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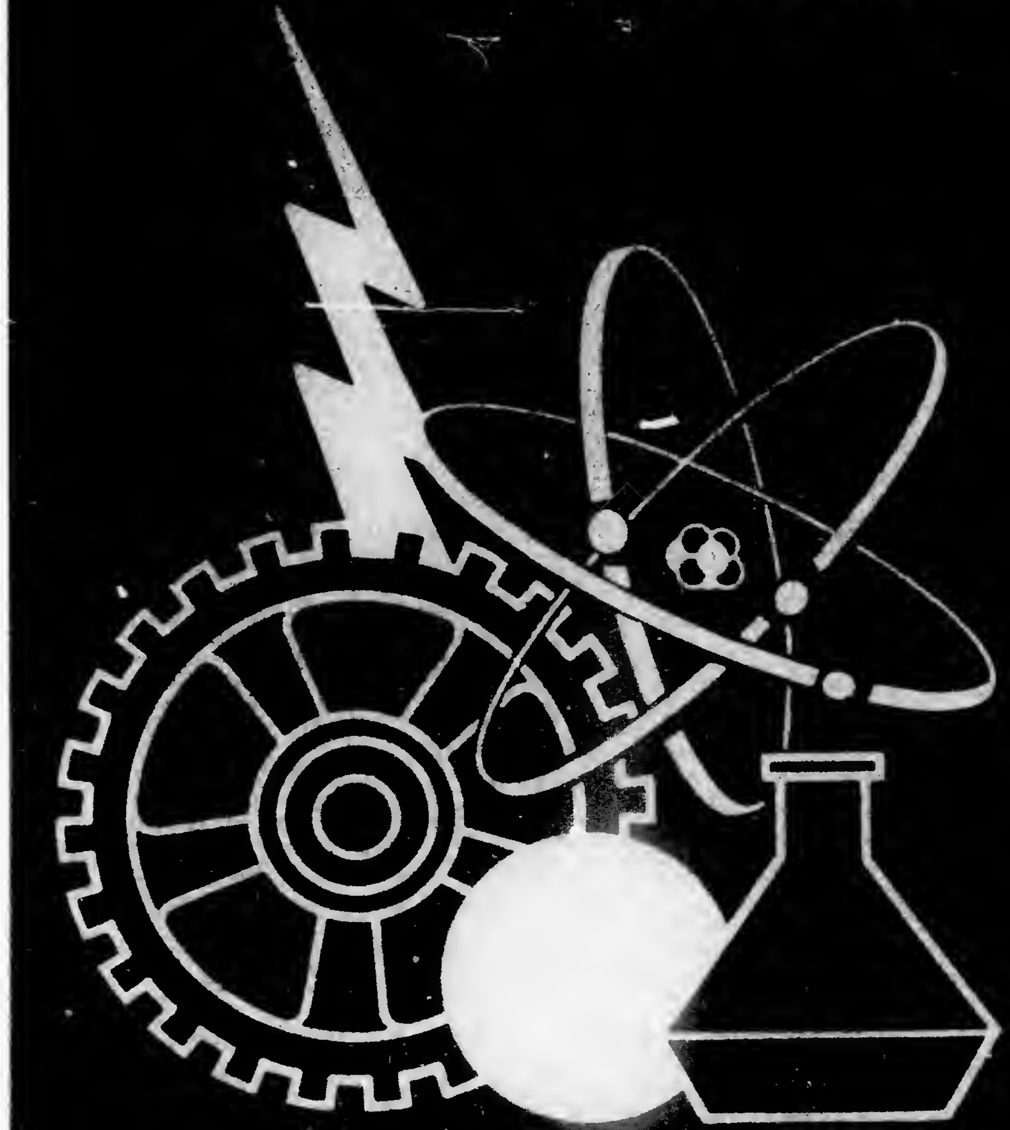
Office

Vol. 1108 Number 1

OFFICIAL GAZETTE
of the
UNITED STATES PATENT AND TRADEMARK OFFICE

PATENTS

NOVEMBER 7, 1989



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OFFICIAL GAZETTE of the UNITED STATES PATENT AND TRADEMARK OFFICE

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THE OFFICIAL GAZETTE (PATENT SECTION), issued weekly.
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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1107 O.G. 5 on Oct. 3, 1989.

For use of the European Patent Office as an International Searching Authority for international applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 5 on Sept. 28, 1982.

For use of the European Patent Office as an International Preliminary Examining Authority for international applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2 on July 7, 1987 and at 1091 O.G. 2 on June 7, 1988.

The search fee of the European Patent Office was changed due to a difference in the exchange rate of the U.S. dollar in relation to the German Mark as of Sept. 1, 1989, and was announced in the *Official Gazette* at 1105 O.G. 36 on Aug. 15, 1989.

International PCT fees were changed on June 1, 1989 due to a difference in the exchange rate of the U.S. dollar in relaton to the Swiss Franc and were announced in the *Official Gazette* at 1102 O.G. 90 on May 30, 1989.

Certain domestic PCT fees and charges for International Search and Preliminary Examination have been changed effective Apr. 17, 1989 and were announced in the *Official Gazette* at 1100 O.G. 24 on Mar. 7, 1989.

The current schedule of PCT fees (in U.S. dollars) is as follows:

Transmittal fee:	170.00
Search Fee	
U.S. Patent and Trademark Office (USPTO) as International Searching Authority (ISA)	
—No corresponding prior U.S. national application filed	550.00
—Corresponding prior U.S. national application filed	380.00
—Supplemental search fee, per additional invention	150.00
European Patent Office as ISA	1040.00
Preliminary examination fee	
USPTO as International Preliminary Examining Authority (IPEA)	
—Search fee paid to USPTO as ISA.	400.00
—Additional examination fee, per additional invention	130.00
—ISA not the USPTO	600.00
—Additional examination fee, per additional invention	200.00
International fees	
Basic fee	436.00
Basic Supplemental fee (for each page over 30)	9.00
Designation fee per country or region for the first 10 national or regional offices	106.00
Designation fee for 11th and subsequent designations	No Charge
Handling fee	134.00

U.S. National Stage fees

	Small Entity	Regular
USPTO was IPEA	165.00	330.00
USPTO was ISA but not IPEA	185.00	370.00
USPTO was neither ISA nor IPEA	250.00	500.00
USPTO was IPEA and all claims presented satisfied provisions of PCT Article 33(2) to (4)	25.00	50.00
—For each independent claim in excess of 3	18.00	36.00
—For each claim in excess of 20	6.00	12.00
—For each application containing a multiple dependent claim	60.00	120.00
—Surcharge for filing national fee or oath or declaration after the time limit applicable under PCT Article 22 or 39.1	60.00	120.00
—Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39.1	30.00	30.00

Sept. 12, 1989.

DONALD J. QUIGG,
Assistant Secretary and Commissioner of Patents and Trademarks.

Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d), effective Nov. 1, 1984, provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on application filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(k) or (l), as amended effective Apr. 17, 1989. If the maintenance fee is not paid in a patent requiring such payment the patent will expire on the 4th, 8th or 12th anniversary of the patent.

Attention is drawn to the patents which were issued on November 4, 1986, for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,620,322 through 4,621,376
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on November 2, 1982 for which maintenance fees due at 7 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,356,569 through 4,357,713
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington. D.C. 20231."

The current amounts of the maintenance fees due at 3 years and six months and seven years and six months are set forth in 37 CFR 1.20(e), (f), (h) and (i), as amended effective Apr. 17, 1989, which are reproduced below:

37 CFR § 1.20 Post-issuance fees

"(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant $245.00"

"(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 8 years; the fee is due by seven years and six months after the original grant $495.00"

"(h) For maintaining an original or reissue patent except a design or plant patent, based on an application filed on or after Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§1.9(f)) $245.00
By other than a small entity $490.00"

"(i) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Aug. 27, 1982, in force beyond 8 years; the fee is due by seven years and six months after the original grant:

By a small entity (§1.9(f)) $495.00
By other than a small entity $990.00"

The amounts of the surcharges as amended effective Apr. 17, 1989, are set forth in 37 CFR 1.20 (k), (l) and (m) which are reproduced below:

"(k) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months , seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982 $120.00"

"(l) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Aug. 27, 1982:

By a small entity(§1.9(f)) $60.00
By other than a small entity $120.00"

"(m) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay is shown to the satisfaction of the Commissioner to have been unavoidable $550.00"

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fees

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th, or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED AUGUST 20, 1989
DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
4,535,479	06/665,613	08/20/85
4,535,491	06/602,528	08/20/85
4,535,495	06/517,076	08/20/85
4,535,499	06/583,010	08/20/85
4,535,505	06/607,965	08/20/85
4,535,506	06/548,168	08/20/85
4,535,510	06/539,277	08/20/85
4,535,522	06/575,760	08/20/85
4,535,539	06/589,159	08/20/85
4,535,540	06/475,119	08/20/85
4,535,546	06/583,679	08/20/85
4,535,551	06/589,635	08/20/85
4,535,556	06/582,461	08/20/85
4,535,565	06/498,387	08/20/85
4,535,566	06/493,331	08/20/85
4,535,571	06/580,242	08/20/85
4,535,572	06/580,601	08/20/85
4,535,574	06/436,311	08/20/85
4,535,575	06/446,412	08/20/85
4,535,582	06/441,132	08/20/85
4,535,596	06/595,200	08/20/85
4,535,609	06/589,248	08/20/85
4,535,613	06/409,627	08/20/85
4,535,623	06/608,995	08/20/85
4,535,624	06/499,820	08/20/85
4,535,626	06/587,379	08/20/85
4,535,630	06/458,742	08/20/85
4,535,634	06/614,055	08/20/85
4,535,647	06/488,367	08/20/85
4,535,648	06/510,546	08/20/85
4,535,655	06/557,941	08/20/85
4,535,661	06/559,415	08/20/85
4,535,663	06/500,610	08/20/85
4,535,676	06/433,272	08/20/85
4,535,683	06/536,214	08/20/85
4,535,684	06/643,052	08/20/85
4,535,685	06/586,061	08/20/85
4,535,686	06/588,746	08/20/85
4,535,690	06/475,623	08/20/85
4,535,706	06/592,725	08/20/85
4,535,708	06/606,848	08/20/85
4,535,710	06/679,341	08/20/85
4,535,712	06/453,888	08/20/85
4,535,713	06/590,531	08/20/85
4,535,721	06/590,167	08/20/85
4,535,726	06/609,325	08/20/85
4,535,728	06/576,428	08/20/85
4,535,729	06/658,253	08/20/85
4,535,735	06/376,132	08/20/85
4,535,750	06/531,481	08/20/85
4,535,751	06/610,122	08/20/85
4,535,752	06/417,708	08/20/85
4,535,753	06/599,516	08/20/85
4,535,778	06/494,534	08/20/85
4,535,781	06/487,785	08/20/85
4,535,783	06/518,859	08/20/85
4,535,784	06/676,220	08/20/85
4,535,785	06/421,992	08/20/85
4,535,786	06/516,627	08/20/85
4,535,795	06/602,836	08/20/85
4,535,796	06/608,051	08/20/85
4,535,800	06/594,038	08/20/85
4,535,804	06/537,410	08/20/85
4,535,806	06/558,450	08/20/85
4,535,812	06/397,653	08/20/85
4,535,814	06/522,026	08/20/85
4,535,817	06/591,554	08/20/85
4,535,823	06/521,105	08/20/85
4,535,829	06/561,187	08/20/85
4,535,845	06/528,672	08/20/85
4,535,851	06/473,645	08/20/85
4,535,853	06/564,804	08/20/85
4,535,854	06/442,026	08/20/85
4,535,858	06/593,935	08/20/85
4,535,861	06/489,376	08/20/85
4,535,863	06/526,705	08/20/85
4,535,875	06/471,711	08/20/85
4,535,878	06/653,087	08/20/85
4,535,885	06/493,752	08/20/85
4,535,890	06/487,104	08/20/85
4,535,894	06/460,248	08/20/85
4,535,902	06/423,358	08/20/85

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Patent Number	Serial Number	Issue Date
4,535,903	06/604,663	08/20/85
4,535,913	06/592,451	08/20/85
4,535,918	06/500,765	08/20/85
4,535,920	06/537,842	08/20/85
4,535,922	06/597,406	08/20/85
4,535,923	06/478,678	08/20/85
4,535,930	06/570,881	08/20/85
4,535,931	06/531,998	08/20/85
4,535,937	06/486,731	08/20/85
4,535,938	06/423,867	08/20/85
4,535,948	06/419,169	08/20/85
4,535,957	06/514,737	08/20/85
4,535,962	06/509,966	08/20/85
4,535,965	06/597,932	08/20/85
4,535,971	06/559,017	08/20/85
4,535,974	06/599,140	08/20/85
4,535,979	06/569,305	08/20/85
4,535,988	06/412,524	08/20/85
4,535,991	06/548,951	08/20/85
4,535,995	06/533,242	08/20/85
4,536,001	06/460,166	08/20/85
4,536,008	06/576,791	08/20/85
4,536,009	06/497,706	08/20/85
4,536,014	06/414,535	08/20/85
4,536,017	06/489,862	08/20/85
4,536,021	06/393,327	08/20/85
4,536,023	06/519,126	08/20/85
4,536,033	06/519,003	08/20/85
4,536,034	06/484,766	08/20/85
4,536,038	06/614,445	08/20/85
4,536,039	06/564,665	08/20/85
4,536,040	06/285,076	08/20/85
4,536,043	06/513,606	08/20/85
4,536,045	06/457,315	08/20/85
4,536,047	06/406,361	08/20/85
4,536,083	06/581,577	08/20/85
4,536,087	06/502,370	08/20/85
4,536,100	06/480,139	08/20/85
4,536,102	06/476,754	08/20/85
4,536,104	06/579,515	08/20/85
4,536,105	06/579,462	08/20/85
4,536,106	06/546,289	08/20/85
4,536,109	06/587,190	08/20/85
4,536,120	06/459,632	08/20/85
4,536,123	06/520,411	08/20/85
4,536,127	06/605,773	08/20/85
4,536,132	06/498,133	08/20/85
4,536,136	06/477,610	08/20/85
4,536,138	06/687,232	08/20/85
4,536,144	06/533,456	08/20/85
4,536,147	06/626,239	08/20/85
4,536,155	06/611,011	08/20/85
4,536,167	06/560,893	08/20/85
4,536,191	06/626,831	08/20/85
4,536,197	06/532,835	08/20/85
4,536,199	06/568,462	08/20/85
4,536,200	06/538,758	08/20/85
4,536,214	06/511,464	08/20/85
4,536,228	06/467,130	08/20/85
4,536,238	06/584,592	08/20/85
4,536,252	06/699,283	08/20/85
4,536,258	06/611,878	08/20/85
4,536,261	06/638,435	08/20/85
4,536,286	06/559,964	08/20/85
4,536,288	06/628,325	08/20/85
4,536,289	06/542,607	08/20/85
4,536,290	06/579,984	08/20/85
4,536,296	06/474,719	08/20/85
4,536,297	06/572,103	08/20/85
4,536,299	06/671,192	08/20/85
4,536,307	06/535,139	08/20/85
4,536,308	06/656,286	08/20/85
4,536,325	06/573,521	08/20/85
4,536,330	06/589,510	08/20/85
4,536,331	06/545,989	08/20/85
4,536,336	06/565,216	08/20/85
4,536,339	06/414,509	08/20/85
4,536,356	06/560,980	08/20/85
4,536,359	06/540,976	08/20/85
4,536,367	06/559,999	08/20/85
4,536,368	06/560,000	08/20/85
4,536,378	06/541,512	08/20/85
4,536,388	06/514,738	08/20/85
4,536,403	06/617,774	08/20/85
4,536,433	06/532,796	08/20/85
4,536,438	06/588,107	08/20/85
4,536,456	06/509,023	08/20/85
4,536,497	06/520,883	08/20/85
4,536,499	06/481,373	08/20/85
4,536,503	06/569,011	08/20/85
4,536,504	06/513,339	08/20/85
4,536,509	06/585,621	08/20/85
4,536,511	06/577,447	08/20/85
4,536,523	06/565,212	08/20/85
4,536,525	06/629,574	08/20/85
4,536,534	06/566,522	08/20/85
4,536,548	06/491,698	08/20/85
4,536,551	06/626,829	08/20/85
4,536,566	06/260,502	08/20/85
4,536,567	06/631,948	08/20/85
4,536,569	06/247,869	08/20/85
4,536,570	06/436,509	08/20/85
4,536,586	06/619,419	08/20/85
4,536,602	06/616,359	08/20/85
4,536,609	06/511,143	08/20/85
4,536,619	06/565,629	08/20/85
4,536,638	06/429,845	08/20/85
4,536,646	06/505,087	08/20/85
4,536,657	06/558,950	08/20/85
4,536,665	06/453,032	08/20/85
4,536,671	06/487,964	08/20/85
4,536,681	08/515,297	08/20/85
4,536,688	06/694,918	08/20/85
4,536,705	06/593,940	08/20/85
4,536,719	06/346,047	08/20/85
4,536,728	06/538,236	08/20/85
4,536,732	06/612,156	08/20/85
4,536,752	06/454,444	08/20/85
4,536,756	06/558,048	08/20/85
4,536,762	06/378,536	08/20/85
4,536,763	06/319,705	08/20/85
4,536,785	06/526,912	08/20/85
4,536,789	06/521,364	08/20/85
4,536,799	06/427,899	08/20/85
4,536,800	06/445,513	08/20/85
4,536,811	06/365,564	08/20/85
4,536,821	06/584,343	08/20/85
4,536,822	06/706,911	08/20/85
4,536,825	06/594,745	08/20/85
4,536,838	06/478,604	08/20/85
4,536,840	06/432,135	08/20/85
4,536,841	06/464,841	08/20/85
4,536,865	06/557,396	08/20/85
4,536,866	06/455,307	08/20/85

NOTIFICATION OF ACCEPTANCE OF DELAYED PAYMENT OF MAINTENANCE FEE
(35 U.S.C. 41(c); 37 CFR 1.378)

The patent(s) listed below are considered as not having expired but are subject to the conditions set forth in 35 U.S.C. 41(c)(2), in view of the Petition to Accept Late Payment of the maintenance fees which has been GRANTED BY THE COMMISSIONER OF PATENTS AND TRADEMARKS, as provided for under 35 U.S. C. 41(c)(1) and 37 CFR 1.378.

Patent No	Serial No.	Patent Date	Application Filing Date	Delayed Payment Acceptance Date
4,466,968	06/310,103	08/21/84	10/09/81	10/05/89
4,472,067	06/410,398	09/18/84	08/23/82	10/11/89
4,497,155	06/377,567	02/05/85	05/12/82	10/11/89

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

4,699,323, Re. S. N. 416,569, Filed Oct. 3, 1989, Cl. 239/585, DUAL SPRAY CONE ELECTROMAGNETIC FUEL INJECTION, James H. Rush, et al., Owner of Record: *General Motors Corp., Detroit, Mich.*, Attorney or Agent: C. K. Veenstra, Ex. Gp.: 314

4,034,083, Re. S. N. 413,873, Filed Sept. 29, 1989, Cl. 514/53, COMPOSITIONS FOR INHIBITING ABSORPTION OF CHOLESTEROL, Fred H. Mattson, Owner of Record: *Inventor*, Attorney or Agent: Eric Guttag, Ex. Gp.: 183

4,535,732, Re. S. N. 315,195, Filed Feb. 27, 1989, Cl. 123, VALVE OPERATION CONTROL DEVICE FOR INTERNAL COMBUSTION ENGINES, Yoshikatsu Nakano, et al., Owner of Record: *Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan*, Attorney or Agent: John F. Carney, Ex. Gp.: 342

4,679,964, Re. S. N. 378,996, Filed July 12, 1989, Cl. 405/216, OFFSHORE WELL SUPPORT MINIPLATFORM, Joseph W. Blandford, Owner of Record: *Seahorse Equipment Corp.*, Attorney or Agent: Donald Gunn, Ex. Gp.: 351

4,701,124, Re. S. N. 415,997, Filed Oct. 2, 1989, Cl. 431/284, COMBUSTION CHAMBER APPARATUS FOR COMBUSTION INSTALLATION, ESPECIALLY FOR COMBUSTION CHAMBERS OF GAS TURBINE INSTALLATION, AND A METHOD OF OPERATING THE SAME, Helmut Maghon, et al., Owner of Record: *Kraftwerk Union Aktiengesellschaft, Mulheim/Ruhr, Germany*, Attorney or Agent: Herbert L. Lerner, Ex. Gp.: 341

4,746,153, Re. S. N. 413,579, Filed Sept. 28, 1989, Cl. 292/216, CLOSURE PANEL PULL DOWN MECHANISM, David E. Compeau, et al., Owner of Record: *General Motors Corp., Detroit, Mich.*, Attorney or Agent: Charles E. Leahy, Ex. Gp.:358

4,785,996, Re. S. N. 345,467, Filed Apr. 28, 1989, Cl. 239/298, ADHESIVE SPRAY GUN AND NOZZLE ATTACHMENT, Roger A. Ziecker, et al., Onwer of Record: *Nordson Corp., Amherst, Ohio*, Attorney or Agent: Thomas L. Kautz, Ex. Gp.: 314

4,788,418, Re. S. N. 412,922, Filed Sept. 26, 1989, Cl. 235/379, AUTOMATIC TRANSACTION MACHINE, Setsuo Tsukui, Owner of Record: *Fujitsu Ltd., Kawasaki, Japan*, Attorney or Agent: John P. Moran, Ex. Gp: 213

4,816,154, Re. S. N. 362,951, Filed June 5, 1989, Cl. 210/448, LIQUID FILTERING APPARATUS, Philip J. Hartley, Owner of Record: *Inventor*, Attorney or Agent: William S. Frommer, Ex. Gp.: 136

4,849,521, Re. S. N. 413,427, Filed Sept. 27, 1989, Cl. 546/209, STEREOSELECTIVE PERPARATION OF 3-SUBSTITUTED-4 PIPERIDINE COMPOUND AND DERIVATIVES, Linas V. Kudzma, Owner of Record: *Boc Inc., Montvale, N.J.*, Attorney or Agent: R. Hain Swope, Ex. Gp.: 129

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b).

3,826,728, Reexam. No. 90/001,858, Requested October 5, 1989, Cl. 204/192, TRANSPARENT ARTICLES HAVING REDUCED SOLAR RADIATION TRANSMITTANCE AND METHOD OF MAKING SAME, Douglas L. Chambers, et al., Owner of Record: *The Boc GRP PLC, Inc. Windlesham, England*, Attorney or Agent: David Draegert, Ex. Gp.: 110, Requester: PPG Industries, Pittsburg, Pa.

4,647,612, Reexam. No. 90/001,854, Requested October 2, 1989, Cl. 524/458, POLYMER EMULSION PRODUCTS, AJay I. Ranka, et al., Owner of Record: *PPG Industries, Inc., Pittsburg, Pa.*, Attorney or Agent: William Uhl, Ex. Gp.: 150, Requester: Owner

4,692,491, Reexam. No. 90/001,855, Requested October 2, 1989, Cl. 524/458, POLYMER EMULSION PRODUCTS, AJay I. Ranka, et al., Owner of Record: *PPG Industries, Inc., Pittsburg, Pa.*, Attorney or Agent: William Uhl, Ex. Gp.: 150, Requester: Owner

4,692,599, Reexam. No. 90/001,856, Requested October 2, 1989, Cl. 219/532, COIL SUPPORT FOR ELECTRIC HEATER, H. Keith Howard, et al., Owner of Record: *Adams Industries, Cookville, Tenn.*, Attorney or Agent: Berman, Aisenberg & Platt, Ex. Gp.: 210, Requester: Emerson Electric Co., St. Louis, Mo.

4,802,732, Reexam. No. 90/001,857, Requested October 5, 1989, Cl. 350/96.230, OPTICAL FIBER CABLE PREVENTING WATER FROM SPREADING TOWARD CABLE INTERIOR, Masumi Fukuma, et al, Owner of Record: *Sumitomo Electric Ind. Osaka, Japan*, Attorney or Agent: J. F. Osha, Ex. Gp.: 250, Requester: Owner

Suspension

Ralph M. Martin of Boulder, Co., formerly of Fort Lauderdale, Fla., whose registration number is 32,267, has been suspended for a period extending until he is reinstated to practice law by the Florida Bar and by the Director of the Office of Enrollment and Discipline. This action is taken under the provisions of 35 USC 32, and 37 CFR 10.130 and 10.133(g).

October 11, 1989 CAMERON WEIFFEBACH, *Director*
Office of Enrollment and Discipline

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PATENT NOTICES

Certificates of Correction For Week of November 7, 1989

D. 298,250
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4,344,530
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PATENT APPLICATION	New patent application and associated papers and fees.
TRADEMARK APPLICATION	New trademark application and associated papers and fees.
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Reference Collection of U.S. Patents Available for Public Use in Patent Depository Libraries

The following libraries, designated as Patent Depository Libraries (PDLs), receive current issues of U.S. Patents and maintain collections of earlier-issued patents. The scope of these collections varies from library to libary, ranging from patents of only recent years to all or most of the patents issued since 1790.

These patent collections, which are organized in patent number sequence, are available for use by the public free of charge. Each of the PDLs, in addition, offers supplemental reference publications of the U.S. Patent Classification System, including the *Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions*, and provides technical staff assistance in their use to aid the public, in gaining effctive access to information contained in patents. CASSIS (Classification And Search Support Information System); which provides direct, on-line access to Patent and Trademark Office data, is available at all PDLs. Facilities for making paper copies of patents from either microfilm or paper collections are generally provided for a fee.

Since there are variations in the scope of patent collections among the PDLs and in their hours of service to the public, anyone contemplating use of the patents at a particular library is urged to contact that library, in advance, about its collection and hours in order to avert possible inconvenience.

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	Toledo/Lucas County Public Library	(419) 259-5212
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PATENT EXAMINING CORPS

JAMES E. DENNY, Acting Assistant Commissioner
STEPHEN G. KUNIN, Acting Deputy Assistant Commissioner
CONDITION OF PATENT APPLICATIONS AS OF October 7, 1989

CHEMICAL EXAMINING GROUPS

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 110—D. E. TALBERT, Director	5-26-87
ORGANIC CHEMISTRY GROUP 120—S. N. ZAHARNA, Director	6-16-87
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 130—R. F. WHITE, Director	4-15-87
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 150—J. O. THOMAS, Director	5 14-87
BIOTECHNOLOGY, GROUP 180—J. E. KITTLE, Director	9-10-86

ELECTRICAL EXAMINING GROUPS

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—D. G. Kelly, Director	9-24-87
SPECIAL LAWS ADMINISTRATION, GROUP 220—K. L. CAGE, Director	2-27-87
INFORMATION PROCESSING, STORAGE, AND RETRIEVAL, GROUP 230—G. GOLDBERG, Director	5-28-87
PACKAGES, CLEANING, TEXTILES, AND GEOMETRICAL INSTRUMENTS, GROUP 240—TRYGVE M. BLIX, Director	5-27-88
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 250—EDWARD E. KUBASIEWICZ, Director	8-18-87
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 260 S. LEVY, Acting Director	8-17-87
DESIGN, GROUP 290—K. L. CAGE, Director	2-6-86

MECHANICAL EXAMINING GROUPS

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director	5-18-88
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 320—N. GODICI, Acting Director	4-13-88
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 330—J. J. LOVE, Director	4-20-87
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 340—C. CROYLE, Acting Director	2-26-88
GENERAL CONSTRUCTIONS, PETROLEUM AND MINING ENGINEERING, GROUP 350—A. L. SMITH, Director	1-3-89

Expiration of patents: The patents within the range of numbers indicated below expire during October 1989, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents .... Numbers 3,694,814 to 3,702,011 inclusive
Plant Patents .... None

STATUTORY INVENTION REGISTRATIONS

PUBLISHED NOVEMBER 7, 1989

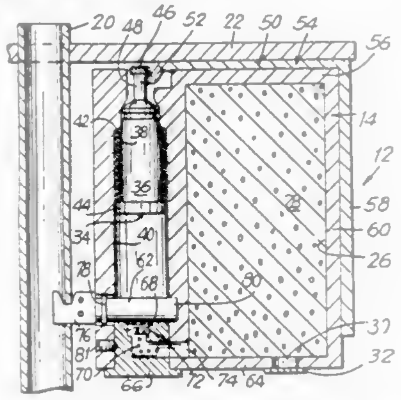
A statutory invention registration is not a patent. It has the defensive attributes of a patent but does not have the enforceable attributes of a patent. No article or advertisement or the like may use the term patent, or any term suggestive of a patent, when referring to a statutory invention registration. For more specific information on the rights associated with a statutory invention registration see 35 U.S.C. 157

H697

SUBMUNITION FUSE WITH REMOVABLE BLOCKER

Terry E. Thomas, Sr., Forest Hill, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jul. 10, 1989, Ser. No. 379,023
Int. Cl.^{4} F42C *15/22;* F41B *13/50*
U.S. Cl. 102—239 **11 Claims**



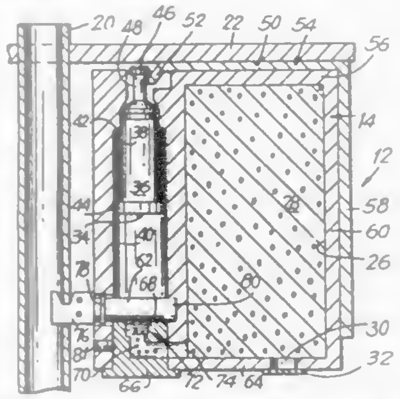
1. A fuze for a submunition subjected to spinning and air turbulence after ejection from a launched projectile containing the submunition, comprising:
   (a) a submunition housing having a compartment containing a solid pyrotechnic chemical main charge which, when burned, produces an incapacitating gas;
   (b) a percussion-type firing pin mounted on the housing for movement in a longitudinal direction along a travel path from a latched to a released position;
   (c) biasing means for constantly urging the firing pin along the travel path from the latched to the released position;
   (d) latch means for engaging and maintaining the firing pin in the latched position;
   (e) a casing stationarily mounted on the housing and having a chamber containing a percussion primer, said chamber having an access port aligned with, and in the travel path of, the firing pin, and an exit port in open communication with the compartment containing the main charge;
   (f) a displaceable blocking means mounted on the housing for displacement in a transverse direction generally perpendicular to the longitudinal direction between blocked and unblocked positions in which the blocking means is respectively in and remote from the travel path of the firing pin;
   (g) displacing means for displacing the blocking means from the blocked to the unblocked position when centrifugal forces generated during said spinning and said air turbulence cooperate to pull the blocking means to the unblocked position;
   (h) said latch means being further operative for releasing the firing pin when subjected to said spinning and air turbulence to enable the biasing means to urge the released pin past the blocking means in the unblocked position through the access port and into striking contact with the primer, thereby detonating the primer and directing a flame through the exit port to burn the main charge in the compartment; and
   (i) a discharge port on the housing and through which the incapacitating gas is discharged, for saturating an area with the incapacitating gas at far range from the projectile launch site.

H698

SUBMUNITION FUSE

Terry E. Thomas, Sr., Forest Hill, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jul. 10, 1989, Ser. No. 379,024
Int. Cl.^{4} F42C *15/22;* F42B *13/50*
U.S. Cl. 102—245 **11 Claims**



1. A fuze for a submunition subjected to spinning and air turbulence after launch of a projectile containing the submunition, comprising:
   (a) a submunition housing having a compartment containing a solid pyrotechnic chemical main charge which, when burned, produces an incapacitating gas;
   (b) a percussion-type firing pin mounted in the housing for movement in a longitudinal direction along an axis from a latched to a released position;
   (c) biasing means for constantly urging the firing pin along the longitudinal direction from the latched to the released position;
   (d) latch means for engaging and maintaining the firing pin in the latched position;
   (e) a slider having a chamber containing a percussion primer, said chamber having an access port through which the primer is accessible and an exit port in open communication with the compartment containing the main charge, said slider being mounted on the housing for displacement in a transverse direction generally perpendicular to the longitudinal direction between offset and aligned positions in which the access port is respectively offset from and aligned with the axis;
   (f) displacing means for constantly displacing the slider along the transverse direction to the offset position against centrifugal forces generated during said spinning until such centrifugal forces reach a predetermined threshold sufficient to displace the slider to the aligned position;
   (g) locking means for locking the slider in the aligned position;
   (h) said latch means being further operative for releasing the firing pin when subjected to said spinning and air turbulence to enable the biasing means to urge the released pin through the access port and into striking contact with the primer in the aligned position of the locked slider, thereby detonating the primer and directing a flame through the exit port to burn the main charge in the compartment; and
   (i) a discharge port on the housing and through which the incapacitating gas is discharged, for saturating an area with the incapacitating gas at far range from the projectile launch site.

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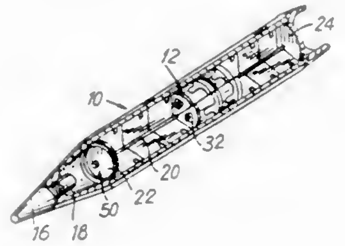
SUBMUNITION FUSE WITH PYROTECHNIC IGNITION

Terry E. Thomas, Sr., Forest Hill, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jul. 10, 1989, Ser. No. 379,040
Int. Cl.^{4} F42B *13/46*
U.S. Cl. 102—370 **9 Claims**



1. A fuze for a submunition ejected from a launched projectile upon detonation of an on-board expelling charge, comprising:

(a) a hollow core rod centrally mounted within, and extending along a longitudinal axis of, the projectile, said core rod having an interior longitudinal channel, and at least one flash port extending radially outwardly of the longitudinal axis and communicating with the longitudinal channel;

(b) at least one submunition housing mounted within the projectile radially adjacent the core rod, said housing having a compartment containing a solid pyrotechnic chemical main charge which, when burned, produces an incapacitating gas, said housing having at least one access port aligned with a respective flash port and communicating with the main charge in the compartment;

(c) pyrotechnic fuzing means loaded within the longitudinal channel and a respective access port, and operative for burning upon detonation of the expelling charge, thereby directing a flame through the longitudinal channel, the respective flash port and the respective access port to burn the main charge in the compartment; and

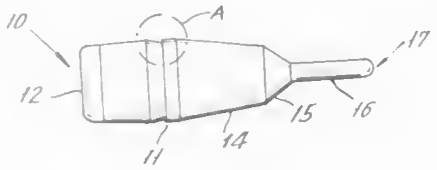
(d) a discharge port on the housing and through which the incapacitating gas is discharged, for saturating an area with the incapacitating gas.

H700

PROBE NOSE TRAINING CARTRIDGE

Anthony L. Farinacci, 13101 Sanfield Rd., Baldwin, Md. 21013

Filed Jul. 7, 1989, Ser. No. 379,320
Int. Cl.^{4} F42B *8/00*
U.S. Cl. 102—529 **14 Claims**



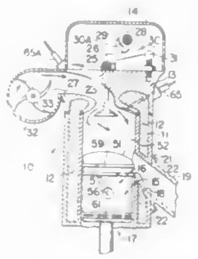
1. A bullet for a training cartridge; said bullet having a generally cylindrical body section, one end of which is receivable into a cartridge case; said cylindrical body section having a first diameter at a given axial position and having an elongated probe section extending from the opposite end of said cylindrical body section; said elongated probe section being coaxial with said cylindrical body section; said elongated probe section having a lateral width which is less than said first diameter and a length which is at least about 25% of the total length of said bullet.

H701

TWO CYCLE INTERNAL COMBUSTION ENGINE

Antonio D. Ancheta, 446 Toronto Street, Winnipeg, Manitoba, Canada (R3G 1S5)

Filed Dec. 12, 1988, Ser. No. 282,638
Int. Cl.^{4} F02B *25/04*
U.S. Cl. 123—65 VB **20 Claims**



1. In a two-stroke supercharged multi-cylinder internal combustion engine, with inline or V-type configuration and including a recirculating type constant pressure lubrication system; comprising in combination a cylinder block having cylinder bores formed therein, a cylinder head on the upper end of the cylindrical bores and closing same and defining a combustion chamber at the upper end of each cylindrical bore, a piston assembly in each of said bores including a piston having a domed head and a connecting rod operatively connected to said piston for reciprocating same between top dead centre and bottom dead centre, a crankshaft mounted for rotation at the base of said block, said connecting rods being operatively connected to said crankshaft and an oil pan enclosing the lower end of the cylinder bores and said crankshaft, said cylinder head including a camshaft mounted for rotation thereon and being operatively connected to said crankshaft, at least two inlet-and-scavenger valves mounted on said cylinder head and being operatively connected with said combustion chamber of each of said cylindrical bores, a rocker arm operatively mounted on said cylinder head and operatively engaging said inlet-and-scavenger valve by one end thereof, a cam lobe for each rocker arm formed on said cam shaft operatively connected with the other end of said rocker arm, said cam lobes having a wide area of contact with said rocker arm to control the opening, closing and duration of opening of said inlet-and-scavenger valve and exhaust port located in the lower side of the cylinder walls of the cylinder bores inclining downwardly and outwardly through the cylinder walls and being covered and uncovered by the reciprocating piston passing thereby, the improvement wherein the cam lobe opens said inlet-and-scavenger valve at approximately 110° after top dead centre and closes said inlet-and-scavenger valve at approximately 83° after bottom dead centre thereby maintaining said inlet-and-scavenger valve open through approximately 153°.

H702

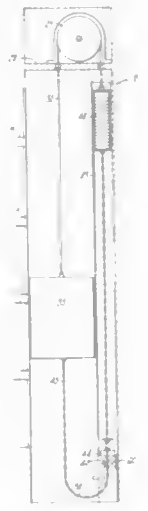
CONTROLLING THE MOTION OF A COMPENSATING ROPE IN AN ELEVATOR

Gary Shively, Seattle, Wash.; Gordon E. Means, Bloomington, Calif., and Robert Staniec, Monee, Ill., assignors to Otis Elevator Company, Farmington, Conn.

Filed Dec. 15, 1987, Ser. No. 133,408
Int. Cl.^{4} B66B *5/16*
U.S. Cl. 187—94 **10 Claims**

1. In an elevator system comprising an elevator car and a counterweight suspended in a hoistway, and an open-looped, flexible compensating rope connected at the ends thereof to said car and said counterweight, the improvement characterized by:

guide means disposed within said hoistway in engagement with said compensating rope for laterally restraining said rope, thereby preventing said rope from striking said car or the walls of said hoistway due to dynamic changes in the geometry of said loop as said car and counterweight move within said hoistway.

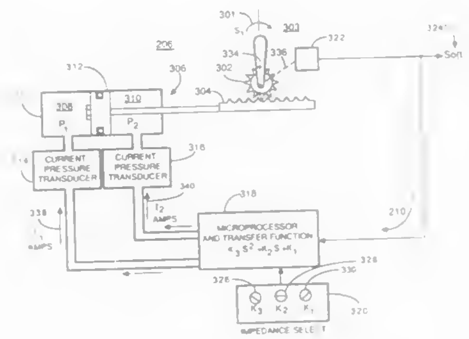


H703

MANUAL CONTROL APPARATUS WITH ELECTABLE MECHANICAL IMPEDANCE

Daniel W. Repperger, Vandalia, and Augustus Morris, Jr., Trotwood, both of Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jul. 30, 1987, Ser. No. 79,323
Int. Cl.^{4} B64C *13/04*
U.S. Cl. 244—221 **2 Claims**



1. Aircraft controlling apparatus comprising the combination of:

a manually operable electrical output signal generating aircraft control stick apparatus having a first mathematical transfer function:

an electrical signal input to mechanical signal output feedback signal apparatus connected between the electrical signal output of said control stick apparatus and a mechanical input node thereof, the combination of said feedback signal apparatus with said control stick apparatus having a second closed loop transfer function which includes selectable dynamic stability characteristic determining mathematical constant terms therein;

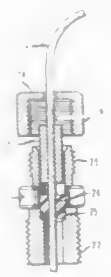
means selective of said transfer function dynamic stability determining mathematical constant term values for selecting stability and instability characteristics and characteristics intermediate thereof in said control stick apparatus.

H704

METHOD AND APPARATUS FOR OPTICAL FIBER TRANSMISSION IN A UTILITY CONDUIT CONTAINING A HOSTILE FLUID

Sam Di Vita, W. Long Branch; Edmund E. Malecki, Rumson, both of N.J., and Loretta J. Kubricky, Ellicott City, Md., assignors to The United of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 10, 1988, Ser. No. 166,336
Int. Cl.^{4} G02B *6/44, 6/10*
U.S. Cl. 350—96.23 **12 Claims**



1. The method of introducing an optical fiber into a utility conduit containing a hostile fluid comprising the steps of

sealing the optical fiber with an inorganic hermetic coating that is impervious to both moisture and said hostile fluid, and

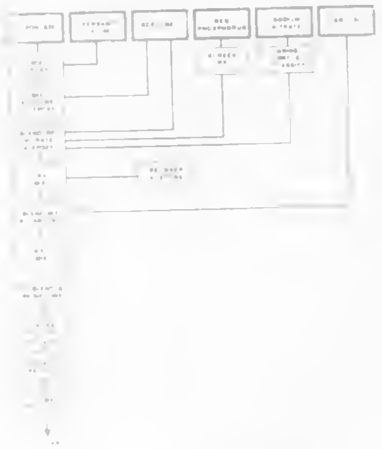
inserting the hermetically-sealed optical fiber into the conduit with a hostile fluid-tight connection.

H705

PROCESS FOR MAKING SMOKE PRODUCING COMPOSITION

Joel H. Selzer, 1 Aspen Tree Ct., Baltimore, Md. 21209, and Michael D. Smith, 160 Nantucket Dr., Port Deposit, Md. 21904

Filed Oct. 9, 1985, Ser. No. 785,709
Int. Cl.^{4} D03D *23/00*
U.S. Cl. 149—109.6 **10 Claims**



1. An improved method of preparing a smoke-composition for processing by automated equipment consisting essentially of:

mixing about 933 grams of a liquid epoxy-curing system with about 1.75 grams of acetone per gram of epoxy-curing system,

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coating about 22.7 kilograms of red phosphorous with said epoxy-curing system,
blending about 4 kilograms of sodium nitrate and about 4 liters of acetone with said coated mixture,
drying the resulting mixture at about 70° F. for about 60 minutes, and coating said dried misture with about 1.5 percent by weight of fumed silica,
consolidating the coated mixture into pellets weighing between 42.0 and 44.0 grams, loading 28 pellets into the cartridge body, and curing for 48 hours at 140° F.

H706
SILVER HALIDE COLOR PHOTOSENSITIVE MATERIALS

Osamu Takahashi; Nobuo Furutachi, and Masakazu Morigaki, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Minami Ashigara, Japan
Filed Aug. 29, 1988, Ser. No. 237,205
Claims priority, application Japan, Aug. 28, 1987, 62-214681
Int. Cl.⁴ G03C *1/08*
U.S. Cl. 430—551 4 Claims

1. A silver halide color photosensitive material, characterized in that a lipophilic fine grain dispersed in at least one hydrophilic colloidal layer formed on a support contains at least one compound represented by formula (1) and at least one compound represented by formula (II):

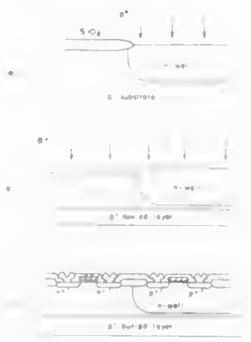
$$R_1—SO_2 \cdot M_1 \qquad (I)$$

$$R_2—SO_3 \cdot M_2 \qquad (II)$$

wherein each of R_1 and R_2 represents an aliphatic, aromatic or heterocyclic group having 8 or more carbon atoms; each of M_1 and M_2 represents a hydrogen atom or an inorganic or organic salt-forming atom or atomic group; also M_1 represents a protective group to be hydrolyzed with alkali, and sodium dodecylbenzenesulfonate is excluded from the compounds of formula (II).

H707
METHOD OF PREVENTING LATCH-UP FAILURES OF CMOS INTEGRATED CIRCUITS

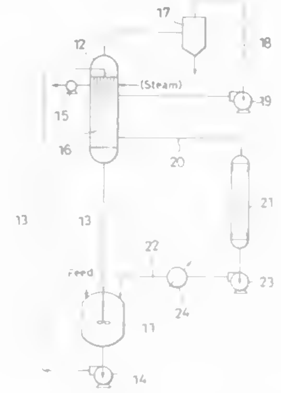
Chemning Hu, Hercules, and Kyle W. Terrill, Berkeley, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Continuation of Ser. No. 677,826, Dec. 4, 1984, abandoned. This application Jun. 8, 1987, Ser. No. 59,237
Int. Cl.⁴ H01L *21/265*
U.S. Cl. 437—26 26 Claims



1. A method of preventing latch-up in an integrated circuit structure comprising the steps of:
providing a lightly ion doped substrate;
implanting a more highly ion doped buried layer of the same conductivity type beneath the surface of the lightly doped substrate;
fabricating the remainder of the integrated circuit structure on the lightly ion doped substrate.

H708
METHOD OF PRODUCING DIACETONE SORBOSE

Youichi Oka, 3954-13, Oaza-murozumimura, Hikari, Yamaguchi 743; Hitoshi Sawada, 1864-11, Oaza-mitsui, Hikarai, Yamaguchi 743, and Masao Yokoyama, 14-10, Nijigaoka 4-chome, Hikari, Yamaguchi 743, all of Japan
Filed Apr. 8, 1987, Ser. No. 35,847
Claims priority, application Japan, Apr. 17, 1986, 61-89296
Int. Cl.⁴ C07G *3/00*
U.S. Cl. 536—18.5 6 Claims

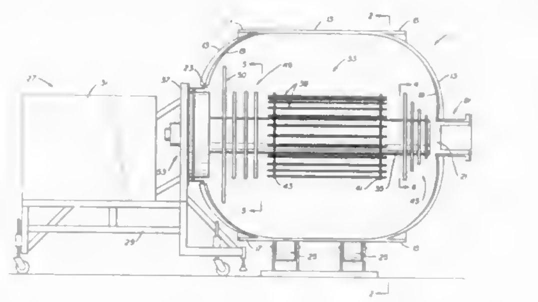


1. A method of producing diacetone sorbose by reaction of L-sorbose with acetone in the presence of a ketal formation catalyst in acetone in a reactor, which comprises feeding into the reactor L-sorbose, acetone which has been dehydrated with zeolite activated at a temperature of 200°-300° C. and has a water content of not more than about 50 ppm in an amount of about 6–25 times the weight of the L-sorbose, and a ketal formation catalyst of the class consisting of concentrated sulfuric acid, perchloric acid and iodine, and carrying out the reaction of the L-sorbose with the acetone at reflux temperatures under reduced pressures, while continuously removing water formed in the reaction as a mixture with acetone by distillation at a rate of amounts of about 0.5–2 times the weight of the amount of the acetone initially fed into the reactor per hour and continuously adding to the reaction mixture dehydrated acetone of a water content not more than about 50 ppm at a rate corresponding approximately to the rate at which the mixture of water and acetone is removed from the reaction mixture.

H709
HEATER SYSTEM FOR CURING ROCKET MOTOR MATERIALS

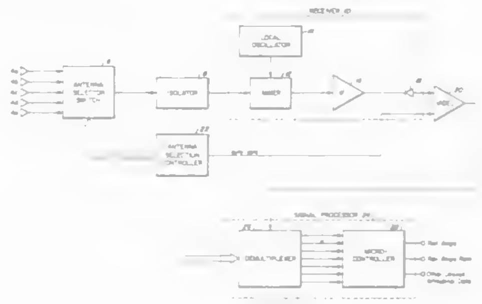
Leonard R. West, Salt Lake City, Utah, assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Oct. 19, 1987, Ser. No. 111,845
Int. Cl.⁴ H05B *3/40*
U.S. Cl. 219—523 10 Claims

1. A heater system for radiant heating of an interior of a rocker motor comprising:
(a) a power and control device;
(b) a heating element system positioned within the interior of said rocket motor;
(c) said heating element system having a plurality of separate heating elements;
(d) said power and control device is operatively connected to said plurality of separate heating elements to selectively activate said heating elements at predetermined power levels to tailor uniform heating of all interior surfaces of the rocket motor.



H710
HORIZON REFERENCE SYSTEM FOR A ROTATING BODY

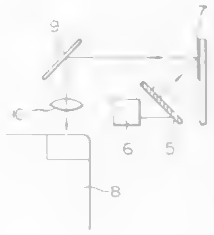
John O. Hooper; Bruce M. Heydlauff, and Robert B. Dillinger, all of Ridgecrest, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Nov. 2, 1984, Ser. No. 700,981
Int. Cl.⁴ G01S *5/04, 3/02*
U.S. Cl. 342—434 7 Claims



1. A horizon reference system for a rotating body comprising:
a plurality of alternate antenna assemblies for receiving microwave energy from the environment;
a receiver;
an antenna selector switch connected between said plurality of alternate antenna assemblies and said receiver for selectively connecting said alternate antenna assemblies to said receiver, one at a time;
an antenna selection controller connected to said antenna selector switch for sequencing said antenna selector switch from one antenna assembly to another according to a predetermined sequence; and
a signal processor connected to said antenna selection controller and said receiver for calculating attitudinal parameters for said rotating body.

H711
EXPOSURE DEVICE

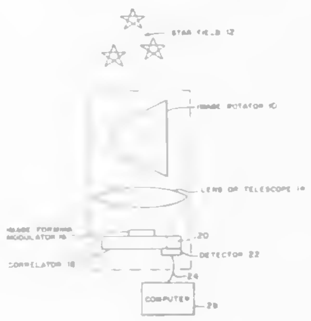
Kiyoshi Harada; Kazuo Takahashi, and Mikio Kawasaki, all of Hino, Japan, assignors to Konica Corporation, Japan
Filed Jun. 20, 1988, Ser. No. 209,417
Claims priority, application Japan, Jun. 23, 1987, 62-156036
Int. Cl.⁴ G03B *27/54*
U.S. Cl. 355—67 4 Claims



1. A method of printing an image on a photographic material wherein said photographic material is exposed to an image with an exposure light comprising a tabular-shaped light emitting means.

H712
METHOD OF STELLAR NAVIGATION USING AN OPTICAL CORRELATOR

Richard L. Hartman, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Aug. 3, 1988, Ser. No. 227,563
Int. Cl.⁴ G01B *11/00;* G01J *1/20*
U.S. Cl. 364—456 3 Claims



1. A method of stellar navigation comprising, providing means for imaging a predetermined star pattern onto lens focusing means, directing the focused image to an image forming modulator of a correlator to cause an output to be produced from a matched filter of the correlator, utilizing the output from the correlator as control signals to a computer and utilizing the control signals in the computer with the position of the imaging means to cause the computer to calculate altitude the latitude.

H713
AUTOMATIC TARGET DETECTION AND RECOGNITION

Roger A. May, Longwood, and Frank B. Link, Orlando, both of Fla., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.
Filed Mar. 15, 1988, Ser. No. 173,859
Int. Cl.⁴ G06K *9/48*
U.S. Cl. 364—517 3 Claims

2. A screener post processor (FIGS. 5 and 6) for a target

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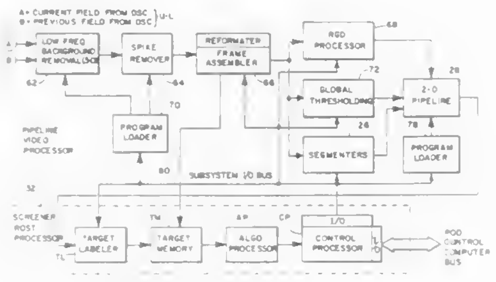
recognizer system, comprising a target laqbeler, target memory means, an algorithm procdssor, and a control processor;

wherein the target labeler includes targer filter means, adjacent boundary filter means, and adjacent target number sorter means;

wherein the target memory means includes a mass target memory, and two single target memories;



Target Recognizer Hardware Architecture

wherein the target labeler includes means for examining each pixel output from a pipeline video processor and storing into one of said two single segment memories only those which have been tagged by a 2-D pipeline for further evaluation, wherein the target labeler also includes means for appending an identification onto each pixel stored, which is sufficient to sort the stored data into single target groupings.

H714

SERIAL DATA WORD PROCESSING ARRANGEMENT

Vaughn P. McDowell, Fredericksburg, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 26, 1987, Ser. No. 112,579

Int. Cl.⁴ G06F *3/153*

U.S. Cl. 364—900 1 Claim

1. A serial data EEPROM processing arrangement comprising:

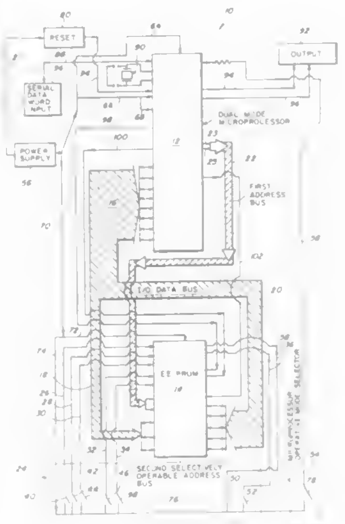
a dual mode microprecessor comprising an accumulator and at least 3 registers;

means for inputting serial data in bytes of 8 bits or less to the accumulator of said dual mode microprocessor;

means for outputting parallel data from the registers of said dual mode microprocessor;

an elecrtonically erasable and programmable read only memory (EEPROM) electrically connected to said dual mode microprocessor;

a data bus connecting the registers of said dual mode microprocessor to said EEPROM;



an address bus interconnecting said dual mode microprocessor with said EEPROM;

a manually selectable address bus comprising switches to designate which area of the EEPROM is addressed by said dual mode microprocessor;

means for manually switching said microprocessor between an encoding and a decoding mode; and

means for outputting an electrical signal when the serial data inputted to said dual mode microprocessor matches the data in said EEPROM.

REISSUES

NOVEMBER 7, 1989

Matter enclosed in heavy brackets ❲ ❳ appears in the original patent but forms no part of th reissue specification; matter printed in italics indicates additions made by reissue.

Re. 33,106

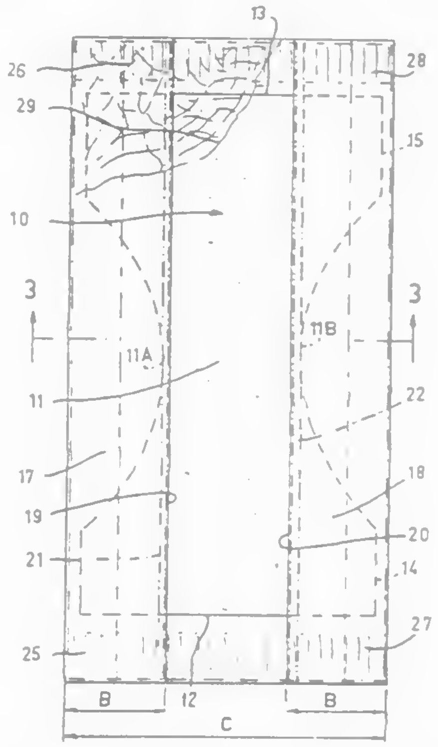
PROTECTOR AGAINST INCONTINENCE OR DIAPER

Bo Beckestrom, Vallingby, Sweden, assignor to Landstingens Inkopscentral, LIC, Ekonomisk Forening, Solna, Sweden

Original No. 4,490,148, dated Dec. 25, 1984, Ser. No. 440,947, Nov. 12, 1982. Application for reissue Dec. 29, 1986, Ser. No. 946,531

Int. Cl.⁴ A61F *13/16*

U.S. Cl. 604—385.2 9 Claims



1. Protector against incontinence or diaper which when extended has an essentially rectangular shape and which comprises a bottom, liquid-tight layer such as a plastic sheet, which carries an oblong absorbent body fixed to the bottom layer, the bottom layer being provided with longitudinal elastic lines such as elastic threads, bands or lines of elastic coating arranged along at least a portion of the length of the protector to gather together the protector in the free state by elastic contraction of the elastic portions and to effect elastic and sealing contact with adjacent bodily parts in the position for use, characterized in that the bottom layer is extended to the sides with side flaps which are folded in over the bottom layer *and over the longitudinal sides of the oblong absorbent body, the bottom layer being extended endwise by ends that are disposed endwise beyond the ends of the oblong absorbent body*, that said *folded over* side flaps are fastened at their end portions to *said extended ends* the bottom layer, ❲and❳ *at locations intermediate the width of the protector* that the elastic lines are arranged at the free edges of the side flaps *and are each fixed at both their ends to the side flaps at locations intermediate the width of the protector, and that said folded over side flaps are free intermediate their length so that when the protector is released and allowed to contract due to the tension of the elastic lines, the side flaps intermediate their length are spaced from the absorbent body to form a pouch having an open mouth defined between said free edges of the side flaps.*

Re. 33,107

COMPOSITIONS CONTAINING 1α-HYDROXYCHOLECALCIFEROL FOR TOPICAL TREATMENT OF SKIN DISORDERS AND METHODS EMPLOYING SAME

Shabtay Dikstein, and Abraham Hartzshtark, both of Jerusalem, Israel, assignors to Yissum Research Development Company of the Hebrew University of Jerusalem, Jerusalem, Israel

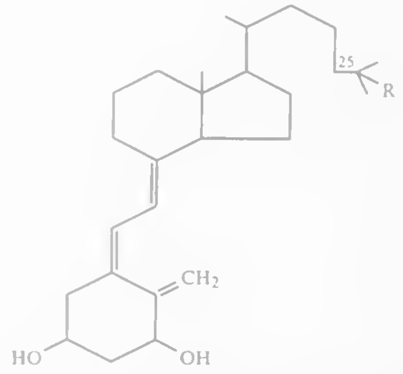
Original No. 4,610,978, dated Sep. 9, 1986, Ser. No. 590,072, Mar. 15, 1984. Application for reissue Sep. 8, 1988, Ser. No. 241,630

Claims priority, application Israel, Mar. 22, 1983, 68196; Mar. 22, 1985, 68195

Int. Cl.⁴ A61K *31/59, 31/70*

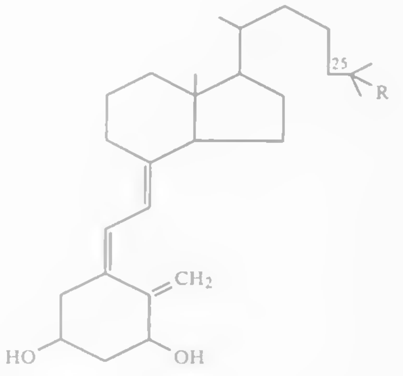
U.S. Cl. 514—46 30 Claims

1. A composition for use in topical treatment of skin disorders selected from the group consisting of dermatitis, eczema, psoriasis, lack of adequate skin firmness, dermal hydration and sebum secretion, which comprises between about 0.001 μg and 1.0 μg per gram of the composition of a compound of the formula:



wherein R is H or OH, and a suitable carrier selected from the group consisting of a cream, an ointment and a lotion.

27. A method for treating skin disorders selected from the group consisting of dermatitis, eczema, psoriasis, lack of adequate skin firmness, dermal hydration and sebum secretion which comprises topically applying to the skin an effective amount of a compound of the formula:



wherein R is H or OH.

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Re. 33,108

METHOD FOR PREPARING A PRINTED CIRCUIT BOARD

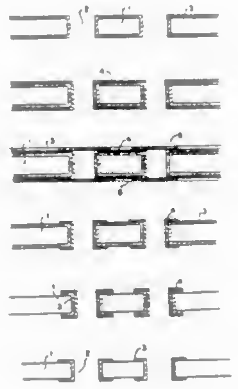
Katsukiyo Ishikawa, Kyoto; Kanji Nishijima, Ibaraki, and Mamoru Seio, Nishinomiya, all of Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

Original No. 4,673,458, dated Jun. 16, 1987, Ser. No. 837,767, Mar. 10, 1986. Application for reissue Nov. 16, 1988, Ser. No. 271,710

Claims priority, application Japan, Mar. 8, 1985, 60-47262

Int. Cl.⁴ C23F *1/02;* B44C *1/22;* C03C *15/00, 25/06*

U.S. Cl. 156—659.1 3 Claims



1. A method for preparing a printed circuit board with plated-through-holes, comprising:

providing a plated board with a number of plated-through-holes,

forming a positive working photoresist on said plated board, exposing said photoresist through a positive mask of circuit pattern placed on said photoresist to an actinic radiation, developing said photoresist on said plated board with an aqueous or a semi-aqueous alkaline solution, thereby removing the exposed area and form an etching resist,

subjecting said resist to an etching to remove copper metal covered with the exposed photoresist on said plated board, and finally removing said resist still remaining on the unexposed area of said plated board,

which is characterized in that the formation of said positive working photoresist is carried out by an electrodeposition process with an anionic or cationic electrodeposition bath containing quinonediazide sulfonic ester bearing acrylic copolymer.

Re. 33,109

CHALCONE DERIVATIVES

Anthony E. Vanstone, Whitton; Graham K. Maile, and Lynn K. Nalbantoglu, both of London, all of England, assignors to Biorex Laboratories Limited, London, England

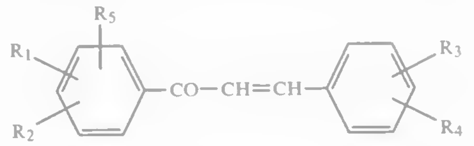
Original No. 4,656,305, dated Apr. 7, 1987, Ser. No. 789,277, Oct. 18, 1985. Application for reissue Apr. 8, 1988, Ser. No. 179,223

Claims priority, application United Kingdom, Oct. 19, 1984, 84-26424

Int. Cl.⁴ C07C *69/76*

U.S. Cl. 560—54 12 Claims

1. A chalcone derivative of the general formulae:



(IIa)

wherein R_1 is a carboxyalkyoxy radical, R_2 is an unsaturated, straight-chained or branched aliphatic hydrocarbonyloxy radical, R_3 is a hydrogen atom, a hydroxyl group or an alkoxy radical, R_4 is a carboxyalkoxy or carboxyalkylcarbonyloxyalkyl radical or a carboxylic acid group and R_5 is a hydrogen or halogen atom *with the proviso that when R_4 is a carboxymethoxy radical R_3 is other than a hydrogen atom*; and the nontoxic inorganic and organic salts of those compounds containing at least one carboxylic acid [or sulphonic acid] group.

PLANT PATENTS

GRANTED NOVEMBER 7, 1989

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing

7,053

AFRICAN VIOLET PLANT NAMED GEMINI

Reinhold Holtkamp, Sr., Wertber Strasse 112, D4294 Isselburg, Fed. Rep. of Germany

Filed Sep. 30, 1988, Ser. No. 251,251

Int. Cl.⁴ A01H *5/00*

U.S. Cl. Plt.—69 1 Claim

1. A new and distinct cultivar of African violet named Gemini, as described and illustrated, and particularly characterized by its single, bright pink flowers with darker pink center; strong, upright flower stems that curve toward the center to form a compact bouquet above the leaves; medium green, serrated girl-type leaves; profuse flowering, vigorous growth habit, flowering 10–11 weeks after potting, and its long-lasting and non-dropping flowers.

7,054

CARNATION PLANT NAMED MILLY

Flavio Sapia, Via Ducca Degli Abrozzi (Strada Viletta), San Remo, Italy

Filed Oct. 18, 1988, Ser. No. 260,377

Int. Cl.⁴ A01H *5/00*

U.S. Cl. Plt.—71 1 Claim

1. A new and distinct carnation plant named Milly, as described and illustrated.

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PATENTS

GRANTED NOV. 7, 1989

ERRATA

For CLASS	See PATENT NO.
562-550	4,879,070
562-882	4,879,071
524-430	4,879,120
428-218	4,879,138
430-126	4,879,184
525-474	4,879,334
514-383	4,879,385
549-248	4,879,387
428-035	4,879,430
341-171	4,879,488
235-385	4,879,540
343-713	4,879,570
367-020	4,879,719

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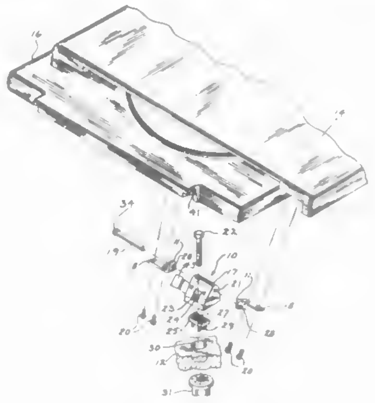
PATENTS

GRANTED NOVEMBER 7, 1989

GENERAL AND MECHANICAL

4,878,255
ADJUSTABLE HINGE ASSEMBLY
Ronald N. Grimstad, Sheboygan, and Michael F. Daly, Manitowoc, both of Wis., assignors to Kohler Co., Kohler, Wis.
Filed Dec. 14, 1987, Ser. No. 132,342
Int. Cl.⁴ A47K *13/12*
U.S. Cl. 4—236 **4 Claims**



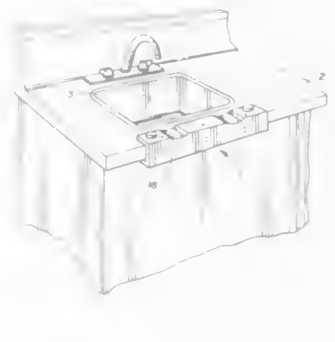
1. A toilet cover assembly for adjustably mounting a toilet covering member to the rearward portion of a toilet, the toilet being of the type having at least one fastening opening extending downwardly in said rearward portion, said assembly comprising:
- a toilet cover having a pocket formed in its lower rearward portion;
- a bushing positionable in said fastening opening, said bushing having a throughbore;
- a hinge block mountable over said bushing and having a substantially horizontal hinge post receiving bore;
- a hinge post insertable in the hinge post receiving bore, said hinge post including an enlarged head at a first end;
- an opening in said hinge block alignable with said bushing throughbore;
- a fastener extendable into said hinge block opening and bushing throughbore to assist in connecting the hinge block and bushing to said toilet;
- recess and projection means extending between said hinge block and bushing whereby said block may be fixed relative to said bushing at at least two different positions; and
- mountable bracket means for rotatably coupling said hinge post and said hinge block to said toilet cover, said mountable bracket means coupling said hinge post to said toilet cover such that said enlarged head of said hinge post is captured in said pocket.

4,878,256
SINGLE HANDLE DUAL FLUSHING TOILET
J. Jewell Bagwell, 103 Hicks Rd., Greenville, S.C. 29605
Filed Jul. 27, 1987, Ser. No. 77,882
Int. Cl.⁴ E03D *1/14*
U.S. Cl. 4—326 **5 Claims**

1. In a toilet having a tank, a source of water into the tank, and two independent control valves at different water levels within the tank for effectuating both light and heavy flushes, the improvement comprising:
- a single handle on the outside of said tank in communication with said independent control valves through a first pivot axis extending through said tank;
- a first lever inside said tank connected to said handle about said first pivot, axis a first lever inside of said tank which rises when said handle is depressed for movement about said axis in one direction, said lever being lowered when said handle is lifted for movement about said pivot axis in an opposite direction;
- a second lever in communication with said first lever said second lever having a pivot axis different from said first lever said second lever rises when the first lever is lowered upon raising said handle;
- a gear tooth on said second lever;

- actuator means mounted about said first pivot axis of said first lever, means for connecting each of the levers to a respective one of the two independent control valves;
- said actuator means having a gear tooth for engaging said gear tooth of said second lever and causing said second lever to pivot about said different axis and
- whereby the raising of each lever effectuates a different flush allowing for water conservation.

4,878,257
COUNTER-MOUNTED SPLASH GUARD, AND METHODS OF CONSTRUCTING AND UTILIZING SAME
Elizabeth V. Hardin, 18227 Valade, Riverview, Mich. 48192
Filed Aug. 6, 1987, Ser. No. 82,302
Int. Cl.⁴ E03C *1/181*
U.S. Cl. 4—658 **4 Claims**



1. A counter mounted splash guard apparatus comprising:
- an elongate, channel-shaped guard body element having an inside and an outside;
- absorption means fittable within said inside of said guard body for absorbing liquids; and
- means for fastening said apparatus to an end portion of a counter;
- said absorption means being removably attachable to said inside of said guard body; and
- said removable attachment is effected by removably fastenable fabric capable of being fastened to itself.

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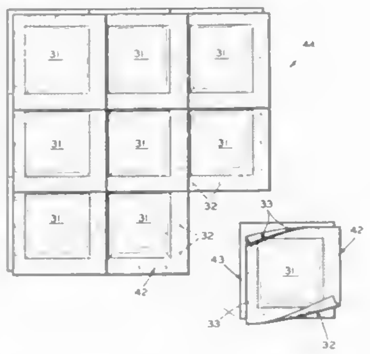
4,878,258
MODULAR ENERGY SAVING COVERING

Susan D. Casey, 243 W. 72nd St. #7, New York, N.Y. 10023
Filed Sep. 19, 1988, Ser. No. 246,362
Int. Cl.⁴ A47G *9/06*
U.S. Cl. 5—420 24 Claims



1. An energy saving covering module, adapted to be detachably connected to a plurality of like modules, comprising:

a central body portion having a pair of spaced apart walls attached together about peripheral edges defining an interior space therebetween; an insulating material positioned in said interior space;

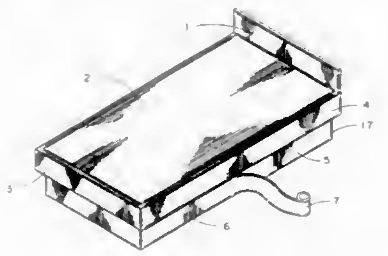
a first flange extending from said peripheral edges of said central body portion;

a second flange extending from at least one of said peripheral edges of said central body portion beyond an outer peripheral edge of said first flange; and

fastener means attached to one of said first flange and said second flange whereby said fastener means are adapted to cooperate with fastener means attached to adjacent ones of said covering modules to form a modular covering sheet with said second flanges overlying said first flanges of adjacent ones of said covering modules forming an infiltration barrier to the transmission of heat energy and water vapor from one side of the modular covering to the other side of the modular covering.

4,878,259
WATERBED PEDESTAL WRAP

Anthony C. Lupo, Orlando, Fla., assignor to Sunny's Waterbeds & Accessories, Inc., Orlando, Fla.
Continuation of Ser. No. 70,337, Jul. 6, 1987, abandoned. This application Oct. 11, 1988, Ser. No. 257,135
Int. Cl.⁴ A47C *27/08, 31/00*
U.S. Cl. 5—451 5 Claims



1. In combination with a waterbed having a frame and a watermattress resting on a generally rectangular pedestal having four substantially planar outer surfaces, a rollable, flexible cover or wrap comprised of a decorative material having attached, integral fastening means adapted to cooperate with the outer surfaces of said pedestal to removably secure the cover in direct contact with said outer surfaces, said cover being of a sufficient length and width to cover a substantial portion of all four outer surfaces.

4,878,260
COMBINATION TOOL

William A. Tunningley; Martha A. Tunnungley, and Emanuel M. Pupulidy, all of 503 Valasquez Dr., Osprey, Fla. 33559
Continuation of Ser. No. 59,537, Jun. 8, 1987, abandoned. This application Aug. 26, 1988, Ser. No. 237,640
Int. Cl.⁴ B25B *7/22*
U.S. Cl. 7—129 4 Claims

1. A combination tool for scribing and separating glass, comprising:

a first elongated member having a longitudinal axis having a first end and a second end; a second elongated member having a longitudinal axis having a first end and a second end;

wherein said first member comprises an elongated intermediate section having a longitudinal axis, said intermediate section being pivotally secured to said second member so that said first and second members pivot with respect to a preset axis;

said first end of said first member includes a handle portion and a tapper ball;

a finger rest on said first member between said intermediate section and said second end and an upper serrated jaw attached to said second end of said first member wherein said finger rest comprises a curved member having a width along said axis greater than the width of said first member along said axis at its connection with said finger rest;

said first end of said second member includes a handle portion; and

said second end of said second member includes a rotatably mounted cutter wheel and a lower serrated jaw;

wherein said lower serrated jaw at said second end of said second member lies in a plane substantially parallel to the longitudinal axis of said second member;

said axis of said intermediate member extending laterally outwardly at an acute angle with respect to the axis of said first member;

wherein said upper serrated jaw lies in a plane substantially perpendicular to the longitudinal axis of said midsection.

4,878,261
SWEEPER WITH PIVOTALLY MOUNTED DUST BIN

Henry J. Rosendall, Grand Rapids, Mich., assignor to Bissell, Inc., Grand Rapids, Mich.
Filed Aug. 4, 1988, Ser. No. 228,259
Int. Cl.⁴ A47L *11/08*
U.S. Cl. 15—41 R 11 Claims

1. A floor sweeper comprising:

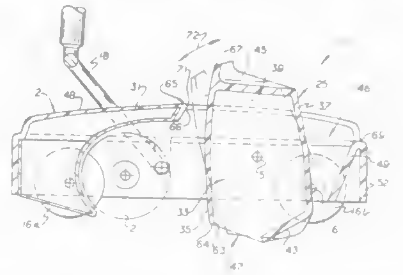
a housing;

a plurality of wheels rollingly supporting said housing on a floor surface;

a brush element rotatively mounted in said housing for sweeping debris from the floor surface;

a dust bin for receiving and collecting the debris swept up by said brush element, said dust bin including an opening through which the debris is passed into and out of said dust bin, said dust bin being pivotally mounted to said housing for movement between an operative position wherein said opening is positioned to receive within said dust bin the debris from said brush, and a dumping position wherein said opening is positioned downwardly to effect release of the debris contained therein;

a dust knocker stop fixed to said housing and oriented such that said dust bin can be rocked to repeatedly knock against said dust knocker stop when said dust bin is in said dumping position to dislodge any debris retained therein;



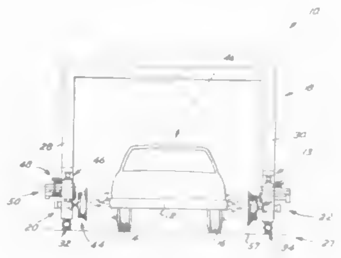
said dust bin and said dust knocker stop being oriented such that said dust bin opening be directed substantially downwardly throughout the knocking of said dust bin against said dust knocker stop;

said dust bin further being oriented in a substantially vertical orientation in said dumping position, wherein said dust bin is rocked only slightly from said vertical orientation when knocking said dust bin against said dust knocker stop, so that retention of the debris by walls defining said bin and said opening is minimized; and

said dust bin further being swung within a range of substantially twenty degrees to each side of a true vertical position when rocking said dust bin to knock against said dust knocker stop.

4,878,262
AUTOMOTIVE SCRUBBER

Frank L. Stufflebeam, Grimes, and James A. Nelson, Des Moines, both of Iowa, assignors to Ryko Manufacturing Company, Grimes, Iowa
Filed Feb. 29, 1988, Ser. No. 162,168
Int. Cl.⁴ B60S *3/06*
U.S. Cl. 15—53 B 14 Claims



1. A scrubber for an automotive vehicle comprising, in combination:

a frame;

brush means for wiping said vehicle, said brush defining an angular orientation;

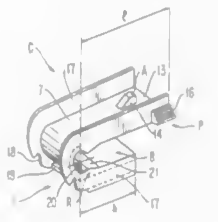
extension means for pushing said brush means toward said vehicle, said extension means including a first extension arm, interconnected to said brush means , and a second extension arm, interconnected to said frame, said angular orientation of said brush being defined by said first arm with respect to said frame, said first and second arms being slidably interconnected, whereby said first arm may slide along said second arm toward said automotve vehicle;

pivot means for allowing said brush means to change angular orientation; and

centering means to urge said brush toward a predetermined angular orientation.

4,878,263
CONNECTOR DEVICE TO MOUNT A WINDSHIELD WIPER CONTACT CLIP, AND CLIP ENDOWED WITH SUCH A CONNECTOR DEVICE

Bernard Raymond, Paris, France, assignor to Valeo Systemes D'Essuyage, Issy-Les-Moulineaux, France
Filed May 6, 1988, Ser. No. 190,822
Claims priority, application France, May 6, 1987, 87 06382
Int. Cl.⁴ B60S *1/40*
U.S. Cl. 15—250.32 14 Claims



1. A connector device for mounting a windshield wiper contact clip on a curved end of a wiper arm, the windshield wiper contact clip comprising a clip body having a pair of upstanding walls and a pair of transverse edges defining an opening in the clip body, the windshield wiper contact clip further comprising a transverse shaft extending across the opening between the pair of upstanding walls, said connector device comprising:

a substantially U-shaped connector body for receiving a concave portion of the curved end of the wiper arm therearound, said substantially U-shaped connector body comprising a first leg, a second leg, and a curved base interconnecting said first and second legs;

fastening means on said connector body for fastening said connector body to the wiper arm, said fastening means comprising a first component on said first leg adapted for cooperation with a complementary component on the wiper arm;

receiving means on an inside portion of said curved base of said substantially U-shaped connector body for receiving and holding the transverse shaft of the windshield wiper contact clip;

said first leg comprising gripping means at a distal end thereof projecting transversely therefrom, and said first leg having a length greater than the length of said second leg and greater than the distance from the transverse shaft of the clip body to one of the transverse edges of the clip body, such that when said connector body holds the transverse shaft said first leg will extend beyond the transverse edge of the clip body so that said gripping means will be located beyond the longitudinal extent of the upstanding sidewalls of the clip body.

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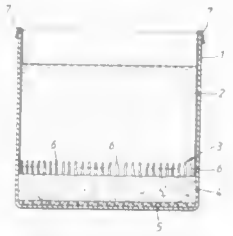
4,878,264
CLEANING EQUIPMENT

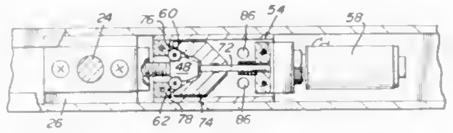
Ronald A. Young, London, Great Britain, assignor to Scot Young Service Systems Limited, United Kingdom
Filed Oct. 7, 1988, Ser. No. 255,040
Claims priority, application United Kingdom, Oct. 9, 1987, 8723799
Int. Cl.⁴ A47L *13/50*
U.S. Cl. 15—264 **10 Claims**



1. Cleaning equipment comprising a container for cleaning liquid, wherein the container is provided with a dirt trap comprising a dirt-receiving element of mat or pad-like form which is positioned in the container to receive dirt settling under gravity from the contained liquid with the dirt collecting in, or passing through so as to be trapped below, the element, the form and structure of the element being such that disturbance of the liquid in the container cannot wash the collected dirt back out from or through the element to any significant extent.

4,878,265
HOLD-OPEN MECHANISM FOR USE WITH A DOOR CLOSER

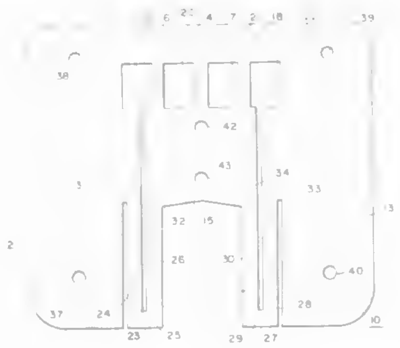
Lanny E. Nesbitt, Strasburg, Pa., assignor to Dorma Door Controls, Inc., Reamstown, Pa.
Filed Sep. 7, 1988, Ser. No. 241,917
Int. Cl.⁴ E05C *17/04;* **E05F** *3/00*
U.S. Cl. 16—49 **9 Claims**



1. A releasable door hold-open mechanism for use with a door closer, comprising an enclosed track a latch element coupled to the door closer and mounted in said track for rectilinear movement along said track during door opening and closing movements, and a latch assembly disposed in said track and adapted to engage and retain said element to hold the door in an open limit position, said latch assembly being selectively positionable for substantially the length of said track to determine the open limit position, means coupled to said latch assembly and engageable with said track for selectively locking said latch assembly from movement relative to said track, whereby said latch assembly determines the open limit position, said latch assembly comprising a reciprocable roller engageable with said element, a clevis engageable with said roller to activate said roller to a latching position, and means for biasing said clevis to a roller-activating position, said clevis being so disposed and arranged as to cam said roller to an element-retaining position when said roller is in said roller-activating position.

4,878,266
EASEL HINGE

Wilson J. Cubides, Somerset, N.J., assignor to Art Materials Service, Inc., N.J.
Filed Apr. 4, 1989, Ser. No. 333,176
Int. Cl.⁴ E05D *1/02*
U.S. Cl. 16—225 **8 Claims**

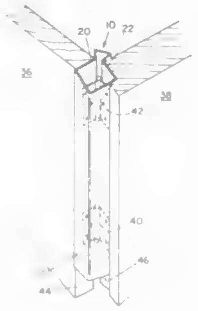


7. An easel hinge comprising a sheet of material having: a first portion with at least one leg section and a hinge support section;

a second portion adjacent said leg section and interconnected with said hinge support section by at least one bendable hinge element;
at least one straddle element spaced from said hinge element and interconnecting said leg section with said second portion;
first attachment means adapted to enable said first portion to be secured to one panel of an easel; and
second attachment means adapted to enable said second portion to be secured to another panel of the easel,
whereby said easel panels may be angularly moved relative to each other to cause bending of said hinge elements, said straddle element limiting the angular movement of the panels.

4,878,267
RESISTING ENTRY OF AN OBJECT INTO A SPACE BETWEEN THE HINGED EDGE OF A DOOR MEMBER HINGEDLY ATTACHED TO A ASSOCIATED JAMB MEMBER AND A SURFACE OF THE JAMB MEMBER

James F. Roach, 28 Pine St., Carver, Mass. 02330, and Kevin V. Roach, 363 Fosdick Rd., North Carver, Mass. 02330
Filed Oct. 11, 1988, Ser. No. 256,319
Int. Cl.⁴ E05D *11/00*
U.S. Cl. 16—250 **16 Claims**



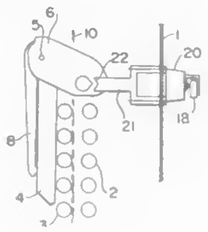
1. A device for resisting entry of an object into a space between the hinged edge of a door member hingedly attached to an associated jamb member and a surface of said jamb member, said device comprising,

a door member;

a jamb member; and
an elongated sheet of material thin enough to be placed in said space without impeding the closing of said door member to said jamb member, said sheet having a first and second strip, said first strip being fixedly connected within the said space to said door member on a surface thereof that is unexposed when said door is closed and said second strip being fixedly connected within said space to said jamb member on a surface thereof that is unexposed when said door is closed, said first and second strips being connected by a third strip attached to said first and second strips, said third strip cooperating with said first and second strips to resist entry into said space when said door member and jamb member are brought together.

4,878,268
DEVICE FOR DRAWING ROVES OR SLIVERS OF FIBERS ON A SPINNING MACHINE

Pierre Mirabel, and Marcel Schoumacher, both of Roanne, France, assignors to Devtex, France
Filed Jul. 21, 1988, Ser. No. 222,538
Claims priority, application France, Aug. 28, 1987, 87 12176
Int. Cl.⁴ D01H *5/74, 5/56*
U.S. Cl. 19—258 **5 Claims**



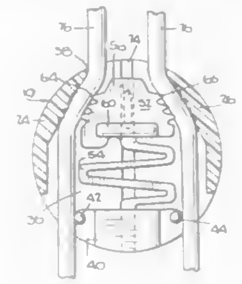
1. In a device for drawing roves or slivers of fibers on a spinning machine with a view to converting this material into spun yarns, of the type incorporating pendulous arms, constituted essentially by an assembly comprising, mounted on the support frame of the machine, a series of splined shafts extending over the whole length of the machine and common to all the work positions, said shafts being driven in rotation and, on the other hand, presser elements constituted by rollers mounted on a pivoting support arm comprising means ensuring pressure of the presser rollers against the splined shafts,

the pendulous arm bearing the presser elements is assembled on the frame of the machine via a support comprising means for simultaneously separating the presser rollers parallel to the line of splined shafts.

4,878,269
CORD FASTENER

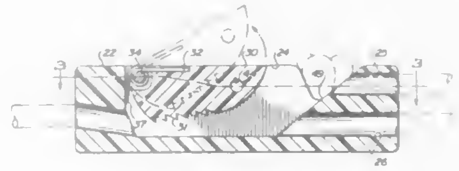
Joseph A. Anscher, Huntington Bay, N.Y., and James Dillner, Lancaster, Pa., assignors to National Molding Corp., Farmingdale, N.Y.
Continuation of Ser. No. 905,831, Sep. 10, 1986, abandoned. This application Jul. 1, 1988, Ser. No. 218,501
Int. Cl.⁴ F16G *11/00*
U.S. Cl. 24—115 G **20 Claims**

1. A cord-fastener which comprises:
a housing having a cavity extending therethrough;
a locking element disposed in said cavity;
said locking element comprising a stationary segment fixedly engaged within said housing by resiliently separable fastener means comprising congruently shaped protrusions and holes cooperatively disposed on surfaces of said stationary segment and said cavity and a movable segment connected to said stationary segment by a spring means;
a cord passage defined by opposing surfaces of said cavity and said movable segment; and
said spring means urging said movable segment so that said opposing surfaces restrict said passage wherein said movable segment, stationary segment and spring means are integrally molded as one piece.



4,878,270
ROPE TIE-DOWN APPARATUS

Myron M. Westerkamp, 2526 E. Solano Dr., Phoenix, Ariz. 85016
Filed May 9, 1989, Ser. No. 349,427
Int. Cl.⁴ F16G *11/00*
U.S. Cl. 24—132 R **19 Claims**



1. A rope tie-down clamp apparatus including in combination:

an unattached housing;
a first longitudinal passage through said housing for a length of rope;
a second longitudinal passage through a portion of said housing, said second passage being parallel to said first passage;
means on said housing for securing one end of said rope to said second passage through said housing to form a loop of rope outside said housing between said first and second passages;
a clamping cam mounted for movement in said housing from a position engaging said rope in said first passage to a position out of engagement with said rope;
means for normally biasing said clamping cam into engagement with said rope for wedging said rope tightly between said cam and a portion of said first passage in response to forces on said rope in a first direction relative to said housing, movement of said rope relative to said housing in a second direction, opposite to said first direction, causing said clamping cam to be urged out of engagement with said rope; and
means for manually moving said clamping cam out of engagement with said rope.

4,878,271
TONGUE ASSEMBLY

Alexander P. Kitokovsky, Oak Park, Mich., assignor to TRW Vehicle Safety Systems Inc., Lyndhurst, Ohio
Filed Oct. 13, 1988, Ser. No. 256,983
Int. Cl.⁴ A44B *11/10*
U.S. Cl. 24—194 **7 Claims**

1. A tongue assembly for use in a safety apparatus having a

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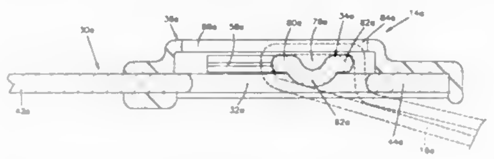
belt for restraining movement of an occupant of a vehicle, said tongue assembly comprising:

a base having an opening through which the belt can extend;

a bar spanning the opening in said base and enabling the belt to extend through the opening, across the bar and back through the opening, said bar having first and second end portions and an intermediate portion disposed between said first and second end portions, said intermediate portion of said bar having surface means for engaging the belt, said bar being slidable relative to said base to enable said intermediate portion of said bar to engage the belt and press the belt against the base; and

a cover supported on said base and engaging said first and second end portions of said bar to retain said bar on said base and to guide movement of said bar relative to said base, said cover being spaced from the surface means of said intermediate portion of said bar.



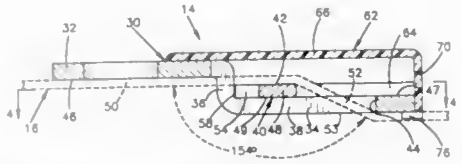
4,878,272
TONGUE ASSEMBLY

Alexander P. Kotikovsky, Oak Park, Mich., and Robert E. Tait, Midland, Canada, assignors to TRW Vehicle Safety Systems Inc., Lyndhurst, Ohio

Filed Dec. 5, 1988, Ser. No. 280,148

Int. Cl.⁴ A44B *11/10*

U.S. Cl. 24—196 12 Claims



1. A tongue assembly for use in a safety apparatus in which a belt restrains movement of an occupant of a vehicle, said tongue assembly comprising:

a base having a flat leading end portion, a flat trailing end portion which is offset from and extends parallel to said leading end portion and a connector portion extending between said leading and trailing end portions, said base having an opening which extends through said trailing end portion and through said connector portion, said trailing end portion having a trailing edge which is spaced from said connector portion and which at least partially defines said opening; and

a bar disposed on said trailing end portion of said base, said bar having first and second end portions and an intermediate portion extending between said first and second end portions of said bar and spanning said opening;

said bar having a first position disposed adjacent said trailing edge and a second position disposed adjacent said connector portion, and when said bar is in said second position the belt has a first straight portion extending from said bar and disposed in a side-by-side relationship with said leading end portion of said base and a second straight portion extending from said bar and disposed in engagement with said trailing edge.

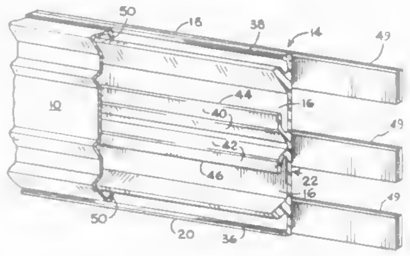
4,878,273
METAL TRIM ATTACHING SYSTEM

Philip B. West, Detroit; Robert D. Major, Rochester Hills, and Gary D. Fuerstenberg, Monroe, all of Mich., assignors to Hoover Group, Aluminum Products Division, East Detroit, Mich.

Filed Oct. 23, 1987, Ser. No. 111,638

Int. Cl.⁴ B32B *7/08*

U.S. Cl. 24—289 23 Claims



1. A metal trim attaching assembly for securing a molding strip of metal, upon a supporting surface having a contour, the assembly comprising: a plastic isolator extending a length along which a mid-axis extends, the isolator being integrally formed and having a generally symmetrical cross-section about the mid-axis, the isolator including:

a substantially flexible mounting plate longitudinally extending said length and having lateral edges and a mounting surface, the mounting surface yieldable to conform generally to the contour of the supporting surface,

two retaining flanges extending said length, each retaining flange depending from the mounting plate proximate to a corresponding edge of the mounting plate, each flange projecting at an acute angle away from the mounting plate and toward said corresponding edge, the retaining flanges being grippable by the metal strip to hold the strip into structural relationship with the mounting plate,

two edge lips formed integral with the mounting plate, each edge lip disposed at a corresponding edge of the mounting plate and extending said length, each edge lip depending from the mounting plate so as to restrict the trim from moving substantially parallel to and toward said corresponding edge and said metal strip interlocked between respective flanges and edge lips, and

a yieldable lever bracket formed integral with the mounting plate and extending said length of said mounting plate, said lever bracket having a cross-section with a central portion with a pair of angular arms extending therefrom and said cross-section being continuous the length of said mounting plate, said arms each projecting away from the mounting plate to a free end, the free ends resiliently movable toward the mounting plate as the lever yields toward the mounting plate, the free ends being adapted to press against the trim to support the trim and effect a supportable leverage; and

adhesive means securable to said mounting surface and to the supporting surface for securing the isolator to the supporting surface.

4,878,274
SECUREMENT SYSTEM

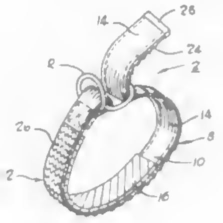
Henry R. Patricy, 2640 Lost Nation Rd., Willoughby, Ohio 44094

Filed Jul. 13, 1988, Ser. No. 218,673

Int. Cl.⁴ A44B *18/00;* A61B *17/12*

U.S. Cl. 24—306 7 Claims

1. A securement device of the type adapted for mounting an object, such as a hammock, snow skis or the like to a support member or to one another, said securement device including a generally flexible, elongated body member having a predetermined length, said body member having inner and outer sections that are joined together by stitching, said inner section being made from a relatively elastic fabric polymeric material and further including a frictional gripping member, said friction gripping member being made from a rubber material having corrugations adapted for frictional gripping engagement with a support member, said outer section further including a female Velcro portion and a male Velcro portion to provide a frictional coupling upon contact with one another for holding said securement device in a closed configurations, one end of the body member having a retaining ring element adapted for receiving the opposite end of said body member such that the free end of the body member can be inserted through a looped around said ring element and secured in place by frictionally pressing the male and female portions of said Velcro system into engagement with one another.



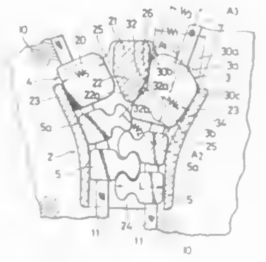
4,878,275
SEPARABLE SLIDE FASTENER

Hidetaka Kazui, Compton, Calif., and Tomiyoshi Takano, Kurobe, Japan, assignors to Yoshida Kogyo K. K., Tokyo, Japan

Filed Sep. 17, 1987, Ser. No. 97,816

Int. Cl.⁴ A44B *19/36*

U.S. Cl. 24—436 3 Claims



1. A separable slide fastener, comprising:

(a) a pair of fastener stringers each including a pair of stringer tapes and a pair of rows of fastener elements mounted on said stringer tapes along respective inner longitudinal edges thereof;

(b) a slider threaded on said pair of rows of fastener elements for movement therealong to close and open the slide fastener, said slider including a slider body having a wedge-shaped neck disposed centrally at a flared front end thereof and a pair of flaring side flanges disposed along opposite sides of said slider to define with said neck a Y-shaped guide channel for passage of said pair of rows of fastener elements, said guide channel having a pair of branches diverging toward said front end of said slider, said wedge-shaped neck having at its lower end a distal end and at its opposite sides respective intermediate peaks;

(c) a separable bottom-end-stop assembly mounted on adjacent bottom ends of said fastener stringers; and

(d) a top end stop mounted on said inner longitudinal edge of one of said stringer tapes, said top end stop having a maximum width (W3), as measured perpendicularly to said inner longitudinal edge of said one stringer, larger than the width (W4) of each of said branches of said guide channel, said top end stop being composed of continuous and integral first and second half parts and having an inner recessed surface engageable with said neck of said slider and an opposite chamfered surface engageable with the flaring side flange, each of said first and second half parts having an upper half portion and a lower half portion, respectively, of the inner recessed surface inwardly inclined with respect to said inner longitudinal edge of said one stringer tape, thus defining an obtuse angle therebetween, each of said first and second half parts having a maximum width (W1), (W2), as measured perpendicularly to the upper half portion and the lower half portion, respectively, of the inner recessed surface, equal to or slightly smaller than the width (W4) of each said branch of said guide channel; so that when said top end stop is received into the branch of the guide channel, the recessed surface of the top end stop engages the intermediate peak of the neck and also the distal end of the neck and the chamfered surface of the top end stop engages the inside surface of the flaring side flange of the slider, thus providing three-point supporting engagement between the neck and the flaring side flange.

4,878,276
SPRING CLIP

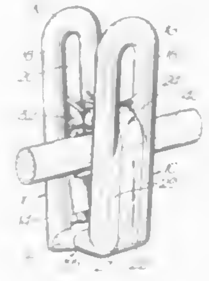
Peter G. A. Morrish, 16 Plantagenet Road, Barnet, Hertfordshire, and William B. Edwards, Radlett, both of England, assignors to Peter G. A. Morrish, United Kingdom and Priscilla D. Morrish, United Kingdom

Filed Jun. 16, 1988, Ser. No. 207,245

Claims priority, application United Kingdom, Jun. 25, 1987, 87 14862; Sep. 25, 1987, 87 22720

Int. Cl.⁴ A44B *21/00;* A41D *27/22*

U.S. Cl. 24—511 10 Claims



1. A spring clip comprising:

a pair of levers having two ends,

said levers including a handle portion toward one of said ends thereof and a jaw portion toward the other of said ends,

means defining a fulcrum intermediate said ends about which said levers are relatively pivotable for mutual approach or parting of said jaw portions,

spring means urging said other of said ends for mutual approach to form a nip, said spring means comprising a substantially U-shaped spring member having two arms and a base joining said arms, said arms lying respectively along said jaw portions of said levers and said base bridging between the levers, said fulcrum being adjacent to said base,

means for engaging said spring clip to a bar,

said engagement means being intermediate said fulcrum and said nip comprising a resilient clip having a closed base and a restricted open mouth, said open mouth being disposed towards said nip, and

said resilient clip being integral with said spring member.

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4,878,277

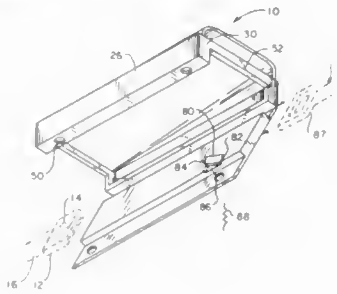
CHILD PROOF SEAT BELT RESTRAINT

Peter Portuese, 39 Huron St., Port Jefferson Station, N.Y. 11776

Filed Dec. 28, 1988, Ser. No. 291,172

Int. Cl.⁴ A44B *11/26*

U.S. Cl. 24—633 — 7 Claims



1. A child proof cover for preventing a child from releasing a seat buckle assembly, which includes a first buckle element having a release control and which is operatively attached to a first seat belt and a second buckle element which is operatively attached to a second seat belt and which is adapted to be releasably coupled to the first buckle element to securely hold a child in place in a motor vehicle seat, the cover comprising:

a housing having a top and a bottom which co-operate to define a seat belt buckle assembly accommodating chamber within said housing, said housing including a first slot for accommodating the first seat belt and a second slot for accommodating the second seat belt when the buckle assembly is located inside said chamber;

said housing being sized and configured to completely encase the seat belt buckle assembly and including a finger access channel defining means on said top, said channel defining means being sized to define an access channel that extends for at least two and one-half inches before access to said buckle release control is provided via said channel to provide access to the buckle assembly release control from outside of said chamber to define a channel that is too long for a young child to insert his fingers far enough into said channel to operate the buckle release control yet short enough for an adult to insert his finger into said channel far enough to operate said buckle release control;

a buckle separation preventing means on said housing which includes a tab and a biasing means urging said buckle separation preventing means into a buckle separation preventing position and a button means for moving said buckle separation preventing means out of said buckle separation preventing position.

4,878,278

METHOD FOR MANUFACTURE OF PAPER MAKING FABRICS

Chien-Yeh Hsu, Greer; Frank J. McGee, Seneca, and Roger L. Banks, Taylors, all of S.C., assignors to Wangner Systems Corporation, Greenville, S.C.

Continuation of Ser. No. 81,750, Aug. 5, 1987, abandoned. This application Apr. 29, 1988, Ser. No. 188,296

Int. Cl.⁴ D04H *1/46*

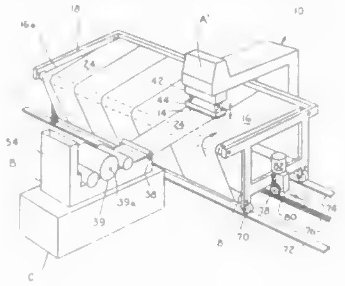
U.S. Cl. 28—142 — 6 Claims

1. A method of producing a papermaking wet felt which travels about press rolls in a machine direction on a papermaking machine, said method being of the type wherein a fiber batt is needled to a base fabric on a needle loom having a main needling module, said method comprising:

(a) conveying a base fabric on a movable carriage about a plurality of carriage rollers for endless travel in said machine direction;

(b) producing a fiber batt on a carding machine having a main carding cylinder with an axis of rotation parallel to an axis of rotation of said carriage rollers so that said fiber batt is delivered generally in longitudinal alignment with the direction of travel of said base fabric;

(c) moving said carriage on which said base fabric travels endlessly in said transverse direction to cause said base fabric to move relative to said fiber batt transverse to said machine direction in a manner that said fiber batt is laid upon said base fabric generally in said machine direction across a prescribed width of said base fabric;



(d) tacking said machine direction oriented fiber batt to said base fabric by needling while said fiber batt is laid upon said base fabric moving in said transverse direction to provide a lightly tacked fiber batt across said width of said base fabric; and

(e) transferring said tacked fiber batt to the needle loom and tucking said tacked fiber batt into said base fabric by passing said lightly tacked fiber batt and base fabric through said main needling module of said needle loom for needling.

4,878,279

WARP TRANSFER APPARATUS

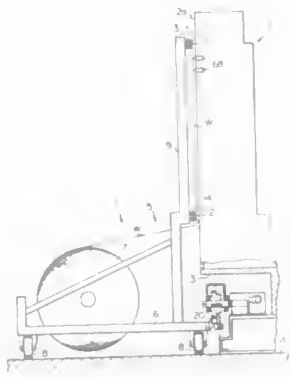
Juro Tachibana, Matsuyama, and Yoshihide Nishimura, Iyo, both of Japan, assignors to Teijin Seiki Company Limited, Osaka, Japan

Filed Jun. 8, 1988, Ser. No. 204,122

Claims priority, application Japan, Oct. 22, 1987, 62-160843

Int. Cl.⁴ D03J *1/14*

U.S. Cl. 28—203 — 6 Claims



1. A warp transfer apparatus for transferring warp threads to a warp drawing apparatus, comprising:

a stationary frame structure,

a warp carrying frame structure for carrying the warp threads thereon which is movable with respect to said stationary frame structure and which has mounted thereon a rack extending along a direction in which said warp carrying frame structure moves,

a pinion support pivotably supported on said stationary frame structure,

a pinion rotatably supported on said pinion support and engageable with said rack,

means for driving said pinion to rotate about an axis of rotation of said pinion, the warp carrying frame structure being transferred to a predetermined position of said stationary frame by rotation of said pinion,

means for permitting pivotal movement of said pinion support in accordance with upward and downward movements of said rack during movement of said warp carrying frame structure, to insure that said rack is properly engaged by said pinion.

4,878,280

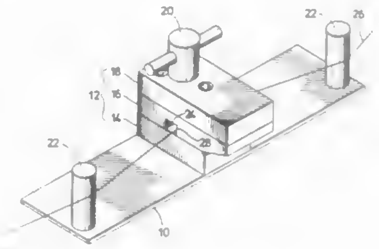
APPARATUS AND PROCESS FOR INTERMINGLING FILAMENT YARNS

Thomas L. Nelson, Georgetown, Del., and Lynn B. Thomas, Sr., Rhodesdale, Md., assignors to E. I. Du Pont De Nemours and Company, Wilmington, Del.

Filed Aug. 2, 1988, Ser. No. 227,771

Int. Cl.⁴ D02J *1/08*

U.S. Cl. 28—274 — 8 Claims



1. A fluid-jet apparatus for entangling yarn comprising:

(a) a block having an elongated passageway through which yarn can move, said passageway being defined by an entrance and an exit connected by at least two walls, said walls being situated substantially at right angles to one another;

(b) means for maintaining the yarn against one of said walls as said yarn enters, moves through, and exits the passageway; and

(c) an orifice in the block for directing a fluid stream into said passageway, said fluid stream discharging from the passageway through both the entrance and the exit, wherein the orifice is located in the second of said walls and is positioned so as to be offset with respect to the longitudinal axis of the passageway in the direction of the first of said walls.

5. A process for entangling yarns comprising the steps of:

(a) over-feeding yarn through a walled passageway defined by at least two walls, said walls being situated substantially at right angles to one another;

(b) directing the yarn along the first of said walls as it enters, moves through, and exits said passageway; and

(c) exposing the yarn in the passageway to a fluid stream, said fluid stream being introduced into the passageway through the second of said walls and being offset from the center line of the yarn travel path in the direction of the first of said walls.

4,878,281

PRESS ROLL FOR DEWATERING A WEB

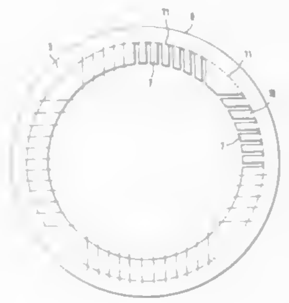
Hans Flämig, Hobe Str. 47, D-7920 Heidenheim; Andreas Schütte, Ligusterweg 9, D-7924 Steinheim; Christian Schiel, Albrecht-Dürer-Str. 90, D-7920 Heidenheim; Karl Steiner, Richard-Wagner-Weg 8, D-7922 Herbrechtingen, and Josef Müllner, Sebastian-Kneipp-Str. 19, D-7920 Heidenheim, all of Fed. Rep. of Germany

Filed Nov. 4, 1988, Ser. No. 267,023

Claims priority, application Fed. Rep. of Germany, Feb. 20, 1988, 3805350

Int. Cl.⁴ B21B *27/00*

U.S. Cl. 29—116.1 — 15 Claims



1. A press roll for pressing webs, or the like, comprising:

a support body;

an endless, flexible, liquid tight press shell around the support body and through which the support body extends, the press shell having opposite edge zones at its lateral edges, and the press shell being longer than the support body so that the edge zones extend beyond the axial ends of the support body;

a shell support element at at least one end of the press roll and rotatably mounted on the support body; the shell support element having an axially outward side face which is axially outward of the support body;

the edge zone of the press shell at the shell support element extends axially past the shell support element and then extends radially inwardly over the axially outward side face of the shell support element; the edge zone of the press shell, where it extends radially inward, has an annular face side sealing surface pressable against the side face of the shell support element;

on the edge zone, at least partially radially inward of the annular side face sealing surface, there are a plurality of radially inwardly directed tongues which extend radially inwardly toward the axis of the press roll, and the tongues being shaped and spaced for defining a respective cutout between circumferentially neighboring tongues; on the side face if the shell support element, radially inward of the sealing surface at the edge zone, centering elements are defined which are distributed around the circumference for and placed for engaging in the cutouts between the tongues of the press shell for centering the press shell;

radially inward of the sealing surface at the side face of the shell support element and also radially inward of the centering elements, rigid holding elements are supported at the side face of the shell support element, one holding element for each tongue, and the tongue being engaged on the respective rigid holding element, which positions the tongue, holding the tongue a preset distance from the axis of the roll and the tongues being held by their respective holding elements for holding the edge zone of the press shell in place over the shell support element; and

means for clamping the edge zone of the press shell and the side face sealing surface thereof against the side face of the shell support element.

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4,878,282
METHOD FOR THE PRODUCTION OF FRICTION PLATES, SYNCHRONIZING BLOCKER RINGS OR SIMILAR STRUCTURES

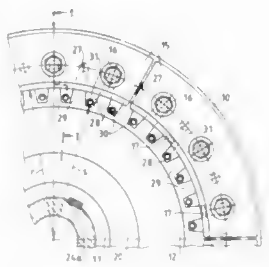
Walter Bauer, Eppelheim, Fed. Rep. of Germany, assignor to Borg-Warner Automotive GmbH, Fed. Rep. of Germany

Filed Aug. 30, 1988, Ser. No. 238,228

Claims priority, application European Pat. Off., Sep. 4, 1987, 87112963.1; Sep. 4, 1987, 87112964.9

Int. Cl.^{4} B21D *53/10*

U.S. Cl. 29—149.5 C 14 Claims



1. A method of forming friction members for use in clutches, brakes and automatic transmissions, comprising a support and a complementary friction lining, formed of an organic material having a paper base, with spaced grooves in and extending completely through the lining material to the support for the flow of oil therethrough, characterized by the steps of forming spaced grooves in the friction lining material by completely removing the lining material so the grooves extend through the material except for rims at the opposite edges thereof, said grooves each extending across the lining material between said rims, applying said friction lining material as a continuous member onto said support, and removing at least one rim to open one end of each groove.

4,878,283
AUGMENTOR LINER CONSTRUCTION

Howard J. McLean, No. Palm Beach, Fla., assignor to United Technologies Corporation, Hartford, Conn.

Filed Aug. 31, 1987, Ser. No. 91,488

Int. Cl.^{4} B23P *15/16;* F02K *3/10*

U.S. Cl. 29—163.6 2 Claims

1. The method of forming circular holes in a cylindrically sinusoidally shaped liner for an augmentor for a gas turbine engine that is distorted to orient the center line of the circular holes so that flow passing therethrough from a stream that is generally axial rather than radial comprising the steps of preforming from sheet metal a generally cylindrically sinusoidally shaped member, drilling a pattern of circular holes prior to the step of preforming, inserting a rod-like tool into each of said circular holes and rotating said tool to reorient the direction of said circular hole from a radial to an axial position so that the flow passing through said circular hole is tangential to the wall of said cylindrically sinusoidally shaped member through which said circular hole is made and flows in the same direction as the gas path of the gas turbine engine.

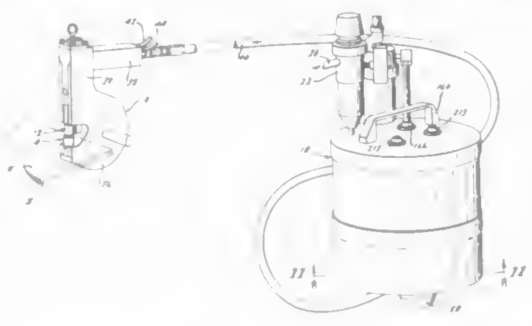
4,878,284
HAND HELD SHEET METAL JOINING SYSTEM

Edwin G. Sawdon, St. Clair, Mich., assignor to BTM Corporation, Marysville, Mich.

Filed Dec. 31, 1987, Ser. No. 139,976

Int. Cl.^{4} B23P *11/00, 19/00*

U.S. Cl. 29—243.53 30 Claims



1. An apparatus for joining two or more overlapping sheets of metal, comprising: a housing; a punch and die mounted in said housing, said punch and die being aligned on a center axis and normally spaced apart a sufficient distance to receive said sheets therebetween; a piston movably mounted in said housing for driving said punch along said axis towards said die and against the sheets whereby the sheets are joined; and a cartridge releasably connected to said piston for movement therewith, said punch being carried by said cartridge.

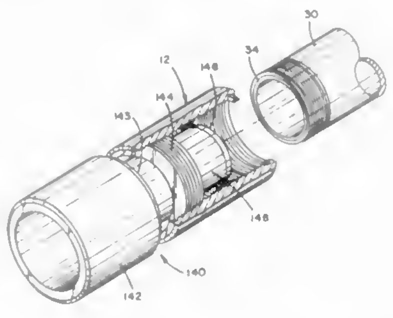
4,878,285
METHOD OF ASSEMBLING COUPLING TO TUBING OR CASTING

Kenneth J. Carstensen, 4540 N. 44th St., No. 70, Phoenix, Ariz. 85018

Division of Ser. No. 802,943, Nov. 27, 1985, Pat. No. 4,706,997, which is a continuation of Ser. No. 379,615, May 19, 1982, abandoned. This application Nov. 5, 1987, Ser. No. 117,682

Int. Cl.^{4} B23P *11/02*

U.S. Cl. 29—451 1 Claim



1. The method of coupling sections of pipe for assembly into a production tubing or casing string comprising the steps of:

(a) entering a reference member from a first end of a collar, the collar being a standard A.P.I. collar having a first and second tapered internally threaded end portions, the reference member provided an interior abutment surface for controlling the depth of penetration of a first pipe, the first pipe having tapered external threaded end portions;

(b) removing the reference member after inserting the first pipe into threaded engagement with the collar and a first end portion thereof in abutting contact with the interior abutment surface;

(c) inserting a position ring of selected length for an axial stress to be encountered along the string, within the collar with one end of the ring in abutment with the first pipe; and

(d) then engaging the second pipe into threaded engagement with the collar and an end thereof in contact with the other end of the position ring.

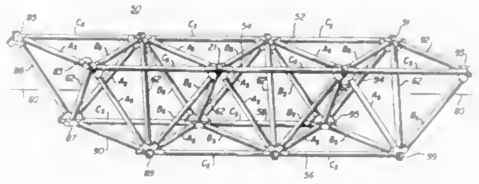
4,878,286
TRUSS STRUCTURE AND METHOD FOR CONSTRUCTION THEREOF

Anthony P. Coppa, Merion, Pa., assignor to General Electric Company, King of Prussia, Pa.

Division of Ser. No. 123,077, Nov. 19, 1987, Pat. No. 4,829,739, which is a division of Ser. No. 808,602, Dec. 12, 1985, Pat. No. 4,803,824. This application Sep. 2, 1988, Ser. No. 240,012

Int. Cl.^{4} B23Q *3/10;* E04H *12/18*

U.S. Cl. 29—467 10 Claims



1. A method for constructing an elongate prism-form truss structure having a square cross section from a plurality of planar, congruent, triangular frame elements, said structure being defined by four longitudinal edges parallel to a central longitudinal axis, said longitudinal edges defining structure planes therebetween, each of said frame elements having A-, B- and C-sides located opposite A-, B- and C-vertices, the dimensions of said sides of said elements being defined by:

$$\cos \alpha = NC/4B$$

where

α=included angle between said B- and C-sides at said A-vertex,

$\alpha > 90°$,

B=length of B-side,

C=length of C-side, and

N=integer>1;

said elements being fed from four feed points radially spaced from said axis;

said method comprising the steps of:

(1) feeding said elements in a predetermined sequence from said fed points such that each element is placed into the confronting structure plane disposed between said feed point and said axis;

(2) joining each element to selected ones of the previously fed elements such that said C-sides align along said longitudinal edges; and

(3) repeating steps (1) and (2) until a structure of the desired length has been constructed.

4,878,287
PROCESS AND APPARATUS FOR POSITIONING A BALE HOOP PARTING DEVICE

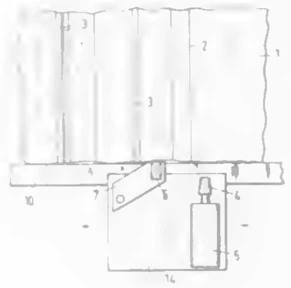
Hubert A. Hergeth, Kockerellstraße 3, 5100 Aachen, Fed. Rep. of Germany

Filed Aug. 10, 1987, Ser. No. 84,405

Claims priority, application Fed. Rep. of Germany, Feb. 19, 1986, 3605215

Int. Cl.^{4} B23P *19/04*

U.S. Cl. 29—564.3 11 Claims



1. An apparatus for positioning and triggering a parting device for severing hoops on bales of fiber, the apparatus comprising:

an elongated guide against which a bale of fibrous material bundled by metal hoops is pressed;

at least one sensor disposed at said guide for producing signals in response to the presence of metal;

a parting device adapted to sever a hoop and displaceable along said guide; and

a control system operatively connected to said parting device and receiving signals from said sensor and in response to analyses of said signals, positioning and triggering said parting device to sever a hoop, the analyses of said control system including a comparison of the sensor actuation time with reference times representing hoops formed by a wire, a band and a double band, for determining the positioning and triggering of said parting device in accordance with the type of hoop to be severed.

4,878,288
PRESS

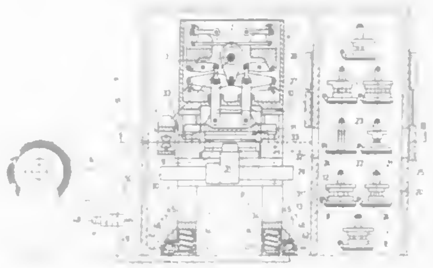
Helmut Messner, Frasnacht, Fed. Rep. of Germany, assignor to Bruderer AG, Switzerland

Continuation of Ser. No. 39,101, Apr. 16, 1987, abandoned. This application May 25, 1988, Ser. No. 203,564

Claims priority, application Switzerland, Apr. 18, 1986, 01575/86

Int. Cl.^{4} B23Q *3/155*

U.S. Cl. 29—568 18 Claims



1. In a high-speed, high-capacity press:

means forming a support frame which stands on a base;

a first tool holder on said support frame for firmly holding a tool by first connection means;

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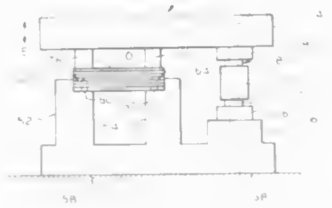
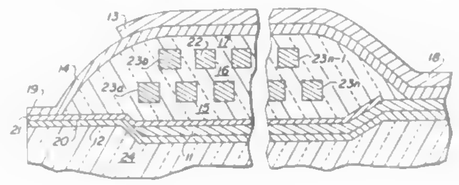
- a second tool holder on said support frame for firmly holding a counter-tool by second connection means;
- said first and second tool holders defining parallel planes;
- drive means for imparting relative to-and-fro movement to at least one of said tool holders, thereby transmitting vibrations to said support frame;
- bearing means rigidly attached on said support frame;
- a tool magazine receiving a plurality of tools and counter-tools and being arranged at a predetermined position with respect to said support frame;
- handling means guided on said bearing means for handling said tools and counter-tools, comprising:
- a displaceable body;
- at least one gripping arm having two ends and being movably mounted for movement about perpendicular axes on said body by one of its ends, whereas the other end freely projects away from said body, including gripper means on said freely projecting end for gripping said tool holders, and
- displacement drive means for said gripper arm and said body, said displacement drive means comprising lifting means to lift said gripping arm, when a tool holder is gripped, in order to raise the latter, said displacement drive means being operable to displace said handling means in a plane parallel to the planes of the holders and at right angles to their direction of movement, from a rest position to a position for transfer of said tool and counter-tool to said magazine, and between said rest position and said transfer position into at least one toolremoval position in which at least one of said tool and counter-tool is removable from the respective holder by loosening the respective means of connection.

4,878,289
METHODS OF ASSEMBLING ELECTRIC MOTORS WITH REDUCED END-PLAY
Max Lautner, Myrtle Beach, S.C.; Fred Hoffman, Chicago, and Edward Melnikov, Des Plaines, both of Ill., assignors to Uppco Inc., Chicago, Ill.
Filed Sep. 20, 1988, Ser. No. 246,364
Int. Cl.⁴ H02K *15/14*
U.S. Cl. 29—596 3 Claims



1. A method of manufacturing electric motors, said method comprising the steps of:
- (a) forming a stack of laminate plates into a stator for an electric motor;
- (b) placing a shaft of a rotor/shaft assembly in parallel with a thickness dimension of said stack of laminate plates, said shaft having a compressible member mounted thereon;
- (c) simultaneously closing a space between a press member, on the one hand, and said stack of laminate plates and said rotor/shaft assembly when in the parallel position of step (b), on the other hand, thereby compressing said compressible member during said closing of said space; and
- (d) using said stack of laminates as a gage for limiting the closed distance of said space, whereby the compression of said compressible member responsive to said closing is customized to compensate the overall length of said rotor/shaft in order to match the thickness of said stack of laminate plates and thereby limit the end-play of said rotor/shaft.

4,878,290
METHOD FOR MAKING THIN FILM MAGNETIC HEAD
Charles R. Masud, and Cheng-Teh Wu, both of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Feb. 13, 1989, Ser. No. 310,414
Int. Cl.⁴ G11B *5/42*
U.S. Cl. 29—603 9 Claims

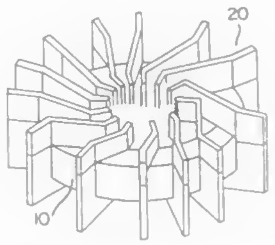


1. The method for making a thin film magnetic head, said thin film magnetic head being of the type comprising two layers of magnetic material forming a yoke structure, said yoke structure at one end comprising a pole tip region in which said layers of magnetic material are separated by a predetermined distance to produce a transducing gap and at another end comprising a back gap region, said yoke structure being activated by a conductor coil deposited between said one end and said another end of said yoke structure, the improvement comprising the steps of:
- after the steps of forming said first layer of magnetic material, said conductor coil and electrically insulating material to insulate said conductor coil from each of said layers of magnetic material;
- depositing a second layer of magnetic material which contacts said first layer of magnetic material in said back gap region and is separated from said first layer of magnetic material by a predetermined distance in said pole tip region to form a transducing gap, said second layer of magnetic material having a reduced width near said pole tip region;
- depositing a masking layer over said second layer of magnetic material, said masking layer being shaped to expose a predetermined area of said second layer of magnetic material at said pole tip region;
- etching said thin film magnetic head to selectively remove material in said exposed area thereby to form pole tips having a predetermined width;
- removing said masking layer; and
- depositing a third layer of magnetic material over substantially all of said second layer of magnetic material except said pole tip region to form a magnetic pole piece having a thinner and narrower cross-section in the pole tip region and a thicker and wider cross-section between the pole tip region and the back gap region.

4,878,291
METHOD OF MANUFACTURING TOROIDAL COILS
Kazuhiko Suguri, Kanagawa, Japan, assignor to Harada Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 4, 1987, Ser. No. 128,701
Int. Cl.⁴ H01F *41/02, 27/30*
U.S. Cl. 29—606 3 Claims

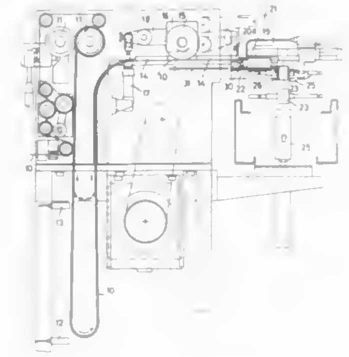
1. A method for manufacturing a pair of toroidal coils for radio frequency antennas comprising the ordered steps of:
- forming first conductive members in a U-shape and second conductive members in an S-shape.
- placing the bottom of each of said U-shaped first conductive members in slits formed in a jig, said slits being arranged at equal predetermined intervals in a circumferential direction on said jig;
- placing a ring shaped ferrite core in said U-shaped first conductive members;

- mounting said second conductive members on upper ends of said first conductive members, each of said second conductive members being electrically connected to one end



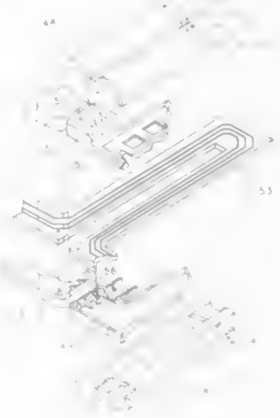
of one of said first conductive members and to the other end of another first conductive member; and
- electrically fastening said second conductive members to said first conductive members.

4,878,292
ARMATURE PAPER FEEDING, CUTTING, AND INSERTING DEVICE
Luciano Santandrea, and Massimo Lombardi, both of Florence, Italy, assignors to Axis S.p.A., Florence, Italy
Filed Apr. 18, 1988, Ser. No. 182,955
Claims priority, application Italy, May 6, 1987, 67390 A/87
Int. Cl.⁴ B23P *19/04*
U.S. Cl. 29—734 11 Claims



1. A machine for driving and variable length cutting of a paper web for use in the armature of an electric motor rotor comprising:
- a variable position ledge;
- a pressure drive wheel which pushes an end edge of said paper web against said ledge by means of frictional engagement of the paper, and which then slips against said paper;
- means for feeding a paper web to said pressure wheel;
- means for cutting said paper web between said ledge and said pressure wheel to produce a paper sheet;
- means for shaping said paper sheet to fit in a slot of said rotor;
- means for transferring said paper sheet to said shaping means;
- means for conveying said rotor to a position suitable to receive the shaped paper sheet; and
- means for inserting said shaped paper sheet into said rotor slot.

4,878,293
METHOD OF INTERCONNECTING ASSEMBLIES USING TORSIONLY STRESSED CONDUCTORS ROUTED THROUGH A HOLLOW ARTICULATED HINGE
Ralph W. Kinser, Jr.; David L. Shriver, and Judith A. Layman, all of Corvallis, Oreg., assignors to Hewlett-Packard Company, Palo Alto, Calif.
Division of Ser. No. 868,401, May 29, 1986, Pat. No. 4,825,395. This application Aug. 31, 1988, Ser. No. 238,708
Int. Cl.⁴ H05K *3/02*
U.S. Cl. 29—850 2 Claims



1. A method of routing conductors from a first assembly to a second assembly, rotatable about the first, comprising the steps of:
- hinging the first and second assemblies together with a hollow articulated hinge;
- passing the conductors from the first assembly into the hollow articulated hinge through an orifice in the first assembly centered about a first axis of hinge rotation;
- clamping the conductors to the first assembly in close proximity to where they exit therefrom into the hollow articulated hinge;
- routing the conductors within the hollow articulated hinge along the first axis of hinge rotation for a portion of that first axis;
- altering the routing of the conductors from running along the first axis to running along a second axis of hinge rotation;
- routing the conductors within the hollow articulated hinge along the second axis of hinge rotation for a portion of that second axis;
- clamping the conductors to the hollow articulated hinge at one end of the portion of the first axis where the step of altering the routing routes the conductors from running along the first axis and at one end of the portion of the second axis where the step of altering the routing routes the conductors to running along the second axis;
- passing the conductors from the hollow articulated hinge into the second assembly through an orifice therein centered about the second axis of hinge rotation; and
- clamping the conductors to the second assembly in close proximity to where they enter therein from the hollow articulated hinge

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4,878,294

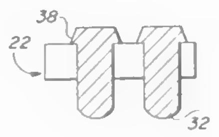
ELECTROFORMED CHEMICALLY MILLED PROBES FOR CHIP TESTING

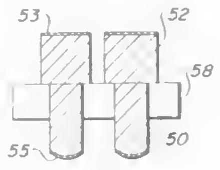
William P. Dugan, Glendora, and Marvin R. Johnson, Mira Loma, both of Calif., assignors to General Dynamics Corp., Pomona Division, Pomona, Calif.

Filed Jun. 20, 1988, Ser. No. 208,907

Int. Cl.⁴ H01K *3/10*

U.S. Cl. 29—852 19 Claims





1. A method of fabricating microcircuit test probes having a selected configuration of circuit leads supported on a carrier with an array of probe contacts affixed to the leads, the method comprising the steps of:

applying layers of photoresist to opposite sides of a metal foil sheet to form a panel;

exposing the photoresist along a first side of the panel through first mask defining a lead pattern;

exposing the photoresist along a second side of the panel through a second mask defining a contact pattern;

developing the photoresist to form a pattern of exposed metal foil along the first side corresponding to the lead pattern image and a plurality of holes exposing metal foil along the second side of the panel corresponding to the contact pattern image;

placing the panel in an electroplating bath and electroforming contact posts in said holes and leads in said lead pattern image;

stripping the remaining photoresist from opposite sides of the panel;

applying a layer of dielectric plastic along the contact side of the panel to encase the contacts;

removing the outer portion of the dielectric plastic layer and the outer ends of the contacts to develop a substantially planar outer surface;

adding respective layers of photoresist along the outer surfaces on both sides of the panel;

exposing the added photoresist along the contact side of the panel through said second mask;

developing hole patterns in said layer of photoresist added to the contact side of the panel corresponding to said second mask;

placing said panel in an electroplating bath to further build up the contact posts in the pattern of holes in said added photoresist;

removing at least the photoresist along the lead side of the panel;

selectively etching the foil sheet to eliminate metal bridging between respective sets of leads and contacts; and

removing all remaining photoresist to leave a pattern of leads with associated contact posts extending through the layer of plastic dielectric.

4,878,295

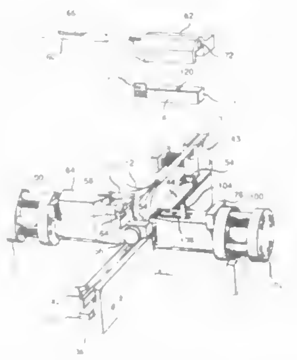
METHOD AND APPARATUS FOR ATTACHING CONNECTORS

Michael A. Muhlberger, Hillsborough, N.J., and Willard E. Rapp, Lantana, Fla., assignors to American Telephone and Telegraph Company, New York, N.Y.

Filed Dec. 27, 1988, Ser. No. 290,551

Int. Cl.⁴ H01R *43/04;* **B23P** *19/00*

U.S. Cl. 29—863 9 Claims



1. A method for successively attaching successive pairs of wires to successive pairs of opposed contacts, each contact lying along a separate one of a pair of rows on a connector, the method comprising the steps of:

placing the connector in a carriage for movement along a first axis such that each of a pair of opposed contacts is opposite a separate one of a pair of rams;

manually pulling each of a pair of wires across each of a pair of wire guides to nominally align each wire with a separate one of the contacts;

manually holding each wire in tension in its respective wire guide while simultaneously displacing each ram towards the contact opposite thereto to attach the aligned wire with the contact;

retracting each of the rams away from the corresponding contact after the wire has been attached thereto; and

simultaneously advancing the carriage along the first axis to locate each of a successive pair of contacts opposite a separate one of the rams.

4. Apparatus for attaching successive pairs of wires to successive pairs of opposed contacts, each lying along a separate one of a pair of rows on a connector, the apparatus comprising:

a base;

a connector-carrying carriage slidably mounted to the base for movement along a longitudinal axis;

a pair of rams, each slidably mounted to the base for movement to and from a separate one of a pair of opposed contacts on a connector carried by the carriage;

a pair of wire guides, each releasably mounted to the base on opposite sides of the carriage, each wire guide including a stationary catch for releasably engaging a wire, when pulled by an operator into the catch in a first orientation, and a flat surface adjacent to the catch for providing a path along which the wire can be pulled across, and tensioned by, the operator in an orientation perpendicular to the first orientation, to nominally align the wire with a separate one of the rams;

a pair of actuating means, each operatively engaged with a separate one of the rams to displace the ram towards the contact opposite thereto so the ram attaches the wire to the contact and to retract the ram from the contact after the wire is attached; and

carriage-advancing means coupled to one of the actuating means for imparting a lateral force to the carriage, only as each ram is retracted from the contact, to advance the carriage in a first direction along the longitudinal axis to pull each wire, which had been previously engaged by the catch, to release the wire therefrom, and to align each of a successive pair of opposed contacts on the connector opposite a separate one of the rams.

4,878,296

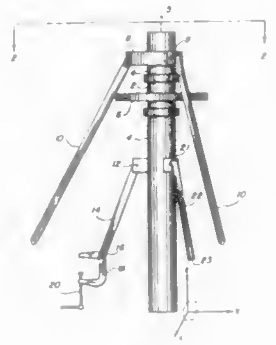
APPARATUS AND METHOD FOR LOCATING THE AXIS OF SYMMETRY (CENTER OF CIRCULAR CROSS SECTION) OF THREE DIMENSIONAL OBJECTS

Joseph M. Londino, Jr., Mishawaka, Ind., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 22, 1988, Ser. No. 184,217

Int. Cl.⁴ G01C *29/00*

U.S. Cl. 33—227 9 Claims



1. An apparatus for locating the vertical axis of symmetry of a surface having a horizontally disposed circular cross section, said axis of symmetry extending through the center of said circular cross section and being perpendicular to said circular cross section, said apparatus comprising:

plumb means for establishing a vertical line of sight, said plumb means comprising means for contacting said surface at at least three points, all of said points being located on the circular perimeter of said circular cross section; and

attaching means for mounting said apparatus, said attaching means comprising:

a first translational means for displacing said plumb means a first preselected distance, said first preselected distance having a linear projection extending along a first horizontal direction; and

a second translational means for displacing said plumb means a second preselected distance, said second preselected distance having a linear projection extending along a second horizontal direction;

each of said projections being orthogonal to one another;

and wherein said first and second translational means and said means for contacting are each adapted to cooperate with one another to permit said line of sight to be located collinear with said vertical axis of symmetry;

wherein said means for contacting comprises:

at least three extensible arms; and

a camming means for deflecting said at least three extensible arms outward from said camming means; wherein

said deflecting is effective to cause said at least three extensible arms to extend outward from said camming means effective to contact said perimeter at said at least three points.

4,878,297

HYDROSTATIC LEVEL AND ELEVATION MEASURING DEVICE

Dennis L. Vories, 29142 via Piedra, Valley Center, Calif. 92082

Continuation of Ser. No. 33,467, Apr. 2, 1987, abandoned. This application Aug. 22, 1988, Ser. No. 236,328

Int. Cl.⁴ G01C *5/04*

U.S. Cl. 33—366 18 Claims

1. A relative elevation indicating device comprising an hydrostatic pressure sensor module in liquid communication with a contained body of liquid under ambient atmospheric pressure through an elongated, flexible conduit, the conduit being filled with the liquid, the sensor module comprising:

(a) means for transducing hydrostatic pressure of the liquid at said sensor module to a signal which is a function of sensor module elevation relative to the elevation of the body of liquid;

(b) a means for providing a reference elevation signal which is equal to a signal produced by the transducer means when the sensor module is at a selected reference elevation;

(c) a transfer funciton means for processing the transducer signal comprising:

  (1) a means for amplifying said signal, and

  (2) a means for translating the amplified signal to make it relative to the reference elevation signal; and

(d) means for coverting processed transducer signals to corresponding indicia readable by an operator.

4,878,298

LIQUID INDICATOR GAUGE

Royce H. Husted, 711 Lakeside Dr., Wheaton, Ill. 60187

Filed Oct. 31, 1988, Ser. No. 265,399

Int. Cl.⁴ G01B *13/02*

U.S. Cl. 33—837 10 Claims

1. A measuring gauge comprising:

a generally circular body;

a spiral channel formed in said body and including an inlet at one end and a sealed reservoir at the other end;

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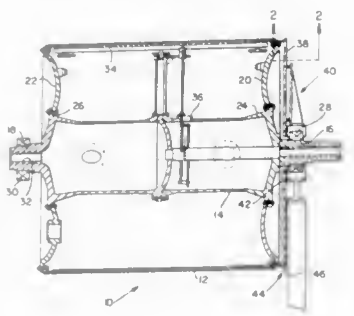
- a compressible medium in said sealed reservoir for pressurizing said other end of said channel;
- said spiral channel increasing in cross sectional area from said inlet to said reservoir to provide a uniform radial scale of liquid movement in said spiral;
- a chamber communicating with said inlet;
- a piston movable in said chamber;
- a liquid in said chamber displaceable by said piston to flow in said channel; and
- a sensing device coupled to said piston for moving said piston responsive to displacement of said sensing device.

4,878,299
INSULATING APPARATUS FOR THERMALLY INSULATING A DRYER HEAD

Gregory L. Wedel, Beloit, Wis., assignor to Beloit Corporation, Beloit, Wis.

Filed Jul. 10, 1987, Ser. No. 72,082
Int. Cl.⁴ F26B *3/00*
U.S. Cl. 34—35 14 Claims



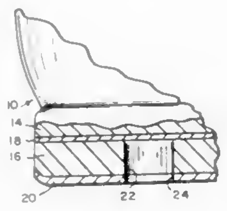
1. An insulating apparatus for thermally insulating a dryer head journalled in a dryer section of a papermaking machine, said apparatus comprising:

- a stationary insulator having a disc-shaped configuration, said insulator defining a central bore for the rotatable reception therein of the journal.

4,878,300
ATHLETIC SHOE

Robert D. Bogaty, Scituate, Mass., assignor to Tretorn AB, Helsingborg, Sweden

Filed Jul. 15, 1988, Ser. No. 219,414
Int. Cl.⁴ A43B *21/26*
U.S. Cl. 36—35 R 18 Claims

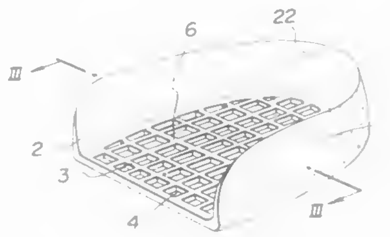


1. A shoe bottom for attachment to the bottom side of an upper, comprising two inner and outer midsole layers, a shock-dispersing plate layer interposed between the midsole layers at the heel end and an outersole layer disposed in engagement with the underlying one of the midsole layers, said underlying one of the midsole layers and the outsole layer containing in the area of the heel center a vertical opening, said vertical openings in the underlying one of said midsole layers and said outsole layer are overlying and expose said plate layer whereby said plate layer may deflect downwardly in the area defined by the openings.

4,878,301
SPORTS SHOE

Junichi Kiyosawa, Kobe, Japan, assignor to Asics Corporation, Kobe, Japan

Filed Jun. 24, 1988, Ser. No. 211,053
Claims priority, application Japan, Jun. 25, 1987, 62-98011
Int. Cl.⁴ A43B *23/08*
U.S. Cl. 36—69 9 Claims

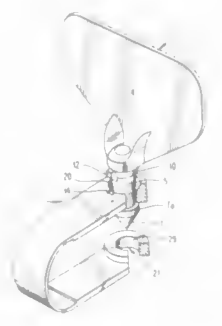


1. A sports shoe comprising an upper portion, a sole portion fitted to said upper portion, and a heel counter fixed to said upper portion and said sole portion, respectively, said heel counter including a lower part nipped between said upper portion and said sole portion, and having a plurality of wall members extending generally vertically and between upper and lower surfaces of said lower part to define a plurality of spaces, said spaces opening through at least one of said upper and lower surfaces toward said upper portion or said sole portion, respectively, each of said wall members having a wall thickness less than the lateral dimension of the spaces between said wall members and a heel side wall part formed integrally with said lower part, said heel side wall part extending along the periphery of said lower part and upwardly from said lower part.

4,878,302
IDENTIFICATION TAG

Clifford G. Jowsey, Auckand, New Zealand, assignor to ITW New Zealand Limited, New Zealand

Filed Oct. 21, 1987, Ser. No. 110,799
Claims priority, application New Zealand, Aug. 13, 1987, 221443
Int. Cl.⁴ G09F *3/00*
U.S. Cl. 40—302 7 Claims



1. An identification tag adapted to be attached to an animal's ear by means of a manually operated tool, said tag comprising:

a body portion comprising:

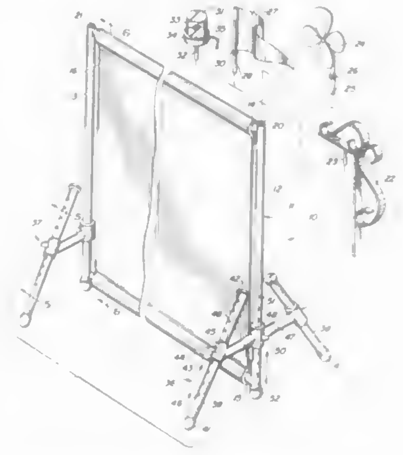
- an elongate, downwardly extending shank including a downwardly pointed lower end and a radially projecting upwardly facing first shoulder disposed above said pointed lower end, said shank including a radially projecting tab disposed above said first shoulder and separated therefrom by an outer periphery of said shank, a locking key projecting radially from said shank and forming an upwardly facing second shoulder, said shank including a radially projecting downwardly facing third shoulder disposed above said second shoulder and spaced therefrom, said shank having a hole extending downwardly into an upper end thereof for receiving a driving portion of the tool to enable the tool to drive said pointed lower end of said shank through an animal's ear, and
- an indicia-bearing section integrally formed with said shank and extending upwardly from a location adjacent said third shoulder and spaced radially of said hole for enabling said hole to receive the driving portion of the tool, and

an elongate strap including first and second bores disposed adjacent opposite ends thereof, said strap being bent intermediate said opposite ends whereby said first bore constitutes an upper bore and said second bore constitutes a lower bore aligned with said upper bore, said lower bore sized to receive said pointed lower end of said shank such that a first one of said ends of said strap comes to rest against said first shoulder, said upper bore being sized to receive an upper portion of said shank and said strap including a radially extending slot opening into said upper bore for receiving said tab such that a second one of said ends of said strap is locked between said second and third shoulders and is held against rotation relative to said shank by said tab.

4,878,303
SIGN

Harry W. Banniza, 314 Ave. I, S.E., Winter Haven, Fla. 33880, and Robert D. Bowlin, 1153 Cephia St., Lake Wales, Fla. 33883

Filed Jul. 25, 1988, Ser. No. 223,947
Int. Cl.⁴ G09F *15/00*
U.S. Cl. 40—606 16 Claims



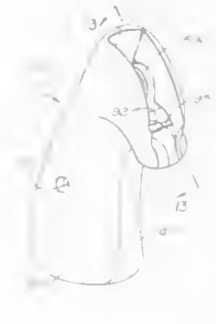
1. A portable, changeable sign comprising:

- a frame having a pair of vertical frame members and a pair of horizontal frame members attached to said vertical frame members;
- display means attached to said frame between said horizontal frame members;
- a pair of ground support bases attached to said frame to support said frame in an upright position for displaying said display means, each said ground support base having a pair of legs slidably connected to a support member on opposite sides thereof, whereby said legs can be adjusted for different ground levels;
- attaching means for movably attaching each said ground support base to said frame to allow said frame to be raised and lowered; and
- ground support means for providing additional support between said frame and a surface whereby additional support can be provided between the sign and the surface to thereby hold said sign more securely in position.

4,878,304
GUN GRIP

Carl J. Cupp, Hawaiian Gardens, Calif., assignor to Pachmayr Ltd., Monrovia, Calif.

Filed Oct. 27, 1988, Ser. No. 263,239
Int. Cl.⁴ F41C *23/00*
U.S. Cl. 42—71.02 17 Claims



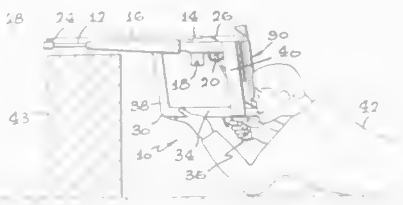
1. For use with a pistol having a handle projection, a grip comprising:

- right and left grip sections to be received at opposite sides respectively of said handle projection;
- at least one of said sections having two surfaces which extend generally transversely of said handle projection and which face in generally opposite directions and are positioned to engage two surfaces respectively of said projection to locate said one section relative to the projection;
- said two surfaces of said one grip section being disposed at a slight wedging angle with respect to one another to wedge tightly against said surfaces of the projection upon movement of said one section transversely of the pistol onto said handle projection.

4,878,305
HAND-CARRIED WEAPON

Pericles Gabrielidis, 14141 Riverside Dr., #1, Sherman Oaks, Calif. 91423

Continuation-in-part of Ser. No. 44,655, May 1, 1987, abandoned. This application Oct. 21, 1988, Ser. No. 260,864
Int. Cl.⁴ F41C *23/00*
U.S. Cl. 42—72 25 Claims



1. A hand-carried weapon comprising:

- a stock, a grip on said stock configured to be engaged by a shooter's trigger operating hand, a trigger on said stock positioned to be actuated by the shooter when his trigger operating hand is on said hand grip;
- a barrel mounted on said stock, said barrel being positioned so that its bore is sufficiently above said stock that when the shooter engages his trigger operating hand on said grip

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and his shoulder against said stock, the shooter's head is below said bore of said barrel;

at least one optical sight mounted with respect to said barrel to establish a sighting line adjacent and substantially parallel to said barrel so that when said sighting line is directed at a point, said barrel can discharge a bullet towards the point; and

a periscope on said weapon, said periscope having first and second reflective optical elements therein, a rest surface on said periscope, said periscope having a first position in which said first reflective optical element is located so that when the shooter's face lies adjacent said stock with his forehead against said rest surface, the shooter's eye is in alignment with said first reflective optical element in said periscope and said second reflective optical element in said periscope is on said sighting line for indirect sighting, said second reflective element in said periscope being movable away from said sighting line so that the shooter can place his eye directly on the sighting line for direct sighting.

4,878,306

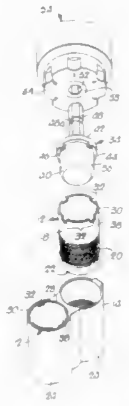
SHOTGUN CHOKE INSERTION AND REMOVAL TOOL

David P. Dyer, 1005 Arno Rd., Kansas City, Mo. 64113

Filed Sep. 1, 1988, Ser. No. 239,297

Int. Cl.⁴ F41C *27/00*

U.S. Cl. 42—90 11 Claims



1. A tool assembly for facilitating the insertion or removal of an end of barrel choke of an interchangeable choke shotgun of the type wherein each choke has at least one tool engaging notch in its outer end and external threads that are adapted to be complementally threaded into internal threads therefor in the end of the gun barrel, said tool assembly comprising:

a tool body adapted to be telescoped into the normally outermost end of a selected choke to be inserted into the the gun barrel or removed therefrom and when so inserted into the choke having a first inner extremity and a second outward facing extremity,

said body having a projection thereon located to be received within a tool engaging notch in the choke when the body is inserted into said selected choke, and

an extension projecting from said second extremity of the tool body and secured to the latter so as to effect rotation thereof in either direction in response to turning of the extension; and

an electrically actuated, reversible drive, portable power unit connected to the extension on said tool body for selectively rotating the body in one direction to rapidly thread a choke telescoped thereover into said outer end of the shotgun barrel upon a first command to the power unit or to rapidly remove a choke from the barrel in response to a second command to the power unit by effecting rotation of the tool body in the opposite direction thereof while telescoped into the choke.

4,878,307

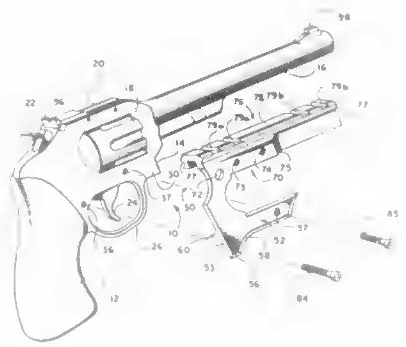
GUNSIGHT MOUNTING DEVICE FOR A REVOLVER

Larry F. Singletary, Thomasville, Ga., assignor to L&S Technologies, Ioc., Thomasville, Ga.

Filed Apr. 22, 1988, Ser. No. 184,774

Int. Cl.⁴ F41G *1/38*

U.S. Cl. 42—101 9 Claims



1. A gunsight mounting device for a revolver having a barrel and a side plate, the mounting device comprising:

means for receiving a gunsight, said receiving means including a first portion configured to lie closely adjacent to the side plate on a single side of the revolver, and a second portion formed integrally with said first portion and including a lower surface configured to overlie and contact a top surface of the revolver in a predetermind fixed location thereon;

means for attaching said receiving means to said single side of the revolver; and

a ledge formed integrally with said second portion of the receiving means on the side thereof opposite the first portion, said ledge resting snugly against the other side of the revolver without attachment thereto, so as to protect the mounting device from being broken off the gun by an impact from the other side,

whereby a gunsight may be mounted upon said revolver in a predetermined location relative to the barrel for use by a shooter.

4,878,308

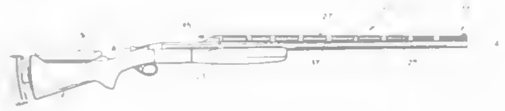
ADJUSTABLE SHOTGUN RIB

Clyde E. Rose, South Weber, Utah, assignor to Browning Corporation, Morgan, Utah

Filed Apr. 17, 1989, Ser. No. 338,329

Int. Cl.⁴ F41G *1/46*

U.S. Cl. 42—102 16 Claims



1. An adjustable sight rib system for a shotgun, said system comprising:

a shotgun barrel with a longitudinal axis, a muzzle end a breach end, said barrel carrying a mounting post near said muzzle end and a retaining structure near said breach end;

a rib element of approximately the same length as the barrel, said rib having an upper, approximately planar sighting surface and a lower surface oriented approximately parallel but spaced from said barrel so that said rib element has a front rib end in the proximity of said mounting post and a rear rib end in the proximity of said retaining structure;

front connection means associated with said mounting post and said front rib end, constructed and arranged such that said front rib end can be attached to said post at selected elevations with respect to said barrel by a pivot connection; and

rear connection means associated with said retaining structure and said rear rib end can be coupled with said retaining structure to prevent longitudinal movement of said rib with respect to said longitudinal axis while permitting adjustment of the spacing of said rear rib end with respect to said barrel.

4,878,309

FISHING ROD

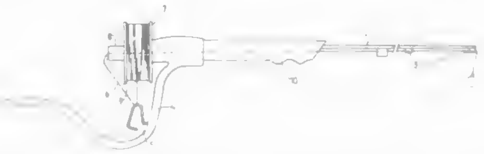
Roger M. Gough, 75 Young St., New Plymouth, New Zealand

Filed Dec. 15, 1988, Ser. No. 284,703

Claims priority, application New Zealand, Dec. 16, 1987, 222953

Int. Cl.⁴ A01K *87/06*

U.S. Cl. 43—18.1 7 Claims



1. A fishing rod including a shaft having a reel mounted substantially para-axial therewith and a winding member rotatable about said reel to facilitate winding and unwinding of a line on said reel, characterised in that the line extends from said reel to a hook connected to the winding member and then towards the free end of said reel.

4,878,310

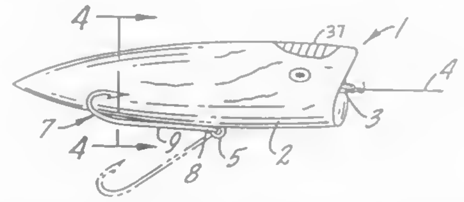
MAGNETIC FISHING BAIT AND METHOD

Douglas Hannon, Odessa, Fla., and Bingham A. McClellan, Traverse City, Mich., assignors to McClellan Industries, Inc., Traverse City, Mich.

Filed Oct. 5, 1987, Ser. No. 105,291

Int. Cl.⁴ A01K *85/00*

U.S. Cl. 43—42.04 20 Claims



1. An artificial fish lure comprising a fish lure body: a fish hook made from a magnetizable material, and said fish hook being permanently magnetized sufficiently to move and hold said fish hook against said lure body;, said fish lure body being made from a material attracted by said magnetized fish hook; means movably attaching said magnetized fish hook to said fish lure body, said magnetized fish hook normally being held by the strength of its magnetism against said lure body in a position where it is less likely to snag, and said magnetized fish hook being movable away from said lure body by the strike of a fish.

4,878,311

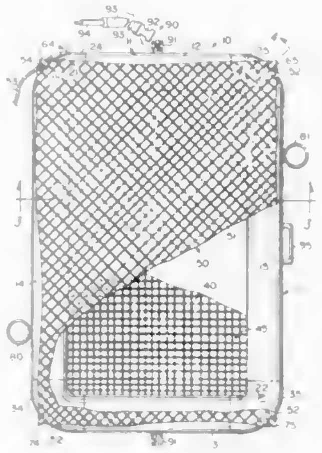
BUOYANT FISHING CONTAINER

David L. Cano, 10615 Meadowglen No. 1007, Houston, Tex. 77042

Filed Aug. 29, 1988, Ser. No. 237,801

Int. Cl.⁴ A01K *97/10*

U.S. Cl. 43—54.1 12 Claims



1. A buoyant container adapted to float upon water and contain articles therein particularly adapted for use by a wading fisherman comprising: a generally continuous closed loop polygonal frame, means in the form of buoyant material housed within said frame for imparting buoyancy thereto, a relatively shallow basket depending from said frame adapted to contain therein sundry articles whereby said basket can be immersed in water yet remains afloat and upright due to the relatively low center of buoyancy created by said relatively shallow basket, a net of flexible material in spanning relationship to an uppermost portion of said frame for preventing articles from being accidentally or inadvertently being discharged from said basket, means for releasably securing peripherally spaced portions of said net to peripherally spaced portions of said frame and maintaining said net in spanning relationship to said frame, said frame normally being disposed in a generally horizontal plane in the in-use floating position thereof, and handle means carried by said frame for supporting said frame in another in-use carrying position in which said frame is disposed in a generally vertical plane in which said net also functions to prevent articles from being discharged accidentally or inadvertently from said basket.

4,878,312

METHOD FOR CULTURING AND CULTIVATING FUNGI

Michitaka Shimizu, Showa, Japan, assignor to Compex Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 716,375, Mar. 26, 1985, abandoned. This application Jul. 28, 1988, Ser. No. 225,647

Claims priority, application Japan, Mar. 30, 1984, 59-61037

Int. Cl.⁴ A01G *1/04;* C12N *1/14;* C12Q *1/24*

U.S. Cl. 47—1.1 9 Claims

1. A method for culturing and cultivating fungi, comprising the steps of:

(a) introducing at least one host wood piece having a diameter of 1 to 10 cm into a plastic bag having a porous site therein;

(b) placing at least one cellulose sheet to promote inoculation of the fungi and to promote the culture and cultiva-

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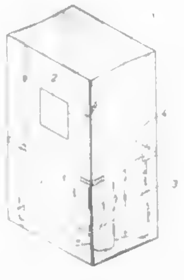
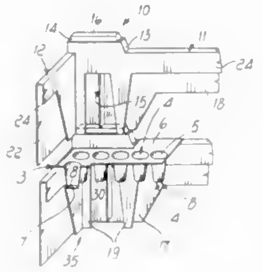
tion of the fungi, which contains nutrients and a bactericide, on said at least one host wood piece in the bag;
(c) sterilizing the bag;



(d) inoculating the cellulose sheet with the fungi; and
(e) sealing the bag and culturing the fungi.

4,878,313
CONTAINER ASSEMBLY

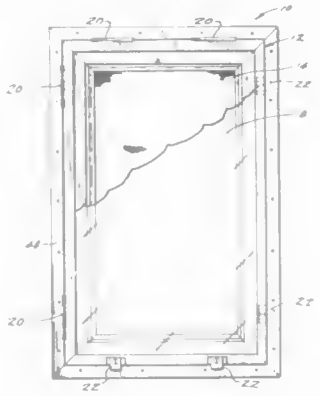
Giampaolo Polesel, Conegliano, Italy, assignor to RESMA S.R.l., Gaiarine, Italy
Continuation of Ser. No. 895,023, Aug. 8, 1986, abandoned. This application Feb. 5, 1988, Ser. No. 154,432
Claims priority, application Italy, Aug. 9, 1985, 30783/85[U]
Int. Cl.⁴ A01G *9/10*
U.S. Cl. 47—87 12 Claims

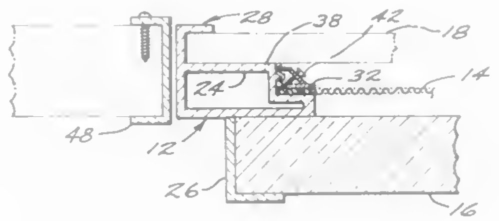


1. A container assembly adapted for small plants, comprising an integral box-like frame structure and a sheet-like container tray, said frame structure including:
two pairs of parallel planar lateral walls, said pairs of lateral walls being connected to define a parallelepipedal shape with four corners, each said lateral wall having upper and bottom edges, said upper and bottom edges being sapced apart from each other by a predetermined distance and respectively defining upper and bottom open surfaces,
four elevations each integrally and vertically projecting adjacent a respective corner of said lateral walls,
first engagement means formed on said elevations,
second engagement means including four downwardly extending vertical extensions projecting downwardly adjacent a respective corner, said second engagement means being vertically aligned with said first engagement means to allow engagement with said first engagement means of a second, like container assembly, said first and second engagement means being defined by cooperating male and female engagement means, and
support members extending between and interconnecting lateral walls of one of said pairs,
said sheet-like container tray comprising:
a sheet-like planar body, said body resting on said support members, said sheet-like planar body having an extension substantially equal to said upper open surface and a peripheral edge bearing on said upper edges of said lateral walls of said frame structure,
a plurality of hollow projections protruding from said planar body toward said bottom open surface and defining cells for accomodating root mediums, each of said hollow projections having a base portion with a bottom drain remote from said sheet-like planar body, the distance of said base portion from said sheet-like planar body defining a projection height which is smaller than said predetermined distance such that, when said sheet-like container tray is laid onto said frame structure, said base portions are raised with respect to said bottom open surface and define an aeration space, said peripheral edge defining corner recesses to accomodate said elevations.

4,878,314
HIGH SECURITY WINDOW

Larry A. Blockinger, 7416 Wonder La., Jacksonville, Fla. 32244
Filed Oct. 5, 1988, Ser. No. 253,752
Int. Cl.⁴ E06B *5/10*
U.S. Cl. 49—381 9 Claims



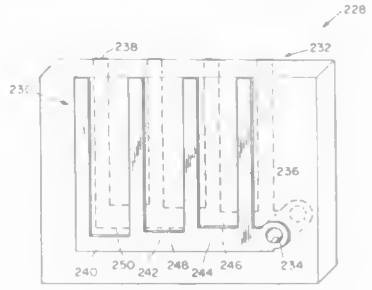


1. A security window including:
a bullet and explosion resistant exterior optically clear window pane;
a steel or titanium screen spaced from and parallel to said pane;
frame means for securing and retaining said screen and said pane; and
sash means, said frame means being pivotably mounted in said sash means.

4,878,315
GRIDING GUIDE AND METHOD

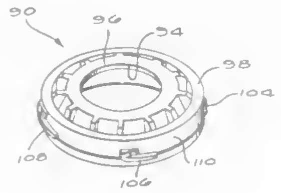
Thomas F. Dawson, Millis, and Paul C. Ewing, Tewksbury, both of Mass., assignors to The Charles Stark Draper Laboratory, Inc., Cambridge, Mass.
Continuation-in-part of Ser. No. 772,269, Sep. 3, 1985, Pat. No. 4,648,211. This application Dec. 29, 1986, Ser. No. 947,371
Int. Cl.⁴ B24B *49/10*
U.S. Cl. 51—165 R 22 Claims

1. A guide for the grinding of a surface of an object having a region to be exposed, comprising:
at least two conductive leads, each lead associated with a different face of the object; and
a conductive control track that penetrates the object for interconnecting said conductive leads and extending across the surface to be ground which lies between said faces, at least a portion of the rear edge of said track being precisely located with respect to a predetermined grinding depth of the region so that a break in said track occurs with the grinding of the surface to that grinding depth.



4,878,316
PRESSURE CAP FOR DISPOSABLE FINISHING ARTICLE

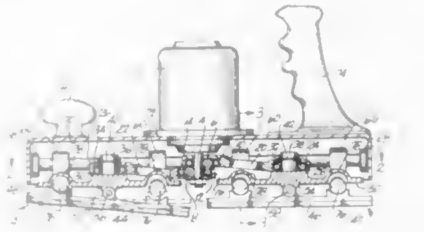
Joseph H. MacKay, Jr., 17551 Cabela Dr., San Diego, Calif. 92127
Continuation-in-part of Ser. No. 113,937, Oct. 27, 1987, Pat. No. 4,754,577, which is a continuation-in-part of Ser. No. 5,813, Jan. 21, 1987, Pat. No. 4,754,578, which is a continuation-in-part of Ser. No. 847,793, Apr. 3, 1986, Pat. No. 4,694,615. This application Apr. 15, 1988, Ser. No. 181,772
The portion of the term of this patent subsequent to Jan. 5, 2005, has been disclaimed.
Int. Cl.⁴ B24B *45/00*
U.S. Cl. 51—168 9 Claims



1. A pressure cap for securing to a throw away finishing article used with a power tool and secured between a retainer nut and a backing flange, one of said nut and said flange having radially extending gripping means, said pressure cap comprising:
a molded plastic body defining a central opening therethrough and having an outer surface including a radially outwardly directed gripping rib for engaging said radially extending gripping means to secure said pressure cap to said article, said gripping rib including a plurality of outwardly extending tangs, each of which includes a wedge shaped portion adapted to be received by one of said radially extending gripping means, said gripping means being radially extending from said backing flange, said body further having a means for engaging a spindle of said power tool and a surface for engaging said backing flange in a load bearing relationship when attached to said power tooi.

4,878,317
POWER SANDER

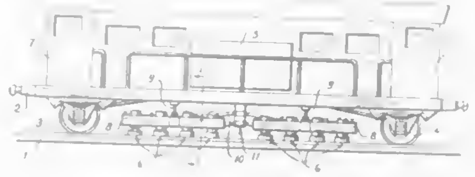
Melvin L. Ovens, 15855 - 84th Avenue, Surrey, British Columbia V3S 2N8, Canada
Filed Jul. 10, 1987, Ser. No. 72,113
Int. Cl.⁴ B24B *23/04*
U.S. Cl. 51—170 TL 14 Claims

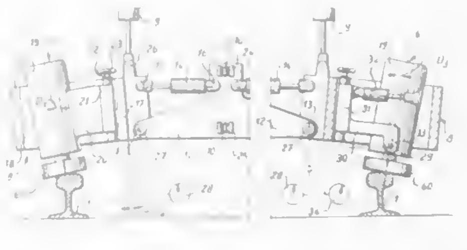


1. A power sander comprising:
a motor;
a drive shaft extending from the motor;
first and second eccentric drive means attached to the drive shaft;
first and second reciprocable shafts driven by the first and second eccentric drive means and extending outwardly from the drive shaft in opposed directions;
first and second sander pads reciprocally mounted at the end of the first and second reciprocable shafts, said sander pads comprising an abrasive pad pivotally mounted to a support member, the pivotal mount between an abrasive pad and a support member to which the abrasive pad is mounted being substantially at the center of the support member, with cams mounted on the support member to enable variation of the orientation of the pad;
whereby rotation of the motor reciprocates the reciprocable first and second shafts to reciprocate the first and second sander pads.

4,878,318
RAILWAY TRACK MAINTENANCE MACHINE FOR THE RECTIFICATION OF THE HEAD OF THE RAIL

Romolo Panetti, Geneva, Switzerland, assignor to Speno International S.A., Geneva, Switzerland
Continuation of Ser. No. 214,686, Dec. 9, 1980, Pat. No. 4,843,765. This application Feb. 10, 1989, Ser. No. 308,664
Claims priority, application Switzerland, Jan. 9, 1980, 123/80
Int. Cl.⁴ E01B *31/17*
U.S. Cl. 51—178 3 Claims





1. Railway track maintenance machine for truing the head of

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railway track rails comprising a rolling frame adapted to roll on railway track rails to be trued, at least one tool carrier slipper mounted under the said frame displaceably with respect to the frame vertically and angularly in a plane perpendicular to the length of the rail, said at least one slipper carrying at least two truing units each having a rotary cutting tool, said tools having non-parallel axes of rotation as viewed in said plane; means for raising and lowering the tool carrier slipper relative to the frame which means serves also to press the slipper against the rail at the desired pressure, means for swinging the slipper in said perpendicular plane relative to the rolling frame, means to couple the truing units and the slipper such that each truing unit is individually angularly displaceable and bodily vertically adjustable relative to the slipper in a plane perpendicular to the length of the rail, and means for selectively individually bodily vertically adjusting each said truing unit in said perpendicular plane relative to the slipper.

4,878,319

MACHINE TOOL

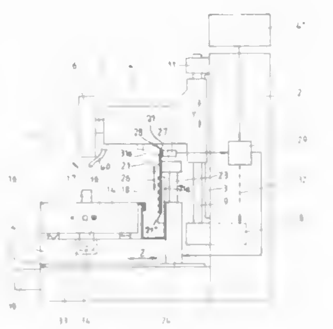
Reinhard Janutta; Franz Hartmann, both of Geesthacht, and Gerd Hinzmann, Lauenburg, all of Fed. Rep. of Germany, assignors to Körber AG, Hamburg, Fed. Rep. of Germany

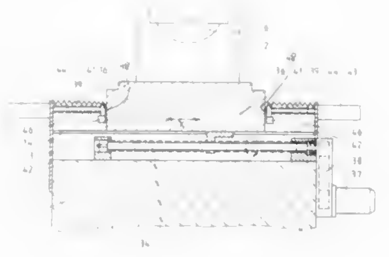
Filed Sep. 20, 1988, Ser. No. 246,984

Claims priority, application Fed. Rep. of Germany, Oct. 2, 1987, 3733346

Int. Cl.⁴ B24B *55/00*

U.S. Cl. 51—271 14 Claims





1. A machine tool, particularly a grinding machine, comprising a frame; guide means provided on said frame; at least one machine element movable along said guide means; at least one mobile guard for said guide means; first prime mover means for said machine element; and discrete second prime mover means for said guard.

4,878,320

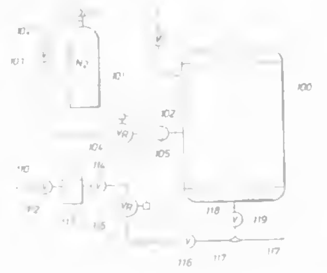
ABRASIVE FEED SYSTEM

Jerry P. Woodson, Houston, Tex., assignor to Whitemetal, Inc., Houston, Tex.

Filed Dec. 4, 1987, Ser. No. 128,589

Int. Cl.⁴ B65G *53/40*

U.S. Cl. 51—320 23 Claims



1. Liquid-propelled abrasive cleaning apparatus comprising:

nozzle means having a body with an interior propulsion chamber having a water inlet, an air and abrasive inlet and an outlet all communicating with said interior propulsion chamber through said housing;

pump and conduit means for furnishing water under high pressure to said nozzle means;

transport line means for conveying a mixture of compressed air and sodium bicarbonate particles to said air and abrasive inlet of said propulsion chamber;

means containing a supply of sodium bicarbonate particles to be delivered under pressure to said transport line means;

nitrogen gas supply means for supplying nitrogen under pressure to said containing means to provide a pressurized flow of sodium bicarbonate particles to said transport line means;

supply means independent of said nitrogen gas supply means for supplying pressurized air to said transport line means, and

regulator means for maintaining a positive pressure differential between the interior of said containing means pressurized by said nitrogen, and said transport line means pressurized by said supply of pressurized air.

4,878,321

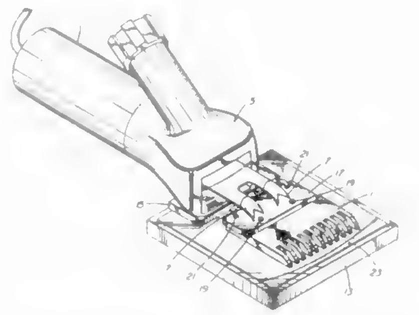
AUTOMATIC PORTABLE SHARPENING KIT FOR ELECTRIC CATTLE SHEARERS/CLIPPERS

Stanley A. Whitehead, P.O. Box 805, Kemptville, Ontario, Canada (K0G 1J0)

Filed Jul. 20, 1988, Ser. No. 221,664

Int. Cl.⁴ B24D *17/00*

U.S. Cl. 51—358 6 Claims



1. For use in a shearer/clipper comprised of oscillating means for moving a first removable blade in a wiping motion relative to an adjacent removable stationary blade for effecting a shearing action therebetween; a sharpening kit comprised of a flat block for connection to said shearer/clipper in place of said removable stationary blade, an abrasive surface being provided on said block, and means for connecting a selected one of either said first or stationary blades to said oscillating means whereby said oscillating means moves said selected blade in a wiping motion relative to and bearing down on said abrasive surface thereby sharpening said selected blade.

4,878,322

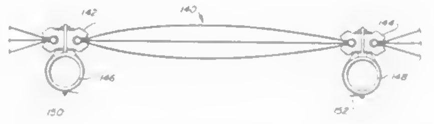
INSULATING PLASTIC FILM STRUCTURES AND METHOD

George Ikeda, San Francisco, and William B. Walker, Sunnyvale, both of Calif., assignors to Ikege, Inc., San Jose, Calif.

Continuation-in-part of Ser. No. 83,174, Aug. 10, 1987, abandoned. This application Aug. 5, 1988, Ser. No. 229,374

Int. Cl.⁴ E04B *1/345*

U.S. Cl. 52—2 5 Claims



1. A walled structure comprising a skeletal frame supporting a flattened plastic film tube means for retaining gas under positive pressure, the flattened tube means comprising an inner film tube surrounded by an outer film tube axially concentric therewith, the inner and outer tubes being flattened to form a four-wall plastic film structure with adjacent ends and opposed side edges, each inner tube open end forming an air-tight seal with an adjacent outer tube open end to form a tubular sealed envelope, a flexible film retainer line passing through the inner tube adjacent each opposed side edge thereof, the skeletal frame having side and top portions and having a plurality of flexible guide strips mounted in a parallel relationship thereon, each guide strip extending along at least a portion of the frame, each guide strip comprising integral track means positioned on opposite edges of the guide strip, a guide track means on a edge of one guide strip opposing a guide track means on an opposing edge of an adjacent guide track means, the guide track means constituting means for receiving and guiding a side edge of the four-wall plastic film structure drawn therethrough by the retainer line and retaining the retainer line and four-wall plastic film structure in place on the skeletal structure.

4,878,323

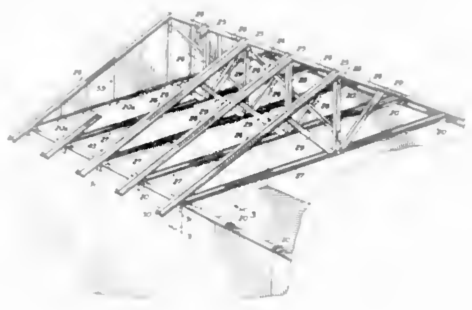
TRUSS SETTING SYSTEM

Thomas E. Nelson, 8025 Banyan Blvd., Orlando, Fla. 32819

Filed May 10, 1988, Ser. No. 192,228

Int. Cl.⁴ E04C *3/11*; E04B *7/06*

U.S. Cl. 52—92 19 Claims



1. A system for setting trusses in building construction, comprising:

a plurality of wall panels, each having an elongated top surface;

a series of truss locks located at longitudinally spaced intervals along each of said top surfaces;

a plurality of prefabricated truss units, each having an elongated chord;

said truss locks being formed with channels and being dimensioned and configured to capture opposite ends of said chords within respective opposing ones of said channels when said panels are erected in opposing upright positions to form opposite walls of a building structure and said units are raised up to straddle said walls, so that the capturing of said chords within said channels serves to space said units; and

snap fit means for locking said ends of said chords within said channels.

4,878,324

BUILDING BLOCKS FOR BUILDING SHIELDING WALLS AGAINST RADIOACTIVE RADIATION

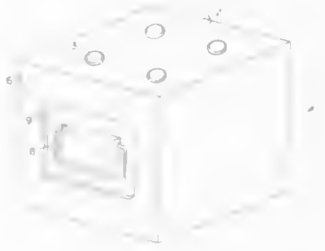
Heinz Rissel, Erlensee, Fed. Rep. of Germany, assignor to Rheinhold & Mahla GmbH, Fed. Rep. of Germany

Filed Apr. 7, 1988, Ser. No. 178,460

Claims priority, application Fed. Rep. of Germany, Aug. 19, 1987, 3727685

Int. Cl.⁴ E04C *1/10*

U.S. Cl. 52—125.2 7 Claims



1. Building stone, for use in constructing temporary walls for shielding against nuclear radiation, in a form of a compact cube, comprising:

a cube formed by steel plates and filled with concrete, the cube having a top surface and a bottom surface (2,4) provided with bulging formations in a form of one of projections (3) and depressions (5) which engage with each other between adjacent building blocks, whereby mutual positions of the building blocks are fixed; and,

swing-out handles (8) sunk in on two mutually opposite lateral surfaces (6,7) of said cube such that the lateral surfaces are flush with an outer contour of the cube in a swung-in position of said handles.

4,878,325

TWO PIECE ADJUSTABLE, REUSABLE METAL DOOR FRAME

James E. Van Tuyl, and Clifford A. Larson, both of 8380 Pearl Rd. #102, Strongsville, Ohio 44136

Continuation of Ser. No. 947,108, Feb. 25, 1987, abandoned. This application Aug. 2, 1988, Ser. No. 228,822

Int. Cl.⁴ E06B *1/04*

U.S. Cl. 52—217 9 Claims

1. An adjustable, variable width, reusable door frame for framing an untrimmed opening in a wall, said wall extending in a plane and separating a first region from a second region, comprising:

(a) a mounting bracket attached to said wall, said mounting bracket including a bracket leg extending generally parallel of said plane into said opening;

(b) a first member of generally L-shaped cross section, said first member including a first projection extending generally perpendicular of the plane of said wall, said first

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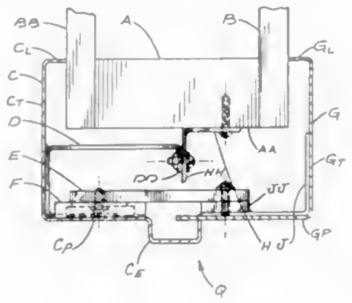
projection including a door stop extension; said first member further including a mounting leg extending generally parallel of said first projection to said bracket leg, said mounting leg disposed in spaced relation of said first projection and proximate said wall;

(c) first fastening means for fastening said bracket leg and said mounting leg;

(d) a second member of generally L-shaped cross section, said second member including a second projection proximate of said wall and in overlapping relation on said first projection, said second projection interfitting between said first projection and said mounting leg, said second projection variably positionable on said first projection enabling said frame to adjust to the width of said wall; and,

(e) a joining fastener extending through said first and second projections for fastening said first projection and said second projection.



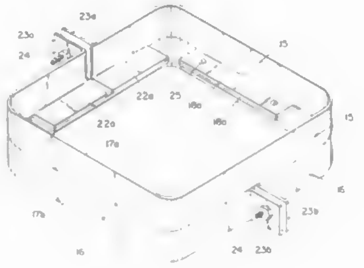
4,878,326
LOCKING AND SEATING MEANS FOR CHIMNEY LINERS

Thomas J. Sass, 5300 Pershing Ave., Parma, Ohio 44134

Filed Sep. 29, 1988, Ser. No. 250,559

Int. Cl.⁴ E04H *12/28*

U.S. Cl. 52—218 **2 Claims**



1. A band for joining adjacent stacked liners of a chimney, said band forming a collar about the outer wall of a first liner, said band having a plurality of inwardly extending flanges at substantially right angles to the collar and abutting portions of an end surface of said liner, said band having means interlocking said band with a second band of similar form disposed about a second liner positioned in stacked end to end relation to said first liner, at least one of said inwardly extending flanges acting as said interlocking means.

4,878,327
CORROSION PROTECTED TENSION MEMBER FOR USE IN PRESTRESSED CONCRETE AND METHOD OF INSTALLING SAME

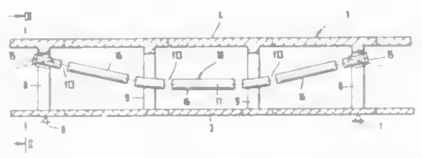
Oswald Nützel, Munich; Egbert Zimmermann, Oberaudorf, and Dieter Jungwirth, Munich, all of Fed. Rep. of Germany, assignors to Dyckerhoff & Widmann Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Mar. 14, 1988, Ser. No. 167,631

Claims priority, application Fed. Rep. of Germany, Mar. 13, 1987, 3708067; Oct. 15, 1987, 3734954; Jan. 20, 1988, 3801451

Int. Cl.⁴ E04C *3/10*

U.S. Cl. 52—230 **41 Claims**



1. Corrosion-protected tension member, such as a tendon for prestressed concrete with post-tensioning, comprising at least one axially extending steel tension element located within a tubular envelope, and with an anchoring device having an abutment member at each end thereof, said tension element has an anchor region where it is connected to said anchoring device and a free region extending between the anchor regions, said tubular envelope comprises a sheathing tube in the free region of said tension member connected in the anchor region to said anchoring device, said tubular envelope enclosing an open space around said tension element and said open space filled with a plastically deformable corrosion protection mass in the region directly adjacent to said anchoring device, wherein the improvement comprises that said tension member comprises a plurality of axially extending tension elements and each said tension element is located within a separate sheathing duct formed of a plastics material located within said sheathing tube and with a space located within said sheathing duct around said tension element and with said space within said sheathing duct filled with a plastically deformable corrosion-protection mass, said open space within said sheathing tube exteriorally of said sheathing ducts and extending between the anchor regions being filled with a hardenable material, said tubular envelope in the anchor regions comprises an anchoring tube located within an opening in the abutment member and extending from said abutment member toward the free region of the tension member and being filled with hardenable material, an anchoring pot located within said anchoring tube, said anchoring pot comprises annular side walls spaced inwardly from the anchoring tube wherein the hardenable material extends into the space therebetween and a base at its end more remote from said abutment member having a plurality of openings corresponding to the member of tension elements, and said anchoring pot being filled with a plastically deformable corrosion-resistant mass wherein the tension elements extend between and through the anchoring pots.

4,878,328
LOG-CORNERED SIDING FOR BUILDINGS

Ronald J. Berge, 11217 NE. Marx Pl., Portland, Oreg. 97220

Filed May 27, 1988, Ser. No. 199,867

Int. Cl.⁴ E04B *1/10*

U.S. Cl. 52—233 **1 Claim**

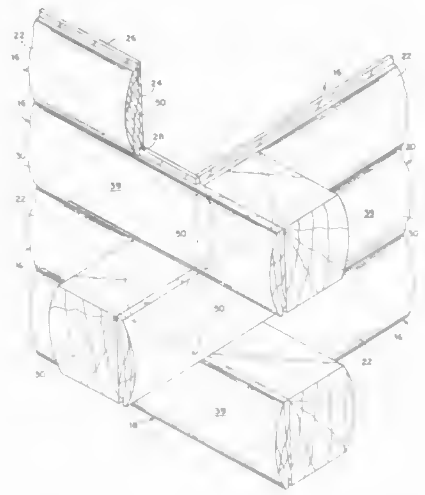
1. A modular wood siding providing the appearance of log construction comprising:

(a) a plurality of planks each having a convex outer surface and a planar inner surface;

(b) a plurality of log segments each having a convex outer surface and a planar inner surface, each of said planks having a first end portion which is integrally joined at the inner surface thereof to the inner surface of a respective one of said log segments, and a second end portion which is not joined to one of said log segments;

(c) each log segment having an inwardly directed concave end which conforms to the convex outer surface of said planks so as to define a corner having a log segment projecting therefrom when the second end portion of one of said planks is positioned normally against the first end portion of another one of said planks adjacent to the concave end of the log segment affixed thereto; and

(d) the second end portion of said planks include ends having straight vertical edges which abut the planar inner surface of the plank they are positioned normally against.



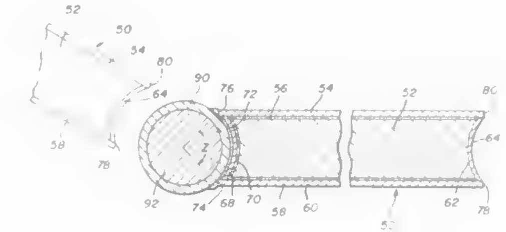
4,878,329
STRUCTURAL PANELS FOR WALLS, FLOORS AND ROOFS HAVING EXTERIOR METAL LAYERS AND AN INSULATING CONCRETE CORE

Rolf P. Pawski, Glen Ellyn, Ill., assignor to CBI Research Corporation, Plainfield, Ill.

Filed Jul. 15, 1988, Ser. No. 219,481

Int. Cl.⁴ E04B *1/32*

U.S. Cl. 52—245 **27 Claims**



1. A structure for use as a wall, floor or roof comprising:

a plurality of panel with a pair of spaced apart elongated edges;

each panel having front and back metal layers of substantially the same shape joined to an insulating concrete core of saubstantially uniform thickness;

the panels being arranged edge-to-edge and separated by adjoining elongated metal members provided between the edges of adjacent panels;

the front and back metal layers of each panel having adjoining edges; and

means joining the adjoining edges of the front and back metal layers to the adjoining elongated metal member.

4,878,330
CONSERVATORY CONSTRUCTION

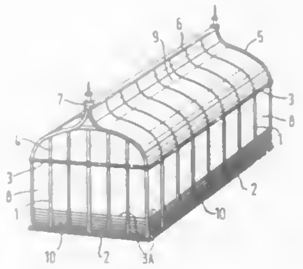
Francis Machin, South Flat, Ransome's Dock, Parkgate Road, London, SW11 4NP, England

Filed Jun. 17, 1987, Ser. No. 62,978

Claims priority, application United Kingdom, Jun. 17, 1986, 8614723

Int. Cl.⁴ E06B *3/54*

U.S. Cl. 52—475 **11 Claims**



1. A conservatory or like building comprising a plurality of transparent panels mounted in a lightweight metal frame, which frame comprises side and end wall sections each comprising a plurality of vertically extending mullions uniformly spaced apart in a horizontal direction to receive and retain in weatherproof manner edges of a plurality of standard transparent wall panels, horizontal sills supporting lower ends of said mullions, a roof section having a plurality of glazing bars uniformly spaced to receive and retain, in weatherproof manner, edges of a plurality of transparent roof panels, and a horizontally extending head assembly interposed continuously between the roof section and all the wall sections characterized in that said head assembly comprises a lower head member which connects upper ends of the mullions, an upper head member surmounting and directly secured to the lower head member and a kerb section member which is secured to the top of said upper head section and to lower ends of said roof glazing bars and is provided with a kerb portion which overhangs outer faces of said upper and lower head members, all the members of said head assembly being connected together by means of interfitting grooves and projections provided on said members and so arranged as to enable the members of said head assembly to be slid transversely into fixed interlocking engagement with one another whereby all structural loads are transmitted through interlocking junctions between members of said head assembly and not through separate fixing devices.

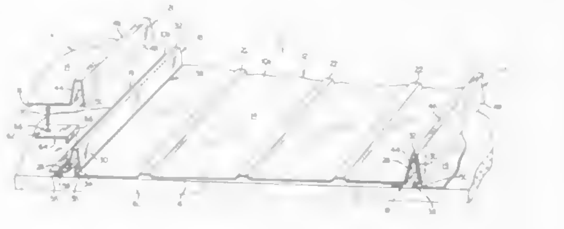
4,878,331
METAL ROOFING STRUCTURE

Duane F. Taylor, Salem, Oreg., assignor to Janet R. Taylor, Salem, Oreg.

Filed Jul. 28, 1987, Ser. No. 79,242

Int. Cl.⁴ E04D *3/362, 3/363*

U.S. Cl. 52—519 **9 Claims**



1. In a roofing panel interlockingly joinable with longitudinally adjacent panels of substantially identical type, each panel being a rigid sheet having an upper surface, a lower surface, first and second parallel longitudinal edges, a substantially

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planar primary panel portion between the edges, a large ridge which extends parallel to and between the first longitudinal edge and the primary panel portion and projects upwardly from the sheet, the ridge including an inclined ascending wall nearest the first longitudinal edge, a top wall substantially parallel to the primary panel portion, and an inclined descending wall, the large ridge defining a downwardly opening channel, and a small ridge which extends along and between the second longitudinal edge and the primary panel portion, projects upwardly from the sheet, and includes an inclined ascending wall nearest the second longitudinal edge, a top wall substantially parallel to the primary panel portion, and an inclined descending wall, the improvement wherein:

the small ridge is sized and configured to be received, without significant play and in a substantially self-aligning manner, within the channel defined by the large ridge of a longitudinally overlapping sheet;

the inclined ascending wall of the small ridge inclines at substantially the same angle as the inclined descending wall of the large ridge;

after installation, the top wall of the small ridge is sufficiently spaced below the top wall of an overlapping large ridge of a longitudinally adjacent panel to provide ventilation and to interrupt movement of water therebetween;

the upper surface of the inclined descending wall of the small ridge defines a horizontally opening channel which opens toward the primary panel portion;

the large ridge has a hook flange that extends, from the bottom of the ascending wall of the large ridge, generally horizontally into the channel defined by the large ridge;

the hook flange and horizontally opening channel are positioned, for the purpose of interlockingly joining a longitudinally adjacent panel, so that when the panels are joined the hook flange fits within the horizontally opening channel of the small ridge of the adjacent panel when the small ridge of the adjacent panel is received within the channel defined by the large ridge of the overlapping first panel and so that the hook flange is elevated above the upper surface of the adjacent panel;

the hook flange engages a portion of the wall which defines the horizontally opening channel of the adjacent panel while the inclined descending wall of the large ridge abuts the inclined ascending wall of the small ridge of the adjacent panel so that the joint between adjacent panels is formed only by interengagement of the panels, without separate fastening devices;

the hook flange and top walls are of sufficient lengths that, when the channel defined by the large ridge receives the small ridge of an adjacent longitudinally underlapping panel, the inclined ascending wall of the large ridge and the inclined descending wall of the small ridge are at least partially spaced apart so as to interrupt upward capillary movement of water and allow ventilation therebetween;

the inclined descending wall of the small ridge extends between the top wall of the small ridge and the horizontally opening channel in such a manner that the upper surface of that descending wall acts as a camming surface to guide the hook flange of an adjacent panel toward the horizontally opening channel during installation; and

an attachment panel portion extends horizontally outwardly between the bottom of the ascending wall of the small ridge and along and between that ascending wall and the second longitudinal edge, the attachment panel portion being the only means by which the panel is attached to underlying roof support boards, attachment being accomplished by fasteners which engage the attachment panel portion and thus are positioned to be concealed when the small ridge is received in the channel defined by the large ridge of an adjacent panel.

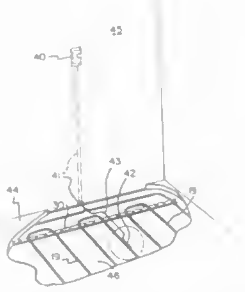
4,878,332
ELECTRIC RADIANT FLOOR HEATING SYSTEM

Lawrence V. Drake, Buffalo, Minn., assignor to Infloor, Inc., Hamel, Minn.

Filed Jan. 11, 1988, Ser. No. 142,755

Int. Cl.⁴ E04B *1/00*

U.S. Cl. 52—741 6 Claims



1. A method of installing an electric radiant floor heating system comprising the steps of: placing, on a subfloor, a flexible electric resistance heating cable; pouring upon the subfloor a sufficient quantity of a substantially self-leveling slurry comprises of water, calcium sulfate hemihydrate and sand to raise the electric heating cable from the floor so that it is substantially completely embedded in the slurry, and to form an underlayment layer having a thickness of about ¾ inches to about 1.5 inches; and permitting the slurry to harden while the slurry maintains said cable suspended therein, portions of the cable thereby being held essentially out of contact with the subflooring solely by the slurry and being spaced thereabove by at least about 1/16 inches.

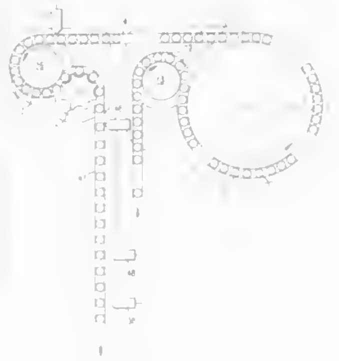
4,878,333
FILLER LINE MONITORING SYSTEM WITH AUTOSYNCHRONIZATION

John R. Sommerfield, Los Gatos, Calif., assignor to Peco Controls Corporation, Milpitas, Calif.

Filed Jan. 20, 1988, Ser. No. 146,170

Int. Cl.⁴ B65B *57/00*

U.S. Cl. 53—53 14 Claims



1. A monitoring and control system for a container filling line having an in-feed conveyor for conveying empty containers, a multiple-valve rotary fill station supplied by said in-feed conveyor for filling said containers, a multi-head closer station for closing the then-filled containers, a discharge station for discharging the filled and closed containers to a take-away conveyor, said take-away conveyor not being synchronized with said in-feed conveyor, the operation of said filler station and the operation of said closer station, said monitoring and control system comprising:

means at said discharge station for generating a first signal responsive to each container passing said discharge station;

a detection station provided at a location on said take-away conveyor spaced from said discharge station for detecting one or more characteristics of a container passing thereby;

means at said detection station for generating a second signal responsive to each container passing said detection station;

means for generating a first measure of the number of containers on said take-away conveyor between said discharge station and said detection station on the basis of said first signal and said second signal;

means for generating a second measure, independently of said means for generating said first measure, of the number of containers between said discharge station and said detection station;

means for comparing said first measure with said second measure; and

means for changing said first measure to substantially agree with said second measure if said comparison indicates said first and said second measures do not substantially agree.

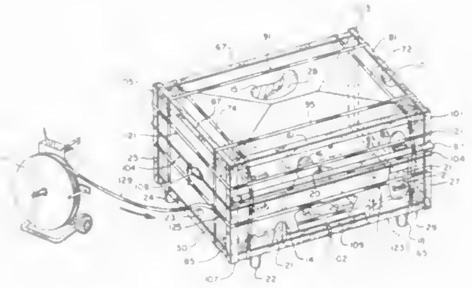
4,878,334
METHOD OF PACKAGING A DESK

Daniel M. Quinn, Chino, Calif., assignor to American Wholesale Packaging, Inc., Burbank, Calif.

Filed Dec. 2, 1988, Ser. No. 279,204

Int. Cl.⁴ B65B *67/00*

U.S. Cl. 53—399 8 Claims



1. A method for packaging a desk having top, bottom, front, back, left side, and right side, comprising the steps of:

covering the top, front, back, left side, and right side of the desk with covering means;

placing a first flexible securing means around the top, front, bottom, and rear of the desk;

placing a plurality of front and rear horizontal edge-protecting means under the securing means and onto the edges of the desk residing under the securing means;

strapping the plurality of front and rear horizontal edge-protecting means in place by strapping around the front and rear horizontal edge-protecting means and around the top, front, bottom, and rear of the desk;

placing a second flexible securing means around the left side, top, right side, and bottom of the desk;

placing a plurality of side horziontal edge-protecting means under the securing means and onto the edges of the desk residing under the securing means;

strapping the plurality of side horizontal edge-protecting means in place by strapping around the side horizontal edge-protecting means and around the left side, top, right side, and bottom of the desk;

placing a third flexible securing means around the left side, front, right side, and back of the desk;

placing a plurality of vertical edge-protecting means under the securing means and onto the edges of the desk residing under the securing means; and

strapping the plurality of vertical edge-protecting means in place by strapping around the vertical edge-protecting means and around the left side, front, right side, and back of the desk

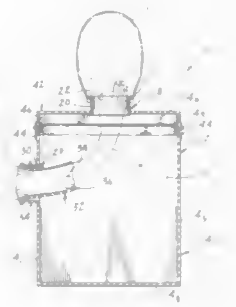
4,878,335
METHODS AND APPARATUS FOR INSERTING OBJECTS WITHIN BALLOONS

Donald J. Hardy, 6806 Chateaux, Coeur d'Alene, Id. 83814

Filed Aug. 31, 1988, Ser. No. 238,842

Int. Cl.⁴ B65B *43/36, 39/02, 39/06, 31/00*

U.S. Cl. 53—434 27 Claims



1. An apparatus for use in producing an inflated balloon having an object contained therein, the balloon having an expandable balloon mouth through which an inflated gas is injectable and the object is insertable, the apparatus comprising:

an enclosure defining an internal volume sufficiently large to receive a predetermined size object to be placed within a predetermined size balloon;

the enclosure including a balloon nozzle opening for sealingly receiving the balloon mouth, the nozzle opening having a size and shape sufficient to enable the object to pass from the enclosure through the nozzle opening and into the balloon;

injection means for filling and pressurizing the enclosure with an inflation gas to inflate the balloon about the balloon opening;

the enclosure including an access opening separate and spaced from the balloon opening, the access opening being sized for receiving a user's hand and arm therethrough; and

the access opening including access sealing means extending therefrom for, (a) fluid sealing the enclosure about the access opening when a balloon is received about the balloon opening and the enclosure filled with an inflation gas and sufficiently pressurized to inflate the balloon, and (b) enabling extension of a user's arm and hand through the access opening into the pressurized enclosure while maintaining inflation of the balloon, such that the user can handle the object to be placed in the balloon which is received within the enclosure and pass such object between the balloon opening walls and into the inflated balloon.

4,878,336
CONTROL DEVICE ON A PACKAGING MACHINE FOR SINGLE OR MULTIPLE PACKAGING OF HANGING ARTICLES OF CLOTHING

Donald Kohler, Melle, Fed. Rep. of Germany, assignor to Wilfred Pavel Maschinenbau, Fed. Rep. of Germany

Filed Mar. 14, 1988, Ser. No. 167,932

Claims priority, application Fed. Rep. of Germany, Nov. 5, 1987, 3737484

Int. Cl.⁴ B65B *57/20, 65/08, 9/13, 43/12*

U.S. Cl. 53—500 11 Claims

1. A control device on a packaging machine for jacketing

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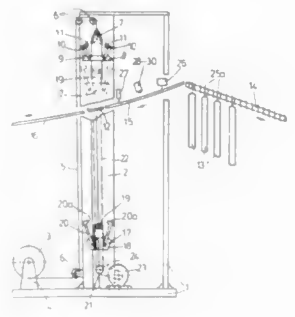
and welding in a tubular film of plastics material articles of clothing hanging on coat hangers in single and multiple packages including:

(a) a worm conveyor for conveying the hanging items of clothing to an output end thereof;
(b) downwardly inclined sliding track having an input end connected to the output end of the worm conveyor on which the hanging articles of clothing slide individually into the packaging machine;
(c) a suspension unit in the packaging machine to which the sliding track leads and into which one or more articles of clothing on their hangers slide;
(d) a clothing article unit separator associated with the sliding track at its input end;
(e) a clothing article stopping device associated with the sliding track at its output end;



(f) and a detector and controller arranged to control the unit separator so as to retain suspended articles of clothing from the worm conveyor and release them individually down the sliding track, and additionally control the clothing article stopper for retaining suspended articles of clothing on the sliding track outside the suspension unit and then release one or more articles of clothing simultaneously into the suspension unit as required;
(g) the detector acting either by virtue of magnetic detection of the last of a preset number of clothes hangers at the separator and stopper, or by means of colour scanning detection of the clothes hanger, or by means of one or more photocells arranged to detect and count the preset number of articles of clothing.

4,878,337
CONTINUOUS MOTION TRAY TYPE PACKAGING MACHINE

John L. Raudat, North Madison, and Lloyd D. Johnson, Portland, both of Conn., assignors to Standard-Knapp, Inc., Portland, Conn.

Division of Ser. No. 47,244, May 6, 1987, Pat. No. 4,793,117. This application Dec. 2, 1988, Ser. No. 278,817

Int. Cl.⁴ B65B *35/44, 21/00*

U.S. Cl. 53—534 5 Claims

1. A continuous motion tray forming and product loading machine comprising:

a plurality of side-by-side individual lane conveyors for advancing cylindrical articles in the downstream direction in end-to-end relationship and in side-by-side rows, each said lane conveyor including a single chain, and links of said chain carrying plates that support the articles in a horizontal plane,

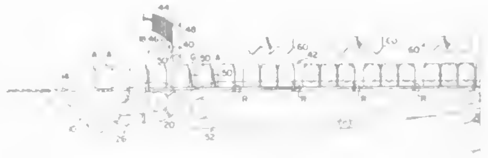
first article engaging pin means for slowing the articles to create a space between adjacent rows, said individual lane conveyors continuously moving beneath the spaced rows of articles and beyond the downstream end of said article engaging pin means,

second means for engaging groups of article rows so separated by said first article engaging pin means for handling groups downstream of said spaced rows and downstream of said first article engaging pin means,

said individual lane conveyors also moving the rows of articles continuously through and at least to the downstream end of said second means,

said first article engaging pin means comprising laterally spaced pin conveyor chains, a plurality of pin supporting flights supported by said laterally spaced chains, certain of said flights having cam follower rollers, said flights being pivotably moveable of said flights relative to said chain, camming means for said cam rollers, said camming means provided subadjacent to said horizontal plane, said camming means being movable longitudinally relative to the path of said pin conveyor chains, and adjustment means for moving said camming means to vary the angle at which said pins penetrate said horizontal plane to accommodate articles of different body diameter, and

means defining a load station and means for feeding tray blanks to the lower station from a position below said horizontal plane, and pocket defining conveyor means for moving the tray blanks and article groups out of the load station.



4,878,338
GRASS CUTTING MACHINE

Edward J. Aldred, Ipswich, and David J. Lloyd, Suffolk, both of United Kingdom, assignors to Ransomes, Sims & Jefferies PLC, United Kingdom

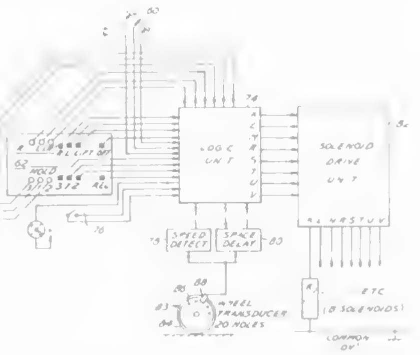
PCT No. PCT/GB87/00341, § 371 Date Jan. 19, 1988, § 102(e) Date Jan. 19, 1988, PCT Pub. No. WO87/06792, PCT Pub. Date Nov. 19, 1987

PCT Filed May 18, 1987, Ser. No. 143,850

Claims priority, application United Kingdom, May 16, 1986, 8611932

Int. Cl.⁴ A01D *34/44, 34/58*

U.S. Cl. 56—7 3 Claims



1. A grass cutting machine comprising:
(a) spaced forward and rearward cutting units;
(b) respective unit control means connected to receive actuating signals and adapted in response to said actuating signals for starting and stopping cutting operations of the cutting units;
(c) distance transducer means for providing a distance signal indicative of the distance of travel of the machine;
(d) operator actuable means for providing a common cutting start signal and a common cutting stop signal; and
(e) common control means connected to receive said distance signal, said common cutting start signal and said common cutting stop signal and adapted on receipt of said common cutting start signal or said common cutting stop signal to provide actuating signals to said respective unit controls means, said actuating signals being spaced by a time interval computed by the common control means in response to said distance signal and the known separation of the cutting units in the direction of motion of the machine such that, irrespective of the speed of travel of the machine, the forward and rearward cutting units start cutting operations at substantially the same point on the ground and stop cutting operations at substantially the same point on the ground.

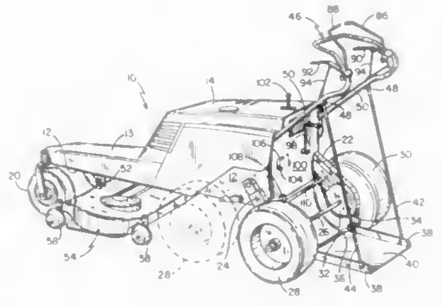
4,878,339
POWER LAWN MOWER WITH SELECTIVELY DEPLOYABLE RIDING PLATFORM

Gregory J. Marier, Brooklyn Park, Minn., and Tommy O. Moats, Frederic, Wis., assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Nov. 7, 1988, Ser. No. 268,344

Int. Cl.⁴ A01D *67/04;* **B62D** *51/02, 51/04*

U.S. Cl. 56—14.7 8 Claims



1. Power lawn mowing apparatus comprising in combination:
(a) frame means having front and rear ends;
(b) an internal combustion engine supported on said frame and having an output shaft;
(c) wheel means supporting said frame means at said front end;
(d) first and second arm members pivotally secured to said frame means along opposed side edges thereof;
(e) further wheel means suspended from said first and second arm members for allowing the axis of rotation of said further wheel means to be moved forward and rearward relative to said rear end of said frame;
(f) cutting means suspended from said frame at a location between said front and rear ends of said frame;
(g) means for selectively coupling said engine output shaft in driving relation to said cutting means;
(h) means for selectively coupling said engine output shaft in driving relation to said further wheel means; and
(i) riding platform means suspended from said frame proximate said rear end and movable between a first location which is non-interfering with the feet of an operator walking behind said rear end of said frame and a second location extending rearward and generally horizontally from said rear end of said frame allowing the operator to stand thereon.

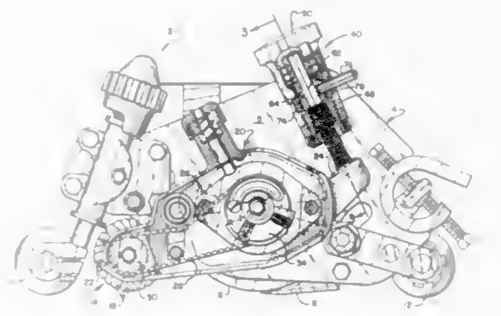
4,878,340
TURF GROOMING REEL

Michael G. Roy, Mound; Helmut J. Ullrich, Eden Prairie, both of Minn.; John M. Beattle, Greeley, and Jimmie D. Sinden, Evans, both of Colo., assignors to The Toro Company, Minneapolis, Minn.

Filed Jan. 29, 1988, Ser. No. 149,772

Int. Cl.⁴ A01D *34/62*

U.S. Cl. 56—249 12 Claims



1. An improved mower of the type having a frame supported for movement over the ground; a cutting unit carried on the frame comprising a cutting reel rotatable about a substantially horizontal axis and a bedknife cooperable with the cutting reel to sever ground growing vegetation; a rotatable grooming reel carried on the frame having a plurality of laterally spaced knife blades extending across at least a portion of the grooming reel; wherein the improvement relates to the grooming reel and comprises:
(a) at least one bellcrank support member pivotally carried on the frame having forward and rearward arms, wherein the grooming reel is rotatably journalled on the forward arm of the support member; and
(b) at least one adjustment unit for changing the vertical position of the grooming reel relative to the frame, wherein the adjustment unit comprises:
  (i) an elongated rod movably supported on the frame, wherein the rod is attached to the rearward arm of the support member and extends upwardly away from the rearward arm such that movement of the rod pivots the support member on the frame to change the vertical position of the grooming reel relative to the frame;
  (ii) a first selectively operable and rotatable means carried on the rod for moving the rod to effect a first adjustment in the vertical position of the grooming reel relative to the frame when the grooming reel is in an operating position closely adjacent the ground;
  (iii) a second selectively operable means for raising and lowering the grooming reel between its operating position and an upper position where the grooming reel is spaced above the ground without changing the first adjustment of the grooming reel in its operating position; and
  (iv) means for biasing the grooming reel upwardly from its operating position towards its upper position to help raise the grooming reel, wherein the biasing means comprises a compression spring surrounding the rod which extends between the rearward arm and a fixed abutment on the frame to be compressed when the grooming reel is in its operating position.

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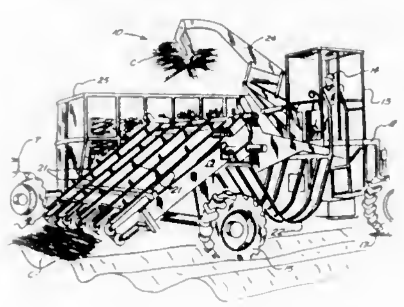
4,878,341
BOOM AND GRAPPLE CONFIGURATION FOR LOADING WHOLESTALK CUT SUGAR CANE AND METHOD OF OPERATION

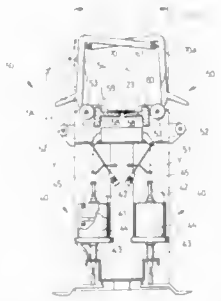
Jacob Giardina, and Kenneth Rodrigue, both of Thibodaux, La., assignors to Cameco Industries, Inc., Thibodaux, La.
Filed Mar. 21, 1989, Ser. No. 326,535
Int. Cl.⁴ A01D *91/04*
U.S. Cl. 56—364 11 Claims



1. A wholestalk sugar cane loader apparatus for picking up and accumulating windrowed wholestalks from a cane field ground surface having heap rows and furrows comprising:
- (a) a wheeled movable carriage adapted to travel along a path defined by the carriage longitudinal center axis, generally parallel to the longitudinally extending elongated heap rows with the carriage wheels trailing in parallel furrows;
- (b) means, positioned adjacent the carriage for movement therewith during gathering of windrowed wholestalk cane, for accumulating wholestalk cut cane from a resting position on the cane field ground surface into a heap;
- (c) an elongated boom pivotally mounted at a rotary connection to the carriage and extending away from the rotary connection along a radial line defining a boom longitudinal axis;
- (d) a pair of opposed jaws, attached to a distal end portion of the boom opposite the rotary connection, the jaws being movable with respect to each other along a jaw travel path, the jaw travel path and the boom longitudinal axis being fixed during operation to intersect each other defining an acute angle therebetween.

4,878,342
TWO-FOR-ONE TWISTING MACHINE

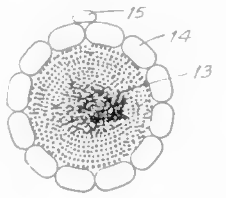
Tsukasa Kawarabashi, Kyoto, Japan, assignor to Murata Kikai Kabushiki Kaisha, Kyoto, Japan
Filed Jul. 12, 1988, Ser. No. 217,837
Claims priority, application Japan, Jul. 21, 1987, 62-181931
Int. Cl.⁴ D01H *1/10, 9/02, 9/18*
U.S. Cl. 57—58.49 10 Claims



1. A two-for-one twisting machine having a plurality of twister units, each twister unit being associated with a respective friction roller and having a front side and a back side, the twister units being arranged in a back-to-back relationship in first and second rows, the two-for-one twisting machine comprising:
- first and second support extending above the friction rollers associated with the first and second rows of said twister units, respectively, wherein the first support shaft is arranged adjacent the front side of the twister unit of the first row and is arranged toward the back side of the twister units of the second row, and wherein the second support shaft is arranged adjacent the front side of the twister units of the second row and is arranged toward the back side of the twister units of the first row, and
- a plurality of individual cradle arms for twister units of both said first and second rows, each cradle arm associated with a respective twister unit and having a base end portion, each cradle arm being supported for pivotal motion at the base end portion thereof on the support shaft arranged toward the back side of the twister unit with which the cradle arm is associated.

4,878,343
REINFORCING ROPE MADE OF AT LEAST TWO DIFFERENT MATERIALS

Wolfgang Weidenbaupt, Erkelenz; Gunther Wepner, Waldfeucht-Neubaaren; Peter Dismon, Heinsberg-Prose, all of Fed. Rep. of Germany, and Mattbeus G. Remijn, Velp, Netherlands, assignors to AKZO BM Arnhem, The Netherlands, Arnhem, Netherlands
Division of Ser. No. 938,056, Nov. 17, 1986, Pat. No. 4,807,680, which is a continuation-in-part of Ser. No. 610,875, May 16, 1984, abandoned. This application Apr. 27, 1988, Ser. No. 186,557
Claims priority, application Fed. Rep. of Germany, May 16, 1983, 3317708; Mar. 23, 1984, 3410703
Int. Cl.⁴ D02G *3/48, 3/12, 3/36;* **D07B** *1/06*
U.S. Cl. 57—222 19 Claims

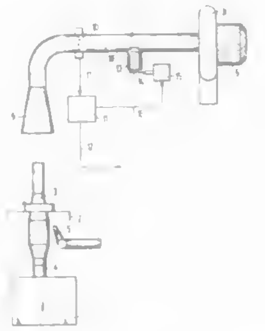


1. A reinforcing rope comprising at least two components, a first component consisting of steel wires and the second component consisting of filaments of aromatic polyamides, the filaments forming a core around which the steel wires are coiled, each steel wire having a substantially rectangular cross-section defining opposite broad and narrow sides and having rounded corners, and the respective coiled steel wires being twisted along their longitudinal axes such that a broad side of each wire engages in a circumferential direction a corresponding peripheral portion of the core.

4,878,344
METHOD AND DEVICE FOR AUOTMATICALLY SPLICING YARN ON A RING SPINNING MACHINE

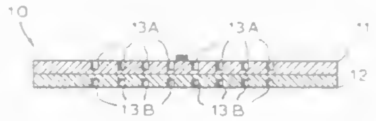
Wolfgang Igel, Ebersbach/Fils, Fed. Rep. of Germany, assignor to Zinser Textilmaschinen GmbH, Fed. Rep. of Germany
Filed Aug. 10, 1988, Ser. No. 230,801
Claims priority, application Fed. Rep. of Germany, Aug. 11, 1987, 3726720
Int. Cl.⁴ D01H *13/14;* **B65H** *54/88, 63/032*
U.S. Cl. 57—261 5 Claims

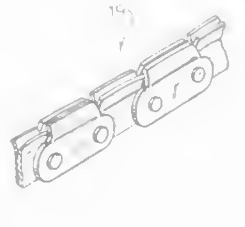
1. In a method for automatically splicing yarn on a ring spinning machine wherein a broken end of yarn to be spliced is drawn by suction into a tube in position for splicing and the presence of the yarn end in the tube in position for splicing is sensed to initiate a splicing operation, the improvement comprising reducing the amount of suction applied to the yarn end in the tube in response to said sensing of the yarn end in position for splicing to a reduced level of suction sufficient to maintain the yarn end in a non-damaging manner in the tube in position for splicing.



4,878,345
CHAIN ASSEMBLY AND METHOD FOR MAKING THE SAME

Stephen K. Bechtold, 306 Ocean Ave., Northport, N.Y. 11768
Filed Sep. 15, 1987, Ser. No. 96,947
Int. Cl.⁴ F16G *13/06*
U.S. Cl. 59—15 13 Claims

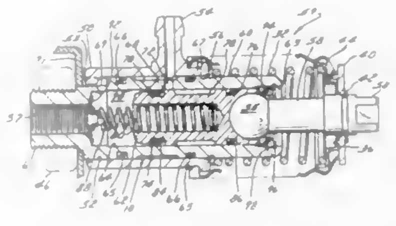




1. A method of making a chain assembly comprising:
- (a) forming a plurality of links having a preselected shape and placement of apertures therein, said plurality of links being formed using a fine blanking process, during which said apertures are formed into said link, and bends are introduced into said preselected shape of each said link;
- (b) forming a plurality of wire blanks with an outer diameter to permit insertion into the apertures of said links;
- (c) retaining each of said links in fixed position and inserting one of said wire blanks into each aperture in said link;
- (d) forming on one end of each said wire blank, a head of larger diameter than said aperture in which said blank is inserted;
- (e) placing a mating link into engagement with each said link containing wire blanks, and the and of each said blank being inserted in an aperture in said mating link in a manner to form a chain assembly; and
- (f) forming a head on the other end of each said blank to complete interlocking of said links and said blanks in forming said chain assembly.

4,878,346
TAB-ALIGNED REPLACEABLE CARTRIDGE FOR MASTER CYLINDER

Glenn S. Metzelfeld, Brookfield; James A. V. Buckely, Whitefish Bay, and Donald D. Brown, Thiensville, all of Wis., assignors to Hayes Industrial Brake, Inc., Mequon, Wis.
Filed Jul. 24, 1987, Ser. No. 77,615
Int. Cl.⁴ B60T *11/16;* **F16J** *10/04*
U.S. Cl. 60—588 8 Claims



1. A master cylinder comprising a housing having a longitudinal bore,
- an oil inlet connected to said bore,
- an outlet opening at one end of said bore, and, a tab in said bore,
- an independent cartridge assembly removably mounted in said longitudinal bore and including a cylinder having a slot in a position to engage said tab to align said cylinder in said longitudinal bore, an axial bore, an oil outlet passage at one end of said axial bore, means on said one end of said cylinder for mounting said cylinder on a fixed stop, annular seal means around the outside of said cylinder to form a seal with said longitudinal bore on each side of said oil inlet,
- a pair of ports in said cylinder located between said annular seal means connecting said longitudinal bore to said axial bore in said cylinder,
- a piston positioned in said axial bore in a spaced relation to said oil outlet passage to define a pressure chamber in said axial bore,
- seal means on the outside of said piston positioned to form a seal on each side of one of said ports to form a compensating reservoir around said piston, one of said seals closing the other of said ports on operation of said piston, and means mounted on said housing for actuating said piston to discharge fluid in said axial bore through said outlet passage, said actuating means including means for biasing said housing into engagement with said fixed stop, the assembly being so constructed and arranged that said cylinder, annular seal means, piston and piston seal means can be removed from the housing as an assembled unit.

4,878,347
DEVICE FOR CONTROLLING TURBOCHARGER WITH ELECTRIC ROTARY MACHINE

Hideo Kawamura, Samukawa, Japan, assignor to Isuzu Motors Limited, Tokyo, Japan
Filed Jul. 29, 1988, Ser. No. 225,771
Claims priority, application Japan, Jul. 30, 1987, 62-191342
Int. Cl.⁴ F02B *37/14*
U.S. Cl. 60—608 4 Claims

1. A device for controlling a turbocharger with an electric rotary machine, comprising:
- a turbine mounted on an engine on a motor vehicle and drivable by exhaust gases emitted from the engine;

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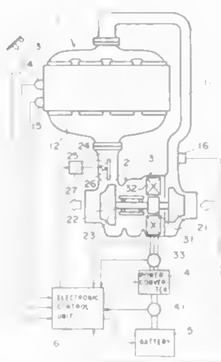
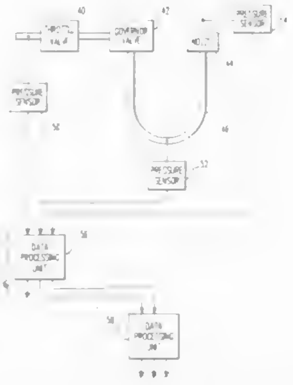
a rotatable shaft coupled to said turbine;
a compressor coupled to said rotatable shaft of delivering air under pressure to said engine;
an electric rotary machine coupled to said rotatable shaft;
an engine speed sensor for detecting the rotational speed of the engine;
an engine load sensor for detecting a load on the engine;
an accelerator pedal movement sensor for detecting the amount of depression of an accelerator pedal which controls operation of said engine;
a boost pressure sensor for detecting the pressure of air supplied to said engine;
a turbine speed sensor for detecting the rotational speed of said turbine;



a battery mounted on said motor vehicle;
means for determining whether said electric rotary machine is in a generator mode or a motor mode based on signals from said engine speed sensor, said engine load sensor, and said accelerator pedal movement sensor;
means for calculating electric power to be supplied to said electric rotary machine based on signals from said engine load sensor, said accelerator pedal movement sensor, and said turbine speed sensor when said electric rotary machine is in the motor mode; and
means for supplying the electric power calculated by said calculating means from said battery to said electric rotary machine.

4,878,348
TURBINE GOVERNOR VALVE MONITOR

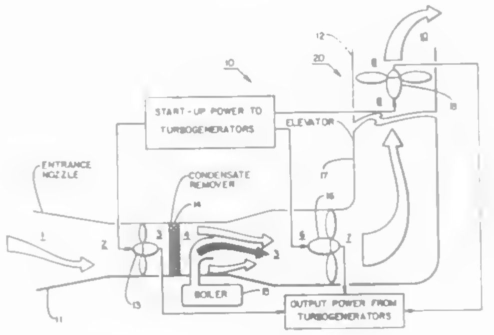
Daniel E. Fridsma, Winter Springs, Fla., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Sep. 28, 1988, Ser. No. 250,198
Int. Cl.⁴ F01K *13/02*
U.S. Cl. 60—660 **8 Claims**



1. A method of continually monitoring the operating state of a set of governor valves in a steam supply system for the first stage of a high pressure turbine during operation of the turbine, the system including means including a throttle valve for supplying steam at a defined pressure to the governor valves and a plurality of nozzles each connected to deliver steam from a respective governor valve to a respective turbine inlet region, comprising: monitoring the pressure at the outlet of each governor valve; monitoring the pressure at the inlet to the throttle valve and at the turbine first stage; and comparing the monitored outlet pressure of each governor valve with the monitored pressure at the throttle valve inlet and at the turbine first stage in order to provide an indication of the operating state of each governor valve.

4,878,349
ATMOSPHERIC LATENT HEAT ENGINE

Julius Czaja, 229 Village Blvd. S., Baldwinsville, N.Y. 13027
Filed Dec. 13, 1988, Ser. No. 283,567
Int. Cl.⁴ F02C *1/04*
U.S. Cl. 60—674 **6 Claims**

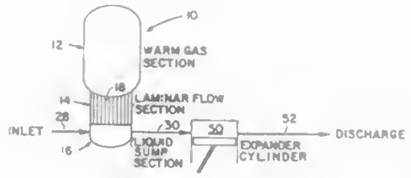


1. An atmospheric latent heat engine comprising:
a. a passageway extending between a lower and a higher elevation, said passageway having a converging nozzle entrance at said lower elevation and an exhaust exit at said higher elevation:
b. a turbo generator arranged within said passageway, said turbo generator being powered to cause a mixture of air and water vapor to flow within said passageway from said entrance to said exit, and said turbo generator being arranged to be driven by output energy from said mixture of air and water vapor flowing in said passageway;
c. a condensate remover arranged downstream of said input nozzle for removing condensate from atmospheric air expanded in said nozzle; and
d. a boiler arranged downstream of said condenstate remover for mixing warm water vapor with said air and water vapor mixture flowing in said passageway so that said mixture of air and said warm water vapor rises to said higher elevation and exhausts through said exit.

4,878,350
PULSATION DAMPENING DEVICE FOR SUPER CRITICAL FLUID EXPANSION ENGINE, HYDRAULIC ENGINE OR PUMP IN CRYOGENIC SERVICE

Leif A. Ness, Macungie, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.
Filed Mar. 8, 1989, Ser. No. 320,346
Int. Cl.⁴ F17C *7/02*
U.S. Cl. 62—50.1 **2 Claims**

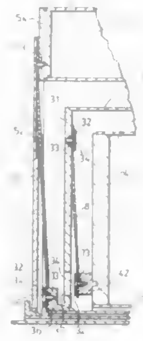
1. A surge bottle or pressure pulsation dampening device for cryogenic services which comprises:
(a) a liquid sump section, wherein the liquid sump section is comprised of an enclosed area containing a volume of an incompressible fluid;
(b) a warm gas volume section, wherein the warm gas volume section is comprised of an enclosed area containing a volume of a compressible warm gas; and
(c) a laminar flow section which connects and allows for communication between the liquid sump section and the warm gas volume section, wherein the laminar flow section is comprised of a number of small bore, thin walled tubes which contain the incompressible fluid in the end connected to the liquid sump section and the compressible warm gas in the end connected to the warm gas volume section wherein the bore of the tubes are such that any movement of the either the compressible warm gas or the incompressible fluid would be laminar flow;



whereby, during operation, the incompressible fluid and the warm compressible gas within the small bore, thin walled tubes move or oscillate a short distance in each of the tubes with minimal intermixing of the incompressible fluid and the warm compressible gas thereby minimizing heat leak from the warm gas volume section to the liquid sump section into the liquid in the sump.

4,878,351
CRYOSTAT

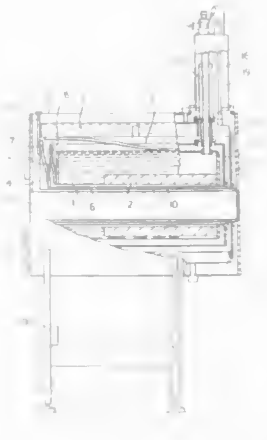
Markus Weber; Andreas Ryser, both of Dubendorf, and Rene Jeker, Hombrechtikon, all of Switzerland, assignors to Spectrospin AG, Switzerland
Filed Jul. 20, 1988, Ser. No. 222,042
Claims priority, application Fed. Rep. of Germany, Jul. 24, 1987, 3724569
Int. Cl.⁴ F25B *19/00*
U.S. Cl. 62—51.1 **15 Claims**



1. Cryostat, in particular for superconductive magnets, comprising several components nested in each other, one of the said components forming an outer shell and at least another one constituting a vessel arranged inside the said shell and intended for receiving a refrigerant, and comprising further tension members for interconnecting the said components, each of the said tension members serving to suspend an inner component on the next outer neighboring component, all said tension members consisting of a fiber glass reinforced plastic material and being provided on their ends with lugs which are passed by bolts for fixing the tension members on a respective component, said tension members (7,8) being formed as strip-like unitary elements from a homogeneous plastic sheet material which is reinforced by glass fiber weave means for providing bidirectional reinforcement of said homogeneous plastic sheet material, said strip-like elements comprising an elongated central portion (21) with parallel edges, followed on both ends by enlarged areas (22) having the lugs (25) which are passed by the bolts.

4,878,352
CRYOSTAT AND ASSEMBLY METHOD THEREFOR

Markus Weber; Andreas Ryser, both of Dübendorf, and René Jeker, Hombrechtikon, all of Switzerland, assignors to Spectrospin AG, Zurich, Switzerland
Filed Jul. 20, 1988, Ser. No. 221,929
Claims priority, application Fed. Rep. of Germany, Jul. 24, 1987, 3724562
Int. Cl.⁴ F25B *19/00*
U.S. Cl. 62—51.1 **9 Claims**



1. A cryostat suitable for superconductive magnets, said cryostat comprising:
a plurality of tubular components nested in each other said plurality of tubular components including at least one inner tank means and one outer tank means for receiving a refrigerant, a radiation shield disposed between said inner and outer tank means and jacket means for enclosing the outer tank means;
a first pipe interconnected with said inner tank means proximate one inner end thereof and projecting outwardly and through adjoining outer tubular components;
a second pipe interconnected with said outer tank means proximate one inner end thereof and projecting outwardly and through adjoining outer tubular components.,
tension member means for interconnecting said plurality of tubular components;
detachable cover means for sealing said radiation shield and said outer tank at ends thereof proximate the position of the first and second pipes;
means defining a recess in both said radiation shield and said outer tank means for enabling the first pipe to be interconnected with said inner tank when the cover means are detached, said second pipe being disposed adjacent said first pipe and in communication with the recess in said outer tank; and
tower means, joined to the jacket means, for enclosing the first and second pipes;
said jacket means being subdivided into a longer and a shorter section along a plane neighboring the first and the second pipe and on a side thereof opposite a side of the first and second pipes proximate said cover means, said shorter section having means defining an opening in a circumferential surface of the shorter section for enabling the first and second pipes to pass therethrough, said opening being adapted for joining with said tower means.

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4,878,353

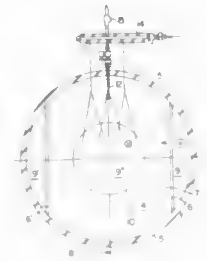
CHAMBER AND PROCESS FOR THERMAL TREATMENT COMPRISING A COOLING PHASE

Claude Gibot, Malakoff; Jean-Pierre Peyremorte, Montelimar, and Richard Sojka, Bonlieu, all of France, assignors to Carboxyque Francaise, Puteaux and Societe Nouvelle Des Etablissements J. Lagarde, Montelimar, both of, France

Filed Sep. 9, 1988, Ser. No. 244,516

Int. Cl.^{4} F25D *17/02*

U.S. Cl. 62—52.1 16 Claims



1. A treatment chamber for cooling a charge of solid material, comprising a heat insulated cylindrical casing adapted to resist pressure, said casing having a substantially horizontal axis and first and second opposite end closures, the chamber defining a first space for receiving said charge intermediate said end closures, a transverse partition defining a second space adjacent said first end closure, said partition having an axial opening therethrough, a fan disposed in said second space for drawing gas from said first space through said opening into said second space, longitudinally extending duct means communicating between said second space and the interior of said casing adjacent said second end closure, nozzle means adjacent said partition for spraying a cryogenic fluid toward said opening, and exhaust means for exhausting from the interior of said chamber gas generated from said cryogenic fluid cooling the charge.

4,878,354

CHILLING ASSEMBLY LINE WORKPIECES BY CRYOGEN COUNTERFLOW

Thornton Stearns, Winchester, and Russell W. Blanton, Acton, both of Mass., assignors to Vacuum Barrier Corporation, Woburn, Mass.

Filed Jul. 20, 1988, Ser. No. 221,900

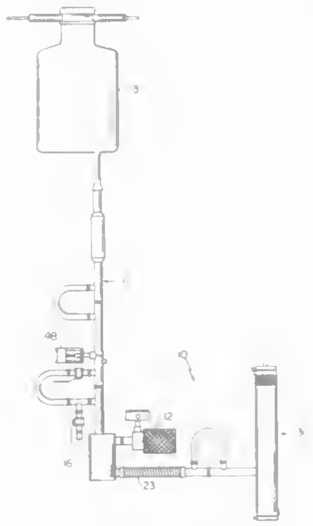
Int. Cl.^{4} F25D *13/06*

U.S. Cl. 62—63 23 Claims

1. Apparatus for chilling workpieces with cryogenic fluid and for delivering chilled workpieces to an assembly line station, said apparatus comprising:

- (a) a reservoir of liquid cryogen;
- (b) a chiller comprising a passage conveying the workpieces downwardly from a location at the top of the passage to the assembly line station, the chiller comprising means for restricting the downward flow of cryogenic fluid down the passage while simultaneously allowing passage of a workpiece therethrough, the passage above the means for restricting being sized and configured to allow sufficient clearance around workpieces to permit an upward flow of cryogenic fluid;
- (c) a conduit to feed cryogen fluid from the reservoir to the chiller, cryogen fluid being fed to the passage at a location between the top of the passage and the means for restricting;

(whereby cryogenic fluid which is denser than the surrounding air flows from the reservoir to the passage, and under pressure, flows up the passage counter to movement of workpieces down the passage.



4,878,355

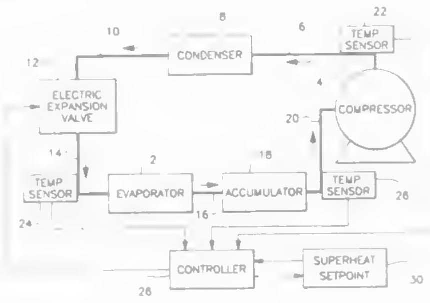
METHOD AND APPARATUS FOR IMPROVING COOLING OF A COMPRESSOR ELEMENT IN AN AIR CONDITIONING SYSTEM

Thomas J. Beckey, Edina, and Lorne W. Nelson, Bloomington, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Feb. 27, 1989, Ser. No. 315,986

Int. Cl.^{4} F25B *41/00*

U.S. Cl. 62—115 12 Claims



1. A method for improving the cooling of a compressor element used in an air conditioning system and having a refrigerant compressor and associated drive motor sealed in a fluid-tight shell which includes the steps of detecting an excessive increase in the temperature of the compressor element, intermittently operating the system during an occurrence of the excessive temperature with a superheat of a refrigerant in the system below zero superheat degrees to concurrently allow liquid refrigerant to enter the compressor element shell to enhance cooling of the compressor element by the latent heat of vaporization of the liquid refrigerant and terminating the intermittent operation and the admittance of the liquid refrigerant into the compressor element upon the detection of a desired temperature of operation of the compressor element.

4,878,356

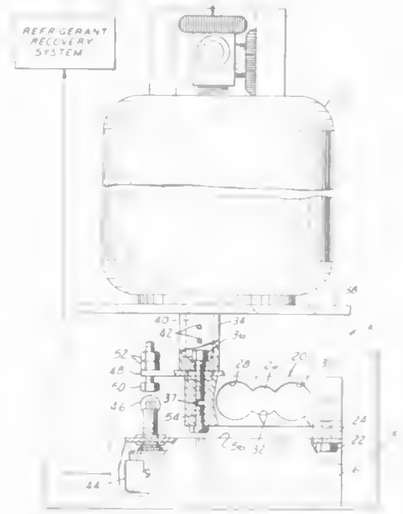
STORAGE TANK SCALE FOR A REFRIGERANT RECOVERY SYSTEM

Robert J. Punches, Hamler; Gary P. Murray, Montpelier, and Roger D. Shirley, West Unity, all of Ohio, assignors to Kent-Moore Corporation, Warren, Mich.

Filed Oct. 28, 1988, Ser. No. 263,887

Int. Cl.^{4} F25B *45/00*

U.S. Cl. 62—149 6 Claims



1. A refrigerant recovery system that includes a refrigerant storage container, means for withdrawing refrigerant from a refrigeration system and feeding such refrigerant to said container for storage, a scale supporting said container for supplying an electrical signal to indicate impending overfill of said container, and means for directing said electrical signal to said refrigerant-withdrawing means to terminate operation of said refrigerant-withdrawing means when said scale indicates impending overfill of said container; characterized in that said scale comprises:

- a support base, a rigid beam horizontally cantilevered from said base, means carried by said beam at an end thereof remote from said base and adapted to support said container such that weight of said container and of refrigerant contained therein deflects said beam end vertically downwardly, an electrical switch carried by said base beneath said base-remote end of said beam and having a switch actuator extending upwardly toward said base-remote end of said beam, means carried by said beam spaced from said actuator in the absence of deflection of said beam for engaging said switch actuator upon a set amount of deflection of said base-remote end of said beam toward said switch actuator, and means on said beam spaced from said support base in the absence of deflection of said beam forming a stop for abutting engagement between said beam and said base to limit deflection of said beam toward said switch actuator and thereby protect said switch and actuator from damage due to excessive weight on said base-remote end of said beam.

4,878,357

AIR-CONDITIONING APPARATUS

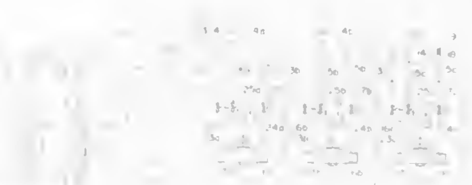
Kunie Sekigami, Ota; Kouji Nagae, and Yoji Sasaki, both of Oizumi, all of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Dec. 21, 1988, Ser. No. 287,086

Claims priority, application Japan, Dec. 21, 1987, 62-324493; Mar. 29, 1988, 63-75733; Sep. 20, 1988, 63-235806

Int. Cl.^{4} F25B *13/00*

U.S. Cl. 62—160 4 Claims



1. An air conditioning apparatus comprising: an outdoor side unit having a compressor, and an outdoor heat exchanger placed in contact with outside air or water, a plurality of room units having a indoor heat exchanger placed in contact with indoor air for selectively providing heating or cooling, wherein a high-pressure gas pipe, connected at one end thereof to said compressor, has high-side branch pipes, low-pressure gas pipe being connected at one end thereof to said compressor and having low-side branch pipes, at least one said high-side branch pipes and at least one of said low-side branch pipes being connected to one end of said outdoor heat exchanger via an outside valve for changing refrigerant flow, another portion of said high-side branch pipes having auxiliary high-side pipes, another portion of said low-side branch pipes having auxiliary low-side pipes, said auxiliary high-side pipes and said auxiliary low-side pipes being connected to one end of said indoor heat exchangers via an inside valve for changing refrigerant flow, a liquid pipe being connected to the other end of said outdoor heat exchanger and having liquid branch pipes, said liquid branch pipes connected to the other ends of said indoor heat exchangers via expansion devices, and wherein said other portion of said high-side branch pipe, at least a part of each of said auxiliary high-side pipes, said other portion of said low-side branch pipe, at least a part of each of said auxiliary low-side pipes, a part of said liquid pipe and at least a part of each of said liquid branch pipes are disposed between said outdoor side unit and said room units.

4,878,358

DEMISTING CONTROL SYSTEM OF AIR CONDITIONER FOR AUTOMOTIVE VEHICLES

Kazuo Fujii, Konan, Japan, assignor to Diesel Kiki Co., Ltd., Tokyo, Japan

Filed Jun. 29, 1988, Ser. No. 213,165

Claims priority, application Japan, Dec. 1, 1987, 62-305375

Int. Cl.^{4} F25B *1/00*

U.S. Cl. 62—227 6 Claims

1. A demisting control system of an air conditioner for an automotive vehicle, said air conditioner including an evaporator, and a variable capacity compressor capable of being controlled in capacity by an external signal, said demisting control system comprising:

- detecting means for detecting an actual cooling degree of said evaporator;
- setting means for setting at least two desired cooling degrees of said evaporator;
- comparing means for comparing the actual cooling degree detected by said detecting means with each of said at least two desired cooling degrees set by said setting means, to output comparison results;

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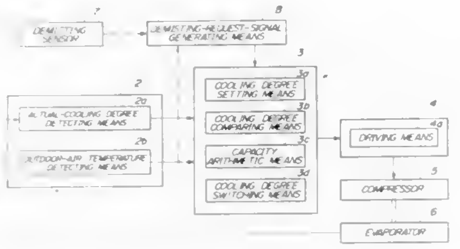
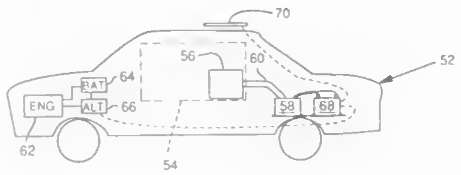
determining means for determining a value of capacity to which said compressor is to be controlled, on the basis of the comparison results from said comparing means;
capacity switching means for selecting one by one said at least two desired cooling degrees in predetermined sequence and supplying each of the selected cooling degrees to said comparing means for a predetermined time period exclusively provided for the each selected cooling degree; and
driving means for driving said compressor by said external signal so that the capacity thereof is brought to said value of capacity determined by said determined means.


DEMISTING SENSOR
DEMISTING-REQUEST-SIGNAL GENERATING MEANS
7
8
3
2
COOLING DEGREE SETTING MEANS
COOLING DEGREE COMPARING MEANS
ACTUAL-COOLING DEGREE DETECTING MEANS
OUTDOOR-AIR TEMPERATURE DETECTING MEANS
CAPACITY ARITHMETIC MEANS
3d
COOLING DEGREE SWITCHING MEANS
DRIVING MEANS
5
COMPRESSOR
6
EVAPORATOR

4,878,359
TRAVEL ACCESSORY

Gerald D. Mandell, 1111 Strawberry La., Ashland, Oreg. 97520
Filed Oct. 5, 1988, Ser. No. 254,372
Int. Cl.⁴ B60H *1/32*
U.S. Cl. 62—239 13 Claims

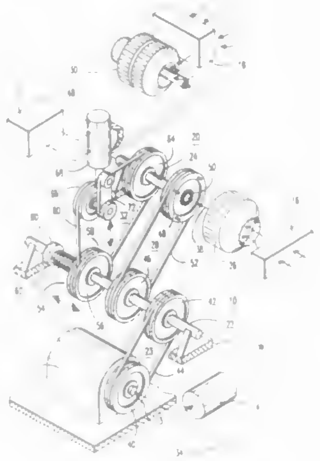


7. An apparatus for travelling with a pet, comprising:
a vehicle, said vehicle including a passenger compartment, an engine, a first battery for starting the engine and an alternator for charging the first battery;
a power source distinct from said first battery;
an active cooling system powered from said power source; and
an enclosure adapted for holding a pet, said enclosure being cooled by the cooling system and including means for introducing fresh air into the enclosure from the outside thereof.

4,878,360
AIR DELIVERY SYSTEM FOR A TRANSPORT REFRIGERATION UNIT

Herman H. Viegas, Bloomington, Minn., assignor to Thermo King Corporation, Minneapolis, Minn.
Filed Nov. 14, 1988, Ser. No. 270,861
Int. Cl.⁴ B60H *1/32*
U.S. Cl. 62—239 5 Claims

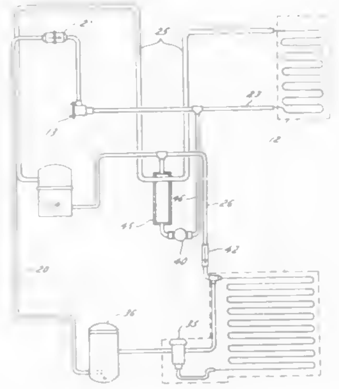
1. An air delivery system for a transport refrigeration unit having a prime mover, a condenser, an evaporator, and condenser and evaporator air delivery means, comprising:
a first shaft driven by the prime mover,
first and second pulleys fixed to said first shaft having fixed and variable pitch diameters, respectively,
a second shaft spaced from said first shaft,
a third pulley journaled for rotation on said second shaft, said third pulley driving the condenser air delivery means,
a fourth pulley fixed to said second shaft,
said fourth pulley driving the evaporator air delivery means,
an idler pulley,
actuator means for selectively adjusting the position of said idler pulley,
first belt means linking said first and third pulleys to drive the condenser air delivery means at a speed directly proportional to the speed of the prime mover,



and second belt means linking said second, fourth and idler pulleys,
said actuator means adjusting the position of said idler pulley to select pitch diameters of said second pulley which provide speeds for the evaporator air delivery means which may be varied relative to the speed of the prime mover.

4,878,361
HARVEST CYCLE REFRIGERANT CONTROL SYSTEM

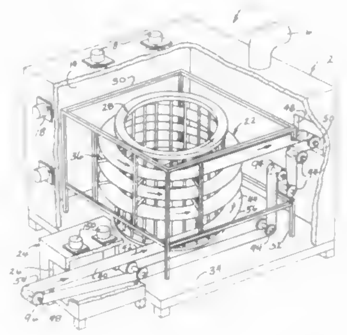
Vance L. Kohl, and Charles E. Schlosser, both of Manitowoc, Wis., assignors to The Manitowoc Company, Manitowoc, Wis.
Filed Sep. 30, 1988, Ser. No. 251,803
Int. Cl.⁴ F25C *5/10*
U.S. Cl. 62—352 14 Claims



11. In an ice making system having a compressor, a condenser and an evaporator and having both a freeze cycle wherein a refrigerant is circulated from the compressor to the condenser through a discharge line and thereafter circulated to the evaporator and returned to the compressor through a supply line and a harvest cycle wherein a refrigerant is circulated from he compressor to the evaporator through the discharge line and thereafter returned to the compressor through the supply line a normally closed hot gas valve disposed between the compressor and the evaporator, said hot gas valve being open during the harvest cycle to permit the flow of vaporous refrigerant therethrough, a check valve disposed between the condenser and the compressor, said check valve preventing the backflow of refrigerant from the condenser to the evaporator during the harvest cycle, a reservoir disposed between the compressor and the evaporator and communicating with the discharge line, means for condensing refrigerant in the reservoir during the freeze cycle, said means for condensing refrigerant comprising a portion of the supply line which is cool during the freeze cycle and which is in thermal contact with a portion of the reservoir, and means for expelling the condensed refrigerant from the reservoir to augment the amount of vaporous refrigerant circulating between the compressor and the evaporator during the harvest cycle.

4,878,362
CHILLER WITH EXPANDING SPIRAL CONVEYOR BELT

Lewis Tyree, Jr., Lexington, Va., assignor to Liquid Carbonic Corporation, Chicago, Ill.
Filed Jun. 27, 1988, Ser. No. 211,985
Int. Cl.⁴ F25D *25/02*
U.S. Cl. 62—381 12 Claims

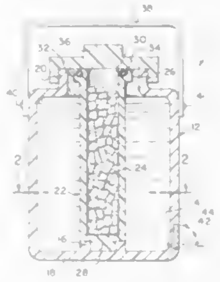


1. A chiller comprising an insulated enclosure for maintaining temperatures below ambient temperatures therewithin,
means forming an entrance and an exit in said enclosure,
an endless conveyor belt for carrying products from said entrance to said exit throughout said enclosure,
means for driving said conveyor belt so that said endless conveyor belt follows along an initial straight-line path section and then along a helical path section which helical path constitutes a significant portion of said belt's total pathway, and
cooling means for establishing a temperature within said enclosure sufficiently low to satisfactorily remove heat from products carried along said conveyor,
said belt being constructed so that, in changing its orientation during the transition from said straight-line path section to said helical path section, only longitudinal expansion of appropriate regions of said belt occurs.

4,878,363
SUPER KOOLER

Francis E. Wells, Sr., 7823 Mandan Rd., Greenbelt, Md. 20770, and George Spector, 233 Broadway RM 3815, New York, N.Y. 10007
Filed Feb. 15, 1989, Ser. No. 311,034
Int. Cl.⁴ B67D *5/62*
U.S. Cl. 62—400 3 Claims

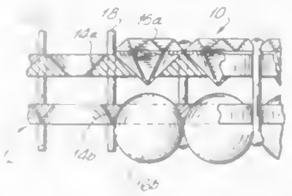
1. A cooler device, comprising:
(a) an outer housing for holding a beverage, said outer housing having a central sleeve with a seat formed into center of bottom wall and an externally threaded neck formed in top end thereof;
(b) an inner container for holding ice, said inner container having an externally threaded mouth end and a base end and can be inserted within said sleeve of said outer housing so that said base end will fit into said seat;
(c) an inner internally threaded cap engageable with said externally threaded mouth end for sealing said inner container; and



(d) an outer internally threaded cap engageable with said externally threaded neck and will bear against said inner cap for sealing said outer housing and holding said inner container within said central sleeve thereby preventing the beverage from becoming diluted when the ice melts.

4,878,364
DOUBLE FACED JEWELRY SETTING

Joseph A. Freilich, Jericho, N.Y., assignor to M. Fabrikant & Sons, Inc., New York, N.Y.
Continuation-in-part of Ser. No. 72,664, Jul. 13, 1987, abandoned. This application May 19, 1988, Ser. No. 198,592
Int. Cl.⁴ A44C *27/00, 17/02*
U.S. Cl. 63—28 16 Claims



1. A double faced jewelry setting comprising:
a base having first and second opposite sides;
securing means for securing a plurality of first gemstones on said first side in at least a substantially abutting relation and for securing a plurality of second gemstones on said second side in at least a substantially abutting relation, wherein different gemstones can be retained and displayed on the first and second opposite sides,
said base including a first base section for holding said plurality of first gemstones and a second base section for holding said plurality of second gemstones, said first and second base sections being substantially parallel to each other in a spaced apart relation,
said first base section including a plurality of first bores for holding said plurality of first gemstones and said second base section including a plurality of second bores for holding said plurality of second gemstones,
wherein said first and second bores are in alignment with each other.

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4,878,365
APPARATUS FOR CONTINUOUS TREATMENT OF A TEXTILE WEB

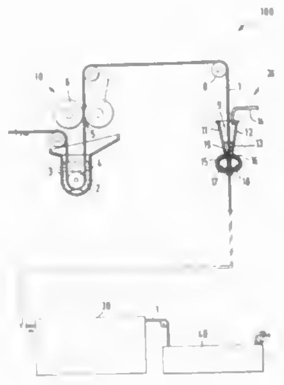
Johannes Kntz, Tönisvorst, and Günter von Harten, Kaarst, both of Fed. Rep. of Germany, assignors to Eduard Küsters Maschinenfabrik GmbH & Co. KG, Krefeld, Fed. Rep. of Germany

Filed Oct. 11, 1988, Ser. No. 255,611

Claims priority, application Fed. Rep. of Germany, Oct. 8, 1987, 3733997

Int. Cl.⁴ D06B *3/18. 21/00*

U.S. Cl. 68—9 8 Claims



1. An apparatus for the continuous treatment of web of material wherein two applicators containing treatment baths are serially arranged in the running direction of the web such that after the web absorbs treatment bath from the first applicator the web is still wet as it passes into the second applicator, said apparatus comprising:

(a) a first applicator applying a first treatment bath to the web;

(b) a roll squeezing mechanism through which the web is fed after passing through the first applicator;

(c) a second applicator applying a second treatment bath to the web after it passes through the roll squeezing mechanism, with both sides of the web being in contact with only a very small amount of the second treatment bath, which is continually being replenished in proportion to the rate it is absorbed by the web;

(d) a gap extending across the width of the web through which the web is conducted after passing through the second applicator; and

(e) a wiping device defining said gap comprising a flexible wall disposed on at least one side of the web in a zone extending across the width of the web, said flexible wall being inflatable by a fluid pressure medium to sealing abut against the web.

4,878,366
LOCKING DEVICE FOR A VEHICLE WHEEL AND TIRE

Robert W. Cox, 5634 Foxcross Pl. SE., Stuart, Fla. 34997

Filed Oct. 27, 1988, Ser. No. 263,549

Int. Cl.⁴ E05B *73/00;* **B60R** *25/00*

U.S. Cl. 70—14 6 Claims

1. A locking device for preventing rotation of a vehicle supporting wheel having a tire mounted thereon, said device comprising:

a clamp including a pair of clamp members and a base portion connecting the clamp members at one end, said clamp members extending from the base portion in spaced apart relation and having threaded free ends adapted to be inserted through openings between the inner and outer sides of a vehicle wheel whereby said base portion is engageable with one of the wheel sides and said clamp members project outwardly of the other wheel side;

a wheel rotation blocking bar mountable on the free ends of said clamp members in chordal relation to the vehicle wheel and tire, said blocking bar having a length such that at least one end thereof extends beyond the outer circumference of the tire;

fastener means engageable with said clamp members for urging said blocking bar into frictional compressive contact with one side of the tire at two chordally spaced locations thereon; and

locking means detachably engageable with said clamp members for preventing the removal of said fastener means therefrom.

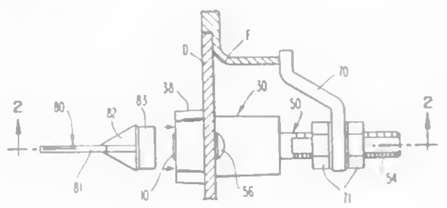
4,878,367
BINARY CODED KEY AND LATCH-ACTUATOR

Robert H. Bisbing, Springfield, Pa., assignor to Southco, Inc., Concordville, Pa.

Filed Mar. 22, 1985, Ser. No. 715,077

Int. Cl.⁴ E05B *27/08*

U.S. Cl. 70—491 5 Claims



1. In combination a binary-coded key and mating latch actuator comprising:

(a) a key having a tubular stem forming an internal bore, said stem having radial recesses in its inner circumferential wall of a preselected number and at preselected locations;

(b) a rotatable latch actuator having a stud portion having radial projections therefrom the size and location of said projections corresponding to the recesses in the inner wall of said stem to permit said stud portion to be received within the bore of said tubular stem of said key;

(c) wherein the surface of the inner circumferential wall of said tubular key is considered to be divided circumferentially into a predetermined number of equal divisions, each division corresponding to a "0" or a "1" in the binary code according to whether said division is recessed or nonrecessed; and

(d) wherein the number and locations of the recesses in the key stem are fixed in accordance with said binary code.

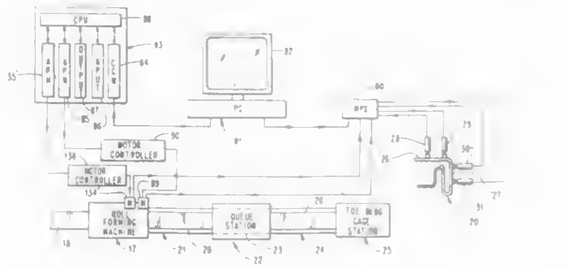
4,878,368
ADAPTIVE ROLL FORMED SYSTEM AND METHOD

Roy T. Toutant; David S. Perry, both of Louisville; Michael A. Brennan, Prospect; James E. Kreko, and Mark A. Dilk, both of Louisville, all of Ky., assignors to General Electric Company, Louisville, Ky.

Filed Dec. 4, 1987, Ser. No. 129,007

Int. Cl.⁴ B21D *5/08*

U.S. Cl. 72—9 20 Claims



1. A system for maintaining a first surface of each of a plurality of roll formed parts relative to a second surface of the same roll formed part within a predetermined relation including:

roll forming means for forming first and second surfaces of each of a plurality of roll formed parts relative to each other;

measuring means for measuring the relation between the first and second surfaces of each of the roll formed parts after said roll forming means has completed formation of the relation between the first and second surfaces of each of the roll formed parts;

first determining means for determining whether the measured relation is within the predetermined relation;

second determining means for determining if the measured relation of each of a selected number of consecutive roll formed parts is not within the predetermined relation as determined by said first determining means;

and adjusting means for adjusting said roll forming means in accordance with the relationship of the measured relation to the predetermined relation only if said second determining means has determined that the measured relation of each of the selected number of consecutive roll formed parts is not within the predetermined relation as determined by said first determining means.

4,878,369
APPARATUS FOR FORMING ELONGATE STRUCTURAL COMPONENTS

Howard R. Apps; Adrian D. Lucas, both of Woodford, and Philip C. Fairhall, North Cheam, all of United Kingdom, assignors to British Aerospace Public Limited Company, London, England

Filed Sep. 9, 1987, Ser. No. 94,749

Claims priority, application United Kingdom, Sep. 9, 1986, 8621725

Int. Cl.⁴ B21D *11/14*

U.S. Cl. 72—12 21 Claims

1. Apparatus for forming an elongate structural workpiece having a length and a longitudinal axis, such as for example a stringer, to have a predetermined contour, said apparatus comprising:

base means;

two longitudinally spaced frame means, each provided on said base means and at least one of said two longitudinally spaced frame means being mounted for pivotal movement with respect to said base means about a respective first pivotal axis;

each frame means including two longitudinally spaced manipulator heads, each of said heads mounted for at least pivotal movement with respect to the associated frame means about respective substantially parallel second pivotal axes substantially parallel with said first pivotal axis;

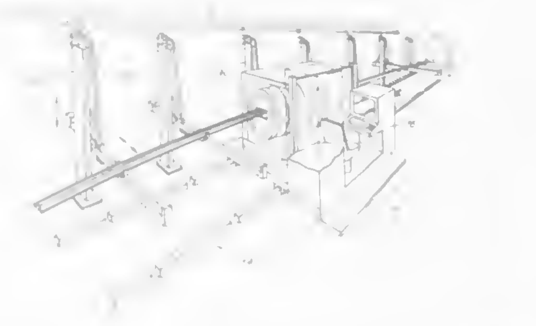
each of said manipulator heads including means for engaging said workpiece by a clamp in a load transfer relationship;

contour and load sensing means, associated with at least one of said manipulator heads, for providing contour data representative of the contour of a portion of said workpiece adjacent said manipulator heads and load data representative of the loads applied to said workpiece by said manipulator heads;

first actuator means for effecting relative movement of said frame means, for causing movement of at least two of said manipulator heads, and for applying a controlled bending moment in a predetermined plane to at least part of said portion of said workpiece adjacent said manipulator heads;

second actuator means for effecting relative movement of at least two of said manipulator heads and for applying a controlled torque to at least part of said portion of said workpiece adjacent said manipulator heads; and

control means including store means for storing data representing said predetermined contour, said contol means further including means responsive to said contour data and the load data from said sensor means, for determining required permanent set deflections to be applied to said portion of said workpiece adjacent said manipulator heads and for controlling said first and second actuator means to apply said required permanent set deflections to said workpiece.



4,878,370
COLD EXTRUSION PROCESS FOR INTERNAL HELICAL GEAR TEETH

William J. Fuhrman, Bloomfield Hills; Daniel W. Hall, Plymouth, and John C. Schneider, Detroit, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Aug. 15, 1988, Ser. No. 232,042

Int. Cl.⁴ B21C *25/06*

U.S. Cl. 72—264 6 Claims

1. A process for cold extruding internal ring gear teeth comprising the steps of machining an annular ring gear blank with precision inside and outside diameters;

mounting said gear blank over a mandrel arranged coaxially with respect to said blank, said mandrel having external die teeth with metal forming portions and a relief portion of pitch diameter and tooth thickness less than the corresponding dimensions of the metal forming portions;

mounting a die ring around said mandrel and blank, said die ring having an inside diameter equal to the desired outside diameter of the finished ring gear;

moving an annular punch between said die ring and said mandrel whereby said workpiece is extruded partially through said die teeth;

mounting a subsequent workpiece over said mandrel adjacent the aforesaid workpiece in abutting relationship with respect to the latter;

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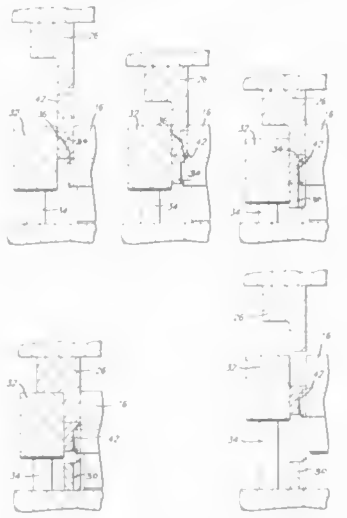
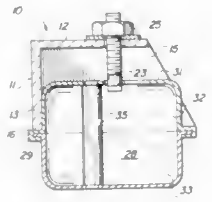
and moving said die ring in unison with the workpiece being extruded thereby reducing the total extrusion force required and eliminating the possibility of scoring of the workpiece and die ring at the surface-to-surface interface.



4,878,371
REALIGNMENT TOOL FOR APERTURE MATING SURFACE

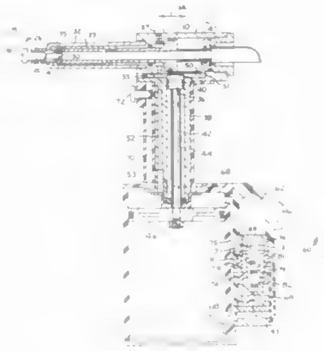
Robert W. Hull, 2915 E. Mulberry, Phoenix, Ariz. 85040
Filed Dec. 31, 1984, Ser. No. 687,779
Int. Cl.⁴ B21D *9/05*
U.S. Cl. 72—390 **5 Claims**



1. A tool for realigning a warped aperture mating surface upon a mid-flanged oil sump to facilitate its external attachment to a jet aircraft engine, said tool comprising: a yoke member having a top plate defining a first plane and having an aperture defined therethrough, a back plate and a first and second side plate, said back plate and said side plates being secured to said top plate in generally normal relationship thereto and depending therefrom to define a flange engaging surface for engaging the mid flange of said sump in a second plane disposed in generally parallel spaced relationship to said first plane, said back plate being operatively interposed between said side plates in supporting relationship thereto; an aperture engaging means having a cylindrical body portion threaded at one end thereof and having a notch defined therein to define a crescent supporting surface therewith adjacent the other end thereof for engagement with the warped aperture in said mating surface in a third plane intermediate said first plane and said second plane; and force means operatively associated with said aperture engaging means and actuatable upon said threaded body portion to selectively move said crescent supporting surface and hence said warped aperture mating surface engaged therewith toward and away from said top plate in response thereto until said third plane is placed in substantially parallel planar relationship to said first and said second planes.

4,878,372
SHOCK-ABSORBING FLUID-ACTUATED FASTENER INSTALLATION TOOL

Gary L. Port, Woodstock, and John J. Kaelin, Saugerties, both of N.Y., assignors to Huck Manufacturing Company, Irvine, Calif.
Filed Dec. 16, 1988, Ser. No. 285,469
Int. Cl.⁴ B21J *15/34*
U.S. Cl. 72—391 **11 Claims**



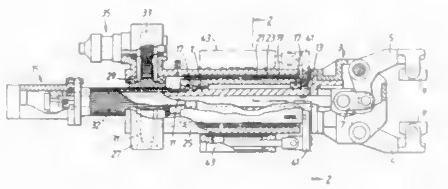
1. A push-pull tool for setting fasteners comprising:
a tool actuator cylinder;
a fastener actuator piston slidably positioned in the actuator cylinder to subdivide the cylinder into first and second chambers;
first and second separate fluids; said first fluid being a liquid; said second fluid including a liquid;
pump means having a forward stroke for pumping the first fluid into the first chamber while withdrawing the second fluid from the second chamber, to thereby move the piston in a first direction;
said pump means having a return stroke for pumping the second fluid back into the second chamber while withdrawing the first fluid from the first chamber, to thereby move the piston in a second direction; and means on said tool for admitting gas into said second fluid to thereby form a gas-liquid foam mixture.

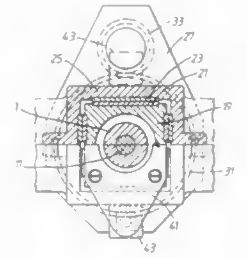
4,878,373
PEEL ASSEMBLY FOR AN INGOT MANIPULATOR

Geoffrey Wilson, and Trevor Hemingway, both of Sheffield, England, assignors to Dave McKee (SHeffield) Limited, Yorkshire, England
PCT No. PCT/GB88/00153, § 371 Date Nov. 2, 1988, § 102(e) Date Nov. 2, 1988, PCT Pub. No. WO88/06499, PCT Pub. Date Sep. 7, 1988
PCT Filed Mar. 2, 1988, Ser. No. 269,738
Claims priority, application United Kingdom, Mar. 3, 1987, 8704931
Int. Cl.⁴ B21D *43/10;* **B21J** *13/12*
U.S. Cl. 72—420 **10 Claims**

1. A peel assembly for a manipulator comprising
an elongate shaft having an enlarged head at one end thereof and at least two co-operating jaws pivotally secured to the head;
an elongate inner housing surrounding part of the shaft and carrying bearings which support the shaft for angular rotation about its longitudinal axis;
an elongate outer housing fitted around the inner housing so as to prevent relative rotation therebetween and with co-operating surfaces on the two housings which permit the inner housing to slide in the direction of its length relative to the outer housing;

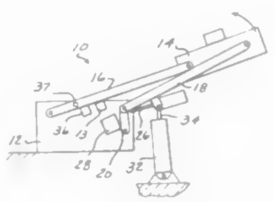
first drive means for rotating the shaft about its longitudinal axis and second drive means connected to the inner housing for sliding the inner housing and the shaft relative to the outer housing.





4,878,374
FIVE BAR LINKAGE MECHANISM

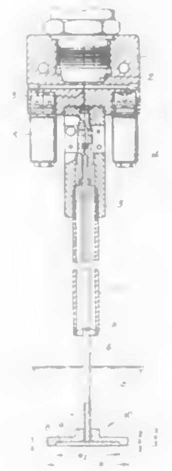
Richard E. Nelson, 53 E. Tacoma, Clawson, Mich. 48017
Filed May 20, 1988, Ser. No. 196,241
Int. Cl.⁴ B21J *13/00*
U.S. Cl. 72—446 **12 Claims**



1. A five bar articulating mechanism, comprising:
a base defining a first bar;
a second bar spaced upward from the first bar in a parallel opposed manner;
a third bar pivotally linked at a lower end to a left end of the first bar, and pivotally linked at an upper end to a right end of the second bar;
a fourth bar pivotally linked at an upper end to a left end of the second bar, the fourth bar extending downward and to the right, crossing the third bar;
a fifth bar pivotally linked at a first end to the first bar, and pivotally linked at a second end to a lower end of the fourth bar;
wherein the mechanism is movable from a first position wherein the second bar is spaced above and opposed to the first bar, to a second position wherein the first and second bars are in a non-parallel, non-opposed position, the mechanism further comprising:
means, acting on one of the bars, for selectively rigidly positioning the one bar non-pivotally with respect to an adjacent bar, the positioning means causing the mechanism to operate as a four bar articulating mechanism, thus stopping the mechanism at the second position, when the means positions the one bar non-pivotally, and the positioning means further causing the mechanism to operate as a five bar articulating mechanism, thus allowing the mechanism to move to a third position wherein the second bar is rotated 180° and positioned adjacent the first bar, when the means allows the one bar to pivot.

4,878,375
DEVICE FOR MEASURING HYDROGEN CONCENTRATION IN AN ALUMINUM MELT

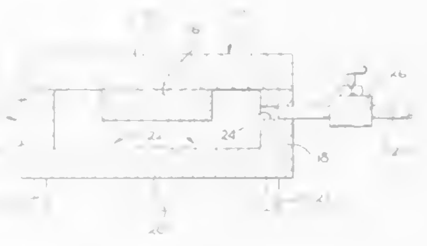
Rolf Roggen, Sion, Switzerland, assignor to Swiss Aluminium Ltd., Chippis, Switzerland
Filed May 1, 1989, Ser. No. 345,958
Claims priority, application Switzerland, May 10, 1988, 1774/88
Int. Cl.⁴ G01N *7/10*
U.S. Cl. 73—19 **15 Claims**



1. Device for measuring the concentration of hydrogen in an aluminum melt which comprises: a measuring head; a pressure gauge associated with said measuring head; a capillary tube of melt-resistant material that is impermeable to hydrogen connected to said pressure gauge; and an immersion probe that is permeable to hydrogen and is made of melt-resistant ceramic material connected to said capillary tube, wherein the immersion probe comprises at least two, essentially plate-shaped diffusion membranes that in each case form a common interface, and wherein the capillary tube communicates freely with said interface.

4,878,376
METHOD AND APPARATUS FOR TESTING SPUTTER TARGETS

Mark Leonov, and Jan Kordel, both of Santa Clara, Calif., assignors to Intel Corporation, Santa Clara, Calif.
Filed Dec. 27, 1988, Ser. No. 290,163
Int. Cl.⁴ G01M *3/26*
U.S. Cl. 73—40 **11 Claims**



1. A device for testing sputter targets comprising:

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- a base, said base having a shape which conforms generally to the shape of said sputter target;
- at least one sidewall connected to said base at a peripheral edge thereof and extending vertically upward, said sidewall and said base defining a cavity, said sidewall having disposed therein a passage way;
- an evacuation means coupled to said passageway for evacuating ambient air from said cavity.

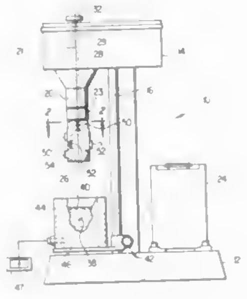
4,878,377
VISCOMETER APPARATUS AND METHOD

James C. Abel, Cedar Hill, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Oct. 7, 1988, Ser. No. 255,003

Int. Cl.⁴ G01N *11/14*

U.S. Cl. 73—59 6 Claims



1. A viscometer apparatus for measuring the viscosity of relatively viscous fluids such as thermally activated fracturing fluids for hydraulically fracturing earth formations, said apparatus comprising:

- a rotor member adapted to be driven at a selected speed, said rotor member including a generally tubular body part having an inner cylindrical wall of substantially constant radius;
- a stationary bob comprising a generally cylindrical part having an outer cylindrical surface of substantially constant radius and disposed in sleeved relationship within said rotor member to provide an annular space in which a quantity of fluid whose viscosity is to be measured is sheared at a predetermined rate by rotating the rotor member relative to the cylindrical part, said cylindrical part being connected to means for determining the torsional effort exerted on said bob;
- container means for containing a quantity of fluid to be tested, said container means being supported for placement of said rotor member and said bob in a chamber formed by said container means; and
- means on said rotor member comprising a plurality of mixing blades projecting radially outwardly from said body part with respect to the longitudinal central axis of said body part for mixing said fluid in said container means during rotation of said rotor member to provide uniform temperature distribution throughout said fluid in said container means during measurement of the viscosity of said fluid.

4,878,378
ROTATING VISCOMETER

Manabu Harada, Tokyo, Japan, assignor to Kabushiki Kaisha Marukomu, Tokyo, Japan

Continuation-in-part of Ser. No. 7,342, Jan. 28, 1987, abandoned. This application Feb. 3, 1988, Ser. No. 181,474

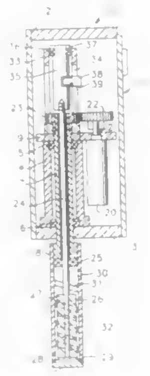
Claims priority, application Japan, Jan. 29, 1986, 61-11422[U]

Int. Cl.⁴ G01N *11/14*

U.S. Cl. 73—59 **15 Claims**

1. In a rotating viscometer including relatively stationary and rotatable members supported on a common axis, the members having spaced, mutually facing surfaces to define a clearance gap located between the surfaces and extending in generally parallel relation to the surfaces between opposite ends, the improvement comprising:

- means defining a fluid inlet at one end of said clearance gap and a fluid outlet at the other end of said clearance gap; and
- means defining spiral flutes on at least one of said surfaces, said spiral flutes having a pitch angle (θ), a width (e) and being spaced along the length of said clearance gap to define spiral grooves of a width (W) in said one surface;



- said pitch angle (θ), flute width (e) and said groove width (W) being selected so that upon movement of the rotatable member relative to the stationary member, fluid introduced at said fluid inlet is advanced through said clearance gap to said fluid outlet under shearing forces for measurement of the viscosity of the fluid and so that the shearing time and shear rate remain substantially constant.

4,878,379
RHEOMETER

John J. Deer, Epsom, United Kingdom, assignor to Carri-Med Ltd., Worthing, United Kingdom

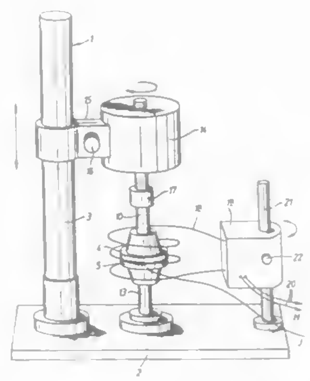
PCT No. PCT/GB86/00625, § 371 Date Jun. 3, 1987, § 102(e) Date Jun. 3, 1987, PCT Pub. No. WO87/02458, PCT Pub. Date Apr. 23, 1987

PCT Filed Oct. 16, 1986, Ser. No. 79,778

Claims priority, application United Kingdom, Oct. 17, 1985, 8525662

Int. Cl.⁴ G01N *3/24*

U.S. Cl. 73—60 15 Claims



1. A rotational rheometer comprising two shearing elements between which a sample of material to be tested can be located, means for applying a rotational force to at least one of said elements so as to subject a sample between said elements to a controlled shear force, means for heating the sample to a controlled extent, and means for automatically indicating a deformation or flow parameter of the material under the applied force, at least one said shearing element comprising electrically conductive material and the heating means comprising an induction heater having at least one induction heating coil or loop located to permit induction heating of said electrically conductive material.

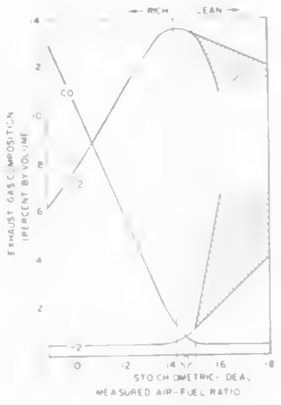
4,878,380
METHOD OF TESTING CATALYTIC CONVERTERS AND OXYGEN SENSORS

Lynn R. Goodman, 3240 Sleeping Lady Lane, Anchorage, Ak. 99515

Filed Oct. 3, 1988, Ser. No. 252,386

Int. Cl.⁴ G01M *15/00*

U.S. Cl. 73—118.1 5 Claims



1. A method for testing catalytic converters used in combination with internal combustion engines having an intake manifold, and an exhaust system, being used in vehicles, comprising the steps of:

- (a) operating the internal combustion engine to operating temperature;
- (b) injecting a subsidiary air-fuel mixture into the intake manifold, said subsidiary air-fuel mixtue being supplied from a source external to the internal combustion engine;
- (c) adjusting the subsidiary air-fuel mixture until the exhaust gasses produced by the internal combustion engine are equal to about: 14.7 percent carbon dioxide, and between about 1.0 and 1.4 percent oxygen;
- (d) reading the output of carbon monoxide produced by the engine when the percentage of gasses produced in step c are reached.

4,878,381
EVALUATION DEVICE FOR MEASURING SIGNALS OF A LAMBDA PROBE

Winfried Moser, Ludwigsburg, and Christian Klinke, Ludwigsburg-Hoheneck, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

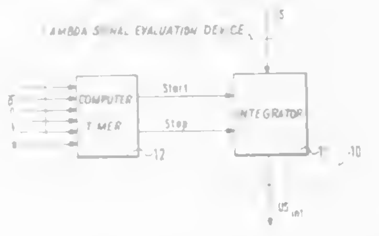
Filed Nov. 23, 1988, Ser. No. 275,711

Claims priority, application Fed. Rep. of Germany, Dec. 21, 1987, 3743315

Int. Cl.⁴ G01M *15/00*

U.S. Cl. 73—118.1 13 Claims

1. An evaluation device for neutralizing interference components of a measuring signal from a lambda probe arranged in an exhaust gas stream of an internal combustion engine, comprising means for computing from predetermined operational variables of the engine periods of pressure pulsation of the exhaust gas; means for integrating the measuring signal from the probe for an adjustable time interval to produce an integrated output signal; and means for timing said integrating means to integrate for a time interval corresponding to an integer multiple of a period of pressure pulsations computed by said computing means such that the integrated output signal corresponds to an interference free measuring signal from the probe.



4,878,382
METHOD OF MONITORING THE DRILLING OPERATIONS BY ANALYZING THE CIRCULATING DRILLING MUD

Timothy G. J. Jones, Cottenham, and Trevor L. Hughes, Cherry Hinton, both of England, assignors to Schlumberger Technology Corporation, Houston, Tex.

Filed Oct. 27, 1988, Ser. No. 263,499

Claims priority, application United Kingdom, Nov. 14, 1987, 8726727

Int. Cl.⁴ E21B *47/00*

U.S. Cl. 73—153 11 Claims

1. A method of monitoring the drilling operations by analyzing the circulating drilling mud, characterized by sampling periodically the mud at the surface, after elimination of the cuttings, and analyzing the samples to determine the successive values as a function of time or depth of a parameter representative of the weight of fine solids present in the mud.

4,878,383
OPTICAL FLUID LEVEL SENSOR

Walter J. Wiegand, Jr., Glastonbury, and Robert H. Bullis, Avon, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Nov. 2, 1987, Ser. No. 115,304

Int. Cl.⁴ G01F *23/00*

U.S. Cl. 73—293 13 Claims

1. An optical sensor for detecting fluid level said sensor comprising:

- a first passageway for conducting a signal beam into the sensor, a second passageway for conducting said signal beam from said sensor such that said signal beam may be detected, said first passageway being separated from said second passageway by a first opaque member, a third passageway for conducting said signal beam from said

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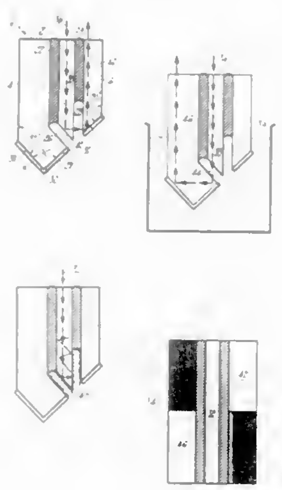
sensor such that said signal beam may be detected said third passageway being separated from said first passageway by a second opaque member,



a first means for conducting said signal beam from said first passageway to said second passageway if said fluid level is relatively high, and a second means for conducting said signal beam from said first passageway to said third passageway if said fluid level is relatively low.

4,878,384

DEVICE FOR EVALUATING AND MEASURING HUMAN SENSORY PERCEPTION

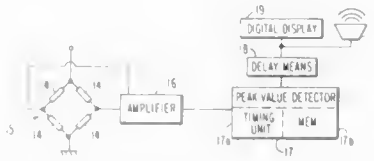
Theodor Bruhn, Calenberger Strasse 15, D-3017, Pattensen, Fed. Rep. of Germany

Filed Jan. 25, 1988, Ser. No. 147,966

Claims priority, application Fed. Rep. of Germany, Jan. 30, 1987, 3702808

Int. Cl.⁴ A61B *5/22;* **G01D** *1/00*

U.S. Cl. 73—379 7 Claims



1. Device for evaluating and measuring human sensory perceptions comprising:
a finger button;
signal generating means for generating a muscle force signal indicative of a maximum muscle force applied to the finger button;
a display means responsive to the muscle force signal for displaying the maximum muscle force;
a time measuring device responsive to muscle force applied to the finger button for commencing a time measuring operation; and
delay means for delaying display of the maximum muscle force by the display means for a predetermined delay period whereafter the display means displays the maximum muscle force for a time measured by the measuring device.

4,878,385

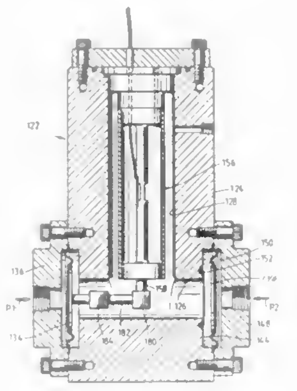
DIFFERENTIAL PRESSURE SENSING APPARATUS

Sheldon G. Lloyd, Austin, Tex., assignor to Fisher Controls International, Inc., Austin, Tex.

Filed Feb. 2, 1988, Ser. No. 151,557

Int. Cl.⁴ G01L *7/08, 9/00*

U.S. Cl. 73—704 24 Claims



17. An apparatus for sensing differential pressures comprising:
a housing having an inner chamber filled with a substantially incompressible working fluid;
a first diaphragm in said housing for separating a fluid having a first pressure from said inner chamber;
a second diaphragm in said housing for separating a fluid having a second pressure from said inner chamber, the difference between said first and second pressures creating a differential pressure;
a core mounted within a cylindrical tube positioned within said chamber having a first end anchored to said housing, a second end coupled to said first diaphragm, and a relatively flexible intermediate section which flexes in response to said differential pressure; and
a strain sensor mounted on said core adjacent said flexible intermediate section for sensing forces applied to said core by said first diaphragm.

4,878,386

KARMAN VORTEX SENSOR TYPE FLOW RATE MEASURING SYSTEM

Toshiaki Isobe, Nagoya, and Hidehiro Oba, Aichi, both of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Division of Ser. No. 884,187, Jul. 10, 1986, Pat. No. 4,819,490. This application Sep. 7, 1988, Ser. No. 241,219

Claims priority, application Japan, Jul. 16, 1985, 60-155083; Sep. 3, 1985, 60-193207

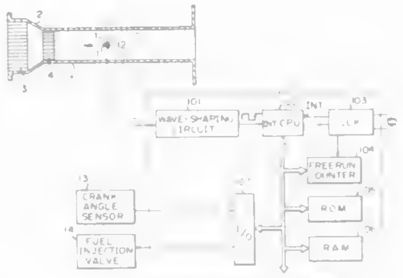
The portion of the term of this patent subsequent to Apr. 1, 2006, has been disclaimed.

Int. Cl.⁴ G01F *1/32*

U.S. Cl. 73—861.22 4 Claims

1. A flow rate measuring system comprising:
(a) a Karmen vortex sensor for generating a signal having a period in response to a flow rate of a fluid;
(b) means for calculating said period of said signal, said period calculating means comprising
(i) means for shaping a waveform of said signal into a pulse-shaped signal;
(ii) means for counting the number of pulses of said pulse-shaped signal within a definite time period;
(iii) means for calculating a total of the time periods of all of said pulses of said pulse-shaped signal within said definite time period;
(iv) means for calculating a means value by dividing said total of the time periods by the number of pulses within said definite time period, only when the number of pulses is not zero; and
(v) means for blunting said means value for said definite time period by

where T is a new means value, TQF is a mean value for



a preceding definite time period, and x is a weighting constant;
(c) means for calculating a correction coefficient in accordance with said period of said signal; and
(d) means for calculating said flow rate of a fluid in accordance with said blunted means value of the period of said signal and said correction coefficient.

4,878,387

AUTOMOTIVE INSTRUMENT

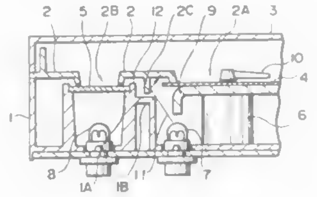
Masahiro Muramatsu, Shizuoka, Japan, assignor to Yazaki Corporation, Tokyo, Japan

Filed Jan. 28, 1988, Ser. No. 149,604

Claims priority, application Japan, Feb. 24, 1987, 62-25040[U]

Int. Cl.⁴ G01D *11/28*

U.S. Cl. 73—866.3 2 Claims



1. In an automotive instrument having a case, a meter plate providing a display panel and carrying a meter scale plate and at least one, indicator lens, wherein said meter scale plate and indicator lens are arranged in side-by-side configuration and separated from the meter plate by a gap, and a light source for illuminating the meter scale plate, the improvement comprising:
a light-shielding projecting wall projecting from a rear side of said meter plate, so as to prevent a portion of light from said light source for illuminating said meter scale plate from leaking through said gap to reach said indicator lens; and
a light-shielding structure positioned transverse to the projecting wall and the light source for illuminating the meter scale plate, so as to prevent the remaining portion of light from said light source for illuminating said meter scale plate from leaking through said gap to reach the indicator lens.

4,878,388

METHOD FOR SIMULATING AND DEMONSTRATING THE GAS EXCHANGE DURING MANDATORY OR ASSISTED VENTILATION AND APPARATUS THEREFOR

Patrick J. Loughlin; Dwayne R. Westenskow, both of Salt Lake City, Utah; Henrich A. Wied, Bad Schwartau, and Carl-Friedrich Wallroth, Lübeck, both of Fed. Rep. of Germany, assignors to Drägerwerk Aktiengesellschaft, Lübeck, Fed. Rep. of Germany

Filed Nov. 27, 1987, Ser. No. 126,175

Int. Cl.⁴ G09B *23/28*

U.S. Cl. 73—866.4 14 Claims

1. A method for demonstrating and simulating the exchange of gases during mandatory or assisted ventilation wherein breathing gas passes through a breathing circuit and wherein a breathing gas mixture including oxygen is prepared in a gas supply unit for metering the same into the breathing circuit, the method comprising the steps of:
metering anesthetic agent into said breathing gas mixture;
passing the breathing gas mixture through reservoir means filled with organic oil simulating a body which is being ventilated whereby portions of the anesthetic agent are dissolved in the oil in said reservoir means;
measuring the quantity of anesthetic agent in said breathing gas mixture after the latter has passed through said reservoir means; and,
regulating the quantity of anesthetic agent added to said breathing gas mixture in correspondence to the amount of said anesthetic agent dissolved in said oil.

4,878,389

BELLOWS FOR PROTECTING KNUCKLE JOINTS

Ferdinand Boge, G. Keller 35, 6204 Taunusstein, Fed. Rep. of Germany

Filed Nov. 16, 1988, Ser. No. 271,688

Claims priority, application Fed. Rep. of Germany, Apr. 22, 1988, 3813782

Int. Cl.⁴ F16J *15/50*

U.S. Cl. 74—18.1 7 Claims

1. A bellows for protecting knuckle joints comprising
two end sections, each with a cylindrical surface means for connection to a machine part, one of said end sections being a larger diameter end section having a larger diameter than the other of said end sections;
a first T-flange formed in said larger diameter end section,
a first fold adjoining said larger diameter end section;
an end groove for receiving a tightening strap, positioned in

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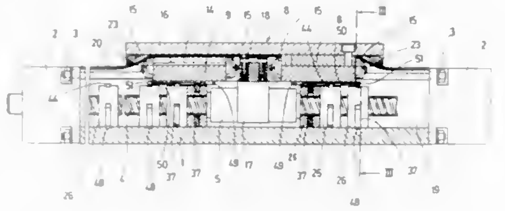
said larger diameter end section, and delimited by said first T-flange and said first fold;

a plurality of connecting points including cylindrical surfaces of smaller diameter than said larger diameter end section, each connecting point having a T-flange, a strap groove for receiving a tightening strap, and a separating groove associated with each connecting point, each connecting point allowing connection to a different sized disk.

4,878,390
LINEAR POSITIONING APPARATUS
Karlheinz Hauser, Steinenbronn, Fed. Rep. of Germany, assignor to Neff Gewindespindeln GmbH, Waldenbuch, Fed. Rep. of Germany
Filed Jan. 18, 1989, Ser. No. 298,633
Claims priority, application Fed. Rep. of Germany, Feb. 11, 1988, 3804117
Int. Cl.⁴ F16H *1/18*
U.S. Cl. 74—89.15 19 Claims



1. Linear positioning apparatus having an elongated support (1);

a spindle (**4**) extending parallel to said support and rotatably retained therreon, and a spindle nut (**5**) longitudinally slidably retained on the spindle and movable along the support in respectively opposite directions upon rotation of the spindle, said spindle nut defining oppositely located end portions facing the ends of the elongated support and forming, respectively, leading and trailing end portions, in dependence on the direction of movement of the spindle nutf

at least one spindle support element for supporting the spindle between the ends of the support, and spaced therefrom,

wherein

each of the spindle support elements (**26, 226**) includes

a body portion (**26′**) and a movable, resiliently biassed engagement element (**37, 45**) projectable from the body portion;

the support (**1**) is formed with at least one stop means (**48**) and positioned for engagement by the projectable engagement element (**37, 45**) of the spindle support element (**26, 26′**) while being releasable from said engagement by axial movement of the leading end portion of the spindle nut (**5**) against the support element;

a take-up carrier means (**49, 50,51**) is provided, located at an end portion of the spindle nut (**5**) for carrying along and moving the at least one released support element located at a trailing end portion of the spindle nut; and

movable connecting dog means (**44, 53**) are provided, located on the least one support element (**26, 226**) engageable with said take-up carrier means (**49, 50, 51**) upon release of the projectable engagement element (**37, 45**) from the at least lone stop means while being disengaged from said take-up carrier means when said projectable engagement element engages with said stop means.

4,878,391
MOTION TRANSLATING MECHANISM FOR USE AS A WINDOW REGULATOR OR THE LIKE
Haruo Komatsu, and Takashi Suzuki, both of Shimizu, Japan, assignors to Koito Seisakusho Co., Ltd., Japan
Filed Feb. 16, 1988, Ser. No. 155,679
Claims priority, application Japan, Feb. 16, 1987, 62-32970; Jan. 12, 1988, 63-4388
Int. Cl.⁴ E05F *5/06;* E05D *3/00*
U.S. Cl. 74—89.2 6 Claims

1. A motion translating mechanism for use as a vehicular window regulator or the like, comprising;

(a) elongate guide rail means curved longitudinally to provide a convex side and a concave side and defining a substantially linear guide way on its convex side, a pair of longitudinally spaced openings being defined in said guide rail means;

(b) a pair of terminal guides mounted to the convex side of the guide rail means adjacent opposite ends thereof;

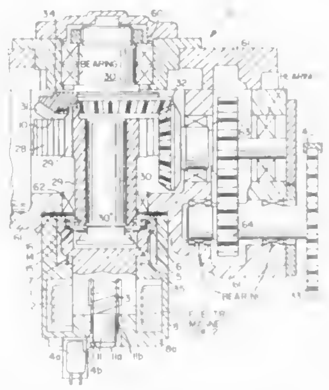
(c) an elongate member of flexible, non-stretchable material looped about the terminal guides and so providing first and second stretches thereof, at least a first stretch of the elongate member extending along the guide way, and a second stretch of the elongate member extending through one of the openings from the convex toward the concave side of the guide rail means;

(d) a drive reel mounted to the guide rail means intermediate the opposite ends thereof and rotatably mounted to the concave side of the guide rail means, the second stretch of the elongate member extending through one of the openings from the convex toward to the concave side of the guide rail means and being wound at least one turn around the drive reel, and extending through the other opening from the concave back to the convex side of the guide rail means; and

(e) a movable member mounted to the guide rail means and coupled to the first stretch of the elongate member for joint bidirectional movement therewith along the guide way.

4,878,392
GEAR DRIVE FOR SHUTTLELESS LOOMS
Siegfried Jaeger, and Wilhelm Herrlein, both of Lindau/B, Fed. Rep. of Germany, assignors to Lindauer Dornier Gesellschaft m.b.H., Lindau/B, Fed. Rep. of Germany
Filed Sep. 23, 1988, Ser. No. 249,418
Claims priority, application Fed. Rep. of Germany, Sep. 23, 1987, 3731990; Aug. 1, 1988, 3826156
Int. Cl.⁴ F16H *5/06*
U.S. Cl. 74—333 14 Claims

1. A gear drive for driving a weft thread insertion member in a shuttleless loom, comprising housing means for supporting said gear drive, a first group of drive means forming a driving gear set, and a second group of drive means forming a driven gear set, shaft means (**30**) mounted for rotation in said housing means, said first group of drive means including a pinion sleeve (**29′**) and a driving pinion (**29**) rigidly secured to said pinion sleeve (**29′**), said pinion sleeve being mounted for rotation on and relative to said shaft means (**30**) and for axial displacement relative to said shaft means (**30**), said second group of drive means comprising a driven gear (**31**) rigidly secured to said shaft means (**30**) for rotation with said shaft means, coupling means (**10**) operatively interposed between said driving pinion (**29**) and said driven gear (**31**) for transmitting a driving force from said driving pinion (**29**) to said driven gear (**31**), said coupling means comprising a first coupling member (**12**) at an axially facing end of said pinion sleeve (**29′**) and a second coupling member (**13**) rigidly secured to said driven gear (**31**) for cooperation with said first coupling member (**12**) when said pinion sleeve (**29′**) is in a coupling means engaging position, drive means for operating said coupling means, said drive means including an armature, means for securing said armature against rotation in said housing means while permitting an axial displacement of said armature in the direction of a rotational axis of said shaft means (**30**), means (**14**) connecting said armature to said pinion sleeve (**29′**) in a form-locking manner for axially displacing said pinion sleeve (**29′**) while permitting rotation of said pinion sleeve relative to said armature, and cooperating clamping means (**15, 35**) for rigidly attaching said shaft means (**30**) to said armature (**1**) in any rotational or angular position of said shaft means (**30**) when said pinion sleeve (**29′**) is moved into a coupling means disengaging position by said armature and for detaching said shaft means from said armature when said pinion sleeve is moved into a coupling means engaging position by said armature, whereby said shaft means cannot rotate when said coupling means are disengaged and can rotate when said coupling means are engaged.



4,878,393
DEXTROUS SPHERICAL ROBOT WRIST
Oprea Duta, 510 W. Belmont, #2109, Chicago, Ill. 60657, and Michael M. Stanisic, 779 Colfax, Elmhurst, Ill. 60126
Filed May 27, 1988, Ser. No. 199,902
Int. Cl.⁴ B25J *17/02*
U.S. Cl. 74—479 20 Claims

1. A mechanical wrist connectable between a first and second arm comprising:

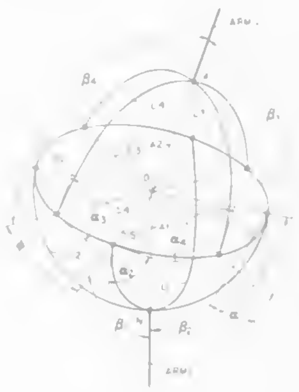
a central link providing at least a first pair of opposed pivot points lying on a first pivot means;

a first semicircular link pivotally connected to said central link at said first pair of pivot points for pivoting movement in a first hemisphere about said first pivot axis;

a second semicircular link pivotally connected to said central link at a second pair of pivot points lying on a second pivot axis for pivoting movement in a second hemisphere, said first pivot axis substantially intersecting said second pivot axis at a point fixed relative to the wrist;

a first block mounted for sliding movement along said first semicircular link;

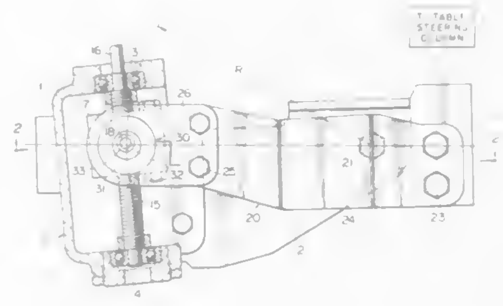
means for connecting said first arm to said first block,



a second block mounted for sliding movement along said second semicircular link; and

means for connecting said second arm to said second block.

4,878,394
DRIVE MECHANISM FOR TILTABLE STEERING COLUMN
Yoshiyuki Nakamura, Nara, and Teruo Koyama, Okazaki, both of Japan, assignors to Koyo Seiko Kabushiki Kaisha, Japan
Filed Jun. 27, 1988, Ser. No. 212,341
Claims priority, application Japan, Jun. 25, 1987, 62-156632
Int. Cl.⁴ B62D *1/18;* F16H *29/20*
U.S. Cl. 74—493 1 Claim



1. A drive mechanism for a tiltable steering column of a vehicle comprising:

a fixed bracket fixedly supportable on a vehicle during use of the drive mechanism;

a movable bracket pivoted on said fixed bracket for supporting a tiltable steering column at its one end during use of the drive mechanism;

a drive shaft having a lead screw supported by said fixed bracket;

a nut member engaging with said lead screw so that said nut member is movable along an axial line of said lead screw as said lead screw rotates, said nut member including a fixed shaft having an axial line perpendicular to said axial line of said lead screw; and

a bearing assembly secured to the other end of said movable bracket, said bearing assembly including a large bearing supported by said movable bracket, an eccentric collar fixed inside said large bearing, and a small bearing fixed on said eccentric collar at its eccentric position, said small bearing engaging said fixed shaft provided on said nut member,

whereby said eccentric collar generates a turning pair on

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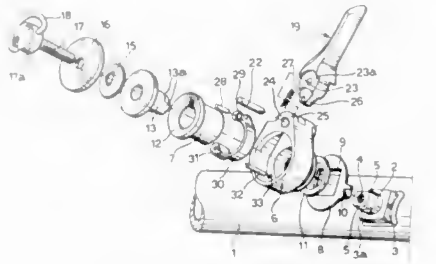
said nut member and said movable bracket when said nut member is moved as said lead screw rotates to thereby convert linear movement of said nut member into angular movement of said movable bracket so that the tiltable steering column supported by said movable bracket is held in a desired angular position.

4,878,395
DEVICE FOR OPERATING THE GEAR CHANGE OF A BICYCLE

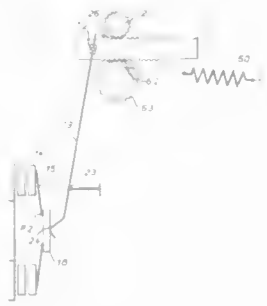
Antonio Romano, Padua, Italy, assignor to Campagnolo S.p.A., Vicenza, Italy
Filed Feb. 1, 1988, Ser. No. 150,857
Claims priority, application Italy, Apr. 29, 1987, 67368 A/87
Int. Cl.⁴ G05G *5/06*
U.S. Cl. 74—531 7 Claims



1. A device for operating the gear change of a bicycle comprising:
- a support pin,
- a main body rotatably mounted on the support pin,;
- an operating lever pivotably mounted on said main body for movement between two end positions,
- resilient means resiliently biasing said lever towards one of said end positions,
- a driven member adapted to be driven by the main body and rotatably mounted on the support pin,
- friction coupling means located disfased between the driven member and the support pin for opposing rotation of the driven member by means of frictional resistance, and
- one way engagement means located between the main body and the driven member for coupling the driven member to the main body for rotation only when the lever is rotated in a direction corresponding to movement of said lever towards said one of said end positions,
- wherein said one way engagement means is comprised of an engagement member carried by the main body and movable into engagement with said driven member to connect the main body for rotation with the driven member and said operating lever is connected to said engagement member whereby upon movement of said lever to said one of said end positions, said engagement member will be moved into engagement with said driven member and upon movement of said lever to another of said two end positions, said engagement member will be moved out of engagement with said driven member.

4,878,396
CONTROL MECHANISM FOR A MECHANICAL COUPLING DEVICE

Pierre Grunberg, Paris, France, assignor to Valeo, Paris, France
Continuation of Ser. No. 475,633, Mar. 15, 1983, abandoned. This application Oct. 24, 1986, Ser. No. 921,842
Claims priority, application France, Mar. 18, 1982, 82 4603; Feb. 25, 1983, 83 3115
The portion of the term of this patent subsequent to Jun. 9, 2004, has been disclaimed.
Int. Cl.⁴ G05G *1/04;* **F16D** *13/75, 23/12*
U.S. Cl. 74—518 13 Claims

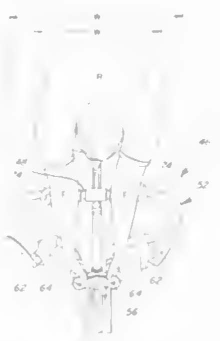


1. A motor-driven control mechanism and a mechanical drive control device controlled thereby, which mechanical drive control device includes a first part and a second part movable relative to said first part in both directions through a stroke defined between two limit positions, and elastic return means acting between said first and second parts; said control mechanism comprising linkage means associated with the second part and movable through a stroke simultaneously with the stroke of the second part and acting upon the second part to transfer the second part from a first of said limit positions to a second of said limit positions against the action of said elastic return means, and vice versa, motor-driven positioning means separate from the elastic return means for moving the linkage means under power in both directions throughout the stroke of the linkage means, and elastic force moderating means coupled to said linkage means and opposing the action of the elastic return means throughout the stroke of said second part and thereby reducing the force required to be exerted by said motor-driven positioning means; and force moderating means being operable to exert on said linkage means a force which varies through the stroke of the linkage means in both directions as the force exerted by the elastic return means on said second part.

4,878,397
BICYCLE, HANDLEBAR AND ADAPTER SYSTEM

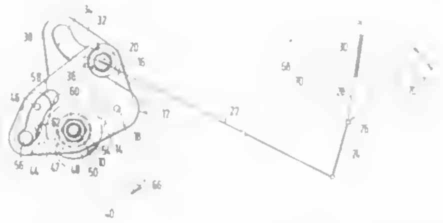
Dan C. Lennon, Box 1177, Hailey, Id. 83333
Continuation-in-part of Ser. No. 1,616, Jan. 9, 1987, Pat. No. 4,750,754. This application Mar. 28, 1988, Ser. No. 173,765
Int. Cl.⁴ B62K *21/12, 21/26*
U.S. Cl. 74—551.1 42 Claims

1. A bicycle handlebar connectable to a steering post located forwardly of a bicycle seat, comprising:
- a crosspiece having a central portion connectable with said steering post and sideways portions extending therefrom,
- turned portions extending from said sideways portions and extending generally forwardly and inwardly to define a pair of forward handle portions spaced apart a distance less than the width of the crosspiece, and
- a front loop portion interconnecting the forward handle portions whereby all of the portions define a continuous loop forward of the steering post.



4,878,398
DRIVING DEVICE FOR WINDOW WIPER OF MOTOR VEHICLES

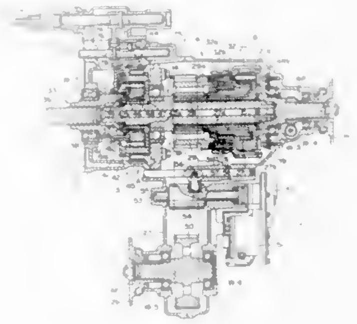
Laurent Heinrich, Strasbourg, France, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany
Filed Sep. 30, 1988, Ser. No. 252,440
Claims priority, application Fed. Rep. of Germany, Oct. 10, 1987, 3734392
Int. Cl.⁴ F16C *3/04;* **B60S** *1/04*
U.S. Cl. 74—959 10 Claims



1. A driving mechanism for a window wiper of a motor vehicle, comprising a cylindrical support fixed to a frame of the motor vehicle and having an indentation in its jacket; a reversible drive shaft arranged for rotation coaxially with said cylindrical support; a crank assembled of two crank plates hinged one to the other; one of said crank plates being secured to said reversible drive shaft and having a first S-shaped cam, and the other crank plate being provided with a crank pin and an oppositely directed first cam follower; a coupling rod hinged at one end thereof to said crank pin and at the other end thereof to a rocking lever for oscillating a wiper blade in a wiping field when the drive shaft rotates in one direction; a control plate supported for rotation about said drive shaft and having a second S-shaped cam cooperating with said first cam follower; means for locking said control plate in a fixed position relative to said cylindrical support when said drive shaft rotates in a reverse direction; a lock pawl pivotably mounted on said control plate and having a second cam follower cooperating with said first S-shaped cam; said first S-shaped cam having one cam section extending concentrically with said drive shaft to guide said lock pawl in engagement with said indentation when said drive shaft rotates in the reverse direction, and another cam section extending in a tangential direction away from said cylindrical support to guide said lock pawl out of engagement with said indentation when said drive shaft rotates in said one direction; and said second S-shaped cam having one cam section extending concentrically with said drive shaft to guide said crank pin on a circular orbiting path when said drive shaft rotates in the one direction, and another cam section directed outwardly away from said orbiting path to guide via said crank pin said wiper blade into a rest position outside said wiping field when the drive shaft rotates in the reverse direction.

4,878,399
PLANETARY SUB-TRANSMISSION

Osamu Kameda, Hiroshima, Japan, assignor to Mazda Motor Corporation, Hiroshima, Japan
Filed Sep. 29, 1987, Ser. No. 102,217
Claims priority, application Japan, Oct. 2, 1986, 61-151714[U]
Int. Cl.⁴ F16H *37/06*
U.S. Cl. 74—665 T 2 Claims



1. A planetary sub-transmission for a vehicle comprising:
- an input shaft and an output shaft, said shafts being axially spaced from and located coaxially relative to each other in a sub-transmission case;
- a planetary gear unit having a carrier member fixedly mounted on said output shaft, a ring gear fixedly supported in said sub-transmission case, and a sun gear supported for rotation on said carrier member;
- shift means mounted on said input shaft for axial movement between respective positions selectively coupling said input shaft to said sun gear and to said carrier member respectively so as to shift said sub-transmission between a high speed drive range and a low speed drive range; and
- means for effecting said axial movement of said shift means,
- said carrier member having a sleeve-like member integrally formed therewith and through which the carrier member is fixedly mounted on said output shaft,
- said output shaft being received in said sleeve-like member and coupled to said sleeve-like member by splines, the planetary sub-transmission further comprising a bearing through which said sun gear is mounted on said sleeve-like member.

4,878,400
BIAS RATIO LEVELLING APPARATUS OF A WORM GEAR TYPE DIFFERENTIAL

Junzo Kimura, Nagoya, and Toshiyuki Nakao, Chiryu, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan
Filed Sep. 29, 1988, Ser. No. 250,744
Claims priority, application Japan, Sep. 30, 1987, 62-246282
Int. Cl.⁴ F16H *1/38*
U.S. Cl. 74—715 6 Claims

1. A bias ratio levelling apparatus for a worm gear type differential comprising:
- first and second shafts mounted on a common axis in series,
- first and second worm gears fixedly connected to opposed end portion of said two shafts,
- a first worm wheel directly engaged with said first worm gear,

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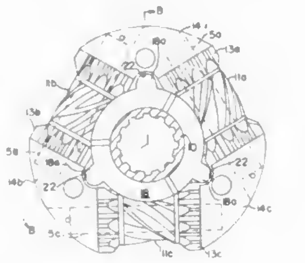
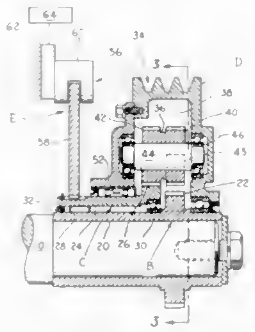
a second worm wheel directly engaged with said second worm gear,
a rotational member for rotatably supporting said first and second worm wheels about a central axis of each worm wheel and for rotating said first and second worm wheels about said first and second shafts,
a spur gear fixedly connected to each said worm wheel and for transmitting rotation of said one worm wheel to said other worm wheel, and
a spacer interposed between said first and second worm gears and axially fixed to said rotational member in the axial direction of first and second shafts in such a manner that thrust force generated at one end of the one of said first and second worm gears does not interfere with the other of said worm gears.



4,878,401

COMBINATION ACCESSORY DRIVE AND SPEED REDUCER

Jackson Chung, 29A Sugar Creek Villas, Greer, S.C. 29650
Filed Sep. 2, 1988, Ser. No. 239,928
Int. Cl.⁴ F16H *3/44, 57/10*
U.S. Cl. 74—781 R 20 Claims

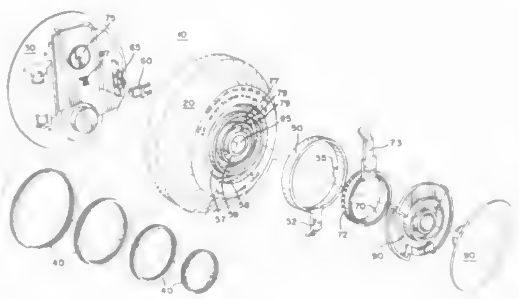


1. A speed reducing accessory drive for an automobile and the like having a crankshaft and a number of accessories which are driven by said crankshaft comprising:
an input sun gear affixed to said crank shaft for rotation with said crankshaft;
a reaction sun gear rotatably carried on said crankshaft;
a combination planet-carrier/drive casing carried on said crankshaft, said drive casing having means for drivably connecting to at least one of said accessories to be driven by said drive casing;
drive means carried by said casing for driving said accessories;
at least one compound planet rotatably carried by said drive casing on an interior of said drive casing having a first planet gear driven by said input sun gear, and a second planet gear of said compound planet which drives said reaction sun gear; and
actuation means for braking said reaction sun gear in a stationary position causing said drive casing to be driven through said compound planet at a prescribed reduced speed ratio to the speed of said crankshaft and in the same direction as said crankshaft, and for releasing said reaction sun gear to cause said drive casing, input sun gear, and input sun gear to rotate in unison with one another so that said drive casing is driven directly with said crankshaft drive.

4,878,402

WATER RESISTANT CONTROL LINKAGE

John W. Behringer, 143 Main St., North Kingstown, R.I. 02852
Filed Mar. 9, 1988, Ser. No. 165,749
Int. Cl.⁴ F16H *35/18*
U.S. Cl. 74—10.8 20 Claims

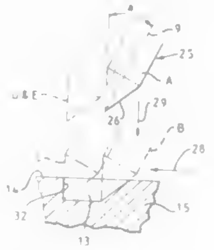


1. A fluid and particulate matter resistant control linkage assembly for controlling an associated device comprising:
a ring;
a handle affixed to said ring;
a circular groove defined in a housing with said ring rotatably disposed within said groove;
means disposed within said groove to seal out fluids or particulate matter from said groove;
a retainer fixed to retain said ring within said groove; and
means affixed to said ring to link said ring to the interior side of said housing.

4,878,403

MANUFACTURE OF ROTARY DRILL BITS

John D. Barr, Cheltenham, England, assignor to Reed Tool Company Limited, Monkstown, Northern Ireland
Filed Nov. 2, 1988, Ser. No. 266,096
Claims priority, application United Kingdom, Nov. 3, 1987, 8725668
Int. Cl.⁴ B21K *5/20*
U.S. Cl. 76—107 R 5 Claims

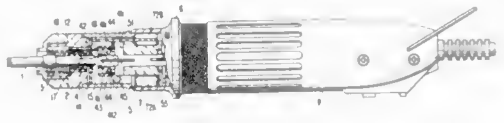


1. A method of making a mould for use in the manufacture of a bit body by a powder metallurgy process, the method comprising the steps of forming a hollow mould in the configuration of at least a portion of the outer surface of the bit body, and then forming in the interior surface of the mould a plurality of elongate pockets, each of which pockets is at least partly to receive a portion of a thermally stable cutting element, which portion has sloping longitudinal sides and a flat transverse front face, characterised in that each said pocket is machined from the mould material by means of a conical tool rotating about its axis, said axis being inclined to the perpendicular in a plane containing the required longitudinal axis of the pocket, a main elongate part of the pocket then being formed by translatory movement of the tool longitudinally thereof, and the pocket being formed with a flat transverse end face by translatory movement of the tool transversely of the longitudinal axis of the pocket.

4,878,404

ELECTRIC SCREWDRIVER

Hsieh-Yuan Liao, No. 33-35; Lane 246, Hsin Ming Road, Nei Hu Dist., Taipei, Taiwan
Filed Sep. 14, 1988, Ser. No. 245,987
Int. Cl.⁴ B25B *21/00*
U.S. Cl. 81—54 1 Claim

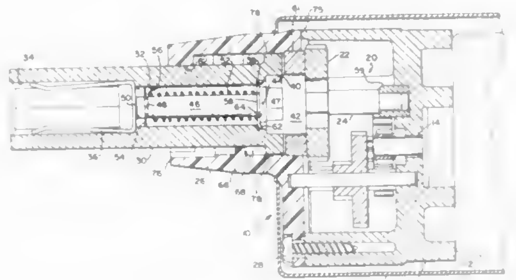


1. An electric screwdriver comprising a housing securing therein a motor, a power output end rotatably mounted said housing and driven by said motor, a control hollow cylinder having a first end secured to said housing and a second opposite end, an active shaft connected to said power output end and rotatably mounted in said control cylinder, a cap hollow cylinder, a torsion-adjusting hollow cylinder mounted between said cap cylinder and said second opposite end, a driver mounting piece axially slidably mounted in said cap and torsion-adjusting cylinders, a following shaft mounted between said mounting piece and said active shaft for transmitting a rotating power from said active shaft to said driver mounting piece, and a spiral spring mounted between said cap and torsion-adjusting cylinders for providing a spring force against said following shaft, characterized in that: said mounting piece has an engaging end, which is the end engaging with said following shaft, attaching thereto a flange;
said control cylinder mounts thereon a photic control switch electrically connected to said motor to emit a light to de-energize said motor; and said flange attachs thereon a light-shielding piece shielding said light to energize said motor when said mounting piece mounts thereon a driver urging against a screw.

4,878,405

COLLET LOCK FOR POWER TOOL

Jack Wolfe, Greenville, S.C., assignor to Ryobi Motor Products Corp., Pickens, S.C.
Filed Nov. 21, 1988, Ser. No. 276,066
Int. Cl.⁴ B25B *17/00*
U.S. Cl. 81—57.31 12 Claims

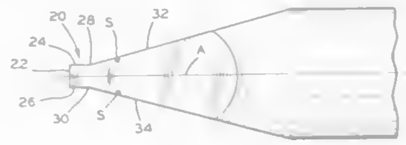


1. In a power tool having a housing, a motor driven shaft within said housing, a bushing fixedly supported on said housing, and a collet supported in said bushing for holding a tool, said collet and said shaft having complementary shaped portions for mating engagement of said collet with said shaft, an arrangement for selectively coupling said collet to either (a) said shaft for rotation therewith or (b) said bushing for locking said collet from rotation, said arrangement comprising:
a rib formed on the interior of said bushing, said rib having a U-shaped portion forming a pocket with the closed end of the U facing a first end of said bushing and spaced therefrom; and
a radial fin on said collet arranged to allow rotation of said collet in said bushing when said fin is between said rib and said first bushing end and to lock said collet to said bushing by interfering contact with said rib when said fin is within said pocket between those portions of said rib forming the walls of the U.

4,878,406

SCREWDRIVER BLADE

Steven C. Simpson, Napoleon, and Warren W. Weible, Defiance, both of Ohio, assignors to SK Hand Tool Corp., Defiance, Ohio
Filed Sep. 28, 1988, Ser. No. 250,166
Int. Cl.⁴ B25B *13/48*
U.S. Cl. 81—436 13 Claims

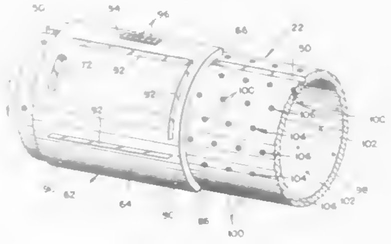


1. A screwdriver blade comprising a shank, a tapered end extending from said shank and terminating in a tip, said tip having a straight edge perpendicular to said shank and having a predetermined thickness, said tip having parallel, planar sides extending back toward said shank from said edge to inner edges a distance equal to the thickness of said edge, opposite side surfaces of said end extending abruptly outwardly from one another in a direction toward said shank from said inner edges of said planar sides at angles of ten to twenty degrees with respect to a longitudinal axis of said screwdriver blade.

4,878,407

VACUUM DIE MOUNT

John R. Harrison, Baltimore; Gary L. Lehr, BelAir, both of Md.; Dennis J. Parr, York, Pa.; William F. Ward, Jr., Hampstead, and Robert R. Wells, Phoenix, both of Md., assignors to The Ward Machinery Company, Cockeysville, Md.
Continuation-in-part of Ser. No. 858,934, May 1, 1986, Pat. No. 4,744,297, which is a continuation-in-part of Ser. No. 776,775, Sep. 17, 1983, Pat. No. 4,683,822. This application May 17, 1988, Ser. No. 194,743
Int. Cl.⁴ B26D *7/26*
U.S. Cl. 83—13 35 Claims



32. A method of mounting a rotary cutting die, having a

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substantially rigid shell, on a die cylinder, comprising the steps of:

placing said die on said die cylinder at a desired lateral and circumferential location with a collapsible seal protruding from said rigid shell contacting a mounting surface of said die cylinder, said seal defining a closed area between said shell and said mounting surface; and

applying vacuum to said closed area to draw said shell into intimate surface contact with said mounting surface and simultaneously collapse said seal.

4,878,408

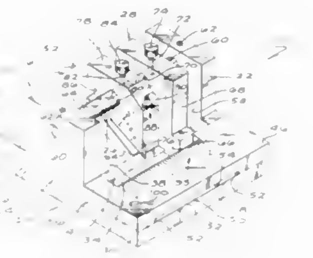
APPARATUS FOR SLITTING ELONGATED FLEXIBLE TAPE

William C. Isaacson, North Hollywood, and Herbert A. Farmery, Anaheim, both of Calif., assignors to Keen Corporation, New York, N.Y.

Filed May 20, 1987, Ser. No. 52,628

Int. Cl.⁴ B26D *1/02, 7/01, 7/26*

U.S. Cl. 83—444 20 Claims



1. A portable apparatus capable of being held by hand during use for slitting an elongated strip of flexible material of predetermined width longitudinally into a plurality of strips of preselected width, said apparatus comprising:

a base having a generally rectangular shape with longitudinally spaced front and rear ends and laterally spaced sides, said base forming a generally horizontal support surface for the strip of flexible material and including an upwardly open and laterally extending channel formed therein, said channel having a sloping wall extending from said support surface to the base of said channel and defining therebetween an edge;

a first side edge guide fixed to said base and having a first guide surface disposed to be engaged by and extend parallel to one side edge of said strip of flexible material;

a second side edge guide adjustably mounted to said base and having a second guide surface disposed parallel with said first guide surface, said second side edge guide being adjustable relative to said base to a position laterally spaced from said first side guide by an amount substantially equal to the predetermined width of said strip of flexible material whereby said second guide surface is engaged by the opposite side edge of said strip of flexible material; and

a cutter adjustably mounted to said base and disposed laterally between said first and said second side edge guides, said cutter including a mounting block and a cutter blade removably secured thereto, a portion of said blade projecting downwardly from said block into said channel substantially parallel to said sloping wall to slit said strip of flexible material into the plurality of strips of preselected width, said block including a hold down surface disposed substantially parallel with said support surface forwardly of said channel to slidably clamp the strip of flexible material against said support surface adjacent said blade to prevent distortion of said strip of flexible material during said slitting by said blade.

4,878,409

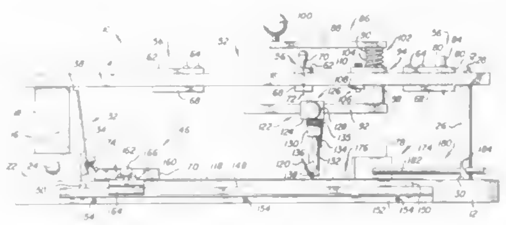
CIRCULAR MAT CUTTING APPARATUS

Charles H. Carithers, Jr., 5752A Gallant Dr., Jackson, Miss. 39236

Filed Jan. 12, 1988, Ser. No. 143,047

Int. Cl.⁴ B26D *5/08, 7/02*

U.S. Cl. 83—466 25 Claims



1. An apparatus for cutting circular arcs or holes in a picture mat comprising:

a flat base upon which the mat rests;

a platform provided above said base; and

a cutting means for cutting the mat including

a disc member,

a disc mounting means for mounting said disc member for rotation adjacent said platform about a center axis,

a disc locking means for releasably locking said disc member against rotation about the center axis,

a crank mechanism having an axle extending perpendicularly through said disc member and a mounting arm attached to and extending perpendicular from a bottom end of said axle below said disc member,

a crank mounting means for slidably mounting and releasably locking said crank mechanism to said disc member at a selected one of a plurality of positions along a radial path through the center axis,

a cutting blade,

a blade mounting means for adjustably mounting said cutting blade along said mounting arm and at a cutting angle to the mat;

whereby the circle or arc is cut in the mat by rotation of said crank mechanism, at a location determined by the position of said crank mounting means and said disc mounting means, and with a diameter determined by the position of said blade mounting means.

4,878,410

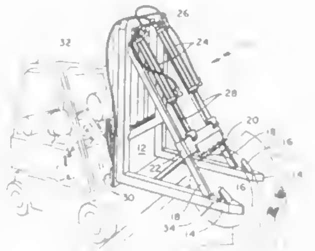
PAPER ROLL SPLITTER

Hoyt C. Darnell, 44 Knapp St., Livermore Falls, Me. 04254

Filed Mar. 21, 1988, Ser. No. 170,545

Int. Cl.⁴ B26D *5/12*

U.S. Cl. 83—635 7 Claims



1. A paper roll splitter attachment of the guillotine type for mounting on the vertically movable assembly of a fork-lift type vehicle provided with hydraulically powered lift means for raising and lowering said assembly, comprising

a main frame,

means for attaching the back of said frame to said vertically movable assembly,

a pair of generally horizontal mutually spaced lifting arms extending forwardly from the bottom of the front of said frame to be lifted and lowered therewith, the spacing between said arms being at least as great as the length of the roll to be split,

a pair of spaced parallel rails extending downwardly in a diagonal plane from the top of said frame connecting the upper portion of said frame to the outer end portions of said arms,

a cutting blade,

means slidably mounting said blade on said rails for reciprocating motion in a path parallel to said diagonal plane with its cutting edge facing diagonally downward,

hydraulic ram means mounted on said frame in driving relation to said blade for bodily reciprocating the latter in its said path, and

means on the outer ends of said arms for lifting engagement with opposite ends of a shaft extended through the core of a paper roll,

whereby a roll to be split may be transported between said arms to a desired location and there split by said knife driven into it guillotine-wise by said ram means.

4,878,411

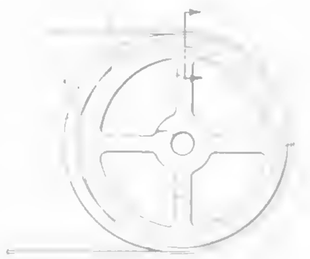
BAND SAW WHEEL

Donald R. Laskowski, Indianapolis, and Daniel R. Tekulve, Batesville, both of Ind., assignors to Laskowski Enterprises, Inc., Indianapolis, Ind.

Filed Dec. 19, 1984, Ser. No. 682,826

Int. Cl.⁴ B26D *1/46;* **B27B** *13/00*

U.S. Cl. 83—820 8 Claims



1. In a band saw having a band saw blade, a wheel for supporting the blade, comprising a pulley having a groove extending around its periphery between radially extending flanges, a tire having a lower portion for mating to the pulley's groove and an outer surface, the tire having an inner circumference greater than the circumference of the pulley around the bottom of the groove to permit the tire to be loosely mounted in the pulley's groove and freely movable therein, the blade received against an outer surface of an arcuate portion of the tire and forces the lower portion of that arcuate portion into the groove to form the outer surface of the arcuate portion into a crown, the tire sized to ensure that the outer surface of the arcuate portion against the blade extends radially outwardly of radially outwardly facing edges of the flanges to maintain the outer crowned surface in contact with the blade to keep the blade aligned.

4,878,412

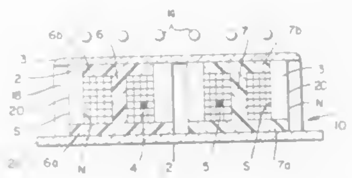
ELECTROMAGNETIC PICKUP FOR A STRINGED MUSICAL INSTRUMENT HAVING FERROMAGNETIC STRINGS AND METHOD

Martin H. Resnick, Rte. 2, Guysville, Ohio 45735

Continuation of Ser. No. 65,051, Jun. 22, 1987, abandoned. This application Jan. 9, 1989, Ser. No. 295,003

Int. Cl.⁴ G10H *3/18;* **H01F** *21/00*

U.S. Cl. 84—726 5 Claims



1. An electromagnetic pickup, adapted for use with a stringed musical instrument in which the strings are formed of ferromagnetic material, comprising

a nonconductive, non-magnetic body having at least one hollow cavity,

at least one conducting coil wound on an electrically nonconductive, non-magnetic core form,

a flexible permanently magnetic bushing adjacent to and surrounding said coil,

said coil and magnetic bushing being arranged within said body so that in use they will be disposed perpendicular to the surface of a plurality of the strings of said instrument, whereby said magnetic bushing provides permanent magnet means to direct a magnetic field into said coil and at least one of said strings.

4,878,413

STRING TUNING AND CLAMPING DEVICE

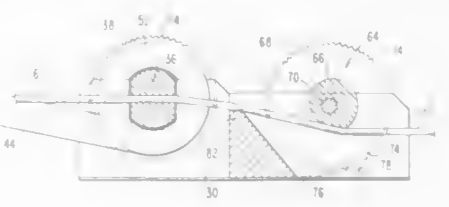
Ned Steinberger, Cornwall, N.Y., assignor to Steinberger Sound Corporation, Newburgh, N.Y.

Filed Jun. 8, 1987, Ser. No. 59,624

The portion of the term of this patent subsequent to Sep. 1, 2004, has been disclaimed.

Int. Cl.⁴ G10D *3/12*

U.S. Cl. 84—314 N 14 Claims



1. A device for clamping and tuning strings which extend longitudinally between and past the nut and bridge of a musical instrument comprising:

a base;

clamping means mounted on the base for clamping the strings at a position past the portion of the string between the nut and bridge; and

a plurality of cam means, each rotatably mounted on the base proximate to one of the strings at a position past the portion of the string between the nut and bridge and between the clamping means and one of the nut and bridge, for moving longitudinally relative to the extent of the string while displacing the string in a direction generally lateral to the longitudinal extent of the string when the cam means is rotated for adjusting the pitch of the string by adjusting the tension of the string.

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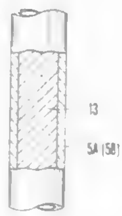
4,878,414
MUSICAL INSTRUMENT STAND

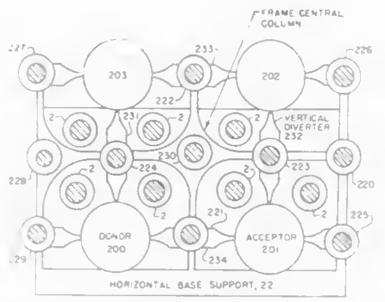
Toshinori Yamashita, Hamamatsu, Japan, assignor to Yamaha Corporation, Hamamatsu, Japan
Filed Feb. 10, 1989, Ser. No. 308,668
Claims priority, application Japan, Feb. 12, 1988, 63-16268[U]
Int. Cl.⁴ G10G *5/00*
U.S. Cl. 84—421 9 Claims



1. A percussion instrument stand comprising:
musical instrument holding means including at least one hollow pipe (**5, 20**) for holding a percussion instrument;
leg means (**2, 7**) for supporting said hollow pipe in a predetermined state; and
a vibration damper (**13**) filled in said hollow pipe.

4,878,415
BOMB PALLET DESIGN WITH HYDRAULIC DAMPING AND FIRE SUPPRESSANT

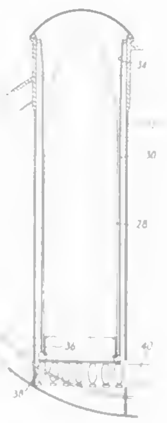
Joseph C. Foster, Jr., Ft. Walton Beach, and Andrew G. Bilek, Valparasio, both of Fla., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.
Filed Aug. 18, 1988, Ser. No. 234,064
Int. Cl.⁴ F42B *57/00, 39/00;* **B65D** *81/08, 85/30*
U.S. Cl. 89—34 8 Claims



1. A bomb storage pallet for suppressing sympathetic detonation of an acceptor bomb in an event of a detonation of an adjacent donor bomb by shielding the acceptor bomb from fragments and shock to a level below a pressure threshold at which the acceptor bomb would be induced into a sympathetic detonation, said bomb storage pallet also containing fire suppressant chemical extinguishing agents to reduce a fire hazard, in the event of the detonation of the donor bomb, said bomb storage pallet comprising:
a first horizontal base which supports a first and a second bomb which are lying horizontally and which are lying parallel with each other;
a first horizontal diverter which abuts and rests between the first and second bombs along their entire lengths, said first horizontal diverter having a sufficient width to reduce any shock propagated through it by a detonation of either bomb below a pressure threshold at which the first and second bomb would experience a sympathetic detonation, said first diverter having a sufficient height to shield each first and second bomb's silhouettes from fragments from a detonation of either bomb;
a frame which is fixed to said first horizontal base and which holds said first horizontal diverter in place; and
a plurality of tubes which are filled with said fire suppressant chemical extinguishing agents, said plurality of tubes including at least one auxiliary tube which is supported by said frame between said first and second bombs along their entire length and which ruptures upon a detonation of a bomb to release said fire suppressant chemical extinguishing agents and reduce the fire hazard of the detonation to help prevent said sympathetic detonation.

4,878,416
SUSPENSION SYSTEM FOR CYLINDRICAL ELEMENTS IN CONTAINERS

Henri Orquera, La Seyne Sur Mer, and Gérard Jennequin, Six Fours, both of France, assignors to Constructions Industrielles de la Mediterranee, Paris, France
Filed Jul. 1, 1988, Ser. No. 214,224
Claims priority, application France, Aug. 4, 1987, 87 11046
Int. Cl.⁴ F41F *3/04*
U.S. Cl. 89—1.810 12 Claims

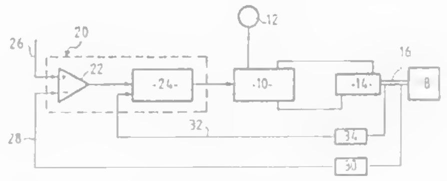


1. A shock-absorbing system for supporting a cylindrical element in a substantially cylindrical housing, comprising:
a multi-spring assembly of a substantially cylindrical configuration including a lower edge member, an upper edge member and a plurality of unitary resilient bars, each forming a spring extending therebetween, said upper edge member being connected to the supported cylindrical element and said lower edge member being connected to the housing, wherein each resilient bar is shaped to have portions which form a means for absorbing multi-directional displacements between the cylindrical element and the housing.

4,878,417
METHOD AND APPARATUS FOR SERVO-CONTROLLING THE POSITION OF A PNEUMATIC ACTUATOR

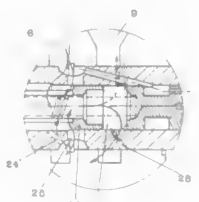
Pierre Facon, Versailles, France, assignor to Bertin & Cie, Plaisir, France
PCT No. PCT/FR87/00212, § 371 Date Feb. 11, 1988, § 102(e) Date Feb. 11, 1988, PCT Pub. No. WO87/07686, PCT Pub. Date Dec. 17, 1987
PCT Filed Jun. 11, 1987, Ser. No. 159,581
Claims priority, application France, Jun. 12, 1986, 8608513
Int. Cl.⁴ F15B *9/03, 9/09*
U.S. Cl. 91—363 R 13 Claims

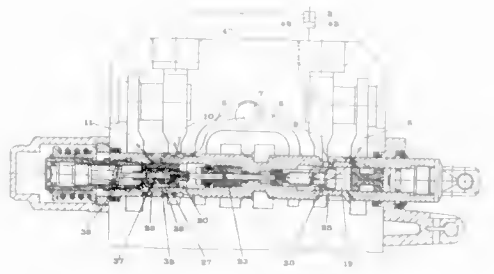
1. An apparatus for servo-controlling the position of a pneumatic actuator having a moving member, the apparatus comprising a valve for feeding the actuator with gas under pressure, a position sensor for generating a position signal representative of the position of the moving member, means for determining the speed and the acceleration of the moving member, means for determining the inertia of the moving member from its acceleration at the beginning of its displacement when the actuator is fed at a predetermined constant flow rate of gas under pressure, means for determining speed and acceleration correction factors from said inertia, and a control circuit having an output connected to the valve, an input connected to the position sensor, another input receiving a signal representative of a reference position of the moving member, and means for generating a valve control signal as a function of the difference between the signals at its both inputs and of the speed and acceleration of the moving member as corrected by applying the said correction factors.



4,878,418
DISTRIBUTOR FOR HYDRAULIC CYLINDERS

Jose M. Badia, Zaragoza, Spain, assignor to Hiab Foco AB, Hudiksvall, Sweden
Filed Dec. 28, 1987, Ser. No. 138,059
Claims priority, application Spain, Dec. 26, 1986, 8603601
Int. Cl.⁴ F15B *11/08, 13/04*
U.S. Cl. 91—421 7 Claims





1. Distributor for hydraulic cylinders, including:
a body forming for each cylinder a through housing in which a runner is axially moveable;
two chambers for two safety valves;
two intermediate oil inlet ducts from a supply pump which run radially into said housing;
two ducts for the supply and return of oil for advance and withdrawal chambers of the cylinder, said ducts running between the housing and said chambers, one on each side of the intermediate oil inlet ducts; and two ducts for the return of the oil to a tank or deposit, which also run between the housing and the safety valve chambers, and being characterized in
that said runner has two peripheral throats which provide intercommunication between certain of the ducts and is hollow and closed at both ends from which two separate chambers are formed, the first one of which is adjacent to the oil supply and return ducts from the cylinder advance chamber, and the second one of which is adjacent to the ducts for the supply and return of oil for said cylinder withdrawal chamber; one of said throat of the runner being located over each of these chambers, and the first of the said runner chambers comprising, in the side, three series of through holes,
that two of these holes run from the surface of the adjacent peripheral throat, while the third runs from a point close to said throat, between the throat and the closest end of the runner,
that the wall of the second chamber in the runner comprises two through holes, one of which runs from the surface of the adjacent peripheral throat, and the other from a point close to this throat, between the throat and the closest end of the runner,
that the first chamber and holes of the runner form a passage for the circulation of oil between the supply and the return ducts of the oil for the cylinder advance chamber when the runner is in a downward position of the said cylinder, the peripheral throat outside the said chamber moving in this position axially in relation to the tank oil return duct as the oil runs from the cylinder advance chamber without providing an opening between this duct and the one for the supply of oil to the cylinder advance chamber;
that the second chamber and the walls in its side in the meantime form a passage, when the runner is in the same position, between the duct for the supply of oil to the cylinder withdrawal chamber and that for return to the tank, and
that the first chamber has means for varying the size of the cross-section of the said passage, as a function of the return oil pressure from the cylinder withdrawal chamber comprising a first plunger alongside the runner end, which is designed to alter the size of the cross-section of the third set of holes of said chamber, while a second plunger has for its task to alter the cross-section of the intermediate set of holes, the base of said first plunger which is adjacent to the second plunger being subject to the pressure in the chamber plus the tension from a spring which is fitted between the two plungers; while the opposite base is subject to the pressure in the external peripheral throat which receives the duct for supply of oil to the cylinder advance chamber through an interconnecting port running off from the said throat, said second plunger having opposite bases of different cross-section, both of which are under the pressure from the chamber and, as well, from the spring located between the two plungers, on the one hand, and on the other, from an adjustable spring which is set to a value equal or close to the pressure due to a maximum load on the cylinder, while the second chamber has means for opening or closing the connection through the said chamber as a function of the pressure of the oil delivered from the pump to the duct for supply of oil to the cylinder withdrawal chamber.

4,878,419
LIGHTWEIGHT HYDRAULIC ACTUATOR

Ralph L. Vick, Granada Hills, Calif., assignor to Allied-Signal Inc., Morris Township, Morris County, N.J.
Filed Jun. 27, 1988, Ser. No. 211,960
Int. Cl.⁴ F01B *31/00*
U.S. Cl. 92—163 10 Claims

1. A lightweight linear hydraulic actuator including a cylindrical barrel, head end and rod end gland members on opposite ends of said barrel, a piston in said barrel dividing said barrel into first and second chambers, a rod attached to said piston

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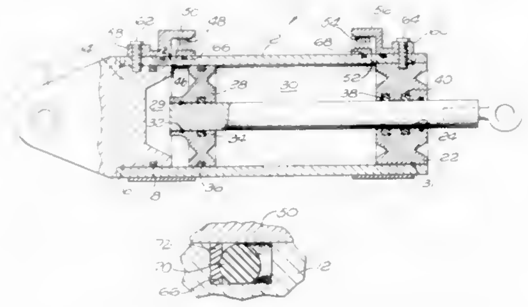
and extending through said rod end gland member, and means connecting a source of hydraulic fluid under pressure to said cylinder on opposite sides of said piston

said means including a first port in the sidewall of said barrel communicating with said first chamber and a second port in the sidewall of said barrel communicating with said second chamber, said ports being axially spaced from said end glands, first and second generally circular grooves in the curved sidewall of said barrel surrounding said first and second ports respectively, and seals in said grooves;



a first fitting member having a passageway communicating with said first port, a second fitting member having a passageway communicating with said second port, said fitting members each having hoop supports surrounding said barrel and internal arcuate surfaces mating with the curved surface of said barrel in contact with said seals, and fastening means fastening said fitting members to said barrel.

4,878,420
ARRANGEMENT FOR CLIMATE CONTROL IN PASSENGER SPACES OF POWER VEHICLES

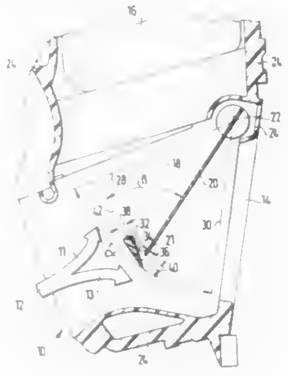
Heinz Rübig, Bühl-Eisenthal, and Thomas Carolus, Achern, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Nov. 16, 1988, Ser. No. 272,543

Claims priority, application Fed. Rep. of Germany, Nov. 24, 1987, 3739737

Int. Cl.⁴ B60H *1/24*

U.S. Cl. 98—2.08 **10 Claims**



1. An arrangement for a climate control in passenger spaces of power vehicles, comprising a passage for supplying an air stream; two further passages located downstream of said first-mentioned passage; a branching located between said first-mentioned passage and said further passages; a flap-like member located in the region of said branching and movable between two end positions in each of which it closes a respective one of said further passages, said flap-like member having an end which faces toward said first-mentioned passage and being provided at said end with an auxiliary blade which extends over an essential part of a length of said member; and a turning bearing arranged to support said flap-like member turnably between said positions, said flap-like member having an end which faces away of said turning bearing, said auxiliary blade being arranged at a distance from said end of said flap-like member.

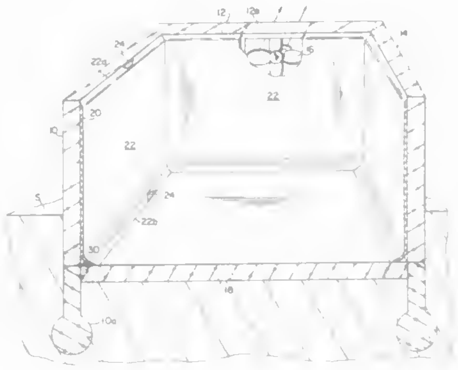
4,878,421
RADON VENTING SYSTEM FOR EXISTING STRUCTURES

Joseph Glasser, Storrs, Conn., assignor to Eljen Corporation, Storrs, Conn.

Filed Jun. 3, 1988, Ser. No. 202,703

Int. Cl.⁴ F24F *7/013*

U.S. Cl. 98—42.07 1 Claim



1. A method for venting radon gas from the basement of a structure that includes a concrete basement floor and structure supporting walls that rest on footings outside the concrete floor, said method comprising the steps of:

providing panels of rigid plastic material alongside the walls, each panel having opposed faces, and each face having a pattern of raised lands and of depressions on one face that define depressions and raised lands respectively on the opposite panel face,

covering the panels with an impermeable plastic sheet or sheets and overlapping and sealing the sheets to cover the entire basement supporting walls of the structure,

sealing the upper marginal edge of the sheets to the top of the supporting walls,

laying the lower marginal edge of the sheet on the concrete floor so as to cover the joint between the floor and the wall structure,

providing an exhaust fan in a basement window opening of the structure, said sheets also covering said basement window opening,

operating the fan at least intermittently to ventilate the spaces on both sides of the plastic panels and hence to evacuate any buildup of radon gas in the basement due to seepage through cracks in the supporting walls or do to seepage through the joint between the floor and these walls.

4,878,422
UNIVERSAL CEREAL PUFFING APPARATUS

Nancy J. McCullough; Jacob E. Schukman, both of Battle Creek, and Phillip G. Powers, East Leroy, all of Mich., assignors to General Foods Corporation, White Plains, N.Y.

Filed Nov. 18, 1988, Ser. No. 274,232

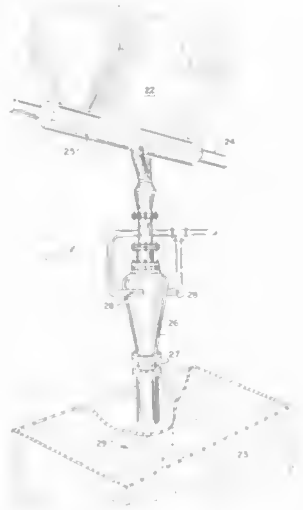
Int. Cl.⁴ A23L *1/18*

U.S. Cl. 99—323.4 18 Claims

1. A cereal puffing apparatus for puffing a variety of different cereal grains or other cereal material, comprising:

chamber means for enclosing and pressurizing a supply of cereal material therewithin, said chamber means having a cereal material inlet end portion and a cereal material outlet end portion, said chamber means having a generally frusto-conical shape that narrows generally between said inlet end portion and said outlet end portion;

nozzle component means for receiving and directing cereal material exiting from said chamber means, said nozzle



component means being interchangeably secured to said apparatus at a location downstream of said chamber means; and

steam injector means for introducing a flow of steam into said chamber means, said steam injector means generally opening into said inlet end portion of the chamber means, and said steam injector means o providing a substantially tangental flow of steam into said chamber means.

4,878,423
ELECTRIC TOASTER

Karl Birkert, Steinbach, and Heinz Marburger, Frankfurt am Main, both of Fed. Rep. of Germany, assignors to Rowenta-Werke GmbH, Offenbach am Main, Fed. Rep. of Germany

Filed Apr. 8, 1988, Ser. No. 179,562

Claims priority, application Fed. Rep. of Germany, Apr. 8, 1987, 3711786

Int. Cl.⁴ A47J *37/08*

U.S. Cl. 99—332 4 Claims

1. An electrical toaster, comprising:

timer means for controlling toasting time;

a movable bread carrier; and

lifting means for moving the bread carrier between a toasting position and toast removal position, the lifting means including at least one spring having temperature-dependent form changing characteristics, the at least one spring being operatively connected to the bread carrier so as to move the bread carrier between the toasting and toast removal positions in response to a temperature change.

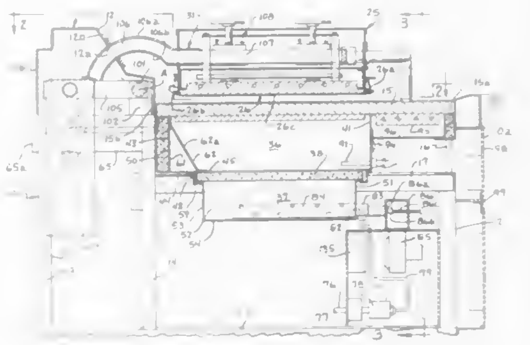
4,878,424
COOKING APPARATUS

Lee F. Adamson, Roscoe, Ill., assignor to Specialty Equipment Companies, Inc., Rockton, Ill.

Filed Nov. 7, 1988, Ser. No. 268,194

Int. Cl.⁴ A47J *37/06;* **F24C** *3/04*

U.S. Cl. 99—349 16 Claims



1. A cooking apparatus comprising: a support structure, a lower cooking platen fixedly mounted on the support structure and having forward and rear edges, at least one upper cooking platen, means mounting the upper cooking platen on the support structure for movement therewith between a lower cook position extending generally horizontally above the lower cooking platen and a raised position inclined upwardly from the lower cooking platen, at least one gas fired infrared heater including combustion chamber housing means defining a combustion chamber at the underside of the lower cooking platen; burner plenum chamber housing means defining a burner plenum chamber below the combustion chamber; and a generally horizontal gas permeable burner plate means between and separating the burner plenum chamber from the combustion chamber, input means for introducing a combustible mixture into said burner plenum chamber, the combustion chamber housing means including front, side and rear wall means sealed to the lower cooking platen, the rear wall means defining a horizontally extending vent passage along a rear side of the combustion chamber, said rear wall means including outer wall means having an exhaust outlet and divider wall means inclined downwardly and forwardly relative to the outer wall means and forming a common wall between the combustion chamber and the vent passage, the divider wall means having a vent opening therein whereby combustion gases from the combustion chamber pass through the vent opening and into the vent passage to the exhaust outlet.

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4,878,425
APPARATUS FOR PREPARATION OF CONFECTION PRODUCTS

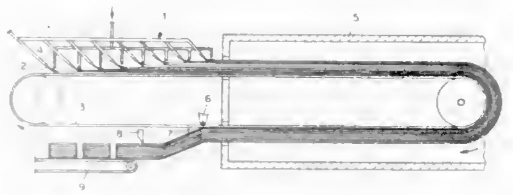
Ian Butcher, Harrow; Gordon S. Carrick, Stroud, and Kevin P. Hillman, Bishops Cleeve, all of England, assignors to Thomas J. Lipton Inc., Englewood, N.J.

Continuation of Ser. No. 753,680, Jul. 10, 1985, abandoned, which is a division of Ser. No. 411,185, Aug. 25, 1982, Pat. No. 4,542,028. This application Jan. 20, 1987, Ser. No. 9,603

Claims priority, application United Kingdom, Aug. 26, 1981, 8125970; Apr. 16, 1982, 8211182

Int. Cl.⁴ A23G *9/00;* **A23P** *1/00;* **B29F** *3/04*

U.S. Cl. 99—450.2 4 Claims



1. Apparatus for producing an extruded composite frozen confection product comprising slotted extrusion means arranged to extrude in succession at least four thin superimposed layers of a first confection material having a thickness of less than about 5 mm, a take-off conveyor arranged to receive the output of the slotted extrusion means and spray nozzles arranged for spraying a second confection material between successive extruded layers of the first confection material.

4,878,426
REFINING DEVICE

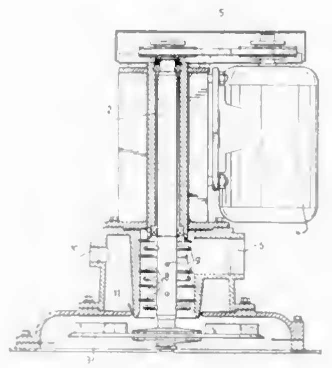
Jan C. Tadema, Bergen, Netherlands, assignor to Wiener & Co. Apparatenbouw B.V., Netherlands

Filed Jun. 1, 1988, Ser. No. 200,974

Claims priority, application Netherlands, Jun. 12, 1987, 8701379

Int. Cl.⁴ A23G *1/00*

U.S. Cl. 99—485 8 Claims



1. In apparatus for refining chocolate, the combination of means for mechanically reducing the viscosity of a chocolate mass in a first stage and means for mechanically reducing the viscosity of the chocolate mass and forming a thin film of chocolate in a second stage, and means for supplying air to the thin film of chocolate during the second stage of viscosity reduction.

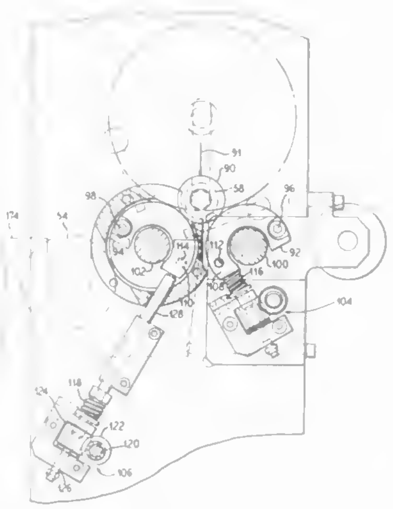
4,878,427
PRINTING STATION WITH TOOLLESS CHANGEABLE PLATE CYLINDER

Bohdan Washcbynsky, Boca Raton, and Vladimir J. Fisher, Coral Springs, both of Fla., assignors to Webtron Corporation, Ft. Lauderdale, Fla.

Filed Jul. 21, 1987, Ser. No. 76,181

Int. Cl.⁴ B41F *5/24, 13/44*

U.S. Cl. 101—219 30 Claims



1. A printing station for use in a printing press comprising:

support means for providing a frame;

first means on said support means for holding an impression roll;

second means on said support means for holding an anilox roll;

first adjustable means on said support means for positioning a plate cylinder relative to said impression roll;

second adjustable means on said support means for positioning said plate cylinder relative to said anilox roll;

releasable means for retaining said plate cylinder in a predetermined position relative to said impression roll and said anilox roll, said releasable means operable to allow removal and insertion of said plate cylinder without changing a setting of said first and second adjustable means;

each of said first and second adjustable means having an adjustable mechanism and a bearer having a pivot end attached to said support means and a free end, said bearer having at least a curved surface for contacting an end region of said plate cylinder, said adjustable mechanism having a moveable member contacting said free end of said bearer, wherein said moveable member causes said free end of said bearer to move pivoting said bearer about said pivot end thereby adjusting the position of said plate cylinder;

said bearer also having an aperture in its free end within which a stationary pin is located, said pin being connected to said support means, said pin and aperture providing a predetermined gap therebetween.

4,878,428
CONTROL METHOD OF TRANSPORTING A CUT SHEET IN A PRINTING STATION AND AN APPARATUS USING THE SAME

Shinichi Watarai, Yokohama, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

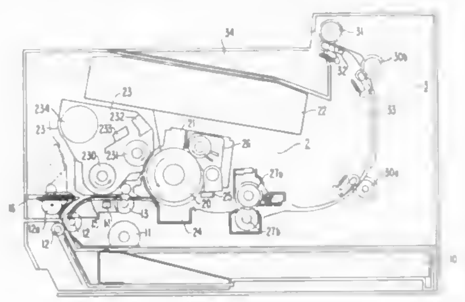
Filed Aug. 10, 1988, Ser. No. 230,612

Claims priority, application Japan, Aug. 12, 1987, 62-201140

Int. Cl.⁴ B41F *1/54*

U.S. Cl. 101—484 25 Claims

1. A control method for transport means transporting a cut sheet in a printing station, wherein said printing station comprises a printing unit, a first transport means for transferring the cut sheet along a first passage from a first storing position of cut sheets to said printing unit, a second transport means for transferring the cut sheet along a second passage from said printing unit to a second storing position by ejecting the cut sheet, and a first detector means for detecting a jamming of the cut sheet along said first passage, said control method comprising the sequential steps of:



(a) detecting the sheet jamming along said first passage by using said first detector means;

(b) stopping said first transport means when the sheet jamming is detected by said first detector means and continuing operation of said second transport means at least until cut sheets remaining along said second passage are ejected into the second storage position; and

(c) stopping said second transport means after the cut sheets remaining along said second passage are ejected into the second storing position.

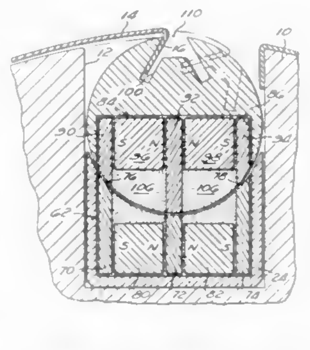
4,878,429
MAGNETIC ROTARY LOCKING MECHANISM AND METHOD

Alberto Russo, Buena Park, Calif., assignor to Nu-Graphics Engineering, Inc., Huntington Beach, Calif.

Filed May 26, 1988, Ser. No. 199,156

Int. Cl.⁴ B41F *27/00*

U.S. Cl. 101—486 13 Claims



1. The method of applying tension to an object comprising the steps of:

securing a restrained object to a rotatably mounted member; and

magnetically urging said member to rotate in a direction such that said urging applies tension to said object, wherein said object is a printing plate wrapped onto the periphery of the cylinder in a rotary printing press, and said member is a bar mounted in a groove in the periphery of the cylinder, and wherein said securing step includes attaching a free end to said plate to said bar and including the step of releasing said bar after said securing step to allow said bar to be magnetically rotated in said direction to apply tension to said plate, thereby locking the plate into position.

4,878,430
DETONATOR PELLET

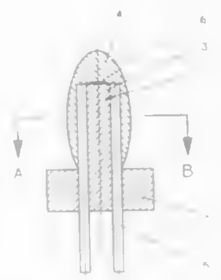
Gottfried Senkowski, Troisdorf, and Joachim Sturm, Lohmar, both of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

Filed Oct. 7, 1988, Ser. No. 254,877

Claims priority, application Fed. Rep. of Germany, Oct. 20, 1987, 3735405

Int. Cl.⁴ F42C *19/12*

U.S. Cl. 102—202.9 6 Claims



1. A detonator pellet comprising a base with two electrical contact members and a pole member, an ignition bridge connected to the contact members being attached to the topside of said pole member, and said pole member being surrounded by an initiator mixture in droplet shape; said base and said pole member being integrally formed of a composite insulating member exhibiting enhanced adhesiveness for the initiator mixture; said contact members comprising wires extending all the way through said composite insulating member to the ignition bridge and being supported by the composite insulating member

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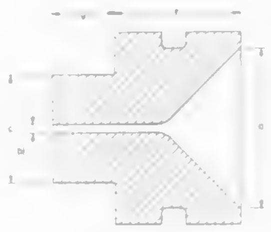
4,878,431
ELASTOMERIC INSULATING MATERIALS FOR ROCKET MOTORS

Liles G. Herring, Waco, Tex., assignor to Hercules Incorporated, Wilmington, Del.

Filed Feb. 21, 1986, Ser. No. 832,110

Int. Cl.⁴ C06D *5/06*

U.S. Ci. 102—290 14 Claims



1. A method of insulating a rocket motor case which comprises (a) providing a compound comprising 100 parts by weight of a crosslinkable, substantially saturated elastomeric polymer; about 5–50 parts by weight of a crosslinkable, substantially unsaturated elastomeric polymer; about 5–85 parts by weight of a polyaramide pulp; about 0–120 parts by weight particulate selected from inorganic and organic particulates and about 1–15 parts by weight peroxide crosslinker and combinations thereof; (b) forming a ribbon by extruding or calendaring said compound; and (c) winding said ribbon around a workpiece having a central longitudinal axis so as to adjacently

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position and tack together integral segments of said ribbon around said axis.

4,878,432

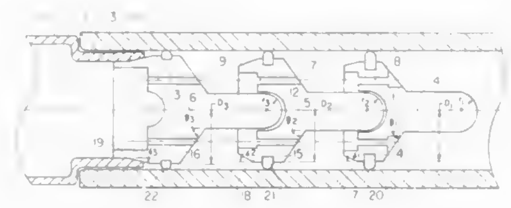
MULTISTAGE KINETIC ENERGY PENETRATOR

Ameer G. Mikhail, Bel Air, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 29, 1988, Ser. No. 238,960

Int. Cl.⁴ F42B *1/02*

U.S. Cl. 102—309 8 Claims



1. A multistage kinetic energy projectile comprising:

a primer case having forward and rearward ends;

a plurality of sequentially separable kinetic energy penetrators longitudinally stacked one onto the other, said plurality of penetrators having a forward leading penetrator and a rearward trailing penetrator secured to the forward end of said primer case;

means for fixidly interconnecting said plurality of kinetic energy penetrators; and

means for separating said plurality of kinetic energy penetrators from one another in sequence along a segment of said multistage kinetic energy projectile's flight path so that said plurality of penetrators fly independently and in spaced relation to one another along the flight path before impact with a target, whereby upon the leading penetrator reaching the target the trailing penetrators will follow onto the target in succession.

4,878,433

DEVICE FOR NEUTRALIZING MILITARY OBJECTS

Claude Pirolli, Rueil-Malmaison, France, assignor to Telecommunications Radioelectriques et Telephoniques, Paris, France

Filed Apr. 12, 1983, Ser. No. 485,517

Claims priority, application France, May 12, 1982, 82 08273

Int. Cl.⁴ F42B *25/02*

U.S. Cl. 102—384 3 Claims

1. A device for neutralizing military objects by launching a mother rocket above the said objects and releasing an assembly of sub-munitions towards elementary targets which are mobile on the ground and are distributed in large numbers over an extended area, each of the said sub-munitions having a military charge capable of being fired and each sub-munition being suspended from an aircraft in such a position that the sub-munition's firing axis forms a constant angle with the vertical comprising:

means ensuring the sub-munition's substantially uniform rotational movement about the vertical axis passing through its suspension point from the aircraft in such manner that, when said aircraft has a substantially uniform vertical descending movement, the firing axis effects a spiral scanning of the ground so as to search for a target;

means for detecting the said target constituted by a sensor having a narrow field of view, comprising one or several detectors and an optical system orienting and concentrating the radiation of the detected target on the detectors;

the firing on said military charge being initiated when a detection of the target is effected at an amplitude lower than a limit imposed by the range of the military charge, characterized in that the said optical system of the sensor comprises a deviator of low inertia interposed on the sensor's optical path and activated during the detection phase by a periodic oscillatory movement in such manner as to control the direction of the optical axis between two limited positions, the movement of the said deviator superimposed upon the uniform rotational movement of the sub-munition about its vertical axis scanning a circular area on the ground in each oscillation period and the said deviator being maintained in a fixed position so that the optical axis of the sensor is substantially parallel to the firing axis during the last phase of operation of the device corresponding to firing the military charge at the detected target.

4,878,434

PENETRATING PROJECTILE WITH HARD CORE AND DUCTILE GUIDE AND METHOD OF MAKING IT

Pierre Sommet, Sucy en Brie, France, assignor to Societe Francaise de Munitions, Paris, France

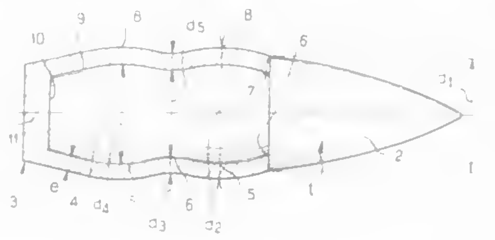
PCT No. PCT/FR88/00064, § 371 Date Oct. 6, 1988, § 102(e) Date Oct. 6, 1988, PCT Pub. No. WO88/06266, PCT Pub. Date Aug. 25, 1988

PCT Filed Feb. 5, 1988, Ser. No. 275,134

Claims priority, application France, Feb. 11, 1987, 8701691

Int. Cl.⁴ F42B *11/08*

U.S. Cl. 102—514 6 Claims



1. A penetrating projectile of a caliber no more than 40 mm, the projectile including a core (1) having a front point (2), the core being composed of a hard and high density metallic material and having a portion (4) to the rear of the point surrounded by a guide (3) having a generally cylindrical wall of ductile metal, the metallic material of the core being harder than the metal of the guide and the portion of the core which is surrounded by the guide being provided with projections (5) and depressions (6) and the guide being crimped onto said portion of the core by radial compression such that the internal surface of the guide is fixed axially and rotationally to said portion of the core by means of the projections and depressions, wherein the improvement comprises:

the guide (3) is crimped onto said portion (4) of the core (1) by electromagnetic forming and

the projections and depressions on said portion (4) of the core comprise undulations (5,6), the internal surface of the guide (3) in contact with said portion of the core assuming the profile of the undulations (5,6), and the external surface of the guide (3) reproducing the profile of the undulations (5,6).

4,878,435

MOBILE TIE EXCHANGE MACHINE ARRANGEMENT

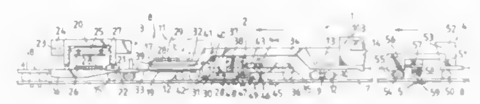
Josef Theurer, Vienna, Austria, assignor to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H., Vienna, Austria

Filed Feb. 7, 1989, Ser. No. 307,825

Claims priority, application European Pat. Off., Jun. 28, 1988, 88890168-3

Int. Cl.⁴ E01B *27/11, 27/13*

U.S. Cl. 104—9 10 Claims



1. A mobile machine arrangement for exchanging old ties for new ties in a track consisting of two rails fastened to ties and supporting the machine arrangement for mobility in an operating direction, which comprises

(a) a first machine unit leading in the operating direction,
(b) a second machine unit trailing in the operating direction,
(c) a drive for propelling each machine unit independently along the track in the operating direction,
(d) an operator's cab for each machine unit, each machine unit comprising
  (1) a bridge-like machine frame,
  (2) a tie loading car coupled to the machine frame and
  (3) undercarriages supporting the machine frame and the tie loading car on the track,
(e) a tie exchange device for laterally pulling a respective one of the old ties out of the track mounted on the machine frame of the first machine unit,
(f) a tie exchange device for laterally inserting a respective one of the new ties into the track mounted on the machine frame of the second machine unit, each tie exchange device comprising
  (1) power-driven vertically and longitudinally adjustable tie gripping means,
(g) a control for the tie exchange device mounted on each machine unit, and
(h) a tie transport arrangement mounted on the machine frame and tie loading car of each machine unit.

4,878,436

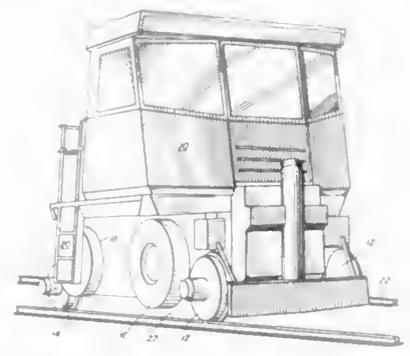
RAILCAR MOVING VEHICLE

Richard L. Lich, Newnan, Ga., and Robert L. Siewert, Loudon, Tenn., assignors to Trackmobile, Inc., LaGrange, Ga.

Filed Apr. 29, 1988, Ser. No. 161,964

Int. Cl.⁴ B61C *11/00*

U.S. Cl. 105—72.2 4 Claims



1. A railcar moving vehicle of the type having a two-piece oscillating frame including a first relatively long main frame at the forward end of the vehicle and a second relatively short pivotable frame at the rear end of the vehicle which is pivotally movable relative to said main frame about a generally longitudinal axis, said vehicle having four driven rail wheels for operating on rail and four road wheels for operating on the road, said road wheels being movable between lower operative positions and raised inoperative positions, the improvement comprising, in combination, a front railwheel axle mounted on said main frame adjacent the forward end thereof and carrying the front two of said railwheels, a second railwheel axle mounted on said pivotable frame adjacent the rear end thereof and carrying the rear two of said railwheels, a first pair of said road wheels comprising non-driven, steerable road wheels mounted on said main frame rearwardly of said front rail wheels and mounted for pivotal movement between said lower and raised positions about a road wheel pivot axis located rearwardly of said steerable road wheels, first hydraulic cylinder means mounted on said main frame for lowering and raising said steerable road wheels, a second pair of said road wheels being mounted on said pivotable frame forwardly of said rear wheels and driven from said rear rail wheel axle, said second pair of road wheels being mounted for pivotal movement between said lower and raised positions about the axis of said rear railwheel axle, and second hydraulic cylinder means mounted on said pivotable frame for raising and lowering said second pair of road wheels.

4,878,437

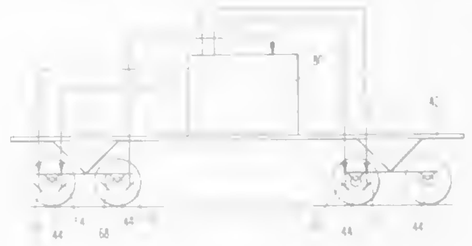
HOT BEARING SIMULATOR

Larry F. Myers, Altoona; Douglas B. Tharp, Exton, and Ralph H. Holl, Hollidaysburg, all of Pa., assignors to Consolidated Rail Corporation, Philadelphia, Pa.

Filed Mar. 17, 1988, Ser. No. 169,864

Int. Cl.⁴ B61K *9/06*

U.S. Cl. 105—451 14 Claims



1. An apparatus for dynamically simulating the presence of a hot bearing on railroad rolling stock in order to verify the operation of hot box detectors comprising:

a moveable carriage having at least a first axle;

left heater means associated with said first axle for simulating a hot bearing on the left side of said first axle;

right heater means associated with said first axle for simulating a hot bearing on the right side of said first axle;

means for sensing the ambient temperature; and

means for controlling the temperature of each heater means to first predetermined temperature above ambient.

4,878,438

PORTABLE CONSOLE AND ARM REST APPARATUS

Donnie R. Carver, 178 Forest Retreat Rd., Hendersonville, Tenn. 37075

Filed Mar. 20, 1989, Ser. No. 325,900

Int. Cl.⁴ A47B *23/00*

U.S. Cl. 108—44 9 Claims

1. A console and arm rest apparatus for use in a vehicular interior containing a longitudinal housing hump and at least one seat wherein said seat includes an underlying seat support of a predetermined length measured forwardly from an upwardly extending seat back rest, said apparatus comprising,

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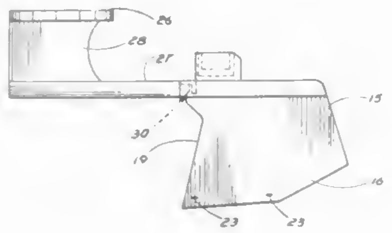
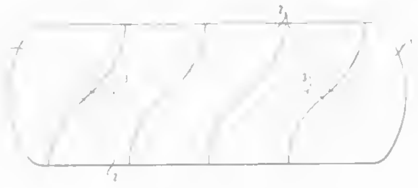
a console and an elongate arm rest selectively securable to said console;
said console including a horizontal support surface disposed below a horizontal rim, and
a right and left side wall sloping outwardly with respect to right and left side portions of said horizontal rim, and
a forward wall joining forward edges of said right and left side walls sloping outwardly with respect to said forward portion of said horizontal rim terminating in a first arcuate recess underlying said rim, and



a rear wall extending downwardly from a rear portion of said horizontal rim joining rear edges of said right and left side walls terminating in a second arcuate recess, and
wherein said first and second arcuate recesses are aligned with one another to accommodate said housing hump, and
said elongate arm rest including attachment means securable to engagement members formed in said rear portion of said horizontal rim to secure said arm rest coextensively and rearwardly of said console.

4,878,439
EXTENDABLE TABLE

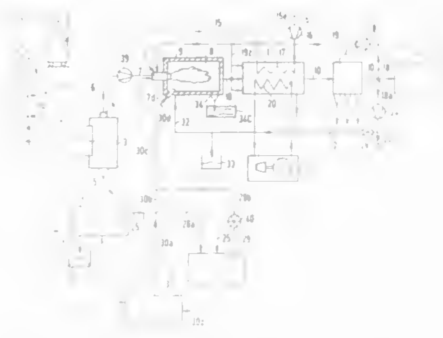
Ilan Samson, Rehov Eshkol 62, Tel-Aviv, Israel
Filed Sep. 28, 1984, Ser. No. 655,710
Claims priority, application Israel, Sep. 30, 1983, 69877
Int. Cl.⁴ F16B *12/26*
U.S. Cl. 108—83 10 Claims



1. A table comprising a table top consisting of at least two table top elements, wherein each table top element and a next adjacent table top element fit together along a respective abutment line, wherein pedestal means is provided for directly supporting at least one but not all of the table top elements, wherein each said respective abutment line comprises a non-straight line, wherein at least three pairs of cooperating interfitting male and female members are provided at each said respective abutment line and are disposed at spaced apart locations in a non-collinear arrangement along said respective abutment line, with one member of each pair being located at one of said table top elements and the other member of the pair being located at said adjacent table top element, for connecting together each table top element and the next adjacent table top element, said pairs of cooperating members forming the sole means of support for table top elements not provided with a pedestal, whereby the weight of a table top element not provided with a pedestal is carried by shear stresses in the cooperating members and by bending stresses in the table top element itself.

4,878,440
METHOD AND PLANT FOR THERMAL WASTE DISPOSAL

Herbert Tratz, Ottensoos; Klaus Riedle, and Georg Loesel, both of Uttenreuth, all of Fed. Rep. of Germany, assignors to Siemens Aktiengessellschaft, Munich, Fed. Rep. of Germany
Filed May 31, 1988, Ser. No. 200,646
Claims priority, application Fed. Rep. of Germany, Aug. 3, 1987, 3725704; Apr. 8, 1988, 3811820
Int. Cl.⁴ F23B *7/00*
U.S. Cl. 110—233 29 Claims



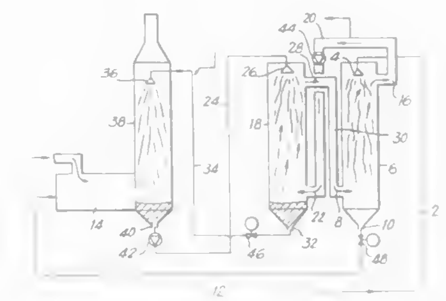
1. Plant for thermal waste disposal, comprising a pyrolysis reactor converting waste into carbonization gas and substantially non-volatile pyrolysis residue, a discharge device connected to said pyrolysis reactor having a non-volatile pyrolysis residue outlet and a carbonization gas discharge fitting for removal of carbonization gas, a combustion chamber operated with an oxygen excess being connected to said carbonization gas discharge fitting for receiving the carbonization gas, a residue sorting device connected to said pyrolysis residue outlet of said discharge device for sorting out coarser coarse components substantially including non-combustible ingredients such as rocks, glass shards, broken porcelain, and metal parts, from combustible finer coarse components, a transport device connected to said residue sorting device for transporting the finer coarse components, a grinding apparatus having an inlet side connected to said transport device and a discharge side for feeding the finer coarse components to said combustion chamber after grinding, said combustion chamber having means for maintaining combustion gases produced from delivered combustible material for a sufficiently long time at a sufficient temperature level to produce molten slag, said combustion chamber having an outlet for removing the molten slag, means downstream of said outlet of said combustion chamber for cooling the molten slag into a glassified form, a flue gas line leading from said combustion chamber, and a chimney connected to said flue gas line.

4,878,441
APPARATUS AND PROCESS FOR GENERATING STEAM FROM WET FUEL

Rolf Ryham, Princeton, N.J., assignor to Ahlströmforetagen Svenska AB, Norrkoping, Sweden
Filed Aug. 11, 1988, Ser. No. 231,085
Int. Cl.⁴ F23G *7/04*
U.S. Cl. 110—238 19 Claims

1. A process for generating steam from wet fuel comprising the steps of:
(a) evaporating water from said wet fuel by bringing said fuel into direct contact with superheated steam, whereby dried fuel and saturated steam are produced;
(b) superheating at least a portion of said saturated steam by bringing said steam into direct contact with a hot heat carrier, whereby a cooled heat carrier is produced;
(c) heating said cooled heat carrier by bringing said heat

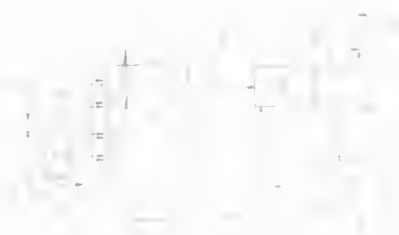
carrier into contact with flue gases produced by burning said dried fuel from step (a); and



(d) using said heated heat carrier as the heating medium for said steam in step (b).

4,878,442
NOX CONTROL FOR HIGH NITRIC OXIDE CONCENTRATION FLOWS THROUGH COMBUSTION-DRIVEN REDUCTION

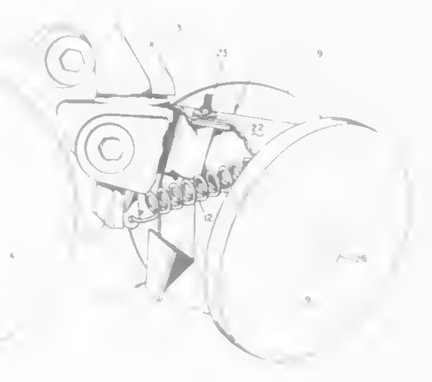
James T. Yeh; James M. Ekmann; Henry W. Pennline, all of Bethel Park, and Charles J. Drummond, Churchill, all of Pa., assignors to The United States of America as represented by the Department of Energy, Washington, D.C.
Filed Jun. 17, 1988, Ser. No. 207,995
Int. Cl.⁴ F23J *11/00, 15/00*
U.S. Cl. 110—345 29 Claims



1. A method of removing nitrogen oxides from industrial waste gas streams containing high concentrations of nitrogen oxides, or from regenerable flue gas cleanup processes, comprising the steps of:
providing a combustor for particulate carbonaceous material, said combustor having primary and secondary oxidant inlets;
mixing a primary oxidant with said particulate carbonaceous material, said mixture being stoichiometrically deficient in oxidant;
injecting said mixture of primary oxidant and particulate carbonaceous material into a primary oxidant-carbonaceous material injection location;
mixing a combustible reductant with the nitrogen oxides and injecting the mixture of combustible reductant and nitrogen oxides into said primary oxidant-carbonaceous material injection location; and,
igniting said primary oxidant, particulate carbonaceous material, combustible reductant and nitrogen oxides in said primary oxidant -carbonaceous material injection location.

4,878,443
PLANTER TRASH GUARD

Donald Gardner, Rt. 1, Box 5, St. Peter, Minn. 56082
Filed Jul. 22, 1988, Ser. No. 223,082
Int. Cl.⁴ A01C *5/06*
U.S. Cl. 111—141 6 Claims



1. A surface debris deflector for soil tillage apparatus including at least one pair of disk member cooperatively mounted in spaced apart relation to one another to rotate on edge as said apparatus travels over the soil, said debris deflector comprising:
(a) a planar body portion having side edges which vertically align in substantially parallel relation to an edge profile exhibited by said disk members relative to a line of apparatus travel over the soil; and
(b) a vertical support portion including means for mounting said body portion in centered relation to said disk members and to suspend said body portion immediately above the soil and forward of the rotational axis of said pair of disk members such that surface debris encountered by said body portion is prevented from entering the space between said disk members.

4,878,444
ELECTRONIC SEWING MACHINE AND PRESSER FOOT PARTICULARLY FOR BUTTONHOLE STITCHES AND PROCESS FOR PRODUCING BUTTONHOLE STITCHES UTILIZING ALTERNATELY OPERABLE SENSOR

Yasuru Sano, 1601-2, Narahara-cho, Hachioji, Tokyo; Akio Koide, 1-11-4, Honda, Kokubunji, Tokyo; Toru Hyodo, Matsue-jutaku 4-209, 1923-1, Suwa-cho; Fumihiko Kobayashi, 1-26-14, Nakanokami-cho, both of Hachioji, Tokyo; Takayuki Kawasato, Room 303, 971-1, Nobe, Akikawa, Tokyo, and Yasuhiko Osanai, 4-4-302, 1097, Tate-machi, Hachioji, Tokyo, all of Japan
Filed Apr. 29, 1988, Ser. No. 188,011
Claims priority, application Japan, Apr. 30, 1987, 62-104698; Apr. 30, 1987, 62-104699; Apr. 30, 1987, 62-63989[U]
Int. Cl.⁴ D05B *3/06*
U.S. Cl. 112—264.1 11 Claims

8. A process for producing buttonhole stitches with an electronic sewing machine wherein plural series of stitch control data for the buttonhole stitches are sequentially read out from a memory unit to control a needle amplitude and a fabric feeding amount, one series of the stitch control data being set to the next series when a longitudinal end of the buttonhole is

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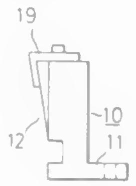
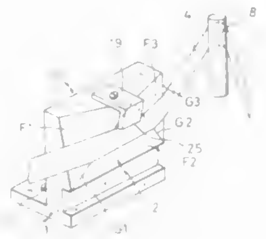
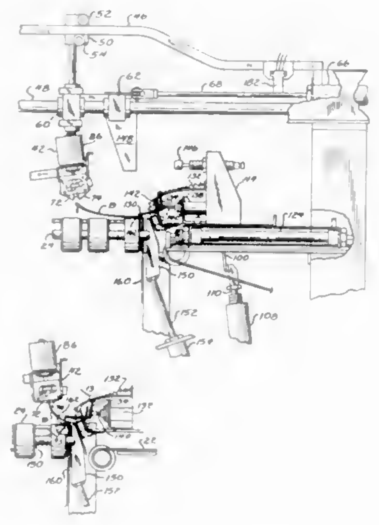
detected with sensor means, the improvement in which operation of said sensor means is annulled during stitching of portions of bar tacks produced at both longitudinal ends of the buttonhole.





4,878,445
HEMMER SEAMER ASSEMBLY

Maximilian Adamski, Palatine; Robert L. Kosrow, Hoffman Estates, and Stephen Ruderman, Oak Park, all of Ill., assignors to Union Special Corporation, Chicago, Ill.
Division of Ser. No. 162,919, Mar. 2, 1988, Pat. No. 4,800,830. This application Oct. 11, 1938, Ser. No. 256,028
Int. Cl.⁴ D05B *27/00*
U.S. Cl. 112—311 8 Claims



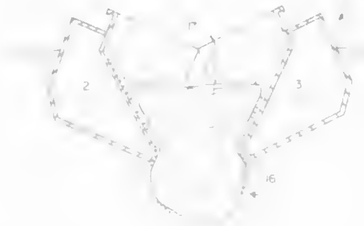
1. A device for transporting a fabric to a sewing station, comprising:
- a transort assembly including clamp means for gripping a portion of the frabic;
- means for placing the fabric at a location for gripping by the clamp means;
- means for adjusting the placing means;
- means for moving the transport assembly towards the sewing station;
- means for stopping movement of the transport assembly adjacent the sewing station; and
- means for sensing the leading edge of the fabric when the transport assembly is stopped by the stopping means to verify the adjusting means is properly adjusted.

2. A device for transporting a fabric to a sewing station; comprising:
- a transport assembly including clamp means for gripping a portion of the fabric;
- means for placing the fabric at a location for gripping by the clamp means;
- means for moving the transport assembly towards the sewing station;
- means for sensing the leading edge of the fabric adjacent the sewing station; and
- means reponsive to the sensing means for stopping movement of the transport assembly.

3. A device for transporting a fabric to a sewing station, comprising;
- a support surface;
- a transport assembly comprising, support means, clamp means located above the support surface, means for pivotally mounting the clamp means to the support means, and means for moving the support means between a first position with the clamp means spaced from the support surface and a second position adjacent the support surface;
- means for placing a portion of the fabric beneath the clamp means; and
- means for moving the clamp means toward the sewing station while the clamp means is in the second position gripping the fabric.

4,878,446
METHOD FOR THE FORMING AND THE DEPOSITION IN A SELECTED PLACE OF A BULK

Jan Vermeulen, Delden, Netherlands, assignor to Nicolon B.V., Netherlands
PCT No. PCT/NL87/00031, § 371 Date Jun. 27, 1988, § 102(e) Date Jun. 27, 1988, PCT Pub. No. WO88/03583, PCT Pub. Date May 19, 1988
PCT Filed Nov. 11, 1987, Ser. No. 224,919
Claims priority, application Netherlands, Nov. 11, 1986, 8602859
Int. Cl.⁴ H63B *35/30*
U.S. Cl. 114—27 18 Claims

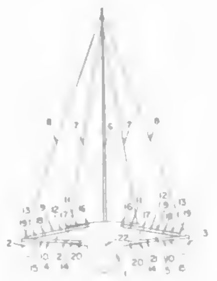


1. A method for depositing in a selected location a bulk material consisting substantially of loose or lightly cohesive material such as sand or other ground material comprising, providing a tank, placing a sheet of material in said tank, placing loose or lightly cohesive material on said sheet until the tank is filled to a desired depth, connecting portions of said sheet to one another to form a substantially closed envelope around said bulk material, positioning the tank substantially above the location where the bulk material is to be deposited, and then removing the envelope from said tank and depositing the envelope with the bulk material therein at said location.

9. Apparatus for depositing in a selected location a bulk material consisting substantially of loose or lightly cohesive material such as sand or other ground material comprising in combination, an envelope containing bulk material therein, said envelope including a sheet of material, connecting means for connecting portions of said sheet to one another to form a substantially closed envelope surrounding the bulk material therein, a tank supporting said envelope, means for moving said tank into position substantially above a location where bulk material is to be deposited, said tank including means for removing and depositing said envelope from said tank, whereby said envelope with the bulk material therein can be deposited at said location.

4,878,447
MULTIHULL VESSELS

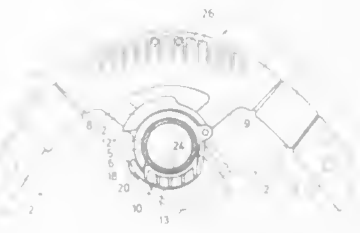
John W. Thurston, 5313 S. 12th, Arlington, Va. 22204
Continuation-in-part of Ser. No. 27,208, Mar. 24, 1987, abandoned, which is a continuation of Ser. No. 751,382, Jul. 3, 1985, abandoned. This application Dec. 11, 1987, Ser. No. 132,068
Int. Cl.⁴ B63B *43/14*
U.S. Cl. 114—61 29 Claims



1. A multihull vessel comprising:
- a center section;
- a plurality of float arm assemblies disposed on opposite sides of the center section and pivotably connected to the center section for movement between:
  - a first position laterally extended from the center section to increase the stability of the vessel in an upright position,
  - a second position located upwardly and inwardly from the first position above the center section and closely adjacent the vertical centerline of the vessel when the vessel is in an upright position, to decrease the stability of the vessel when the vessel is in a fully capsized position; and
  - a third position located downwardly and inwardly from the first position to reduce the beam of the vessel,
- each float arm assembly including upper arm means and lower arm means pivotably connected to the center section for pivotal movement;
  - the upper arm means including inner and outer segment means pivotably connected together about a first intermediate pivot, the inner segment means including an inner end pivotably connected to the center section,
  - the lower arm means including inner and outer segment means connected together about a second intermediate pivot, the outer segment means of the lower arm means connected to a float and being pivotably connected to an outer end of said outer segment means of said upper arm means, the inner segment means of the lower arm means being pivotably connected to the center section,
  - the outer segment means of the upper arm means being rotatable relative to the inner segment about the first intermediate pivot to shorten the effective length of the upper arm means as the float arm assembly is moved between its first and second positions,
  - the outer segment of the lower arm means being rotatable relative to the inner segment about the second intermediate pivot to shorten the effective length of the lower arm means as the float arm assembly is moved between its first and third positions, and
- actuating means for pivoting the float arm assembly, comprising:
  - lifting means for moving the float arm assembly from its first portion to its second position comprising a rigging line extending between the center section and to one of said outer segments at a location adjacent said float, the line disposed below the first intermediate pivot and above the second intermediate pivot and arranged such that the lifting force applied to said one outer segment has a larger component in the horizontal direction than in the vertical direction,
- a lowering means for moving the float arm assembly from its first position to its third position, the lowering means extending between the upper and lower arm means and connected to the upper arm means,
- means for tensioning the rigging line for effecting movement of the float toward the center section when not opposed by the lowering means,
- means for tensioning the lowering means for reducing the separation between the upper and lower arm means when not opposed by the lifting means, and
- the rigging line engaging an underside of the first intermediate pivot to resist downward movement of the latter as the float assembly is being maintained in its first position.

4,878,448
WISHBONE BOOM MOUNTING FOR SAILBOARDS

Udo Schütz, Rückersteg 4, D-5418 Selters, Fed. Rep. of Germany
Filed Jul. 11, 1988, Ser. No. 217,224
Claims priority, application Fed. Rep. of Germany, Jul. 11, 1987, 8709564[U]
Int. Cl.⁴ B63B *15/00*
U.S. Cl. 114—98 7 Claims



1. In a wishbone boom mounting for sailboards with a wishbone head section of a synthetic resin, integrally molded onto a curved pipe section for attaching the two spars of a wishbone boom, and a jacket section accommodating the curved pipe section, a collar connected to the jacket section by at least one web and being placeable onto the mast, a locking element being articulated to this collar and having an inner contour that matches the outer contour of the mast, and a quick-action closure for closing and opening the locking element in order to mount the head section to the mast and, respectively, for detaching the head section from the mast; the improvement comprising a hinged cover (10) molded onto the collar (6) of the wishbone head section (1) by way of a thin flexible hinge (11) and having an inner contour that matches the outer contour of the mast (5), as well as a clamping lever (12) articulated to the collar (6) for tightening and releasing a rope piece (13) forming a loop (14), one end of this rope piece being attached to the clamping lever (12) and the other end thereof being attached to the collar (6) in the region of the thin flexible hinge (11), the loop (14) of said rope piece being tensionable for attaching the wishbone head section (1) to the mast (5) by means of the clamping lever (12) by an extension (20) on the collar (6) lying opposite the closing rim (19) of the hinged cover (10), as well as by guides (22, 23) on the outside of the hinged cover (10).

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4,878,449
SAFETY DEVICE FOR WATER SKIING

Stephan J. Smith, 15662 Park La., Livonia, Mich. 48154
Filed Dec. 1, 1988, Ser. No. 278,356
Int. Cl.⁴ B63B *21/56*

U.S. Cl. 114—253 5 Claims

4. A safety release assembly for water skiing, said assembly comprising:

a tow harness member mounted across a rear transom of a boat,

a block-like means for mounting on the harness for slidable movement back and forth across the harness,

said block-like means having a spring-loaded means for engaging and pulling a ski rope which is held by a skier,

said spring-loaded means being held in fixed position during actual water skiing by,

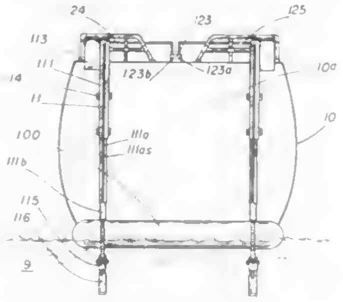
a movable release member means which engages and holds the spring-loaded means in a closed condition during continued water skiing,

a triggering means attached to the movable release member means and operative substantially upon demand such that upon actuating said triggering means the release member means is disengaged from the spring-loaded means to thereby release the ski rope from any attachment to the boat.

4,878,450
BOAT LIFTING DEVICE

Anthony Schmidt, Jr., 3370 N. Key Dr., #1E, North Fort Myers, Fla. 33903
Filed Jun. 24, 1988, Ser. No. 211,241
Int. Cl.⁴ B63B *21/00*

U.S. Cl. 114—259 5 Claims



1. A lifting device for boats, comprising in combination a plurality of support units, each said support unit comprising:

(a) a hollow vertical support member having a vertical slot;

(b) means for attaching said hollow vertical support member to another surface;

(c) motor means mounted on said hollow vertical support member;

(d) a vertical extension member movable up and down in said hollow vertical support member;

(e) cable means connecting said motor means to said extension member; and

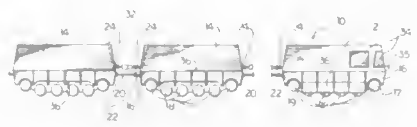
(f) horizontal boat support means connected to said extension member through said slot;

said vertical extension member comprising a hollow first member having a vertical slot and movable in said hollow vertical support member and a second member movable in said first member; said horizontal boat support means being anchored to said second member; said device being characterized in that actuation of said motor means selectively raises or lowers a boat position on said boat support means.

4,878,451
ALL-TERRAIN AMPHIBIAN VEHICLE

Andy O. Siren, 10011 Fairmount Drive, South East, Calgary, Alberta, Canada (T5J 0S6)
Filed Dec. 16, 1987, Ser. No. 133,732
Int. Cl.⁴ B63B *35/00*

U.S. Cl. 114—270 11 Claims



1. An amphibious vehicle comprising:

a hull;

a plurality of wheels mounted on each side of the hull;

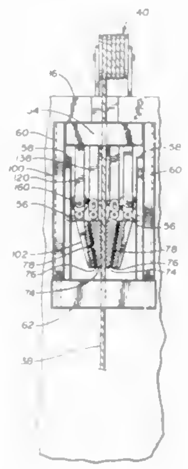
drive means including two drive trains for driving the wheels on respective sides of the hull and means for varying speeds of the drive trains in respect to one another;

power take-off means including two power take-offs associated with respective ones of the drive trains at at least one end of the vehicle for driving connection to the respective drive trains of another, similar vehicle.

4,878,452
QUICK-RELEASE MOORING APPARATUS FOR FLOATING VESSELS

James B. Regan, Burnsville, Minn.; George J. Ikovich, Philadelphia, Pa.; James A. Carlsen, St. Paul, Minn.; Richard J. Juelich, Stillwater, Minn., and Henry G. Kogel, St. Paul, Minn., assignors to Amca International Corporation, St. Paul, Minn.
Continuation of Ser. No. 13,128, Feb. 10, 1987, abandoned. This application Feb. 13, 1989, Ser. No. 309,965
Int. Cl.⁴ B63B *21/50*

U.S. Cl. 114—293 24 Claims



9. A platform-mounted apparatus for drawing in, holding, paying out and rapidly releasing a flexible load line having the properties of a wire rope comprising:

(a) winch means mounted to said platform, said winch means having the ability to draw in and hold the line up to a tensile force less than the breaking strength of the line; and

(b) wedge gripper means for holding said line by self-locking up to a tensile force substantially equal to the breaking strength of the line, said gripper means mounted to said platform and comprising:

(1) a pair of opposed grip wedges having opposed internal gripping surfaces for engaging the line and external wedging surfaces that taper toward each other in the direction of tensile force in the line;

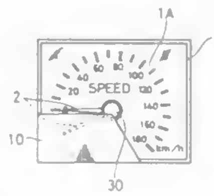
(2) of grip body having opposed seating surfaces against which the external wedging surfaces moveably bear, said seating surfaces tapering toward each other at substantially the same angle as the external wedging surfaces, said grip body and said grip wedges being relatively shiftable between a line engaging position wherein said grip wedges are received within the taper of the seating surfaces such that the opposed grip wedges are wedged together to engage the line for self-locking, and a line clearing position wherein said grip wedges move out of the taper of the seating surfaces such that the opposed grip wedges are moveable apart to disengage the line; and

(3) line release means operably connecting said grip body and said grip wedges to said platform for positively moving the grip body relative to the grip wedges to release self-locking by moving the grip body into said line clearing position while said grip wedges are limited in their travel relative to said platform.

4,878,453
INDICATING INSTRUMENT FOR AUTOMOTIVE VEHICLE

Tai Inoue; Masaya Sugita, both of Susono, and Keiji Okamoto, Shimada, all of Japan, assignors to Yazaki Corporation, Japan
Filed Mar. 15, 1988, Ser. No. 168,398
Claims priority, application Japan, Mar. 16, 1987, 62-037182[U]; Nov. 28, 1987, 62-174994[U]
Int. Cl.⁴ G01D *13/04*

U.S. Cl. 116—288 7 Claims



1. An indicating instrument for an automotive vehicle, comprising:

(a) a dial for displaying pointer scale marks including:

(1) a black opaque layer in which pointer scale marks are engraved;

(2) a semitransparent layer; and

(3) a colored transparent layer sandwiched between said black opaque layer and said semitransparent layer

(b) a pointer for indicating on said dial a quantity measured;

(c) means for driving said pointer according to a quantity measured; and

(d) means, disposed on said dial means, for substantially covering said pointer when said means for driving said pointer is deactivated.

4,878,454
ELECTROSTATIC PAINTING APPARATUS HAVING OPTICALLY SENSED FLOW METER

Roger S. Cann, Mt. Clemens, Mich., assignor to Behr Industrial Equipment Inc., Rochester, Mich.
Filed Sep. 16, 1988, Ser. No. 245,683
Int. Cl.⁴ B05C *11/00*

U.S. Cl. 118—663 23 Claims

1. A high-voltage electrostatic painting apparatus (10) of the type for coating an article (12) with any one of several colors of paint, said apparatus (10) comprising:

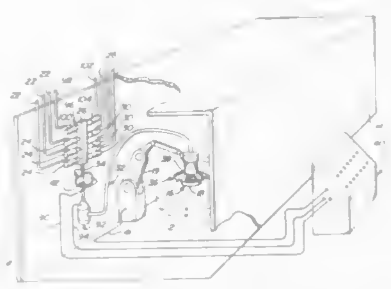
a spray booth (14);

discharge means (16) for discharging paint onto articles (12) on said booth (14);

fluid flow means (20) for conducting liquid paint from outside said booth (14) to said discharge means (16);

meter means (34) in said booth (14) for measuring the rate of flow of the paint through said fluid flow means (34);

electrostatic charging means (36) creating an electrical field within said booth (14) for establishing an electrical potential between said discharge means (16) and the article (12) to be painted;



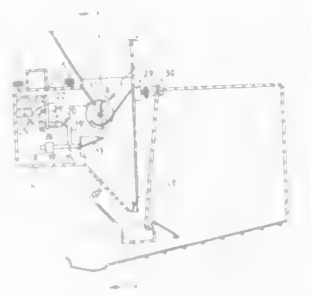
master control means (40) outside said booth (14) for controlling the flow of liquid paint to the discharge means (16) thereby controlling the painting of articles (12) in said booth (14);

and characterized by including optical sensing means (42) responsive to the flow rate measurements of said meter means (34) for sending an optical signal from said meter means (34) to said master control means (40) for controlling the flow of liquid paint whereby the electrical field created by said electrostatic charging means (36) in said booth (14) will not adversely affect a reading of the paint flow rate measurement at said master control means (40).

4,878,455
DEVICE AND METHOD FOR SUPPLYING, VERY ACCURATELY METERED, A QUANITITY OF FOOD TO SMALL LIVESTOCK

Harry M. van der Veer, Heerde, Netherlands, assignor to Farmtec B.V., Heerde, Netherlands
Filed Nov. 18, 1987, Ser. No. 122,173
Claims priority, application Netherlands, Nov. 18, 1986, 8602925
Int. Cl.⁴ A01K *5/00*

U.S. Cl. 119—57.5 4 Claims



1. An animal feeding device comprising a frame movable along a sequence of cages disposed side-byside each having a feeder and comprising a food hopper having a discharge orifice, means in said discharge orifice for supplying food therefrom, a receiving trough in said frame below said discharge orifice and disposed to receive food supplied therefrom, said receiving trough being movable into a dumping position, means for retaining said receiving trough in a position to receive said supplied food, means for indicating when said re-

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ceiving trough has received a predetermined quantity of food corresponding to the quantity of food desired for each animal multiplied by the number of animals within a said cage, means responsive to said indicating means for stopping the supply of food to said receiving trough, and means for actuating said retaining means such that said receiving trough moves to the position to dump food into said feeder, said indicating means comprises a bar having one end connected to said frame and a second end, said receiving trough being retained against said second end of said bar, and a strain gauge mounted on said bar to emit a signal corresponding to the degree of bending of said bar as an indication of the weight of food in said receiving trough.

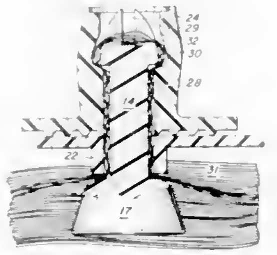
4,878,456
ANIMAL TAIL TAG FOR INSECTICIDE PROTECTION

Steve R. Howe, Glendale, Ariz., assignor to An-Tech International Livestock Products, Phoenix, Ariz.

Filed Oct. 2, 1987, Ser. No. 103,906

Int. Cl.⁴ A01K *13/00*

U.S. Cl. 119—156 **8 Claims**



1. Apparatus for attachment to the hair of an animal which comprises:

(a) an engaging member for gathering a multiplicity of strands of animal hair, said member including:
  I. a stem having first and second ends;
  II. limit means affixed to the second end of said stem;
  III. a head affixed to the first end of said stem and having a cross-sectional area greater than said stem, the head containing at least one transverse slot recessed therein for gathering strands of animal hair, said at least one slot extending partially through the head;

(b) an elongated member having a passage therethrough for receiving and surrounding the stem and head of said engaging member, said passage containing regions of large and small cross-sectional areas for receiving adjacent portions of said slotted head and stem respectively; and

(c) retention means including a transition region contained in said elongated member and extending between said regions of large and small areas whereby the urging of said head and gathered strands through the small area region results in the frictional engagement of said strands between the elongated member and the engaging member within said transition region.

4,878,457
ZERO FLASH CLOSED CONDENSATE BOILER FEEDWATER SYSTEM

Martin Bekedam, 103 Brookline, Moraga, Calif. 94556

Filed Oct. 17, 1988, Ser. No. 258,827

Int. Cl.⁴ F22D *1/28, 1/32, 1/40*

U.S. Cl. 122—441 **7 Claims**

1. A steam processing system having a closed condensate return system for collecting condensate from processing equipment and returning it to a boiler feedwater system comprising:

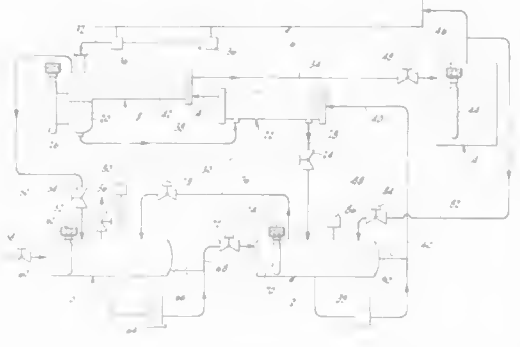
a boiler;

a boiler feedwater system having a low pressure receiver means for receiving condensate and storing boiler feedwater, and a feedwater delivery means for supplying feedwater from the receiver means to the boiler;

processing equipment that receives high pressure steam from the boiler, the processing equipment having collection means for collecting condensate from spent boiler steam;

a pressurized flash condenser connected to the processing equipment for receiving mid pressure condensate from the processing equipment, the flash condenser having a surge tank means for collecting condensate and a cooling means for circulating cooling water to condensate flash steam from condensate entering the flash condenser under varying pressure, wherein the cooling means of the flash condenser includes a cooling conduit through which the feedwater delivery means supplies feedwater from the receiver means to the boiler;

and, condensate return means for delivering condensate from the flash condenser to the receiver means according to the level of collected condensate in the flash condenser surge tank means.



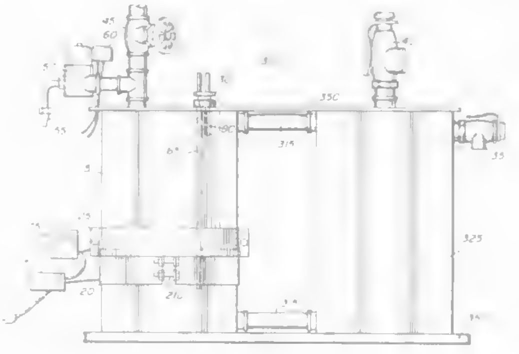
4,878,458
METHOD AND APPARATUS FOR GENERATING PRESSURIZED FLUID

Clinton D. Nelson, 2910 Frontenac, North Chicago, Ill. 60606

Filed Aug. 31, 1987, Ser. No. 91,505

Int. Cl.⁴ F22B *5/02*

U.S. Cl. 122—4 A **14 Claims**



1. An apparatus for generating pressurized fluid at elevated temperatures, said apparatus comprising:

a plurality of tanks housing fluids at elevated temperatures and pressures;

heating means for externally heating at least one tank and heating the fluid housed in said at least one tank to elevated temperatures and pressures;

heat sink means provided between each of said plurality of tanks to transfer heat from said at least one externally heated tank to the other said plurality of tanks;

temperature control means for controlling said heating means to heat the fluid housed in said at least one tank to temperatures sufficient for providing fluids at elevated temperatures and pressures; and

fluid level sensing means for sensing the level of fluid in said at least one tank and deactivating said heating means when the level of fluid in said tank is below a preselected amount.

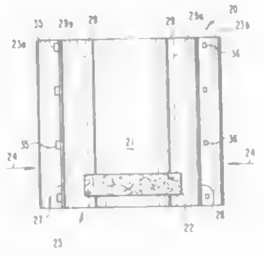
4,878,459
WATER HEATER CONSTRUCTION

Thomas E. Nelson, 2407 Greten La., Anchorage, Ky. 40223

Filed Feb. 13, 1989, Ser. No. 309,658

Int. Cl.⁴ F22B *37/36*

U.S. Cl. 122—494 **12 Claims**



1. A water heater comprising:

a generally cylindrical inner water tank; and

a generally cylindrical outer insulation panel disposed circumferentially around said water tank, said insulation panel including:

(a) a flexible cover having two oppositely disposed, axially extending free ends which are joined together to complete said generally cylindrical shape and said flexible cover having an inside diameter size greater than the outside diameter size of said water tank;

(b) insulation means received by said flexible cover, and having a thickness at least equal to the distance of radial separation between said tank and said cover; and

(c) said cover further includes a skin and a plurality of generally parallel axially extending and inwardly directed ribs joined to said skin, each pair of adjacent ribs defining a receiving channel and each receiving channel having a portion of said insulation means disposed therein.

4,878,460
INTAKE SYSTEM FOR V-TYPE INTERNAL COMBUSTION ENGINE

Hiroyasu Uchida, Hiroshima, and Kazuhiko Ueda, Higashihiroshima, both of Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Oct. 31, 1988, Ser. No. 264,651

Claims priority, application Japan, Oct. 30, 1987, 62-273363

Int. Cl.⁴ F02B *25/28*

U.S. Cl. 123—52 MV **14 Claims**

1. An intake system for a V-type internal combustion engine comprising:

(a) an engine having elongated first and second banks set at an angle to each other to define a V-shaped space therebetween, each bank including a plurality of cylinders not intended to be fired one after another, and intake ports for the cylinders provided in the side of the bank facing toward the V-shaped space;

(b) a supercharger means positioned in the V-shaped space for feeding supercharged air to the cylinders;

(c) intercooler means coupled to said supercharging means for receiving cooling supercharged air from the supercharger means, said intercooler means being positioned above the first bank;

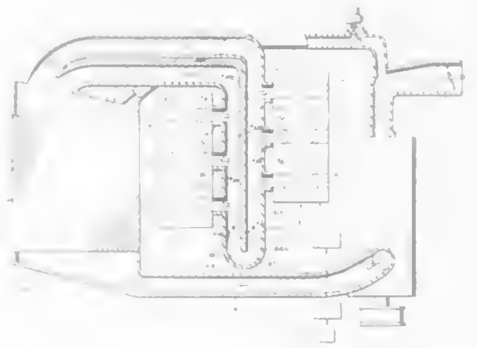
(d) first and second intake collecting passages located in the V-shaped space below the supercharger means for receiving cooled air from the intercooling means and feeding same as intake air to the first and second banks, respectively;

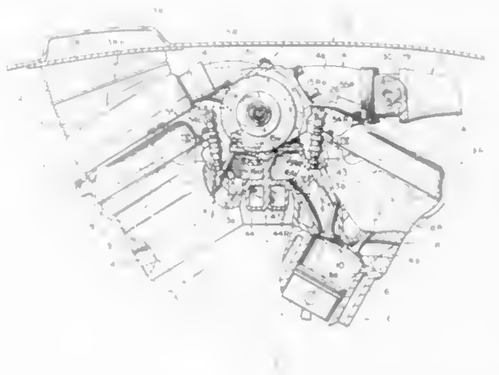
(e) a first branch intake passage coupling the first intake collecting passage with the intercooler means;

(f) a second branch intake passage coupling the second intake collecting passage with the intercooler means;

(g) a plurality of first separate intake passages coupling the first intake collecting passage with the intake ports of the cylinders constituting the first bank; and

(h) a plurality of second separate intake passages coupling the second intake collecting passage with the intake ports of the cylinders constituting the second bank.





4,878,461
VARIABLE CAMSHAFT TIMING SYSTEM

Samuel J. Sapienza, IV, Hampton; Willem N. J. van Vuuren, Williamsburg; Benjamin G. Shirey, Hampton, and Russell J. Wakeman, Newport News, all of Va., assignors to Siemens-Bendix Automotive Electronics L.P., Troy, Mich.

Continuation-in-part of Ser. No. 181,867, Apr. 15, 1988, which is a continuation of Ser. No. 17,670, Feb. 24, 1987, Pat. No. 4,744,338. This application Jun. 30, 1988, Ser. No. 213,651

Int. Cl.⁴ F01L *1/34*

U.S. Cl. 123—90.15 **8 Claims**

1. A variable timing system in combination with an internal combustion engine having an engine crankshaft or moveable member, an exhaust camshaft mounted for rotation and extending from the engine, said exhaust camshaft having at least one exhaust cam for controlling the opening and closing of at least one exhaust valve, and an intake camshaft mounted for rotation on the engine, said intake camshaft having at least one intake cam for controlling the opening and closing of at least one intake valve, said system comprising:

a first pulley wheel means fixedly attached to one end of each of the exhaust camshaft and the crankshaft of the engine;

a first belt means for interconnecting said first pulley wheel

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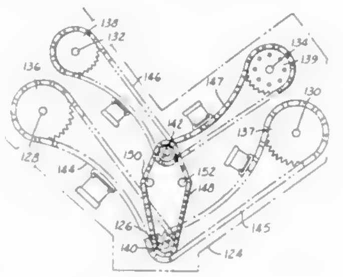
means for transferring rotational drive from the crankshaft to the exhaust camshaft;

a second pulley wheel means fixedly attached to each of the exhaust camshaft and one end of the intake camshaft at opposite end of the engine;

a second belt means for interconnecting said second pulley wheel means for transferring rotational drive from the crankshaft via the exhaust camshaft to the intake camshaft;

idler arm means including a pivoting arm, a cam follower means and an idler wheel in operative contact with a portion of said second belt means;



positioning cam means operatively coupled to said cam follower means of said idler arm means, for relatively rotating said second pulley wheel means attached to said one end of the intake camshaft with said second pulley wheel means attached to said opposite end of the exhaust camshaft;

a control means responsive to various engine operating parameters for generating motor control signals; and

motor means responsive to said motor control signals and operatively coupled to rotate said positioning cams means for positioning said idler arm means for changing the relative rotational position between the input camshaft and the exhaust camshaft.

4,878,462

ENGINE VALVE OPERATING APPARATUS

Toru Kurisu, Hiroshima, and Tuneo Kodama, Higashihiroshima, both of Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Feb. 2, 1988, Ser. No. 151,667

Claims priority, application Japan, Feb. 5, 1987, 62-26070

Int. Cl.^{4} F01L *1/08*

U.S. Cl. 123—90.17 19 Claims

1. An engine valve operating apparatus for a multi-cylinder internal combustion engine comprising a camshaft having a plurality of cams each of which has a cam lobe consisting of a cam nose section, opening and closing flank sections disposed on opposite sides of said cam nose section for opening and closing an engine valve associated with each said cam, and ramp sections connecting said opening and closing flank sections to a base section of said cam, respectively; and a plurality of journals formed between said plurality of cams through which said camshaft is mounted on said engine for rotation, said plurality of cams including an outermost cam which is located outside an outermost journal of said plurality of journals and has a closing ramp height higher than any opening and closing ramp height of any one of the remaining cams.

4,878,463

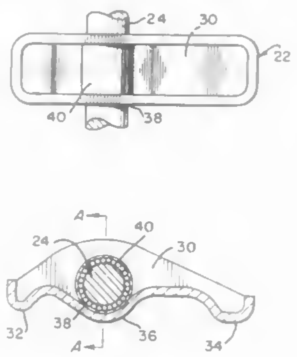
NEEDLE BEARING ROCKER ARM ASSEMBLY

Arnold E. Fredericksen, New Hartfort, and Robert D. Richtmeyer, Goshen, both of Conn., assignors to The Torrington Company, Torrington, Conn.

Filed Oct. 1, 1987, Ser. No. 103,988

Int. Cl.^{4} F01L *1/18*

U.S. Cl. 123—90.41 6 Claims



1. A rocker arm assembly for a rocker shaft comprising:

a rocker arm having an open-topped tub-like body;

said body further comprising a central pivot portion,

said pivot portion having a bottom wall and side walls,

said bottom wall having a semi-cylindrical extending bottom surface of a diameter greater than the rocker shaft, and

said side walls having coaxial bores of a diameter equal to the rocker shaft; and

a bearing adapted to fit in the interior of said pivot portion, said bearing having an outer portion radially in contact with said bottom surface and axially constrained by said side walls.

4,878,464

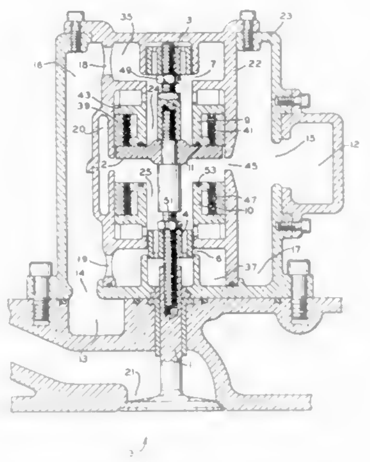
PNEUMATIC BISTABLE ELECTRONIC VALVE ACTUATOR

William E. Richeson, Jr., and Frederick L. Erickson, both of Fort Wayne, Ind., assignors to Magnavox Government and Industrial Electronics Company, Fort Wayne, Ind.

Filed Feb. 8, 1988, Ser. No. 153,257

Int. Cl.^{4} F01L *9/04, 9/02*

U.S. Cl. 123—90.11 15 Claims



6. A bistable electronically controlled pneumatically powered transducer having an armature reciprocable between first and second positions, motive means for causing the armature to move, a permanent magnet latching arrangement for holding the armature in either one of said positions, and an electromagnetic arrangement for temporarily neutralizing the effect of the permanent magnet latching arrangement to release the armature to move from one of said postions to the other of said positions.

4,878,465

CONTROL FOR AUTOMATICALLY STARTING A DIESEL ENGINE

Jay L. Hanson, Bloomington, and Leland L. Howland, Belle Plaine, both of Minn., assignors to Thermo King Corporation, Minneapolis, Minn.

Filed Aug. 26, 1988, Ser. No. 236,887

Int. Cl.^{4} F02N *11/08*

U.S. Cl. 123—179 BG 13 Claims

1. Electrical control apparatus for automatically starting a Diesel engine, comprising:

a starting solenoid,

glow plugs,

a fuel solenoid,

start, preheat and run relays having switch contacts connected to respectively control the energization of said starting solenoid, glow plugs, and fuel solenoid,

a control module for controlling the energization of said start, preheat and run relays following energization of the control module,

and means for energizing said control module when the Diesel engine is to be automatically started,

said control module including:

first logic means for controlling said preheat relay,

said first logic means energizing the preheat relay when said control module is energized, to initiate energization of said glow plugs,

first timer means for providing a glow plug preheat time related to the temperature of the Diesel engine,

said first timer means providing a first signal for energizing the run relay prior to the completion of the preheat time, to energize the fuel solenoid, and a second signal at the completion of the preheat time,

second logic means for controlling said start relay,

said second logic means being responsive to the second signal of said first timer means, energizing the start relay in response thereto, to energize the starting solenoid,

monitor means for monitoring the speed (RPM) of the Diesel engine,

comparator means responsive to said monitor means for providing first and second signals at first and second predetermined RPM's, respectively,

second timer means responsive to the second signal of the first timer means and to the first signal of the comparator means for providing a limit signal,

said second timer means providing the limit signal after a first predetermined period of time, in the absense of the first signal, of the comparator means,

said second timer means providing the limit signal after a second predetermined period of time upon receipt of the first signal prior to the end of said first predetermined period of time,

said first and second logic means being responsive to said limit signal and to the second signal of said comparator means,

said first and second logic means respectively de-energizing the preheat relay and the start relay in response to the first to occur of said limit and second signals

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4,878,466

PISTON OF AN INTERNAL COMBUSTION ENGINE

Nikolai M. Storchevoi, Bratislavskaya, 34, kv. 174, Kiev, U.S.S.R.

PCT No. PCT/SU87/00032, § 371 Date Oct. 28, 1988, § 102(e) Date Oct. 28, 1988, PCT Pub. No. WO88/07132, PCT Pub. Date Dec. 22, 1988

PCT Filed Mar. 19, 1987, Ser. No. 283,483

Claims priority, application U.S.S.R., Nov. 15, 1982, 3514116; Canada, May 11, 1987, 536,779; China, May 15, 1987, 87103522

Int. Cl.^{4} F02F *3/08*

U.S. Cl. 123—193 CP 1 Claim

1. A piston of an internal combustion engine comprising a skirt (1) with a hole (3) to receive a piston pin the axis (O_1) of which is perpendicular to the axis (O) of the skirt (1) the side surface of which is provided with two recesses (4) arranged at

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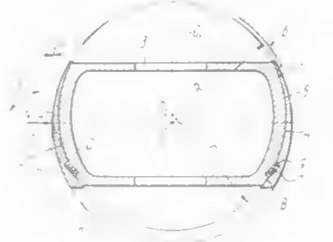
the opposite sides of the piston pin hole axis (O_1) and having cylindrical surfaces with axes thereof parallel with the axis (O) of the skirt (1), each pin receiving an insert (5) having an outer cylindrical surface engageable with the surface of the cylinder (6) of the internal combustion engine, this outer cylindrical surface having a radius of curvature equal to the radius of the cylinder (6) of the internal combustion engine, and having an inner cylindrical surface of a radius of curvature of the recess (4), and two springs (7) each disposed between the corresponding insert (5) and skirt (1) for the force of the spring to urge the insert (5) to the cylinder (6), characterized in that cross-sectionally each insert (5) has the form of a curvilinear wedge having a maximum angle not exceeding the angle of friction thereof, the inner surface of the insert (5) engaging with the cylindrical surface of the recess (4) the axis (0_2) of which is offset from the axis (O) of the skirt (1) axially of the piston pin hole axis (O_1) in the direction of taper of the wedge by a magnitude equal to the product of the radius (r) of curvature of the inner surface of the insert (5) by the maximum angle (α) of the wedge, each spring (7) being disposed so that the angle (β) between the direction of force produced by the spring (7) and a line (K) tangent to the inner surface of the corresponding insert at the point of application of this force toward the wedge taper is less than 90°.



4,878,467

SINGLE- OR MULTIPLE-PART PROTECTIVE COVER FOR TRACTION DRIVES

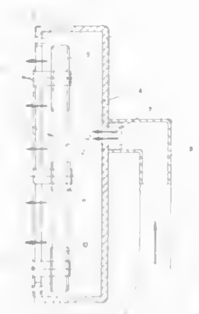
Konrad Schmidt, Ringstrasse 12, D-8501 Tuchenbach, Fed. Rep. of Germany

Filed Oct. 2, 1987, Ser. No. 103,717

Claims priority, application Fed. Rep. of Germany, Sep. 17, 1986, 3631517

Int. Cl.⁴ F01P *5/06*

U.S. Cl. 123—195 C **23 Claims**



1. A single- or multiple-part protective cover for traction drives, such as chain, belt, toothed belt drives, in particular for vehicle engines, vehicle drives, machines, comprising:

at least one inlet opening disposed in the protective cover, through which opening a gaseous medium can enter into an inner chamber containing the traction drive, the at least one inlet opening being designed as an over-pressure coolant inlet opening in a wall of the protective cover;

a line having one end connected with a corresponding one of the at least one inlet opening and having a second end connected to a source emitting the coolant medium, said source comprising a turbo-compressor.

4,878,468

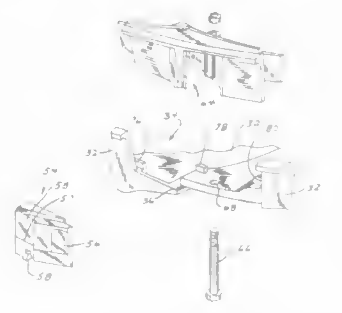
COWL ASSEMBLY FOR AN OUTBOARD MOTOR

James C. Boda, Winneconne, and Gordon C. Slattery, Omro, both of Wis., assignors to Brunswick Corporation, Skokie, Ill.

Division of Ser. No. 77,689, Jul. 24, 1987, Pat. No. 4,800,854. This application Dec. 6, 1988, Ser. No. 280,684

Int. Cl.⁴ F02F *7/00*

U.S. Cl. 123—195 P **7 Claims**



1. A cowl assembly for enclosing the engine of an outboard motor having an internal cable leading thereto, comprising:

a first cowl section and a second cowl section, said first and second cowl sections adapted to fit together to house said engine, said first and second cowl sections having edge portions which cooperate to form a joint between said cowl sections when said cowl sections are fitted together about said engine;

one of said cowl sections having a cut-out portion adjacent its edge portion forming an opening for allowing said cable to pass into the interior of said cowl assembly; and

sealing means for providing a water resistant seal around said cable at its point of entry into the interior of said cowl assembly, comprising:

a flexible plug adapted to surround said cable; and

an insert adapted for placement within said opening and including a passage adapted to receive said flexible plug for providing a water resistant seal at said opening about said cable.

4,878,469

POWER PLANT STRUCTURE FOR MOTOR VEHICLE

Yoshimasa Hayashi, Kamakura, and Tsuyoshi Tamazawa, Yokohama, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Jan. 6, 1988, Ser. No. 141,244

Claims priority, application Japan, Jan. 7, 1987, 62-581

Int. Cl.⁴ F02B *75/06, 75/20*

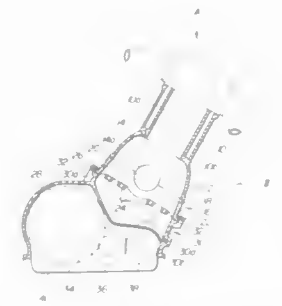
U.S. Cl. 123—195 A **13 Claims**

1. A power plant structure of increased rigidity and reduced engine noise comprising:

an engine including a cylinder block which includes a lower skirt;

a mounting portion integrally formed on said transmission case to which the lower skirt of said cylinder block is mounted;

connecting means for securely connecting said lower skirt of said cylinder block to said mounting portion; and



a part of said transmission case constituting a part of an oil pan of said engine upon mounting of said engine onto said mounting portion.

4,878,470

DEVICE FOR ACTUATING BUTTERFLY THROTTLE VALVE OF AN INTERNAL COMBUSTION ENGINE

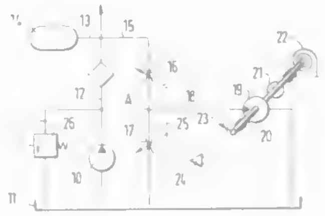
Rainer Burkel, Asberg; Kurt Engelsdorf, Besigheim; Rolf Gawlik, Beilstein, and Karl-Heinz Hägele, Vaihingen/Enz, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Oct. 13, 1988, Ser. No. 257,967

Claims priority, application Fed. Rep. of Germany, Oct. 30, 1987, 3736831

Int. Cl.⁴ F02D *9/02;* **F15B** *1/02*

U.S. Cl. 123—401 **7 Claims**



1. A device for actuating a throttle valve of an internal combustion engine having a fuel pump and a throttle valve, said actuating device comprising:

hydraulic setting means coupled to the throttle valve for setting an operating position thereof in accordance with a nominal signal;

fuel flow control means connectable between the fuel pump and said hydraulic setting means for communicating to said hydraulic setting means a flow of fuel acting as a pressure medium; and

means for regulating said fuel flow control means in accordance with the nominal signal and including a position sensor for sensing the operating position of the throttle valve and for generating a position signal and an electronic control circuit connectable to said position sensor and a source of the nominal signal for generating a regulating signal in accordance with the position signal and the nominal signal;

said fuel flow control means comprising two adjustable throttles and said regulating means comprising adjusting means for simultaneously adjusting said two adjustable throttles in accordance with the regulating signal to provide for fuel flow to said hydraulic setting means in accordance with the nominal signal.

4,878,471

DIESEL FUEL INJECTION DEVICE WITH PREINJECTION

Peter Fuchs, Adlikon, Switzerland, assignor to Nova-Werke AG, Effretikon, Switzerland

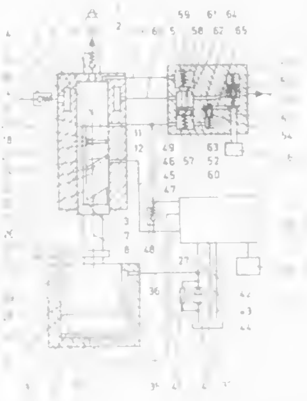
PCT No. PCT/CH87/00112, § 371 Date Jul. 8, 1988, § 102(e) Date Jul. 8, 1988, PCT Pub. No. WO88/02066, PCT Pub. Date Mar. 24, 1988

PCT Filed Sep. 4, 1987, Ser. No. 210,493

Claims priority, application Switzerland, Sep. 9, 1986, 03617/86

Int. Cl.⁴ F02M *39/00*

U.S. Cl. 123—446 **16 Claims**



1. A fuel injection device for a diesel engine in which an injection nozzle is connected through a pressure line to an injector, which injector has a housing with at least one fuel line for the inflow and outflow of fuel, a pump chamber and a plunger, in which the plunger has at least one annular groove with two control edges and is fluidly connected with the pump chamber, and the housing has a corresponding relief passage for the interruption of pressure build-up in the pump chamber, with the distinction that the plunger (7) is connected with a fluid drive system (27) independent of the fuel system; said drive system (27) includes a drive unit (28), a pressure source (37), and a first control device (38) which ca be actuated mechanically and electrically, said first control device (38) including a main slide valve (70) and an auxiliary slide valve (71); said main and auxiliary slide valves each having a return piston (72, 74) acted on by fuel pressure from the pump chamber (6) through a respective line (45, 46); a second control device (50) being located in a fuel line (5, 15) on the injector (3) and includes an inlet relief valve (51) and at least one interruption valve (53), said inlet relief valve (51) having a switching piston (52) located in piston chamber (57) which is connected through a first line (49) with a first relief passage (11) on the injector housing (4) communicating with the pump chamber (6) and connected with the fuel line (15) through a second line (63, 65) having said interruption valve (53) located therein.

4,878,472

AIR-FUEL RATIO FEEDBACK CONTROL METHOD FOR INTERNAL COMBUSTION ENGINES

Yoshitaka Hibino, Wako, Japan, assignor to Honda Giken Kogyo K.K., Tokyo, Japan

Filed Aug. 4, 1988, Ser. No. 228,545

Claims priority, application Japan, Aug. 31, 1987, 62-217252

Int. Cl.⁴ F02M *17/00*

U.S. Cl. 123—489 **10 Claims**

1. In a method of controlling the air-fuel ratio of a mixture being supplied to an internal combustion engine having an exhaust system, in a feedback manner responsive to an output signal from sensing means arranged in said exhaust system for sensing the concentration of a component in exhaust gases from said engine to produce as said output signal a normally

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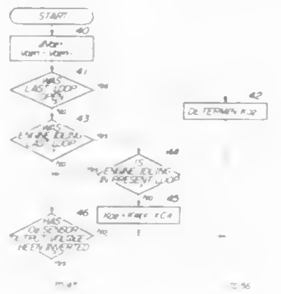
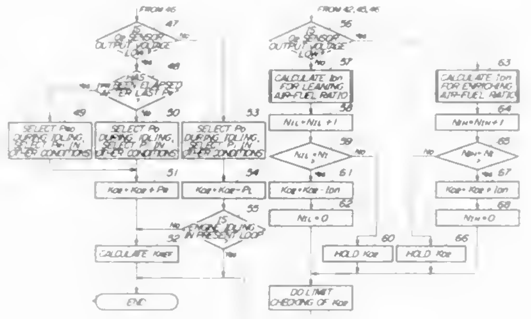
fluctuating output signal indicative of the concentration of said component, the method including:

- comparing the value of said output signal with a predetermined reference value; and
- controlling the air-fuel ratio of said mixture to a desired value by means of at least one of proportional control applying a first correction value to correct the air-fuel ratio when said output signal changes from a rich side to a lean side or vice versa with respect to said predetermined reference value, and integral control applying a second correction value to correct the air-fuel ratio with a predetermined period so long as said output signal remains on the lean side or on the rich side with respect to said predetermined reference value,

the improvement comprising the steps of:

- (1) sensing a rate of change in the value of said output signal;
- (2) determining a correcting amount in response to the sensed rate of change; and
- (3) increasing or decreasing said second correction value by means of said determined correcting amount, depending upon whether said output signal remains on the lean side or on the rich side with respect to said predetermined value.


START
40
41
42
43
44
45
46
IS ENGINE IDLING IN PRESENT LOOP
HAS O2 SENSOR OUTPUT VOLTAGE BEEN INVERTED


FROM 46
FROM 42, 45, 46
47
56
57
63
CALCULATE Ion FOR LEANING AIR-FUEL RATIO
CALCULATE Ion FOR ENRICHING AIR-FUEL RATIO
CALCULATE Kapi
END
DO LIMIT CHECKING OF Kα

4,878,473
INTERNAL COMBUSTION ENGINE WITH ELECTRONIC AIR-FUEL RATIO CONTROL APPARATUS

Shinpei Nakaniwa, and Akira Uchikawa, both of Kasukawa, Japan, assignors to Japan Electronic Control Systems Co. Ltd., Isesaki, Japan

Filed Sep. 28, 1988, Ser. No. 250,261

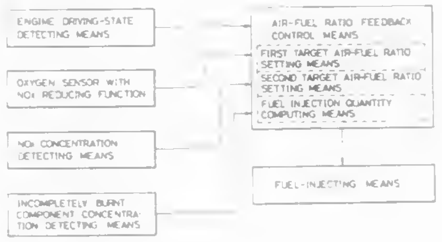
Claims priority, application Japan, Sep. 30, 1987, 62-243896

Int. Cl.⁴ F02D *41/06*

U.S. Cl. 123—489 **18 Claims**

1. An electronic air-fuel ratio control apparatus in an internal combustion engine with a ternary catalyst disposed in an exhaust system which is effective in oxidation reaction of carbon oxide and hydro carbon and in reduction reaction of nitrogen oxides when an air-fuel mixture drawn into the engine is in a theoretical air-fuel ratio, which comprises:

- an engine driving state-detecting means for detecting a driving state of the engine;
- a nitrogen oxides concentration detecting means for detecting nitrogen oxides concentration in the exhaust gas;
- an incompletely burnt component concentration detecting means for detecting incompletely burnt component concentration including carbon oxide CO or hydro carbons HC in the exhaust gas;
- an oxygen sensor disposed in the exhaust system of the engine to detect the air-fuel ratio of the air-fuel mixture through the oxygen concentration in the exhaust gas, said oxygen sensor comprising an oxidizing catalyst layer and a nitrogen oxides-reducing catalyst layer for promoting the reaction of reducing nitrogen oxides and emitting a voltage signal with the point of the theoretical air-fuel ratio corresponding to the oxygen concentration in the exhaust gas including the oxygen in the nitrogen oxides;
- an air-fuel ratio feedback control means for controlling the air-fuel ratio of the air-fuel mixture by increasing or decreasing a fuel injection quantity to be supplied to the engine based on the engine driving state detected by said engine driving state-detecting means and the air-fuel ratio detected by said oxygen sensor so as to eliminate the deviation of the air-fuel ratio detected by said oxygen sensor from a target air-fuel ratio;


ENGINE DRIVING-STATE DETECTING MEANS
OXYGEN SENSOR WITH NOx REDUCING FUNCTION
NOx CONCENTRATION DETECTING MEANS
INCOMPLETELY BURNT COMPONENT CONCENTRATION DETECTING MEANS
AIR-FUEL RATIO FEEDBACK CONTROL MEANS
FIRST TARGET AIR-FUEL RATIO SETTING MEANS
SECOND TARGET AIR-FUEL RATIO SETTING MEANS
FUEL INJECTION QUANTITY COMPUTING MEANS
FUEL-INJECTING MEANS

- a fuel-injecting means for injecting and supplying a fuel to the engine in an on-off manner according to a driving pulse signal emitted from said air-fuel feedback control means; and
- said air-fuel ratio feedback control means in which the target air-fuel ratio has first and second target air-fuel ratios further comprising:
- a first target air-fuel ratio setting means for setting the first target air-fuel ratio based on the engine driving state detected by said engine driving state detecting means and the air-fuel ratio detected by said oxygen sensor;
- a second target air-fuel ratio setting means for changing the first air-fuel ratio to set the second target air-fuel ratio which is richer than the first air-fuel ratio when a high nitrogen oxides concentration is detected by said nitrogen oxides concentration detecting means or which is leaner than the first air-fuel ratio when a high incompletely burnt component concentration is detected by said incompletely burnt component concentration detecting means; and
- a fuel injection quantity computing means for computing and setting a fuel injection quantity to be injected from said fuel-injecting means to the engine to attain the first target air-fuel ratio or the second target air-fuel ratio of the air-fuel mixture based on the engine driving state, the air-fuel ratio of the air-fuel mixture, the nitrogen oxide concentration and the incompletely burnt component concentration.

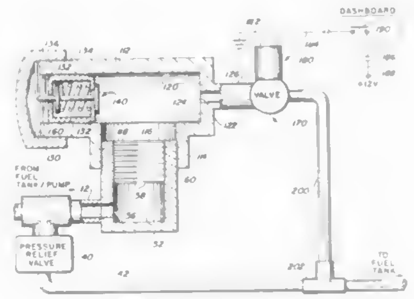
4,878,474
VENT APPARATUS FOR FUEL INJECTION SYSTEM

J. Roy Hack, Jr., 5405 S. Rosemont, Tucson, Ariz. 85706

Filed Nov. 18, 1988, Ser. No. 272,902

Int. Cl.⁴ F02M *39/00*

U.S. Cl. 123—516 11 Claims



1. In a fuel injection system having a fuel rail, a pressure relief valve connected to the fuel rail, a fuel return line extending from the pressure relief valve, and a bleed valve for bleeding air pressure from the fuel rail, including a valve housing connected to the fuel rail and a removable manually actuated valve core, the improvement comprising, in combination:

- valve housing means connected to the valve housing for providing a manual bleed valve and a remotely actuable bleed valve;
- means for receiving and connecting the manually actuated valve core in and to the valve housing means for providing a manual bleed valve; and
- remotely actuable valve means connected to the valve housing means for remotely bleeding air pressure from the fuel rail.

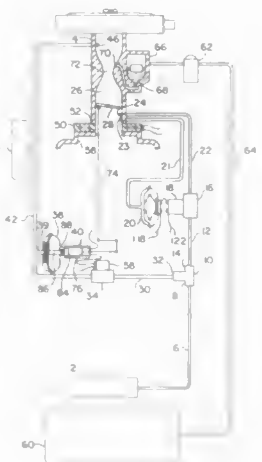
4,878,475
FUEL SUPPLY SYSTEM FOR INTERNAL COMBUSTION ENGINES

Ludwig Birsa, 219 Fisher Ave., Rockdale, Ill. 60436

Filed Nov. 21, 1988, Ser. No. 274,233

Int. Cl.⁴ F02B *1/00*

U.S. Cl. 123—525 10 Claims



1. A fuel supply system for an internal combustion engine having at least one combustion chamber, comprising first fuel supply means to supply a first fuel to said combustion chamber for starting initial combustion therein, including said first fuel, and to continue to supply a limited amount of said first fuel to said combustion chamber throughout the entire operation of said engine until it is stopped, second fuel supply means to supply a second fuel to said combustion chamber during a specified and limited phase of said engine's operation, including said second fuel, acceleration means operative to begin supply of said second fuel to said combustion chamber after said initial combustion and to thereafter accelerate and decelerate supply of said second fuel to said combustion chamber, and third fuel suuply means to supply said first fuel to said combustion chamber from said third fuel supply means for a determinable limited time period in response to said acceleration means operating to accelerate supply of said second fuel to said combustion chamber, said first fuel and said second fuel being both supplied to said combustion chamber during such determinable limited period of time, said third fuel supply means discontinuing to supply said first fuel to said combustion chamber after such determinable limited period of time.

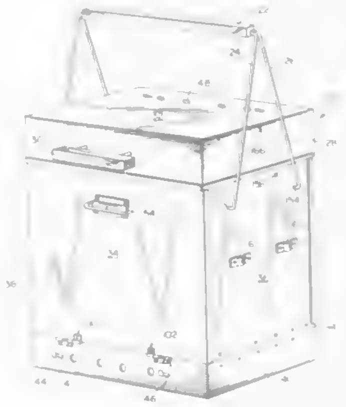
4,878,476
PORTABLE BARBECUE GRILL ASSEMBLY

Adam L. Oliphant, 1452 D Street, N.E., Washington, D.C. 20002

Filed May 22, 1989, Ser. No. 355,620

Int. Cl.⁴ F24C *1/16*

U.S. Cl. 126—9 R 11 Claims



1. A portable barbecue grill assembly capable of being folded into an attache carrying case configuration comprising:

- a. rectangular top cover in the form of an attache case having four upstanding closed sides, a closed back and an open front, together with a grip handle affixed on one side;
- b. a cooking oven supporting the top cover and including:
  - i. a rectangular base pan;
  - ii. left and right hand oven upstanding sides hingedly connected to said base pan and including interior bracket means for support of grills therebetween;
  - iii. an upstanding back hinged to said base pan and including interior bracket members for supporting cooking grills, and
  - iv. a front door releaseably and pivotally secured to said base pan, and
- c. a plurality of cooking grates including side and back studs respectively engaging said bracket means in said sides and back.

4,878,477
BARBEQUE GRILL WITH FLAMELESS HEATING ELEMENT AND HEAT RESTRICTIVE COOKING SURFACE

Jack S. McLane, 3101 Backman Rd., Gaston, S.C. 29503

Filed Apr. 22, 1988, Ser. No. 184,689

Int. Cl.⁴ A47J *37/00;* **F24C** *3/04*

U.S. Cl. 126—41 R 14 Claims

1. In a barbecue grill of the type having a housing defining an upper opening and a substantially rectangular grill supported a preselected distance below the upper opening with

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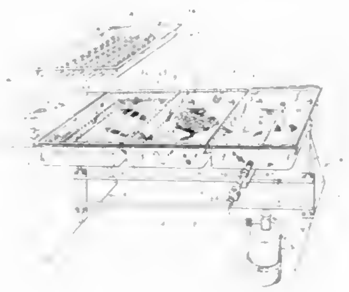
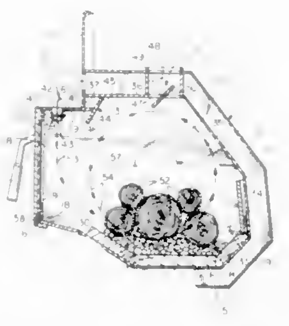
the support grill comprising a plurality of substantially parallel rods, an improvement comprising a substantially rectangular pan adapted to be supported on said support grill, said pan being corrugated to form substantially parallel ridges and valleys with the spacing between adjacent ridges corresponding to the spacing between adjacent rods of the support grill, said valleys having a plurality of openings formed therein with the openings sized to restrict egress of heat from within the housing, and means for producing heat within the housing, said pan further comprising two side members extending upwardly from opposite edges of the pan a distance substantially corresponding to said preselected distance, whereby the pan can be supported upon the food support grill with its side members extending upwardly adjacent the upper opening of the housing.



4,878,478

WOOD BURNING STOVE

Darrel Johnson, 320 - 11th St., Lewiston, Id. 83501
Filed Mar. 21, 1988, Ser. No. 170,804
Int. Cl.⁴ F24C *1/14*
U.S. Cl. 126—61 7 Claims



1. A stove that circulates combustion gases in a horizontal cylindrical fashion to provide a longer dwell time in the fire chamber, comprising in combination:

an outer shell partially containing an inner shell, with door means in the inner shell at a spaced distance from the outer shell, to define a heat exchange chamber between the inner and outer shells, said heat exchange chamber having means to circulate air therethrough for heating;

a fire chamber defined by the inner shell and having a forward portion, a bottom portion extending rearwardly and below the forward portion in an angulated fashion, a rearward portion angled in an upward and forward direction, a forwardly extending substantially horizontal top plate and a forward vertical wall defining the aforesaid door means;

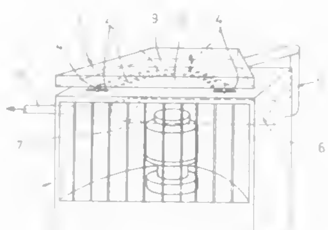
draft means defined in the top plate above and immediately rearwardly of the door means;

and flue means for exhausting combusion gases from the upper rearward part of the fire chamber defined a spaced distance forwardly of the rearward portion of the fire chamber.

4,878,479

APPARATUS FOR EXHAUSTING THE COMBUSTION GASES OF A STOVE FIRED ON LIQUID OR GASEOUS FUEL

Cornelis C. Stuitje, Johan van Oldenbarneveldlaan 27, 3705 HA, Zeist, Netherlands
Filed Sep. 6, 1988, Ser. No. 241,057
Claims priority, application Netherlands, Sep. 3, 1987, 8702075
Int. Cl.⁴ F24C *15/20*
U.S. Cl. 126—84 9 Claims

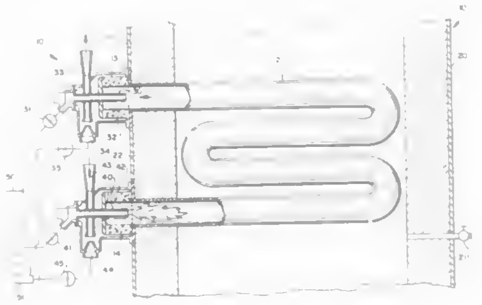


1. Apparatus for exhausting the combustion gases of a stove with open combustion fired on liquid or gaseous fuel, said stove having an upper wall with a plurality of combustion gas outlet means, said apparatus comprising a collector hood, having a closed upper wall and a downwardly directed open under side, means for detachably mounting the collector hood on top of the upper wall of the stove with its open under side covering said combustion gas outlet means, a heat exchanger, means connecting the heat exchanger to the collector hood, an exhaust tube for exhausting the combustion gases, and a fan for providing a flow of combustion gases from the collector hood through said connecting means and said heat exchanger to said exhaust tube.

4,878,480

RADIANT TUBE FIRED WITH TWO BIDIRECTIONAL BURNERS

James E. Watson, Southgate, Mich., and Theodore E. Davies, Hudson, Ohio, assignors to Gas Research Institute, Chicago, Ill.
Filed Jul. 26, 1988, Ser. No. 224,161
Int. Cl.⁴ F24C *3/00*
U.S. Cl. 126—91 A 6 Claims

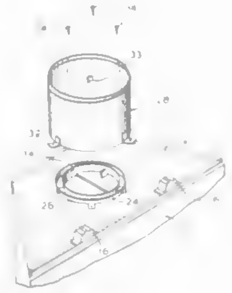


1. An improvement for a radiant tube heating system having a bi-directional burner at the ends thereof, the bi-directional burners serving as burners for combustion air and discharge openings for products of combustion, the improvement comprising a first eductor, means to connect said first eductor to a first burner, said first eductor having a jet nozzle and a throat, a second eductor, means to connect said second eductor to a second burner, said second eductor having a jet nozzle and a throat, first means to operate the second burner and the jet nozzle of said first eductor pulling combustion air through said throat of said second eductor for firing said second burner while discharging the products of combustion thereof through said first eductor, second means to operate the first burner and the jet nozzle of said second eductor pulling combustion air through said throat of said first eductor for firing said first burner while discharging the products of combustion thereof through said second eductor and means to alternately selectively operate said first means and said second means to heat the radiant tube.

4,878,481

FIREPLACE HAVING CHIMNEY CONSTRUCTION INCLUDING COLD AIR BARRIER

Terry G. Schoeff, Andrews, and Rex A. Kaufman, Roanoke, both of Ind., assignors to Majco Building Specialites, L.P., Huntington, Ind.
Filed Jan. 9, 1989, Ser. No. 295,128
Int. Cl.⁴ F23L *17/02*
U.S. Cl. 126—307 R 12 Claims



1. A fireplace and chimney assembly comprising:

a fireplace housing including a top wall and an opening within said top wall;

a two wall chimney construction mounted to said top wall of said fireplace housing, said chimney construction including an inner cylindrical wall extending from said opening and an outer cylindrical wall positioned concentrically with respect to said inner cylindrical wall, said outer wall including a base portion positioned adjacent to said top wall of said fireplace housing;

an annular space defined by the inner surface of said outer wall and the outer surface of said inner wall;

means for introducing cooling air into said annular space near said base portion of said outer wall;

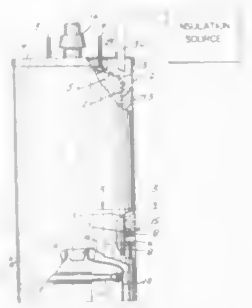
ceiling means positioned a selected distance above said top wall of said fireplace housing; and

a shield including walls defining a bottom opening; a top opening, and a space extending between said bottom and top openings, said shield being mounted to said top wall of said fireplace such that said bottom opening is substantially sealed by said top wall, said shield walls including inner and outer surfaces, said outer surfaces of said shield walls being in substantially sealing engagement with said ceiling means; said inner surfaces of said shield and said outer surface of said outer wall defining a second space from which cooling air may be introduced into said annular space, said shield being substantially shorter in length than said inner and outer cylindrical walls.

4,878,482

INSULATED FLUID STORAGE UNIT AND METHOD OF MAKING

John D. Pfeffer, Brookfield, Wis., assignor to A. O. Smith Corporation, Milwaukee, Wis.
Continuation-in-part of Ser. No. 28,475, Mar. 20, 1987. This application Apr. 15, 1988, Ser. No. 181,971
Int. Cl.⁴ F24H *7/00*
U.S. Cl. 126–375 24 Claims



1. A liquid heating unit, comprising an inner tank extending along an axis, an outer shell spaced from said storage tank and defining a cavity between said opposed walls of said shell and tank, a bottom wall secured in said cavity between said shell and storage tank to define the bottom end of said cavity, said bottom wall including an essentially semi-rigid single support element of a high temperature insulation and having an extended surface parallel to said axis of said tank, said extended surface directly affixed to and abutting the tank, and said support element having an outer peripheral surface sealed to said shell, and a hardened insulation filling said cavity and defining a rigid insulation about said inner tank.

4,878,483

PLATE HEAT EXCHANGER AND HEATING STOVE WITH THE PLATE HEAT EXCHANGER

Zenon Todorski, 198 Westcroft Road, Beaconsfield, Quebec, Canada (H9W 2M3)
Filed Apr. 17, 1987, Ser. No. 40,571
Claims priority, application Canada, Sep. 4, 1986, 517462
Int. Cl.⁴ F24B *7/00*
U.S. Cl. 126—523 8 Claims

1. A heating stove comprising: a combustion chamber, a grate for fuel disposed in the combustion chamber, upper and lower combustion air inlets to provide a bottom air feed upwardly through fuel from below the grate, and downwardly through fuel from above the fuel, a heat exchanger including a series of vertically oriented horizontally spaced metal plates means for interconnecting said plates to form a set of vertical passages conducting the products of combustion and a set of horizontal passages conducting a flow of air to be heated, top and bottom passageways above and below said series of plates through which the plates communicate with the combustion chamber, two flow control adjustable baffles above the plates in the top passageway, one of the baffles being disposed centrally of the series of plates, the other of the baffles controlling flow from the combustion chamber, and an outlet connecting a downstream end of the top passageway to a flue.

3. A heat exchanger, comprising: a series of vertically oriented, horizontally spaced metal plates, each of said plates having first mutually opposite unbent edges and second mutually opposite edges with flanges formed thereon protruding perpendicularly to said plates, said first and second opposite edges being alternating horizontal and vertical edges throughout said series of plates, each of said flanges having a U-shaped outer edge receiving an unbent edge of the adjacent plate, said plates being interconnected exclusively by direct engagement of said unbent edges with said U-shaped outer edges, and each of said flanges having notches formed therein defining a tail

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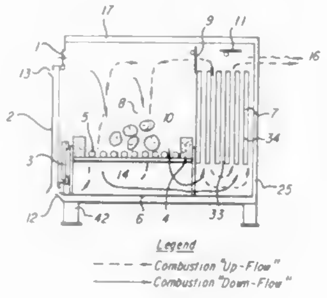
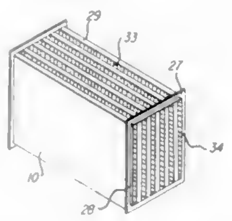
permitting attachment of said plates, said flanges spacing said plates apart to form a set of vertical passages conducting the products of combustion and a set of horizontal passages conducting a flow of air to be heated.





4,878,484

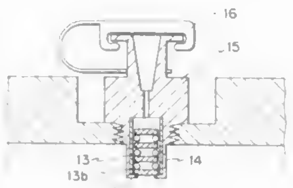
WATER-TIGHT ENDOSCOPE

Kunihiko Miyagi, Tokyo, Japan, assignor to Machida Endoscope Co., Ltd., Tokyo, Japan

Filed Jul. 15, 1988, Ser. No. 219,251

Int. Cl.^{4} A61B *1/00*

U.S. Cl. 128—4 5 Claims



1. A water-tight endoscope comprising a flexible tube zone, a handle zone and a guide tube zone, the respective zones and connecting parts thereof having a water-tight structure, wherein an opening for connecting the interior of the endoscope to the outer air is formed in the guide tube zone and a waterproof and gas breathable filter is arranged in said opening to connect gas within the interior of the endoscope to the outer gas, said filter capable of being constantly open for passage of air into and out of the interior of said endoscope during all temperature stages of a disinfecting, temperature-related procedure.

4,878,485

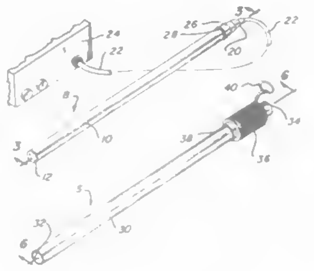
RIGID VIDEO ENDOSCOPE WITH HEAT STERILIZABLE SHEATH

Edwin L. Adair, 2800 S. University Blvd., Denver, Colo. 80210

Filed Feb. 3, 1989, Ser. No. 306,815

Int. Cl.^{4} A61B *1/00*

U.S. Cl. 128—6 13 Claims



1. A rigid video endoscope comprising:
an inner cylindrical body member having a distal end and a proximate end;
a light transmitting element sealed to said distal end of said body member;
an image sensor mounted against said element within said body member;
an electronic cable within said body member, having a distal end connected to said image sensor and a proximate end extending beyond said proximate end of said body member and connectable to a video processing unit;
at least one fiber optic bundle within said body member, having a distal end adjacent said element and a proximate end extending beyond said proximate end of said body member and connectable to the video processing unit;
a strain relief fixture sealingly attached to said proximate end of said body member, said electronic cable and said fiber optic bundle extending through said fixture, said fixture being sealed thereto;
an outer cylindrical heat sterilizable sheath, having a distal end and a proximate end, for receiving said inner body member and being of substantially the same length as said body member;
a window sealed to said distal end of said sleeve;
an accordion-folded, heat sterilizable, cylindrical sleeve mounted adjacent said proximate end of said sheath and extendable along said electronic cable and said optical bundle for a substantial distance for maintaining sterility of said video endoscope within an operating room; and
means for releasably locking said body member within said sheath.

4,878,486

DISPOSABLE COVER ARRANGEMENT FOR LARYNGOSCOPES AND THE LIKE

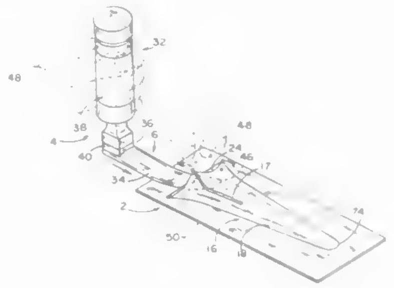
William M. Slater, 6 N. Buys, Muskegon, Mich. 49445

Filed Jul. 13, 1987, Ser. No. 72,600

Int. Cl.^{4} A61B *1/06*

U.S. Cl. 128—110 21 Claims

14. A disposable cover for laryngoscopes of the type having an elongate blade with a contoured, channel-shaped guide surface on which an associated light source is mounted to facilitate inserting an endotracheal tube into the air passageway of a patient; said cover comprising:
a sheath having a sterile exterior surface, and a closed interior surface which defines a hollow cavity originally of a different three-dimensional shape than the shape of laryngoscope blades which it is intended to cover, said cover being adapted to receive and envelope a laryngoscope blade; said sheath having an open end adapted for insertion of a laryngoscope blade into the cavity of said sheath; said sheath being readily flexible and formable to conform an associated portion of the same to the shape of a contoured guide surface of a laryngoscope blade, and being constructed from a light-transmitting material, such that light waves emitted from the light source are transmitted through the sheath to illuminate an air passageway of a patient;
retaining means for securely retaining the associated portion of said sheath closely against a contoured guide surface of laryngoscope blade, after selectively fitting said sheath on a laryngoscope blade, such that a view along an air passageway of the patient remains wholly unobstructed during insertion of an endotracheal tube, yet permits said sheath to be manually stripped from a laryngoscope blade for disposal after a single use;
means for forming a seal between said sheath and a laryngoscope at a location adjacent to the open end of said sheath, and
a tube connected with the interior surface of said sheath, and having an outer end disposed exterior to said seal means, and an inner end disposed within said sheath cavity interior to said seal means, whereby applying suction to the outer end of said tube evacuates the cavity of said sheath, and draws said sheath closely against a laryngoscope blade to define at least a portion of said retaining means



4,878,487

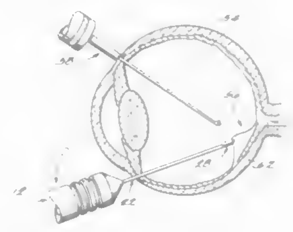
ILLUMINATED TISSUE MANIPULATOR FOR OPHTHALMIC SURGERY

Kevin B. Sinnett, Mukwonago, Wis., assignor to Trek Medical Products, Inc., Oak Creek, Wis.

Filed May 26, 1988, Ser. No. 199,109

Int. Cl.^{4} A61B *1/06*

U.S. Cl. 128—20 7 Claims



1. An illuminated instrument for manipulating vitreous tissue and the like comprising
a handpiece having first and second ends;
an elongated, rigid probe made from a substantially opaque material, extending from said first end of said handpice and including a tubular body having an outside dimension suitable for insertion through an opening in a patient's eye into the vitreous cavity thereof and terminating in a forward edge extending around a substantial portion of the outer periphery of said body and in a plane generally perpendicular to the longitudinal axis of said body, said body including an integral, narrow tissue manipulating tool extending longitudinally and outwardly beyond said forward edge;
an elongated fiber optic light-conducting member extending through said handpiece and said body, having a first end disposed adjacent said body forwrad edge and extending in a plane generally perpendicular to the longitudinal axis of said body and having a second end remote from said second end of said hand piece;and
means connected to second end of said light-conducting member for receiving light from a light source for intraocular illumination whereby a beam of light from said source is directed outwardly through said forward end of said light-conducting member.

4,878,488

SHOCK WAVE TUBE WITH LONG SERVICE LIFE

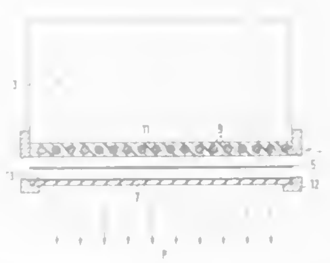
Georg Naser, Zirndorf; Helmut Reichenberger, Eckental, and Karl-Heinz Schlee, Neunkirchen, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Continuation of Ser. No. 821,085, Jan. 21, 1986, abandoned. This application Mar. 17, 1988, Ser. No. 170,584

Claims priority, application Fed. Rep. of Germany, Jan. 28, 1985, 3502751

Int. Cl.^{4} A61B *17/22*

U.S. Cl. 128—24 A 10 Claims



2. An improvement to a shock wave tube of the type which is used to destroy kidney stones and the like in vivo and which includes a coil, a coil carrier which carries the coil, and a diaphragm which is located in front of the coil and which produces shock waves in response to energizations and deenergizations of the coil, comprising a coil carrier of aluminum oxide ceramic.

4,878,489

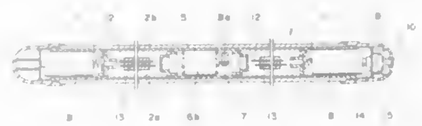
MASSAGE UNIT

Yuzo Kamayachi, Tokyo, Japan, assignor to Tensho Electric Industrial Co., Ltd., Tokyo, Japan

Filed Jul. 11, 1988, Ser. No. 217,580

Int. Cl.^{4} A61H *1/00*

U.S. Cl. 128—6 5 Claims



1. A massage unit comprising:
an elongated elastically deformable hollow cylinder;
vibrator means disposed in said elongated elastically deformable cylinder for producing vibrations for vibrating said elongated elastically deformable hollow cylinder;
switch means attached to said vibrator means for turning said vibrator means on and off; and
elastically deformable cylinder shape retaining means at-

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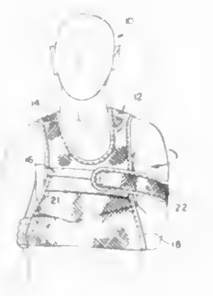
tached to and extending along substantially the entire length of said elongated elastically deformable hollow cylinder for retaining the cylindrical shape of said elongated elastically deformable hollow cylinder when said elastically deformable shape retaining means and said elongated elastically deformable hollow cylinder are bent to a desired shape, said elastically deformable cylinder shape retaining means being an elongated hollow cylindrical bellows disposed within said elongated elastically deformable hollow cylinder, and said elongated hollow cylindrical bellows being a synthetic resin material.

4,878,490
UNIVERSAL ORTHOPEDIC RECUPERATIVE GARMENT

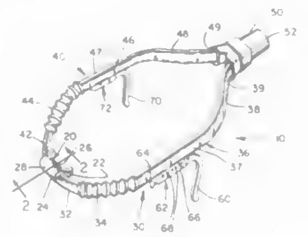
James W. Scott, P.O. Box 7630, Tifton, Ga. 31794
Filed Jan. 27, 1989, Ser. No. 302,364
Int. Cl.⁴ A61F *5/37*
U.S. Cl. 128—77 14 Claims



1. A universal orthopedic recuperative garment comprising:
a vest portion having,
  a front vest panel operable to extend over a patient's chest and upper abdomen, and
  a back vest panel joined to and substantially coextensive with said front vest panel, said front and back vest panels having a central opening operable to permit said vest to be fitted over the head of a patient such that said vest may be operably supported upon a patient's shoulders;
a generally rectangular retaining pad laterally extending across an upper portion of said front panel and being composed of one of a hook and pile type fastening material;
means connected to adjacent lateral edges of said front panel and said back panel for adjustably connecting said front and back panels substantially at lateral rib cage areas for securing said vest portion about the upper torso of a patient;
an arm support panel integrally joined at a bottom portion of said front vest panel, said arm support panel, having at a free end thereof, a transverse rectangular strip on each side of said free end is composed of one of a hook and pile type fastening material wherein a first transverse rectangular strip releasably connects to said generally rectangular retaining pad and a second opposed transverse rectangular strip forms an outwardly extending retaining surface in cooperation with said generally rectangular retaining pad composed of one of a hook and pile type fastening material thereby allowing said arm support panel to fold upwardly and transversely attach to said generally rectangular retaining pad mounted upon said front vest panel and to form from said front vest panel and said arm support panel a transversely extending channel for supporting a patient's forearm;
at least one retaining patch mounted upon an interior surface of said front panel and opposed to said generally rectangular retaining pad and being composed of one of a hook and pile type fastening material; and
an upper arm rotating and binding strap having fastening patch at a first end composed of the other of a hook and pile type fastening material with respect to said one of said hook and pile type fastening material of said outwardly extending retaining surface of said generally rectangular retaining pad and said transverse rectangular strip and a fastening patch at a second end of said upper arm rotating and binding strip composed of the other of a hook and pile type fastening material with respect to said at least one retaining patch positioned on the interior surface of said front vest panel wherein a patient's recuperating hand, forearm, upper arm, shoulder, or the like may be operably supported by placing a patient's forearm in a generally horizontal posture within said transversely extending channel formed by said front vest panel and said arm support panel and the patient's upper arm is pulled forward and rotated by said arm rotating and binding strap extending from an interior portion of said front vest panel, around the upper humerus portion of patient's arm and connecting to said outwardly extending retaining surface formed upon said front vest panel of said universal orthopedic recuperative garment.

4,878,491
EXERCISE SNORKEL APPARATUS

Donald A. McGilvray, III, 70 Grace Ter., Pasadena, Calif. 91105
Filed Sep. 23, 1988, Ser. No. 248,385
Int. Cl.⁴ B63C *11/16*
U.S. Cl. 128—201.11 18 Claims

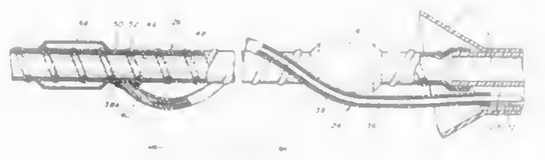


1. An exercise snorkel apparatus comprising:
a. a mouthpiece having a gripping member, an internal chamber and an opening through the gripping member extending into the internal chamber;
b. a first hollow breathing tube connected to one side of the mouthpiece and in fluid communication with the internal chamber of the mouthpiece;
c. said first hollow breathing tube further comprising a hollow insert section which extends into one side of the mouthpiece, a hollow flexible bellows section which extends from the other side of the hollow insert section, and a hollow elongated section extending from the other side of the hollow flexible bellows section and further comprising a straight portion, an arcuate portion and a mating chamber portion;
d. a second hollow breathing tube connected to the opposite side of the mouthpiece and in fluid communication with the internal chamber of the mouthpiece;
e. said second hollow breathing tube being a mirror image of the first hollow breathing tube, and further comprising a hollow insert section which extends into one side of the mouthpiece, a hollow flexible bellows section which extends from the other side of the hollow insert section, and a hollow elongated section extending from the other side of the hollow flexible bellows section and further comprising a straight portion, an arcuate portion and a mating chamber portion;
f. the respective hollow insert sections extending away from each other and joining their respective hollow flexible bellows sections which extend along oppositely disposed arcuate routes; and

g. the respective arcuate portions of the respective hollow elongated sections extending along a joining arcuate path such that their remote ends lie adjacent each other and are joined together by a joining hollow collar such that the back opening of the breathing tubes extend out of the back opening of the joining hollow collar;
h. whereby the exercise snorkel apparatus may be held between the wearer's teeth and the exercise snorkel apparatus is positioned on the wearer's head such that the respective hollow flexible bellow sections are aligned around the side of the wearer's face, the straight portion of a respective one of the elongated hollow sections rests over a respective one of the wearer's ears, and the respective joined arcuate portions and joining hollow collar extend behind the wearer's head the exercise snorkle apparatus further including
  a first adjustable mounting means affixed beneath the straight portion of the first hollow breathing tube;
  a the first adjustable mounting means further comprising a hollow chamber and a wall having a multiplicity of mating members therein;
  a first adjustable temple having a multiplicity of mating members thereon and insertable into the chamber of the first adjustable mounting means such that the temple can be adjustable to fit into one of the wearer's ears;
  a second adjustable mounting means affixed beneath the straight portion of the second hallow breathing tube;
  the second adjustable mounting means further comprising a hollow chamber and a wall having a multiplicity of mating members therein and;
  a second adjustable temple having a multiplicity of mating members thereon and insertable into the chamber of the second adjustable mounting means such that the temple can be adjusted to fit the wearer's other ear.

4,878,492
LASER BALLOON CATHETER

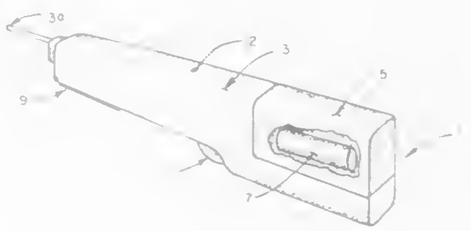
Edward L. Sinofsky, N. Reading, Mass.; J. Richard Spears, Bloomfield Hills, Mich.; Douglas W. Dickinson, Merrimack, N.H., and Maria S. Wagner, Reading, Mass., assignors to C. R. Bard, Inc., Murray Hill, N.J.
Filed Oct. 8, 1987, Ser. No. 106,609
Int. Cl.⁴ A61B *17/36*
U.S. Cl. 128—303.1 47 Claims



1. A laser balloon catheter comprising:
an elongated flexible tube having a distal end and a proximal end;
an inflated balloon secured to said flexible tube at or near the distal end thereof;
means for inflating and deflating said balloon;
central shaft means disposed in said balloon and coupled to said flexible tube;
an optical fiber for carrying laser radiation through said flexible tube into said balloon; and
tip assembly means coupled to said optical fiber for directing laser radiation outwardly through a major portion of the balloon surface, said tip assembly means being located within said balloon between said central shaft means and the balloon surface and including means for limiting shadowing thereof by said central shaft means.

4,878,493
HAND-HELD DIATHERMY APPARATUS

Eliezer Pasternak; Robert C. Drews, and Tadmor Shalon, all of St. Louis County, Mo., assignors to Ninetronix Venture I, St. Louis, Mo.
Continuation of Ser. No. 546,571, Oct. 28, 1983, abandoned.
This application Dec. 30, 1985, Ser. No. 815,661
Int. Cl.⁴ A61B *17/39*
U.S. Cl. 128—303.14 3 Claims



1. A hand held, cordless diathermy apparatus for use in neurological and microsurgical applications comprising
an elongated housing shaped for manual support and manipulation during neurosurgery and microsurgery,
an electrical power supply within said housing,
radio frequency generating means within said housing and supplied with energy from said power supply for generating an oscillatory current,
at least one electrode extending from one end of said housing, and
switch means mounted to said housing near said one end and operable by a hand holding said apparatus during surgery, said switch means controlling the supply of said oscillatory current to said at least one electrode.

4,878,494
CARDIO-VALVE ASSIST UNIT AND METHOD FOR PERFORMING CARDIO-VALVE REPLACEMENT SURGERY

James L. Phillips; Dale W. Richardson, both Mattawan, Mich., and J. Donald Hill, San Francisco, Calif., assignors to International Research & Development Corporation, Mattawan, Mich.
Division of Ser. No. 176,030, Mar. 31, 1988, Pat. No. 4,834,097.
This application Dec. 20, 1988, Ser. No. 287,400
Int. Cl.⁴ A61B *17/04;* B25B *1/20*
U.S. Cl. 128—334 R 13 Claims

1. A cardio-valve assist unit which comprises:
first clamp means adapted to be clamped in a fixed position relative to an operating table;
first arm means affixed to said first clamp means and rigidly projecting therefrom;
second arm means;
double-clamp means for connecting said second arm means to said first arm means;
said double-clamp means comprising two parts mounted for rotation one relative to the other, one of which is adapted to receive said first arm means for slidable movement therein and the other of which is adapted to receive said second arm means for slidable movement therein, and

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clamping screw means adapted simultaneously to clamp said two parts on said arm means in any position to which they may be adjusted; and

third clamp means mounted on said second arm means for clamping a cardio-valve holding means to said second arm in rigid relation thereto;

whereby, when a cardio-valve holding means having a cardio-valve therein is clamped in said third clamp means, the cardio-valve can be placed in position for suturing into the heart and held firmly in that position until suturing is complete.

4,878,495

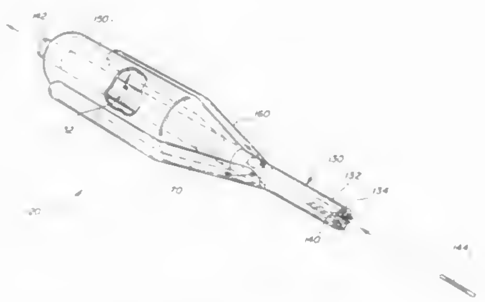
VALVULOPLASTY DEVICE WITH SATELLITE EXPANSION MEANS

Joseph Grayzel, 262 Fountain Rd., Englewood, N.J. 07631

Filed May 15, 1987, Ser. No. 50,741

Int. Cl.⁴ A61M *25/00*

U.S. Cl. 128—344 **24 Claims**



1. A balloon catheter for valvuloplasty comprising:

a catheter portion having a plurality of flow passages therein;

primary expandable means coupled to a source of pressurized liquid;

auxiliary expandable means coupled to a source of pressurized liquid;

said auxiliary expandable means mounted circumferentially adjacent said primary expandable means with the axis of said primary and auxiliary expandable being displaced and capable of being expanded under control of said liquid supply separately and independently of the expansion of said primary expandable means and in substantially parallel relation to the primary expandable means said auxiliary expandable means being displaced laterally from the axis of said primary expandable means upon expansion of said primary expandable means.

4,878,496

SELF-RETRACTABLE RUBBER NIPPLE

Bo-Zhou Chen, No. 130-18, Shih Lin Ts'un, Liu Ying Hsiang, Tainan Hsien, Taiwan

Filed Mar. 31, 1987, Ser. No. 32,463

Int. Cl.⁴ A61J *17/00*

U.S. Cl. 128—360 **3 Claims**

1. A self-retractable rubber nipple particularly provided with a collapsible bellows-like element which is made in a cylindrical and hollow form with a plurality of pleats on the external surface thereof and mounted on the same side of a stop plate where a nipple member is placed; and an air volume control unit being provided on said stop plate by means of which air can be regulatively controlled so to determine the expanding speed of said bellows-like element, in such a manner said rubber nipple can be slowly automatically removed from a baby's mouth without its notice.

4,878,497

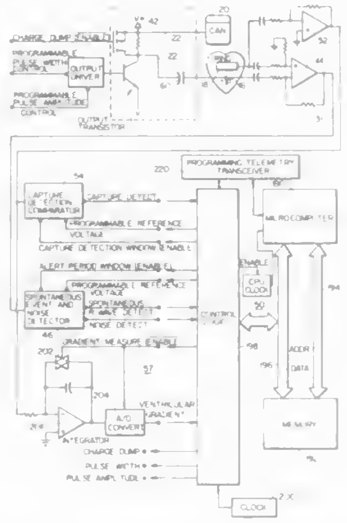
PACEMAKER WITH IMPROVED AUTOMATIC OUTPUT REGULATION

Francis J. Callaghan, Miami, and William Vollmann, Lauderhill, both of Fla., assignors to Telectronics N.V., Curacao, Netherlands Antilles

Filed Mar. 25, 1988, Ser. No. 173,566

Int. Cl.⁴ A61N *1/00;* **H05G** *00/00*

U.S. Cl. 128—419 PG **17 Claims**



1. A rate-responsive pacemaker comprising means for sensing the presence of absence of an evoked potential; means for periodically ascertaining the value of a measured rate control parameter which is based upon the sensing of an evoked potential; means for generating pacing pulses at a pacing rate which is a function of said MRCP; and means responsive to the failure to sense an evoked potential following the generation of a pacing pulse for increasing the pacing rate so that if said failure was due to a fusion beat, then the next pacing pulse is more likely to result in a heart capture.

4,878,498

ELECTROCONVULSIVE THERAPY APPARATUS AND METHOD FOR AUTOMATIC MONITORING OF PATIENT SEIZURES

Richard Abrams, Chicago, and Conrad M. Swartz, Lake Forest, both of Ill., assignors to Somatics, Inc., Lake Bluff, Ill.

Continuation of Ser. No. 258,209, Oct. 4, 1988. This application Feb. 23, 1989, Ser. No. 313,906

The portion of the term of this patent subsequent to Oct. 7, 2006, has been disclaimed.

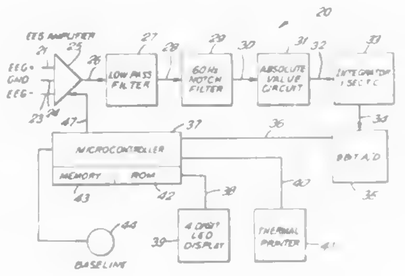
Int. Cl.⁴ A61N *1/36*

U.S. Cl. 128—419 S **12 Claims**

1. A method in electroconvulsive therapy (ECT) to monitor the termination of an induced seizure in a patient, the method including the steps of:

employing an ECT device, removably securing a plurality of electrodes on the head of the patient and applying electricity through the electrodes in an electroconvulsive therapy session to induce seizure, and

detecting the electrical brain waves of the patient in an electroencephalographic (EEG) device by amplifying the brain waves detected by at least one electrode removably secured to the head of the patient; establishing and storing in system memory a baseline reference of a brain wave parameter, detecting the patient brain waves to commence the monitoring of the termination of the seizure in the range of 1–30 seconds after ceasing the said application to induce seizure, automatically determining the termination of seizure as determined by the monitored brain wave parameter declining to the said established reference, and displaying said termination of seizure.



4,878,499

MAGNETIC RESONANCE IMAGING SYSTEM

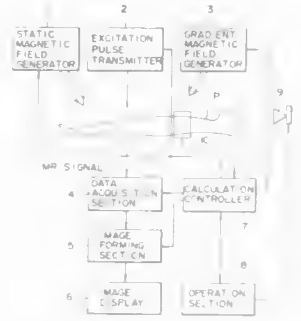
Hirokazu Suzuki, Ootawara; Yoshio Machida, Tochigi, and Yuji Yuasa, Tokyo, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 24,528, Mar. 11, 1987, abandoned. This application Oct. 11, 1988, Ser. No. 256,110

Claims priority, application Japan, Nov. 2, 1985, 60-247799

Int. Cl.⁴ A61B *5/05*

U.S. Cl. 128—653 A **9 Claims**



1. In a magnetic resonance imaging system which comprises static magnetic field generation means for generating a static magnetic field, gradient magnetic field generation means for generating a gradient magnetic field, excitation means for applying an excitation pulse signal, data acquisition means for acquiring magnetic resonance data, image forming means for forming a magnetic resonance image based on the magnetic resonance data, and control means for controlling said static magnetic field generation means, said gradient magnetic field generation means, said excitation means, and said data acquisition means at a predetermined timing, and in which the static magnetic field is applied to an object to be examined, the gradient magnetic field and the excitation pulse signal are applied to the object to be examined in accordance with a predetermined pulse sequence, so as to cause a magnetic resonance phenomenon in a selected portion of the object to be examined, the magnetic resonance data of the magnetic resonance phenomenon is acquired by said data acquisition means, and the magnetic resonance image is obtained from the magnetic resonance data by said image forming means, the improvement comprising:

direction means for intermittently directing the object to be examined to keep still; and

acquisition control means for causing said data acquisition means to repeat a data acquisition operation a number of times for acquiring the magnetic resonance data necessary for reconstruction of the magnetic resonance image of the object to be examined, each data acquisition operation being performed only while said object remains still in response to said direction from said direction means, for collecting a predetermined quantity of magnetic resonance data, said predetermined quantity being set prior to the data acquisition in accordance with the duration in which the object to be examined remains still.

4,878,500

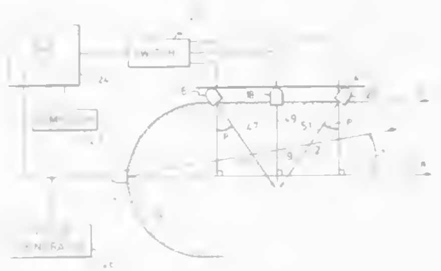
MULTI-BEAM TRACKING FOR ANGLE ERROR CORRECTION IN SPEED OF SOUND ESTIMATIONS

Jonathan Ophir, and David P. Shattuck, both of Houston, Tex., assignors to The University of Texas System, Austin and The University of Houston-University Park, Houston, both of, Tex.

Continuation-in-part of Ser. No. 887,349, Jul. 21, 1986, Pat. No. 4,807,635, and a continuation-in-part of Ser. No. 823,322, Jan. 28, 1986, Pat. No. 4,777,958, which is a continuation-in-part of Ser. No. 791,719, Oct. 28, 1985, Pat. No. 4,669,482. This application Jul. 13, 1988, Ser. No. 218,810

Int. Cl.⁴ A61B *8/00*

U.S. Cl. 128—660.01 **15 Claims**



1. A method of correcting for angle error in sound velocity estimations in a target medium using ultrasound transducers comprising the steps of:

(a) applying a tracked ultrasound transducer oriented along an aiming axis to the outer surface of a target medium:

(b) applying a central tracking transducer oriented along an axis normal to the aiming axis of said tracked transducer to the outer surface of a target medium;

(c) applying a left and a right outer tracking transducer to the outer surface of a target medium, each of said outer tracking transducers placed on an opposite side of said central tracking transducer forming a tracking transducer axis with said central tracking transducer, said tracking transducer axis being parallel to said aiming axis and said left and right outer tracking transducers oriented at angles P and −P, respectively, from an axis normal to the aiming axis toward said central tracking transducer;

(d) employing a means for measuring the energy and travel time of signals produced by said ultrasound transducers;

(e) generating a tracked beam from said tracked ultrasound transducer which is misdirected at an angle T from said aiming axis;

(f) receiving ultrasound energy scattered from scatterers along said tracked beam to each of said tracking transducers;

(g) measuring the travel time required for ultrasound energy

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to travel from the tracked transducer to each of said tracking transducers;
(h) recording each of said measured travel times;
(i) relocating each of said tracking transducers a distance Δx from its present location in the same direction along said tracking transducer axis;
(j) repeating steps (d)-(i) to obtain a plurality of data sets for travel time at each location for each of said tracking transducers;
(k) plotting the plurality of data sets obtained in step (j) for each of said tracking transducers;
(l) fitting a line to each of the plots made in step (k);
(m) estimating the speed of sound along the tracked beam by calculating the slope of each of the fitted lines obtained in step (l);
(n) solving the following two equations, labeled (1) and (2), for the speed of sound, C:

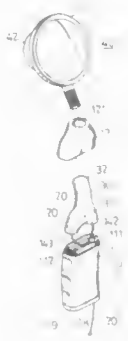
$$C = CE\,[1 - \sin(T)]/\cos(T);\ \text{and} \tag{1}$$

$$\sin(T)\,\frac{\sin(2P) + \cos(T + P) - \cos(T - P)}{[\cos(T + P)]\,[\cos(T - P)]} = \frac{C}{CB} - \frac{C}{CA} \tag{2}$$

where
CE = the speed of sound obtained in step (m) for the central tracking transducer;
T = the angle of misdirection which the tracked beam undergoes in step (d);
P = the angle between the axis along which the left outer tracking transducers is aimed and an axis normal to the aiming axis;
CB = the speed of sound obtained in step (m) for one of said outer tracking transducers; and
CA = the speed of sound obtained in step (m) for the other outer tracking transducer.

4,878,501
ELECTRONIC STETHOSCOPIC APPARATUS

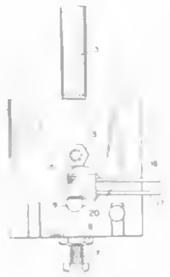
Ming-Jeng Shue, No. 14, Lane 8, Chung-I St., Taichung, Taiwan
Continuation-in-part of Ser. No. 27,101, Mar. 13, 1987, and a continuation-in-part of Ser. No. 926,578, Nov. 4, 1986, Pat. No. 4,723,555. This application Jun. 25, 1987, Ser. No. 66,222
The portion of the term of this patent subsequent to Feb. 9, 2005, has been disclaimed.
Int. Cl.⁴ A61B *5/02*
U.S. Cl. 128—715 6 Claims



1. An electronic stethoscopic apparatus comprising:
a housing means adapted for hand gripping and operational control;
an audio-signal amplifying means having input/output terminals provided therein installed in said housing means for amplifying and outputting audio signals therefrom;
power supply means replaceably installed in said housing means and electrically connected to said audio-signal amplifying means for providing power thereto;
an audio-wave guiding means disposed on said housing means for receiving and transmitting sound waves;
transducing means having output terminals provided thereto disposed in said audio-wave guiding means and electrically connected to said audio-signal amplifying means for receiving said sound waves and converting same into electrical audio signals to be fed into said audio-signal amplifying means; and
a body contact means composed of a sound transmission pipe with a diaphram on one side, a bell on another, and a sound-wave duct in a middle portion thereof, sleevingly connected to said audio-wave guiding means for detecting sound waves from a body portion of a patient.

4,878,502
BREATHING SENSOR

Henry G. Dietz, 80 Salisbury Ave., Garden City, N.Y. 11530
Continuation-in-part of Ser. No. 646,294, Aug. 31, 1984, abandoned. This application Mar. 27, 1986, Ser. No. 844,523
Int. Cl.⁴ A61F *5/00*
U.S. Cl. 128—725 2 Claims



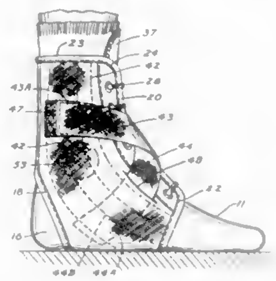
1. A gas flow sensor comprising, a transparent housing, means for defining within said housing a transparent flow path for said gas flow and having a vent in communication with the atmosphere, means for defining a first stop position and other means for defining a second stop position both disposed within a section of the flow path, means for providing communication with said flow path for applying thereto a low value negative pressure from infant nasal airflow to said section of the flow path, a very low density ball made of expanded styrene and freely movable within said flow path in response to said negative pressure and disposed initially at said first stop position and movable to said second stop position in response to said negative pressure when applied to said flow path, an anti-static, anti-static electroconductive coating on said ball, an infrared light source energizable to emit infrared light along a path of infrared light interrupted when said ball is at said first stop position and said infrared light is not interrupted when the ball is at second stop position, detector means for detecting uninterrupted infrared light when the ball moves to said second stop position, and means responsive to detection of said infrared light by said detector means for developing a signal representative of the existence of a negative pressure in said flow path.

4,878,504
ANKLE BRACE WITH COMPRESSION STRAPS

Ronald E. Nelson, 405 Sunset Ln., Cambridge, Minn. 55008
Filed Jul. 22, 1988, Ser. No. 223,083
Int. Cl.⁴ A61F *3/00*
U.S. Cl. 128—80 H 17 Claims

1. An ankle brace to be worn on a foot and ankle in encompassing relationship to the lateral malleolus and medial melleolus of the ankle on the lateral and medial sides of the foot respectively, comprising:
a base of flexible sheet-like material shaped to encompass the ankle region and proximate lateral and medial portions of the foot; said base having medial and laterial forward edges that come together toward one another over the

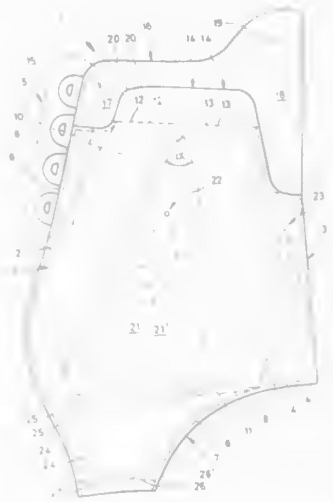
forward ankle and from superior foot portion when the base is installed on the foot, and means for fastening the medial and lateral forward edges with respect to one another to secure the base with respect to an ankle and foot;
said base including an outer layer and an inner layer of sheet-like material;
said base having a plurality of medial seams sewn between the outer and inner layers located on the medial side thereof in parallel spaced apart relationship and being forwardly curved extending from the region of the ankle to the mid-foot region;
said base having a plurality of lateral seams sewn between the outer and inner layers located on the lateral side thereof in parallel spaced apart relationship and being forwardly curved extending from the region of the ankle to the mid-foot region;
a medial compression strap comprised as a flat elongate longitudinal member having a fixed end section fixed to the medial side of the base and a free end extendable around the base, said fixed end section having a width and length of sufficient dimension to span segments of said plurality of medial seams, said end section being fixed to the base by said segments of said plurality of medial seams and being embedded between the inner and outer layers of the base;
a first medial comprssion strap fastening means located on the free end of the medial compression strap, and second medial compression strap fastening means located on the lateral side of the base above the area covering the lateral malleous and positioned to be releasably engaged by the first fastening means upon wrapping the medial compression strap in tension around the front superior foot surface portion of the base and the vicinity of the lateral malleolus, said fixed end section of the medial compression strap fixed to the base orientated so that the medial compression strap is directed to extend forwardly and upwardly so that it can extend from the fixed end section across the front superior foot surface to the second medial compression strap fastening means;



a lateral compression strap comprised as a flat elongate longitudinal member having a fixed end section fixed to the base and a free end extendable around the base, said fixed end section having a width and a length of sufficient dimension to span segments of said plurality of lateral seams, said end section being fixed to the base by said segments of said plurality of lateral seams and being embedded between said inner and outer layers of the base; and
a first lateral compression strap fastening means located on the free end of the lateral compression strap, and second lateral compression strap fastening means located on the medial side of the base above the area covering the medial malleous and positioned to be releasable engaged by the first fastening means upon wrapping the lateral compression strap in tension around the front superior foot portion of the base and the vicinity of the medial malleolus, said fixed end section of the lateral compression strap fixed to the base orientated so that the lateral compression strap is directed to extend forwardly and upwardly so that it can extend from the fixed end section across the front superior foot surface to the second lateral compression strap fastening means, said base having an opening for extension of the free end of the lateral compression strap from between said outer and inner layers in said forward and upward direction.

4,878,505
ANKLE SUPPORTING SLEEVE

Arthut Thanner, Am Fallenweg 30, D-8884, Höchstädt/Donau, Fed. Rep. of Germany
Filed Aug. 30, 1988, Ser. No. 238,393
Claims priority, application Fed. Rep. of Germany, Sep. 1, 1987, 3729197
Int. Cl.⁴ A61F *13/00*
U.S. Cl. 128—882 12 Claims



1. Ankle supporting sleeve comprising:
two side parts each having an inner surface and an outer surface;
a rear connecting part connecting said side parts by their rear longitudinal edges to from a main portion of the sleeve;
a releasable front fastening means for releasably connecting the opposite front longitudinal edges of said side parts;
a lower connecting part connecting said side parts by each of their bottom edges; and
front and rear elongated receiving pockets defined between the inner and outer surfaces of each side part, each of the receiving pockets adapted to receive a corresponding elongated, slightly curved reinforcing part, wherein
the front and rear receiving pockets are slightly curved and extend along the corresponding respective front and rear longitudinal edges and each defines an insertion opening extending through the outer surface of its respective side part and provided with a releasable pocket fastening means for releasably closing its associated insertion opening,
top portions of the front and rear receiving pockets merge at each side to from an acute angle,
the insertion openings are located in the vicinity of the acute angle,
the front and rear receiving pockets located on one of the side parts are considerably longer than the correspond front and rear receiving pockets located on other of the two side parts,
the removable reinforcing parts exhibit a slight curvature,
at least one of the reinforcing parts differs from another of the reinforcing parts in at least one physical characteristic selected from the group consisting of hardness, curvature and flexibility,

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the side parts and the connecting part are provided with an cushioned U-shaped extension part which extends above said main portion, and

at least an outer surface of the U-shaped extension part is formed from a material which is softer and more flexible than the corresponding materials forming the outer surfaces of the main portion of the supporting sleeve.

4,878,506

METHOD OF AND APPARATUS FOR TREATING ACCUMULATIONS OF FIBERS OF TOBACCO OR OTHER SMOKABLE MATERIAL

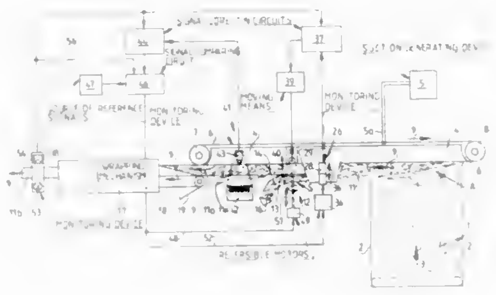
Peter Pinck, Gross-Hansdorf; Heinz-Christen Lorenzen, Wentorf; Uwe Heltmann, and Wolfgang Siems, both of Hamburg, all of Fed. Rep. of Germany, assignors to Körber AG, Hamburg, Fed. Rep. of Germany

Filed Jul. 28, 1988, Ser. No. 225,692

Claims priority, application Fed. Rep. of Germany, Jul. 31, 1987, 3725364

Int. Cl.⁴ A24C *5/18, 5/28, 5/34*

U.S. Cl. 131—84.4 45 Claims



1. A method of treating accumulations of fibers of tobacco, other smokable material or filter material for tobacco smoke, comprising the steps of establishing for the fibers an elongated path; supplying fibers into a first portion of the path in such quantities that the fibers form a stream which contains a surplus of fibers; advancing the stream along said path in a predetermined direction by a foraminous conveyor, including attracting the fibers to the conveyor by suction; removing the surplus from the stream in a second portion downstream of the first portion of the path to thus convert the stream into a filler, including trimming the stream in a plane which is spaced apart from the conveyor; monitoring the mass flow of fibers in the path upstream of the second portion of the path and generating a succession of signals denoting the mass flow of fibers in successive increments of the stream; and moving the conveyor relative to the plane in response to said signals so as to maintain the mass flow of fibers in the filler within a predetermined range.

4,878,507

SMOKING ARTICLES

Paul D. Case, and David J. Dittrich, both of Southampton, England, assignors to British-American Tobacco Company, Ltd., London, England

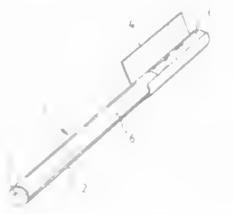
Filed Sep. 2, 1988, Ser. No. 239,867

Claims priority, application United Kingdom, Sep. 3, 1987, 8720726; Dec. 16, 1987, 8729389

Int. Cl.⁴ A24D *1/00*

U.S. Cl. 131—336 10 Claims

1. A smoking article comprising a smoking material rod, which rod comprises smoking material and paper wrapper circumscribing said smoking material, the density of said smoking material in said rod being in a range of about 100 mg cm^{-3} to about 260 mg cm^{-3}, said smoking material comprising at least about 20% by weight of expanded tobacco, the air permeability of said wrapper being not more than about 20 Coresta units and said smoking article, when smoked under standard machine smoking conditions exhibiting a synergistic sidestream smoke component reduction effect, and providing not less than six puffs and yielding not more than about 17 mg total sidestream PMWNF and not more than about 35 mg total sidestream carbon monoxide.



4,878,508

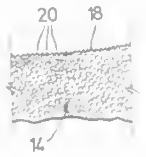
DENTAL DEVICE FOR CLEANING TEETH

Douglas D. Durbin, 851 Corporate Dr. Ste. 201, Lexington, Ky. 40503

Filed Mar. 28, 1988, Ser. No. 172,775

Int. Cl.⁴ A61C *15/00*

U.S. Cl. 132—329 11 Claims



1. A dental device for cleaning teeth, comprising:

a resilient, elongated body member having two sides joined together along a line to form a substantially V-shaped cross-section, said body member further including texture means in the form of cilia on said sides for cleaning said teeth and means on distal edges of said sides for substantially preventing cutting of gingival tissue when said dental device is used to clean between teeth.

4,878,509

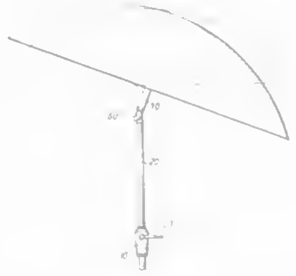
STEPLESS TILTING DEVICE FOR UMBRELLA

Po L. Tung, No. 20, Lane 673, Chung Chen Rd., Jen Teh Hsiang, Tainan Hsien, Taiwan

Filed May 10, 1989, Ser. No. 349,991

Int. Cl.⁴ A45B *17/00*

U.S. Cl. 135—20 M 1 Claim



1. A tilting device for an umbrella comprising:

a control block (**40**) received in an upper rod (**10**) of the umbrella, said control block (**40**) having a guided wheel (**41**) at an upper end portion therewithin;

a pull cord (**32**) connecting a winch (**30**) with a runner (**50**) of the umbrella via said guide wheel (**41**), said winch (**30**) being controllable by a crank handle (**31**);

an elongate connecting member (**70**) connected to a lower end of said control block (**40**), said elongate connecting member (**70**) including a pivot hole (**71**) at a lower end therethrough;

an upper bending head (**80**) being a sleeve body connected to said upper rod (**10**), said upper bending head (**80**) including a central opening (**81**) for the passage of said elongate connecting member (**70**) and a pair of downward extending plates (**82**), each downward extending plate (**82**) having a pinhole (**83**) and an inclined slot (**84**) therethrough, said pinhole (**83**) and said inclined slot (**84**) of one downward extending plate (**82**) being in transverse alignment with said pinhole (**83**) and said inclined slot (**84**) of the other downward extending plate (**82**);

a spring member (**85**) mounted around said control block (**40**) and said elongate connecting member (**70**);

a lower bending head (**90**) being a sleeve body connected to a lower rod (**20**) of the umbrella, said lower bending head (**90**) including a central recess (**91**) at an upper end thereof for receiving said pair of downward extending plates (**82**), each lateral side of said lower bending head (**90**) being formed with a pinhole (**93**) and a guide slot (**94**) therethrough, said pinhole (**93**) and said guide slot (**94**) formed on one lateral side being in transverse alignment with said pinhole (**93**) and said guide slot (**94**) of the other lateral side, each guide slot (**94**) having an obtuse angular shape;

a pin (**95**) extending through the pinholes (**83**), (**93**) for pivotally connecting said upper bending head (**80**) and said lower bending head (**90**);

a displacing pin (**96**) extending through said guide slots (**94**), said inclined slots (**84**) and said pivot holes (**71**) for connecting said elongate connecting member (**70**) to said upper bending head (**80**) and said lower bending head (**90**);

whereby said pull cord (**32**) is pulled via said guide wheel (**41**) thereby causing said runner (**50**) to move upwards and engage with a fixed collar (**11**) of the umbrella when said crank handle (**31**) is rotated; said control block (**40**) is lowered along said upper rod (**10**) when said crank handle (**31**) is further rotated to pull said pull cord (**32**) and in the meantime, said elongate connecting member (**70**) together with said displacing pin (**96**) are movable along said guide slots (**94**) so that said upper bending head (**80**) rotates pivotally about said pin (**95**) to tilt said upper rod (**10**) with respect to said lower rod (**20**); said spring (**70**) is restored so that said control block (**40**) moves up to an original position thereof thus causing said upper bending head (**80**) and said lower bending head (**90**) to return to vertical positions thereof when said pull cord (**32**) is released.

4,878,510

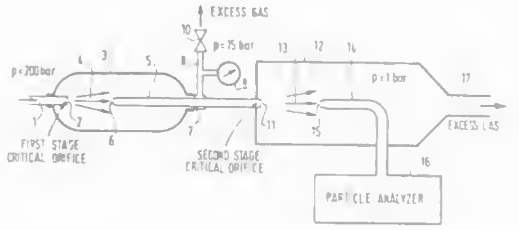
METHOD FOR REDUCING PRESSURE OF HIGHLY COMPRESSED GASES WITHOUT GENERATION OF CONDENSATION DROPLETS

Gerhard Kasper, Downers Grove; Horng-Yuan Wen, Brookfield, and Yukinobu Nishikawa, Darien, all of Ill., assignors to American Air Liquide, New York, N.Y.

Filed Oct. 13, 1987, Ser. No. 107,173

Int. Cl.⁴ E03B *1/00*

U.S. Cl. 137—1 14 Claims



1. A method for reducing the pressure of a high pressure compressed gas at a predetermined temperature level to a low pressure without causing condensation of condensible vapors contained in said compressed gas which comprises: causing a succession of pressure drops by expanding said high pressure compressed gas through a plurality of consecutive critical orifices into a plurality of consecutive zones, each zone having a pressure less than said high pressure and less than the previous zone; and providing for sufficient space between said consecutive orifices, so as to allow the gas temperature to return to its predetermined temperature level before further expansion, thereby creating a low pressure expanded gas, each of said pressure drops being less than a pressure drop necessary to cause condensation of said condensible vapors.

4,878,511

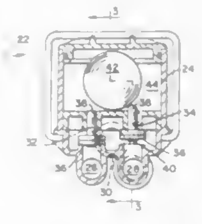
VALVE ASSEMBLY FOR A VEHICULAR FUEL TANK

Clarence D. Fox, Decatur, Ill., assignor to Borg-Warner Automotive, Inc., Troy, Mich.

Filed Oct. 16, 1986, Ser. No. 919,738

Int. Cl.⁴ F16K *17/36*

U.S. Cl. 137—38 19 Claims



10. An apparatus for controlling fluid withdrawal from a container comprising:

a housing adapted to be carried by said container and having two intake ports both of which may fluidically communicate with an outlet port;

a weighted spherical valve actuator arranged to roll in said housing along a predetermined path in response to tilting of the container; and

a pair of valve members disposed in spaced alignment beneath said predetermined path in said housing for reciprocal movement between first and second positions, one valve member being disposed between each inlet port and said outlet port such that substantially the entire weight of said valve actuator is imposed on either one of said valve members automatically when said container is tilted whereby causing said one of said valve members to move from one position to another.

4,878,512

VALVE MECHANISM

Fred L. Pirkel, Phoenixville, Pa., assignor to Ogontz Controls Company, Willow Grove, Pa.

Continuation of Ser. No. 555,379, Nov. 28, 1983, abandoned, which is a continuation of Ser. No. 460,927, Jan. 28, 1983, Pat. No. 4,460,007. This application Mar. 1, 1988, Ser. No. 165,427

Int. Cl.⁴ E03B *7/10;* **F16K** *17/38*

U.S. Cl. 137—62 2 Claims

1. A valve for use in draining a liquid system to prevent the liquid in the system from freezing under low ambient temperature conditions comprising:

means providing a valve chamber connectable to the liquid system, said valve chamber having a drain outlet;

a valve element cooperating with said drain outlet and movable from a first position towards a second position, the valve element in its first position closing the drain outlet and, during movement thereof towards its second position, opening the drain outlet;

means in contact with the valve element for urging the valve element towards its second position;

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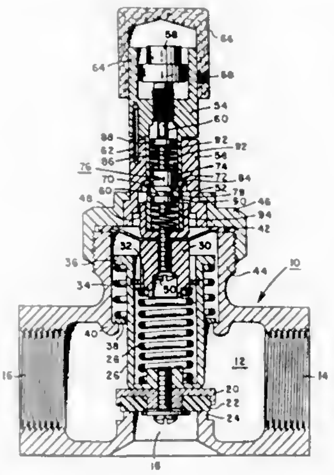
latch means connectable to the valve element for holding the valve element in its first position and releasable to permit the valve element to move towards its second position under the influence of the urging means;

a temperature sensor including a temperature sensing element that is in thermal contact with the liquid in the liquid system when the valve is connected to said system, and means responsive to the temperature sensing element for releasing the latch means when the temperature of the sensing element falls below a predetermined level;



means providing a heat-conductive housing surrounding at least a substantial part of the temperature sensing element, said means isolating the temperature sensing element from the ambient atmosphere substantially completely; and

means for conducting heat from the liquid system to the heat-conductive housing when the valve chamber is connected to the liquid system;

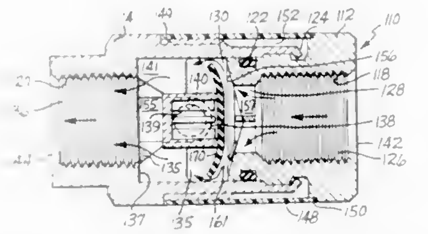
whereby the valve is prevented from opening while the liquid in the liquid system is warm, yet responds rapidly to a drop in the ambient temperature when the liquid in the liquid system is cool.

4,878,513
QUICK VENT VALVE FOR AIR BRAKE LINE

David P. Ashby, Kirkland, and Charles J. Green, Vashon, both of Wash., assignors to GT Development Corporation, Tukwila, Wash.

Filed Sep. 28, 1988, Ser. No. 250,758
Int. Cl.⁴ B60T *15/30*

U.S. Cl. 137—102 15 Claims



1. A vent valve for an air brake line having a supply end and a delivery end, said valve comprising:

a valve housing having means for attaching the housing to the line intermediate said ends; said housing defining a flow passage extending therethrough, an exhaust passage communicating the flow passage with the exterior of the housing, an inlet port positioned to communicate the flow passage with the supply end of the line, and a delivery port positioned to communicate the flow passage with the delivery end of the line;

a valve element having a supply position in which it closes the exhaust passage and allows flow through the flow passage from the supply end of the line to the delivery end of the line when there is higher pressure at the inlet port than at the delivery port, and an exhaust position in which it substantially closes the flow passage and allows flow from the delivery end of the line through the delivery port and out of the housing through the exhaust passage when there is higher pressure at the delivery port than at the inlet port; said valve element being adapted to respond substantially instantaneously to greater pressure at the inlet port than the delivery port by moving into its supply position; and

a shunt passageway communicating two portions of the flow passage on opposite sides of the valve element to prevent maintenance of a higher pressure at the delivery port than the inlet port due to movement of the valve element away from its exhaust position before pressures at the delivery port and the inlet port are equalized;

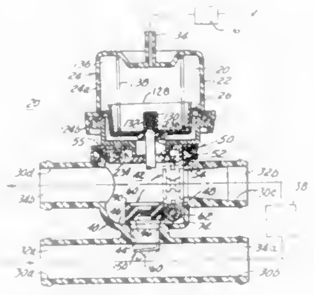
in which the exhaust passage has an inner end surrounded by a valve seat that is substantially coaxial with the flow passage, and an outer end spaced radially from the flow passage; and the flow passage extends around and past said valve seat and is coaxial with the inlet port and the delivery port.

4,878,514
HEATER CONTROL VALVE WITH FLEXIBLE DEFLECTOR

Allan W. DeJong, Chatham, Canada, assignor to Siemens-Bendix Automotive Electronics Limited, Chatham, Ontario, Canada

Filed Sep. 19, 1988, Ser. No. 246,580
Int. Cl.⁴ G05D *7/01;* **F16K** *11/052*

U.S. Cl. 137—110 10 Claims



1. A fluid control valve comprising:

a valve body defining a chamber and a bypass passage, for receiving fluid, extending therefrom,

first conduit means, in fluid communication with the bypass passage, for defining a first inlet adapted to receive fluid and a first outlet adapted to commumicate fluid to an external device;

second conduit means, in communication with the chamber for defining a second inlet, adapted to receive flow from the external device, and a second outlet;

the valve body further including a first seating surface, within the chamber, disposed about a downstream end of the bypass passage and a second seating surface disposed about the second inlet within the chamber;

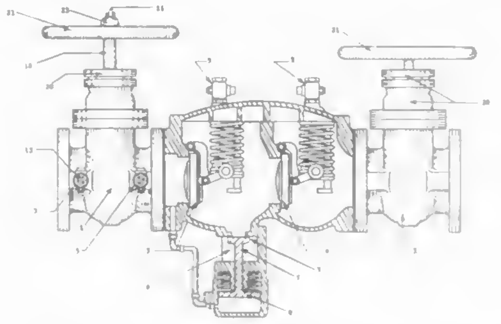
flow control means for regulating the flow rate of fluid, from the first inlet to the first outlet, to a maximum value, and for prohibiting fluid flow through the external device by terminating fluid communications between the second inlet and second outlet and first means including a resilient divertor means deflectable in response to fluid flow, for diverting fluid into the bypass passage as a function of the rate of fluid flow through the first conduit means.

4,878,515
WATER ACCESS PREVENTER

Robert B. Stevens, P. O. Box 26284, Honolulu, Hi. 96825

Filed Oct. 7, 1988, Ser. No. 254,574
Int. Cl.⁴ F16K *24/00, 35/06*

U.S. Cl. 137—218 18 Claims



13. A water access preventer for a testable backflow prevention assembly said assembly comprising: an upstream gae valve, a primary check valve, an air inlet valve, a downstream gate valve, an internally threaded test cock located between the upstream gate valve and the primary check valve, and an internally threaded te.. cock located between the primary check valve and the air inlet valve; wherein a means is provided to prevent access to potable water within the backflow prevention assembly said means comprising: an externally threaded plug, for each of the two test cocks, wherein each plug is designed to mate with the internal threading of a test cock, and wherein a means is provided to lock each plug within a test cock such that a key is required to unlock or remove each plug from a test cock, and, wherein, a means is provided to prevent closure of the upstream gate valve.

4,878,516
ARRANGEMENT FOR PERITONEAL DIALYSIS AND CONNECTOR THEREFORE

Bernd Mathieu, Spiessen-Elfersberg, Fed. Rep. of Germany, assignor to Fresenius AG, Fed. Rep. of Germany

Continuation of Ser. No. 850,855, Apr. 11, 1986, abandoned. This application Oct. 7, 1988, Ser. No. 256,165

Claims priority, application Fed. Rep. of Germany, Apr. 12, 1985, 3513204

Int. Cl.⁴ A61M *5/14*

U.S. Cl. 137—240 6 Claims

1. A connector for use in peritoneal dialysis comprising:

a first connector piece having means defining an introduction opening;

a second connector piece having a central tube section introducible into said introduction opening of said first connector piece;

a first connection means, on one of said two connector pieces, for connecting to a first flexible tube portion, said first flexible tube connection being connected to a first bag containing dialysis solution;

a second connection means, on a second connector piece, for connecting to a second flexible tube portion, said second flexible tube connection being connectable to a peritoneal catheter;

a third connection means for connecting a third flexible tube portion to a second bag;

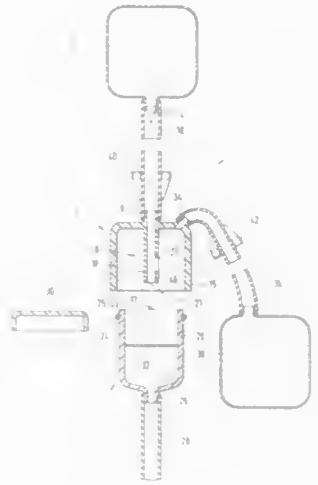
at least first and second clamps for clamping off the first and third flexible tube portions;

said central tube section (16) of said second connector piece (6) engaged and surrounded by an outer sleeve (19), said first connector piece (4) surrounded on its outer surface by an annular seal (24) mating with an inner face (25) on said outer sleeve (19) forming a sealing arrangement with the interior of the connector;

said third connection (34) originatiing from a rearward section of said outer sleeve (19);

said central tube section (16) further comprising at least one radial opening (23);

said first connector piece (4) further comprising a closure member (32) oriented between said introduction opening (22) and said second connection means (26) having a first connection state (FIG. 2) defining a means for flushing disinfectant and particles from said connector, a front end of said central tube section (16) oriented between closure member (32) causing a first fluid communication path between said first bag (12) through said central tube section (16), space (44) surrounding said central tube section (16) within said connector (6), and said third connection means (34) to the second bag (38);



a second connection state (FIG. 3) having a second fluid communication path, said front end of the central tube section (16) penetrating said closure means (32) and said central tube section (16) closed by the first clamp (40) establishing a fluid connection from the supply line (28) through the central tube section (16) and said radial opening (23) to the second bag (38); and

a third conneciton state (FIG. 4) having a third fluid communication path, said first clamp (40) on said first flexible tube portion (10) establishing a fluid conneciton between said first bag and said supply line (28) when said second clamp (42) is closed.

4,878,517
HIGH PRESSURE HOSE PULSATION ATTACHMENT

Charles J. Prange, Cridersville, Ohio, assignor to Sewer Rodding Equipment Co., Lima, Ohio

Filed Aug. 15, 1988, Ser. No. 231,949
Int. Cl.⁴ A62C *35/00;* **B08B** *3/00*

U.S. Cl. 137—355.12 8 Claims

1. Apparatus for use in a sewer cleaning machine wherein cleaning is performed by a high pressure hose terminated by a jet nozzle which pulls the hose through the sewer by rearwardly directed water jets, said apparatus comprising:

pressure bleeder means connected to the hose for relieving the high pressure developed therein including first valve means for operating said pressure bleeder means;

pulse control means for automatically cycling said first valve means to generate a series of high prssure pulses at the water jets to assist in cleaning by better penetrating block-

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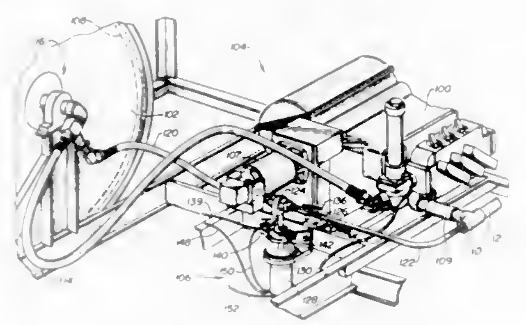
ages formed by concentrated accumulations of refuse and debris; and



switch means for selectively activating and deactivating said pulse control means.

4,878,518

IN-TANK FUEL RESERVOIR WITH FUEL VAPOR SEPARATION

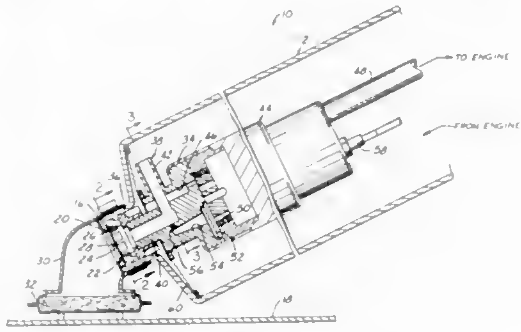
Charles H. Tuckey, Cass City, Mich., assignor to Walbro Corporation, Cass City, Mich.

Continuation-in-part of Ser. No. 153,316, Feb. 8, 1988, Pat. No. 4,831,990, which is a continuation-in-part of Ser. No. 49,537, May 14, 1987, Pat. No. 4,807,582, which is a continuation-in-part of Ser. No. 928,184, Nov. 7, 1986, Pat. No. 4,747,388. This application Jun. 2, 1988, Ser. No. 201,418

The portion of the term of this patent subsequent to Nov. 7, 2006, has been disclaimed.

Int. Cl.⁴ B60K *15/02;* F04F *5/02*

U.S. Cl. 137—448 10 Claims



1. A fuel delivery system for automotive engines and the like comprising:

a canister for positioning within a fuel tank and having a lower end with an opening and means forming an internal wall spaced from said lower end and dividing said canister into upper and lower canister chambers,

an electric-motor fuel pump having a fuel inlet, a primary fuel outlet for feeding fuel under pressure to an engine and a secondary fuel outlet for supplying fuel under pressure, said fuel pump including both said outlets being positioned within said upper chamber, and

fuel aspiration module means within said canister extending between and coupling said fuel pump and said lower chamber, said fuel pump aspiration module means including fluid conduit means extending through said wall having an inlet end in said lower chamber and an outlet end positioned in said upper chamber, and nozzle means within said module means directly coupling said secondary outlet to said fluid conduit means within said canister for aspirating fuel through said fluid conduit means from said lower chamber to said upper chamber.

4,878,519

PISTON ACCUMULATOR

Josef Berding, Ludwigsburg; Hannes Bertling, Vaihingen; Thomas Lees, Ludwigsburg, and Carsten Pabst, Stuttgart, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

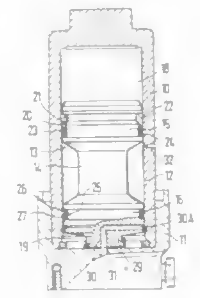
PCT No. PCT/DE88/00008, § 371 Date Aug. 11, 1988, § 102(e) Date Aug. 11, 1988, PCT Pub. No. WO88/05134, PCT Pub. Date Jul. 14, 1988

PCT Filed Jan. 7, 1988, Ser. No. 243,025

Claims priority, application Fed. Rep. of Germany, Jan. 10, 1987, 3700576

Int. Cl.⁴ P16L *55/04*

U.S. Cl. 138—31 5 Claims



1. An accumulator comprising:

a cylinder formed with a substantially closed chamber;

a piston formed with a small-diameter central region and a pair of large-diameter end regions flanking the central region and each formed with an outwardly open annular groove, the piston subdividing the chamber into a gas compartment at one of the end regions, a liquid compartment at the other end region, and an annular charging compartment surrounding the central region, the piston being displaceable in the cylinder to oppositely vary the volumes of the gas and liquid compartments, the liquid compartment being adapted for connection to a hydraulic system;

respective gas and liquid seals engaged in the grooves between the gas- and liquid-compartment end regions of the piston and the cylinder and both constructed to inhibit fluid flow from the respective gas and liquid compartments into the charging compartment, the liquid seal also being constructed to inhibit fluid flow from the charging compartment into the liquid compartment but the gas seal being constructed to permit fluid flow from the charging compartment past itself into the gas compartment; and

means including a passage formed in the cylinder and opening directly into the charging compartment for introducing a gas under pressure into same and for thereby pressurizing the charging and gas compartments by flowing past the gas seal into the gas compartment.

4,878,520

HEAT INSULATING STRUCTURES FOR LOW-TEMPERATURE OR CRYOGENIC PIPINGS

Masao Nakamura, Honolulu, Hi., and Hiroshi Tonokawa, Suzuka, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Tokyo, Japan and The Dow Chemical Company, Midland, Mich.

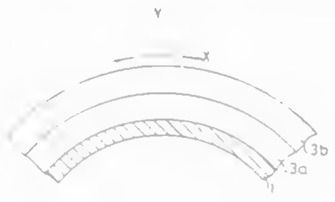
PCT No. PCT/US84/00892, § 371 Date Jan. 22, 1986, § 102(e) Date Jan. 22, 1986, PCT Pub. No. WO86/00122, PCT Pub. Date Jan. 3, 1986

PCT Filed Jun. 7, 1984, Ser. No. 83,351

Int. Cl.⁴ F16L *9/14;* F17C *7/02*

U.S. Cl. 138—149 1 Claim

1. A heat insulating structure for low-temperature or cryogenic pipings, comprising at least one heat insulating barrier and at least one moisture barrier which are laid on the outer surface of a piping to be heat-insulated, and at least one sheathing layer, wherein said heat insulating barrier comprises an extruded styrenic resin foam and wherein, as expressed in terms of the three-dimensional coordinates X (circumferential direction), Y (thicknesswise direction) and Z (longitudinal direction), said heat insulating barrier has a Y-axial water vapor permeability Py of 1.5 g/m^2·hr or less and at least the heat insulating barrier most adjacent to said piping has X-axial and Z-axial elongations at rupture Ex and Ez in the range of 8 to 40 percent.



4,878,521

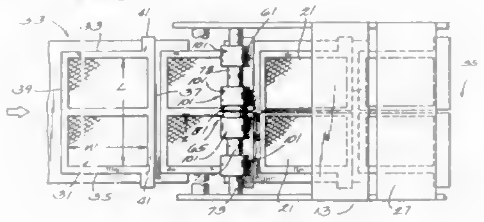
APPARATUS FOR PARTING AND PASTING BATTERY PLATE GRIDS

Roy A. Fredrickson, Stevensville, Mich., assignor to Mac Engineering & Equipment Company, Inc., Benton Harbor, Mich.

Filed Oct. 28, 1988, Ser. No. 264,055

Int. Cl.⁴ H01M *7/00*

U.S. Cl. 141—1.1 19 Claims



1. Apparatus for dividing a multi-unit battery plate grid including at least two connected battery plate grids into separated individual battery plate grids and for subsequently pasting the separated individual battery plate grids, said apparatus comprising means for dividing a multi-unit battery plate grid into separated individual battery plate grids, and means for thereafter pasting the separated individual battery plate grids.

4,878,522

PASTE HOPPER CONTROL SYSTEM

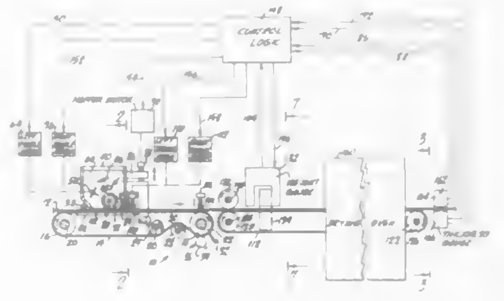
Paul R. Ostrander, Mississauga, Canada, assignor to Valmet-Sentrol Ltd., North York, Canada

Continuation of Ser. No. 99,382, Sep. 19, 1987, abandoned. This application Dec. 23, 1988, Ser. No. 291,378

Int. Cl.⁴ H01M *4/82, 4/20*

U.S. Cl. 141—11 19 Claims

1. A method of applying paste to a stream of grid material including the steps of conveying said material along a path, supplying paste to said material at a location along said path to form a plate, forming a clearance gap along said path for the passage of said plate, measuring the thickness of said plate following said clearance gap, controlling the width of said clearance gap in accordance with said measured thickness, measuring the weight of said plate independently of said thickness, and controlling the supplying of paste to said material independently of said clearance gap in accordance with said measured weight.



4,878,523

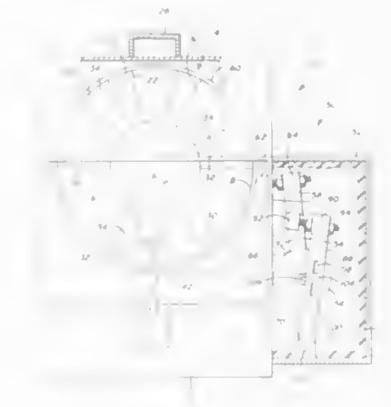
ICE MEASURING AND DISPENSING MACHINE

William A. Balsamico, 1722 Marion Dr., and Walter J. Minnick, Jr., 1732 Marion Dr., both of North Huntingdon, Pa. 15642

Filed Apr. 4, 1988, Ser. No. 177,149

Int. Cl.⁴ B65B *3/16*

U.S. Cl. 141—114 12 Claims



1. An improved ice measuring and dispensing machine of the type which includes an ice supply hopper, a rotating housing having a vertical axis and at least three measuring and dispensing chambers continuously rotating about said vertical axis at a predetermined speed, and a discharge tube; each of said chambers rotating beneath said ice supply hopper to receive said ice by gravity flow therefrom; said each chamber filled with said ice from said ice supply hopper rotating over said discharge chute to discharge said ice therein by gravity flow down said discharge chute into an ice bag; said improvement comprising:

said rotating housing having a cylindrical wall which partially defines each of said chambers;

said cylindrical wall having an outer surface including a continuous cylindrical band region;

means for selectively vibrating said cylindrical wall during said rotating of said housing;

said means for selectively vibrating said cylindrical wall including a hammer device which has a first end and a head on said first end thereof; and

said means for selectively vibrating said cylindrical wall including means for reciprocating at least said first end of said hammer device toward and away from said outer surface of said cylindrical wall to cause said head on said first end of said hammer device to make repeated, jarring contact in said continuous cylindrical band region of said cylindrical wall.

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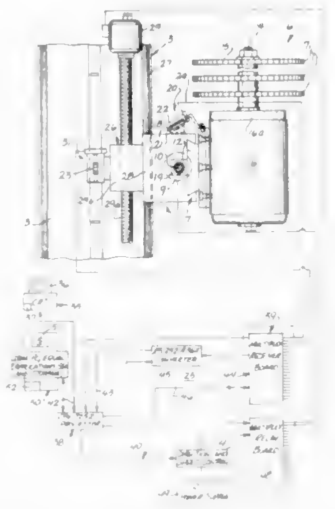
4,878,524

WOODWORKING MACHINE HAVING A PLURALITY OF SEQUENTIALLY OPERATIVE MULTIPLE TOOL UNITS

Bruce C. Rosenthal; Kevin L. Zill, both of Sheboygan; Kevin R. Claerbaut, Oostburg; David M. Berglund, and Kenneth L. Grover, both of Plymouth, all of Wis., assignors to Kobler General Corp., Sheboygan Falls, Wis.

Filed Jun. 13, 1988, Ser. No. 206,268
Int. Cl.⁴ B27B *1/00;* B27M *3/00*
U.S. Cl. 144—356 17 Claims



12. A woodworking apparatus adapted to produce a line of edge worked wood products having edge profiles including a line of different profiles with interrelated recessed and projecting surfaces, comprising a frame structure, means for successive transport of product along a fixed work path, a first work station and a second work station adjacent said work path,

each of said work stations including a tool unit comprising a plurality of rotating cutting tools secured to a drive spindle, a tool unit support structure mounted to said frame structure for positioning said tool unit in said work path, said support structure having a first slide unit having an axis parallel to the axis of the spindle for aligning of an individual tool in said work path and a second slide unit having a lateral axis of movement for positioning of a tool unit relative to the edge of the work path, first motor means secured to said support structure and said first slide unit for moving said too unit along said first axis, second motor means connected to said support structure and coupled to said second slide unit for positioning of said spindle along said second axis of movement, first and second position sensing means secured to said support structure for sensing the corresponding position along the first and second axii, each of said sensing means including a movable member moving in the direction of first axis and a relatively fixed member with respect to the axis, said position sensing means establishing an absolute position output signal corresponding precisely to the position of said movable member and thereby the position of said tool unit and an individual tool of the tool unit relative to said work path,

said tools of said second stack of said second work station having cutting tools with a cutting edge related to and oriented to form predetermined extensions of the surface of said first cutting tools of said first work station whereby the cutting edge of at least some of said tools of said second station can be located in overlapping relation to the cut surface established by said first cutting tools to form extended surfaces and whereby combinations of said tools forming said plurality of profiles, and

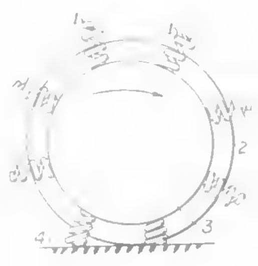
a control means including a position demand signal means and a position feedback input means, means receiving a command signal connecting each of said tool unit position sensing means to said input means and establishing a position signal, and said control means energizing said motor means to position said tool unit on said corresponding axii to establish a match between said command signals and said position signals and thereby position said tools in successive stations to form selected profiles.

4,878,525

EPICYCLOID ROLLING RESISTANCE ABATEMENT

Thomas A. Gardner, 3572 Banbury Dr., #70, Riverside, Calif. 92505

Filed Jan. 23, 1989, Ser. No. 299,896
Int. Cl.⁴ B60B *9/00*
U.S. Cl. 152—14 2 Claims



1. The combination of a vehicle wheel and tire attached thereto and means of rolling resistance abatement comprising:

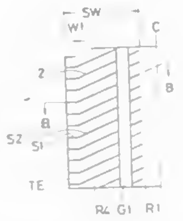
a plurality of radially mounted displacement elements on said wheel, the extremities of said elements being elongated beyond the periphery of the tire attached to the wheel, each element of which is within the track of the wheel, said elements surrounding the wheel and incurvate in a manner that a concave side of each element is opposite to the direction of movement of the vehicle, said elements being in a predetermined spaced relation along said wheel, each element contracting as each portion of the tire on the wheel at each predetermined space contacts a surface and each element expanding as each said portion of said tire rolls away from said surface.

4,878,526

RADIAL TIRE TREAD HAVING INCLINED AND AXIAL SIPES

Kiyoshi Ochiai, Kobe, Japan, assignor to Sumitomo Rubber Industries, Ltd., Hyogo, Japan

Filed Mar. 10, 1988, Ser. No. 166,259
Claims priority, application Japan, Mar. 10, 1987, 62-56145
Int. Cl.⁴ B60C *11/12*
U.S. Cl. 152—209 R 13 Claims



1. A radial tire having a tread provided with a plurality of circumferential grooves extending circumferentially of the tire to form a rib pattern thereon,

said tread having lateral side portions, each said side portion being provided with sipes arranged at intervals of 8 to 20 mm in the circumferential direction of the tire, each said sipe having a length in the axial direction of the tire which is 10 to 35% of the tread width, said sipes each comprising

a main portion inclined with respect to the axial direction of the tire at an angle of 5 to 25 degrees and

an outer portion located axially outward of said main portion and extending axially to the tread edge at an angle of not more than 5 degrees to the axial direction of the tire, wherein the main portion is inclined to the axial direction of the tire at a larger angle than said outer portion,

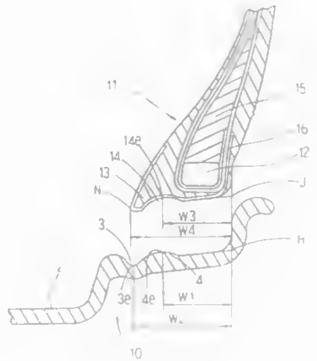
the axial length of said outer portion of each sipe being not more than 10% of the tread width and being not more than 50% of the axial length of the sipe.

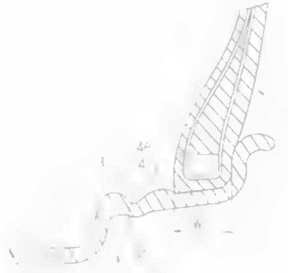
4,878,527

WHEEL RIM AND ASSEMBLY OF WHEEL RIM AND TIRE

Hiroyuki Noma, Hyogo, Japan, assignor to Sumitomo Rubber Industries, Ltd., Hyogo, Japan

PCT No. PCT/JP87/00299, § 371 Date Feb. 10, 1988, § 102(e) Date Feb. 10, 1988, PCT Pub. No. WO87/06889, PCT Pub. Date Nov. 19, 1987
PCT Filed May 12, 1987, Ser. No. 143,159
Claims priority, application Japan, May 15, 1986, 61-112181
Int. Cl.⁴ B60B *21/10;* B60C *15/02*
U.S. Cl. 152—379.3 13 Claims





1. A wheel rim for use with a tire having a conventional bead construction or a bead provided with a radially inwardly extending toe, comprising

a well for mounting the tire and

a protrusion located axially outside the well to define a circumferentially extending annular groove disposed axially outward thereof for receiving said radially, inwardly extending toe,

a hump provided axially outward of the annular groove,

a beadbase located axially outward of the hump and having a width of a conventionally standardized dimension, and

a rim flange disposed axially outward of the beadbase,

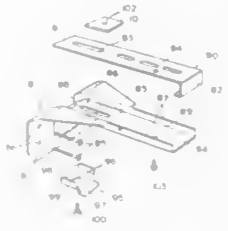
whereby the beadbase of the wheel rim can accommodate a conventional tire having a bead devoid of a radially inwardly extending toe or the annular groove, hump and beadbase can accommodate a tire having a bead with said radially inwardly extending toe.

4,878,528

ELECTRIC BLIND

Masanori Kobayashi, Nagaoka, Japan, assignor to Kuron Corporation, Japan

Filed Mar. 9, 1988, Ser. No. 165,720
Int. Cl.⁴ E06B *9/30*
U.S. Cl. 160—168.1 10 Claims



1. An electric blind to be mounted on a mounting support face, comprising:

a generally elongated casing frame having a pair of longitudinally extending guide rails;

at least two brackets fitted on said casing frame for fastening said casing frame therethrough to said mounting support face, each of said at least two brackets including a body having a mounted portion to be mounted on said mounting support face, a support arm extending generally at a right angle from said mounted portion, and a first slot formed in a base end of said support arm, a hanger head having a planar body fitted slidably on the support arm of said body of the bracket, a one-side clamping hook formed at a leading end of said planar body, and a second slot formed in the base end of said support arm, a hanger hook having a planar body fitted slidably on the base end of said support arm, and an other-side clamping end extending from the other end of said planar body, first fixing means being inserted through the planar body of said hanger hook and loosely through said first slot and said second slot for fixing said hanger head and said hanger hook on said support arm, and second fixing means for selectively fixing said hanger head on said support arm, said first fixing means having a first bolt and a nut having an internally threaded hole into which said first bolt is screwed, said second fixing means having a second bolt and an internally threaded hole formed in said hanger head;

a traverse rod borne rotatably in the longitudinal direction of said casing frame;

a plurality of runners made rotatable to run one by one on said guide rails when said traverse rod is driven;

a plurality of slats, each suspended from a corresponding one of said runners;

a tilt rod borne rotatably in the longitudinal direction of said casing frame;

tilt means meshing with said tilt rod for tilting said slats when rotated by said tilt rod;

traverse drive means for driving said traverse rod when the traverse drive means is excited;

tilt drive means for driving said tilt rod when the tilt drive means is excited; and,

drive transmitting means for transmitting driving forces of said traverse drive means and said tilt drive means to said traverse rod and said tilt rod, respectively,

and wherein said traverse drive means, said tilt drive means and said transmitting means are arranged in one end side of said casing frame, whereby said casing frame can be cut at an other end side to leave a casing frame of a desired length.

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SECTIONAL OVERHEAD DOOR FOR LOW LINTEL HEIGHTS

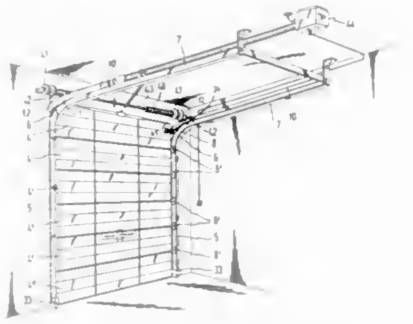
Michael Hormann, Steinhagen, Fed. Rep. of Germany, assignor to Hormann KG Brockhagen, Steinhagen, Fed. Rep. of Germany

Filed Jan. 28, 1987, Ser. No. 7,651

Claims priority, application Fed. Rep. of Germany, Jan. 28, 1986, 3602520

Int. Cl.⁴ E05D *15/16*

U.S. Cl. 160—201 **11 Claims**



1. Sectional overhead door arrangement for low lintel heights, the sectional overhead door arrangement being adapted to be mounted in an opening selectively opened and closed by the sectional overhead door arrangement, the sectional overhead door arrangement comprising:

a frame means for enabling an attachment of the sectional overhead door arrangement to a support structure, the frame means including vertically extending frame elements disposed on respective lateral sides of the opening with each frame element having spaced longitudinally extending rim portions;

a sectional door including a plurality of door leaf members articulated in succession in a vertical direction when the sectional door is in a closed position with one of the door leaf members forming an uppermost door leaf member and one of the remaining door leaf members forming a lowermost door leaf member;

first roller means disposed on respective lateral sides of each of the door leaf members other than the uppermost door leaf member for guiding a movement of the door leaf members, said first roller means being located in an upper area of the respective door leaf members;

primary guide rail means disposed on respective lateral sides of the opening for guiding a movement of the first roller means, each of said primary guide rail means including an approximately vertical guide section respectively secured to the vertically extending frame elements, an approximately horizontal guide section extending from the opening in a direction of an area to be closed by the overhead sectional door arrangement, and arcuate transitional guide sections provided at mutually facing ends of the approximately vertical and horizontal guide sections of said primary guide rail means for joining the respective approximately vertical and horizontal guide sections;

second roller means mounted on respective lateral sides of the uppermost door leaf member for guiding a movement of the uppermost door leaf member, said second roller means being located in an upper area of the uppermost door leaf member;

secondary guide rail means for guiding a movement of the second roller means, each of said secondary guide rail means including a substantially horizontal section disposed above an in parallel to the respective approximately horizontal guide sections of the primary guide rail means, and an intermediate guide member arranged so that the intermediate guide members are lowerable from the horizontal position in such a manner that the uppermost door leaf member, when the uppermost door leaf member is placed in the closed position, is transferred into a plane of the closed overhead sectional door arrangement along a shorter path than the remaining door leaf members;

a weight balancing shaft means having torsion spring means mounted thereon along with rope drum means and shaft bearing means arranged at respective ends of the balancing shaft means;

rope means retained on the respective rope drum means and respectively connected to a lower lateral zone of the door leaf member lowermost in the closed position of the overhead sectional door arrangement;

bearing bracket means affixed in an upper zone of each of the vertically extending frame elements of the frame means, said bearing bracket means including means for guiding accommodating a web member of an associated shaft bearing means; and

a threaded bolt means provided on each of the bearing bracket means for pivotally mounting the intermediate guide members of the secondary guide rail means to the bearing bracket means;

wherein each of said intermediate guide members of the secondary guide rail means includes a first angularly disposed end zone and a second curved end zone, and a linearly extending longitudinal section interposed between said first and second end zones of said intermediate guide members, said first angularly disposed end zone of the respective intermediate guide members being connected by said threaded bolt means to the respective bearing bracket means, said second curved end zone of the respective intermediate guide members being connected to the respective approximatley horizontal guide sections of the secondary guide rail means and to the approximately horizontal guide sections of the primary guide rail means, whereby the first roller means are guided along said approximately horizontal guide sections of the primary guide rail means and the second roller means are guided along the approximately horizontal guide sections of the secondary guide rail means during an opening and closing of the sectional overhead door.

4,878,530
BATHROOM PANEL

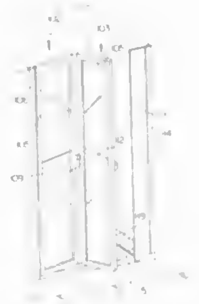
Marielle Jean, 25 rue Lucas, 03200 Vichy, France

Filed Apr. 1, 1988, Ser. No. 176,783

Claims priority, application France, Apr. 3, 1987, 87 05056; Apr. 3, 1987, 87 05057

Int. Cl.⁴ E05D *15/00*

U.S. Cl. 160—211 **8 Claims**



1. A wall-mounted bathroom panel assembly comprising, in combination,

at least one panel having a rectangular frame and a pane surrounded by and supported by the frame, said frame including two horizontal short sides and two vertical long sides which each have a longitudinally extending corner;

an elongated vertical mounting member fixed to the bathroom wall and having a longitudinal corner extending in a direction parallel to the long sides of said frame, said corner of the mounting member and said corner of each of the sides of said frame each defining a recess of circular cross-section;

pin means connecting one of the long sides of the frame of said panel to said mounting member for pivotal movement about a vertical axis and for sliding movement along said axis, said pin means having a pair of integrally connected pins respectively disposed in the corner recess in said mounting member and in the corner recess in said one long side of the frame; and

weight-compensating means cooperating with said mouting member and said panel for restricting sliding vertical movement therebetween.

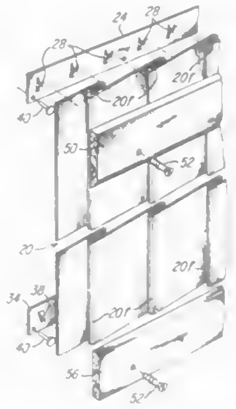
4,878,531
WALL COVERING SUPPORT STRUCTURE AND METHOD

Douglas F. Stover, P.O. Box 5803, Athens, Ohio 45701

Filed Jan. 25, 1988, Ser. No. 147,853

Int. Cl.⁴ A47H *23/00*

U.S. Cl. 160—327 **13 Claims**



1. Wall covering structure for covering a wall, the wall having an upper portion and a lower portion, comprising: a first elongate flat support strip, the first elongate flat support strip having a pair of opposed longitudinally extending peripheral edges, the first elongate flat support strip having a flat surface extending along the length thereof and between the opposed longitudinally extending peripheral edges thereof, a series of spaced-apart protuberances integral with the first elongate flat support strip and extending outwardly therefrom thereof, the first elongate flat support strip being adapted to be positioned horizontally and attached to the upper portion of a wall with the protuberances extending upwardly from the first elongate flat support strip, a second elongate flat support strip, the second elongate flat support strip having a pair of opposed longitudinally extending peripheral edges, the second elongate flat support strip having a flat surface extending along the length thereof and between the opposed longitudinally extending peripheral edges thereof, a series of spaced-apart protuberances integral with the second elongate flat support strip and extending outwardly therefrom, the second elongate flat support strip being adapted to be positioned horizontally and attached to the lower portion of a wall below the first elongate flat support strip and with the protuberances extending downwardly from the second elongate flat support strip, a sheet of flexible cloth-like material having an upper portion and a lower portion, there being a series of vertical fold sections which extend between the upper portion of the sheet and the lower portion of the sheet, the sheet of flexible cloth-like material being adapted to be attached to the elongate flat support strips, the upper portion of the sheet being attached to and supported by the first elongate flat support strip with the protuberances of the first elongate flat support strip extending through the vertical fold sections at the upper portion of the sheet of cloth-like material, the lower portion of the sheet of cloth-like material being attached to and supported by the second elongate flat support strip with the protuberances of the second elongate support strip extending through the vertical fold sections at the lower portion of the sheet of cloth-like material, the sheet of cloth-like material thus covering a wall.

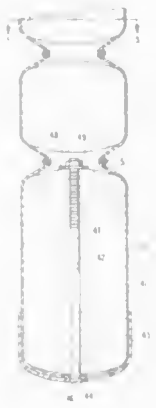
4,878,532
FLEXIBLE DECORATIVE INTERIOR SCREEN

John Strelnieks, 3850 Wind Drift Dr., Apt. 2C, Indianapolis, Ind. 46254

Filed Mar. 14, 1988, Ser. No. 167,773

Int. Cl.⁴ A47H *1/00*

U.S. Cl. 160—332 **20 Claims**



1. A flexible screen comprising:

a series of vertically hanging columns;

each column having upper and lower end portions and comprising an elongate flexible tube containing solid filler material;

said tube being constricted at vertically spaced locations intermediate said end portions thereby facilitating the flexing of the column preferentially at said locations; and

each column being hung suspended from hanger means at the upper end of the tube.

4,878,533
VAPORIZATION APPARATUS AND METHOD FOR PRODUCING CURING GAS

Boyd A. Wear; Craig V. Latham, and James A. Priser, all of 513 S. Lake St., Warsaw, Ind. 46580

Filed Mar. 7, 1988, Ser. No. 164,871

Int. Cl.⁴ B22C *9/12*

U.S. Cl. 164—16 **15 Claims**

1. A method of vaporizing a curing agent which exists in a normally liquid phase comprising the steps of:

(a) delivering a quantity of said liquid curing agent to a container, said container at least partially surrounded by a jacket;

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(b) delivering a quantity of a preheated fluid into said jacket, with the temperature of said preheated fluid being sufficiently high to heat said container and raise the temperature of said liquid curing agent to its boiling point or higher wherein the liquid curing agent is vaporized into a gaseous phase; and

(c) delivering a quantity of said gaseous phase curing agent to one or more work stations to be used in reacting or catalyzing a chemical curing reaction.

6. Apparatus for vaporizing a curing agent which exists in a normally liquid phase, said apparatus comprising container means for holding a quantity of said liquid phase curing agent, means for introducing a quantity of said liquid phase curing agent into said container means, a jacket at least partially surrounding said container means, said jacket holding a preheated fluid separate from said liquid phase curing agent with said preheated fluid being of sufficiently high temperature to heat said container means and liquid phase curing agent to a temperature at which the curing agent is vaporized into a gaseous phase, conduit means connecting said container means and a work station, and means in communication with said conduit means for delivering a quantity of said gaseous phase curing agent to said work station.

4,878,534

APPARATUS FOR THE COMPACTING OF GRANULAR MOLDING MATERIALS

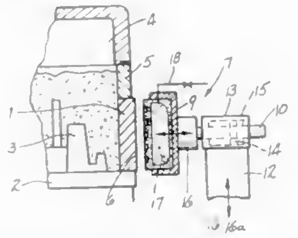
Wendelin Welmann, Klettgau, Fed. Rep. of Germany, assignor to Georg Fischer AG, Schaffhausen, Switzerland

Filed Jan. 3, 1989, Ser. No. 292,772

Claims priority, application Switzerland, Jan. 8, 1988, 00058/88

Int. Cl.⁴ B22C *15/00*

U.S. Cl. 164—154 6 Claims



1. An apparatus for compacting granular molding material comprising: a pattern plate, a molding box having a plurality of peripheral sidewalls mounted on said pattern plate, a filling frame mounted on said peripheral sidewalls and a pressure chamber on said filling frame wherein said pattern plate, said molding box, said sidewalls and said pressure chamber together define a mold cavity for receiving said granular molding material and compression means associated with the outer surface of said plurality of peripheral sidewalls exterior of said mold cavity for applying pressure to substantially the entire area of said sidewalls in opposition to pressure in said mold cavity said compression means comprises a compression beam associated with each of said sidewalls and having substantially the same surface area as said sidewalls, motor means for biasing said compression beam toward and away from said sidewall, and a pressure sensor between said compression beam and said motor means wherein said compression beams comprise a chamber for receiving a fluid medium under pressure from a source upon the sensing of an increase in pressure within the mold cavity by said pressure sensor.

4,878,535

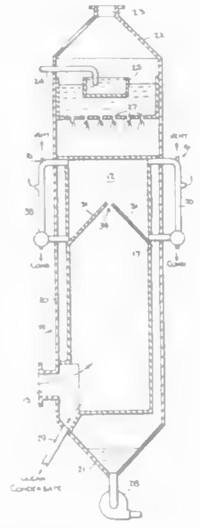
SELECTIVE CONDENSATION APPARATUS

Axel E. Rosenblad, Seabright, N.J., assignor to Rosenblad Corporation, Princeton, N.J.

Filed Apr. 27, 1988, Ser. No. 186,639

Int. Cl.⁴ F28B *1/00;* B01D *1/22*

U.S. Cl. 165—114 5 Claims



1. A falling film surface condenser for selective condensation of vapor comprising at least one plate element including a pair of plates joined around their peripheries and spaced apart throughout substantially all of the area defined within said peripheries so as to allow for the flow of vapor through the plate element; a slanting internal partition located between and joining the plates across part of the width of the plate element from an upper partition end spaced from said peripheries to a lower partition and sealingly secured at a side edge of the plate element, said partition separating upper and lower internal spaces within the plate element, means for introducing vapor to be condensed in said plate element, and at least two outlet means for condensates formed by vapor condensing within the plate element and a liquid coolant distribution means located above the plate element such that the vapor passes in countercurrent flow to the liquid coolant distributed to said plate element.

4,878,536

COMBINED FILTER AND HEAT FXCHANGER

Stig Stenlund, Saltsjöbaden, Sweden, assignor to Hypeco AB, Malmo, Sweden

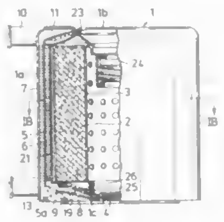
PCT No. PCT/SE88/00053, § 371 Date Jul. 28, 1988, § 102(e) Date Jul. 28, 1988, PCT Pub. No. WO88/06228, PCT Pub. Date Aug. 25, 1988

PCT Filed Feb. 12, 1988, Ser. No. 224,946

Claims priority, application Sweden, Feb. 16, 1987, 8700627

Int. Cl.⁴ F01M *5/00;* F28D *7/10*

U.S. Cl. 165—119 12 Claims



1. An arrangement for simultaneously filtering a first medium and effecting a heat exchange between said first medium and a second medium, comprising a filter section and a heat-exchange section, of which the filter section includes a substantially cylindrical tubular filter element (2) and the heat-exchange section has also a substantially cylindrical tubular form and the filter section and the heat-exchange section are located mutually coaxially within an outer casing (1) having a cylindrical peripheral wall (1*a*) and end walls (1*b*, 1*c*) connected to respective axial ends of said peripheral wall, said outer casing being provied with a first inlet (8) and a first outlet (4) for said first medium and with a second inlet (10) and a second outlet (12) for said second medium, characterized in that the heat-exchange section is located coaxially outwardly of the filter element (2) in an annular space defined between the filter element and the cylindrical casing wall (1*a*) and includes a substantially cylindrical, liquid-impervious partition wall (5) which subdivides said space into two separate chambers (6, 7), of which the first chamber (6) is located between the partition wall (5) and the filter element (2) and is arranged to be passed through by said first medium, whereas the second chamber (7) is located between the partition wall (5) and the cylindrical casing wall (1*a*) and communicates with said second inlet (10) and said second outlet (12) for said second medium so as to be passed through by said second medium, said first chamber (6) incorporating a large number of flow channels for said first medium extending in a peripheral direction close to said partition wall (5) and a smaller number of axially extending main flow channels of a first kind (18) and a second kind (20) located alternately at a pripheral distance from one another, said main channels communicating with all said peripherally extending flow channels and being separated from one another by a substantially cylindrical sleeve (21) inserted between the peripherally extending flow channels and the outer surface of the filter element (2) and surrounding the filter element (2), said substantially cylindrical sleeve (21) defining on its radially outwardly facing side said axial main channels of a first kind (18) and separating them from the outer surface of the filter element (2) and defining on its radially inwardly facing side said axial main channels of a second kind (20), which extend along the outer surface of the filter element (2) and communicate with said peripherally extending flow channels through openings (22) provided in said sleeve (21), a flow passage being provided at one axial end of said tubular filter element (2) between a space enclosed by the filter element and said main channels of a first kind (18), said flow passage including pressure relief valve means (23, 24) for opening said flow passage only when the pressure drop across the filter element (2) for said first medium exceeds a predetermined value, and said first inlet (8) and said first outlet (4) being provided in the casing end wall (1*c*) at the opposite axial end of the filter element (2) and communicating with either of said main channels of a first kind (18) and said space enclosed by the filter element (2).

4,878,537

HEAT EXCHANGER FOR PHYSIOLOGICAL FLUIDS

Wesley H. Verkaart, Duxbury, Mass., assignor to Level 1 Technologies, Marshfield, Mass.

Continuation-in-part of Ser. No. 866,910, May 27, 1986, Pat. No. 4,759,749. This application May 26, 1987, Ser. No. 53,637

Int. Cl.⁴ A61F *7/12*

U.S. Cl. 165—156 13 Claims

1. A heat exchanger capable of maintaining sterility during temperature variation comprising an inner conduit, an outer conduit partially covering said inner conduit and forming a fluid flow channel between an outer surface of said inner conduit and an inner surface of said outer conduit, and end cap means for securing and fluid sealing one end of said outer conduit and for communicating a first fluid with said channel, wherein said inner conduit has a thermal coefficient of expansion larger than that of said outer conduit and said outer conduit is elastic for at least partially accommodating expansion or contraction of said inner conduit, and wherein said end cap means is elastic for at least partially accommodating expansion or contraction of said inner conduit and comprises a first hollow portion cemented to said one end of said outer conduit and a second hollow portion having a hoop strength adequate to tightly grip said outer surface of said inner conduit to provide a pressure tight seal between said second hollow portion and said inner conduit and to provide a location of said pressure tight seal which remains substantially fixed with respect to said inner conduit during normal thermal expansion or contraction of said inner conduit.

4,878,538

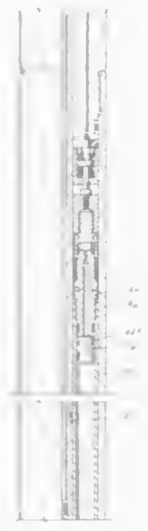
PERFORATE, TEST AND SAMPLE TOOL AND METHOD OF USE

Jon B. Christensen, Ankeny, Iowa, assignor to Halliburton Company, Duncan, Okla.

Continuation of Ser. No. 244,627, Sep. 12, 1988, abandoned, which is a continuation of Ser. No. 64,285, Jun. 19, 1987, abandoned. This application Feb. 15, 1989, Ser. No. 312,323

Int. Cl.⁴ E21B *49/08*

U.S. Cl. 166—264 20 Claims



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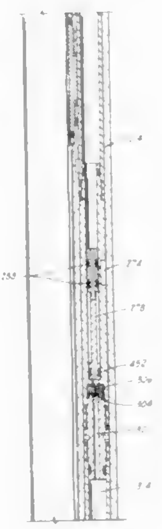
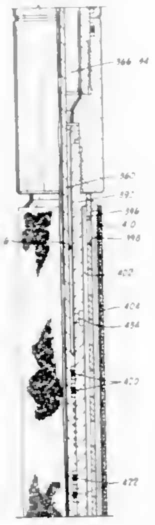




9. A downhole tool for testing fluid from a formation reservoir in a well, said tool comprising:
  a packer connectable to a tool string and sealingly engageable with a well bore such that a first well annulus is defined above the packet and a second well annulus is defined therebelow;
  a cylinder adjacent said packer and defining a central opening therethrough;
  an operating piston slidably disposed in said central opening of said cylinder;
  a fluid sampler disposed below said packer and defining a sampling chamber and a sample port therein in communication with said second well annulus, said sampling chamber having no communication with said tool string; and
  a valve connected to said piston for movement therewith and slidably disposed in said sampler for opening and closing said sampler port.

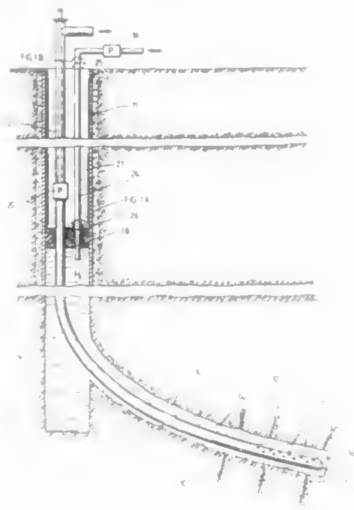
4,878,539

METHOD AND SYSTEM FOR MAINTAINING AND PRODUCING HORIZONTAL WELL BORES

Edward O. Anders, Kerrville, Tex., assignor to Anders Energy Corporation, Conroe, Tex.
Filed Aug. 2, 1988, Ser. No. 227,197
Int. Cl.⁴ E21B *37/00, 43/24, 43/25*
U.S. Cl. 166—303 35 Claims

2. Apparatus for completing a well in a subsurface oil bearing formation, the well including a lower, generally horizontal section which extends into the formation; which comprises:
  a dual packer set in the well above the formation;
  a first tubing string extending down through a first passageway in the packer and substantially into the generally horizontal section in the formation; said first tubing string being closed at its lower distal end and defining a plurality of perforations proximate the distal end;
  a pump in the first tubing string above the packer operable to pump liquid up the well; and
  a second tubing string extending from the earth's surface down the well through a second passageway in the packer and terminating below the packer.

17. A method of recovering oil from a subsurface oil-bearing formation by means of a well which has a vertically disposed well section extending down from the surface of the earth, and a laterally disposed well section which extends into the formation generally along the bedding planes of the formation to a distal end within the formation, comprising:



transmitting oil produced from the formation into the laterally disposed section from the distal end of the laterally disposed section through a first separate fixed passageway extending from the distal end of the laterally disposed section to the earth's surface; and
transmitting fluid down a second separate fluid passageway from the earth's surface to a point above the laterally disposed section.

4,878,540

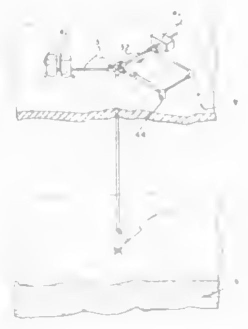
APPARATUS AND PROCESS FOR PUMPING FLUID FROM SUBTERRANEAN FORMATIONS

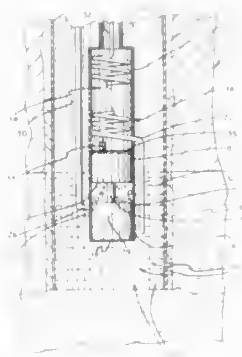
William M. Raymond, P.O. Box 48788, Wichita, Kans. 67201
Filed Jun. 22, 1988, Ser. No. 210,701
Int. Cl.⁴ E21B *43/12*
U.S. Cl. 166—369 12 Claims

1. An apparatus for pumping fluid from a subterranean reservoir comprising:
  (a) a well casing means extending from a surface of the earth down to a subterranean reservoir, said well casing means having at least one casing perforation wherethrough fluid enters therein from said subterranean reservoir;
  (b) a hollow tubing means having a known tubing diameter and disposed generally concentrically within said well casing means down to a predetermined depth;
  (c) a generally cylindrical hollow housing having a housing diameter and a housing side wall is secured to the bottom of said hollow tubing means and is generally concentric therewith;
  (d) a motor means disposed at the bottom of said hollow housing;
  (e) a pump means disposed within said hollow housing above said motor means;
  (f) a common shaft means connected to said motor means and said pump means for interconnecting the motor means with the pump means such that the shaft means can transfer rotary power from the motor means to the pump means, said housing side wall immediately opposed to said common shaft means having a structure defining a plurality of apertures wherethrough subterranean fluids pass;

  (g) a partition means disposed within said hollow housing above said pump means, said partition having a partition aperture wherethrough subterranean fluids are pumped by said pump means;
  (h) an entrance conduit means extending from the surface of the earth down to the motor means and through the housing side wall in order to connect with the motor means, said entrance conduit means being disposed between said well casing means and said hollow tubing means; and
  (i) a return conduit means extending from said motor means, through the housing side wall, upwardly between the housing side wall and said well casing means, through the housing side wall above said partition means, and through the hollow housing above said partition means, and through the tubing means to the surface of the earth.

5. A process for pumping fluid from a subterranean reservoir to a surface of the earth comprising the steps of:
  (a) descending a refrigerant working fluid between a well casing means and a well tubing means;



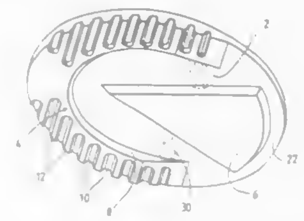


  (b) passing the refrigerant working fluid into a lower part of a housing secured to the bottom of the well tubing means;
  (c) cooling the refrigerant working fluid in the lower part of the housing;
  (d) passing the cooled refrigerant working fluid of step (c) out of the lower part of the housing;
  (e) heating the cooled refrigerant working fluid of step (d);
  (f) passing the heated refrigerant working fluid of step (e) into an upper part of the housing, said refrigerant working fluid of steps (a)–(e) being at a pressure and temperature such as to be in a liquid state;
  (g) heating the heated refrigerant working fluid of step (f) in the upper part of the housing in order to vaporize the refrigerant working fluid into a vapor; and
  (h) ascending the vapor of step (g) through the well tubing means to the surface of the earth.

4,878,541

HORSESHOE, ESPECIALLY FOR TROTTING HORSES

Palle Pedersen, Nymarksgade 31, DK-5474 Veflinge, Denmark
PCT No. PCT/DK87/00095, § 371 Date Mar. 30, 1988, § 102(e) Date Mar. 30, 1988, PCT Pub. No. WO88/00793, PCT Pub. Date Feb. 11, 1988
PCT Filed Jul. 27, 1987, Ser. No. 174,795
Claims priority, application Denmark, Jul. 30, 1986, 3610/86
Int. Cl.⁴ A01L *5/00*
U.S. Cl. 168—4 8 Claims

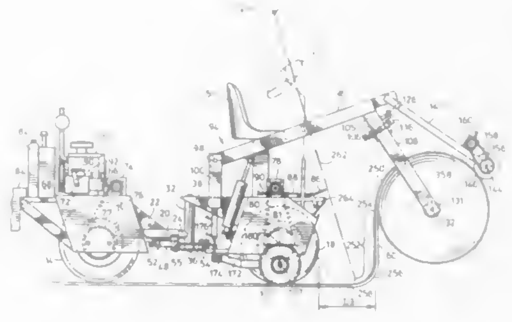


1. A horseshoe, primary for four legs of trotting horses, and consisting of a wear-resistant plate element of resiliently bendable plastic, the underside of which is provided with downwardly projecting portions, characterized in that the horseshoe includes a thin plate element for covering an entire hoof surface and is provided with two mutually separated thickened areas including a first, arched area extending along an outer rim portion of a front half of the thin plate element and being provided with transverse grooves which extend over only a part of the thickened arched area so as to leave an unbroken rib portion extending in parallel to the outer rim portion of the thin plate element, as well as a number of transverse rib portions, and a second, primarily triangular area extending rearwardly with an increasing width from a front end area situated in front of a transverse middle line of the horseshoe, such that the triangular area is connected with a rear end of the first arched area through a connection area of a material of the thin plate element.

4,878,542

SOD LAYING METHOD

Gerardus J. Brouwer, Keswick, and Henry Zwambag, Sutton, both of Canada, assignors to Brouwer Turf Equipment Limited, Keswick, Canada
Division of Ser. No. 776,242, Sep. 16, 1985, Pat. No. 4,754,815. This application Apr. 5, 1988, Ser. No. 177,760
Claims priority, application Canada, Sep. 17, 1984, 463424
Int. Cl.⁴ A01B *45/00*
U.S. Cl. 172—1 8 Claims



1. A method of laying sod comprising:
  (a) employing a roll of sod having the grass side of said sod facing outwardly,
  (b) supporting said roll of sod above the ground.

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(c) carrying said roll of sod in a direction to unwind said roll of sod with the grass side of said sod facing upwardly,

(d) and laying the unwound portion of said sod on the ground.

4,878,543

METHOD FOR CONTROLLING AN ATTACHMENT TO AGRICULTURAL TRACTORS

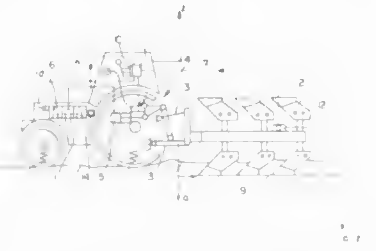
Wolfgang Kauss, Lohr-Wombach, Fed. Rep. of Germany, assignor to Mannesmann Rexroth GmbH, Lohr/Main, Fed. Rep. of Germany

Continuation of Ser. No. 712,258, Mar. 15, 1985, abandoned. This application Apr. 20, 1987, Ser. No. 45,263

Claims priority, application Fed. Rep. of Germany, Mar. 19, 1984, 3409604; Jan. 19, 1985, 3501568

Int. Cl.⁴ A01B *63/11*

U.S. Cl. 172—2 15 Claims



1. A method of controlling an attachment connected to an agricultural tractor via a power lift without measuring the pulling force, comprising the steps of:

detecting or determining the absolute vertical movement of the attachment by a motion sensor;

generating signals corresponding to the absolute vertical movement of the attachment and the relative position of the attachment with respect to the tractor; and

directly applying or utilizing the sensed absolute vertical movement and the relative position between the attachment and the tractor in the form of values of these signals as feedback signals for an attachment control circuit.

4,878,544

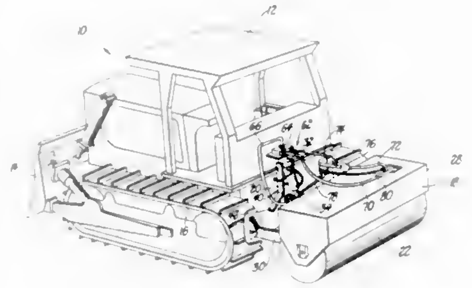
COMPACTION ROLLER

James Barnhart, 6144 Columbia, Haslott, Mich. 48840

Filed Apr. 20, 1988, Ser. No. 183,823

Int. Cl.⁴ A01B *29/02, 35/18*

U.S. Cl. 172—40 13 Claims



1. A compaction roller machinery assembly **(10)** for compacting surfaces such as sand, said assembly **(10)** comprising; a vehicle **(12)** having a power plant for driving said assembly **(10)**, roller means **(18)** extending in a cantilevered fashion from a pivot axis on said vehicle **(12)** for compacting a surface, said roller means **(18)** including a housing **(28)**, roller lift means **(20)** mounted to said vehicle **(12)** and interconnecting said roller means **(18)** and said vehicle **(12)** for raising and lowering said roller means **(18)** about said pivot axis between a raised position and a surface-engaged position, said roller lift means **(20)** including a hydraulic cylinder **(32)** having a piston moveable therein between first and second positions and a rod **(34)** extending from the piston exteriorly of the cylinder **(32)** and a piston delivery passage **(36)** for providing positive fluid pressure to one side of the piston in said cylinder **(32)** to move said rod **(34)** to its extended position and a piston return passage **(38)** for providing positive fluid pressure to the other side of said piston in said cylinder **(62)** to move said rod **(34)** to its retracted position to lift said roller means **(18)**, said roller lift means **(20)** further including a cylinder support means **(40)**, said cylinder **(32)** pivotally connected at one end to said cylinder support means **(40)**, said housing **(28)** including a mounting bracket **(48)**, said rod **(34)** pivotally connected at the distal end to said bracket **(48)**, said hydraulic cylinder **(32)** raising said vibratory compaction roller means **(18)** to said raised position when said rod **(34)** is moved to its retracted position and lowering said roller means **(18)** to said lowered position once said rod **(934)** is moved to its extended position, said roller means **(18)** including a roller **(22)** for rolling and compacting surfaces and vibration-producing means **(24)** for vibrating said roller **(22)** to facilitate the compaction of the surfaces, said assembly **(10)** characterized by including a first hydraulic pump means for supplying said roller lift means **(20)** with hydraulic power for raising and lowering said roller means **(18)** and a second hydraulic pump means **(26)** disposed on said vehicle **(12)** for supplying hydraulic power to said hydraulic vibration-producing means **(24)** on said roller means **(18)** to vibrate said roller **(22)** to facilitate the compaction of the surface.

4,878,545

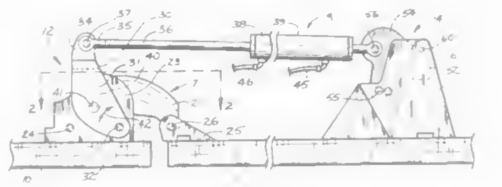
AGRICULTURAL IMPLEMENT WITH FOLDABLE WING

Ray Dyken, Coaldale, Canada, assignor to Victory Equipment (1983) Limited, Alberta, Canada

Filed Jun. 15, 1987, Ser. No. 62,510

Int. Cl.⁴ A01B *17/00*

U.S. Cl. 172—776 20 Claims



1. An implement including a first frame and a wing frame connected to said first frame by hinge means to permit pivoting of said wing frame a lowered operating position to a raised transport position relative to said first frame; said hinge means including a hinge member having a first pivot means connecting said hinge member to said first frame and allowing turning movement of said hinge member about a horizontal axis relative to said first frame and a second pivot means connecting said hinge member to said wing frame and allowing turning movement of said wing frame relative to said hinge member about a second horizontal axis spaced from and parallel to the axis of first pivot means, and locking means movable between locking and unlocking positions, said locking means in the unlocking position permitting the turning movements of both said pivot means whereby said wing frame in said operating position is free for limited float upward and downward relative to said first frame, lock actuating means operable when said wing frame is in said operating position for moving said locking means to said locking position for preventing the turning movement about one of said first and second pivot means, and a wing frame raising means operable after operation of said lock actuating means for pivoting said wing frame about the other of said first and second pivot means to the transport position.

4,878,546

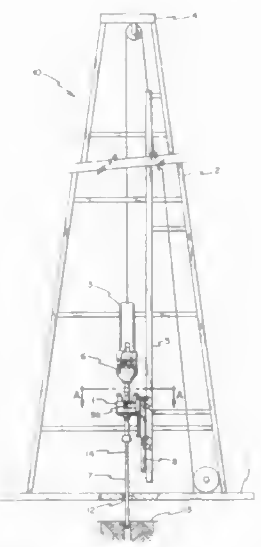
SELF-ALIGNING TOP DRIVE

Danial G. Shaw, Conroe, and Billy MacCline, Porter, both of Tex., assignors to Triten Corporation, Houston, Tex.

Filed Feb. 12, 1988, Ser. No. 155,300

Int. Cl.⁴ E21B *3/00*

U.S. Cl. 173—163 6 Claims



1. A self-aligning top drive apparatus for well operations with tubulars suspended from a derrick, the top drive apparatus mountable to the derrick, the derrick having a central derrick vertical axis, the top drive apparatus comprising

top drive means,

gimbal mean to which the top drive means is movably mounted,

the movable mounting of the top drive means to the gimbal means providing for movement of the top drive means at right angles to the central derrick vertical axis and also for tilting movement with respect to said axis to maintain the top drive means in alignment with the tubulars,

a first pivot pin extends from a first side of the top drive means and a second pivot pin extends from a second side of the top drive means opposite to the first side, and the gimbal means comprising

a gimbal frame disposed about the top drive means,

the gimbal frame having two holes therein one each for receiving one of the two pivot pins, each of the pivot pins slidable and rotatable in its respective hole,

a gimbal pin secured to the gimbal frame,

a gimbal frame support disposed about the gimbal frame, the gimbal frame support having an opening therethrough for receiving the gimbal pin,

the gimbal pin slidably and movably extending through the opening in the gimbal frame support,

dolly means movably mounted for upward and downward movement in the derrick, and

gimbal mount means for securing the gimbal means to the dolly means.

4,878,547

ROCK DRILLING APPARATUS

Archie A. Lennon, Troutville, Va., assignor to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Continuation of Ser. No. 264,016, Oct. 28, 1988, abandoned. This application Jun. 21, 1989, Ser. No. 368,904

Int. Cl.⁴ E21B *04/16*

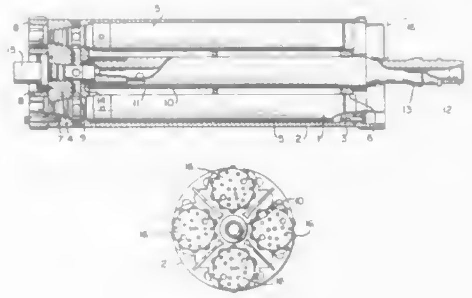
U.S. Cl. 175—53 11 Claims

1. A gang drill for increasing the diameter of bored holes in hard rock comprising:

a plurality of individual percussion producing rock drills in a cylindrical drill body, said body having a rearward end and a forward end, said forward end having bit ends of said drills exposed for rock cutting arranged peripherally around said body and a drill string connected at the centerline of said drills to said body at its forward end for rotating and drawing said drills through a previously drilled bore hole to enlarge said previously drilled hole;

said body totally encloses said drills, said body being further provided with alignment means, securing means, and means for supplying pressure fluid for each of said drills, said pressure fluid entering said drills internally of said body and exiting said drills externally to said body at its forward end, whereby said body forms a peripheral passage for exiting of rock cuttings and provides protection for individual drills; and

said means for supplying pressure fluid from said forward end of said body comprises a center core rod of approximately the same dimensions as an individual percussive drill allowing substitution for same and thereby providing for reversal of the direction of drilling of said gang drill.



4,878,548

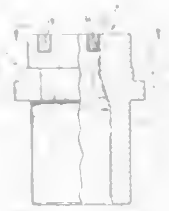
NOZZLE RETENTION SYSTEM FOR A DRILL BIT

Alfred Ostertag, Celle, Fed. Rep. of Germany; Robert E. Iversen, Humble, Tex.; Craig R. Hyland, Magna, Utah; Kenneth D. Enever, Lisses, France, and Steven R. Radford, South Jordan, Utah, assignors to Eastman Christensen, Salt Lake City, Utah

Filed Jan. 21, 1988, Ser. No. 146,377

Int. Cl.⁴ E21B *10/18, 10/60*

U.S. Cl. 175—340 16 Claims



1. A drill bit, comprising:

a body member, said body member having a bore for receiving a nozzle, said bore having a profile forming a keyway;

a nozzle, said nozzle including a key portion adapted to selectively engage said keyway in a first position to retain said nozzle within said bore of said body member, and to disengage said keyway in a second position to disengage said nozzle from said body member; and

a spring disposed generally coaxially with said nozzle, and externally relative to said nozzle, and adapted to exert a

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force on said nozzle to selectively retain said nozzle in said first position.

12. A drill bit, comprising:
a body member, said body member having a bore for receiving a nozzle, said bore having a profile forming a keyway;
a nozzle, said nozzle including a key portion which allows said nozzle to be inserted into said keyway in a first position, and which allows said nozzle to engage said keyway in a second position after the insertion of said nozzle within said bore of said body member, said nozzle being adapted to pass a pressurized fluid through said body member;
means for resiliently forcing said key portion of said nozzle into engagement with said keyway in said second position to retain said nozzle within said bore; and
means for isolating said forcing means from said pressurized fluid.

4,878,549

WIRE LINE CORE BARREL

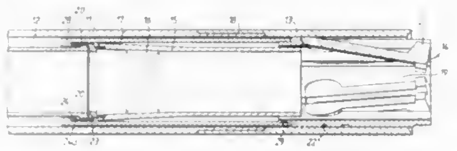
Andrew H. Bennet, deceased, late of Newcastle-upon-Tyne, England (by David H. Davies, executor), assignor to Diamant Boart Cralius Ltd., Daventry, England

Continuation-in-part of Ser. No. 135,500, Dec. 18, 1987, abandoned, which is a continuation of Ser. No. 882,235, Jul. 7, 1986, abandoned. This application Oct. 12, 1988, Ser. No. 256,509

Claims priority, application United Kingdom, Jul. 9, 1985, 8717388

Int. Cl.⁴ E21B *25/04*

U.S. Cl. 175—248 5 Claims



1. A core sampling device for connection to a drilling machine through at least one drilling rod and an outer barrel attached to the drilling rod most distant from said drilling machine, said sampling device comprising a drill bit assembly, a generally cylindrical drive shoe drivingly coupled to said outer barrel and arranged to house said drill bit assembly, and a core sample tube; said drill bit assembly including a bit housing and a series of drill segments; said bit housing including first engagement means on an external surface thereof and said drive shoe including second engagement means on an internal surface thereof, whereby, when said bit housing is located within said drive shoe, said first and second engagement means engage each other so that when rotational force from said drilling machine is applied to said drive shoe via said drilling rods and said outer barrel, said bit housing is drivingly engaged by said drive shoe through the first and second engagement means; each drill segment comprising an elongate body having a laterally enlarged head at one end and the enlarged head having a rear surface formed with a convexly curved engagement section and a cutting portion at the other end, said cutting portion having an inner radial limit and an outer radial limit; said bit housing having a series of elongate slots, each slot being open at one end of said bit housing and having a laterally enlarged recess at the other end thereof and each recess defining a concavely curved internal support section around its front side conforming to the convexly curved engagement section; each drill segment being located with its elongate body within one of said elongate slots and with said curved engagement section slidably engaged with said curved support section of said recess to define a curved hinge profile whereby each drill segment is capable of pivoting, without any translation movement, relative to said bit housing between a drilling position, in which said outer and inner radial limits of said cutting portions define the outer and inner diameter of an annular hole to be drilled, and a retracted position in which said cutting faces are entirely within the diameter of said generally cylindrical drive shoe; said drill segments being maintained in said drilling position with said elongate bodies held in said elongate slots by means of said core sampling tube when said core sampling tube is in a forward position within said bit housing; means surrounding the bit housing and elongate bodies of the drill segments to maintain said engagement section in sliding engagement with said support section and said segments being allowed to adopt said retracted position with said elongate bodies extending into the interior of said bit housing when said sampling tube is withdrawn; said core sampling tube engaging said drill bit assembly whereby continued withdrawal of said core sampling tube causes withdrawal of said drill bit assembly from within said drive shoe.

4,878,550

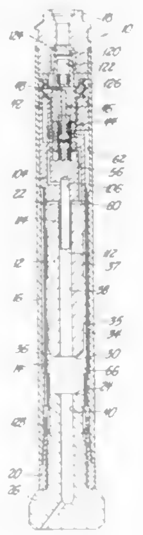
PILOT-VALVE-CONTROLLED PERCUSSION DRILLING TOOL

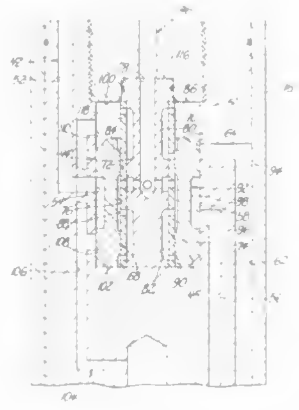
Jo-Yu Chuang, Sugarland, Tex., assignor to Sandvik Rock Tools, Inc., Bristol, Va.

Filed Jul. 15, 1988, Ser. No. 219,394

Int. Cl.⁴ F21B *4/14;* F01L *15/00*

U.S. Cl. 175—296 24 Claims





24. A down-hole drilling tool of the type for boring into the earth and supplied with a pressurized fluid flow to operate said tool for increasing boring rate, said drilling tool comprising: impact means moved by the fluid flow toward and away from an impact position for producing an impact force; conduit network means for conducting the fluid flow to said impact means; and control valve means in said conduit network means for controlling fluid flow to said impact means, at least a portion of said control valve means being movable between a first position for directing fluid flow in said conduit network means to move said impact means toward said impact position and a second position for directing the fluid flow in said conduit network means to move said impact means (12) away from said impact position, said portion of said control valve means being responsive to fluid flow in said conduit network means for continuously cycling between said first and second positions; said drilling tool characterized by said conduit network means including a tap in the fluid flow to said impact means and pilot passage means continuously conveying pilot fluid pressure from said tap in said conduit network means to said control valve means, said control valve means being responsive to said pilot fluid pressure for continuously cycling between said first and second positions independently of the fluid flow after said tap.

4,878,551

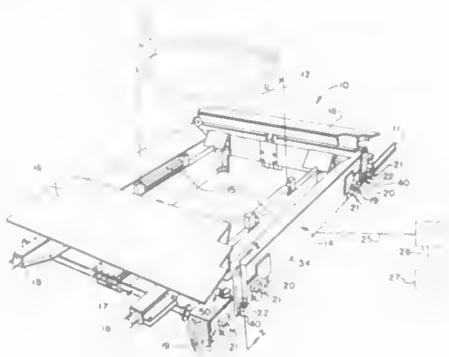
LADLE TRANSFER CAR WITH WEIGHING SYSTEM

Donald M. Watkins, Beloit; Tryon V. Huggett, Chagrin Falls, and Judson F. Martt, Youngstown, all of Ohio, assignors to Steel Equipment Specialists, Inc., Alliance, Ohio

Filed Nov. 18, 1988, Ser. No. 273,357

Int. Cl.⁴ G01G *19/08, 3/14*

U.S. Cl. 177—139 12 Claims



1. A ladle transfer car for transporting a ladle and its contents along a surface and weighing such ladle and the contents thereof, said ladle transfer car including a car body for supporting such ladle and multiple truck assemblies for supporting said car body upon such surface and at least one load sensor for use in determining the weight of such ladle and the contents thereof, said at least one load cell sensor comprising a shear beam load cell pin connecting said car body to said truck assembly which is capable of sensing a load and transmitting an electrical signal for use in determining the weight of such ladle and its contents, each of said truck assemblies connected to said car body with a stabilizer assembly which limits the relative horizontal movement between each of said truck assemblies and said car body, said stabilizer assemblies each comprising a pivot arm extending substantially perpendicular to the major axis of said truck assemblies, said pivot arm pivotally connected at one end to said car body and pivotally connected at the other end to said respective truck assembly.

4,878,552

SHIELDING MEANS FOR USE WITH ELECTROMAGNETIC BALANCE

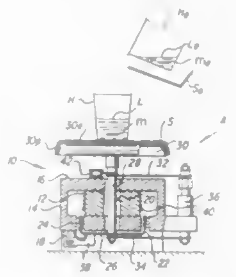
Charles H. Gebo, and Bradley C. Roth, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 21, 1988, Ser. No. 274,171

Int. Cl.⁴ G01G *7/00, 21/22*

U.S. Cl. 177—212 15 Claims

1. In combination with weighing apparatus of the electromagnetic-load-compensation type, such apparatus including stationery magnet means located within the apparatus and having an air gap, a compensation coil operatively disposed for movement in said gap, carrying means supporting said coil and mounted for movement relative to said stationary magnet means away from and back to an initial position, and means responsive to carrying means movement away from said initial position for supplying current to said coil to return said carrying means to said position, said carrying means being adapted to support a load to be weighed, an improvement adapted to render such apparatus immune to interference by magnetic flux from a source thereof external to the apparatus, said improvement comprising protective shield means configured to be placed between said carrying means and said source of magnetic flux, so as to be in flux-transmitting relation to said source, for shielding the apparatus from said flux, said shield means being formed from ferromagnetic material having sufficient permeability to provide a path of least reluctance for transmitting said flux and thereby preventing said flux from interfering with intended operation of the apparatus.



4,878,553

POSITION DETECTING APPARATUS

Tsuguya Yamanami, Okegawa; Takahiko Funahashi, Kuki, and Toshiaki Senda, Okegawa, all of Japan, assignors to Wacom Co., Ltd., Saitama, Japan

Filed Sep. 14, 1987, Ser. No. 95,702

Claims priority, application Japan, Sep. 12, 1986, 61-213970

Int. Cl.⁴ G08C *21/00*

U.S. Cl. 178—18 7 Claims

1 A position detecting apparatus comprising:
a tablet;
a position pointer, at least one signal being transmitted and received between said position pointer and said tablet, and a position designated with said position pointer being detected;
a tuning circuit provided in said position pointer;
an electric wave generating means for sending an electric wave to said tuning circuit, said tuning circuit resonating with the electric wave from said electric wave generating

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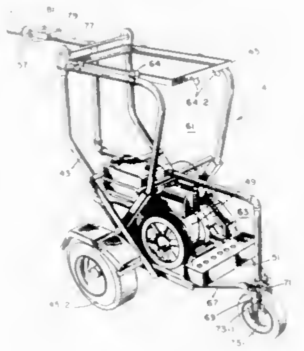
means to generate another electric wave to be sent to an electric wave detecting means;

wherein coordinates values corresponding to said position designated with said pointer on said tablet are detected via said electric wave detecting means.

4,878,554
MOTORIZED MAIL CART

Donald D. Dion, 270 Newport Ave., South Attleboro, Mass. 02703

Filed Aug. 31, 1987, Ser. No. 90,848
Int. Cl.⁴ B62D *51/04*
U.S. Cl. 180—19.3 4 Claims



1. A cart for transportation of bags of mail and the like comprising:

a. a frame adapted to hold a plurality of mail bags and adapted to hold a compartment for additional storage of mail, the frame having a top portion and a bottom portion, the top portion having a top section which is rectangular in shape, the top portion being constructed to hold a mail tray and including four sets of spaced apart hooks each of to which may be attached a mail bag, the bottom portion having a bottom surface,
b. an axle mounted on the frame for rotational movement,
c. a pair of wheels fixedly mounted on the axle,
d. a third wheel mounted on the bottom surface of the bottom portion to provide additional stability to the cart,
e. an internal combustion motor,
f. means for connecting the motor to the axle,
g. a battery for supplying an initial electrical current to the motor,
h. a starter/generator interconnecting the motor to the battery for relaying the initial electrical current from the battery to the motor, for re-circulating electrical current to the motor and for recharging the battery,
i. a handle mounted on the frame for steering the cart,
j. a throttle disposed within the handle and actuated by twisting said handle for varying the revolution speed of the motor,

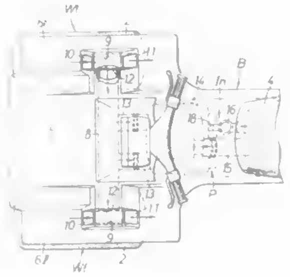
and

m. brake means for selectively slowing down movement of the cart, the brake means comprising a hand brake lever situated under the handle so that said hand brake lever and the handle can be grasped together with one hand in order to facilitate pulling said hand brake lever upward, a friction-based assembly situated on both sides of the third wheel, and a cable extending from the hand brake lever to the friction-based assembly which causes the friction-based assembly to engage with the third wheel when the hand brake lever is pulled upwards.

4,878,555
AIR INTAKE DEVICE FOR A VEHICLE ENGINE

Osamu Yasunaga, Saitama; Kazuharu Wakusaka, Tokyo; Fumio Inomata, and Toshio Tsuchiya, both of Saitama, all of Japan, assignors to Honad Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 808,003, Dec. 12, 1985, abandoned.
This application Sep. 30, 1987, Ser. No. 104,543
Claims priority, application Japan, Dec. 13, 1984, 59-263666; Jul. 2, 1985, 60-145224; Jul. 19, 1985, 60-159464
Int. Cl.⁴ B60K *13/02*
U.S. Cl. 180—68.3 15 Claims



1. An air intake device for an engine in a vehicle including a body provided with a front wheel, an engine carried on said vehicle body, an air cleaner connected to an intake pipe of the engine and disposed above the engine, and a front fender provided at a front portion of said vehicle body to cover an upper surface of said front wheel, said upper front fender having an upper surface, comprising an air intake chamber of a predetermined volume provided on said upper surface of the front fender defining a closed channel extending generally in the direction of movement of the vehicle having top, bottom, and side walls, and having at least one intake port, said one intake port opening to the vehicle and a conduit connecting said air intake chamber to an inlet of the air cleaner, said conduit including an air induction passage extending from said air intake passage to the air cleaner of said engine, said air induction passage joining with said air intake passage at a first end of said air induction passage to define a port through a side wall of said air intake passage at a substantial angle to the flow direction of said air intake passage, said port having a cross sectional area substantially less than the transverse cross sectional area of said air intake passage at said port the intersection of said port with a side wall of said air intake passage being spaced above said bottom wall.

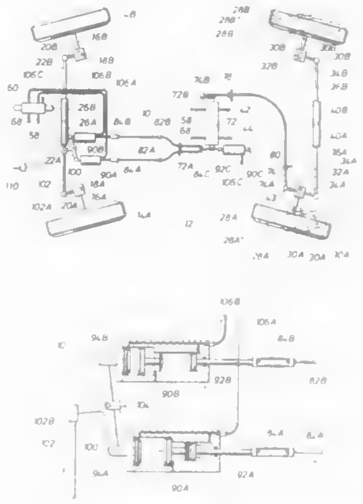
4,878,556
VEHICLE STEERING SYSTEMS

David L. Wells, Houston, Tex., assignor to Stewart & Stevenson Services, Inc., Houston, Tex.

Filed Sep. 11, 1987, Ser. No. 96,163
Int. Cl.⁴ B62D *7/14*
U.S. Cl. 180—140 21 Claims

1. In combination with a steering system for a vehicle having steerable front and rear road wheels of the type wherein a steering wheel for turning the front road wheels to an angular quantity, and a hydraulic actuator means for automatically turning the rear road wheels through an angle proportional to the turning of the front road wheels to operably provide a vehicle steering system having at least two steering modes for the front and rear road wheels, the improvement which comprises:

a rear mechanical means for signaling an angular quantity of the turning of the rear road wheels to said hydraulic actuator means,
a first front mechanical means for signaling an angular quantity of the turning of the front road wheels to said hydraulic actuator means,
said hydraulic actuator means turning the rear road wheels until said rear mechanical means signals said hydraulic actuator means that the angular quantity of the turning of the rear road wheels is equal to a proportional angular quantity of the turning of the front road wheels signaled by said front mechanical means to said hydraulic actuator means, and

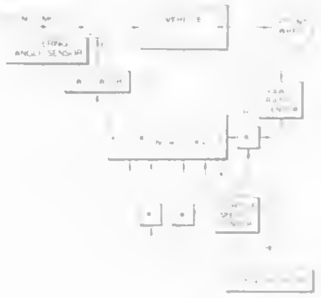


a first hydraulic coupling means for selectively engaging and disengaging said first front mechanical signaling means and said hydraulic actuator means to control the angular position of said rear wheels with respect to said front wheels.

4,878,557
AUXILIARY STEERING SYSTEM FOR WHEELED VEHICLE

Yasuji Shibahata, Yokohama; Yukio Fukunaga, Zushi; Yasumasa Tsubota, Yokosuka; Takaaki Uno, Zama, and Yuji Okuyama, Atsugi, all of Japan, assignors to Nissan Motor Co., Ltd., Japan

Continuation of Ser. No. 38,460, Apr. 16, 1987, abandoned, which is a continuation of Ser. No. 695,344, Jan. 28, 1985, abandoned. This application Feb. 28, 1989, Ser. No. 318,470
Claims priority, application Japan, Jan. 31, 1984, 59-15332
Int. Cl.⁴ B62D *5/04, 5/06, 6/02, 6/04*
U.S. Cl. 180—140 36 Claims



1. A vehicle comprising:
road wheels;
a steering wheel;
a steering mechanism which steers the vehicle by altering the direction of at least one of said road wheels in accordance with angular displacement of said steering wheel;
a steering angle sensor which senses the angular displacement of said steering wheel;
a vehicle speed sensor which senses the speed of the vehicle;
vehicle behavior sensing means for sensing a variable indicative of actual turning behavior of the vehicle;
negative feedback means connected the said steering angle sensor, said vehicle speed sensor, and said vehicle behavior sensing means for producing a negative feedback signal which is proportional to the difference between a first quantity indicative of actual turning behavior of the vehicle multiplied by a first coefficient and a reference quantity multiplied by a second coefficient, the first quantity being a function of the variable which is sensed by said vehicle behavior sensing means and the reference quantity being determined in accordance with the angular displacement sensed by said steering angle sensor and the vehicle speed sensed by said vehicle speed sensor and being substantially equal to what the magnitude of the variable would be if the vehicle were performing a steady state turning motion with the sensed angular displacement and the sensed vehicle speed; and
actuating means for steering the vehicle by altering the direction of at least one said road wheels in accordance with the negative feedback signal in such direction as to reduce the magnitude of the variable.

4,878,558
FRONT FORK OF A MOTORCYCLE

Toshimitsu Asakura, Wako, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 26, 1988, Ser. No. 262,589
Claims priority, application Japan, Oct. 28, 1987, 62-270259
Int. Cl.⁴ B62J *13/00*
U.S. Cl. 180—219 7 Claims

1. A front fork of a bicycle including outer cases disposed above on each side of a vehicle body, inner tubes disposed below on each side of a front wheel and telescopically inserted into said respective outer cases, and brake callipers provided at the rear of the bottom end of said inner tube; characterized in

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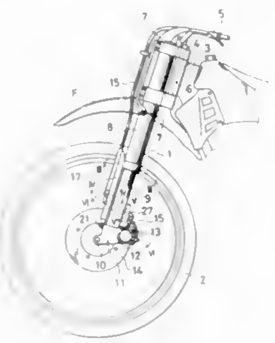
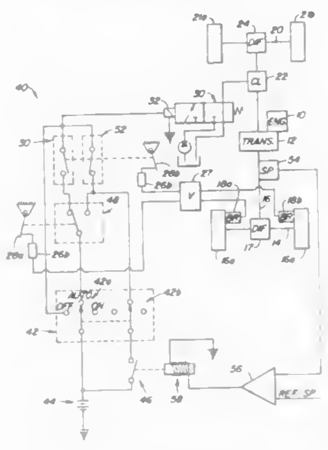
that said front fork comprises an axle support member connected to said inner tube, a protector having its bottom end fixedly secured to said axle support member for covering the front of at least one of said inner tubes therealong, a hose holding member formed on the front surface of said protector for holding a brake hose, and a hose guide member for guiding a brake hose portion extending from said hose holding member down to said brake callipers so as to detour by the side of said inner tube along a route having a larger radius than that of said outer case.



4,878,559
BRAKE SYSTEM FOR FOUR-WHEEL DRIVE VEHICLES

Seaton Moon, and Mark A. Bergene, both of Cedar Falls, Iowa, assignors to Deere & Company, Moline, Ill.
Continuation-in-part of Ser. No. 155,772, Feb. 16, 1988, Pat. No. 4,811,811. This application Oct. 14, 1988, Ser. No. 257,574
Int. Cl.⁴ B60K *23/08*
U.S. Cl. 180—244 13 Claims



1. In a vehicle having a primary axle driven by an engine via a transmission, first and second drive wheels on the primary axle, first and second service brakes for braking the respective first and second drive wheels, a secondary axle supporting a pair of secondary wheels, a clutch between the engine and the secondary axle, a clutch control means for controlling engagement and disengagement of the clutch, and a mode controller;

the clutch control means comprising:

means for automatically engaging the clutch when both service brakes are applied;

means for engaging the clutch when both service brakes are released; and

means for automatically disengaging the clutch when only one of the first and second service brakes is applied, the clutch control means being operable as a function of a potential applied to an input thereof;

the means for automatically engaging and disengaging comprises a control circuit comprising:

a potential source;

a second potential source;

first switch having a first terminal for connecting to the potential source, a second terminal, a third terminal and a switch element operatively connected to the first service brake to close a circuit between the first and second terminals when the first service brake is released and to close a circuit between the first and third terminals when the first service brake is applied;

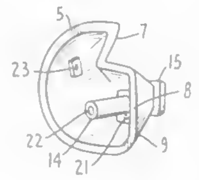
a second switch having a first terminal connected to one of the second and third terminals of the first switch, a second terminal connected to the clutch control means and a switch element operatively connected to the second service brake to close a circuit between its terminals when the second service brake is released and to open a circuit between its terminals when the second service brake is applied; and

a third switch having a first terminal connected to the other of the second and third terminals of the first switch, a second terminal connected to the clutch control means and a switch element operatively connected to the second service brake to open a circuit between its terminals when the second service brake is released and to close a circuit between its terminals when the second service brake is applied;

the mode controller being coupled to the clutch control means, the potential source and to at least one of the first, second and third switches, the mode controller having a first state wherein the clutch control means is controlled as a function of the operation of the service brakes, the mode controller also having a second state wherein the clutch control means causes engagement of the clutch regardless of the operation of the service brakes.

4,878,560
EARMOLD

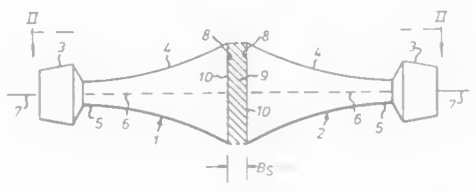
Robert T. Scott, 416 Lighthouse Ave., Santa Cruz, Calif. 95060
Filed Mar. 16, 1989, Ser. No. 323,994
Int. Cl.⁴ H04R *25/00*
U.S. Cl. 181—130 6 Claims



1. An integrally formed earmold having thin walls and having an inwardly extending conical portion adapted to fit into a concha and outer portion of an auditory canal, terminating in a rectangular knob with a small flange thereon, said knob sealing off a meatus of an external ear canal without substantially penetrating the external ear canal, said flange anchoring an earmold at the entrance of the external ear canal, and a hollow cylinder extending laterally from said knob a sufficient distance to form a support for a headset, said integrally formed earmold being made of a soft, flexible, elastic plastic.

4,878,561
SOUND EMITTER

Görand Tengstrand, Hägersten; Boris Lindblom; Jerry Nilsson, both of Tyresö , and Peter Lundén, Stockholm, all of Sweden, assignors to Satt Communications AB, Stockholm, Sweden
PCT No. PCT/SE86/00571, § 371 Date Jun. 23, 1988, § 102(e) Date Jun. 23, 1988, PCT Pub. No. WO87/03994, PCT Pub. Date Jul. 2, 1987
PCT Filed Dec. 12, 1986, Ser. No. 213,583
Claims priority, application Sweden, Dec. 23, 1985, 8506106-7
Int. Cl.⁴ G10K *11/10*
U.S. Cl. 181—188 9 Claims



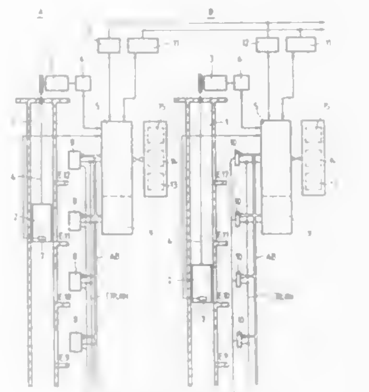
1. An omnidirectional sound emitter with separate sound sources (1, 2), each comprising a funnel-shaped horn (4) and each sound source (1, 2) having a sound-emitting end opening (8) through which the horn (4) is adapted to direct sound of a predetermined wavelength along an acoustic main axis of the horn (4), said horn emitter being adapted to emit acoustic energy through 360° in a predetermined plane (7), the sound-emitting end openings (8) of said horns (4) being directed toward a central portion of the sound emitter and spaced apart from one another, characterized in that the acoustic main axes of the horns (4) are parallel to said predetermined plane (7), and that separate slot-shaped openings (9), extending perpendicular to said predetermined plane (7) and having a width (B_S) parallel to the plane which is small in relationship to the wavelength of the sound emitted and being spaced a distance (B_H, B_D) from opposed slot-shaped openings (9) which is small in relation to the wavelength of the sound emitted, are so arranged between adjacent end openings (8) of the horns (4) that sound emitted from the end openings (8) of the horns (4) is caused to pass in a direction from the sound emitter through the separate slot-shaped openings (9), thereby to be dispersed in said predetermined plane (7) such that the sound representation by the sound emitter corresponds to sound representation from a line source perpendicular to said plane (7).

4,878,562
GROUP CONTROL FOR ELEVATORS WITH LOAD DEPENDENT CONTROL OF THE CARS

Joris Schroder, Lucerne, Switzerland, assignor to Inventio AG, Switzerland
Filed Oct. 19, 1988, Ser. No. 259,874
Claims priority, application Switzerland, Oct. 20, 1987, 04103/87
Int. Cl.⁴ B66B *1/22*
U.S. Cl. 187—127 8 Claims

1. A group control for elevators with load-dependent control of the cars, including call registering devices arranged on the floors by means of which calls for desired floors of destination can be entered, floor and car call memories assigned to the elevators of the group, which memories are connected with the call registering devices where at the input of calls at a floor a call characterizing the floor of input is stored in the floor call memory and the calls characterizing the floors of destination are stored in the car call memory, load measuring devices provided in the cars of the group of elevators which are connected with load memories, selectors assigned to each elevator of the group indicating in each case the floor of a possible stop, first and second scanners assigned to each elevator of the group exhibiting for each floor at least one position, a device whereby the entered calls of the cars are assigned to the group of elevators and having for each elevator a computer and a comparison device and the computer calculates at every floor designated by the first scanner from data specific to the elevator operating costs corresponding to the waiting times of the passengers, and having an assignment memory and a cost memory and the operating costs of all cars at every position of the second scanner are compared with each other by means of the comparison device and the respective call is assigned to that car which exhibits the smallest operating coats by storage in the assignment memory, and an overload control device comprising:

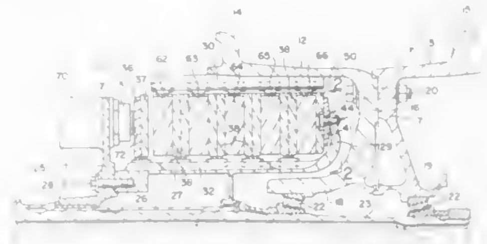
first circuits assigned to the floors serviced by an elevator car and connected with a selector, a load memory, an assignment memory and a floor call memory, said first circuits being activated at every position of the selector for preventing the car from servicing an assigned call if at a stop at the associated floor an overload would be generated in the car; and



second circuits assigned to the upward and downward directions for the floors and connected with the selector and said first circuits, said second circuits being connected with each other and activated at every position of the selector, whereby after passing of said associated floor and reaching the point of reversal of the direction of travel, the car travels back to said associated floor without interruption and correspondingly services said assigned call entered there.

4,878,563
BRAKE APPARATUS

Bradley J. Baden, and John H. Warren, both of Troy, Ohio, assignors to The B.F. Goodrich Company, Akron, Ohio
Continuation-in-part of Ser. No. 630,622, Jul. 13, 1984, abandoned. This application Apr. 4, 1986, Ser. No. 848,190
Int. Cl.⁴ F16D *55/36*
U.S. Cl. 188—71.5 11 Claims



1. A wheel and brake assembly comprising fixed mounting

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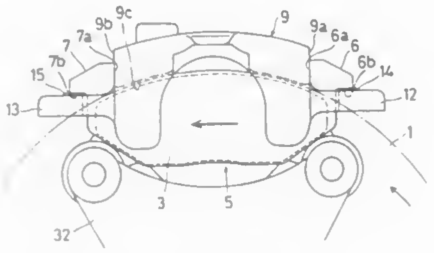
means, a wheel member operatively connected to said fixed mounting means and rotatable with respect thereto, said wheel member having a plurality of axially extending splines, a torque tube member operatively connected to said fixed mounting means, said torque tube member having a radially outwardly extending annular end portion defining a torque plate, said torque tube having a plurality of axially extending splines, a plurality of primary friction discs carried by said splines on said wheel for rotation therewith, a plurality of secondary friction discs carried by said splines on said torque tube, said primary and secondary discs interleaved to form an axially moveable brake stack, an annular metal backing plate secured to said torque plate, an annular carbon composite friction brake disc mounted on said backing plate and secured thereto, force transmitting means operatively connected to said fixed mounting means for urging said brake stack against said carbon composite brake disc and causing frictional engagement between adjacent discs, means operatively interconnecting said annular carbon composite brake disc to said backing plate to allow radial relief from radial thermal stresses induced therebetween at said interconnecting means.

4,878,564
DISC BRAKE ASSEMBLY

Toshio Kondo, Okazaki, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan
Filed Jul. 28, 1988, Ser. No. 225,203
Claims priority, application Japan, Jul. 29, 1987, 62-115019
Int. Cl.⁴ F16D *55/224*
U.S. Cl. 188—73.31 16 Claims



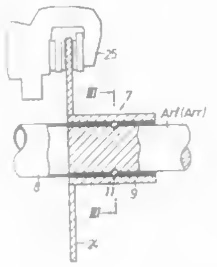
1. A disc brake assembly comprising:
a brake disc rotated with a wheel of a body for rotation about an axis extending in an axial direction;
a pair of brake pads disposed with the brake disc therebetween so as to squeeze the brake disc;
a caliper member straddling a portion of the brake disc and having a cylinder portion and a reaction portion on opposite sides of the brake disc, respectively, the caliper member further including a bridge portion straddling outer circumference of the brake pads and the brake disc and connecting the cylinder portion of the reaction portion;
said caliper member having a pair of arm portions formed integrally therewith, extending between the cylinder portion and the reaction portion, and being circumferentially spaced from the bridge portion with respect to the direction of rotation of the brake disc, each of the arm portions having an approximately U-shape and straddling the outer circumference of the brake disc adjacent a respective one of leading and trailing sides of the bridge portion with respect to a direction of rotation of the brake disc;
each of the brake pads having a pair of ear portions extending outwardly from opposite sides of the outer periphery thereof so as to locate the bridge portion therebetween; and
said ear portions being slidably supported on the arm portions for movement in the axial direction of the brake disc and said ear portions on the trailing side of the bridge portion being capable of transmitting brake torque generated at the brake pads to the trailing side surface of the bridge portion.

4,878,565

Patent Not Issued For This Number

4,878,566
METHOD AND MECHANISM FOR SELECTIVELY TRANSMITTING AND INTERRUPTING DELIVERY OF POWER

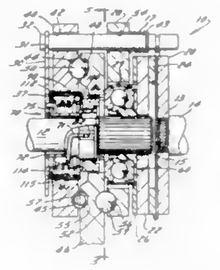
Tetsuro Hamada; Katsuhiko Masuda; Kazunori Shibuya; Kazuhiko Shimada; Etsuo Fujii; Hiroshi Ikegami, and Kunitaka Furuya, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Oct. 23, 1987, Ser. No. 112,676
Claims priority, application Japan, Oct. 24, 1986, 61-253465
Int. Cl.⁴ F16D *11/02, 67/02*
U.S. Cl. 192—13 R 11 Claims



1. A mechanism for selectively transmitting and interrupting power between an input shaft and an output shaft arranged in coaxial relation, said mechanism comprising
a rotary member,
means coupling said rotary member with one of said shafts for providing first and second state therebetween in which in said first state the rotary member is free to rotate and said means provides transmission of rotation between the input and output shafts, whereas in said second state said one shaft can rotate relative to the other said shaft and transmission of rotation is interrupted, said rotary member and said other shaft being angularly rotated relative to one another between first and second relative positions in said second state, and
said coupling means including a ball releasably interposed between said shafts and a spring between said rotary member and said other shaft to permit the relative angular rotation between the rotary member and the other shaft,
said ball in said first state being engaged with said shafts and said spring being relaxed whereas in said second state said ball is released from said one shaft and said spring is under stress,
said one shaft having a recess receiving said ball, said other shaft having a further recess and a projection adjacent to said further recess, said rotary member including a further projection engaged in said further recess in said other shaft, said spring being engaged in said further recess in said other shaft and bearing against said further projection on said rotary member.

4,878,567
BRAKE/LOCKING DIFFERENTIAL

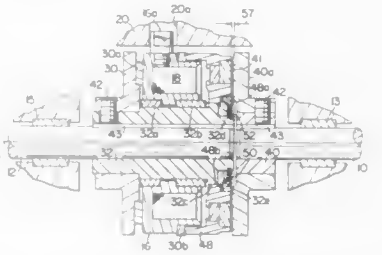
James A. V. Buckley, Whitefish Bay; Donald D. Brown, Thiensville, and Glenn S. Metzelfeld, Brookfield, all of Wis., assignors to Hayes Industrial Brake, Inc., Mequon, Wis.
Filed Dec. 22, 1987, Ser. No. 136,824
Int. Cl.⁴ F16D *67/02, 13/75*
U.S. Cl. 192—18 R 17 Claims



1. A brake/locking differential assembly for locking a first shaft to a second shaft so that the shafts either rotate as a unit or brake as a unit,
said assembly comprising,
a clutch plate secured to the end of one of said shafts,
a friction plate mounted for axial movement on the end of the other of said shafts and being axially aligned with said clutch plate,
a frame mounted in a fixed relation to said shafts,
a cam plate mounted on said frame in axial alignment with the other of said shafts,
an actuator plate mounted in a parallel relation to said cam plate for pivotal and axial motion on the other of said shafts,
first means located between said cam plate and said actuator plate for moving said actuator plate away from said cam plate when said actuator plate is pivoted in one direction on said shaft,
a thrust bearing mounted on the other of said shafts between said actuator plate and said friction plate,
whereby said actuator plate will move said thrust bearing and said friction plate axially into engagement with said clutch plate when said actuator plate is pivoted in one direction so that said shafts rotate at the same speeds,
a brake ring mounted on said frame between said actuator plate and said friction plate for axial motion with respect to the other of said shafts, and second means located between said actuator plate and
said brake ring for moving said brake ring axially into engagement with said friction plate and said friction plate axially into engagement with said clutch plate on pivotal motion of said actuator plate in the opposite direction whereby said first and second shafts will be locked in a braking mode.

4,878,568
ELECTROMAGNETIC CLUTCH/BRAKE ASSEMBLY

Eric R. Fossum, Simsbury, Conn., assignor to Inertia Dynamics, Inc., Collinsville, Conn.
Filed Mar. 17, 1989, Ser. No. 325,309
Int. Cl.⁴ F16D *67/06*
U.S. Cl. 192—18 B 5 Claims



1. An electromagnetic clutch and brake assembly for coupling input and output shafts that are aligned with one another, said assembly comprising
an input hub defining a clutch armature fixedly mounted therein, said clutch armature defining an annular face,
an output hub defining a flange and having a sleeve portion,
a frame for rotatably receiving said sleeve portion,
an electromagnetic coil mounted in said frame,
means for restraining said frame from rotation while allowing said frame to move axially on said output hub,
biasing means for urging said frame toward said output hub flange when said coil is deenergized,
an annular pole piece movable axially between a clutch engaged and a clutch disengaged position, said pole piece defining a frictional clutch face, said coil when energized urging said clutch pole piece into said engaged position wherein said clutch face engages said annular clutch armature face, and
said biasing means also urging said pole piece toward said clutch disengaged position and said frame toward a brake engaged position.

4,878,569
CAGE

Georg Schaeffler, Herzogenaurach, Fed. Rep. of Germany, assignor to INA Walzlager Schaeffler KG, Fed. Rep. of Germany
Filed Apr. 4, 1984, Ser. No. 596,547
Claims priority, application Fed. Rep. of Germany, Apr. 15, 1983, 3313639
Int. Cl.⁴ F16D *3/34*
U.S. Cl. 192—45 2 Claims

1. A cage for an overrunning roller clutch comprising pockets for accommodating cam rollers defined by cross bars connected at least at one end by an end ring, each pocket being provided with a separate spring element formed by a leaf spring slightly tangentially inclined relative to the adjacent

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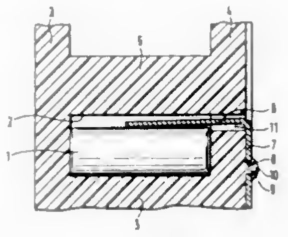
cross bar, the said leaf springs being connected at one end with an annular flange abutting against the outside of one end ring of the cage and each leaf spring passing therethrough by a cutout.



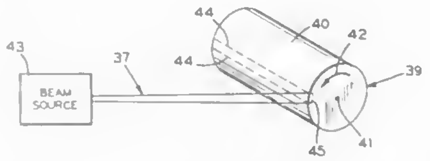
4,878,570
SURFACE HARDENED SPRAGS AND ROLLERS

Thaddeus F. Zlotek, Center Line, Mich., assignor to Dana Corporation, Toledo, Ohio

Filed Jan. 25, 1988, Ser. No. 147,854

Int. Cl.⁴ F16D *41/07*

U.S. Cl. 192—45 17 Claims



1. An overrunning clutch comprising:
a first body of generally circular tubular crosssection and having an inwardly facing arcuate first wall defined at a first diameter;
a second body of generally circular cross-section positioned coaxially within said first body and having an outwardly facing arcuate second wall defined at a second diameter less than said first diameter;
a plurality of elongate metallic elements disposed between said first and second walls, said elements each having at least one arcuate surface extending generally parallel to a longitudinal axis of said element and adapted to slidingly contact at least one of said first and second walls; and
each of said metallic elements having a relatively hard surface area formed on at least a portion of said one arcuate surface by implantation of ions of a gaseous element accelerated toward said one arcuate surface, said ions being located throughout a zone extending from an outer surface of said relatively hard surface area inwardly to a predetermined depth.

4,878,571
SHIFTABLE FRICTION CLUTCH FOR GEAR DRIVES

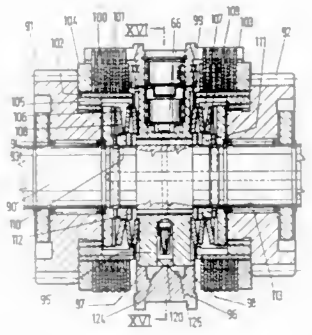
Christoph Sacher, Sauerlach/Arget, Fed. Rep. of Germany, assignor to Carl Hurth Maschinen - und Zahnradfabrik GmbH & Co., Munich, Fed. Rep. of Germany

Filed Jul. 9, 1987, Ser. No. 72,148

Claims priority, application Fed. Rep. of Germany, Jul. 9, 1986, 3623142

Int. Cl.⁴ F16D *13/42, 21/00*

U.S. Cl. 192—48.91 19 Claims



1. In a shiftable friction clutch having first and second friction members for operably connecting a selected drive gear to a shaft, comprising a gearshift sleeve encircling said shaft and first support means for supporting said gearshift sleeve for axial movement and for a limited rotational movenment relative to said shaft during an engaging operation said first friction member belonging to a first clutch half being axially movable by said gearshift sleeve and which through friction surfaces cooperates with said second friction member belonging to a second clutch half, said first and second friction members, during engagement being pressed onto one another by an engagement force developed against the bias of a spring means, at least one springloaded drop-in pin mounted on said shaft and being guided for movement radially with respect to said shaft having means for initially locking said drop-in pin to said gearshift sleeve ina neutral position and which during the engaging operation engages with and produces an axially directed initial force on an inclined surface on said gearshift sleeve to initiate said engagement of said shiftable friction clutch, the improvement wherein bolt means are mounted in openings provided in said gearshift sleeve and wherein block means are provided and include second support means for mounting said block means relative to said shaft, at least one of said bolt means and said block means having a peg means provided thereon and the other of said bolt means and said block means having a recess receiving said peg means therein, the mutually contacting surfaces of said peg means and said recess, which contact one another during a change in condition of said shiftable friciton clutch from a neutral condition to an engaged condition, defining an angular relationship to a plane of rotation, said mutually contacting surfaces at a location corresponding to a position of said bolt means and said block means when said shiftable friction clutch is in the neutral condition defining a larger angle with said plane of rotation than said mutually contacting surfaces at a location corresponding to a position of said bolt means and said block means when said shiftable friction clutch is in the engaged condition.

4,878,572
ROLLER BEARING CAGE FOR CLUTCH RELEASE BEARING

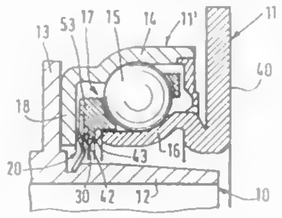
Christian Gay, Paris, and Philippe Lassiaz, Boulogne, both of France, assignors to Valeo, Paris, France

Filed Ang. 19, 1988, Ser. No. 234,323

Claims priority, application France, Aug. 24, 1987, 87 11850

Int. Cl.⁴ F16D *23/14, 25/08*

U.S. Cl. 192—98 5 Claims



1. A clutch release bearing suitable for an automobile vehicle, of the kind comprising an operating member and a drive member comprising a roller bearing having a non-rotatable race carrying a radial flange thereon, and a rotatable race

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between which are disposed rolling elements restrained by a roller bearing cage, said driving member bearing axially directly or indirectly against the operating member, and an elastic washer within the drive member adapted to clamp the drive member and the operating member axially together, said elastic washer bearing on a bearing surface of the operating member and on the radial flange connected to the non-rotatable race, said drive member comprising a fitting bearing operable to act on the elastic washer during relative approach of the drive member relative to the operating member during assembly, said fitting bearing being carried by the roller bearing cage and being axially disposed between the rotatable race and the radial flange of the non-rotatable race.

4,878,573
A COIN SEPARATOR HAVING A PROJECTING WALL FOR AUGMENTING THE SEPARATION OF COINS OF DIFFERENT DIAMETERS

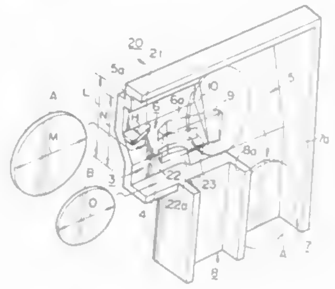
Osamu Kobayashi, Tsurugashima, and Koji Yukimoto, Sakado, both of Japan, assignors to Kabushiki Kaisha Nippon Conlux, Tokyo, Japan

Filed Mar. 18, 1988, Ser. No. 170,967

Claims priority, application Japan, Mar. 26, 1987, 62-44479[U]; Apr. 1, 1987, 62-49766[U]

Int. Cl.⁴ G07D *5/02;* **G07F** *3/04, 1/04*

U.S. Cl. 194—338 2 Claims



1. A coin separator comprising:
a first coin passage including an inclined rail on which two coins having.larger and smaller diameters are transferred;
a first inclined wall formed sidewise of said inclined rail, an upper end of said first inclined wall being inclined at a predetermined angle toward the outside of said first coin passage, the height of said first inclined wall being generally larger than the diameter of a large diameter coin;
a second inclined wall formed upstream of said first inclined wall, an upper end of said second inclined wall being inclined at a predetermined angle toward the outside of said first coin passage, said predetermined angle of said second inclined wall being greater than that of said first inclined wall, the height of said second inclined wall being generally larger than the diameter of a smaller diameter coin;
a wall projecting from a position located opposite to said second inclined wall to the inside of said first coin passage;
a wall portion connecting the downstream end of said second inclined wall with said first inclined wall so as to change the direction of coins when the coins contact said wall portion;
a second coin passage in communication with the downstream end of said inclined rail; and
a third coin passage provided downward of said projecting wall, an upstream end of said third coin passage in communication with said first coin passage,
whereby coins having larger and smaller diameters transferred within said first coin passage are tilted toward said first inclined wall and said second inclined wall by said projecting wall and the tilted coins are selected according to the diameter thereof in a manner such that a larger diameter coin is guided into said second coin passage along said first inclined wall and a smaller diameter coin is guided into said third coin passage along said second inclined wall and said wall portion,
a projection being provided on the inclined surface of said second inclined wall located opposite to said projecting wall, said projection projects toward the inside of said first coin passage, said projection having a height decreasing in the downstream direction of said second inclined wall, and a starting end of said projection being located at a more upstream side of said first coin passage than a starting end of said projecting wall.

4,878,574
APPARATUS FOR SORTING WORKPIECES

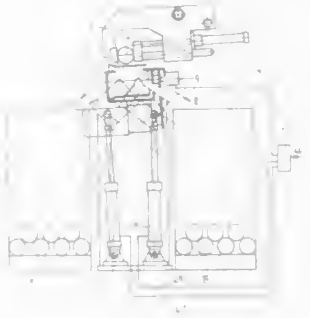
Siegfried Ritter, Reutlingen, Fed. Rep. of Germany, assignor to Gustav Wagner Maschinenfabrik GmbH & Co. KG, Reutlingen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 895,793, Aug. 12, 1986, abandoned. This application Feb. 16, 1988, Ser. No. 156,209

Claims priority, application Fed. Rep. of Germany, Aug. 14, 1985, 3529149

Int. Cl.⁴ B65G *47/46*

U.S. Cl. 198—369 10 Claims



1. An apparatus for sorting cut lengths discharged from an automatic metal cutting saw, comprising at the discharge side of said saw:
a movable, endless link conveyor belt; drive means for driving said conveyor belt in a moving direction;
a plurality of partitions arranged in spaced relation in the moving direction of said conveyor belt;
mounting means for mounting said partitions for movement in the moving direction of said conveyor belt;
a plurality of receiving bins arranged on opposite sides of said conveyor belt and mounted on said partitions, said receiving bins having different dimensions for receiving cut lengths of different dimensions, said receiving bins being spaced at predetermined lengths from said source;
discharge means for discharging said cut lengths from said conveyor belt into respective ones of said bins; and
trough means secured to a lower portion of each partition for collecting material falling therein.

4,878,575
VIBRATORY FEEDER FOR ELASTOMERIC COMPONENTS

Walter McDonald, Newton, and Norbert J. Seitel, Gillette, both of N.J., assignors to Norwalt Design, Inc., Randolph, N.J.

Filed Dec. 30, 1988, Ser. No. 292,402

Int. Cl.⁴ B65G *27/00*

U.S. Cl. 198—391 9 Claims

1. Apppartus for accepting an initially presented population of random articles formed from soft polymeric material, and providing a high speed output stream, wherein all said articles are commonly oriented for further mechancal manipulation; said apparatus comprising:

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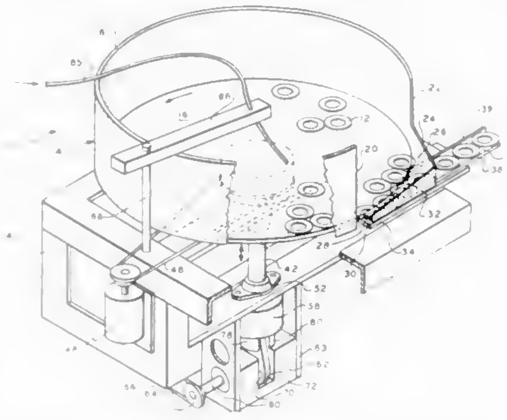
an input bowl for accepting said articles, said bowl including a rotatably central disk for feeding said articles rendered incident thereupon to the periphery of said disk;

a continuous wall member rising upwardly from a point adjacent the periphery of said disk and extending about a major arced zone of said disk;



an output section for delivering said articles from said disk, said output section being defined adjacent the periphery of said disk, at the portion thereof opposed to said major arced zone;

chute means for receiving said articles from said output section;

means for rotating said disk; and

means for vibrating said disk during its rotation in a direction normal to the plane thereof.

4,878,576

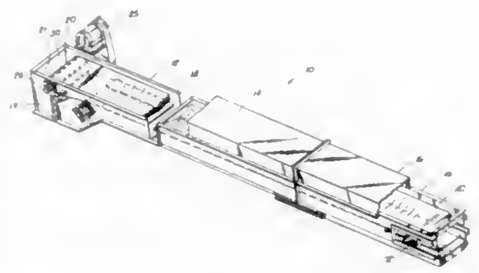
METHOD FOR ACCUMULATING AND CONTAINING BORE HOLE SOLIDS AND RECOVERING DRILL FLUIDS AND WASTE WATER ON DRILLING RIGS

Gary H. Dietzen, 110 Stonewood Cir., Lafayette, La. 70508

Continuation of Ser. No. 99,653, Sep. 28, 1987, abandoned, which is a continuation of Ser. No. 822,009, Jan. 24, 1986, abandoned, which is a continuation-in-part of Ser. No. 783,009, Oct. 1, 1985, abandoned, which is a continuation-in-part of Ser. No. 570,398, Jan. 13, 1984, abandoned. This application Sep. 27, 1988, Ser. No. 250,998

Int. Cl.^{4} B65G *21/00, 45/00;* E21B *21/06*

U.S. Cl. 198—494 **4 Claims**



1. A method of disposing of oil well drilling cuttings that comprise a combination of rock drill bit cuttings, drilling mud, and oil comprising the steps of:

a. providing an elongated, two level structural conveyor including at least two elongated self-supporting, structural fluid containing sections temporarily connectable together to form an enclosure that will contain fluids, one of the sections carrying a motor driven drive roller and the other section containing an idler roller spaced therefrom with an elongated endless conveyor belt being mounted upon and between the two spaced apart rollers;

b. supporting the upper or conveying portion of the belt with an upper level V-shaped conveyor support bed so that the belt slides upon the V-shaped support bed;

c. supporting the return portion of the endless belt with a lower level return bed portion of the structural sections so that the belt slides on the return bed;

d. transporting oil well drill cuttings on the V-shaped support bed with the belt between intake and discharge positions that are spaced apart and respectively adjacent the spaced rollers by frictional drive transmitted to the belt with the drive roller;

e. containing any fluid transmitted by the conveyor belt within the structural conveyor section so that leakage does not occur in the central portion of the conveyor sections generally between the two rollers;

f. discharging the conveyed cuttings from an end portion of the conveyor adjacent one of the spaced apart two rollers; and

g. using transverse channels on the drive roller to channel away fluids from the area of contact between the drive roller and belt.

4,878,577

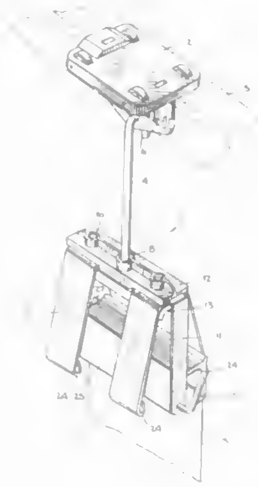
PEG FOR OVERHEAD TROUSER CONVEYOR

Antonio Romero Lledo; Fernando Diaz Zorita, and Juan Cristos, all of Madrid, Spain, assignors to Investronica, S.A., Madrid, Spain

Continuation of Ser. No. 117,629, Nov. 5, 1987, abandoned. This application Nov. 1, 1988, Ser. No. 267,756

Int. Cl.^{4} B65G *29/00*

U.S. Cl. 198—803.9 **7 Claims**



1. A peg for an overhead conveyor used in a pressing process for conveying a workpiece from one work station to another, said peg comprising:

an elongated rigid base member having a first end and a second end;

an inverted V-shaped plate member mounted at its top to said base member between the first and second end thereof, said mounted inverted V-shaped plate member having a first leg and a second leg extending downwardly from said base member;

a first strip member mounted to the first end of said base member and extending downwardly therefrom;

a second strip member mounted to the second end of said base member and extending downwardly therefrom;

an elongated rectangular prism member disposed within said first and second legs of said V-shaped plate member and extending substantially parallel to said base member, said rectangular prism member having a first contact surface defined by one surface thereof and a second contact surface defined by an adjacent second surface thereof;

means mounting said elongated prism member to said first and second strip members for selectively tilting said first contact surface adjacent said first leg of said V-shaped plate member and said second contact surface adjacent said second leg of said V-shaped plate member; and

means connected to said base member for mounting said peg to said overhead conveyor.

4,878,578

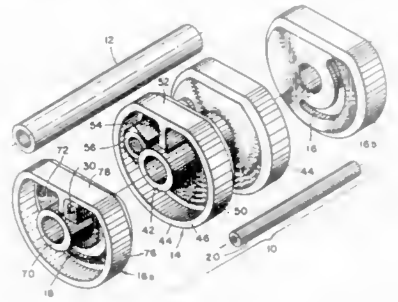
SPLIT-CAM CONVEYOR ROLLERS

Gerald A. Brouwer, Grandville, Mich., assignor to Rapistan Corp., Grand Rapids, Mich.

Filed Jun. 10, 1988, Ser. No. 204,897

Int. Cl.^{4} B65G *15/00*

U.S. Cl. 198—809 **7 Claims**



1. A cam roller assembly for supporting a propelling member in both raised and lowered positions, said cam roller comprising:

first and second eccentric rollers mounted coaxially and rotatable relative to one another between a lowered position wherein the portions of least radius of said rollers are in phase with each other and a raised position wherein the portions of least radius of said rollers are out of phase with each other;

stop means for limiting relative movement of said first and second rollers between the lowered and raised positions; and

retaining means for releasably retaining said first and second rollers in the raised position after said rollers are moved to said raised position said retaining means being a magnetic member on one of said first and second rollers and magnetically attracted means on the other of said first and second rollers.

4,878,579

TAMPER-PROOF COIN CASE

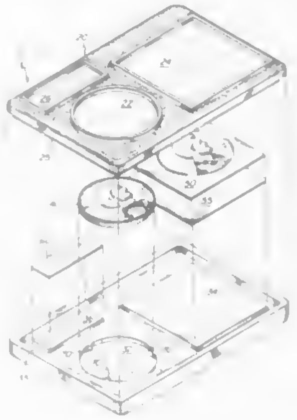
Alan Hager, Stamford, Conn., assignor to Robert M. Paul, Meadowbrook, Pa.

Filed Apr. 24, 1987, Ser. No. 42,174

Int. Cl.^{4} A45C *11/28*

U.S. Cl. 206—0.84 **15 Claims**

1. A tamper-proof coin case which is comprised of a unitary assembly comprising a first substantially planar member having a first element of an interlocking means disposed circumferentially thereabout, said first planar member being joined to a second substantially planar member having a second element of said interlocking means whose shape is complementary to said first element and which is disposed circumferentially about said second planar member, said unitary assembly having a first interior retention zone shaped such that a coin can be retained within said first interior retention zone, a second interior retention zone shaped such that at least one photograph of the coin can be retained within said second interior retention zone and a third interior retention zone shaped such that a certificate for the coin can be retained within said third interior retention zone, each of said planar members having a first transparent portion located to permit observation of each side of a coin retained within said first interior retention zone, each of said planar members further comprising a second transparent portion located to permit observation of two photographs of the coin retained within said second interior retention zone and said first planar member further comprising a third transparent portion located to permit observation of a certificate for the coin retained within said third interior retention zone; wherein the exterior surfaces of said first and second planar members which do not comprise said transparent portions have a surface texture which causes at least partial opacity; and further wherein said unitary assembly is formed by ultrasonically welding said first and second planar members together.



4,878,580

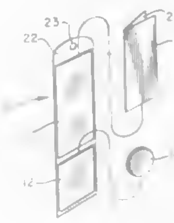
SCENE AND VERSE COORDINATED MEDALLION AND CARD PACKAGED TOGETHER IN A TWO POCKETED TRANSPARENT PROTECTIVE PACKAGE

C. Lamar Johnston, 3641 Stratford, Dallas, Tex. 75205

Filed Aug. 31, 1988, Ser. No. 238,770

Int. Cl.^{4} B65D *77/00*

U.S. Cl. 206—216 **6 Claims**



1. A card and coin scene and verse coordinated together as a pair comprising: a card having a scene on a first side and a verse on the second side; a coin having a scene on a first side like te scene on a first side on the card, and a verse on a second side like the verse on the second side on the card, for marketing of the card and coin as a coordinated card and coin pair in the market place; wherein said card is a folded over on itself card for personal signature and note inscription on the inside of the card; said card and coin are packaged together in a protective package; said protective package is a transparent protective plastic package; said transparent protective plastic package includes two pockets a card containing pocket and a coin containing pocket; said card containing pocket is a rectangular pocket; and said conin containing pocket is a square pocket; said card pocket and said coin pocket are positioned in said

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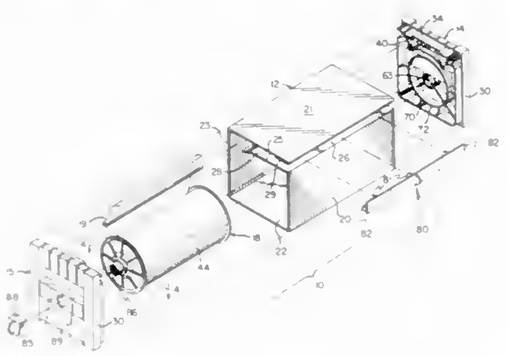
package with the card pocket above the coin pocket in the common plane of said package; said card pocket and said coin pocket are of substantially the same width, and vertically aligned pockets; and wherein said card pocket is larger than said coin pocket.

4,878,581
CARTRIDGE FOR WEB-TYPE MEDIA MATERIAL

Jack Beery, Centerville, Ohio, assignor to The Mead Corporation, Dayton, Ohio
Filed Oct. 17, 1988, Ser. No. 258,928
Int. Cl.⁴ B65D *85/38*
U.S. Cl. 206—416 6 Claims



1. In a spool cartridge for containing a spool of web type light and pressure sensitive media material in which the edges of such material are protected from damage in the event of a sudden axially-applied acceleration such as may occur when such a cartridge is dropped, comprising:

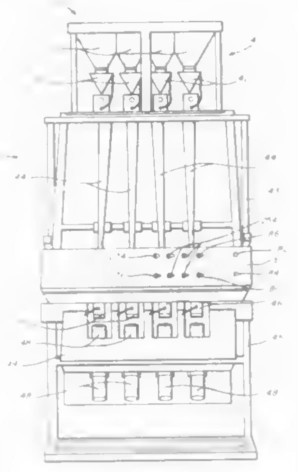
a cartridge housing having a pair of spaced apart end caps,
a spool of such media material in said cartridge between said end caps,
said spool having a core and having end flanges forming generally radial inside surfaces positioned in close proximity to the convoluted edges of such a web of wound media material on said core,
means mounting said spool on said cartridge end caps for rotation in said housing, and
each said end cap having means defining at least one axially extending retainer having an inner abutment edge terminated in close proximity to said spool at an outside surface of an adjacent said end flange for receiving axial loads applied by said spool in the event that said cartridge is dropped on one of said end caps thereof.

4,878,582
MULTI-CHANNEL BICHROMATIC PRODUCT SORTER

Elias H. Codding, Houston, Tex., assignor to Delta Technology Corporation, Houston, Tex.
Filed Mar. 22, 1988, Ser. No. 171,560
Int. Cl.⁴ B07C *5/342*
U.S. Cl. 209—580 22 Claims

1. A sorting apparatus for sorting agricultural products into acceptable and unacceptable categories based on a pattern check and a ratio check of color characteristics of the products as they descend in a chute or conduit through a zone of illumination in a viewing station, comprising:

(a) means for sensing the light reflected from successive portion of the product in the zone of illumination at plural sensors about the periphery of the zone of illumination;
(b) means for dividing the sensed light reflected from the portions of the product into plural color illumination level components;
(c) means for converting the color illumination level components into electrical component level signals;
(d) classification means for analyzing the electrical component level signals to determine if the color of individual ones of the product is acceptable, comprising:
  (1) ratio check circuit means for comparing the ratio of the electrical component level signals to detect unacceptable product;
  (2) pattern check circuit means for comparing each of the electrical component level signals against a reference level to detect unacceptable product;
  (3) means for selectively energizing said ratio check circuit means and said pattern check circuit means;
  (4) product reject means for forming a signal indicating an unacceptable product as detected by at least one of said ratio check circuit means and said pattern check circuit means;
(e) control circuit means for selectively enabling said ratio check circuit means and said pattern check circuit means;
(f) background means for providing a background illumination level in the zone of illumination when energized;
(g) means for enabling said background means when said pattern check circuit means is enabled;
(h) means for disabling said background means when said ratio check circuit means is enabled; and
(i) ejector means responsive to said product reject means for removing unacceptable product from the descending products.

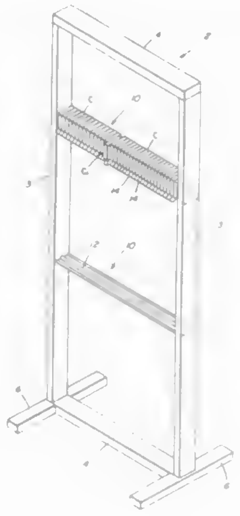


4,878,583
STORING AND DISPENSING SYSTEM

Edmund T. Paquette, Shrewsbury, and John W. Beam, Princeton, both of Mass., assignors to Wright Line, Inc., Worcester, Mass.
Filed Dec. 2, 1987, Ser. No. 127,797
Int. Cl.⁴ A47G *19/08*
U.S. Cl. 211—41 17 Claims

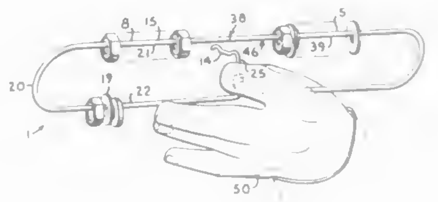
1. A system for storing and dispensing objects such as magnetic tape cartridges comprising:

a storage cell for receiving an object having:
a bottom,
a rear wall,
a discharge end opposite the rear wall,
a ridge at the discharge end of the cell extending upwardly from the bottom across the cell and engagable with the object residing on the bottom of the cell,
a central, elongate, cantilever area formed in the bottom,
means mounting the cell for pivotal movement relative to the horizontal,
means for restraining the central area from pivotal movement,
whereby when the discharge end of the cell is pivoted downwardly, the object remains on the central area, the ridge moves below the object and the rear wall urges the object along the central area outwardly of the cell into a position where it may be grapsed for removal.



4,878,584
ARTICLE HOLDER AND SELECTOR

Elbert J. Young, 1025 N. Prospect, Liberal, Kans. 67901
Filed May 11, 1989, Ser. No. 350,407
Int. Cl.⁴ A47F *7/00*
U.S. Cl. 211—59.1 14 Claims

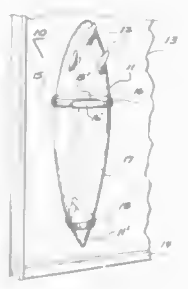


1. A device for storing and allowing selection of a particular article from a plurality of articles strung thereon, said device comprising:

(a) primary holding means, having a first elongate member adapted to extend through an aperture in each of the articles being held by said device;
(b) secondary holding means having a second elongate member connected to said primary holding means; said primary and secondary holding means having a storage position, and a selection position relative to one another; and
(c) said primary and secondary holding means being alignable when in said selection position such that said first and second elongate members are connected end to end to allow the articles to be moved between said first and second members without removing the articles from the device and said first and second elongate members are separable such that a preselected one of said articles may be removed from said device and thereafter said first and second members are reconnectable; and further said primary and secondary holding means are alignable in the storage position wherein said first and second elongate members are not aligned end to end.

4,878,585
SPORTBOARD WALL-DISPLAY SAFETY-HANGER FIXTURE

Andrew J. Orestano, 8706 Mariposa St., La Mesa, Calif. 92041
Filed Dec. 9, 1987, Ser. No. 130,436
Int. Cl.⁴ A47F *7/00*
U.S. Cl. 211—87 9 Claims



1. A special T-harness apparatus constructed of flexible strap material for wall or door hanging of various types of 'sportsboards' and similar articles; comprising:

an upper portion of the T-harness having first and second arm members, each outer end portion thereto having an integral mating fastener means facilitating 180-degree wrap-around of both said strap members relative to the body of the thus captive sportboard;
a third and lower T-strap extension member stemming centrally down from the said upper opposed T-strap arm members at a right-angle, and including an integrally formed bottom most inverted-Y nose stirrup arrangement into which the sportboard-nose is inserted so as to become retentively seated therein via force-of-gravity.
an first and second upper hanger means, located approximately at the junction point of all three T-strap members, and capable of engaging upon a wall-hanger device such as a conventional protruding nail, screw, or picture-hanger type device, and thereby providing a basic vertial hanging modality via a single point.

4,878,586
RACK AND TUBE MEMBER FOR ORGANIZING ELECTRICAL CORDS

Darl Bancroft, and Beverly Bancroft, both of 10490 Clark Rd., Eagle, Mich. 48822
Filed Nov. 2, 1988, Ser. No. 266,431
Int. Cl.⁴ A47F *5/08*
U.S. Cl. 211—106 6 Claims

1. An organizer rack for electrical cords, comprising:

a first elongate post member;
said first post member being mounted to a wall means;
a first plurality of peg members disposed in equidistantly spaced relation to one another along the extent of said first post member;
said first plurality of peg members lying in a common vertical plane orthogonal to a plane of said wall means;
said first plurality of peg members being disposed upwardly at a common predetermined angle relative to a horizontal plane;
a second elongate post member mounted to said wall means in laterally spaced, parallel relation to said first post member;
a second plurality of peg members disposed in equidistantly spaced relation to one another along the extent of said second post member;
said second plurality of peg members lying in a common vertical plane orthogonal to a plane of said wall means;
said second plurality of peg members being disposed upwardly at a common predetermined angle relative to a horizontal plane;

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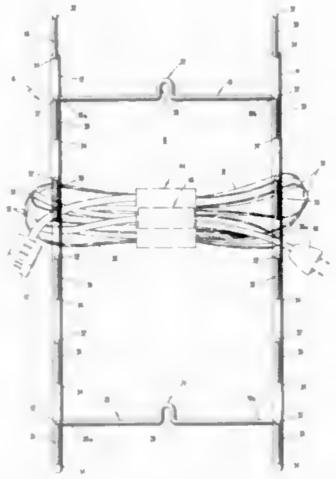
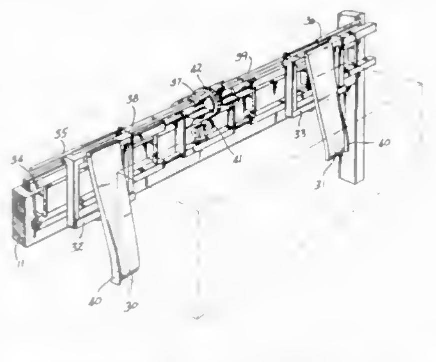
said first and second post members being vertically disposed;
means for securing said first and second post members to said wall means;
a plurality of truncate tubular members; and
said plurality of tubular members being equal to one-half the number of said peg members;



whereby a plurality of electrical cord means that have been folded at equidistant intervals along their respective extents are slidably inserted into a hollow interior of an associated tubular member; and
whereby opposite ends of electrical cords that have been folded at substantially equidistant intervals along their extent are releasably engageable to said peg members.

4,878,587
POSITIONING APPLIANCE

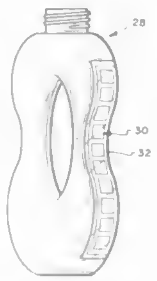
Gerhardus J. Wormmeester, Zwijndrecht, Netherlands, assignor to Europe Container Terminus B.V., Rotterdam, Netherlands
Filed Apr. 14, 1988, Ser. No. 181,821
Claims priority, application Netherlands, Apr. 15, 1987, 8700893
Int. Cl.⁴ B66C *13/08*
U.S. Cl. 212—271 3 Claims



1. A positioning appliance for positioning a container suspended on crane cables, comprising: two carriages; two slide chutes having top ends each of which is pivotably suspended at their top ends on one of said carriages; actuating means for pivoting the slide chutes; actuating means for moving the carriages; a spacer movable in the direction of movement of the carriages disposed between the carriages; a stopping device associated with each carriage operative to be brought into engagement with said spacer by moving the respective carriage; and means to coordinate the actuating means for moving the carriages, when there is contact between the two stopping devices and the spacer, so that the carriages, the stopping device and the spacer move as one unit.

4,878,588
BABY NURSING BOTTLE WITH TEMPERATURE INDICATOR

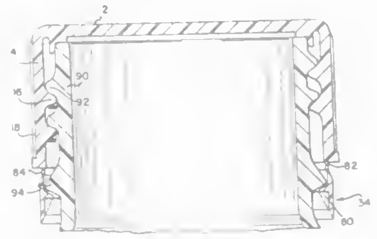
Jacob Ephraim, 24419 Plumtree Ct., West Hills, Calif. 91307
Filed Jun. 7, 1988, Ser. No. 203,693
Int. Cl.⁴ A61J *9/02*
U.S. Cl. 215—11.2 7 Claims



1. A baby feeding bottle, comprising:
an elongated, hollow vessel constituted by an integral side wall and an end wall and being open at the other end, said side wall having a smooth, curved section thereon with a varying gradient, said smooth curved section including an elongated, smooth, inwardly recessed portion with a similarly varying gradient thereon and a clear cover ultrasonically bonded to the periphery of said recessed portion, said clear cover having a similarly varying gradient for covering said recessed portion in a flush manner with respect to said side wall, an elongated closed space being formed between said recessed portion and said cover; and
a liquid crystal-type strip thermometer disposed within said elongated space, said strip thermometer having temperature indications in a selected temperature range around 37° C.

4,878,589
LINERLESS CAP CLOSURE

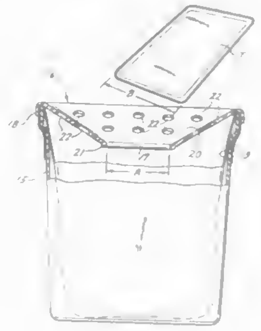
Charles Webster, Oak Lawn, and Christian J. John, Downers Grove, both of Ill., assignors to American National Can Company, Chicago, Ill.
Continuation-in-part of Ser. No. 43,106, Apr. 27, 1987, Pat. No. 4,741,447. This application Apr. 26, 1988, Ser. No. 186,460
Int. Cl.⁴ B65D *41/34, 53/00*
U.S. Cl. 215—252 6 Claims



1. A linerless cap closure comprising a generally circular top wall with a depending annular skirt having an internal thread adapted to engage with an external thread on a container neck and sealing means depending from a lower surface of said top wall adjacent said annular skirt, said sealing means including an annular protrusion integral with said lower surface and being generally rectangular in cross-section and having an outer wall, an inner wall and a bottom wall, and an annular projection integral with said bottom wall of said protrusion, said projection having a flat outer wall and an arcuate inner wall merging with said flat outer wall through a reduced radiused portion, said inner wall of said projection merging with said bottom wall of said protrusion intermediate opposite ends thereof and having a flat wall portion extending perpendicular to said bottom wall so that upon threading of said closure onto a threaded container neck the projection will engage and slide along an outer edge of the container neck and provide a side seal with said flat wall portion and said bottom wall of said protrusion will engage on a top surface of said container neck to produce an additional seal.

4,878,590
RECEPTACLE COVER FOR PREVENTION LOSS OF TRAYS WITH TRASH

James L. Porter, Thayer, Mo. 65791
Filed Dec. 5, 1988, Ser. No. 279,923
Int. Cl.⁴ B65D *25/02*
U.S. Cl. 220—1 T 4 Claims

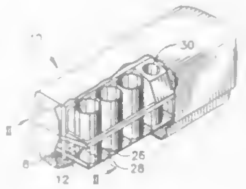


1. The combination with an open top refuse container to receive refuse dumped into the container, of a refuse carrying tray for transporting refuse to the container, and an external container cover comprising a body supported by and removably fitted with a downwardly sloped surface presented to receive refuse from said tray and direct it into the open top refuse container, said sloped surface being sized to cover the open top of the refuse container and being formed with a principal opening therethrough for directing refuse into the container placed on said sloped surface, and said principal opening having a fixed size in its largest dimension to be less than the least dimension of said refuse carrying tray, whereby the fixed size of said principal opening in said sloped surface will pass refuse into the container and arrest efforts to force the passage of said refuse carrying tray into the container.

4. The combination with an open top refuse receiving container in which refuse is dumped from a refuse carrying tray, of a container cover molded from plaster and having a rim for removably seating on the container open top, said cover having a circular funnel shaped surface integrally formed on and projecting from said rim downwardly into the container, and said funnel shaped surface having a bottom opening for passing refuse into the container and a plurality of secondary openings distributed through said shaped surface for the passage of fluid in the refuse while solids in the trash pass through said bottom opening, and said bottom opening having a bead defining the margin thereof to be less than the smallest dimension of the refuse carrying tray, whereby the bead strengthens said opening and arrests efforts to force the passage of the carrying tray into the container while allowing refuse to pass into the container.

4,878,591
SHOCK RESISTANT CELLULAR FUEL TANK

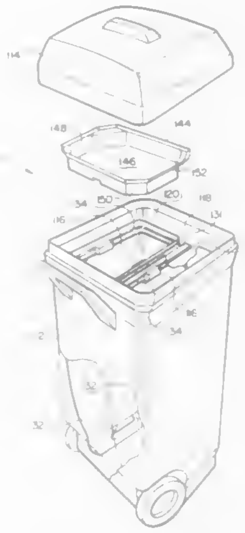
Daniel D. Johnston, 355 "1" Ave., Coronado, Calif. 92118
Filed Jul. 5, 1988, Ser. No. 215,040
Int. Cl.⁴ B65D *1/24*
U.S. Cl. 220—22 18 Claims



1. A shock resistant cellular fuel tank comprising:
a peripheral frame having longitudinally extending top, bottom and opposed side members;
an array of vertically oriented tubular cells mounted to and within said peripheral frame; and
an impervious shell preloaded and stressed in tension over said frame for restraining movement of said frame within said shell and enclosing said cells.

4,878,592
APPARATUS FOR SEGREGATED REFUSE COLLECTION

Norman C. Lee, Greensboro, N.C., assignor to Zarn, Inc., Reidsville, N.C.
Filed Jun. 28, 1988, Ser. No. 212,609
Int. Cl.⁴ B65D *91/00*
U.S. Cl. 220—23.83 21 Claims



1. Apparatus for segregated collection of differing types of refuse and the like such as recyclable trash materials, comprising:
a container body defining an interior receptacle receiving area and an access opening thereinto; and
a plurality of receptacle units each defining an interior storage area, a receptacle opening thereinto, and a closed end generally opposite said receptacle opening, said receptacle units being of complimentary shapes and sizes for individually removable disposition in side-by-side relation within said receiving area of said container body with said receptacle openings of said receptacle units generally adjacent one another and said access opening of said container body;

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each said receptacle unit having first gripping means adjacent said receptacle opening at second gripping means at said opposite closed end for manual insertion and removal of said receptacle unit into and from said container body and for easy inversion of said receptacle unit for discharging its contents, said second gripping means being configured to render said recepticle unit incapable of free standing disposition on said opposite closed end to minimize possible theft or loss thereof.

4,878,593
PACK FOR FLOWABLE MATERIAL

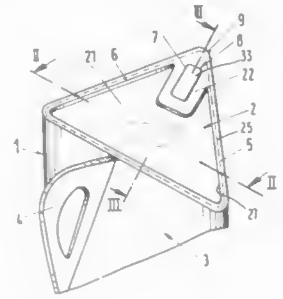
Hans Rausing, Wadhurst Park, Wadhurst, East Sussex TN5 6NT, Great Britain

Filed Jul. 27, 1987, Ser. No. 78,221

Claims priority, application United Kingdom, Jul. 28, 1986, 8618380

Int. Cl.⁴ B65D *25/00*

U.S. Cl. 220—67 7 Claims



1. A pack for flowable material, the pack including:
(a) a tube made of a base material coated on at least one side with a thermoplastic material and having at least one longitudinal seam and a top end and a bottom end, the top end of the tube having an edge;
(b) a bottom fitted to the tube at the bottom end; and
(c) a lid formed from a thermoplastic material and welded to the tube at the top end, the lid having a generally downwardly extending exterior flange, the lid having an annular peripheral wall, and a pouring device adjacent the peripheral wall, the flange extending downwardly from the exterior of the peripheral wall of the lid, the lid having a first interior wall extending generally downwardly from a portion of the interior of the peripheral wall, the lid having a second interior wall extending generally horizontally from the first interior wall, the downwardly extending flange, the peripheral wall, and the first interior wall forming a U-shaped groove for receiving the edge of the top end of the tube, the pouring device having an upper wall extending generally horizontally from a portion of the peripheral wall, the lid having a third interior wall extending generally downwardly from the upper wall of the pouring device to the second interior wall, the third interior wall being adapted to being grasped during welding the lid to the tube to permit the application of pressure to the portion of the flange adjacent the portion of the peripheral wall adjacent the pouring device to provide a good seal.

4,878,594
CLOSING DEVICE FOR CRYOGENIC CONTAINER

Daniel Delatte, Saint Maur, and Bernard Simon, Le Plessis Trevise, both of France, assignors to L'air Liquide, Societe Anonyme pour l'etude et l'exploitation des Procedes Georges Claude, Paris, France

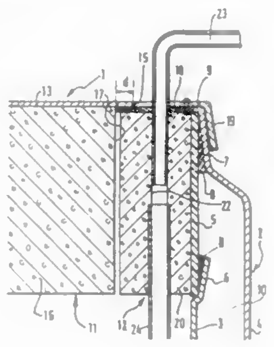
PCT No. PCT/FR88/00208, § 371 Date Nov. 21, 1988, § 102(e) Date Nov. 21, 1988, PCT Pub. No. WO88/08501, PCT Pub. Date Nov. 3, 1988

PCT Filed Apr. 28, 1988, Ser. No. 286,952

Claims priority, application France, Apr. 30, 1987, 87 06159

Int. Cl.⁴ B65D *51/16;* **F17C** *13/06*

U.S. Cl. 220—254 5 Claims



1. Closing device (1) for a cryogenic container (2), characterized in that it comprises a principal stopper (11) having a lateral notch (17) and an auxiliary stopper (12) having a general shape conjugate with that of this notch, the auxiliary stopper being provided with at least one boe (22) and means (19) for fixing said auxiliary stopper to the edge of the opening of the container.

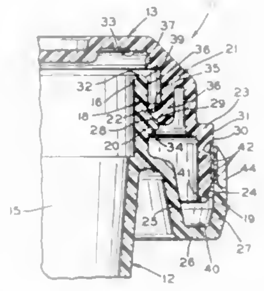
4,878,595
TAMPER RESISTANT WIDE MOUTH PACKAGE WITH LABYRINTH SEAL

Albert R. Uhlig, Toledo, Ohio, assignor to Plastic Technologies, Inc., Toledo, Ohio

Filed Jun. 9, 1988, Ser. No. 204,574

Int. Cl.⁴ B65D *41/18*

U.S. Cl. 220—306 15 Claims



1. A tamper resistant package comprising:
a container having a side wall defining an open end, a closed end wall attached to said side wall, said side wall having an inner wall and a spaced outer wall at said open end;
a closure formed of a flexible material and having a depending annular skirt adapted to securely fit between said inner wall and said outer wall of said container;
cooperating means formed on an outer surface of said inner wall and an inner surface of said closure for retaining said closure on said container; and
a labyrinth seal defined by the abutment of an annular sealing surface formed on one of said outer wall and said outer surface of said skirt and at least two outwardly extending annular ridges formed on the other one of said outer wall and said outer surface of said skirt.

4,878,596
WASTE BIN LID

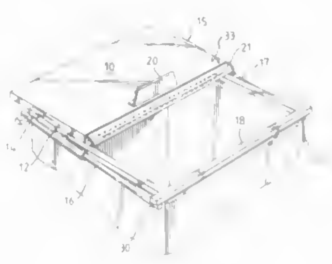
Scott A. Cawley, and Malcolm E. Vidler, both of Brisbane, Australia, assignors to Thiess Contractors Pty. Ltd., Queensland, Australia

Filed Jan. 6, 1989, Ser. No. 293,963

Claims priority, application Australia, Aug. 31, 1988, PJ0154

Int. Cl.⁴ B65D *43/20*

U.S. Cl. 220—331 16 Claims



9. The combination of a waste bin and a bin closure means, said bin closure means comprising a bin closure means comprising a frame adapted for hinged connection to the opening of a bin such that it forms a seal around the perimeter of the opening and such that it may hinge away from the opening when the bin is inverted during emptying, said frame including a fixed lid and a movable lid, the said movable lid being displaceable along support guides located on two opposite marginal sections of the frame, said support guides being inclined with respect to the plane defining the bin opening so that the movable lid may be displaced between a position overlying and spaced from said fixed lid, and a position where sections of opposed faces of the lids overlap and form a seal therebetween and where the remaining perimter of the movable lid forms a seal with the frame, thereby closing the bin, said waste bin being of hexahedral configuration with a rectangular opening and associated lifting fork pockets on exterior opposing sides to enable the bin to be lifted and inverted for emptying purposes.

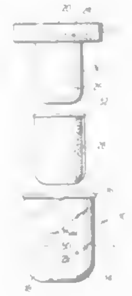
4,878,597
LYOPHILIZATION CONTAINERS

William E. Haast, Miami Serpentarium Laboratories, Innovation Center University of Utah, Research Park, 419 Wakara Way, Salt Lake City, Utah 84108

Filed Mar. 24, 1988, Ser. No. 172,556

Int. Cl.⁴ B65D *20/00*

U.S. Cl. 220—404 32 Claims



25. Apparatus for forming a lyophilizable material into a shell-like conformation wherein the material can be frozen in said conformation and wherein the surface area of the material frozen within the apparatus is increased without damage to the apparatus which could be occasioned by expansion of the lyophilizable material on freezing thereof, comprising:
container means for receiving a lyophilizable material; and,
deformable core means insertable into the container means for displacing the lyophilizable material into that space between opposed surfaces of the container means and core means, the core means being formed of a compressible material which is continuous throughout said core means, the core means being deformable on freezing of the lyophilizable material to form a frozen shell of lyophilizable material.

4,878,598
METHOD AND APPARATUS FOR DISPENSING A SUBSTANCE TO A WORK AREA

Dolph W. Ruschhaupt, Jr., Fresno, Calif., assignor to California Fresno Transportation, Inc., Fresno, Calif.

Filed Apr. 30, 1987, Ser. No. 44,302

Int. Cl.⁴ G01F *11/00*

U.S. Cl. 222—1 5 Claims

1. A method for dispensing a substance to a work area comprising the steps of:
A. determining the quantity of the substance to be dispensed to said work area;
B. dispensing said substance to the work area during movement thereof; and
C. at intervals during said movement thereof:
   1. calculating during said movement the quantity of said substance remaining to be dispensed,
   2. calculating the portion of said area remaining to have substance dispensed thereto at said intervals, and
   3. adjusting the rate of said dispensing at said intervals to correspond to the quantity of the substance remaining to be dispensed by comparing at said intervals the quantity of said substance remaining to be dispensed calculated in the first of said calculating steps with the portion of said area remaining to have said substance dispensed thereto calculated in the second of said calculating steps and adjusting the rate of said dispensing so that said quantity remaining of said substance will be substantially evenly dispensed over said work area.

4,878,599
CAULKING NOZZLE

John M. Greenway, 44 Spruce Dr., Westwood, Mass. 02090

Filed Sep. 3, 1987, Ser. No. 92,464

Int. Cl.⁴ B65D *25/42*

U.S. Cl. 222—1 11 Claims

1. A tube assembly comprising a tube comprising hardenable material to be extruded through a nozzle in a direction from said tube to an outlet at the end of said nozzle opposite said tube, said material being hardenable upon exposure to air and material at the tip of said nozzle forming a hardened plug of a known length when exposed to air, comprising a nozzle comprising:
a series of hollow members, said members having a first and second end wherein said first end has a first inner cross-sectional dimension and said second end has a second

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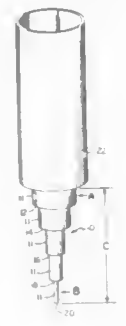
inner cross-sectional dimension, wherein said second dimension is at least as great as said first dimension, said first dimension being different for each said member, wherein the member having the largest said first dimension is at one end of said nozzle and the member having the smallest said dimension is at the other end of said nozzle, other said members beings positioned between said largest and said smallest dimensioned members in order of decreasing said dimensions in said direction, whereby said series forms a hollow vessel having a stepwise decreasing inner cross-sectional first dimension,



wherein said largest dimensioned member comprises an opening at one end suitable for connection to said tube, and wherein said members are of a length greater than the length of said plug and wherein said material hardens upon exposure to air only to a depth less than the depth of a said member.

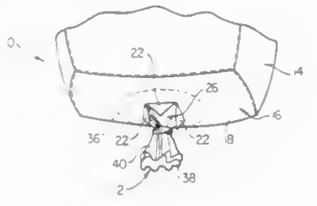
4,878,600
STATIC CONTROLLED DISCHARGE SPOUT

Norwin C. Derby, Dallas, Tex., assignor to Super Sack Manufacturing Corporation, Dallas, Tex.

Continuation of Ser. No. 2,493, Jan. 12, 1987, abandoned. This application Jul. 13, 1988, Ser. No. 220,432

Int. Cl.⁴ B65D *33/38*

U.S. Cl. 222—105 2 Claims



1. A collapsible product receptacle comprising:

a tubular side wall;

a bottom wall secured to the side wall around the lower end thereof for closing the lower end of the receptacle to retain the product;

a generally pliable cylindrical discharge spout located in the bottom wall for dispensing the product, the discharge spout comprising a continuous inner layer for contact with the product to be dispensed and a continuous outer layer having a continuous inner non-metalized surface securely bonded substantially throughout to the continuous inner layer and a continuous outer surface metalized to a level that is electrically conductive to the static electricity generated by contact of the dispensed product with the inner layer, said inner layer and said inner surface of said outer layer protecting said conductive metalized surface of said spout from wear and tear induced by direct contact with the dispensed product; and

means for connecting the outer conductive surface of the discharge spout to a source of predetermined electrical potential to control the buildup of static electricity in the receptacle.

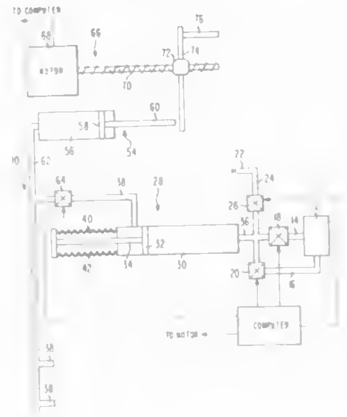
4,878,601
LIQUID DISPENSER

J. Peter Flemming, R.D. #2, 6 Cleveland Road West, Princeton, N.J. 08540, and Robert J. Dee, 338 S. 3rd St., Philadelphia, Pa. 19106

Continuation-in-part of Ser. No. 156,439, Feb. 16, 1988, abandoned. This application Feb. 17, 1988, Ser. No. 156,729

Int. Cl.⁴ B65D *85/44*

U.S. Cl. 222—137 9 Claims



1. A liquid dispenser comprising:

a plurality of reservoirs for containing different liquids to be dispensed;

a plurality of nozzles for dispensing the liquids from the reservoirs;

a plurality of dispensing cylinders each having a liquid inlet/outlet connected to a separate reservoir and a separate nozzle, and a hydraulic fluid inlet/outlet;

a piston in each of said dispensing cylinders separating the liquid inlet/outlet from the hydraulic fluid inlet/outlet;

hydraulic operating means connected to the hydraulic fluid inlet/outlet of each of the dispensing cylinders for selectively operating the dispensing cylinders, said hydraulic operating means including a cylinder having a hydraulic fluid inlet/outlet at one end, a piston in said cylinder, and a piston rod connected to said piston and extending from the other end of the cylinder, the inlet/outlet of the operating cylinder being connected to the hydraulic fluid inlet/outlet of each of the dispensing cylinders; and

means for operating the hydraulic operating means.

4,878,602
FOOT-ACTUATED POWDER DISPENSER

Peter Welgelt, 5974 Buckingham Pky., #401, Culver City, Calif. 90230

Filed Nov. 10, 1988, Ser. No. 269,485

Int. Cl.⁴ A61M *35/00*

U.S. Cl. 222—161 16 Claims

1. A foot-actuated powder dispenser comprising:

a pair of vertical support members each having an elongated opening formed therein,

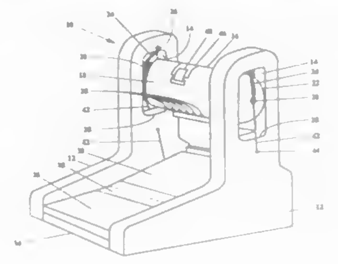
a generally cylindrical dispenser member having a plurality of openings formed in the bottom surface thereof,

resilient means normally suspending said dispenser member from said support members approximately mideway of said elongated openings,

a treadle member hingedly secured to the lower portions of said support members,

actuator means coupling said treadle member to move said dispenser member downwardly against the action of said resilient means, and

stop means positioned in the path of movement of said dispenser member to abruptly halt downward movement of said dispenser member and to cause powder contained in said dispenser to be dislodged through said openings for application to the foot on said treadle member.



4,878,603
TONER REPLENISHING DEVICE

Masumi Ikesue, Tokyo, and Takashi Ikeda, Sagamihara, both of Japan, assignors to Ricoh Company, Limited, Tokyo, Japan

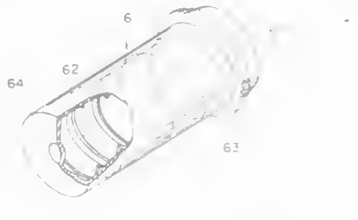
Continuation of Ser. No. 866,414, May 23, 1986, Pat. No. 4,744,493, which is a continuation of Ser. No. 598,022, Apr. 9, 1984, Pat. No. 4,611,730. This application Apr. 8, 1988, Ser. No. 179,626

Claims priority, application Japan, Jan. 9, 1984, 59-1729

The portion of the term of this patent subsequent to May 3, 2005, has been disclaimed.

Int. Cl.⁴ B67D *5/64, 3/00*

U.S. Cl. 222—167 14 Claims



1. A cartridge for use with a toner replenishing device and for detachable, sealingly and rotationally engaging within a cylindrical portion of a cap-shaped receptacle of the toner replenishing device for the feeding of toner from said cartridge into the toner replenishing device, comprising:

a main body containing a quantity of toner, said main body comprising a substantially hollow container having a longitudinal axis and first and second oppositely-disposed ends, said first end being closed, said second end comprising a mouth portion, said mouth portion comprising a substantially annular sidewall terminating in a plane substantially perpendicular to said longitudinal axis, said mouth portion having a configuration suitable for rotational and sealing engagement within and relative to the cap-shaped receptacle of the toner replenishing device, said main body being open at said plane for the egress of toner; and

a gear disposed on and extending circumferentially of said main body for rotatably driving said cartridge.

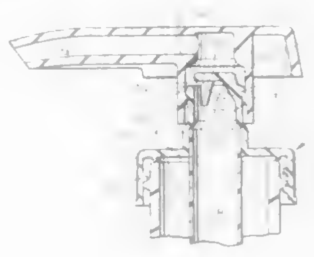
4,878,604
DISPENSING CLOSURE

Jacques J. Barriac, Montgomery, Pa., assignor to Owens-Illinols Closure Inc., Toledo, Ohio

Filed Aug. 31, 1988, Ser. No. 238,657

Int. Cl.⁴ B65D *37/00*

U.S. Cl. 222—209 16 Claims



1. A liquid dispensing closure assembly for a threaded container neck comprising:

an internally threaded annular skirt adapted to interengage the threaded container neck and secure the closure on the container;

a top wall integral with said skirt and including an axial stepped delivery tube, said stepped delivery tube having a lower large diameter segment and an upper smaller diameter segment, the two segments being joined at an annular shoulder,;

a dip tube;

means connecting the dip tube to said delivery tube;

a stationary circular valve member supported by webs integral with the delivery tube, said circular valve member being disposed at the upper end of the delivery tube and spaced from said delivery tube to permit liquid flow past said valve member;

a delivery spout including a hollow tubular portion telescopically engaging the upper end of said delivery tube;

interengaging snap fit means on the interior of said hollow tubular portion of the delivery spout and the exterior of said delivery tube permitting rotary swiveling movement and axial reciprocating movement of the delivery spout toward and away from the valve member thereon;

said snap fit means comprising an annular bead on the interior of the axial tubular portion of the delivery spout intermediate its length and an annular bead on the exterior of the delivery tube near its upper end, said shoulder segment of the stepped delivery tube limiting axial downward travel of the delivery spout on the delivery tube and defining its axial lower position thereon, and said interior bead of the delivery spout limiting axial upward travel thereof and defining its upper limited position thereon;

an axial outlet passage in said tubular portion of said spout including a seat to receive said valve member and seal said outlet passage from the dip tube when the tubular portion of the spout is moved toward the top wall to the axial lower position and connect said passage with the dip tube when said tubular portion is moved away from said axial lower position toward said upper limited position.

4,878,605
LOAD CARRYING APPARATUS

James P. Doyle, P.O. Box 408, Wis Dells, Wis. 53965, and Lyle J. Rudolph, 1132 Old Roum Rd., Cambridge, Wis. 52523

Filed Nov. 17, 1987, Ser. No. 121,529

Int. Cl.⁴ B60R *9/00*

U.S. Cl. 224—42.41 2 Claims

1. Apparatus for carrying a load of pallets on the underside of a semi-trailer, said apparatus comprising: a series of brackets disposed on the underside of said semi-trailer in spaced-apart relation; means for rigidly securing said brackets to said semi-

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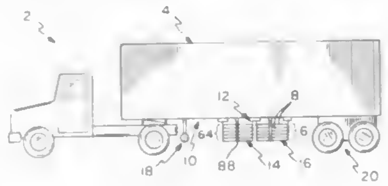
trailer; a first flexible strap having a first end and a second end said first flexible strap having rings reinforcingly attached to said first and second end of said first flexible strap; means for releasably securing said first end of said first strap and said second end of said first strap to a pair of said brackets, said means for releasably securing having a first downwardly directed hook coupled to a first bracket and a second downwardly directed hook coupled to a second bracket positioned a mounting-effective distance from said first bracket, said first flexible strap operable for supporting a load of pallets on the underside of said semi-trailer; a second flexible strap, said second flexible strap disposed in a direction generally perpendicular to said first strap to stabilize said load of pallets on the underside of said semi-trailer.



4,878,606
HARNESS FOR SHOULDER SUPPORTED BAG

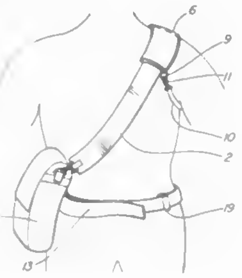
Murray G. W. Miller, Thunder Bay, Canada, assignor to Murlyn Enterprises Ltd., Orillia, Canada

Continuation-in-part of Ser. No. 258,816, Apr. 29, 1981. This **application Nov. 17, 1983, Ser. No. 552,944**

Claims priority, application Canada, Jan. 9, 1981, 368,202

Int. Cl.^{4} A45F *3/14*

U.S. Cl. 224—208 8 Claims



1. A waist bag and supporting harness adapted to be worn by a user, comprising an adjustable shoulder strap and pelvic belt cooperating with the bag wherein the waist bag has one face which is oriented towards the waist of the user, which said one face has an associated pelvic belt retention means comprising a plurality of loops arranged in a vertical column, each of which is adapted to receive a horizontally pelvic belt, wherein the pelvic belt may be positioned through a selected one of said loops to support and restrain movement of the bag.

4,878,607
APPARATUS FOR UNREELING A CABLE

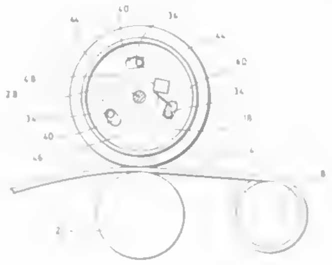
Michel Lessard, Lac St Jean, Canada, assignor to Less Micanik Inc., Quebec, Canada

Filed Oct. 31, 1988, Ser. No. 264,972

Int. Cl.^{4} B66D *1/48;* **B60P** *3/00*

U.S. Cl. 226—24 8 Claims

1. Apparatus for unreeling a cable, comprising:
- a body provided with positioning means for moving said body with respect to a solid frame;
  - a drawing means for unreeling said cable, including:
  - a motor provided with a shaft;
  - a disk having its centre rigidly locked to said shaft, said disk having a lateral surface provided with at least one pin perpendicular to said surface; and
  - a wheel having its centre positioned around said shaft by means of a ball bearing, said wheel having one of its lateral sides adjacent to said lateral surface of said disk , said one lateral side of the wheel being provided with at least one slot extending circumferentially for receiving said at least one pin in such a manner that phase displacement is allowed between said disk and said wheel, resilient means being provided for keeping said at least one pin against the forward extremity of said at least one slot, said wheel having its circumference covered by a resilient frictionsurface adapted to squeeze said cable against a rotative guiding roller which allows unreeling of said cable by rotative movement of said wheel, said wheel being applied against said rotative guiding roller to squeeze said cable by means of said positioning means; and
- detecting and controlling means for detecting said phase displacement and, upon detection of said phase displacement, activating said motor when said cable is in a rest position or disabling said motor when said cable is unreeling.



4,878,608
HAND STAPLER FOR USE WITH A BAR OF ORNAMENTED STAPLES

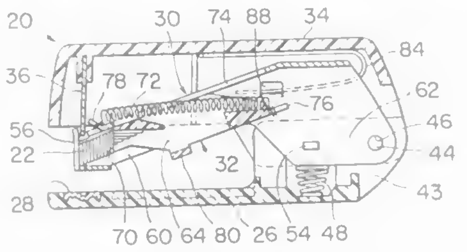
Yoshio Mitsuhashi, Yokohama, Japan, assignor to M.G.S. Japan Co., Ltd., Tokyo, Japan

Filed Dec. 6, 1988, Ser. No. 280,563

Claims priority, application Japan, Jul. 13, 1988, 63-172775

Int. Cl.^{4} B25C *5/02, 5/06*

U.S. Cl. 227—120 10 Claims



1. In combination with a staple bar having a plurality of ornamented staples separably joined together, each ornamented staple having a bridge interconnecting a pair of parallel legs, and an ornament joined to the bridge, the staple bar being such that the ornaments of the staples are in overlapping relation to one another so that the bridges of the joined staples form an obtuse angle with respect to each pair of staple legs, a hand stapler comprising:
- (a) an elongate base having a front and a rear end, with an anvil disposed adjacent the front end of the base;

- (b) an elongate staple magazine to be loaded with the staple bar, the staple magazine having a rear end pivotally coupled to the rear end of the base and having a front end movable into and out of engagement with the anvil on the base, the staple magazine comprising a front end wall to be abutted upon by the loaded staple bar and an elongate guide wall for relative sliding contact with the bridges of the loaded staple bar, there being approximately the same obtuse angle between the front end wall and guide wall of the staple magazine as between the bridges of the staple bar and each pair of staple legs;
- (c) staple pusher means mounted to the staple magazine for pushing the loaded staple bar against the front wall of the staple magazine;
- (d) a handle pivotally coupled to the base and the staple magazine and having a staple ejector for driving the successive staples out of the front end of the staple magazine against the anvil on the base.

4,878,609
APPARATUS FOR MANUAL WIRE BONDING

Farhad Farassat, Munich, Fed. Rep. of Germany, assignor to **Emhart Industries Inc., Farmington, Conn.**

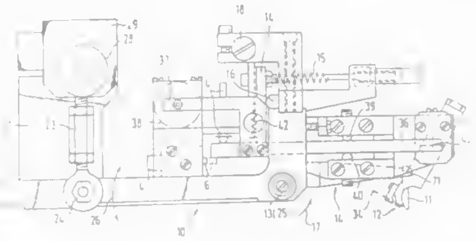
PCT No. PCT/EP87/00258, § 371 Date Feb. 18, 1988, § 102(e) **Date Feb. 18, 1988, PCT** Pub. No. **WO87/06864, PCT Pub. Date Nov. 19, 1987**

PCT Filed May 15, 1987, Ser. No. 150,668

Claims priority, application Fed. Rep. of Germany, May 16, 1986, 3616651

Int. Cl.^{4} B23K *37/00*

U.S. Cl. 228—4.5 9 Claims



1. An apparatus for manual wire bonding, comprising an ultrasonically energizable and/or thermocompression wedge (11) for pressing the wire (34) against a bonding pad, wherein the wedge (11) is part of a bonding head (10) adapted to be moved towards and away from the bonding pad, especially in up/down direction, and the bonding pad is disposed on a base which is movable in a direction approximately transversely to the direction of movement of the bonding head for positioning the bonding pad opposite the wedge (11), and comprising control unit means for controlling a drive unit (20) for the bonding head (10), characterized in that the bonding head (10) is adapted to be moved by the drive unit, said drive unit including a d.c. servomotor (20), in accordance with the following cycle:
- (a) lowering of the bonding head (10) from an elevated starting position (54) to a first search position (55);
- (b) after positioning of a first bonding pad opposite the wedge (11), further lowering of the bonding head (10) onto the same while compressing the bonding wire (34) thereagainst;
- (c) lifting of the bonding head (10) from the first bonding pad while moving the head to a predetermined loop position (65);
- (d) lowering of the bonding head (10) to a second search position (66);
- (e) after positioning of a second bonding pad opposite the wedge (11), further lowering of the bonding head (10) onto the same while compressing the bonding wire (34) thereagainst;
- (f) lifting of the bonding head (10) to the starting position (54) after previously severing the bonded wire length,
  wherein said control unit means includes a distance control unit (44–47), a speed control unit (48–51), and a distance and speed feedback unit (28) so that each part-motion and non-motion of the bonding head (10) can be adjusted individually in respect of travelling distance and speed and motionless period, respectively, and can be checked for execution,

said control unit means further includes:
- (a) a manually actuated switch,(start button 53) for initiating the bonding head motion,
- (b) distance potentiometers (44, 45, 46, 47) for setting the starting position or height (54), the first search position or height (55), the second search position or height (66), and the loop position or height (65),
- (c) speed potentiometers (48, 49, 50, 51) for setting the speed of the bonding head (10) from the starting position (54) to the first search position (55), from the first search position (55) to the first "touch-down" position, from the first "touch-down" position to the loop position (65), from the loop position (65) to the second search position (66), from the second search position (66) to the second "touch-down" position, and from the second "touch-down" position back to the starting position (54),
  wherein the speed potentiometers (48, 49, 50, 51) are coupled to the drive unit (20) via a speed selecting means (31), and wherein,
  the distance feedback unit comprises a feedback potentiometer, which is preferably mechanically coupled to the output (output shaft 21) of the drive unit (20), the output of said potentiometer being coupled to a distance comparing unit (30) in which the desired values set by the distance potentiometers (44, 45, 46, 47) are compared with the actualmotion values detected by the feedback potentiometer (28) to produce an error signal (NO) or a correct signal (YES), and wherein,
  the speed selecting means (31) associated with the speed potentiometers (48, 49, 50, 51) is coupled on the one hand to the feedback potentiometer and on the other hand to a tachogenerator (32) serving as a speed feedback unit (32), wherein the feedback potentiometer defines the speed change-over points and the tachogenerator (32) detects the actual speed of the bonding head motion so that upon a deviation from a preset desired speed a correction or interruption of the bonding operation will be possible.

4,878,610
DIE BONDING APPARATUS

Ryuichiro Mori; Syuichi Osaka, and Toshinobu Banjo, all of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed Feb. 8, 1989, Ser. No. 307,512

Claims priority, application Japan, Aug. 12, 1988, 63-199994

Int. Cl.^{4} B23K *37/04*

U.S. Cl. 228—6.2 9 Claims

1. A die bonding apparatus comprising:
- a stocker for temporarily accommodating dice;
- a first conveying means for successively picking up a plurality of dice from one wafer and conveying them to said stocker;
- a wafer loader/unloader for replacing the wafer from which the dice have been picked up with a new one;
- a bonding station for bonding a die to a work which serves as a die mounting medium;

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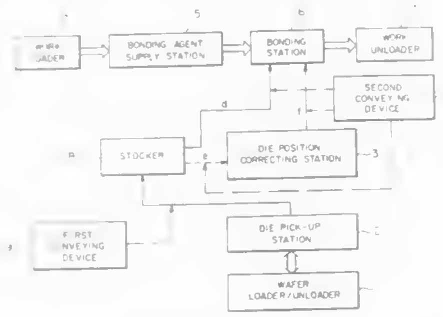
a work loader for supplying works to said bonding station; and



a second conveying means for successively conveying said dice accommodated in said stocker to said bonding station.

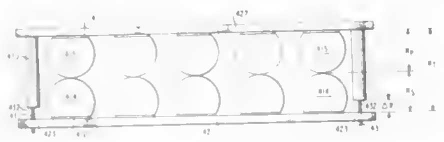
4,878,611
PROCESS FOR CONTROLLING SOLDER JOINT GEOMETRY WHEN SURFACE MOUNTING A LEADLESS INTEGRATED CIRCUIT PACKAGE ON A SUBSTRATE

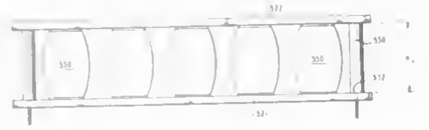
Francis LoVasco, Roxbury Township, and Michael A. Oien, Chatham Township, both of Morris County, N.J., assignors to American Telephone and Telegraph Company, AT&T Bell Laboratories, Murray Hill, N.J.

Continuation of Ser. No. 868,988, May 30, 1986, abandoned. This application Jun. 9, 1988, Ser. No. 207,003

Int. Cl.⁴ B23K *31/02*

U.S. Cl. 228—180.2 9 Claims





9. A method of forming solder joints for joining a package and substrate, comprising the steps of:
depositing substantial, predetermined and controlled volumes of solder on individual pads of a package, each of these pads having a predetermined and controlled size and shape,
depositing substantial, predetermined and controlled volumes of solder on individual pads of a substrate, each of these pads having a predetermined and controlled size and shape,
laterally positioning the substrate and package adjacent to each other with individual pads of the package in registration with associated individual pads of the substrate by shaping associated volumes of solder on the package and substrate so that they interlock to sustain a desired lateral position,
establishing an initial vertical between the package and substrate by utilizing a physical contact of certain of first controlled volumes of solder with their associated second controlled volumes of solder, the initial vertical separation being small enough to allow the predetermined and controlled volumes of solder on each associated pair of pads to touch and coalesce when molten,
applying sufficient heat to an assembly of the package and substrate to achieve a predetermined reflow temperature, such that the first and second volume of solder on each associated pair of pads become molten and coalesce to form a solder joint between a pad on the package and an associated pad on the substrate, and
maintaining a predetermined and controlled final separation between package and substrate after molten solder joint form in order to control a solidified shape of each of the solder joints.

4,878,612
WRAP-AROUND CARTON WITH LOCKING FLAP CONNECTION

Richard L. Schuster, Monroe, La., assignor to Manville Corporation, Denver, Colo.

Filed Apr. 18, 1988, Ser. No. 182,540

Int. Cl.⁴ B65D *65/06*

U.S. Cl. 229—40 11 Claims

1. In a wrap-around paperboard carton containing an article having a substantially flat surface;
a panel in close face-to-face proximity with the substantially flat surface of the article;
the panel comprising overlapping inner and outer flaps, each flap having an outer edge, an exterior face and an interior face;
the inner flap having a slot forming an edge spaced from the outer edge thereof;
the outer flap having a tab having an outer extremity, the tab extending beyond the outer edge of the outer flap and through the slot in the inner flap;
locking means on the outer flap engaging the spaced edge of the inner flap to secure the flaps together; and
means for holding the locking means in locking condition to prevent withdrawal thereof from the inner flap;
the locking means comprising shoulder means engaging the spaced slot edge of the inner flap;
the outer flap containing a slot spaced from the outer extremity of the tab, the shoulder means being defined by an edge of the slot;
the means for holding the locking means in locked condition comprising tab means on the inner flap engaging the outer flap adjacent the slot therein to hold the shoulder means in position; and
the tab means on the inner flap extending through the slot in the outer flap and being held in position by an edge of said slot, whereby the tab means is maintained in position to hold the shoulder means in place.

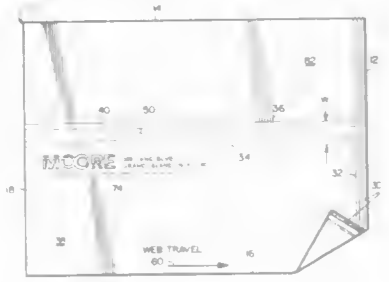
4,878,613
ENVELOPE FOR TABLE TOP LASER PRINTER

Ernest E. Badger, Buffalo Grove, Ill.; G. Russell Sornberger, Sanborn, and Michael W. Anderson, West Seneca, both of N.Y., assignors to Moore Business Forms, Grand Island, N.Y.

Continuation of Ser. No. 196,299, May 20, 1988, abandoned. This application May 1, 1989, Ser. No. 346,334

Int. Cl.⁴ B65D *27/06*

U.S. Cl. 229—75 8 Claims



1. An envelope blank assembly for use in the production of envelopes printed by a non-impact type printer comprising:
a first sheet incorporating a front panel portion including a foldable sealing flap portion of an envelope superimposed on
a second sheet incorporating a rear panel portion of said envelope, said first and second sheets being secured to each other along one edge only of said assembly;
at least one of said first and second sheets having a heat activatable adhesive extending along three peripheral edges of the respective envelope panel;
said foldable sealing flap portion of said front panel having a rewettable or pressure sensitive adhesive applied thereto, and a corresponding portion of said second sheet, lying directly beneath said foldable sealing flap portion, having an antistick composition applied thereto.

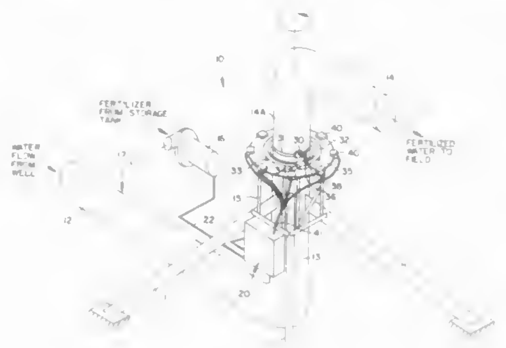
4,878,614
PROGRAMMABLE FERTILIZER APPLICATION SYSTEM

Clifford C. Hach, and Keith M. Gawlik, both of Loveland, Colo., assignors to Hach Company, Loveland, Colo.

Filed Aug. 3, 1988, Ser. No. 227,707

Int. Cl.⁴ A01C *23/04;* A01G *25/09*

U.S. Cl. 239—10 17 Claims



10. A method for determining plant utilization of fertilizer in a field being irrigated by a center pivot irrigation system of the type having a vertical water feed pipe, a horizontal sprinkler boom operably coupled to the upper end of said feed pipe by means of a rotatable connector, and a fertilizer supply means connected to said water feed pipe, wherein said method comprises the steps of:
(a) providing rotation sensor means,
(b) operably connecting said rotation sensor means to said rotatable connector,
(c) providing control means for controlling the amount of said fertilizer supplied to said feed pipe in response to rotation of said horizontal boom,
(d) operably connecting said control means to said rotation sensor means,
(e) irrigating said plants with said irrigation system and adding said fertilizer to said water feed pipe in an amount which varies from one section of said field to another in response to rotation of said sprinkler boom relative to said vertical feed pipe,
(f) analyzing said plants from each said section of said field to determine said utilization of said fertilizer by said plants in each said section.

4,878,615
FLUID EVAPORATING DEVICES

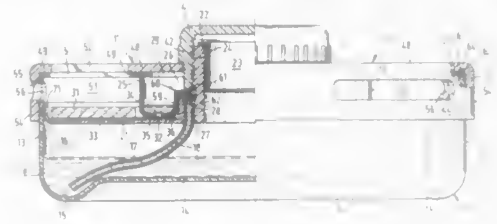
Salvatore A. Losi, Petit-Lancy, Switzerland, assignor to Givaudan Corporation, Clifton, N.J.

Filed May 20, 1988, Ser. No. 196,414

Claims priority, application Switzerland, May 25, 1987, 2012/87

Int. Cl.⁴ A61L *9/04*

U.S. Cl. 239—45 11 Claims



1. A method for the evaporation of a solution which comprises:
(a) introducing a certain volume of said solution (**18**) into a reservoir (**16**) having at least one elastic wall (**13**);
(b) intermittently opening a passage (**17,18**) connecting said reservoir and a first compartment (**26**) outside said reservoir, for the transfer of a portion of said solution from said reservoir to said first compartment;
(c) intermittently opening an opening (**29**) in said first compartment to the ambient air;
(d) exerting an external pressure on said elastic wall of said reservoir, when said opening (**29**) and said passage (**17,18**) are open, sufficient to transfer said portion of said solution from said reservoir to said first compartment, and gradually and continuously transferring a portion of the solution (**34**) contained in said first compartment to an impregnation member (**31**) consisting of a material capable of absorbing a liquid, said member being placed on a support (**21**) outside said reservoir and outside said first compartment;
(e) closing said opening of said first compartment and closing said passage; and
(f) keeping said opening and said passage closed during the time intervals between intermittent transfers of portions of said solution from said reservoir to said first compartment.

4,878,616
SPRAY BOOM HEIGHT ADJUSTMENT

Delmar J. Richardson, 2262 Portage Ave., Winnipeg, Manitoba, Canada

Filed Jun. 16, 1988, Ser. No. 207,490

Int. Cl.⁴ B05B *1/20*

U.S. Cl. 239—167 **14 Claims**

1. An elongate spray boom assembly having an elongate

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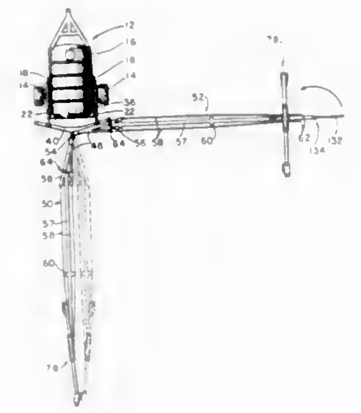
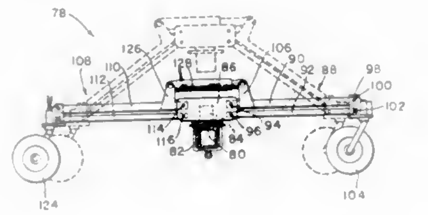
boom carrier, a plurality of walking beams pivotally mounted on the boom carrier, and ground wheels mounted on the walking beams, wherein each walking beam comprises a pair of parallelogram linkages extending to front and back sides re-

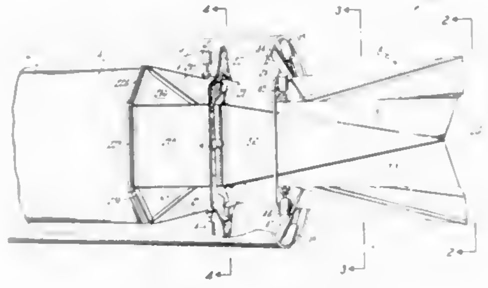




spectively of the boom carrier, each linkage having two boom pivots mounted on the boom carrier and two wheel pivots mounted on a wheel support, and actuating means for pivoting the parallelogram linkages to adjust the height of the boom carrier with respect to the wheels.

4,878,617
TRIPLE AXIS THRUST VECTORING EXHAUST NOZZLE

Rudolph J. Novotny, Stuart, Fla., assignor to United Technologies Corporation, Hartford, Conn.
Filed May 24, 1988, Ser. No. 198,023
Int. Cl.⁴ F02K *1/12*
U.S. Cl. 239—265.35 8 Claims



1. A thrust vectoring exhaust nozzle for a gas turbine engine, comprising:

a deformable flow duct receiving a flow of engine exhaust gas at an upstream end thereof and discharging said exhaust gas at an open, downstream end thereof,

wherein the deformable duct includes

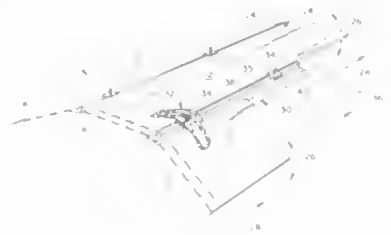
a plurality of generally planar triangular segments, each segment having one side thereof coefficient with one end of the deformable duct and the other two sides thereof extending the full length of the deformable duct, and wherein

each of the other two sides of each planar triangular segment is hingedly joined the length thereof to one of the other two sides of a next circumferentially adjacent triangular segment, the plurality of hingedly joined triangular segments defining the deformable flow duct;

a plurality of actuators, each actuator engaged between a static portion of the nozzle exterior to the deformable duct and at least one of the triangular segments, each actuator adapted to selectively position the triangular segment engaged therewith relative to the nozzle static portion for collectively defining one of a plurality of deformable duct configurations for directing the exhaust gases relative to a central nozzle axis.

4,878,618
WEAR RESISTANT, SELF-DAMPING CLAMP ASSEMBLY

Nick L. Hufnagel, Tequesta, Fla., assignor to United Technologies Corporation, Hartford, Conn.
Filed Dec. 8, 1988, Ser. No. 281,162
Int. Cl.⁴ F01K *1/12*
U.S. Cl. 239—265.39 7 Claims



1. A clamp assembly for securing an elongated seal between first and second forwardly hinged exhaust nozzle flaps, the elongated seal including a stiffening ridge extending from the seal between the flaps, wherein the clamp assembly comprises:

a bridge clamp having a pair of circumferentially extending arms, one of said arms extending circumferentially over a portion of the first flap, and the other of said arms extending circumferentially over a portion of the second flap;

a wear plate, disposed intermediate the bridge clamp and the first and second flaps, the wear plate including

a first antirotation means engaged with the elongated seal, and

a second antirotation means engaged with the bridge clamp; and

means, disposed between the elongated seal and the bridge clamp, for securing the bridge clamp and wear plate to the elongated seal.

4,878,619
FLUID SPRAY SYSTEM HAVING A REPLACEABLE CARTRIDGE

Richard O. Norman, San Antonio, Tex., assignor to Environmental Delivery Systems, Inc., San Antonio, Tex.
Filed Nov. 1, 1988, Ser. No. 265,526
Int. Cl.⁴ B05B *7/30*
U.S. Cl. 239—318 11 Claims

1. A fluid spraying system comprising:

a spray gun further comprising:

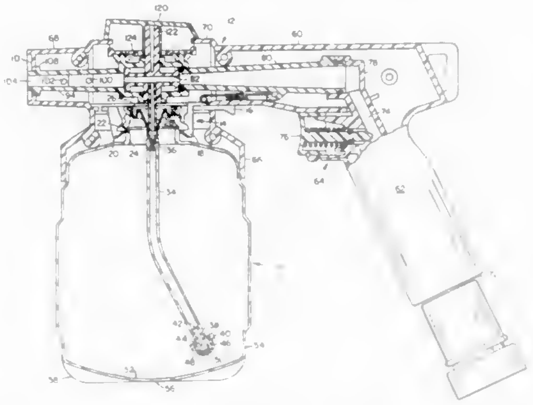
a first fluid input conduit;

a selector valve having a flow channel in fluid communication with said first fluid conduit, said valve having a second fluid inlet port in fluid communication with said flow channel;

a second fluid discharge conduit for discharging a first discharge from said selector valve flow channel, said flow channel positionable to alternatively draw from said inlet port or partially discharge to said inlet port;

a means for activating flow of a first fluid through said first fluid input conduit; and

a means for discharging to the environment a discharge from said second fluid discharge conduit; and



an interchangeable and disposable cartridge sealingly engageable with said spray gun, said cartridge further comprising:

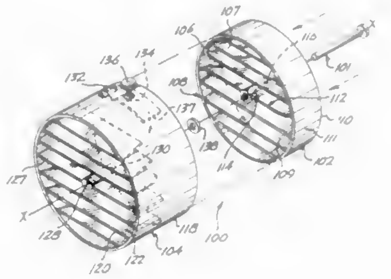
a housing for containment of a second fluid within said cartridge;

a means for sealing engagement with said second fluid inlet port ,

a means for delivery of a metered amount of said second fluid to said selector valve.

4,878,620
ROTARY VANE NOZZLE

E. Russell Tarleton, 13805 23rd Ave. SE, Bothell, Wash. 98012
Filed May 27, 1988, Ser. No. 200,012
Int. Cl.⁴ B05B *1/34;* **F24F** *7/00*
U.S. Cl. 239—383 21 Claims



1. A nozzle for continuously redirecting the entire volume of a flow of fluid in a predetermined pattern, the fluid flowing along a longitudinal axis, the nozzle comprising:

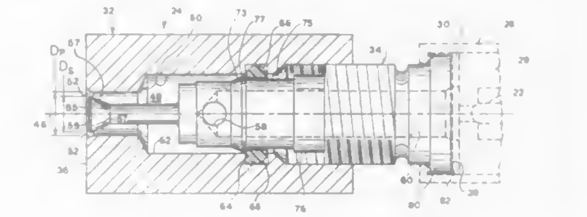
a continuously rotating first fluid directing means for directing the entire volume of the fluid to flow in a first plane oblique to the longitudinal axis;

means for continuously rotating the first fluid directing means about a rotational axis to thereby rotate the plane of flowing fluid about the rotational axis; and

a second fluid directing means for directing the rotating plane of flowing fluid into a second plane such that the entire volume of the fluid flow continuously laterally reciprocates in said second plane.

4,878,621
PROJECTING GUN AND NOZZLE

Michael J. Krueger, 812 Cleveland Ave., Kaukauna, Wis. 54130
Continuation of Ser. No. 62,682, Jun. 16, 1987, abandoned. This application Nov. 18, 1988, Ser. No. 274,649
Int. Cl.⁴ B05B *1/26*
U.S. Cl. 239—458 21 Claims



1. A nozzle comprising

a housing having a first end, and a passage in said housing, said passage having first and second ends and a longitudinal axis, said passage extending, from said first end of said housing at said first end of said passage, into the interior of said housing, and opening into a chamber in said housing at said second end of said passage, said first end of said passage having a first surface flared outwardly,

a male member in said housing, having an end disposed toward said first end of said passage,

a shaft comprising an elongated constant cross-sectioned portion extending from said end of said male member and from said chamber, through said passage, and an enlarged tip extending from said constant cross-sectioned portion, at a location adjacent said first end of said passage, said enlarged tip having a second surface flared outwardly from said constant cross-sectioned portion of said shaft,

means for introducing a material into said chamber for dispensing said material through said passage,

adjusting means for adjusting the position of said shaft longitudinally in said passage within an operating range, for modifying the pattern of dispensing of said material, including a full open position at a first end of said range wherein said end of said male member is disposed closest to said first end of said passage, thereby opening said nozzle for maximum flow of said material, and

a constant cross-sectioned space between said constant cross-sectioned portion of said shaft and interior walls of a constant cross-sectioned portion of said passage, said constant cross-sectioned space extending outwardly from said second end of said passage, to the first-to-be encountered of said first and second flared surfaces, when said shaft is adjusted in said full open position, with said male member being disposed closest to said first end of said passage.

4,878,622
PERISTALTIC VOLTAGE BLOCK

Chris M. Jamison, and Eric A. Petersen, both of Indianapolis, Ind., assignors to Ransburg Corporation, Indianapolis, Ind.
Filed Jun. 17, 1988, Ser. No. 208,774
Int. Cl.⁴ B05B *5/02;* **F04B** *43/12*
U.S. Cl. 239—690.1 14 Claims

1. A coating material dispensing system comprising an electrostatic high potential supply having an output terminal on which the supply maintains a high electrostatic potential, a source of coating material, a dispenser for dispensing the coating material, means for coupling the dispenser to the source of coating material, means for coupling the output terminal to the dispenser to supply potential to the coating material dispensed by the dispenser, and a peristaltic device having multiple coils of a resilient conduit and a rotor for supporting means for contacting each coil at multiple contact points for substantially

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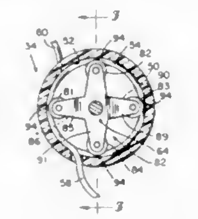
dividing the coating material in the peristaltic device into discrete slugs of coating material substantially to interrupt the electrical path through the coating material from the terminal to the coating material supply.



4,878,623
PROCESS AND DEVICE FOR MECHANICALLY REMOVING THE SURFACE OF LUMPED GOODS

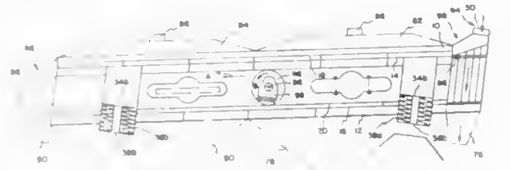
Friedrich W. Plank; Helmut Machnig; Georg H. Mischke, all of Menden; Reinhard Friedrichs, and Norbert Nahrmann, both of Oelde, all of Fed. Rep. of Germany, assignors to Rheinisch-Westfalische Kalwerke AG, Fed. Rep. of Germany

PCT No. PCT/DE85/00553, § 371 Date Feb. 19, 1988, § 102(e) Date Feb. 19, 1988, PCT Pub. No. WO87/03826, PCT Pub. Date Jul. 2, 1987

PCT Filed Dec. 21, 1985, Ser. No. 192,513

Int. Cl.⁴ B07C *19/12*

U.S. Cl. 241—5 **40 Claims**



1. Process for mechanical surface removal of lumped lime having a sulphur containing layer, wherein the lumped lime is treated by, starting from a bottom, accelerating the lumped lime by a mechanical impulse and projecting the lumped lime against a processing surface, returning the lumped lime thence to the bottom, and continuing to treat the lumped lime along a conveying path for a predeterminable period of time between the bottom and the processing surface, with the processing surface provided at least over partial sections thereof with profiles, until a desired surface removal is achieved.

4,878,624
PROCESS FOR CONDITIONING LIQUID PETROLEUM

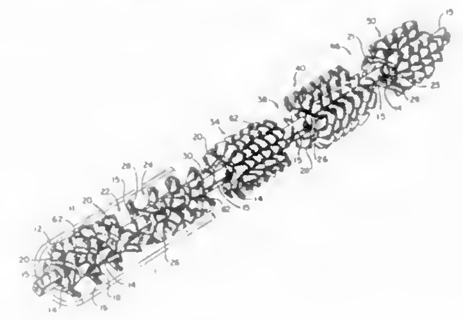
Emmanuel Psaltopoulos, Belmont, Mass., assignor to Hydro Energy Systems, Ltd., Douglas, Isle of Man

Division of Ser. No. 777,963, Sep. 19, 1985, Pat. No. 4,826,089. This application Feb. 13, 1989, Ser. No. 310,329

Int. Cl.⁴ B02C *19/12*

U.S. Cl. 241—29 **11 Claims**

1. A process for treating fuel oil having therein a substantial quantity of asphaltene, said process comprising the steps of
   (1) flowing said fuel oil through a conduit, said conduit having therein first array of first shearing elements, said first shearing elements being mounted along the interior of said conduit, said first sharing elements directing said flowing fuel oil into a first helical path,
   (2) flowing said fuel oil further through said conduit, said conduit having therein a second array of second shearing elements mounted along the interior of said conduit, said second shearing elements directing said flowing fuel oil into a second helical path generally counter to said first helical path,
   (3) flowing said fuel oil further through said conduit said conduit having therein additional arrays of shearing elements disposed serially along the length of said conduit, said additional arrays directing said flowing fuel oil through additional paths in alternating directions, and



   (4) maintaining said flowing of said fuel oil at a velocity across said first, second and additional shearing elements, thereby comminuting said asphaltene and dispersing said asphaltene within said fuel oil in a combustible form,
   (5) thereby substantially reducing quantities of particulates emanated upon burning of said fuel oil.

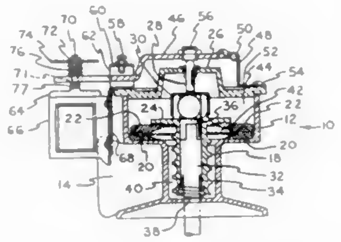
4,878,625
BEAN AND NUT GRINDER SHIFT MECHANISM

Brian D. Newnan, Louisville, Ky., assignor to Grindmaster Corporation, Louisville, Ky.

Filed Jul. 29, 1988, Ser. No. 225,929

Int. Cl.⁴ B02C *7/14*

U.S. Cl. 241—37 **18 Claims**



1. In combination with a grinder of the type which includes a housing and an adjustable grinder means disposed in said housing for grinding beans or nuts to a selected particulate size within a range of permissible sizes, a grinder shift mechanism comprising:
   biasing means for urging said grinder means toward a predetermined coarse grinding condition to grind beans or nuts to a maximum predetermined particulate size,
   shifting means operatively connected to said grinder means for shifting said grinder means from said coarse grinding condition to a first fine grinding condition in opposition to said biasing means to grind said beans or nuts to a minimum particulate size, said shifting means comprising a pivotally movable lever arm for shifting between said coarse and said first fine grinding condition, and
   first means operatively connected to said shifting means for automatically activating said shifting means upon command by changing from a first state to a second state.

4,878,626
APPARATUS FOR DESTROYING BANKNOTES

Karl Leuthold; Maul: Herbert, both of Munich; Walter Tröger, Martinsried, and Alexander Serester, Munich, all of Fed. Rep. of Germany, assignors to GAO Gesellschaft fur Automation und Organisation mbH, Munich, Fed. Rep. of Germany

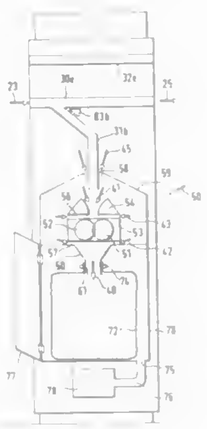
Division of Ser. No. 49,012, May 12, 1987, Pat. No. 4,754,933, which is a continuation of Ser. No. 694,648, Jan. 24, 1985, abandoned. This application Apr. 14, 1988, Ser. No. 181,549

Claims priority, application Fed. Rep. of Germany, Dec. 7, 1984, 3444709

The portion of the term of this patent subsequent to Jul. 5, 2005, has been disclaimed.

Int. Cl.⁴ B02C *4/08, 23/26*

U.S. Cl. 241—57 **4 Claims**



1. An apparatus for high speed shredding documents such as banknotes in a high-speed sorter, in which sorter the documents are removed from a stack one by one, tested according to various criteria and assigned to certain sorting classes as a result of the testing, one sorting class embracing documents which are supplied by a conveyor system to a shredder means and destroyed therein, comprising a shredder means including overlapped cutter disks mounted in fixed, spaced apart relationship on parallel rotatable shafts so that the disks are spaced apart from each other, each cutter disk including peripheral crosscutting notches that are out of registration with notches of adjacent disks;
   a collecting means for the document shreds disposed downstream of the shredder in the direction of movement of the documents; and a vacuum pump arranged to produce low pressure in the collecting means;
   said collecting means including an entry opening, through which opening air is sucked through the shredder means due to the low pressure in the collecting means; and wherein said shredder means includes air conducting means forming flow channels through and around said cutter disks, said flow channels increasing the velocity of air sucked through the channels such that banknote shreds sticking to the cutter disks are stripped off and that the cutter disks are exposed to a flow of cooling air through and around the cutter disks.

4,878,627
KITCHEN APPLIANCE

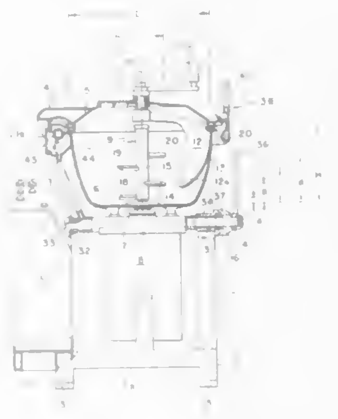
Friedrich Otto, Hameln, Fed. Rep. of Germany, assignor to A. Stephen u. Soehne GmbH & Co., Hameln, Fed. Rep. of Germany

Filed Aug. 30, 1988, Ser. No. 238,075

Int. Cl.⁴ B01F *7/16;* B02C *18/18*

U.S. Cl. 241—199.12 **15 Claims**

1. A kitchen appliance for the mincing or shredding of food, comprising:
   (a) an upwardly open bowl of substantially round cross-section with a bowl bottom;
   (b) an upwardly protruding tool shaft perpendicular to the center of the bowl bottom and driven at high speed by a motor arranged underneath the bowl bottom; and
   (c) on the tool shaft there is fixed a chopping tool having four radially outwardly extending blades mutually offset at 90° of circumference, which in plan view form a cross; the blades arranged at different axial heights, the lowest blade revolving directly above the bowl bottom and the highest blade revolving at approximately ¾ of the bowl height (H); each blade having a constant flatly rectangular cross-section over its radial length; each blade being slightly pitched about its longitudinal axis, its longer rectangular side forming an acute angle of pitch (alpha) with the horizontal in such a way that, seen in the direction of rotation, the front edge of each blade is slightly higher than the rear edge thereof; and in plan view, the radial distance (B) between the free ends of two opposite blades, is equivalent to approximately half the maximum bowl diameter (D).



4,878,628
COIL WINDING MACHINE HAVING A TAPE WINDER

Kyoji Takeda, and Yoji Suekane, both of Tokyo, Japan, assignors to Tanaka Seiki Co., Ltd., Tokyo, Japan

Filed May 10, 1988, Ser. No. 192,311

Claims priority, application Japan, May 12, 1987, 62-115197; May 12, 1987, 62-70294[U]; Dec. 18, 1987, 62-192455[U]

The portion of the term of this patent subsequent to Sep. 1, 2004, has been disclaimed.

Int. Cl.⁴ B65H *19/20;* H01F *41/12*

U.S. Cl. 242—7.08 **7 Claims**

1. A coil winding machine having a tape winder, comprising:
   a plurality of rotatable spindles capable of holding coil bobbins;
   nozzle holder support means for supporting a nozzle holder holding a plurality of nozzles for guiding wires to said coil bobbins, respectively;
   a tape winder base, said tape winder base being movable at least vertically relative to said nozzle holder;
   means for moving said tape winder base vertically relative to said nozzle holder; and
   a plurality of tape winding mechanisms provided on said tape winder base, each of said tape winding mechanisms including a tape support for supporting a tape, a tape

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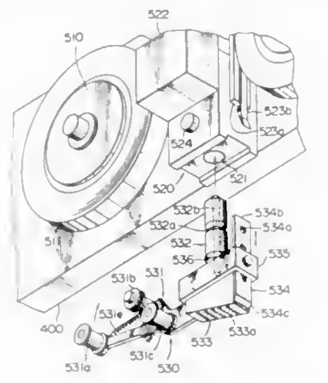
guide mechanism having a plurality of rollers, a pad for pressing said tape against a coil disposed on said coil bobbin, and a retractable cutter provided adjacent to said pad.



4,878,629

RESERVE WINDING OF YARN ON A TUBE OF A CROSS-WOUND BOBBIN AND METHOD AND APPARTUS OF FORMING SAME

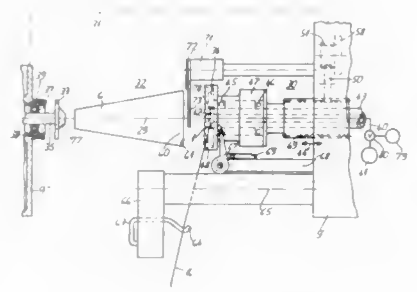
Hans Grecksch, Monchengladbach; Josef Bertrams, Wegberg, and Rene Bucken, Grefrath, all of Fed. Rep. of Germany, assignors to W. Schlafhorst & Co., Fed. Rep. of Germany

Filed Jun. 16, 1988, Ser. No. 208,145

Claims priority, application Fed. Rep. of Germany, Jun. 17, 1987, 3720220; Oct. 2, 1987, 3733353

Int. Cl.⁴ B65H *54/02, 54/34*

U.S. Cl. 242—18 PW 13 Claims



1. A method of forming a reserve winding of yarn on a tube on which yarn is to be cross-wound to build a bobbin comprising drawing at least a few centimeters of yarn centrally into a rotatable tube plate, clamping the end of a tube against the tube plate with the yarn clamped therebetween, guiding the yarn inwardly from the clamped tube end along the surface of the tube to form an initial length of yarn, and rotating the tube and advancing the yarn toward the tube end to form a plurality of substantially non-overlapping windings progressing toward the tube end and overlaying said initial length of yarn.

4,878,630

GUIDE ROLLER ASSEMBLY

Reinhold Schmid, Monchen-Gladbach, Fed. Rep. of Germany, assignor to W. Schlafhorst & Co., Fed. Rep. of Germany

Filed Feb. 27, 1989, Ser. No. 316,228

Claims priority, application Fed. Rep. of Germany, Mar. 2, 1988, 3806691

Int. Cl.⁴ B65H *54/28, 54/20;* **F16C** *13/02, 33/76*

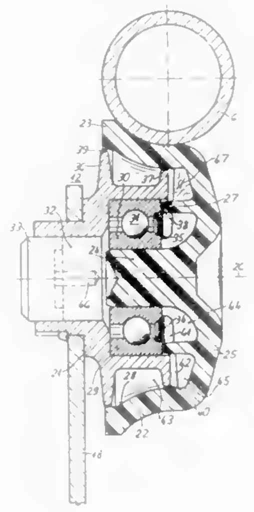
U.S. Cl. 242—43 R 6 Claims

1. In a textile bobbin winding machine of the type having a reciprocating yarn guide rod for crosswinding yarn bobbins, a guide roller assembly for supporting said yarn guide rod, said guide roller assembly comprising:

an outer shell having an annular rim portion configured for rotational supporting engagement with said yarn guide rod, a central shaft portion, and a continuous wall portion extending between said rim and shaft portions;

a fixed carrier member; and

a lubricated ball bearing assembly interposed between said carrier member and said outer shell for rotatably supporting said outer shell;



at least one of said outer shell and said carrier member having a plurality of annular projecting portions defining a plurality of relatively narrow annular spacings between said outer shell and said carrier member and further defining a plurality of annular air chambers in series between said projecting portions in communication with one another through said spacings, a radially inwardmost one of said air chambers being located in the vicinity of said central shaft portion of said outer shell and a radially outwardmost one of said air chambers being located in the vicinity of said rim portion of said outer shell.

4,878,631

ROLL HOLDER

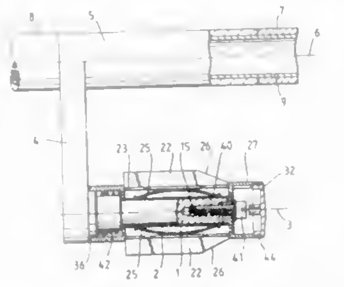
Alexandru Tanovici, Arolsen, Fed. Rep. of Germany, assignor to HEWI Heinrich Wilke GmbH, Fed. Rep. of Germany

Filed Sep. 2, 1988, Ser. No. 240,840

Claims priority, application Fed. Rep. of Germany, Sep. 4, 1987, 3729559

Int. Cl.⁴ B65H *75/32*

U.S. Cl. 242—55.2 11 Claims



1. Roll holder for a roll which is made from a material web and has a receiving opening, especially a paper roll provided

with perforations running transversely, comprising: a bearing body having a friction surface formed thereon, a shaft with a free face end and an adjusting screw driven into said free face end, said screw having a head; a carrier element containing a tube rotatably mounted on said shaft, serving for at least partial insertion into the receiving opening and being clamped axially between said friction surface and said head; a compression spring held between said friction surface of the bearing body and an associated friction surface of said carrier element; means mounted on said carrier element whereby said roll is held unrotatably on said carrier element; and braking means mounted on the bearing body and on the carrier element for producing a defined braking force when said carrier element rotates on said bearing body, said braking means containing said adjusting screw for regulating said braking force.

4,878,632

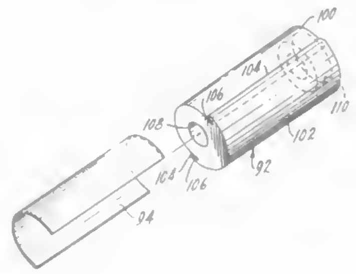
MAGNETIC TAPE CASSETTES

William M. Carroll, Milwaukee, Wis., assignor to Koller Manufacturing Corporation, Milwaukee, Wis.

Division of Ser. No. 101,795, Sep. 28, 1987, Pat. No. 4,819,890, which is a continuation-in-part of Ser. No. 53,348, May 22, 1987, Pat. No. 4,773,615, which is a continuation-in-part of Ser. No. 30,698, Mar. 25, 1987, Pat. No. 4,770,367. This application Jan. 3, 1989, Ser. No. 292,838

Int. Cl.⁴ G11B *23/04*

U.S. Cl. 242—199 23 Claims



1. A tape guide for use in a magnetic tape cassette comprising an upstanding core affixed to the cassette and having longitudinally-extending slots formed therein, and a polished insert supported on the core and extending about a sufficient arc of the core to provide a bearing surface for contact with the magnetic tape, the insert comprising an elongate sleeve which is split to form longitudinally-extending edges which extend into and are retained by said slats in the core.

4,878,633

DRAG MECHANISM FOR A DOUBLE-BEARING FISHING REEL

Shinichi Morimoto, Nishinomiya, Japan, assignor to Shimano Industrial Company Limited, Osaka, Japan

Filed Apr. 1, 1988, Ser. No. 176,768

Claims priority, application Japan, Apr. 6, 1987, 62-51990[U]

Int. Cl.⁴ A01K *89/01*

U.S. Cl. 242—268 7 Claims

1. A fishing reel comprising a reel body, a spool rotatably supported relative to said reel body, a drag mechanism for applying a braking force against rotation of said spool, a handle shaft rotatably supported to said reel body and a main gear supported to rotate responsive to rotation of said handle shaft to drive said spool, said drag mechanism comprising:

a plurality of drag discs supported to said handle shaft so as to be non-rotatable and axially movable relative to said handle shaft;

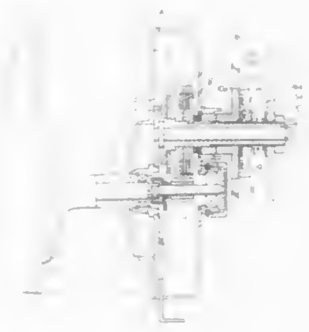
a plurality of drag members (i) supported to said handle shaft to be rotatable relative to said handle shaft and (ii) interposed between said drag discs and said main gear;

a load setting member screwably mounted on said handle shaft and for adjustably setting a slipping rotation starting load for said spool applied by said drag members,

a reference member supported to said handle shaft to be non-rotatable relative to said handle shaft and having a single reference portion for setting a reference position corresponding to an optimum value of said slipping rotation starting load set by said load setting member,

an operating member supported to said load setting member to be rotatable with said load setting member to enable said load setting member to be rotatably operable, said operating member having a single position setting portion for setting a reference position for said load setting member corresponding to said reference position, and

position change means, provided between said load setting member and said operating member, for enabling said operating member to be changed in position with respect to said load setting member.



4,878,634

DEVICE FOR RECEIVING AND SECURING LOADS OR VEHICLE HOOKING SYSTEMS

Michel E. Pacault, 13, rue Bernard Roy, 44100 Nantes, and Jean-Jacques E. Gallet, 37, rue Camille Passarro, 44000 Reze, both of France

Filed Nov. 9, 1987, Ser. No. 117,961

Claims priority, application France, Nov. 19, 1986, 86 16065

Int. Cl.⁴ B64F *1/12*

U.S. Cl. 244—115 15 Claims

1. A reception and securing device for a hooking system used for mooring loads or vehicles onto a platform, of the type including one upper perforated plate and support means for said plate, connected together by pillars, wherein said support means comprise one lower plate of approximately constant thickness in contact with said platform, in combination with

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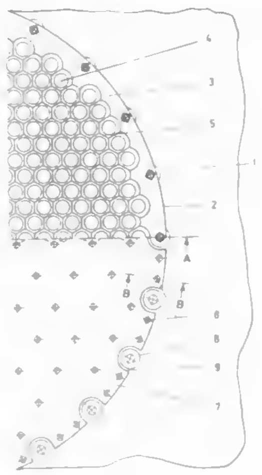
said pillars which comprise two shoulders respectively in contact with said upper and lower plates, to make a strong unit



and to provide a constant separation between said upper perforated plate and said lower plate.

4,878,635
CARGO HANDLING SYSTEM

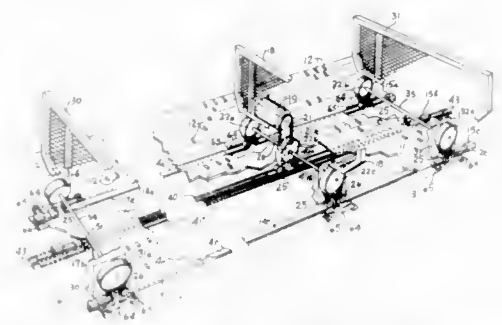
Arnold Nordstrom, Fallbrook, Calif., assignor to Ancra Corporation, Hawthorne, Calif.

Continuation-in-part of Ser. No. 39,709, Apr. 20, 1987, Pat. No. 4,805,852. This application Oct. 24, 1988, Ser. No. 261,784

The portion of the term of this patent subsequent to Feb. 21, 2006, has been disclaimed.

Int. Cl.⁴ B64C *1/22*

U.S. Cl. 244—137.1 9 Claims



1. A cargo handling system for use in moving cargo along the system's floor panel structure which rests on the floor of the loading compartment of a vehicle, to effect the loading and unloading of said compartment comprising:

a main drive panel mounted for longitudinal movement along the floor panel structure;

similar fore and aft end panels mounted for longitudinal movement along the floor panel structure;

belt means extending longitudinally along said floor panel structure and anchored thereto;

drive means mounted on said main panel for driving said main panel in trolley-like fashion along said belt means; and

means for selectively connecting said end panels to the main drive panel such that one or the other of said end panels is drawn by said main drive panel;

said main drive panel while disconnected from said end panels being operable to drive said cargo in a first direction or in a direction opposite to said first direction in loading the cargo in said compartment;

said main drive panel while connected to one or the other of said end panels being operable to draw the connected panel so that the connected panel drives cargo in said compartment in unloading said cargo.

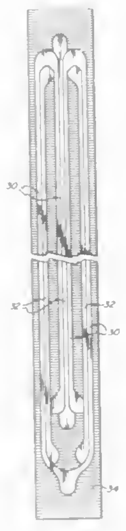
4,878,636
KITE BRIDLE AND LINK SYSTEM AND METHOD FOR MAKING SAME

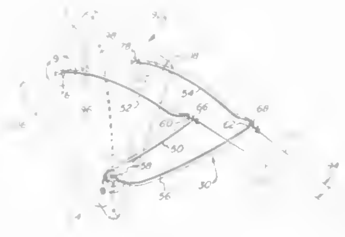
Robert J. Mileti, 21 Taylor St., Torrington, Conn. 06790

Filed Feb. 9, 1989, Ser. No. 308,741

Int. Cl.⁴ B64C *31/06*

U.S. Cl. 244—155 A 12 Claims





1. A detachable bridle for connecting a flying line to a kite, comprising:

a sheet of a bendable polymeric material having high longitudinal strength;

a continuous cut on the sheet which provides a single length of the polymeric material having at least four branches, the four branches being joined at least three joints;

means, located at a middle joint and at ends of the single length, for detachably mounting the single length to the kite; and

means, located at the other two joints, for connecting a flying line to the single length.

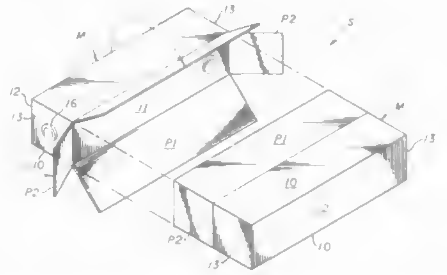
4,878,637
MODULAR SPACE STATION

Charles F. Mullen, 204 Yacht Club La., Seabrook, Tex. 77586

Continuation-in-part of Ser. No. 900,094, Aug. 25, 1986, Pat. No. 4,744,533. This application May 13, 1988, Ser. No. 194,042

Int. Cl.⁴ B64G *1/10*

U.S. Cl. 244—159 36 Claims



1. A space station structure assembled in orbit comprising:

a plurality of hollow modules transported into orbit by rocket and joined in spaced relation by panels extending therebetween to form a complete enclosure about a common interior volume, said panels and modules forming the walls of the common enclosure,

said modules forming end walls of the common enclosure and said panels forming adjacent mating side walls of the common enclosure to create a single space station unit having a central area between the joined modules the volume of which approximates or exceeds the sum of the combined volumes of said joined modules.

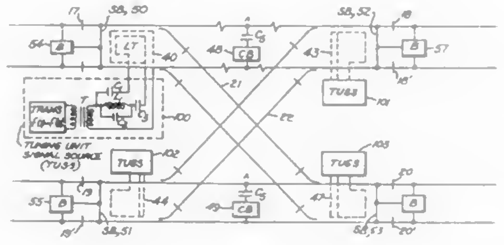
4,878,638
COMBINATION FREQUENCY LOOP COUPLING FOR RAILWAY TRACK SIGNALLING

James R. Hoelscher; Klaus H. Frielinghaus, both of Rochester; Frank A. Raso, Spencerport, and Barry L. Smith, Rochester, all of N.Y., assignors to General Signal Corporation, Stamford, Conn.

Filed Jan. 12, 1987, Ser. No. 2,369

Int. Cl.⁴ B61L *21/00*

U.S. Cl. 246—34 CT 18 Claims



1. In a track circuit system using a coupling loop for coupling AC signals to the rails, the improvement comprising a source of signals of different frequency respectively suitable for train detection and train signalling purposes, and coupling means tunable to said different frequencies and having circuits for independently transmitting said different frequency signals in non-interferring relationship, said coupling means interconnecting said source and said loop, said loop having a plurality of turns and presents an inductance LT, and said tunable coupling means comprising a pair of circuits connected in parallel with each other to said loop, and one of which transmits one of said frequencies and the other transmits another of said frequences while blocking said one frequency.

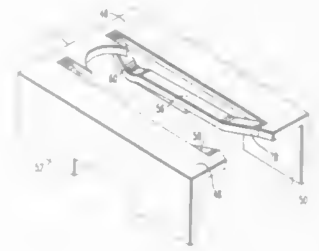
4,878,639
MOUNTING BRACKET FOR A CONDUCTOR OF ELECTRICAL APPARATUS

Dale A. Tempco, Jefferson City, Mo., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Nov. 27, 1987, Ser. No. 129,219

Int. Cl.⁴ F16L *3/08*

U.S. Cl. 248—73 2 Claims



1. A mounting bracket for use in an electrical apparatus having a terminal bushing to which an electrical cable is detachably connected and having a plug assembly including a base and an insulating plug in which the cable is inserted when removed from the bushing during maintenance, the plug being supported on the base by a bolt having a shaft and a bolt head spaced from the base, a bracket on the apparatus for detachably mounting the plug assembly, the bracket including a plate of sheet material and having a slot extending from one end and dividing the plate into a pair of spaced planar portions, each portion including an inclined runner along each of the opposite sides of the slot, each runner being similarly offset from the plane of the plate and tapered from said one end, whereby the plug assembly is releasably, slidably mounted on the bracket by moving the bolt shaft along the slot from said open end with the bolt head sliding along the adjacent inclined runner so as to slide the base into tight-fitting engagement with the spaced plate portions, and the inclined runner comprising a portion of greater inclination than the runner portion nearer said open end of the slot so as to prevent loosening of the plug assembly due to tolerance variations of assembly parts.

4,878,640
TOOTHED ANCHORING RAIL

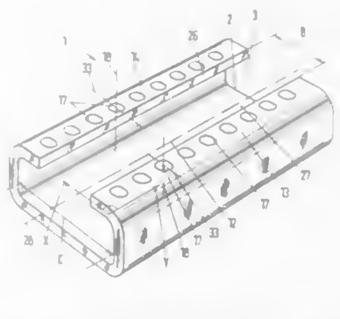
Siegfried Fricker, Str. 30-34, 7135 Wiernsheim, and Klaus Eröhlich, Pforzheim, both of Fed. Rep. of Germany, assignors to Siegfried Fricker, Wiernsheim, Fed. Rep. of Germany

Filed Jan. 21, 1988, Ser. No. 146,515

Claims priority, application Fed. Rep. of Germany, Jan. 21, 1987, 3701530

Int. Cl.⁴ E04B *1/41*

U.S. Cl. 248—297.2 4 Claims



1. An anchoring rail for use with a mounting element and having a substantially rectangular hollow shape in cross section at right angles to a longitudinal axis of the anchoring rail and one side of the anchoring rail having arm edges defining a

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longitudinal slot of which a width is smaller than the width of the hollow shape cross section;

a fastening element inserted in an interior of the hollow anchoring rail and being shiftable in a longitudinal direction of the anchoring rail;

said fastening element including a threaded bolt having a widened head portion of which the width is greater than the width of the longitudinal slot;

a latching plate arranged and associated with the fastening element;

said latching plate having a width which is equally as large as the width of said longitudinal slot and on a side of said widened head toward a threaded shaft of said fastening element at oppositely located narrow sides of said widened head respectively said widened head portion having engagement surfaces in the form of recessed shoulders offset in level as to said latching plate and on opposite sides of said latching plate, which engagement surfaces lie deeper than said latching plate;

said engagement surfaces being located in the same plane and lying in an engagement position of the fastening element on an inner surface of said anchoring rail arm edges;

said engagement surfaces having multiple pins arranged at right angles to each engagement surface and projecting in a same direction as said threaded shaft and located in the longitudinal direction of the anchoring rail and arranged respectively in two rows located opposite to each other;

a row of holes closed in a peripheral/circumferential direction in both said arm edges of said anchoring rail and in longitudinal spacing similar to that of said pins, each of said holes having axes at right angles to the arm edges;

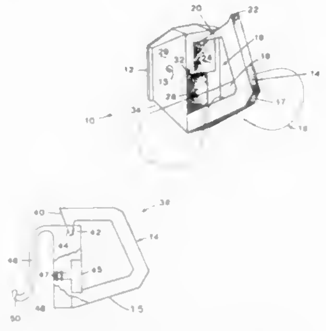
said pins engaging positively in the holes in the engagement position of said fastening element; and

said latching plate being located in said latter position in the longitudinal slot in such a manner that said latching plate bridges spacing between said arm edges of said anchoring rail.

4,878,641

EYEWEAR HOLDER

Paul A. Vogt, 1058 Ottawa Ave., West St. Paul, Minn. 55118
Filed Jun. 27, 1988, Ser. No. 211,999
Int. Cl.⁴ A47F *5/00*
U.S. Cl. 248—309.1 9 Claims



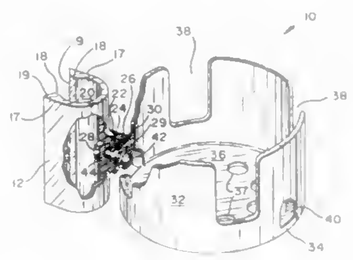
1. Eyewear storage apparatus comprising:

a body member including a fastener portion mountable to a support surface and a resilient eyewear restraint portion integrally molded with said body member and having a distal end projecting outward relative to said body member to define an eyewear receiving space therebetween, wherein said body member in the region of said eyewear receiving space includes an inwardly extending recess and a plug member detachably mounting to said recess, and wherein said restraint portion is resiliently biased to upon deflection release eyewear contained in the space between said restraint member and body member.

4,878,642

OBJECT SUPPORT FOR ATTACHMENT TO A CYLINDRICALLY SHAPED SUPPORT MEMBER

Emery L. Kirby, Jr., 4052 Antiem St., San Diego, Calif. 92111
Filed Jun. 11, 1986, Ser. No. 872,858
Int. Cl.⁴ A47K *1/08*
U.S. Cl. 248—311.2 8 Claims



1. An object holder removably attachable to a cylindrical support member comprising:

an upstanding container open at both ends;

a first attachment member carried by said upstanding container and extending substantially perpendicular thereto;

a resilient clamp member having a central bore and an open side wall;

a second attachment member carried by said resilient clamp member and extending substantially perpendicular thereto; and

connecting means selectively length adjustable for locking said first and second attachment members when adjusted to one length and for selective relative rotation therebetween when adjusted to a longer length,

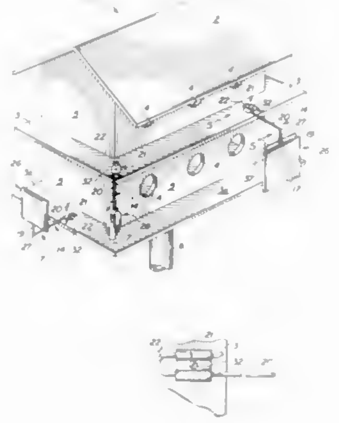
wherein the open side of said resilient member can be forced over said cylindrical support member of a slightly larger diameter than said bore for attachment thereto and said first and second attachment surfaces are rotatably positionable relative to each other and lockable in any selected rotational position by adjusting the length of said connecting means.

4,878,643

WIDE ANGLE MIRROR FOR BIRDHOUSES

Jim E. Stinson, 9508 Wesso Circle, Shreveport, La. 71118
Continuation-in-part of Ser. No. 228,502, Aug. 5, 1988. This application Mar. 6, 1989, Ser. No. 319,299
Int. Cl.⁴ G08B *15/00*
U.S. Cl. 248—475.1 8 Claims

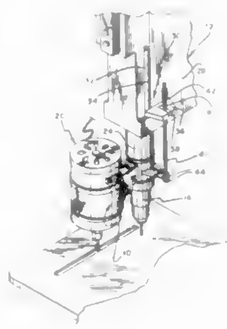
1. A wide angle mirror for reducing the incidence of undesirable, image-sensitive birds nesting in a birdhouse, comprising at least one convex mirror, frame means supporting said convex mirror, an elongated roof having a U-shaped mount leg loop provided in one end, a double-S-shaped bracket adapted to engage said U-shaped mount leg loop provided in said one end of said elongated rod and secure said one end of said elongated rod to the birdhouse, with the opposite end of said elongated rod attached to said frame means, said convex mirror having at least one convex image-reflecting surface of selected curvature, whereby when the image-sensitive birds view reflected images of themselves in said convex image-reflecting surface, the image-sensitive birds are frightened from the birdhouse.



4,878,644

ROUTER BRACKET

Charles Downing, R.R. 1, Box 13, Sedan, Kans. 67361
Filed May 20, 1988, Ser. No. 196,678
Int. Cl.⁴ F16M *13/00*
U.S. Cl. 248—674 2 Claims

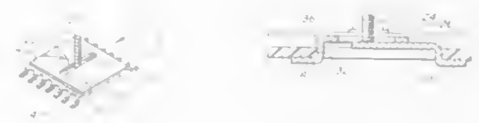


1. A router bracket comprising a first cylindrical ring means having a first cylindrical structure terminating in a pair of first flanges spaced with respect to each other; a bridge member means bound to said first cylindrical ring; a second cylindrical ring means having a second cylindrical structure terminating in a pair of second flanges spaced with respect to each other; and a lug means gauge means; said lug means has a structure defining a lug aperture for receiving therethrough a depth gauge means; said first cylindrical ring means has a first diameter, and each of said first flanges has a first flange aperture; and a nut-bolt means passing through said first flange aperture of each of said first flanges for compressing together the first cylindrical structure to decrease the first diameter; second cylindrical ring means has a second diameter, and each of said second flanges has second flange aperture; and a second bolt means passing through said second flange aperture of each of said second flanges for compressing together of each of said second flanges for compressing together the second cylindrical structure to decrease the second diameter; said first flanges and said second flanges are generally diametrically opposed to said bridge member means; said bridge member means has a bridge structure tapering from the first cylindrical ring means towards said second cylindrical ring means such that the bridge member has a thickness greater at the point where the first cylindrical ring means bounds to the bridge member means than at the point where the second cylindrical ring means bounds to the bridge member means; said first cylindrical ring means has a first length and said second cylindrical ring means has a second length, and said first cylindrical ring means has a second length, and said first length is greater than said second length; said first diameter is greater than said second diameter; said lug means tapers outwardly such that the lug means has a thickness greater at the point of bounding with the second cylindrical means than at an extremity point not secured to any structure; said lug aperture is in close proximity to said extremity point not secured to any structure; said first cylindrical structure is hollow with a first upper general circular flanged perimeter and with a first lower general circular flanged perimeter, said first upper flanged perimeter and said first lower flanged perimeter respectively extend away from the first cylindrical structure; said second cylindrical structure is hollow with a second upper general circular flanged perimeter and with a second lower flanged perimeter, said second upper flanged perimeter and said second lower flanged perimeter respectively extend away from the second cylindrical structure; said bridge member means is connected to said first cylindrical structure between said first upper flanged perimeter and said first lower flanged perimeter and is connected to said second cylindrical structure between said second upper flanged connector and said second lower flanged perimeter; and additionally comprising a depth gauge means engaged within said lug aperture.

4,878,645

APPLIANCE RETAINING ADAPTOR

Edward L. O'Neill, San Leandro, Calif., assignor to Lucasey Manufacturing Company, Inc., Oakland, Calif.
Filed Ang. 23, 1988, Ser. No. 235,271
Int. Cl.⁴ A47B *97/00*
U.S. Cl. 248—680 5 Claims



1. An apparatus for mounting an appliance to a support, said appliance having a housing with a plurality of aligned apertures, said apparatus comprising:

a. first and second carrier plates, each said plate having at least one engaging member offset and extending from said plate terminating on a plane substantially parallel to said plate, said engaging members accommodating a variety of configurations of aligned apertures of said housing and having a size to permit receipt within selected apertures of said housing;
b. means for laterally displacing said first and second carrier plates to vary the spacing between their respective engaging members;
c. means for holding said first and second carrier plates in fixed position to maintain said engaging members in a desired spaced relationship within said selected apertures; and
d. means for attaching said first and second carrier plates to said support.

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4,878,646

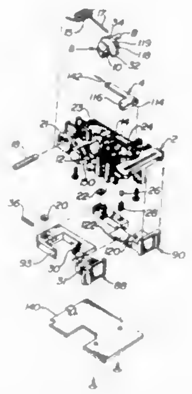
PINCH VALVE MECHANISM FOR A PARENTERAL INFUSION SYSTEM

Howard Edelman, San Francisco, and Carl Ritson, San Jose, both of Calif., assignors to Critkon, Inc., Tampa, Fla.

Filed Aug. 15, 1988, Ser. No. 231,920

Int. Cl.^{4} F16L *55/14*

U.S. Cl. 251—9 11 Claims



1. A pinch valve mechanism for a parenteral infusion system comprising:

a spring-loaded pinch valve;

means for latching said pinch valve to an open condition, whereby the energy of said spring of said pinch valve is stored;

means, connected to said latching means, for unlatching said pinch valve and releasing said energy of said spring, including a length of wire which contracts upon application of a current; and

means for applying a current to said wire,

whereby the application of current to said wire by said current applying means causes said wire to contract and unlatch said pinch valve.

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PNEUMATIC IMPULSE VALVE AND SEPARATION SYSTEM

James C. Putt, and Robert N. Hohenshil, both of Doylestown, Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio

Filed Sep. 2, 1988, Ser. No. 240,030

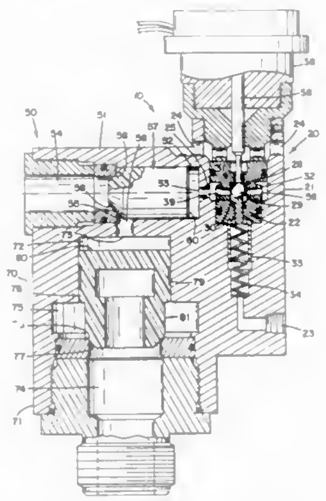
Int. Cl.^{4} F16K *31/40;* **B64D** *5/16*

U.S. Cl. 251—30.05 22 Claims

1. A valve comprising pilot, intermediate and output sections,

the pilot section including a pilot housing containing a pilot cavity, inlet conduit means extending from the exterior of the pilot housing to the pilot cavity, exhaust conduit means extending from the pilot cavity to the exterior of the pilot housing, and intermediate conduit means extending from the pilot cavity to said intermediate section, gate means configured for movement from a load position during which the inlet conduit means is in fluid communication with said intermediate conduit means and a dump position during which the exhaust conduit means is in fluid communication with said intermediate conduit means while said inlet conduit means is disconnected from said intermediate conduit means;

the intermediate section including an intermediate housing containing an intermediate cavity having an inlet port in fluid communication with said intermediate conduit means, an exhaust vent, and an outlet port in fluid communication with output conduit means, the outlet port being proximate to the exhaust vent, and a poppet contained within said intermediate cavity configured for movement from a load position during which fluid under pressure may enter the intermediate cavity and force the poppet to seal off movement of fluid into the exhaust vent while permitting flow of fluid to the outlet port and a dump position during which fluid under pressure may flow from said output conduit means to said vent; the output section including an output housing containing an output cavity having an inlet orifice in fluid communication with said output conduit means, an outlet and accumulation means having an opening to said output cavity proximate to said outlet, and a Piston contained within said output cavity configured for movement from a load position during which fluid under pressure may enter the output cavity through said inlet orifice and force the piston to seal off movement of fluid into the outlet while permitting flow of fluid into the accumulation means, and a dump position during which fluid under pressure may flow from said accumulation means to said outlet.



4,878,648

INSERT VALVE

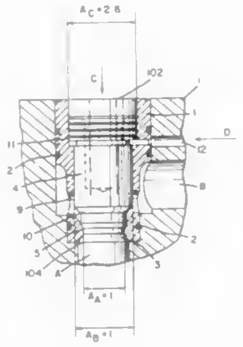
Herbert Strassheimer, Wehrheim, Fed. Rep. of Germany, assignor to Paul Pleiger Maschinenfabrik GmbH & Co., Fed. Rep. of Germany

Continuation of Ser. No. 114,905, Oct. 29, 1987, abandoned. This application Mar. 15, 1989, Ser. No. 323,265

Claims priority, application Fed. Rep. of Germany, Oct. 29, 1986, 3636835

Int. Cl.^{4} F16K *31/122*

U.S. Cl. 251—63 5 Claims



1. A removable insert valve reciprocally operable for controlling fluid flow in both directions between spaced-apart fluid conducting ports, comprising:

(a) a housing free of springs and having a longitudinally extending passageway;

(b) a valve seat having a beveled sealing surface carried by said housing;

(c) a piston movably mounted for reciprocation in said passageway to and from said seat, said piston having a beveled first surface positioned to directly contact said beveled sealing surface, said piston being free of O-rings or other means of providing a seal except said beveled first surface;

(d) means including one of said ports for applying fluid under pressure endwise against a first endwise surface on said piston to move said piston in a direction away from said seat;

(e) the other of said ports being laterally oriented for sidewise communication of pressure through said housing to said piston;

(f) said piston having a beveled second surface spaced from said beveled first surface and communicating with said sidewise oriented port when said piston is seated on said seat, to move said piston in a direction away from said seat in response to pressure from said sidewise oriented port;

(g) means providing a first control pressure port communicating with said piston for applying fluid under pressure against a second endwise surface on said piston in a direction to move said piston toward and into direct sealing contact with said seat;

(h) means providing a second control pressure port communicating with said piston to move said piston away from said seat;

(i) said piston having a third surface spaced from said first and second surfaces and communicating with said second control pressure port when said piston is seated on said seat, to move said piston in a direction away from said seat in response to pressure from said second control port; and

(j) control means for selectively applying pressure to said first and second control pressure ports for external control of piston movement.

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THROTTLE DEVICE FOR HIGH VISCOSITY PAINT

Youichiro Baba; Hirofumi Hashimoto, both of Toyota, and Masayuki Watanabe, Aichi, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Jul. 15, 1988, Ser. No. 219,402

Claims priority, application Japan, Jul. 24, 1987, 62-183702

Int. Cl.^{4} B05B *9/00;* **F15D** *1/10;* **F16K** *47/06*

U.S. Cl. 251—121 12 Claims

1. A throttle device for applying back pressure to a high viscosity paint in an airless paint supply system having a paint supply pump for supplying paint to a paint spray gun and through the throttling device, said throttling device, comprising:

a tubular member having an inlet and outlet adjacent opposite ends and an inner surface defining a cylindrical through hole of uniform diameter extending axially between the inlet and outlet;

an elongated core member having a uniform outer cylindrical surface concentrically disposed in the through hole and extending substantially throughout the length of the tubular member;

support means mounting the core member in said concentric disposition;

the cylindrical surface of the core member and the inner surface of the tubular member being diametrically dimensioned to define an annular passage between the inner surface of the tubular member and outer surface of the core member having an annulus of at least 1.5 millimeters in radial dimension to permit a flow of paint therethrough while maintaining a selected loss of pressure at the paint spray gun; and

the ratio of the axial length of the annular passage and the radial dimension of the annulus being selected in accordance with the selected loss of pressure at the paint spray gun.

4,878,650

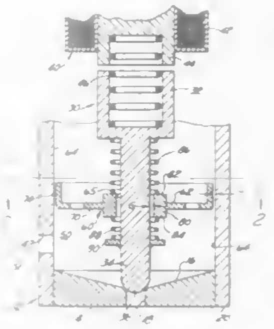
ARMATURE WITH SHEAR STRESS DAMPER

Paul D. Daly, Troy; Mark A. Brooks, Sterling Heights; Robert E. Fallis, Milford, and Mark S. Cerny, Sterling Heights, all of Mich., assignors to Allied-Signal Inc., Morris Township, Morris County, N.J.

Filed Apr. 29, 1988, Ser. No. 188,250

Int. Cl.^{4} F16K *31/06*

U.S. Cl. 251—129.15 25 Claims



1. An electro-mechanical fuel injector comprising:

a housing and valve seat including a valve seating surface and a metering orifice;

an armature assembly movable relative to the valve seating surface for opening and closing, the metering orifice, including an armature adapted to engage the seating surface;

means for moving the armature assembly comprising:

a coil assembly comprising a coil and a stator magnetically coupled therewith, and when activated operative to move the armature assembly in a direction to open the metering orifice;

and bias means for urging the armature assembly in a direction to close the metering orifice;

a fluid chamber, including a wall, defined upstream of the metering orifice, in surrounding relation to a portion of the armature assembly;

means, resiliently coupled with the armature assembly, within the fluid chamber, including an element spaced from the wall of the fluid chamber for generating a viscous shear force therebetween and in concert with resilient means for preventing the bounce or rebound of the armature;

means for resiliently supporting the element relative to the armature means.

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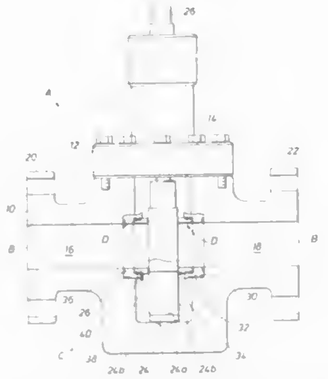
4,878,651
VALVE SEAT ASSEMBLY

Frank W. Meyer, Jr., Montgomery, Tex., assignor to Worldwide Oilfield Machine, Inc., Houston, Tex.

Continuation of Ser. No. 172,436, Mar. 24, 1988, abandoned. This application Apr. 14, 1989, Ser. No. 338,504

Int. Cl.⁴ F16K *1/42*

U.S. Cl. 251—172 **3 Claims**



1. In a through conduit gate valve structure having a valve body defining a valve chamber and inlet and outlet flow passages communicating with the valve chamber, a gate valve member having a port therein mounted within the valve chamber for reciprocal movement between open and closed positions relative to said flow passages, and an annular body pocket at the juncture of each flow passage with the valve chamber with each pocket defining a rear annular shoulder and an outer peripheral surface at right angles to said rear shoulder;

an improved seat assembly mounted in each of said body pockets to provide upstream and downstream seat assemblies; each improved seat assembly comprising:

an outer generally L-shaped seat retaining ring positioned within an associated body pocket in opposed contacting relation to said rear annular shoulder and outer peripheral surface of said body pocket;

said L-shaped retaining ring having an annular shoulder and outer peripheral surface to form a seat pocket therein;

an inner floating seat ring fitting within the seat pocket of said L-shaped outer retaining ring adjacent said annular shoulder and outer peripheral surface thereof, said outer L-shaped seat retaining ring and said inner floating seat ring having annular inner peripheral surfaces of the same diameter as said flow passages and forming a smooth continuation thereof;

said L-shaped retaining ring having a rear face positioned in metal-to-metal contact relation with said annular shoulder of said body pocket and an annular groove in said rear face;

a first O-ring received in said annular groove and maintaining sealing relation between said rear face and said annular shoulder of said body pocket under all conditions of operation of said gate valve structure and blocking fluid flow between the body pocket and retaining ring;

said inner floating seat ring being of a generally rectangular cross-section having a front face engaging the gate valve member in sealing relation, a rear face adjacent the annular shoulder of the seat pocket of said L-shaped retaining ring, and an outer peripheral surface with an annular groove therein;

a second O-ring received within the annular groove of said floating seat ring for sealing between the outer peripheral surface of said seat ring and said outer peripheral surface of the seat pocket of said seat retaining ring;

said floating seat ring upon fluid pressure in the adjacent flow passage exceeding the body chamber fluid pressure a predetermined amount moving in a direction toward the gate valve member relative to said L-shaped seat retaining ring for maintaining a tight sealing relation with said gate valve member, said floating seat ring upon fluid pressure in said valve body chamber exceeding the adjacent flow passage pressure a predetermined amount moving out of sealing contact with said gate valve member to permit leakage of fluid from the body chamber into the adjacent flow passage;

the maximum axial spacing between said floating seat ring and said retaining ring being less than the expanded diameter of said first O-ring between the opposed shoulders of said retaining ring and said body pocket thereby to maintain sealing relation between said retaining ring and said body pocket under all conditions of operation for blocking flow of lading from the adjacent flow passage to the outer peripheral surface of said body pocket and the outer peripheral surface of said seat retaining ring.

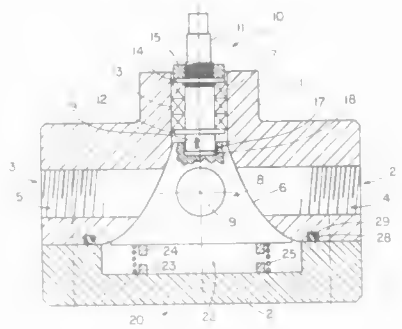
4,878,652
PLUG VALVE

John J. Wordin, Shelley, Id., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed May 9, 1986, Ser. No. 861,383

Int. Cl.⁴ F16K *25/00, 5/00*

U.S. Cl. 251—181 **4 Claims**



1. An improved plug valve including a valve body having an inlet passage and an outlet passage therethrough, a valve chamber between said inlet and outlet passages, a valve plug having substantially the same shape as said valve chamber and being rotatably disposed therein, said valve plug having a flow passage therethrough, said flow passage disposed such that with said valve plug in a first position, said flow passage is in alignment with said inlet and said outlet passages and provides fluid communication therebetween, and with said valve plug in a second position, said flow passage is not in alignment with said inlet and outlet passages and said valve plug interrupts fluid communication therebetween; and means for rotating said valve plug between said first position and said second position; wherein the improvement comprises:

said valve plug and said valve chamber having the shape of a pseudosphere.

4,878,653
APPARATUS AND METHOD FOR PRE-WIRE ROUTING FOR BUILDINGS

James B. Brown, 17992 Milan Pl., Aurora, Colo. 80155

Filed Mar. 15, 1988, Ser. No. 168,270

Int. Cl.⁴ B65H *59/00*

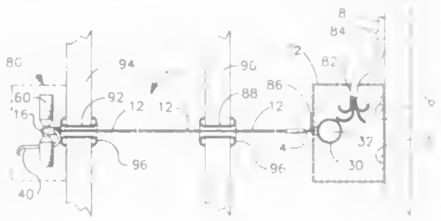
U.S. Cl. 254—134.3 FT **19 Claims**

1. Apparatus adapted for pre-wire routing a building during construction whereby an electrical wire, cable or the like may be drawn along a pathway between first and second terminal locations in a wall portion of the building, comprising:

a strand of flexible material having a selected diameter, a leading end and a trailing end;

an enlarged tail element connected to said strand at the trailing end thereof;

an enlarged head element; and



fastening means having a leader formed of stiff, resilient material attached to said strand at the leading end thereof for selectably connecting said enlarged head element to the leading end of said strand.

4,878,654
METHOD FOR COOLING GASES AND/OR VAPORS FROM NON-FERROUS METAL TREATMENT PLANTS, AND THE RELATIVE APPARATUS

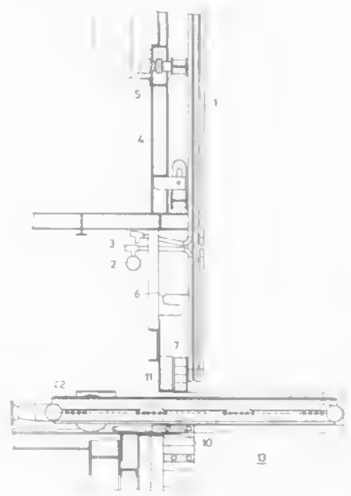
Antonio Carminati, Milan, and Andrea Perillo, Rome, both of Italy, assignors to Snamprogetti S.p.A., Milan, Italy

Filed Sep. 2, 1987, Ser. No. 95,003

Claims priority, application Italy, Sep. 2, 1986, 21566 A/86

Int. Cl.⁴ F22D *1/04*

U.S. Cl. 266—159 **11 Claims**



1. An apparatus for cooling offgas which is produced in non-ferrous metal treatment plants and recovering the heat from said offgas which comprises:

a roasting chamber in which the non-ferrous ore treatment is carried out,

an offgas heat recovery chamber disposed above said roasting chamber and having a cross section substantially equal to the upper part of said roasting chamber, said offgas heat recovery chamber comprising a plurality of vertically positioned tubes with surfaces disposed side-by-side in intimate mutual contact to define a cooling shaft structure through which high temperature offgases flow to be cooled,

a vertical metal support structure disposed adjacent to or adhering to said cooling shaft structure, said support structure terminating at a lower end thereof in a fixed ledge which supports a wall composed of one or more courses of refractory bricks which protect said lower end of said metal structure from said high temperature offgases,

header means for introducing pressurized water into said vertically positioned tubes,

means for recovering heated water or steam from said tubes, and

percussion means for engaging with said tubes for shaking-off impurities which deposit on said tube surfaces whereby because said offgas heat recovery chamber is disposed above said roasting chamber, the impurities which are loosened from the tube surfaces caused by the percussion means fall back into the roasting chamber.

4,878,655
FURNACE CHARGING THROAT CONSTRUCTION

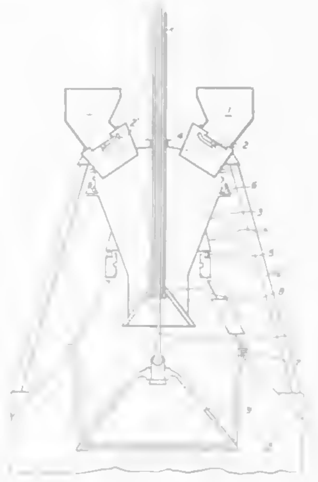
Bernhard Henneken, Oberhausen; Bruno Kämmerling, Dinslaken; Eckhard-K. Scholz, Bottrop; Wolfgang Schröder, Oberhausen, and Hans Krause, Moers, all of Fed. Rep. of Germany, assignors to Man Gutehoffnungshuette, GmbH, Fed. Rep. of Germany

Filed Sep. 24, 1987, Ser. No. 100,526

Claims priority, application Fed. Rep. of Germany, Sep. 26, 1986, 3632724

Int. Cl.⁴ C21B *7/18*

U.S. Cl. 266—184 **5 Claims**



1. A furnace charging double-sluice throat stopper construction comprising a stationary hood, an upper sluice hoppr rotatably mounted below and sealable with said hood, drive meanns connected to said upper sluice hopper for rotating said upper sluice hopper around a substantially vertical axis below said hood, at least one charging chute mounted on said hood and opening into said hood and having a lower end entering into said hood with at least one charging flap valve, and means for pressure-sealing said upper sluice hopper in respect to said hood and a lower sluice hopper arranged for charging by said upper sluice hopper

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4,878,656
SHEET FINISHER

Takeshi Honjo, Kawasaki, and Akimaro Yoshida, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 21, 1988, Ser. No. 171,484

Claims priority, application Japan, Mar. 20, 1987, 62-67487; Mar. 20, 1987, 62-67488; Mar. 20, 1987, 62-67489; Mar. 20, 1987, 62-67490

Int. Cl.⁴ B42B *1/02*

U.S. Cl. 270—53 **21 Claims**

1. A sheet finishing apparatus, comprising:

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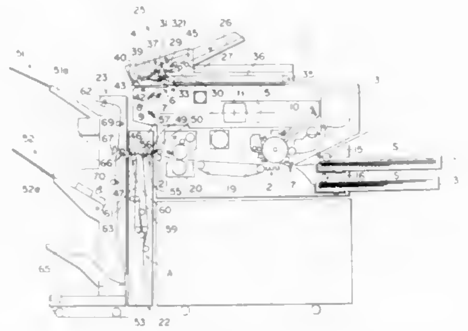
- stacking means for receiving and stacking plural sheets sequentially discharged;
- stapling means for acting on a stack of the sheets stacked on said stacking means at a predetermined position of the stack to staple it;
- discharging means for discharging from said stacking means the sheets stapled by said stapling means;
- an inlet for allowing manual insertion of sheets to said stacking means;



- manually operable means for said stapling means; and
- automatic control means for actuating said stapling means when a preset number of the sheets are stacked on said stacking means, for actuating said discharging means when a stapling operation is completed, for actuating said stapling means in response to said manually operable means, and for not actuating said discharging means even when the stapling operation responsive to said manual means is completed.

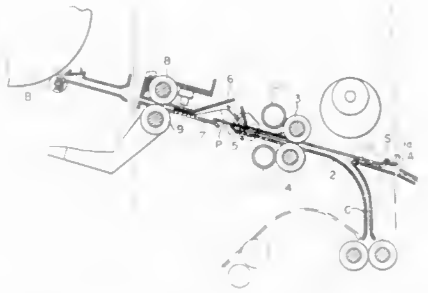
4,878,657
SHEET CONVEYANCE APPARATUS
Hiroaki Ura, and Takao Shiozawa, both of Hachioji, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Dec. 21, 1987, Ser. No. 135,435

Claims priority, application Japan, Dec. 24, 1986, 61-310034; Dec. 24, 1986, 61-201993; Dec. 24, 1986, 61-201995; Dec. 24, 1986, 61-201997; Jan. 20, 1987, 62-11164

Int. Cl.⁴ B65H *3/44, 5/26, 9/04;* G03G *21/00*

U.S. Cl. 271—9 11 Claims



1. A sheet conveyance apparatus for a copy machine having a movable photoreceptor for forming a toner image thereon, comprising:

- a sheet feed section including
  - a plurality of tray accommodation means for respectively accommodating a sheet tray containing a stack of sheets, and
  - a plurality of feed means associated, respectively, with said plurality of tray accommodation means for feeding a sheet to a sheet conveyance section, and
- said sheet conveyance section including
  - guide means for forming a sheet conveyance passage common to said plurality of feed means,
  - conveyance means disposed along said sheet conveyance passage for transporting to a registration means the sheet fed from said feed means,
  - said registration means being disposed along said sheet conveyance passage for initially blocking movement of the sheet transported from said conveyance means along the sheet passage, and a selected time interval after the fed sheet reaches the registration means, conveying the blocked sheet to said photoreceptor so that the toner image is transferred onto the sheet, and
  - said guide means having a loop-forming means between said conveyance means and said registration means for forming a loop in the fed sheet as it is transported by said conveyance means and blocked as its forward end by said registration means;
- wherein said sheet conveyance section is formed as one unit and is capable of being adjusted to be located a selected position in relation to said photoreceptor independently from said sheet feed section.

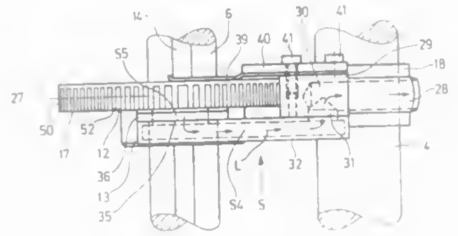
4,878,658
SHEET DELIVERY DEVICE IN A PRINTING MACHINE
Gerhard Pollich, Heidleberg, Fed. Rep. of Germany, assignor to Heidelberger Druckmaschinen AG, Heidelberg, Fed. Rep. of Germany

Filed Oct. 11, 1985, Ser. No. 786,850

Claims priority, application Fed. Rep. of Germany, Oct. 13, 1984, 3437584

Int. Cl.⁴ B65H *29/68*

U.S. Cl. 271—183 14 Claims



1. In a printing machine, a sheet delivery device having pneumatic braking devices of substantially bipartite construction on a chain delivery arragned as rotating brake rollers on a traverse extending beneath the chain delivery transversely to a sheet conveying direction through the printing machine and upstream of a sheet pile, as viewed in the sheet conveying direction, for braking and tightening a sheet exiting from the printing machine, comprising separate suction units with suction air feeding devices operatively associated with the brake rollers for feeding suction air to lateral faces of the brake rollers, at least one of said suction units being selectively associated operatively with at least one lateral face of each of the brake rollers, each of the brake rollers having a sheet-carrying peripheral surface formed with a multiplicity or recesses extending transversley to the sheet conveying direction and distributed adjacent one another over the periphery of the respective brake roller and extending over a region of the width of the respective brake roller, said recesses forming respective breaks in at least one lateral edge of said sheet-carrying peripheral surface and being disposed in a radially outer region of said one lateral face of the respective brake roller, said suction units being formed with lateral air outlet openings located at a respective radially outer segment region of said one lateral face of the respective brake roller.

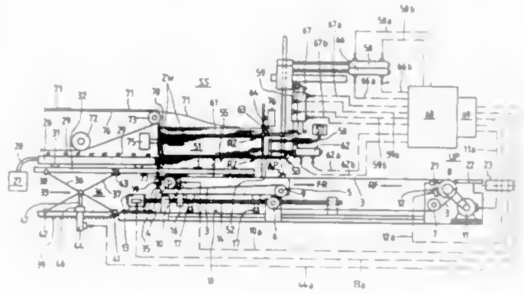
4,878,659
METHOD OF AND APPARATUS FOR GATHERING AND MANIPULATING STACKS OF PAPER SHEETS AND THE LIKE
Alfred Besemann, Hamburg, Fed. Rep. of Germany, assignor to E.C.H. Will GmbH, Hamburg, Fed. Rep. of Germany

Filed Dec. 10, 1987, Ser. No. 131,369

Claims priority, application Fed. Rep. of Germany, Dec. 11, 1986, 3642259

Int. Cl.⁴ B65H *31/12*

U.S. Cl. 271—218 37 Claims



1. A method of accumulating and manipulating stacks of sheets, comprising the steps of gathering sheets into a series of stacks at a first station, including feeding sheets into the first station from above to form a first growing stack and a second growing stack on top of the first stack when the latter is fully grown; and advancing successive stacks of the series from the first to a second station, including supporting successive stacks from below, holding successive stacks from above, at least during the initial stage of advancement from the first station, said holding step including engaging the upper side of the fully grown first stack by a first jaw to thus separate the fully grown first stack from the growing second stack thereabove, engaging the second stack when fully grown from above by a second jaw, and lowering the second stack and the second jaw upon completed removal of the first stack from the first station.

4,878,660
SORTER
Yoichiro Irie, Suita, Japan, assignor to Mita Industrial Co., Ltd., Osaka, Japan

Filed Jul. 22, 1988, Ser. No. 222,781

Claims priority, application Japan, Jul. 28, 1987, 62-186694; Aug. 12, 1987, 62-199894; Sep. 17, 1987, 62-231031

Int. Cl.⁴ B65H *39/11*

U.S. Cl. 271—293 6 Claims

1. A sorter provided with a plurality of vertically arranged bin trays, the bin trays respectively having a widthwise projecting trunnion in at least one side thereof, the trunnions being vertically stacked and being movable in the stacking direction along a predetermined moving passage, and a transfer mechanism for elevating and lowering the trunnions successively one by one through the predetermined transfer passage and spacing adjacent bin trays from each other vertically at their sheet receiving ends to form a sheet receiving opening between them; wherein

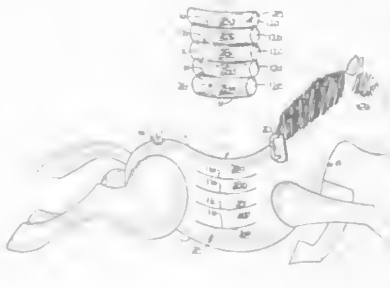
- the transfer mechanism includes a pair of cooperating rotating cam plates and a rotating means,
- each of the rotating cam plates has at least one trunnion receiving groove extending radially and being open at its radially outside end and an outer circumferential cam surface extending continuously in the circumferential direction excepting a site corresponding to the trunnion receiving groove, and the outer circumferential cam surface is a convoluted surface whose radius increases progressively in a given rotating direction,
- the pair of rotating cam plates are arranged such that their rotating central axes are positioned on both sides of the predetermined moving passage, a straight line connecting the rotating central axes crosses the predetermined moving passage obliquely, and that they move toward and away from each other in a predetermined rotating angular relation at a part at which the straight line connecting their rotating central axes crosses the predetermined moving passage, and
- the rotating means rotates the pair of rotating cam plates synchronously in opposite directions to each other.

4,878,661
INFLATABLE BULBOUS TOY HAVING A SUBSTANTIALLY NON-BULBOUS CENTER SECTION
Henry S. Wolfe, Gulfport, Fla., assignor to The Frenry Company, Clearwater, Fla.

Continuation-in-part of Ser. No. 927,458, Nov. 6, 1986, abandoned, and a continuation-in-part of Ser. No. 895,263, Aug. 11, 1986, Pat. No. 4,770,408. This application Jul. 6, 1988, Ser. No. 215,629

Int. Cl.⁴ A63G *19/00*

U.S. Cl. 272—52 4 Claims



1 An inflatable ridable toy device of the type formed by welding together sheets of flexible material at their respective peripheral edges comprising:

- a first bulbous portion;
- a second bulbous portion,
- a center section interposed between the first and second bulbous portions having a transverse diameter narrower than the transverse diameter of the first and second bulbous portions;
- the center section being suitable for straddling by a standing child; and
- the center section being formed between the peripheral edges by welding together the sheets along a plurality of at least four vertically spaced apart weld lines each adjacent pair of center section welds creating a longitudinal compartment between the welds, the compartment being open ended and in fluid communication with the first and second bulbous portions.

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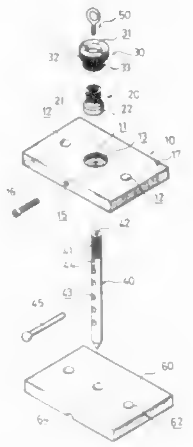
4,878,662
EXERCISE MACHINE WEIGHT GUIDE

Lu-Meng Chern, No. 4, Lane 42, Holi St., Taiping Hsiang, Taichung Hsien, Taiwan
Filed Jan. 24, 1989, Ser. No. 301,040
Int. Cl.^{4} A63B *21/06*
U.S. Cl. 272—118 2 Claims

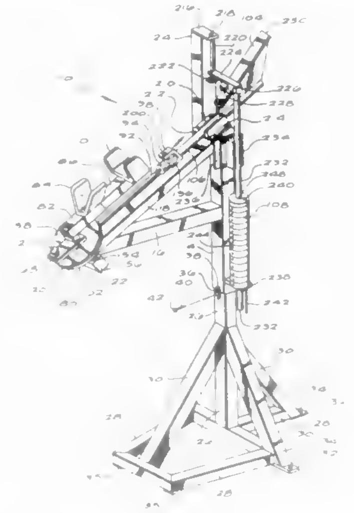


1. An exercise machine weight guide, comprising
an uppermost plate (**10**) having a mounting hole (**11**) and two guide post holes (**12**); said mounting hole (**11**) being stepped with an upper larger threaded hole (**13**) and a lower smaller smooth hole (**14**);
an internally threaded plug (**20**) having a narrower cylindrical end (**21**) and an annular lip (**22**); said annular lip (**22**) having an outer diameter slightly larger than said lower smaller smooth hole (**14**) and smaller than said larger threaded hole (**13**);
a securing plug (**30**) having a stepped central hole (**31**) which is complementary in shape and engageable to said threaded plug (**20**); said securing plug (**30**) consisting of a larger upper section (**32**) and a smaller externally threaded lower section (**33**), said threaded lower section (**33**) being engageable to said upper threaded hole (**13**) of said uppermost plate (**10**);
a weight post (**40**) having a threaded end (**41**) which is threadedly engageable to said internally threaded plug (20) and a centrally axially threaded hole (**42**) for threadedly engaging a threaded screw eye (**50**); said weight post (40) having a plurality of apertures (**43**) evenly spaced lengthwise thereon so that a connector pin (**45**) is slidably insertable therein.

4,878,663
DIRECT DRIVE REHABILITATION AND FITNESS APPARATUS AND METHOD OF CONSTRUCTION

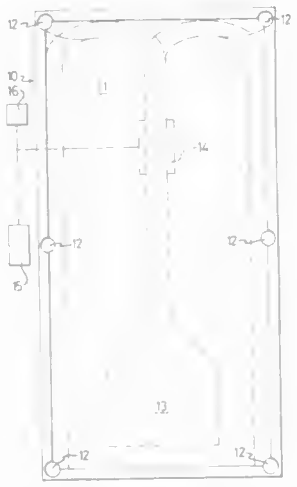
Michael M. Luquette, Lafayette, La., assignor to Innovative Therapeutic Designs, Inc., Oakland, N.J.
Filed Nov. 8, 1988, Ser. No. 268,783
Int. Cl.^{4} 272 *67, 117*
U.S. Cl. 272—134 **29 Claims**

1. A rehabilitation and fitness apparatus comprising, in combination:
means for supporting said apparatus;
an actuator arm mounted to said supporting means, said actuator arm being pivoted for providing rotational motion;
means in communication with said actuator arm for limiting the range of rotational motion of said actuator arm;
direct driving means connected to said range limiting means and a surface for converting said rotational motion of said actuator arm to translational motion of said surface; and
means for resisting the rotational motion of said actuator arm, said resisting means being vertically movable along said surface in relation to the translational motion of said direct driving means, said actuator arm being rotatably operable through opposing patterns of movement for therapeutically exercising opposing muscle groups by adjusting said range limiting means.



4,878,664
POKER POOL GAME

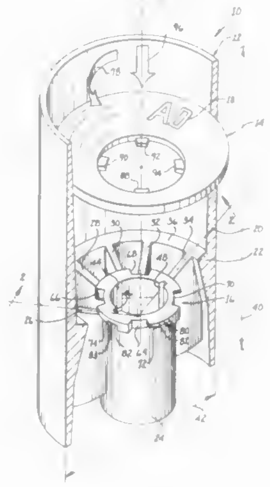
David L. Brookes, Auckland, New Zealand, assignor to Development Finance Corporation, Auckland, New Zealand
Continuation-in-part of Ser. No. 452,729, Dec. 23, 1982, Pat. No. 4,516,770. This application Oct. 24, 1984, Ser. No. 664,365
The portion of the term of this patent subsequent to May 14, 2002, has been disclaimed.
Int. Cl.^{4} A63D *15/00*
U.S. Cl. 273—11 R 2 Claims



1. A table ball game comprising a playing surface and ball traps, electronics detection means associated with one or more of the ball traps, a plurality of visually distinguishable balls having individually distinct electronic identification means associated therewith capable of being detected and individually distinguished from each other by said electronic detection means, said electronic detection means being coupled to scoring means to record the entry of balls into said ball traps, wherein the balls, other than a "cue ball", are marked with numbers or letters, and also with symbols, that correspond to card values in a standard pack of playing cards.

4,878,665
GOLF CUP ADVERTISING DEVICE AND METHOD

Louis H. Boudreau, and Scott R. Ketterer, both of Phoenix, Ariz., assignors to Boudreau/Darque, Inc., St. Louis, Mo.
Filed Dec. 30, 1988, Ser. No. 292,364
Int. Cl.^{4} A63B *57/00*
U.S. Cl. 273—34 R 8 Claims



1. A golf cup advertisement device including:
a golf cup unit having an axis;
an insert disc having an advertisement thereon and disposed coaxially inside the cup unit; and
connection means for connecting the disc to the cup unit, wherein
the connection means comprises:
a tubular member having a cylindrical outer surface with a tapered cam groove and being supported by the cup unit; and
said disc having a radially inner portion with a cylindrical inner surface for receiving the tubular member and having at least one radial prong which is received in the tapered cam groove.

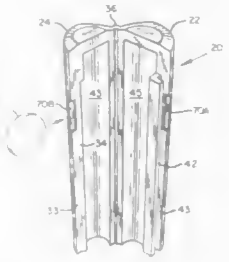
4,878,666
GOLF CLUB

Rokuro Hosoda, 1-29-13, Akatsuka, Itabashi-ku, Tokyo, Japan
Filed Sep. 30, 1988, Ser. No. 252,172
Claims priority, application Japan, Oct. 9, 1987, 62-154086[U]
Int. Cl.^{4} A63B *53/06*
U.S. Cl. 273—79 10 Claims

1. An adjustable golf club having a handle, shaft, and a club head assembly, comprising:
a spline shaft projecting from the lower end of the club shaft;
a sleeve provided at the back of said club head for permitting insertion of said spline shaft, said sleeve including a mouth end;
said spline shaft connected to a spline hole in said sleeve by spline engagement means such that the angle of the club head with respect to the club shaft may be selectively adjusted;
said club head including a club face having at its upper edge a putting surface located in a plane substantially normal to said club face and facing generally the back of the club head;
a slit provided longitudinally along said sleeve at the back of said club head located proximate said mouth end of said sleeve;
said spline shaft further including a tip end projecting from said mouth end engaged with a bush having an inner and outer end, wherein said bush is rotatably mounted about the outer periphery of said spline shaft;
a coil spring inserted in said spline hole of said sleeve between said spline engagement means and said inner end of said bush;
said outer end of said bush attached to said tip end of said spline shaft by means of a bolt head which screws into said tip end of said spline shaft; and
said bush further including a lever abutting against said mouth end of said sleeve to prevent accidental disengagement of said spline engagement means.

4,878,667
REPLACEABLE, REUSABLE GOLF CLUB GRIP

John Tosti, 5727 Buena Vista Dr., Vancouver, Wash. 98661
Filed May 24, 1988, Ser. No. 198,060
Int. Cl.^{4} A63B *53/14*
U.S. Cl. 273—81.2 14 Claims



1. A gold club grip comprising:
a pair of elongate sections substantially equal in length, together defining an interior channel sized for engagingly receiving a golf club shaft, the top end of the shaft being covered by the grip;
hinge means connected to each of the elongate sections for pivotally opening and closing the sections; and
locking means connected to each said sections for releasably securing the sections in mating relation to each other to lock the grip onto the shaft for forming a unitary golf club grip, said locking means including a first flange having an L-shaped cross-section connected along the end of a first one of said sections and extending axially outward away from said interior channel; and a second flange having an L-shaped cross-section connected along a corresponding end of the other one of said sections and extending axially inward toward said interior channel; said first flange and said second flange sized and positioned relative to each other to interlockingly engage each other to releasably secure the sections to each other and form a substantially continuous external surface of the grip.

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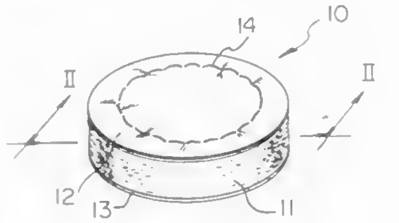
4,878,668
INDOOR HOCKEY PUCK

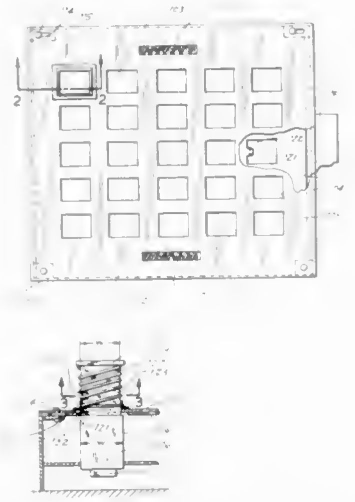
Victor Nevoral, 1189B Baity Avenue, Quesnel, British Columbia, Canada V2J 5G5
Filed Apr. 14, 1987, Ser. No. 38,324
Claims priority, application Canada, Apr. 14, 1986, 506564
Int. Cl.⁴ A63B *71/00*
U.S. Cl. 273—128 R 6 Claims



1. A floor hockey puck in the form of a cylindrical disc having the size and shape of a conventional hockey puck, said puck having an inner relatively thick layer of felt material and two outer relatively thin cylindrical discs of leather material, said inner layer being substantially continuous throughout its volume between said two outer discs, and means connecting each of said outer discs to opposite flat sides of said inner layer.

4,878,669
BINGO CARD MARKER

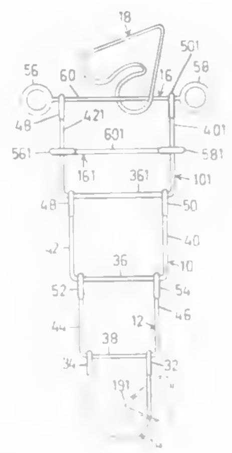
Jaroslav Premysl, 5865 S. 31st St., Milwaukee, Wis. 53221
Filed Feb. 13, 1989, Ser. No. 309,733
Int. Cl.⁴ A63F *3/06;* **B43K** *27/08*
U.S. Cl. 273—148 R 1 Claim



1. Bingo Card Stamping Apparatus comprising:
a. a hollow rectangular base containing a matrix of rectangular holes in the top thereof which are spaced so that they are in alignment with the locations on a bingo card, the length and width of said holes being any convenient size;
b. a rectangular plate which is affixed to the inside of the hollow rectangular base by any suitable means and is in parallel alignment with the top of the base, the distance between the top of the base and the plate being determined by convenience, said plate containing a matrix of holes which are also in alignment with the locations on a bingo card and are slightly wider and longer than the holes in the base;
c. a rectangular set-reset plate which is in parallel arrangement with and slidably attached to the inside of the top of the base by any convenient means, said set-reset plate having a matrix of rectangular U-shaped holes, the open end of the U being formed by a tab of any convenient shape, which extends into the otherwise rectangular holes on the left side, the length of said holes being slightly greater than the length of the tab plus the length of the holes in the top of the base and the width of said holes being the same as the width of the holes in the base, the set-reset plate having an extension on the right side which provides the means for moving the set-reset plate to the left;
d. spring means attached on one end to the set-reset plate and on the other end to the top of the base for urging the set-reset plate to the right;
e. a plurality of buttons having an upper barrel and a lower barrel, the dimensions of the transverse cross section of the upper barrel of the button being slightly less than the dimensions of the holes in the top of the base so that the upper barrel may slidably pass therethrough, the dimensions of the cross-section of the lower barrel of the button being slightly less than the dimensions of the holes in the rectangular plate so that the lower barrel may slidably pass therethrough, each button having a left side and a right side, the left side of the upper barrel of each button containing a notch which is slightly larger than the tab which projects into the holes in the set-reset plate and which may engage said tab thereby locking a button in a downward position, a ramp on the left side of the upper barrel of each button which may contact the tab and cause the tab to flex in a downward direction in response to downward movement of a button until the tab falls into said notch;
f. stamping means, which is attached to the bottom of the lower barrel of each button; and
g. spring means surrounding the barrels of the buttons for urging said buttons to return to an upward position.

4,878,670
HEART PUZZLE

Larry W. Bernauer, 1214 Arlington Ave., Davenport, Iowa 52803
Filed Sep. 30, 1988, Ser. No. 251,343
Int. Cl.⁴ A63F *9/08*
U.S. Cl. 273—158 6 Claims

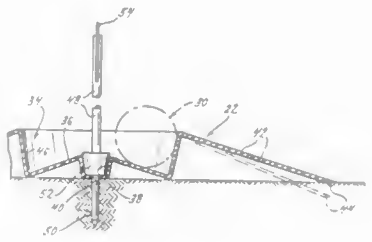


1. A puzzle comprising:
a first crossbar having a loop at each end,
a first U-shaped element having loops at the upper ends of its upstanding portions with the horizontal portion of said crossbar extending through these loops,
a second U-shaped element having loops at the upper ends of its upstanding portions with the rung of said first U-shaped element extending through these loops,

a third U-shaped element having loops at the upper ends of its upstanding portions with the rung of said second U-shaped element extending through these loops,
a second crossbar having a loop at each end, said loops of said second crossbar respectively encircling the upstanding portions of said first U-shaped element, and
a separate movable game piece of a heart shaped configuration that mey be engageable with said first crossbar and then sequentially engageable with said first, second, and third U-shaped elements,
said game piece having a looped tongue insertable portion with spaced sides extending from a throat portion insertable into said loops and passable over said loops in accomplishing said sequential engagements, said game piece having enlarged rib portions thereof to prevent passage of said game piece through said loops, said game piece enlarged portions being in a flat plane and said insertable portion extending out of said plane.

4,878,671
YARD GOLF GAME APPARATUS

Peter M. Gubany, #6 Oakbriar Farm Ct., Ballwin, Mo. 63021
Filed Nov. 9, 1988, Ser. No. 268,984
Int. Cl.⁴ A63B *69/36*
U.S. Cl. 273—176 R 13 Claims

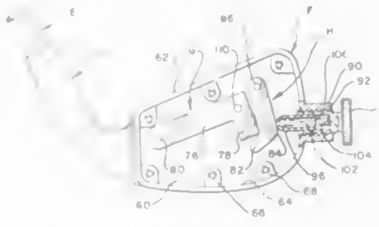


1. A game apparatus including a device for forming a simulated hole for a golf-type game in which players strike a ball to propel it into the hole, the device comprising:
a generally circular cup sized to receive the game ball, the cup having an opening generally in the center;
a generally frustoconical resilient flange surrounding the cup, the flange sloping downwardly and radially outwardly from the rim of the cup, the lower lip of the flange extending below the bottom of the cup in its uncompressed state;
a flag pole for anchoring the apparatus, the flag pole adapted to extend through the opening in the cup and embed in the ground below the cup, the flag pole including means for engaging the bottom of the cup to hold the cup down and compress the resilient flange to hold the lip of the flange against the ground.

4,878,672
GOLF CLUB WITH SWING SPEED INDICATOR

Robert F. Lukasiewicz, Hinsdale, Ill., assignor to Ram Golf Corporation, Melrose Park, Ill.
Division of Ser. No. 53,612, May 26, 1987, abandoned. This application Jul. 11, 1988, Ser. No. 220,374
Int. Cl.⁴ A63B *69/36*
U.S. Cl. 273—186 A 5 Claims

1. A fitting golf club for determining the flexibility of a golf club shaft, said fitting golf club including an elongated shaft having one shaft end portion adapted to be grasped in a person's hands and an opposite shaft end portion, a fitting golf club head attached to said opposite shaft end portion, and adjustable means on said golf club head adjustable between a plurality of different positions, indicia for determining a particular position of adjustment, and mechanisms associated with said adjustable means operative responsive to the centrifugal force applied upon swinging of the fitting golf club, said mechanisms including a weight pivotally mounted within said head on an axis perpendicular to said shaft and parallel with the swing direction, said weight being movable between an armed position adjacent the upper side of said head to a released position adjacent the lower side of said head, the optimum shaft flexibility for said person being determinable by comparison of the release of said weight with the position of adjustment of said adjustable means.



4,878,673
GOLF CLUB SWING TRAINING METHOD

Theodore Pollard, Miami, Fla., assignor to Objective Golf, Inc., Miami, Fla.
Filed Jan. 19, 1988, Ser. No. 145,151
Int. Cl.⁴ A63B *69/36*
U.S. Cl. 273—186 C 24 Claims

1. A method of training oneself to properly swing a golf club comprising the steps of:
(A) providing a golf swing training device comprising a pair of training sticks, separate and independently movable relative to one another, each of said training sticks having a shaft having upper and lower ends, a weight, and flexible elongate means of fixed length connecting said lower end of said shaft and said weight; and
(B) practicing movements associated with a golf swing while swinging the training sticks in a prescribed pattern of exercise with each hand holding a different one of the shafts by an upper end thereof.

4,878,674
ILLUMINATED TRANSLUCENT GOLF BALL

Nelson F. Newcomb, and Nelson F. Newcomb, Jr., both of Mirror Lake, N.H. 03853
Continuation of Ser. No. 816,236, Jan. 6, 1986, Pat. No. 4,695,055. This application Sep. 18, 1987, Ser. No. 98,521
The portinn of the term of this patent subsequent to Sep. 22, 2004, bas been disclaimed.
Int. Cl.⁴ A63B *43/06*
U.S. Cl. 273—213 3 Claims

1 A solid golf ball comprising a molded spherical body comprising a translucent plastic, said ball being not less than

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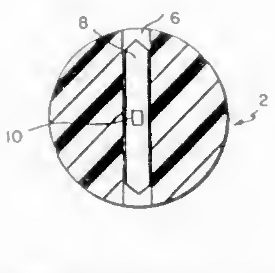
1.680 inches in diameter nor over 1.620 ounces in weight, and said ball having one permanent diametrically extending hole



passing at least partially therethrough for receiving a chemiluminescent light stick and illuminating the ball for night play.

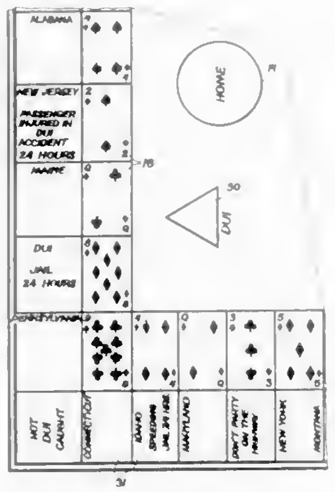
4,878,675
EDUCATIONAL AND AMUSEMENT GAME

Timothy Perry, and Leroy Perry, both of P. O. Box 788, Ellicott City, Md. 21043

Filed Aug. 10, 1988, Ser. No. 230,593

Int. Cl.⁴ A63F *3/00, 3/06*

U.S. Cl. 273—251 5 Claims



1. A method of playing an entertainment and amusement game comprising,

providing a game board with a top surface including a plurality of player stations wherein each player station includes a Home space and a first Control pointed space and a second D.U.I. pointed space wherein each of said pointed spaces are on opposite sides of Home space, and

A first continuous series of inner spaces on said game board top surface associated with said first pointed space, and

a second continuous series of outer spaces contiguous to and adjacent to said first spaces associated with said second pointed space,

each respective point of said first and second pointed space is pointing to a respective starting space of said first and second series of spaces, and

further providing two decks of conventional playing cards including two Jokers per each deck to provide one hundred and eight playing cards, and

providing an arbitrary emblem for each of said players, and

providing a predetermined number of reward and penalty cards wherein each of said reward and penalty cards include a statement and a consequence of said statement, and

providing a predetermined number of question and answer cards, and wherein said question and answer cards are divided into four series wherein each of said series is associated with each of four suits associated with playing cards, said suits include clubs, diamonds, hearts, and spades

providing a game card for each of said players, and

providing a predetermined number of tokens for use with each of said playing cards for each player, and providing a dice, and wherein

each player initially rolls a dice to proceed from the Home space to the first pointed space upon rolling a predetermined number on said dice, and each player in turn rolls the dice to determine a number of spaces to traverse in a clockwise manner of about said game board on said first series of spaces, and

each space of said first series of spaces corresponds to a conventional playing card by suit and designation wherein upon landing on said space, a player guesses that a card chosen from said deck of conventional playing cards will be higher, lower, or the same as the space the player has landed upon, and

a upon a correct guess, the player positions one of said tokens on a space of a game card secured by said player, and

said game card includes designations corresponding to said conventional playing cards and the player positions a token on the game card only if the game card includes a designation corresponding to the space landed upon by the player, and

optionally, if a player incorrectly guesses the chosen playing card the player selects a single of said plurality of question and answer cards and upon a correct answer, the player positions a token on said game card.

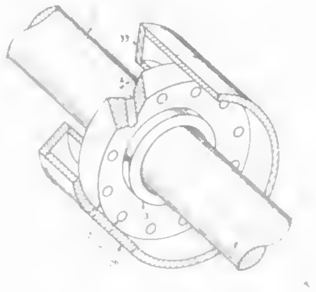
4,878,676
SEAL-FLUSHING IN CENTRIFUGAL-PUMPS, IMPROVED METHODS AND APPARATUSES

John W. Johnson, Cuidad Bolivar, Venezuela, assignor to Chaldar, Inc., Denver, Colo.

Filed Sep. 18, 1987, Ser. No. 98,205

Int. Cl.⁴ F16J *15/00;* **F01D** *15/00*

U.S. Cl. 277—24 2 Claims



1. In a pump shaft sealing assembly, comprising a pump shaft having an impeller, a seal assembly for said pump shaft, a housing enclosing said seal assembly; the improvement of a method of flushing said seal assembly, said method comprising the steps of: (a) injecting pressurized seal flush fluid into said seal housing on a side of said seal opposite said impeller such that the flush fluid flows axially forwardly over said seal assembly towards said impeller; (b) causing said flush fluid to be injected equally circumferentially spaced about the periphery of the seal; and (c) continuing to inject said flush fluid in a direction at an acute angle to the axis of said pump shaft in the direction of rotation of the impeller."

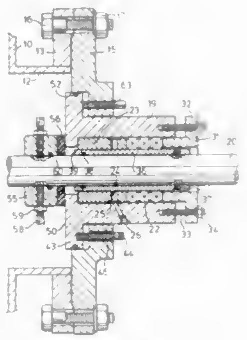
4,878,677
SHUT OFF SEAL ABOUT A SHAFT OF A DEVICE HAVING A SIDE ENTRY INTO A TANK

David J. Larkins, Brampton, and John C. Schneider, Acton, both of Canada, assignors to Hydrochem Developments Ltd., Brampton, Canada

Filed Dec. 15, 1988, Ser. No. 284,556

Int. Cl.⁴ F16J *15/00*

U.S. Cl. 277—105 9 Claims



1. A shut off seal in a device having a rotatable shaft extending through a nozzle side entry structure of a tank, comprising:

a mounting flange attachable to the nozzle structure;

a housing about the shaft, the housing having a flanged end which is releasably attachable to the mounting flange and which is sized to enable it to enter the nozzle structure, said flanged end having a flat outer surface;

releasable attachment means for attaching the flange of the housing to the mounting flange;

sealing means between the mounting flange and the housing;

packing about the shaft within the housing, the packing providing a seal about the shaft and lubricating the shaft when it is rotating;

a collar having a sealing ring at one end thereof, the collar being attached to the shaft with the sealing ring facing the flat outer surface of the flanged end of the housing, the collar being spaced slightly from the housing when the housing is attached to the mounting flange; and

means for sliding the housing into engagement with the sealing ring of the collar so that the sealing ring and the flat outer surface of the flanged end of the housing form a seal about the stationary shaft while also maintaining the seal between the mounting flange and the housing.

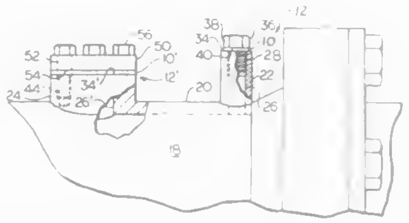
4,878,678
HIGH TEMPERATURE METALLIC GASKET

John J. Hensley; Christian M. Waldhelm, both of San Diego; Henry J. Tohill, Chula Vista, and Kenneth G. Kubarych, Del Mar, all of Calif., assignors to Solar Turbines Incorporated, San Diego, Calif.

Filed Jul. 9, 1987, Ser. No. 71,438

Int. Cl.⁴ F16J *15/08*

U.S. Cl. 277—235 A 15 Claims



1. A metallic gasket comprising:

a substantially non-compressible metallic sheet having at least one opening therethrough and opposite sides;

at least a pair of seals each being connected to a portion of the sheet circumferentially around the opening on each side of the sheet, said seals being formed of a metallic material having sufficient ductility to sealingly conform to a surface to be sealed when a predetermined compressive load is applied thereto, said pair of seals having a thickness which falls within the range of from 0.10 mm to 0.30 mm a width which falls within the range of from 1 mm to 3 mm.

4,878,679
VARIABLY OPERABLE HAND-HELD DEVICE

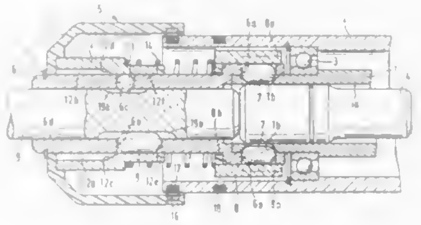
Uto Plank, Freising; Anton Neumaier, Fürstenfeldbrück, and Erwin Manschitz, Germering, all of Fed. Rep. of Germany, assignors to Hilti Aktiengesellschaft, Fürstentum, Fed. Rep. of Germany

Filed Jul. 1, 1988, Ser. No. 214,491

Claims priority, application Fed. Rep. of Germany, Jul. 1, 1987, 3721771

Int. Cl.⁴ B23B *31/04*

U.S. Cl. 279—19.4 10 Claims



1. Hand-held device comprising an axially elongated driven spindle having a leading end and a trailing end, means for securing a working tool on said spindle, said means for securing a working tool comprises an axially extending tubular shaped holder for receiving a working tool with said holder having a leading end and a trailing end with the trailing end thereof connected to the leading end of said spindle, means for releasably connecting said holder to said spindle, at least one first through opening in said holder spaced axially from said releasable connecting means toward the leading end of said holder, a locking element located within said first through opening, means mounted on and displaceable relative to said holder for radially inwardly displacing said locking elements into engagement with a corresponding recess in a working tool inserted into said holder, at least one second through opening in said holder spaced from said first through opening, a control element located within said second through opening and being displaceable between a radially inner position and a radially outer position, said radially inwardly displacing means also arranged for radially inwardly displacing said control element into the radially inner position into a corresponding recess in a working tool inserted into said holder, whereby the radially inner and outer positions of said control member control the displacement of said radially inwardly displacing means relative to said holder.

4,878,680
STROLLER CAR SEAT

Terrence O. Molnar, 35325 Marina, Sterling Heights, Mich. 48077

Filed Jun. 8, 1988, Ser. No. 203,900

Int. Cl.⁴ B62B *7/12*

U.S. Cl. 280—30 1 Claim

1. A child stroller car seat apparatus comprising in combination,

a frame including a back rest and a seat, and

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a downwardly depending flange directed orthogonally downwardly relative to said seat, and

a perimeter frame underlying and outwardly directed from said flange and fixedly secured to said flange, and

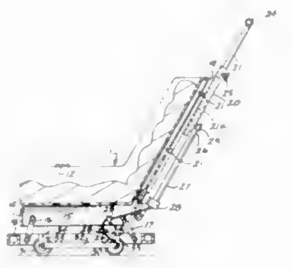
a first and second wheel pair;

each wheel pair pivotally secured to said perimeter frame, and

each wheel pair including a rear and forward wheel;

a reciprocatably mounted handle which is reciprocatably mounted within a pair of tubular supports wherein said tubular supports are fixedly mounted rearwardly of said back seat and including actuator means mounted to each of said rear wheels from said handle, and

said handle positioned rearwardly of said seat and movable from a first retracted position to retract said first and second wheel pairs relative to said perimeter frame, and movable to a second extended position to extend said first and second wheel pairs relative to said perimeter frame wherein said actuator means is operably connected between said handle and said rear wheels to effect said retracted and extended positions of said first and second wheel pairs, and



wherein said actuator means comprises a plurality of flexible cables, a flexible cable connected between each axle of said rear wheels and said handle, and

wherein said handle is of a generally "U" shaped configuration with a pair of parallel spaced downwardly depending legs each telescopingly and slidably received within one of said pair of parallel tubular supports, each of said tubular supports including a slot slidably receiving a clamp with each clamp integrally secured to each downwardly depending leg of said handle and each clamp securing a flexible cable thereto, and

wherein an actuator link is secured between each of said rear and forward wheels, and

wherein each forward and rear wheel includes a support axis and said actuator link is secured to each of said axles, and

wherein each flexible cable is directed through a flexible conduit wherein said conduit is secured to said frame by a plurality of clamps to direct said conduit between each leg of said handle to each of said rear wheels, and further including abutment means secured to the perimeter frame for limiting extension of the first and second wheel pairs in the second position.

4,878,681

STEERING SULKY FOR TOWING VEHICLES

Garry W. Busboom, and Gary L. Rogge, both of Beatrice, Nebr., assignors to Exmark Manufacturing Company, Incorporated, Beatrice, Nebr.

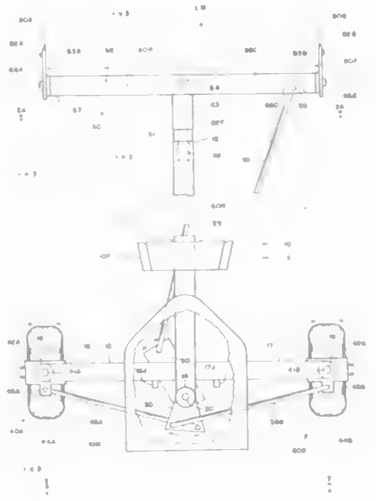
Filed Mar. 24, 1988, Ser. No. 172,491
Int. Cl.⁴ B62D *63/00, 13/04*
U.S. Cl. 280—32.7 **12 Claims**

1. For use in longitudinally extending attached relationship with a lawnmower towing vehicle, a self steering sulky comprising:

(A) a frame member including a directionally longitudinally extending towbar providing the frame forward portion and said towbar having a front-end and a rear-end, said frame member at the rearward portion comprising a directionally transversely extending and substantially horizontal crossbeam connected to said towbar said crossbeam being provided with transversely separated vertical bores including a left-bore and a right-bore, said frame member being rearwardly provided with a rear-collar defining a vertical central-bore, and said frame member being provided with means for supporting riding personnel thereupon and who may thereat operate the lawnmower towing vehicle;

(B) a pair of wheelmounts extending downwardly from the crossbeam and including a left-wheelmount having a vertical left-stud revolvably journalled by the crossbeam left-bore and also including a right-wheelmount having a vertical right-stud revolvably journalled by the crossbeam right-bore, the lower portion of each wheelmount at a horizontal wheel-axis revolvably supporting a turfengaging wheel means, said left-wheelmount spaced from said left-stud being provided with a horizontally extending left-ear, and said right-wheelmount spaced from said right-stud being provided with a horizontally extending right-ear;

(C) revolvably journalled by said rear-collar centralbore, a vertical central-stud extending downwardly from the frame rear-collar, said central-stud being provided with at least two rigidly radially extending crank means including a first crank means that extends partially leftwardly and also partially rightwardly of said central-stud;



(D) a pair of links for simultaneously effecting similar directional steering of said wheel means including a left-link having its two end portions pivotably connected to said left-ear and to the rightward portion of said first crank means, and there also being a right-link having its two end portions pivotably connected to said right-ear and to the leftward portion of said first crank means;

(E) attached to the elongate tow bar of the frame member and extending longitudinally forwardly and bi-directionally transversely of the towbar front-end, hitching means for attaching the towing vehicle and the steering sulky, said hitching means providing between the towing vehicle and sulky relative movements along: a vertically extending yaw-axis, a transversely extending pitch-axis, and a longitudinally extending roll-axis;

(F) an elongate steering-rod having its two end portions respectively pivotably connected to the second of said crank means and also to said hitching means at a position transversely offset from said vertically extending yaw-axis, and said steering-rod intersecting an imaginary vertical plane extending longitudinally along said frame towbar; and

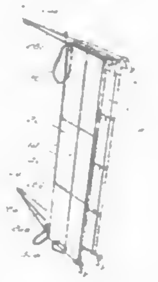
(G) anti-jackknife means to limit the extent of revolvability of the left-wheelmount about the frame member left-bore and of the right-wheelmount about the frame member right-bore provided on said cross member.

4,878,682

CENTER COLLAPSIBLE TRANSPORT CART

David M. Lee, 4800 W. McFadden, #93, Santa Ana, Calif. 92704

Filed Jul. 22, 1988, Ser. No. 222,958
Int. Cl.⁴ B62B *11/00*
U.S. Cl. 280—42 **6 Claims**



1. A collapsible transport, movable between an "operative" configuration and a "stowed" configuration, said transport cart comprising:

a horizontally disposed pivot member having first and second longitudinally spaced ends, said pivot member being movable up and down in a vertical plane so as to be alternately positionable in a lowered position and a raised position;

first and second rigid vertical members connected to and extending upwardly from said first and second longitudinally spaced ends of said pivot member, said first and second vertical members having upper ends which are sized and configured to be grasped and lifted upwardly to cause said upward movement of said pivot member from its lowered position to its raised position;

first and second rectangular floor panels having inner and outer edges;

first and second side walls having upper and lower edges;

a plurality of rigid transverse end members, each said end member being pivotally attached to and extending between an upper end of one of said first and second vertical members and an upper edge of one of said first and second side walls;

at least one flexible strut member attached to and extending between the approximate upper edge of each of said first and second side walls and the approximate inner edge of each of said first and second floor panels, respectively; and

a plurality of wheels attached to said transport cart and extending beneath said floor panels for supporting said cart on an underlying surface and for maintaining rolling contact with said underlying surface as the cart is moved between its "stowed" and "operative" configurations;

said transport cart, when in its "operative" configuration being disposed such that:

said pivot member is in its lowered position;

said first and second floor panels extend laterally outward from said pivot member in a common horizontal plane so as to form a generally flat cargo floor;

said first and second side walls extend vertically upward from the outer edges of the horizontally disposed floor panels;

said rigid end members extend laterally from each said vertical member to each said side wall so as to support said side walls and to prevent inadvertent pivotal movement of said side walls relative to said floor panels; and

said flexible strut members are fully extended and diagonally taut between each said side wall and each said floor panel so as to support said floor panels in their horizontal operative positions; and

said transport cart, when in its "stowed" configuration, being disposed such that:

said pivot member is in its raised position;

said floor panels extend generally downward from the raised pivot member such that said floor members are disposed in generally vertical, side-by-side planes;

said side walls are positioned outboard of and next to said generally vertically disposed floor panels; and

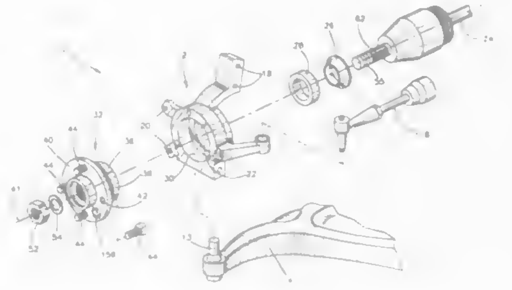
said flexible strut members are relaxed and permitted to hang loosely from their points of affixation to said vertical members and said side walls.

4,878,683

UNITARY HUB ASSEMBLY

James A. Dever, Bay Village, Ohio, assignor to Green Ball Bearing Company, Cleveland, Ohio

Filed Jul. 26, 1988, Ser. No. 224,343
Int. Cl.⁴ B62D *7/18*
U.S. Cl. 280—96.1 **12 Claims**



1. A unitary hub assembly for use in mounting a driven wheel on a steering knuckle of a vehicle, said unitary hub assembly comprising a hub adapted to be connected with a drive shaft and the driven wheel, a bearing assembly to support said hub for rotation relative to the steering knuckle, and a flange connected to said bearing assembly and connectable with the steering knuckle to secure said hub assembly to the steering knuckle, said bearing assembly having a cylindrical housing, said housing having outer side surface means for slidably engaging a cylindrical inner side surface of a recess in the steering knuckle and an end surface for engaging a bottom surface of the recess in the steering knuckle, said bearing assembly having a radially outer and axially inner bearing race fixedly connected to said housing and a radially and axially outer bearing race fixedly connected to said housing and coaxial with said radially outer and axially inner bearing race, said bearing assembly having a first circular array of bearing elements disposed in rolling engagement with said radially outer and axially inner bearing race and a second circular array of bearing elements disposed in rolling engagement with said radially and axially outer bearing race, said bearing assembly having a radially and axially inner bearing race fixedly connected to said hub and disposed in rolling engagement with said first circular array of bearing elements and a radially inner and axially outer bearing race coaxial with said radially and axially inner bearing race and fixedly connected to said hub and disposed in rolling engagement with said second circular array of bearing elements, said flange having axially inner surface means for engaging the steering knuckle at a plurality of locations where said flange is adapted to be secured with the steering knuckle, at least a major portion of said second circular array of bearing elements being disposed between an outer plane containing said axially inner surface means on said flange and an inner plane extending parallel to said outer plane and at least partially containing said end surface of said housing so that said first circular array of bearing elements and at least a major portion of said second circular array of bearing elements

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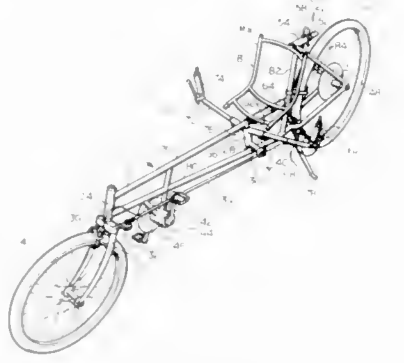
are in the recess in the steering knuckle when said hub assembly is connected with the steering knuckle.

4,878,684
RECUMBENT BICYCLE

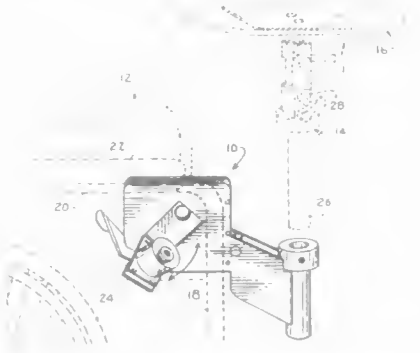
Eugene W. Lemle, 3891 Rte. 295, Swanton, Ohio 43558
Filed Dec. 31, 1987, Ser. No. 139,913
Int. Cl.^{4} B62K *3/14*
U.S. Cl. 280—288.1 25 Claims



1. A recumbent cycle comprising:
front wheel means;
rear wheel means;
generally horizontally extending frame means extending between said front wheel means and said rear wheel means, said front wheel means being journaled in said frame means for oscillation about a generally vertically extending axis to permit steering of said recumbent cycle, said frame means comprising a generally horizontally extending support bar, a generally horizontally extending tubular member, and means extending from said support bar for supporting said tubular member;
foot supporting means attached to said frame means;
a seat spaced from said foot supporting means and comprising a generally horizontally extending bottom portion and a generally vertically extending backrest portion; said bottom portion being slidably supported on said generally horizontally extending support bar, said backrest portion having a generally horizontally extending rod member extending rearwardly therefrom, said rod member being slidably received in said tubular member;
means cooperative with said rod member and said tubular member for adjusting the position of said seat on said frame means between said front wheel means and said rear wheel means to adjust the spacing between said seat and said foot supporting means;
handle bar steering control means having opposed handles which are graspable by a person in said seat, said handle bar steering control means being spaced from said front wheel means and being journaled with respect to said frame means for oscillation about a generally vertically extending axis, said handle bar steering control means further having a central T-shaped member, said opposed handles being pivotably and detachably secured to opposed ends of a head portion of said T-shaped member, each of said opposed handles extending outwardly and upwardly from said T-shaped member; and
connecting rod means connecting said handle bar steering control means to said front wheel means for transmitting oscillating movement from said handle bar steering control means to said front wheel means.

4,878,685
WHEELCHAIR WORK TRAY

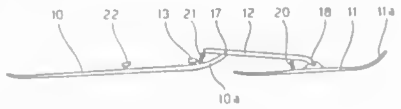
Glenn A. Bahm, Houston, Tex., assignor to Mobility Work Trays, Inc., Houston, Tex.
Filed Sep. 16, 1988, Ser. No. 245,459
Int. Cl.^{4} A63D *5/00*
U.S. Cl. 280—304.1 17 Claims



1. A wheelchair work tray multipivotal mounting assembly adapted for mounting to a wheelchair or the like, said wheelchair having an armrest assembly including a normally substantially horizontal component and a normally substantially vertical component positioned in converging orientation with respect to said substantially horizontal component, said mounting assembly comprising;
mounting means for mounting over said armrest assembly including a pair of interconnected, spaced apart members adapted to receive said substantially horizontal and said substantially vertical components therebetween, said mounting means including barrier means oriented for simultaneous abutting engagement with both said substantially horizontal component and said substantially vertical component of said armrest assembly;
pivotally mounted, transversely extending, selectively actuatable locking means oriented for abutting said armrest assembly proximate an area of convergence of said substantially vertical and substantially horizontal components and for exerting a clamping force in combination with said barrier means simultaneously on both said substantially horizontal component and said substantially vertical component; and
means for releasably receiving a supporting mount.

4,878,686
DOUBLE-SHOE SKI WITH INTERMEDIATE LINKING MEMBER

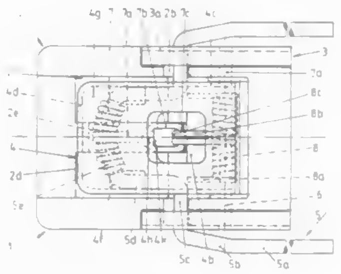
Vittorio Quaggiotti, Padova, Italy, assignor to S.B.P. S.r.l., Padova, Italy
Filed Jul. 20, 1987, Ser. No. 75,786
Claims priority, application Italy, Aug. 22, 1986, 41601 A/86
Int. Cl.^{4} A63C *5/00*
U.S. Cl. 280—602 15 Claims



1. A double-shoe ski comprising:
a rear shoe having an upwardly-curved front end;
a front shoe having an upwardly-curved front end, said front shoe being longitudinally aligned with and shorter in length than said rear shoe;
intermediate link means connecting said rear shoe and said front shoe and maintaining longitudinal alignment of said front shoe relative to said rear shoe, said link means being hingedly connected to said front shoe to allow pivotal movement of said front shoe only about a side-to-side transverse axis;
foot binding means being mounted on and essentially at the level of said rear shoe, said foot binding means being positioned rearwardly of said intermediate link means; and
motion-limiting means, disposed between said link means and said front shoe, for limiting movement of said front shoe relative to said link means.

4,878,687
SKIBREMSE

Karl Stritzl, Vienna; Franz Luschnig, Traiskirchen; Andreas Riegler, Vienna; Hubert Wurthner, Hainburg/Donau, and Henry Freisinger, Vienna, all of Austria, assignors to TMC Corporation, Switzerland
PCT No. PCT/EP87/00262, § 371 Date Jan. 6, 1988, § 102(e) Date Jan. 6, 1988, PCT Pub. No. WO87/07515, PCT Pub. Date Dec. 17, 1987
PCT Filed May 18, 1987, Ser. No. 154,346
Claims priority, application Austria, Jun. 3, 1986, 1483/86
Int. Cl.^{4} A63C *7/10*
U.S. Cl. 280—605 8 Claims

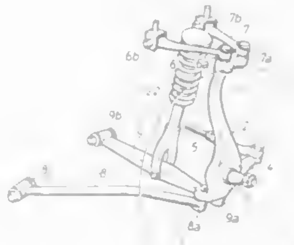


1. A ski brake (1, 10) comprising:
a bail including first and second brake-arms (5, 50);
an erecting spring (8, 80) positioned to urge said ski brake (1, 10) into a braking position in which said first and second brake-arms (5, 50) are located next to side surfaces of a ski and project below said ski;
an actuation pedal (4, 40), the depression of which causes said ski brake to be positioned in a ready position in which said first and second brake arms (5, 50) are pivoted toward a longitudinal axis of said ski so that said first and second brake-arms (5, 50) do not extend below said ski; and
a connecting spring (7, 70) including a cross rod (7*c*, 70*c*) supported by said first and second brake arms (5, 50) and positioned in a guide path (2*e*, 20*e*) of a base plate (2, 20) and against a front limit wall (4*h*, 40*h*) of a longitudinal passage (4*b*, 40*b*) of said actuation pedal (4, 40);
wherein said erecting spring (8, 80) comprises first and second legs (8*a*, 80*a*; 8*b*, 80*b*), said first leg (8*a*, 80*a*) biasing said actuation pedal (4, 40) toward said braking position and said second leg (8*b*, 80*b*) biasing said connecting spring (7, 70) toward said braking position.

4,878,688
VEHICLE SUSPENSION SYSTEM FOR A STEERABLE WHEEL

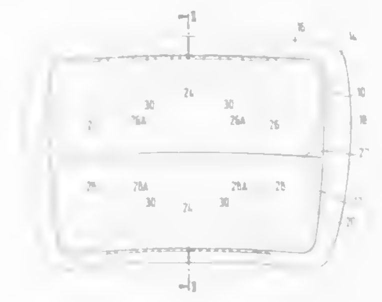
Kanji Kubo, Saitama, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 17, 1988, Ser. No. 169,438
Claims priority, application Japan, Mar. 20, 1987, 62-067460
Int. Cl.^{4} B60G *3/20*
U.S. Cl. 280—693 9 Claims

1. A suspension system for a steerable wheel, comprising a knuckle rotatably supporting a wheel having a tire for rotation about an axle line, two pairs of lateral links, each pair being located one above the other, which are pivotally connected to upper and lower parts of the knuckle at their first ends, respectively, and pivotally connected to a vehicle body at their second ends, so as to allow both a steering action and a vertical motion of the knuckle, wherein:
the lower lateral links comprise a first lower link which extends substantially laterally of the vehicle substantially in parallel with the axle line of the wheel as projected onto the road surface and a second lower link which diverges relative to the first lower link from the knuckle toward the vehicle body forming a certain angle in relation with the first lower link;
the upper lateral links comprise a first upper link which extends in a direction intermediate between those of the lower links as projected onto a horizontal plane and a second upper link which diverges relative to the first upper link, so as to extend obliquely in opposite direction to the second lower link as projected onto a horizontal plane, from the knuckle toward the vehicle body forming a certain angle in relation with the first upper link; and
the first end of the second upper lateral link being spaced laterally from the first end of the first upper lateral link away from the vehicle body while the first ends of the lower lateral links are substantially aligned along the longitudinal direction of the vehicle and, likewise, the second ends of each pair of the lateral links are substantially aligned to each other along a longitudinal direction of the vehicle.



4,878,689
COVER OF A DRIVER-SIDE GAS BAG COLLISION PROTECTION DEVICE IN MOTOR VEHICLES

Jürgen Mitzkus, Mutlengen, and Dieter Wiesner, Schwäbisch Gmünd-Lindach, both of Fed. Rep. of Germany, assignors to TRW Repa GmbH, Alfdorf, Fed. Rep. of Germany
Filed Jul. 27, 1988, Ser. No. 224,904
Claims priority, application Fed. Rep. of Germany, Sep. 30, 1987, 8713154[U]
Int. Cl.^{4} B60R *21/05, 21/20*
U.S. Cl. 280—731 5 Claims



1. A cover of a driver-side gas bag collision protection device accommodated in the steering wheel of a motor vehicle,

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said cover comprising two cover portions, each of said cover portions having an outer edge region permitting the cover portions to fold open, said cover portions being connected together at their center edge region along a tear line by weakened wall portions, each cover portion comprising a reinforcing insert embedded in foamed plastic, said reinforcing insert being formed by a metal plate which extends out of the outer edge region of each cover portion and terminates in lug-like securing portions, said cover including a frame having an inner surface, each cover portion being arched at its outer edge region adjoining said frame, said metal plate being connected to said frame and having a transition portion to said lug-like securing portions comprising: a first portion within said frame, a second portion extending inwardly from said first portion through said inner surface and out of said foamed plastic, and a third portion extending approximately perpendicular to said second portion and along said inner surface of said frame and terminating in said lug-like securing portions.

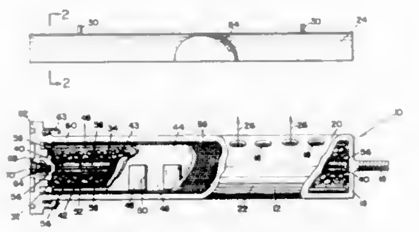
4,878,690
LIGHT WEIGHT VEHICLE RESTRAINT BAG INFLATOR

Donald J. Cunningham, North Ogden, Utah, assignor to Morton Thiokol, Inc., Chicago, Ill.

Filed Mar. 9, 1988, Ser. No. 166,066

Int. Cl.⁴ B60R *21/26*

U.S. Cl. 280—741 **20 Claims**



1. An inflator for a vehicle inflatable restrain bag comprises an elongate generally cylindrical housing having first and second sides and having along said first side gas outlet means, said first side extends over an arc of said housing circumference of less than about 180 degrees, said second side extends over an arc of said housing circumference which is equal to 360 degrees less said arc over which said first side extends, said second side being free of gas outlets, the inflator further comprises an elongate arcuate barrier member which has a thickness which is less than 0.06 inch disposed within said housing and defining a chamber for holding gas generant material, gas generant material disposed within said chamber, means for igniting said gas generant material, gas filtering means disposed between said chamber and said housing, and means for directing generated gas from said chamber in a direction toward said housing second side, said barrier member being disposed between said chamber and said housing first side to prevent the flow of generated gas, as it leaves said chamber, in a direction toward said housing first side whereby generated gas may change direction after it flows out of the chamber toward the housing second side to flow through the filter means while flowing around the barrier member to the gas outlet means.

4,878,691
TRAILER SUSPENSION APPARATUS

Herbert E. Cooper, Scottsdale; Josef P. de Fazekas, Fountain Hills, and E. Dallas Smith, Scottsdale, all of Ariz., assignors to DBX Corporation, Scottsdale, Ariz.

Filed Mar. 23, 1988, Ser. No. 172,695

Int. Cl.⁴ B60G *11/26*

U.S. Cl. 280—189 **20 Claims**

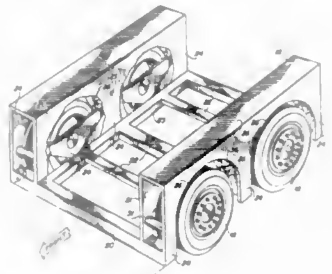
10. A wheel suspension apparatus in which the wheels on opposite sides of a vehicle are independently suspended, comprising:

a U-shaped frame having a transverse structure and upright structures carried at the ends of the transverse structure, said upright structures having downwardly-facing openings thereon;

wheels disposed in the open regions of the upright structures, the upright structures being disposed respectively at least in part above the tracks of said wheels, said wheels having rolling axes and the transverse structure being disposed beneath the rolling axes of said wheels;

a pair of trailing suspension arms having front and rear ends;

pivot means for pivotally supporting each of said arms at its forward end on said upright structure with its rear end being movable vertically between uppermost and lowermost positions, said pivot means being disposed in a region above the track of said wheel;



biasing means for separately biasing each said suspension arm in an intermediate position between the uppermost and lowermost positions, said biasing means being disposed between the rear ends of said arms and said upright structure, said biasing means being disposed in a region above the track of said respective wheel; and

a spindle on each said arm intermediate its ends for rotatably carrying each said wheel.

4,878,692
GUIDE RAIL SUPPORTING STRUCTURE

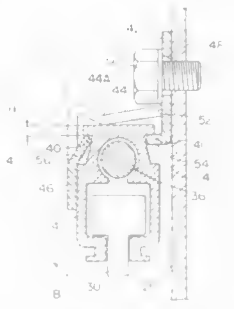
Takayuki Ando; Kazuyoshi Ishiguro; Kenji Matsui; Tatsuo Yamashita, and Toshikatsu Kondo, all of Aichi, Japan, assignors to Kabushiki Kaisha Tokai-Rika-Denki-Seisakusho, Aichi, Japan

Filed Jul. 26, 1988, Ser. No. 224,396

Claims priority, application Japan, Jul. 27, 1987, 62-114780[U]; Mar. 25, 1988, 63-39464[U]

Int. Cl.⁴ B60R *22/06*

U.S. Cl. 280—804 **23 Claims**



1. A structure for supporting a guide rail of an automatic seat belt apparatus of a vehicle on a side wall of a compartment to slidably support and move a slider attached to a webbing in a longitudinal direction of said vehicle front and rearwards along said wall of said compartment for positioning said webbing about an occupant in said vehicle, said structure comprising:

a holder being engageable with sides of said guide rail and being disposed on said side wall in the widthwise direction of the compartment, said holder having at least one first engagement piece for supporting said guide rail; and

a first engagement portion formed at an outside portion of said guide rail in the widthwise direction of the compartment and formed essentially in the end portion of said guide rail that is remote from said webbing with respect to said slider, said first engagement portion being engageable with said first engagement piece.

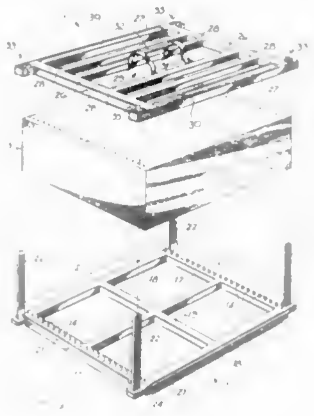
4,878,693
SHEET MATERIAL CARRIER

Peter Scherm, 1508 Glenleaf Dr., Norcross, Ga. 30092

Filed Nov. 16, 1988, Ser. No. 271,927

Int. Cl.⁴ B42D *17/00;* **B42F** *13/00;* **F16B** *2/20, 21/00*

U.S. Cl. 281—45 **12 Claims**



1. An apparatus for supporting and transporting sheet material of the type having perforated marginal edge portions, said apparatus comprising:

a base member to support the sheet material with said base member defining a plane upon which the sheet material rests;

a plurality of pins mounted to said base member and extending upwardly therefrom with said pins being adapted to register with and extend through the perforated marginal edge portions of sheet material supported upon said base member; and

means for guiding sheet material into position upon said base member with said pins extending through the perforated marginal edge portions of the sheet material, said means comprising at least one guide element mounted to a peripheral portion of said base member and extending upwardly and outwardly therefrom at an angle relative to the plane of said base.

4,878,694
METHOD AND DEVICE FOR THE REMOTE POSITIONING OF AN ELBOW COUPLING

Yvon Castel, Croissy S/Seine, France, assignor to Institut Francais du Petrole, Rueil-Malmaison, France

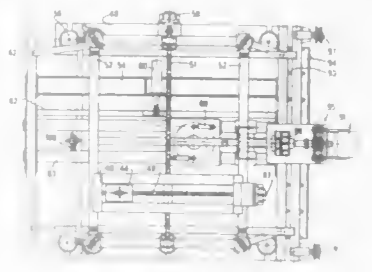
Filed Jun. 25, 1987, Ser. No. 66,204

Claims priority, application France, Jun. 26, 1986, 86 09421

Int. Cl.⁴ F16L *35/00*

U.S. Cl. 285—24 **15 Claims**

1. In a device for a remote positioning of an elbow coupling to a distance installation from a main installation situated above the distance installation, said device including a support frame, said elbow coupling having at least two ends at least one of which cooperates with an end of a first line to obtain a connection between these ends, said first line being connected to said distance installation, said support frame including a suspension member for suspending the support frame from a support element connected to the main installation and a support member holding said elbow coupling with said support frame, said members being fixed to said support frame, said support and suspension member being movable relative to said support frame and along a direction not parallel to a substantially vertical axis of the support element.



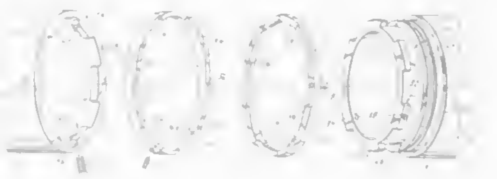
4,878,695
EXPANDING RING JOINT

Kent G. Whitham, Inyokern, Calif., assignor to The United States of America as Represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 5, 1988, Ser. No. 280,056

Int. Cl.⁴ F16L *35/00*

U.S. Cl. 285—39 **13 Claims**



1. An apparatus for joining female and male tubular members along a common axis, comprising:

a female tubular member having on one end a flat end surface and a female interrupted lip on said one end defining a plurality of inwardly projecting cogs;

a male tubular member having a male interrupted lip on one end defining a plurality of outwardly projecting cogs sized and positioned to fit between and behind said inwardly projecting cogs when said male tubular member is axially aligned with said female tubular member, said male tubular member also defining a shoulder on said one end, said shoulder having an integral, stepped ramp surface extending axially therearound;

a ring having a flat surface on one side and a stepped ramp surface on the other side, said ring being positioned around said one end of said male tubular member, said step ramp side abutting said stepped ramp surface integral to said shoulder;

said female and male tubular members being axially aligned and engaged wherein said outwardly projecting cogs are behind said inwardly projecting cogs;

means for holding said male tubular member against rotation relative to said female tubular member;

means for rotating said ring relative to said stepped ramp surface integral to said shoulder so that said ring flat surface is in abutment with said flat end surface; and

means for locking the rotational position of said ring relative to said male tubular member.

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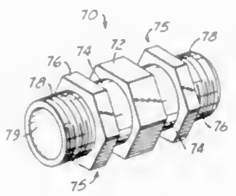
4,878,696
HEXAGONAL JUNCTION ADAPTER FOR CLAMPING SYSTEM

William R. Walker, Rochester, Mich., assignor to Hydro-Craft, Inc., Rochester Hills, Mich.

Filed Oct. 11, 1988, Ser. No. 255,823

Int. Cl.^{4} F16L *3/10, 3/22*

U.S. Cl. 285—61 10 Claims



1. A junction adapter for a standard plural line clamping assembly of the type having (1) a plurality of channels each of generally U-shaped cross-section and each provided with two leg sections and a connecting section therebetween, and provided with semicylindrical collar portions formed in the leg sections at the outer most extent thereof, and (2) stacking nut means, disposed between and separating said first and second channels in a position such that the U-shapes of the two members face each other, the adapter comprising:

- a hexagonal-shaped central support portion adapted to be mounted within the channels of the standard plural line clamping assembly;
- two cylindrical collar support portions each formed radially smaller than said central support portion and formed at each axial side thereof and adapted to be mounted between two opposed semi-cylindrical collar portions of a standard plural line clamping assembly;
- two connection portions each formed at the end of said collar support portion opposite said central support portion and provided with connector means to sealingly receive a fluid line connection, said connection portions each including at least a first section which is of the same hexagonal shape and size in cross-section as the central support portion, whereby each said section of the connection portion is usable as wrench flats when connecting fluid lines to the adapter,
- and wherein said central support portion, collar support portions and connection portions are formed from a single piece of hexagonal bar stock material, and have a common fluid passage extending therethrough.

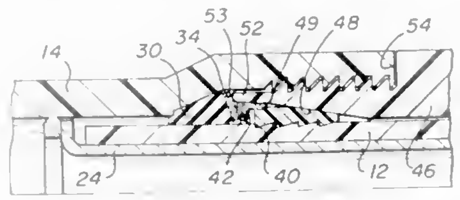
4,878,697
COMPRESSION COUPLING FOR PLASTIC PIPE

Ralph E. Henry, Rixford, Pa., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Oct. 14, 1987, Ser. No. 108,144

Int. Cl.^{4} F16L *33/18*

U.S. Cl. 285—250 9 Claims



1. A compression coupling for plastic pipe, comprising in combination:

- a body having an enlarged bore and a sloped transition surface narrowing to an inner bore, said bores extending along a longitudinal axis of said body and said enlarged bore having internal threads;
- a rigid stiffener having a flange at one end thereof with said flange end inserted into said inner bore;
- an elastomeric gasket, having an axially outer end, encircling said stiffener and compressible in said body, said gasket having a sloped radially outward surface, and said sloped radially outward surface conforming to said sloped transition surface between said bores of said body;
- a flexible spring washer encircling said stiffener for contacting said gasket at its axially outer end;
- a grip ring encircling said stiffener and having a frustoconical radially outward surface, a radially inward surface having a plurality of inwardly projecting means for gripping, a lateral slot, and a resilient lip for axially compressive contact with said spring washer; and
- a connecting threaded nut encircling said stiffener and having external threads for engagement with said internal threads of said enlarged bore, said nut having an axially extending nose and a frustoconical bore for mating with said outward surface of said grip ring, said pipe inserted in said bores and around said stiffener, axial movement of said nut as said nut is threaded into said body causing axial movement of said gasket, said spring washer and said grip ring toward the transition surface of the body, resulting in radial compression of said grip ring around said pipe and compression of said gasket by axial force of said nose and said resilient lip against said spring washer, said sloped radially outward surface of said gasket mating with said transition surface of said body forming a seal.

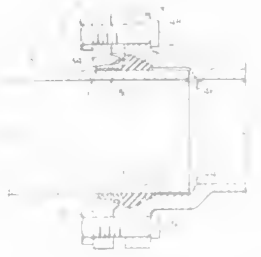
4,878,698
RESTRAINING PIPE JOINT

R. Fowler Gilchrist, 2409 Farington Rd., Witebita Falls, Tex. 76308

Continuation-in-part of Ser. No. 2,322, Jan. 12, 1987, abandoned. This application Oct. 13, 1988, Ser. No. 257,241

Int. Cl.^{4} F16L *23/02*

U.S. Cl. 285—342 4 Claims



1. A restraining pipe joint for use in a bell and plain pipe end assembly comprising:

- a. a plain pipe end of plastic;
- b. a bell which defines an opening wall of maximum radius relative to a center line of the joint, said opening wall joining a first conical shoulder of declining radius, a second shoulder of shortest radius, joining the first shoulder rearwardly to form within the bell a recess for the plain pipe end;
- c. a gland encircling the plain pipe end, said gland defining a conical axial aperture interior wall which terminates short of its forward end forming in extension thereof an inclined interior peripheral abutment;
- d. an elongated split ring likewise encircling the plain pipe end in juxtaposition with said gland and including:
  - i. a conical exterior wall complementally engageable by the conical axial aperture interior wall of said gland,
  - ii. a peripheral flange in forward extension of the conical exterior wall, directed outwardly from the plain pipe end, said flange defining at its end a forwardly inclined outer shoulder of positive angle relative to the center line of the joint and an inner rearwardly inclined inner shoulder of greater positive angle than the outer said shoulder of the flange, the inner shoulder of the flange being contiguously engageable by the inclined, interior peripheral abutment of the gland.
  - iii. a plurality of inwardly extending pipe end gripping teeth forming the inner surface of said split-ring, and
- e. a compressible gasket encircling the plain pipe end, interposed between said split ring flange and the bell, said gasket defining a forwardly inclined packing ring shoulder, engageable in parallel with the forwardly inclined outer shoulder of said split-ring flange and an inwardly inclined outer shoulder, complementally contiguous with the first shoulder of the bell;
- f. tightening means interconnecting said gland and the bell compressibly securing said gasket and said split-ring assembly within the pipe joint.

4,878,699
LATCH MECHANISMS

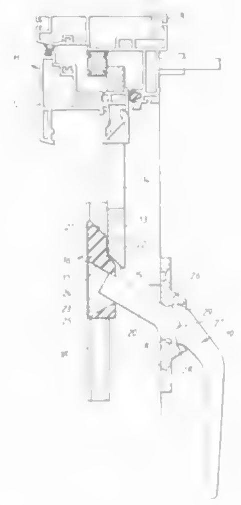
Yurek A. Wronski, Cheltenham, United Kingdom, assignor to Cotswold Architectural Products Limited, Cheltenham, England

Filed Apr. 22, 1988, Ser. No. 184,875

Claims priority, application United Kingdom, May 2, 1987, 8710510

Int. Cl.^{4} E05C *1/14*

U.S. Cl. 292—143 8 Claims



1. In a window assembly, comprising a frame defining a window opening having an outside and an inside, the window pivotally mounted on the frame for closing the opening by engaging the outside of the frame and a fly screen fixed to the inside of the frame and extending across the opening, a latch mechanism comprising operating means having an operating handle and a tongue movable in response to movement of the handle, means for pivotally mounting the operating means in the window frame such that the operating handle extends inwardly of the frame and the tongue extends outwardly of the frame, a latch member mountable on the outside of the window frame for relative movement thereto and engageable by the tongue for operation by the handle, and a latch element mountable on the window to align with the latch member when the window is substantially closed, the facing ends of the member and element being mutually configured so that when they engage during operational movement of the latch member the element is drawn across the member into a locking position.

4,878,700
CABINET STIFFENER

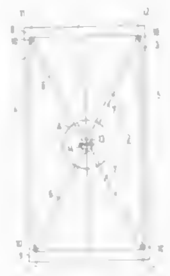
Johannes Brune, Erlangen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschtaft, Munich, Fed. Rep. of Germany

Filed May 23, 1988, Ser. No. 197,613

Claims priority, application Fed. Rep. of Germany, Jul. 6, 1987, 3722296

Int. Cl.^{4} E05C *3/04*

U.S. Cl. 292—241 8 Claims



1. A stiffening device for a cabinet having a first and a second angle strut, a frame rack and at least two doors, each angle strut being formed from at least two profile bars coupled to each other to create a vertex enclosing an obtuse angle, each of said angle struts pivoting at their ends in an upper and lower corner region of said frame rack about an axis parallel to a lateral edge of siad frame rack, said angle struts further coupling to each other in a frictional and form-locking manner at their vertex, the improvement comprising:

- (a) the first angle strut having a first hole of a first radius R_1 located at the vertex of said first angle strut and the second angle strut having a second hole of a second radius R_2 located at the vertex of said second angle strut, said second radius R_2 being greater than said first radius R_1; and
- (b) a tightening assembly associated with the angle struts and acting as an eccentric at their vertex comprising a tightening latch having a first and a second disc coupled to each other, the first disc having a first radius R_1 and pivoting in the first hole having the first radius R_1, the second disc lying in the plane of the second hole when the angle struts are coupled to each other, the second disc further being made of a first circular sector with a second radius R_2 and a second circular sector with a third radius R_3, the center of the first circular sector being located on a straight line perpendicular to said axis through a center of said first hole.

4,878,701
PORTABLE DOOR LOCK

Stephen A. Rondel, Redmond, and James B. Dobson, Seattle, both of Wash., assignors to Advanced Products & Technologies, Redmond, Wash.

Filed Apr. 16, 1987, Ser. No. 39,539

Int. Cl.^{4} E05C *19/18*

U.S. Cl. 292—288 2 Claims

1. A portable device for securing doors or the like comprising:

- a blade means including an outer end for fixedly engaging the latch plate of a doorjamb while allowing the door latch to function normally and an inner elongated end having a serrated edge along a substantial portion of its length, being selectively engaged by a retractable dog having a serrated edge, said dog being biased away from said inner elongated end by a spring biased roller means continuously urging the dog to a nonengaging position;
- a handle means, rotatably connected to said dog, said handle means moveable along the blade means such that when the handle means and the blade means are parallel, the dog is freely moveable along the inner elongated end of the blade means and when the handle means is at an angle to

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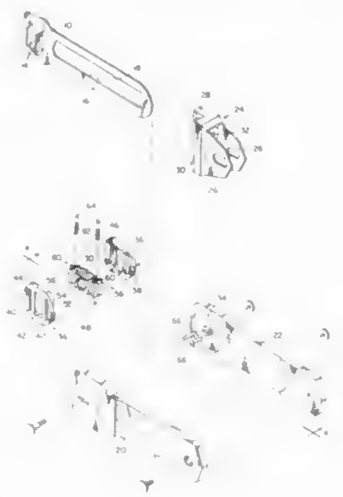
the blade means the dog prevents relative movement between the handle means and the blade means; and

a pressure block attached to said handle means, such that



when said blade means engages the latch plate and when said pressure block abuts the door and is held in place by the action of the dog, it securely holds the door in a closed position.

4,878,702

METHOD, A BINDER AND A BINDING MACHINE FOR CLOSING HOSE OR BAG SHAPED PACKINGS, PRIMARILY TUBULAR FOODSTUFF PACKINGS

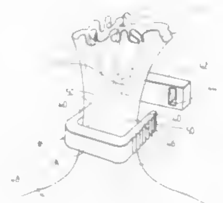
Erik Madsen, Viby J., and Flemming Kroman, Brabrand, both of Denmark, assignors to emc-tamaco a/s, Viby J., Denmark

Filed May 29, 1987, Ser. No. 55,366

Claims priority, application Denmark, May 29, 1986, 2508/86

Int. Cl.⁴ B65D *33/34*

U.S. Cl. 292—307 9 Claims



1. A method of closing hose or bag shaped packings, primarily foodstuff packings, whereby a constricted portion of the packing is clamped by a ring shaped non-metallic clamp binder caused to be narrowed about the constricted portion of the packing by a closing pressure applied from opposite sides thereof and fixed in its shaped as attained when it is subjected to a final closing pressure, characterized in that the constricted portion of the packing is clamped between opposed smooth surface portions of substantially straight clamping beams of the non-metallic clamp binder so as to be compacted into a final shape, in which the constricted portion of the packing is cross-sectionally oblong in a longitudinal direction of the substantially parallel clamping beams, preferably with a length of at least twice a distance between the clamping beams.

4,878,703

IMPLEMENT FOR DISPOSING OF DUNG OF A PET ANIMAL

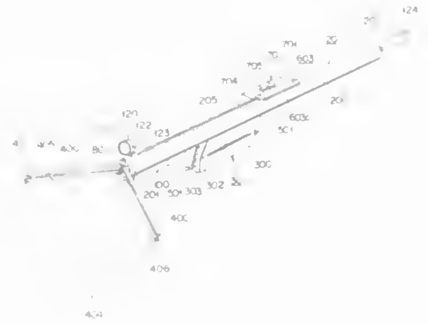
Mashayuki Yoshioka, 3031, 2-chome Higashiyurigaoka, Aso-ku, Kawasaki, Kanagawa, Japan

Filed Aug. 29, 1988, Ser. No. 237,963

Claims priority, application Japan, May 24, 1988, 63-68343[U]

Int. Cl.⁴ A01K *29/00;* **E01H** *1/12*

U.S. Cl. 294—1.5 33 Claims



1. An implement for disposing of dung of a pet animal comprising:

tubular means consisting of an elongated tubular body which has first and second ends and a pin removably fitted to said first end in a manner to vertically penetrate said first end:

storage means mounted on said tubular body of said tubular means and for carrying vertically stacked cartridges therein;

movable means movably supported with respect to said storage means and for moving said cartridges within said storage means one by one in a longitudinal bore of said tubular body;

pushing means inserted in said longitudinal bore of said tubular body to be movably supported with respect to said tubular body and for pushing a cartridge having been located in said longitudinal bore of said tubular body by said movable means toward said first end of said tubular body along said longitudinal bore of said tubular body; and

actuating means mounted with respect to said tubular body of said tubular means and for automatically moving said pushing means toward said first end of said tubular body and automatically returning said pushing means toward said second end of said tubular body;

each of said cartridges including a pair of casing members each having a substantially U-shape in vertical section and being pivotally connected at one end thereof to each other in a manner to be faced at an opened side thereof to each other; a vinyl sack having an opening for receiving dung of a pet animal therein and having resilient wire provided along a margin of said opening of said vinyl sack, said vinyl sack being supported through said resilient wire between the faced sides of said casing members in a manner to be folded up; and two tape pieces applied across onto upper and lower surfaces of said casing members to cause said casing members to be closed toward each other against an elastic force of said resilient wire in a manner to permit a space to be left between said casing members, said space being enough to receive said pin of said tubular body therein when said cartridge is moved to said first end of said tubular body by means of said pushing means.

4,878,704

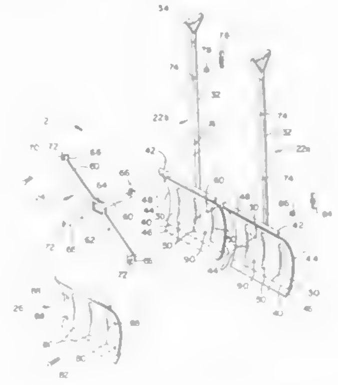
CONVERTIBLE SNOW CLEARING APPARATUS

James M. Jacanin, Jr., 4637 Briarpatch Ct., Fairfax, Va. 22032, and Christopher H. Cardiff, 9020 Southwick St., Fairfax, Va. 22031

Filed Apr. 29, 1988, Ser. No. 187,984

Int. Cl.⁴ A01B *1/22;* **E01H** *5/02*

U.S. Cl. 294—54.5 18 Claims



1. Snow clearing apparatus comprising first and second blades for pushing snow, and first means for detachably connecting the first and second blades together in side-to-side relationship to form a wide blade and so as to enable the first and second blades to be detached and separated, the wide blade being substantially rectangular in front profile and having a predetermined transverse width; first and second handles, each handle having one end connected to a respective one of the first and second blades, the handles being transversely spaced such that the predetermined transverse width of the wide blade is greater than the spacing between the handles and such that the wide blade extends transversely beyond each handle; cross bracing means for holding the handles in spaced relationship; second means for detachably connecting the cross bracing means to the handles, and first and second hand grips respectively secured to another end of the first and second handles to enable a user to push the blades across the ground, the first and second detachably connecting means enabling the apparatus to be converted to first and second snow shovels, each shovel comprising one of the blades and one of the handles.

4,878,705

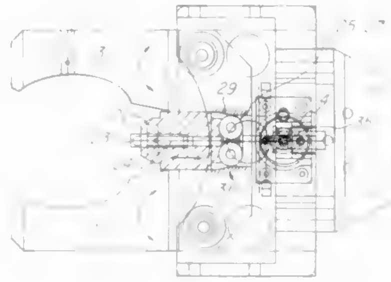
ROBOT GRIPPER PASSIVELY LOCKED

David C. Arnquist, Riviera Beach, Fla., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Mar. 18, 1988, Ser. No. 169,690

Int. Cl.⁴ B25J *15/02*

U.S. Cl. 294—116 7 Claims



1. A robot gripper comprising:

(a) a set of gripping jaws;

(b) means including a plunger and sensor responsive to predetermined positioning of an object within said jaws to lockingly close said jaws on said object and provide a predetermined sensed pressure condition within said jaws; and

(c) means including a powered latch pin responsive to removal of said predetermined sensed pressure condition and a predetermined further condition to unlock and open said gripping jaws.

4,878,706

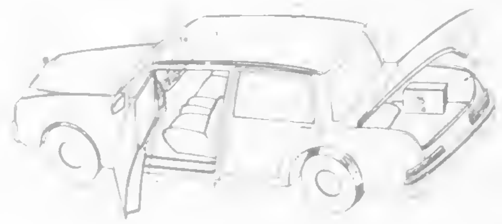
ANTI-THEFT SYSTEM

Eduard Novikov, 209 Avenue "P", Apt. C10, Brooklyn, N.Y. 11204

Filed Aug. 25, 1988, Ser. No. 236,537

Int. Cl.⁴ B60R *7/00*

U.S. Cl. 296—37.1 19 Claims



1. An anti-theft system for protecting and preventing theft of valuable accessories for a vehicle comprising, in combination, a vehicle having a frame, a vehicle body supported on said frame, means for operating said vehicle and an instrument panel located in said body, and an accessory removably disposed for use in said vehicle body at one location, and storage means for receiving and storing said accessory, said storage means comprising a parallelepiped container having a cover, including lock means, said container being permanently fixed to said vehicle in the trunk thereof remote from the location where it is used, thereby protecting and preventing theft of said accessory.

4,878,707

AIR DEFLECTOR FOR MAINTAINING CLEANLINESS OF WINDOWS OF A VEHICLE

Arnold G. Meyers, Waterloo, Canada, assignor to Clemmer Industries Limited, Waterloo, Canada

Filed May 31, 1988, Ser. No. 200,469

Claims priority, application Canada, Feb. 8, 1988, 558408

Int. Cl.⁴ B60J *1/20*

U.S. Cl. 296—91 7 Claims

1. An air deflector for use on a tractor having at least one side window, the purpose of said deflector being to keep the side window clean, said deflector comprising an oblong panel having two ends, a forward edge and a rear edge, said panel

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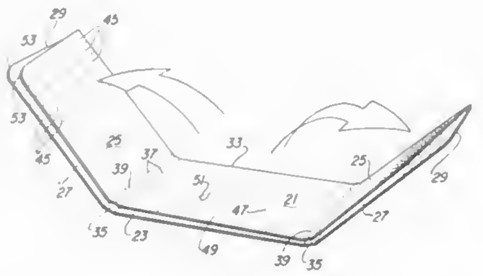
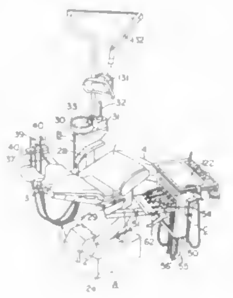
having an arcuate cross section, an interior surface on an inner curve of the arcuate cross section and an exterior surface on an outer curve of the arcuate cross section, with means for mounting said deflector on a front corner of said tractor with said inner surface facing said tractor and a longitudinal centre line of said panel being substantially parallel to a longitudinal centre line of said corner, said corner being the first corner to a front of said side window, said forward edge extending slightly along a front of said tractor and said rear edge extending slightly along a side of said tractor, a flange extending along said rear edge of said deflector, said flange being angled towards said tractor, said panel being held in place by upper and lower brackets between the deflector and the tractor, said brackets continuously decreasing in width from front to rear of said deflector and being curved to correspond to the arcuate cross section of said panel, a space between said panel and said tractor continuously decreasing in size from front to rear of said deflector, an upper end of said deflector being at a level substantially lower than the side window nearest to said deflector, the deflector, when the tractor is moving forward, creating a strong air flow from front to rear of said tractor partially along that side of the tractor where the deflector is located, said air flowing beneath the side window on the same side as the deflector, thereby keeping said window clear from road contaminants for a much longer period of time than would otherwise occur.

4,878,708
MOTOR VEHICLE SUNSHIELD
Dean J. Champane, 7001 Chicago Rd., Warren, Mich. 48092
Filed Nov. 7, 1988, Ser. No. 267,799
Int. Cl.^{4} B60J *3/00*
U.S. Cl. 296—97.7 9 Claims



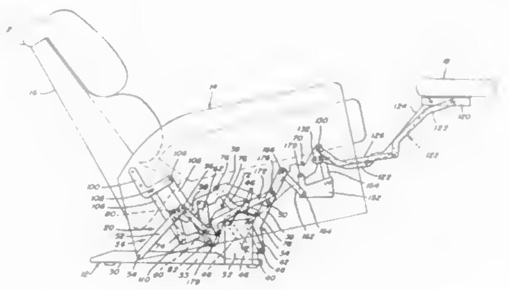
1. In a motor vehicle having a windshield, a dashboard and a pair of spaced end pillars:
- a collapsible sunshield of a corrugated cardboard resilient material having top and bottom edges and a thickness, including a pair of generally symmetrical planar top and bottom sections of the same height having a single horizontal fold line midway of said top and bottom edges;
- each section including non-symmetrical central and end panels of general rectangular shape arranged on transverse laterally spaced parallel fold lines; the panels of both sections being the same height;
- the top section having a pair of spaced inner backing panels; and the bottom section having a pair of spaced outer backing panels, a first of said inner backing panels being adjacent a first of said outer backing panels, a second of said inner backing panels being adjacent a second of said outer backing panels, said backing panels being of reduced width with respect to the central and end panels and arranged between said central and end panels on transverse laterally spaced fold lines, the ends of adjacent inner and outer backing panels being in registry;
- the sunshield extending closely adjacent and along said windshield substantially over its height and length with the respective end panels at their ends compressively anchored against said pillars and said bottom section being self-supported upon and along said dashboard and extending upwardly to cover a portion of said windshield;
- the width of said backing panels being greater than twice the thickness of said sunshield, such that said top and bottom sections can be folded upon said horizontal fold line so as to overlie each other, said adjacent first inner and outer backing panels overlying each other to form one composite backing panel, said second adjacent inner and outer backing panels overlying each other to form a second composite backing panel, one of said end panels being foldable on said transverse fold lines of one of said composite backing panels and received within the width of said other composite backing panel, said other end panel being foldable upon said transverse fold lines of said other composite backing panel to overlie said one end panel.

4,878,709
RETRACTABLE LEGREST FOR DENTAL CHAIR
Kei Okamoto, 816, Kurotani, Osawabe, Yso-Shi, Osaka, Japan
Continuation of Ser. No. 70,089, Jul. 6, 1987. This application Jan. 27, 1988, Ser. No. 148,108
Int. Cl.^{4} A47C *7/50*
U.S. Cl. 297—68 6 Claims



1. A legrest for a positionable chair having a seat and a legrest extending therefrom, said legrest comprising:
- (a) legrest frame means pivotally attached to said seat of said chair proximate a front end thereof;
- (b) sub-frame means fixedly coupled to said legrest frame means;
- (c) extendable cylinder means pivotally attached at an end thereof to said seat of said chair proximate said front end thereof but more removed from said front end than the pivotal attachment of said legrest frame means to said chair, the other end of said extendable cylinder means attached to said sub-frame means so that when said extendable cylinder means is extended, said sub-frame is moved along with the extendable end of said extendable cylinder means and said legrest frame is moved arcuately about its pivotal attachment to said seat of said chair;
- (d) internal frame means positioned between said legrest frame means and said sub-frame means movably connected to said sub-frame means by a rail and guide means and extendable out of its position between said legrest means and said sub-frame means in response to action of a linkage means said linkage means comprising spring means having a first end connected to said legrest means and a second end connected to said internal frame means for urging said internal frame means into a home position, a plurality of pairs of linkage arms forming a dual network linkage system each network pivotally interconnecting said internal frame means and said sub-frame means to each other with one end of each said network connected to said seat of said chair and the other end of each said network connected to said internal frame means, each said network connected to said sub-frame means at a pivot point interum said one end and said other end of the respective network so as to move said internal frame means relative to its position between said legrest and said sub-frame means when said extendable cylinder means moves said sub-frame means.

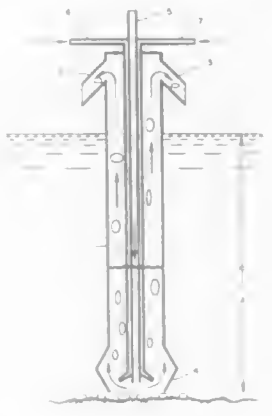
4,878,710
WALL PROXIMITY CHAIR
Billy D. Tacker, Okolona, Miss., assignor to Super Sagless Corporation, Tupelo, Miss.
Filed Jul. 11, 1988, Ser. No. 217,155
Int. Cl.^{4} A47C *1/02*
U.S. Cl. 297—68 12 Claims



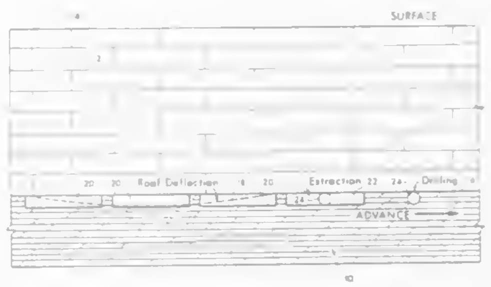
1. A reclining chair having a base, seat and backrest, and a pair of linkage mechanisms for supporting the seat and backrest for movement between upright, TV and reclining positions, each of said linkage mechanisms comprising
- a base plate forming part of the base,
- a support link,
- front and rear pivot linkages pivotally carrying the support link above the base plate, said rear pivot linkage including a pivot link and an additional link connected in series between the base plate and support link,
- said front pivot linkage including a pair of substantially parallel swing links pivoted at their upper ends to the base plate and a front pivot link connected at its lower end to the lower ends of the pair of swing links, said front pivot link being connected intermediate its ends to the support link.
- a control link connected between the front and rear pivot linkages for preventing collapse of the support link and pivot linkages on the base plate,
- a seat mounting bracket carried on the support link by a second pair of swing links, said seat mounting bracket carrying the seat,
- and an actuating linkage including a handle mounted on the seat mounting bracket for causing the front and rear pivot linkages to swing the support link forwardly and the seat mounting bracket and seat to the TV position.

4,878,711
METHOD AND APPARATUS FOR MINING OF OCEAN FLOORS
Bernard Vinot, Paris, and Odile Constant, Chelles, both of France, assignors to Rhone-Poulenc Chimie, Courbevoie, France
Filed Feb. 16, 1988, Ser. No. 155,701
Claims priority, application France, Feb. 16, 1987, 87 01913
Int. Cl.^{4} E02F *7/00*
U.S. Cl. 299—9 20 Claims

1. A process for the mining of ocean floors, comprising arranging a recovery tube so as to extend between an ocean surface and the ocean floor and confining a column of sea water therein, injecting a pressurized gas into said tube, while separately contemporaneously injecting an aqueous solution of at least one water-soluble, high molecular weight suspension enhancing polymer into a base of said tube so as to form a diluted dispersion of particulate ocean floor solids, conveying the diluted dispersion towards the ocean surface, and recovering said particulate solids from the diluted dispersion.



4,878,712
HYDRAULIC METHOD OF MINING COAL
Fun-Den Wang, 108 S. Eldridge Way, Golden, Colo. 80401
Filed Sep. 9, 1988, Ser. No. 243,478
Int. Cl.^{4} F21C *25/60;* E21C *41/00*
U.S. Cl. 299—10 22 Claims



1. A mining method primarily intended for mining coal and other deposits, comprising:
- (a) providing an entry adjacent to at least a portion of the deposit to be mined; and
- (b) extracting through said entry a substantially horizontal layer of adjacent slices from the deposit by the steps of:
  - (1) drilling a substantially horizontal borehole from said entry extending the length of the slice to be extracted, and
  - (2) introducing a water jet into said borehole and extracting said slice of deposit extending laterally from said borehole by means of said water jet,

each of said slices extending in a substantially horizontal plane and having an upper and lower surface, the upper and lower surfaces of said slices forming a substantially continuous roof and floor, respectively, above and below said slices, the vertical separation between said surfaces being sufficiently small that elastic downward deformation of said roof due to settling will cause a portion of said roof to contact and be supported by a portion of said floor.

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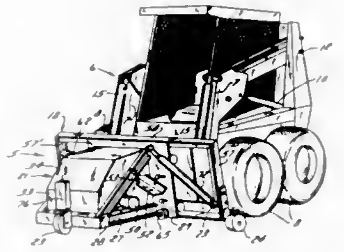
4,878,713
PAVEMENT PLANING MACHINE

C. Christopher Zanetis, Wauwatosa, Wis., assignor to Alitec Corporation, Menomonee Falls, Wis.

Filed Dec. 9, 1988, Ser. No. 282,383

Int. Cl.⁴ E01C *23/09*

U.S. Cl. 299—39 7 Claims



1. A pavement planing machine for removable attachment to a self-propelling vehicle such as a front end loader, said vehicle having a pair of lift arms. each outwardly adjacent to one of a pair of opposite sides of the vehicle, said arms being swingable up and down in unison about a laterally extending arm axis near a rear end of the vehicle and projecting forward from that axis to have front ends in front of a front end of the vehicle, attachment means on the front ends of said arms providing for removable attchment of a bucket to said arms and for swinging of the bucket relative to said arms about a bucket axis that is near their front ends and is parallel to said arm axis, and pressure fluid energizable arm actuating means connected with a pressure fluid source on the vehicle for controlledly raising and lowering said arms, said pavement planing machine comprising:

- A. a housing that is substantially open at its bottom, said housing having
  - (1) a top wall,
  - (2) a pair of opposite uproght sides walls spaced apart by a distance substantially smaller than the distance between said arms,
  - (3) a laterally extending front member rigidly connected with said side walls at front ends of them, and
  - (4) a plate-like edgewise upright and laterally extending rear wall
    - (a) rigidly secured to said side walls at rear ends of them and
    - (b) having at least one marginal portion which projects edgewise outwardly beyond one of the other of said walls;
- B. mounting means on each of said side walls for removably supporting a digging instrumentality that is rotatable in the housing, said mounting means defining a rotation axis substantially normal to said side walls about which said instrumentality is rotatable and whic is fixed in relation to said housing to partake of all motion thereof;
- C. an upright frame member removably securabel to said attachment means to replace said bucket and to be swingable about said bucket axis, said frame member having laterally opposite ends and having a width between those ends to extend laterally across the entire distance between said arms;
- D. a carrier confined between said frame member and said rear wall;
- E. cooperating guide means on said frame member and on said carrier confining the latter to lateral motion relative to the frame member between an off-center position near one of said ends of the frame member and a central position intermediate said ends of the frame member;
- F. cooperating pivot means on said carrier and on said rear wall of the housing confining the housing to tilting adjustment relative to the carrier about a fore-and-aft extending tilting axis which is at a level below said rotation axis and is adjacent to the side wall of the housing that is remote from said one end of the frame member;
- G. cooperating releasable clamping means on said carrier and on said marginal portion of the rear wall for releasably confining the housing against tilting relative to the carrier and thus maintaining the rotation axis in a selected position of inclination to the horizontal; and
- H. pressure fluid actuated expansible and retractable jack means
  - (1) connectable with said pressure fluid source,
  - (2) having at one end thereof a connection with said frame member that is near the other of its said ends and near the level of said pivot connection and
  - (3) having at an opposite end thereof a conneciton with said housing that is at a level substantially above said rotation axis and is adjacent to said side wall that is remote from said one end of the frame member,

so taht said jack means can effect lateral shifting of the carrier relative to the frame member and can control tilting of the housing relative to the carrier.

4,878,714
CUTTING MACHINE FOR CUTTING AND CARRYING AWAY MATERIAL FROM A WORK FACE

Franz Bärnthaler, Weissenkirchen, and Krzysztof Rutkowski, Vienna, both of Austria, assignors to Voest-Alpine Aktiengesellschaft, Linz, Austria

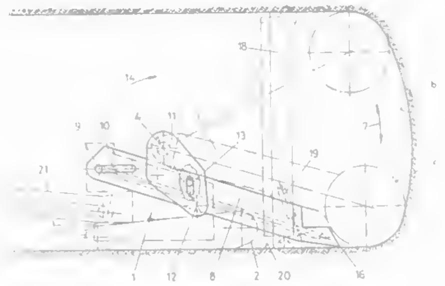
PCT No. PCT/AT87/00072, § 371 Date Aug. 22, 1988, § 102(e) Date Aug. 22, 1988, PCT Pub. No. WO88/03985, PCT Pub. Date Jun. 2, 1988

PCT Filed Nov. 26, 1987, Ser. No. 251,707

Claims priority, application Austria, Nov. 26, 1986, 3162/86

Int. Cl.⁴ F21D *9/10, 9/12*

U.S. Cl. 299—67 5 Claims



1. A cutting machine for cutting and carrying away material from a work face, comprising:

- a machine frame and means for supporting the machine frame on a floor in front of a work face;
- a longitudinally extending cutting arm having a forward end supporting for rotation at least one cutting head or drum;
- means mounting said cutting arm, rearwardly of said forward end thereof, to said machine frame for pivoting about a first transverse axis, for raising and lowering said cutting head or drum relative to said first transverse axis;
- a longitudinally extending loading ramp or conveyor having a front edge positionable near the work face for receiving and transporting away from the work face material cut from the work face by operation of the cutting head or drum;
- means mounting the loading ramp or conveyor to the machine frame for displacement in a longitudinal direction towards and away from the work face;
- said means mounting said cutting arm to said machine frame providing for adjustment of position of said first transverse axis longitudinally towards and away from the work face;
- means coupling said loading ramp or conveyor to said means for mounting said cutting arm to said machine frame for consequential movement therewith, so that as said cutting head or drum is moved towards and away from the work face relative to the machine frame, the front edge of the loading ramp or conveyor is moved towards and away from the work face.

4,878,715
BRAKE CONTROL DEVICE FOR VEHICLES

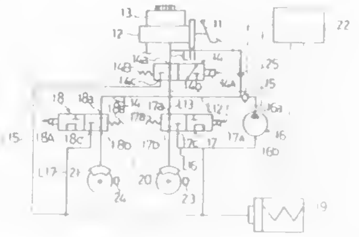
Hiroshi Toda, Kariya, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Sep. 13, 1988, Ser. No. 243,846

Claims priority, application Japan, Sep. 17, 1987, 62-231134

Int. Cl.⁴ B60T *8/48*

U.S. Cl. 303—110 6 Claims



1. A brake control device for a vehicle wheel, comprising:

- a pedal-actuated master cylinder having an outlet,
- a wheel cylinder for braking the vehicle wheel,
- first valve means having an outlet, and an inlet communicating with said master cylinder outlet, and an outlet,
- first fluid conduit means extending from said first valve means to said wheel cylinder,
- a fluid pump having an inlet and an outlet,
- second fluid conduit means extending from said first valve means to said pump inlet,
- second valve means disposed in said first fluid conduit means and having an inlet and an outlet, said pump outlet communicating with said inlet of said second valve means,
- shifting means for shifting said first valve means between: (a) an anti-skid braking position in which said outlet of said first valve means communicates with said inlet of said second valve means through said first fluid conduit means, and (b) a traction control position in which said outlet of said first valve means communicates with said pump inlet through said second fluid conduit means, and for shifting said second valve means between (c) a pressure-applying position in which said inlet of said second valve means communicates with said wheel cylinder, and (d) a pressure-relieving position in which said wheel cylinder communicates with said pump inlet,
- relief conduit means for conducting fluid from said pump outlet to said master cylinder when a pump outlet pressure exceeds a master cylinder pressure by a predetermined value,
- sensing means for sensing skidding and slipping conditions of the vehicle wheel, and control means operably connected to said sensing means for causing said second valve means to be selectively shifted between said pressure-applying and pressure-relieving positions in response to sensed skidding conditions of the vehicle wheel, and for causing said first valve means to be shifted between said anti-skid braking position and said traction control position in response to sensed slipping conditions of the vehicle wheel.

4,878,716
Patent Not Issued For This Number

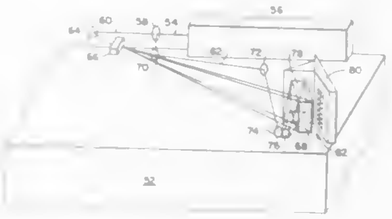
4,878,717
APPARATUS AND METHOD FOR RAPIDLY CONSTRUCTING HOLOGRAMS

Hendrik J. Gerritsen, Providence, R.I., assignor to Brown University Research Foundation, Providence, R.I.

Filed Nov. 19, 1987, Ser. No. 122,373

Int. Cl.⁴ G03H *1/08, 1/30*

U.S. Cl. 350—3.66 20 Claims



1. An apparatus for constructing a multiplex hologram of two-dimensional images, comprising:

- a variable-reflectance device whose reflectance varies in a series of patterns representative of a series of two-dimensional images;
- a holographic plate to be exposed;
- means for directing an object beam of coherent radiation at said variable-reflectance device to be redirected by said device to said holographic plate;
- means for directing a reference beam of coherent radiation at said holographic plate to produce, in combination with

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said redirected object beam, a holographic interference pattern on said plate; and

mask means for selectively exposing successive portions of said plate corresponding to successive ones of said images to form a multiplex hologram on said plate.

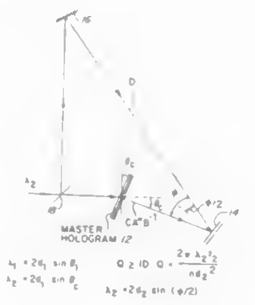
4,878,718
METHOD FOR HOLOGRAPHIC CORRECTION OF BEAMS OF COHERENT LIGHT

C. Gilbreath-Frandsen, Washington, D.C., and James W. Wagner, Annapolis, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 5, 1986, Ser. No. 938,314

Int. Cl.⁴ G02B *5/32*

U.S. Cl. 350—3.69 14 Claims



11. A product produced by a method for forming holograms, said method comprising steps for:

directing first and second mutually coherent beams of light of wavelength λ_1 onto a first holographic emulsion at an angle θ_1 measured in opposite directions, respectively, from the normal to said first holographic emulsion, said directing being effective to create an interference pattern of line spacing d_1 on said first holographic emulsion, said λ_1 being defined by: $\lambda_1=2d_1\mathrm{Sin}(\theta_1)$;

developing said first holographic emulsion effective to cause said first interference pattern to be fixed in said first holographic emulsion as a first developed hologram corresponding to said first interference pattern;

directing a third beam of light having wavelength λ_2 onto said developed hologram at a Bragg angle θ_c effective to cause said first developed hologram to diffract said third beam of light, said θ_c being defined by: $\lambda_2=2d_1\mathrm{Sin}(\theta_c)$;

directing the diffracted third beam and a fourth beam of light coherent with said third beam onto a second holographic emulsion at an angle $(\phi/2)$ measured in opposite directions, respectively, from the normal to the second holographic emulsion, said directing of said diffracted third beam being effective to create a second interference pattern of line spacing d_2 on said second holographic emulsion, said first holographic emulsion being selected to be more sensitive to said λ_1 than said λ_2, said second holographic emulsion being selected to be more sensitive to said λ_2 and λ_1, said $\phi/2$ being constrained to satisfy both:

$$\lambda_2=2d_2\ \mathrm{Sin}\ (\phi/2)\ \text{and}$$

$$10\geqq(2\pi\lambda_2 t)/(nd_2^2)$$

said t being the thickness of said second holographic emulsion; and

developing said second holographic emulsion effective to cause said second interference pattern to be fixed in said second holographic emulsion as a second developed hologram corresponding to said interference pattern, said second developed hologram being said product.

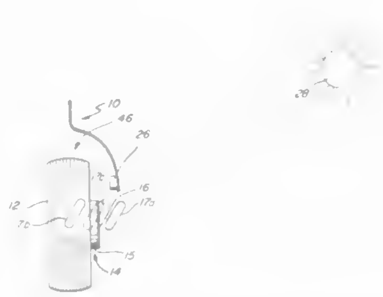
4,878,719
AUTOMOTIVE WHEEL COVERS WITH SPATIALLY STABILIZED IMAGES

John E. Wreede, Monrovia; James E. Scott, Los Angeles, and Richard B. Upper, Studio City, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Dec. 15, 1988, Ser. No. 285,458

Int. Cl.⁴ G03H *1/26*

U.S. Cl. 350—3.75 19 Claims



1. In a vehicle, an improved wheel system that provides an emblem image relative to a rotating wheel, the improvement comprising:

a wheel cover member fixed on and rotatable with the rotating wheel; and

a hologram assembly fixed to said wheel cover member so that said hologram assembly may be exposed to sunlight, said hologram assembly having a plurality of exposures therein, each of which is subject to being selectively used to produce one of a plurality of emblem images of said exposures, said emblem images capable of being remotely positioned from and stationary relative to said vehicle.

4,878,720
DEVICE FOR DEFLECTING A BUNDLE OF LIGHT RAYS

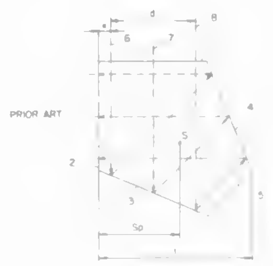
Peter Hanke, Eichenau, and Wie Postanschrift, Munich, both of Fed. Rep. of Germany, assignors to Optische Werke G. Rodenstock, Munich, Fed. Rep. of Germany

Filed Dec. 4, 1987, Ser. No. 128,868

Claims priority, application Fed. Rep. of Germany, Mar. 5, 1987, 3707023

Int. Cl.⁴ G02B *26/10, 5/04*

U.S. Cl. 350—6.4 20 Claims



1. In a light scanner system including a rotating device for deviating a light beam of a bundle of light rays into a plane, the rotating device comprising a deflecting prism of constant deviation rotatable about an axis, the improvement comprising the deflecting prism being a Wollaston type quadrangular prism having two prism faces forming a right angle therebetween and having an axis of rotation oriented substantially perpendicular to one of the two prism faces having the right angle therebetween, the quadrangular prism having a center of gravity substantially close to the axis of rotation thereof, wherein the quadrangular prism enables rotation at high speed without expensive balancing as necessitated when a pentaprism is utilized, the quadrangular prism having the center of gravity closer to the axis of rotation thereof than the distance between the center of gravity and the axis of rotation of a pentaprism.

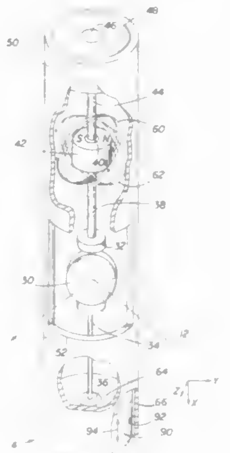
4,878,721
RESONANT MECHANICAL SYSTEM

Dean R. Paulsen, Danvers, Mass., assignor to General Scanning, Inc., Watertown, Mass.

Filed Feb. 17, 1987, Ser. No. 14,998

Int. Cl.⁴ G02B *26/10*

U.S. Cl. 350—6.6 21 Claims



2. A resonant rotationally oscillating mechanical system comprising

an even number of masses supported at spaced apart locations along a resilient structure held at both ends on a stationary base to define a natural resonance frequency of intended rotational motion about an axis relative to said base,

said resilient structure, for a selected mode of motion, being stiff so as to substantially preclude angular motion of one of said masses relative to said base about an axis other than said axis of said intended rotational motion.

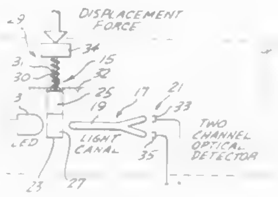
4,878,722
WAVELENGTH ENCODED OPTICAL SWITCHES

Leonard Y. Nelson; John R. Green, and Carol W. Wong, all of Seattle, Wash., assignors to Korry Electronics Company, Seattle, Wash.

Filed Jun. 24, 1988, Ser. No. 211,437

Int. Cl.⁴ G02B *6/36*

U.S. Cl. 350—96.2 50 Claims



26. A wavelength encoded optical switch system comprising:

(A) a plurality of switch stations, each of said switch stations comprising:

(1) a light source for generating a beam of light energy;

(2) a movable element located in the beam of light produced by said light source, said movable element including at least two sections, at least one of said two sections comprising a filter having a dissimilar transmissivity effect on light produced by said light source in two different wavelength bands lying within the wavelength band of light produced by said light source; and

(3) positioning means for selectively positioning one or the other of said two sections of said movable element in the beam of light produced by said light source;

(B) pulse generating means for generating a plurality of trigger pulses and selectively applying said trigger pulses to said light sources of said switch stations such that only one of said light sources receives a trigger pulse at one same point in time;

(C) a two-channel photodetector including two light detectors configured to detect light in the two different wavelength bands lying within the wavelength band of light produced by said light source; and,

(D) optical coupling means for conveying light from the side of said removable element remote from said light source to said two-channel detector.

4,878,723
OPTICALLY CONTROLLED SEMICONDUCTOR WAVEGUIDE INTERFEROMETER APPARATUS

Ying C. Chen, Closter, N.J.; Jia-ming Liu, Arlington, and Michael A. Newkirk, Auburndale, both of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Feb. 6, 1986, Ser. No. 826,644

Int. Cl.⁴ G02B *6/10;* H01J *40/14;* G01B *9/02;* H01L *27/14*

U.S. Cl. 350—96.14 14 Claims

1. An optically controlled semiconductor waveguide interferometer apparatus comprising

a Mach-Zehnder interferometer formed of semiconductor laser materials selected from the group consisting of double heterostructure and quantum-well semiconductor laser materials,

said interferometer having a carrier input port and a carrier output port, and having two optical paths coupling said ports together for dividing an applied input optical signal to said input port and then recombining the divided input signal after passing through the two optical paths and providing the recombined signal onto said output port;

first optoelectronic switching means adapted to be coupled across a first voltage potential and one of said optical paths, said first optoelectronic switching means having a gap therein; and

means for applying a first light pulse to said gap for controlling the index of refraction of said one optical path,

whereby

said first light pulse controls said interferometer so that the output intensity of said interferometer is maximized.

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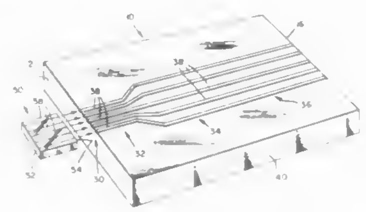
4,878,724
ELECTROOPTICALLY TUNABLE PHASE-LOCKED LASER ARRAY

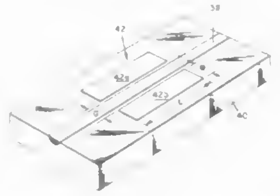
Suwat Thanlyavarn, Bellevue, Wash., assignor to TRW Inc., Redondo Beach, Calif.

Filed Jul. 30, 1987, Ser. No. 79,552

Int. Cl.⁴ G02B *6/10*

U.S. Cl. 350—96.14 — 7 Claims





1. A waveguide structure for controlling the characteristics of the optical outputs of a semiconductor laser array having multiple laser elements coupled to the waveguide structure, comprising:

- a first plurality of substantially parallel waveguides formed in an electrooptical material, the waveguides being optically coupled along their lengths;
- a plurality of electrodes formed adjacent to the first plurality of waveguides for inducing changes in the degree of optical coupling between the waveguides to provide control of the relate amplitudes of the optical outputs of the laser elements;
- a second plurality of substantially parallel waveguides formed in the electrooptical material and optically coupled to the first plurality of waveguides, the second plurality of waveguides being optically uncoupled along their lengths; and
- a plurality of electrodes formed adjacent to the second plurality of waveguides for inducing changes in the relative phases of the optical outputs of the laser elements;
- whereby both the amplitude and phase of the optical outputs of the laser elements are controlled to produce a desired optical output from the waveguide structure.

4,878,725
APPARATUS FOR THE CIRCUMFERENTIAL IRRADIATION OF OBJECTS

Stefan Hessel, and Thomas Ischinger, both of Munich, Fed. Rep. of Germany, assignors to Messerschmitt-Bölkow-Blohm GmbH, Munich, Fed. Rep. of Germany

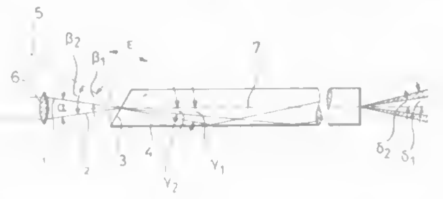
Filed May 24, 1988, Ser. No. 198,453

Claims priority, application Fed. Rep. of Germany, May 25, 1987, 3717525

Int. Cl.⁴ G02B *6/32*

U.S. Cl. 350—96.15 — 11 Claims

1. Apparatus for the circumferential irradiation of objects, especially of vessels, hollow organs and solid tissue by high-intensity optical radiation which is conducted to the irradiation site by a flexible optical fiber having a near end and a distant end, wherein the optical radiation comprises two marginal rays in a cross section defining an illuminated line, the radiation being coupled into an end face of the near end of the optical fiber at a predetermined angle (β_1, β_2) to the surface normal of the end face of the optical fiber such that the optical radiation emanates at the distant end of the optical fiber in the form of a conical surface, said predetermined angle β_1 comprising the angle of a first of said marginal rays with respect to the surface normal and said predetermined angle β_2 comprising the angle of a second of said marginal rays with respect to the surface normal, said predetermined angles β_1 and β_2 each being greater than 0°.



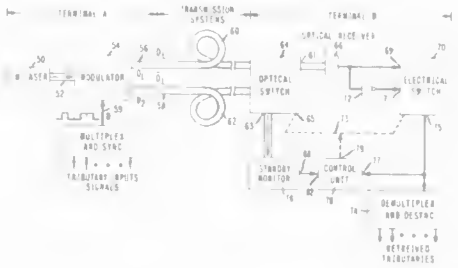
4,878,726
OPTICAL TRANSMISSION SYSTEM

Mohammad T. Fatehi, Middletown, N.J., assignor to American Telephone and Telegraph Company, New York, N.Y. and AT&T Bell Laboratories, Murray Hill, N.J.

Filed Nov. 10, 1988, Ser. No. 269,289

Int. Cl.⁴ G02B *6/26*

U.S. Cl. 350—96.15 — 6 Claims



1. An optical network comprising

- a laser for generating optical energy,
- a directional coupler modulator having a control port coupled to simultaneously transmit optical signals to a first output port and the complement of said optical signal to a second output port,
- a first transmission network coupled to receive the optical energy from said first port,
- a second transmission network coupled to receive the complementary optical energy from said second port,
- an optical receiver for converting received optical signals to electrical signals,
- an optical switch coupled to said first and second transmission networks to pass only the optical signal on said first transmission network to said optical receiver, and
- control means coupled to selectively activate said optical switch to pass only the optical signal on said second transmission network to said optical receiver.

4,878,727
MULTIMODE CHANNEL WAVEGUIDE OPTICAL COUPLING DEVICES AND METHODS

Anthony A. Boiarski, Upper Arlington, and William M. Myers, Grandview Heights, both of Ohio, assignors to Battelle Memorial Institute, Columbus, Ohio

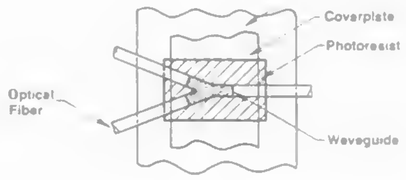
Filed Jun. 30, 1988, Ser. No. 213,657

Int. Cl.⁴ G02B *6/30*

U.S. Cl. 350—96.17 — 14 Claims

1. A method of fabricating a device for optical coupling between multimode fiber optic means via multimode channel waveguide means comprising

- providing a substrate having a predetermined relatively lower index of refraction with a substantially planar surface and an elongate open channel therein,
- filling a predetermined middle portion of the channel with an optically conductive waveguide material in a liquid state and having a predetermined relatively higher index of refraction,



- then hardening a middle portion of the waveguide material, placing a fiber optic means in each end of the channel adjacent to each end of the waveguide material with an end of each fiber optic means contacting the adjacent end of the waveguide material, and then
- hardening the rest of the waveguide material to form a continuous waveguide means having a predetermined relatively higher index of refraction and to attach each end thereof to the adjacent end of one said fiber optic means.

4,878,728
MULTILAYER INTEGRATED OPTICAL DEVICE

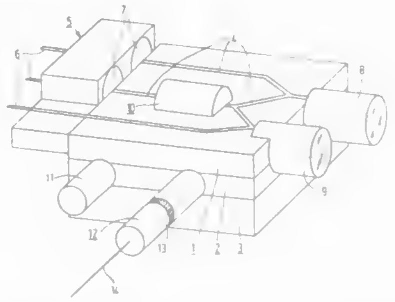
Lothar P. Mannschke, Eckental-Eckenhaid, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 681,162, Dec. 13, 1984, abandoned. This application May 23, 1988, Ser. No. 198,700

Claims priority, application Fed. Rep. of Germany, Dec. 17, 1983, 3345715; Dec. 17, 1983, 3345716

Int. Cl.⁴ G02B *6/30*

U.S. Cl. 350—96.17 — 15 Claims



1. A multilayer integrated optical device comprising:

- a substrate;
- a first optical waveguide arranged on or in the substrate, said first waveguide extending in at least two directions substantially in a first plane, said first waveguide having an end face;
- a second optical waveguide arranged on or in the substrate, said second waveguide extending substantially in a second plane, said second plane being spaced from but substantially parallel to the first plane, said second waveguide having an end face arranged substantially above or below the end face of the first waveguide; and
- means for imaging the end face of the first optical waveguide and the end face of the second optical waveguide onto each other, said means being arranged at least partly outside the substrate.

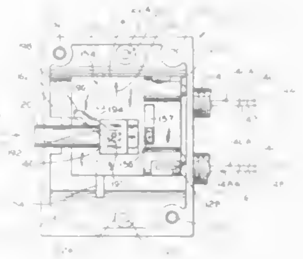
4,878,729
OPTICAL SWITCH

David G. Stewart, Livingstone, South Africa, assignor to Square D Company, Palatine, Ill.

Filed Oct. 28, 1985, Ser. No. 791,802

Int. Cl.⁴ G02B *6/32*

U.S. Cl. 350—96.18 — 5 Claims



1. an optical switch comprising:

- a housing;
- at least one mirror mounted within said housing;
- a drive rod, said at least one mirror mounted upon said drive rod, said drive rod capable of linear motion so that in at least one position of said drive rod said at least one mirror is capable of reflecting light in a desired direction; and
- means for attaching both a first optical fiber and a second optical fiber to said housing so that at least some of the light entering said housing from said first optical fiber may be reflected from said mirror and travel in said second optical fiber in at one position of said mirror, and said mirror may be moved to reduce the intensity of said light reflected into said second optical fiber.

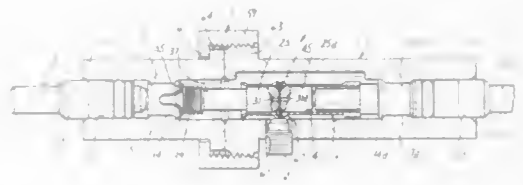
4,878,730
FIBER OPTIC ATTENUATOR

Stephen W. Wall, Costa Mesa, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Oct. 31, 1988, Ser. No. 264,426

Int. Cl.⁴ G02B *6/38*

U.S. Cl. 350—96.21 — 9 Claims



1. A fiber optic attenuator comprising:

- first and second fiber optic termini, each of said termini including a body with an end face and an optical fiber carried by the body, each of the optical fibers having a distal end adjacent the end face;
- connector means for connecting the fiber optic termini with the end faces in confronting relationship and the distal ends of the optical fibers optically coupled so that an optical signal can be transmitted from one of the termini to the other; and
- means for relatively displacing said distal ends in a generally radial direction from a first optically coupled position to a second optically coupled position, to introduce radial misalignment to the optical fibers and attenuate the optical signal.

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said connector means including resilient means for urging the distal ends from the second optically coupled position toward the first optically coupled position whereby, when the displacing action of the displacing means is removed, the resilient means urges the distal ends toward the first optically coupled position.

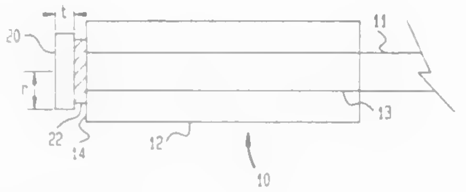
4,878,731
FIBER OPTIC CONNECTOR INCLUDING FERRULE WITH FILTER ISOLATOR

Bernard G. Caron, Harrisburg; Pamela R. Gutterman, Camp Hill, and Dale D. Murray, Mount Joy, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Feb. 19, 1988, Ser. No. 146,447

Int. Cl.^{4} G02B *6/38*

U.S. Cl. 350—96.21 2 Claims



2. In combination,

an optical fiber for conducting optical radiation, said optical fiber defining a longitudinal axis and an exit facet via which radiation leaves the fiber, said exit facet being oriented perpendicular to said longitudinal axis, and

a connector for terminating said optical fiber, said connector comprising a ferrule including a bore for receiving the optical fiber and an end face oriented perpendicular to said longitudinal axis of said fiber, said fiber being received in the bore of said ferrule so that said end face of said ferrule and said exit facet of said fiber are substantially co-planar,

said connector further including a sheet of material capable of transmitting optical radiation in a particular wavelength band, said sheet having an area larger than the area of the exit facet of said fiber, and

sealing means for sealing said sheet to the end face of said ferrule in an orientation parallel to said end face for filtering radiation exiting said fiber via said exit facet to provide said connector with an improved coupling ratio versus wavelength characteristic.

4,878,732
OPTICAL COMMUNICATION CABLE WITH RIBBON WAVEGUIDE SUPPORT

Peter Rohner, Isernhagen, and Gerhard Ziemek, Langenhagen, both of Fed. Rep. of Germany, assignors to kabelmetal electro Gesellschaft mit beschränkter Haftung, Hanover, Fed. Rep. of Germany

Filed Mar. 11, 1987, Ser. No. 24,739

Claims priority, application Fed. Rep. of Germany, Mar. 11, 1986, 367970; Dec. 22, 1986, 3643886

Int. Cl.^{4} G02B *6/44*

U.S. Cl. 350—96.23 21 Claims

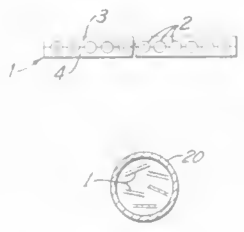
13. A communication cable comprising:

a jacket of high tensile strength;

a core surrounded by the jacket, there being disposed in the core at least one ribbon line comprising two ribbon-shaped supports, there being optical waveguides fixed in place extending parallel to each other between the two ribbon-shaped supports;

wherein, to produce a flexible and easy treatable ribbon line of high tensile strength, the optical waveguides are laminated between the two ribbon-shaped supports of said at least one ribbon line, the ribbon-shaped supports being made of plastic which is reinforced with fiberglass, and the ribbon-shaped supports having a coefficient of thermal expansion essentially equal to that of the optical waveguides; and

the optical waveguides are spaced apart from each other defining intermediate spaces between the optical waveguides, the ribbon-shaped supports each being provided on one side with an adhesive layer and being bonded both to the optical waveguides and to each other at the edges and in the intermediate spaces of a ribbon line, the adhesive and the plastic providing sufficient flexibility to said ribbon line to permit a longitudianal flexing of the ribbon line.



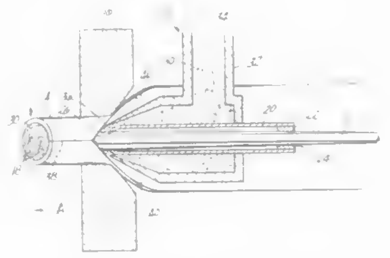
4,878,733
OPTICAL FIBER COMMUNICATION CABLE HAVING A HIGH STRENGTH, DRAWN COPPER ALLOY TUBE

Joseph Winter, New Haven, and Michael J. Pryor, Woodbridge, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed May 24, 1983, Ser. No. 497,546

Int. Cl.^{4} G02B *6/44*

U.S. Cl. 350—96.23 13 Claims



1. An optical fiber communication cable comprising:

at least one optical fiber;

a high strength drawn copper alloy tube surrounding said optical fiber, said tube having its interior free of any structural reinforcing member and a tube defining wall of a desired substantially constant thickness;

said tube wall including a generally longitudinally extending seam; and

said seam being defined by opposing substantially nonlinear deformed edges whose length from the outside of said tube to the inside of said tube exceeds the thickness of said wall.

4,878,734
BICYCLE WHEEL ACTIVATED REFLECTOR

Ralph J. Trebnick, P.O. Box 23, Bovey, Minn. 55709

Filed Jun. 22, 1988, Ser. No. 210,091

Int. Cl.^{4} G02B *5/12*

U.S. Cl. 350—99 7 Claims

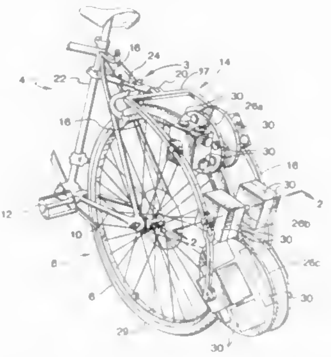
1. A reflector apparatus for a bicycle comprising

a bracket secured by a shaft to a frame of the bicycle adjoining the periphery of a rear wheel thereof;

means pivotally connecting the bracket to the shaft, such that the axis of the pivotal connecting means is substantially parallel to the rear wheel transverse support axis of rotation;

at least a first drive wheel means axially supported by the bracket and operatively engaging the rear wheel periphery for rotation therewith, the drive wheel means having an axis of rotation located rearwardly of the rear wheel axis of rotation;

at least one reflecting means operatively connected to the first drive wheel means and rotatable therewith, the reflecting means rotatingly reflecting incident light away from the bicycle.



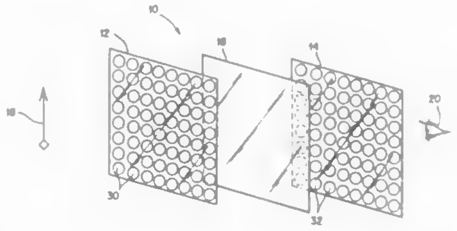
4,878,735
OPTICAL IMAGING SYSTEM USING LENTICULAR TONE-PLATE ELEMENTS

Ivars J. Vilums, DeForest, Wis., assignor to LookingGlass Technology, Inc., Madison, Wis.

Filed Jan. 15, 1988, Ser. No. 144,942

Int. Cl.^{4} G02B *27/22, 27/44*

U.S. Cl. 350—131 52 Claims



1. An optical imaging system for storing, processing and reconstructing an image of an object, comprising:

(a) a generation plane, which encodes information concerning the object into the system, the generation plane including a plurality of first diffraction elements, each of which represents a separate optical element; and

(b) a presentation plane, which decodes the information encoded by the generation plane, the presentation plane including a plurality of second diffraction elements defining a planar array of first circular zone plates;

wherein the generation plane and the presentation plane are separated by a substantially transparent medium having a thickness of at least the sum of the focal lengths of the generation plane and the presentation plane, wherein the substantially transparent medium comprises a resource plane at the focal lengths of the generation plane and the presentation plane.

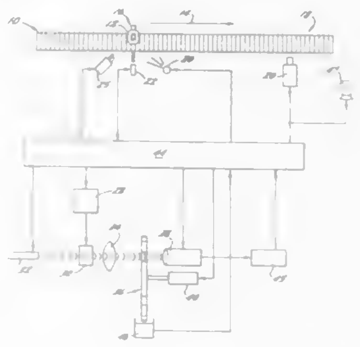
4,878,736
CONTROL MEANS AND METHOD FOR OPTICAL INSPECTION SYSTEM

Roeland M. T. Hekker, and Izhak M. Livny, both of Fairfield, Iowa, assignors to Global Holonetics Corporation, Fairfield, Iowa

Continuation-in-part of Ser. No. 920,513, Oct. 17, 1986. This application Dec. 23, 1987, Ser. No. 137,464

Int. Cl.^{4} G02B *27/46;* **G01N** *21/01*

U.S. Cl. 350—162.13 29 Claims



1. An object inspection system, comprising:

first imaging means for generating electrical signal data representative of the appearance of each inspected object;

second imaging means for receiving said signal data and generating a visual image of the object;

third imaging means for receiving and generating a transform image from said visual image of the object;

signature generating means for sampling light from different spatial domains of said transform image and generating electrical signal data representative thereof and collectively defining a characteristic signature of said transform image and thus of the inspected object;

and control means for automatically controlling and coordinating operation of each of said imaging means and said signature generating means.

4,878,737
OPTICAL LOW-PASS FILTER

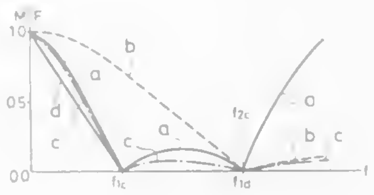
Koichi Ise, Chiba, Japan, assignor to Sony Corp., Tokyo, Japan

Filed Dec. 16, 1987, Ser. No. 133,788

Claims priority, application Japan, Dec. 24, 1986, 61-313859

Int. Cl.^{4} G02B *27/00*

U.S. Cl. 350—167 7 Claims



3. In an optical system of a color video camera having a horizontal scanning direction, an optical low-pass filter comprising:

a transparent substrate having opposed first and second major surfaces, means on at least one of said major surfaces of the substrate for defining first and second periodic structures, said first and second periodic structures extending parallel to each other at an angle to said horizontal scanning direction, and said first and second periodic structures having different periodic lengths measured

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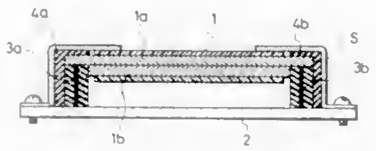
transversely to said first and second periodic structures, respectively.

4,878,738
ELECTRO-OPTICAL DEVICE

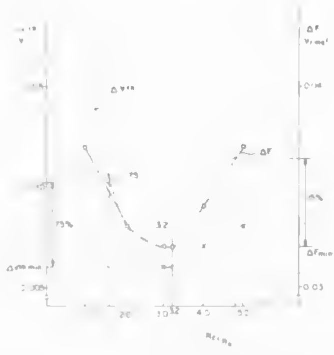
Takayoshi Hanami, Tokyo, Japan, assignor to Seiko Instruments, Inc., **Tokyo, Japan**
Filed Apr. 26, 1988, Ser. No. 186,283
Claims priority, application Japan, Apr. 27, 1987, 62-103709
Int. Cl.⁴ G02F *1/13*
U.S. Cl. 350—334 17 Claims



1. An electro-optical device comprising: an electro-optical panel having opposed inner and outer substrates, the outer one of which has a first group of lead terminals on the inner surface of the periphery thereof. a circuit board having a second group of lead terminals opposed and corresponding to the first group of the lead terminals, a resilient connector for electrically connecting together the first and second groups of the lead terminals, a frame for positioning both the electro-optical panel and connector to the circuit board, and a resilient buffer affixed to the resilient connector and between at least a portion of the electro-optical panel and the frame, the resilient connector and the buffer defining a gap which receives the periphery of the outer substrate therein so as to protect said outer substrate from externally applied shock.

4,878,739
LIQUID CRYSTAL DISPLAY DEVICE WITH PARTICULAR IMPEDANCE RATIO FOR SIGNAL AND COMMON ELECTRODES

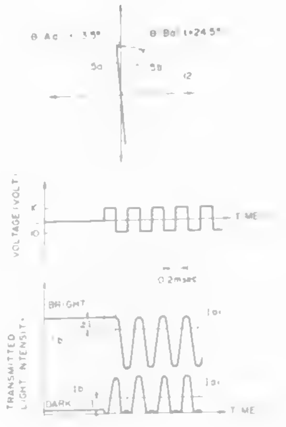
Mitsuaki Shioji, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Sep. 30, 1988, Ser. No. 252,266
Claims priority, application Japan, Dec. 4, 1987, 62-307943
Int. Cl.⁴ G02F *1/13*
U.S. Cl. 350—336 1 Claim



1. A liquid crystal display device having dot matrix electrodes comprising
- a liquid crystal layer,
- a plurality of mutually parallel elongated transparent belt-like first electrodes of length L_1 and width W_1, and
- a plurality of mutually parallel elongated transparent belt-like second electrodes of length L_2 and width W_2, said first and second electrodes sandwiching said liquid crystal layer therebetween and crossing each other to form a lattice across said liquid crystal layer, said first and second electrodes having surface resistance R_1 and R_2, respectively, and the ratio R_1/R_2 being within 50% of L_2W_1/L_1W_2.

4,878,740
LIQUID CRYSTAL DEVICE

Yutaka Inaba, Kawaguchi, and Osamu Taniguchi, Chigasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Jun. 2, 1987, Ser. No. 56,646
Claims priority, application Japan, Jun. 3, 1986, 61-128813
Int. Cl.⁴ G02F *1/13*
U.S. Cl. 350—337 13 Claims



1. A liquid crystal device, comprising:
a liquid crystal cell comprising:
- a pair of substrates; and
- a chiral smectic liquid crystal assuming a first and a second orientation state in response to an electric field applied thereto, wherein said chiral smectic liquid crystal is disposed between said pair of substrates in a layer sufficiently thin to release its helical structure when no electric field is applied thereto; and

optical means for receiving the light from said chiral smectic liquid crystal,

wherein the time-average transmitted light intensity therethrough in either orientation state under the application of an alternating electric field having a time-average of zero not causing a transition between the first and second orientation states is substantially equal to the transmitted light intensity in either orientation state under no electric field.

7. A liquid crystal device according to claim 3, wherein the absorption axis of said polarizer or said analyzer or an axis forming an angle of 45° from the absorption or axis is located between two optic axes based on the first and second orientation states of said chiral smectic liquid crystal under no electric field.

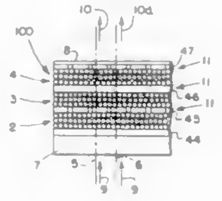
4,878,741
LIQUID CRYSTAL COLOR DISPLAY AND METHOD

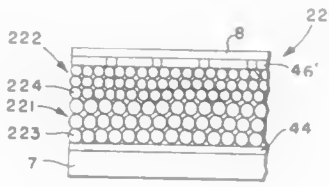
James L. Fergason, Atherton, Calif., assignor to Manchester R & D Partnership, Pepper Pike, Ohio
PCT No. PCT/US86/01863, § 371 Date Dec. 16, 1986, § 102(e) Date Dec. 16, 1986
Continuation-in-part of Ser. No. 707,486, Mar. 1, 1985, abandoned. This PCT application Sep. 10, 1986, Ser. No. 942,548
Claims priority, application PCT Int'l Appl., Sep. 10, 1986, PCT/US86/01863
Int. Cl.⁴ G02F *1/13*
U.S. Cl. 350—339 F 79 Claims

1. An optical device, comprising an assemblage of plural groups of volumes of liquid crystal material, a plurality of said volumes comprising discrete capsules formed by containment medium of isolating polymer containing therein said liquid crystal material, the liquid crystal material in at least one of said groups comprising nematic or operationally nematic liquid crystal, the device being formed in such a way to maintain adequate resistivity to obtain a field across the liquid crystal material in response to an applied voltage to cause alignment of said liquid crystal material with respect to such field, said resistivity being obtained by purifying at least part of the containment medium prior to formation of the device.

2. An optical device, comprising plural groups of volumes of liquid crystal in a containment medium, a plurality of such groups containing in the volumes thereof respective pleochroic dye to color light transmitted therethrough, said volumes being arranged relative to each other in generally optically serial relation to affect color of light transmitted therethrough in a subtractive color operation, and at least one of such groups containing in the volumes thereof black pleochroic dye operative selectively to attenuate light incident thereon.

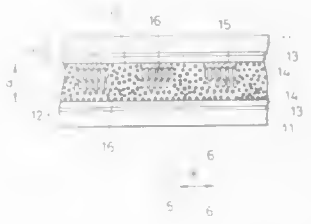
17. An optical device, comprising plural groups of volumes of liquid crystal in a containment medium, a plurality of such groups containing in the volumes thereof respective pleochroic dye to color light transmitted therethrough, said volumes being arranged relative to each other in generally optically serial relation to affect color of light transmitted therethrough in a subtractive color operation, and at least one of such groups containing in the volumes thereof black pleochroic dye operative selectively to attenuate light incident thereon, wherein each group of plural volumes is in a separate layer separated from one or more relatively adjacent layers by electrode means, said electrode means being operative for applying electric field to respective layers as a prescribed input to affect the alignment of liquid crystal structure and dye structure in such volumes, wherein at least one layer is more proximately exposed to a source of external optical radiation than another layer, and the liquid crystal in said more proximately exposed layer includes pleochroic dye that removes at least a substantial amount of ultraviolet optical radiation from such optical radiation emitted by such source prior to passing such optical radiation to a less proximately exposed layer, and wherein said volumes distort the natural structure of the liquid crystal in the absence of an electric field, and in the presence of such electric field the liquid crystal structure tends to aling with respect to such field.





4,878,742
LIQUID CRYSTAL OPTICAL MODULATOR

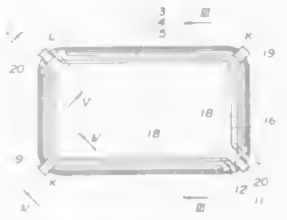
Ynkitoshi Ohkubo, Yokohama; Yasuyuki Watanabe, Chigasaki; Chiori Mochizuki, Yokohama; Takayuki Ishii, Hiratsuka; Masato Yamanobe, Machida, and Kazuya Ishiwata, Yokosuka, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 3, 1987, Ser. No. 80,892
Claims priority, application Japan, Aug. 4, 1986, 61-181938; Aug. 4, 1986, 61-181939
Int. Cl.⁴ G02F *1/13*
U.S. Cl. 350—347 V 11 Claims



1. A liquid crystal optical modulator comprising liquid crystal material held between two substrates, each substrate having a light-transmissive electrode on a surface thereof, at least one of the substrates being provided with at least two kinds of minute alignment-treated regions formed in a regular periodic arrangement with a pitch P and one of the two subtrates has hemeotropic aligning ability and homogeneous aligning ability in periodic alignment and the other substrate has homogeneous aligning ability, wherein the gap between said two substrates is no larger than P and said alignment-treated regions each have different liquid crystal aligning ability than the other regions on the same substrate.

4,878,743
AUTOMOTIVE MIRROR USING ELECTROCHROMIC ELEMENT

Toyoshi Aikawa, Ageo, and Eiichi Sekine, Higashimurayama, both of Japan, assignors to Ichikoh Industries Limited, Tokyo, Japan
Filed Jun. 7, 1988, Ser. No. 203,139
Claims priority, application Japan, Jun. 8, 1987, 62-141492
Int. Cl.⁴ G02F *1/17, 1/23*
U.S. Cl. 350—357 3 Claims



1. An automotive nonglaring mirror using an electrochromic element, comprising:
- a generally rectangular glass substrate having four corners;
- a first transparent electrode layer formed on said glass substrate with portions of a set of corners diagonally opposing each other among said four corners being left uncovered for a pair of insulative portions;
- strip-shaped metal films formed longitudinally and laterally, respectively, on the first electrode layer and made of a material of a rather higher electric conductivity than said first electrode layer;
- a first EC (electrochromic) layer located inside said metal films and formed as laminated on said first electrode layer;

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an electrolyte layer formed on said first EC layer;
a second EC layer formed on said electrolyte layer;
a second electrode layer having a portion extended to said pair of insulative portions, formed on said second EC layer and having a light reflective action;
a pair of first terminal fixtures secured near the corners in a set among the four corners of said glass substrate and electrically connected to said metal films;
a pair of second terminal fixture secured near the corners in another set among the four corners of said glass substrate and electrically connected to the extended portion of said second electrode layer; and
an insulative and protective layer insulating the exposed surface of said second electrode layer.

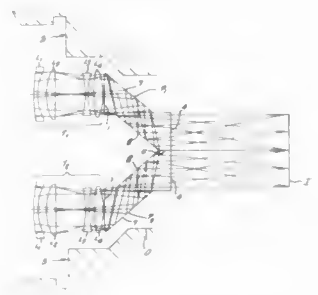
4,878,744
THREE DIMENSIONAL REFLEX LENS SYSTEMS

Robert S. Hilbert, La Canada, and Ronald J. Korniski, Glendora, both of Calif., assignors to Capitol Records, Inc., Los Angeles, Calif.

Division of Ser. No. 814,549, Dec. 30, 1985, Pat. No. 4,688,906. This application Jun. 26, 1987, Ser. No. 67,597

Int. Cl.⁴ G02B *27/22, 9/64*

U.S. Cl. 350—447 6 Claims



1. A three-dimensional optical system adapted for use with reflex cameras, comprising: two parallel and adjacent lens systems each having a sequence of a negative lens element followed by a triplet lens, whereby each of said lens systems gathers and focusses an image onto a focal plane independently of the other lens systems, the focal plane on which one said lens system gathers and focusses an image being the same as the focal plane on which the other said lens system gathers and focusses an image, and the images formed by the said two lens systems being adjacent on the said focal plane.

4,878,745
OPTICAL SYSTEM FOR EFFECTING INCREASED IRRADIANCE IN PERIPHERAL AREA OF OBJECT

Kenji Endo; Shinichi Nagata, and Haruo Uemura, all of Kyoto, Japan, assignors to Dainippon Screen Mfg. Co., Ltd., Kyoto, Japan

Filed Jul. 18, 1988, Ser. No. 220,624

Claims priority, application Japan, Jul. 17, 1987, 62-179630; Jul. 31, 1987, 62-193327; Jul. 31, 1987, 62-193328; Jul. 31, 1987, 62-193329; Aug. 7, 1987, 62-198775

Int. Cl.⁴ G02B *9/34, 13/18, 9/06, 9/12*

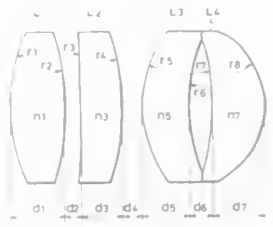
U.S. Cl. 350—469 6 Claims

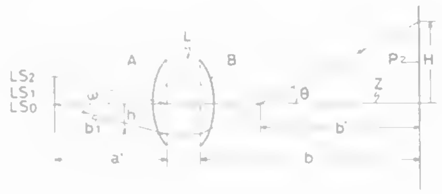
1. An optical system for use in illuminating an object comprising:
a light source;
an entrance pupil for receiving light from the light source;
an exit pupil for passing the light received to the object; and
an optical axis which extends through the optical system to the light source and the object respectively,
wherein the relationship among an incident height h to the entrance pupil, an illumination height H on the object and a changing rate (dh/dH) of the incident height and the illumination height is defined by a function f(H):

$$f(H)=(h/H)(dh/dH)$$

the optical system being designed so as to satisfy the following formula in the peripheral area of the object:

$$f(0)\leqq F(H)$$





f(0) being represented by the formula:

$$f(0)=[fa'/\{(a'-f)b'\}]^2$$

where a' is the distance between the light source and the primary principal point of the optical system, and b' is the distance between the real image of the light source and the object.

4,878,746
SURGICAL MICROSCOPE APPARATUS

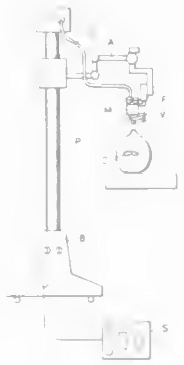
Hiroshi Nakano; Toyoaki Takeuchi, both of Ina; Toshiyuki Tsunoda, Sagamihara, and Masahiko Kinukawa, Tokyo, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Apr. 7, 1988, Ser. No. 178,967

Claims priority, application Japan, Apr. 9, 1987, 62-87421; Oct. 12, 1987, 62-256518

Int. Cl.⁴ G02B *21/00*

U.S. Cl. 350—507 10 Claims



1. A surgical microscope apparatus comprising:

a stereomicroscope for observing an affected part to be operated;
an illumination device attached to said microscope, including a lamp for illumination of the affected part to be operated;
a first failure detecting device, connected to said illumination device, for carrying out an initial examination and an ordinary examination of an operation of said illumination device;
a magnification and focusing device attached to said microscope for electrically controlling a magnifying and focusing of said microscope; and
a second failure detecting device, connected to said magnification and focusing device, for carrying out ordinary examination of operation of said magnification and focusing device.

4,878,747
APERTURE IMAGE BEAM SPLITTER

Donald W. Sting, New Canaan, and Roger G. Messerschmidt, Westport, both of Conn., assignors to Spectra-Tech, Inc., Stamford, Conn.

Continuation of Ser. No. 13,584, Feb. 11, 1987, abandoned, which is a continuation-in-part of Ser. No. 707,231, Mar. 1, 1985, Pat. No. 4,653,880. This application Jan. 24, 1989, Ser. No. 302,112

Int. Cl.⁴ G02B *21/06*

U.S. Cl. 350—511 8 Claims

7. An optics system for spectroscopic analysis comprising.
a radiant energy source;
a sample;
optics means to direct an incident radiant energy beam from the source to the sample, the optics being operative to focus the incident radiant energy beam at first and second sample image planes and at the sample;
the optics means including an aperture image beam splitter positioned between the first and second sample image planes;
the aperture image beam splitter being operative to discard part of the incident radiant energy beam from the system while transmitting the rest of the incident radiant energy beam through the second sample image plane to the sample and being further operative to transmit radiant energy reflected from the sample back through the second sample image plane to a detector.

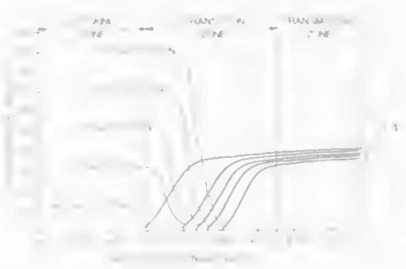
4,878,748
ULTRAVIOLET RADIATION AND BLUE LIGHT BLOCKING POLARIZING LENS

Laurie A. Johansen, and Paul Diffendaffer, both of La Crescenta, Calif., assignors to Suntiger, Inc., North Hollywood, Calif.

Continuation-in-part of Ser. No. 19,556, Feb. 26, 1987, abandoned. This application Mar. 28, 1989, Ser. No. 329,600

Int. Cl.⁴ G02C *7/10, 7/12*

U.S. Cl. 351—44 19 Claims



1. A sunglass lens comprising:
(a) means to substantially block wavelengths in the electromagnetic spectrum that are between 300 nanometers and a specific sharp cut-on wavelength that is selected between a range of 450 and 550 nanometers, where the selection of the specific cut-on wavelength is based on a trade-off between visibility and safety that is determined quantitatively,
(b) means to substantially transmit wavelengths in the visible portion of the electromagnetic spectrum that are longer than 625 nanometers, and
(c) means to substantially block horizontally polarized light.

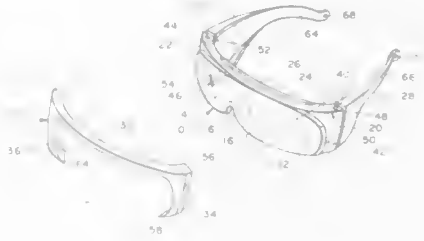
4,878,749
PROTECTIVE EYEWEAR WITH INTERCHANGEABLE DECORATIVE FRAMES

James E. McGee, 31635 Blue Meadow La., Westlake Village, Calif. 91361

Filed Jun. 29, 1988, Ser. No. 212,881

Int. Cl.⁴ G02C *11/02*

U.S. Cl. 351—52 2 Claims



1. Protective eyewear with interchangeable decorative frames comprising:
preformed lens having a recessed border forming a frame;
right and left temple pieces on said preformed lens;
hinge means securing said temple pieces to said preformed lens;
said hinge means comprising posts formed on said temple pieces and hinge sockets formed on said preformed lens, said posts on said temple pieces constructed to snap into said hinge sockets on said preformed lens;
an interchangeable decorative frame fitting said recessed border around said preformed lens;
means detachably securing said interchangeable decorative frame to said preformed lens;
said means detachably securing said interchangeable decorative frame comprising posts formed on said decorative

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frame and sockets formed on each end of said preformed lens; said posts on said interchangeable decorative frame constructed to snap into said sockets formed in said preformed lens;

said hinge sockets and said sockets for mounting said interchangeable decorative frame being the same sockets;

whereby said hinge sockets support both said temple pieces and said interchangeable frame so that said temple pieces and said interchangeable decorative frame may be easily removed and replaced to change the appearance of said protective eyewear.

4,878,750

OPHTHALMIC MEASURING APPARATUS

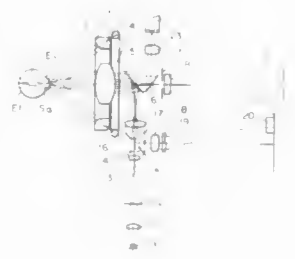
Kyoji Sekiguchi, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 820,801, Jan. 22, 1986, abandoned. This application Mar. 3, 1989, Ser. No. 318,474

Claims priority, application Japan, Jan. 25, 1985, 60-13161; Feb. 9, 1985, 60-23728

Int. Cl.⁴ A61B *3/10*

U.S. Cl. 351—212 20 Claims



1. An ophthalmic measuring apparatus comprising:

means for projecting a first target image onto the cornea of an eye to be examined;

a first photodetector means;

means for receiving a corneal reflection image of said first target image with said first photodetector means to obtain information on the corneal shape of the eye;

means for projecting a second target image onto an eye fundus of the eye;

a second photodetector means;

means for receiving an eye fundus reflection image of said second target image with said second photodetector means to obtain information on the refractive power of the eye;

signal processing means for calculating the shape of the cornea and the refractive power of the eye by receiving the output of said first photodetector means and said second photodetector means;

said signal processing means including means for providing an output signal indicating at least a degree of remaining astigmatism C_r obtained by subtracting a corneal astigmatism C_k of the eye from total astigmatism C_f of the eye; and

contact lens selecting means for selecting a contact lens matching the eye to be examined, based on the output signal of said signal processing means.

4,878,751

CAMERA SYSTEM

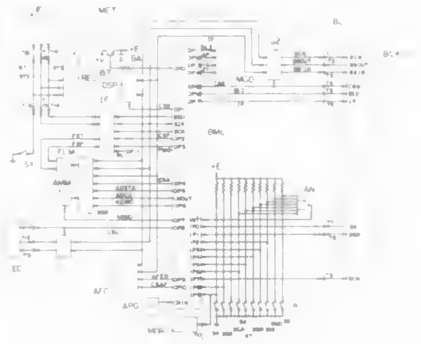
Yoshiiku Kikukawa, Kishiwada; Masayuki Nakasa, Sennan; Tadahiro Yoshida, Takatsuki; Mashio Kitaura, Tondabayashi; Masaaki Nakai, Kawachinagano; Takanobu Omaki, Sennan, and Nobuyuki Taniguchi, Tondabayashi, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 820,656, Jan. 21, 1986, Pat. No. 4,816,853. This application Mar. 24, 1989, Ser. No. 328,311

Claims priority, application Japan, Jan. 21, 1985, 60-9717; Feb. 13, 1985, 60-27398

Int. Cl.⁴ G03B *7/08, 17/24*

U.S. Cl. 354—410 9 Claims



1. A camera system including a camera body and an adaptor attachable to the camera body, comprising;

means, provided in the camera body, for measuring light from an object to be photographed to produce light measuring signal indicating the measured light amount;

means, provided in the camera body, for producing film sensitivity signal corresponding to film sensitivity;

first means, provided in the camera body, for calculating exposure value based on the light measuring signal and the film sensitivity signal;

means, provided in the camera body, for transmitting the light measuring signal and the film sensitivity signal to the adaptor attached to the camera body;

means, provided in the camera body, for discriminating whether the adaptor is attached to the camera body;

second means, provided in the adaptor, for calculating exposure value based on the light measuring signal and the film sensitivity signal;

means, provided in the camera body, for reading the exposure value calculated by second calculating means when said discriminating means discriminates that the adaptor is being attached to the camera body; and

means, provided in the camera body, for controlling exposure operation of the camera in accordance with the exposure value read by the reading means when said discriminating means discriminates that the adaptor is being attached to the camera body, and in accordance with the exposure value calculated by the first calculating means when said discriminating means discriminates that the adaptor is not being attached to the camera body.

4,878,752

SIGHTING SYSTEM

David F. Bramley, Surrey, United Kingdom, assignor to The Marconi Company Limited, England

Filed Aug. 12, 1981, Ser. No. 292,746

Claims priority, application United Kingdom, Aug. 14, 1980, 8026544

Int. Cl.⁴ G01B *11/26*

U.S. Cl. 356—152 7 Claims

1. A sighting system comprising:

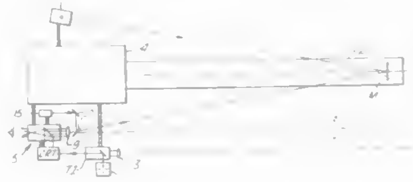
first and second optical sights mounted so as to have substantially the same field of view,

means for superimposing the field of view of the second optical sight on the field of view of the first optical sight,

means for controlling the field of view of each of the first and second optical sights within a limited angle,

means for providing a first line of sight marker in said first optical sight which marker is movable with the field of view,

means for providing a second line of sight marker in said second optical sight which marker is located with reference to the scene viewed,



and means for injecting a reference mark into the field of view of the first optical sight which reference mark can be aligned with the projected view of said second line of sight marker and is otherwise located with respect to the scene viewed,

alignment of the field of view of the second optical sight with the field of view of the first optical sight being effected by control of the field of view of the second optical sight to maintain the relationship between said reference mark and said second line of sight marker.

4,878,753

METHOD FOR MEASURING DOUBLE PRINT OFFSET IN PRINTING SYSTEMS

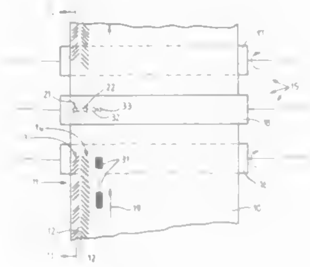
Johannes Nestmeier, Munich, Fed. Rep. of Germany, assignor to MAN Technologie GmbH, Munich, Fed. Rep. of Germany

Filed Jan. 5, 1988, Ser. No. 293,644

Claims priority, application Fed. Rep. of Germany, Jan. 14, 1988, 3800877

Int. Cl.⁴ G01N *21/89*

U.S. Cl. 356—237 13 Claims



1. A method for measuring offset between doubly printed elements in a printing system comprising printing a test screen pattern consisting of test pattern strips, such strips being arranged so as to comply with a fishbone pattern and scanning the gray tone values of this test screen pattern by means of two sensors and evaluating measured data so obtained.

4,878,754

METHOD OF AND APPARATUS FOR MEASURING IRREGULARITIES OF ROAD SURFACE

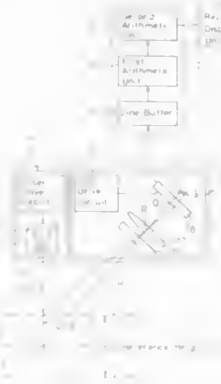
Kazuya Homma; Hiroshi Nogi; Koichi Yamada; Masahiro Kitazume; Masamitsu Uzawa, and Makoto Aoki, all of Tokyo, Japan, assignors to Tokyo Keiki Co. Ltd., Tokyo, Japan

Filed Oct. 14, 1987, Ser. No. 107,992

Claims priority, application Japan, Oct. 16, 1986, 61-246039; Oct. 16, 1986, 61-246040; Dec. 19, 1986, 61-303247; Dec. 19, 1986, 61-303248

Int. Cl.⁴ G01B *11/30*

U.S. Cl. 356—376 11 Claims



1. An apparatus for measuring irregularities on a road surface by applying a beam spot to a measuring point on said road surface and detecting any change in the vertical position of the beam spot thereby determining the height of said measuring point from a reference height, said apparatus comprising:

a beam signal transmitting portion adapted for applying a light beam to said measuring point on said road surface;

a photo-sensor portion for detecting the spot formed on said road surface by said light beam;

an arithmetic circuit for conducting a predetermined arithmetic operation on the output from said photo-sensor portion so as to produce and output data concerning an irregularity on said road surface;

at least two amplifiers connected to the output of said photo-sensor portion in parallel with each other and having different amplification factors; and

data evaluation/selection circuit for selecting the output from one of said amplifiers as the optimum data and to deliver the selected data to said arithmetic circuit.

4,878,755

PROCESS AND DEVICE FOR MEASURING THE OPTICAL PROPERTIES OF THIN LAYERS

Hans-Joachim Siegmund, Babenhausen, and Horst Schwiecker, Berlin, both of, assignors to Leybold Aktiengesellschaft, Hanau, Fed. Rep. of Germany

Filed Jul. 3, 1986, Ser. No. 881,708

Claims priority, application Fed. Rep. of Germany, Mar. 29, 1986, 3610733

Int. Cl.⁴ G01B *11/06*

U.S. Cl. 356—382 1 Claim

1. Apparatus for measuring the light transmission behavior of thin layers while they are being formed in a vacuum chamber with a coating source, in which a substrate holder is movably disposed and has facilities for holding at least one test object and for moving the test object along a path of motion, said apparatus comprising a measuring light source and a measuring light receiver, which is connected with the measuring light source by means of a path of rays, the path of motion of the test object passing consecutively through the stream of material emanating from the coating source and through the path of rays, wherein aside from the test object, at least one

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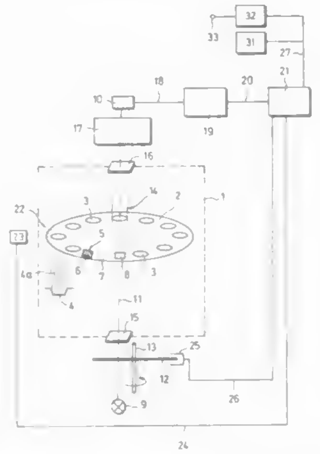
opaque measuring zone and at least one measuring zone, which does not attenuate the measuring light beam, are disposed in the substrate holder, the substrate holder has signal transmitters for reporting the positions of the test object and of the measuring zones and outputs of the photodetector and the signal receiver are locked on to an arithmetic logic unit, in which the ratio of the measured value of the test object, decreased by measured value of the opaque measuring zone, to the measured value of the nonattenuating measuring zone, decreased by the measured value of the opaque measuring zone, is formed and in which the ratio can be evaluated as the transmission value of the test object.



4,878,756

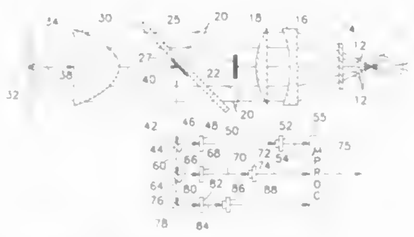
METHOD AND APPARATUS FOR SENSING COLOR

Norman L. Stauffer, Arapahoe, Colo., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Aug. 8, 1988, Ser. No. 229,871

Int. Cl.⁴ G01N *21/25*

U.S. Cl. 356—406 34 Claims



1. Color sensing apparatus comprising:

source means for producing radiation including at least first and second wavelength bands in a selected spectrum;

collimating means receiving the radiation from the source and producing a collimated beam of radiation generally along a first axis;

first substantially aspheric focusing means in said beam, focusing the radiation into a spot on a first surface, the color of which is to be sensed, said first focusing means receiving radiation reflected from the spot and re-collimating the reflected radiation back generally along the first axis;

first radiation detecting means positioned a first optical distance from the surface to receive energy from a predetermined cross-sectional area of the beam of reflected radiation and responsive to radiation in substantially only the first wavelength band;

second radiation detecting means positioned the first optical distance from the surface to receive energy from the predetermined cross-sectional area of the beam of reflected radiation and responsive to radiation in substantially only the second wavelength band; and

analyzing means connected to the first and second radiation detection means and operable to determine the relative amounts of radiation in the first and second wavelength bands as an indication of the color of the surface at the spot.

4,878,757

TUBE FOR A MICROSCOPE

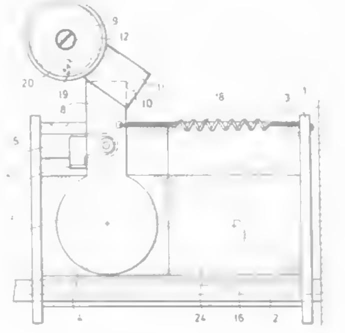
Klaus Westphal, Oberkochen, Fed. Rep. of Germany, assignor to Carl-Zeiss-Stiftung, Heidenheim/Brenz, Fed. Rep. of Germany

Filed Sep. 8, 1988, Ser. No. 242,329

Claims priority, application Fed. Rep. of Germany, Sep. 11, 1987, 8712342[U]

Int. Cl.⁴ G02B *21/18;* G01N *21/59*

U.S. Cl. 356—432 11 Claims



1. A microscope tube comprising a prism carriage (3) movable within the tube between a first carriage position for visual observation of a specimen and a second carriage position for "photometry" or "photography" of said specimen, a diaphragm (6) coupled for movement with said prism carriage, said diaphragm being shiftable between a first diaphragm position blocking entrance of light from an eyepiece when said carriage is in its said second position and a second diaphragm position ineffective to block entrance of said light, a handle (9) mounted externally on said tube, and mechanical transmission means for actuating said diaphragm from said handle.

4,878,758

PROCESS FOR MIXING BULK MATERIALS

Roland Schäfer, Ortenberg, and Farid Rizk, Neuhofen, both of Fed. Rep. of Germany, assignors to Harth & Seifert GmbH, Grossenluder, Fed. Rep. of Germany

Filed Feb. 10, 1988, Ser. No. 154,326

Claims priority, application Fed. Rep. of Germany, Feb. 13, 1987, 3704535; Feb. 3, 1988, 3803085

Int. Cl.⁴ B01F *13/02, 15/02*

U.S. Cl. 366—101 5 Claims

1. A method of blending fine-grained to powdery bulk materials by means of a pressure-tight jet gas blender container equipped with a pressure-tight admission port, a discharge port, a gas intake port and a gas exhaust port, said method comprising the steps of:

(1) filling said blender container approximately half full with said bulk materials;

(2) opening a first valve between a source of compressed gas and a compressed gas storage tank, capable of filling said blender container with between twice and ten times its gross volume of gas, so as to fill said tank with said compressed gas;

(3) closing said first valve and simultaneously opening a second valve between said blender container and said storage tank for a predetermined blending time t_1, so that

said compressed gas expands into said blender container through mixing nozzles located at the bottom of said blender container;

(4) simultaneously closing said second valve and opening said first valve for a predetermined settling time t_2 so that settling of the blended material can occur while the pressure in said blender container is maintained;

(5) at the end of said predetermined settling time t_2, opening third and fourth adjustable valves in said gas exhaust port, located between said blender container and a filter, in such a manner as to maintain the flow of gas through said exhaust port at an approximately constant flow rate; and

(6) removing said blended material from said blender container through said discharge port after said pressure in said blender container equals atmospheric pressure.

4,878,759

TURBINE MIXER

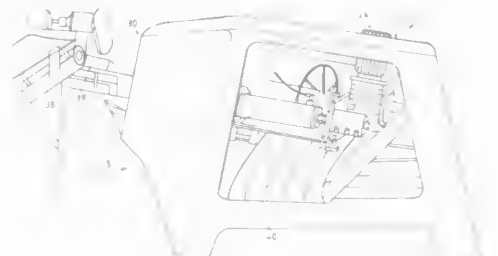
Robert K. Tomlinson, Rosewater, Australia, assignor to Monier Redland Limited, Australia

Filed Jul. 18, 1988, Ser. No. 220,492

Claims priority, application Australia, Jul. 20, 1987, PI3186

Int. Cl.⁴ B28C *5/18*

U.S. Cl. 366—56 12 Claims



1. A concrete turbine mixer having a main frame, a sub-frame, a rotor comprising elastomeric material carried by the sub-frame, mixing blades on the rotor, drive means on the sub-frame coupled for drive to the rotor,

a bearing ring carried by the main frame, a barrel carrier supported by the bearing ring for rotation about an axis of the bearing ring, the barrel carrier comprising a plurality of supports extending in a direction away from the ring, a barrel of elastomeric material surrounding the rotor but contained within the barrel carrier, a plurality of flexible straps for supporting the barrel, the straps extending between respective said supports and an outer surface of the barrel, there being sufficient spaces between adjacent said supports to provide access to the outer barrel surface for deflection of the barrel wall such as to shed concrete when adhered to an inner surface of the wall.

4,878,760

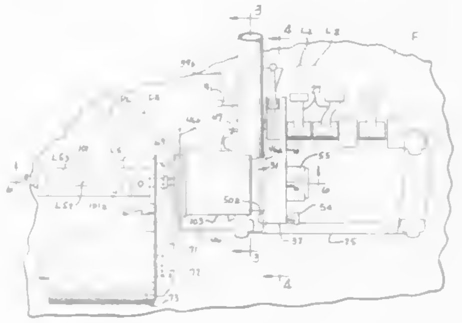
MIXING AND DISPENSING APPARATUS FOR A FROZEN CONFECTION MACHINE

Robert K. Newton, and Steven M. Schmalz, both of Beloit, Wis., assignors to Specialty Equipment Companies, Inc., Rockton, Ill.

Filed Apr. 19, 1989, Ser. No. 340,257

Int. Cl.⁴ A23G *9/00*

U.S. Cl. 366—149 30 Claims



1. Mixing and dispensing apparatus for a frozen confection machine having a refrigerated freeze chamber comprising, mixing and measuring chamber means including a mixing cylinder having an inner side wall; a head having an inner face extending across one end of the side wall; and piston means mounted in the cylinder for movement between a first position in which an end face of the piston means is contiguous to the inner face of the head and a second position in which the end face of the piston means is spaced a selected distance from the inner face of the head, the mixing and measuring chamber means having discharge passage means and a discharge valve movable from a closed position blocking flow through the discharge passage means and an open position, the mixing and measuring chamber means having a confection material inlet port adapted for connection to the freeze chamber of the frozen confection machine and confection inlet valve means movable between a closed position blocking flow to the confection material inlet port and an open position, the mixing and measuring chamber means having a flavoring material inlet port and a flavoring material feed chamber communicating with the flavoring material inlet port, flavoring material feed means for feeding flavoring material from the feed chamber to the mixing and measuring chamber means, rotary mixer means in the mixing and measuring chamber means, means for driving the rotary mixer means to mix materials in the mixing and measuring chamber means, and means for moving the piston means from said second position to said first position to discharge material from the mixing and measuring chamber means.

4,878,761

DEVICE FOR DETECTING EXCESSIVELY HEATED WHEEL BEARINGS AND/OR WHEEL TIRES

Jens Dührkoop, Heidelberg, Fed. Rep. of Germany, assignor to Voest-Alpine AG, Linz, Austria

Filed Oct. 16, 1987, Ser. No. 110,521

Claims priority, application Austria, Oct. 17, 1986, 2771/86

Int. Cl.⁴ B61L *3/06;* G01J *5/10*

U.S. Cl. 374—124 22 Claims

1. A system for measuring the temperature of and detecting excessively heated wheel bearings and/or wheel tires of rail vehicles running on a track at a measuring point within a fixed field of vision wherein the system is stationarily arranged in the vicinity of the track and the position of the measuring point varies in a random manner over the length of the bearing along a known axis within a fixed field of vision, comprising:

heat sensing means for detecting infrared radiation and measuring the temperature of the wheel bearings;

infrared object lens means for scanning infrared radiation

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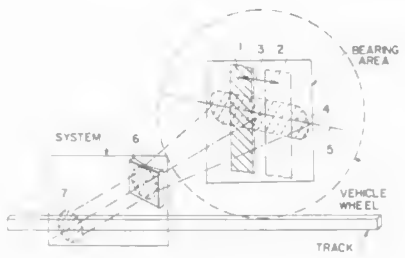
emitted from the measuring point and to produce an image thereof;

infrared focusing lens means for focusing scanned infrared radiation onto said heat sensing means; and

afocal anamorphotic cylinder lens means for anamorphotically scanning the image produced by said infrared object lens means and for focusing the image into a beam having a substantially circular symmetrical shape on said infrared focusing lens means, wherein said afocal anamorphotic cylinder lens means widens the image in one axial direction to extend narrowly across an area at least equal to the fixed field of vision within which the position of the measuring point vaires



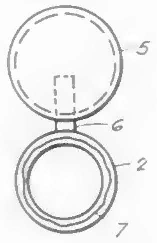
4,878,762
SECRETION CONTAMINATED INDWELLING TUBE CLOSED REMOVAL AND DISPOSAL SYSTEM

Joseph F. Uddo Jr., 1201 Ridgelake Dr., Metairie, La. 70001, and John R. Breaux, 327 Bonnebel Blvd., Metairie, La. 70005

Filed Jan. 13, 1988, Ser. No. 143,177

Int. Cl.⁴ B65B *39/06*

U.S. Cl. 383—33 2 Claims



1. An apparatus for isolated, sanitary reception and disposal of a contaminated tube comprising:

a rigid, tubular, hand-held cannister having a first and a second open end therein;

means for sealingly capping said first end;

an elongate, impervious flexible sheath having an open receiving end;

said sheath being sealingly affixed at said open end interior to said receptacle means, having a first collapsed position within said receptacle and a second, extended enclosing position distal of the second end of said receptacle;

the first open end of said hand-held canister having means for directing the free end of a contaminated tube to the interior of said cannister within said sheath;

said means for directing said free end comprising an inwardly extending bevel extending circumferentially around said open mouth.

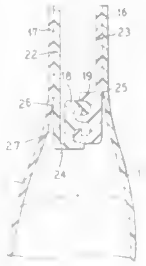
4,878,763
DOUBLE HINGE ZIPPER CONSTRUCTION

Steven Ausnit, New York, N.Y., assignor to Minigrip, Inc., Orangeburg, N.Y.

Filed Nov. 30, 1988, Ser. No. 277,979

Int. Cl.⁴ B65D *33/16*

U.S. Cl. 383—65 17 Claims



1. A reclosable bag structure comprising in combination:

front and back flexible plastic film wall panels attached along their bottom and, side edges and separated at their top edges to form a bag with a top filling opening;

and separate first and second complementary pressure closable and reopenable closure strips having interlocking profiles in confronting relationship within said top opening and each strip attached to the inner surface of a wall panel;

the first strip having a web portion attached at its base from a location below the center line of the interlocking profiles, with said web portion extending upwardly therefrom;

the second strip having a web portion attached at its base from above the center line of the interlocking profiles, with said web portion extending upwardly therefrom;

said web portions being surface bonded to the inner surfaces of the front and back panels respectively so that forces on the panels from internally of the bag will pivot the strips in a hinge action about their base so as to pull the closure strips with a shear action which resists separation of said strips.

4,878,764
DRAW-STRING CARRYING BAG

Alfons Meyer, Wallensteig 6, D-7056 Weinstadt 3, Fed. Rep. of Germany

Filed May 9, 1988, Ser. No. 191,605

Claims priority, application Fed. Rep. of Germany, May 28, 1987, 8707670

Int. Cl.⁴ B65D *33/28*

U.S. Cl. 383—72 19 Claims

1. Corded or draw-string carrying bag of web-like material, particularly plastic foil, having a mouth portion (2), which mouth portion includes

folded-over end portions (8) and seams (5) seaming the folded-over end portion (7) to an adjacent underlying portion (8) of the side of the bag, to define channels (3, 4, 6); and

at least one cord or draw-string (9, 10; 11) passed through the channels,

wherein, in accordance with the invention,

the mouth portion is formed with an opening (14) therein which is free or open for a portion only of the channel, and a solid strip of material (20) is provided, extending, at the mouth of the bag (2) from the opening across the channel and toward said opening, and covering said cord or draw-string;

said solid strip of material being formed with a tear or yield line (21) extending transversely through said solid strip of material to permit tearing the solid strip of material to extend the opening, to then permit access to the at least one cord or draw-string (9, 10; 11), and to form mutually approaching channel regions (17*e*),

the mutually approaching regions, upon pulling out of the at least one cord or draw string from the opening and upon tearing or severing of the tear or yield line, causing said mutually approaching regions to form collar-like pleats or folds adjacent the folded-over edge defining the channel.

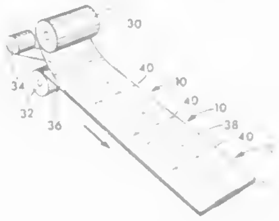
4,878,765
FLEXIBLE PACKAGING SHEETS AND PACKAGES FORMED THEREFROM

James D. Watkins, Prior Lake; David W. Andreas, and David H. Cox, both of Minneapolis, all of Minn., assignors to Golden Valley Microwave Foods, Inc., Edina, Minn.

Continuation of Ser. No. 740,252, Jun. 3, 1985, Pat. No. 4,735,513. This application Mar. 28, 1988, Ser. No. 174,491

Int. Cl.⁴ B65D *30/02*

U.S. Cl. 383—116 15 Claims



1. A flexible laminate folded into the form of a bag, said bag enclosing a food product adapted to be heated within the bag in a microwave oven, said laminate comprising,

an enclosed layer of a microwave interactive coupling material comprising a lossy substance which becomes hot within a microwave oven,

said microwave interactive layer being positioned within only that portion of said laminate located beneath the food product when the food product is heated in the bag within a microwave oven,

said microwave interactive layer being incorporated into a wall of the bag supporting the food product during heating whereby the food is adapted to rest upon the laminate in heat conductive relationship with the microwave interactive layer therebeneath,

said laminate including at least two layers of flexible backing sheet material one of which is an inner layer positioned between the interactive layer and the food product, one of said backing sheets being bonded to each side of the microwave interactive layer to form a sandwich structure in which the microwave interactive layer is encapsulated by being enclosed between the flexible backing sheets on each side thereof,

at least the inner layer of backing sheet material being composed of nonthermoplastic cellulosic fibers that assist in preserving the integrity and dimensions of the interactive layer upon exposure to microwave energy, and

during heating, the heat being transferred from the interactive layer by conduction to the overlying food product whereby the food is heated by the heat transferred from the microwave interactive layer through the inner backing sheet to raise the temperature of the food body by heating one surface thereof without damaging portions of the bag remote from the food.

4,878,766
HIGH SPEED SELF-LUBRICATING BEARING-SEAL ASSEMBLY

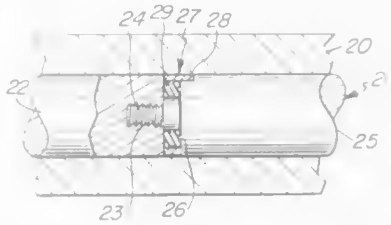
Richard M. Boyd, St. Louis Park, Minn., assignor to Quadion Corporation, Minneapolis, Minn.

Filed Aug. 25, 1988, Ser. No. 235,438

The portion of the term of this patent subsequent to Jun. 14, 2005, has been disclaimed.

Int. Cl.⁴ F16C *33/74, 9/00, 15/00*

U.S. Cl. 384—130 32 Claims



1. A self-lubricating bearing-seal assembly comprising.

(a) a molded annular bearing-seal member comprised of readily moldable plastic material having inherent self-lubricating qualities with a pressure-velocity value of no less than 1800 at 100 feet per minute surface speed;

(b) said bearing-seal member being of uniform radial dimensions throughout its cross-section and having a sealing surface and a pressure-receiving surface opposite to and spaced radially from said sealing surface;

(c) support-structure mounted in supporting relation to said bearing-seal member and having a sealing surface opposite same and having an annular groove formed therein opposite said surfaces and in the same radial plane as said bearing-seal member;

(d) a continuous annular combined spring and sealing member mounted under slight radial compression within said groove in supporting relation to said bearing-seal member and being of lesser radial dimension than said groove;

(e) said combined spring and sealing member being formed of uniformly resilient, flowable rubber-like material throughout and bearing against said pressure-receiving surface of said bearing-seal member in radial pressure-applying relation;

(f) the combined radial dimensions of said bearing-seal member and said combined spring and sealing member in its free-form being slightly in excess of the depth of said groove whereby said combined spring and sealing member maintains said bearing-seal member under slight compression against said support-structure sealing surface at all times; and

(g) said combined spring and sealing member having maximum axial dimensions slightly less than the axial dimensions of said groove.

4,878,767
SLEEVE BEARING

Hans-Joerg Halder, Mannheim, Fed. Rep. of Germany, assignor to Firma Carl Freudenberg, Weinheim, Fed. Rep. of Germany

Filed Jan. 23, 1989, Ser. No. 300,432

Claims priority, application Fed. Rep. of Germany, Feb. 17, 1988, 3804886

Int. Cl.⁴ F16C *33/74*

U.S. Cl. 384—140 6 Claims

1. In a sleeve bearing comprised of inner and outer sleeves, each having an outwardly projecting radial flange, being mounted for relative rotation with the inner sleeve inside the

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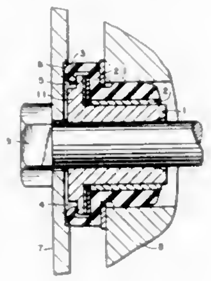
outer sleeve and contacting one another at said outwardly projecting flanges, the outer sleeve consisting of rubber on the side of the profile facing away from the inner sleeve and contacting the flange of the inner sleeve with a circumferential sealing lip; the improvement wherein the sealing lip of the outer sleeve reaches externally around the profile of the projecting flange of the inner sleeve and contacts the flange of the inner sleeve with a sealing edge under resilient bias on the side facing axially away from the projecting flange of the outer sleeve.



4,878,768

BEARING HAVING AN IMPROVED CORROSION-RESISTANCE

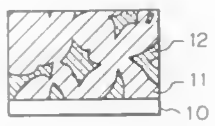
Tatsuhiko Fukuoka, and Takashi Suzuki, both of Toyota, Japan, assignors to Taiho Kogyo, Ltd., Aichi, Japan

Filed Aug. 4, 1988, Ser. No. 228,092

Claims priority, application Japan, Feb. 13, 1987, 62-029807

Int. Cl.⁴ F16C *33/12*

U.S. Cl. 384—279 **11 Claims**



1. A bearing having an improved corrosion resistance, comprising:
a base plate; and,
a bearing layer of Cu-series alloy which has the first surface facing said base plate and the second surface opposite to the second surface and which consists essentially of a Cu-alloy phase forming a skeleton structure extending between said first surface and second surface and a Pb-containing phase filling essentially clearances of the skeleton structure, wherein at least a part of said Pb-containing phase including the second surface contains In until a depth exceeding approximately 20 μm measured from the second surface.

4,878,769

CENTER-FREE ROLLER BEARING

Martin Schepp, Schweinfurt, Fed. Rep. of Germany, assignor to SKF GmbH, Fed. Rep. of Germany

Filed Sep. 26, 1988, Ser. No. 248,736

Claims priority, application Fed. Rep. of Germany, Oct. 3, 1987, 8713304

Int. Cl.⁴ F16C *19/34, 33/36*

U.S. Cl. 384—618 **10 Claims**

1. Center-free rolling bearing assembly for machine tools comprising a disk-shaped outer ring, two adjacent outer raceways on an inner radial edge of said outer ring which converge conically together in an axially and radially inward direction, an inner ring, two conical inner raceways on a lateral surface of the inner ring, parallel to said outer raceways, a row of cylindrical rolling elements between each outer raceway-inner raceway combination, inner and outer guide flanges for guiding the rolling elements of each row, the outer raceways (4, 5) forming a single piece with the outer ring (2) and the inner raceways (6, 7) forming a single piece with the inner ring (1), at least one of the outer guide flanges being formed by an outer flange ring (16) which can be fixed in place on a seating section (18) of the lateral surface of the inner ring so that the rolling elements (9) can be installed between the inner and outer raceways.

4,878,770

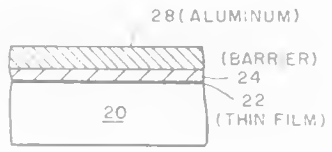
IC CHIPS WITH SELF-ALIGNED THIN FILM RESISTORS

Paul A. Ruggierio, Littleton, Mass., and Cynthia E. Anderson, Glenview, Ill., assignors to Analog Devices, Inc., Norwood, Mass.

Filed Sep. 9, 1987, Ser. No. 94,513

Int. Cl.⁴ H01C *1/012*

U.S. Cl. 388—308 5 Claims



1. An IC chip comprising:
a substrate for carrying IC components including transistor elements;
metal interconnect having side edges and formed above said substrate in a pattern to make connections to said elements of the IC;
said pattern comprising at least two spaced-apart portions of metal interconnect having ends separated by a gap;
a layer of thin film above said substrate and beneath said metal interconnect in all portions thereof and making electrical contact therewith, said thin film layer having side edges aligned vertically with the side edges of said metal interconnect and forming layered segments; and
a layer of additional thin film material in said gap between said spaced-apart portions of metal interconnect, said additional thin film material being integral with the thin film material beneath said spaced-apart portions and having the same width and thickness as the thin film beneath said spaced-apart portions, said additional thin film material serving as at least one resistor for the circuit of said IC chip.

4,878,771

LABEL PRINTER

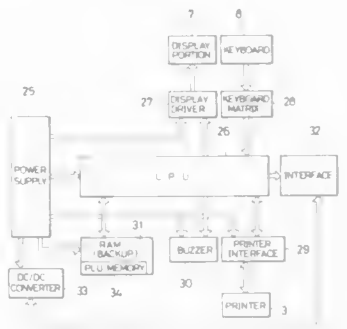
Manabu Nishida, Shizuoka, Japan, assignor to Tokyo Electric Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 50,566, May 18, 1987, abandoned. This application Jun. 24, 1988, Ser. No. 212,159

Claims priority, application Japan, May 22, 1986, 61-118135

Int. Cl.⁴ B41J *5/31*

U.S. Cl. 400—70 1 Claim



1. A label printer comprising:
a central processing unit;
a keyboard comprising means for inputting data to the central processing unit;
a printer unit comprising means for outputting data from the central processing unit;
a display unit for displaying data from the central processing unit; and
a random access memory connected to said central processing unit, said memory having PLU memory means including:
  (a) means for storing commodity item numbers,
  (b) means for storing PLU numbers,
  (c) means for storing commodity names,
  (d) means for storing bar code data,
  (e) means for storing a number of sheets issued from the printer unit,
  (f) means for storing department codes,
  (g) means for storing commodity prices, and
  (h) retrieval storage means for storing commodity retrieval codes comprising data for the conditions of the place where each commodity is physically located, including the order of display, shelf number, gondola number, passage number and the number of said commodities located at said place, said retrieval storage means enabling said printer unit to print and issue labels including bar code, department code and price for commodities corresponding to a retrieval code inputted from said keyboard, whereby the labels may be printed and issued for commodities where only the conditions of the place where the commodity is physically located is known.

4,878,772

THERMAL TRANSCRIPTION PRINTER

Hiroshi Fukumoto; Koji Namura, both of Amagasaki; Kenichi Naruki, and Ryuzo Une, both of Fukuyama, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

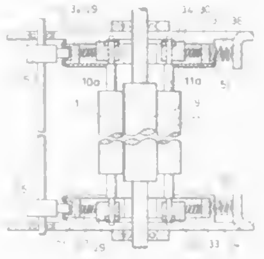
Filed Aug. 1, 1988, Ser. No. 226,931

Claims priority, application Japan, Aug. 8, 1987, 62-198560

Int. Cl.⁴ B41J *3/02, 13/02*

U.S. Cl. 400—120 4 Claims

1. A thermal transcription printer comprising:
a thermal head for supplying heat energy to an ink ribbon pressed on a paper to be transcribed of an image;
a platen whereon said paper is to be wound and reciprocatively conveyed by clockwise and counterclockwise rotations whereof;
a pair of pinch rollers disposed with pressing forces onto insertion side and ejection side of said platen for pressing said paper to said platen; and
a pressure control means for making pressing force of said pinch rollers, in a manner that pressing force of the pinch roller of backward position with respect to a conveyance direction of said paper is smaller than that of the forward position.



4,878,773

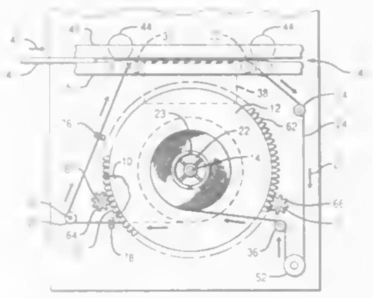
RIBBON FEED CONTROL APPARATUS AND METHOD

Ali T. Mazumder, Waterloo, Canada, assignor to NCR Corporation, Dayton, Ohio

Filed Jun. 8, 1988, Ser. No. 203,962

Int. Cl.⁴ B41J *33/34*

U.S. Cl. 400—234 1 Claim



1. Ribbon feed control apparatus comprising:
apparatus support means;
ribbon supply means on which a supply of ribbon may be placed, said ribbon supply means being rotatably mounted on said apparatus support means;
ribbon take-up means rotatably mounted on said apparatus support means;
first drive means for driving said ribbon take-up means in a first direction of rotation;
ribbon advance timer means for controlling operation of said first drive means;
second drive means for driving said ribbon supply means in a second direction of rotation;
ribbon tension means for controlling operation of said second drive means;
guide means for guiding said ribbon in a path from said ribbon supply means to said ribbon take-up means;
control means for providing information as to the distance which said ribbon is to be advanced during a given operation;
measuring means for measuring the distance which said ribbon is actually advanced during a given operation;
comparison means coupled to said control means, said measuring means and said ribbon advance timer means for providing a halt signal to said ribbon advance timer means

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when ribbon distance information provided by said control means and by said measuring means are equal;

adjustable delay means comprising coupled resistor means, including a potentiometer, and capacitor means for determining time duration, said adjustable delay means being controlled by said ribbon advance timer means for controlling initiation of operation of said ribon tension means after a predetermined time period greater than zero following termination of operation of said first drive means; and

ribbon tension sensing means coupled to said ribbon tension means for causing operation of said ribbon tension means when said ribbon in said path between said ribbon supply means and said ribbon take-up means is slack, whereby said ribbon tension means is operable to operate said second drive means to drive said ribbon supply means in said second direction of rotation to take-up said slack after expiration of said predetermined time period greater than zero.

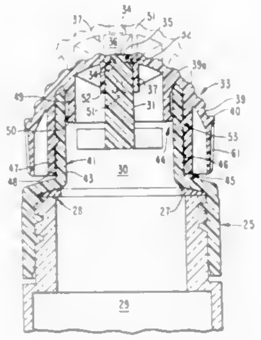
4,878,774
VALVED DISPENSING APPLICATOR

Craig E. Karasin, Orangetown, N.Y., and Joseph Thompson, Upper Saddle River, N.J., assignors to Sterling Drug Inc., Rensselaer, N.Y.

Filed Aug. 12, 1987, Ser. No. 84,571

Int. Cl.⁴ B05C *17/00*

U.S. Cl. 401—15 **19 Claims**



1. A dispenser comprising:

a container body having an opening at one end thereof and a cavity therein in fluid communication with said opening;

a mounting member detachably mounted to said container body at said one end of said container body, said mounting member having a flow passage therethrough in fluid communication with said opening in said container body, said mounting member including a closure member extending in an axial direction away from said container body;

a dispensing head movably mounted on said mounting member, said dispensing head being movable in said axial direction towards said mounting member to a closed position and movable in said axial direction away from said mounting member to an open position, said dispensing head having at least one aperture therein for dispensing a flowable substance stored in said container body, said closure member including aperture sealing means for sealing said at least one aperture when said dispensing head is in said closed position, said dispersing head further including an axially extending wall defining a skirted chamber in fluid communication with said at least one aperture, said axially extending wall of said dispensing head having a radially inner surface sealingly engaging an outer periphery of said closure member when said dispensing head is in positions between and including said open and closed positions such that the flowable substance in the flow passage is prevented from passing between the sealingly engaged portions of the inner surface of the wall and the outer periphery of the closure member, said wall having a radially outer surface in fluid communication with said flow passage of said mounting member. and said wall having a free end defined by a terminal edge extending between said radially inner and outer surfaces, and said skirted chamber including flow controlling means for controlling flow of the flowable substance from said flow passage of the mounting member into said skirted chamber when said dispensing head is in the open position so that excess dripping of the flowable substance from the dispensing head is avoided during use thereof, said flow controlling means comprising at least one contiguous elongated slot extending through said wall and open at said terminal edge thereof, the entire said at least one slot extending over the outer periphery of said closure member when said dispensing head is in the closed position.

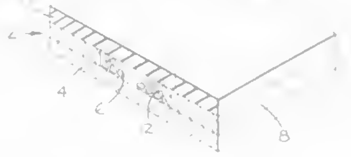
4,878,775
LIQUID TRANSFER DEVICE

R. James Norbury, and Daniel B. Pendergrass, Jr., both of St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Oct. 28, 1987, Ser. No. 114,435

Int. Cl.⁴ A61M *35/00;* B05L *1/00*

U.S. Cl. 401—132 **11 Claims**



1. An applicator device capable of carrying liquid material to be applied to a surface comprising a flat support layer, liquid containing microcapsules of between 200 and 300 microns on at least one surface of said support layer, a flat structural layer with a hole therein for providing a raised area around all of said microcapsules, and a flexible, liquid-permeable material overlaying the microcapsules, said support layer being less flexible than said liquid permeable material, and said microcapsules being bonded to said support layer by an adhesive, said raised area being above the highest level of said microcapsules.

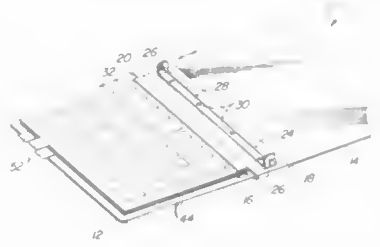
4,878,776
BINDER FOR TELEPHONE DIRECTORIES AND THE LIKE

George Orlandini, 166 Brentwood La., Fairport, N.Y. 14450

Filed Mar. 9, 1989, Ser. No. 321,425

Int. Cl.⁴ B42F *11/02*

U.S. Cl. 402—4 **9 Claims**



1. For use with a telephone directory having pages of predetermined size, a binder having a spine and top and bottom covers attached to the spine and adapted to respectively overlie the top and bottom faces of the directory, means removably

for attaching the binder to the directory, an auxiliary sheet folded in accordion fashion and disposed inside the binder top cover so as to normally lie atop the directory top face, the sheet having one edge disposed adjacent to the spine and adapted to be unfolded outwardly when the binder is opened so as to present an area several times greater than the predetermined size of the page in the directory, and means removably attaching the sheet to the binder along said one edge of the sheet.

4,878,777
SOCKET FOR A CONTROL PANEL

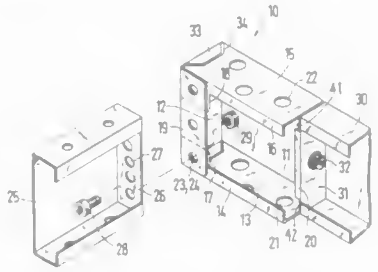
Jürgen Debus, Dietzhölztal, and Lothar Lehr, Oberdresselndorf, both of Fed. Rep. of Germany, assignors to Rittal-Werk, Herborn, Fed. Rep. of Germany

Filed Mar. 15, 1988, Ser. No. 168,374

Claims priority, application Fed. Rep. of Germany, Mar. 30, 1987, 3720576

Int. Cl.⁴ F16B *1/00*

U.S. Cl. 403—205 **11 Claims**



1. In a socket for a control panel of the type having four corner pieces and at least two longitudinal and two transverse box-like recess members connected to form a frame, in which each corner piece has: two vertical outside walls at right angles to each other; vertical mounting flanges along the free vertical edges of the outside walls, said vertical mounting flanges having boreholes; and horizontal panel-mounting flanges along the horizontal edges of, and bent at right angles to, the outside wall and adjacent to the longitudinal recess member, the panel-mounting flanges having panel-mounting boreholes and free edges; and the box-shaped recess members being connected to the vertical mounting flanges such that they are aligned with said outside walls, the improvement in the corner pieces comprising:

vertical connecting flanges (**17, 18**) bent at substantially right angles to, and along the free edges of, the horizontal panel-mounting flanges (**13, 15**) at least in the area of the vertical mounting flange (**19**),

whereby said vertical connecting flanges are connected to the vertical mounting flange (**19**) in attachement of said corner piece to said transverse recess member (**25**).

4,878,778
CONCRETE PATH PAVER

Pat Bresnahan, 3210 W. Woodthrust St., Lecanto, Fla. 32661

Filed Apr. 14, 1988, Ser. No. 181,384

Int. Cl.⁴ E01C *19/48*

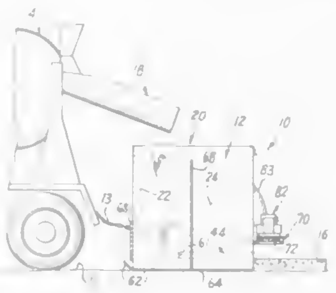
U.S. Cl. 404—105 **10 Claims**

1. A concrete path paver for slip forming a slab of concrete onto a dirt pathway, the upper surface of the dirt pathway constituting a plane of construction, comprising in combination:

a box having a front wall extending downwardly at an angle through the box to the plane of construction, and an inwardly sloping rear wall extending downwardly at an angle through the box to a location above the plane of construction, and opposing side walls coupling the front and rear walls extending downwardly to at least the plane of construction to define a closed box having only an upper opened end for receiving concrete and a lower opened end with a vertically disposed opened mouth defined by the vertical edges of said side walls and the lower horizontal edge of said rear wall, with said lower opened end having a smaller cross-sectional area than said upper opened end;

a fixed screed for slip forming the concrete, means for securing said screed at its edges to said side walls below said rear wall with a mouth of said screen being positioned about said opened mouth of said rear wall;

a plate secured at its edges to said side walls across a lowermost front edge of said box, said plate being upwardly turned to create a ski-like effect upon movement of the paver on the pathway;



a pair of skids affixed to a lowermost edge of said sidewalls of said box causing said box to float upon the pathway during movement of the paver; and

hitch means connected relative to said front of said box allowing the paver to be connected immediately behind a cement truck by means of a chain or like such that concrete being dispensed from the chute of the cement truck flows into said upper opened end of said box to fill the same while said screed slip-forms the concrete from said opened mouth of said lower opened end into a concrete slab laid directly on the pathway.

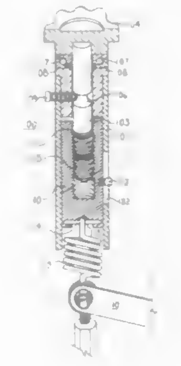
4,878,779
RIDING POWER TROWEL

Marvin E. Whiteman, Jr., 2254 Braniff St., Boise, Id. 83705

Filed Feb. 3, 1989, Ser. No. 306,089

Int. Cl.⁴ E01C *19/22*

U.S. Cl. 404—112 **1 Claim**



1. In a riding surface working machine having a pair of overlapping counter rotating rotor assemblies and a control linkage there between, a trim control which comprises:

a hollow cylindrical housing being rigidly attached to a stationary point on the riding surface working machine

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and having a traveler slot disposed in one side being parallel to the housing's longitudinal axis;

a cylindrical traveler block being slidably inserted into said cylindrical housing and having a coaxial threaded bore in a first end;

a shoulder bearing coaxially installed in a first end of said cylindrical housing having a radially disposed threaded through hole and an allen screw engaged therewith;

a control bolt having a scalloped knob coaxially attached to a first end and a threaded second end sized for and being in threaded engagement with the threaded bore of said first end of said traveler block, said control bolt further having a coaxial groove circumscribing its outer surface and disposed for slidable engagement with said allen screw;

a stop dog being radially attached to said traveler block and extending radially through the traveler slot in said cylindrical housing; and

a tensive spring having a first end attached to a second end of said traveler block and a second end attached to the control linkage.

4,878,780

APPARATUS AND METHOD OF CREATING AND CONTROLLING AN ARTIFICAL WATER TABLE

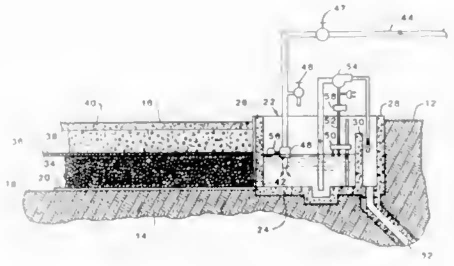
Stephen P. Vidal, P.O. Box 973, Anza, Calif. 92306-0973

Continuation-in-part of Ser. No. 517,012, Jul. 25, 1983, Pat. No. 4,576,511. This application Mar. 10, 1986, Ser. No. 838,320

The portion of the term of this patent subsequent to Mar. 18, 2003, has been disclaimed.

Int. Cl.⁴ E02B *13/00*

U.S. Cl. 405—38 6 Claims



1. A subsurface irrigation system for supplying moisture to an elongated strip of land, comprising:

a ditch having a bottom from which two walls extend upwardly;

a strip of water-impermeable material covering the bottom of the ditch and extending at least part way up the sides of the ditch, thereby forming a watertight trough;

a ballast layer within the watertight trough, of substantially uniform thickness, and including interstices through which water can flow in any direction;

a fine layer composed predominantly of fine particulate material through which water is dispersed by capillary action; and,

a strip of permeable material through which water can pass readily but through which the fine particulate matter of said fine layer cannot pass, bonded to said sheet of water-impermeable material, disposed on top of said ballast layer, and on which said fine layer rests, whereby said strip of permeable material prevents the fine particulate material of said fine layer from settling into said ballast layer and clogging the interstices of said ballast layer thereby choking off the flow of water through said ballast layer.

4,878,781

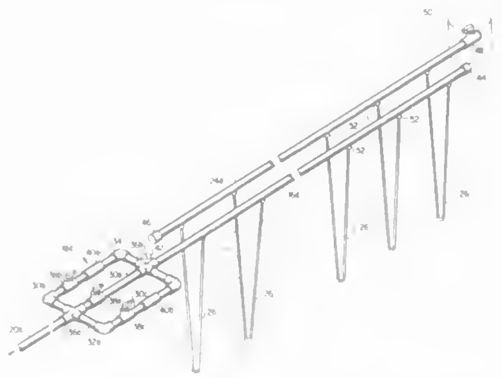
MOISTURE CONTROL SYSTEM FOR A FOUNDATION

Steven D. Gregory, 425 Sheffield, Richardson, Tex. 75081, and Joseph R. Holler, 5616 Spring Valley Rd., Apt. 125, Dallas, Tex. 75240

Filed Dec. 6, 1988, Ser. No. 280,377

Int. Cl.⁴ E02B *11/00*

U.S. Cl. 405—52 7 Claims



1. A moisture control system for controlling the moisture level of subsoil adjacent the foundation of a building comprising a source water, supply pipe means extending in said subsoil along an area adjacent said foundation and connected to said water source, accumulator pipe means disposed adjacent said supply pipe means, and a plurality of generally U-shaped porous pipes each extending away from and substantially orthogonal to said supply pipe means and said accumulator pipe means, and each being connected between said supply pipe means and said accumulator pipe means for receiving water from said supply pipe means and allowing said water to seep out into said subsoil, said accumulator pipe means adapted to receive the water from said porous pipes that does not seep therefrom.

4,878,782

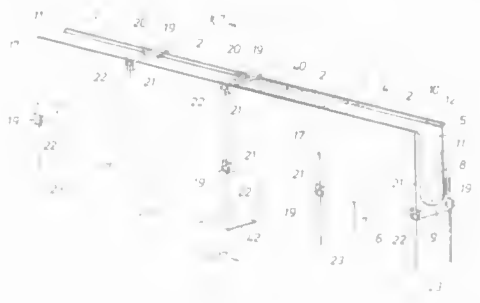
DRAIN CHANNEL ALIGNMENT AND INSTALLATION APPARATUS

Thomas B. Beattie, 213 Riverdale Ave., Vacaville, Calif. 95688; Fred M. Schweinberg, 15819 Lakecliffe, Houston, Tex. 77095, and Ronald L. Rutzen, 238 Greenbow, Highlands, Tex. 77562

Filed Dec. 11, 1987, Ser. No. 132,082

Int. Cl.⁴ E02B *5/00*

U.S. Cl. 405—119 10 Claims



1. A strap for installing and aligning a drainage channel comprised of two or more drainage channel sections locatable in a trench, each drainage channel section having spaced-apart walls with inner and outer wall surfaces, a bottom with inner and outer wall surfaces, the inner wall and bottom surfaces forming a U-shaped channel with a top opening and at least one end opening, the end opening of a first section made so as to operatively engage with the end opening of a second section and each channel section having at least one alignment anchor indentation on the outside surface of each wall near the end opening, wherein said strap comprises a body with two arms attached to the body, the combination of the body and the arms essentially forming a U, the distance between the arms being slightly larger than the distance between the outside surface of the drainage channel walls, each arm having a spike attachment means for accepting, sliding over and attaching to a spike and at least two threaded channel holes with channel indentation bolts therein, the threaded channel holes being positioned on the arm so that when the strap is placed over the channel top opening or under the channel bottom at the joint between two drainage channel sections, with the arms extending over the outer surface of the channel walls, at least one threaded channel hole is positioned over the alignment anchor indentation of the first channel section and at least a second threaded channel hole is positioned over the alignment anchor indentation of the second channel section when the two channel section end openings are joined and aligned.

4,878,783

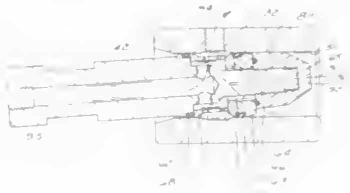
HYDRAULIC STAB CONNECTOR WITH ANGULAR FREEDOM

Benton F. Baugh, 14626 Oak Bend, Houston, Tex. 77079

Filed Dec. 28, 1987, Ser. No. 138,433

Int. Cl.⁴ F16L *1/04*

U.S. Cl. 405—169 11 Claims



1. An apparatus for use in combination with subsea oil well drilling, completion, workover, and service systems and the such like which is located below the surface of a body of water having fluid conduit devices or receptacles, comprising:

a hydraulic stab sub with two or more seals for inserting into, sealing within, and commuicating fluid or gas to a receptacle comprising:

a body with a first face and a first seal means and a centerline,

a nose member with a second face and means for attaching to said body,

said first face and said second face being an axial distance apart when said nose is attached to said body,

a seal carrier with a second seal means capable of radial movement with respect to said centerline of said body, said seal carrier having an axial length less that said axial distance,

a third seal means sealing between said seal carrier and said nose during said radial movement such that when said seal carrier moves radially with respect to said body, sealing contact is maintained between said seal carrier and said nose,

such that said hydraulic stab sub can be inserted into said receptacle without precise alignment due to the ability of said second seal on said seal carrier to move radially with respect to said first seal on said body,

said hydraulic stab sub further comprising attachment means for the purpose of gripping by grippers on remotely operated vehicles or diver's hands,

said receptacle further providing guidance chamfers to facilitate the insertion of said hydraulic stab receptacle into said receptacle, and

said hydraulic stab receptacle provides guidance chamfers to facilitate insertion into said receptacle.

4,878,784

FEED CHUTE ARRANGEMENT FOR TEXTILE MACHINES, SUCH AS CARDING MACHINES

Rolf Binder, Schottikon; Paul Staeheli, Wilen b. Wil; Urs Staehli, Turbenthal, and Fritz Knabenhans, Winterthur, all of Switzerland, assignors to Rieter Machine Works Ltd., Winterthur, Switzerland

Continuation of Ser. No. 770,643, Aug. 28, 1985, abandoned. This application Dec. 28, 1987, Ser. No. 138,835

Claims priority, application Switzerland, Sep. 18, 1984, 04465/84

Int. Cl.⁴ B65G *53/48, 53/66, 53/60*

U.S. Cl. 406—70 6 Claims

1. An arrangement for feeding fiber material to a textile machine, especially to a carding device, comprising:

a feed chute having a plurality of peripheral walls one of which is at least partially gas-permeable and together bounding an accumulation space having an open upper end for receiving the fiber material travelling through a transporting duct with a gaseous transportation medium and a lower end;

the fiber material accumulating in the feed chute to a predeterminate filling level in the form of a fiber body upon deposition from the transportation medium that leaves said accumulation space through said gas-permeable wall;

said gas-permeable part of said one peripheral wall, during operation of the feeding arrangement, being covered by said accumulated fiber material to an extent determined by the filling level of said accumulated fiber material;

a feeding roller pair arranged at said lower end of said accumulation space and operative for substantially continuously feeding the fiber material of said fiber body out of said accumulation space, during operation of the feeding arrangement;

means for bounding a gas output chamber in juxtaposition with said gas-permeable wall of said feed chute, including a wall different from said gas-permeable wall and having a gas output opening;

gas discharge means communicating with said gas output opening;

means for controlling the flow of the transportation medium into and through said accumulation space, said gas output chamber, and said gas discharge means, including a blocking flap movably mounted at said different wall for movement between a closed position in which it blocks said gas output opening so that supply of the fiber material into

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said feed chute is stopped and a plurality of open positions in which it offers selected amounts of resistance to the flow of said transportation medium through said gas output opening to thereby control the density and the filling level of the fiber material accumulated in the form of a fiber body within the feed chute and to maintain such density and such filling level essentially within predeterminate limits; and

a weight connected to blocking flap and exerting a gravitational force thereon that results in a torque that urges said blocking flap toward said closed position thereof.

4,878,785

ABRASIVE FLUID FLOW

Roger A. Heron, Bedford, and David H. Saunders, Buckinghamshire, both of Great Britain, assignors to The British Hydromechanics Research Association, Bedford, England

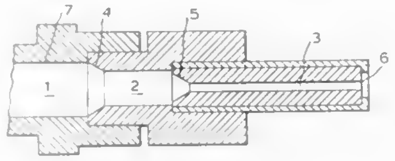
PCT No. PCT/GB86/00224, § 371 Date Dec. 10, 1986, § 102(e) Date Dec. 10, 1986, PCT Pub. No. WO86/06311, PCT Pub. Date Nov. 6, 1986

PCT Filed Apr. 24, 1986, Ser. No. 3,387

Claims priority, application United Kingdom, Apr. 25, 1985, 8510538

Int. Cl.⁴ B65G *53/34*

U.S. Cl. 406—194 **14 Claims**



1. A nozzle for forming an abrasive fluid jet, comprising a fluid conduit having an inlet section of relatively large cross section into which an abrasive particulate material is to be introduced with a carrier fluid, flow deflector means mounted substantially centrally within said inlet section for deflecting the abrasive material outwardly toward the periphery of said inlet section, means comprising a first tapered section disposed down-stream from said inlet section for deflecting the abrasive material toward a central axis of said fluid conduit to form a core of the abrasive material surrounded by the carrier fluid, means comprising a second tapered section disposed downstream from said first tapered section for accelerating the carrier fluid, and means comprising an outlet section disposed down-stream from said second section for affecting an interchange of momentum between the accelerated carrier fluid and the abrasive material such that the abrasive material is accelerated to a high velocity.

4,878,786

TINE BIT

Virgil E. Hedgepeth, 704 Hillcrest Dr., Bradenton, Fla. 34209

Filed Sep. 21, 1988, Ser. No. 247,346

Int. Cl.⁴ B23B *51/04*

U.S. Cl. 408—86 **15 Claims**

1. A drill bit for drilling a bore in stock material comprising:

an elongated main body member having a first, proximal end and a second, distal end;

said distal end having a central tine element mounted thereto,

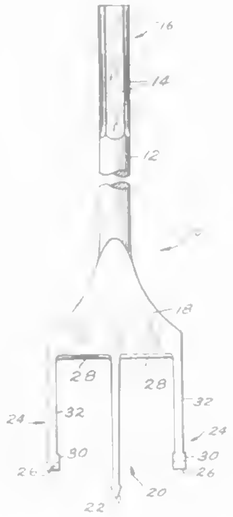
said central tine element including a shaft portion having a longitudinal axis parallel to a longitudinal axis of said main body member and having a pointed distal end.

said distal end of said central tine element having a maximum width greater than width of said shaft portion of said central tine element,

said distal end of said main body member further having at least one cutting tine element mounted thereto,

each said cutting tine element having a longitudinal axis parallel to the longitudinal axis of said central tine element and spaced therefrom,

each of said cutting tines having a shaft portion and a sharpened distal end defining a cutting blade.



said sharpened distal end of each said cutting tine element having a width greater than width of said shaft portion of said respective cutting tine element,

said distal end of said main body member further including a cutting blade defined between said central tine element and each of said cutting tine elements.

4,878,787

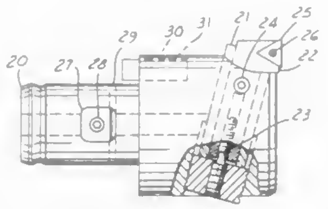
COARSE/FINE ADJUSTMENT BORING HEAD

Carl E. Hunt, Davisburg, Mich., assignor to GTE Valenite Corporation, Troy, Mich.

Filed Oct. 17, 1988, Ser. No. 258,345

Int. Cl.⁴ B23B *29/034*

U.S. Cl. 408—181 **15 Claims**



1. Coarse/fine adjustable boring head comprising a body having a transverse threaded bore, a through sleeve with externally threaded head adjustable within said bore to establish a coarse transverse adjustment for said sleeve, cutting tool cartridge means nonrotatably transversely adjustable within said sleeve to establish a fine transverse final boring diameter adjustment, unidirectional lead differential pitch threaded holes respectively in said head and an adjacent end of said cartridge means, and matching differential pitch screw means engaging respectively said threaded holes, whereby said sleeve may be coarse adjusted in single revolution external thread pitch increments, and said cartridge means may be fine adjusted relative to said sleeve through rotation of said differential screw in continuous whole or partial revolution increments.

4,878,788

DRILL FOR DRILLING A THIN PLATE

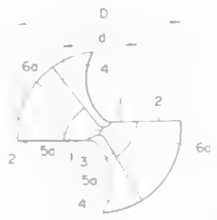
Koichiro Wakihira, Kobe; Michitaka Katsuta, Kakogawa; Masayasu Hino, Akashi, and Toshio Sasayama, Himeji, all of Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Jan. 18, 1989, Ser. No. 298,015

Claims priority, application Japan, Aug. 4, 1988, 63-196397

Int. Cl.⁴ B23B *51/02*

U.S. Cl. 408—230 **4 Claims**



1. A drill for drilling thin plates, having a pair of major cutting edges each of which comprises:

a tip;

an inner major cutting edge diagonally extending in a radially inner portion of the tip so as to form a protrusive leading part;

an outer major cutting edge extending in a radially outer portion of the tip;

a chisel edge formed at the junction of the pair of major cutting edges;

continuous flanks extending behind the inner major cutting edges and the outer major cutting edges, respectively, wherein:

the diameter of a circle scribed by the pair of inner major cutting edges is in the range of 40 to 50% of the drill diameter,

the point angle formed between the inner major cutting edges is in the range of 100° to 115°, and

the outer corner angle corresponding to an angle formed between each outer major cutting edge and a plane perpendicular to the axis of the drill is in the range of 4° to 10°, wherein no margins are formed on the circumference of the tip and the circumference of the tip has a substantially circular shape.

4,878,789

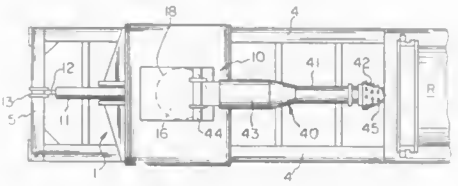
APPARATUS FOR CLEANING TITANIUM POTS

Louis A. Grant, Pittsburgh, Pa., assignor to Louis A. Grant, Inc., Pittsburgh, Pa.

Filed Jul. 26, 1988, Ser. No. 224,794

Int. Cl.⁴ B23C *3/00*

U.S. Cl. 409—143 **8 Claims**



1. Apparatus for cleaning the inside of a metallurgical vessel comprising an inclined foundation having a lower end and a raised end, a mobile carriage having cleaning means carried thereon, support means on said inclined foundation for supporting said mobile carriage, said mobile carriage mounted on said support means and including means for permitting movement of said mobile carriage along said support means relative to said ends of said inclined foundation, means connected between said lower end of said foundation and said mobile carriage for moving said mobile carriage along said support means, said cleaning means including a pivotally mounted elongated boom having a rotary shaft with a distal end, a rotatable cutting head mounted on said distal end of said rotary shaft and drive means on said cleaning means for rotating said rotary shaft and said cutting head, means adjacent said raised end of said inclined foundation adapted to hold a metallurgical vessel in a stationary position during cleaning, whereby said rotatable cutting head is positioned within a stationary metallurgical vessel mounted in said means adjacent said raised end of said inclined foundation to contact the inner surface of a metallurgical vessel to remove material from the interior of the metallurgical vessel.

4,878,790

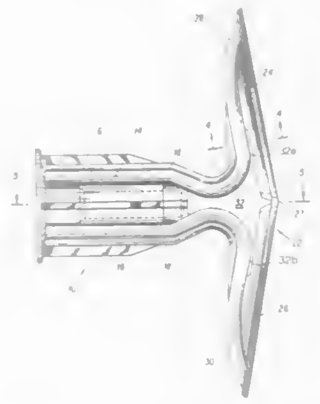
EXPANSIBLE FASTENING ELEMENT

Thomas W. McSherry, Stamford, Conn., and Nathaniel H. Garfield, Harrison, N.Y., assignors to Mechanical Plastics Corp., Pleasantville, N.Y.

Filed Apr. 2, 1985, Ser. No. 718,920

Int. Cl.⁴ F16B *13/04*

U.S. Cl. 411—34 **14 Claims**



1. An expansible plastic fastener for securement within an aperture defined by structural means which comprises.

(a) a generally elongated body portion defining a generally central opening for reception of an elongated retaining element;

(b) a collar member formed integrally with one end of said body portion and having a flanged portion extending in a generally radially outward direction; and

(c) locking means connected to said body portion and movable between a collapsed position for insertion into such aperture and an expanded position in which said locking means prevents removal of the body portion out of such aperture by engagement of said locking means with said structural means beyond the edges of said aperture,

said locking means comprising a pair of substantially rigid toggle arms pivotally connected to said body portion and extending transversely with respect thereto in said expanded position, and wherein said pivotal connection permits said movement between said collapsed position, wherein said toggle arms move toward each other, and said expanded position, said toggle arms further being pivotally connected to each other by flexible integral strap means which intersects the central longitudinal axis of said body portion, with the flexible integral strap means being connected to the toggle arms at a distance from the central longitudinal axis such that the toggle arms are longitudinally spaced from the strap means,

said toggle arms each having an integrally formed plastic reinforcing rib integrally molded thereon, if a width less than the average width of the toggle arm and positioned generally centrally with respect to the width of said toggle arm and extending over a portion of said toggle

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arm, parallel to said longitudinal spacing along a planar portion of said arm, and onto said body portion past said first mentioned pivotal connection, with said first mentioned pivotal connection being reinforced by said rib,
said toggle arms being pivotally movable toward and away from each other between respective collapsed and expanded positions with said reinforcing ribs assisting movements toward their expanded positions, while simultaneously contributing to their holding strength when said toggle arms are in said expanded position.

4,878,791

EXPANDING PLASTIC FASTENER

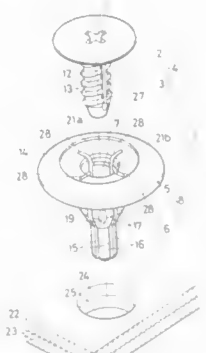
Kazumasa Kurihara, Utsunomiya; Seiji Takahashi, Hiroshima, and Yoshio Kaneko, Utsunomiya, all of Japan, assignors to Nifco Inc., Yokohama, Japan

Filed Oct. 19, 1988, Ser. No. 259,909

Claims priority, application Japan, Oct. 19, 1987, 62-261642; Oct. 20, 1987, 62-262580

Int. Cl.⁴ F16B *13/04, 13/06*

U.S. Cl. 411—55 4 Claims



1. A plastic fastener, comprising a male member having a head and a pin-like portion having male threads, said pin-like portion depending from the lower surface of said head, and a female member having a flange facing said head of said male member, a leg portion depending from the lower end of said flange and a bore extending from the upper surface of said flange into said leg portion and capable of receiving said pin-like portion of said male member, said pin-like portion having a diametrically penetrating axial slot which extends in its intermediate portion, said leg portion of said female member having a plurality of axial grooves radially spaced apart around said bore and a plurality of spreadable portions each defined between adjacent ones of said axial grooves and having an upper end connected to the lower surface of said flange and a lower end connected to the lower ends of the other spreadable portions by hinge portions, said spreadable portions being adapted to be spread with the insertion of said pin-like portion into said bore, an upper portion of the inner periphery of said bore being formed with a helical ridge which makes a complete revolution along the inner periphery of said bore and is received in a thread groove defined between the male threads of said pin-like portion.

4,878,792

REMOVABLE MAT FASTENER

Frank G. Frano, Hoffman Estates, Ill., assignor to Illinois Tool Works, Inc., Chicago, Ill.

Filed Aug. 1, 1988, Ser. No. 226,772

Int. Cl.⁴ F16B *21/00, 19/00*

U.S. Cl. 411—339 20 Claims

1. A car-mat fastener for removably retaining a car-mat to a car carpet, said fastener comprising:

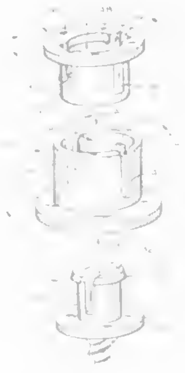
a latching post member consisting of a central flange separating an upper bifurcated post portion and a lower projecting portion, said lower projecting portion being adapted for fixed attachment to a car carpet, said post portion having a slightly enlarged head portion formed with an outer arcuate ridge;

a bottom latching ring-mat member consisting of a first bifurcated tubular-shaped section and a lower annular flange, said bottom latching member having a first axial opening for receiving a top latching ring-mat member, said first tubular-shaped section having diametrically opposed U-shaped slots and a pair of opposed tabs, said opposed tabs being formed on an inner surface of said first tubular-shaped section and being disposed perpendicularly to said U-shaped slots;

said top latching ring-mat member consisting of a second tubular-shaped section and an upper annular flange, said top latching member having an axial opening extending therethrough, said axial opening including a first aperture formed in said second tubular-shaped section and a second aperture formed in said upper annular flange defining a radial shoulder therebetween, said second tubular-shaped section having diametrically opposed raised ribs extending longitudinally on its outer surface, said top latching member having a pair of opposed L-shaped cut-outs disposed perpendicularly to said raised ribs;

said second tubular-shaped section of said top latching member being telescoped into the first axial opening in the first tubular-shaped section of said bottom latching member so that said raised ribs mate with said U-shaped slots and said tabs are permanently secured into said L-shaped cut-outs, said top and bottom latching members sandwiching the car-mat between the upper and lower flanges and forming an eyelet therebetween; and

said post portion of said latching post member being inserted into said eyelet so as to cause the opposed sides thereof to be compressed by said second tubular-shaped section of said top latching member, said head portion being passed through the first aperture so that the arcuate ridge is allowed to become detachably engaged with said radial shoulder formed adjacent the second aperture.



4,878,793

SCREW THREADED FASTENER

George D. Hewison, Twyford, Great Britain, assignor to ITW, Ltd., Camberley, England

Filed Sep. 8, 1988, Ser. No. 241,891

Claims priority, application United Kingdom, Sep. 8, 1987, 8721048

Int. Cl.⁴ F16B *23/00, 25/00*

U.S. Cl. 411—387 7 Claims

1. A screw threaded fastener, particularly intended for use in fastening corrugated sheet material to metal purlins, comprising:

a drilling point formed upon one end of said fastener;

a head portion formed upon an opposite second end of said fastener;

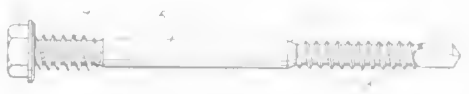
a first self-tapping screw threaded portion formed adjacent to said drilling point upon a first blank portion of said fastener having a first predetermined diameter;

a second screw threaded portion formed adjacent to said head portion upon a second blank portion of said fastener having a second predetermined diameter which is greater than said first predetermined diameter of said first screw threaded portion;

an unthreaded portion interposed and extending between said first and second screw threaded portions and having a diametrical extent which is substantially equal to said diameter of said second blank portion of said second screw threaded portion of said fastener and which is therefore greater than said diameter of said first blank portion of said first screw threaded portion;

a transition portion interposed between said first screw threaded portion and said unthreaded portion for smoothly interconnecting said first screw threaded portion, having said first predetermined diametrical extent, with said unthreaded portion having said second predetermined diametrical extent; and

forming means formed upon said transition portion and projecting substantially radially outwardly from external surface portions of said transition portion for enlarging the diameter of a hole drilled within said sheet material by said drilling point so as to facilitate the passage of said unthreaded and second screw threaded portions through said sheet material.



4,878,794

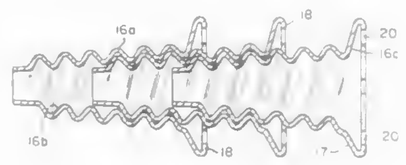
COLLATED SCREW FASTENERS

Frank R. Potucek, Palmetto, Fla., assignor to John W. Hall, Jr., Savannah, Ga.

Filed Mar. 15, 1988, Ser. No. 168,310

Int. Cl.⁴ F16B *35/00, 35/04*

U.S. Cl. 411—395 14 Claims



1. A fastener means, comprising:

an elongate, hollow, tubular screw member having a head and a shank;

said shank having a proximal end contiguous to said head and a distal end terminating in an annular opening;

said shank being tapered along its extent;

said annular opening having a diameter less than the inner diameter of said shank proximal end;

a plurality of helical ribs being formed along the extent of said shank;

an annular overhang being defined by a difference in diameter between said head and the proximal end of said shank;

said helical ribs forming interior thread means and exterior thread means along the extent of said shank; and

the interior thread means of about a top half of a first screw member screw threadedly receiving about a lower half of the exterior thread means of a second screw member of like size when said first and second screw members are disposed in a nesting relationship with one another

4,878,795

BUSH HAVING A RADIALLY ENLARGED FLANGE

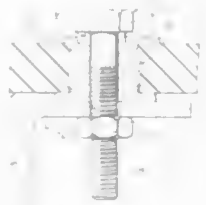
Michael Woodrow, Welwyn Garden City, and Raymond D. Lacey, Essendon, both of England, assignors to Avdel Systems Limited, Welwyn Garden City, England

Filed Nov. 4, 1988, Ser. No. 267,300

Claims priority, application United Kingdom, Nov. 11, 1987, 8726363

Int. Cl.⁴ F16B *19/08, 37/04*

U.S. Cl. 411—501 7 Claims



1. A bush comprising:

a generally cylindrical body;

a radially enlarged flange extending from adjacent one axial end of said body for abutting one face of a workpiece;

an axial bore extending through said cylindrical body and said flange; and

a tail portion extending axially from an end of said body opposite said flange whereby said body defines an intermediate portion between said flange and said tail portion, wherein said tail portion comprises:

(a) an annular boss extending axially from said opposite end of said body, said axial bore extending through said annular boss so that said annular boss surrounds said axial bore, and

(b) a deformable annular skirt extending axially from said opposite end of said body by a distance greater than the axial length of said boss, said skirt surrounding said annular boss with an annular gap therebetween,

wherein the axial length of said boss is greater than the radial thickness of said skirt, whereby said annular skirt may be deformed to extend radially of said intermediate portion and form a second radially enlarged flange at said opposite end of said body when said intermediate portion is inserted through the workpiece and said annular boss extends axially beyond said deformed annular skirt.

4,878,796

CONVEYING APPARATUS FOR LOADING AND UNLOADING GOODS, IN PARTICULAR FOR USE WITH SHIPS

Thomas C. M. Ammeraal, Zandweg 115, 1531 Ar. Wormer, Netherlands

Filed Feb. 29, 1988, Ser. No. 162,162

Claims priority, application Netherlands, Mar. 3, 1987, 8700511

Int. Cl.⁴ B65G *67/60*

U.S. Cl. 414—141.7 19 Claims

1. Conveying apparatus for loading and unloading goods, in particular for use with ships, comprising

a frame;

a conveyor supported by the frame and being covered by a first encasement means;

a cage lift provided with a lower loading and unloading point and an upper loading and unloading point connected to the conveyor, the cage lift comprising a substantially

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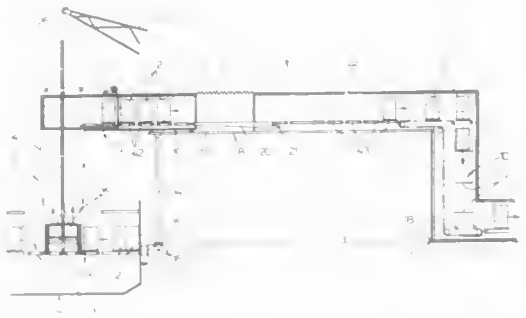
vertical lift shaft having a second encasement means and guiding means extending substantially vertically;

a lift cage for conveying the goods, the cage being guided by the guiding means within the lift shaft and having a floor for carrying the goods, the floor being adapted to be opened in order to enable goods packed in slings and hoisted into or out of a ship's hold to pass through the lift cage;



hoisting means connected to the lift cage for displacing the lift cage up and down within the lift shaft.

4,878,797

METHOD AND APPARATUS FOR CORRECTING THE FALLING PATH IN A LOADING INSTALLATION OF A SHAFT FURNACE

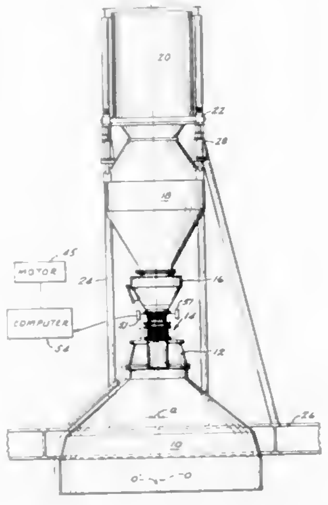
Emile Lonardi, L-Bascharage, Luxembourg, assignor to Paul Wurth S.A., Luxembourg

Filed Mar. 16, 1988, Ser. No. 168,926

Claims priority, application Luxembourg, Mar. 24, 1987, 86.822

Int. Cl.⁴ F23K *3/00*

U.S. Cl. 414—161 9 Claims



3. Apparatus for correcting the falling path of charge material in a loading installation of a shaft furnace in order to compensate for the random movements and inclinations of the shaft furnace whereby the central axis of the shaft furnace deviates from an initial reference axis 0 comprising:

a storage lock chamber supported on a framework, said framework being independent of the shaft furnace;

compensator means connecting said storage lock chamber to the head of the shaft furnace;

detector means for detecting lateral shifting of the head of the shaft furnace in relation to said lock chamber to determine the shifted central axis 0'of the furnace; and

inclining means for inclining said storage lock chamber until the axis of the falling path of charge material corresponds to said shifted central axis 0'of the shaft furnace.

4,878,798

BOX HANDLING APPARATUS

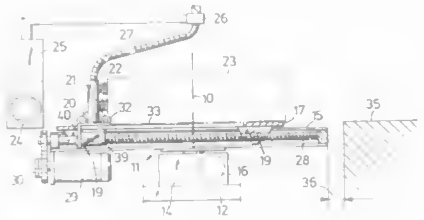
Lennart Johansson, Mjölby, Sweden, assignor to BT Industries AB, Mjolby, Sweden

Filed Nov. 3, 1987, Ser. No. 117,013

Claims priority, application Sweden, Nov. 3, 1986, 8604691

Int. Cl.⁴ B66C *9/18*

U.S. Cl. 414—280 7 Claims



1. Apparatus for handling boxes stored in shelf compartments of a storage shelving system, comprising:

a body structure adapted to be carried by a materials-handling vehicle, said body structure being movable to a given vertical level by a lifting means provided on said vehicle, so as to be in registration with a respective shelf compartment of the storage shelving system;

a box support table on said body structure and being movable along said body structure by means of a box dogging device;

said box dogging device being arranged for dogging movement along said body structure with a drive means for dogging respective boxes between said box support table and said respective shelf compartment;

said box dogging device including a plurality of suction cups commonly mounted on a carrier device which is mounted on said box dogging device, and vacuum means coupled to said suction cups, said suction cups being arranged for engagement with a side of a box when said vacuum means is activated;

guiding means provided on said body structure and on which said box support table is movable between an inner and outer terminal position;

said box support table comprising a substantially flat supporting plate having a substantially flat slide surface on which boxes are displaceable by means of said box dogging device, said substantially flat plate having an elongated opening therein;

said box dogging device with said carrier device extending through said elongated opening in said substantially flat plate, the linear extension of said elongated opening being shorter than the length of a full working stroke of said box dogging device so that said box dogging device by engaging a respective end surface of said elongated opening prior to the box support table reaching its respective terminal position also moves said substantially flat plate therewith.

4,878,799

AUTOMATIC MACHINE FOR UNLOADING FILM SHEET FROM MAGAZINE

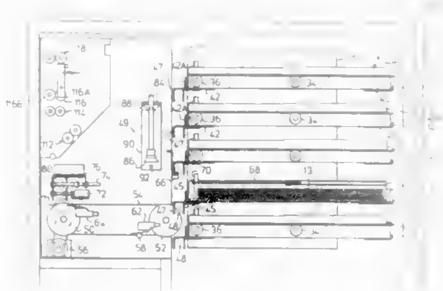
Izumi Seto; Mikio Tsuyuki, and Yutaka Takashima, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jan. 7, 1988, Ser. No. 141,395

Claims priority, application Japan, Jan. 7, 1987, 62-668[U]; Mar. 17, 1987, 62-62308

Int. Cl.⁴ B65G *65/00*

U.S. Cl. 414—331 26 Claims



1. An automatic machine for unloading film sheets from any of a plurality of magazine, said machine comprising:

a plurality of movable trays, each of which is loaded with one of said magazines containing film sheets;

an elevator for moving said movable trays to locate a selected one of said magazines to a retracted position from which said selected magazine is capable of being moved to a film unloading position where the film sheets can be unloaded from said selected magazine;

a film unloading preparation means including tray driving means operable for driving the movable tray which loads said selected magazine to move it between said retracted position and said film unloading position and engaging means disposed between each of said movable trays and said tray driving means and having a portion connected to said movable trays, said engaging means comprising a hook and an insert member disposed on said tray driving means for movement during operation of said tray driving means to a position for engaging said hook to transmit a driving force of the tray driving means to the movable tray which loads said selected magazine, said portion of said engaging means connected to said movable trays having a notch opening defined therein for allowing said tray driving means to pass through said notch opening during movement of said movable trays by said elevator; and

a film unloading mechanism for unloading the film sheet from said selected magazine located at said film unloading position.

4,878,800

PORTABLE UNLOADING PLATFORM AND RAMP

Travis E. Dell, 2609 N. Ellis Loop Rd., Plant City, Fla. 33566

Filed Mar. 15, 1988, Ser. No. 168,245

Int. Cl.⁴ B65G *67/00*

U.S. Cl. 414—401 16 Claims

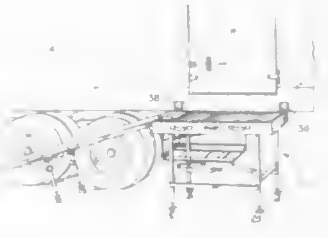
1. In combination, a platform and ramp for loading or unloading of a semi-trailer, said combination comprising:

a platform, said platform including legs extendable between a retracted and an extended position,

first carrier means mounted on the bottom of said semi-trailer for removably securing said platform beneath the bottom of said semi-trailer,

a ramp, said ramp including legs extendable between a retracted and an extended position, and

second carrier means mounted on the bottom of said semi-trailer for removably securing said ramp beneath the bottom of said semi-trailer, said second carrier means including a fixed mounting bracket and a swivel turntable spaced from one another for holding the ends of said ramp,



said fixed mounting bracket and said swivel turntable being located on opposite sides of said first carrier means,

said swivel turntable including a pivotable bracket for receiving a top end of said ramp at variable angles during loading of said ramp into said second carrier means.

4,878,801

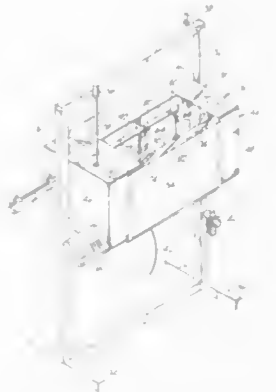
MACHINE FOR HANDLING CIRCUIT PACKAGE STORAGE TUBES

Rune S. Pearson, Torrance, Calif., assignor to Invention Design Engineering Associates, Inc., Torrance, Calif.

Continuation of Ser. No. 864,723, May 19, 1986, abandoned. This application May 2, 1988, Ser. No. 191,720

Int. Cl.⁴ B65B *69/00*

U.S. Cl. 414—411 12 Claims



1. A machine for handling elongated storage tubes capable of holding components in a uniform and substantially fixed position with respect to at least one rotational axis of the components within individual tubes, comprising:

a bin for holding the tubes in a substantially known longitudinal position, the bin including means for moving tubes to a substantially known lateral position;

a gripping means comprising a pair of opposed gripping fingers, the gripping fingers being slidably affixed at opposite ends of the bin and being inwardly moveable for grasping the opposite ends of an individual tube;

automated means for lowering the gripping fingers toward the substantially known lateral position until the gripping fingers contact an individual tube in the bin, and for moving the gripping fingers to grasp the ends of the contacted tube and lift it from the bin; and

automated means for rotating the tube, after it has been lifted from the bin, about its longitudinal axis to a desired rotational position determined by reference to an indexing means on the tube related to the position of components

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held in the tube, whereby components with a substantially known orientation can be fed to and from the tube.

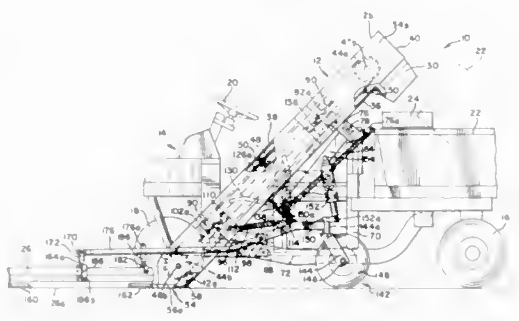
4,878,802
MACHINE FOR COLLECTING GROUND PARTICLES AND THE LIKE

Loren F. Hansen, Lincoln; Donald J. Huber, deceased, late of Lincoln (by Lisa A. Huber, beneficiary), and Joseph J. Oliver, Lincoln, all of Nebr., assignors to Outboard Marine Corporation, Waukegan, Ill.

Filed Feb. 26, 1988, Ser. No. 160,617

Int. Cl.^{4} B65G *65/02*

U.S. Cl. 414—523 15 Claims



1. A machine for gathering particles from a ground surface and the like and being attachable to a self-propelled vehicle, comprising, in combination,

an upwardly inclined conveyor operative to receive particles at a lower receiving end and convey the particles longitudinally of the conveyor to an upper discharge end,

gathering means cooperative with said lower receiving end of said conveyor for guiding particles disposed on the ground surface to said receiving end of said conveyor as the machine traverses the ground surface,

and means supporting said conveyor on the vehicle in an upwardly inclined orientation, said support means including a truss frame arrangement having ball joint means supporting said conveyor for rotation substantially about its longitudinal axis in response to changes in surface contour so as to enable said conveyor and gathering means to maintain a predetermined operating orientation to the ground surface, said truss frame arrangement including linkage means enabling an operator to raise said conveyor above the ground surface to a non-operating position for transport, said truss frame arrangement including a substantially parallelogram linkage arrangement having a pair of pivot arms supported for pivotal movement about discrete parallel pivot axis and having cantilevered support arms defining said ball joint means which are cooperative with said conveyor so as to enable rotation of said conveyor substantially about its longitudinal axis.

4,878,803
STICK DELIVERY APPARATUS

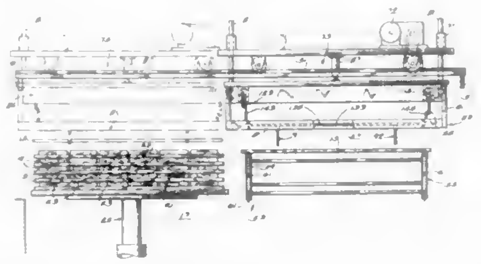
Wade Q. Whiddon, P.O. Box 31, Abbeyville, Ala. 36310

Filed Mar. 11, 1988, Ser. No. 167,024

Int. Cl.^{4} B65G *57/18*

U.S. Cl. 414—789.5 13 Claims

12. Apparatus for delivering separator sticks to a stacking station, said apparatus comprising a frame, a stick conveyor supported on said frame for movement between a stick supply station and a stick transfer station horizontally spaced from the stick supply station and from the stacking station and including means for transporting sticks from the supply station and for delivering to the transfer station a plurality of the sticks in a predetermined spaced and parallel relation to one another, means on said frame adjacent said transfer station for lifting the predetermined plurality of sticks in the predetermined spaced and parallel relation to one another from said conveyor to a raised position above said conveyor, carriage means supported on said frame for movement relative to said frame between a pick-up position adjacent the transfer station and a delivery position horizontally spaced from the pick-up station and adjacent the stacking station, and means on said carriage means and movable in common therewith for engaging the predetermined plurality of sticks in the predetermined spaced and parallel relation to one another when the sticks are located in the raised position and when said carriage means is in the pick-up position, for retaining the predetermined plurality of sticks in the predetermined spaced and parallel relation to one another during carriage means movement from the pick-up position to the delivery position and for releasing the predetermined plurality of sticks in the predetermined spaced and parallel relation to one another at the stacking station when said carriage mean sis in the delivery position.



4,878,804
CIRCULATING PUMP

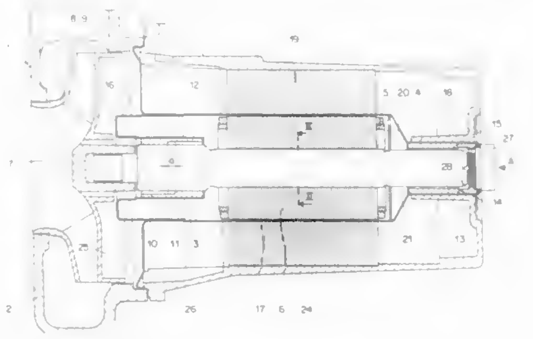
Paul Akerman, Münsingen, and Wolfram Meyer, Hilterfingen, both of Switzerland, assignors to Bieri Pumpenbau AG, Sudstrasse, Switzerland

Filed Sep. 12, 1988, Ser. No. 242,486

Claims priority, application Switzerland, Sep. 15, 1987, 3553/87

Int. Cl.^{4} F04D *29/06*

U.S. Cl. 415—111 5 Claims



1. A circulating pump, especially for hot-water plants, of the type having a pump housing, at least two bearing bushes, a shaft mounted between the bearing bushes, a rotor provided with longitudinal grooves mounted on the shaft, a stator, a fluid-tight sleeve disposed between the rotor and the stator, and an impeller connected to the shaft, wherein the improvement comprises:

at least one baffle plate having a center aperture encircling said shaft between said rotor and one of said bearing bushes, the diameter of said aperture being slightly greater than the diameter of said shaft, whereby a gap is formed between said shaft and said baffle plate, and

at least one lubrication groove disposed in each of said bearing bushes.

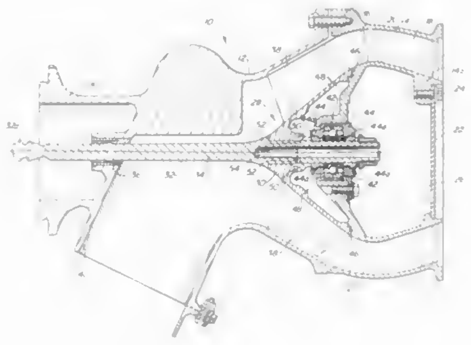
4,878,805
BLOWER FOR USE IN PARTICLE CONTAMINATED ENVIRONMENTS

Behzad Hagshenas, San Diego, Calif., assignor to Sundstrand Corporation, Rockford, Ill.

Filed Oct. 20, 1988, Ser. No. 260,036

Int. Cl.^{4} F01D *25/32*

U.S. Cl. 415—169.1 12 Claims



5. In a blower for use particularly in environments of particle contamination, the blower including impeller means rotatably mounted in housing means by bearing means between two cavities on opposite sides of the bearing means for drawing the particle contaminated air from an inlet of housing means, the improvement comprising passage means communicating between said cavities to provide a pressure balance therebetween and thereby prevent particle contaminates from infiltrating the bearing means.

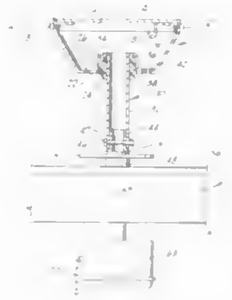
4,878,806
DUAL MOUNTING CEILING FAN

Herbert W. Markwardt, Fort Worth, Tex., assignor to Encon Industries, Inc., Fort Worth, Tex.

Continuation-in-part of Ser. No. 913,475, Mar. 8, 1988, Pat. No. 4,729,725. This application Mar. 4, 1988, Ser. No. 164,098

Int. Cl.^{4} F04D *29/64*

U.S. Cl. 416—5 3 Claims



1. A ceiling fan adapted for selective mounting flush to the ceiling in a flush mounting mode, or alternatively, suspended by a down rod in a down rod mounting mode, comprising:

a horizontally extending ceiling mounting plate having a downwardly extending flange, said flange defining a plurality of screw holes therethrough;

a concavo-convex canopy having screw holes therethrough and including a centrally apertured lower central plate, said lower central plate having a plurality of upper fastener holes formed therethrough in spaced array about the aperture through the center of said central plate;

a plurality of mounting screws extending through said screw holes in the canopy and into engagement with the screw holes in the downwardly extending flange of the ceiling mounting plate;

a J-hook projecting down from the ceiling mounting plate from a location within the downwardly extending flange and having a canopy-suspending point thereon of a size to pass through the screw holes in the canopy and facilitating hanging of the canopy therefrom to effect electrical connections to the fan;

a down rod assembly removably connected to the canopy and projecting downwardly therefrom, said down rod assembly including:

an elongated tubular down rod having an upper end extending through the central aperture in said lower central plate and having a lower end;

a ball element secured to the upper end of said down rod and adapted to land on the lower central plate for swivelly supporting said down rod suspended from said canopy when said fan is mounted in said down rod mounting mode;

anti-rotation means on the ball element and the central plate for preventing rotation of the ball element relative to the canopy; and

a down rod sleeve telescopingly receiving the lower end of said down rod and sized to project through the aperture in the lower central plate of said canopy when said fan is mounted in said flush mounting mode;

a fan motor housing carried by said down rod sleeve;

a flush mounting plate carried with the fan motor housing and having a plurality of lower fastener holes therethrough vertically aligned with said upper fastener holes in said central plate of said canopy; and

means for interengaging said lower central plate of said canopy in flat abutting contact with said flush mounting plate with said down rod sleeve projecting into said canopy through the central aperture in said lower central plate at a time when the down rod and ball element are removed to facilitate flush mounting of the fan, said interengaging means comprising a plurality of fasteners removably carried in said lower fastener holes through said flush mounting plate, and sized to pass through the upper fastener holes in said central plate of said canopy.

4,878,807
RELATING TO ENERGY CONVERSION APPARATUS

Keith G. Baker, 210 Linden Ave., Rutledge, Pa. 10970

Filed Mar. 28, 1988, Ser. No. 174,037

Int. Cl.^{4} F03D *5/04*

U.S. Cl. 416—7 11 Claims

1. Energy conversion apparatus which comprises.

a rigid structural frame;

endless belt circulating means supported by the said structural frame;

endless belt means mounted on said endless belt circulating means for movement thereon;

a multiplicity of generally planar hydrodynamic lift members spaced apart at intervals along, and mounted on and laterally offset from the said endless belt means for pivotal movement of said lift members about an axis outside of and parallel to the plane of said lift members; and

load means having a rotary part coupled to the said endless belt means, the arrangement of the several parts being

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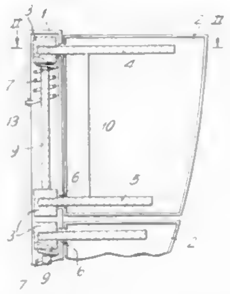
such that lift forces are developed acting on the said lift members as a result of passage of fluid thereacross, such lift forces being transmitted to the said belt means so as to cause motion thereof about the said circulating parts.

4,878,808

AIRFOIL FOR A WIND-DRIVEN WHEEL

Anton Wildenauer, Auf dem Wingert 3, 6101 Rossdorf, Austria
Filed May 4, 1988, Ser. No. 189,988
Claims priority, application Austria, May 14, 1987, 1223/87
Int. Cl.⁴ F03D *7/04*
U.S. Cl. 416—132 B 9 Claims



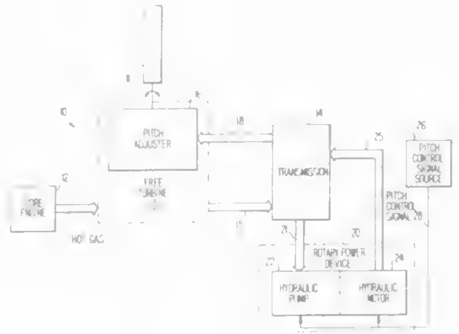
1. An airfoil for a wind-driven wheel rotatable about a horizontal axis for utilizing wind energy, comprising:
- a spar connected with the axis of the wheel and having a longitudinal side;
- at least one vane provided at the longitudinal side of the spar;
- at least one pivot bearing located inside the spar;
- a return spring provided so as to press the vane into a neutral position; and
- at least one web provided so as to connect the at least one vane with the at least one pivot bearing, the web being arranged so as to pass through an aperture in the longitudinal side of the spar.

4,878,809

POWER SOURCE AND CONTROL MECHANISM FOR PROPELLER PITCH CONTROL

John E. Ames, Rockford, Ill., assignor to Sundstrand Corporation, Rockford, Ill.
Filed Jul. 5, 1988, Ser. No. 215,356
Int. Cl.⁴ B64C *11/32*
U.S. Cl. 416—151 21 Claims

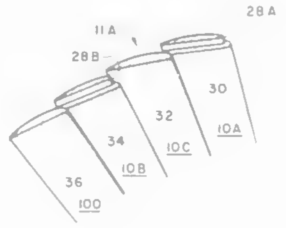
1. A pitch controller for varying a pitch of a plurality of blades in a fan powered by a turbine, the pitch controller comprising:
- pitch adjusting means having an input means for controlling the pitch of the blades, the pitch of the blades being constant in response to a rotational velocity of the input means and a rotational velocity of a power source means for applying rotary power to the blades having a constant ratio, and the pitch of the blades changing in response to the rotational velocity of the input means and the rotational velocity of the power source means changing in ratio;
- a transmission means having a first input means from the power source means for applying rotary power and a second input means for controlling a rotational velocity of a first output means in proportion to a change in velocity of the second input means, and a second output means; and
- means for providing the input from the second input means to the transmission means, the rotational velocity of the second input from the second input means to the transmission means varying in proportion to a change in an applied pitch control signal for controlling the pitch of the blades, the output from the first output means of the transmission means providing torque to the pitch adjusting mean to control an adjustment of pitch of the blades.



4,878,810

TURBINE BLADES HAVING ALTERNATING RESONANT FREQUENCIES

David H. Evans, Lake Mary, Fla., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed May 20, 1988, Ser. No. 196,691
Int. Cl.⁴ F01D *5/10*
U.S. Cl. 416—203 6 Claims

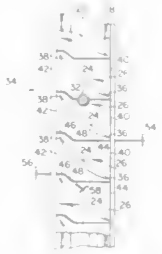


1. A steam turbine rotor assembly comprising:
- a rotor rotatable at a predetermined running speed,
- a plurality of first free standing elongated, low aspect rotor blades, each having a first resonant frequency,
- a plurality of second free standing elongated, low aspect rotor blades, each having a second resonant frequency, wherein the plurality of first and second rotor blades are alternatingly connected to the rotor in at least one row, and wherein adjacent blades of the at least one row have alternating first and second resonant frequencies, each of the plurality of first and second rotor blades having a base portion and an air foil portion including a leading edge, a trailing edge, a concave surface, a convex surface, and a tip, and the tips of the plurality of second rotor blades of the at least one row being profiled for increasing the resonant frequency thereof, said alternating first and second resonant frequencies providing means for preventing unstalled flutter in the at least one row at non-resonant frequencies wherein each profiled tip includes an L-shaped recess formed substantially longitudinally from the leading edge to the trailing edge in the concave surface of the airfoil portion of the blade at the tip, said L-shaped recess defining an extension running from the trailing edge along the top and terminating before the leading edge.

4,878,811

AXIAL COMPRESSOR BLADE ASSEMBLY

Stephen W. Jorgensen, West Palm Beach, Fla., assignor to United Technologies Corporation, Hartford, Conn.
Filed Nov. 14, 1988, Ser. No. 270,994
Int. Cl.⁴ F01D *5/22*
U.S. Cl. 416—215 7 Claims



1. A bladed drum type compressor assembly comprising:
- a plurality of disks each having a rim with a circumferential blade root retention slot therein;
- a plurality of blades installed in each slot, each blade having an airfoil, a blade platform supporting said airfoil, and a root supporting said blade platform;
- said blade roots retained within said slots with said airfoils in high solidity relationship with each other;
- each blade platform having two circumferentially oriented ends, a first major axial edge portion adjacent a first end and substantially perpendicular to said first end,
- a second minor axial edge portion adjacent to the second end and substantially perpendicular to said second end, a canted intermediate edge portion intermediate said first and second axial edge portions; and
- said plurality of blades assembled with the minimum clearance between adjacent platforms occurring between said first major portions as compared to said second minor portions and said canted intermediate portions.

4,878,812

TURBINE ROTOR

Tomohisa Kito; Katsuhisa Yabuta, and Yoshinori Hattori, all of Aichi, Japan, assignors to NGK Spark Plug, Co., Ltd., Aichi, Japan
Filed Jun. 3, 1988, Ser. No. 201,722
Claims priority, application Japan, Jun. 5, 1987, 62-141271
Int. Cl.⁴ F01D *5/28*
U.S. Cl. 416—241 B 1 Claim

1. In a turbine rotor having a ceramic turbine wheel, wherein the improvement comprises said ceramic turbine wheel being made of a material having pores having a maximum diameter of 20 μm distributed in a blade portion of said turbine wheel at a porosity of 2 to 10 vol. % and wherein the volume porosity of said pores gradually decreases from a blade surface of said blade portion to an inside thereof

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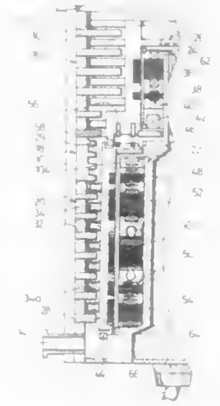
4,878,813

VACUUM PUMP

Masaharu Miki, Narashino, Japan, assignor to Seiki Seiki Kabushiki Kaisha, Japan
Filed Mar. 9, 1988, Ser. No. 165,719
Claims priority, application Japan, Mar. 18, 1987, 62-63282
Int. Cl.⁴ F04B *23/04, 37/14*
U.S. Cl. 417—2 11 Claims



1. A pump for producing ultra high vacuum comprising: a housing; a first rotor within said housing having a first set of rotor blades disposed around said first rotor for coaxial with said first rotor within said housing producing ultra high vacuum; a second rotor having a second set of rotor blades disposed around said second rotor for producing relatively low to high vacuum; ;magnetic suspension means for magnetically suspending said first rotor and said second rotor for rotation with said housing; a motor for rotationally driving at least said second rotor; and magnetic clutch means for coupling said first rotor and said second rotor when a predetermined level of vacuum is reached.

4,878,814

VARIABLE CAPACITY COMPRESSOR WITH CAPACITY-INDICATING DEVICE

Nobuyuki Nakajima; Kenichi Inomata; Masaya Moruta; Toshio Yamaguchi, and Kazuo Eitai, all of Konan, Japan, assignors to Diesel Kiki Co., Ltd., Tokyo, Japan
Filed Oct. 31, 1988, Ser. No. 257,980
Claims priority, application Japan, Nov. 5, 1987, 62-280134
Int. Cl.⁴ F04B *21/00, 39/00, 49/02*
U.S. Cl. 417—63 10 Claims

1. A variable capacity compressor including pumping means, a suction chamber for supplying said pump means with low pressure, a discharge pressure chamber supplied with high pressure from said pumping means, and a control element the position of which changes in response to a difference between

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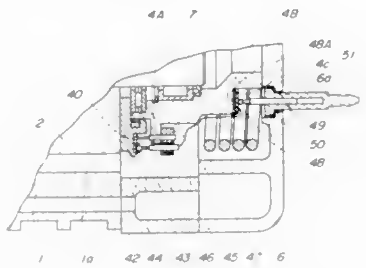
low pressure from said suction chamber and high pressure from said discharge pressure chamber to determine the capacity of said pumping means, which comprises:

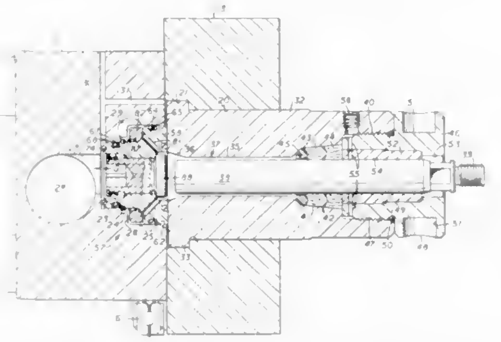
detector means for detecting change in the position of said control element in a continuous manner and having an output commensurate with said change; and



capacity-indicating means for visually indicating an output value thereof in a manner continuously variable in response to a continuous change in said detector means output, whereby the output value visually indicated by said capacity-indicating means varies continuously with a continuous change in the capacity of said pumping means.

4,878,815
HIGH PRESSURE RECIPROCATING PUMP APPARATUS

J. Edward Stachowiak, P.O. Box 79731, Houston, Tex. 77024
Filed May 18, 1988, Ser. No. 195,689
Int. Cl.⁴ F04B *21/02;* **F16J** *10/02, 15/24;* **F16K** *15/00*
U.S. Cl. 417—63 43 Claims



1. In a high pressure reciprocating fluid pump including a pump drive housing having at least one reciprocating plunger extendable out of one end thereof;

a mounting plate secured to said drive housing plunger end having a first face perpendicular to the axis of said plunger in contact therewith and a second, parallel face with at least one bore extending therethrough in axial alignment with said plunger,

stuffing box means releasably received in said mounting plate bore and having one end extending into said pump drive housing and a central bore slidably receiving one end of said plunger,

packing means surrounding said plunger in reciprocal sealing relation

a pressure chamber in said stuffing box means at the opposite end of said central bore coaxial with said plunger,

suction and discharge manifold means comprising block means secured on said mounting plate second face and having at least one interior cavity substantially coaxial with said stuffing box means central bore and having suction and discharge manifolds therein opening into the end of said cavity opposite said plunger, and

a unitary suction and discharge valve cartridge assembly in said manifold means interior cavity abutting said stuffing box means and aligned with said plunger and said pressure chamber, and including a suction valve and a discharge valve movably mounted on a common seat member to control fluid flow into and out of the end of said cavity.

35. A suction and discharge valve cartridge assembly for installation in a valve manifold apparatus having at least one valve cavity in communication with suction and discharge port passageways and the manifold apparatus of the type used in a high pressure reciprocating fluid pump having a pump drive housing and at least one reciprocating plunger extending through stuffing box means, the valve cartridge assembly comprising;

a generally cylindrical seat member having a central bore extending therethrough,

a suction valve seat surface and a discharge valve seat surface concentric and radially spaced relative to one another,

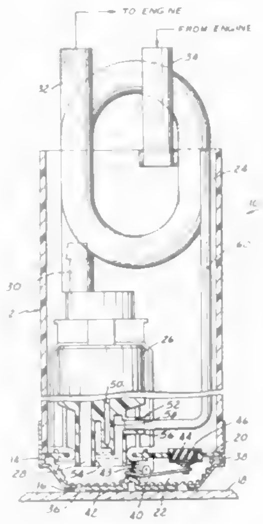
a suction valve member and a discharge valve member movably mounted on said seat member relative to said suction valve seat surface and said discharge valve seat surface respectively,

said suction valve and said discharge valve members positioned concentric and radially spaced relative to one another on said seat member and coaxial with the seat axis, and

said suction valve having a surface opposite said seat surface substantially coplanar with one end of said cylindrical seat member.

4,878,816
IN-TANK FUEL RESERVOIR WITH FUEL VAPOR SEPARATION

Charles H. Tuckey, Cass City, Mich., assignor to Walbro Corporation, Cass City, Mich.
Continuation-in-part of Ser. No. 153,316, Feb. 8, 1988, Pat. No. 4,831,990, which is a continuation-in-part of Ser. No. 49,537, May 14, 1987, Pat. No. 4,807,582, which is a continuation-in-part of Ser. No. 928,184, Nov. 7, 1986, Pat. No. 4,747,388. This application Jun. 2, 1988, Ser. No. 201,633
The portion of the term of this patent subsequent to Nov. 7, 2006, has been disclaimed.
Int. Cl.⁴ B60K *15/02;* **F04F** *5/02*
U.S. Cl. 417—76 5 Claims



1. A fuel delivery system for automotive engines and the like comprising:

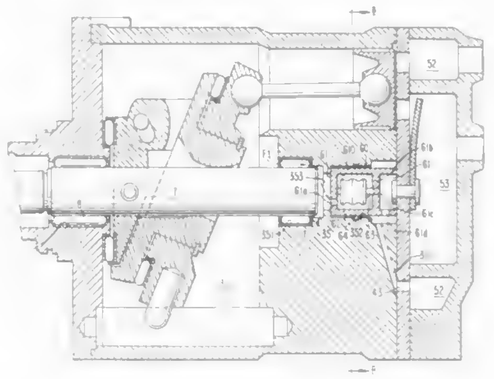
a canister for positioning within a fuel tank and having a lower end with an opening and means forming an internal wall spaced from said lower end and dividing said canister into upper and lower canister chambers,

an electric-motor fuel pump positioned within said upper chamber having a fuel inlet extending through said wall into said lower chamber, a primary fuel outlet for feeding fuel under pressure to an engine and a secondary fuel outlet for supplying fuel under pressure, and

a glad extending through said wall from said pump to said lower chamber, said glad including passages forming said pump fuel inlet, fluid conduit means extending through said wall in parallel with said inlet passage and having an inlet end in said lower chamber adjacent to a lower end of said pump fuel inlet passage and an outlet end positioned in said upper chamber, and nozzle means coupling said pump secondary outlet to said fluid conduit means for aspirating vapor and fuel through said fluid conduit means from said lower chamber to said upper chamber.

4,878,817
WOBBLE PLATE TYPE COMPRESSOR WITH VARIABLE DISPLACEMENT MECHANISM

Sei Kikuchi; Kiyoshi Terauchi, both of Isesaki; Kazuhiko Takai, Maebashi, and Teruo Higuchi, Isesaki, all of Japan, assignors to Sanden Corporation, Gunma, Japan
Filed Feb. 22, 1988, Ser. No. 158,711
Claims priority, application Japan, Feb. 20, 1987, 62-35910
Int. Cl.⁴ F04B *1/26*
U.S. Cl. 417—222 S 21 Claims



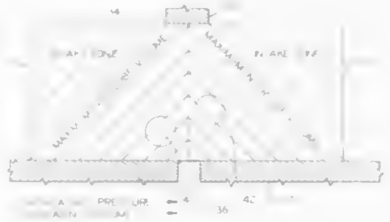
1. In a slant plate type compressor with a variable displacement mechanism, the compressor comprising a compressor housing having a central portion, a front end plate at one end and a cylinder head provided with a suction chamber and a discharge chamber at its other end, said housing having a cylinder block provided with a plurality of cylinders and a crank chamber adjacent and cylinder block, a piston slidably received within each of the cylinders, a drive shaft rotatably supported in the housing, said cylinder block having a central bore rotatably supporting one end of the drive shaft, a rotor coupled to the drive shaft and rotatably therewith, coupling means for drivingly coupling said rotor to said pistons such that the rotary motion of said rotor is converted into reciprocating motion of said pistons, said coupling means including a member having a surface disposed at an incline angle relative to the longitudinal axis of the drive shaft, and control means for controlling fluid communication between the crank chamber and the suction chamber to vary the angle of said member, the stroke length of said pistons and the capacity of the compressor, the improvement comprising:

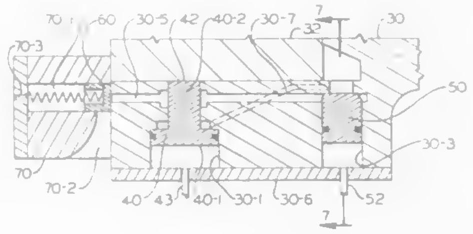
said control means being disposed in said central bore of said cylinder block adjacent said one end of said drive shaft, said control means including a control valve; and

a conduit in said cylinder block extending from said central bore through said cylinder block to the suction chamber.

4,878,818
COMMON COMPRESSION ZONE ACCESS PORTS FOR POSITIVE DISPLACEMENT COMPRESSOR

David N. Shaw, Manlius, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.
Filed Jul. 5, 1988, Ser. No. 214,974
Int. Cl.⁴ F04B *49/02*
U.S. Cl. 417—308 16 Claims





1. A method for operating a positive displacement compressor of the type where trapped volumes are established and moved relative to fixed structure as part of a compression cycle comprising the steps of:

providing at least one port in the fixed structure at a location having fluid communication with a trapped volume during a portion of its compression cycle;

blocking the one port when full output of the compressor is desired;

establishing communication between a trapped volume and the inlet to the compressor via the one port when it is desired to unload the compressor; and

establishing communication between a trapped volume and the discharge to the compressor via the one port when it is desired to reduce the discharge pressure to suction pressure ratio.

4,878,819
OTR SAFETY URINAL PUMPS

Edward Bozoyan, 1812 West St., Union City, N.J. 07087
Filed Apr. 14, 1988, Ser. No. 181,507
Int. Cl.⁴ F04B *7/00*
U.S. Cl. 417—514 6 Claims

1. A pouring liquid pumping device connected to an actuating means, to a discharge and disinfectant means, said pump having an "at rest" position, an intake cycle and a pumping cycle; said device comprising:

pressure chamber means having a pump cylinder provided with a lower plate having a valved outlet opening,

and having with an upper plate having a central opening and an intake opening;

piston means having a composite piston, said piston having a face on a lowermost surface of the piston with a central opening on said face forming a valve seat; having an interior chamber with an interior shelf and an annular lid covering said interior chamber;

a central and normally open inlet valve operatively disposed inside said piston's interior chamber, said valve having

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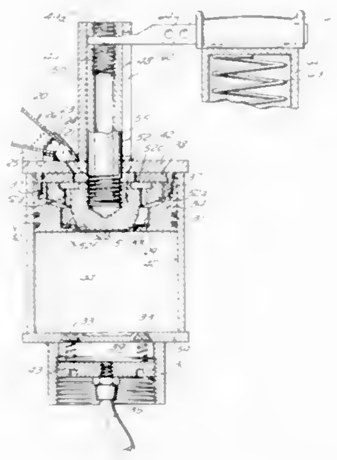
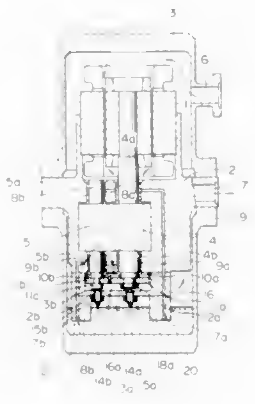
(a) a valve head adapted to engage with and to seal said valve seat provided in the piston;
(b) a rigid peripheral shoulder adapted to operatively drive said piston to and fro,
(c) an apertured segment connecting said peripheral shoulder and said valve head,
(d) a valve stem projecting out of said piston, out of said cylinder and operatively engaging with said actuating means;



said central valve being the final mover of said pumping device at said intake cycle, liquid is poured down through said intake opening, passed said apertured segment and said valve seat and filled into said pump cylinder; at said pumping cycle, said valve stem and the inlet valve being depressed; at a few millimeters downstroke said valve head strikes and seals said valve seat, at the same time said peripheral shoulder strikes said piston's interior shelf and drives it down, thus the inside liquid is compressed and pumped out through said valved output opening.

4,878,820
SCREW COMPRESSOR

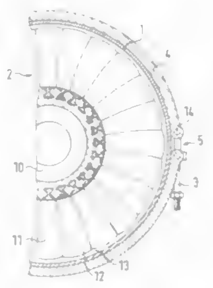
Motomichi Doi, Katsuta; Minetoshi Izushi, Shimizu; Kazuhiko Kawaike, Katsuta, and Masayuki Urashin, Shimizu, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed May 17, 1988, Ser. No. 194,917
Claims priority, application Japan, May 22, 1987, 62-123645
Int. Cl.^{4} F04C *18/16*
U.S. Cl. 418—203 12 Claims



1. In a screw compressor including a casing, a pair of male and female rotors respectively formed in outer peripheries thereof with helical teeth and grooves, said male and female rotors being arranged within said casing in meshing relation to each other through said teeth and grooves for compressing gas at a mating section between said male and female rotors, two pairs of first and second radial plain bearing means are provided for respectively supporting shafts of said male and female rotors, a pair of thrust plain bearing means are provided adjacent said second radial bearing means for the respective shafts, for supporting respectively one ends of the shafts of the male and female rotors, each of said thrust plain bearing means being of dynamic-pressure type in which with rotation of a corresponding one of the shafts of the male and female rotors, pressure is applied to lubricant at a sliding section of the thrust plain bearing means to produce an anti-thrust force, and the lubricant is fed to each of said first radial plain bearing means for the respective shafts, and is fed to a space between an end of a sliding section of each of said second radial plain bearing means and an adjacent end of the sliding section of a corresponding one of said thrust plain bearing means so that the lubricant is distributed to the second radial plain bearing means and the thrust plain bearing means to lubricate these bearing means in proportion to a difference between flow resistance with which the lubricant passes through the second radial plain bearing means and flow resistance with which the lubricant passes through the thrust plain bearing means.

4,878,821
DETACHABLE ANTI-RUPTURE RING FOR THE HOUSING OF A TURBO POWER PLANT

Werner Huether; Axel Rossman, both of Karlsfeld, and Siegfried Sikorski, Munich, all of Fed. Rep. of Germany, assignors to MTU Motoren-und Turbineo-Union Munchen GmbH, Dachauer, Fed. Rep. of Germany
Filed Feb. 9, 1988, Ser. No. 154,142
Claims priority, application Fed. Rep. of Germany, Feb. 11, 1987, 3704197
Int. Cl.^{4} F01D *25/24*
U.S. Cl. 415—9 12 Claims



1. An anti-rupture ring for a housing of a turbo power plant in a region subject to breakage of blades of a rotor in the housing, said ring having an axial slit and opposite spaced ends at said slit and comprising at least one detachable clamping device engaging the ends of the ring at said slit and including means for applying adjustable force to the ends of the ring and thus adjustable circumferential tension in said ring, said at least one clamping device comprising a hydraulic piston.

4,878,822
TIRE RECAPPING CURING JACKET

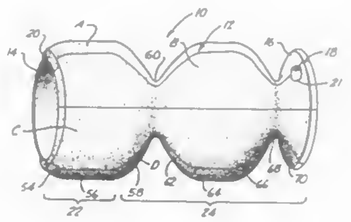
Terry L. Wetch, 704 31st St. Northwest, Fargo, N. Dak. 58012
Filed Apr. 1, 1988, Ser. No. 176,447
Int. Cl.^{4} B29C *35/02, 37/00*
U.S. Cl. 425—14 7 Claims

1. For use in conjunction with a tire to be recapped and having a pair of sidewalls and a tread, a curing jacket for encasing the tire, including:

a tubular envelope having first and second edges and configured to extend around a circumference of and adjacent to interior and exterior surfaces of the sidewalls and tread of the tire;

an O-ring member on the first edge of the envelope;

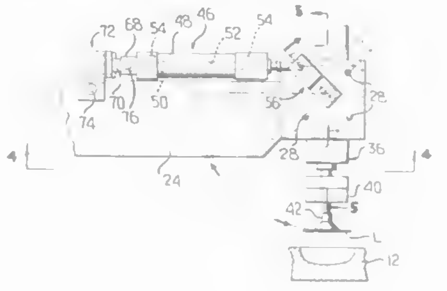
a complementary seat member for joining with the O-ring member, on the second edge of the envelope; and



evacuation means for permitting air to be evacuated from the sealed envelope.

4,878,823
APPARATUS FOR APPLYING A LABEL TO AN OPEN MOLD HALF

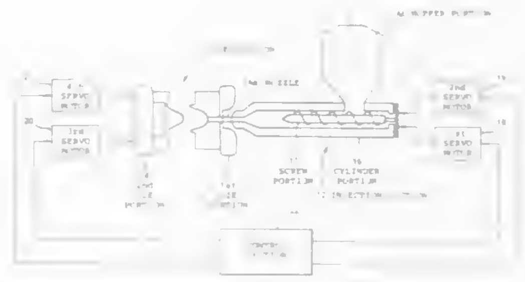
Leonard A. Blomquist, Joliet, Ill., assignor to Continental Plastic Containers, Inc., Norwalk, Conn.
Filed Mar. 1, 1984, Ser. No. 585,077
Int. Cl.^{4} B29B *11/06;* **B65C** *9/14*
U.S. Cl. 425—116 10 Claims



1. An apparatus for applying a label to an open mold half of a Ferris wheel type blow molding machine, said apparatus comprising a support member having means for attachment to a frame of a Ferris wheel type blow molding machine, a shaft assembly including a housing and a shaft rotatably journalled in said housing and projecting from opposite ends of said housing, means fixedly securing said housing to said support member with one of said shaft ends projecting transversely beyond said support member, a support unit carried by the other of said shaft ends, an extensible fluid motor carried by said support unit, said fluid motor having an axis disposed substantially normal to said shaft, and a label pick-up and delivery suction head carried by said extensible fluid motor for controlled projection and retraction; and drive means for selectively and rotatably oscillating said shaft to position said suction head at a label stack, then at an open mold half, and return to the label stack, said drive means including a second extensible fluid motor, said second extensible fluid motor having a cylinder and a piston carrying a piston rod, mounting means mounting an end of said cylinder remote from said piston rod to said support member, a lever arm on said shaft one end, and means directly connecting said piston rod to said lever arm.

4,878,824
INJECTION MOLDING MACHINE HAVING SELECTIVELY CONTROLLABLE MOTORS

Hitoshi Hara, Funabashi, Japan, assignor to Sumitomo Heavy Industries, Ltd., Tokyo, Japan
Filed Dec. 14, 1988, Ser. No. 284,401
Claims priority, application Japan, Dec. 15, 1987, 62-315220
Int. Cl.^{4} B29C *45/80*
U.S. Cl. 425—139 7 Claims



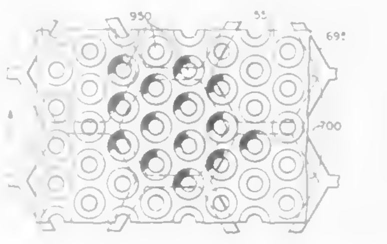
1. In an injection molding machine for molding a melted resin into a product by injecting said melted resin from an injection section to a die section in accordance with a predetermined injection molding process, said injection molding machine comprising first motor means for introducing said melted resin into said injection section, second motor means coupled to said injection section for injecting said melted resin from said injection section to said die section, third motor means for opening and clamping said die section, fourth motor means for ejecting said product from said die section, and a control section for controlling said first, said second, said third, and said fourth motor means to carry out said predetermined injection molding process, the improvement wherein:

each of said first, said second, said third, and said fourth motor means is grouped into either one of first and second groups so that said motor means of each of the first and the second groups has a driving duration which is not overlapped with one another;

said control section comprising first and second control means coupled to said first-group and said second-group motor mean for individually and selectively controlling said first-group motor means and said second-group motor means.

4,878,825
STATIONARY SUPPORT MEMBER IN FORMING AREA FOR UNIFORMLY DEBOSSING AND APERTURING A MOVING PLASTIC WEB

William I. Mullane, Jr., Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio
Division of Ser. No. 542,796, Oct. 17, 1983, abandoned. This application Jan. 23, 1986, Ser. No. 822,686
Int. Cl.^{4} **B29C** *71/00*
U.S. Cl. 425—290 4 Claims



1. A apparatus for uniformly debossing a moving ribbon of substantially planar plastic film as said film moves continuously in the machine direction to impart a fine scale three-dimensional pattern thereto, said apparatus comprising:

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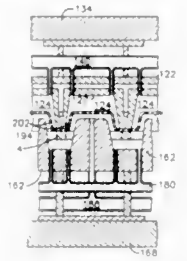
(a) a three-dimensional forming structure comprising a cylinder, said cylinder exhibiting said fine scale three-dimensional pattern for supporting said plastic film, said three-dimensional pattern including a first predetermined pattern of apertures therein;
(b) a fluid pressure differential zone comprising a peripherally stationary vacuum chamber located inside said cylinder;
(c) means for rotating said cylinder in the machine direction across said fluid pressure differential zone while said plastic film is supported on said cylinder; and
(d) stationary support means located in said vacuum chamber immediately adjacent the innermost surface of said cylinder, said peripherally stationary support means and said cylinder being movable relative to one another as measured in a radial direction, said apparatus further including means for exerting a constant force between said peripherally stationary support member and the innermost surface of said cylinder to prevent deformation of said cylinder in said fluid pressure differential zone, said stationary support means having a second pattern of apertures therein, said apertures in said second pattern overlapping one another in the cross-machine direction so tnat a continuous, uninterrupted straight line oriented parallel to the machine direction and completely traversing said fluid pressure differential zone cannot be inscribed on the land area defining said apertures in said support member, said apertures in said support means being so sized and spaced relative to said first pattern of apertures in said three-dimensional forming structure that substantially all of said apertures in said three-dimensional forming structure are exposed to the fluid pressure differential existing on the opposite sides of said plastic film in said fluid pressure differential zone at some point during their traverse of said fluid pressure differential zone, whereby said plastic web is uniformly debossed in the pattern of said three-dimensional forming structure.

4,878,826

APPARATUS FOR THERMOFORMING PLASTIC MATERIALS

Michael L. Wendt, 1382 E. Hull Rd., Hope, Mich. 48628
Division of Ser. No. 192,057, Dec. 7, 1987. This application Jan. 17, 1989, Ser. No. 297,958
Int. Cl.^{4} B29C *51/42*
U.S. Cl. 425—384 24 Claims

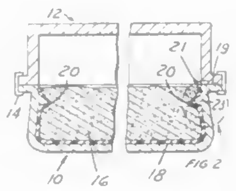


16. In a molding apparatus for forming articles out of a sheet of polyethylene teraphthalate material wherein the molding apparataus includes a mold with a female mold section having at least one cavity configured in the shape of an article to be formed and a first passageway communicating with said cavity and a switchable vacuum source to apply negative pressure to the cavity to vacuum form the article out of a sheet of the material and a male mold section having a plug assist sized for advancement into said cavity to assist stretching of the material during the forming thereof as said molding apparatus moves toward a closed position and means for opening and closing the mold, an improved construction operative to enhance crystallization of the polyethylene teraphthalate comprising an inlet extending axially through said plug assist to an orifice facing said cavity, said inlet in switchable fluid communication with a first source of gas at a first pressure and first temperature and in switchable fluid communication with a third source of gas at a third pressure and third temperature, a second passageway laterally adjacent said plug assist and communicating with said cavity when the mold is closed and connected in switchable fluid communication with a second source of gas at a second pressure and second temperature and connected in switchable fluid communication with an exhaust outlet whereby a first stream of gas from said first source of gas may be directed against said sheet as the mold is closing at a sufficient pressure to prevent contact between the sheet and the plug assist during closing of the mold after which the cavity may be pressurized with pressurizing gas from the second source of gas through said second passageway for a selected molding time after which a second stream of gas from said third source of gas may be directed through said inlet against the article and exhausted through the second passageway.

4,878,827

PLASTIC SHELL FOR FOAM MOLDINGS

John Muller, Englewood, Tenn., assignor to Davidson Textron Inc., Dover, N.H.
Filed Aug. 22, 1988, Ser. No. 234,575
Int. Cl.^{4} B29C *41/04*
U.S. Cl. 425—434 2 Claims



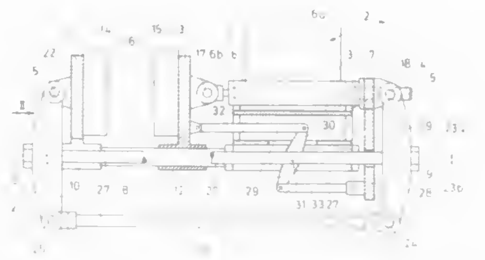
1. A heated slush mold for molding a vinyl skin shell from powder material which fills the mold to cover heated surfaces thereon for forming a deposited layer of fused plastic thereon for forming a hollow shell, said slush mold comprising: a body portion having a heated deposit surface therein and an inlet surface including an upper segment defining an opening for flow of powder material into a cavity, said heated deposit surface further including a lower segment, said heated deposit surface also including a ridge portion formed on said body portion at a point between said upper segment and said lower segment, said ridge portion including an inclined surface and a reentrant surface intersecting at a sharp angle for defining a tear edge, said reentrant surface having a predetermined height and a predetermined slope formed at select areas of said mold for forming a resultant gasket edge on a shell of material fused on said deposit surface, said inclined surface having material deposited thereon that is stippable from said deposit surface for tearing along said tear edge so as to form a sharp edge on said formed gasket edge of a resultant molded shell.

4,878,828

CLOSING DEVICE FOR MANUFACTURING ARTICLES OF THERMOPLASTIC MATERIAL

Dieter Wollschläger, Königswinter, and Helmut Scharrenbroich, Neunkirchen-Seelscheid, both of Fed. Rep. of Germany, assignors to Battenfeld Fischer Blasformtechnik GmbH, Troisdorf/Spich, Fed. Rep. of Germany
Filed Jul. 7, 1988, Ser. No. 216,282
Claims priority, application Fed. Rep. of Germany, Jul. 7, 1987, 3722340
Int. Cl.^{4} B29C *49/56*
U.S. Cl. 425—541 12 Claims

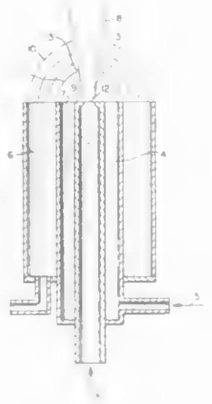
1. In a closing device for molds for manufacturing articles of thermoplastic material, the device including guide beams and first and second die plates which are linearly displaceable on the guide beams in a direction of displacement, and a power drive for moving the guide beams in opposite directions relative to each other, the device further including a frame comprising at least one tension rod, a compression rod and first and second yokes connecting the at least one tension rod and the compression rod, the at least one tension rod and the compression rod extending parallel to the direction of displacement and the yokes extending transversely of the direction of displacement of the die plates, the first yoke including a cantilever arm for acting directly on the first die plate, the second yoke being connected to the power drive, the power drive being connected between the second yoke and the second die plate, the improvement comprising a fixed housing which is fixed with respect to space, the housing supporting the guide beams independently of the frame, suspension means for supporting the frame wherein the power drive is arranged in the housing, support elements connected to the yokes of the frame, the yokes acting on at least one of the first die plate and the power drive through the support elements, wherein the support elements have axial planes which are located on a line of application of a closing force between the two guide plates.



4,878,829

FUEL JET BURNER AND COMBUSTION METHOD

John E. Anderson, Somers, N.Y., assignor to Union Carbide Corporation, Danbury, Coon.
Filed May 5, 1988, Ser. No. 190,396
Int. Cl.^{4} F23C *5/00*
U.S. Cl. 431—8 22 Claims



1. A method for combusting gaseous fuel and oxidant comprising:
(A) injecting into a combustion zone the major portion of the gaseous fuel required for the combustion as at least one stream at a high velocity V which is greater than 5P where P is the volume percent oxygen in the oxidant and V is in feet per second;
(B) injecting into said combustion zone in proximity to the major fuel, a minor portion of the gaseous fuel required for the combustion, said minor portion comprising at least 1 percent of the total gaseous fuel injected into the combustion zone, at a low velocity less than 0.5 V;
(C) injecting oxidant, comprising at least 30 percent oxygen, into the combustion zone in proximity to the minor fuel to form an interface between said oxidant and said minor fuel, at a velocity such that the low velocity of the minor fuel is within 200 feet per second of the velocity of the oxidant at the interface;
(D) combusting minor fuel with oxidant at the interface;
(E) entraining minor fuel into the high velocity major fuel immediately after injection of the major fuel into the combustion zone and thereafter entraining oxidant into the high velocity major fuel; and
(F) drawing hot combustion products from the interface into the high velocity major fuel, said hot combustion products serving as a continuous source of ignition for the oxidant and major fuel, and combusting oxidant and high velocity major fuel in a stable flame.

11. Burner apparatus for use with pure oxygen or oxygen-enriched air as the oxidant comprising:
(A) means for providing major fuel for injection into a combustion zone said major fuel provision means comprising a central fuel supply tube and a nozzle at the injection end of the supply tube, said nozzle having at least one orifice therethrough for passage of gaseous fuel from the supply tube into the combustion zone;
(B) an annular opening around the nozzle for providing minor fuel to the combustion zone in proximity to the major fuel injection so that minor fuel is entrained into major fuel immediately after injection of major fuel into the combustion zone, said annular opening connected by conduit means to a source of gaseous fuel; and
(C) means for providing oxidant to said combustion zone in proximity to the minor fuel provision means, said oxidant provision means connected by conduit means to a source of oxidant comprising at least 30 volume percent oxygen, so that said oxidant and minor fuel form an interface within the combustion zone prior to contact between oxidant and major fuel.

4,878,830

SUBSTOICHIOMETRIC FUEL FIRING FOR MINIMUM NO_x EMISSIONS

James K. Henderson, New Orleans, La., assignor to Exxon Research and Engineering Company, Florham Park, N.J.
Continuation-in-part of Ser. No. 208,610, Jun. 20, 1988, abandoned. This application Feb. 24, 1989, Ser. No. 315,880
Int. Cl.^{4} F23M *3/04*
U.S. Cl. 431—10 5 Claims

1. A method for combusting hydrocarbonaceous fuels such that minimum amounts of NO_x are produced, which process comprises:
(a) introducing a mixture of fuel and an oxygen-containing gas into a first combustion zone at substoichiometric conditions of oxygen to fuel,

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(b) combusting the mixture of fuel and oxygen-containing gas to oxygen depletion,

(c) passing the combustion gases to a heat transfer device for heat removal which is controlled by continuously monitoring the temperature of the combustion gases exiting the heat transfer device, at least a portion of the gases being cooled by heat exchange relaying said temperature information to a control mechanism associated with the heat transfer device which controls the amount of heat removed from the combustion gases such that the temperature of the combustion gases are lowered to a range of at least 500° F. below the combustion temperature of the first stage, but not lower than the ignition temperature of the combustion gases exiting the heat transfer device; and

(d) passing said combustion gases exiting the heat transfer device to a second combustion zone where a sufficient amount of oxygen-containing gas is introduced into the combustion gas stream to complete combustion of the remaining combustible gases.

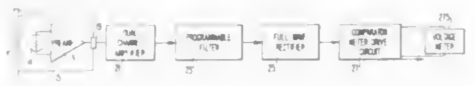
4,878,831
INFRARED FLAME DETECTOR ADAPTABLE FOR DIFFERENT FUELS

Donald L. Ewing, Richardson, Tex., assignor to Forney International, Inc., Carrollton, Tex.

Filed Oct. 24, 1988, Ser. No. 261,335

Int. Cl.⁴ F23N *5/08*

U.S. Cl. 431—79 8 Claims



1. A flame detection system comprising an infrared photodetector positioned to receive infrared radiation from a flame and operable to generate an output signal corresponding to the intensity of the received infrared radiation, amplifying means to amplify the AC variation in the output signal from said photodetector, programmable high pass filter means connected to the output of said amplifying means to pass AC signal components in the output signal of said amplifying means above a corner frequency, control means to vary said corner frequency between selected values, means to rectify the output signal of said high pass filter means to produce a DC signal level corresponding to the amplitude of the AC output signal of said filter means, comparison means to compare the DC output signal of said rectifier with a reference value and produce a first output signal value when the output signal of said rectifier is above said reference level indicating the presence of a flame and to produce a second output signal value when the output of said rectifier is below said reference value indicating the absence of a flame.

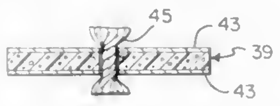
4,878,832
BURNER ILLUMINATOR DEVICE

Michael B. Lynch, 717 King St., Alexandria, Va. 22314

Filed Oct. 23, 1980, Ser. No. 200,037

Int. Cl.⁴ F23D *3/28*

U.S. Cl. 431—120 4 Claims



1. A method of making a disposable burner-iluminator device comprising:

inserting a wick member into a receiving aperture in a buoyant flotation collar,

flattening at least one end of said wick member to extend the diameter of said end larger than the diameter of said receiving aperture.

4,878,833
GASLIGHTER STRUCTURE

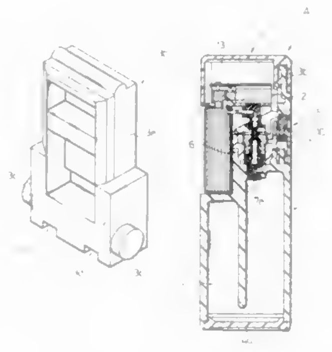
Tomio Nitta, Yokohama, Japan, assignor to Tokai Corporation, Yokohama, Japan

Filed Apr. 28, 1989, Ser. No. 344,725

Claims priority, application Japan, May 11, 1988, 63-61048[U]

Int. Cl.⁴ F23Q *25/00*

U.S. Cl. 431—146 1 Claim



1. A gaslighter which comprises: a lighter body comprising a housing having a built-in gas container to be filled with a liquefied petroleum gas, a nozzle fixed to a top plate of said housing and a cap pivot latch provided to the rear top of said housing: a flint unit comprising a mount having a cover fitted thereon, said cover having a flame apertue made in its front, a flint mechanism in the vicinity of said flame aperture and a conduit opening at its front end in the vicinity of said flame aperture, extending under said mount and connected at its rear end to said nozzle assembly; and a cap having a support piece at its rear end, said cap being fixed to said cap pivot latch to permit said cap to turn about its pivot and cover said flint unit when closed, characterized in that said support piece comprises a generally rectangular synthetic resin mold having pivots integrally fixed to its lower opposite sides, said support piece having its upper end push-fitted into the rear end space of said cap, and said support piece having its pivots fitted in countersinks of the rear top inside of said housing.

4,878,834
GASLIGHTER STRUCTURE

Tomio Nitta, Yokohama, Japan, assignor to Tokai Corporation, Yokohama, Japan

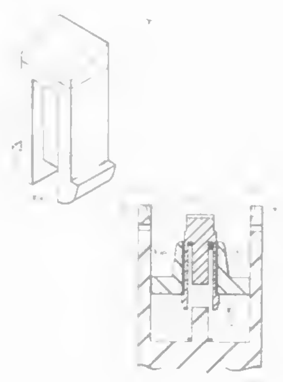
Filed Apr. 28, 1989, Ser. No. 344,347

Claims priority, application Japan, May 11, 1988, 63-61047[U]

Int. Cl.⁴ F23Q *25/00*

U.S. Cl. 431—1. 2 2 Claims

1. A gaslighter which comprises: a lighter body comprising a housing having a built-in gas container to be filled with a liquefied petroleum gas, a nozzle assembly fixed to a top plate of said housing and a cap pivot-and-latch provided to the rear, top of said housing; a flint unit comprising a mount having a cover fitted thereon, said cover having a flame aperture made in its front, a flint mechanism in the vicinity of said flame aperture and a conduit opening at its front end in the vicinity of said flame aperture, extending under said mount and connected to said nozzle assembly; and a cap having a support piece at its rear end, said cap being fixed to said cap pivot-and-latch to turn about its pivot and cover said flint unit when closed, characterized in that said cap pivot-and-latch comprises, in the hollow cylinder space defined by the inner wall of the rear portion of said housing and the rear side of the top plate of said housing, a push rod having hooks integrally connected to its opposite sides to be caught by the lower edge of the top plate of said housing, and an associated spring, said push rod being spring-biased upwards and pushed against said support piece of said cap, thereby permitting said cap to clock shut and open.



4,878,835
CERAMIC BURNER FOR PARTIAL OXIDATION OF A HYDROCARBON-CONTAINING FUEL

Franciscus J. A. Martens, Amsterdam, Netherlands, assignor to Shell Oil Company, Houston, Tex.

Filed Jul. 25, 1988, Ser. No. 223,813

Claims priority, application United Kingdom, Sep. 10, 1987, 8721282

Int. Cl.⁴ F23C *7/00*

U.S. Cl. 431—187 7 Claims

1. A burner for the partial oxidation of hydrocarbon-containing fuel and an oxygen-containing gas, said burner comprising a tubular burner head having a feed supply end and a discharge end, said burner head being disposed around an arrangement of a plurality of concentric tubular passages for feeding the fuel and oxygen-containing gas to a partial oxidation reactor, wherein said burner further comprises a thin-walled tubular mantle of impervious ceramics having a high thermal conductivity, said tubular mantle having an inner skin and an outer skin and being mounted at the feed supply end on the burner head and the other, discharge end, disposed to protrude into the reactor, and to separate the said tubular passages from the reactor environment, wherein the outer skin of said mantle is exposed to the reactor environment whereas the inner skin of said mantle, during operation of the burner, is cooled by at least one of the feed streams.

4,878,836
GASLIGHTER STRUCTURE

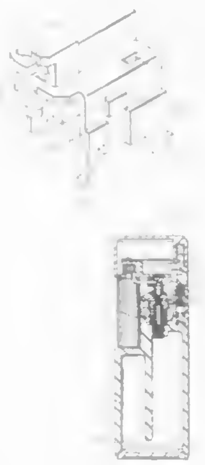
Tomio Nitta, Yokohama, Japan, assignor to Tokai Corporation, Yokohama, Japan

Filed Apr. 28, 1989, Ser. No. 344,722

Claims priority, application Japan, May 11, 1988, 63-61049; May 11, 1988, 63-61050; May 11, 1988, 63-61051

Int. Cl.⁴ F23Q *25/00*

U.S. Cl. 431—277 3 Claims



1. A gaslighter which comprises: a lighter body comprising a housing having a built-in gas container to be filled with a liquefied petroleum gas, a nozzle assembly fixed to a top plate of said housing and a cap pivot latch provided to the rear top of said housing; a flint unit comprising a mount having a cover fitted thereon, said cover having a flame aperture made in the front, a flint mechanism in the vicinity of said flame aperture and a conduit opening at the front end in the vicinity of said flame aperture, extending under said mount and connected at the rear end to said nozzle assembly; and a cap having a support piece at the rear end, said cap being fixed to said cap pivot latch to permit said cap to turn about its pivot and cover said flint unit when closed, characterized in that said mount comprises a flat plateau and opposite walls integrally connected to the opposite longitudinal edges of said plateau in the form of the letter "U", each wall having at least one hook to be caught by said top plate of said housing.

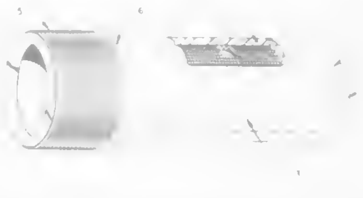
4,878,837
INFRARED BURNER

Nancy M. Otto, Clay, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Feb. 6, 1989, Ser. No. 306,128

Int. Cl.⁴ F23D *14/12*

U.S. Cl. 431—328 2 Claims



1. An infrared burner comprising a corrosion resistant mesh screen having deposited thereon a thick porous coating of ceramic fibers having structural integrity, ability to generate

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radiant energy at the rate of 80,000 BTU to 100,000 BTU per sq.ft. per hour, a pressure drop during operation of up to 0.4 inch of water, and a pressure drop cold versus hot of up to 0.2 inch of water.

4,878,838

PROCESS FOR THE THERMAL TREATMENT OF MORE PARTICULARLY SUBSTANTIALLY FLAT BODIES OF A CERAMIC MATERIAL AND CONTINUOUS FURNACE FOR THE PERFORMANCE OF THE PROCESS

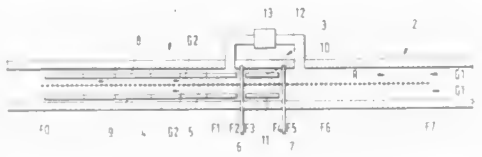
G. M. C. Verheyden, Jr., Doesburg, Netherlands, assignor to A.P.T. Anlagen fur Pyrotechnik GmbH, Dusseldorf, Fed. Rep. of Germany

Filed Nov. 30, 1987, Ser. No. 126,536

Claims priority, application Fed. Rep. of Germany, Nov. 28, 1986, 3640727

Int. Cl.⁴ F26B *13/00;* **F27B** *9/02*

U.S. Cl. 432—8 6 Claims



1. A process for the thermal treatment of substantially flat bodies of a ceramic material in a continuous furance having conveying rollers, a heating zone, a firing zone and a cooling zone, comprising treating the bodies in the firing zone while it is divided off from the preceding and following zones while subjecting the bodies to continuous horizontal reciprocating movement in the firing zone, while the bodies are treated in the firing zone interrupting the continuous conveying in the firing zone direction of the bodies in the heating zone, continuing the conveying of the bodies in the cooling zone at least until the bodies have been removed from the cooling zone portion immediately following the firing zone, and after the treatment of the bodies in the firing zone conveying the bodies out of the firing zone over a portion downstream of the firing zone at a conveying speed greater than that in the other portions.

4,878,839

NON-POLLUTING HOT GAS GENERATING SYSTEM

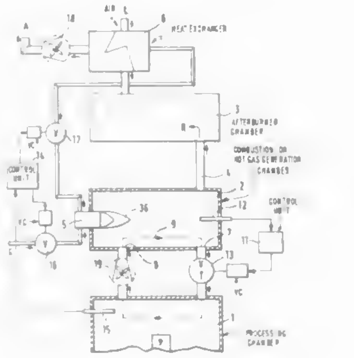
Joachim Wunning, Leonberg, Fed. Rep. of Germany, assignor to WS Wärmeprozesstechnik GmbH, Rennigen, Fed. Rep. of Germany

Filed Aug. 22, 1988, Ser. No. 234,799

Claims priority, application Fed. Rep. of Germany, Sep. 8, 1987, 3729971

Int. Cl.⁴ F26B *5/00*

U.S. Cl. 432—72 24 Claims



1. Non-environmentally polluting hot gas generating system, emitting clean, non-polluting exhaust gases, comprising

- a hot gas generating chamber (2) and an after-burner chamber (3) forming, together, a combustion chamber;
- a burner means (5) emitting a fuel jet (36) located in said hot gas generating chamber and ejecting a flame jet into the chamber in a predetermined direction;
- a processing chamber (1) for carrying out thermal treatment of processes during which polluting matter including at least one of: combustible or oxidizable gases, combustible or oxidizable vapors, or combustible or oxidizable particles are liberated;
- a hot gas outlet (7) from the gas generating chamber (2) and coupled to the processing chamber (1) to provide hot gases therefor,
- said hot gases being cooled while carrying out said thermal treatment and liberating polluting matter;
- a hot gas recirculating inlet (8) into the gas generating chamber and coupled to the processing chamber to receive said cooled hot gases, together with liberated polluting matter, said cooled hot gases together with the liberated polluting matter and the hot gases generated by the burner mixing in a hot gas generating chamber (2) and forming a raw gas (R),
- a portion of said hot gas generating chamber, said hot gas outlet (7), a portion of the processing chamber (1) and the recirculating inlet into the hot gas generating chamber forming a closed gas cycling loop (9) in which a predetermined quantity of gases circulates;
- burner control means (14) controlling fuel supply to the burner to furnish said hot gases for said thermal treatment and energizing the gases in the hot gas generating chamber for circulation in said gas circulating loop (9);
- said after-burner chamber (3) communicating with the hot gas generating chamber (2),
- said after-burner chamber (3) defining a volume which is large enough to provide for a dwell time in said after-burner chamber of the raw gas supplied thereto from the hot gas generating chamber (2) to completely burn or oxidize said polluting matter to result in a non-polluting gas (A);
- a heat exchanger (6) coupled to receive the nonpolluting gas (A) from said after-burner chamber, said heat exchanger having an air heat exchange inlet (L) for admitting ambient air and heating said ambient air by removing heat from the non-polluting gases and said air thereby becoming preheated;
- means (17) for coupling the preheated air from the heat exchanger to the burner means (5) to thereby supply preheated combustion air thereto;
- sensing means (12) sensing at least the temperature of the raw gases (R) in the combustion chamber (2); and
- control means (11, 13) responsive to the sensed temperature of the raw gases (R) and maintaining the temperature of the raw gases (R) entering the after-burner chamber (3) from the combustion chamber (2) at a predetermined command level which is sufficiently high to effect complete combustion of the raw gases (R) and result in said non-polluting gas (A).

4,878,840

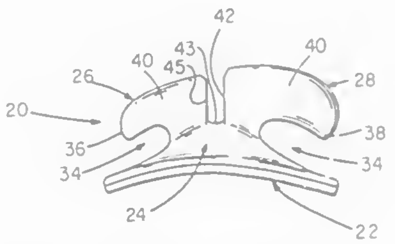
ORTHODONTIC APPLIANCE

James M. Reynolds, Lubbock, Tex., assignor to Zulauf, Inc., Lubbock, Tex.

Continuation of Ser. No. 15,568, Feb. 13, 1987, which is a continuation of Ser. No. 625,075, Jun. 27, 1984, abandoned, which is a continuation of Ser. No. 506,404, Jun. 21, 1983, abandoned, which is a continuation of Ser. No. 355,137, Mar. 5, 1982, abandoned, which is a continuation of Ser. No. 135,652, Mar. 31, 1980, abandoned, which is a continuation of Ser. No. 930,577, Aug. 3, 1978, Pat. No. 4,216,583. This application Feb. 22, 1988, Ser. No. 158,632

Int. Cl.⁴ A61C *7/00*

U.S. Cl. 433—9 11 Claims



1. An orthodontic appliance comprising:

- a base having an inwardly facing surface on one side thereof adapted for attaching the appliance and a body portion extending outwardly from the other side of said base;
- said body portion having one embodiment substantially shorter than a corresponding dimension of the base;
- a pair of wings, each wing extending in opposite directions from the body portion and having a length extending substantially beyond the body portion to define wire receiving slots between the base and the ends of said wings;
- the wings defining an outwardly facing domed surface which is curved in at least one direction and which thereby presents a comfortable surface to the mouth tissue of the patient; and
- a cross slot extending into said body portion between the wings and configured to receive therein a dental appliance of predetermined dimensions, the cross slot having a curved surface between the bottom of the cross slot and the sides of the cross slot to reduce stress concentrations.

4,878,841

PERIODONTAL PROBE

Christopher A. G. McCulloch, 9 Holloway Road, Islington, Ontario, Canada (M9A 1E7), and Peter Birek, 169 Hillcrest Ave., Willowdale, Ontario, Canada (M2N 3N9)

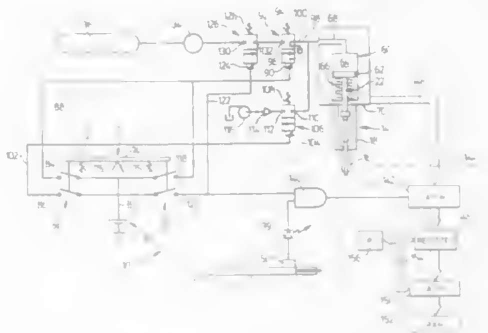
Filed Jun. 19, 1986, Ser. No. 876,115

Int. Cl.⁴ A61C *19/04*

U.S. Cl. 433—72 21 Claims

1. Apparatus for determining the attachment point of tissue to a tooth comprising:

- a body for insertion into the mouth;
- a datum surface on said body for engagement with a location on the tooth;
- a probe moveable relative to said datum surface into engagement with said tissue;
- drive means operable upon said probe to control movement thereof;
- measuring means to measure movement of said probe relative to said datum surface, said drive means including force control means to regulate the force applied by said drive means to said probe to maintain said force at a predetermined value; and
- attitude sensing means located on said body for inhibiting operation of said measuring means upon movement of said body from a predetermined attitude, thereby permitting movement of said probe when said body is positioned in any attitude whilst inhibiting the measuring of such movement of said probe until said body is positioned in said predetermined attitude while allowing the measuring of movement once said body is positioned in said predetermined attitude.



4,878,842

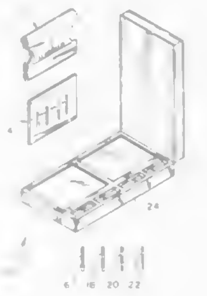
APPARATUS AND METHOD FOR PREPARING TEETH FOR CROWN OR BRIDGE WORK OR OTHER DENTAL WORK

Louis J. Malcmacher, 30016 Donoit Rd., Westlake, Ohio 44145, and Jeffrey S. Gross, 34586 Lakeshore Blvd., Eastlake, Ohio 44094

Filed Nov. 2, 1987, Ser. No. 115,704

Int. Cl.⁴ A61C *19/04*

U.S. Cl. 433—72 6 Claims



1. A dental drilling kit comprising a plurality of drill bits of different profiles and measuring means for determining the proper one of the bits for use in preparing a tooth, said measuring means comprising a first transparent sheet having a reference scale printed on it and a second reference sheet having a profile of each of the drill bits printed on it, said first sheet formed of a transparent plastic material folded to define a front panel and a rear panel, said front panel and said rear panel being adapted to receive said second reference sheet therebetween, said front and rear panels including congruent arcuate cut-outs in opposite lateral edges to facilitate manipulation of said second reference sheet between said front panel and said rear panel.

4,878,843

PROCESS AND APPARATUS FOR CONVEYING INFORMATION THROUGH MOTION SEQUENCES

Nina J. Kuch, 2197 Dorset St., Shelburne, Vt. 05482

Filed Jun. 8, 1988, Ser. No. 203,818

Int. Cl.⁴ G09B *21/00*

U.S. Cl. 434—112 29 Claims

13. A process for the teaching of finger spelling utilizing the manual alphabet, comprising:

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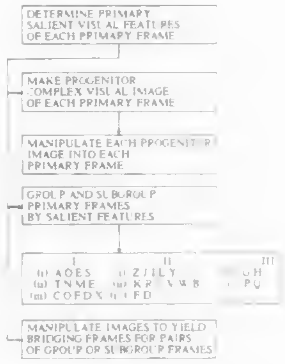
(a) determining the primary salient visual features which are to be contained as visual elements of principal frames respectively representing the letters of the manual alphabet;

(b) making a complex visual image as a progenitor of each principal frame of the respective letters;

(c) manipulating each complex image to emphasize the determined primary salient visual features to yield the respective desired visual elements of the respective letter;


DETERMINE PRIMARY SALIENT VISUAL FEATURES OF EACH PRIMARY FRAME
MAKE PROGENITOR COMPLEX VISUAL IMAGE OF EACH PRIMARY FRAME
MANIPULATE EACH PROGENITOR IMAGE INTO EACH PRIMARY FRAME
GROUP AND SUBGROUP PRIMARY FRAMES BY SALIENT FEATURES
I
II
III
(i) AOES
(ii) TNME
(iii) COFDX
ZJILY
KR
FD
GH
PU
MANIPULATE IMAGES TO YIELD BRIDGING FRAMES FOR PAIRS OF GROUP OR SUBGROUP FRAMES

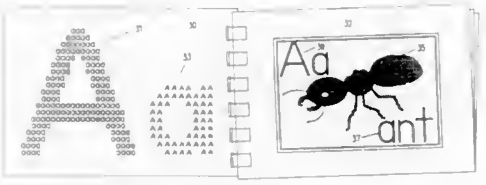
(d) dividing the principal frames of the respective letters into groups and subgroups according to their common respective salient features;

(e) determining the primary salient visual features in common of a plurality of pairs of groups and subgroups; and

(f) manipulating an image to provide at least one bridging frame containing selected salient features of the principal frames of said pair, such that the display in sequence of the principal frames of said pair, interposed by the bridging frame, provides an illusion of motion to an observer in the displayed sequence of frames.

4,878,844
TEACHING AID HAVING TACTILE FEEDBACK

Elon Gasper, and Nedra Goedert, both of Redmond, Wash., assignors to Bright Star Technology, Inc., Bellevue, Wash.
Filed Jun. 20, 1988, Ser. No. 208,881
Int. Cl.⁴ G09B *17/00*
U.S. Cl. 434—159 4 Claims



1. A teaching aid in booklet-form comprising:

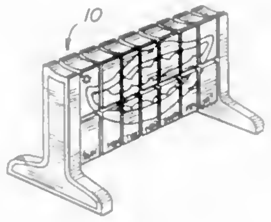
a plurality of pages, each page having a different letter of an alphabet printed on a first side of said page and an object or animal depicted on a second side of said page, said object or animal associated with a letter of the alphabet, said associated letter different than the letter printed on the first side of said page, said plurality of pages arranged such that the first side of a page faces the second side of the next successive page, the letter on the first side of said page associated with the object or animal depicted on the second side of said next successive page;

each of said different letters comprising a plurality of relatively small like letters disposed in spaced relationship on the surface of the first side of a different page and arranged in a pattern to form an outline of said letter, said outline filled in with said small like letters in said spaced relationship; and

each of said small like letters formed to protrude slightly from the surface of the page.

4,878,845
DEVICE FOR ENCOURAGING CHILDREN TO BRUSH THEIR TEETH REGULARLY

Tom E. Lindsay, 1607 Hamilton Ave., Palo Alto, Calif. 94303, and James C. Smith, Hayward, Calif., assignors to Tom E. Lindsay, Lake Oswego, Oreg.
Filed Mar. 14, 1988, Ser. No. 167,395
Int. Cl.⁴ G09B *1/20;* **G09F** *9/00, 11/00*
U.S. Cl. 434—238 11 Claims



1. A device for aiding and encouraging a child to brush his teeth, comprising:

a mounting frame;

a pair of shafts nonrotatably mounted by said mounting frame;

a plurality of independently and individually rotatable, spaced-apart blocks each mounted for independent and separate rotation about a respective one of said pair of shafts;

each said shaft being mounted horizontally by said mounting frame, said shafts being mounted parallel to each other and vertically spaced apart; each said shaft mounting a plurality of said blocks for said independent and individual rotation in spaced-apart relationship; said blocks thus defining a first row and a second row, said rows being positioned very close to each other; and

each said block comprising an upper concave exterior surface and a lower concave exterior surface, so that the first row of blocks may be positioned very close to said second row of blocks and allow for the independent and separate rotation of each block with respect to the juxtapositioned block in the other row;

each said block having a front surface face and a rear surface face; each said front surface face comprising a printed design forming a portion of a frowning mouth; and each said rear surface comprising a printed design forming a portion of a smiling mouth.

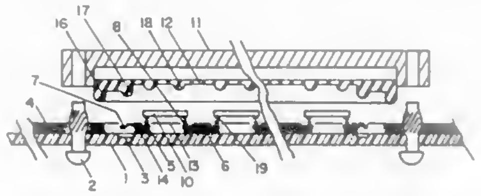
4,878,846
ELECTRONIC CIRCUIT CHIP CONNECTION ASSEMBLY AND METHOD

Jon M. Schroeder, Apt. 1013, 9815 Copper Creek, Austin, Tex. 78729
Continuation of Ser. No. 178,252, Apr. 6, 1988, abandoned, which is a continuation-in-part of Ser. No. 854,920, Apr. 23, 1986, abandoned. This application May 30, 1989, Ser. No. 358,503
Int. Cl.⁴ H01R *9/09*
U.S. Cl. 439—65 11 Claims

1. A chip connecting assembly for connecting a plurality of electronic circuit chips to a substrate, comprising;

a. said plurality of electronic circuit chips and said substrate with electronic circuitry thereon;

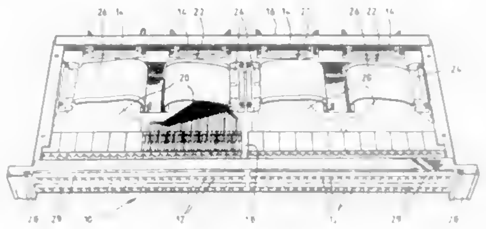
b. a conductive preform containing a plurality of photo-resist sites with each of said sites comprising multiple conductive leads on an insulating photo-resist film; a first type of said multiple conductive leads having a less-than-30-micron sized electrical connector both on a first end and a second end that may be pressured by an elastomeric pressure means into pads of an adjacent pair of said plurality of electronic circuit chips when said pair of electronic circuit chips are placed on an adjacent pair of said plurality of sites; a second type of said multiple conductive leads having a less-than-30-micron sized connector on a beginning end thereof and an elongated connector on a terminal end thereof that may be pressured with said elastomeric pressure means to connect said less-than-30-micron sized connector on said beginning end to a pad on a said electronic circuit chip and said elongated connector on said terminal end to said electronic circuitry of said substrate;



c. a rigid metallic cover having means to fasten said cover to said substrate and containing said elastomeric pressure means, said rigid metallic cover being sized to encompass said plurality of electronic circuit chips when each of said plurality of electronic circuit chips is placed on one of said sites of said conductive preform and with said elastomeric pressure means having primary projections that pressure said less-than-30-micron sized connectors into said pads of each of said plurality of electronic circuit chips and having secondary projections to pressure said elongated connectors on a second end of said conductive leads to connect with said electronic circuitry of said substrate and having a tertiary rib-like projection to seal against said substrate when said rigid metallic cover is biased toward said substrate by said means to fasten said cover to said substrate.

4,878,847
PATCHFIELD SYSTEM

Michael J. W. Rutledge, Collingwood, Australia, assignor to Rutledge Engineering (Aust.) Pty. Ltd., Australia
Filed Jul. 28, 1988, Ser. No. 225,387
Claims priority, application Australia, Jul. 29, 1987, PI3416
Int. Cl.⁴ H01R *9/09*
U.S. Cl. 439—74 11 Claims



1. A printed circuit patchfield assembly for patching of audio circuits, the assembly comprising:

a plurality of electrical jack means adapted for mounting in a front panel of the assembly, wherein said plurality of jack means are arranged into a first and a second group;

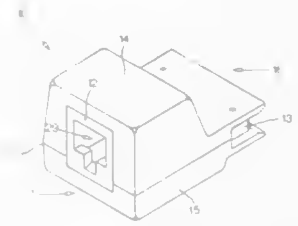
a plurality of rear electrical connecting means adapted for mounting in a rear connector panel of the assembly;

first and second double-sided printed circuit boards, said first board having a first plurality of electrically conducting tracks on a first side thereof for electrically interconnecting said first group of jack means to one of said rear connecting means, said second board having a first plurality of electrical conducting tracks on a first side thereof for electrically interconnecting said second group of jack means to another one of said rear connecting means, and wherein said first and second boards are further provided with a second plurality of electrically conducting tracks on the respective second sides thereof for electrically interconnecting said first and second groups of jack means; and,

internal electrical connecting means whereby the second plurality of tracks on said first board can be electrically interconnected to the second plurality of tracks on the second board thereby, in use, said internal connecting means enables various normalling options to be provided between said first and second groups of jack means.

4,878,848
110 BLOCK ADAPTER

David L. Ingalsbe, Hastings, Minn., assignor to Independent Technologies, Inc., Omaha, Nebr.
Filed Jul. 14, 1988, Ser. No. 219,561
Int. Cl.⁴ H05K *1/00*
U.S. Cl. 439—76 14 Claims



1. A telecommunications interface adapter system for connecting a modular connector to a 110-type Block Terminal having a mating end, comprising:

a. modular connection means having a plurality of contact wires;

b. a housing structure enclosing said modular connection means and having a central cavity and a tapered plug end, said tapered plug end having receptacle means for connection to the mating end of the 110-type Block Terminal, said receptacle means further including channel means;

c. a plurality of upstanding conductive blades extending from said central cavity through and disposed within said channel means of said receptacle means and extending to the exterior of said housing structure at said tapered plug end to expose a portion of each said blade for mating contact with the 110-type Block Terminal; and

d. a printed board having means to electrically connect said contact wires of said modular connection means and said upstanding blades, said printed circuit board being located in said housing structure.

4,878,849
ELECTRICAL CONNECTOR HAVING MULTI-POSITION HOUSING

Anil K. Talwar, Schaumburg, and Joseph Warywoda, Chicago, both of Ill., assignors to Amphenol Corporation, Wallingford, Conn.
Filed Apr. 29, 1988, Ser. No. 187,985
Int. Cl.⁴ H01R *0/00*
U.S. Cl. 439—79 20 Claims

1. An electrical connector comprising:

(a) a housing defining a first, generally planar side and defining a plurality of openings arranged in first and second

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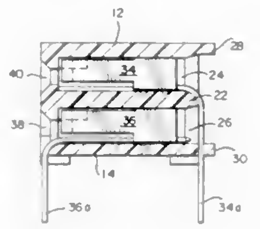
rows extending generally parallel to each other and opening through the first side;

(b) a plurality of bosses formed on the housing in first and second rows and extending beyond the plane of the first side of the housing; and



(c) electrical contact pins inserted into the plurality of openings, each contact pin having a contact tail portion extending from the housing wherein said bosses in the second row of bosses are deformable so as to be capable of holding therebetween the contact tail portions of the contacts extending from the first side of the housing.

4,878,850
ELECTRIC POWER SUPPLY TERMINAL FOR ENCAPSULATED GLAZING

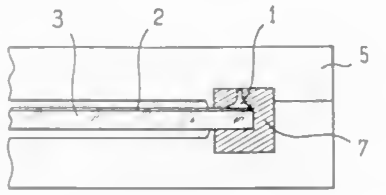
Bernard Letemps, Thourotte; Gérard Huchet, Retheuil, and Jacques Leclercq, Roisel, all of France, assignors to Saint-Gobain Vitrage, Courbevoie, France

Filed Jul. 15, 1988, Ser. No. 219,395

Claims priority, application France, Jul. 15, 1987, 87 09915

Int. Cl.⁴ H01R *9/09*

U.S. Cl. 439—83 13 Claims



1. An electric power supply terminal for a glazing having an electrically conductive deposit and provided with electrical equipment, comprising:

terminal fastening means for assuring electrical connection on a conductive zone deposited on the glazing; and

means for fastening said terminal to a zone on an edge of the glazing covered with said conductive deposit, wherein the glazing is at least partially embedded in an encapsulation frame and said electric power supply terminal is embedded in said encapsulation frame so that said terminal is flush with an outside surface of said encapsulation frame.

4,878,851
ELECTRICAL SOCKET APPARATUS WITH TEMPORARY HOUSING

William B. Mullen, III, Boca Raton, Fla., assignor to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 92,351, Jul. 27, 1987, abandoned. This application Jan. 4, 1989, Ser. No. 293,617

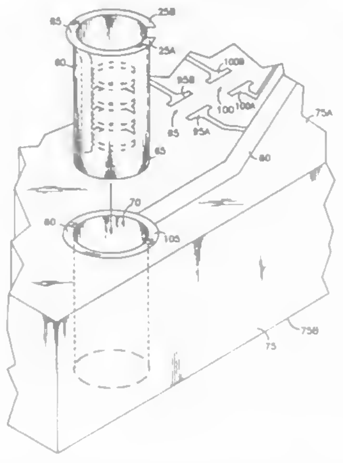
Int. Cl.⁴ H05K *1/00*

U.S. Cl. 439—83 4 Claims

1. A socket for receiving an electrical lead therein, said socket being adapted for use on a substrate having at least one aperture, said socket comprising:

connecting means for receiving said electrical lead and making an electrical connection to said electrical lead; and

soluble housing means, attached to said connecting means, for temporarily housing said connecting means such that said soluble housing means prevents solder from reaching inside said aperture when said connecting mean inserted into said aperture during a soldering operation, said soluble housing means being removable via solvent from said connecting means after said soldering operation.



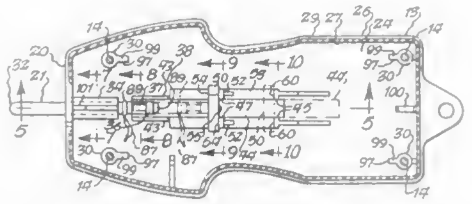
4,878,852
CIRCUIT TESTER CONSTRUCTION

Jack E. Bertsch, Orchard Park, and Harold P. Kopp, Williamsville, both of N.Y., assignors to Polytronics, Inc., Buffalo, N.Y.

Filed Jun. 3, 1988, Ser. No. 202,114

Int. Cl.⁴ H01R *4/66*

U.S. Cl. 439—103 19 Claims



1. In an electrical device having a housing and prong means for insertion into an electrical socket, a retractable ground pin construction comprising an elongated ground pin having an inner end and having an outer end for movement between retracted and extended positions relative to said housing, means on said housing for rectilinearly guiding said ground pin for movement between said extended and extracted positions relative to said housing, an elongated member in said housing, first and second ends on said elongated member, means securing said first end of said elongated member to said inner end of said ground pin, interengaging means for interfitting with and selectively positively locking said elongated member to said housing to fixedly lock said ground pin in said extended position, and manually actuatable means secured to said elongated member and extending through said housing to the outside thereof for effecting movement of said elongated member and said ground pin secured thereto in a rectilinear direction to said extended position wherein said interengaging means fixedly lock said ground pin in said extended position and for moving said interengaging means out of said interfitting locking engagement with said housing and effecting movement of said elongated member and said ground pin connected thereto to said retracted position.

4,878,853
LOCKING DEVICE FOR CONNECTOR ASSEMBLY

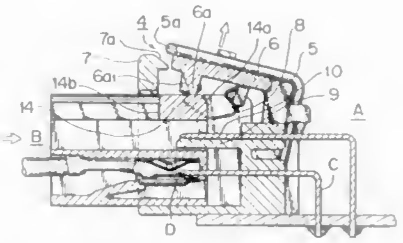
Kenichi Yamade; Sukeyoshi Nakashima, both of Tokyo; Shigemitsu Inaba, and Kazuto Ohtaka, both of Shizuoka, all of Japan, assignors to Yazaki Corporation, Tokyo, Japan

Filed Mar. 23, 1989, Ser. No. 327,675

Claims priority, application Japan, Mar. 23, 1988, 63-67318

Int. Cl.⁴ H01R *13/639*

U.S. Cl. 439—144 6 Claims



1. A locking device for a connector assembly for enabling an operator to confirm the complete connection between a first connector and a second connector sc as to gain electric connection, locking said connected state at the same time, wherein said first connector comprises;

a locking plate to be moved between a connector locking position and a releasing position;

a holding element for holding said locking plate at said locking position;

a short-circuiting element provided on said locking plate; and

a plurality of short-circuiting terminals provided on a supporting plate opposing to said short-circuiting element,

while said second connector comprises a locking element to be engaged with said locking plate,

said short-circuiting element being brought into contact with said short-circuiting terminals when said connectors are in a mutually locked condition.

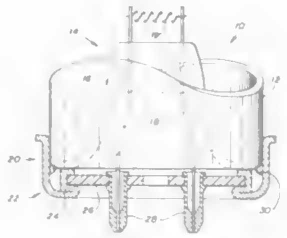
4,878,854
LAMP BASE

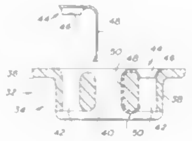
Donald M. Cannon, Dover, Pa., assignor to GTE Products Corporation, Stamford, Conn.

Filed May 31, 1988, Ser. No. 200,217

Int. Cl.⁴ H01R *33/02*

U.S. Cl. 439—236 4 Claims





1. An adapter for converting a fluorescent lamp bi-pin base to a recessed double contact base, said bi-pin base comprising a shell; a disk of insulating material secured to said shell; and a pair of base pins mounted on said disk, said pins being formed to receive the lead wires from a fluorescent lamp, said adapter comprising:

an insulating housing having a disk-shaped base and a boss projecting therefrom;

a central aperture in said boss;

a pair of peripheral apertures in said boss, one on either side of said central aperture and having a spacing corresponding to the spacing of said pair of base pins; and

an electrical contact in each of said peripheral apertures, each of said contacts being fixed therein and including a portion which frictionally engages a base pin to provide electrical contact.

4,878,855
ELECTRIC CONNECTION TERMINAL FOR WIRES THAT ARE NOT PRIOR-STRIPPED

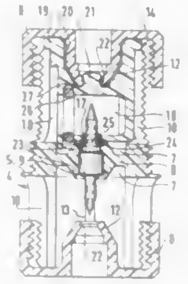
Jean-Paul Heng, Lyons; André Marmonier, Bron, and Etienne Briguet, Rillieux la Pape, all of France, assignors to Societe Anonyme dite: CGEE Alsthom, Perret, France

Filed Aug. 24, 1988, Ser. No. 235,600

Claims priority, application France, Sep. 22, 1987, 87 13069

Int. Cl.⁴ H01R *4/24*

U.S. Cl. 439—411 7 Claims



1. An electrical connection terminal for power transport wires each constituted by a multi-strand conductor within insulation, said terminal comprising a rigid body provided with at least one threaded or tapped tubular end crossed transversely and at least in part by a wire-passing opening which is elongate in shape parallel to the longitudinal axis of said tubular end and whose width corresponds to a maximum diameter wire to be connected, together with a stopper including a central pusher and screwable onto the end of said tubular end, thereby closing said end, the central pusher moving into the tubular end progreesively as the stopper is tightened, said terminal also including at least one conductive spike having perforating end point projecting from a common wall, each point passing through the bottom of a wire-passing opening in one of the tubular ends for the purpose of enabling said spike to interconnect respective wires fixed in each end against the common wall within a tubular end into which the wire under consideration is engaged and in which it is fixed by a stopper whose central pusher arrives, when the stopper is screwed home, close to a perforating point with which said stopper is in alignment, said central pusher causing a wire to be pressed against the perforating point in alignment with the stopper by applying lateral pressure to the wire until said perforating point perforates the insulation and penetrates to come into contact with the central conductors strands of the wire, said terminal further comprising:

two tubular ends respectively provided on opposite sides of the common bottom wall with said tubular ends including respective wire-passing openings, said spike projecting on opposite sides of said common bottom wall into said openings and being situated on the alignment axis of said tubular ends,

a body provided with at least one hollow tubular end whose wire-passing opening is delimited by two diametrically opposite longitudinal notches disposed symmetrically

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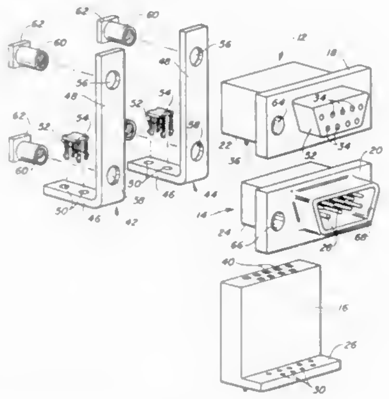
about a longitudinal mid-plane through said end, and further including a body provided with at least one tubular end having an outer thread which is provided on its inside with two diametrically opposite ribs disposed symmetrically about a longitudinal mid-plane perpendicular to the longitudinal mid-plane about which the longitudinal notches are symmetrical, said ribs serving in a first portion to center a wire to be connected relative to the perforating point of the spike which is disposed between them, and participating in a second portion in wedging said wire engaged on said perforating point.

4,878,856

BRACKETED STACKING OF MULTI-PIN CONNECTORS

Jack A. Maxwell, San Jose, Calif., assignor to Maxconn Incorporated, San Jose, Calif.

Filed Mar. 20, 1989, Ser. No. 326,029
Int. Cl.⁴ H01R *9/09, 13/73*
U.S. Cl. 439—540 14 Claims



1. A stacked connector for electrically coupling a printed circuit board to first and second multi-pin external articles comprising,

a board-seatable connector member having a first face having means for selectively coupling said board-seatable connector member to a first multi-pin external article, said coupling means including a pair of mounting holes through said first face, said board-seatable connector member having a base wall perpendicular to said first face and further having a first set of angulate contacts originating at said first face and extending through said base wall for attachment to a printed circuit board,

spaced apart brackets attached to opposed sides of said board-seatable connector member, each bracket having a planar lower portion parallel to said base wall and an upper portion having an eyelet aligned with a mounting hole through said first face, and

a top connector member attached to the upper portion of said bracket and having a second face having means for selectively coupling said top connector member to a second multi-pin external article, said top connector member having a second set of angulate contacts originating at said second face and extending downwardly from said top connector member, and wherein each bracket is an L-shaped bracket, the planar lower portion of each L-shaped bracket being perpendicular to the upper portion.

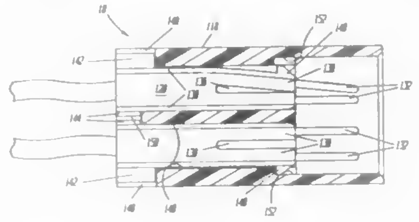
4,878,857

PIN ASSEMBLY

Douglas A. Neidich, Harrisburg, Pa., assignor to InterCon Systems, Inc., Harrisburg, Pa.

Filed Feb. 27, 1989, Ser. No. 315,831
Int. Cl.⁴ H01R *13/506*
U.S. Cl. 439—599 6 Claims

1. A pin assembly for use in an electrical connector, the assembly including an elongate insulating body having a pair of generally parallel, flexible fingers at one end thereof, said fingers being separated by a slot permitting movement of said fingers toward and away from each other, a pair of generally parallel contact pins with one pin embedded within each finger, said pins extending outwardly beyond the ends of the fingers for engagement with disconnect terminals; two wires embedded within the body, said wires being electrically joined to the pins and extending outwardly from the other end of the body, and a latch on the end of one of the fingers extending away from the slot.

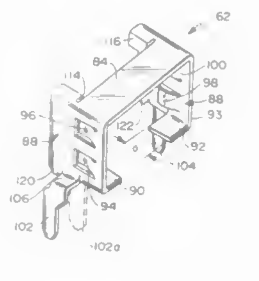


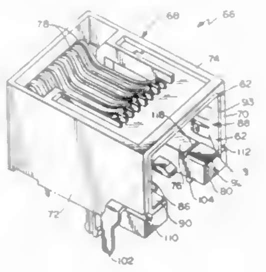
4,878,858

LOW PROFILE SHIELDED JACK

Helen M. P. Dechelette, Paris, France, assignor to Molex Incorporated, Lisle, Ill.

Filed Dec. 13, 1988, Ser. No. 283,670
Int. Cl.⁴ H01R *13/648*
U.S. Cl. 439—607 14 Claims





1. A low profile shielded jack for mounting to a circuit board and for receiving a plug having an external shield thereon, said jack comprising:

a nonconductive housing having a board mounting wall, a plug mating face and a plurality of peripheral walls, said peripheral walls defining a plug receiving cavity extending into the mating face of said housing for receiving the shielded plug, said housing further being formed to define a pair of slots in proximity to the board mounting wall thereof;

a plurality of terminals mounted in said housing for making electrical contact with corresponding terminals on the shielded plug mountable in the plug receiving cavity of said jack; and

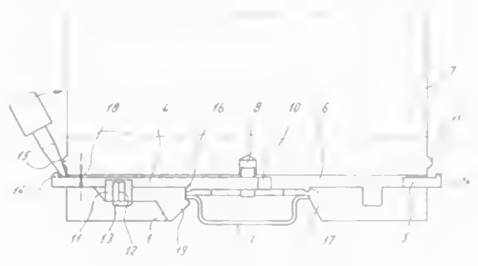
an electrically conductive shield unitarily formed to define peripheral shield walls disposed in the plug receiving cavity of said housing, said peripheral shield walls being disposed substantially in face to face contact with the peripheral walls of said housing defining the plug receiving cavity therein, said peripheral shield walls further comprising a mating end disposed generally in line with the mating face of said housing, a plurality of spring contacts unitarily formed with said peripheral shield walls and resiliently extending inwardly in the plug receiving cavity of said housing for electrically contacting the shield on the shielded plug insertable in said plug receiving cavity, said shield of said jack further comprising a pair of board contacts extending through the slots in said housing and beyond the board mounting wall of said housing for electrically contacting a ground on the circuit board to which said shielded jack is mountable.

4,878,859

SUPPORT ASSEMBLY FOR AN ELECTRICAL TERMINAL HOUSING

Bernd Haller, Detmold; Ernst Herkner, Lemgo; Peter Murray; Volker Riesenberg, both of Detmold; Michael Schnatwinkel, Herford; Rainer Schulze, Detmold; Georg Wagner, Oerlinghausen, and Manfred Wilmes, Detmold, all of Fed. Rep. of Germany, assignors to C. A. Weidmuller GmbH, Fed. Rep. of Germany

Filed Dec. 16, 1988, Ser. No. 285,064
Claims priority, application European Pat. Off., Jan. 30, 1988, 88101365.0
Int. Cl.⁴ H01R *9/26*
U.S. Cl. 439—716 12 Claims



1. An assembly for supporting an electrical terminal bank on a carrier rail, comprising

(a) a terminal housing including a guide;

(b) a pair of slide members connected with said housing guide for sliding movement between latched and released positions, the thickness of said housing guide being slightly greater than the thickness of said slide members to define a gap therebetween;

(c) each of said slide members including a lower hook portion engaging a leg of the carrier rail when said slide members are in the latched position for connecting said terminal housing with the rail;

(d) spring means connected with said slide members for normally biasing said member hook portions toward the latched positions, respectively; and

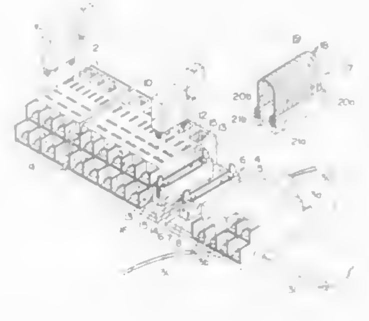
(e) means for preventing unintentional movement of said slide members to said released positions including first and second abutment means connected with said housing and said slide members, respectively, said second abutment means being normally vertically offset from said first abutment means by the thickness of said gap, whereby when said housing is lifted with respect to said slide members, said gap is closed and said first and second abutment means are arranged opposite each other to prevent lateral movement of said slide members toward the released positions.

4,878,860

CONNECTION ARRANGEMENT BETWEEN CONTROL DEVICE AND SIGNAL TRANSMISSION DEVICE

Kazushige Matsuoka, Osaka, Japan, assignor to Omron Tateisi Electronics Co., Kyoto, Japan

Filed Feb. 5, 1988, Ser. No. 153,295
Claims priority, application Japan, Feb. 6, 1987, 62-26955
Int. Cl.⁴ H01R *9/26*
U.S. Cl. 439—716 28 Claims



1. A connection arrangement comprising:

a control device adapted for being connected by a plurality of electrical connecting elements as many as the number of a plurality of information signals to be transmitted;

a signal transmission device for transmit and receive signals with the control device,

wherein said signal transmission device is connected between a main station and said control device,

wherein said signal transmission device has a first converting means for converting an input signal from said main station into a control signal readable by said control device, and

wherein said signal transmission device has a second converting means for converting a signal from said control device into a transmission signal readable by said main station; and

connecting means for connecting the control device and the signal transmission device,

wherein said connecting means includes a first connector provided for at least either one of the control device and the signal transmission device and a second connector which can be attachably and detachably connected with the first connector, and

wherein said connecting means is used to connect said control device and said signal transmission device and is used for transmitting a number of information signals.

4,878,861

COMPLIANT ELECTRICAL CONNECTOR PIN

Jerry A. Kendall, and David M. Webb, both of Lewisville, Tex., assignors to Elfab Corporation, Lewisville, Tex.

Filed Nov. 1, 1988, Ser. No. 265,782
Int. Cl.⁴ H01R *13/42*
U.S. Cl. 439—751 7 Claims

1. A compliant electrical connector pin for press-fit connection to a hole in a circuit board, the pin comprising:

a tail section; and

an enlarged compliant section of generally rectangular cross-section, two generally V-shaped troughs formed in opposing faces of the compliant section to form two flange members, each trough having a bottom, including a generally flat bottom face, the flat bottom faces of the troughs

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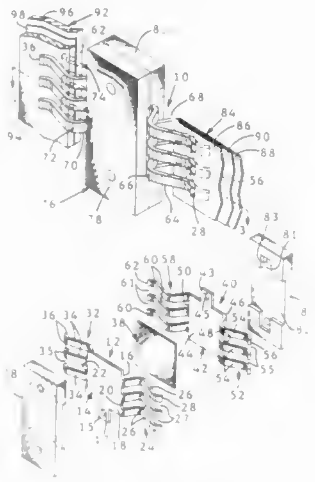
forming therebetween a compressible web member connecting the two flange members, and the bottom of each trough further intersects barrier walls extending substantially normal to the generally flat bottom face.

4,878,862
CONNECTOR FOR MATING TWO BUS BARS
James H. Wise, Palmyra, Pa., assignor to AMP Incorporated, Harrisburg, Pa.
Filed Dec. 5, 1988, Ser. No. 280,108
Int. Cl.⁴ H01R *13/10*
U.S. Cl. 439—787 18 Claims



1. An electrical connector for mating two blade-shaped members, each having opposed first and second sides, said connector comprising:

first and second terminal elements having body sections secured together with insulating means therebetween, each said body section including inwardly and outwardly facing major surfaces and leading and trailing edges;

each said first and second terminal element having a first array of spaced cantilevered spring contact arms extending outwardly from a respective said leading edge, and a second array of spaced cantilevered spring contact arms extending outwardly from a respective said trailing edge, said spring contact arms of both said first and second arrays of each said terminal element extending outwardly from the plane of the respective said body sections toward the other said terminal element and into the spacing between said contact arms of said arrays of said other terminal element;

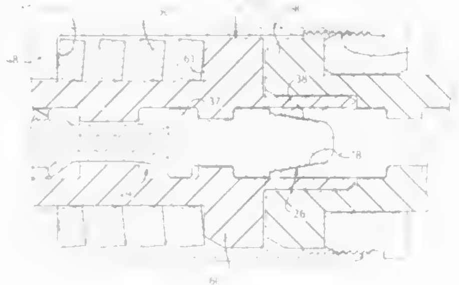
said spring contact arms of said first arrays defining a first blade-receiving receptacle between free ends thereof, and said spring contact arms of said second arrays defining a second blade-receiving receptacle between free ends thereof, said first and second blade-receiving receptacles being aligned with said secured together body sections and having first and second sides corresponding to said body sections of said first and second terminal elements respectively;

said free ends of said spring contact arms of said first and second arrays of said first terminal element being disposed along said second side of said first and second blade-receiving receptacles respectively and adapted to be deflected outwardly by corresponding second sides of respective first and second mating blade-shaped members; and

said free ends of said spring contact arms of said first and second arrays of said second terminal element being disposed along said first and second blade-receiving receptacles respectively and adapted to be deflected outwardly by corresponding first sides of respective first and second mating blade-shaped members; whereby

deflection of the free ends of the contact arms of each terminal element during connector mating by first and second blade-shaped members urges the body section of one terminal element more tightly against the body section of the other terminal element.

4,878,863
ELECTRICAL CONNECTOR AND CONTACT TERMINAL THEREFOR
Robert C. Swengel Jr., York, and James H. Wise, Palmyra, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.
Filed Dec. 22, 1988, Ser. No. 288.748
Int. Cl.⁴ H01R *13/52*
U.S. Cl. 439—884 23 Claims



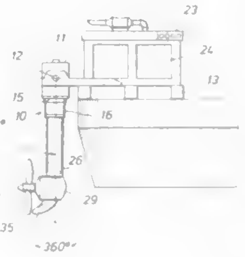
1. A pin terminal member for mating with a complimentary socket terminal member, said pin terminal member comprising:

a forward portion including contact means therearound defining a tapered contact surface, said surface having an array of facets disposed in selected areas along said surface, the outer surface portions of said facets defining a plurality of small contact areas;

said forward portion being adapted to conform to an complimentary inner tapered surface of a mating socket terminal member; whereby

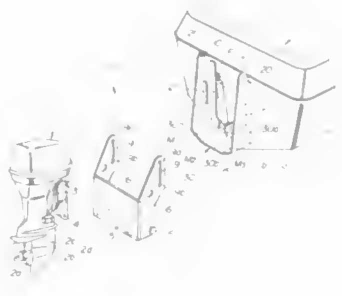
upon mating of said pin and socket terminal members and urging said pin and socket terminal members together, said facets provide a multitude of macrocontactasperities between said pin terminal contact areas and said inner socket terminal surface to establish a plurality of essentially parallel circuit paths for current passing through said mated terminal members thus decreasing the constriction resistance of the mated members.

4,878,864
OUTBOARD THRUSTER WITH DIRECT DRIVE HYDRAULIC MOTOR
Fransiscus C. A. Van Bentem, 3010 Apple Valley Ln., Missouri City, Tex. 77459
Continuation of Ser. No. 879,972, Jun. 30, 1986, abandoned. This application Mar. 9, 1988, Ser. No. 169,103
Int. Cl.⁴ B63H *21/165*
U.S. Cl. 440—5 8 Claims



1. A compass-type outboard marine thruster apparatus, comprising: a horizontally disposed base adapted to be rigidly mounted to the deck of a marine vessel; a housing; spaced-apart trunnions on opposite sides of said housing for mounting said housing on said base for pivotal movement about a horizontal pivot axis and for suspending said housing rearwardly of the stern of said vessel; a bearing head connected to the lower end of said housing; an elongated tubular structure having an upper section that extends upwardly within and through said head, the longitudinal axis of said tubular structure being in the same plane with and at a right angle to said horizontal pivot axis; bearing means for mounting said tubular structure for rotation with respect to said head and said housing; propeller hub means fixed to the lower end of said tubular structure; hydraulic motor means mounted in said hub means and having an output shaft; propeller means coupled to said output shaft; and hydraulic lines extending from said motor means up through said tubular structure and into said housing to a location above the upper end of said upper section for conveying hydraulic fluid under pressure to and from said motor means.

4,878,865
OUTBOARD PROPULSION UNIT SUPPORTING SYSTEM FOR BOAT
Novuo Makihara; Hiroshi Ono, and Norimasa Kawamura, all of Yokosuka, Japan, assignors to Nissan Motor Co.,.Ltd., Yokohama, Japan
Filed Dec. 7, 1987, Ser. No. 129,561
Claims priority, application Japan, Apr. 16, 1987, 62-57899[U]
Int. Cl.⁴ B63H *1/28*
U.S. Cl. 440—66 19 Claims



1. An outboard propulsion unit supporting system for a boat, comprising:

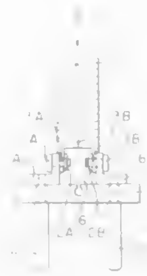
first and second transom brackets secured to a boat transom and positioned spaced from each other to support an outboard propulsion unit;

first and second deflector side plate sections which are respectively integral with said first and second transom brackets and extend downwardly and rearwardly relative to the boat transom; and

a deflector bottom plate section connecting said first and second deflector side plate sections, said deflector bottom plate section extending rearwardly relative to the boat transom and positioned between said boat and the outboard propulsion unit, said deflector bottom plate section including a generally flat portion which is generally horizontal relative to the boat and positioned at a central part of the deflector bottom plate section, said flat portion being located below the level of a splash plate of the outboard propulsion unit and extending generally in directions of width and length of the boat;

said first and second deflector side plate sections and said deflector bottom plate section constituting a deflector for rearward water flow from the boat.

4,878,866
THERMIONIC CATHODE STRUCTURE
Yoshiharu Mori, Tsuchiura; Suzuya Yamada, Machida; Mitsuaki Saito, Machida; Hirotoshi Hagiwara, Machida, and Kenichi Ehara, Shibukawa, all of Japan, assignors to Denki Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 55,379, May 29, 1987. This application Jul. 22, 1988, Ser. No. 222,300
Claims priority, application Japan, Jul. 14, 1986, 61-163859; Jan. 19, 1987, 62-4924; Feb. 12, 1987, 62-17800; Mar. 3, 1987, 62-46718
Int. Cl.⁴ H01J *9/04*
U.S. Cl. 445—36 5 Claims



1. A method of making a thermionic cathode structure comprising the steps of:

cutting by a wire cut method a heat resistant and electrically conducting inorganic tubular substrate such that two parallel thermionic electron emitting elements are formed in a reverse-helical manner which are arranged so that their emissive surfaces are parallel to each other and wherein one end of each said elements is connected to the one end of the other elements and providing current feeding ports on the remaining end of each of said elements.

4,878,867
COIN BANK
Ralph M. Dworman, and Nancy S. Dworman, both of Worcester, Mass., assignors to Ralphco Inc., Worcester, Mass.
Filed Jul. 29, 1988, Ser. No. 226,072
Int. Cl.⁴ A45C *1/12;* **B65D** *3/10, 43/08;* **A63H** *33/30*
U.S. Cl. 446—8 3 Claims

1. A coin bank comprising:

(a) a cylindrical tubular intermediate portion which has a vertical central longitudinal axis, a circular inner surface, a circular outer surface, a top end with a top opening and a bottom end with a bottom opening,

(b) a cap portion which has a hollow interior, a top surface

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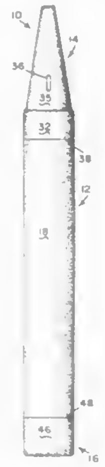
a cylindrical lower end which fits snugly within the top end of said intermediate portion so that said cap portion is removably attached to the top end of said intermediate portion, a bottom opening at said lower end, a circular intermediate outer surface having an outer diameter which is the same as the outer diameter of the circular outer surface of said intermediate portion so that when said cylindrical lower end is inserted within said intermediate portion, the circular intermediate outer surface of said cap and the circular outer surface of said intermediate portion define a single continuous outer surface, a conical



outer surface which tapers inwardly from said intermediate outer surface to said top surface, and a coin slot in said conical surface to the interior of said cap portion,

(c) a base portion which has a bottom wall and a cylindrical upper end which is removably attached to the bottom end of said intermediate portion, said cylindrical upper end having a top opening so that a coin which is inserted into said slot falls through the bottom opening of said cap portion, through the intermediate portion and through the top opening of said base portion to said portion to said bottom wall.

4,878,868

SWINGING BOB TOY

Laurence J. Shaw, 595 Fairway Dr., Novato, Calif. 94947

Filed Apr. 17, 1989, Ser. No. 339,340

Int. Cl.⁴ A63H *33/00*

U.S. Cl. 446—75 17 Claims

1. A toy comprising:

(a) a flexible elongated tethering means,

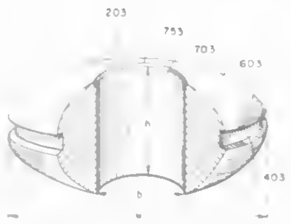
(b) a first mass secured to said tethering means, and

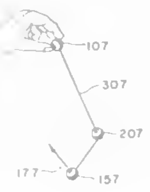
(c) a second, movable mass having a bore with a height h and a width b, the bore of said movable mass allowing said movable mass to move freely along said tethering means, and said second, movable mass having an outer width w, such that

$$0.2 < h/w$$

and

$$(h/w) - (b/w) < 0.8,$$





whereby the operation of said toy is smooth and the tangling of said tethering means is infrequent.

4,878,869

TOYS HAVING MAGNETIC SWITCHES

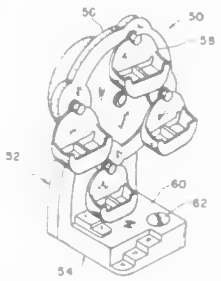
Yuji Yamane, and Hideya Nishikawa, both of Tokyo, Japan, assignors to Tomy Kogyo Co., Inc., Tokyo, Japan

Filed Jun. 9, 1988, Ser. No. 204,342

Claims priority, application Japan, Oct. 22, 1987, 62-161715

Int. Cl.⁴ A63H *33/26, 13/20;* **F17D** *19/00*

U.S. Cl. 446—130 8 Claims



1. A toy comprising:

a body;

a movable element connected to the body;

spring mechanical drive motor means with rotary release means, and being operatively connected to the movable element for moving the movable element;

an actuator for selectively contacting and releasing the rotary release means;

a first magnetic member linked to said actuator; and

a second magnetic member for placement in contact with the body and being operative to move the actuator into and out of contact with the rotary release means by magnetic attraction with the first magnetic member, so that when the actuator is out of contact with the rotary release means, the drive motor outputs a rotary driving force to the movable element.

4,878,870

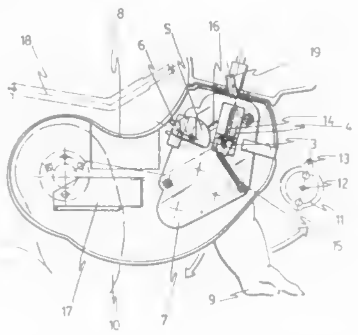
ALL-FOURS WALKING DOLL

Vincente N. Pastor, Onil, Spain, assignor to Vicma, S.A., Onil, Spain

Filed Feb. 19, 1988, Ser. No. 158,254

Int. Cl.⁴ A63H *3/28, 3/24, 3/22*

U.S. Cl. 446—298 5 Claims



1. An all-fours walking doll toy that periodically falls down on a horizontally disposed body portion comprising:

movable arm and leg parts, connected to the body portion, that support the body portion and cause the doll to walk on all-fours;

an electrically powered drive mechanism within the body connected to at least one rotatable cam having a convex surface and a flat surface;

at least one rotatable plate connected to the drive mechanism and the arm part of the doll so as to cause the arm part to move, said rotatable plate is movable between a first position in which an elastic means within the body portion and connected to the plate urges an appendix of the plate against the convex surface of the cam so as to maintain the arm part in a generally upright position, and a second position in which the appendix loses contact with the cam when the rotation of the cam by the drive mechanism causes the flat surface of the cam to be positioned adjacent to the appendix so that the elastic means can rotate the plate and cause the arm part to extend forward so that the doll acquires a headlong-fallen position;

a swivel mechanism connected to the drive mechanism and a head part of the doll so as to cause the head part to alternately swivel sideways as the doll walks on all-fours; and

a connecting, means between the plate and the leg part, so as to move the leg part in conjunction with the arm part.

4,878,871

TOY FOR CONVEYING PERSONALIZED MESSAGE

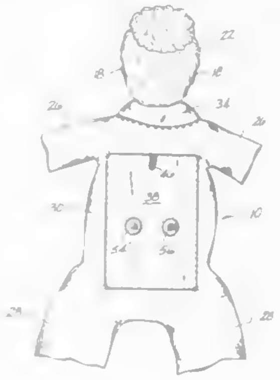
Nancy C. Noto, 26 Castle Rock, Branford, Conn. 06405

Filed Apr. 22, 1988, Ser. No. 184,761

Int. Cl.⁴ A63H *5/00, 3/28, 3/02;* **G09B** *50/60*

U.S. Cl. 446—302 6 Claims

1. A toy having a cavity containing a cassette player, a battery holder, a switch with an operative push button, electric circuit means interconnecting said player, said holder and said switch, and a flap that is movable between a closed position in which said flap covers said cavity and an open position in which said cavity is exposed, whereby a sender can tape a personal message on a cassette, insert the cassette in said player with said flap in the open position, close said flap and give the toy a recipient with the message-bearing cassette therein, wherein said switch is so positioned that, when said flap is in said closed position, said push button will engage said flap to produce a bulge therein, whereby said switch can be operated without moving said flap to said open position.



4,878,872

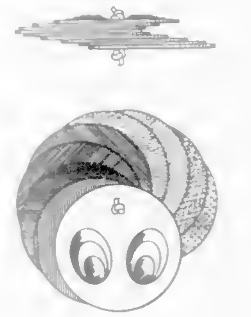
ADJUSTABLE ANIMAL APPEARING TOY

Cynthia L. Johnson, HCR 61, Box 12, North Amity, Me. 04465

Filed Sep. 7, 1988, Ser. No. 241,361

Int. Cl.⁴ A63H *3/12, 3/00*

U.S. Cl. 446—321 4 Claims



1. An adjustable animal or creature-appearing toy comprising

a plurality of discs of identical diameter arranged side by side on a common axis,

means hinging the discs to each other on an axis offset from said common axis for individual swinging movement of each disc independently of the others, and

indicia on the exposed side of each endmost disc depicting facial features of a selected animal or creature, the intermediate discs being of different selected colors resembling those of the selected animal and being composed of relatively stiff material and said end discs being relatively thicker than said intermediate discs and being provided with a textured surface,

whereby, when said discs are selectively swung through different predetermined arcs about said offset axis, they suggest to the viewer the body of said animal or creature facing toward or away from the viewer.

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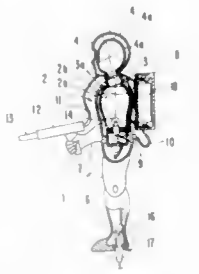
4,878,873

DOLL TOY

Hidehiko Yamaguchi; Kouichi Minami, and Nobuo Kobayashi, all of Tokyo, Japan, assignors to Tomy Kogyo Co., Inc., Tokyo, Japan

Filed Jan. 21, 1988, Ser. No. 146,392
Claims priority, application Japan, Jan. 22, 1987, 62-7880[U]
Int. Cl.⁴ A63H *3/36*
U.S. Cl. **446—321** 9 Claims



1. A doll toy comprising:
a head member having a first interior space;
a trunk member having a second interior space and being connected to the head member, the first interior space being in communication with the second interior space;
wherein the head member and the trunk member constitute portions of an outer shell body of the doll toy;
frame means which includes a pattern and being disposed within the outer shell body, for projecting a desired pattern onto the outer shell body, the frame means being transparent and hollow; and
a light source disposed within the frame means for providing illumination light to project images from the patterned frame means onto the outer shell body,
wherein the frame means is a plurality of transparent frames, each made of a transparent material and including a pattern for displaying images.

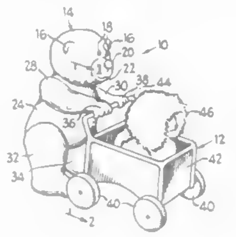
4,878,874

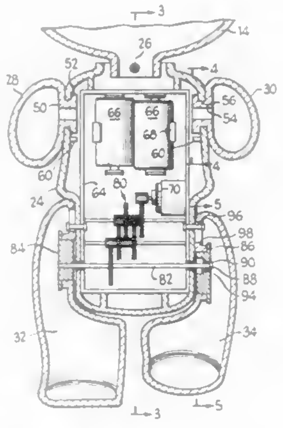
SELECTIVELY ROCKING OR WALKING DOLL

Roubeo T. Terzian, Chicago, Ill., assignor to Marvin Glass & Associates, Chicago, Ill.

Filed Feb. 9, 1989, Ser. No. 309,635
Int. Cl.⁴ A63H *11/18*
U.S. Cl. **446—355** 3 Claims

1. A character comprising in combination:
a torso having a front and a back plus a top and a bottom;
legs mounted on the torso for pivotal movement between front and back positions along with simultaneous limited up and down movement;
a reversible motor contained in the character; and
means for selectively articulating the legs through their pivotal movement between front and back positions along with simultaneous limited up and down movement either in phase or out of phase with each other in response to operation of the reversible motor in one direction or in the opposite direction.



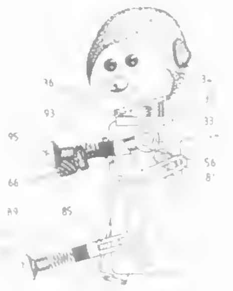


4,878,875

NOVEL CLIMBING TOY

Lin Pin-Hung, 5F, No. 5, Lane 59, Sec. 3, and Yu Kao-Hsien, Room 506, 5F, No. 54, Sec. 1 Chung Hsiao E. Road, both of Taipei, Taiwan

Filed Nov. 16, 1987, Ser. No. 121,110
Int. Cl.⁴ A63H *11/00*
U.S. Cl. 446—356 8 Claims



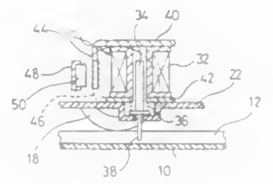
1. A climbing toy animal having a body and limbs, the climbing toy animal being intended to climb up a fabric, such as the clothing worn by a person, comprising:
a motor disposed within the body;
a source of power to energize the motor;
a means for moving the limbs to simulate climbing; and
a climbing mechanism driven by the motor and including means which alternately clamp and release the person's clothing, thereby enabling the toy animal to climb up the person.

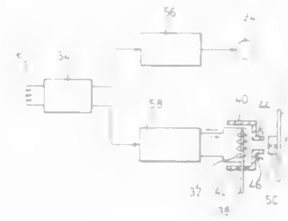
4,878,876

APPARATUS FOR CHANGING THE RUNNING TRACK OF A RACING TOY

Zenichi Ishimoto, Tokyo, Japan, assignor to Nikko Co., Ltd., Tokyo, Japan

Filed Jul. 19, 1988, Ser. No. 221,466
Claims priority, application Japan, Sep. 12, 1987, 62-227560
Int. Cl.⁴ A63H *18/00, 30/02, 33/26*
U.S. Cl. **446—446** 3 Claims





1. Apparatus for changing the running track of a running toy car, in which a motor-driven running toy car body runs on a base having a plurality of parallel guide tracks, said body having a guide pin engageable in any selected one of said tracks, the running body having an electromagnetic coil for disengaging said guide pin from a said track and spring means to urge said guide pin into a said track, said electromagnetic coil having oppositely polarized yokes at opposite ends thereof, said yokes having protuberant portions comprising magnetic poles which are of opposite polarity when said coil is energized, said protuberant portions being disposed side by side of each other in one direction, steering linkage swingably connected with wheels of said running body to steer said running body, said linkage having a magnet thereon which is disposed adjacent said protuberant portions of said yokes and is movable parallel to said one direction, whereby energization of said coil simultaneously moves said guide pin out of one said track and moves said magnet and linkage to steer said running body into the path of another track, whereupon the deenergization of said coil permits said spring means to enter said pin into said another track.

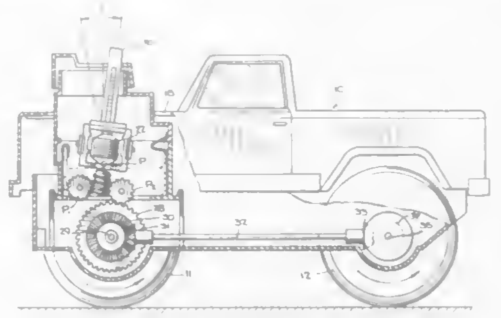
4,878,877

PLUG-IN MODULE FOR MOTORIZED TOY VEHICLE

Robert T. Auer, East Stroudsburg, Pa., and David Reina, Maplewood, N.J., assignors to Buddy L Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 122,253, Nov. 16, 1987. This application Sep. 9, 1988, Ser. No. 242,265
Int. Cl.⁴ A63H *29/24, 29/20, 17/26;* **F16H** *3/34*
U.S. Cl. **446—463** 7 Claims

1. A power module adapted to be installed in an open compartment in the body of a motorless toy vehicle to drive the vehicle in a desired direction, said compartment being disposed above a coupling gear operatively linked to a drive wheel, the module comprising:
A. a case having a base and housing a battery supply; and
B. a DC motor and gear assembly pivotally supported within the case having a control lever attached thereto which normally is positioned in a neutral non-driving mode, the lever being selectively shiftable either to a forward mode for driving the vehicle in the forward direction in which the assembly is then inclined with respect to the neutral mode, or to a reverse mode for driving the vehicle in the opposite direction in which the assembly is then oppositely inclined, said assembly being provided with a worm gear on a shaft of the motor and a pair of drive pinions engaging the worm gear on either side thereof, said pinions being positioned at an opening in said base adjacent said coupling gear, whereby when the motor is connected to said supply, the pinions are caused to rotate concurrently in opposite directions, only one of said pinions engaging the coupling gear in the forward mode and only the other pinion engaging the coupling gear in the reverse mode, both pinions being disengaged from the coupling gear in the neutral mode.

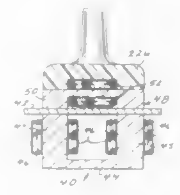


4,878,878

METHOD AND APPARATUS FOR STABILIZING AND POWERING WALKING ANIMATED FIGURES

Ronny E. Bittner, LaVerne, Calif., assignor to The Walt Disney Company, Burbank, Calif.

Filed Feb. 24, 1987, Ser. No. 17,635
Int. Cl.⁴ A63H *33/26, 3/22, 3/20*
U.S. Cl. 446—139 2 Claims



1. In an animated figure which simulates walking of the type wherein jointed appendages are rotatably mounted to a frame and selectively lifted off a platform surface by the interaction of a plurality of electronically controlled drive motors and gears, an improvement which comprises:
first electromagnetic means secured to a jointed appendage for (1) generating a stabilizing holding force, and (2) in-

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ductively receiving an energization signal and command signals; and

second electromagnetic means secured to a platform beneath said platform surface and adapted to be energized by a direct current for selectively interacting with said first electromagnetic means for stabilizing said figure by selective magnetic attraction therebetween, said second electromagnetic means being further adapted to be energized by (1) an alternating current, and (2) a modulated current for transmission of said energization and command signals to said first electromagnetic means, said electromagnetic means includes a plurality of electromagnet elements arranged in a matrix, each of said plurality of elements being selectively energized and deenergized for providing said stabilization of said figure and said signals.

4,878,879

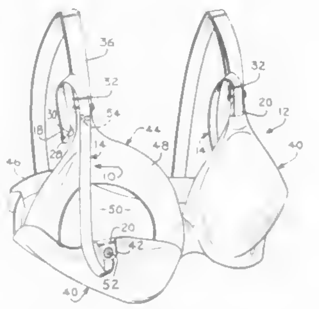
CLOSURE DEVICE FOR NURSING BRA

Maria A. Kunstadter, 1708 Bluebell, Liberty, Mo. 64068

Filed Dec. 30, 1988, Ser. No. 292,108

Int. Cl.⁴ A41C *03/04*

U.S. Cl. 450—36 5 Claims



1. A closure device for a nursing bra having a releasably securable breast-enveloping cup and a supporting bra strap, said closure device comprising:

an elongated flexible strip presenting a first end and a second end;

means for releasably attaching the strip to the cup at said first end;

means for releasably attaching the strip to the bra strap and for enabling the strip to move slidably relative to the bra strap, said attaching means being positioned intermediate the first end and the second end; and

stop means attached to the second end for inhibiting the second end from sliding through said bra strap attaching means.

4,878,880

CLUTCH APPARATUS

Jack L. Williams, Orange, Calif., assignor to ITT Corporation, New York, N.Y.

Continuation of Ser. No. 87,579, Aug. 20, 1987, abandoned. This application Nov. 16, 1988, Ser. No. 274,637

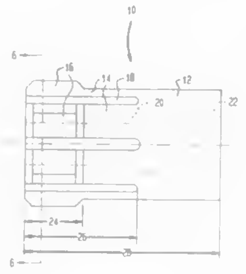
Int. Cl.⁴ F16D *7/04*

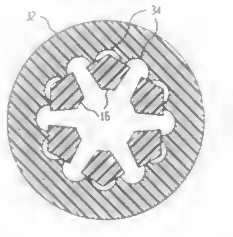
U.S. Cl. 464—37 3 Claims

1. A two piece slip clutch, each piece being molded in plastic and having a unitary configuration, the clutch comprising:

an inner rotary member including a cylindrical hub portion having an inner hub diameter and an outer hub diameter, a plurality of beam members axially extending from said hub portion, said beam members being uniformly shaped and separated by equal interdigital spaces, and said beam members having tooth projections and a cylindrical inner diameter which is smaller than said inner hub diameter;

a cylindrically shaped rotary outer member having a plurality of cavities on the inner peripheral surface at least equal said beam members and a hub mounting portion, said cavities being formed for coupling engagement with said tooth projections, the maximum diameter of a pair of oppositely located cavities is less than the maximum outer diameter of a pair of oppositely located tooth projections, and when the outer member is subjected to an overload condition, said beam members flex inwardly toward the center and the tooth projections slip to the next adjacent cavity.





4,878,881

FIXED HOMOKINETIC JOINT FOR TRANSMISSIONS OF DRIVING WHEELS OF AUTOMOBILE VEHICLES

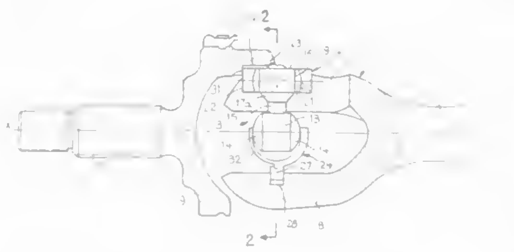
Jean-Claude Van Dest, Saintry sur Seine, France, assignor to Glaenzer-Spicer, Poissy, France

Filed Oct. 6, 1988, Ser. No. 254,083

Claims priority, application France, Oct. 6, 1987, 8713766

Int. Cl.⁴ F16D *3/30*

U.S. Cl. 464—111 9 Claims



1. A fixed homokinetic joint for driving wheel transmissions of automobile vehicles, said joint having a general axis and comprising:

a tulip element for connection to a drive shaft, said tulip element having three axially extending petal portions, each said petal portion defining a rolling track;

a tripod element having three radial arms;

a plurality of rollers, each said roller having an inner spherical bearing surface, and each said roller cooperative with a respective said rolling track on said petal portions;

spherical sectors carried by each said radial arm and cooperative with a said inner spherical bearing surface of a respective said roller, said spherical sectors of each said radial arm having flat surfaces defined therebetween;

a bowl element for connection to a wheel stub-axle, said bowl element fixed to said tripod element; and

means for axially connecting said tulip element to said tripod element;

said tripod element comprising a central ball, each said radial arm of said tripod element comprising a portion off-center in a radial plane relative to said central ball;

said means for axially connecting said tulip element to said tripod element comprising a central spider element having three branches adapted to cap, in a radially floating manner, said central ball of said tripod element, and means for axially retaining said branches of said spider element in said tulip element such that said spider element has two degrees of freedom, radially relative to said tulip element and rotationally with said tulip element about said general axis.

4,878,882

CROSS GROOVE CONSTANT VELOCITY RATIO UNIVERSAL JOINTS

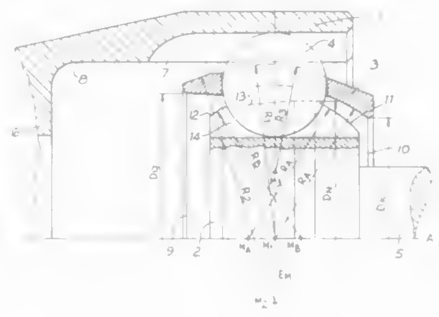
Hans-Heinrich Welschof, Rodenbach, and Peter Schwärzler, Glattbach, both of Fed. Rep. of Germany, assignors to Löhr & Bromkamp GmbH, Offenbach am Main, Fed. Rep. of Germany

Filed Apr. 4, 1988, Ser. No. 176,849

Claims priority, application Fed. Rep. of Germany, Apr. 2, 1987, 3710572

Int. Cl.⁴ F16D *3/21*

U.S. Cl. 464—144 17 Claims



1. A cross groove constant velocity ratio universal joint, comprising:

an outer joint member;

an inner joint member;

the inner and outer joint members having circumferentially disposed axially extending facing pairs of grooves, the grooves of each pair being oppositely inclined to the rotational axes of their joint members so that they cross one another as viewed in a direction transverse to said axes;

a plurality of balls disposed one in each facing pair of grooves, for torque transmission between the joint members;

and a cage of annular form disposed between the joint members, the cage having apertures wherein the balls are received to constrain the balls such that their centers occupy a ball center plane;

wherein, as viewed in longitudinal section, the cage is asymmetrical and has at one end an opening of a diameter greater than a maximum diameter of the inner joint member, and at its other end has an opening of a diameter smaller than said maximum diameter of the inner joint member, so that the cage can be fitted axially over the inner joint member from said one end thereof, and said other end of the cage forms a stop for limiting relative axial movement between the cage and inner joint member, the external surface of the cage comprising a number of longitudinally extending portions of different configuration from one another, the portions including a first portion, towards the end of the cage having the larger diameter opening, and a further portion towards the end of the cage having the smaller diameter opening, both of which portions are convex surfaces of revolutions about the longitudinal axis of the cage and which, as viewed in longitudinal section of the cage, having centers of curvature which lie in the ball center plane but which are offset from said cage axis, the first portion having a radius of curvature greater than that of the further portion.

4,878,883

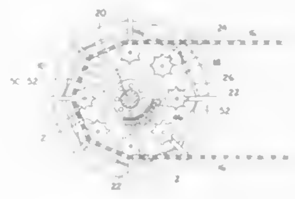
CONTINUOUSLY VARIABLE CHAIN DRIVE TRANSMISSION

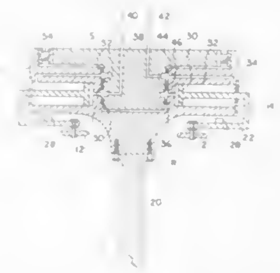
Thomas K. Wheless, 1570 W. Maggio Way, Bldg. 24, Apt. 2055, Chandler, Ariz. 85224

Filed Dec. 8, 1988, Ser. No. 281,527

Int. Cl.⁴ F16H *55/54*

U.S. Cl. 474—51 4 Claims





1. A sprocket wheel and control mechanism for a chain or belt drive transmission with a continuously adjustable mechanical advantage comprising:

said sprocket wheel of said chain or belt drive transmission having variable effective diameters about a center including a plurality of pairs of diametrically opposed sprocket, spur and/or friction gears adapted for engagement with a chain or belt of said transmission;

hydraulic piston and cylinder assemblies activated by a flow of fluid, each of said assemblies controlling the variable effective diameters by displacement of each of said sprocket, spur and/or friction gears from the center of the sprocket wheel by control of said flow of said fluid to said assemblies and from said assemblies;

equalization means for tending to synchronously form uniform effective diameters by equalizing the displacement of said sprocket, spur and/or friction gears from the center of the sprocket wheel at any instant of time; and

valve means for controlling said flow of said fluid to said assemblies and from said assemblies, said valve means having as one of a plurality of possible positions a neutral position for stabilizing said fluid in said piston and cylinder assemblies to stabilize the displacement of the sprocket, spur and/or friction gears and having, as the others of said positions, positions for moving said sprocket, spur and/or friction gears.

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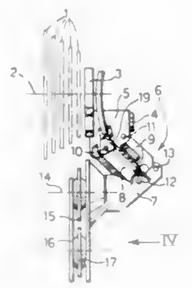
4,878,884
REAR DERAILLEUR FOR BICYCLE GEARS

Antonio Romano, Padua, Italy, assignor to Campagnolo S.p.A., Venice, Italy
Filed Aug. 31, 1988, Ser. No. 238,427
Claims priority, application Italy, Sep. 4, 1987, 67761 A/87
Int. Cl.^{4} F16H *11/08*
U.S. Cl. 474—82 3 Claims

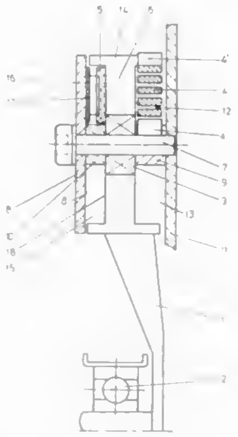


1. A rear derailleur for bicycle gears, comprising an upper body which can be fixed to the bicycle frame, a lower body carrying transmission means for the bicycle chain, and an articulated parallelogram joint which connects the lower body to the upper body, the joint including a pair of connecting rods whose ends are articulated to the upper body and to the lower body respectively,

wherein the axes of articulation of the two connecting rods to the upper body are inclined to the longitudinal plane of the bicycle in the position of mounting of the derailleur on the bicycle, and are arranged with one outwardly of higher than the other so that the plane containing the axes is inclined to the axis of the rear wheel of the bicycle.

4,878,885
TENSION ARRANGEMENT FOR TRANSMISSION BELTS

Manfred Brandenstein, Eussenbeim, and Jurgen Kober, Schwebeim, both of Fed. Rep. of Germany, assignors to SKF GmbH, Schweinfurt, Fed. Rep. of Germany
Filed Feb. 12, 1988, Ser. No. 155,261
Claims priority, application Fed. Rep. of Germany, Feb. 13, 1987, 3704521
Int. Cl.^{4} F16H *7/08*
U.S. Cl. 474—135 7 Claims



1. In a tension arrangement for transmission belts, including a pivot arm, a tension roller mounted at one end of the pivot arm, a pivot bearing mounted at the other end of the pivot arm, a torsion spring coaxial to the pivot bearing and mounted to act between the pivot arm and a fixed machine part, and a pivot movement damping friction element having friction surfaces extending substantially over its entire circumference and inserted in an annular space bounded by opposite surfaces the improvement comprising; means for prestressing the friction element between said opposite surfaces with a first amplitude of force in one direction of pivot movement of the arm and for prestressing said friction element with a second amplitude of force greater than said first amplitude in the other direction of pivot movement of the arm.

4,878,886
TOOTHED BELT AND POWER TRANSMISSION DEVICE USING THE SAME

Masayuki Kitabayashi, and Michio Tanaka, both of Kobe, Japan, assignors to Bando Chemical Industries, Ltd., Kobe, Japan
Filed Jan. 23, 1989, Ser. No. 299,688
Int. Cl.^{4} F16G *1/00*
U.S. Cl. 474—204 8 Claims

1. A toothed belt having an endless belt body made of elastomer material, tensile members embedded in said belt body extending longitudinally thereof along a belt pitch line and a plurality of teeth integrally formed with said belt body along an inner periphery thereof at a certain pitch Pb adapted for engaging with a toothed pulley in pulley grooves thereon;

said belt teeth being separated by belt cavity portions, each belt tooth being symmetrical about a belt tooth center line in longitudinal cross-section, each said belt cavity portion being symmetrical about a belt cavity portion center line in longitudinal cross-section;

each said belt tooth being divided into four regions in longitudinal cross-section from a tooth root to a tooth tip, a pair of opposed tooth root portions occupying a first region, a pair of convex arcuate tooth flank portions which extend from ends of said tooth root portions toward said tooth tip occupying a second region, a pair of convex arcuate tooth top portions which extend from ends of said tooth flank portions toward said tooth tip occupying a third region, and a tooth tip portion which connects ends of said tooth top portions occupying a fourth region, all said portions being connected so as to be formed in a continuous curvature;

each said belt tooth having a width Wb at tooth root measured between intersections Q and Q at which the belt pitch line intersects imaginarily extended arcs of said tooth flank portions from conjunctive points thereof with said tooth root portions in longitudinal cross-section, wherein the width Wb at tooth root is predetermined to be in a range of 0.3–0.8 times as long as the belt tooth pitch Pb;

each said tooth root portion of said belt tooth being formed in a first circular arc with a radius R_1 b connecting said tooth flank portion to a base part of said belt cavity portion in both sides of the belt tooth center line, wherein said base part in longitudinal cross-section is a line coinciding with a belt land line which is colinear with base parts of other belt caavity portions on said belt;

each said tooth having a tooth height Hb measured between an extremity of said tooth tip portion and the belt land line on the belt tooth center line, wherein the tooth height Hb is predetermined to be higher than a groove depth dimension of said pulley groove;

each said tooth flank portion being formed in a second circular arc with a radius R_2 b equal to the wid'h Wb at tooth root whose center lies on the intersection Q between the belt pitch line and the imaginarily extended arc of the opposite tooth flank portion from the belt tooth center line;

said tooth tip portion being formed in a fourth circular arc whose center lies on the belt tooth center line and whose radius R_4 b is predetermined to be in a range given by a following inequality,

$$R_4 b > \{(Wb/2)^2 + Kb^2 - (R_2 b)^2\}/4\,(Kb - R_2 b)$$

(wherein reference Kb is a distance measured between said extremity of said tooth tip portion and the belt pitch line.); and

each said tooth top portion being formed in a third circular arc whose center lies on a point (x, y) apart from the belt tooth center line in the same side as said tooth top portions, the location of the point (x, y) being expressed by following equations in an x-y coordinate system which is composed of an origin on an intersection between the belt pitch line and the belt tooth center line, x axis extending along the belt pitch line in a direction toward said tooth top portions in question from the belt tooth center line and y axis extending along the belt tooth center line in a direction toward saidi tooth top portions from the belt pitch line,

$$x = -(Wb/2) + (R_2b - R_3b)\cos\theta$$

$$y = (R_2b - R_3b)\sin\theta$$

wherein

$$\theta = \sin^{-1}\{4T_A/(R_2b - R_3b)\cdot Wb\}$$

$$T_A = \{\, T_S\cdot(T_S - R_2b + R_3b)\cdot(T_S - R_4b + R_3b)\cdot(T_S - Wb/2)\,\}^{\frac{1}{2}}$$

$$T_S = (R_2b + R_4b - 2R_3b + Wb/2)/2$$

and whose radius R_3 b is predetermined to be in a range given by follwoing inequalities:

$$R_3b > \{(Wb/2)^2 + Kb^2 - (R_2b)^2\}/4(Kb - R_2b)$$

$$R_3b < \{(Wb/2)^2 + Kb^2 - (R_2b)^2\}/2(Kb - R_2b).$$

4,878,887
ENDLESS TRANSMISSION BELT

Shiro Sakakibara; Yoshinori Miyaishi, both of Aichi, and Yoshiaki Kano, Gifu, all of Japan, assignors to Aisin-Aw Kabushiki Kaisha, Japan
Filed Dec. 21, 1988, Ser. No. 287,322
Claims priority, application Japan, May 17, 1988, 63-118188
Int. Cl.^{4} F16G *1/22*
U.S. Cl. 474—245 10 Claims

1. An endless transmission belt comprising:

a plurality of sets of link plates;

a plurality of pin pairs, each pair of pins linking one end of one set of link plates to an adjacent end of another set of link plates;

a plurality of blocks mounted on said link plates and extending around the circumference of the belt, each of said blocks having a pin engagement groove defined by:

a circumferential contact surface for engaging a pin in the running direction of the belt;

an opening; and

a pair of side walls each extending from said circumferential contact surface to said opening, one of said side walls providing a radial contact surface for a pin;

each of said pins having a transverse cross-section defined in part by:

a rocking surface for contact with its paired pin;

a first curved surface for radial contact with a sidewall of said pin engagement groove; and

a second curved surface for contacting said circumferential surface of a block and said link plates;

the dimensions of said radial contact surface of said pin engagement groove and the dimensions of said surfaces of each pin being selected to minimize, where the belt passes over a pulley, the difference between (1) Δr which is the total of the displacement of the points of contact between paired pins as a result of the pins of a pair rolling with respect to each other, the displacement of the pins per se and the relative displacement between said pairs of pins and said blocks due to their rotation relative to one another and (2) Δr_i which is the ideal Δr, from the viewpoint of variation in belt speed, vibration and noise.

4,878,888
PROCESS AND APPARATUS FOR SEVERING AND SUBSEQUENTLY STACKING FLAT ARTICLES MADE OF PLASTIC FILM AND PREFERABLY CONSISTING OF DOUBLE BAGS

Klaus Ullmann, Uplengen, Fed. Rep. of Germany, assignor to Windmoller & Holscher, Lengerich, Fed. Rep. of Germany
Filed Oct. 30, 1987, Ser. No. 114,919
Claims priority, application Fed. Rep. of Germany, Nov. 4, 1986, 3637491
Int. Cl.^{4} B31B *1/64*
U.S. Cl. 493—204 6 Claims

1. A process of severing and subsequently stacking web sections which in their central portions are provided with locating holes, said process comprising:

delivering the web sections by a delivering means including a wicketer having pairs of inner and outer wicketer arms, which are arranged in a starlike array and rotate about a horizontal axis, and the web sections are deposited by said delivering means in a stacking station onto a stacking conveyor, which includes endless tensile elements, which are trained around reversing elements and are intermittently driven and provided with upstanding stacking pins,

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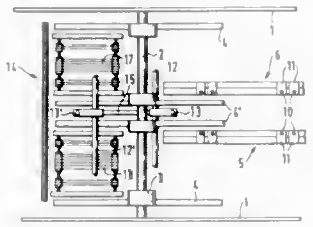
the stacks formed by the web sections placed on the stacking pins are intermittently carried off by an intermittent advance of the tensile elements, and

the web sections having been perforated on or adjacent to the longitudinal center line of each section of the web,



severing said perforation line while the web sections are being transported by the delivery means and before the web sections are placed on the stacking pins and said severing is effected in that the web sections are subjected to a severing force.

4,878,889

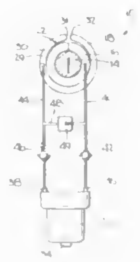
ARTIFICIAL SPHINCTER DEVICE

Mark Polyak, Minneapolis, Minn., assignor to American Medical Systems, Inc., Minnetonka, Minn.

Filed Jun. 24, 1988, Ser. No. 211,346

Int. Cl.⁴ A61F *1/00*

U.S. Cl. 600—31 **11 Claims**



1. An implantable, unitary artificial sphincter for a body passage comprising:

a. an inflatable, flexible cuff adapted to be positioned around the body passage, which when inflated closes around and shuts the body passage, and when deflated opens the body passage;

b. an inflatable, flexible reservoir ring disposed around and fastened to the cuff, and predisposed upon inflation to straighten and open outward from the body passage;

c. a fluid passageway interconnecting the cuff and the ring; and

d. means for transferring fluid from the cuff to the reservoir ring.

4,878,890

PERIHEPATIC PROSTHESIS

Joseph Bilweis, Noisy le Roi, France, assignor to Ethicon, Inc., Somerville, N.J.

Filed Oct. 13, 1987, Ser. No. 108,385

Claims priority, application France, Oct. 15, 1986, 86 14312

Int. Cl.⁴ A61F *2/02*

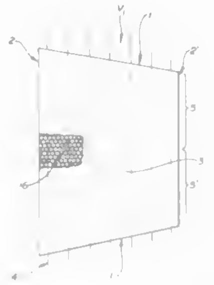
U.S. Cl. 600—37 **14 Claims**

1. A perihepatic prosthesis of a supple biodegradable surgical material for haemostasizing a hepatic lobe of a liver, comprising:

at least one wing constituted of a central part dimensioned in the shape of an isosceles trapezium for surrounding a hepataic lobe of a liver and including

a first peripheral fixing part comprising the longer base of said trapezium intended to be fixed on a falciform ligament of said liver, said longer base being suitable for substantially surrounding said liver proximate the jointure of said hepatic lobe with a second hepatic lobe of said liver;

a second peripheral fixing part comprising the shorter base of said trapezium opposing said longer base; and



first and second lateral edges comprising the non parallel sides of said trapezium and disposed between said longer and shorter bases and being suitable for enclosing said hepatic lobe within said prosthesis along a line extending from said remote end of said hepatic lobe to said longer base.

4,878,891

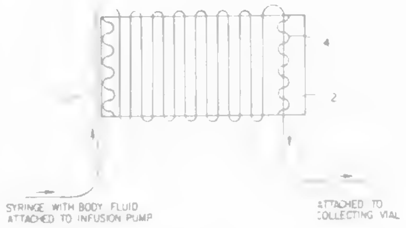
METHOD FOR ERADICATING INFECTIOUS BIOLOGICAL CONTAMINANTS IN BODY TISSUES

Millard M. Judy; James L. Matthews; Joseph T. Newman, and Franklin Sogandares-Bernal, all of Dallas, Tex., assignors to Baylor Research Foundation, Dallas, Tex.

Filed Jun. 25, 1987, Ser. No. 67,237

Int. Cl.⁴ A61K *39/00*

U.S. Cl. 604—5 **63 Claims**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SYRINGE WITH BODY FLUID ATTACHED TO INFUSION PUMP
ATTACHED TO COLLECTING VIAL

1. A method for eradicating infectious pathogenic biological contaminants from body fluids outside the body prior to introduction of the decontaminated body fluids into the body of a patient, said method comprising:

admixing an effective, non-toxic amount of a photoactive compound with the body fluid to produce a resulting body fluid, the photoactive compound having an affinity to be selectively bound to the contaminants;

passing the resulting fluid under flow conditions through a cell assembly having a predetermined flow path; and

irradiating the resulting fluid in the cell assembly as same passes through the flow path with an effective level of radiation in the region of the visible spectrum, with a wavelength range upwards of about 400 nm to about 1000 nm, for an effective period of time such that the radiation penetrates the resulting fluid and exposes the photoactive-compound-bound contaminants to the radiation so as to eradicate such contaminants while maintaining the viability of said body fluids to produce viable decontaminated body fluids.

4,878,892

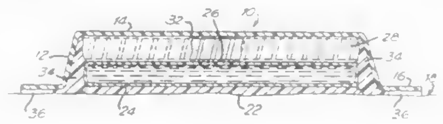
ELECTROLYTIC TRANSDERMAL DELIVERY OF POLYPEPTIDES

Dan Sibalis, Stony Brook, and Sanford Rosen, New York, both of N.Y., assignors to Drug Delivery Systems Inc., New York, N.Y.

Filed Feb. 10, 1987, Ser. No. 12,889

Int. Cl.⁴ A61N *1/30*

U.S. Cl. 604—20 **19 Claims**



1. A transdermal patch for delivering at least one drug directly to the bloodstream of the patient comprising in combination:

(a) an active ingredient comprising at least one polypeptide having from three to 20 peptide units selected from the group consisting of vasopressin, lypressin, atriopeptin, oxytocin, desmopressin, a dynorphin, leuprolide, an angiotensin, and mixtures thereof contained in a drug reservoir, and

(b) electrolytic means for transdermal transport of the polypeptide characterized by a current density from about 0.5 microampere/cm^2 to about 1 milliampere/cm^2,

whereby the skin of the patient is neither irritated nor erythematized.

4,878,893

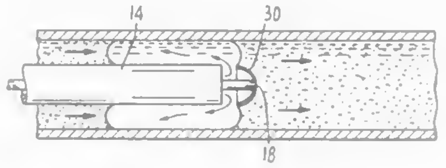
ANGIOSCOPE WITH FLUSH SOLUTION DEFLECTOR SHIELD

Albert K. Chin, Palo Alto, Calif., assignor to Thomas J. Fogarty, Palo Alto, Calif.

Filed Apr. 28, 1988, Ser. No. 187,482

Int. Cl.⁴ A61B *1/12*

U.S. Cl. 604—21 **3 Claims**



1. An angioscope centering catheter for visualizing a vessel, the catheter comprising:

(a) an inner catheter having distal and proximal ends;

(b) an angioscope mounted within the inner catheter and having a distal viewing end for visualization at the distal end of the catheter;

(c) an outer sheath having distal and proximal ends, the inner catheter being disposed within the outer sheath for sliding movement with respect to the outer sheath, the outer sheath including a plurality of longitudinal slitted sections formed circumferentially near its distal end, the outer sheath and the inner catheter being connected at their distal ends such that when the inner catheter moves proximally with respect to the outer sheath, the slitted sections splay out radially and symmetrically about the longitudinal axis of the angioscope centering catheter to center the viewing end of the angioscope within the vessel; and

(d) a deflector shield mounted at and spaced apart from the distal end of the catheter to deflect the bolus of flushing solution provided by the catheter.

4,878,894

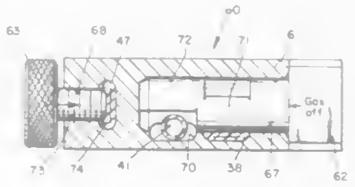
GAS/SALINE VALVE WITH SUCTION CONTROL

Leroy V. Sutter, Jr., and Harold A. Cameron, both of Irvine, Calif.

Filed Feb. 26, 1987, Ser. No. 19,434

Int. Cl.⁴ A61B *17/36;* **A61M** *1/00*

U.S. Cl. 604—24 **2 Claims**



1. A gas/saline insufflation system for use with an arthroscopic attachment with a gas inlet and an arthroscope with a saline inlet, said gas/saline insufflation system comprising:

a. a gas insufflator which provides a flow of gas;

b. a first tubing in fluid communication with the gas insufflator for being coupled to a gas inlet of the arthroscopic attachment;

c. a saline source which provides a flow of saline;

d. a second tubing in fluid communication with said saline source for being coupled to a saline inlet of the arthroscopic attachment;

e. a housing with an open end which has a first bore and a second bore and which also has a first slotted chamber and a second slotted chamber both of which are contiguous to said first and second bores, respectively, within which said first and second tubings, respectively, are disposed; and

f. a gas/saline control knob having a solid cylinder which has a first semi-cylindrical notch and a second semi-cylindrical notch and which is rotatively coupled within said housing with said first and second semi-cylindrical notches being aligned with said first and second slotted chambers, respectively, whereby when an unnotched portion of said solid cylinder is contigous to either said first or second tubing, it compresses said tubing into either said first or second slotted chamber thereby closing off either said flow of gas or saline respectively, therein and when either said first or second semi-cylindrical notch becomes contiguous to either said first or second tubing, respectively, said tubing is no longer compressed thereby maintaining or turning on either said flow of gas or saline therethrough.

4,878,895

IN-VIVO STIMULATION, COLLECTION, AND MODIFICATION OF PERITONEAL MACROPHAGE

Phillip H. Klesius, and Debra A. Cross, both of Auburn, Ala., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Sep. 26, 1988, Ser. No. 248,744

Int. Cl.⁴ A61M *1/00;* **A61B** *10/00*

U.S. Cl. 604—49 **24 Claims**

1. An apparatus for collection of macrophage from the peritoneal cavity of a vertebrate including,

container means consisting essentially of membrane means, completely enclosing therein an interior volume, for excluding tissue growth into said interior volume and for

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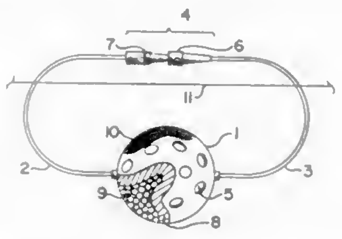
permitting permeation of macrophage through said membrane means into said interior volume, and

cell supporting means filling at least a portion of said interior volume.

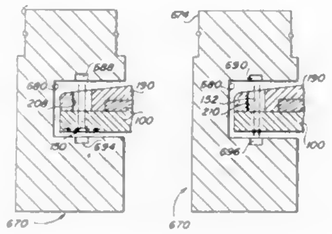


4,878,896
CASSETTE OPTICAL IDENTIFICATION APPARATUS FOR A MEDICATION INFUSION SYSTEM

Michi E. Garrison, Granada Hills, and John P. Pelmulder, Chatsworth, both of Calif., assignors to Pacesetter Infusion, Ltd., Sylmar, Calif.

Filed Dec. 1, 1987, Ser. No. 128,009
Int. Cl.⁴ A61M *5/18*

U.S. Cl. 604—65 **16 Claims**



1. A system for providing information identifying which of a series of disposable cassettes is installed on a main unit in a medication infusion system, comprising:

a projection located on said disposable cassette;

an optical receiving module mounted on said main unit, said optical receiving unit defining an opening therein for receiving aid projection on said disposable cassette when said disposable cassette is installed onto said main unit;

first optical signal source means for providing a first light beam, said first optical signal source means being located in said optical receiving module on one side of said opening;

second optical signal source means for providing a second light beam, said second optical signal source means also being located in said optical receiving module on said one side of said opening;

first optical signal sensor means for receiving said first light beam, said first optical signal means being located in said optical receiving module on the other side of said opening opposite said first optical signal source means;

second optical signal sensor means for receiving said second light beam, said second optical signal sensor means also being located in said optical receiving module on the other side of said opening opposite said second optical signal source means;

first identification means for controlling the passage of said first light beam through said projection on said disposable cassette from said first optical signal source means to said first optical signal sensor means, said first identification means alternatively being either conductive of light to allow the passage of light therethrough, or nonconductive of light to prevent the passage of light therethrough, said first identification means being located on said projection on said disposable cassette; and

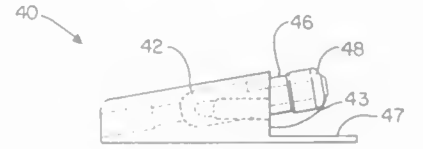
second identification means for controlling the passage of said second light beam through said projection on said disposable cassette from said second optical signal source means to said second optica' signal sensor means, said second identification means alternatively being either conductive of light to allow the passage of light therethrough, or nonconductive of light to prevent the passage of light therethrough, said second identification means being located on said projection on said disposable cassette.

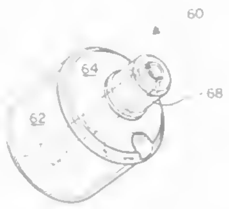
4,878,897
INJECTION SITE DEVICE HAVING A SAFETY SHIELD

Gerald H. Katzin, Raleigh, N.C., assignor to Ideation Enterprises, Inc., Raleigh, N.C.

Continuation-in-part of Ser. No. 863,577, May 15, 1986, abandoned. This application Nov. 26, 1986, Ser. No. 935,286
Int. Cl.⁴ A61M *5/14*

U.S. Cl. 604—86 **7 Claims**





1. An injection site device suitable for facilitating the infusion of a drug and the like into a patient through the primary flow path of an IV administration system wherein the device comprises a bifurcated juncture of the generally "Y" shape type having in fluid communication, an injection port at a first end of a tubular body member, an inlet port adjacent the first end and extending outwardly from the body member, and an outlet port at the other end of a body member, the improvement which comprises grasping means extending generally outwardly from said tubular body member so that when the fingers of the user are applied to grasp the body member, they will be distally spaced from the injection port and out of the path of the needle should the user miss the injection port with the needle, said grasping means comprising a cylindrical housing surrounding the bifurcated juncture and extending radially outwardly from said tubular body member a distance sufficient to fully remove the fingers of a user from the area immediately surrounding the injection port.

2. An injection site device suitable for facilitating the infusion of a drug and the like into a patient through the primary flow path of an IV administration system wherein the device comprises a bifurcated juncture of the generally "Y" shape type having in fluid communication, an injection port at a first end of a tubular body member, an inlet port adjacent the first end and extending outwardly from the body member, and an outlet port at the other end of a body member, the improvement which comprises: a finger protecting shield means extending generally radially outwardly from the tubular body member and positioned between the injection port and the outlet port of the device for protecting a user's fingers from needle puncture when the injection site device is held in one hand beneath the shield means and the other hand is used to

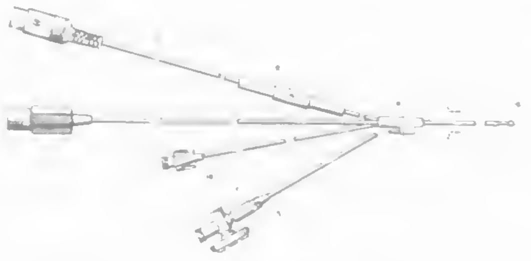
insert a needle into the injection port, said shield means extending radially outwardly from said tubular body member a distance sufficient to fully shield the fingers of a user from said needle, said shield means further including a non-foldable skirt connected to said body member at an angle to said shield means and being adapted to lie flat against the skin of a patient for increased comfort and to further protect the patient from accidental puncture by the needle.

4,878,898
THERMODILUTION AND PRESSURE TRANSDUCER BALLOON CATHETER

Joseph C. Griffin, Atco, and James L. Skaggs, Indian Mills, both of N.J., assignors to Nova Medical Specialties, Indian Mills, N.J.

Continuation-in-part of Ser. No. 85,551, Aug. 17, 1987, abandoned. This application Sep. 16, 1988, Ser. No. 245,623
Int. Cl.⁴ A61M *29/00*

U.S. Cl. 604—101 **7 Claims**



1. A multiple lumen balloon catheter for pulmonary artery catheterization procedures comprising:

a multiple lumen catheter body having a distal end portion and proximal end portions;

inflatable balloon means surrounding said distal end portion and including hollow elastic cylindrical sleeve means having inside and outside surfaces, said sleeve means adhesively affixed proximal to said distal end to said catheter body by the inside surface of said sleeve means and adhesively affixed adjacent to the distal end of said catheter body by the outside surface of said sleeve means which has been turned inwardly of the sleeve so as to be inside at least a portion of the inside surface of said sleeve means, and

transducer means containing housing means having a closed distal end and an open proximal end and capable of being received in fluid tight relationship at the distal end of one of said lumens and adhesively adhered therein, said housing means containing arranged therein a silicon strain gauge bridge within but not fixedly connected to said housing means having wire means electrically connected thereto said wire means communicating through said lumen to the proximal end portion of said catheter body;

a piezoelectric Silicon strain gauge means having a front face and a rear face, said rear face being distally contiguous to said strain gauge bridge but not affixed thereto and in electrical contact therewith so that changes in resistance in said piezoelectric strain gauge means can be electrically sensed through the wire means electrically connected to said strain gauge bridge and said wire means, such changes in resistance being proportion to the pressure exerted onto the front face of said transducer means;

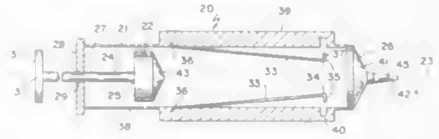
force transmitting means closing the distal end of said housing and contiguous to the distal face of said strain gauge means said force transmitting means comprising metal diaphragm means normally in physical contact with said strain gauge means and a titanium diaphragm means located distally of said metal diaphragm means and contiguous thereto, covering said open distal end of said housing means and in fluid tight relationship therewith to form the distal face of said transducer housing means, whereby fluid pressure applied to the titanium diaphragm means transmits a force to said metal diaphragm and onto said strain gauge means to produce a change in resistance that is proportional to said applied force and detectable through the wire means electrically connected to said silicon strain gauge bridge; and said transducer means being located axially of the circumference of said balloon means when said balloon means is inflated.

4,878,899
DISPOSABLE SYRINGE FOR ONE-TIME USE

Frederick L. Plouff, 21A Sweetser St., Wakefield, Mass. 01880

Filed Feb. 26, 1988, Ser. No. 160,712
Int. Cl.⁴ A61M *5/00*

U.S. Cl. 604—110 **18 Claims**



1. A disposable syringe for one-time use comprising:

a cylindrical barrel having a side wall, an axis, and two ends one of which is a distal end for the administration of a fluid;

a cylindrical plunger mounted snugly and fluid tight for axial movement within the barrel;

an actuating rod connected to the plunger and of radial extent less than that of the plunger, the barrel having at the other, proximal end means for guiding the actuating rod axially;

a pin of spring material within the barrel and having two ends, the proximal end being securely fixed and sealed imbedded in the side wall at an axial position and the other, distal end being free and located axially within the barrel nearer the other, distal end of the barrel than the axial position of imbedment of the pin and having a position radially within the side wall;

the plunger being movable by the actuating rod from a position nearer the one, distal barrel end to a position nearer the other, proximal barrel end and beyond the proximal end of the pin, the barrel on such movement camming the pin free end aside from its normal position toward the wall of the barrel until with continued plunger movement the free end is freed and returns by elasticity of the spring material to its normal position radially within the wall;

whereby on such movement the plunger is captured by the pin at its free end to prevent return movement of the plunger toward the proximal end of the barrel and thereby to prevent re-use of the syringe.

4,878,900
SURGICAL PROBE AND SUCTION DEVICE

Thoralf M. Sundt, Dept. of Neurosurgery, Mayo Clinic, Rochester, Minn. 55905

Filed Jul. 27, 1988, Ser. No. 224,943
Int. Cl.⁴ A61M *1/00*

U.S. Cl. 604—119 **14 Claims**

1. A surgical probe and suction device comprising:

(A) an elongated tubular handle having a central longitudinal passage and means at one end for connection to a vacuum source,

(B) a suction regulating orifice in said handle communicating with said central passage,

(C) a separable elongated tubular probe and suction member connected to the opposite end of said handle and having an open passage therethrough,

(D) a positive snap-on rotatable connection between said

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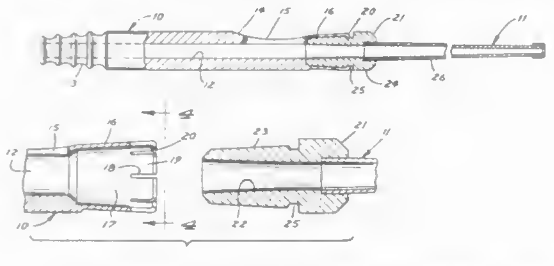
handle and probe and suction member, said connection comprising:

(1) a tapered male connection member extending from the probe or the handle having a central passage therethrough,

(2) an annular groove around said male connection member spaced from the end thereof,

(3) a mating female connection member adapted to receive and engage said male connection member extending from the other of said probe or handle and comprising:



(a) an annular ring having a plurality of parallel resilient finger members closely and uniformly spaced apart about a central passage, and

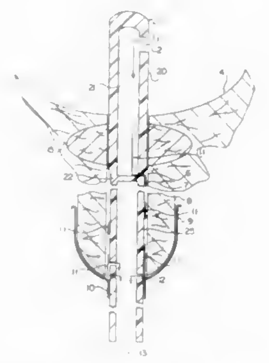
(b) an inwardly directed lip at the ends of each of said finger members adapted to engage the annular groove around said male connection member, and

(E) a blunted distal end on said probe and suction member surrounding the open passage therein.

4,878,901
CONDOM CATHETER, A URETHRAL CATHETER FOR THE PREVENTION OF ASCENDING INFECTIONS

Hans-Ernst Sachse, 8500 Nuernberg 90, Lerchenstr. 55, Fed. Rep. of Germany

Filed Dec. 7, 1987, Ser. No. 129,448
Int. Cl.^{4} A61M *5/32*
U.S. Cl. 604—174 5 Claims



1. Indwelling urethral catheter arrangement for the prevention of ascending bacterial infection, comprising

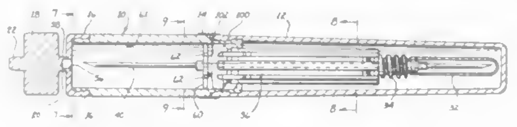
a catheter shaft having an upper section with a diameter sufficiently large to substantially prevent passage of urine externally thereof, and a lower section at least a part of which is of reduced diameter, said catheter shaft having lateral outlet opening means near the upper end of said part, lateral inlet opening means at a lower point of said part and lumen stopper means intermediate said outlet and inlet opening means so that the urinary stream is deflected for relatively free flow over the distance defined by said opening means to the generally annular space between the urethral wall and the outside of said catheter shaft, and a condom-like sheath in the region of said lower end, said sheath at its bottom having an aperture surrounding the lower section of said catheter shaft in sealing relationship, and at its top being fittable over the penis,

so that, on the one hand, the bacteria are flushed downwardly by the urinary stream and , on the other hand, the entire urinary stream is conducted in a leakproof manner to the outside of said catheter arrangement.

4,878,902
NEEDLE GUARD FOR BODY SUBSTANCE ISOLATION

Alan A. Wanderer, 1075 E. Radcliffe, Englewood, Colo. 80110, and William E. Sagstetter, 2217 E. Grove, Denver, Colo. 80210

Filed Feb. 25, 1988, Ser. No. 160,150
Int. Cl.^{4} A61M *5/32*
U.S. Cl. 604—192 21 Claims



1. A guard for enclosing a needle extending from a hub before and after use to prevent inadvertent needle stick and to provide body substance isolation, said guard comprising in combination:

(a) means for locating said guard relative to the hub in a first position to enclose the needle within said guard;

(b) means for posteriorly relocating said guard to and for urging retention of said guard in a second position relative to the hub to exteriorize the needle from within said guard;

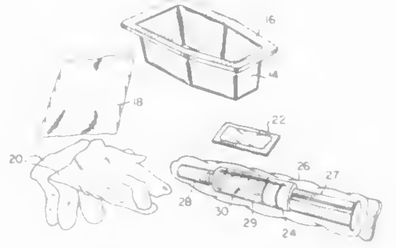
(c) means for anteriorly repositioning said guard for locking said guard in a third position relative to the hub to reenclose the needle within said guard; and

(d) means for isolating within said guard any body substances attendant the needle and within upon repositioning of said guard into the third position, said isolating means including means for sealing the posterior end of said guard about the hub, said sealing means comprising a piston associated with the hub and taper means disposed at the junction of said piston and said guard upon location of said guard in the third position for developing a seal at the junction between said piston and said guard.

4,878,903
PREFILLED CATHETER TIP SYRINGE KIT

Louis H. Mueller, 165 Sheffield Cir., Palm Harbor, Fla. 34683

Filed Apr. 15, 1988, Ser. No. 182,259
Int. Cl.^{4} B65D *83/10*
U.S. Cl. 604—199 3 Claims



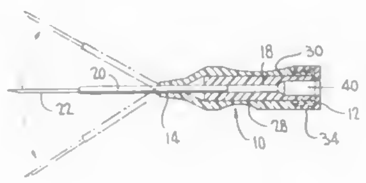
1. A device for use as a single use, disposable, sterile irrigation kit for catheter irrigation, comprising:

a prefilled sterile piston syringe containing from about 45 to about 75 cc of a fluid selected from sterile water, saline solution and dilute aqueous acetic acid solutions, said syringe including a catheter tip sized to operably connect to a conventional catheter tube, a cap on said tip removably mounted to selectively prevent escape of said fluid from said syringe and prevent movement of said piston while said cap is on said tip, and kit further including a disposable pouch for enclosing said filled syringe, said pouch and said filled syringe being sterilized after enclosure of said syringe in said pouch, said device further including a container having a tear-off top labeled with the specific solution in said syringe and enclosing said pouch containing said filled syringe and further including sterilized gloves and an applicator pad.

4,878,904
INTRAVENOUS NEEDLE AND HOLDER ASSEMBLY

James J. Callaway, 300 25th Ave. North, Nashville, Tenn. 37203

Filed Jun. 16, 1987, Ser. No. 62,584
Int. Cl.^{4} N61M *5/00*
U.S. Cl. 604—273 12 Claims



1. an intravenous needle and holder assembly having an outer case, an intravenous needle for receipt in the outer case with at least a part of the needle projecting from a forward end of the case, and adjustment means attached to a back end of the needle for selectively establishing an insertion orientation of the assembly having a substantially rigified junction between the needle and the case effectively preventing lateral movement of the case, relative to the needle, and an administration orientation of the assembly having a flexible junction between the needle and the case allowing lateral movement of the case relative to the needle.

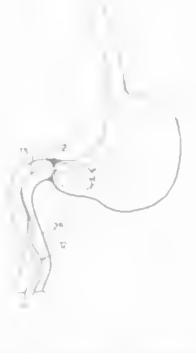
4,878,905
GASTROINTESTINAL MODULE: A NONSURGICAL IMPLANT

Karl G. Blass, University of Regina, Regina, Saskatchewan, Canada (S4S 0A2)

Continuation of Ser. No. 11,476, Feb. 5, 1987, abandoned. This application Aug. 10, 1988, Ser. No. 230,686

Claims priority, application United Kingdom, Feb. 7, 1986, 8603099

Int. Cl.^{4} A61K *9/22;* A61M *31/00*
U.S. Cl. 604—891.1 12 Claims

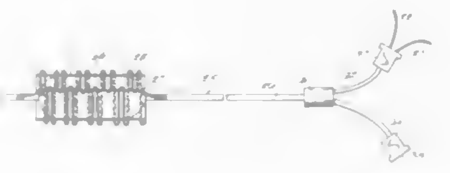


1. A gastrointestinal module comprising in combination a collapsible gastric anchor component including a flexible cavity-wall gastric engaging member and a plurality of flexible, resilient ribs extending upwardly therefrom converging to a common apex, an intestinal payload component containing releasable medicaments for altering the biochemical process within the bowel, tether means secured to the anchor component only adjacent said apex and extending downwardly therefrom through and unconnected to said gastric-cavity wall engaging member to the payload component connected to and supporting said payload component from said anchor component, and means maintaining said anchor component in a collapsed condition until implanted.

4,878,906
ENDOPROSTHESIS FOR REPAIRING A DAMAGED VESSEL

Peer Lindemann, West Bend, and Victor M. Haughton, Dousman, both of Wis., assignors to Servetus Partnership, Milwaukee, Wis.

Division of Ser. No. 843,992, Mar. 25, 1986, abandoned. This application Jun. 6, 1988, Ser. No. 202,562
Int. Cl.^{4} A61F *2/06;* A61B *17/04*
U.S. Cl. 623—1 4 Claims



1. An apparatus for repairing a damaged area of a body vessel, comprising:

a resilient sleeve adapted for placement within the vessel and having a length sufficient to bridge the damaged area of said vessel, said sleeve being radially collapsible to a collapsed condition and capable of thereafter expanding to its original uncollapsed condition, said sleeve having an outside diameter sufficient to form an interference fit between the outer wall of the sleeve and the inner wall of the vessel throughout substantially the entire length of the sleeve;

percutaneous insertion means for inserting the sleeve into the body vessel, said insertion means including a thin walled sheath for retaining said sleeve in its collapsed condition against radially outward pressure exerted thereby during placement of said sleeve within said vessel, said insertion means being removable after placement of said sleeve within said vessel;

said thin walled sheath being provided at the end of an elongated flexible catheter adapted for percutaneous placement within said vessel for transporting said sleeve to the location of the damaged area of said vessel, said catheter and sheath being removable from said vessel while said sleeve is retained at the location of the damaged area of said vessel for allowing said sleeve to return to its original unexpanded condition upon withdrawal of said catheter and sheath; and

collapsing means for collapsing said sleeve, comprising a thread adapted to be looped about the circumference of said sleeve throughout substantially the entire length of said sleeve, and to be tightened about said sleeve so as to collapse said sleeve onto said catheter for subsequent insertion of said sleeve into said thin walled sheath.

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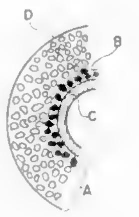
4,878,907
SYNTHETIC VASCULAR PROSTHESIS

Masao Okada, 4-48, Soden-Higashi-cho, Gifu-shi, Gifu; Kazuhiko Sakai, 1-3, Ozaki-Nishi-machi, Kakamigahara-shi, Gifu; Haruo Kimura, 28, Shimohonmachi, Kasamatsu-cho, Hashima-gun, Gifu, and Yoshito Ikada, 2-182, Hirookadani, Gokanosho, Uji-shi, Kyoto, all of Japan

Filed Nov. 6, 1987, Ser. No. 117,696
Claims priority, application Japan, Nov. 10, 1986, 61-265578
Int. Cl.⁴ A61F *2/06*
U.S. Cl. 623—1 7 Claims



1. A synthetic vascular prosthesis having a compliance close to that of a natural blood vessel, consisting essentially of:

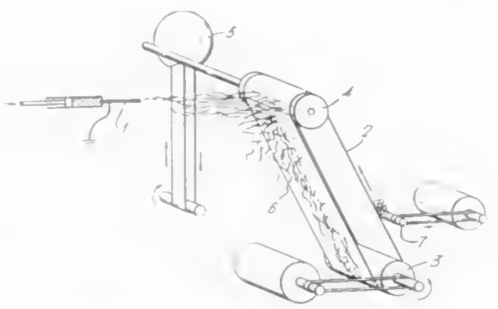
a hollow tubular base member formed of an elastomer material and having formed throughout a wall thereof a multitude of continuous pores; and

a hydrogel layer formed on the inner surface of said base member, the outer portion of said hydrogel layer being partially embedded in the inner portion of said base member at said pores to thereby achieve anchoring adhesion between said hydrogel layer and said base member, and said hydrogel layer having a smooth inner surface.

4,878,908
FIBRILLAR PRODUCT

Graham E. Martin; Ian D. Cockshott, both of Runcorn, and Francis J. T. Fildes, Macclesfield, all of England, assignors to Imperial Chemical Industries PLC, London, England

Continuation of Ser. No. 14,114, Feb. 4, 1987, abandoned, which is a continuation of Ser. No. 824,944, Feb. 3, 1986, abandoned, which is a continuation of Ser. No. 728,458, May 1, 1985, abandoned, which is a continuation of Ser. No. 547,451, Oct. 31, 1983, abandoned. This application Jun. 1, 1988, Ser. No. 203,546
Claims priority, application United Kingdom, Aug. 5, 1974, 7434338
Int. Cl.⁴ A61F *2/06*
U.S. Cl. 623—1 9 Claims

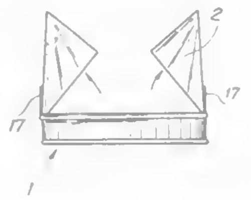


1. A prosthetic device comprising a tube of vascular diameter said tube comprising an electrostatically spun mat of fibres of diameter 0.1 to 25 microns of a biologically acceptable polymeric material which is selected from the group consisting of polyurethane, polyamide or polyacrylonitrile, and fibres adjacent the bore of the tube having a disposition substantially parallel to the inner surface of the tube, said mat having a thickness of 0.5 mm to 5 mm.

4,878,909
HIGH EFFICIENCY CARDIAC VALVE

Roberto Parravacini, Viale Reiter, 51, 41100 Modena, Italy

Filed Sep. 27, 1988, Ser. No. 249,947
Claims priority, application Italy, Oct. 6, 1987, 22167 A/87
Int. Cl.⁴ A61F *2/24*
U.S. Cl. 623—2 3 Claims

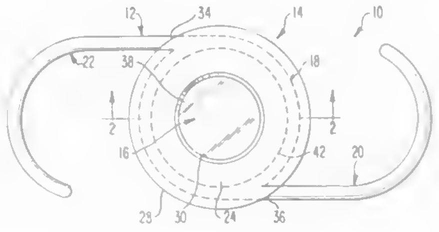


1. A high efficiency artificial cardiac valve, comprising an annular body and valve members, said annular body consisting of an outer ring member and an inner ring member coupled to one another, said inner ring member, at one axial end thereof, defining a projecting rim therein there are formed pivot seat means of said valve members and a bearing surface, said outer ring member defining a flanged rim and a closure surface, said outer ring member and inner ring member being arranged with a concentrical and coaxial relationship with respect to one another, said pivot seat means being formed in a portion of said projecting rim of said inner ring member, said inner ring member being split into two pieces and said seat being closed.

4,878,910
INTRAOCULAR LENS ASSEMBLY

Jeffrey E. Koziol, 1211 S. Arlington Heights Rd., Arlington Heights, Ill. 60005, and Gholam A. Peyman, 123 Walnut St., New Orleans, La. 70118

Filed Jun. 13, 1988, Ser. No. 205,640
Int. Cl.⁴ A61F *2/16*
U.S. Cl. 623—6 26 Claims



24. An intraocular lens assembly, the combination comprising:

an optical lens;

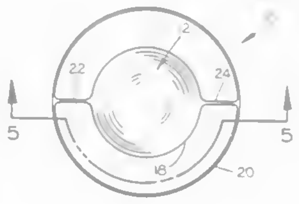
a resilient housing having an anterior wall with an aperture therein and a posterior wall, said optical lens being received in said housing and located between said anterior and posterior walls; and

a pair of support arms extending from said resilient housing, said pair of support arms extending into said housing.

4,878,911
FLEXIBLE ONE-PIECE POSTERIOR CHAMBER LENS

Aziz Y. Anis, 7531 N. Hampton, Lincoln, Nebr. 68506

Continuation of Ser. No. 67,163, Jun. 29, 1987, abandoned, which is a continuation-in-part of Ser. No. 44,753, May 1, 1987, Pat. No. 4,804,361, and a continuation-in-part of Ser. No. 201,388, May 17, 1988, which is a continuation of Ser. No. 624,232, Jun. 25, 1984, abandoned. This application Sep. 19, 1988, Ser. No. 248,236
Int. Cl.⁴ A61F *2/16*
U.S. Cl. 623—6 6 Claims



1. A one-piece intraocular lens implant, comprising:

a flexible, substantially ring-shaped position fixation member having a diameter of between 8.0 and 13.0 millimeters wherein the fixation member, after implantation of the lens implant, engages the capsular bag for 360 degrees;

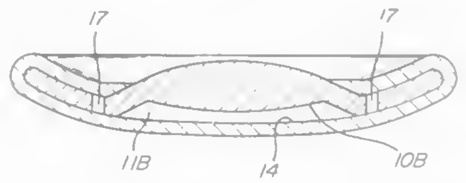
a lens body having a diameter of between 4.0 and 8.0 millimeters, but less than said position fixation member and being positioned within said position fixation member; and

connection means connecting said lens body with said position fixation member, including no more than two members which extend oppositely from said lens body, said connection means being adapted to permit compression of opposing sides of said fixation member intermediate said post members inwardly to the lens body.

4,878,912
FOLDABLE INTRAOCULAR DISC LENS

Lawrence D. Castleman, 1201 Water Cliff Dr., Bloomfield Hills, Mich. 48013

Filed Nov. 9, 1988, Ser. No. 269,189
Int. Cl.⁴ A61F *2/16*
U.S. Cl. 623—6 20 Claims



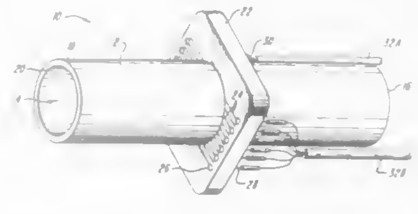
1. A flexible intraocular polymeric disc lens that is foldable for intercapsular insertion into a surgical incision of an aphakic capsular sac and is unfoldable within the sac for vision-enabling implantation therein in normal lens-oriented relation parallel to the iris plane, comprising:

a substantially circular disc body having an anterior face and a posterior face, the disc body including a central optic portion and a unitary forwardly dished rim that is circumferentially coextensive with the inner lateral dimensions of said sac so as to afford autocentration of the lens when implanted, the posterior surface of said rim of the unfolded disk body being extended forwardly at a rim angle with respect to the plane of the central optic portion and being axially spaced apart from the posterior surface of said optic portion such that when the disc lens is folded, implanted centrally in the sac and unfolded the rim posterior surface is in coextensive annular contact with the similar forwardly angulated inner surface of the posterior capsule of the sac and the posterior optic surface is axially spaced away from the posterior capsule thereby providing a behind-the-lens cavity within the rim as a site for postoperative corrective laser surgery behind the lens.

4,878,913
DEVICES FOR NEURAL SIGNAL TRANSMISSION

Patrick Aebischer; Robert F. Valentini, and Pierre M. Galletti, all of Providence, R.I., assignors to Pfizer Hospital Products Group, Inc., New York, N.Y.

Filed Sep. 4, 1987, Ser. No. 93,371
Int. Cl.⁴ A61F *2/04, 2/72*
U.S. Cl. 623—12 16 Claims



1. A device for transmitting neural signals from a proximal stump of a transected nerve to a prosthetic apparatus, said transmission device comprising:

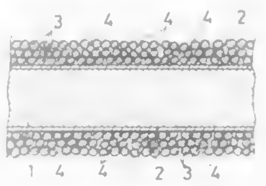
a microelectrode capable of sensing electrical signals from a nerve and transmitting said signals to said prosthetic apparatus; and

a guidance channel disposed about said microelectrode, comprising a tubular, semipermeable membrane and having a capped distal end and a proximal end which defines an opening adapted to receive a proximal stump of a transected nerve, whereby said channel promotes the growth of said stump, such that an electrical connection between said transected nerve and said microelectrode can be obtained.

4,878,914
CERAMIC PROSTHESIS FOR LIVING BODY & METHOD OF MAKING THE SAME

Takeru Miwa, and Iwao Noda, both of Shiga, Japan, assignors to Kyocera Corporation, Kyoto, Japan

Continuation of Ser. No. 758,101, Jul. 23, 1985, abandoned. This application Jul. 1, 1988, Ser. No. 214,874
Claims priority, application Japan, Jul. 23, 1984, 59-153582
Int. Cl.⁴ A61F *2/28, 2/30*
U.S. Cl. 623—16 13 Claims



1. A prosthesis, comprising:

a ceramic substrate;

a ceramic layer formed of ceramic particles said layer comprising a mixture of a first group of ceramic particles and a second group of ceramic particles, the first group of ceramic particles having a mean diameter within the range of 250 to 350μ, the second group of ceramic particles having a mean diameter within the range 1,000 to 1,500μ, the ceramic layer also having interconnected gaps formed

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between substantially all of the ceramic particles, the gaps having a mean size less than the mean diameter of the particles; and

a layer of sintered ceramic bonding the layer of ceramic particles to the ceramic substrate, the interconnected gaps of the ceramic layer forming a network into which bone tissue may grow.

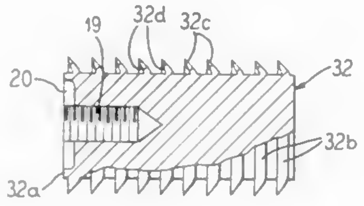
4,878,915
SURGICAL PROSTHETIC IMPLANT FACILITATING VERTEBRAL INTERBODY FUSION

John W. Brantigan, 2108 Bramblewood La., Fremont, Nebr. 68025

Continuation of Ser. No. 95,461, Sep. 11, 1987, abandoned, which is a continuation-in-part of Ser. No. 5,785, Jan. 22, 1987, Pat. No. 4,743,256, which is a continuation of Ser. No. 784,112, Oct. 4, 1985, abandoned. This application Jan. 4, 1989, Ser. No. 293,578

Int. Cl.⁴ A61F *2/44, 5/04*

U.S. Cl. 623—17 9 Claims



1. A prosthetic plug implant for forming a rigid transverse strut between opposed prepared posterior to anterior transversely extending laterally spaced channels in faces of adjacent vertebrae of a vertebral column to maintain the disc space therebetween which comprises at least a pair of laterally spaced side-by-side rigid inert plugs sized and shaped to fit the prepared channels in the faces of the vertebrae and having roughened surfaces on the periphery thereof, said roughened surfaces having irregularities to interlock with the bone of the prepared channels and recesses for receiving bone to facilitate bone ingrowth, and said plugs each having an end face with tool receiving and mounting means extending internally of the plug to secure each plug endwise on the end of a tool for inserting the plug endwise transversely of the axis of the vertebral column in the prepared channels and to accommodate removal of the tool from the plug after insertion.

4,878,916
PROSTHETIC CUPULE

Jean-Luc Rhenter, 11, rue de l'Annonciade, 69001 Lyon, and Jean Collomb, L'Olagnier, 26800 Partes-Les-Valence, both of France, assignors to Jean-Luc Rhenter; Jean Collomb and Jacques Bejui, all of, France

Continuation of Ser. No. 124,946, Nov. 3, 1987, abandoned. This application Jan. 19, 1989, Ser. No. 300,173

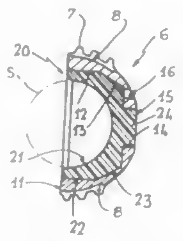
Int. Cl.⁴ A61F *2/34*

U.S. Cl. 623—18 9 Claims

1. A prosthesis cupule, comprising:

a metallic support cupule for fixing to a bone, and a friction cupule of plastic material having an internal surface in the form of a concave approximate semi-sphere to fit over a spherical head of a pin, an axis of said semi-spherical surface being normal to the central plane defining the extent of the approximately semi-spherical surface, and an external surface comprising at least one surface parallel to said axis, the coefficient of expansion of the plastic material constituting the friction cupule is at 20° C. sufficiently greater than that of the metal constituting the support cupule, so that the expanded friction cupule is compressed and tightly held within the support cupule at body temperature, that is at about 37° C.,

said metallic support cupule having an internal cavity for receiving the external face of the friction cupule;



and wherein at body temperature, said friction cupule expands and is compressed against said internal cavity and tightly held therein, thereby providing the sole engagement between said friction and metallic support cupules.

4,878,917
MODULAR ASSEMBLY FOR A SHAFT PROSTHESIS

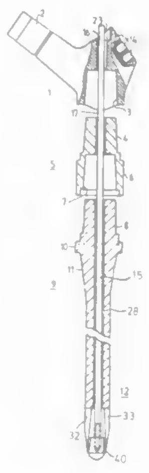
Curt Kranz, and Emmanuel Anapliotis, both of Berlin, Fed. Rep. of Germany, assignors to Mecron medizinische Produkte GmbH, Berlin, Fed. Rep. of Germany

Filed Apr. 23, 1987, Ser. No. 41,378

Claims priority, application Fed. Rep. of Germany, Apr. 25, 1986, 8611697[U]

Int. Cl.⁴ A61F *2/30*

U.S. Cl. 623—18 6 Claims



1. A modular assembly for a shaft prosthesis which comprises:

(a) a head part,

(b) an end part, one of said head part and end part having a conical protrusion and the other of said head part and end part having a conical bore, and

(c) at least one intermediate part engagable with both said protrusion and said bore of said head part and end part and disposed between said parts,

(d) said head part and said at least one intermediate part each having an aligned through bore, said end part having a bore with releasable engaging means for transmitting a force in the axial direction along said bore, the bores all being aligned axially relative to one another when said parts have been joined together, and

(e) a tension rod extending through said aligned bore of each said part having an engaging element adapted to be engagable with said releasable engaging means for releasable engagement therewith, said tension rod projecting beyond said head part when said head and end parts have been joined together, said tension rod having a region of reduced cross section designed to break upon excessive tightening of said tension rod, the tensile strength of said region corresponding to a force that is sufficient to seat the connecting cones of said head, end and at least one intermediate part in such a manner that in the implanted state they are secured against loosening.

4,878,918
MECHANICALLY FIXED ACETABULAR UNIT FOR PROSTHESES AND IMPLANTATION DEVICE FOR FIXING IT INTO THE COTYLOID CAVITY

Gábor Tari, Harsfa u. 16, 6640 Csongrád; Zoltán Badó, Ifjuság sétány 12, 6600 Szentes, and Imre Juhász, Felszabadulás u. 61/a, 6800 Hódmezovásárhely, all of Hungary

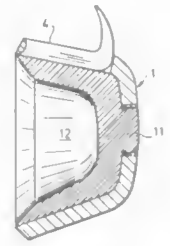
PCT No. PCT/HU85/00062, § 371 Date Jan. 28, 1987, § 102(e) Date Jan. 28, 1987, PCT Pub. No. WO86/05679, PCT Pub. Date Oct. 9, 1986

PCT Filed Nov. 5, 1985, Ser. No. 2,685

Claims priority, application Hungary, Mar. 29, 1985, 1186/85

Int. Cl.⁴ A61F *2/32*

U.S. Cl. 623—22 12 Claims



1. A mechanically fixable acetabular unit for prostheses comprising:

(a) an acetabular basket made of biocompatible material having an open face, a curved base and walls defining an interior space;

(b) cutouts defined by said walls of said acetabular basket;

(c) L-shaped anchors, having a longer and a shorter shank, positioned within said cutouts in such a manner that said shorter shank is at the portion of the cutout nearest said curved base and said shorter shank is formed as a sharp pointed claw, whereby said L-shaped anchors pivot, said pointed claw on each anchor thus engaging a bone;

(d) a threaded bore defined by said curved base of said acetabular basket; and

(e) an acetabular basket insert comprising:

  (i) insert side walls having the same shape as the walls of said acetabular basket defining said interior space;

  (ii) an insert base having the same shape of the curved base of said acetabular basket defining said interior space;

  (iii) a threaded pin, dimensioned, configured and proportioned to matingly engage said threaded bore defined by said curved base, said threaded pin located on said insert base; and

  (iv) a cavity having a hemispherical surface, said inset maintaining said anchors in a pivoted, bone engaging position when said insert is placed in said acetabular basket.

4,878,919
ARTIFICIAL HIP ENDO-LIMB

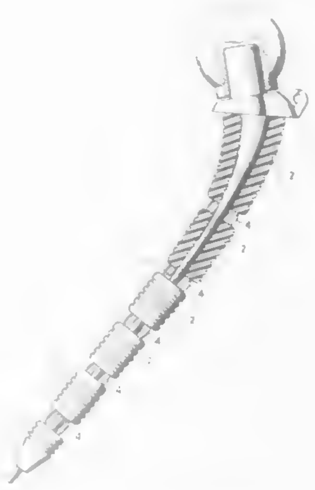
Rudolf Pavlansk, and Miroslay Petrt l, both of Prague, Czechoslovakia, assignors to Ceske Vysoke Uceni Technicke, Prague, Czechoslovakia

Continuation-in-part of Ser. No. 676,573, Nov. 30, 1984, abandoned. This application Dec. 9, 1986, Ser. No. 939,643

Claims priority, application Czechoslovakia, Nov. 30, 1983, 8930-83

Int. Cl.⁴ A61F *2/36*

U.S. Cl. 623—23 9 Claims



1. An improved artificial hip endo-limb having a spherical joint supported by a metal shaft for insertion in a bone marrow channel, wherein said shaft is surrounded by substantially cylindrical segments of porous ceramic and said segments are transversely separated by substantially cylindrical elastomeric spacing elements which surround the shaft, and

wherein said shaft is sufficiently elastic so as to accomodate itself to said bone marrow channel.

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4,878,920

PROCESS FOR THE CONTINUOUS DYEING OF INDUSTRIAL NYLON

Ernest J. Russell, Greensboro, and Tanya E. FitzGerald, Fuquay-Varina, both of N.C., assignors to Burlington Industries, Inc.

Filed Apr. 28, 1987, Ser. No. 43,360

Int. Cl.⁴ D06P *00/00*

U.S. Cl. 8—476 **10 Claims**

1. A continuous process for uniformly dyeing high tenacity nylon 6,6 fabrics comprising the sequential steps of:

(a) continuously applying to a high tenacity, highly crystalline nylon 6,6 fabric whose fibers have a breaking tenacity in the range of about 6.0 to about 9.8 g/denier, an aqueous dyebath containing a tinctorial amount of at least one dye the dyebath applied at a temperature of from about 65° C. to about 95° C.;

(b) subjecting the dyed fabric to superheated steam at atmospheric pressure and at a temperatures greater than 100° C. up to 160° C. for a period of time up to 3 minutes sufficient to fix the dye to the fabric; and

(c) washing the dyed fabric to remove any unfixed dye and drying the dyed fabric.

4,878,921

NATURAL BLUE DYE COMPOSITION AND COLORANT USING THE SAME: PREPARED BY REACTING TAURINE AND GENIPIN

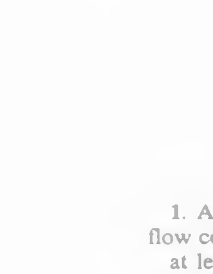
Kunimasa Koga; Shigeaki Fujikawa, and Yuko Fukui, all of Osaka, Japan, assignors to Suntory Limited, Osaka, Japan

Filed Jun. 19, 1987, Ser. No. 65,033

Claims priority, application Japan, Jun. 21, 1986, 61-145651

Int. Cl.⁴ A23L *1/27;* **C09B** *61/00*

U.S. Cl. 8—646 5 Claims



1. A blue dye composition that is prepared by reacting genipin with taurine at a temperature between 40 and 100° C. and at a pH between 4 and 9 and which, when analyzed by high-pressure chromatography, produces a chromatogram containing the following six principal components, A to F, which respectively have approximate retention times of 1.6 min., 2.3 min., 2.7 min., 2.9 min., 3.6 min., and 4.4 min., with components A, B and C each having an absorption maximum (λ_{max}) of about 592 nm, component D with λ_{max} of about 602 nm, component E with λ_{max} of about 614 nm, and component F with λ_{max} of about 627 nm, as measured in 40% ethanol.

4,878,922

FIREPLACE STARTER COMPOSITION

John A. Kaye, Parkersburg, W. Va., assignor to A and A Realty Company, Parkersburg, Va.

Continuation-in-part of Ser. No. 30,254, Mar. 24, 1987, abandoned, which is a continuation-in-part of Ser. No. 920,410, Oct. 20, 1986, abandoned. This application Jul. 26, 1988, Ser. No. 224,446

Int. Cl.⁴ C10L *5/00*

U.S. Cl. 44—502 9 Claims

1. A granular fire initiation composition comprising wood by-products, solid hydrocarbons, liquid fuel, and scent producing materials and particulate ammonium nitrate impregnated with a hydrocarbon.

7. The composition as defined in claim 1 wherein the composition is wrapped in cellophane and packaged in an aluminum tray.

8. The composition as defined in claim 1 wherein the proportions are about:

50% to 70% wood by-products,
10% to 30% solid hydrocarbons,
2% to 8% liquid fuel,
5% to 20% scent producing material, and
2% to 8% hydrocarbon impregnated particulate ammonium nitrate.

4,878,923

APPARATUS FOR REMOVING OIL FROM A COMPRESSED GAS FLOW

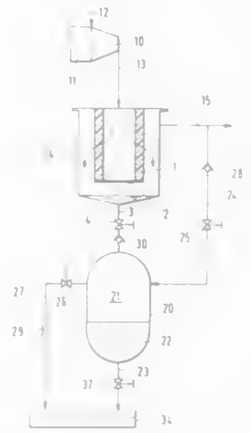
Eduard Muller, Ettenhausen, Switzerland, assignor to Maschinenfabrik Sulzer-Burckhardt AG, Winterthur, Switzerland

Filed Jan. 25, 1989, Ser. No. 301,626

Claims priority, application Switzerland, Feb. 25, 1988, 00707/88

Int. Cl.⁴ B01D *46/00*

U.S. Cl. 55—185 6 Claims



1. An apparatus for removing oil from a compressed gas flow comprising

at least one separator having an inlet to receive a flow of compressed gas, means for separating oil from the compressed gas flow, a gas outlet for expelling a flow of gas and an oil outlet for expelling a flow of separated oil; and

a vessel below said separator having an oil inlet selectively connected to said oil outlet of said separator to receive a flow of oil therefrom, a gas inlet selectively connected to said gas outlet of said separator, a gas outlet for expelling gas, a restrictor connected to said gas outlet of said vessel, and an oil outlet for selectively discharging oil therefrom.

4,878,924

INTEGRATED SEPARATOR FOR SOLID AND GAS CONTAMINANTS IN ENGINE OIL

Hisashi Yano; Hiroyuki Ibara, and Junsuke Yabumoto, all of Kanagawa, Japan, assignors to Mitsubishi Oil Co., Ltd., Tokyo, Japan

Filed Jul. 22, 1988, Ser. No. 223,047

Claims priority, application Japan, Jul. 30, 1987, 62-188976; May 17, 1988, 63-118180

Int. Cl.⁴ B01D *19/00*

U.S. Cl. 55—204 8 Claims

1. A separator device for removing both solid and gaseous contaminants from engine oil or the like, comprising: a wall defining a vortex flow chamber, a plurality of small pores being formed in said wall to permit oil stripped of gaseous contaminants to pass therethrough; an oil introduction pipe for

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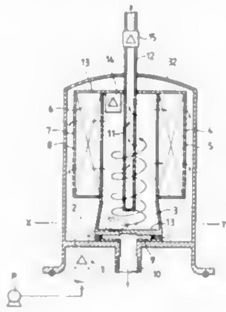
introducing oil into said vortex flow chamber in a tangential direction of said chamber; an oil filter system receiving oil passing through said pores in said wall defining said vortex flow chamber, said oil filter system having a plurality of pores for passing oil filtered of solid contaminants in said oil filter system; a gas removal pipe extending into said vortex flow chamber and disposed substantially at an axial center of said vortex flow chamber, a plurality of small pores being formed in said gas removal pipe for allowing gas-rich oil to pass therethrough; and oil outlet passage means for passing oil filtered by said filter system.



4,878,925
APPARATUS FOR REMOVING FOREIGN SUBSTANCES IN GAS

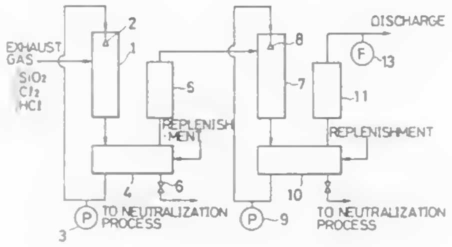
Hisao Kojima, 3-53-21, Shioiri-cho, Tsurumi-ku, Yokohama-shi, Kanagawa, Japan

Filed Jan. 20, 1988, Ser. No. 146,025

Claims priority, application Japan, Jan. 22, 1987, 62-11227

Int. Cl.⁴ B01D *47/00*

U.S. Cl. 55—235 26 Claims



1. An apparatus for removing foreign substances in a gas, comprising:
- a plurality of right-handed elements, each of the elements having a passage tube through which the gas flows, a spiral blade twisted in the clockwise direction and dividing the inside of the passage tube into a plurality of gas passages, and an auxiliary porous body connected to the passage tube;
- a plurality of right-handed elements, each of the elements having a passage tube through which the gas flows, a spiral blade twisted in the clockwise direction and dividing the inside of the passage tube into a plurality of gas passages, and an auxiliary porous body connected to the passage tube;
- a plurality of left-handed elements, each of the elements having a passage tube through which the gas flows, a spiral blade twisted in the counterclockwise direction and dividing the inside of the passage tube into a plurality of gas passages, and an auxiliary porous body connected to the passage tube, the left-handed elements and right-handed elements having arranged alternately with their passage tubes connected;
- injecting means for injecting a liquid into the elements, and collecting means for collecting the liquid passed through the elements.

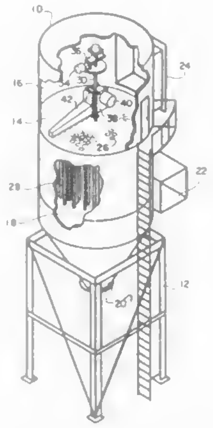
4,878,926
DUST COLLECTOR

Robert L. Goodrich, Charlotte, N.C., assignor to Pneumafil Corporation, Charlotte, N.C.

Filed Aug. 16, 1988, Ser. No. 232,808

Int. Cl.⁴ B01D *41/00*

U.S. Cl. 55—294 6 Claims



1. In a dust collector apparatus that includes a housing and a plurality of filter elements secured to a grid plate for receiving cleaning air through openings in said grid plate, and that includes a blower means having a drive motor integrally secured thereto for providing a continuous flow of cleaning air that is delivered to a plenum means for discharging said cleaning air into said openings in said grid plate, the improvement comprising:
- (a) stanchion means disposed with its extending length arranged generally perpendicular with respect to said grid plate, said stanchion means being mounted in said housing for rotation about the axis of its extending length;
- (b) mounting means for mounting said blower means, said blower means drive motor, said plenum means as a fixed integral unit to said stanchion means for rotation therewith, with said plenum being disposed on one side of said axis of rotation of said stanchion means and having its extending length disposed generally radially with respect to said axis of rotation and with said blower means and said blower means drive motor being disposed on the opposite side of said axis of rotation so that the weight of said blower means and said blower means drive motor will counterbalance at least in part the weight of said plenum means, said blower means having its air discharge end fixed to said plenum means so that air discharged from said blower means travels directly into said plenum means in a flow path that is essentially straight and directed along said extending length of said plenum means; and
- (c) drive means for rotating said stanchion means, said plenum means, said blower means and said blower means motor as an integral unit about said axis rotation.

4,878,927
FILTERING SEPARATOR FOR PARTICLES AND HARMFUL GASES FROM UNREFINED GASES

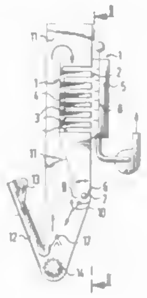
Adolf Margraf, Am Schleplingsbach 46, D-3060 Stadthagen, Fed. Rep. of Germany

Filed Oct. 21, 1987, Ser. No. 111,781

Claims priority, application Fed. Rep. of Germany, Oct. 22, 1986, 3635921; Nov. 21, 1986, 3639824

Int. Cl.⁴ B01D *46/00*

U.S. Cl. 55—302 10 Claims



1. A filtering separator comprising a housing, a perforated partition wall in said housing which subdivides the housing into a filtering space fed with an unrefined gas, and a clean gas space, means defining an unrefined gas guiding space disposed adjacent said filtering space, filtering elements on said partition wall, means for cleaning said filtering elements, a dust collecting trough, a dust conveyor associated with said trough, wherein said dust collecting trough traverses said unrefined gas guiding space and is provided at one end with an opening to a lower part of said unrefined gas guiding space, said trough being open to said filtering space, whereby the dust settled on the surface of said filtering elements during cleaning the gas being partially removed and returned to said filtering elements by a flow of unrefined gas, and means arranged in said lower part of said unrefined gas guiding space for mechanically loosening and crushing the dust which is removed by said filtering elements from the unrefined gas in order to make the dust capable of being carried with the unrefined gas back to said filtering elements in said filtering space.

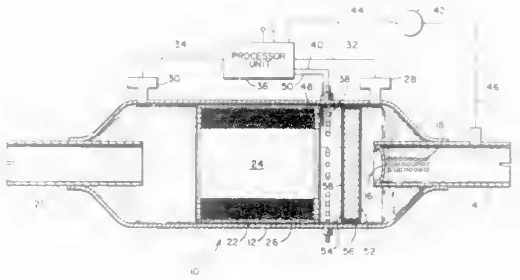
4,878,928
APPARATUS FOR INCREASING REGENERATIVE FILTER HEATING ELEMENT TEMPERATURE

Wayner M. Wagner, Apple Valley, and Douglas E. Flemming, Rosemount, both of Minn., assignors to Donaldson Company, Inc., Minneapolis, Minn.

Filed Jul. 28, 1988, Ser. No. 225,477

Int. Cl.⁴ B01D *46/00*

U.S. Cl. 55—466 1 Claim



1. Filter apparatus for reducing particulates from exhaust gases from an engine, comprising:

a housing having a chamber with an inlet, an outlet, and a fluid flow path leading from said inlet upstream to said outlet downstream;

means, within said chamber along said fluid flow path, for filtering the particulates from said exhaust gases, said filtering means including a ceramic filter element having an inlet end;

means for regenerating said ceramic filter element, said regenerating means including an electrical heating element with first and second sides, said heating element being supported by said housing, said heating element having a surface temperature;

a porous ceramic disc between said inlet to said chamber and said heating element, said disc having a side facing said heating element, said facing side including a black coating thereon, said disc being spaced from said heating element, said disc being supported by said housing;

said regenerating means including means for blowing air through said porous ceramic disc and said heating element toward the inlet end of said filter element tom initiate and maintain regenerative combustion; and

means for controlling said regenerative means.

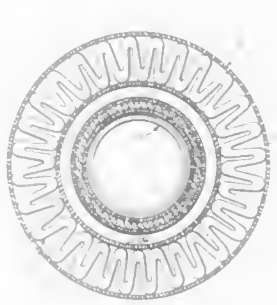
4,878,929
LIQUID-GAS SEPARATOR

Kenneth M. Tofsland; Jeffrey S. Morgan; Eric G. Grytten Holm, and Tadeusz Jaroszczyk, all of Stoughton, Wis., assignors to Nelson Industries Inc., Stonghton, Wis.

Filed Feb. 1, 1989, Ser. No. 304,707

Int. Cl.⁴ B01D *46/12*

U.S. Cl. 55—486 12 Claims



1. A gas liquid separator, comprising a casing having an inlet to receive a gas containing entrained liquid and having an outlet, first stage filter means disposed within the casing, second stage filter means disposed within the casing and located downstream of said first stage filter means, said first stage filter means including a coalescor section composed of unwoven fibrous material having an average fiber diameter of 0.5 to 50 microns and having a Frazier permeability of 3 to 100, said first stage filter means also including a disloader section disposed downstream and in engagement with said coalescor section and composed of a plurality of contiguous layers of synthetic fibers coated with a resin having a low surface energy, said disloader section having a Frazier permeability of 10 to 600, said second stage filter means consisting of a mass of filter media having a greater permeability than said coalescor section.

4,878,930
FILTER CARTRIDGE

James L. Manniso, Newark; Eugene W. Sieber, Bear, and Glenn R. Voshell, Newark, all of Del., assignors to W. L. Gore & Associates, Inc., Newark, Del.

Filed Mar. 15, 1984, Ser. No. 589,731

Int. Cl.⁴ B01D *27/06*

U.S. Cl. 55—493 9 Claims

1. An improved gas filter cartridge comprising:
- (a) an inner pleated wire support frame capable of supporting a correspondingly pleated filter medium;

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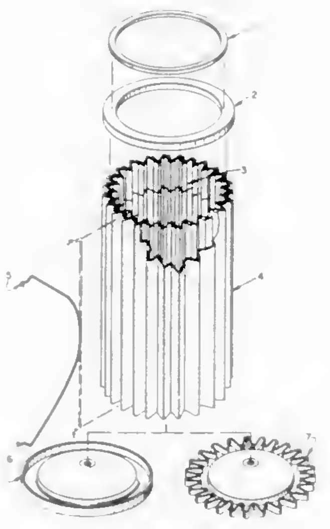
(b) a pleated filter medium supported on said inner wire support frame;
(c) an outer filter medium-support wire stay disposed at the inner apex of each pleat of said filter medium and;



(d) end caps into which the ends of said filter medium pleats, said inner wire support frame, and said outer filter medium-support wires stays are sealed.

4,878,931

TWO STAGE VAPOR RECOVERY SYSTEM

David C. H. Grant, Gainesville, Fla., assignor to Quadrex HPS Inc., Gainesville, Fla.

Filed Aug. 29, 1988, Ser. No. 237,744
Int. Cl.⁴ F25J *3/00*
U.S. Cl. 62—17 **11 Claims**

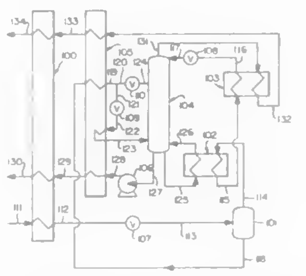
1. A process for removing solvent vapor from an air/solvent vapor mixture comprising the steps of:
(a) conducting the air/solvent vapor mixture through a condenser column;
(b) simultaneously conducting liquid solvent at a temperature above 32° F. countercurrently through the condenser column thereby condensing a portion of the solvent vapor in the air/solvent vapor mixture to form a first condensate;
(c) conducting the air/solvent mixture exiting the condenser column through a stripper column;
(d) simultaneously conducting liquid solvent at a temperature below 32° F. countercurrently through the stripper column thereby condensing substantially all of the solvent vapor in air/solvent vapor mixture exiting the condenser column to form a second condensate.

4,878,932

CRYOGENIC RECTIFICATION PROCESS FOR SEPARATING NITROGEN AND METHANE

Ravindra F. Phade, Getzville, and James R. Handley, Amherst, both of N.Y., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Mar. 21, 1988, Ser. No. 326,727
Int. Cl.⁴ F25J *3/02*
U.S. Cl. 62—24 **15 Claims**



1. A process for separating nitrogen and methane comprising
(A) separating a feed comprising methane and nitrogen into a nitrogen-enriched vapor portion and a methane-enriched liquid, portion;
(B) condensing the nitrogen-enriched vapor portion and introducing resulting condensed nitrogen-enriched vapor into a main column operating within the range of from 15 to 200 psia;
(C) subcooling the methane-enriched liquid portion and dividing resulting subcooled methane-enriched liquid into first and second parts;
(D) introducing the first part into said main column;
(E) at least partially vaporizing the second part by indirect heat exchange with said subcooling methane-enriched liquid portion;
(F) introducing the at least partially nitrogen-enriched vaporized second part into said main column;
(G) separating the condensed vapor portion, subcooled first part, and at least partially vaporized second part by cryogenic rectification within the main column into nitrogen-richer vapor and methane-richer liquid; and
(H) removing nitrogen-richer vapor and methane-richer liquid from the main column.

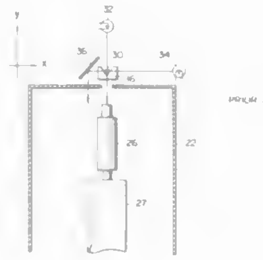
4,878,933

APPARATUS FOR FUSION SPLICING OPTICAL FIBERS

Takeshi Yamada, Sakura; Yasukuni Osato, Narashino; Okosu Watanabe, Chiba; Masao Suzuki, Sakura; Osamu Kawata, and Koushi Ishihara, both of Mito, all of Japan, assignors to Fujikura Ltd. and Nippon Telegraph & Telephone Public Corporation, both of Tokyo, Japan

Continuation of Ser. No. 713,194, Mar. 18, 1985, abandoned.
This application Dec. 16, 1986, Ser. No. 941,563
Claims priority, application Japan, Sep. 1, 1984, 59-183321; Sep. 1, 1984, 59-183322; Jan. 14, 1985, 60-4756
Int. Cl.⁴ C03B *23/207*
U.S. Cl. 65—29 **7 Claims**

1. An apparatus for fusion slicing optical fibers comprising:
posts;
a base supported by said posts;
a pair of V-shaped blocks, and mounting means for moving said blocks on said base in rectilinear X and Y directions defining a plane, said blocks having V-shaped slots adapted for receiving optical fibers the axis of each of which is substantially perpendicular to said plane, and said V-shaped slots being in line with each other;
light source means for emitting light consisting substantially of parallel light rays incident in said X direction;
deflecting means provided above said base for receiving a first group of said light rays prior to its passage through said optical fibers, and for deflecting said first group of light rays to pass through said optical fibers in said Y direction, and said deflecting means also receiving a second, different group of said light rays incident in said X direction after its passage through said optical fibers, and for deflecting said second group of light rays to said Y direction;
a microscope, provided under said base, including means for observing an opposed state of said optical fibers received in said slots, said observing means receiving said first group of light rays deflected to pass through said optical fibers in said Y direction to observe displacement of said optical fibers relative to each other in said X direction, and for receiving said second group of light rays deflected, after passing through said optical fibers, to said Y direction to observe displacement of said optical fibers relative to each other in said Y direction, said observing means including shifting means for adjusting the axis of the microscope along the X direction into alignment, respectively, with the deflected first group of light rays and the deflected second group of light rays; and
means associated with said base for adjusting positions of said optical fibers relative to each other on the basis of an observation by said microscope.

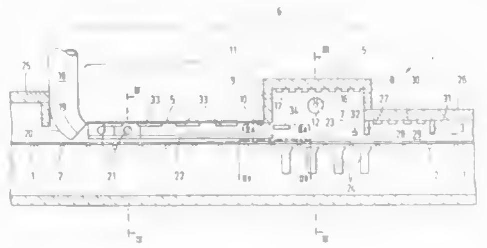


4,878,934

PROCESS AND APPARATUS FOR COATING GLASS

Jean-Francois Thomas, Ottignies; Robert Terneu, Thiméon; Albert Van Cauter, Charleroi, and Robert Van Laethem, Loverval-Gerpinnes, all of Belgium, assignors to Glaverbel, Brussels, Belgium

Continuation of Ser. No. 930,756, Nov. 14, 1986, abandoned.
This application Jan. 19, 1988, Ser. No. 147,551
Claims priority, application United Kingdom, Dec. 20, 1985, 8531424
Int. Cl.⁴ C03C *17/09*
U.S. Cl. 65—60.52 **46 Claims**



1. A process for pyrolytically forming a metal oxide coating on an upper face of a hot glass substrate in sheet or ribbon form, comprising:
conveying the hot glass substrate in a downstream direction along an apparatus having a coating path with an extended coating path length of at least 2 m and including a coating chamber and a passageway defined within the apparatus, the coating path leading beneath the coating chamber and the coating chamber opening downwardly onto the upper face of the hot glass substrate;
introducing oxidizing gas and coating precursor material into a mixing zone of the coating chamber, which coating precursor material is in the form of a volatilizable solution comprised of solvent and a metallic compound, which metallic compound is soluble in the solvent and is pyrolyzable by the hot glass substrate to form a metal oxide coating thereon and which coating chamber is positioned within or adjacent to the upstream end of said passageway;
supplying heat energy to the mixing zone to vaporize the coating precursor material and to maintain the coating precursor material in the vapor phase, wherein the coating precursor material in the vapor phase and oxidizing gas are thoroughly mixed in the mixing zone while exposed to the hot glass substrate but wherein mixing occurs at a height above the hot glass substrate such that metal oxide coating formation commences from and continues from a substantially homogeneous vapor mixture and wherein introduction of the coating precursor material into the mixing zone is made by spraying from a height of at least 50 cm above the level of the upper face of the hot glass substrate; and
causing the substantially homogeneous vapor mixture to flow continuously from the coating chamber along the coating path and in contact with the upper face of the substrate by pressure lowering means.

20. Apparatus for use in pyrolytically forming a metal oxide coating on an upper face of a hot glass substrate in sheet or ribbon form, the apparatus comprising:
conveyor means for conveying the hot glass substrate in a downstream direction along a coating path with an extended coating path length of at least 2 m;
a roof structure defining a coating chamber opening downwardly onto the coating path and a passageway, wherein the coating chamber is positioned within or adjacent to the upstream end of the passageway and comprises a mixing zone;
means for injecting oxidizing gas into the mixing zone;
means for injecting coating precursor material in the form of a volatilizable solution comprised of solvent and a metallic compound, which metallic compound is soluble in the solvent and is pyrolyzable by the hot glass substrate to form a metal oxide coating thereon, into the mixing zone by spraying from a height of at least 50 cm above the level of the upper face of the hot glass substrte;
means for supplying heat energy to the mixing zone to vaporize the coating precursor material and to maintain the coating precursor material in the vapor phase so that the coating precursor material in the vapor phase and the oxidizing gas are mixed to form a coating atmosphere comprising a substantially homogeneous vapor mixture of coating precursor vapor and oxidizing gas, the mixing zone being in communication with the passageway to permit a stream of the coating atmosphere to flow along the passageway from the mixing zone; and
pressure lowering means for causing the coating atmosphere to flow continuously from the coating chamber along the coating path and in contact with the upper face of the substrate.

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SUPPORTING MECHANISM FOR MOULD SIDE PORTIONS IN A GLASSWARE FORMING MACHINE

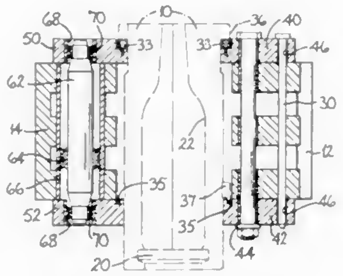
Johann Zsifkovits, Forch, Switzerland, assignor to Emhart Industries Inc., Farmington, Conn.

Filed Dec. 6, 1988, Ser. No. 280,769

Claims priority, application United Kingdom, Dec. 29, 1987, 8730248

Int. Cl.⁴ C03B *9/353*

U.S. Cl. 65—323 2 Claims



1. An individual section glassware forming machine for carrying out glassware forming processes in a mold or molds comprising a plurality of opposing mold supporting portions which when clamped together form at least one mold having a vertical axis, each of said mold supporting portion including
  a top plate including a mold engaging portion which is to be proximate an upper portion of a mold,
  a bottom plate including a mold engaging portion which is to be proximate a lower portion of a mold, and
  a body portion extending between said top and bottom plates,
  means for mounting said top and bottom plates for rotational displacement about a vertical axis so that each of said plates can rotate to bring its mold engaging portion into engagement with a mold including
    vertical shaft means,
    means for mounting said vertical shaft means in said body portion for pivotal displacement about a horizontal axis, and
    bearing means for pivotally interconnecting said top and bottom plates to opposing ends of said vertical shaft means, whereby
  one of said plates can be displaced toward a mold while the other of said plates will be displaced away from a mold so that said plates can automatically compensate for a mold axis which is not precisely vertically oriented.

4,878,936

METHOD TO ENHANCE ROOT NODULATION IN LEGUMES AND INOCULUM PREPARATION THEREFOR

Jo E. Handelsman, and Larry J. Halverson, both of Madison, Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed Jul. 27, 1987, Ser. No. 77,937

Int. Cl.⁴ C05F *11/08;* **C12R** *1/085*

U.S. Cl. 71—7 4 Claims

1. A method for enhancing nodulation in legumes growing in a growing medium comprising the step of placing in the growing medium in the immediate vicinity of the roots of the legume the nodulation of which is to be enhanced an effective quantity of an enhancing bacteria selected from the group consisting of *Bacillus cereus* ATCC 53522, and enhancing mutants thereof.

4,878,937

HERBICIDAL SULFONAMIDES

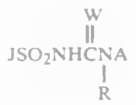
Donald J. Dumas, and Marcus P. Moon, both of Wilmington, Del., assignors to E. I. Du Pont De Nemours and Company, Wilmington, Del.

Division of Ser. No. 926,732, Nov. 4, 1986, Pat. No. 4,752,322, which is a continuation-in-part of Ser. No. 845,703, Apr. 2, 1986, abandoned, which is a continuation-in-part of Ser. No. 733,906, May 14, 1985, abandoned. This application Feb. 12, 1988, Ser. No. 155,962

Int. Cl.⁴ A01N *43/66;* **C07D** *401/12, 411/12, 251/46*

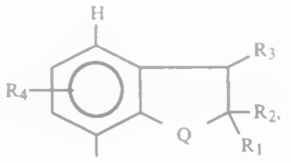
U.S. Cl. 71—90 27 Claims

1. A compound of the formula

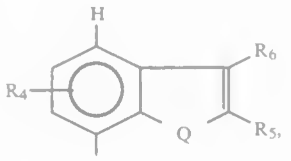


$$JSO_2NH\overset{\overset{W}{\|}}{C}\underset{\underset{R}{|}}{N}A \qquad I$$

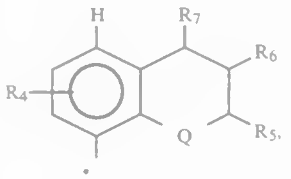
wherein
J is



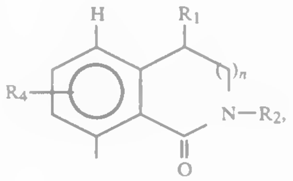
J-1



J-2



J-3



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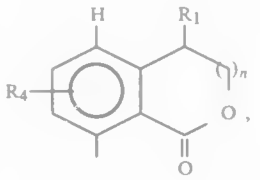

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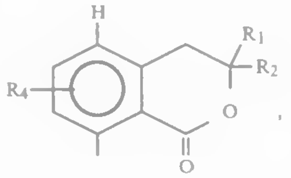
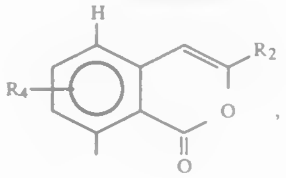
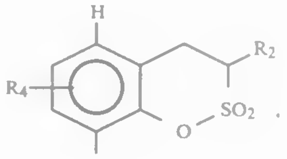


J-6

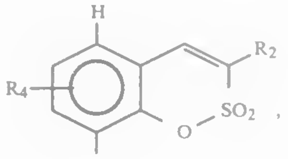
-continued



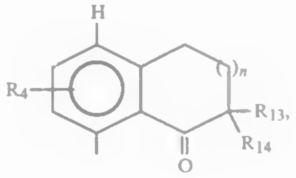
J-7



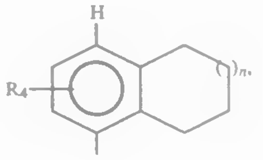
J-8



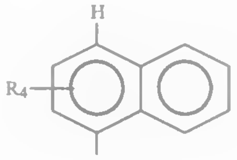
J-9



J-10

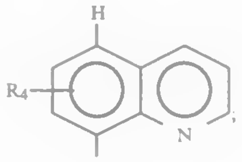


J-11



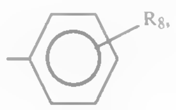
J-12

or

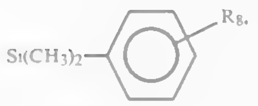


J-13

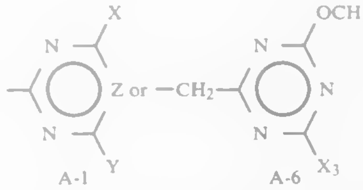
n is 0 or 1;
W is O or S;
Q is O, S, SO or SO_2;
R is H or CH_3;
R_1 is H or CH_3;
R_2 is H or C_1–C_3 alkyl;
R_3 is H or CH_3;
R_4 is C_3–C_6 cycloalkyl, C_5–C_6 cycloalkenyl,



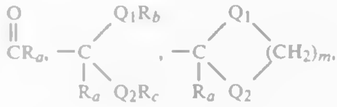
$Si(CH_3)_2(C_1$–C_4 alkyl), $Si(CH_3)_2(C_2$–C_4 alkenyl), $Si(CH_3)_2(C_1$–C_3 alkoxy),

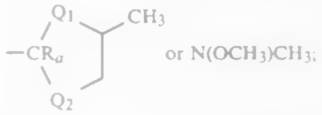


$P(O)(CH_3)_2$, $P(O)(OCH_3)_2$, CN, C_1–C_4 alkylcarbonyl, C_3–C_4 cycloalkylcarbonyl, NR_9R_{10} or C_1–C_2 alkyl substituted with C_3–C_5 cycloalkyl, C_1–C_3 alkoxy, C_1–C_3 haloalkoxy, C_2–C_3 alkenyloxy, C_2–C_3 haloalkenyloxy, C_1–C_3 alkylthio, C_1–C_3 haloalkylthio, C_1–C_3 alkylsulfinyl, C_1–C_3 alkylsulfonyl, C_1–C_3 haloalkylsulfinyl, C_1–C_3 haloalkylsulfonyl, $Si(CH_3)_2(C_1$–C_4 alkyl), NO_2, CN, C_1–C_2 alkylcarbonyl, OH, NR_9R_{10}, $CO_2(C_1$–C_3 alkyl), SCN, $P(O)(OCH_3)_2$ or $SO_2NR_{11}R_{12}$;
R_5 is H or C_1–C_2 alkyl;
R_6 is H or CH_3;
R_7 is H or CH_3;
R_8 is H, F, Cl, Br, CH_3, OCH_3 or SCH_3;
R_9 is H or C_1–C_3 alkyl;
R_{10} is H or C_1–C_3 alkyl; or
R_9 and R_{10} may be taken together to form $(CH_2)_4$, $(CH_2)_5$ or $CH_2CH_2OCH_2CH_2$;
R_{11} and R_{12} are independently H or C_1–C_3 alkyl;
R_{13} is H, C_1–C_3 alkyl, Cl or Br;
R_{14} is H, CH_3, Cl or Br;
A is



X is H, C_1–C_4 alkyl, C_1–C_4 alkoxy, C_2–C_4 halo-alkoxy, C_1–C_4 haloalkyl, C_1–C_4 haloalkylthio, C_1–C_4 alkylthio, C_2–C_5 alkoxyalkyl, C_2–C_5 alkoxyalkoxy, amino, C_1–C_3 alkylamino, di(C_1–C_3 alkyl)amino or C_3–C_5 cycloalkyl;
Y is H, C_1–C_4 alkyl, C_1–C_4 alkoxy, C_2–C_4 halo-alkoxy, C_1–C_4 haloalkylthio, C_1–C_4 alkylthio, C_2–C_5 alkoxyalkyl, C_2–C_5 alkoxyalkoxy, amino, C_1–C_3 alkylamino, di(C_1–C_3 alkyl)amino, C_3–C_4 alkenyloxy, C_3–C_4 alkynyloxy, C_2–C_5 alkylthio alkyl, C_2–C_5 alkylsulfinylalkyl, C_2–C_5 alkyl sulfonylalkyl, C_1–C_4 haloalkyl, C_2–C_4 alkynyl, azido, cyano,





m is 2 or 3;
Q_1 and Q_2 are independently O or S;
R_a is H or C_1–C_3 alkyl;
R_b and R_c are independently C_1–C_3 alkyl;
Z is N; and
X_3 is CH_3 or OCH_3;

and their agriculturally suitable salts; provided that
  (a) when W is S, then R is H, A is A-1, and Y is CH_3, OCH_3, OC_2H_5, CH_2OCH_3, C_2H_5, CF_3, SCH_3, $OCH_2CH{=}CH_2$, $OCH_2C{\equiv}CH$, $OCH_2CH_2OCH_3$, $CH(OCH_3)_2$ or

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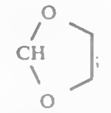


(b) when R_1 is CH_3, then n is O;

(c) when J is J-6, then R_1 and R_2 are not both H;

(d) when the total number of carbons of X and Y is greater than four, then the number of carbons of R_4 must be less than or equal to three;

(e) when J is J-12, then R_4 is other than C_1–C_4 alkylcarbonyl; and

(f) when J is J-7 or J-9, then R_4 is other than CN.

10. An agriculturally suitable composition for controlling the growth of undesirable vegetation comprising an effective amount of a compound of claim 1 and at least one of a surfactant, solid or liquid diluent.

4,878,938

HERBICIDAL SULFONAMIDES

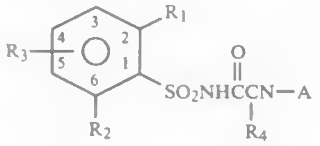
Mary A. Hanagan, Blue Bell, Pa., assignor to E. I. Du Pont De Nemours and Company, Wilmington, Del.

Division of Ser. No. 78,154, Jul. 27, 1987, Pat. No. 4,764,204, which is a division of Ser. No. 841,109, Mar. 18, 1986, Pat. No. 4,705,556, which is a division of Ser. No. 628,259, Jul. 12, 1984, Pat. No. 4,604,131, which is a continuation-in-part of Ser. No. 520,801, Aug. 5, 1983, abandoned. This application May 18, 1988, Ser. No. 196,629

Int. Cl.⁴ C07D *239/69, 403/12, 401/12;* **A01N** *43/54*

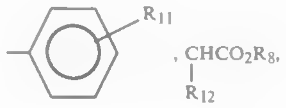
U.S. Cl. 71—92 27 Claims

1. A compound of the formula:



wherein

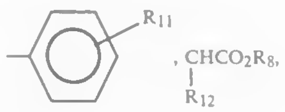
R_1 is $S(O)_nR_5$, NR_6R_7, CO_2R_8, $SO_2NR_9R_{10}$,



, $\underset{\substack{|\\ R_{12}}}{\mathrm{CHCO_2R_8}}$,

OSO_2R_{13}, CH_2OR_{14} or Q;

R_2 is $S(O)_mR_5$, NR_6R_7, CO_2R_8, $SO_2NR_9R_{10}$,



, $\underset{\substack{|\\ R_{12}}}{\mathrm{CHCO_2R_8}}$,

OSO_2R_{13}, CH_2OR_{14} or Q;

R_3 is H, Cl, F, Br, CH_3, OCH_3 or CF_3;

R_4 is H or CH_3;

R_5 is C_1–C_3 alkyl;

R_6 and R_7 are independently CH_3 or CH_2CH_3;

R_8 is C_1–C_3 alkyl, $CH_2CH{=}CH_2$, CH_2CH_2Cl or $CH_2CH_2OCH_3$;

R_9 is CH_3 or OCH_3;

R_{10} is C_1–C_3 alkyl;

R_{11} is H, Cl, Br, F, CH_3 or OCH_3;

R_{12} is H or CH_3;

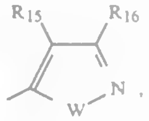
R_{13} is C_1–C_3 alkyl or CF_3;

R_{14} is C_1–C_3 alkyl or CF_2H;

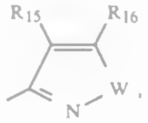
n is 0, 1 or 2;

m is 0 or 1;

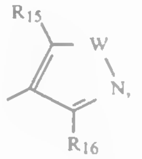
Q is



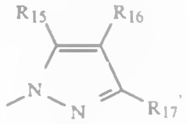
Q-1



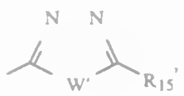
Q-2



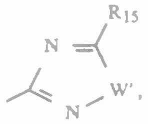
Q-3



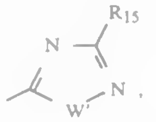
Q-4



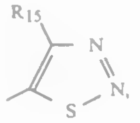
Q-5



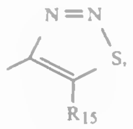
Q-6



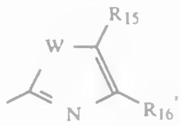
Q-7



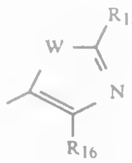
Q-8



Q-9

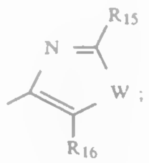


Q-10



Q-11

or



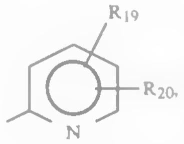
Q-12

W is O, S or NR_{18};

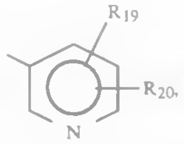
W′ is O or S;

R_{15}, R_{16}, R_{17} and R_{18} are independently H or CH_3;

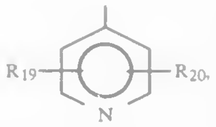
Q is also



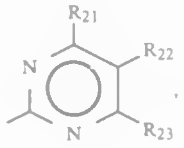
Q-13



Q-14

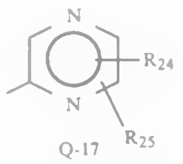


Q-15



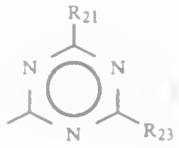
Q-16

,



Q-17

or

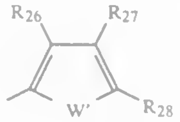


Q-18

R_{19}, R_{20}, R_{22}, R_{24} and R_{25} are independently H or CH_3;

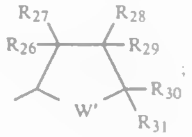
R_{21} and R_{23} are independently H, CH_3 or OCH_3;

Q is also



Q-19

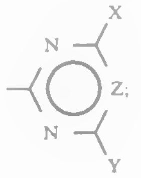
or



Q-20

R_{26}, R_{27}, R_{28}, R_{29}, R_{30} and R_{31} are independently H or CH_3;

A is



A-1

Z is CH;

X is CH_3, OCH_3, Cl, OCH_2CH_3, OCF_2H or F;

Y is H, NH_2, $NHCH_3$, $N(CH_3)_2$, CH_3, CH_2CH_3, CF_3, CH_2OCH_3, $CH_2OCH_2CH_3$, $O(C_1$–C_3 alkyl), SCH_3, $O(C_3$–C_4 alkenyl), $O(C_3$–C_4 alkynyl), OCH_2CF_3, OCH_2CH_2F, OCH_2CH_2Cl, OCH_2CH_2Br or OCF_2H;

and agriculturally suitable salts thereof; provided that

(a) R_1 and R_2 are not simultaneously CO_2R_8;

(b) when either one of R_1 or R_2 is $SO_2NR_9R_{10}$, then the other must not be $S(O)_nR_5$, $S(O)_mR_5$, CH_2OR_{14} or NR_6R_7;

(c) when R_9 is OCH_3, then R_{10} is CH_3;

(d) when either one of R_1 or R_2 is CO_2R_8, then the other must not be $S(O)_nR_5$, $S(O)_mR_5$ or NR_6R_7;

(e) the total number of carbon atoms in R_{26} to R_{31} combined, is equal to or less than four;

(f) when X is Cl or F, then Y is NH_2, $NHCH_3$, $N(CH_3)_2$, OCH_3 or OCH_2CH_3;

(g) when R_1 is CO_2R_8 then R_2 is not OSO_2R_{13}; and

(h) when X or Y is OCF_2H, then R_2 is Q.

10. An agriculturally suitable composition for controlling the growth of undesired vegetation comprising an effective amount of a compound of claim 1 and at least one of the following: surfactant, solid or liquid diluent.

4,878,939

FUNGICIDAL AND PLANT-GROWTH REGULATING AZOLYL ETHER KETONES AND ALCOHOLS

Gerhard Jäger, Leverkusen; Manfred Jautelat, Burscheid; Wolfgang Krämer, Burscheid; Karl H. Büchel, Burscheid; Paul Reinecke, Leverkusen; Wilhelm Brandes, Leichlingen; Gerd Hänssler, Leverkusen, and Klaus Lürssen, Bergisch Gladbach, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

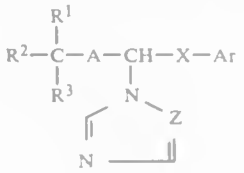
Continuation of Ser. No. 930,634, Nov. 13, 1986, abandoned. This application Oct. 13, 1988, Ser. No. 258,108

Claims priority, application Fed. Rep. of Germany, Nov. 15, 1985, 3540523

Int. Cl.⁴ A01N *43/653, 43/50;* **C07D** *249/08, 233/60*

U.S. Cl. 71—92 10 Claims

1. An azolyl ether ketone or alcohol of the formula



in which

R^1 represents straight-chain or branched alkyl with 2 to 4 carbon atoms,

R^2 represents straight-chain or branched alkyl with 2 to 4 carbon atoms,

R^3 represents straight-chain or branched alkyl with 1 to 4 carbon atoms,

A represents a keto group or a CH(OH) grouping,

Z represents a nitrogen atom or a CH group,

X represents oxygen and

AR represents phenyl which is unsubstituted or mono- or di-substituted by substituents independently selected from the group consisting of fluorine, chlorine and phenyl,

or an addition product thereof with an acid or metal salt.

4,878,940

HERBICIDAL 1,5-SUBSTITUTED 1H-IMIDAZOLES

Marcel F. L. De Bruyn, Hoogstraten; Guy R. E. Van Lommen, Berlaar, both of Belgium, and William R. Lutz, Riehen, Switzerland, assignors to Janssen Pharmaceutica N.V., Beerse, Belgium

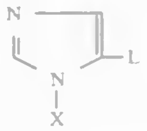
Filed Mar. 25, 1988, Ser. No. 173,511

Claims priority, application United Kingdom, Apr. 2, 1987, 8707856; Dec. 22, 1987, 8729798

Int. Cl.⁴ A01N *43/50;* **C07D** *233/64*

U.S. Cl. 71—92 11 Claims

1. A compound of the formula:



(I)

or a stereochemically isomeric form thereof, or a salt thereof, wherein:

L represents —C(=G)—R wherein G is oxo, thioxo, or R^5imino wherein R^5 represents hydrogen, $C_{1\text{-}5}$alkyl, or OR^4 wherein R^4 represents hydrogen, aryl, $C_{1\text{-}12}$alkyl, aryl-$C_{1\text{-}12}$alkyl, $C_{1\text{-}5}$alkylcarbonyl, arylcarbonyl, or $C_{1\text{-}5}$alkylaminocarbonyl, and wherein R is hydrogen, $C_{1\text{-}7}$alkyl, $C_{3\text{-}7}$cycloalkyl, fluoro$C_{1\text{-}5}$alkyl, aryl$C_{1\text{-}5}$alkyl, or aryl; and

X represents 1-indanyl, 1-tetrahydro-naphthyl, or 5-benzocycloheptanyl, each of which groups can be unsubstituted or can have one to six substituents selected from the group consisting of $C_{1\text{-}5}$alkyl, mono- and di(aryl)$C_{1\text{-}5}$alkyl, $C_{1\text{-}5}$alkoxy, halo, $C_{3\text{-}7}$alkenyl, amino, nitro, $C_{1\text{-}5}$alkylcarbonylamino, trifluoromethyl, and difluoromethoxy; and each aryl is phenyl or phenyl substituted with one to three substituents each independently selected from C_1–C_5alkyl, C_1–C_5alkoxy and halo.

5. A method of controlling weeds by applying thereto or to the locus thereof of a herbicidally effective amount of a compound of formula (I) as claimed in claim 1.

4,878,941

HERBICIDES

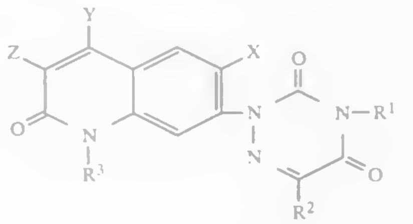
George Theodoridis, Princeton, N.J., assignor to FMC Corporation, Philadelphia, Pa.

Filed Dec. 29, 1987, Ser. No. 139,404

Int. Cl.⁴ A01N *43/207;* **C07D** *403/04*

U.S. Cl. 71—93 49 Claims

1. A herbicidal compound of the formula



in which:

R^3 is H, alkyl, alkenyl, alkynyl, haloalkyl, haloalkenyl, alkoxyalkyl, alkoxyalkoxyalkyl, cycloalkyl, alkylthioalkyl, benzyl, cyanoalkyl, alkoxycarbonylalkyl, hydroxy or alkoxy;

X is H, halogen, alkyl, or haloalkyl;

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Y is H, halogen, alkyl, haloalkyl, alkoxycarbonyl, cyano, or nitro;

Z is H, halogen, alkyl, haloalkyl, alkoxy, alkenyl, alkynyl, haloalkoxy, alkylthio, alkylsulfinyl, alkylsulfonyl, alkoxycarbonyl, cyano, or nitro;

R^1 is alkyl, alkenyl, alkynyl, haloalkyl, alkoxyalkyl, or haloalkoxyalkyl; and

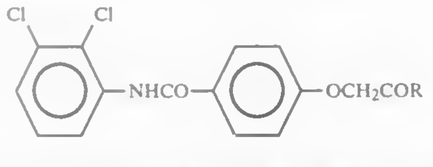
R^2 is H, alkyl, haloalkyl, alkoxy, haloalkoxy, alkylthio, alkylsulfinyl, alkylsulfonyl, or halogen;

and in which any alkyl, alkenyl, alkynyl or alkylene group or moiety has up to 6 carbon atoms and any cycloalkyl has 3 to 7 ring carbon atoms.

4,878,942
BENZAMIDE DERIVATIVE, PROCESS FOR ITS PRODUCTION AND PLANT GROWTH REGULANT

Takeo Motegi; Mitsumasa Yamazaki; Hiroyuki Iguchi, and Kaoru Kasahara, all of Tokyo, Japan, assignors to Hodogaya Chemical Co., Ltd., Tokyo, Japan
Filed Jul. 21, 1988, Ser. No. 222,256
Claims priority, application Japan, Jul. 23, 1987, 62-182369
Int. Cl.^{4} A01N *37/38*
U.S. Cl. 71—109 4 Claims

1. A benzamide derivative of the formula:

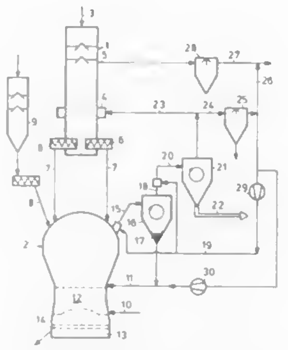


(I)

wherein R is hydroxyl, alkoxy, alkoxyalkoxy, alkoxyalkoxyalkoxy, alkenylalkoxy, alkenylalkoxyalkoxy, alkynylalkoxy, alkynylalkoxyalkoxy, monoalkylamino, dialkylamino or O-cat wherein cat is an inorganic or organic cation.

4,878,943
PROCESS OF DEZINCIFYING A MATERIAL FLOW WHEN OPERATING A PIG-IRON PRODUCTION PLANT

Werner Kepplinger, Linz, Austria, assignor to Deutsche Voest-Alpine Industrieanlagenbau GmbH, Dusseldorf, Fed. Rep. of Germany
Filed Nov. 7, 1988, Ser. No. 267,977
Claims priority, application Austria, Nov. 12, 1987, 2994/87
Int. Cl.^{4} C21B *13/14*
U.S. Cl. 75—25 1 Claim



1. In a process for producing pig iron in a pig iron production plant including a direct reduction shaft furnace defining a reduction zone and a meltdown gasifier defining a meltdown zone, said process comprising:

reducing iron-oxide containing particulate charging substances in said direct reduction shaft furnace by a reducing gas so as to obtain sponge iron particles,

melting said sponge iron particles in said meltdown gasifier by supplying coal and oxygen-containing gas thereby forming said reducing gas,

cooling and dedusting said reducing gas so as to obtain dedusted reducing gas and separated dust.

supplying said dedusted reducing gas to said reduction zone of said direct reduction shaft furnace and recycling said separated dust to said meltdown zone of said meltdown gasifier, and

washing and cooling excess reducing gas so as to make said excess reducing gas available to external consumers,

the improvement wherein zinc is removed from said reducing gas is carried out in two steps in a consecutively arranged first cyclone and second cyclone by

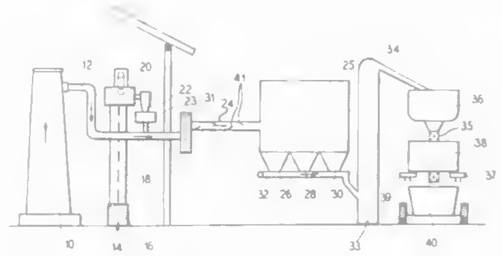
adjusting the temperature of said reducing gas exiting said meltdown gasifier to about 1,000° C. in said first cyclone so as to partially dedust said reducing gas an d produce a first zinc-poor dust comprising coal particles, and recycling said dust to said meltdown gasifier; and

cooling said partially dedusted reducing gas obtained from said first cyclone to about 800° C. by feeding cooling gas into said partially dedusted gas and further dedusting said reducing gas in said second cyclone so as to produce a purified gas and a second dust enriched with deposited metallic zinc, and collecting said metallic zinc as a zinc concentrate for further utilization,

wherein said cooling gas comprises a portion being cooled before introduction into the second cyclone.

4,878,944
METHOD OF TREATING METALLIC OXIDE IMPREGNATED DUST

Thomas E. Rolle, and D. J. Rapp, both of Dubuque, Iowa, assignors to The TDJ Group, Inc., Dubuque, Iowa
Filed Oct. 18, 1988, Ser. No. 262,103
Int. Cl.^{4} C21C *5/38;* F23J *15/00*
U.S. Cl. 75—25 24 Claims



1. A process for treating and collecting metallic oxide impregnated dust generated during a manufacturing process comprising the steps of:

passing particulate material through at least one enclosed area and toward a waste collection device;

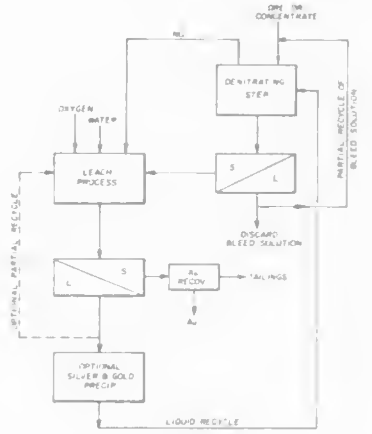
feeding an additive into the enclosed area to be mixed with the particulate material to create an additive-particulate material, upstream from the waste collection device; and

passing the additive-particulate material mixture into the waste collection device.

4,878,945
HYDROMETALLURGICAL PROCESS FOR TREATING REFRACTORY ORES CONTAINING PRECIOUS METALS

Rein Raudsepp, 4539 Quebec St., and Morris J. Beattie, 2955 W. 38th Ave., both of Vancouver, B. C., Canada
Continuation-in-part of Ser. No. 868,029, May 29, 1986, abandoned. This application Sep. 18, 1987, Ser. No. 98,517
Int. Cl.^{4} C22B *11/04*
U.S. Cl. 75—118 R 18 Claims

1. In a process for recovering precious metals from pyritic and arsenopyritic concentrates and ores involving decomposing the arsenopyrite or pyrite concentrates and ores in acidic leach solution in a common volume space which contains a gas phase and a liquid slurry which comprises a liquid phase and a solid phase through the action of higher valence oxidized nitrogen species in which the nitrogen has a valence of at least plus 3, the active oxidized nitrogen species being regenerated in the same common volume space by oxygen containing gas, the improvement which comprises, prior to decomposing said concentrate or ore in said common volume space, introducing the concentrate or ore into a denitrating vessel along with solution from the leach solution, reacting essentially all of the oxidized nitrogen species in the leach solution in the denitrating vessel with concentrate or ore to produce in the denitrating vessel nitric oxide, which is released into an oxygen free gas phase and is transported to the gas phase of the common volume space, subjecting the liquid and solid products of the denitrating vessel top a solid-liquid separation, transporting the solids from the separation to the common volume space where the solids are treated with oxygen and with nitric oxide from said denitrating vessel, and bleeding the remaining liquid which is free of oxidized nitrogen species from the process.



4,878,946
HOT-MELT TYPE INK FOR THERMAL INK-JET PRINTER

Isao Tabayashi, Kuki; Hiroshi Harada, Takaishi; Sadahiro Inoue, Chiba, and Hiroshi Fukutomi, Urawa, all of Japan, assignors to Dainippon Ink and Chemicals, Inc., Tokyo, Japan
Filed Feb. 26, 1988, Ser. No. 160,877
Claims priority, application Japan, Feb. 27, 1987, 61-42846
Int. Cl.^{4} C09D *11/06*
U.S. Cl. 106—27 7 Claims

1. A hot-melt type ink for thermal ink-jet printers which comprises an oil-soluble dye dissolved in at least one compound selected from the group consisting of a phosphoric acid ester, a hydroxybenzoic acid ester and a phthalic acid ester, the compound being in solid state at room temperature.

4,878,947
METHOD FOR MANUFACTURE OF POROUS REFRACTORY ARTICLES

Richard L. Helferich, Clayton, Ohio, assignor to The Duriron Company, Inc., Dayton, Ohio
Continuation of Ser. No. 127,654, Dec. 2, 1987, abandoned. This application Dec. 22, 1988, Ser. No. 290,815
Int. Cl.^{4} C04B *38/00, 41/91*
U.S. Cl. 106—75 11 Claims

1. A process for lowering the alkali metal content of a porous, unfired, supportable ceramic shape containing alkali metal so as to increase the refractoriness and thermal shock resistance of fired porous ceramic articles made therefrom, comprising the steps of first contacting said porous ceramic shape with water to remove therefrom leachable alkali metal compounds, and thereafter contacting said porous ceramic shape with a dilute aqueous solution of an ammonium salt selected from the group consisting of ammonium acetate, ammonium bicarbonate, ammonium carbonate, ammonium chloride, ammonium hydroxide, ammonium sulfate, and mixtures thereof, to effect exchange of ammonium ion for remaining alkali metal ion in said porous ceramic shape to an extent such that a fired porous ceramic article made from said porous, unfired, supportable ceramic shape contains less than about 0.5 percent by weight alkali metal.

4,878,948
WATER RESISTANCE ADDITIVE FOR CEMENTITIOUS COMPOSITIONS

Virendra V. Shah, Macungie, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.
Filed May 18, 1988, Ser. No. 195,738
Int. Cl.^{4} C04B *24/08*
U.S. Cl. 106—90 10 Claims

1. In a cementitious composition comprising cement, aggregate, water soluble or water dispersible polymer and a water resistant additive, the improvement which comprises about 0.5 to 3 wt%, based on cement, of a polyethylene glycol ester of a C_8–C_{22} fatty acid having an HLB value from 11 to 20 as the water resistant additive.

4,878,949
METHOD FOR THE PRODUCTION OF CEMENT CLINKER FROM SEMI-WET RAW MATERIAL

Georg Unland, Ennigerloh, Fed. Rep. of Germany, assignor to Krupp Polysius AG, Fed. Rep. of Germany
Filed Feb. 16, 1988, Ser. No. 156,294
Claims priority, application Fed. Rep. of Germany, Feb. 17, 1987, 3705037
Int. Cl.^{4} C04B *7/43*
U.S. Cl. 106—100 5 Claims

1. In a method of producing cement clinker from semi-wet raw material from which moisture has been removed to form a filter cake which subsequently is dried in a drying zone and crushed in a crushing zone, and wherein the dried and crushed material is heated and deacidified in a preheating zone and then burnt to clinker in a combustion zone and finally cooled in a cooling zone, the improvement comprising supplying exhaust air from said cooling zone directly to said drying zone bypassing the combustion zone and the preheating zone, and adjusting the quantity of said exhaust air to reduce the moisture content of said filter cake and maintain the moisture content of said filter cake prior to crushing thereof at not more than about 2% to maintain substantially constant the degree of acidification of crushed material delivered to said combustion zone.

4,878,950
BITUMEN COMPOSITION

Andrew Halasz, Dollard des Ormeaux; Giuseppe Spinelli, Baie d'Urfe, both of Canada, and David H. Doolittle, Houston, Tex., assignors to Exxon Chemical Patents Inc., Linden, N.J.
Filed Apr. 29, 1988, Ser. No. 187,700
Int. Cl.^{4} C08L *95/00*
U.S. Cl. 106—273.1 13 Claims

1. A bitumen composition comprising asphalt and from about 1 wt.% to about 10 wt.%, based on asphalt, of an α-olefin polymer having a molecular weight within the range from about 750 to about 5000.

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LOW-FOAMING ALKALINE, HYPOCHLORITE CLEANER

Guy Pocbard, Minnetonka, and Creighton Steiner, Brooklyn Park, both of Minn., assignors to A & L Laboratories, Inc., Minneapolis, Minn.

Filed Jan. 17, 1989, Ser. No. 297,422

Int. Cl.⁴ C11D *1/22, 3/395;* **B08B** *9/00*

U.S. Cl. 134—22.17 **14 Claims**

1. An aqueous alkaline chlorinated cleaning formulation comprising:
   - (a) an alkaline hydroxide in an amount equivalent to about 5% - 15% sodium hydroxide;
   - (b) a component providing available chlorine at a level of between about 1% and about 5% available chlorine;
   - (c) between about 0.1% and about 2% of a surfactant mixture comprising (i) a sulfonate surfactant selected from the group consisting of alkyl diphenyloxide sulfonates, having one or two alkyl groups and two sulfonate groups, the alkyl groups being linear or branched C_4-C_8 alkyl groups, and (ii) a nonionic surfactant selected from the group consisting of poly(oxyethylene)/poly(oxypropylene) block copolymers and polyethoxylated/polypropoxylated aliphatic alcohols; and
   - (d) 0 to about 15% of a water softening agent stable to the other components of the formulation, said sulfonate and nonionic surfactants being present in a ratio of between about 2.5:1 and 3.5:1 and said nonionic surfactant selected to provide a substantially clear solution at about 120° F. when combined with the remaining ingredients of the formulation.

4,878,952

PROCESS FOR HEAT TREATING CAST NICKEL ALLOYS

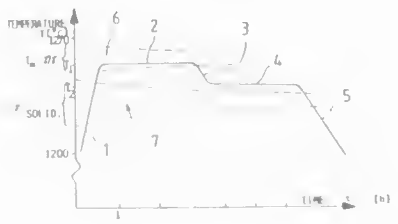
Horst Pillhoefer, Karlsfeld, Fed. Rep. of Germany, assignor to MTU Motoren-und Turbinen-Union Muenchen GmbH, Munich, Fed. Rep. of Germany

Filed Sep. 12, 1988, Ser. No. 243,424

Claims priority, application Fed. Rep. of Germany, Sep. 19, 1987, 3731598

Int. Cl.⁴ C22F *1/10*

U.S. Cl. 148—1 **2 Claims**



1. A process for heat treating structural components made of polycrystalline nickel alloys, comprising the following process steps:
   - (a) heating the structural component to a temperature T_1 ranging between 0° C. to 10° C. above the incipient melting temperature $T_m\ \gamma/\gamma'$ of the carbidic γ/γ' eutectic phase,
   - (b) maintaining this temperature T_1 for a length of time sufficient to completely bring into solution and homogenize the partially casting-inducted nonuniform γ' precipitation phase,
   - (c) cooling to a temperature T_2 below $T_m\ \gamma/\gamma'$ but above the solution temperature T of the γ' precipitation hardening phase,
   - (d) maintaining this temperature T_2 under hydrostatic pressure between 900 to 2000 bars until the fusion porosity is eliminated, and
   - (e) cooling at a rate required for producing the desired γ' precipitation particle phase.

4,878,953

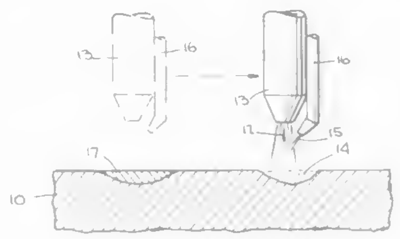
METHOD OF REFURBISHING CAST GAS TURBINE ENGINE COMPONENTS AND REFURBISHED COMPONENT

Gilbert A. Saltzman, Howell; Timothy A. Wertz, Manahawkin, and Ira L. Friedman, Rumson, all of N.J., assignors to Metallurgical Industries, Inc., Tinton Falls, N.J.

Filed Jan. 13, 1988, Ser. No. 143,513

Int. Cl.⁴ C21D *1/09*

U.S. Cl. 148—4 **12 Claims**



1. A process of refurbishing a superalloy casting comprising the steps of
   - generating a plasma arc between an electrode and a section of the casting to be refurbished under an electric current of less than 30 amps to melt a surface of said section into a shallow pool of molten metal without detrimentally heating the casting;
   - delivering a controlled amount of welding powder of the same composition as the superalloy casting into said arc at a point slightly above said molten pool for heating and delivery to said molten pool; and
   - subsequently solidifying the delivered powder and molten pool into an overlay, having a high integrity cast structure metallurgically bonded to said casting and being of the same composition as the casting.

4,878,954

PROCESS FOR IMPROVING THE DUCTILITY OF A PRODUCT OF ALLOY INVOLVING MARTENSITIC TRANSFORMATION AND USE THEREOF

Alain Dubertret, Sevres, and Bernard Prandi, Faverges, both of France, assignors to Compagnie Europeenne Du Zirconium Cezus, Courbevoie, France

Filed Jun. 17, 1988, Ser. No. 208,035

Claims priority, application France, Jun. 24, 1987, 87 09272

Int. Cl.⁴ C22C *9/01;* **C22F** *1/08, 1/10*

U.S. Cl. 148—11.5 F **14 Claims**

1. A process for improving the ductility of a shape-memory alloy product based on Ti-Ni involving martensitic transformation, comprising at least one thermal treatment cycle of alternating cold and hot treatments, wherein
   - the first said thermal treatment cycle comprises a cold treatment of the product at a temperature both lower than −50° C. and lower than (M_s−50° C.) where M_s is the temperature at which martensitic transformation of the product begins, and a hot treatment of the product at a temperature of 700°-900° C., which does not result in recrystallization of the product.

4,878,955

PROCESS FOR PREPARING A HIGH STRENGTH STAINLESS STEEL HAVING EXCELLENT WORKABILITY AND FREE FORM WELD SOFTENING

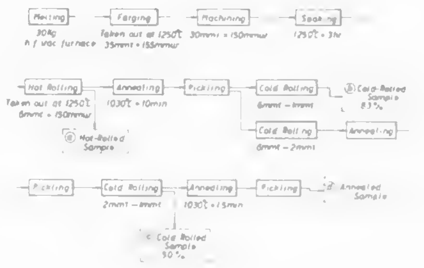
Kazuo Hoshino, and Takashi Igawa, both of Yamaguchi, Japan, assignors to Nisshin Steel Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 900,455, Aug. 26, 1986, abandoned. This application Jun. 23, 1988, Ser. No. 210,399

Claims priority, application Japan, Aug. 27, 1985, 60-186605

Int. Cl.⁴ C21D *8/02*

U.S. Cl. 148—12 E **12 Claims**



10. Process for preparing a high strength stainless steel material having excellent workability and free from weld softening consisting of a single martensitic phase or a duplex phase structure of martensite and minute austenite, said process comprising heat-treating at a temperature of 550° to 675° C. for 1 to 30 hours a cold-rolled material of a steel wherein no annealing treatment is performed between a final cold rolling step and said heat-treatment step, said steel consisting essentially of:

C: not more than 0.10%
Si: 0.85–4.5%
Mn: 0.20–5.0%
P: not more than 0.060%
S: not more than 0.030%
Cr: 10.0–17.0%
Ni: 3.0–8.0%
N: not more than 0.10%
At least one of Cu, Mo, W and Co: not more than 4% in total
At least one of Ti, Nb, V, and Zr not more than 1% in total and Fe and inevitable incidental impurities, wherein the Ni_{eq} value defined as:
$Ni_{eq}+Ni+Mn+0.5Cr+0.3Si+Cu+Mo+W+0.2Co$ is in the range of 13.0–17.5.

4,878,956

SINGLE CRYSTAL FILMS OF CUBIC GROUP II FLUORIDES ON SEMICONDUCTOR COMPOUNDS

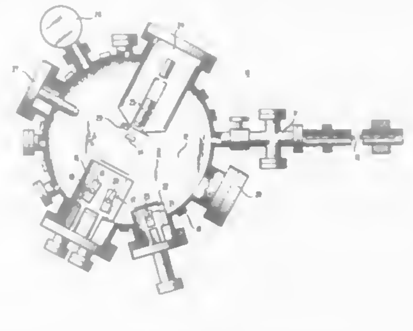
Wilbur D. Johnston, Jr., Mendham, and Charles W. Tu, Basking Ridge, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Continuation of Ser. No. 6,989, Jan. 14, 1987, abandoned, which is a continuation of Ser. No. 554,793, Nov. 23, 1983, abandoned. This application Mar. 9, 1989, Ser. No. 320,884

Int. Cl.⁴ H01L *29/201, 29/78*

U.S. Cl. 148—33.3 **11 Claims**

1. A semiconductor device comprising semiconductor material, said semiconductor material consisting essentially of at least one III-V semiconductor compound in which at least part of the surface of the semiconductor material is covered with an insulating film characterized in that the insulating film is an epitaxial film of cubic Group II fluoride which is grown in the temperature range of 150 degrees C. below the decomposition temperature of the III-V semiconductor and at a growth rate of least 250 Angstroms per hour and is substantially twin-free and substantially single crystal, and the cubic Group II fluoride is selected from the group consisting of $Ca_xSr_{1-x}F_2$ and $Ba_ySr_{1-y}F_2$ where x and y vary from 0 to 1.



4,878,957

DIELECTRICALLY ISOLATED SEMICONDUCTOR SUBSTRATE

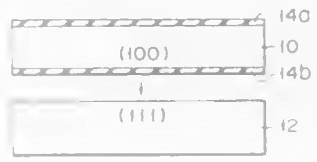
Yoshihiro Yamaguchi, Urawa; Kiminori Watanabe, Kawasaki; Akio Nakagawa, Hiratsuka; Kazuyoshi Furukama, Kawasaki; Kiyoshi Fukuda, and Katsujiro Tanzawa, both of Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 30, 1989, Ser. No. 330,492

Claims priority, application Japan, Mar. 31, 1988, 63-78714; Jul. 14, 1988, 63-173701

Int. Cl.⁴ H01L *21/265*

U.S. Cl. 148—33.3 **5 Claims**



1. A semiconductor substrate comprising:
   - (a) a first semiconductive layer;
   - (b) a second semiconductive layer; and
   - (c) an insulative layer sandwiched between said first and second semiconductive layers, said first semiconductive layer being a first silicon layer having a (100) or (110) crystal surface orientation, and said second semiconductive layer being a second silicon layer having a (111) crystal surface orientation.

4,878,958

METHOD FOR PREPARING RARE EARTH-IRON-BORON PERMANENT MAGNETS

Mohammad H. Ghandehari, Brea, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Division of Ser. No. 869,045, May 30, 1986, Pat. No. 4,747,874. This application Apr. 4, 1988, Ser. No. 177,056

The portion of the term of this patent subsequent to Aug. 9, 2005, bas been disclaimed.

Int. Cl.⁴ H01F *1/09*

U.S. Cl. 148—103 **23 Claims**

18. A method for producing a permanent magnet, comprising the steps of:
   - (a) mixing together the components:
     - (i) a particulate alloy consisting essentially of neodymium, iron, and boron;
     - (ii) particulate aluminum; and
     - (iii) a particulate rare earth oxide selected from the group

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consisting of gadolinium oxide, terbium oxide, dysprosium oxide, holmium oxide, and mixtures thereof;
(b) aligning magnetic domains of the mixture in a magnetic field;
(c) compacting the aligned mixture to form a shape;
(d) sintering the compacted shape; and
(e) annealing the sintered shape.

4,878,959

METHOD OF PRODUCING GRAIN-ORIENTED SILICON STEEL WITH SMALL BORON ADDITIONS

Carl P. Stroble, Natrona Heights, and Anthony P. More, Cheswick, both of Pa., assignors to Allegheny Ludlum Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 58,078, Jun. 4, 1987, abandoned. This application Apr. 13, 1989, Ser. No. 337,593

Int. Cl.^{4} H01F *1/04*

U.S. Cl. 148—111 9 Claims

1. A method of producing cube-on-edge grain-oriented silicon steel having improved core loss and magnetic permeability values, the method comprising:
making a silicon steel melt composition, by weight percent, of about 2 to 4.5 silicon, up to 0.06 carbon, up to .008 nitrogen, 0.04 to 0.100 manganese, 0.016 to 0.035 of material selected from the group consisting of sulfur and selenium, the balance iron and incidental impurities;
casting the melt to form a casting thereof;
hot rolling the casting at greater than 2300° F. to form a hot-rolled band, said band having a manganese-to-sulphur and/or selenium ratio of greater than 2.5;
cold working the hot-rolled band to an intermediate gauge strip of about 0.018 to 0.026 inch by a reduction of at least 60%;
annealing the intermediate gauge to effect primary recrystallization;
cold working the intermediate annealed gauge steel strip to a final gauge of about 0.0045 to 0.012 inch by a cold reduction of about 65% to 75% the final gauge steel strip having 3 to less than 10 ppm boron therein prior to final texture annealing;
annealing to effect decarburization;
applying to the final gauge steel strip a refractory coating; and
final texture annealing the final gauge steel for a time and temperature to develop secondary recrystallization with grain sizes of less than 10 mm and a permeability at 10 oersteds of 1850 or more.

9. A method of producing cube-on-edge grain-oriented silicon steel having improved core loss and magnetic permeability values, the method comprising:
making a silicon steel melt composition, by weight percent, of about 2 to 4.5 silicon, 0.028 to 0.04 carbon, 0.003 to 0.0065 nitrogen, 0.068 to 0.085 manganese, 0.024 to 0.028 of material selected from the group consisting of sulfur and selenium, the balance iron and incidental impurities;
adding sufficient boron to the melt to produce 3 to 7 ppm boron in a final gauge steel strip prior to final texture annealing;
casting the melt to form a casting thereof; hot rolling the casting at greater than 2300° F. to form a hot-rolled band, said band having a manganese-to-sulphur and/or selenium ratio of 2.5 or more;
cold working the hot-rolled band to an intermediate gauge strip of about 0.020 to 0.026 inch by a reduction of 60 to 70%;
annealing to effect primary recrystallization;
cold working the intermediate annealed gauge steel strip to a nominal final gauge of 0.007 to 0.009 inch by a cold reduction of 65 to 75%; then
annealing to effect decarburization;
applying a refractory oxide coating; and
final texture annealing the final gauge steel for a time and temperature to develop secondary recrystallization with grain sizes of less than 10 mm and a permeability at 10 oersteds of 1850 or more.

4,878,960

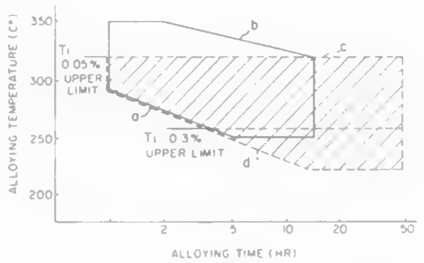
PROCESS FOR PREPARING ALLOYED-ZINC-PLATED TITANIUM-KILLED STEEL SHEET HAVING EXCELLENT DEEP-DRAWABILITY

Nobuhiko Sakai; Yukio Uchida, both of Amagasaki; Eizo Wada, Izumisano, and Yusuke Hirose, Osaka-Sayama, all of Japan, assignors to Nisshin Steel Company, Ltd., Tokyo, Japan

Filed Feb. 6, 1989, Ser. No. 307,673

Int. Cl.^{4} C23C *16/02*

U.S. Cl. 148—127 1 Claim



1. A process for preparing alloyed-zinc-plated steel sheet having excellent deep drawability, which comprises adjusting the temperature of substrate steel sheet of titanium-killed steel essentially consisting of C≦0.01%, Si<0.15%, Mn: 0.15–0.85%, Ti: 0.05–0.30% P≦0.02%, S≦0.02%, Al≦0.05% and balance of Fe, to a temperature within a temperature range T(°C.) defined as 180≦T≦−240×W+292, wherein W(%) is the Ti content of the substrate steel sheet, subjecting said steel sheet to Zn-plating by vacuum vapor deposition, and thereafter maintaining the plated steel sheet for alloying the plating zinc layer and the substrate steel at 220°–320° C. for 1∼50 hours in accordance with Ti content of the substrate steel.

4,878,961

METHOD AND SYSTEM FOR CONTROLLING TENSION TO BE EXERTED ON METAL STRIP IN CONTINUOUS ANNEALING FURNACE

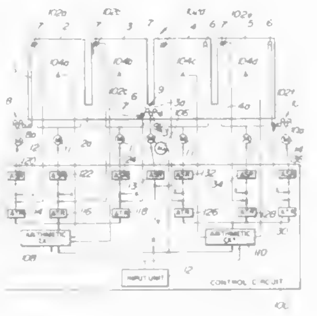
Yasuhiro Yamaguchi; Yuji Shimoyama; Tateo Ohnishi, and Hironobu Ohno, all of Chiba, Japan, assignors to Kawasaki Steel Corp., Japan

Filed Sep. 30, 1987, Ser. No. 102,875

Claims priority, application Japan, Sep. 30, 1986, 61-231579; Dec. 9, 1986, 61-292955

Int. Cl.^{4} C21D *11/00*

U.S. Cl. 148—128 35 Claims



1. A system for controlling tension to be exerted on a metal strip in a continuous annealing furnace which includes a plurality of hearth rolls for defining a path for the metal strip, comprising:
tensioning means for exerting tension on said metal strip as it travels through said continuous annealing furnace along said path;
monitoring means for monitoring a preselected operation parameter of said annealing furnace, which operation parameter effects a variation of the magnitude of the effective roll crown on said hearth rolls;
crown deriving means for deriving an effective roll crown magnitude on the basis of said operation parameter as monitored; and
tensioning deriving means for deriving an optimum tension range to be applied to the strip on the basis of said operation parameter and connected for controlling said tensioning means for adjusting the tension to be exerted on said metal strip so that the tension to be exerted on the metal strip is maintained within said optimum tension range.

4,878,962

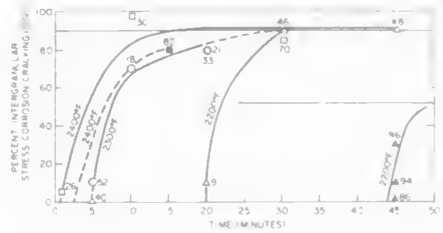
TREATMENT FOR INHIBITING IRRADIATION INDUCED STRESS CORROSION CRACKING IN AUSTENITIC STAINLESS STEEL

Alvin J. Jacobs, San Jose, and Gerald M. Gordon, Soquel, both of Calif., assignors to General Electric Company, San Jose, Calif.

Filed Jun. 13, 1988, Ser. No. 206,144

Int. Cl.^{4} C21B *6/00*

U.S. Cl. 148—136 6 Claims



1. A method of inhibiting stress corrosion cracking attributable mainly to exposure to concentrated irradiation in austenitic stainless steel comprising heat treating a stainless steel consisting of an alloy consisting essentially of in approximate percentage by weight:

Chromium	18 to 20
Nickel	8 to 14
Carbon	0.08 maximum
Manganese	2.0 maximum
Silicon	1.0 maximum
Molybdenum	3.0 maximum
Iron	Balance

by maintaining the mass of said alloy at a temperature within the range of at least 2050° F. up to about 2400° F. for a period of at least about 1 minute up to about 45 minutes with the period of heat treatment of the alloy being approximately inversely proportional to the temperature of the treatment.

4,878,963

CORROSION RESISTANT ALUMINUM COATING COMPOSITION

John W. Bibber, Batavia, Ill., assignor to Sanchem, Inc., Chicago, Ill.

Continuation-in-part of Ser. No. 86,362, Aug. 17, 1987, Pat. No. 4,755,224, which is a continuation-in-part of Ser. No. 908,827, Sep. 18, 1986, Pat. No. 4,711,667. This application Mar. 18, 1988, Ser. No. 170,169

Int. Cl.^{4} C23C *22/66*

U.S. Cl. 148—262 11 Claims

1. An alkali metal permanganate coating composition for aluminum and aluminum alloys comprising a basic pH and having as the essential ingredients thereof n alkali metal permanganate, an alkali metal chloride and a phosphorous compound selected from the group consisting of alkali metal phosphate and phosphoric acid.

4,878,964

PERMANENT MAGNETIC ALLOY AND METHOD OF MANUFACTURING THE SAME

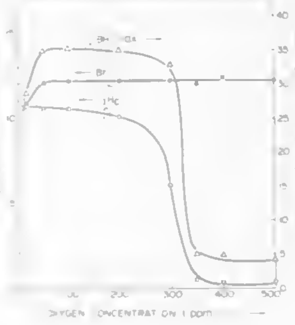
Tetsuhiko Mizoguchi; Koichiro Inomata, both of Yokohama; Toru Higuchi, Yamagata, and Isao Sakai, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Division of Ser. No. 11,609, Feb. 6, 1987, Pat. No. 4,793,874, which is a division of Ser. No. 773,547, Sep. 9, 1985, Pat. No. 4,664,724. This application Sep. 27, 1988, Ser. No. 249,945

Claims priority, application Japan, Sep. 14, 1984, 59-191810; Mar. 30, 1985, 60-66848; Mar. 30, 1985, 60-66849

Int. Cl.^{4} H01F *1/04*

U.S. Cl. 148—302 9 Claims



1. A permanent magnet manufactured by a process, comprising the steps of:
melting a raw material essentially consisting of 10 to 40% by weight of R, 0.1 to 8% by weight of boron, 50 to 300 ppm by weight of oxygen and the balance of iron, where R is at least one component selected from the group consisting of yttrium and rare-earth elements;
casting a melt of raw material to obtain a block;
pulverizing the block to a powder of an average particle size of 2 to 10 μm;
compressing the powder while applying a magnetic field; and
sintering a resultant compact at a temperature of 1,000° to 1,200° C. for 0.5 to 5 hours.

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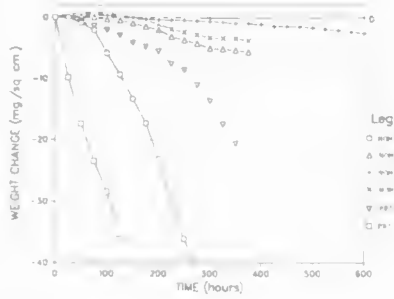
4,878,965
OXIDATION RESISTANT SUPERALLOY SINGLE CRYSTALS

William J. Gostic, Jupiter; Abdus S. Khan, Palm Beach Gardens, and Kenneth S. Murphy, Juno Beach, all of Fla., assignors to United Technologies Corporation, Hartford, Conn.

Filed Oct. 5, 1987, Ser. No. 105,625

Int. Cl.^{4} C22C *19/05*

U.S. Cl. 148—404 2 Claims



2. A single crystal gas turbine engine turbine blade consisting essentially of

4–7.5% Al, 7–18% Cr, 0–1.9% Co, 0–12% W, 1–10% Ta, 0–3% Mo, 0–0.5% Cb, 0–3% Re, 0–1.2% Ti, 0–0.5% C, <0.05% B, 0.15%–0.30% Zr, 0–0.5% Hf, 7–17% (W+Ta+Mo+Cb+Re), bal Ni and a small but effective amount of zirconium from about 0.21 to about 0.30% whereby, upon exposure to engine operating conditions said blade forms an adherent protective scale and is thereby made useable in uncoated form at temperatures of 2000° F. and above.

4,878,966
WROUGHT AND HEAT TREATED TITANIUM ALLOY PART

Edouard Alheritiere, Ugine, and Bernard Prandi, Faverges, both of France, assignors to Compagnie Europeenne du Zirconium Cezus, Courbevoie, France

Division of Ser. No. 181,715, Apr. 14, 1988, Pat. No. 4,854,977. This application Oct. 26, 1988, Ser. No. 262,792

Claims priority, application France, Apr. 16, 1987, 87 05786

Int. Cl.^{4} C22F *1/18*

U.S. Cl. 148—421 2 Claims

1. A wrought and heat treated titanium alloy part, comprising, by weight: Al 4.5 to 5.4%, Sn 1.8 to 2.5%, Zr 3.5 to 4.8%, Mo 2.0 to 4.5%, Cr 1.5 to 2.5%, Cr+V 1.5 to 4.5%, Fe 0.7 to 1.5%, O 0.07 to 0.13%, the remainder being Ti and impurities,

said part having a fine and regular alpha-beta structure and essentially segregation free microstructures, and having the mechanical characteristics: $R_m \geqq 1200$ MPa, $R_{p0.2} \geqq 1000$ MPa, $A\% \geqq 5$, K_{1C} at 20° C. $\geqq 45$ MPa.$\sqrt{m}$, creep at 400° C. under 600 MPa: 0.5% in more than 200 hours.

4,878,967
RAPIDLY SOLIDIFIED ALUMINUM BASED, SILICON CONTAINING ALLOYS FOR ELEVATED TEMPERATURE APPLICATIONS

Colin M. Adam; Richard L. Bye, both of Morristown; Santosh K. Das, Randolph, and David J. Skinner, Long Valley, all of N.J., assignors to Allied-Signal Inc., Morris Township, Morris County, N.J.

Continuation of Ser. No. 782,774, Oct. 2, 1985, abandoned. This application Sep. 8, 1987, Ser. No. 96,293

Int. Cl.^{4} C22C *21/00*

U.S. Cl. 148—437 12 Claims

1. A rapidly solidified aluminum-base alloy consisting essentially of the formula $Al_{bal}Fe_aSi_bX_c$, wherein X is at least one element selected from the group consisting of Mn, V, Cr, Mo, W, Nb, Ta, "a" ranges from 2.0 to 7.5 at %, "b" ranges from 0.5 to 3.0 at %, "c" ranges from 0.05 to 3.5 at % and the balance is aluminum plus incidental impurities, with the proviso that the ratio (Fe+X):Si ranges from about 2.0:1 to 5.0:1, said alloy having an aluminum solid solution phase containing therein a substantially uniform distribution of dispersed, intermetallic phase precipitates, each of said precipitates being of approximate composition $Al_{12}(Fe,X)_3Si$, measuring less than about 100nm in any dimension thereof and having a cubic structure.

4,878,968
OXIDIZING SALTS OF CUBYL AMINES

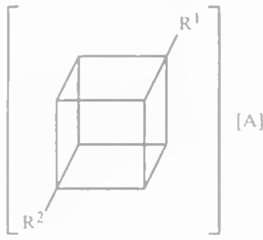
Rodney L. Willer, Newark; Glen T. Cunkle, Wilmington, both of Del., and Nathan Klein, Baltimore, Md., assignors to Morton Thiokol, Inc., Chicago, Ill.

Filed Jan. 12, 1988, Ser. No. 143,496

Int. Cl.^{4} C06B *31/00;* C07C *87/40, 87/453*

U.S. Cl. 149—45 8 Claims

1. A compound having the following formula:



wherein R^1 is

$N^{+}H_3$,

R^2 is selected from R^1, in which case X is 2 divided by the valence of A, and hydrogen, in which case X is 1 divided by the valence of A; and A is an oxidizing anion useful to provide oxidizing capability in a propellant formulation.

5. A liquid propellant consisting essentially of:

A. from about 60% to about 85% by weight of hydroxylammonium nitrate;

B. from about 30% by weight of a compound according to claim 1, and

C. from about 10% to about 20% water.

4,878,969
PROCESS FOR PRODUCING AN ELECTRICALLY INSULATING SHEATHING AROUND A JUNCTION BETWEEN ELECTRICALLY CONDUCTIVE ELEMENTS

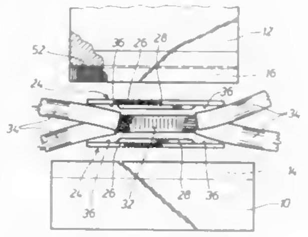
Erich R. Janisch, Heideck, Fed. Rep. of Germany, assignor to Erich Janisch Kunstoffe, Heideck, Fed. Rep. of Germany

Continuation of Ser. No. 909,849, Sep. 22, 1986, abandoned. This application May 20, 1988, Ser. No. 196,467

Claims priority, application Fed. Rep. of Germany, Oct. 18, 1985, 3537167

Int. Cl.^{4} H01B *13/06, 13/08*

U.S. Cl. 156—49 11 Claims



1. A method of joining and sealingly enclosing conductive end portions of a plurality of electrical conductors each of the type including an elongated conductive wire surrounded by an electrically nonconductive covering except at a stripped end portion thereof, the method comprising the steps of mechanically joining the stripped end portions to each other to form an elongated electrically conductive junction;

forming an enclosing material including two elongated strips of polyvinyl chloride material bonded together to form an inseparable single strip of sheathing material, the polyvinyl chloride material of the two strips having different softening temperatures;

placing two portions of elongated strips of the sheathing material on opposite sides of the junction formed by the mechanically joined stripped end portions with the strips of sheathing material extending generally perpendicular to the longitudinal direction of the junction and with the material having the lower softening temperature adjacent the stripped end portions and with the sheathing material overlapping the covering material;

applying pressure and vibratory energy to the outer surfaces of the sheathing material to cause the material with the lower softening temperature to flow around and into the junction until the sheathing material has formed a complete sealing enclosure around the conductive stripped end portions and the adjacent portions of the covering material; and

allowing the sheathing material to harden.

4,878,970
HEATING OF A FOAM CUP TO INCREASE STIFFNESS

John C. Schubert, and Edward C. Leduc, both of Marietta, Ga., assignors to Amoco Corporation, Chicago, Ill.

Filed May 27, 1988, Ser. No. 199,666

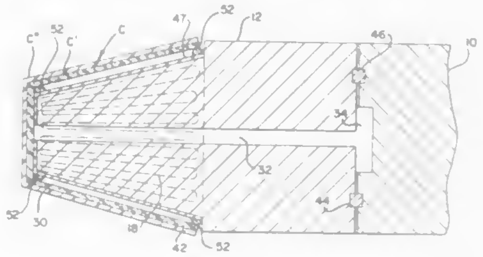
Int. Cl.^{4} B32B *31/26*

U.S. Cl. 156—69 13 Claims

1. A method of providing a foam cup having a sidewall and a bottom, said cup having an improved sidewall deflection strength and being suitable for use with hot beverages, comprising:

(a) forming the foam cup from a roll stock of a polystyrene foam by rolling said roll stock into shape to form the sidewall, subsequently forming the bottom of the cup from said roll stock and sealing the bottom to the sidewall of the foam cup,

(b) placing said cup around a heated mandrel, said mandrel having an outside diameter sufficiently less than than the inside diameter of the cup so that the sidewall of the cup is not in contact with the mandrel, and



(c) maintaining the cup around said mandrel at a temperature and for a time sufficient to expand the sidewall of the cup to increase the sidewall deflection strength of the cup.

4,878,971
METHOD OF CONTINUOUSLY ASSEMBLING CHEMICAL ANALYSIS SLIDES

Yuzo Tsunekawa; Yukio Ishida, and Tatsuo Shiino, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jan. 27, 1988, Ser. No. 148,834

Claims priority, application Japan, Jan. 28, 1987, 62-18111

Int. Cl.^{4} B32B *31/10, 31/08*

U.S. Cl. 156—70 3 Claims

1. A method of continuously assembling chemical analysis slides each including at least two plastic sheets superposed one on another and bonded together, and a chemical analysis film sandwiched therebetween in which while at least two plastic sheets in continuous lengths are conveyed in the longitudinal direction thereof, a plurality of chemical analysis films are sandwiched between the plastic sheets at predetermined intervals, the plastic sheets are bonded together at a portion circumscribing each of the chemical analysis films sandwiched therebetween to form a sheet assembly and individual chemical analysis slides are cut out from the sheet assembly,

characterized in that at least one of the sheets in continuous lengths is provided with a plurality of slit means extending in the transverse direction of the sheet at regular intervals at the remaining portions of the sheet which do not form a part of the chemical analysis slide.

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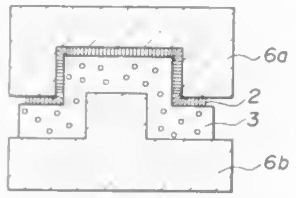
PROCESS FOR PREPARING TWO-PLY FOAM MOLDED ARTICLES

Katsutoshi Kaneko; Toshio Kobayashi, and Mitsuru Watari, all of Ichibara, Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan
Filed Aug. 18, 1988, Ser. No. 233,541
Claims priority, application Japan, Aug. 20, 1987, 62-207628
Int. Cl.⁴ B32B *31/20, 5/20*
U.S. Cl. 156—78 13 Claims

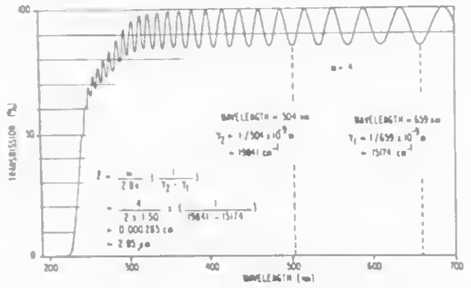


1. A process for preparing a two-ply foam molded article, characterized by heating to a melted and softened state a foamable polyolefin sheet which is in its not yet foamed state to form a foamed polyolefin layer, integrally laminating a fabric on one side of the resulting foamed polyolefin layer which is still in a melted and softened state to form a laminate and simultaneously drawforming the resulting laminate to shape the two-ply foam molded article.

4,878,973

PROCESS FOR PRODUCING A THIN RESIN FILM

Etsuo Ohtake, Kanagawa; Kaoru Yamaki, and Takayuki Kuroda, both of Hyogo, all of Japan, assignors to Daicel Chemical Industries, Ltd., Osaka, Japan
Continuation of Ser. No. 504,752, Jun. 15, 1983, abandoned.
This application Aug. 19, 1985, Ser. No. 767,239
Claims priority, application Japan, Jun. 15, 1982, 57-103488
Int. Cl.⁴ B29D *7/01;* **B32B** *31/04*
U.S. Cl. 156—85 10 Claims



1. A process for producing a transparent thin film of unoriented cellulose ester held under uniform tension, the process including the steps of:

casting a solution of cellulose ester in an organic solvent free from plasticizer over a smooth glass plate and thereafter removing the solvent to form a transparent thin film of a uniform thickness on the glass plate;

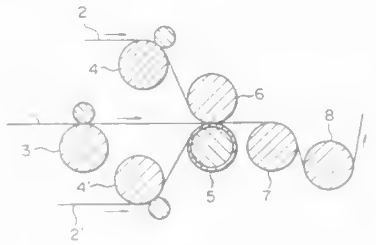
permitting the transparent thin film to separate from the glass plate by immersing the same into water; and

recovering the transparent thin film from the water and setting and subsequently bonding the moist film on a supporting mount, followed by drying the same.

4,878,974

METHOD OF PRODUCING A GAS-PERMEABLE, WATERPROOF COMPOSITE SHEET

Seiji Kagawa, Yokohama, Japan, assignor to Tonen Sekiyukagaku Kabushiki Kaisha, Tokyo, Japan
Filed Feb. 6, 1989, Ser. No. 306,178
Claims priority, application Japan, Feb. 5, 1988, 63-25200; Aug. 25, 1988, 63-211118; Sep. 16, 1988, 63-231900
Int. Cl.⁴ B32B *31/20*
U.S. Cl. 156—85 24 Claims



1. A method of producing a waterproof, gas-permeable composite sheet comprising the steps of:

(a) preparing a film from a composition comprising 40–70 weight % of an ethylene-propylene-diene copolymer and 30–60 weight % of an ethylene-vinyl acetate copolymer; and

(b) adhering said film to a woven or nonwoven fabric by hot pressing while causing the heat shrinkage of said film simultaneously, thereby making said film microporous.

4,878,975

METHOD FOR PRODUCING A RIGID SHAPED BODY

Harald Schobermayer, 9/4 Helpelweg, A-8706 Leoben, Austria
Division of Ser. No. 820,712, Jan. 17, 1986, Pat. No. 4,748,042.
This application May 10, 1988, Ser. No. 192,136
Claims priority, application Austria, Jan. 25, 1985, 201/85
Int. Cl.⁴ B29C *55/12;* **B29D** *9/00;* **B32B** *31/12*
U.S. Cl. 156—163 9 Claims

1. A method of forming a rigid shaped body which comprises at leat ten high melting point thermoplastic layers having a high molecular orientation alternating with low melting point thermoplatic layers substantially without molecular orientation, the low melting point layers comprising up to about 20 volume percent of the volume of the rigid shaped body, the method comprising the steps of:

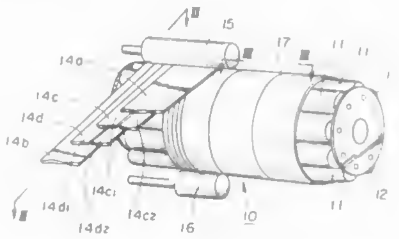
adjacently arranging a plurality of at least ten high melting point thermoplastic carriers having a high molecular orientation and having coatings of low melting point thermoplastic thereon so that the coatings contact each other, the combined thickness of any two adjacent coatings being lower than the thickness of one of the carriers; and

commonly pressing said adjacently arranged carriers having coatings thereon at a temperature in the range of or above the crystallite melting temperature or the glass temperature of the coatings and below the crystallite melting temperature or the glass temperature of the carriers, such that the coatings of adjacent thermoplastic carriers bond together to form a rigid shaped body without altering said high molecular orientation of said thermoplastic carriers.

4,878,976

METHOD FOR CONTINUOUSLY MANUFACTURING SYNTHETIC RESIN TUBE

Hiroshi Asakura, Kamakura, Japan, assignor to Toyo Chemical Co., Ltd., Kamakura, Japan
Filed Dec. 13, 1988, Ser. No. 283,967
Claims priority, application Japan, Dec. 17, 1987, 62-319927; Jan. 18, 1988, 63-7675
Int. Cl.⁴ B31C *13/00*
U.S. Cl. 156—190 10 Claims



1. A method for continuously manufacturing a synthetic resin tube comprising the steps of:

arranging in a circular array a plurality of rollers each rotating at the same speed such that an imaginary cylinder is defined about its central axis by said rollers, the longitudinal axes of said rollers being parallel to each other but offset with respect to said central axis;

continuously passing a plurality of pre-molded flat strips of synthetic resin material through a heating zone to thereby heat the pre-molded flat strips to a temperature of not lower than a softening point of said synthetic resin material and not higher than a melting point of said synthetic resin material, the plurality of said pre-molded flat strips compring a first strip for forming an outermost wall of the tube, a second strip for forming an innermost wall of the tube and at least one intermediate strip for forming an intermediate tube wall sandwiched between said first and second strips;

continuously feeding said flat strips thus heated and softened generally perpendicularly to lengths of said rollers in such a manner that each of said strips is helically wrapped around and advanced axially along said imaginary cylinder with each of the strips displaced along the lengths of said rollers and with portions of adjacent turns of said at least one intermediate strip forming the intermediate tube wall not overlapping one on another; and

pressing at least one pressure roller against the plurality of said flat strips to join and weld the strips together, whereby to form the synthetic resin tube having generally smooth outer and inner wall surfaces.

4,878,977

PROCESS FOR MANUFACTURING SYSTEMATIC COLOR TABLES OR COLOR CHARTS FOR SEVEN-COLOR PRINTING, AND TABLES OR CHARTS PRODUCED BY THIS PROCESS

Harald Kueppers, Im Buchenhain 1, D-6070 Langen, Fed. Rep. of Germany
PCT No. PCT/DE86/00419, § 371 Date Jun. 15, 1987, § 102(e) Date Jun. 15, 1987, PCT Pub. No. WO87/02455, PCT Pub. Date Apr. 23, 1987
PCT Filed Oct. 17, 1986, Ser. No. 64,310
Claims priority, application Fed. Rep. of Germany, Oct. 17, 1985, 3537008
Int. Cl.⁴ B32B *31/00*
U.S. Cl. 156—264 8 Claims

1. A method for producing systematic color tables or, respectively, color charts for seven-color printing, whereby the chromatic printing colors yellow, magenta-red, cyan-blue, violet-blue, green and orange-red and the achromatic printing color black are used comprising the steps of printing a plurality of color field tables onto a printing material with inks of two of said chromatic colors together with the achromatic color, black, with the combinations Y/G/S, G/C/S, C/V/S, V/M/S, M/O/S and O/Y/S being produced, where Y represents the color yellow, M represents the color magenta-red, C represents the color cyan blue, V represents the color violet-blue, G represents the color green and O represents the color orange-red and S represents the color black and wherein said two chromatic colors used are juxtaposed or neighboring and they come together and are overprinted with the achromatic color black to produce the colors on charts or tables.

4,878,978

BONDING METHOD EMPLOYING HIGH PERFORMANCE INDUCTION CURABLE TWO-COMPONENT STRUCTURAL ADHESIVE WITH NONSAGGING BEHAVIOR

Anil B. Goel, Worthington, and Joseph G. Holehouse, Columbus, both of Ohio, assignors to Ashland Oil, Inc., Ashland, Ky.
Division of Ser. No. 876,060, Jun. 19, 1986, Pat. No. 4,762,864.
This application Apr. 18, 1988, Ser. No. 182,667
Int. Cl.⁴ B32B *31/00*
U.S. Cl. 156—272.4 4 Claims

1. The process comprising placing an adhesive composition between the surfaces of at least two substrates of fiber reinforced plastic material and forming a strong thermoset adhesive bond rapidly between the substrates by subjecting the adhesive composition to electromagnetic induction heating, said adhesive composition comprising a mixture of components (I) and (II) wherein

(I) is an epoxy resin component comprising (a) an epoxy resin, from 1 to 15% by weight of which is a flexible di- or tri-glycidyl ether of a poly(alkylkene glycol); (b) from 1 to 15% by weight of the epoxy resin of a carboxylic acid terminated acrylonitrile-butadiene rubber; and (c) from 2 to 50% by weight of an electromagnetic energy absorbing material selected from the group consisting of particulate, magnetizable iron, cobalt, nickel, alloys of nickel and iron, inorganic oxides of iron, inorganic oxides of nickel, carbonaceous materials and mixtures thereof, and

(II) a hardener component comprising (a) from 50 to 90% by weight of a poly(alkylene oxide) di- or tri-primary amine having a molecular weight greater than 2000, (b) up to 20% by weight of a poly(alkylene oxide) di- or tri-primary amine and/or amido-amine having a molecular weight in the range of from 200 to 600, (c) up to 10% by weight of a compound selected from the group consisting of ethylene diamine, aminoethyl piperazine and diethanol amine, (d) from 2 to 15% by weight of a phenolic compound, (e) up to 15% by weight of an amine cure accelerator selected from the group consisting of tertiary amino group containing molecules and boron trifluoride-amine complexes and (f) from 2 to 60% by weight of an electromagnetic mate-

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rial selected from the group consisting of particulate, magnetizable iron, cobalt, nickel, alloys of nickel and iron, alloys of nickel and chromium, inorganic oxides of iron, inorganic oxides of nickel, carbonaceous materials and mixtures thereof.

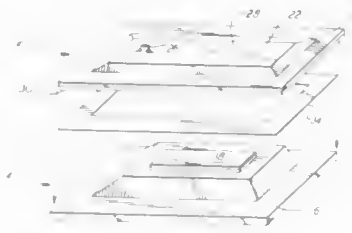
4,878,979
METHOD OF REUSABLY SEALING A SILICONE RUBBER VACUUM BAG TO A MOLD FOR COMPOSITE MANUFACTURE

John Steinbach, Milford, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Apr. 25, 1986, Ser. No. 855,980

Int. Cl.⁴ B29C *43/12;* **B32B** *31/00*

U.S. Cl. 156—285 1 Claim



1. A method of reusably sealing a silicone rubber vacuum bag to a mold, comprising:

priming the mold-mating portion of the vacuum bag with a silicone rubber adhesive;

applying a layer of semiadhesive sealer between the primed mold-mating portion of the vacuum bag and the mold;

temporarily securing the primed portion of the silicone rubber vacuum bag to the layer of semiadhesive material and to the mold;

applying vacuum to the mold;

releasing the vacuum;

removing the bag from the mold;

peeling the semiadhesive material from the primed portion of the silicone rubber bag; and

reusing the bag a plurality of times before reapplying additional silicone rubber adhesive to the mold-mating portion of the silicone rubber bag.

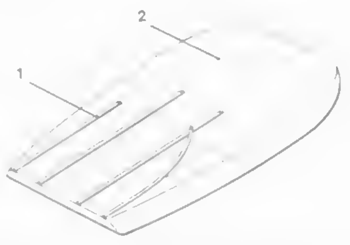
4,878,980
POWER RIDGES

Lewis P. Stedman, 24391 La Hermosa, Laguna Niguel, Calif. 92677

Continuation-in-part of Ser. No. 198,635, May 23, 1988, abandoned, which is a continuation-in-part of Ser. No. 68,338, Jul. 1, 1987, abandoned. This application Jan. 7, 1979, Ser. No. 294,898

Int. Cl.⁴ B32B *31/00*

U.S. Cl. 156—299 1 Claim



1. A method of improving the performance of wave riding vehicles comprising installing a number of strips of automobile, self-adhesive, flexible plastic, protective side-molding on the bottom of such vehicles so that a portion of the water flow is redirected toward the rear.

4,878,981
FORM COLLATOR GLUING APPARATUS

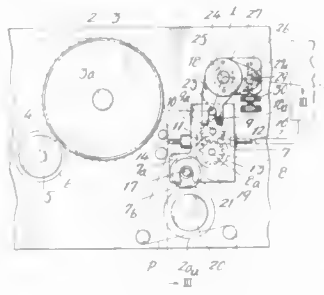
Mario Mizutani, Yokohama, Japan, assignor to Print Kiko Co., Ltd., Tokyo, Japan

Filed May 17, 1988, Ser. No. 195,018

Claims priority, application Japan, May 22, 1987, 62-125351

Int. Cl.⁴ B29C *19/00*

U.S. Cl. 156—356 2 Claims



1. A form collator gluing apparatus comprising:

a framework;

a plurality of rollers arranged in said framework, said rollers each having a pinwheel and being driven by a main motor whereby a separate continuous sheet of paper may be hung over each of said rollers and the pinwheel thereof for transfer thereover through said framework;

a gear pump mounted adjacent each of said rollers, each said gear pump having a glue outlet provided with a nozzle in opposing relation to a respective continuous sheet of paper passing over the adjacent roller, an inlet of said gear pump being communicated via a hose with a glue tube, each said gear pump being swingably mounted on said framework for permitting the nozzle of said gear pump to be selectively brought into and out of contact with said respective continuous sheet of paper; and

a cam mounted on said framework for swinging said gear pump with respect to said sheet of paper;

whereby glue discharged from said nozzle can be continuously applied to the respective continuous sheet of paper by maintaining the nozzle in contact with the sheet of paper, and whereby, by said cam swinging said gear pump to bring the nozzle thereof alternately into and out of contact with the sheet of paper, glue discharged from said nozzle can be skippingly applied to the sheet of paper.

4,878,982
APPARATUS FOR SPLICING A REPLACEMENT WEB TO A WEB HAVING A PROGRAMMED MOVEMENT WITHOUT INTERRUPTING SUCH MOVEMENT

Taizo Ogata; Toyoharu Takahashi, both of Chiba, and Kenji Koshiba, Tokyo, all of Japan, assignors to Tokyo Automatic Machinery Works, Ltd. and Japan Tobacco Inc., both of Tokyo, Japan

Filed Dec. 24, 1987, Ser. No. 137,571

Claims priority, application Japan, Dec. 25, 1986, 61-312563

Int. Cl.⁴ B65H *19/20, 21/02*

U.S. Cl. 156—361 21 Claims

1. Apparatus comprising:

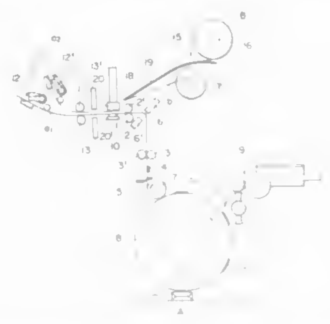
(a) a first web supply containing a first web and a second web supply containing a second web;

(b) operable pulling means engaged with said first web for withdrawing the same from said first supply and moving said first web along a predetermined path;

(c) cutter means for severing the first web to establish a trailing edge thereon, and for severing the second web to establish and a leading edge thereon;

(d) means for detecting the presence of said trailing edge on said path; and

(e) a splicing station position in said path constructed and arranged to splice said leading edge of said second web to said trailing edge of said first web while each of said first and second webs lie in a common plane such that the leading edge of the second web abuts the trailing edge of the first web in response to detecting the presence of said trailing edge.



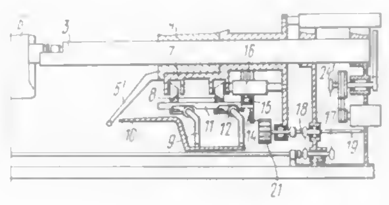
4,878,983
APPARATUS FOR BUILDING PNEUMATIC TIRE COVERS

Lev V. Schadin, ulitsa Avtozavodskaya, 67, kv. 5, and Alexander S. Klimov, ulitsa Klubnaya, 4, kv. 32, both of Yaroslavl, U.S.S.R.

Filed Aug. 6, 1987, Ser. No. 82,379

Int. Cl.⁴ B29D *30/24*

U.S. Cl. 156—415 1 Claim



1. An apparatus for building pneumatic tires, comprising:

a main tire-building drum;

guide members having said main tire-building drum mounted thereon;

supports mounted on said guide members;

auxiliary tire-building drums mounted for rotation on said supports coaxially with said main tire-building drum;

a rotation drive for said main tire-building drum;

actuators for collapsing and expanding said auxiliary tire-building drums;

drive means for axially moving said supports and said auxiliary tire-building drums mounted thereon;

a transmission shaft connected with said rotation drive of said main tire-building drum for rotation therewith;

intermediate shafts provided with gears and mounted on said supports of said auxiliary tire-building drums and connected to said transmission shaft for rotation therewith; and

tooth rims provided on said auxiliary tire-building drums, said tooth rims being engageable with the gears of said intermediate shafts only when the auxiliary tire-building drums are in the collapsed position such that rotation is only transmitted to said auxiliary tire-building drums from said rotation drive for said main tire-building drum when the auxiliary tire-building drums are in the collapsed position.

4,878,984
APPARATUS FOR FORMING A FILAMENT-WOUND STRUCTURE ON A CYLINDRICAL POLE

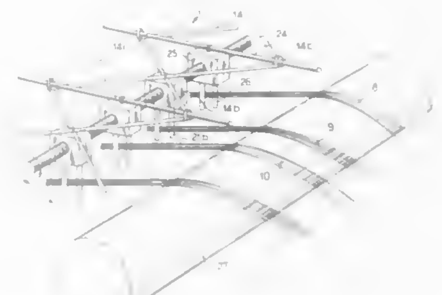
Pierre Bourrieres, Cahors, France, assignor to Manufacture d'Appareillage Electrique de Cahors, Cahors, France

Division of Ser. No. 865,769, May 22, 1986, Pat. No. 4,769,967. This application May 11, 1988, Ser. No. 195,678

Claims priority, application France, May 28, 1985, 85 07952

Int. Cl.⁴ B31C *13/00;* **B65H** *81/00*

U.S. Cl. 156—431 5 Claims



1. Apparatus for forming a filament-wound structure on a cylindrical pole (**1**) of plastic material having a longitudinal axis X—X′, and having a bottom end to be fitted in the ground and a top end adapted to support loads, said pole being reinforced by said wound structure of filaments disposed in a plurality of layers, each filament having a winding angle (α) with respect to a plane perpendicular to said axis X—X ′ of the pole (**1**), the adjacent filaments in each layer being spaced a distance apart, the winding angle (α) of each filament and said distance between adjacent filaments progressively increasing from the bottom end to the top end of the pole, said apparatus comprising means for feeding a filament web impregnated with resin in the unpolymerized state to the pole (**1**) at a predetermined angle (α) with respect to a plane perpendicular to said axis, means for driving the pole (**1**) in rotation about said axis, means for displacing the filament web along the pole from the bottom end to the pole end thereof in a direction parallel to the axis of the pole while this latter is being driven in rotation, said feeding means feeding a plurality of parallel fiber slivers (**7, 8, 9**) simultaneously to the pole (**1**), and means (**13, 14, 15, . . . 20**) for progressively increasing the spacing between said slivers during feeding of said slivers from the bottom end toward the top end of the pole in each said layers, said increasing means comprising a rotatably mounted threaded rod (**12**) in cooperating relation with a series of deformable parallelograms (**13, 14, 15, . . . 20**) adapted to carry at two of their opposite vertices a body (**14***a*, **14***b*) which is slidably mounted on said threaded rod, each body being provided with a fork (**21***a*, **21***b*) for guiding the displacement of a fiber sliver (**7, 9**), the vertex of the deformable parallelogram (**13**) located at one end of the threaded rod (**12**) being rigidly coupled to a fixed point (**22**) whilst the vertex of the deformable parallelogram (**20**) adjacent the other end of the threaded rod (**12**) is rigidly fixed to a body (**23**) which is engaged by screwing on said threaded rod (**12**).

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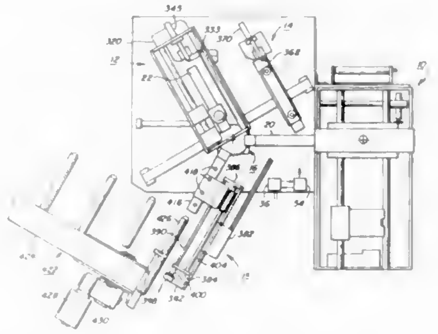
4,878,985
APPARATUS FOR PREPARING BELTS

Karl V. Thomsen, Ontario; John J. Darcy, Webster; Augustus W. Griswold, Rush; Boris W. Haritonoff, Geneseo, and Jacob Pond, Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 28,807, Mar. 20, 1987, abandoned. This application May 31, 1988, Ser. No. 200,408

Int. Cl.⁴ B29C *53/36;* **B32B** *31/16*

U.S. Cl. 156—459 17 Claims



1. Apparatus for fabricating belts comprising
(a) a web supply means for supplying a web having a leading edge from a web supply roll,
(b) web cutter means adapted to sever said web to form a web segment having a trailing edge, a midsection and said leading edge,
(c) an adjustable web pick up means adapted to temporarily grip said web and pull said leading edge a predetermined distance downstream from said web cutter means,
(d) a first invertable gripper means adjacent to said web cutter means, said first invertable gripper means being adapted to temporarily grip the lower surface of said trailing edge of said web,
(e) means to invert said first invertable gripper and loop said trailing edge of said web segment over said midsection of said web segment,
(f) a second invertable gripper means spaced downstream from said first invertable gripper means, said second invertable gripper means being adapted to temporarily grip the lower surface of said leading edge of said web,
(g) means to activate said web pick up means to transport said leading edge of said web upstream to a location adjacent to and above said second invertable gripper means,
(h) means to invert said second invertable gripper and loop said leading edge of said web segment over the midsection of said web segment whereby said leading edge forms a lap joint with said trailing edge and said midsection of said web segment forms the bottom of a loop loosely suspended from said lap joint,
(i) a belt welding station comprising means adapted to weld said lap joint,
(j) a belt conveying anvil comprising an elongated arm having a free end, a supported end and at least one opening extending along the upper surface of said elongated arm,
(k) means to form a partial vacuum within said opening,
(l) an anvil transporting means adapted to support said supported end of said anvil and adapted to position said upper surface of said elongated arm within said loop and below said lap joint of said web,
(m) means to activate said first invertable gripper and said second invertable gripper to transfer said web at said lap joint to said upper surface of said elongated arm of said anvil,
(n) means to activate said means to form a partial vacuum within said opening of said elongated arm of said anvil to secure said lap joint to said upper surface of said elongated arm of said anvil,
(m) means to convey said elongated arm and said loosely suspended loop to said belt welding station, and
(o) means to activate said welding station to weld said lap joint while said lap joint is secured to said elongated arm of said anvil to form a welded belt.

4,878,986
WEB BUTT SPLICING DEVICE

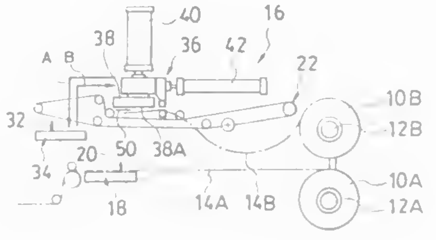
Tetsuo Nishikawa, Haibara, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 14, 1988, Ser. No. 284,286

Claims priority, application Japan, Dec. 17, 1987, 62-319786

Int. Cl.⁴ B65H *19/14, 19/18*

U.S. Cl. 156—504 8 Claims



1. A web butt splicing device for splicing a first roll of web to a second roll of web by butting the following end of the first roll of web against the leading end of the second roll of web using an adhesive tape, said device comprising:
a butt splicing table including a hold surface for attracting and positioning said first roll of web and a cutting device for cutting said following end of said first roll of web into a given shape;
a guide device for unwinding said leading end of said second roll of web from said second web roll and guiding the same;
a provisionally positioning table including a hold surface for attracting and holding a web, said table being adapted to hold on said hold surface said leading end of said second roll of web guided by said guide device; and,
a web carrying device including a hold surface for attracting, positioning and holding a web, said device being adapted to attract and remove said leading end of said second roll of web from said hold surface of said provisionally positioning table by means of said hold surface thereof and carry said leading end of said second roll of web to said butt splicing table so as to butt said leading end of said second roll of web against said following end of said first roll of web.

4,878,987
TRANSVERSE ZIPPER BAG MATERIAL AND METHOD OF AND MEANS FOR MAKING SAME

Donald L. Ven Erden, Wildwood, Ill., assignor to Minigrip, Inc., Orangeburg, N.Y.

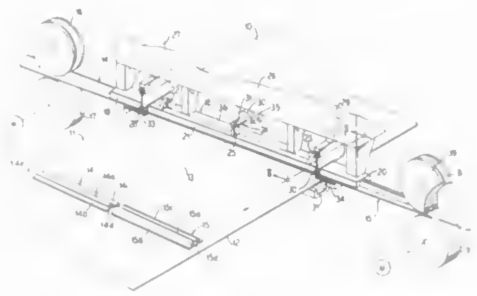
Continuation of Ser. No. 26,011, Mar. 16, 1987, abandoned. This application Aug. 1, 1988, Ser. No. 226,544

Int. Cl.⁴ B31B *1/90, 23/72;* **B32B** *31/10*

U.S. Cl. 156—519 4 Claims

1. A mechanism for making material suitable for use in a form, fill and seal operation comprising in combination:
means for advancing a continuous sheet of thin plastic film material along a path including a fastener station therealong;
means for supplying a first supply of flexible fastener strip material at one side of the sheet;
means for supplying a second supply of flexible fastener strip material to the opposite side of the sheet;

first guide means positioned at said station aligned with said first supply for guiding the first strip material laterally onto the sheet;
second guide means positioned at said station aligned with said second supply of strip material for guiding the second strip material laterally onto said sheets positioned in alignment with said first supply of first strip material;
means for securing said first and second strips to the film sheet;



said first and second guide means includes open channels facing downwardly toward the film through which the flexible strip material slides; and
including a movable wall along the forward side of the channels movable to a noninterfering position to allow exit of the fastener strip material from the channels when the film sheet is moved forwardly along the path after the strip material has been attached thereto.

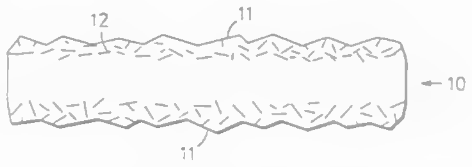
4,878,988
GETTERING PROCESS FOR SEMICONDUCTOR WAFERS

James B. Hall; Martin G. Robinson, both of Chandler, and Ronald C. Swift, Mesa, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 3, 1988, Ser. No. 251,734

Int. Cl.⁴ G30B *33/00*

U.S. Cl. 156—600 5 Claims



4. A method for removing impurities from a wafer having a first and second surface consisting essentially of:
slicing the wafer from an ingot thus creating mechanical damage on the first and second wafer surfaces;
heating the wafer at a temperature for a amount of time so that impurities are gettered to the damaged area; and
lapping the damaged area thus removing the gettered impurities.

4,878,989
CHEMICAL BEAM EPITAXY SYSTEM

Andrew J. Purdes, Garland, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

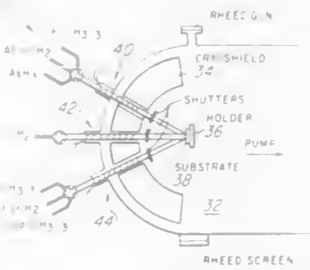
Filed Nov. 26, 1986, Ser. No. 935,481

Int. Cl.⁴ C23C *16/00*

U.S. Cl. 156—613 12 Claims

1. A chemical beam epitaxy system, comprising:
(a) a vacuum chamber;
(b) a substrate holder within said chamber;
(c) a plurality of cells in said chamber, each of said cells providing a beam directed at a substrate in said substrate holder, each of said beams essentially consisting of atoms or molecules selected from the group consisting of atomic hydrogen, compounds of elements which are constituents of material to be epitaxially grown on said substrate, elements which are constituents of material to be epitaxially grown on said substrate, and diluents, with at least one of said cells with a beam including atomic hydrogen.

7. A method of epitaxial growth of compound materials on a substrate, comprising the steps of:



(a) directing a first beam including a first compound of a first element at a surface of a substrate in an evacuated chamber, said first compound containing carbon;
(b) directing a second beam including a second compound of a second element at said surface in said chamber concurrently with said first beam, said first and second elements constituents of a compound material; and
(c) directing a third beam including atomic hydrogen at said surface in said chamber concurrently with said first and second beams.

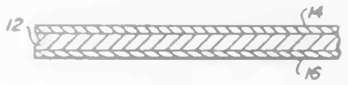
4,878,990
ELECTROFORMED AND CHEMICAL MILLED BUMPED TAPE PROCESS

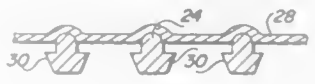
William P. Dugan, Glendora; Rama P. Samudrala, Upland, and Grace A. Rivas, Claremont, all of Calif., assignors to General Dynamics Corp., Pomona Division, Pomona, Calif.

Filed May 23, 1988, Ser. No. 197,794

Int. Cl.⁴ C23F *1/02;* **B44C** *1/22;* **C03C** *15/00, 25/06*

U.S. Cl. 156—630 12 Claims





1. A process for producing bumped lead frae tape comprising the preliminary steps of:
(a) laminating a metal foil sheet on a first side and a second side with a photoresist;
(b) simultaneously exposing said first side to an image of bumps and said second side to an image of leads;
(c) developing said image of bumps to expose a plurality of bump openings while protecting said photoresist on said second side from being developed;
(d) cleaning those parts of said metal foil sheet exposed in said bump openings; and
(e) electroforming metal bumps on said metal sheet in said bump openings to a predetermined height.

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2. The process of claim 1 further including the subsequent steps of:
- (f) developing said lead image on said second side of said sheet;
- (g) chemically milling exposed parts of said metal sheet on said second side with an etchant while protecting said first side from contact with said etchant, for a time sufficient to form a plurality of bumped leads;
- (h) removing any remaining said photoresist from said first and second sides to leave a bumped tape; and
- (i) activating said bumped tape with a solution of sodium persulfate.

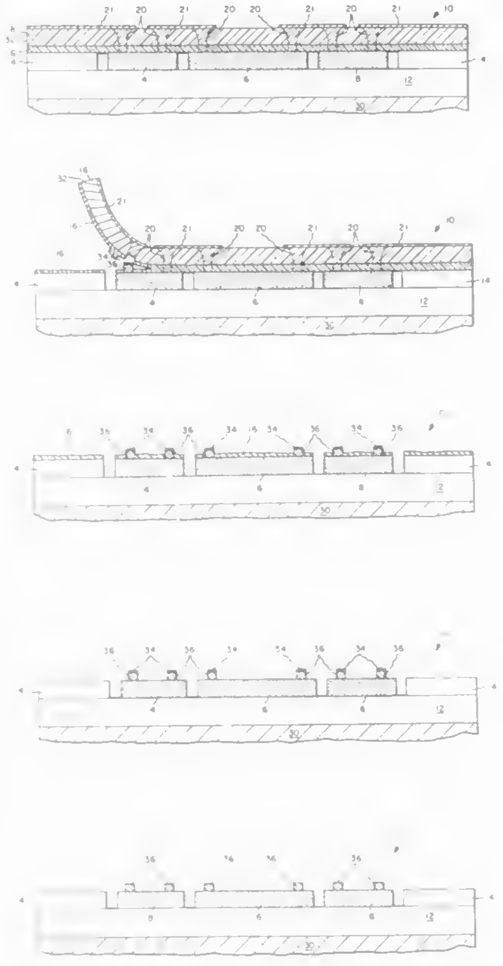
4,878,991
SIMPLIFIED METHOD FOR REPAIR OF HIGH DENSITY INTERCONNECT CIRCUITS

Charles W. Eichelberger, Schenectady, and Robert J. Wojnarowski, Ballston Lake, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 12, 1988, Ser. No. 283,095

Int. Cl.⁴ C23F *1/02;* **B44C** *1/22;* **C03C** *15/00;* **B29C** *37/00*

U.S. Cl. 156—630 **19 Claims**



1. A method of gaining access to, for the purpose of replacing, a defective integrated circuit chip situated in a high density interconnect circuit wherein a polymer overlay layer is bonded by an adhesive to the upper surfaces of integrated circuit chips positioned on a substrate, comprising the steps of:
- peeling said polymer overlay layer from said integrated circuit chips;
- removing any adhesive remaining on said integrated circuit chips;
- applying an etchant to metal deposits on contact pads situated on said integrated circuit chips so as to remove said deposits; and
- washing particulate from said integrated circuit chips and said substrate.

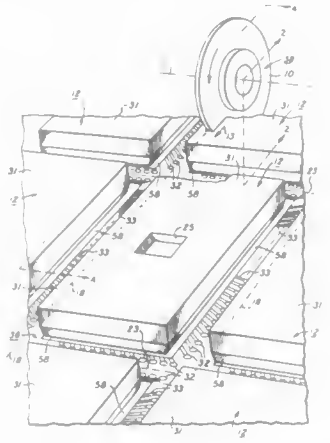
4,878,992
METHOD OF FABRICATING THERMAL INK JET PRINTHEADS

Michael R. Campanelli, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Nov. 25, 1988, Ser. No. 276,845

Int. Cl.⁴ H01L *21/306;* **B44C** *1/22;* **C03C** *15/00, 25/06*

U.S. Cl. 156—633 **8 Claims**



1. A method of fabricating a plurality of ink jet printheads from at least two substrates having confronting surfaces aligned and bonded together, wherein the confronting surface of one substrate contains a plurality of sets of equally spaced, linear arrays of heating elements and addressing electrodes having terminals for enabling the individual addressing of each heating element with current pulses, and wherein the confronting surface of the other substrate contains a plurality of sets of equally spaced, parallel grooves and a recess, one end of each set of grooves communicate with an ink supply means, the fabricating method comprising the steps of:
- (a) removing the substrate material above the electrode terminals on the other substrate and thus producing a plurality of separate portions in which each contain one set of grooves and interconnected recesses;
- (b) dicing the end portions from each separate substrate portion containing the ends of the set of grooves opposite the ends communicating with the ink supply means to form a nozzle face containing open groove ends, the open groove ends to serve subsequently as droplet emitting nozzles, the dicing being accomplished by a first circular, resin-bonded blade having a predetermined diamond particle size and density, the blade having a predetermined diameter and thickness, and operated at a speed of greater than 32,000 inches per second with a predetermined depth of cut, so that the entire region containing grooves are cut; and
- (c) dicing in a direction perpendicular to the nozzle faces to separate the rows of printheads into individual printheads.

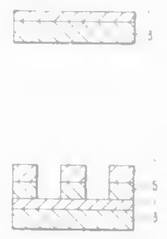
4,878,993
METHOD OF ETCHING THIN INDIUM TIN OXIDE FILMS

Barbara A. Rossi, Putnam Valley, and Udayanath Mitra, Tarrytown, both of N.Y., assignors to North American Philips Corporation, New York, N.Y.

Filed Dec. 22, 1988, Ser. No. 289,654

Int. Cl.⁴ B44C *1/22;* **C03C** *15/00, 25/06;* **C23F** *1/02*

U.S. Cl. 156—643 **19 Claims**



1. A method of etching a thin layer of indium tin oxide deposited on a substrate comprising subjecting said layer of indium tin oxide to ion reactive etching in a plasma consisting of disassociated argon.

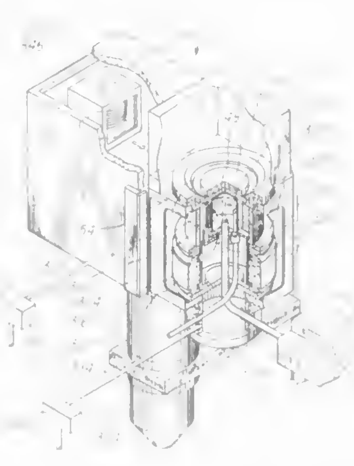
4,878,994
METHOD FOR ETCHING TITANIUM NITRIDE LOCAL INTERCONNECTS

Rhett B. Jucha, Celeste; Cecil J. Davis, Greenville; Tom Tang, Dallas, and Lee M. Loewenstein, Plano, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation-in-part of Ser. No. 74,415, Jul. 16, 1987. This application Mar. 29, 1988, Ser. No. 174,649

Int. Cl.⁴ C23F *1/02;* **B44C** *1/22;* **C03C** *15/00;* **H01L** *21/306*

U.S. Cl. 156—643 **53 Claims**



1. A process for etching of a titanium containing film in a process chamber comprising the steps of:
- (a) generating at least free radicals from at least a halogen containing gas in remote plasma generator separated from the process chamber;
- (b) introducing said free radicals to said process chamber, and
- (c) generating an in situ plasma within the process chamber from said free radicals.

4,878,995
METHOD OF DRY ETCHING AND APPARATUS FOR USE IN SUCH METHOD

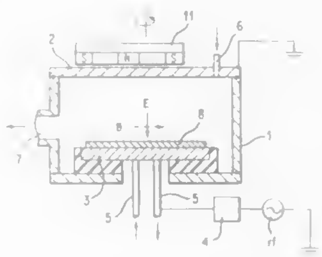
Tsunetoshi Arikado, Tokyo; Makoto Sekine, Kanagawa; Haruo Okano, and Yasuhiro Horiike, both of Tokyo, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa, Japan

Filed Jul. 1, 1988, Ser. No. 214,368

Claims priority, application Japan, Jul. 2, 1987, 62-165860

Int. Cl.⁴ H01L *21/306;* **B44C** *1/22;* **C03C** *15/00, 25/06*

U.S. Cl. 156—643 **34 Claims**



1. A method of dry etching, comprising the steps of:
- disposing an object to be etched in a vacuum chamber, the object having a first film thereon and a second film over the first film;
- introducing an activated reactive gas into the chamber for selectively etching the second film; and
- cooling the object to a temperature at which a thin film including at least an element of the first film deposits on the first film selectively.

4,878,996
METHOD FOR REDUCTION OF FILAMENTS BETWEEN ELECTRODES

Allan T. Mitchell, Garland; Howard L. Tigelaar, Allen; Shaym G. Garg, Lubbock, and Kalipatnam V. Rao, Plano, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 170,528, Mar. 21, 1988, Pat. No. 4,806,201, which is a continuation of Ser. No. 937,658, Dec. 4, 1986, Pat. No. 4,749,443. This application Jan. 23, 1989, Ser. No. 300,468

Int. Cl.⁴ H01L *21/306;* **B44C** *1/22;* **C03C** *15/00, 25/06*

U.S. Cl. 156—653 **11 Claims**

1. A method for fabricating an integrated circuit at a surface of a semiconductor body, comprising:
- forming a first polysilicon electrode layer over selected portions of said surface;
- forming an interlevel dielectric layer over said first electrode layer, said interlevel dielectric layer comprising a material which inhibits oxidation of silicon and extending over an edge of said first polysilicon electrode layer;
- forming a second electrode layer over said dielectric layer and overlying a portion of said first polysilicon electrode layer;

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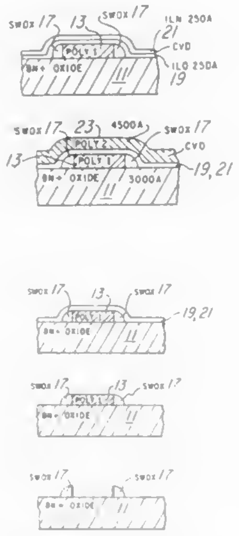
removing said interlevel dielectric layer over an undesired portion of said first polysilicon electrode layer; and



removing said undesired portion of said first polysilicon electrode layer.

4,878,997
METHOD AND APPARATUS FOR MANUFACTURING FIBRE PULP

Rolf B. Reinhall, Bellevue, Wash., assignor to Sunds Defibrator Aktiebolag, Sundsvall, Sweden

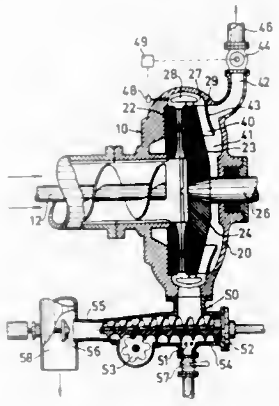
PCT No. PCT/SE84/00053, § 371 Date Oct. 2, 1984, § 102(e) Date Oct. 2, 1984, PCT Pub. No. WO84/03313, PCT Pub. Date Aug. 30, 1984

PCT Filed Feb. 14, 1984, Ser. No. 666,629

Claims priority, application Sweden, Feb. 22, 1983, 8300961

Int. Cl.⁴ D21B *1/12*

U.S. Cl. 162—23 12 Claims



1. A method of manufacturing fibre pulp from lignocellulose-containing material in a refiner provided with at least two opposed refining members rotatable relative to each other and enclosed is a pressure-proof refiner housing, so as to permit the material to be disintegrated during passsage of the material outwardly through a gap defined between the refining members and discharged from the refiner housing, including the steps of:

(a) providing steam in the pulp during the manufacturing;
(b) rotating at least one of the refining members so as to generate centrifugal forces;
(c) passing the pulp and the steam through the gap;
(d) separating the steam from the pulp by the centrifugal forces;
(e) discharging the steam from the refiner housing under pressure; and
(f) discharging the pulp from the refiner housing under pressure.

4,878,998
METHOD FOR CONTROLLING PEROXIDE BLEACHING IN A PLURALITY OF BLEACHING STAGES

Jan-Erik Höök, Lilla Edet, and Görgen Akerlund, Sollentuna, both of Sweden, assignors to Eka Nobel AB, Surte, Sweden

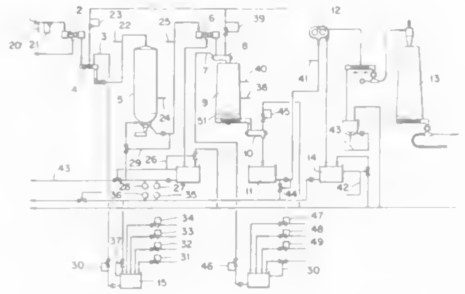
PCT No. PCT/SE87/00467, § 371 Date Jun. 20, 1988, § 102(e) Date Jun. 20, 1988, PCT Pub. No. WO88/02796, PCT Pub. Date Apr. 21, 1988

PCT Filed Oct. 14, 1987, Ser. No. 210,281

Claims priority, application Sweden, Oct. 20, 1986, 8604459

Int. Cl.⁴ D21C *9/16*

U.S. Cl. 162—49 21 Claims



1. A method for controlling peroxide bleaching of mechanical, thermomechanical and chemi-mechanical pulp in a plurality of bleaching stages, comprising the steps of bleaching the pulp in a first stage with a predetermined amount of bleaching chemicals containing peroxide and under predetermined reaction conditions, measuring the brightness of the pulp from this first stage and calculating the bleachability of the pulp as a function of the measured brightness and the predetermined amount of chemicals and predetermined reaction conditions feedforwardly adjusting the amount of bleaching chemicals containing peroxide added in a second stage as a function of the calculated bleachability of the pulp from the first stage, and bleaching the pulp in the second stage.

4,878,999
NON-ALUM SIZING

John W. Gowan, Jr., Washington, D.C., assignor to Westvaco Corporation, New York, N.Y.

Filed Sep. 19, 1988, Ser. No. 246,589

Int. Cl.⁴ D21H *3/34*

U.S. Cl. 162—164.6 7 Claims

1. A process for the nonreactive sizing of cellulose fibers in the substantial absence of alum comprising adding to an aqueous furnish of cellulose fibers at approximately neutral pH conditions a sizing composition comprising cationic material consisting essentially of a cationic polymer characterized by a molecular weight of at least 15,000 and having at least 5% of the monomer units in said polymer exhibiting a positive charge, a cationic starch, and saponified fortified rosin.

4,879,000
PROCESS FOR DETERMINING DIMENSION ERRORS

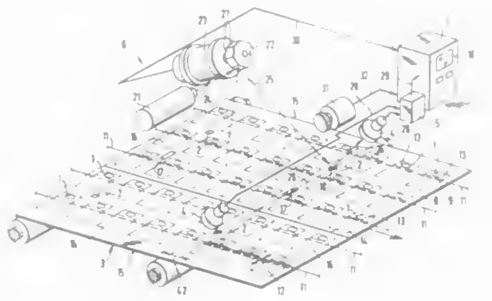
Alexander Gausa, Bielefeld, Fed. Rep. of Germany, assignor to Feldmuehle Aktiengesellschaft, Duesseldorf, Fed. Rep. of Germany

Filed Apr. 6, 1988, Ser. No. 178,140

Claims priority, application Fed. Rep. of Germany, Apr. 18, 1987, 3713279

Int. Cl.⁴ D21F *11/00*

U.S. Cl. 162—198 9 Claims



1. A method of determining a dimension or a distortion error in a paper sheet comprising:

(a) making a paper sheet including a security thread by a paper making process;
(b) forming a water mark within a defined area of the paper sheet during the paper making process;
(c) forming at least two sharp-edged recesses into the body of the paper sheet during the paper making process in an intermediate area outside said defined area, the depth of said recesses being 40 to 80% of the thickness of the paper sheet, said recesses being disposed in positions opposite to each other and each recess having a selected x and y position in the paper sheet;
(d) scanning the paper sheet with a light means so that light strikes the recesses and is reflected as light pulses or permeates the paper sheet;
(e) detecting the light pulses after the recesses are struck and evaluating the pulses in a computer means to establish a value of the pulses; and
(f) comparing the value of the light pulses to values of the x and y positions of the recesses in said computer means, thereby determining any distortion in the paper sheet.

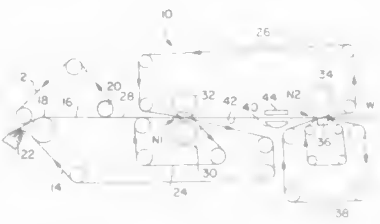
4,879,001
TWIN WIRE FORMER WITH ROLL PRESS FOLLOWED BY EXTENDED NIP PRESS

Dennis C. Cronin, Rockton, Ill., assignor tn Beloit Corporation, Beloit, Wis.

Filed Sep. 12, 1988, Ser. No. 245,481

Int. Cl.⁴ D21F *9/00, 3/02*

U.S. Cl. 162—206 14 Claims



1. A apparatus for making a paper web from stock, said apparatus having a direction of web travel and comprising:

first and second forming wire loops cooperating together to define therebetween a substantially horizontal web forming section having a first and a second end;
a headbox disposed adjacent to said first end of said forming section for ejecting the stock between said wires such that the web is formed in the direction of web travel from the stock during passage of the stock from said first towards said second end of said forming section;
a first felt disposed downstream in the direction of web travel relative to said forming section, said first felt running contiguously relative to said second wire in the second wire loop such that said second wire is disposed between said first felt and the web;
a second felt disposed downstream in the direction of web travel relative to said forming section and on the opposite side of the web relative to said first felt;
an open roll looped by said first felt;
a suction roll looped by said second felt and cooperating with said open roll for defining therebetween a first press nip for pressing a first portion of water from the formed web;
a backing roll disposed downstream in the direction of web travel relative to said first nip; and
an extended nip press shoe cooperating with said backing roll for defining therebetween an extended nip such that said second felt and the web extend through said extended nip for removing a second portion of water from the web.

14. A method for making a paper web from stock, said method comprising the steps of:

ejecting the stock from a headbox between a first and a second forming wire which cooperate together to define therebetween a substantially horizontal web forming section having a first and a second end;
forming the web during passage of the stock from the first to the second end of the forming section;
supporting the formed web on the second wire and guiding the formed web on the second wire through a first press nip defined by an open roll and a cooperating suction roll, the first press nip being disposed downstream relative to the forming section;
guiding a first felt disposed downstream relative to the forming section through said first press nip, the first felt running contiguously relative to the second wire such that the second wire is disposed between the first felt and the web and such that said first felt loops the open roll;
transferring the pressed web to a second felt which extends through the first press nip and which loops around the suction roll;
applying steam to the press web downstream relative to the first press nip for heating the web; and
further pressing the pressed web by guiding the pressed, heated web and said second felt through an extended nip press.

4,879,002
FRAME CONSTRUCTION OF THE PRESS SECTION IN A PAPER MACHINE

Yrjö Snellman, Tampere, and Mauri Rantala, Nokia, both of Finland, assignors to Oy Tampella Ab, Tampere, Finland

Filed Sep. 15, 1988, Ser. No. 244,883

Claims priority, application Finland, Sep. 15, 1987, 874003

Int. Cl.⁴ D21F *3/00*

U.S. Cl. 162—273 4 Claims

1. A frame construction in a press section in a paper machine having a longitudinal direction, the press section including a combination of at least two rolls forming at least one press nip, members for guiding the paper web through the press section and members for guiding at least one felt into contact with the press section, said frame construction comprising:

a front frame situated before said roll combination, a rear frame situated after said roll combination and a horizontal intermediate frame interconnecting said front and rear frames above the press section, said intermediate frame comprising at least one substantially horizontal beam

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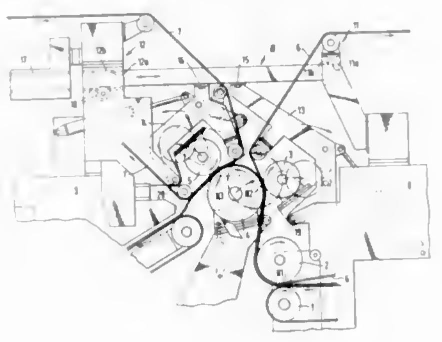
extending in the longitudinal direction of the papermaking machine and being located on a level;

means for detachably interconnecting said intermediate frame to said front frame and rear frame whereby said intermediate frame is easily removable from above the roll combination;

transfer means for moving said intermediate frame horizontally and in the longitudinal direction of the papermaking machine in a removal direction between a working position in which said intermediate frame is interconnected above said roll combination to a service position in which said intermediate frame is detached from both front and rear frames by said means for detachably interconnecting same and removed from above said roll combination, thereby providing for an easy access thereto; and

a support means provided on the frame construction in the removal direction and located at substantially the same level as said intermediate frame for receiving and supporting said intermediate frame in said service position. intermediate frame.



4,879,003

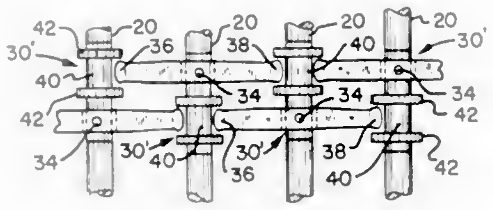
SLICE LIP PROTECTOR SYSTEM

Gordon K. Reed, Bexley, Ohio, assignor to Process Automation Business, Inc., Columbus, Ohio

Filed Apr. 7, 1989, Ser. No. 334,497

Int. Cl.^{4} D21F *1/06*

U.S. Cl. 162—344 **6 Claims**



1. In a paper machine headbox slice lip protector system permitting limited incremental slice lip actuator movement through a series of adjacent slice profiling spindles having mechanically interconnected protectors mounted thereon, the improvement comprising:

said interconnected protectors each including an elongated lever member centrally pivoted on one of said spindles;

lock bolts on the opposite ends of said lever member;

stop means mounted on the spindles;

said stop means defining a keeper recess into which said lock bolts of adjacent protectors extend to form a mechanical interconnection;

whereby the one spindle is permitted to move up or down within limits established by the adjacent keeper recesses as the lever member pivots.

4,879,004

PROCESS FOR THE EXTRACTION OF OIL OR POLYCHLORINATED BIPHENYL FROM ELECTRICAL PARTS THROUGH THE USE OF SOLVENTS AND FOR DISTILLATION OF THE SOLVENTS

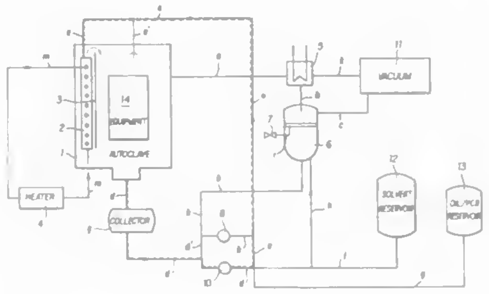
Gustav Oesch, Zurich; Paul Gmeiner, Lieli, and Urs Hofer, Zurich, all of Switzerland, assignors to Micafil AG, Zurich, Switzerland

Filed May 4, 1988, Ser. No. 190,080

Claims priority, application Switzerland, May 7, 1987, 01740/87

Int. Cl.^{4} B01D *1/22, 3/10, 11/00*

U.S. Cl. 203—89 **8 Claims**



1. A combined process for the extraction of oil or polychlorinated biphenyl from parts having electrical insulation impregnated with a dielectric liquid containing oil or polychlorinated biphenyl, by means of a highly volatile solvent, and for the distillation of the solvent from a mixture of oil or polychlorinated biphenyl with the solvent, comprising the steps of:

locating parts to be cleaned in an evacuated autoclave;

introducing a highly volatile solvent into said autoclave;

evaporating the highly volatile solvent during a heating phase in at least one evaporator located in the autoclave;

condensing the solvent on said parts thereby heating said parts so that said solvent penetrates into the electrical insulation of the parts and so that the condensation heat of the solvent dissolves the oil or the polychlorinated biphenyl out from said electrical insulation; and

effecting a plurality of intermediate pressure reductions during the heating phase such that during each intermediate pressure reduction, the supply of the solvent is discontinued and the mixture is circulated in order to simultaneously carry out a distillation phase so that the highly volatile solvent is distilled out of the oil or polychlorinated biphenyl-solvent mixture directly from the autoclave, wherein the pressure after each intermediate pressure reduction is reduced to between 1 to 100 mbar.

4,879,005

ELECTROCHEMICAL SENSOR FOR HYDROGEN SENSING

Derek J. Fray, Cambridge, England, and David R. Morris, New Brunswick, Canada, assignors to National Research Development Corporation, London, England

Filed Sep. 22, 1988, Ser. No. 247,567

Claims priority, application United Kingdom, Oct. 2, 1987, 8723222

Int. Cl.^{4} G01N *27/58*

U.S. Cl. 204—1 T **13 Claims**

1. An electrochemical sensor for hydrogen, comprising

(i) an electronically conductive component exposable to the hydrogen to be sensed and which catalyses the disassociation of hydrogen to hydrogen ions,

(ii) a solid-state electrolyte for hydrogen cations in contact with the component (i), and

(iii) a reference entity in contact with the electrolyte (ii) and connectable to one side of a voltmeter whose other side is connectable to the component (i),

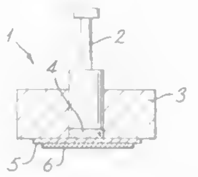
said reference entity (iii) comprising a solid mixture of two oxidation states of the same element.

13. A method of sensing the presence or measuring the concentration of hydrogen, comprising:

providing an electrochemical sensor for hydrogen comprising (i) an electronically conductive component exposable to the hydrogen to be sensed and which catalyses the disassociation of hydrogen to hydrogen ions, (ii) a solid-state electrolyte for hydrogen cations in contact with the component (i), and (iii) a reference entity in contact with the electrolyte (ii) and connectable to one side of a voltmeter whose other side is connectable to the component (i), the reference entity (iii) comprising a solid mixture of two oxidation states of the same element;

exposing the electronically conductive component (i) of said sensor to the hydrogen to be sensed; and

measuring the voltage generated between the electronically conductive component (i) and the reference entity (iii).



4,879,006

LIQUID TREATMENT PROCESS

Andrew D. Turner, Abingdon, United Kingdom, assignor to United Kingdom Atomic Energy Authority, Oxfordshire, England

Filed Aug. 5, 1988, Ser. No. 228,510

Claims priority, application United Kingdom, Aug. 12, 1987, 8719045

Int. Cl.^{4} C25C *1/22, 3/34;* **C25D** *3/54, 5/32*

U.S. Cl. 204—1.5 **6 Claims**

1. A method of converting dissolved ruthenium present in aqueous solution in a first oxidisable oxidation state to ruthenium (IV) oxide, which method comprises establishing an electrochemical cell wherein the solution is the cell electrolyte, and subjecting the ruthenium in the solution in said cell to electrochemical oxidation and to electrochemical reduction thereby to convert the ruthenium to the +4 oxidation state and give rise to the ruthenium (IV) oxide.

4,879,007

SHIELD FOR PLATING BATH

Chi W. Wong, Kowloon, Hong Kong, assignor to Process Automation Int'l Ltd., Kowloon, Hong Kong

Filed Dec. 12, 1988, Ser. No. 282,751

Int. Cl.^{4} C25D *5/02, 17/06*

U.S. Cl. 204—15 **17 Claims**

1. In a method for the electrolytic deposition of a coating of metal having uniform thickness on an electroplatable substrate as cathode in an electrolyte bath equipped with anode, the improvement comprising supporting said substrate in a substantial vertical plane in an elongated trough, said trough being slidably mounted at each end in guide members and adapted for confined movement in a vertical plane in said electrolytic bath, wherein the lower edge of said substrate is located below the plane in which lies the upper edges of said trough.

4,879,008

PREPARATION OF BIDENTATE LIGANDS

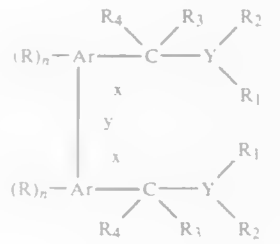
Thomas A. Puckette, Longview, Tex., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 9, 1987, Ser. No. 118,573

Int. Cl.^{4} C25C *3/00*

U.S. Cl. 204—72 **8 Claims**

1. A process for preparing a bidentate ligand of the formula



wherein

each Ar is independently selected from aromatic ring compounds having 6 up to 14 carbon atoms;

the x bonds and the y bonds are attached to adjacent carbon atoms on the ring structures;

each R, when present as a substituent, is independently selected from alkyl, alkoxy, aryloxy, aryl, aralkyl, alkaryl, alkoxyalkyl, cycloaliphatic, halogen, alkanoyl, alkanoyloxy, alkoxycarbonyl, carboxyl, cyano or formyl radicals;

n is a whole number in the range of 0–4 where Ar is phenyl; 0–6 where Ar is naphthyl; and 0–8 where Ar is phenanthryl or anthracenyl;

each R_1 and R_2 is independently selected from alkyl, aryl, aralkyl, alkaryl or cycloaliphatic radicals or substituted derivatives thereof; wherein substituted derivatives are selected from ethers, amines, amides, sulfonic acids, esters, hydroxyl groups or alkoxy groups;

each R_3 and R_4 is independently selected from hydrogen and the R_1 substituents;

each of the above alkyl groups or moieties is a straight or branched chain of 1–20 carbons;

each aryl group contains 6–10 ring carbons;

each cycloaliphatic group contains from 4–8 ring carbons; and

each Y is independently selected from the elements N, P, As, Sb and Bi;

said process comprising, maintaining a redox reaction system comprising

(a) a reactant of the formula:

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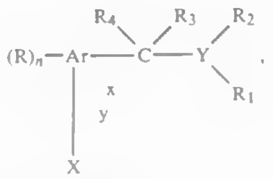


wherein X is a halogen,
- (b) a polar, aprotic solvent,
- (c) a nickel compound, and
- (d) a reducing agent, which has a sufficient reducing potential to promote the reduction of Ni(II) to Ni(O), at a temperature and for a time sufficient to form said ligand.

4,879,009
METHOD OF PREPARING AN ASBESTOS DIAPHRAGM

Jerry N. Kinney, Mogadore, Ohio, assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 26,810, Mar. 1, 1987, Pat. No. 4,806,214, which is a continuation of Ser. No. 813,326, Dec. 24, 1985, abandoned. This application Sep. 2, 1988, Ser. No. 240,777

The portion of the term of this patent subsequent to Feb. 21, 2006, has been disclaimed.

Int. Cl.⁴ C25G *1/14*

U.S. Cl. 204—98 9 Claims

1. A method of depositing a liquid permeable asbestos diaphragm on a foraminous cathode structure by the steps of:
- (a) providing an aqueous slurry containing from about 100 to about 200 grams per liter alkali metal hydroxide and from about 0.5 to about 3 weight percent, basis total weight of slurry, of asbestos and particulate alternating copolymer of ethylene and chlorotrifluoro-ethylene, the copolymer being present in amount of from about 1 to about 30 weight percent basis total weight of asbestos and copolymer;
- (b) contacting a foraminous cathode structure with the slurry so as to deposit on the foraminous cathode structure a mat containing alkali metal hydroxide, asbestos and copolymer; and
- (c) heating the foraminous cathode structure having the mat deposited thereon at temperature in the range of from about 140° C. to about 220° C. for at least two hours so as to react the alkali metal hydroxide with the asbestos, the heating temperature being below the melting point of the copolymer.

4,879,010
RECOVERY OF MERCURY FROM MERCURY COMPOUNDS VIA ELECTROLYTIC METHODS

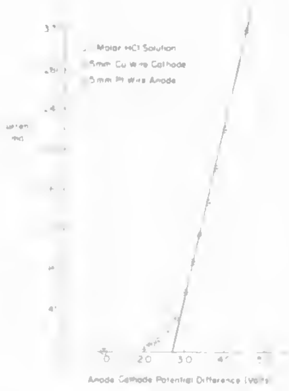
Mark W. Grossman, Belmont, and William A. George, Rockport, both of Mass., assignors to GTE Products Corporation, Danvers, Mass.

Continuation of Ser. No. 815,150, Dec. 31, 1985, abandoned. This application Oct. 7, 1988, Ser. No. 259,425

Int. Cl.⁴ C25C *1/16*

U.S. Cl. 204—105 R 10 Claims

1. A process for the production of isotopically specific elemental mercury from a compound comprising:
- a. producing an isotopically specific mercury compound in a reactor for producing such a mercury compound;
- b. dissociating said mercury compound into ions which are soluble in an electrolyte solution, said electrolyte solution contained in said reactor, thereby producing isotopically specific mercury ions within said electrolyte solution;
- c. transporting said electrolyte solution containing the isotopically specific mercury ions to an electrolytic cell by means of a fluid connecting means connected to the reactor and the electrolytic cell, said electrolytic cell containing an anode and a cathode;
- d. applying an electric voltage across said anode and cathode, thus passing an electric current from the anode through said electrolyte solution to the cathode wherein the isotopically specific mercury ions in the electrolyte solution are reduced and isotopically specific elemental mercury is plated onto the cathode and thereafter recovering said elemental mercury; and
- e. transporting the electrolyte solution back to the reactor through fluid connecting means, such that additional isotopically specific mercury compound can be dissociated and transported to the electrolytic cell wherein additional elemental isotopically specific mercury can be recovered.



2. A process of claim 1, wherein Hg_2Cl_2 containing isotopically specific Hg is produced in the reactor and mercurous ions are formed in the electrolyte solution and reduced in the electrolytic cell to form elemental mercury.

7. A process as recited in claim 1, wherein HgO containing isotopically specific Hg is produced in the reactor and is dissociated in the electrolyte solution to produce isotopically specific mercuric ions in solution, said ions being reduced in the electrolytic cell to form isotopically specific elemental mercury.

4,879,011
PROCESS FOR CONTROLLING A REACTION BY ULTRASONIC STANDING WAVE

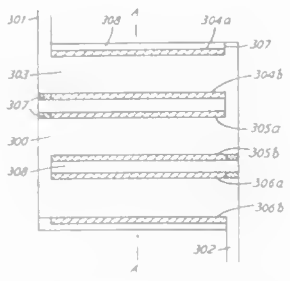
Cornelius J. Schram, Pavenham, England, assignor to National Research Development Corporation, London, England

Filed Aug. 8, 1988, Ser. No. 229,495

Claims priority, application United Kingdom, Aug. 7, 1987, 8718756

Int. Cl.⁴ B01J *19/08*

U.S. Cl. 204—157.42 19 Claims



1. A process for controlling a reaction involving particulate material, in which said material is immersed in a fluid medium, an ultrasonic standing wave is established within said medium, said standing wave retaining said particulate material suspended in the medium, and a relative displacement is produced between said material and the fluid medium, whereby to effect or control the reaction.

4,879,012
METHOD FOR REUTILIZATION OF ELECTROPHORESIS GEL

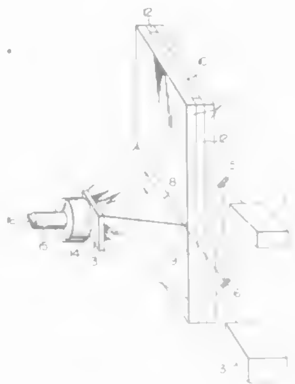
Hideki Kambara, Hachioji, and Tetsuo Nishikawa, Koganei, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 24, 1988, Ser. No. 211,284

Claims priority, application Japan, Jun. 24, 1987, 62-155447

Int. Cl.⁴ G01N *27/26*

U.S. Cl. 204—157.15 7 Claims



1. A method for reutilizing an electrophoresis gel which comprises irradiating an electrophoresis gel used for electrophoresis separation of a fluorophore-labeled sample and detection of the fluorescene emitted from the sample separated by electrophoresis with light, thereby photo-dissociating the fluorophore remaining in the gel and utilizing the irradiated gel; the fluorophore having a dissociation cross-section of 10^{-22} to 10^{-19} cm^2 and being FITC and said electrophoresis gel being irradiated with an argon laser with 40 mW or more, focused onto an area of 1 mm^2 as the light and the electrophoresis gel being scanned with said argon laser, thereby dissociating the fluorophore.

4,879,013
METHOD OF CATIONIC ELECTRODEPOSITION USING DISSOLUTION RESISTANT ANODES

Henry T. Austin, Allison Park, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 835,148, Mar. 3, 1986, abandoned. This application Jul. 19, 1988, Ser. No. 220,416

Int. Cl.⁴ C25D *13/00;* C25B *11/04*

U.S. Cl. 204—180.2 4 Claims

1. A method of electrocoating an electrically conductive surface serving as a cathode in an electrical circuit comprising said cathode and an anode immersed in an aqueous dispersion of a cationic resinous composition which will dissolve stainless steel anodes comprising passing electric current between said cathode and anode at a constant voltage of from 50 to 500 volts and at a current density of from 0.5 to 10 amperes per square foot to cause a coating to deposit on the cathode, characterized in that the anode does not dissolve nor deteriorate during the electrocoating process and comprises a titanium including alloys of titanium substrate to which is adhered a coating of a conductive material selected from the group consisting of ruthenium oxide, iridium oxide and mixtures of.

4,879,014
REMOVAL OF ORGANIC ACIDS FROM FRESHLY PRODUCED BITUMEN

Hermanus G. van Laar; Richard H. Lea, both of Calgary, and Beverley Payne, Corunna, all of Canada, assignors to Shell Oil Company, Houston, Tex.

Filed Sep. 15, 1988, Ser. No. 244,885

Claims priority, application Canada, Sep. 18, 1987, 547250

Int. Cl.⁴ B03C *5/00*

U.S. Cl. 204—190 12 Claims

1. A process for removal of organic acids from freshly produced bitumen comprising the following steps:
- (a) freshly produced, acidic bitumen is diluted with a low-density hydrocarbon blend to create a favorable density difference with an aqueous phase,
- (b) a dilute solution of caustic soda in water is intimately mixed with the diluted bitumen, allowing caustic soda to react with the acids in the bitumen,
- (c) at least one demulsifying chemical is added to weaken the interfacial layers between the de-acidized bitumen phase and the organic salt containing aqueous phase,
- (d) coalescence between the weakened droplets of the dispersed aqueous phase is achieved in an electrostatic dehydration vessel whereby separation between the bitumen and aqueous phase is effected in the vessel, and
- (e) the acid-reduced bitumen is removed from the top of the electrostatic coalescer vessel and the aqueous organic salt solution from its bottom.

4,879,015
METHOD AND MANUAL APPARATUS FOR THE SEMIMECHANICAL GALVANIZING OF SHEET METAL SURFACES

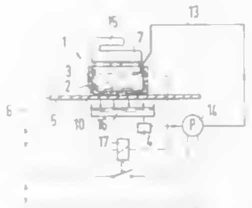
Jan Adamek, Rutesheim; Karl-Heinz Schaich, Kornwestheim, and Wolfgang Heck, Renningen, all of Fed. Rep. of Germany, assignors to Dr. Ing. h.c.f. Porsche Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 836,368, Mar. 5, 1986, abandoned. This application Sep. 17, 1987, Ser. No. 97,716

Claims priority, application Fed. Rep. of Germany, Mar. 6, 1985, 3507927

Int. Cl.⁴ C25D *5/06*

U.S. Cl. 204—224 R 4 Claims



1. An apparatus for electrolytically treating a surface of a workpiece comprising:
- a treatment element having a bottom surface to engage the surface of the workpiece, the treatment element having a plurality of holes therethrough;
- an absorbent cover positioned over at least the bottom surface of the treatment element;
- connector means for connecting the treatment element to a source of electric current so that the treatment element serves as an anode during use;
- a handle assembly for displacing the apparatus over the workpiece as a unit;
- means to connect the handle assembly for the treatment element; and
- drive means in the handle element for imparting an automatic oscillating movement to the treatment element with respect to the handle assembly.

wherein the holes in the treatment element terminate in a

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plurality of longitudinal and transverse grooves in the bottom surface of the treatment element, the grooves being open in the direction of the absorbent cover, the grooves serving to feed electrolyte to the absorbent cover and being connected with a feed line for the electrolyte and having a bottom side matched to the course of the shape of the surface of the workpiece.

4,879,016
ELECTROLYTE ASSEMBLY FOR OXYGEN GENERATING DEVICE AND ELECTRODES THEREFOR

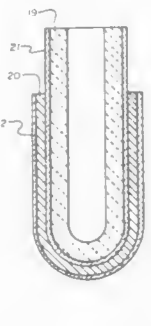
Ashok V. Joshl, Salt Lake City, Utah, assignor to Ceramatec, Inc., Salt Lake City, Utah

Continuation-in-part of Ser. No. 889,214, Jul. 25, 1986, Pat. No. 4,725,346. This application Feb. 16, 1988, Ser. No. 156,549

The portion of the term of this patent subsequeot to Feb. 16, 2005, has been disclaimed.

Int. Cl.⁴ C25B *1/02, 9/00*

U.S. Cl. 204—242 8 Claims



1. In a ceramic electrolyte having oxygen transport characteristics suitably sized to provide useful oxygen quantities and a substantially non-porous silver electrode for conducting electrons and oxygen molecules and/or ions to said electrolyte surface or surfaces, the improvement comprising:

an electrode undercoat comprising a ceramic oxide electronic conductor adherent to said electrolyte surface.

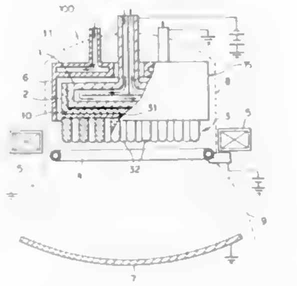
4,879,017
MULTI-ROD TYPE MAGNETRON SPUTTERING APPARATUS

Hee-Yong Lee, Kyungki, Rep. of Korea, assignor to Dae Ryung Vacumm Co. Ltd., Seoul, Rep. of Korea

Filed Nov. 29, 1988, Ser. No. 279,200

Int. Cl.⁴ C23C *14/34*

U.S. Cl. 204—298 4 Claims



1. Apparatus for coating a substrate by magnetron sputtering comprising electromagnets for producing and directing transverse magnetic fields towards a target, an anode positioned to produce an accelerating electric field adjacent to the target, said anode also for producing a glow discharge plasma which is confined by the magnetic fields at predetermined apex regions, and connecting means for connecting electrodes to a source of electrical potential, said apparatus characterized by a cathode comprising a cathode body, a backing plate connected removably to the cathode body, a copper common plate secured to a bottom of said backing plate, and a multi-rod type target including a plurality of vertical rods of magnetic material to be sputtered, each rod having a sputtering surface of hemisperhic form on the apex thereof, and being connected to and directed downward from said copper common plate.

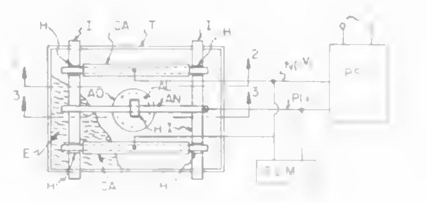
4,879,018
LOW VOLTAGE ANODIZING PROCESS AND APPARATUS

Charles Fenoglio, 6690 7 Mile Rd., South Lyon, Mich. 48178; Peter Kljucaricek, 6732 Lozier, Warren, Mich. 48091; Jeffrey Pernick, 3504 Edgewood Park Dr., Commerce Township, Oakland County, Mich. 48085, and Fred C. Schaedel, 12812 Valley View #18, Garden Grove, Mich. 92645

Filed Dec. 19, 1986, Ser. No. 943,510

Int. Cl.⁴ C25D *11/00, 21/00*

U.S. Cl. 204—56.1 2 Claims



1. A low voltage anodizing process for anodic oxidation of metals in which are used: (i) an anodizing bath containing an electrolyte, an anode and a cathode; and (ii) an AC fed DC power supply for supplying pulsating DC power to the anodizing bath; said anodizing process comprising supplying pulsating D.C. power to the anodizing bath and cyclicly discharging inherent capacitance in the anodizing bath; said cyclic discharge of said inherent capacitance being accomplished by providing successive power cycles wherein each such power cycle consists of a rise portion followed by a fall portion followed by an off-time portion; and providing a shunt discharge path in an electical circuit across the anode and cathode and being external to the anodizing bath for discharging said inherent capacitance during the last part of such fall portion and all during such off-time portion of each power cycle, a significant fraction of the total anodizing current being shunted across said discharge path; said fraction being large enough to completely discharge said inherent capacitance and to empty it of accumulated charges thereon prior to the rise portion of the next subsequent power cycle, there being no capacitor in said electrical circuit across the anode and cathode and external to the anodizing bath.

4,879,019
HYDROCARBON CONVERSION PROCESS FOR SELECTIVELY MAKING MIDDLE DISTILLATES

John W. Ward, Yorba Linda, Calif., assignor to Union Oil Company of California, Los Angeles, Callf.

Division of Ser. No. 28,654, Mar. 20, 1987, Pat. No. 4,762,813, which is a continuation of Ser. No. 793,567, Oct. 31, 1985, abandoned, which is a continuation-in-part of Ser. No. 699,919, Feb. 8, 1985, Pat. No. 4,610,973, which is a continuation of Ser. No. 531,924, Sep. 13, 1983, Pat. No. 4,517,074, which is a division of Ser. No. 84,761, Oct. 15, 1979, Pat. No. 4,419,271. This application Apr. 4, 1988, Ser. No. 196,942

Int. Cl.⁴ C10G *47/20*

U.S. Cl. 208—111 28 Claims

1. A hydrocarbon conversion process which comprises contacting a hydrocarbon feedstock with a hydrocarbon conversion catalyst under hydrocarbon conversion conditions to

convert said feedstock into hydrocarbon conversion reaction products, wherein said catalyst is prepared by the process comprising:

(a) extruding a mixture of a porous, inorganic refractory oxide component and a crystalline aluminosilicate zeolite having cracking activity to form extrudates, wherein said zeolite is selected from the group consisting of Y zeolites, and X zeolites; and

(b) calcining said extrudates in the presence of added steam at a water vapor partial pressure greater than about 2.0 p.s.i.a. under conditions such that the unit cell size of said crystalline aluminosilicate zeolite is reduced to a value between about 24.20 and about 24.35 Angstroms.

4,879,020
METHOD OF OPERATING A FURNACE HYDROCARBON CONVERTER

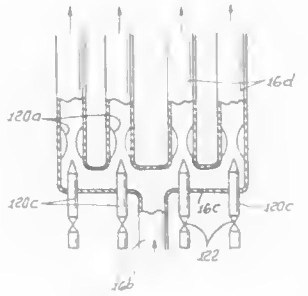
Frank W. Tsai, San Marino, Calif., assignor to Kinetics Technology International, Monrovia, Calif.

Division of Ser. No. 47,210, May 8, 1987, Pat. No. 4,792,436. This application Oct. 17, 1988, Ser. No. 258,771

The portion of the term of this patent subsequent to Dec. 20, 2005, has been disclaimed.

Int. Cl.⁴ C10G *9/16, 9/36*

U.S. Cl. 208—130 3 Claims



1. A method of operating a hydrocarbon, converter furnace having an upper conversion heating section and a lower radiant heating section, and tubing extending through said sections to convey a fluid hydrocarbon feed and steps in sequence through the convection and radiant heating sections, the steps that include:

(a) providing said tubing to have a common feed section and multiple branches extending therefrom in the radiant section of the furnace, each of said branches having an inlet in fluid communication with the feed section, and effecting hydrocarbon and steam flow from the feed section into each of said branches,

(b) providing valve means in each of said branches controlling the rates of flow of hydrocarbon and steam in said branches to reduce differential coking therein,

(c) orienting said branches to extend generally upright in and relative to said radiant heating section of the furnace, and providing the feed section with a downcomer and a U-shaped section, both extending in said radiant section of the furnace and through which hot feed hydrocarbon and steam are fed upwardly to said branches,

(d) providing said branches with main extents in said radiant section, and providing said valve means to include control valves in each of said branches, the control valves having openings and separately movable stoppers, and moving the stoppers within the branches for increasing or decreasing the flow rates of hydrocarbon and steam through the openings of the control valves in the main extents of said branches in said radiant section,

(e) said stoppers including nozzle means controllably introducing dilution steam therethrough into the branches, said nozzle means including separately adjustable valves and including the steps of separately controlling the amount of dilution steam fed to each of said branches through the nozzle means of each stopper in said branch to thereby minimize differential coking in the branches.

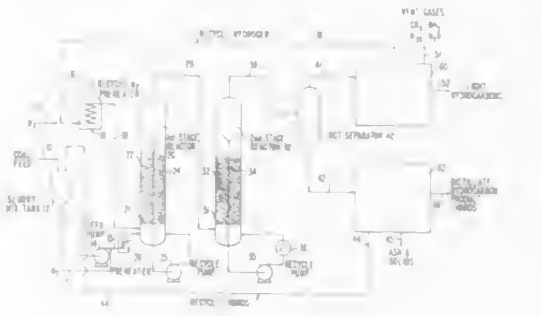
4,879,021
HYDROGENATION OF COAL AND SUBSEQUENT LIQUEFACTION OF HYDROGENATED UNDISSOLVED COAL

Edwin J. Hippo, Makanda, Ill.; Alfred G. Comolli, Yardley, Pa., and Robert O'Brien, Jackson, N.J., assignors to HRI, Inc., Lawrenceville, N.J.

Continuation of Ser. No. 33,856, Apr. 6, 1987, abandoned, which is a continuation of Ser. No. 874,886, Jun. 16, 1986, abandoned, which is a continuation of Ser. No. 472,915, Mar. 7, 1983, abandoned. This application Aug. 26, 1988, Ser. No. 237,636

Int. Cl.⁴ C10G *1/00, 1/06*

U.S. Cl. 208—413 17 Claims



1. A continuous two reactor stage coal conversion process for catalytic hydrogenation of coal particles and subsequent liquefaction thereof for producing coal-derived hydro-carbon liquid and gas products, said process comprising:

(a) mixing solid coal particles having particle size ranging from about 20 mesh to about 400 mesh (U.S. Sieve Series) with hydrocarbon liquid solvent in a solvent/coal weight ratio at least sufficient to provide a flowable coal/oil slurry feed of said solid coal particles, a substantial portion of said hydrocarbon solvent having a normal boiling point ranging from about 400° F. to about 1100° F.;

(b) passing said coal/oil slurry and hydrogen upwardly through a first reaction zone containing hydrocarbon solvent liquid which is partly generated from the coal and substantially hydrogenated therein, said first reaction zone containing a catalytic ebullated bed of particulate solid hydrogenation catalyst maintained at a temperature ranging from about 550° F. to about 650° F., and having a hydrogen partial pressure of 100 to 2000 psig for a residence time between about 5 minutes and about 90 minutes to substantially hydrogenate said solvent oil and said solid undissolved coal particles simultaneously in said coal/oil slurry by transfer of gaseous hydrogen to the solvent oil and coal particles without substantial liquefaction of the coal, said catalyst containing an active non-alkali metal or metal compound selected from the group consisting of Co/Mo, Ni/Mo, Li, Sn promoted Co/Mo, W promoted Co/Mo, NiS, CoS, MoS, FeS, FeS_2, LiH, MgH_2 and mixtures thereof supported on a porous substrate material, said first catalytic ebullated bed reaction zone being back mixed by recycled liquid slurry within the reaction zone;

(c) withdrawing said coal/oil slurry effluent containing said hydrogenated coal particles from said first reaction zone and passing said coal/oil slurry through a second reaction zone containing a catalytic ebullated bed of particulate hydrogenation catalyst which is maintained at a temperature between about 700° F. and about 850° F., and a hydrogen partial pressure of 100 to 2000 psig for a residence time of about 1 to 90 minutes to liquefy and convert said hydrogenated coal particles to gas and liquid fractions, said catalyst containing an active non-alkali metal or metal

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compound supported on a porous substrate material, said second catalytic ebullated bed reaction zone being back mixed by recycled liquid within the reaction zone;

(d) passing said gas and liquid fractions from said second reaction zone to a gas-liquid-solids separation zone, from which separation zone a coal-derived hydrocarbon liquid stream containing a reduced solids concentration is recycled directly without further hydrogenation to said coal slurrying step to provide at least part of the hydrocarbon solvent liquid for said coal/oil slurry feed, a recovered hydrogen gas stream is recycled to said first reaction zone to provide the hydrogen partial pressure in the first reaction zone, and a liquid stream is removed containing an increased concentration of insoluble materials and ash; and

(e) recovering from said separation zone hydrocarbon liquid distillate and gaseous hydrocarbon products, whereby the substantial catalytic hydrogenation of the coal particles in the first reaction zone before catalytic liquefaction in the second reaction zone provides increased yields of C4-975° F. fraction hydrocarbon liquid products, with the yield of cyclohexane soluble product material being about 60–90 W% of the coal feed.

4,879,022

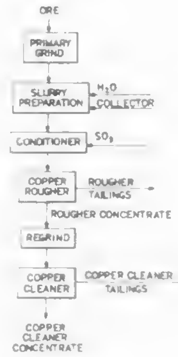
ORE FLOTATION PROCESS AND USE OF MIXED HYDROCARBYL DITHIOPHOSPHORIC ACIDS AND SALTS THEREOF

Alan C. Clark, Mentor; Edward P. Richards, Chagrin Falls, both of Ohio, and Douglas R. Shaw, Lakewood, Colo., assignors to The Lubrizol Corporation, Wickliffe, Ohio

Continuation of Ser. No. 72,809, Jul. 14, 1987, abandoned. This application Jan. 19, 1989, Ser. No. 300,694

Int. Cl.⁴ B03D *1/02*

U.S. Cl. 209—166 34 Claims



1. A process of effecting the concentration of a metal value selected from the group consisting of zinc, copper and lead, from a sulfide ore containing said metal value and at least one of pyrite or pyrrhotite, with selective depression of said at least one of pyrite or pyrrhotite comprising the steps of:

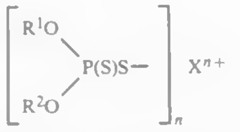
(A) grinding the ore to an appropriate size range;

(B) preparing a slurry comprising

(B-1) said ground ore;

(B-2) at least one metal value collector which is a water-dispersible or soluble dihydrocarbyl dithiophosphoric acid or salt having the formula

(I)



$$\left[\begin{array}{l} R^1O \\ \quad\searrow \\ \qquad P(S)S- \\ \quad\nearrow \\ R^2O \end{array}\right]_n X^{n+}$$

wherein R^1 is an alkyl group containing from 2 to about 12 carbon atoms and R^2 is an aryl group containing from 6 to about 18 carbon atoms, n is an integer equal to the valence of X and X^{n+} is a dissociating cation; and

(C) conditioning the slurry with SO_2 under aeration at a pH of about 6.0 to about 7.0 in an amount sufficient to depress said at least one of pyrite or pyrrhotite;

(D) subjecting the conditioned slurry to froth flotation to produce a froth containing a metal value rougher concentrate and a resultant slurry containing said at least one of pyrite or pyrrhotite which was depressed during the flotation;

(E) collecting said froth; and

(F) recovering the metal value rougher concentrate containing the metal values.

4,879,023

CONVEYOR ASSEMBLY

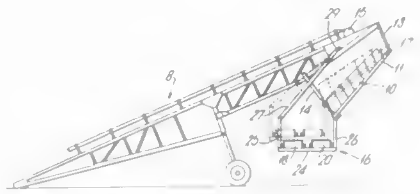
Michael L. Mallaghan, Dungannon, United Kingdom, assignor to Powerscreen International Limited, County Tyrone, United Kingdom

Continuation of Ser. No. 115,573, Oct. 7, 1987, abandoned, which is a continuation of Ser. No. 867,225, May 27, 1986, abandoned. This application Sep. 16, 1988, Ser. No. 245,970

Claims priority, application United Kingdom, May 28, 1985, 8513428

Int. Cl.⁴ B07B *1/00*

U.S. Cl. 209—241 3 Claims



1. A conveyor assembly comprising a main inclined conveyor having a loading end and a discharge end with a screen box having a loading end and a discharge end located at the discharge end of the conveyor, said main conveyor and screen box being located on an elongated structure having a loading end and a discharge end including length adjustable legs intermediate its ends mounted on wheels, in which the loading end of the screen box is pivoted about an axis traversely of and at the discharge end of the structure with the discharge end of the screen box extending towards the loading end of the structure, the discharge end of the screen box being connected to said structure by length adjustable means thereby to alter the inclination of said box, and a cradle is suspended below said structure to carry at least one boom conveyor to receive a grade of material, said cradle being horizontally oriented and connected by linkage with said structure and said box whereby pivotal movement of said box causes synchronous movement of the cradle such as to maintain a horizontal orientation of said cradle, and

wherein said at least one boom conveyor comprises two lateral boom conveyors mounted on said cradle to extend in opposite directions therefrom.

4,879,024

ELASTOMERIC ELEMENT FOR FORMING SURFACES ENGAGEABLE WITH LOOSE ABRASIVE MATERIALS, AND A SIZING SCREEN MADE FROM SUCH ELEMENTS

Alfred G. Chervonenko; Vladimir P. Naduty; Vladimir L. Morus; Valery I. Kravchenko, and Viktor A. Lavrukhin, all of Dnepropetrovsk, U.S.S.R., assignors to Institut Geotekhnicheskoj Mekhaniki, Dnepropetrovsk, U.S.S.R.

Filed Mar. 25, 1988, Ser. No. 173,377

Int. Cl.⁴ B07B *1/04*

U.S. Cl. 209—352 4 Claims

1. An elastomeric element for forming a surface engageable with loose abrasive materials comprising:

(a) a base having two ends and a working surface, to engage loose abrasive materials, in the form of a surface of revolution having an axis; said base in a section perpendicular to the axis of said surface of revolution, having the form of a sector of a ring; and

(b) at least two attachment means connected to said base in a configuration to provide absence of tension in the surface engageable with the abrasive material when the element is mounted.

4,879,025

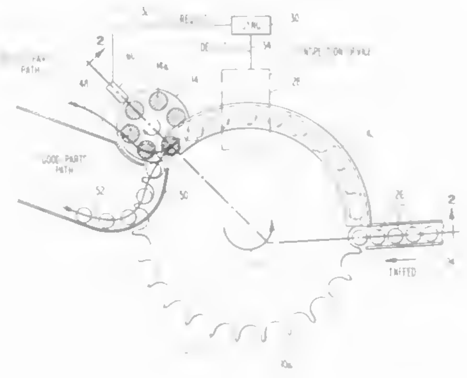
APPARATUS FOR SORTING PARTS

Michael Shapcott, Tamaqua, Pa., assignor to Zapata Technologies, Inc., Hazelton, Pa.

Filed Jan. 21, 1988, Ser. No. 146,517

Int. Cl.⁴ B07C *5/00*

U.S. Cl. 209—559 10 Claims



1. Apparatus for inspecting a stream of parts and for removing defective parts from the stream of parts, comprising:

means for controlling the spacing of said parts along a portion of said stream, said spacing means comprising a moving member having a series of regularly spaced recesses along its periphery for receiving parts from said stream at a supply station, and for advancing said parts to and discharging them at a discharging station;

inspection means at a predetermined location along the portion of the stream along which the spacing of the parts is controlled by said spacing means, for providing a rejection signal with respect to a defective part; and

rejection means responsive to said rejection signal, comprising:

a first rotating disc carrying a plurality of individually-actuable means for removing parts spaced equally about the axis of rotation of said first rotating disc, each means for removing parts being individually actuable responsive to said rejection signal for removing parts from said recesses in the periphery of said spacing means, the disc being located and rotated with respect to said spacing means such that the linear speed and spacing of said means for removing parts are substantially equal to the linear speed and spacing of first rotating disc;

a friction disc mounted co-axially and rotating with said first rotating disc, said friction disc being spaced from said first rotating disc by a distance at least equal to one of the dimensions of said parts and greater than the thickness of the periphery of the spacing means in which said recesses are formed, so that said parts in their corresponding recesses are disposed between said friction disc and said first rotating disc, and wherein said means for removing parts when actuated each urge the corresponding part against the friction disc, whereby the subsequent rotation of the first and friction discs withdraws the part from its recess; and

synchronization means for communicating said rejection signals from said inspection means to said individually actuable means for removing parts.

4,879,026

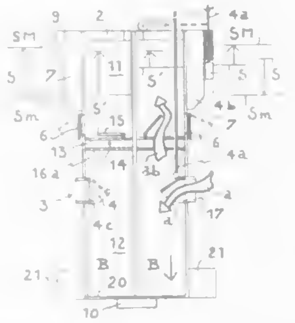
DEVICE FOR THE COLLECTION OF VARIOUS SUBSTANCES PRESENT IN A LIQUID

Jacques J. Metais, 72, rue du Cherche-Midi, 75006 Paris, France

Division of Ser. No. 691,571, Dec. 11, 1984. This application May 27, 1987, Ser. No. 81,852

Int. Cl.⁴ C02F *1/40;* **B01D** *17/025*

U.S. Cl. 210—123 6 Claims



1. A buoyant device for collecting various non-floating substances present in a liquid the surface of which is choppy or rough, said substances having a higher density than the liquid, comprising:

a. a tank having at least one internal compartment which is in communication with the atmosphere through an upper aperture, said compartment being partly submerged in a liquid external to said tank, so that the external liquid surface may have, with respect to said compartment, vertical alternate movements between a higher level and a lower level;

b. said compartment being in communication with the external liquid through at least one inlet opening provided with an inlet valve, said inlet opening being positioned underneath the lowest level of the liquid surface, said inlet opening being submerged completely and continually, for allowing the external liquid and said non-floating substances to come into said compartment;

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c. said compartment being in communication with the external liquid through at least one outlet opening which is fitted with an outlet valve, said outlet opening being positioned at a level above the level of said inlet opening, to prevent said non-floating substances from escaping from said compartment, said non-floating substances being trapped inside said compartment beneath the level of said outlet opening;

d. said inlet valve and said outlet valve being able to function freely and automatically, under the sole effect of the variations of the level of the liquid surface with respect to said compartment;

e. said compartment being divided into two superposed chambers, that is one lower chamber and one upper chamber, said lower chamber being in communication with the external liquid through said inlet opening, said upper chamber being in communication with the external liquid through said outlet opening and with the atmosphere through said upper aperture, said lower chamber and said upper chamber being in communication one with the other through an opening fitted with a non-return valve allowing an inner current going upwardly from said lower chamber to said upper chamber and preventing a flow in the opposite direction;

f. said inlet opening of said compartment being provided with a locking mechanism which is able to prevent the opening of said inlet valve as long as the external liquid surface has not reached a definite level, and said locking mechanism allowing the opening of said inlet valve when the external liquid surface reaches and rises above the said definite level;

g. said compartment being provided with filter means which are able to collect and to hold back inside said compartment various substances having nearly the same density as the liquid flowing into said compartment;

h. submerged volumes which are associated with the lower part of said tank and placed at a certain depth beneath the average level of the liquid surface with respect to said tank, said submerged volumes being able to reduce and to limit the amplitude of the vertical movements of the tank when the liquid surface is rough.

4,879,027

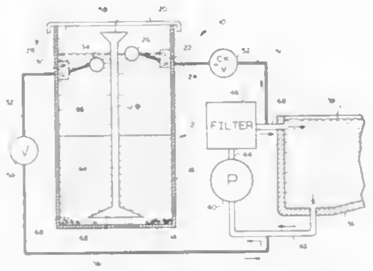
BINARY FLUID SYSTEM, AND COMPONENTS THEREOF, FOR PRODUCING AN IMPREGNATED METERED FLUID STREAM

John T. Sanders, Thousand Oaks, Calif., assignor to A. W. Schlottmann, Thousand Oaks, Calif.

Continuation-in-part of Ser. No. 34,062, Apr. 2, 1987, abandoned. This application Sep. 18, 1987, Ser. No. 161,200

Int. Cl.^{4} E04H *3/16*

U.S. Cl. 210—123 24 Claims



24. A swimming pool water treatment unit comprising: a separator tank, said separator tank provided a tank bottom and having a lower portion containing a first body of treatment material in water solution which has a density greater than water and also an upper portion; a quantity of pool water from an external swimming pool disposed in said upper portion and comprising a second body constituted by said pool water, said first and second bodies meeting in continuous contact at an uninterrupted juncture accommodating migration upwardly across said entire juncture of elements of said first body upwardly into said second body; an inlet line connected to said pool and affixed to and communicating into said upper portion of said tank; means associated with said inlet for controlling the level of water in said separator tank; an adjustable metered outlet from said upper portion of said tank for connection to said external swimming pool; and externally accessible means in lower terminal communication solely with said tank lower portion for non-turbulently delivering the additional placement of a like body of treatment material in water solution directly and solely in said lower portion of said tank.

4,879,028

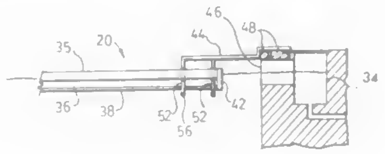
DEBRIS DIVERTING BOOM

John Gibson, R. R. #3, Campbellville, Ontario, Canada (L0P 1B0)

Filed Aug. 30, 1988, Ser. No. 238,219

Int. Cl.^{4} E04H *3/20*

U.S. Cl. 210—169 19 Claims



1. A debris diverting boom for diverting debris floating on the surface of a body of a liquid circulating in a tank or pool toward the edge thereof said boom comprising:

an elongated hollow tubular body portion and an integral elongated skirt portion roll-formed from an elongated strip of metal, the sharp free edge of the part of the metal strip forming the skirt portion being folded back on itself so that the lower edge of the skirt is constituted by a fold junction;

plastic caps having tube and skirt portions and covering the metal boom ends to cover the sharp free edges of the metal strip;

flotation means within the interior of the hollow tubular body portion and providing sufficient buoyancy to the boom to keep it afloat despite entry of water to the interior; and

bracket means engageable with the boom body portion and with the tank or pool edge for holding said boom in place extending across said circulating liquid at an angle to the liquid flow.

4,879,029

LIQUID CHROMATOGRAPH APPARATUS

Martin A. Whitehead, Landbeach, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 18, 1989, Ser. No. 339,938

Claims priority, application United Kingdom, Sep. 17, 1986, 8622328

Int. Cl.^{4} B01D *15/08*

U.S. Cl. 210—198.2 10 Claims

1. A liquid chromatograph apparatus comprising

reciprocating piston pump means for pumping solvent,

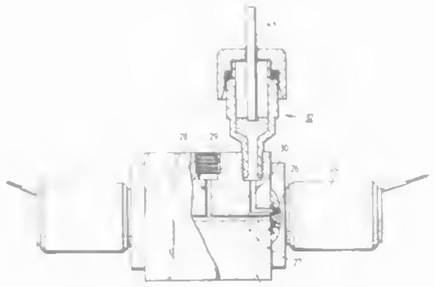
first means for selecting and for feeding at least one of a plurality of solvents to an input of said reciprocating pump means, said first means including

a plurality of solvent sources,

proportioning valve means for feeding solvent to said reciprocating piston pump means, said proportioning valve means having a plurality of valves for feeding at least one of said plurality of solvents to said reciprocating pump means,

wherein each of said valves has inlet means for connecting to

at least one of said plurality of solvent sources, said inlet means for each of said valves including a chamber having a solvent inlet and a solvent outlet, said chamber being partly occupied by at least one gas, and said chamber being adjacent to said proportioning valve means, wherein said chamber structure enables constant flow of solvent to prevent irregular opening of said valves by dissipation in said gas and wherein said chamber includes a hollow body portion and a cap portion, said body portion communicating with said inlet means of said valves, said cap portion having a tube projecting from said at least one solvent



sources to said body portion, said tube passing solvent from said solvent sources to said chamber, and said cap portion being detachable from said body portion, and

wherein each of said valves has an outlet coupled to an input of said reciprocating piston pump means,

second means for feeding an output of said reciprocating piston pump means to a separating column,

third means for injecting a sample into said solvent flowing from said reciprocating piston pump means to said separating column, and

detector means for detecting separated components of said sample in eluent from said separating column.

4,879,030

APPARATUS FOR TRANSFORMING SEA WATER, BRACKISH WATER, POLLUTED WATER OR THE LIKE INTO A NUTRIOUS DRINK BY MEANS OF OSMOSIS

Knut Stache, Darmstadt, Fed. Rep. of Germany, assignor to DD-Dynamic Devices Ltd., London, England

Continuation of Ser. No. 873,109, Jun. 10, 1986, abandoned, which is a continuation of Ser. No. 617,182, Jun. 4, 1984, abandoned, which is a continuation of Ser. No. 471,636, Mar. 3, 1983, abandoned, which is a continuation-in-part of Ser. No. 298,025, Aug. 31, 1981, abandoned, which is a continuation-in-part of Ser. No. 94,666, Nov. 15, 1979, abandoned. This application Jun. 1, 1987, Ser. No. 57,719

Claims priority, application Fed. Rep. of Germany, Nov. 25, 1978, 285105; Jun. 19, 1979, 7917456

Int. Cl.^{4} B01D *13/00*

U.S. Cl. 210—238 10 Claims

1. A housing forming an interior chamber and comprising:

a semipermeable membrane portion communicating with said chamber and having an outer membrane surface,

a flexible porous layer of salt permeable material covering at least said outer membrane surface of said membrane portion, said membrane portion retaining salt while allowing purified water to pass therethrough into said chamber by regular osmosis, and

at least one efflux tube communicating with said chamber and through which purified water may pass from said chamber.

4,879,031

BLOOD CENTRIFUGATION CELL

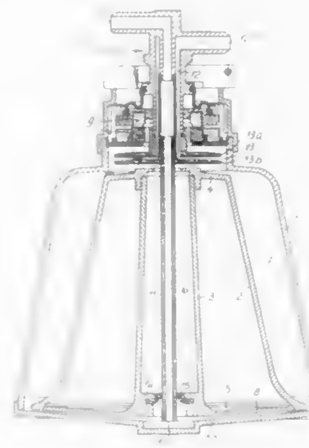
Ivo Panzani, Mirandola, Italy, assignor to Dideco S.p.A., Mirandola, Italy

Filed Apr. 6, 1988, Ser. No. 177,721

Claims priority, application Italy, Apr. 7, 1987, 20036 A/87

Int. Cl.^{4} B04B *15/00, 7/08;* **B01D** *33/00*

U.S. Cl. 210—360.2 5 Claims



1. A centrifugation cell for blood and biological liquids, comprising:

an outer container rotatable about a central axis having an outer wall, an upper end and an enclosed bottom;

a volume displacement body having an upper end, a lower end and a generally cylindrical central longitudinal passage therein, and coaxially enclosed within said container with the lower end closely spaced from the bottom of said container;

a stationary housing connected to and enclosing the upper end of said container through an annular rotatable seal and consisting of a coaxial first conduit adapted for the initial inflow of blood, a generally coaxial second conduit adapted for the outflow of light blood fraction components and a means providing a stationary passage within said housing near the upper end of said container and in communication with said second conduit;

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said first conduit extending downwardly through the central passage of said body with the end thereof closely spaced from the bottom of said container;

said body further having a means for substantially sealing the space between said first conduit and the central passage at a location near the lower end of said body for facilitating the outflow of red blood components from said container.

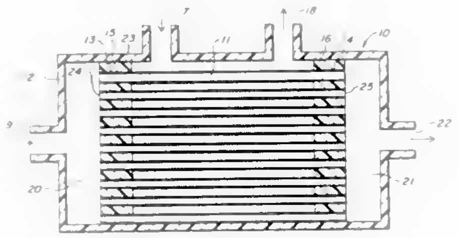
4,879,032
FLUID SEPARATORY DEVICES HAVING IMPROVED POTTING AND ADHESIVE COMPOSITIONS

John C. Zemlin, Reading, Mass., assignor to Allied Resin Corporation, East Weymouth, Mass.

Filed Jun. 4, 1984, Ser. No. 616,736

Int. Cl.^{4} B01D *13/00*

U.S. Cl. 210—321.61 36 Claims



1. A hollow-fiber, fluid separatory device comprising a bundle of fine hollow fibers whose end portions are potted in a tube-sheet and whose open fiber ends terminate in a tube-sheet face, the bundle being sealed within a casing to form a separatory cell having one or more fluid ports which allow for the passage of one fluid through the fibers and another around the fibers without mixing of the two fluids, said tube-sheet comprising a cured polyurethane composition which is substantially bubble-free although cured in the presence of moisture, said composition comprising the reaction product of an aliphatic polyisocyanate with a propoxylated polyether amine in the presence of a metallo-organic catalyst selected from the group consisting of the organic acid salts and the β-diketonates of zinc, iron, copper, manganese, mercury, lead, and mixtures thereof, and said catalyst being present in an amount effective to substantially increase the cure rate and permit curing in the presence of moisture without significant bubble formation.

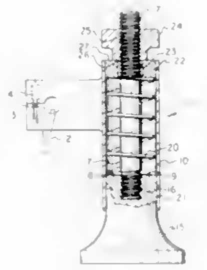
4,879,033
SLURRY PLOW

Arthur R. Rich, Caddo Mills, Tex., assignor to Pilgrim's Pride Corporation, Pittsburg, Tex.

Filed Aug. 26, 1988, Ser. No. 237,604

Int. Cl.^{4} B01D *33/04, 33/36*

U.S. Cl. 210—396 20 Claims



1. A slurry plow comprising a hollow elongated housing having an upper end and a lower end, a foot member having an upper portion adapted for slidable engagement with the lower interior surface of said elongated housing and for telescoping therewithin, biasing means within said housing for resiliently biasing said foot member to a predetermined position with respect to said housing whereby said foot member is correspondingly telescoped a predetermined distance within said housing, adjusting means for adjusting said predetermined distance, and means including said biasing means responsive to the application to said foot member of a force greater than the bias of said biasing means to cause said foot member to telescope an additional distance within said housing.

4,879,034
DEWATERING DEVICE WITH TWO FILTERING BELTS

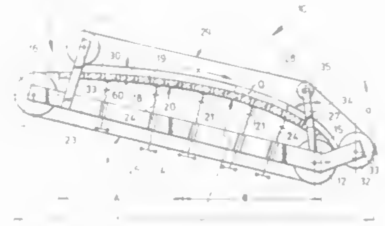
Wendel Bastgen, Betzdorf/Sieg, Fed. Rep. of Germany, assignor to Alb. Klein GmbH & Co. KG, Niederfischback, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 714,630, Mar. 21, 1985, abandoned. This application Sep. 27, 1988, Ser. No. 250,045

Claims priority, application Fed. Rep. of Germany, Mar. 23, 1984, 3410745

Int. Cl.^{4} B01D *33/04;* **B01B** *5/06*

U.S. Cl. 210—400 11 Claims



1. A dewatering device comprising a first endless band and a second endless band spaced from said first endless band and forming a pressure zone gap therebetween, each of said endless bands being movable around and between pairs of guide rollers in one driving direction, an adjustable perforated supporting plate formed from a flexible material for supporting one of said endless bands, said supporting plate having a pair of generally parallel surfaces and being adjustable over substantially its entire length, one of said surfaces defining a curved surface having a radius of curvature which decreases toward the driving direction whereby said one surface biases said one of said endless bands in the pressure zone.

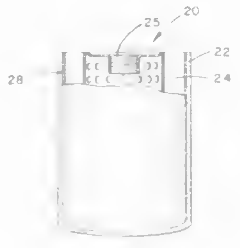
4,879,035
ALL SEASON FUEL FILTER

Allen O. Thompson, P.O. Box 182, Granville, N. Dak. 58741

Continuation of Ser. No. 99,774, Sep. 22, 1987. This application Feb. 17, 1989, Ser. No. 312,382

Int. Cl.^{4} D01D *35/02*

U.S. Cl. 210—416.4 3 Claims



1. A fuel filter, comprising:

(a) a fuel filter housing having sides, a bottom and a top; and

(b) a separate, distinct insulating layer of urethane material being permanently attached to the outside of the fuel filter housing along the sides and bottom of the fuel filter housing so as to insulate the fuel filter from its ambient surroundings.

4,879,036
ASYMMETRICAL MEMBRANE OF POLYESTER-AMIDE AND PROCESS FOR PREPARING IT

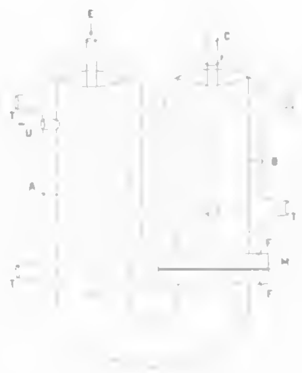
Francesco Pittalis; Francesco Bartoli, and Otello Farias, all of Rome, Italy, assignors to Eniricercbe, S.p.A., Milan, Italy

Filed Jun. 9, 1987, Ser. No. 60,120

Claims priority, application Italy, Jun. 20, 1986, 20862 A/86

Int. Cl.^{4} B01D *13/00;* **C08J** *9/28*

U.S. Cl. 210—500.38 15 Claims



1. An asymmetrical membrane suitable for dialysis and ultrafiltration comprising: polyester-amide $(TATE)_n$, wherein T represents a radical of terephthalic acid, A represents a radical of hexamethylenediamine, and E represents a radicla of hexanediol, said polyester-amide having a relative viscosity of from 2 to 2.5, a content of free carboxy groups of from 15 to 25 meq/kg, and a melting point of from 252° to 260° C., said membrane displaying a thickness of from 15 to 190 μm, a water permeability of from about 3 up to about 9 liters/m^2/hour, for a ΔP of 300 mm$_{Hg}$ and being effectively permeable for substances having a molecular weight of up to about 17,000.

4,879,037
METHOD AND APPARATUS FOR COUNTER CURRENT LIQUID-LIQUID EXTRACTION

Gustav E. Utzinger, Kastelweid 231,, 4249 Himmelried, Switzerland

Division of Ser. No. 852,633, Apr. 16, 1986, Pat. No. 4,749,130, which is a continuation-in-part of Ser. No. 523,175, Aug. 15, 1983, abandoned. This application Mar. 17, 1988, Ser. No. 169,498

Claims priority, application Switzerland, Aug. 14, 1982, 4855/82

Int. Cl.^{4} B01D *11/04*

U.S. Cl. 210—634 12 Claims

1. A method of liquid-liquid extraction of at least one solute dissolved in a first liquid being a solution of said solute in a solvent therefor, comprising the steps of

(a) directing a stream of said first liquid through a first elongated channel from an entry end toward a terminal end of said first channel, and maintaining in said first channel a determined pressure above ambient,

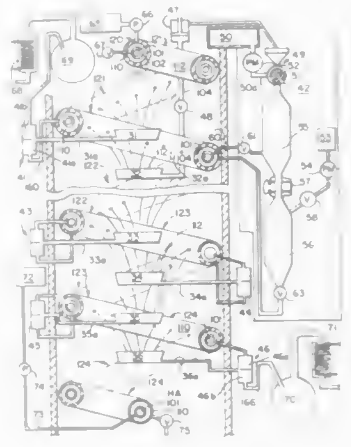
(b) directing a stream of a second liquid of different density, counter-currently to said first liquid stream, through a second elongated channel from an entry end toward a terminal end of said second channel, and maintaining in said second channel a pressure lower than said pressure in said first channel,

said first and second channels having longitudinal axes, and one of said first and second liquids being the heavier, and the other the lighter one,

(c) maintaining between said first and second channels, a separating wall zone of liquid-tight elastically resilient material being substantially non-swelling when in contact with water having a temperature of 60° C. or higher, or when in contact with organic extraction solvents, said wall zone having a first and a second contact surface on opposite sides thereof, which surfaces border on said first and second channels, respectively, extending parallel with the axes of said channels;

said wall zone containing a plurality of crosswise passages therethrough from said first to said second contact surface, said passages being distributed uniformly along said wall zone in axial direction,

(d) passing a large number of streams of said first liquid, ejected from said first channel through said passages successively into said second channel and intermingling said first liquid streams therein cross-currently with said stream of second liquid flowing countercurrently through said second channel, while at the same time maintaining said exit end of said first channel at least substantially obturated, thereby maintaining in said first channel a determined pressure above the pressure prevailing in said second channel, and maintaining said exit end of said second channel obturated,



(e) ejecting a large number of fine liquid jets of the resulting liquid mixture iteratively out of said second channel, transversely to the direction of liquid flow through said second channel,

(f) collecting groups of said liquid jets, from successive ejection zones of said second channel,

(g) settling the portions of the liquid mixture, obtained from such zones, with phase separation,

(h) separating the resulting heavier and lighter phases of each liquid portion from each other,

(i) back-feeding the separated heavier phase of a liquid portion from an intermediate zone of said second channel, into approximately the same zone, but of that channel which contains the stream of the heavier liquid, and

(j) back-feeding the lighter phase of a liquid portion from an intermediate zone of said second channel, into approximately the same zone of that channel which contains the stream of the lighter liquid;

(k) recovering from that ejection zone last preceding the terminal end of said second channel one of said phases resulting from the separation of the liquid portion collected from said zone, and back-feeding the other phase into the said first channel, in said last-mentioned ejection zone

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4,879,038

SEPARATION AGENT COMPRISING ACYL- OR CARBAMOYL-SUBSTITUTED POLYSACCHARIDE

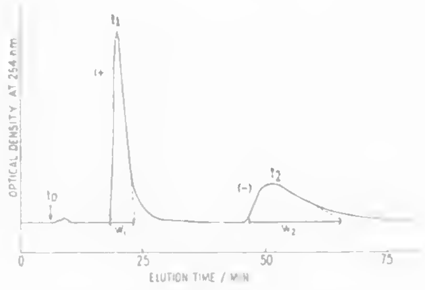
Hajime Namikoshi; Tohru Shibata, and Ichiro Okamoto, all of Himeji, Japan, assignors to Daicel Chemical Industries, Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 716,791, Mar. 27, 1985, abandoned. This application Sep. 19, 1988, Ser. No. 246,449

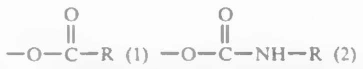
Claims priority, application Japan, Mar. 29, 1984, 59-365

Int. Cl.^{4} B01D *15/08*

U.S. Cl. 210—635 15 Claims

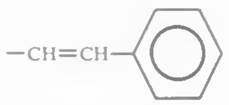


1. A method of separating a chemical substance from a mixture containing the same, which comprises the step of treating said mixture with a polysaccharide derivative selected from the group consisting of β-1,4 glucans, α-1,4 glucans, α-1,6 glucan, β-1,6 glucan, β-1,3 glucans, α-1,3 glucan, β-1,2 glucan, β-1,4 galactan, β-1,4 mannan, α-1,6 mannan, β-1,2 fructan, β-2,6 fructan, β-1,4 xylan, β-1,3 xylan, β-1,4 chitosan, β-1,4-N-acetylchitosan, pullulan and alginic acid, said polysaccharide derivative having 30–100% of the hydroxyl groups thereof substituted with a substituent selected from the group consisting of an acyl group of the formula (1) and a carbamoyl group of the formula (2):



$$-O-\overset{\overset{\displaystyle O}{\|}}{C}-R \quad (1) \qquad -O-\overset{\overset{\displaystyle O}{\|}}{C}-NH-R \quad (2)$$

wherein R is selected from the group consisting of



and substituted derivatives thereof.

4,879,039

PROCESS FOR MEASURING STABLE-TYPE GLYCATED HEMOGLOBIN IN A SAMPLE

Hiroaki Takahashi, Sagamihara; Haruo Okada, Machida; Katsuya Matsumoto, and Masuo Umino, both of Atsugi, all of Japan, assignors to Toyo Soda Manufacturing Co., Ltd., Shinnanyo, Japan

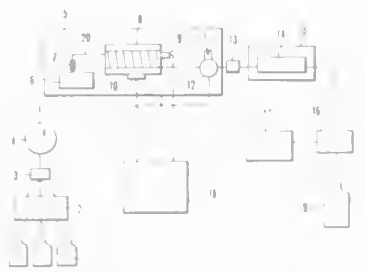
Filed Jul. 30, 1987, Ser. No. 79,435

Claims priority, application Japan, Jul. 30, 1986, 61-177599

Int. Cl.^{4} B01D *15/08*

U.S. Cl. 210—635 3 Claims

1. A process for measuring the amount of stable-type glycated hemoglobin in a sample using high performance liquid chromatography, comprising heating to a temperature of at least 45° C. a sample diluted with a hemolysis agent containing a reagent for the removal of unstable-type glycated hemoglobin comprising boric acid to achieve the removal of the unstable-type glycated hemoglobin, and analyzing the sample by high performance liquid chromatography.



4,879,040

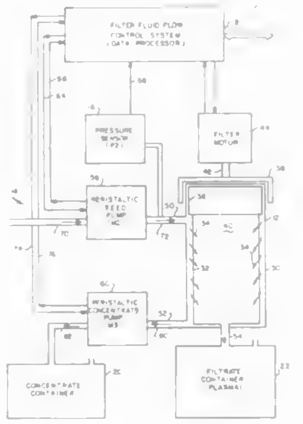
ADAPTIVE FILTER CONCENTRATE FLOW CONTROL SYSTEM AND METHOD

Paul R. Prince, Fountain Valley; Michael G. Ford, Riverside; Donald W. Schoendorfer, Santa Ana, and Ronald L. Clark, Westminster, all of Calif., assignors to Baxter International Inc., Deerfield, Ill.

Continuation of Ser. No. 166,833, Mar. 4, 1988, abandoned, which is a continuation of Ser. No. 671,576, Nov. 15, 1984, abandoned. This application Dec. 22, 1988, Ser. No. 291,413

Int. Cl.^{4} B01C *13/00*

U.S. Cl. 210—637 31 Claims


FILTER FLUID FLOW CONTROL SYSTEM (DATA PROCESSOR)
PRESSURE SENSOR
FILTER
PERISTALTIC FEED PUMP
PERISTALTIC CONCENTRATE PUMP
CONCENTRATE CONTAINER
FILTRATE CONTAINER (PLASMA)
22

1. A fluid flow control system for controlling a flow of filtrate through a filter system having a filter membrane with a predictable transmembrane pressure-filtrate flow rate relationship when the filter system is operated under nonobstructing operating conditions, the control system comprising:

a flow regulating system coupled to control flows of feed fluid, concentrate fluid and filtrate fluid in the filter system in response to at least one control signal;

a pressure sensor disposed to sense and generate indications of transmembrane pressure in the filter system; and

a fluid flow control system coupled to receive an indication of transmembrane pressure from the pressure sensor and generate the at least one control signal to control the flow regulating system in response thereto maintain the transmembrane pressure at an intersection with a particular curve having a shape conforming to the predictable transmembrane pressure-filtrate flow rate relationship and a pressure offset from the received pressure indication by a predetermined positive pressure difference.

4,879,041

PROCESS FOR PRODUCING ULTRA-PURE WATER AND PROCESS FOR USING SAID ULTRA-PURE WATER

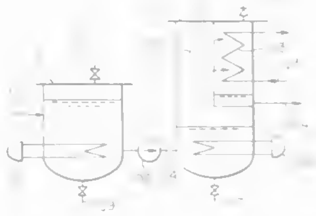
Hideaki Kurokawa; Akira Yamada, both of Hitachi; Yasuo Koseki, Hitachiota; Harumi Matsuzaki, Hitachi; Katsuya Ebara, Mito; Sankichi Takahashi, Hitachi; Hiroaki Yoda, Ibaraki; Nobuatsu Hayashi, Abiko; Isao Okouchi, Hitachi; Yukio Hishinuma, Hitachi, and Naohiro Momma, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 24, 1988, Ser. No. 172,583

Claims priority, application Japan, Mar. 25, 1987, 62-68893; Jun. 5, 1987, 62-139782; Aug. 14, 1987, 62-201718; Aug. 24, 1987, 62-209989; Sep. 17, 1987, 62-233399

Int. Cl.^{4} B01D *13/00*

U.S. Cl. 210—640 15 Claims



1. A process for producing ultra-pure water which comprises boiling raw water to vaporize off volatile components from the raw water, subsequently generating steam from the boiled water from which said volatile components have previously been removed, contacting the steam with a hydrophobic, porous, gas-permeable and liquid-impermeable membrane to make the steam permeate the membrane and removing liquid mist sufficient to produce a high purity steam substantially free of impurities, and then condensing the steam to form ultra-pure water.

4,879,042

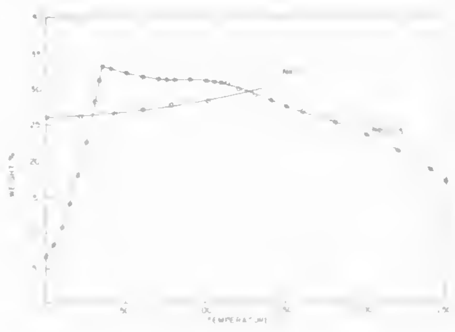
METHOD OF CRYSTALLIZING SALTS FROM AQUEOUS SOLUTIONS

Donald N. Hanson, 522 Moraga Way, Orinda, Calif. 94563, and Scott Lynn, 2646 San Antonio Dr., Walnut Creek, Calif. 94598

Continuation-in-part of Ser. No. 178,870, Aug. 18, 1980, Pat. No. 4,430,227, Ser. No. 567,764, Jan. 30, 1984, abandoned, Ser. No. 774,953, Sep. 11, 1985, Pat. No. 4,632,760, and Ser. No. 946,809, Dec. 29, 1986, abandoned. This application Feb. 23, 1988, Ser. No. 159,372

Int. Cl.^{4} B01D *11/04*

U.S. Cl. 210—642 17 Claims



8. A method of crystallizing an inorganic solute from an aqueous solution, said solute having a solubility (in water) that changes relatively little with temperature such that the crystallization of solute from aqueous solution by adjustment of temperature results in a low yield, said method comprising:

(a) providing an aqueous solution of such solute which is saturated or substantially saturated at T_1

(b) providing a hydrophilic organic solvent

(c) contacting solution (a) with solvent (b) at T_1 in a crystallizing zone, thereby producing (1) a solvent-rich phase and a water-rich phase or (2) a single solvent-rich liquid phase, T_1 being selected so that the ratio of the solute to water in the solvent-rich phase is substantially less than in solution (a), thereby causing crystallization of a portion of the solute,

(d) separating crystals of solute,

(e) separating all or a major portion of the solvent rich phase,

(f) adjusting the temperature of the separated solvent-rich stream by heating or cooling it from T_1 to T_2,

(g) contacting the solvent-rich stream from step (f) in an extraction zone with a concentrated aqueous solution of said solute at T_2, the temperature T_2 (differing from T_1) and the concentration of solute in the aqueous solution being such that the resulting dried solvent phase is suitable for recycling to the crystallizing zone,

(h) separating from the extraction zone the dried solvent phase and recycling it to the crystallizing zone

(i) separating from the extraction zone the diluted aqueous solution of solute

(j) employing all or a portion of the diluted solution separated i step (i) to dissolve solute from a solid source, resulting in solution (a) and

(k) employing the resulting solution (a) from step (j) in the crystallizing zone.

4,879,043

MANUFACTURE OF HIGH PURITY HYDROGEN PEROXIDE BY USING REVERSE OSMOSIS OSMOSIS

John H. Boughton, Wilmington, Del.; Ralph A. Butz, Orange, Tex.; Herman C. T. Cheng, Wilmington, Del.; Jonathan R. Dennis, Brighton, Tenn.; Brian T. Hannon, Hockessin, Del., and Janet H. Weigel, Bartlett, Tenn., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Jul. 20, 1988, Ser. No. 222,089

Int. Cl.^{4} B01C *13/00*

U.S. Cl. 210—651 6 Claims

1. A process for the manufacture of high purity aqueous hydrogen peroxide (permeate) in which ionic impurities and organic carbon compounds are removed from an aqueous solution thereof in which the concentration of hydrogen peroxide is from 5 to 50 weight percent comprising

(a) feeding said solution to a reverse osmosis apparatus having a suitable semipermeable membrane selected from an aromatic polyamide, a polypiperazineamide or a polyacrylonitrile positioned therein at a sufficiently higher pressure to force the hydrogen peroxide solution through the membrane,

(b) removing said impurities and carbon compounds that do not permeate the membrane (concentrate), and

(c) removing the high purity aqueous hydrogen peroxide solution (permeate).

4,879,044

HIGHLY AROMATIC ANISOTROPIC POLYUREA/URETHANE MEMBRANES AND THEIR USE FOR THE SEPARATION OF AROMATICS FROM NON AROMATICS

Joseph L. Feimer, Bright's Grove; Bernd A. Koenitzer, Sarnia, both of Canada, and Robert C. Schucker, Baton Rouge, La., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Division of Ser. No. 108,821, Oct. 14, 1987, Pat. No. 4,828,773. This application Feb. 3, 1989, Ser. No. 307,108

Int. Cl.^{4} B01D *13/00*

U.S. Cl. 210—654 11 Claims

1. An anisotropic membrane: comprising layers of aromatic polyurea/urethane, including a thin dense layer, a thin non-

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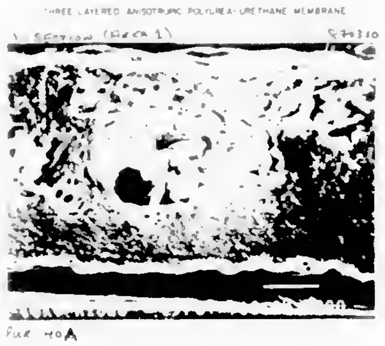
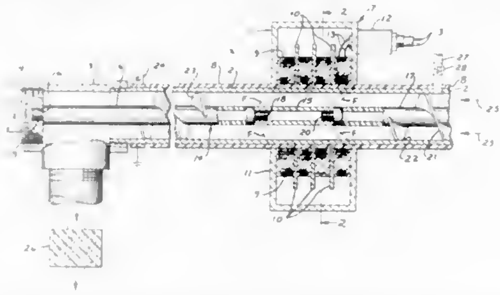
continuous skin and an open porous structure between the aforesaid thin dense layer and the thin non-continuous skin.



4. A method comprising separating aromatics from a mixture of aromatics with non-aromatics-saturates by contacting the mixture with one side of an anisotropic aromatic polyurea/urethane membrane characterized by possessing three layers.

4,879,045
METHOD AND APPARATUS FOR ELECTROMAGNETICALLY TREATING A FLUID

Terry L. Eggerichs, P.O. Box 181, Wykoff, Minn. 55990
Continuation of Ser. No. 817,996, Jan. 13, 1986, abandoned. This **application Nov. 9, 1987, Ser. No. 119,320**
Int. Cl.^{4} C02F *1/48;* **B01D** *35/06;* **B03C** *1/30*
U.S. Cl. 210—695 41 Claims



1. A method of treating a fluid with magnetic lines of force, comprising the steps of:

passing a fluid to be treated through a magnetic force field such that the fluid moves through the magnetic force field in a direction having a vector component at about a 90° relationship thereto by means of convoluting the flow of the fluid with baffle means located completely upstream from said magnetic force field; and

introducing ferrous ions from an auxiliary source of ferrous ions into said fluid at a location prior to the fluid passing through the magnetic force field.

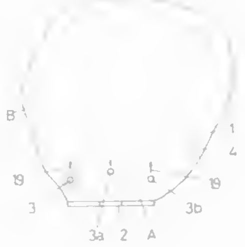
4,879,046
LOCAL WATER CLEANING METHOD FOR USE IN CONSECUTIVE WATER AREAS

Sadao Kojima, Hachioji, Japan, assignor to Kaiyo Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Jun. 17, 1988, Ser. No. 208,127
Claims priority, application Japan, Jun. 18, 1987, 62-152335
Int. Cl.^{4} C02F *7/00*
U.S. Cl. 210—747 4 Claims

1. A method of cleaning or purifying water in a large water body, which large water body has a discharge end, by increasing the amount of oxygen dissolved in the water, comprising the steps of:

providing a means for forming a water flow wall for separation of the water across at least a part of the depth and along a line substantially entirely across the large water body near the discharge end for delimiting by said line a part of the large water body as a local water purifying area separate from the remainder of the large water body and separating said delimited part from the rest of the large water body for preventing the water near the surface of said local water purifying area from flowing out of the local water purifying area into the rest of the large water body; and

providing in the local water purifying area a plurality of apparatuses at predetermined spaced intervals in said local water purifying area for producing a vertical water circulation in the local water purifying area between the surface and the bottom thereof, each apparatus supplying individually formed air bubble masses at regular intervals through a vertical water diffuser tube, said air bubble masses being followed by water being drawn under the action of the air bubble masses to produce jets of water for causing the vertical water circulation.



4,879,047
EFFLUENT TREATMENT

Samuel D. Jackson, Darlington, England, assignor to Imperial Chemical Industries, PLC, London, England
Filed Jan. 11, 1988, Ser. No. 141,942
Claims priority, application United Kingdom, Jan. 22, 1987, 8701397
Int. Cl.^{4} C02F *1/58*
U.S. Cl. 210—756 5 Claims

1. A process for treating an effluent containing at least one oxidizing agent selected from the group consisting or hypohalite ions, periodate ions, and hydrogen perioxide which comprises decomposing said oxidizing agent by contacting said effluent with a bed of catalyst, said catalyst being free of resin binders and comprising an intimate mixture of:

(i) at least one finely divided oxide of an element of Group IIA of the Periodic Table, and

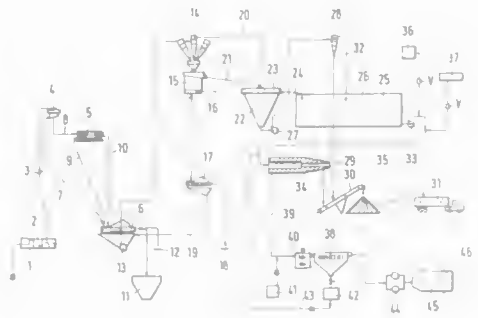
(ii) at least one finely divided material selected from nickel oxide and hydrates thereof, supported on pieces of a nonporous substantially inert material selected from the group consisting of alumina and magnesia, said Group IIA oxide constituting 0.5 to 50% by weight of said intimate mixture (with the components thereof being expressed as the anhydrous divalent oxides).

4,879,048
METHOD AND FACILITY FOR REMOVING SLUDGE FROM WATER

Heiner Kreyenberg, Waldseestr. 31, 4030 Ratingen 4, Fed. Rep. of Germany
Filed Sep. 16, 1987, Ser. No. 97,629
Claims priority, application European Pat. Off., Mar. 19, 1987, 87104058.0
The portion of the term of this patent subsequent to Sep. 20, 2005, has been disclaimed.
Int. Cl.^{4} E01D *1/038*
U.S. Cl. 210—768 7 Claims

1. A method of removing from a body of water sludge that contains water, inorganic constituents, and organic constituents with which a problem arises as to what to do with this matter of constituents after removal thereof from the water since dumps are becoming more scarce so that this problem is met in such a way that the rest of the constituents of the sludge can be provided for subsequent use as economical material, said method including steps of separating the inorganic constituents in the sludge, comprising stones, gravel and sand, from the organic constituents thereof, comprising wood and roots, said method further further comprising: minimizing the volume of said sludge to be disposed in said dumps by effecting in sequence the steps of:

recovering said inorganic constituents for economic use by providing a sorter in a first stage and separating out from said sludge those constituents that are larger than a given size, with inorganic and organic ones of these larger constituents being separated from one another, cleaning these larger constituents, and providing them for subsequent use as economically usable material to avoid the problem of placement thereof in dumps;



recovering said organic constituents by providing a cyclone unit in a second stage and separating out from the remaining matter inorganic constituents that are larger than a minimum size, cleaning these constituents, and providing them for subsequent use also as economically usable material to avoid the problem of placement thereof in dumps, whereby from the further remaining matter an inorganic and organic slurry is obtained directly during said second stage;

providing a thickener, disposed downstream of said cyclone unit, for thickening said inorganic and organic slurry obtained during said second stage; and

further depositing the thickened portions of said slurry in at least one of said dumps.

4,879,049
METHOD OF REMOVAL OF POLYCYCLIC AROMATIC HYDROCARBONS FROM A LLIQUID

Bob De Mon, Alkmaar, and Antonius I. Van Hoorn, Koedijk, both of Netherlands, assignors to Hoogovens Groep B.V., IJmuiden, Netherlands
Filed Nov. 30, 1987, Ser. No. 126,356
Claims priority, application Netherlands, Dec. 8, 1986, 8603107
Int. Cl.^{4} B01D *37/02*
U.S. Cl. 210—777 6 Claims

1. Method of removal of polycyclic aromatic hydrocarbons (PAH) from a liquid by subjecting the liquid to precoat vacuum filtration in order to remove from the liquid at least one of solid particles which carry PAH and a second liquid phase which contains PAH, said precoat vacuum filtration comprising the steps of

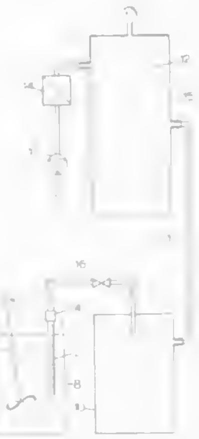
(i) providing a rotary vacuum filter having a rotatable vacuum filter drum having a rotation axis and a diameter and with respect to said axis a peripheral filtering surface which defines the interior of the drum,

(ii) applying to the exterior side of said peripheral filter of the drum a particulate precoat comprising finely divided organic particles in the form of particulate material which in a method of testing applied before the material is applied to the drum in order to determine its suitability for use as precoat material in precoat vacuum filtration, said precoat material had a layer thickness in the range of 30–200 mm, said method of testing comprises the steps of

(a) preparing a uniform slurry of the organic particles;

(b) passing the slurry upwardly through a filter for a predetermined time using a predetermined substantially constant reduced pressure on the downstream side of the filter;

(c) measuring the thickness of the layer of the organic material thus formed against the filter;



(iii) filtering said liquid through said filter drum with said precoat thereon to the interior of the drum, by partially immersing the drum rotating about said axis, in liquid and applying reduced pressure at the interior of the drum, the immersion depth of the drum during the filtering being more than 40% of the drum diameter,

(iv) continuously or intermittently removing a surface layer of the precoat at the exterior of the precoat thereby to present, to subsequently filtered liquid, fresh particles of the precoat at the exterior of the precoat, said organic material consists of wood flour, originating from at least one of the rough pine (Pinus Sylvestris) and the beech (Fagus Sylvatica).

4,879,050
METHOD FOR FIRE EXTINGUISHMENT OF CHLOROSILANES

Hisayoshi Yamaguchi, Tokyo; Tamotsu Yanagisawa, Niigata; Masao Yabuzuka, Gunma; Masakatu Shimizu, and Takashi Tanaka, both of Niigata, all of Japan, assignors to Co., Ltd. Shin-Etsu-Handota, Tokyo, Japan
Filed Oct. 5, 1988, Ser. No. 253,705
Claims priority, application Japan, Oct. 6, 1987, 62-252211
Int. Cl.^{4} C09K *21/00*
U.S. Cl. 252—2 5 Claims

1. A method for extinguishing fire of a chlorosilane compound which comprises the successive steps of:

(a) sprinkling, over the burning site of the chlorosilane compound, an inert inorganic powder composed of porous particles having a particle diameter in the range from 5 μm to 5 mm, pore diameter in the range from 0.1 to 100 μm, true density in the range from 2.1 to 2.5 g/cm^3 and bulk density in the range from 0.2 to 0.7 g/cm^3 and containing at least 80% by weight of silicon dioxide SiO_2 or at least 90% by weight as a total amount of silicon dioxide as SiO_2 and aluminum oxide as Al_2O_3; and

(b) spraying, over the layer of the inert inorganic powder covering the burning site of the chlorosilane compound, an aqueous solution of a salt selected from the group

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consisting of sodium chloride, potassium chloride and calcium chloride.

4,879,051

METHOD OF BOOSTING FOAM IN LOW SUDSING DETERGENTS WITH ZWITTERIONIC POLYSILOXANE

Sunny J. Lo, Sussex, England, and Steven A. Snow, Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Aug. 8, 1988, Ser. No. 229,690

Int. Cl.^{4} C11D *17/00;* **B01F** *17/00;* **C08G** *77/38;* **C07F** *7/10*

U.S. Cl. 252—8.75 12 Claims

1. A method of boosting foam in a low sudsing detergent system which contains cationic or nonionic fabric softening surfactants in a textile wash liquor comprising adding to the wash liquor in addition to the detergent an organosulfobetaine zwitterionic siloxane based compound having the general formula selected from the group consisting of:

$$Me_3SiO(SiMeR^1O)_ySiMe_3$$

and

$$Me_3SiO(SiMe_2O)_x(SiMeR^1O)_ySiMe_3$$

wherein:

Me = methyl;

$R^1 = —CH_2CH_2CH_2N^+(R^2)_2(CH_2)_zSO_3^-$, or $—CH_2CH_2CH_2N^+(R^2)_2(CH_2)_zCOO^-$;

R^2 = an alkyl group having from one to six carbon atoms or $(CH_2)_mOH$;

m = 1-6;

x = 1-10;

y = 1-3; and

z = 1-4,

and mixing the detergent and the siloxane compound in the wash liquor along with the textiles.

4,879,052

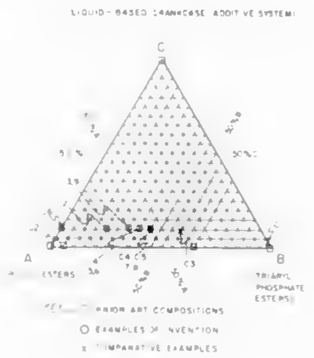
HIGH TEMPERATURE POLYOL ESTER/PHOSPHATE ESTER CRANKCASE LUBRICANT COMPOSITION

Geralyn Mullin, Yonkers, N.Y., assignor to Akzo America Inc., New York, N.Y.

Continuation of Ser. No. 122,476, Nov. 5, 1987, Pat. No. 4,780,229. This application Aug. 19, 1988, Ser. No. 233,773

Int. Cl.^{4} C10M *137/04*

U.S. Cl. 252—32.5 3 Claims



1. A process for improving the frictional characteristics and brake specific fuel consumption of an engine operated at temperatures in excess of 1000° F., which comprises the step of lubricating the engine's moving parts with a composition comprising a blend of at least one polyol ester and at least one triaryl phosphate ester in a combined amount of at least 80 weight percent.

4,879,053

PROCESS FOR PREPARING OVERBASED CALCIUM SULFONATES

Leonard A. Matthews; William J. Powers, III, both of Port Arthur, Tex.; Henry M. Przybyla; Joanne R. Whittle, both of, Los Angeles, Calif., and Jerry C. Perciful, St. Genese, Belgium, assignors to Texaco Inc., White Plains, N.Y.

Filed Jul. 11, 1988, Ser. No. 217,540

Int. Cl.^{4} C10M *135/10*

U.S. Cl. 252—25 7 Claims

1. A process for preparing an overbased calcium sulfonate comprising the steps of:

(a) diluting a neutral, calcium sulfonate with a light hydrocarbon solvent and a lower alkanol, said calcium sulfonate derived from sulfonating a naturally occurring or synthetic alkylaryl with oleum or sulfur trioxide and recovering chloride free sulfonate;

(b) mixing calcium oxide and 0.1 to 1 wt % of a promoter selected from the group consisting of alkali halides and alkaline earth halides with the diluted calcium sulfonate;

(c) heating the resulting mixture to about 100° F. to 170° F. at a pressure of about 1 to 5 atm;

(d) introducing into the heated mixture, gaseous carbon dioxide in an amount sufficient to provide a molar ratio of CO_2/calcium oxide of about 0.1 to 1.2;

(e) adding a diluent oil;

(f) separating solids from the liquid; and

(g) stripping the solvent from the resulting liquid product.

4,879,054

PROCESS FOR PRODUCING LOW TEMPERATURE HIGH PERFORMANCE GREASE

John A. Waynick, Bolingbrook, Ill., assignor to Amoco Corporation, Chicago, Ill.

Filed Feb. 29, 1988, Ser. No. 162,045

Int. Cl.^{4} C10M *111/02*

U.S. Cl. 252—41 6 Claims

1. A process for producing grease, comprising the steps of:

forming lithium 12-hydroxystearate grease concentrate in polyalphaolefin in the absence of mineral oil by

adding a 12-hydroxystearic compound to polyalphaolefin, said 12-hydroxystearic compound being selected from the group consisting of 12-hydroxystearic acid or methyl 12-hydroxystearate,

subsequently adding at least a chemically equivalent amount of lithium hydroxide monohydrate to said 12-hydroxystearic compound and said polyalphaolefin,

reacting substantially all of said 12-hydroxystearic compound with said lithium hydroxide monohydrate in said polyalphaolefin, in the presence of water, while

concurrently mixing and heating said polyalphaolefin, 12-hydroxystearic compound, and lithium hydroxide monohydrate to a temperature ranging above about +180° F. to less than +400° F. to provide lithium 12-hydroxystearate soap thickener in said polyalphaolefin thereby providing lithium 12-hydroxystearate grease concentrate in polyalphaolefin;

substantially drying said lithium 12-hydroxystearate grease concentrate in polyalphaolefin by vaporizing and removing volatile by-products of reaction, said volatile by-products of reaction selected from the group consisting of water, methyl alcohol, and combinations thereof;

cooling said dried lithium 12-hydroxystearate grease concentrate in polyalphaolefin to a temperature at least about +270° F. to substantially minimize transesterification; thereafter

blending an aliphatic diester of an aliphatic dicarboxylic acid with said 12-hydroxystearate grease concentrate in polyalphaolefin, said aliphatic diester of said aliphatic dicarboxylic acid comprising at least one member selected from the group consisting of di-2-ethyl hexyl azelate, di-isodecyl azelate, di-tridecyl azelate, di-isodecyl adipate, and di-tridecyl adipate;

said aliphatic diester being blended with said grease concentrate in said polyalphaolefin after said volatile by-products of reaction have been vented to substantially prevent hydrolytic cleavage of said aliphatic diester;

cooling said blend of aliphatic diester and said 12-hydroxystearate grease concentrate in polyalphaolefin to a temperature ranging from about +200° F. to about 250° F.; and thereafter

admixing additives with said blend of diester and grease concentrate in polyalphaolefin to substantially impart extreme pressure antiwear properties to the grease and substantially inhibit corrosion of copper and iron, said additives comprising at least one dithiocarbamate-containing compound, a phosphate-containing compound, a corrosion inhibitor, an oxidation inhibitor, and a metal deactivator; and

said blend of aliphatic diester, lithium 12-hydroxystearate grease concentrate in polyalphaolefin with said additives forming a grease with enhanced extreme temperature performance and lubricity qualities at temperatures as low as at least about −100° F. and as high as at least about +250° F.

4,879,055

SOFT MAGNETIC MATERIAL COMPOSITION AND MOLDING PROCESS THEREFOR

Koji Sezaki; Koichi Nagai, and Takashi Sakaucbi, all of Ohtsu, Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

PCT No. PCT/JP86/00189, § 371 Date Feb. 12, 1987, § 102(e) Date Feb. 12, 1987, PCT Pub. No. WO86/06541, PCT Pub. Date Nov. 6, 1986

Continuation of Ser. No. 934,633, Feb. 12, 1987, abandoned. This PCT application Apr. 16, 1986, Ser. No. 298,226

Claims priority, application Japan, Apr. 19, 1985, 60-85110

Int. Cl.^{4} C04B *35/04;* **H01F** *1/00, 1/26*

U.S. Cl. 252—62.54 4 Claims

1. A soft magnetic material composition consisting essentially of 70 to 95 vol% of particles of spinel ferrite powder, wherein the particles of spinel ferrite powder have a diameter of at least 0.1 mm, and a fraction of said particles have a diameter of at least 0.6 mm, the balance of said composition being a liquid thermosetting resin containing 5 to 100 parts by weight of a plasticizer based on 100 parts by weight of solids of the liquid thermosetting resin.

4,879,056

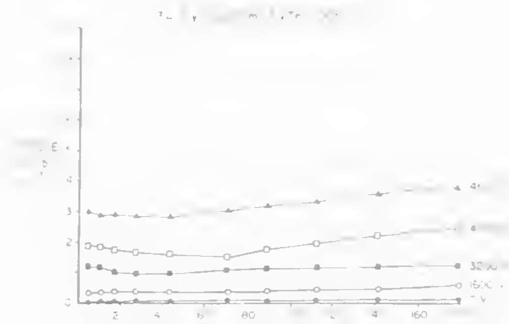
ELECTRIC FIELD DEPENDENT FLUIDS

Frank E. Filisko, and William F. Armstrong, both of Ann Arbor, Mich., assignors to Board of Regents Acting for and on Behalf of University of Michigan, Ann Arbor, Mich.

Continuation-in-part of Ser. No. 922,003, Oct. 22, 1986, Pat. No. 4,744,914. This application Oct. 21, 1987, Ser. No. 111,938

Int. Cl.^{4} H01B *3/20*

U.S. Cl. 252—74 16 Claims



1. A method of inducing a change in dynamic torque transmission of an electrorheological fluid in response to an electric field at low current comprising the steps of:

(a) selecting a nonconductive liquid phase;

(b) dispersing in said nonconductive liquid phase a particulate phase substantially free of adsorbed water, thus producing an electrorheological fluid; and

(c) subjecting said electrorheological fluid prepared in step (b) to an electric potential in excess of about one kilovolt at a current density of less than about ½ microamp per square inch.

4,879,057

AQUEOUS BLEACHING AGENT SUSPENSIONS CONTAINING PEROXYCARBOXYLIC ACID, METHOD FOR THEIR PREPARATION AND USE

Manfred Dankowski, Mömbris; Thomas Lieser, Hanau; Günter Prescher, Hanau; Wolfgang Leonhardt, and Manfred Diehl, both of Frankfurt, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt/Main, Fed. Rep. of Germany

Filed Mar. 16, 1988, Ser. No. 168,997

Claims priority, application Fed. Rep. of Germany, Mar. 21, 1987, 3709348

Int. Cl.^{4} C11D *7/18, 7/38, 7/56*

U.S. Cl. 252—99 22 Claims

1. A storage-resistant, pourable to pasty aqueous bleaching agent suspension having a pH between approximately 1 and approximately 6 comprising an aqueous carrier liquid, a particulate, substantially water-insoluble peroxycarboxylic acid, an organic thickening agent, an acidifying agent and a hydrate-forming neutral salt which densensitizes peroxycarboxylic acids, the thickening agent comprising a xanthan polysaccharide or agar polysaccharide.

4,879,058

DETERGENT COMPOSITIONS COMPRISING SYNTHETIC ALKALI METAL ALUMINOSILICATES

Satish K. Wason, Macon, Ga., assignor to J. M. Huber Corporation, Rumson, N.J.

Division of Ser. No. 116,805, Nov. 3, 1987, Pat. No. 4,812,299, which is a continuation-in-part of Ser. No. 875,120, Jun. 17, 1986, abandoned. This application Jan. 19, 1989, Ser. No. 299,293

Int. Cl.^{4} C11D *3/12*

U.S. Cl. 252—174.25 9 Claims

1. A detergent composition which contains a surfactant ingredient, an alkali metal alumino-silicate having a composition in terms of mole ratio of oxides as follows:

$$xM_2O\ Al_2O_3{:}ySiO_2{:}zH_2O$$

wherein x is the number of moles of alkali metal oxide and is an integer of 0.01 to 2.0, M is an alkali metal, y is the number of moles of SiO_2 associated with the compositions and is an integer of 2.0 to 20.0, and z is the number of moles of bound water and is an integer of 1.0 to 5.0, wherein primary particles of said alkali metal alumino-silicate comprise a core of clay platelets having an integral adjacent area of essentially amorphous alkali metal silicate base-kaolin clay reaction product.

4,879,059

LIQUID CRYSTAL DEVICE

Yukio Hanyu, Yokohama, and Yukiko Futami, Sagamihara, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 31, 1987, Ser. No. 91,105

Claims priority, application Japan, Sep. 2, 1986, 61-207012; Aug. 6, 1987, 62-197827

Int. Cl.^{4} G02F *1/13;* **C09K** *19/56*

U.S. Cl. 252—299.4 23 Claims

1. A ferroelectric liquid crystal device comprising a pair oof

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sustrates an aligment control film of an aliphatic polyimide derived from a (i) tetracarboxylic acid or dianhydride and (ii) a diamine, at least one of which is aliphatic and a ferroelectric liquid crystal disposed between the pair of substrates.

4,879,060

2-PHENYLPYRIDINE DERIVATIVES AND LIQUID CRYSTAL COMPOSITIONS INCLUDING SAME

Yoshio Shionozaki; Hiroshi Mukai; Tsuyoshi Obikawa, and Shuhei Yamada, all of Suwa, Japan, assignors to Seiko Epson Kabushiki Kaisha, Tokyo, Japan

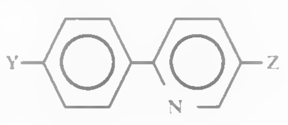
Division of Ser. No. 754,056, Jul. 11, 1985, Pat. No. 4,684,220. This application May 22, 1987, Ser. No. 68,996

Claims priority, application Japan, Jul. 12, 1984, 59-144848; Oct. 11, 1984, 59-213073; Mar. 27, 1985, 60-62553

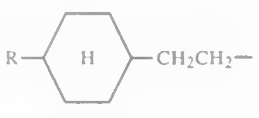
Int. Cl.^{4} G02F *1/13;* **C09K** *19/34;* **C07D** *239/02, 239/72, 241/46*

U.S. Cl. 252—299.61 11 Claims

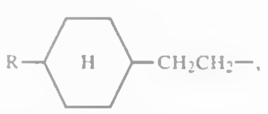
1. 2-phenylpyridine derivatives represented by the general formula:



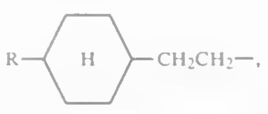
wherein one of Y and Z is



and when Y is



Z is one of R— and —CN; and when Z is



Y is one of —R or —CN; and R is a straight chain alkyl group from 1 to 12 carbon atoms.

4,879,061

LIQUID CRYSTALLINE MATERIALS AND METHOD OF MAKING SAME

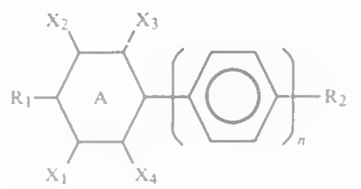
Joseph P. Ferrato, and Julie C. Ferrato, both of Akron, Ohio, assignors to Crystaloid Electronics Co., Hudson, Ohio

Filed Sep. 29, 1986, Ser. No. 912,918

Int. Cl.^{4} C02F *1/13;* **C09E** *19/30;* **C07C** *121.60, 121/48, 13/28, 49/313, 49/702*

U.S. Cl. 252—299.62 13 Claims

1. A liquid crystalline compound having the formula:



where A designates a cyclohexane ring, n has values of 1, 2 or 3, R_1 is an alkyl radical, R_2 is an alkyl, alkoxy, or alkylcyclohexyl radical or cyanide with at least one of the X_1, X_2, X_3 and X_4 groups being selected from the class of alkyl, halide and cyanide and the rest of the X_1, X_2, X_3 and X_4 groups are selected from hydrogen.

4,879,062

PREPARATION OF A GEL HAVING GAS TRANSPORTING CAPABILITY

Robert E. Moore, Wilmington, Del., assignor to Adamantech, Inc., Linwood, Pa.

Continuation of Ser. No. 313,124, Oct. 20, 1981, Pat. No. 4,569,784, which is a continuation-in-part of Ser. No. 209,238, Nov. 17, 1980, abandoned. This application Sep. 19, 1985, Ser. No. 777,798

The portion of the term of this patent subsequent to Feb. 11, 2003, has been disclaimed.

Int. Cl.^{4} B01J *13/00*

U.S. Cl. 252—315.1 1 Claim

1. A method for preparing a gel, comprising:

(a) admixing an inert, water-immiscible organic liquid having gas transporting capability, water, and an emulsifying agent under condition of agitation and in proportions effective to form an emulsion; and

(b) concentrating the emulsion to form a gel phase and a liquid phase.

4,879,063

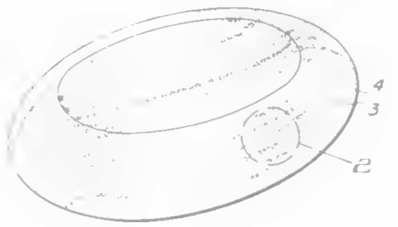
PROCESS FOR MAKING TRANSLUCENT SOAP BARS

Julianne C. Wood-Rethwill, Phoenix; Robert J. Jaworski, Scottsdale; E. Gary Myers, and Michael L. Marshall, both of Scottsdale, all of Ariz., assignors to The Dial Corporation, Phoenix, Ariz.

Filed Jun. 5, 1987, Ser. No. 58,923

Int. Cl.^{4} C11D *13/18, 13/04, 17/00*

U.S. Cl. 252—370 10 Claims



1. In a process for the production of translucent soap wherein a blend of tallow fat and coconut oil or other fats and oils useful in the production of soap or the corresponding fatty acids derived therefrom are saponified or neutralized, with the resulting neat soap being dried, amalgamated, refined and formed in bars, the improvement comprising:

conducting the saponification or neutralization with a mixture of from about 90–95% sodium hydroxide and from about 5–10% of potassium hydroxide, adding to the resulting neat soap from about 0.8 to about 2.1% of glycerin, from about 1.2 to about 2.0% of a superfatting agent and from about 0 to about 1.2% of a polyethylene glycol

having a molecular weight of about 600, the foregoing percentages being based on the weight of the neat soap, drying said neat soap to a moisture level of from about 14% to about 18%, thereafter passing the dried soap through a refining plodder provided with a screen having hole sizes no greater than 0.8 mm., subjecting the refined soap to amalgamation where a non-aqueous slurry containing polyethylene glycol having an average molecular weight of about 600 and additional glycerin is added to and mixed with said soap, the amount of said polyethylene glycol added to said soap being from about 2.5 to about 4.5% by weight of said soap including any of said polyethylene glycol that is added to said neat soap, the amount of glycerin so added being at least about 0.5% by weight of said soap with the total amount of glycerin in said soap including that added to the heat soap not exceeding 3.5% of the weight of said soap, subjecting said soap to refining using a screen having openings no greater than about 0.8 mm. and thereafter compacting and extruding said soap in a continuous log which can be cut and stamped into bars.

7. A process for the production of translucent bar soap having a striated pattern comprising saponifying a blend of tallow and coconut fatty acids with an alkali mixture of sodium hydroxide and potassium hydroxide, adding from about 0.8 to about 2.1% glycerin and from about 1.2 to about 2.0% superfatting agent to the resulting neat soap, the foregoing percentages being based on the weight of the neat soap, drying said neat soap to a moisture level of from about 14% to about 18%, subjecting the dried soap to amalgamation wherein a slurry containing polyethylene glycol with an average molecular weight of 600, additional glycerin and a planar reflective material are added to and mixed with said soap, the amount of said polyethylene glycol added to said soap being from about 2.5 to about 4.5% by weight of said soap and the amount of glycerin so added being at least about 0.5% by weight of said soap with the total amount of glycerin in said soap not exceeding 3.5% by weight of said soap, subjecting said soap to refining using a screen having openings no greater than about 0.8 mm., and thereafter compacting and extruding said soap in an extrusion plodder having an extrusion worm mounted to a worm support having openings therein, and a compaction plate mounted adjacent to said support, said compaction plate being provided with a series of openings through which said soap is forced, and wherein the ratio of the total open area of said worm support to the total area of the openings in said compaction plate is from 2:1 to about 3:1.

4,879,064

ELECTROCONDUCTIVE COATING COMPOSITION

Kelvin P. Adkins, Elmstead Market, England, assignor to Imperial Chemical Industries Plc, London, England

Filed Jun. 30, 1987, Ser. No. 69,701

Claims priority, application United Kingdom, Jul. 2, 1986, 8616186

Int. Cl.^{4} H01B *1/00*

U.S. Cl. 252—500 6 Claims

1. An electroconductive composition for coating a plastics substrate wherein the composition comprises a polymeric electrolyte and a polyepoxy resin in a weight ratio from 1:20 to 1:0.5, the polymeric electrolyte being an a cationic electroconductive polymer capable of conducting a current through ionization.

4,879,065

PROCESSES OF MAKING PLASTICS MIXTURES WHICH ABSORB ELECTROMAGNETIC RADIATION AND CONTAIN FERROELECTRIC AND/OR PIEZOELECTRIC SUBSTANCES

Hans-Josef Sterzel, Dannstadt-Schauernheim, Fed. Rep. of Germany, assignor to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Continuation of Ser. No. 28,547, Mar. 20, 1987, abandoned. This application Nov. 13, 1987, Ser. No. 120,707

Claims priority, application Fed. Rep. of Germany, Mar. 22, 1986, 3609814

Int. Cl.^{4} G03C *1/03;* **H01B** *1/06;* **G21F** *1/10*

U.S. Cl. 252—600 5 Claims

1. A process for the preparation of a plastics mixture which absorbs electromagnetic radiation, and which contains:

(A) from 99 to 10% by weight of a heat-stable thermoplastic polymer, and

(B) from 1 to 90% by weight of a ferrite of the formula $MeO.Fe_2O_3$, a titanate of the formula $MeTiO_3$, a zirconate of the formula $MeZrO_3$ or a mixed compound of the formula $Me'_mMe''_n(Ti_xZr_y)O_3$ where $x+y=1$, $m+n=1$ and Me' and Me" are divalent metal cations, wherein said ferrite, titanate, zirconate or mixed compound has a particle size of from 100 to 5,000Å and is present in a nonagglomerated form dispersed in said thermoplastic polymer,

which process comprises: combining metal components necessary to form said ferrite, titanate, zirconate or mixed compound and in the stoichiometric ratios required to form said ferrite, titanate, zirconate or mixed compound, in the form of organometallic compounds; and mixing said metal components in their organometallic form with the thermoplastic polymer and the amount of water required for hydrolysis; and heating the mixture to above 250° C.

4,879,066

FIRE RETARDANT ADDITIVES AND THEIR USES

Geoffrey Crompton, 55 Arbour Street, Southport, Merseyside, United Kingdom (PR8 6SQ)

Filed Apr. 11, 1988, Ser. No. 179,702

Claims priority, application United Kingdom, Apr. 11, 1987, 8708733; Jul. 7, 1987, 8715929; Sep. 10, 1987, 8721309

Int. Cl.^{4} C09K *21/00;* **C09D** *5/16, 5/18;* **C03C** *8/14*

U.S. Cl. 252—606 17 Claims

17. A composition for providing or enhancing the fire resistance of a material comprising:

a first frit having a relatively low melting point;

a second frit having a melting point higher than said first frit; and

at least one other frit having a melting point higher than said second frit, at least one of said frits being a devitrifying frit, said frits melting progressively under fire conditions to provide a fused protective layer for said material

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4,879,067

RED PHOSPHORUS FLAME RETARDANT AND NONFLAMMABLE RESINOUS COMPOSITION CONTAINING THE SAME

Ichiro Sakon, Toyama; Masao Sekiguchi, Uozu, and Atsushi Kanayama, Toyama, all of Japan, assignors to Rinkagaku Kogyo Co., Ltd., Shinminato, Japan

Filed Apr. 17, 1987, Ser. No. 40,522

Claims priority, application Japan, Jun. 19, 1986, 61-143714; Oct. 27, 1986, 61-255419

Int. Cl.^{4} C07K *21/00*

U.S. Cl. 252—609 16 Claims

9. A flame retardant comprising: spherical particles consisting of red phosphorus and agglomerates of said spherical particles, said spherical particles having particle sizes of not greater than 200 μm and having continuous external surfaces which are substantially free of ridges and active sites formed by pulverizing which would be capable of adsorbing moisture and

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oxygen whereby the surfaces of said particles are stable and adsorption of oxygen and moisture and disproportionation do not occur on said surfaces.

4,879,068

PROCESS FOR THE PREPARAITON OF ALKYL FLUORIDES

Dario Chiarino, Via Rivolta, 2, 20052 Monza (Milano); Davide Della Bella, Piazza Leonardo da Vinci, 3, 20133 Milano; Giancarlo Jommi, Via Gozzano, 4, 20131 Milano; Domenico Badone, Via Andreoli, 2, 21056 Induno Olona (Varese); Roberto Pagliarin, Via Zara, 29, 20010 San Giorgio su Legnano (Milano), and Paolo Tavecchia, Via Volta, 10, 20017 Rho (Milano), all of Italy

PCT No. PCT/EP86/00086, § 371 Date Sep. 30, 1986, § 102(e) Date Sep. 30, 1986, PCT Pub. No. WO86/04893, PCT Pub. Date Aug. 28, 1986

PCT Filed Feb. 12, 1986, Ser. No. 928,255

Claims priority, application Italy, Feb. 15, 1985, 19530 A/85

Int. Cl.⁴ C07C *17/22, 19/02, 71/24;* **C17J** *1/00*

U.S. Cl. 260—397 5 Claims

1. A process for the preparation of an alkyl fluoride, RF, wherein a sulfonyl derivative of the formula

$$R—O—SO_2—R' \qquad (I)$$

wherein R is alkyl, arylalkyl or cycloalkyl and R' is lower alkyl, or aryl, is reacted at 40° to 110° C. with a sodium, potassium, ammonium or phosphonium fluoride in a polyglycol of the formula

$$HO—(AO)_n—H$$

wherein A is a straight or branched alkylene having 2–6 carbon atoms and n is an integer ranging from 4 to 50.

4,879,069

FLUORESCENT CONJUGATED POLYENE STEROL DERIVATIVES AS CELL MEMBRANE PROBES

Peter Morand, 4-274 Daly Avenue, Ottawa, Ontario, Canada (K1N 6G5); Jacinta Drew, Apt. 209-475 Elgin Street, Ottawa, Ontario, Canada (K2P 2E6); Arthur G. Szabo, 21 Beechmont Crescent, Gloucester, Ontario, Canada (K1B 4A7), and Pierre R. Proulx, 57 Rebecca Crescent, Ottawa, Ontario, Canada (K1J 6C2)

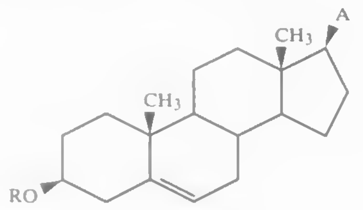
Filed May 28, 1986, Ser. No. 867,565

Claims priority, application Canada, May 31, 1985, 482887

Int. Cl.⁴ C07J *9/00*

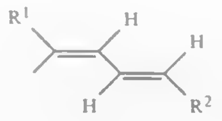
U.S. Cl. 260—397.2 7 Claims

1. An olefinic compound of formula I



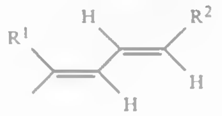
I

wherein R represents hydrogen, formyl, C_2-C_{20} alkylcarbonyl, C_3-C_{20} alkenylcarbonyl, C_3-C_{20} alkynylcarbonyl or arylcarbonyl, and A represents

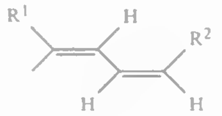


(a)

-continued

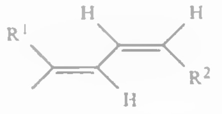


(b)



(c)

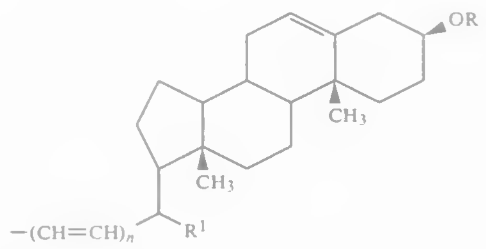
or



(d)

in which R^1 represents H, C_1-C_4 lower alkyl, C_2-C_4 lower alkenyl, C_2-C_4 lower alkynyl phenyl or phenyl substituted by a substituent selected from the group consisting of halo, aryl and lower alkyl and

R^2 represents $—(CH{=}CH)_n—CH{=}CH_2$, $—(CH{=}CH)_n$-phenyl, $—(CH{=}CH)_n$-naphthyl, $—(CH{=}CH)_n$-tricyclic aryl, $—(CH{=}CH)_n$-tetracylic aryl or



in which n is 0 to 3 and R and R^1 are as defined above.

4,879,070

PRODUCTION OF FORMATE SALTS

Alexander G. Kent, North Humberside, England, assignor to BP Chemicals Limited, London, England

Continuation of Ser. No. 946,667, Jan. 5, 1987, abandoned, which is a continuation of Ser. No. 689,826, Jan. 9, 1985, abandoned. This application Apr. 7, 1988, Ser. No. 180,672

Claims priority, application United Kingdom, Jan. 14, 1984, 8401005

The portion of the term of this patent subsequent to Oct. 2, 2001, has been disclaimed.

Int. Cl.⁴ C07C *87/08, 87/10, 87/12, 87/123*

U.S. Cl. 562—550 15 Claims

1. A process for the production of a formate salt of a nitrogenous base containing a tertiary nitrogen atom which process comprises reacting hydrogen and carbon dioxide with the nitrogenous base containing a tertiary nitrogen atom in the presence of a solvent and an effective amount of a catalyst characterised in that the catalyst comprises an inorganic or organometallic compound of rhodium and an organophosphorus compound.

4,879,071

BORON TRIS-(DIALKYL-DITHIOCARBAMATES) AND A PROCESS FOR THEIR PREPARATION

Wolfram Spiess, and Rolf Himmelreich, both of Grünstadt, Fed. Rep. of Germany, assignors to C.F. Spiess & Sohn GmbH & Co., Kleinkarlback, Fed. Rep. of Germany

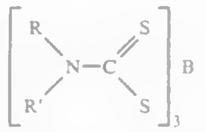
Filed Apr. 26, 1988, Ser. No. 186,337

Claims priority, application Fed. Rep. of Germany, Apr. 29, 1987, 3714260

Int. Cl.⁴ C07F *5/02*

U.S. Cl. 562—882 4 Claims

1. A boron tris-(dialkyl-dithiocarbamate) of the formula



(I)

wherein R and R' represents the same or different branched- or straight-chain saturated or unsaturated hydrocarbon groups having from 1 to 16 carbon atoms.

4,879,072

METHOD OF MANUFACTURING NATURAL PROTEIN POLYMER CONTACT LENSES BY MOLDING AND CROSS-LINKING

Claude Bourset, Creteil, and Georges Wajs, Ivry, both of France, assignors to Essilor International Cie Generale d'Optique, Cretiel, France

Filed Jul. 6, 1988, Ser. No. 215,502

Claims priority, application France, Jul. 7, 1987, 87 09619

Int. Cl.⁴ B29D *11/00*

U.S. Cl. 264—1.4 11 Claims

1. Method of manufacturing a flexible contact lens from a protein biological material wherein a hydrogel is made by hydrating said protein biological material, a lens preform is then made from said hydrogel at a temperature between ambient temperature and the temperature at which said material liquefies, said preform is then placed in a mold made from a low-loss dielectric material and in at least two parts which, when locked together, define a three-dimensional shape and a finished lens surface state, said hydrogel is then liquefied by irradiating said mold by means of an electromagnetic field at a frequency between 10^8 and 10^{10} Hz, said parts of said mold are then locked together, said hydrogel is then gelified by cooling in said mold and said hydrogel is then cross-linked by contact with a cross-linking agent.

4,879,073

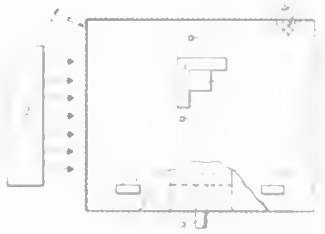
PROCESS OF HIGH PRESSURE CURING WITH ULTRAVIOLET RADIATION

Robert V. Kromrey, Campbell, Calif., assignor to United Technologies Corporation, Hartford, Conn.

Filed Apr. 22, 1988, Ser. No. 184,929

Int. Cl.⁴ B29C *35/08, 35/10, 43/10, 43/22*

U.S. Cl. 264—22 9 Claims



1. The method of pressure molding a polymeric containing article from a polymeric containing precursor article comprising

(a) placing the precursor article within a pressure vessel;
(b) substantially filling the vessel with a solid, flowable, polymer medium that is substantially ultraviolet transparent under pressure;
(c) pressurizing said medium so as to produce a substantially uniform, predetermined pressure on the surface of said precursor article; and
(d) passing through said pressurized medium ultraviolet radiation of about 280 nm to about 400 nm in wavelength sufficient to cure said article.

4,879,074

METHOD FOR COATING SOOT ON A MELT CONTACT SURFACE

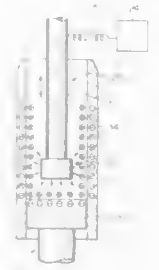
Yoshiharu Waku; Hideho Yoshioka; Hiroyoshi Oba, and Kiyoshi Fujino, all of Ube, Japan, assignors to Ube Industries, Ltd., Yamaguchi, Japan

Filed Nov. 20, 1987, Ser. No. 123,261

Claims priority, application Japan, Nov. 27, 1986, 61-280708; Mar. 13, 1987, 62-56799

Int. Cl.⁴ B28B *7/38;* **B05D** *1/06*

U.S. Cl. 264—24 10 Claims



1. A method of coating soot, employing a gas burning system, on a melt contact surface for use in a casting, comprising: the step of charging the soot and the melt contact surface with opposite electrical polarities to thereby cause an electrodeposition of the charged soot on the melt contact surface;

wherein a combustion gas from which the soot is derived is produced in at least one jet stream directed onto the melt contact surface; and

the melt contact surface is coated with a parting agent prior to being subjected to said electrodeposition of the soot.

5. A method of coating soot on a melt contact surface of a casting apparatus adapted for multiple cycles of injection molding, comprising:

the step of coating soot on the melt contact surface by applying a high voltage between the soot and the melt contact surface to thereby cause an electrodeposition of the soot on the melt contact surface, wherein said step of coating is carried out once in a plurality of injection molding cycles.

4,879,075

EVAPORATIVE AIR COOLING APPARATUS

Robert A. Hinton, 14006 Fairoak Crossing, San Antonio, Tex. 78231-1914

Filed Sep. 13, 1988, Ser. No. 243,622

Int. Cl.⁴ B01F *3/04*

U.S. Cl. 261—26 3 Claims

1. An evaporative cooler apparatus comprising in combination:

a. An induced draft fan, mounted within the attic of a building or structure to facilitate intake of outside, ambient air through a screened intake vent;
b. An adapter section which receives air from the fan, and provides conduit for the air into the evaporation bundle; and receives excess evaporation water from the evapora-

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tion bundle, and provides conduit for said water into a water drain pipe or conduit;

c. An evaporator bundle comprised of concentric elements such as cylinders of fibrous pad media within a containment shell;

d. A means for suspension or support of said evaporation apparatus in an inclined position within the attic space of said structure to provide natural capillary and gravity flow of evaporation water from the higher end of said evaporation bundle to the lower end of said evaporation bundle;

e. A conduit and flow control system to supply evaporation water to said evaporation bundle; said flow control system including trickle irrigation nozzles which are affixed to the top surface of each evaporation element said irrigation nozzles spaced to provide even distribution of evaporation water throughout the evaporation pads by the action of gravity and capillary flow of said evaporation water;

f. Annular spacers to support the evaporation elements within the containment shell of the evaporation bundle in an array to facilitate equalized air velocity in all annular spaces between the evaporation elements, and facilitating flow of air with minimum resistance;

g. A supporting means, such as a restraining bar, to prevent telescoping movement of the elements of the evaporation bundle.

4,879,076

PROCESS FOR THE PRODUCTION OF POLYETHYLENE MATERIALS

Akira Sano, Kawasaki; Seizo Kobayashi, Yokohama; Kazuo Matsuura, Tokyo; Shigeki Yokoyama, Yokohama, and Takeshi Kamiya, Kamakura, all of Japan, assignors to Nippon Oil Co., Ltd., Tokyo, Japan

Filed Jun. 12, 1987, Ser. No. 61,226

Claims priority, application Japan, Jun. 17, 1986, 61-140647; Aug. 7, 1986, 61-185918; Aug. 7, 1986, 61-185919; Sep. 5, 1986, 61-209211

Int. Cl.⁴ B29C *35/02;* **B29B** *11/12*

U.S. Cl. 264—28 10 Claims

1. A process for producing a polyethylene material of great mechanical strength and high elastic modulus, which comprises;

(a) polymerizing ethylene at a temperature between −20° C. and 110° C. in the presence of a catalyst comprising (1) a solid component containing magnesium and vanadium and (2) an organometallic compound to produce particulate polyethylene having an intrinsic viscosity in the range of from 5 to 50 dl/g at 135° C. in decalin; and

(b) drawing the resulting particulate polyethylene, without melting or dissolution, at a temperature lower than the melting point thereof.

6. A process for producing a polyethylene material of great mechanical strength and high elastic modulus, which comprises;

(a) polymerizing ethylene in a first reaction stage in a reactor at a temperature in the range of from 0° C. to 90° C. in the presence of a catalyst comprising (1) a solid component containing magnesium and titanium and (2) an organometallic compound, in the absence of hydrogen or in the presence of hydrogen at reduced concentration, to from 50–99.5 parts by weight of an ethylene homopolymer having an intrinsic viscosity in the range of from 12 to 50 dl/g at 135° C. in decalin;

(b) introducing a fresh feed of ethylene into said reactor and polymerizing the fresh feed of ethylene in a second reaction stage at a temperature in the range of from 40° C. to 100° C. in the presence of hydrogen at increased concentration to from 50–0.5 parts by weight of an ethylene polymer having an intrinsic viscosity in the range of from 0.1 to 4.9 dl/g at 135° C. in decalin; and

(c) drawing particular polyethylene of ultrahigh molecular weight which results from the above two stages of polymerization, without melting or dissolution, at a temperature lower than the melting point thereof, said particular polyethylene having an intrinsic viscosity in the range of 5 to 50 dl/g at 135° C. in decalin.

4,879,077

CONTROL METHOD OF INJECTION MOLDING MACHINE

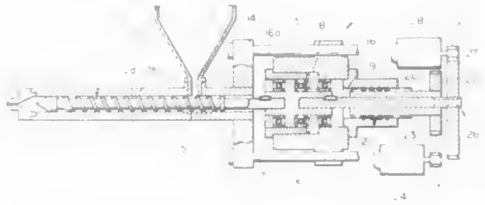
Junichi Shimizu, and Tadashi Nakajoh, both of Nagano, Japan, assignors to Nissei Jushi Kogyo Kabushiki Kaisha, Nagano, Japan

Filed Jul. 8, 1988, Ser. No. 216,503

Claims priority, application Japan, Feb. 29, 1988, 63-46853

Int. Cl.⁴ B29C *45/50*

U.S. Cl. 264—40.1 3 Claims



1. A control method for an in-line injection molding machine having a screw in a heating cylinder provided with a hopper, the control method comprising the steps of:

feeding material from the hopper to the screw;

rotating the screw in one of a forward and reverse direction;

moving the screw forward and backward in the heating cylinder;

setting a predetermined speed for reverse rotation of the screw during an injection process when the screw is moved forward by the equation:

$$r = Vs/L$$

wherein

r is the predetermined speed,

Vs is a forward speed of the screw, and

L is a pitch of the screw,

detectng an apparent position of a ridge of the screw in an axial direction for a predetermined position of the heating cylinder,

whereby the apparent position of the ridge of the screw remains generally stationary relative to the heating cylinder during forward movement of the screw during the injection process in response to the setting.

4,879,078

PROCESS FOR PRODUCING UNIAXIAL POLYOLEFIN/FILLER FILMS FOR CONTROLLED ATMOSPHERE PACKAGING

Mitchell K. Antoon, Jr., Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed Mar. 14, 1988, Ser. No. 167,815

Int. Cl.⁴ B29B *9/06*

U.S. Cl. 264—41 7 Claims

1. A process for preparing a controlled atmosphere packaging film having a consistent permeance throughout the film and a wide processing window by

(a) melt blending in a vessel in a temperature range of 150°–300° C. the ingredients

(i) 64–84% by volume of a polymer selected from the group of homopolymer, copolymer, or blends thereof of alpha-monoolefins having 2 to 10 carbons, poly(ethylene terephthalate), poly(butylene terephalate), nylon, polystyrene, ethylene-vinyl acetate copolymers, ethylene-methacrylic acid copolymers, ethylene-vinyl alcohol copolymers, and polycarbonate,

(ii) about 15–34% by volume of an inert filler based on the weight of the polymer and filler, said filler having an average particle size of about 0.3 to 8 microns,

(iii) about 0.2–5% by volume of a processing aid selected from calcium stearate, zinc stearate, oleic acid, and stearic acid, and

(iv) 0 to 3% by volume of a stabilizer,

(b) maintaining the moisture level in the melt blend below 700 ppm,

(c) casting a film,

(d) cooling the film to a temperature below the melting point of the film,

(e) uniaxially stretching the film at least two times its original casting dimensions in one direction with the temperature of the film during stretching being within the temperature range which is above the line-drawing temperature and below the melting temperature of the polymer, until the film has a sufficient number of elongated, narrow shaped, microporous voids in order to create a CO_2 and O_2 permeance in the film in the range of 5,000 to 10,000,000 cc/100 in^2-atm-day with a standard deviation of the permeance in the range of less than 35%, and

(f) cooling the film to room temperature

4,879,079

FORMATION OF LANTHANUM ALUMINATE

Martin Y. Hsieh, Palo Alto, Calif., assignor to GTE Products Corporation, Stamford, Conn.

Filed Jul. 16, 1984, Ser. No. 631,270

Int. Cl.⁴ C04B *35/44*

U.S. Cl. 264—56 8 Claims

1. In a process for producing silicon nitride bodies wherein a sintering aid is used, the improvement comprising forming said sintering aid by a process comprising:

(a) formimg an admixture of oxides of lanthanum and aluminum in a weight ratio of lanthanum oxide to aluminum oxide of about 12 to 1 to about 1 to 12 and

(b) heating said admixture at a sufficient temperature and for a sufficient time to form a reacted material containing at least some of a lanthanum aluminum compound having an atomic ratio of lanthanum to aluminum of about 1 to 1.

4,879,080

HIGH DENSITY SILICON NITRIDE BODIES

Martin Y. Hsieh, Palo Alto, Calif., assignor to GTE Products Corporation, Stamford, Conn.

Filed May 2, 1984, Ser. No. 606,044

Int. Cl.⁴ C04B *35/44*

U.S. Cl. 264—63 6 Claims

1. A process for producing silicon nitride bodies of near theoretical density said process comprising:

(a) forming an admixture consisting essentially of silicon nitride and sintering aids selected from the group consisting of lanthanum aluminate, mixtures of lanthanum aluminate and aluminum oxide and mixtures of lanthanum aluminate and lanthanum oxide, and a volatile binder,

(b) pressing said admixture to form a green silicon nitride body and,

(c) sintering said green silicon nitride body to produce a silicon nitride body having a density of greater than about 96% of the theoretical density.

4,879,081

PROCESS OF MAKING FUSED, ORIENTED-GRAIN POLYMERIC MATERIALS

Gerald T. Keep, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 15, 1988, Ser. No. 219,629

Int. Cl.⁴ B29C *67/04*

U.S. Cl. 264—101 8 Claims

1. A process for producing a fused thermoplastic material, comprising the steps of:

(i) molecularly orienting a thermoplastic material;

(ii) grinding said oriented material to produce a ground particulate material having a particle size between about 0.01 to 10 mm; and

(iii) fusing said ground particulate material at a temperature sufficient to substantially mutually adhere said particles, but low enough to prevent loss of orientation of said thermoplastic material, thereby producing said thermoplastic material.

4,879,082

METHOD FOR MOLDING PLASTIC MATERIAL INTO DISK SHAPED SABSTRATE FOR AN OPTICAL INFORMATION RECORD CARRIER

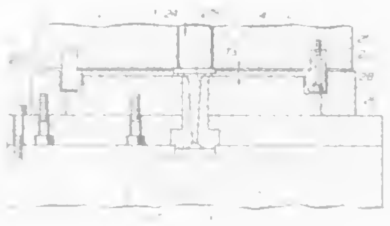
Junichiro Kudo, and Yoshihiro Shimizu, both of Miyagi, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Nov. 27, 1987, Ser. No. 126,043

Claims priority, application Japan, Nov. 28, 1986, 61-283615

Int. Cl.⁴ B29D *11/00*

U.S. Cl. 264—106 5 Claims



1. A method for molding plastic material into a disk shaped substrate for an optical information record carrier comprising the steps of,

injecting molten polycarbonate resin into a cavity defined by a stationary mold and a movable mold under application of mold clamp pressure between said molds,

releasing said mold clamp pressure at a predetermined time after injection of said molten resin is completed and said molten resin is partially solidified, whereby a predetermined double refraction characteristic is obtained for said substrate,

holding said resin in said molds under the released mold clamp pressure condition until said resin is solidified, and

taking out the molded resin from said mold.

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4,879,083
CHEMICALLY TREATED WOOD PARTICLE BOARD

Robert M. Knudson, and Marek J. Gnatowski, both of Coquitlam, Canada, assignors to MacMillan Bloedel Limited, Canada

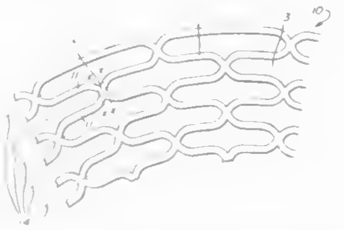
Filed Jun. 17, 1988, Ser. No. 207,955
Int. Cl.^{4} B29C *43/02*
U.S. Cl. 264—122 8 Claims

1. A method of making a chemically treated, consolidated wood product from wood particles comprising applying a phenol formaldehyde resin and at least one particulate boron compound selected from the group consisting of anhydrous borax and zinc borate having a particle size of less than 30 mesh to substantially uniformly distribute particles of said particulate boron compound on the surface of the wood particles and produce treated wood particles, laying said treated wood particles into a mat, consolidating said mat under heat and pressure to consolidate said treated wood particles into said consolidated wood product having an internal bond equivalent to the internal bond of a similar consolidated wood product not containing said boron compound.

4,879,084
METHOD OF FORMING A NET-LIKE STRUCTURE

Rudolf Parnigoni, 62, Boul. Du Domaine, Ile Perrot, Quebec, Canada J7V 5V6

Continuation-in-part of Ser. No. 357,721, Mar. 12, 1982, abandoned, which is a continuation-in-part of Ser. No. 250,863, Apr. 3, 1981, abandoned. This application Sep. 19, 1983, Ser. No. 533,789
Int. Cl.^{4} B29C *53/04;* **B21D** *31/04*
U.S. Cl. 264—295 15 Claims



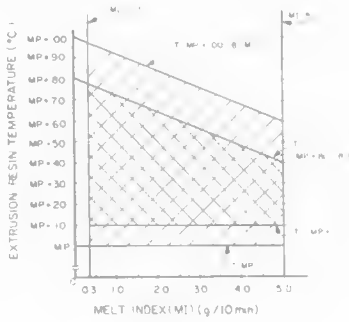
1. A method of forming a three-dimensional structure comprising the steps of casting a substantially planar web from a suitable material in the plastic state, the planar web being initially cast with an expandable pattern of a plurality of nonbendable, rigid strands merging at strand joints and defining openings therebetween, the planar web including a central portion and exterior portion surrounding the pattern of strands and the central portion, selecting points on the strands near or on the strand joints, a bending axis passing through each of said points, weakening the strands in the intermediate area of the selected points to form hinges in order to permit the strands to bend about the bending axes, and expanding the structure by forcing the central portion and the exterior portions in opposite directions perpendicular to the plane of the planar web, the bending of the strands occurring about their respective bending axes at the hinges, the expansion of the structure occurring without changing the dimensions of the strands and strand joints from the dimensions thereof in the planar web, whereby a rigid, three dimensional structure with structural integrity is formed.

4,879,085
METHOD OF MANUFACTURING POLYACETAL RESIN FILM

Kotaro Taniguchi, Nagaokakyo; Toshio Konishi, Sakai; Takehiko Shimura, Nara; Shigekazu Tanimoto, and Shigeru Nedzu, both of Fuji, all of Japan, assignors to Polyplastics Co., Ltd., Osaka, Japan

Filed Apr. 1, 1988, Ser. No. 176,820

Claims priority, application Japan, Apr. 1, 1987, 62-80096; Jun. 22, 1987, 62-155057
Int. Cl.^{4} B29C *49/04, 49/08;* **C08G** *2/00, 6/00*
U.S. Cl. 264—564 5 Claims



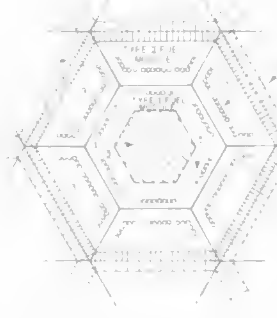
1. A method of manufacturing a polyacetal resin film comprising forming a polyacetal resin having a melt index of between 0.3 to 5.0 into a film by an inflation process within an extrusion resin temperature range according to the following equation:

$$\text{melting point } (^\circ\text{C}) < \text{extrusion resin temperature } (^\circ\text{C}) \leqq \text{melting point} + 100 - 8 \cdot \text{melt index } (^\circ\text{C})$$

4,879,086
NEUTRON ECONOMIC REACTIVITY CONTROL SYSTEM FOR LIGHT WATER REACTORS

Robert G. Luce, Glenville; Daniel F. McCoy, Latham; Floyd C. Merriman, Rotterdam, and Steve Gregurech, Scotia, all of N.Y., assignors to The United States of America as represented by The United States Department of Energy, Washington, D.C.

Filed Sep. 27, 1988, Ser. No. 250,040
Int. Cl.^{4} G21C *1/00*
U.S. Cl. 376—173 1 Claim



1. The combination of a neutron reactivity control system and a light water pre-breeder/breeder reactor comprising:
- a reactor core having a stationary seed-blanket arrangement of a plurality of symmetrical, contiguous hexagonal shaped physics cell regions, each of said cell regions comprising:

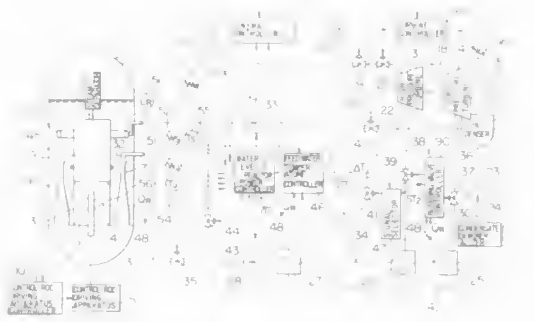
- a hexagonal shaped inner fuel module including a hexagonal shaped inner blanket region of stationary blanket fuel rods containing thoria fuel pellets, said inner blanket region centrally positioned in said inner fuel module, and a hexagonal shaped, annular first seed region which surrounds said inner blanket region and which includes stationary seed fuel rods having a mixture of thoria and urania fuel pellets and the combination of a neutron reactivity control system and a light water pre-breeder/breeder reactor comprising: movable poison rods of neutron absorption materials which are used to shut down and control the reactor core and which are symmetrically arranged about said inner blanket region; and
- a hexagonal shaped, annular outer fuel module which is contigious to and arranged symmetrically about said first seed region of said inner fuel module, said outer fuel module including an outer annular periphal blanket region of stationary blanket fuel rods containing thoria fuel pellets which defines the outer periphery of said physics cell and an annular second seed region which is contiguous with and which surrounds said inner fuel module, said second seed region including stationary seed fuel rods having a mixture of thoria and urania fuel pellets, and a plurality of movable shim control rods containing thoria materials for controlling the reactivity of the reactor core.

4,879,087
NUCLEAR POWER PLANT

Takao Akiyama; Tetsuo Ito, both of Hitachi, and Isao Sumida, Ibaraki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 4, 1988, Ser. No. 152,380

Claims priority, application Japan, Feb. 4, 1987, 62-22357
Int. Cl.^{4} G21C *7/36*
U.S. Cl. 376—216 17 Claims



16. A nuclear power plant comprising:
- a reactor container incorporating a core;
- a jet pump disposed in said reactor container and adapted to supply a coolant to said core;
- a feed water sparger]provided in said reactor container;
- a first pipeline for introducing feed water into said jet pump as driving water;
- a second pipeline connected to said first pipeline and adapted to introduce said feed water into said feed water sparger;
- a first feed water heater disposed at a portion of said first pipeline upstream of a connecting point between said first pipeline and said second pipeline;
- a second feed water heater disposed at a portion of said first pipeline downstream of said connecting point;
- a turbine driven by steam discharged from said reactor container;
- a bleeding pipeline provided with a flow-rate adjusting valve and adapted to introduce said steam into said first feed water heater;
- means for detecting a rotational speed of said turbine;
- means for extracting from an output of said rotational speed detecting means a component of variation falling within a predetermined period and predetermined amplitude; and
- means for controlling an amount of opening of said flow-rate adjusting valve on the basis of said component of variation extracted

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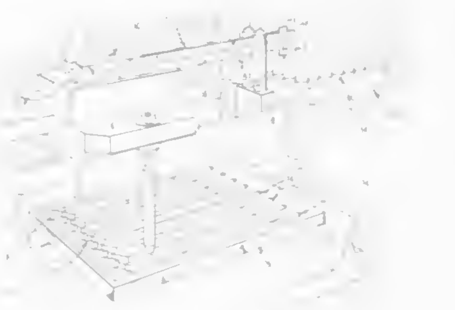
4,879,088
METHOD AND APPARATUS FOR DETECTING FAILED FUEL RODS (ENC-189)

Leo F. van Swam, Richland; Thomas R. Blair, Kennewick, and Quang D. Ho, West Richmond, all of Wash., assignors to Advanced Nuclear Fuels Corporation, Bellevue, Wash.

Continuation-in-part of Ser. No. 65,185, Jun. 17, 1987, abandoned, which is a continuation of Ser. No. 660,786, Oct. 15, 1984, abandoned. This application Mar. 8, 1988, Ser. No. 165,681
Int. Cl.^{4} G21C *17/06*
U.S. Cl. 376—252 5 Claims



1. A method of distinguishing nuclear fuel rods containing water from rods free from water, such rods being arranged in an assembly in straight spaced rows, comprising moving a single ultrasonic transducer parallel to one of said rows, but spaced from the fuel rods in said row, and emitting bursts of ultrasound in the direction of said rods and at right angles to their axes; upon reception of an initial echo from a rod, recording said echo on a recording medium and, after a predetermined length of time and for a limited period of time, corresponding to echoing entirely within the cladding wall, recording reception of a second repetitive echo greater than a predetermined threshold, said second echo resulting from echoing back and forth between the outer surface and the inner surface of the cladding of said rod nearest to the transducer, the absence of said second echo above said threshold indicating the presence of water.

4,879,089
LIQUID METAL COOLED NUCLEAR REACTORS

Gordon Kenworthy, Leigh; Colin H. Mitchell, Knutsford, and Keith S. Hawkins, Wirral, all of England, assignors to National Nuclear Corporation Ltd., Knutsford, England

Filed Jan. 21, 1987, Ser. No. 5,653

Claims priority, application United Kingdom, Feb. 12, 1986, 8603398
Int. Cl.^{4} G21C *13/04*
U.S. Cl. 376—399 16 Claims

1. A liquid metal cooled nuclear reactor, of the kind in which the liquid metal coolant is circulated from a relatively cool region (herein called the cold pool) of the reactor primary vessel through the reactor core where the coolant is in heat exchange relationship with nuclear fuel and emerges at a higher temperature in a higher region (herein called the hot pool) of the reactor vessel, the coolant then being returned from the hot pool to the cold pool via heat exchangers which serve to extract heat from the hot coolant for conversion to other forms of energy, the reactor having an intermediate plenum encircling the reactor core to provide a thermal barrier between the hot and cold pools of the reactor, characterised by means intercommunicating an upper part of the intermediate

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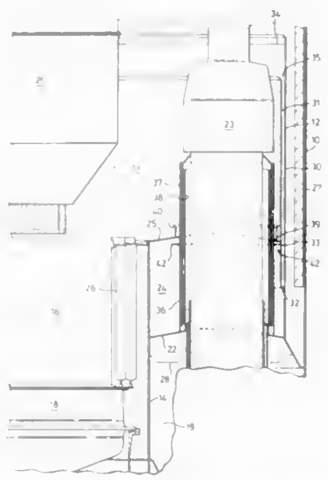
plenum and the hot pool superimposed in relation thereto to establish therebetween a permanently open, convectively acting communication capable of allowing rapid interchange of coolant convectively and unforced between the intermediate plenum and the hot pool in response to rapid temperature reduction in the hot pool and in a sufficient amount so as to avoid substantial temperature differentials which would otherwise occur between the upper part of the intermediate plenum and the hot pool but incapable of allowing, when the reactor is in a steady state condition, any more than a substantially smaller interchange to occur such as will not materially affect the thermal barrier function of said intermediate plenum.

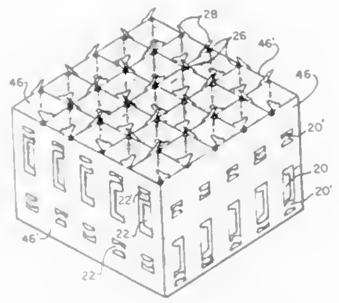


4,879,090
SPLIT VANED NUCLEAR FUEL ASSEMBLY GRID
Patrick A. Perrotti, Newington; Paul F. Joffre, Colchester; Zeses E. Karoutas, Simsbury; Lawrence V. Corsetti, Granby; William J. Bryan, Granby, and Stephen C. Hatfield, Granby, all of Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Aug. 24, 1987, Ser. No. 88,439

Int. Cl.^{4} G21C *3/18*

U.S. Cl. 376—462 4 Claims



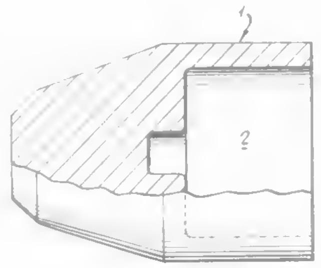
1. In a fuel element grid including integral springs for supporting a plurality of nuclear fuel elements intermediate their ends in spaced relation for fluid flow therebetween, said grid including a polygonal perimeter strip and a first and second plurality of half-slotted interlocking divider strip members arranged in a transverse intersecting egg-crate fashion to define a plurality of fuel element cells, the improvement in which: the fuel element support grid has each integral element support spring and definding cutout located in the slotted half of the divider members thereby making the material that is parallel and makes up the other half of the divider member unbroken by said half-slots and integral spring cutouts.

4,879,091
EQUIAXED DISPERSION STRENGTHENED COPPER PRODUCT AND PROCESS FOR MAKING SAME
Prasan K. Samal, Lyndhurst, and Anil V. Nadkarni, Mentor, both of Ohio, assignors to SCM Metal Products, Inc., Cleveland, Ohio

Filed Dec. 14, 1987, Ser. No. 132,799

Int. Cl.^{4} C22C *9/00*

U.S. Cl. 419—19 9 Claims



1. A method for making a substantially fully-dense, near net-shape body made of dispersion strengthened copper powder and having a substantially equiaxed grain structure, comprising the steps of:

(a) pressing dispersion strengthened copper powder into a green compact; and

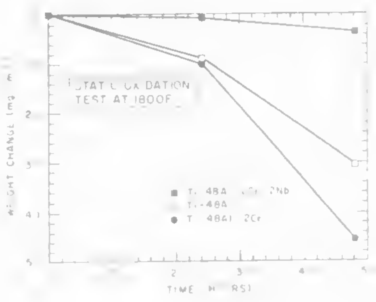
(b) hot isostatically pressing the compact into said body.

4,879,092
TITANIUM ALUMINUM ALLOYS MODIFIED BY CHROMIUM AND NIOBIUM AND METHOD OF PREPARATION
Shyh-Chin Huang, Latham, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jun. 3, 1988, Ser. No. 201,984

Int. Cl.^{4} C22C *14/00;* C21D *1/00*

U.S. Cl. 420—418 18 Claims



1. A chromium and niobium modified titanium aluminum alloy consisting essentially of titanium, aluminum, chromium and niobium in the following approximate atomic ratio:

$Ti_{52-42}Al_{46-50}Cr_{1-3}Nb_{1-5}$.

4,879,093
DUCTILE IRRADIATED ZIRCONIUM ALLOY
Anand M. Garde, Simsbury, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Jun. 10, 1988, Ser. No. 205,775

Int. Cl.^{4} C21D *1/26;* C22C *16/00*

U.S. Cl. 420—422 2 Claims

1. An improved ductile modified Zircaloy alloy for use in light water nuclear reactor core structural comonents and fuel cladding which comprises:

measurable amounts of alloying material from the group of niobium or molybdenum -or combinations thereof, niobium being present in a range up to 0.6 percent by weight or molybdenum being present in a range up to 0.1 percent by weight, said alloying material homogeneously dissolved in alpha Zircaloy with 1.2 to 1.70 percent by weight tin, 0.07 to 0.24 percent by weight iron, 0.05 to 0.13 percent by weight chromium, up to 0.08 percent by weight nickel, and oxygen in the range of from 900 to 1600 ppm.

4,879,094
CU—SN—ZN—BI ALLOYS
William Rushton, Wakefield, England, assignor to IMI Yorkshire Fittings Limited, Leeds, England

Filed Oct. 17, 1988, Ser. No. 258,724

Claims priority, application United Kingdom, Oct. 16, 1987, 8724311

Int. Cl.^{4} C22C *9/02, 9/04*

U.S. Cl. 420—476 12 Claims

1. A substantially lead free alloy containing from 1.5 to 7 wt % bismuth, from 5 to 15 wt % zinc, from 1 to 12 wt % tin, the balance being essentially copper.

4,879,095
RAPIDLY SOLIDIFIED ALUMINUM BASED SILICON CONTAINING, ALLOYS FOR ELEVATED TEMPERATURE APPLICATIONS
Colin M. Adam; Richard L. Bye, both of Morristown; Santosh K. Das, Randolph, and David J. Skinner, Long Valley, all of N.J., assignors to Allied-Signal Inc., Morris Township, Morris County, N.J.

Continuation-in-part of Ser. No. 782,774, Oct. 2, 1985, abandoned. This application Apr. 17, 1987, Ser. No. 39,246

Int. Cl.^{4} C22C *21/00*

U.S. Cl. 420—548 12 Claims

1. A rapidly solidified aluminum-base alloy consisting essentially of the formula $Al_{bal}Fe_aSi_bV_c$, wherein "a" ranges from 3.0 to 7.1 at %, "b" ranges from 1.0 to 3.0 at %, "c" ranges from 0.25 to 1.25 at % and the balance is aluminum plus incidental impurities, with the provisos that (i) the ratio (Fe+V):Si ranges from about 2.33:1 to 3.33:1, and (ii) the ratio Fe:V ranges from 11.5:1 to 5:1.

4,879,096
LEAD- AND ANTIMONY-FREE SOLDER COMPOSITION
Paul E. Naton, North Ridgeville, Ohio, assignor to Oatey Company, Cleveland, Ohio

Filed Apr. 19, 1989, Ser. No. 340,370

Int. Cl.^{4} C22C *13/00*

U.S. Cl. 420—561 12 Claims

1. A lead- and antimony-free solder composition comprising as essential ingredients

about 0.05% to about 3% by weight of silver;
about 0.5% to about 6% by weight of copper,
about 0.1% to about 3% by weight of bismuth; and
about 88% to about 99.35% by weight of tin.

4,879,097
DISPENSING DEVICE AND RECORDING APPARATUS
Thomas P. Whitehead, 70 Northumberland Road, Leamington Spa, Warwickshire; Gary H. G. H. Thorpe, 84 Newcombe Road, Handsworth, Birmingham; Larry J. Kricka, 16 Newent Road, Northfield, Birmingham; John E. C. Gibbons, 9 Norfolk Close, Stirchley, Birmingham, and Roger A. Bunce, 117 Berberry Close, Bournville, Birmingham, all of England

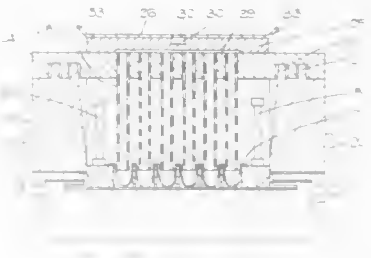
Continuation of Ser. No. 626,856, Jun. 27, 1984, Pat. No. 4,593,728. This application Apr. 4, 1986, Ser. No. 848,134

Claims priority, application United Kingdom, Nov. 20, 1982, 8233168; Apr. 26, 1983, 8311372

The portion of the term of this patent subsequent to Jun. 10, 2003, has been disclaimed.

Int. Cl.^{4} G01N *21/03*

U.S. Cl. 422—67 19 Claims



1. Recording apparatus comprising:

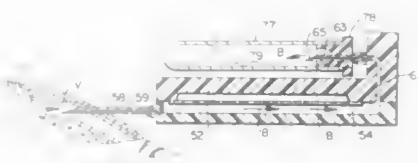
a holder for a multiplicity of reaction vessels, said holder comprising a support plate having an array of holes therein for receiving an array of reaction vessels;
a housing for receiving said holder, said housing being sealed to prevent entry of stray light;
an openable cover for said housing;
film holding means for holding a photographic film adjacent an underside of said support plate; and
a shutter for interposition between said film holding means and said support plate;
said shutter being movable between a closed position between said film holding means and said support plate, and an open position wherein film held on said film holding means is exposed to use;
said support plate being adapted to rest on said shutter when said shutter is in the closed position and to drop towards said film holding means when said shutter is moved into the open position.

4,879,098
DEVICE FOR THE SEPARATION OF THE LIGHTER FRACTION FROM THE HEAVIER FRACTION OF A LIQUID SAMPLE
Bruce J. Oberhardt, Raleigh, and Phyllis J. Palmer, Durham, both of N.C., assignors to Becton, Dickinson and Company, Franklin Lakes, N.J.

Filed Jan. 25, 1985, Ser. No. 694,717

Int. Cl.^{4} G01N *1/14*

U.S. Cl. 422—101 18 Claims



1. An operable device for the separation of the lighter fraction from the heavier fraction of a liquid sample for use with two rigid evacuated receptacles wherein each receptacle in-

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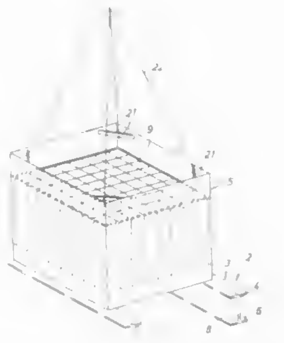
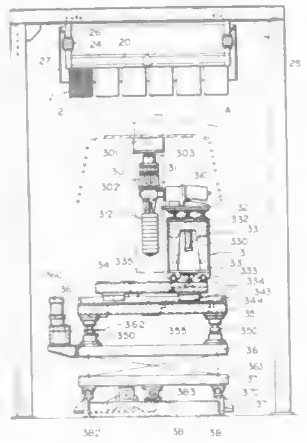
cludes an open end and a pierceable stopper sealably closing the open end comprising:
- a housing having an interior cavity;
- a separator membrane dividing said cavity into a first portion and a second portion, said separator membrane having a porosity selected for the desired separation thereacross;
- inlet means for providing fluid communication between said first portion and the source of the liquid sample;
- first communication means for providing fluid communication between said first portion and a first evacuated receptacle, said first communication means being positioned in opposed relationship from said inlet means so that liquid passing from said inlet means to said first communication means travels in a direction along the surface of said membrane;
- second communication means for providing fluid communication between said second portion and a second evacuated receptacle so that when said inlet means is in fluid communication with the source of the liquid sample and said first communication means is in fluid communication with the first evacuated receptacle and said second communication means is in fluid communication with the second evacuated receptacle, the liquid sample flows through said inlet means along said membrane through said first communication means into the first evacuated receptacle, simultaneously, the lighter fraction of the liquid being drawn through said membrane and said second communications means into the second evacuated receptacle; and
- holding means for holding the first evacuated receptacle and the second evacuated receptacle in a fixed relationship with respect to each other and coordinating means between said housing and said holding means to facilitate the controlled movement of the evacuated receptacles into engagement and fluid communication with said first communication means and said second communication means.

4,879,099
CATALYST BASKET FOR DENITRATION FOR USE IN AN EXHAUST GAS PASSAGE
Hitoshi Koike, Kure, Japan, assignor to Ishikawajima-Harima Jukogyo Kabushiki Kaisha, Japan
Filed Jul. 3, 1986, Ser. No. 881,820
Claims priority, application Japan, Jul. 8, 1985, 60-102853[U]
Int. Cl.⁴ B01T *32/00*
U.S. Cl. 422—177 7 Claims



1. In combination, a catalyst basket for denitration, shelves for supporting said basket, and an exhaust gas passage, said shelves being disposed in said exhaust gas passage and upon which basket dry NH_3 catalytic reduction catalyst elements are being placed, comprising a hollow body made of steel and detachably placeable on said shelves so as to permit exhaust gases to be denitrated to pass from one end of the body to the other end thereof, a catalyst element supporting member disposed at a bottom of said hollow body so as to permit the exhaust gases to pass, a plurality of catalyst elements supported by said catalyst element supporting member, said hollow body having at least one detachable side to enable said catalyst elements to be placed on said catalyst element supporting member, ceramic shock absorbers interposed between inner surfaces of said hollow body and the catalyst elements charged therein, and transportation means for said basket guided by said shelves.

4,879,100
CORONA DISCHARGE TREATMENT APPARATUS
Koichi Tsutsui, Kyoto; Shoji Ikeda, and Koji Ueki, both of Osaka, all of Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan
Filed Nov. 17, 1987, Ser. No. 122,158
Claims priority, application Japan, Dec. 23, 1986, 61-306749
The portion of the term of this patent subsequent to Sep. 20, 2005, has been disclaimed.
Int. Cl.⁴ B01J *19/08;* H01T *19/04*
U.S. Cl. 422—186.05 7 Claims



1. A corona discharge treatment apparatus for corona discharge treatment of the surface of an object, said apparatus comprising:
- a plurality of treating zones positioned one treating zone after the other, each treating zone being arranged for treating a different part of the surface of the object to be treated;
- transfer means for moving said object to be treated into each of said treating zones, one of said each treating zone after the other, for treating said different part of said surface in said treating zone and for moving said object into the next treating zone for treating another different part of said surface in said next treating zone and for repeating said moving, said treating and said moving into said next treating zone until all of said different parts of said object to be treated are treated;
- a first electrode for contacting said object while said surface of said object is treated in each one of said treatment zones;
- a second electrode immovably mounted in each said treating zone and responsive with said first electrode for impressing high voltage between said first electrode and said second electrode and to said different part of said surface of said object being treated in said each said treating zone for treatment of said different part of said surface of said object while said object is in said each treating zone; and
- a high frequency and high voltage source connected in said each treating zone with said second electrode while said first electrode is grounded, for providing a corona discharge between said first electrode and said second electrode in said each treating zone and to said different part of said surface of said object being treated therein.

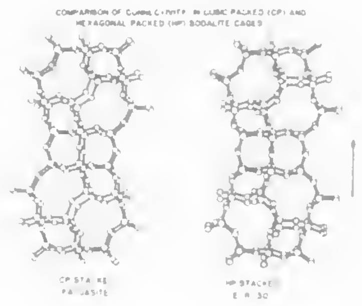
4,879,101
METHOD FOR PRODUCING A MAGNESIA POWDER FOR USE AS AN ELECTRICAL INSULATING MATERIAL
Yasuyoshi Oda, Tokyo, Japan, assignor to Shin Nihon Chemical Industry Co., Ltd., Osaka, Japan
Continuation of Ser. No. 874,686, Jun. 16, 1986, abandoned. This application Feb. 29, 1988, Ser. No. 165,346
Claims priority, application Japan, Jun. 17, 1985, 60-129954; Mar. 17, 1986, 61-56900
Int. Cl.⁴ C01F *5/26;* C04B *35/04*
U.S. Cl. 423—163 5 Claims

1. A method for producing a magnesia powder for use as an electrical insulating material, said method comprising the steps of:
- (a) providing a magnesia clinker powder;
- (b) washing said powder with an aqueous solution of an acid; and either
- (c) subjecting said acid-washed magnesia powder to heat treatment until the acid radical content of the magnesia powder is reduced to 0.015% by weight or less, or
- (d) washing said acid-washed magnesia powder with water until the acid radical content of the magnesia powder is reduced to 0.015% by weight or less, and drying the magnesia powder.

4,879,102
REGENERATION OF WASH SOLUTIONS CONTAINING FE(II) AND FE(III) CHELATE COMPLEXES
Klaus-Dieter Hoppe, Wachenheim; Bernd Leutner, Frankenthal, and Siegfried Schreiner, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany
Filed Sep. 30, 1988, Ser. No. 251,449
Claims priority, application Fed. Rep. of Germany, Sep. 30, 1987, 3732952
Int. Cl.⁴ C01B *21/00*
U.S. Cl. 423—235 3 Claims

1. A process for regenerating a wash solution containing Fe(II) and Fe(III) chelate complexes and used for removing NO_x from a waste gas comprising adding an effective amount of sodium tetrahydroborate to a wash solution containing Fe(II) and Fe(III) chelate complexes at a pH of from 5 to 7 and at a temperature of from 20 to 80°C. to reduce the Fe(III) contained in the wash solution to Fe(II).

4,879,103
COMPOSITION AND PROCESS FOR PREPARING ECR-30
David E. W. Vaughan, Flemington, N.J., assignor to Exxon Research and Engineering Company, Florham Park, N.J.
Continuation-in-part of Ser. No. 118,301, Nov. 6, 1987, abandoned, which is a continuation-in-part of Ser. No. 606,940, May 4, 1984, Pat. No. 4,714,601. This application Sep. 27, 1988, Ser. No. 249,754
Int. Cl.⁴ C01B *33/28*
U.S. Cl. 423—329 9 Claims



1. An aluminosilicate with a structure characterized by having an x-ray diffraction pattern similar to that shown in Table 2, a silica to alumina mole ratio of at least six, and containing methyl triethyl ammonium, wherein said organic ammonium template is within the super cages of said aluminosilicate, said zeolite having a hexagonal unit cell.

4,879,104
PROCESS FOR PRODUCING CARBON BLACK
Steven J. List, Billerica, Mass., and Ronald C. Hurst, Pampa, Tex., assignors to Cabot Corporation, Waltham, Mass.
Filed Jun. 16, 1987, Ser. No. 63,187
Int. Cl.⁴ C01B *31/02*
U.S. Cl. 423—450 10 Claims

1. A process for producing carbon black comprising
- introducing a fuel and oxidant into a combustion zone at a rate sufficient to produce a gauge pressure within the combustion zone of at least 2.0 inches (51 mm) of mercury;
- reacting the fuel and the oxidant so as to provide a stream of hot combustion gases possessing sufficient energy to convert a carbon blackyielding hydrocarbon feedstock to carbon black;
- injecting hydrocarbon feedstock into the stream of hot combustion gases axially or substantially radially relative to the direction of the flow of the hot combustion gas stream under sufficient pressure to achieve penetration and mixing of the feedstock;
- flowing the stream of hot combustion gases containing the feedstock through a transition zone and into a first reaction zone having an internal cross-sectional area larger than the internal cross-sectional area of the transition zone;
- flowing the stream of hot combustion gases containing the feedstock out of the first reaction zone and into a throat zone having an internal cross-sectional area smaller than the internal cross-sectional area of the transition zone;
- flowing the stream of hot combustion gases containing the feedstock out of the throat zone and into a second reaction zone having an internal cross-sectional area larger than the internal cross sectional area of the throat zone;
- quenching the stream of hot combustion gases containing carbon black; and
- cooling, separating and collecting the resultant carbon black

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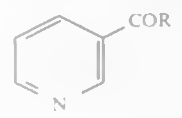
4,879,105
WEAKLY ACIDIC BATH AGENTS
Hidenori Yorozu, Utsunomiya, Japan, assignor to Kao Corporation, Tokyo, Japan
Filed Mar. 18, 1988, Ser. No. 169,879
Claims priority, application Japan, Apr. 1, 1987, 62-80481
Int. Cl.⁴ A61L *9/04;* C11D *7/00*
U.S. Cl. 424—44 9 Claims

1. A weakly acidic bath agent comprising 5 to 80% by weight of carbon dioxide or a carbon dioxide-generating substance and 0.01 to 40% by weight of a derivative of nicotinic acid represented by the general formula:



wherein R represents a group $-OR_1$, in which R_1 is a saturated or an unsaturated hydrocarbon group having 1 to 10 of carbon atoms, or benzyl group.

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4,879,106

METHODS FOR TREATING GINGIVITIS AND PARADENTAL PYORRHEA

Giorgio Voli, No. 17, Lungotevere Prati, 00193 Roma, Italy
PCT No. PCT/IT86/00048, § 371 Date Jan. 27, 1987, § 102(e) Date Jan. 27, 1987, PCT Pub. No. WO87/00051, PCT Pub. Date Jan. 15, 1987
PCT Filed Jul. 2, 1986, Ser. No. 19,558
Claims priority, application Italy, Jul. 2, 1985, 48306-A/85
Int. Cl.⁴ A61K *7/22, 7/26, 33/24, 33/30*
U.S. Cl. 424—54 6 Claims

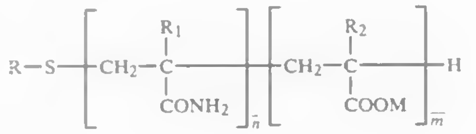
1. A method for treating gingivitis and paradental pyorrhea, comprising topically applying a medicament composition comprising from 1% to 3% by weight of the ammonium salt of sulfoichthyolic acid, from 5 to 20% by weight of zinc oxide, from 3 to 9% by weight of titanium dioxide and from 0.5 to 2% by weight of a fluid extract of Hamamelis, in a pharmaceutically acceptable carrier.

4,879,107

FOAMING COSMETIC COMPOSITIONS

Guy Vanlerberghe, Claye-Souilly; Henri Sebag, Paris; Michele Lagoutte, and Jean F. Grollier, both of Paris, all of France, assignors to L'Oreal, Paris, France
Filed May 4, 1988, Ser. No. 190,052
Claims priority, application Luxembourg, May 8, 1987, 86873
Int. Cl.⁴ A61K *7/09*
U.S. Cl. 424—70 10 Claims

1. An aqueous foaming cosmetic composition for cleaning the hair or skin comprising at least one surfactant oligomer of formula (I):



$$R{-}S{-}\left[CH_2{-}\overset{\displaystyle R_1}{\underset{\displaystyle CONH_2}{C}}\right]_{\bar{n}}\left[CH_2{-}\overset{\displaystyle R_2}{\underset{\displaystyle COOM}{C}}\right]_{\bar{m}}{-}H \qquad (I)$$

wherein

R represents a linear C_{10} to C_{18} hydrocarbon radical,

R_1 and R_2, each independently, represent hydrogen or methyl,

$\bar{n}$ represents an average statistical value of 10 to 35,

$\bar{m}$ represents 0 or an average statistical value equal to or less than 5 and, when $\bar{m}$ is other than 0, the ratio $\bar{m}/\bar{n}$ is less than or equal to 0.25,

M represents H, Na, K or, as an ammonium group, NH_4, 2-ammonio-2-methyl-1-propanol, 2-ammonio-2-methyl-1,3-propanediol, trimethylhydroxyethylammonium or triethanolamine and,

as an acidifying agent, a C_2-C_6 carboxylic acid present in an amount such that said composition has a pH ranging from 3 to 7.

4,879,108

CONFECTIONERY DELIVERY SYSTEM FOR ANTIPYRETICS

Robert K. Yang, Randolph; Shri C. Sharma, Mendham; Shan-Shan Sheu, Parsippany, and James J. Shaw, Morristown, all of N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.
Division of Ser. No. 811,601, Dec. 20, 1985, Pat. No. 4,786,676. This application Oct. 14, 1988, Ser. No. 258,245
Int. Cl.⁴ A61K *9/40, 9/16*
U.S. Cl. 424—440 14 Claims

1. A chewable confectionery delivery system for antipyretics comprising:

(a) an antipyretic pre-coated with at least one material selected from the group consisting of lecithin, polyoxyalkylenes having chain lengths of about 4 carbons or less, glycerides having a melting point of 100° C. or less, polyalkyleneglycols having a molecular weight of 3,700 or less, synthetic and natural waxes and mixtures thereof; and

(b) a confectionery matrix comprising a binder system comprising from about 0.1% to about 5% by weight gelatin and a humectant material selected from the group consisting of glycerin and its lower alkyl ($C_{2\text{-}7}$) ester derivatives, a sweetener; and about 1% to about 30% by weight water, all weights are in percent of the final delivery system.

4,879,109

METHOD FOR TREATING BURNS

Robert L. Hunter, Tucker, Ga., assignor to Emory University, Atlanta, Ga.
Continuation-in-part of Ser. No. 45,459, May 7, 1987, Pat. No. 4,801,452, which is a continuation-in-part of Ser. No. 43,888, Apr. 29, 1987, which is a continuation of Ser. No. 863,582, May 15, 1986, abandoned. This application Dec. 29, 1988, Ser. No. 291,925
Int. Cl.⁴ A61K *31/745*
U.S. Cl. 424—83 9 Claims

1. A method of reducing tissue damage due to burns in an animal or human comprising the step of injecting into the animal or human with the burn an effective of amount of a solution of a surface active copolymer with the following general formula:

$$HO(C_2H_4O)_b(C_3H_6O)_a(C_2H_4O)_bH$$

wherein a is an integer such that the hydrophobe represented by (C_3H_6O) has a molecular weight of approximately 950 to 40000, and b is an integer such that the hydrophile portion represented by (C_2H_4O) constitutes approximately 50% to 95% by weight of the compound.

4,879,110

ANTIHYPERTENSIVE HYPERIMMUNE MILK, PRODUCTION, COMPOSITION, AND USE

Lee R. Beck, and Ralph J. Stolle, both of Lebanon, Ohio, assignors to Stolle Research and Development Corporation, Lebanon, Ohio
Continuation-in-part of Ser. No. 1,848, Jan. 9, 1987, which is a division of Ser. No. 546,162, Oct. 27, 1983, Pat. No. 4,636,384, which is a continuation-in-part of Ser. No. 384,625, Jun. 3, 1982, abandoned. This application Feb. 26, 1988, Ser. No. 161,039
Int. Cl.⁴ A61K *39/06, 39/12*
U.S. Cl. 424—85.8 22 Claims

1. An anti-hypertensive factor, in substantially pure form, produced by a process comprising:

(i) obtaining milk from a hyperimmunized animal;
(ii) removing from said milk macromolecules having a molecular weight greater than about 10,000 daltons;
(iii) fractionating by ion-exchange chromatography the lower-than-10,000 dalton product of step (ii) to obtain a negatively charged product of molecular weight less than about 10,000 daltons;
(iv) fractionating by molecular sieve chromatography said negatively charged product from step (iii); and
(v) isolating by isoelectric precipitation said antihypertensive product fractionated in step (iv).

4,879,111

TREATMENT OF INFECTIONS WITH LYMPHOKINES

Kong-Teck Chong, Union City, Calif., assignor to Cetus Corporation, Emeryville, Calif.
Filed Apr. 17, 1986, Ser. No. 853,122
Int. Cl.⁴ A61K *45/02, 37/02*
U.S. Cl. 424—85.2 16 Claims

1. A method for prophylactic or therapeutic treatment of bacterial infections in mammalian hosts comprising administering an effective amount of tumor necrosis factor (TNF) from a mammalian species, to the host, before or after infection of the host, wherein the amount of TNF is a sufficient dose to achieve at least 50% protection of the host.

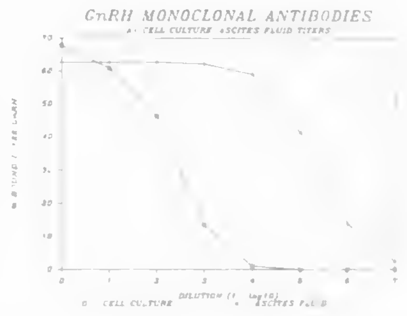
9. A method for prophylactic or therapeutic treatment of bacterial infections in mammalian hosts comprising administering an effective amount of tumor necrosis factor (TNF) and interleukin-2 (IL-2), both from a mammalian species, to the host, before or after infection of the host, wherein the amount of TNF and IL-2 is a sufficient dose to achieve at least 50% protection of the host.

11. A method for propylactic or therapeutic treatment of bacterial infections in mammalian hosts comprising administering an effective amount of tumor necrosis factor (TNF) and interferon-gamma (IFN-γ), both from a mammalian species, to the host, before or after infection of the host, wherein the amount of TNF and IFN-γ is a sufficient dose to achieve at least 50% protection of the host.

4,879,112

MONOCLONAL ANTIBODIES AGAISNT GNRH

David W. Silversides; Reuben J. Mapletoft; Bruce D. Murphy, and Virkam Misra, all of Saskatoon, Canada, assignors to University of Saskatchewan, Saskatoon, Canada
Continuation of Ser. No. 577,694, Feb. 7, 1984, Pat. No. 4,676,981. This application May 15, 1987, Ser. No. 50,023
The portion of the term of this patent subsequent to Jun. 30, 2004, has been disclaimed.
Int. Cl.⁴ A61K *39/395;* **C12N** *5/00, 15/00;* **C12P** *21/00*
U.S. Cl. 424—85.9 21 Claims



1. A monoclonal antibody designated USAKS/DSIL-GnRH produced by a hybridoma deposited in ATCC under designation HB-9094 and formed by fusion of cells from a mouse myeloma line and antibody producing spleen cells from a mouse previously immunized with a source of GnRH, said monoclonal antibody having the following characteristics:

(i) producing a short term reduced mean level of LH in female mammals of the zoological order Carnivora after passive immunization;
(ii) producing a short term reduced pulsatile secretion of LH in female mammals of the zoological order Carnivora after passive immunization;
(iii) being effective in passive immunization to terminate pregnancy in a female mammal of the zoological order Carnivora with an accompanying decline in progesterone levels;
(iv) being effective in passive immunization to produce a long term reduced testosterone level in a male mammal of the zoological order Carnivora; and
(v) being effective in passive immunization to induce infertility in a male mammal of the zoological order Carnivora.

4,879,113

VACCINE FOR IMMUNOLOGICALLY MEDIATED NUTRITIONAL DISTURBANCES ASSOCIATED WITH PLANT PROTEIN ANTIGENS

Clyde K. Smith, 3743 Bay Shore Dr., Sturgeon Bay, Wis. 54235
Filed Oct. 27, 1987, Ser. No. 114,082
Int. Cl.⁴ A61K *39/00, 39/12, 39/02*
U.S. Cl. 424—88 24 Claims

1. A method for suppressing immunologically-mediated nutritional disturbances associated with pre-ruminant bovine ingestion of dietary plant protein, which comprises the steps of:

(a) administering to said pre-ruminant bovine said plant protein in an amount effective to prevent a nutritional disturbance in said pre-ruminant bovine due to the formation of an immune response to the dietary plant protein, and
(b) parenterally administering to said pre-ruminant bovine of step (a) again a second effective amount of said plant protein, there being a selected suitable time interval between said two administrations.

4,879,114

LIPIDS FROM OMENTUM AND METHODS FOR COSMETIC USE

Nicholas Catsimpoolas, Newton Centre; Ahmad R. Kamarei, Arlington; Ann L. Griffith, Newton Centre, all of Mass., and Robert S. Sinn, New York, N.Y., assignors to Angio-Medical Corporation, Avenue of the Americas, N.Y.
Filed Dec. 20, 1985, Ser. No. 811,505
Int. Cl.⁴ A61K *35/12, 7/42, 7/32, 7/06*
U.S. Cl. 424—95 24 Claims

1. A topical cosmetic composition for skin care consisting essentially of an omental lipid and a cosmetic agent in a stable cosmetic formulation selected from the group consisting of a cream, shampoo, oil, lotion, sunscreen, deodorant, powder, moisturizer, soap, solid, stick and ointment.

4,879,115

FEED EFFICIENCY IMPROVEMENT COMPOSITION

James L. Brunton, Amarillo, Tex., assignor to Aerion Industries, Inc., Amarillo, Tex.
Filed Feb. 6, 1987, Ser. No. 11,548
Int. Cl.⁴ A61K *33/06, 33/10, 33/08*
U.S. Cl. 424—694 7 Claims

1. A composition for increasing growth rate and decreasing feed to gain ratio in animals comprising: feeds having a proper nutritional balance and a strengthened positive valency of the feeds resulting from the foods having a positive electrical charge of from 10^{-9} to 10^{-7} coulombs.

4,879,116

SKIN PROTEIN COMPLEXING COMPOSITION FOR THE POTENTIATION OF THE SUBSTANTIVITY OF ALUMINUM ACETATE THROUGH THE USE OF A CATIONIC EMULSIFIER AS AN AID IN SKIN HEALING

Charles Fox, 39-08 Tierney Pl., Fairlawn, N.J. 07410; John W. DeWitt, 9 Parker Ct., Florham Park, N.J. 07932, and John D. Rothenberger, Jr., 303 Parkside Rd., Harrington Park, N.J. 07640
Filed Jun. 13, 1988, Ser. No. 207,871
Int. Cl.⁴ A01N *59/06*
U.S. Cl. 424—682 6 Claims

1. A stabilized and synergistic therapeutic skin healing and soothing preparation for topical application to the skin containing from 0.1% to 5.0% of a topical astringent the Markush, "selected from the group consisting of aluminum acetate
aluminum sulfate, witch hazel, salts of zinc maganese, iron and bismuth, tannins, polyphenolic compounds, acids alcohols and phenols capable of precipitating proteins, and from 0.25% to 5.0% of a cationic surfactant salt

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where the accompanying anion is a chloride, bromide, or sulfate ion.

4,879,117
INSECTICIDAL COLLAR AND PROCESS FOR PRODUCING IT

Max A. Rombi, 67, rue Rossini, 06000 Nice, France

Filed Apr. 3, 1984, Ser. No. 596,271

Claims priority, application France, Apr. 14, 1983, 83 06099; Nov. 29, 1983, 83 19005

Int. Cl.⁴ A01N *25/34*

U.S. Cl. 424—411 5 Claims

1. A ready-for-use insecticidal collar for animals in strip form comprising
   - (a) an inner element comprising an absorbent textile material impregnated with a liquid insecticidal composition comprising a liquid insecticidal pyrethroid or pyrethrin and a hygroscopic substance selected from the group consisting of calcium chloride, magnesium chloride, lecithin, choline and salts thereof, said hygroscopic substance being present in an amount of about 1 to 10 parts by weight per 100 parts by weight of said liquid insecticidal composition, and
   - (b) a polyvinyl chloride casing surrounding said inner element, at least a portion of said casing being permeable to said liquid insecticidal composition.

4,879,118
GLYCYRRHETINIC ACID-CONTAINING PLASTERS

Makoto Senuma, Tokyo; Shigeru Kondoh, Saitama; Tadamasa Kawase, Saitama, and Yoshihiko Nakagawa, Saitama, all of Japan, assignors to Yamanouchi Pharmaceutical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 705,549, Feb. 26, 1985, abandoned. This application Mar. 3, 1988, Ser. No. 168,587

Claims priority, application Japan, Mar. 7, 1984, 59-41994

Int. Cl.⁴ A61F *13/02;* **A61L** *15/06;* **A61K** *31/19*

U.S. Cl. 424—448 6 Claims

1. An antipruritic plaster comprising a backing having formed on one surface thereof a pressure-sensitive adhesive layer containing:
   - (1) from about 0.1 to about 10 percent by weight, based on the total weight of said plaster, of a glycyrrhetinic acid compound selected from the group consisting of glycyrrhetinic acid, glycyrrhizin and salts of glycyrrhizin,
   - (2) from about 1 to about 20 percent by weight of at leastone solvent for dissolving said glycyrrhetinic acid compound selected from benzyl alcohol, phenethyl alcohol, diphenhydramine, chlorpheniramine and crotamiton, and
   - (3) a base of either:
     - (a) from about 75 to about 98.5 percent by weight based on the total weight of said adhesive layer of at least one rubber compound adhesive plaster base selected from natural rubber, a styrene-butadiene copolyer elastomer, and a styrene-isoprene-styrene copolymer elastomer; at least one tackifying agent selected from a petroleum resin, rosin, hydrogenated rosin, and an ester gum; and at least one softener selected from polybutene, liquid paraffin, a higher fatty acid ester, a silicon oil, and a vegetable oil, or
     - (b) from about 65 to about 98.5 weight percent based on the total weight of said adhesive layer of an acrylic resin.

4,879,119
PATCH

Yutaka Konno; Hiroitsu Kawata; Masayoshi Aruga; Takashi Sonobe, all of Saitama, and Mitsuo Mitomi, Tokyo, all of Japan, assignors to Yamanouchi Pharmaceutical Co., Ltd., Tokyo, Japan

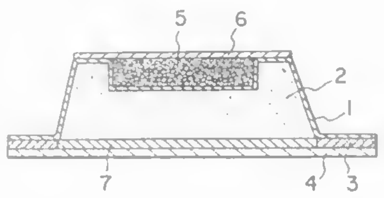
Continuation of Ser. No. 17,886, Feb. 20, 1987, abandoned, which is a continuation of Ser. No. 699,585, Feb. 8, 1985, Pat. No. 4,685,911. This application Aug. 26, 1988, Ser. No. 239,013

Claims priority, application Japan, Feb. 21, 1984, 59-31934

The portion of the term of this patent subsequent to Aug. 11, 2004, has been disclaimed.

Int. Cl.⁴ A61F *13/00*

U.S. Cl. 424—449 7 Claims



1. A transdermal patch comprised of a polyvinyl chloride container, an adhesive layer on said container at the portion to be applied to the skin, and wherein said adhesive layer is covered by a liner, said patch containing a solution or a suspension of a drug component selected from the group consisting of nicardipine hydrochloride, nifedipine, dipyridamole, formoterol fumarate, indenolol and -oryzanol, and wherein said drug component is uniformly dispersed in a base mainly comprising cacao butter, isocacao butter or a triglyceride of a vegetable saturated fatty acid having 12 to 18 carbon atoms together with a penetration enhancer.

4,879,120
POLYCAPROLACTAM WITH TITANIUM DIOXIDE CONTENT

Rudolf Wehr, Wachenheim, Fed. Rep. of Germany, assignor to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Aug. 25, 1988, Ser. No. 236,211

Int. Cl.⁴ C08K *3/22*

U.S. Cl. 524—430 4 Claims

1. A polycaprolactam with a titanium dioxide content which, based on titanium dioxide, contains less than 0.1% by weight of 100° C. water solubles and from 2 to 15% by weight of monomeric caprolactam and oligomers thereof, based on polycaprolactam.

3. A polycaprolactam as claimed in claim 1 containing from 0.5 to 3% by weight of aluminum oxide, based on titanium dioxide.

4,879,121
ZEOLITES IN POULTRY FEEDING

Sebastian M. Laurent, Greenwell Springs, and Robert N. Sanders, Baton Rouge, both of La., assignors to Ethyl Corporation, Richmond, Va.

Continuation-in-part of Ser. No. 846,188, Mar. 31, 1986, abandoned, which is a continuation of Ser. No. 741,572, Jun. 5, 1985, abandoned, which is a division of Ser. No. 475,370, Mar. 14, 1983, Pat. No. 4,556,564. This application Nov. 24, 1986, Ser. No. 934,460

The portion of the term of this patent subsequent to Dec. 3, 2002, has been disclaimed.

Int. Cl.⁴ A23K *1/00*

U.S. Cl. 426—2 20 Claims

1. A method of improving the lean/fat ration of broiler poultry as correlated with the very low density lipoproteins in the blood of said poultry, said method comprising feeding said poultry an amount of zeolite A sufficient to improve said ratio, said zeolite A being incorporated in an amount of up to about 4 weight percent in poultry feed.

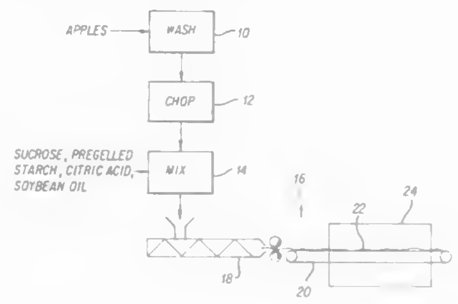
4,879,122
CRUNCHY FRUIT BRITTLE PRODUCT AND PROCESS

William B. Seely, Jr., Dallas, and Charmaine C. Jackson, Coppell, both of Tex., assignors to Frito-Lay, Inc., Dallas, Tex.

Continuation of Ser. No. 880,056, Jun. 30, 1986, abandoned. This application Jan. 7, 1988, Ser. No. 143,237

Int. Cl.⁴ A23L *1/072*

U.S. Cl. 426—102 26 Claims



1. A method for preparing a crunchy fruit brittle which comprises:
   - (a) chopping apples or pieces thereof into particles, at least 35% of which have a particle size from about 0.03 inches to about 0.14 inches;
   - (b) admixing the apple particles with a binder/texturizer composition comprising from about 5% to about 100% by weight of a crystallizable sugar; from about 0% to about 55% of a moisture-adsorbing substance; and from about 0% to 40% by weight of a softening or tenderizing agent, the weight ratio of apple particles to binder/texturizer solution being from about 20:1 to about 7:1;
   - (c) sheeting the mixture to a thickness from about 0.04 inches to about 0.16 inches; and
   - (d) drying the sheeted mixture to a moisture content from about 0% to about 3.0%, provided that at least 40% of the apple cells are maintained intact.

4,879,123
TUBULAR PACKAGE CASING COMPOSED OF MUTUALLY CONNECTED SECTIONS

Manfred Siebrecht, Wiesbaden, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

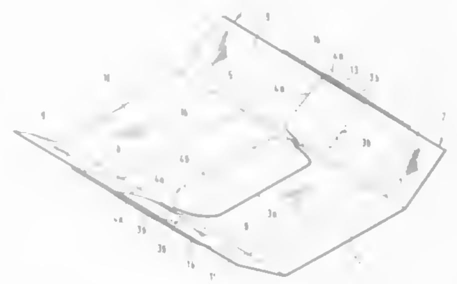
Filed Apr. 21, 1988, Ser. No. 184,415

Claims priority, application Fed. Rep. of Germany, Apr. 22, 1987, 3713479

Int. Cl.⁴ A22C *13/00;* **A23L** *1/317*

U.S. Cl. 426—105 9 Claims

1. A tube, comprising:
   - mutually connected first and second longitudinal sections of flexible material, said sections having at the connection point cut edges which extend approximately at right angles to the longitudinal axis of the tube and parallel to each other and cut edge regions which overlap in an overlapping zone which is of approximately rectangular shape when the tube is in a flattened condition and;
   - an adhesive tape extending around the outside of the tube and connecting said sections to one another, wherein in the case of the tube in a flattened condition having two folded edges extending parallel to each other, a first half of the cut edge region of the first section which extends along a first side from a first folded edge to the other opposite folded edge is situated within the tube and a second half of the cut edge region of the first section which extends along a second side, opposite said first side, from the second folded edge back to the first folded edge is situated on the outside of the tube, while a first half of the cut edge region of the second section which extends along the first side is situated on the outside of the tube and a second half of the cut edge region of the second section which extends along the second side is situated within the tube.



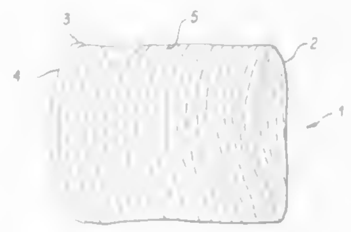
4,879,124
PERFORATED COOK-IN SHRINK BAG

Timothy T. Oberle, Duncan, S.C., assignor to W. R. Grace & Co.-Conn, Duncan, S.C.

Continuation of Ser. No. 785,419, Oct. 8, 1985, abandoned. This application Apr. 19, 1988, Ser. No. 183,116

Int. Cl.⁴ B65D *81/34, 30/08, 30/02*

U.S. Cl. 426—113 3 Claims



1. A sealed perforated heat shrinkable bag containing a meat product to be cooked therein comprising.
   - (a) a seamless, biaxially oriented heat shrinkable tube of thermoplastic film forming the body of the bag;
   - (b) a transverse heat seal closing one end of the tube, said closed end defining the bottom of the bag, the other end defining the mouth of the bag which too is closed and wherein said meat product is contained therein, said heat shrinkable thermoplastic film shrinking with predominantly transverse shrink tension;
   - (c) an array of spaced apart perforations in the body of said bag, said perforations being arrayed and spaced apart relative to each other in both the transverse and longitudinal direction of the bag, each perforation being an elongated slit aligned to extend in the transverse direction of the bag and the slits are dimensioned both in length and the space between slits sufficient such that when the bag is heat shrunk during cook-in with said meat product enclosed therein splitting of the tube film is reduced during cook-in, as compared to needle perforated film.

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4,879,125

SANDWICH IN A LUNCH BOX

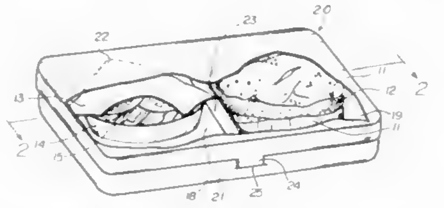
Tong S. Pak, Rte. 15, Box 115, Oak Grove Cir., Statesville, N.C. 28677

Continuation-in-part of Ser. No. 924,261, Oct. 29, 1986, Pat. No. 4,765,998. This application Aug. 16, 1988, Ser. No. 232,851

The portion of the term of this patent subsequent to Aug. 23, 2005, has been disclaimed.

Int. Cl.⁴ A21D *13/00;* **A23L** *1/31;* **B65D** *1/34, 1/42*

U.S. Cl. 426—120 7 Claims



1. A sandwich in a lunch box which comprises:

a lunch box having first and second parts partitioned in said lunch box,

two slices of bread disposed in said first part, said two slices of bread having inserted therebetween a meat product, and

an edible container disposed in said second part, said edible container housing a salad therein and having a concave configuration disposed at the bottom surface with a circular edge portion for causing the edible container to tightly adhere to the meat product when the edible container is inserted into said slices of bread, whereby the salad is separated from the meat product to maintain its fresh condition while at the same time prevented from falling from the sandwich.

4,879,126

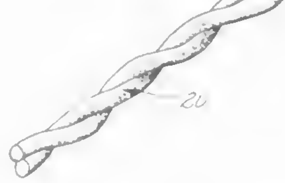
METHOD FOR PREVENTING DISTORTION IN THE SHAPE OF FRIED STRAND-LIKE EXPANDED SNACKS

Miles J. Willard, P.O. Box 1747; Jane J. Arnold, 1120 Orlin, and Veldon M. Hix, Rte. #6, Box 263, all of Idaho Falls, Id. 83401

Continuation of Ser. No. 732,908, May 9, 1985, abandoned, which is a continuation of Ser. No. 631,509, Jul. 16, 1984, abandoned, which is a continuation of Ser. No. 384,896, Jun. 4, 1982, abandoned. This application Dec. 9, 1985, Ser. No. 806,128

Int. Cl.⁴ A21D *2/36;* **A23L** *1/217;* **A23P** *1/14*

U.S. Cl. 426—272 32 Claims



1. A method for preventing distortion of an elongated, thin strand-like expanded fried snack product, the method comprising the steps of:

preparing a dough from starch-containing cereal solids, potato solids, or mixtures thereof and sufficient water so that the dough contains from about 35% to about 60% moisture by weight of the dough, in which a portion of the starch contained in the dough is gelatinized and in which additional starch contained in the dough is ungelatinized;

forming said dough into a composite dough piece comprising at least two elongated, thin strand-like dough pieces adhered to one another by point contact along the length of the dough strands; and

frying said composite dough piece in hot cooking oil and at said 35% to 60% moisture content and with said combination of gelatinized and ungelatinized starches being contained in the dough piece at the time of frying to form a finished fried expanded snack product having a moisture content of about 2% or less, in which the strands of the finished composite product are joined along the point of adherence while maintaining their separate strand-like shape throughout the frying step for substantially reducing distortion of the composite fried snack product when compared with the same dough strand fried singly.

4,879,127

METHOD OF PRESERVING PRODUCE FOR FURTHER PROCESSING

Yuan K. Liu, Concord; Philip A. Kuhmichel, Antioch; Fred G. Cordes, Oakland, and Wayman Wong, Concord, all of Calif., assignors to Del Monte Corporation, San Francisco, Calif.

Continuation of Ser. No. 78,803, Jul. 28, 1987, abandoned, which is a continuation-in-part of Ser. No. 76,702, Jul. 23, 1987. This application Nov. 1, 1988, Ser. No. 266,338

Int. Cl.⁴ A23B *7/04, 7/08;* **A23L** *3/10*

U.S. Cl. 426—325 11 Claims

1. A method of preparing canned produce wherein the texture and flavor of the produce are retained after extended storage in a frozen state at freezer temperatures ranging from about −20° F. to about +10° F., which comprises the steps of suspending the produce in a solutes containing, substantially isotonic aqueous storage solution in which the solutes content is adjusted such that the osmotic pressures of the produce and solution are substantially equal; freezing the produce, while suspended in said solution in cold storage at temperatures ranging from about −20° F. to about +10° F. and maintaining the produce in a frozen state at said temperatures; removing the produce from the storage solution and from cold storage thereby thawing the produce without loss of structural integrity and organoleptic characteristics; filling the produce into cans with canning syrup; sealing the cans; and then sterilizing the contents of the cans.

4,879,128

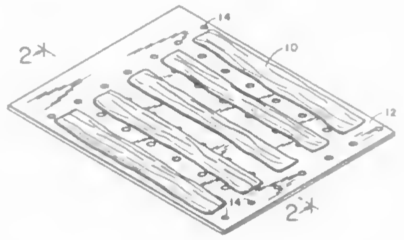
METHOD OF PRE-COOKING BACON

Paul G. Morin, Madison, Wis., and Tommy L. Hoes, Waco, Tex., assignors to Oscar Mayer Foods Corporation, Madison, Wis.

Filed Jan. 15, 1988, Ser. No. 144,291

Int. Cl.⁴ A23L *1/31;* **A65B** *35/30, 25/08*

U.S. Cl. 426—392 8 Claims



1. A method for packaging bacon comprising the steps of placing on sheets of greaseproof interleaving paper a plurality of bacon slices so that a plurality of bacon slices are placed in a single layer on each of said sheets, cooking said bacon slices on said sheets of interleaving paper, said bacon cooked on said interleaving paper to a bacon yield of 25% to 40%, then stacking said sheets of interleaving paper with said cooked bacon thereon so that said cooked bacon is between each of said sheets; and then packaging said stack of sheets of interleaving

paper and said cooked bacon slices therebetween; said interleaving paper having a multiplicity of holes with a hole size diameter range from between 0.07 inches to 0.02 inches and with a centerline distance between the holes range from between 0.3 inches to 1.25 inches, said paper having a minimum weight of 25 pounds and a grease proofness rating of 600 or greater.

4,879,129

METHOD OF WASHING AND COOLING A DAIRY PRODUCT

Meredith C. Thomson, Sheboygan, Wis., assignor to Kusel Equipment Company, Watertown, Wis.

Division of Ser. No. 169,957, Mar. 18, 1988, Pat. No. 4,829,890. This application Feb. 13, 1989, Ser. No. 309,182

Int. Cl.⁴ A23C *19/02*

U.S. Cl. 426—506 6 Claims

1. A method of washing and cooling a friable degradable material of cheese curds and whey comprising the steps of:

(a) disposing a longitudinally extending housing for containing a fluid in an generally horizontal position and establishing an upstream end and a downstream end in said housing;

(b) admitting a washing and cooling fluid into said housing through a fluid inlet adjacent said upstream end and discharging said fluid from said housing through a fluid outlet adjacent said downstream end to establish a reservoir of flowing fluid in said housing that has a normal direction of fluid flow;

(c) placing said material in an unwashed and uncooled condition into said reservoir of flowing fluid adjacent said downstream end;

(d) lifting said material in said reservoir of flowing fluid in a direction generally transverse to said normal direction of fluid flow;

(e) lowering said material in said reservoir of flowing fluid and simultaneously moving said material, as it is being lowered, at an acute angle relative to said normal direction of fluid flow toward said upstream end;

(f) repeating steps (d) and (e) until said material is moved to said upstream end of said housing and;

(g) discharging said washed and cooled material through a material discharge output in said housing adjacent said upstream end.

4,879,130

PROCESS FOR PREPARATION OF A FLAVORING AGENT

Sven Heyland, Weiningen; Karl Rolli, Winterthur; David Röschli, Pfungen, and Jaak J. Sihver, Gutenswil, all of Switzerland, assignors to Nestec S.A, Vevey, Switzerland

Filed Mar. 15, 1988, Ser. No. 168,426

Claims priority, application Switzerland, Apr. 6, 1987, 1317/87

Int. Cl.⁴ A23L *1/231*

U.S. Cl. 426—533 7 Claims

1. A process for carrying out a Maillard reaction and preparing a flavoring agent comprising:

mixing from 70% to 95% by weight of at least one source of free amino acids having a water content of from 1% to 3% by weight with from 1% to 25% by weight of additives comprising at least one reducing sugar and water such that the water content of the mixture is from 5% to 12% water by weight for forming a paste-like mixture;

kneading and heating the paste-like mixture for plasticizing it;

propelling the plasticized mixture through an extrusion unit under a pressure of from 1 to bar to 100 bar while heating the plasticized mixture at a temperature of from 80° C. to 140° C. for from 30 secs to 30 mins for reacting the mixture; and

extruding the reacted mixture through an extrusion die into a chamber having a reduced pressure of from 5 mbar to 50 mbar for drying and cooling the reacted mixture and obtaining a flavorant.

4,879,131

PREPARATION OF WHEY PRODUCTS HAVING REDUCED ALLERGERICITY

Olivier de Rahm, La Tour-de-Peilz, Switzerland, assignor to Nestec S.A., Vevey, Switzerland

Filed Sep. 16, 1988, Ser. No. 245,463

Claims priority, application Switzerland, Oct. 15, 1987, 4041/87

Int. Cl.⁴ A23C *7/04, 9/14;* **A23L** *1/305*

U.S. Cl. 426—583 6 Claims

1. A process for reducing e allergenicity of whey products comprising preparing an aqueous solution of a whey product having from 0.5% to 5.0% by weight of non-denatured whey proteins, adjusting the pH of the solution to a pH of from 5.5 to 8.5, adjusting free calcium content of the solution to a concentration of from 6 mmol/l to 15 mmol/l and heating the solution for from about 2 minutes to about 10 minutes at a temperature of from 90° C. to 140° C. for obtaining a treated whey product solution having a residual β-lactoglobulin content of less than 0.1% of a β-lactoglobulin content of the aqueous solution of the whey product to be treated.

4,879,132

APPARATUS FOR INACTIVATION OF ENZYMES IN OIL SEEDS

Kanji Tsuchiya, Tokyo, and Shizumi Ono, Chiba, both of Japan, assignors to Seikensha Company Limited, Tokyo, Japan

Divisinn of Ser. No. 708,850, Mar. 6, 1985, Pat. No. 4,630,534. This application Jul. 30, 1986, Ser. No. 890,641

Int. Cl.⁴ A23L *1/20*

U.S. Cl. 426—634 5 Claims

1. A method for the inactivation of lipoxidase enzyme in oil seeds within an elongated pressure cylinder having a first zone, a second zone and a third zone, comprising

feeding a product to be treated consisting essentially of whole or skinned oil seeds to the first zone of said elongated pressure cylinder and conveying said oil seeds within said pressure zone cylinder to said second zone thereof;

feeding a non-toxic buffer solution at a pH of about 8-10 to the interior of said elongated pressure cylinder at approximately the end of said first zone, said buffer solution providing an alkaline environment for said oil seeds;

subjecting said oil seeds to agitation and heating under pressure with steam in said second zone to effect a temperature of about 100°-110° C. of said oil seeds in said second zone, and effecting said agitation and heating under pressure in an alkaline environment in said second zone for a time sufficient to effect inactivation of lipoxidase enzyme in said oil seeds; and

passing said oil seeds from said second zone into said third zone and then discharging the resultant enzyme-inactivated oil seeds from said elongated pressure cylinder

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4,879,133

MODIFIED GLUTEN PRODUCT AND BREAD IMPROVER COMPOSITION

Shigeru Endo, Kawagoe; Satoshi Nomura, Tokorozawa; Shinji Ishigami, Tanashi, and Sonoko Karibe, Tokyo, all of Japan, assignors to Nisshin Flour Milling Co., Ltd., Tokyo, Japan

Filed Mar. 8, 1988, Ser. No. 165,526

Claims priority, application Japan, Mar. 12, 1987, 62-57645; Mar. 12, 1987, 62-57646

Int. Cl.⁴ A21D *2/00*

U.S. Cl. 426—653 5 Claims

1. A water-insoluble, modified gluten which is prepared by kneading a mixture of wheat flour, L-ascorbic acid, cystine and water, then causing a mechanical damage to the resulting dough-like hydrated flour mixture so kneaded, until the dough-

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like hydrated flour mixture contains proteins which are soluble in 0.05 N aqueous acetic acid, at a content of 75 to 85% as calculated on the basis of the total content of the protein present in said dough-like hydrated flour mixture, and subsequently separating the water-insoluble, modified gluten from the dough-like hydrated flour mixture which has received the mechanical damaging step.

4,879,134

FINGERPRINTING COMPOSITIONS, SYSTEMS AND METHODS

Anthony E. Vassiliedes, 8738 Tanager Woods Dr., Cincinnati, Ohio 45249

Continuation of Ser. No. 938,420, Dec. 5, 1986, abandoned. This application Oct. 5, 1988, Ser. No. 253,941

Int. Cl.⁴ A61B *5/10;* **B41K** *1/00;* **C09D** *11/00*

U.S. Cl. 427—1 13 Claims

1. A self-contained inkless liquid composition for use in making fingerprints comprising the reaction product of at least one leuco or non-leuco chromogenic compound and at least one color-developing substance, metallic ions, a compound capable of forming complexes of low stability in an alkaline medium with said metallic ions, and a liquid vehicle that is a solvent for said chromogenic compound and reaction product and a solvent or dispersant for said color-developing substance.

7. A fingerprinting system comprising means capable of releasably retaining a liquid and an inkless liquid composition releasably retained in said means, said liquid composition comprising the reaction product of at least one leuco or non-leuco chromogenic compound and at least one color-developing substance, metallic ions, a compound capable of forming complexes of low stability in an alkaline medium with said metallic ions, and a liquid vehicle that is a solvent for said chromogenic compound and reaction product and a solvent or dispersant for said color-developing substance.

4,879,135

DRUG BONDED PROSTHESIS AND PROCESS FOR PRODUCING SAME

Ralph S. Greco, Princeton; Richard A. Harvey, East Brunswick, and Stanley Z. Trooskin, North Brunswick, all of N.J., assignors to University of Medicine and Dentistry of New Jersey, Newark, N.J.

Continuation-in-part of Ser. No. 852,849, Apr. 11, 1986, which is a continuation-in-part of Ser. No. 633,615, Jul. 23, 1984, Pat. No. 4,740,382. This application Jul. 18, 1988, Ser. No. 220,503

The portion of the term of this patent subsequent to Apr. 26, 2005, has been disclaimed.

Int. Cl.⁴ A61F *1/00, 1/24*

U.S. Cl. 427—2 17 Claims

1. A prosthesis for use in in vivo surgery having a coating, respectively, of an anionic surfactant and an oppositely charged drug bound to the surfactant.

4,879,136

METHOD OF APPLYING OPAQUE DENTAL CERAMIC MATERIAL TO A METAL STRUCTURE

M. H. Pölz, Erlangen, Fed. Rep. of Germany, assignor to Dentsply G.m.b.H., Dreieich, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 18,211, Feb. 24, 1987, Pat. No. 4,806,383. This application Oct. 15, 1987, Ser. No. 109,140

The portion of the term of this patent subsequent to Feb. 21, 2006, has been disclaimed.

Int. Cl.⁴ A61C *13/00, 13/09, 6/02;* **B05D** *1/36*

U.S. Cl. 427—2 15 Claims

1. A method for coating a metal structure for a dental appliance consisting essentially of the steps of: preparing an opaque ceramic paste by mixing an opaque ceramic powder with an organic liquid having a boiling point below about 300° C., coating said metal structure with said opaque ceramic paste to prepare a coating of opaque ceramic paste on said metal structure, dusing said coating with a coarse ceramic powder having an average grain size of from about 40 um to about 100 um said powder having thermal stability such that at least a substantial part of grain structure of said powder is maintained under conditions of firing said dental appliance, applying at least one additional layer of ceramic opaque paste, applying a stain paste to an additional layer of ceramic opaque paste, and firing said dental appliance.

4,879,137

METHOD AND APPARATUS FOR ELECTROSTATIC COATING WITH CONDUCTIVE MATERIAL

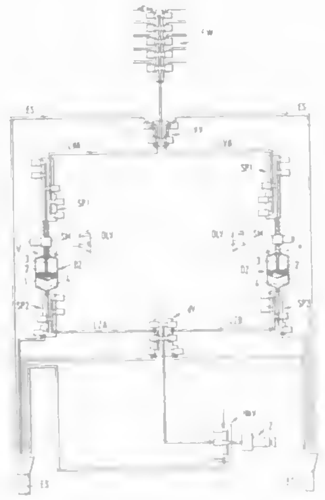
Hans Behr, Stuttgart, and Kurt Vetter, Remseck, both of Fed. Rep. of Germany, assignors to Behr Industrieanlagen GmbH & Co., Fed. Rep. of Germany

Filed May 24, 1988, Ser. No. 198,184

Claims priority, application Fed. Rep. of Germany, May 27, 1987, 3717929; Jul. 29, 1987, 3725172

Int. Cl.⁴ B05D *1/04;* **B05B** *5/02, 15/02*

U.S. Cl. 427—27 10 Claims



1. A method for successively coating workpieces with an electrically conductive coating material comprising the steps of: moving a quantity of coating material from a storage supply to an intermediate isolation tank (V'); moving the quantity of coating material from the isolation tank (V') to a spraying device (Z) for coating a workpiece; and characterized by adjusting the capacity of the isolation tank (V') prior to moving the coating material to the tank to correspond with the quantity of coating material to be supplied from the storage supply and moved to the spraying device (Z).

4. A coating apparatus for successively coating workpieces with an electrically conductive coating material comprising: an isolation tank (DZ) having a coating material capacity for storing coating material supplied thereto; a spraying device (Z) in fluid communication with said isolation tank (V') for spraying coating material from said isolation tank (V') onto a workpiece; fluid expulsion means (PL_1) associated with said isolation tank (V') for applying a pressurized gas to the coating material in said isolation tank (V') to move the coating material from said location tank (V') to said spraying device (Z); and said isolation tank (V') including metering cylinder means (DZ) for adjusting the coating material capacity of said isolation tank (DZ) to a predetermined volume before coating material is supplied thereto and for maintaining the capacity at the predetermined volume while said fluid expulsion means (PL_1) moves the coating material therefrom.

4,879,138

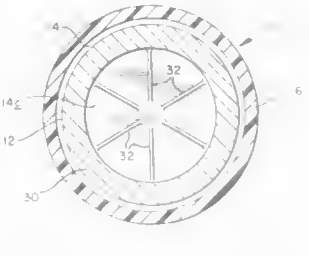
COMPOSITION FOR PLASTIC ARTICLE WITH UNITARILY MOLDED FOAM LAYER

Marion Johnson, Baytown; Granville J. Hahn, and Ramiro V. Ramoos, both of Big Spring, all of Tex., assignors to Permian Research Corporation, Big Spring, Tex.

Division of Ser. No. 195,094, May 17, 1988, which is a continuation-in-part of Ser. No. 922,127, Oct. 23, 1986, Pat. No. 4,744,478. This application May 8, 1989, Ser. No. 348,510

Int. Cl.⁴ B32B *7/02;* **B65D** *53/00*

U.S. Cl. 428—218 13 Claims



1. A molded polymeric container closure comprising: A major portion of moldable polypropylene resin; from about 1.25 to about 6 parts per hundred of resin (pphr) foam concentrate; from about 0.15 to about 1 pphr calcium carbonate; from about 0.03 to about 0.15 pphr amorphous silicon dioxide; from about 0.1 to about 0.4 pphr lubricant selected from the group consisting of synthetic waxes and distilled monoglycerides; from about 0.1 to about 0.4 pphr lubricant selected from the group consisting of N,N'-dioleoylethylenediamine and calcium stearoyl-2-lactylate; from about 0.15 to about 0.3 pphr unsaturated fatty monoamide; and from about 0.5 to about 2 pphr titanium dioxide concentrate.

4,879,139

METHOD OF MAKING A THIN FILM ELECTROLUMINESCENCE ELEMENT

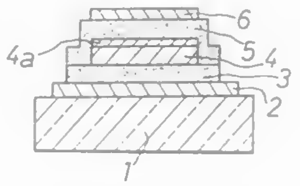
Yoshinori Ootsuka; Kinya Atsumi, both of Okazaki; Masumi Arai, Nukata, and Tadashi Hattori, Okazaki, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Continuation-in-part of Ser. No. 937,482, Dec. 3, 1986, abandoned. This application Jun. 23, 1988, Ser. No. 212,023

Claims priority, application Japan, Dec. 25, 1985, 60-295656

Int. Cl.⁴ B05D *3/06*

U.S. Cl. 427—38 10 Claims



1. A method of forming a thin film electroluminescent element comprising the steps of:

forming a luminous body layer having a crystal basic material and a luminescence center, on a transparent base plate; and

doping an impurity within said crystal basic material so that the doped luminous body layer will emit light from said luminescence center in response to an inflow of electrons accelerated in an electric field;

forming a transparent electrode between said luminous body layer and said transparent base plate;

forming a rear electrode on said luminous body layer opposed to said transparent electrode in a way such that an electric field can be formed between said rear electrode and said transparent electrode;

at least one dielectric body film layer provided between at least one of said transparent electrode and said rear electrode, and said luminous body layer; and

causing high energy particles to collide against a surface of the luminous body layer to destroy the crystal structure of at least a portion thereof and to form at least one electron inflow restraining layer in said luminous body layer in contact with said at least one dielectric body film layer, said electron inflow restraining layer restraining an inflow of said electrons from the interface of said luminous body layer with said dielectric body film layer into said luminous body layer

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4,879,140

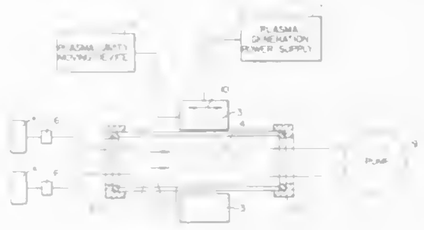
METHOD FOR MAKING PIGMENT FLAKES

Howard R. Gray, Sebastopol; Richard P. Shimshock, and Matthew E. Krisl, both of Santa Rosa, all of Calif., assignors to Deposition Sciences, Inc., Santa Rosa, Calif.

Filed Nov. 21, 1988, Ser. No. 274,380

Int. Cl.⁴ B05D *3/06*

U.S. Cl. 427—38 22 Claims



1 A method for producing flakes of films, said method comprising providing a substrate within a chamber, creating a vacuum within the chamber, feeding a gas to the interior of the chamber, said gas being characterized as being capable of forming a plasma upon its exposure to a plasma generating device, creating a plasma within said chamber which, in turn, forms a film upon a surface of said substrate which is thereupon removed from the substrate as flakes which are then extracted from said chamber.

4,879,141

IN-REACTOR STABILIZATION OF POLYOLEFINS VIA COATED STABILIZERS

Ananda M. Chatterjee, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Division of Ser. No. 147,953, Jan. 25, 1988. This application Dec. 27, 1988, Ser. No. 289,886

Int. Cl.⁴ C08J *3/20;* **C09C** *3/08*

U.S. Cl. 427—213 12 Claims

1. A method for making a coated particulate comprising the steps of:

heating until liquid a polyolefin wax;

fluidizing with a hot gas, additive particles selected from the group comprising an antioxidant, a processing stabilizer, an acid acceptor, and mixtures thereof;

spraying the liquid polyolefin wax on the heated fluidized additive particles; and

maintaining the fluidized additive particles at a temperature which is sufficient to prevent the formation of fibers and adequate to form discrete substantially coated additive particles.

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4,879,142
PROCESS FOR PREPARING A SILICON CARBIDE PROTECTIVE COATING

Volker Fey; Bernd Pachaly, and Norbert Zeller, all of Burghausen, Fed. Rep. of Germany, assignors to Wacker-Chemie GmbH, Munich, Fed. Rep. of Germany

Filed Feb. 22, 1988, Ser. No. 158,813

Claims priority, application Fed. Rep. of Germany, Mar. 6, 1987, 3707224

Int. Cl.⁴ B05D *3/02*

U.S. Cl. 427—227 **5 Claims**

1. A process for preparing a protective coating containing silicon carbide, which comprises applying a coating composition containing a copolymer obtained by reacting at least one disilane of the formula

$$R_2R^1Si_2(OCH_3)_3$$

in which R is selected from the group consisting of alkyl, alkenyl, aryl radicals and mixtures thereof and R^1 is an alkyl radical with at least one compound of the formula

$$R_2R^2SiH$$

in which R is the same as above and R^2 is selected from the group consisting of a methoxy radical and R, in the presence of at least one compound of the formula

$$MOR$$

in which R is the same as above and M is an alkali metal, and a compoud of the formula

$$HO[(R^1R^3SiO)_x(R^1{}_2SiO)_y]_nH$$

in which R^1 is the same as above, R^3 is an alkenyl radical, x is in the range of from 0.5 to 1.5, y is in the range of from 3 to 5 and n is in the range of from 500 to 2,000, to a substrate and thereafter pyrolyzing the coating in an inert atmosphere or in vacuo.

4,879,143
PROCESS FOR THE PRODUCTION OF FLOOR COVERING

Klaus Rang, Blaustein, Fed. Rep. of Germany, assignor to Rang KG Haus Moderner Fussboden, Blaustein, Fed. Rep. of Germany

PCT No. PCT/DE86/00493, § 371 Date Jul. 30, 1987, § 102(e) Date Jul. 30, 1987, PCT Pub. No. WO87/03578, PCT Pub. Date Jun. 18, 1987

PCT Filed Dec. 2, 1986, Ser. No. 93,743

Claims priority, application Fed. Rep. of Germany, Dec. 6, 1985, 3543184; Feb. 6, 1986, 3603664

Int. Cl.⁴ B05D *3/00, 7/04, 7/06, 7/24*

U.S. Cl. 427—387 **7 Claims**

1. A process for the production of a floor covering which may be a floating covering, said process comprising:

mixing a granulated material and a hardenable plastic binder into a paste-like mass in such manner that individual particles of said granulated material are attached to each other only at certain points;

spreading said mass evenly upon a surface to be covered;

smoothing said spread mass;

hardening said smoothed and spread mass into said floor covering;

selecting prior to mixing, the proportion of said granulated material and binder so as to ensure that said surface to be covered is not wetted in a proportion of 40 to 70 % by the binder as the binder drips into hollow spaces existing between individual granules of the granulated material during the hardening step; and

applying to said hardened floor covering a second layer of water-emulsifiable synthetic resin including a hydraulic binding means, to achieve an increase in mechanical load which can be supported by the hardened floor covering.

4,879,144
LIQUID CRYSTAL ELEMENT

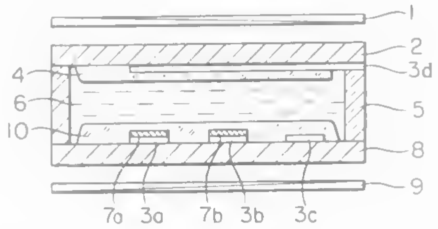
Yoshiyuki Nakura, Kawasaki, and Yasuo Kato, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 828,281, Feb. 11, 1986, abandoned. This application Apr. 6, 1989, Ser. No. 333,771

Claims priority, application Japan, Feb. 19, 1985, 031040

Int. Cl.⁴ G02F *1/13*

U.S. Cl. 428—1 **15 Claims**



1. A liquid crystal element, comprising:

a pair of transparent substrates including a first substrate having disposed thereon a transparent electrode and an orientation controlling film and a second transparent substrate having disposed thereon a transparent electrode and an orientation controlling film:

a ferroelectric liquid crystal disposed between the pair of substrates, wherein at least one of the first or second substrates further comprises a color filter having a protecting layer which prevents the color filter from directly contacting the ferroelectric liquid crystal, said orientation controlling films comprising materials which are independently selected from the group consisting of polymides, polyvinyl alcohols and polyether amides.

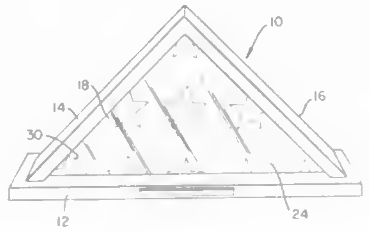
4,879,145
MEMORIAL FLAG DISPLAY AND STORAGE CASE

Gordon McLellan, 32 Hawkins St., and Diane G. Wright, 1460 Elm St., B420, both of Stratford, Conn. 06497

Filed Nov. 6, 1987, Ser. No. 117,461

Int. Cl.⁴ A47G *1/12;* **E06B** *3/64*

U.S. Cl. 428—14 **7 Claims**



1. In combination: a memorial flag folded into the shape of an isosceles triangle and a display and storage case therefor, said display and storage case comprising:

an elongated, flat base plate;

two elongated frame members joined together at one end and having their opposite ends mounted on said base plate,

said frame members being of substantially equal length and forming together with said base plate an isosceles triangular shaped opening of a size which is substantially identical to that of said folded flag,

the inner side wall of each frame member having a pair of elongated, spaced apart, parallel slots formed therein, each one of said slots extending longitudinally along a marginal edge of said frame member;

a pair of substantially rigid, transparent panel members having the same isosceles triangular shape as that of said opening and being of a size which is slightly larger than said opening on two adjacent sides thereof;

said transparent panel members being mounted within said triangular shaped opening with said folded flag therebetween and having each of said larger adjacent sides thereof fitting snugly within one of said pair elongated slots formed in said frame members;

the third side of each transparent panel member resting on said base plate;

the spacing between said pair of elongated slots in each frame member being such that said transparent panel members are separated by a distance which is substantially less than the normal thickness of said flag when loosely folded prior to assembly within said case so that said flag is held under compression between said transparent panel members and maintained in an upright position therebetween without sagging or unfolding under its own weight;

the compressed and folded flag acting as a bias member urging said transparent panel members into sealing engagement with said slots along the edges of said two adjacent sides thereof, prohibiting the ingress of dust, moths and other foreign materials; and

means for removably securing the opposite ends of said frame members to said base plate.

4,879,146
COFFEE CARAFE

Kendrick A. Johnson, 8242 Queen Ave. S., Bloomington, Minn. 55431

Filed Feb. 18, 1988, Ser. No. 157,746

Int. Cl.⁴ A47J *27/00;* **A47G** *19/14*

U.S. Cl. 428—35.7 **11 Claims**

1. A coffee carafe suitable for heating on a hot plate having a temperature of at least 190° F., said carafe comprising a bowl and an integral handle being formed by blow molding and having a side wall thickness of between about 0.1 and 0.06 inches and a base thickness of between about 0.015 up to 0.06 inches, said side wall and said base consisting of unreinforced polyetherimide being heat stable to permit heating of said carafe on said hot plate, said polyetherimide having molecular weight of about 19,000 and glass transition temperature of at least 400° F.

4,879,147
POLYMERIC MULTILAYER SHEET SUITABLE FOR THE MANUFACTURE OF MICROWAVEABLE CONTAINERS

Frederick C. Newman, Weston, Conn., and Louis J. Marsella, Freemont, Calif., assignors to Continental Can Company, Inc., Norwalk, Conn.

Filed Jan. 15, 1987, Ser. No. 3,437

Int. Cl.⁴ B27N *5/02*

U.S. Cl. 428--35 **12 Claims**

1. A multilayer plastic sheet suitable for the manufacture of containers which can withstand exposure to microwave heating of product contained therein without significant loss of dimensional stability, the sheet being comprised of at least one layer of a propylene polymer bonded to a styrene polymer layer, the propylene polymer layer having incorporated therein about 20 to about 40 percent by weight of an inorganic filler, the filled propylene polymer and styrene polymer layers having melt flows substantially equal to the other and the thickness of the layers being at a ratio of about 60:40 to 40:60.

4,879,148
MARKER ASSEMBLY

Bryan D. Neaves, Swindon; Frederick W. L. Hill, Lechlade, and Malcolm G. Cross, Deddington, all of England, assignors to Raychem Limited, England

Continuation of Ser. No. 20,798, Mar. 2, 1987, abandoned. This application Feb. 3, 1988, Ser. No. 157,073

Int. Cl.⁴ B32B *5/16*

U.S. Cl. 428—40 **16 Claims**

1. A marker assembly which comprises a support layer having a surface that is provided with a porous coating of a latent curable material that is capable of receiving printed indicia that can subsequently be cured to render the indicia substantially indelible, said porous coating being in particular and/or filamentary form.

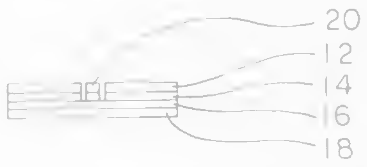
4,879,149
BOOK BINDING REINFORCEMENT

Charles J. Barnett, Akron, Ohio, assignor to Kent Adhesive Products Co., Kent, Ohio

Filed Apr. 15, 1988, Ser. No. 182,221

Int. Cl.⁴ B32B *3/10, 7/06, 7/10*

U.S. Cl. 428—41 **3 Claims**



1. A laminate for reinforcing a book binding comprising.

an elongated backing member longitudinally cut along the length thereof by a pair of parallel cuts spaced apart by 1/16-⅜ inch;

an elongated face strip congruent with said backing member, said backing member and face strip being ¾-3¾inches wide;

an adhesive layer interconnecting said backing member and face strip; and

wherein removal of said backing member between said pair of parallel cuts exposes a thin line of adhesive for securing contacting engagement of said face strip to an edge of the book binding.

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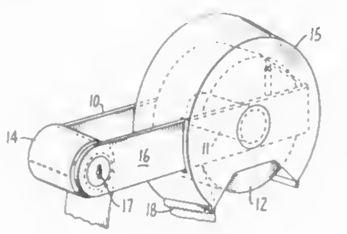
4,879,150
JUMBO ROLL OF TOILET TISSUE

Rudolph W. Schutz, Walnut Creek, and William Schultz, Piedmont, both of Calif., assignors to James River II, Inc., Oakland, Calif.

Continuation-in-part of Ser. No. 20,635, Mar. 2, 1987, abandoned, which is a division of Ser. No. 121,310, Nov. 16, 1987, Pat. No. 4,796,832. This application Oct. 17, 1988, Ser. No. 258,759

Int. Cl.⁴ B32B *3/02*

U.S. Cl. 428—43 1 Claim



1. A roll of toilet tissue having a diameter between about 20 and 30 centimeters, the roll having an initial section corresponding to a roll diameter of between about 40 and 60 percent of the diameter of the roll and a remaining terminal section, the initial section being the section closest to the core and having transverse lines of perforations, and the terminal section being unperforated.

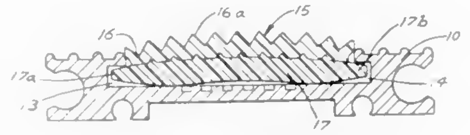
4,879,151
INSERT STRIP FOR A FLOOR COVERING STRUCTURE

Chester W. Ellingson, Jr., Burnsville, Minn., assignor to Reese Enterprises, Inc., Rosemount, Minn.

Filed Jun. 6, 1988, Ser. No. 202,255

Int. Cl.⁴ B32B *3/06*

U.S. Cl. 428—53 8 Claims



1. In combination with a floor covering structure of coupled sections, each section having a central longitudinal channel having transversely opposed facing grooves, an insert strip in combination with said channel, said strip comprising

an upper layer portion formed as an extrusion of a fairly hard durometer plastic material,

an underlying layer portion of a durometer harder than that of said upper layer portion and co-extruded therewith,

said upper layer portion having a width to extend across the width of a channel of the floor covering section,

said underlying layer having a width extending beyond each side of said upper layer portion to project into grooves formed at each side of said channel,

said underlying layer portion having a substantially slick friction free surface, and

said upper layer portion having formed into its upper surface portion a figured surface treatment.

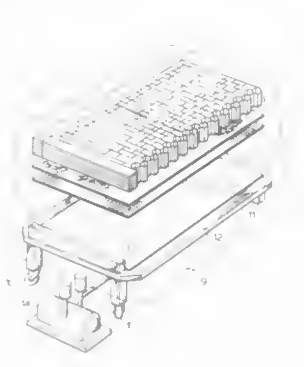
4,879,152
COMPOSITE PANEL STRUCTURE

Patrick H. Green, 29 Montressor Drive, Willowdale, Ontario, Canada (M2P 1Y9)

Filed Feb. 15, 1989, Ser. No. 310,661

Int. Cl.⁴ B32B *3/12*

U.S. Cl. 428—73 12 Claims



1. A composite panel having:

(1) a first face comprising a first layer of cured polyester resin bonded to

(2) a second layer of cured polyester resin having embedded therein a fabric of woven roving fiberglass bonded by said second layer of cured resin to one side of

(3) a polypropylene core layer of thin wall, open cell, honeycomb structure, in turn bonded to

(4) a second face comprising a third layer of cured polyester resin having embedded therein a fabric of woven roving fiberglass, said third layer of cured polyester resin bonding said second face to the second side of said polypropylene core layer, and

(5) means to prevent resin from said second and third layers from penetrating through the cells of the honeycomb structure core.

4,879,153
INTEGRATED CIRCUIT CARD

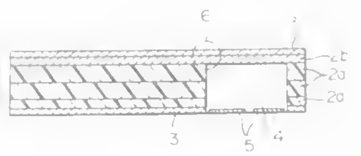
Masato Ohashi, Kobe, and Shiyojiro Kodai, Itami, both of Japan, assignors to Ryoden Kasei Co., Ltd. and Mitsubishi Denki Kabushiki Kaisha, both of, Japan

Filed Sep. 8, 1988, Ser. No. 241,895

Claims priority, application Japan, Oct. 20, 1987, 62-264953

Int. Cl.⁴ B32B *1/04;* G09F *3/02*

U.S. Cl. 428—76 11 Claims



1. An integrated circuit card comprising:

an integrated circuit module housed entirely within the integrated circuit card, said module having a top surface and a bottom surface; and

a laminated card body which comprises outer layers overlying opposite surfaces of a laminated core formed from a plurality of laminated sheets, said core having a hole formed therein in which said integrated circuit module is housed, one of said sheets being in direct contact with the bottom surface of said integrated circuit module, wherein at least the sheet which is in contact with the bottom surface of said integrated circuit module is made of synthetic paper.

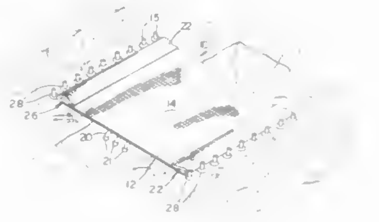
4,879,154
REINFORCED UTILITY MAT ADAPTABLE AS MILITARY OVERHEAD FOXHOLE COVER AND FOOT SUSPENSION BRIDGE

Stephen H. Bennett, Alexandria, Va., assignor to United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 30, 1988, Ser. No. 292,076

Int. Cl.⁴ B32B *3/06*

U.S. Cl. 428—81 10 Claims



1. A portable mat assembly for combat soldiers suitable for battlefield emplacement preferably as an overhead cover assembly for supporting a load of loose or sandbagged soil over a foxhole battle position up to about 36 inches in width to provide occupants of the position protection against high velocity ballistic fragments and blast overpressure produced by near-miss indirect fire, but also adaptable for use as camouflage, as a foot bridge across a narrow ravine or ditch, or as revetment, or any other general utilitarian function, wherein said mat assembly comprises:

a. soil supporting means including a durable, rectangular fabric main body panel or membrane;

b. a support reinforcing net disposed beneath said fabric body membrane, substantially fully co-extensive therewith, said support net comprising a first plurality of parallel longitudinally extending principal load carrying and reinforcing straps and a second plurality of transversely disposed parallel bracing straps extending transversely of and interconnecting with said principal straps;

c. said principal straps having loops formed at opposite ends thereof for reception of stakes thereby providing means for anchoring said reinforcing net in stretched taut relation over a foxhole or trench;

d. fold-up straps means including plural pairs of separable connectable strap members at least portions of which are operatively connected with and extend laterally from opposite generally medial portions of said coextensively disposed net and body membrane where by when at least a pair of longitudinally spaced fold-up straps are connected to each other above said body membrane panel of said mat assembly, said body membrane will be folded up along opposite sides to form a trough or pocket to help retain and minimize spillage of soil supported by said mat assembly; and

e. wherein said fabric membrane is provided with deadman sleeve members on opposite ends thereof whereby when said sleeve members are filled with logs or loose soil and covered with additional loose soil an anchoring effect will be provided.

4,879,155
PLEATED CLOTH AND METHOD FOR PRODUCING THE SAME

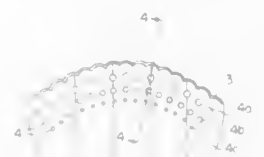
Mitsuo Fujisawa, 1-6, Maeishiki 1-chome, Gifu-City, Japan (500)

Filed May 26, 1987, Ser. No. 54,265

Claims priority, application Japan, May 27, 1986, 61-121894

Int. Cl.⁴ D06C *23/04, 25/00;* D06H *7/22;* D06Q *1/00*

U.S. Cl. 428—131 2 Claims



1. Improved pleated cloth made of thermoplastic fibers comprising

(1) a strip-like film edge and (2) a film-like section in parallel alignment with said edge, said edge and said pattern section each having been formed by ultrasonic melting and said pattern section being substantially free of pleats.

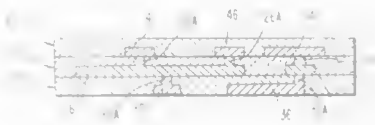
4,879,156
MULTILAYERED CERAMIC SUBSTRATE HAVING SOLID NON-POROUS METAL CONDUCTORS

Lester W. Herron; Robert O. Lussow; Robert W. Nufer, all of Hopewell Junction; Bernard Schwartz, Poughkeepsie; John Acocella, Hopewell Junction, and Srinivasa N. Reddy, Lagrangeville, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 859,092, May 2, 1986, Pat. No. 4,753,694. This application Mar. 14, 1988, Ser. No. 167,607

Int. Cl.⁴ B32B *9/00*

U.S. Cl. 428—137 12 Claims



1. A multilayer ceramic substrate having a network of exposed and encapsulated metal conductors adapted for mounting and interconnecting a plurality of electronic devices exterior thereof consisting solely of:

a monolithic sintered ceramic body,

an exposed pattern of solid metal conductors on the surface of said body,

a plurality of spaced-apart planar patterns of solid metal conductors encapsulated in said body, each of which has a predetermined configuration, and

means provided conducting pathways between predetermined areas of said spaced-apart planar patterns and between predetermined areas of said spaced-apart planar patterns and predetermined areas of said exposed pattern of solid metal conductors;

wherein the ceramic material has a lower sintering temperature than the melting point of said metal conductors; and

wherein said ceramic substrate has been sintered at a temperature less than the melting point of said metal conductors but high enough to densify the ceramic material, while simultaneously restraining the ceramic substrate from shrinkage in the X and Y directions.

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4,879,157
PLATE MADE OF INSULATING MATERIAL, IN PARTICULAR MINERAL FIBERS

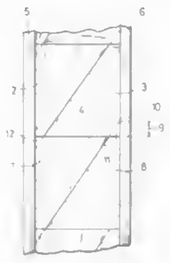
Manfred Pankatz, Geldern, Fed. Rep. of Germany, assignor to Deutsche Rockwool Mineralwoll GmbH, Gladbeck, Fed. Rep. of Germany

Continuation of Ser. No. 811,301, Dec. 16, 1985, abandoned, which is a continuation of Ser. No. 481,447, Sep. 15, 1982, abandoned. This application Jul. 27, 1987, Ser. No. 52,756

Claims priority, application Fed. Rep. of Germany, Sep. 17, 1981, 3136924; Feb. 3, 1982, 3203624

Int. Cl.⁴ B32B *3/02*

U.S. Cl. 428—157 9 Claims



9. Plate as defined in claim 1, wherein said body includes a plurality separate parts formed by said at least one continuous cut so that when they are inserted loosely in one row into the space between the supports and then displaced relative to one another during mounting in said direction along said longitudinal sides, protruding tip portions are formed, and said mineral fiber insulating material is compressible so that said protruding tip portions are compressed.

4,879,158
MASKING MEMBER

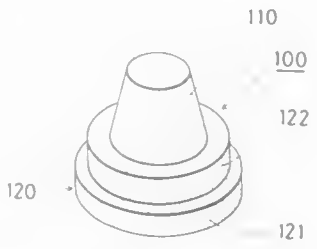
Seinosuke Horiki; Reiji Makino, both of Nagoya, and Hisami Iwata, Aichi, all of Japan, assignors to Nagoya Oilchemical Co., Ltd. and Toyota Jidosha Kabushiki Kaisha, both of Aichi, Japan

Filed Aug. 3, 1987, Ser. No. 81,295

Claims priority, application Japan, Aug. 6, 1986, 61-120518[U]

Int. Cl.⁴ B32B *1/00;* **B05C** *21/00*

U.S. Cl. 428—159 2 Claims



1. A solid plug type masking member adapted for insertion into an opening to mask the opening and periphery thereof comprising a unitary structure providing a tapered solid plug portion and double flange end portion, the tapered solid plug portion having a relatively small end and a relatively large end, said tapered plug portion uniformly increasing in diameter from said small end to said large end, said double flange portion being fixed to said relatively large end and said tapered plug portion, the double flange end portion comprising a relatively small flange larger in diameter than the large end of said tapered plug portion on which said small flange is provided and a relatively large flange larger than and directly superposed on said small flange, said masking member being comprised of polystyrene foam, the outside dimension or periphery of said small flange when said masking member is inserted into said opening being larger than the opening into which said tapered plug portion is inserted.

4,879,159
DECORATIVE FOAMED GLASS WITH DENSE GLASS SURFACE LAYER AND METHOD OF PRODUCING SAME

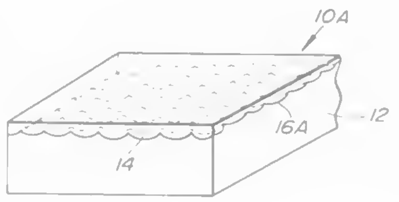
Toshiharu Furuuchi, Takaishi, Japan, assignor to Central Glass Company, Limited, Ube, Japan

Filed Aug. 26, 1988, Ser. No. 239,197

Claims priority, application Japan, Aug. 31, 1987, 62-215199

Int. Cl.⁴ B32B *3/00, 3/26;* **B29C** *27/60*

U.S. Cl. 428—161 14 Claims



1. A foamed glass plate comprising a foamed glass layer which has a wavy surface, and a dense glass surface layer which is transparent or translucent and tightly bonds to said wavy surface of said foamed glass layer.

4,879,160
EDGE STABILIZED WOOD COMPOSITE PANEL

Robert M. Knudson, Coquitlam, and Hubert Ehrenfellner, Surrey, both of Canada, assignors to MacMillan Bloedel Limited

Filed Jul. 15, 1988, Ser. No. 219,308

Int. Cl.⁴ B32B *23/02*

U.S. Cl. 428—192 8 Claims

1. A composite wood panel formed of wood particles coated with a adhesive and consolidated under elevated temperature and pressure conditions and having a pair of face surfaces, a pair of lateral side edges and a pair of transverse end edges, said panel including a pair of laterally spaced side portions distinct from a central portion of said panel between said spaced side portions in that each of said side portions has a stability enhancing additive incorporated substantially throughout its volume, said side portions extending substantially the full thickness of said panel as determined by spacing between said face surfaces in areas positioned one adjacent each lateral side edge of said panel, each said area having a lateral inside edge and a lateral outside edge, each said area extending substantially the full length of said panel between said pair of transverse end edges and each said area having a width determined by the spacing between its said lateral inside edge and its said lateral outside edge, said lateral outside edge of one of said areas being positioned substantially at one of said panel side edges and said lateral outside edge of the other of said areas being positioned substantially at the other of said panel lateral side edges and said width of each of said areas measured perpendicular to the said thickness being at least one inch.

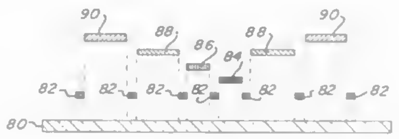
4,879,161
METHOD FOR PRINTING A DOUBLE-SIDED DISPLAY ON TRANSPARENT FILM

Geri L. Raymond, and Mark A. Raymond, both of 3475 S. Quay St., Lakewood, Colo. 80227

Filed Nov. 16, 1987, Ser. No. 121,336

Int. Cl.⁴ B32R *9/00*

U.S. Cl. 428—195 7 Claims



1. A reusable display which can be electrostatically adhered to a transparent support surface which allows the display to be equally viewed from either side of the surface, the display being comprised of:

(a) a thin transparent carrier sheet of electrostatic adhering material;

(b) a plurality of semi-opaque coatings applied to only one side of said transparent carrier sheet and arranged to form a design, each of said coatings being applied directly to the carrier sheet in an edge abutting, non-overlapping configuration whereby the design can be seen with equal clarity from either side of the support surface.

5. A reusable display as defined in claim 1 which further includes a cover sheet applied to the opposite side of said transparent carrier sheet from the coating side to prevent the contamination and maintain the cleanliness of the surface of the transparent carrier sheet which will be applied to the transparent support surface.

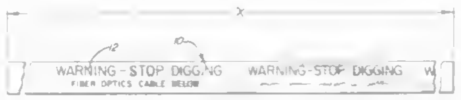
4,879,162
BURYABLE WARNING TAPE

James B. Hansen, Sr., 2010 E. Old Elm Rd., Lindenburst, Ill. 60046

Filed Mar. 24, 1988, Ser. No. 172,487

Int. Cl.⁴ B32B *3/00, 27/14*

U.S. Cl. 428—196 14 Claims



1. A buryable warning tape which comprises a length of woven plastic fabric, visible indicia printed on a first face of said fabric in ink which is essentially nondegradable during burial, and a transparent, plastic coating bonded to and covering said first face.

4,879,163
TEXTILES CONTAINING INTERSTICES AND PROCESSES FOR MAKING SUCH TEXTILES

D. Mark Woiceshyn, St. Catharines, Canada, assignor to Bay Mills Limited, St. Catharines, Canada

Filed Sep. 24, 1987, Ser. No. 100,455

Int. Cl.⁴ B32B *27/14*

U.S. Cl. 428—198 23 Claims

1. A process for making a textile comprising the steps of:

selecting a yarn comprising a plurality of filaments;

dispersing unexpanded microspheres and a resin within such yarn;

causing interstices to be dispersed in said yarn by expanding said microspheres, thereby placing filaments of the yarn in spaced apart relationship relative to each other; and

setting such resin while filaments are so separated, thereby holding filaments in spaced apart relationship to each other.

4,879,164
LAMINATED COMPOSITE OF A RIGID POLYISOCYANURATE SUBSTRATE AND METAL, PLASTIC, CELLULOSE, GLASS, CERAMIC OR COMBINATIONS THEREOF

Usama E. Younes, Newtown Square, Pa., assignor to Arco Chemical Technology, Inc., Wilmington, Del.

Continuation-in-part of Ser. No. 86,009, Aug. 17, 1987, abandoned. This application Apr. 25, 1988, Ser. No. 185,648

Int. Cl.⁴ B32B *9/00*

U.S. Cl. 428—209 30 Claims

1. A laminated composite which comprises forming in combination in a mold at least one layer of a rigid polyisocyanurate thermoset composition prepared by reacting in said mold at temperature of from about ambient to about 140° C. ,a reaction mixture of an organic di- or polyisocyanate and from about 2 to about 50 parts by weight of a cyclic alkylene carbonate, based on the isocyanate-carbonate mixture, and a soluble adduct of a tertiary amine and a cyclic alkylene carbonate as catalyst at a concentration of from about 0.005 to about 3.0 weight percent based on the total composition and at least one layer of material selected from the group consisting of metal, cellulose, plastic, glass and ceramic or combination thereof.

4,879,165
LIGHTWEIGHT ARMOR

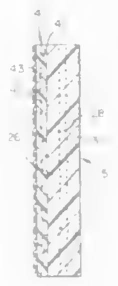
W. Novis Smith, 412 S. Perth St., Philadelphia, Pa. 19147

Filed Jun. 20, 1988, Ser. No. 208,969

The portion of the term of this patent subsequent to Mar. 22, 2005, has been disclaimed.

Int. Cl.⁴ B32B *7/02;* **F41H** *1/02;* **E06B** *9/00;* **E04B** *2/02*

U.S. Cl. 428—212 13 Claims



1 An armor structure or high impact structure comprising a plurality of zones, at least one zone comprising an extruded ionomer resin, said zone of ionomer resin having incorporated therein a fibrous structure comprising an aramid and/or linearly crystallized polyethylene arranged in an amount and direction to transfer impact forces laterally, said zones being arranged in zones of decreasing Young's modulus and increasing elongation characteristics.

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4,879,166
CARRIER MEDIUM FOR A COLORING MATTER

Katsutoshi Misuda, and Takafumi Hasegawa, both of Yokohama, Japan, assignors to Asahi Glass Company, Ltd., Tokyo, Japan

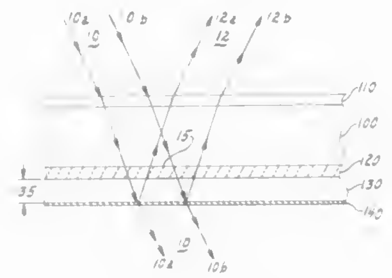
Filed Jul. 7, 1988, Ser. No. 216,016
Claims priority, application Japan, Jul. 7, 1987, 62-167808
Int. Cl.^{4} B41M *5/00*
U.S. Cl. 428—212 14 Claims

1. A carrier medium for a coloring matter, which comprises a substrate having thereon a particulate ink absorbent, and a substance selected from the group consisting of alumina, alumina hydrate and pseudo-boehmite present on the surface of the absorbent, which substance has an adsorptivity of from 20 to 100 mg/g.

4,879,167
REAL TIME HOLOGRAPHIC FILTER USING NONLINEAR OPTICAL MATERIALS

Byung J. Chang, Ann Arbor, Mich., assignor to Kaiser Optical System, Inc., Ann Arbor, Mich.

Filed Aug. 25, 1987, Ser. No. 89,082
Int. Cl.^{4} B32B *9/00, 17/10;* **G02B** *5/18*
U.S. Cl. 428—215 13 Claims



1. A laser protection device for protection against laser illumination having a coherence length exceeding a minimum expected coherence length, said laser protection device comprising:

a layer of a nonlinear optical material having an index of refraction dependent upon light intensity;
a layer of transparent optical material having a first surface disposed adjacent to said layer of nonlinear optical material and a second opposed surface, and having a thickness greater than the coherence length of the expected ambient light but less than the minimum expected coherence length of the laser illumination; and
a partially reflecting layer disposed on said second surface of said layer of transparent optical material for partially reflecting and partially transmitting incident light.

4,879,168
FLAME RETARDING AND FIRE BLOCKING FIBER BLENDS

Francis P. McCullough, Jr.; Frank W. Hale, both of Lake Jackson; R. Vernon Snelgrove, Damon, all of Tex., and David M. Hall, Auburn, Ala., assignors to The Dow Chemical Company, Midland, Mich.

Filed Oct. 28, 1987, Ser. No. 114,324
Int. Cl.^{4} B32B *9/00;* **D02G** *3/00;* **D04H** *1/00*
U.S. Cl. 428—224 15 Claims

1. A fire retarding and fire blocking structure comprising an intimate blend of non-carbonaceous fibers selected from the group consisting of natural and synthetic fibers and at least 7.5% by weight of heat set carbonaceous fibers having a LOI value greater than 40, said heat set carbonaceous fibers having a nitrogen content of about 5 to 35% and being derived from heat treated stabilized acrylic fibers.

4,879,169
QUILTED ELASTIC COMPOSITE FABRIC

Dimitri P. Zafiroglu, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 11, 1988, Ser. No. 179,620
Int. Cl.^{4} D03D *3/00*
U.S. Cl. 428—230 8 Claims

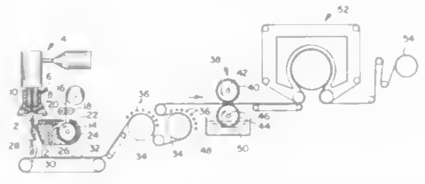
1. A quilted composite fabric having a thickness of at least 6 mm, a unit weight of at least 75 g/m^2, a density of no greater than 0.05 g/cm^3 and stretchability of at least 25% in at least one direction, the composite fabric comprising

a gathered fibrous layer,
an elastic fabric layer containing elastic spandex fiber which amounts to between ½ and 10% of the weight of the elastic fabric layer and no more than 5% of the total weight of the quilted composite,
the layers being quilted with thread that forms spaced-apart patterns of stitches extending along the composite fabric.

4,879,170
NONWOVEN FIBROUS HYDRAULICALLY ENTANGLED ELASTIC COFORM MATERIAL AND METHOD OF FORMATION THEREOF

Fred R. Radwanski, Norcross, Ga.; Lloyd E. Trimble, Dustin, Okla.; Roland C. Smith, Gainesville, and Linda A. Connor, Atlanta, both of Ga., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed Mar. 18, 1988, Ser. No. 170,196
Int. Cl.^{4} B32B *1/04*
U.S. Cl. 428—233 27 Claims

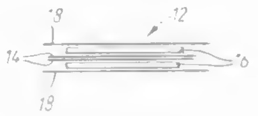


1. A nonwoven fibrous elastomeric web material comprising a hydraulically entangled admixture of (1) a first component of meltblown fibers and (2) a second component of at least one of pulp fibers, staple fibers, meltblown fibers and continuous filaments, at least one of the first component and the second component being elastic, said admixture having been subjected to high pressure liquid jets causing entanglement and intertwining of said first component and said second component so as to form an elastomeric web material.

4,879,171
THERMAL CAMOUFLAGE FABRIC

Robert F. Jeffrey, Bolton, England, assignor to J & D Wilkie Limited, United Kingdom

Filed Feb. 16, 1989, Ser. No. 311,722
Claims priority, application United Kingdom, Feb. 19, 1988, 8803965; Mar. 28, 1988, 8807325
Int. Cl.^{4} B32B *7/00;* **D03D** *15/00*
U.S. Cl. 428—259 7 Claims

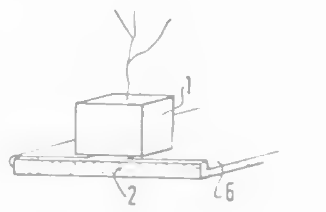


1. A thermal camouflage fabric comprising a heat reflective composite material which is coated on both of its sides with a protective material, the heat reflective composite material comprising at least one layer of a metal and at least one layer of a flexible support material, the protective material being such that it protects the heat reflective composite material from damage and such that it has predetermined thermal emission characteristics, the protective material being securely bonded to the heat reflective composite material, and the thermal camouflage fabric being such that the heat reflective composite material is first formed from the said at least one layer of the metal and the said at least one layer of the flexible support material, and is then woven.

4,879,172
SUBTRATUM FOR SOIL-FREE CULTIVATION

Jean-Paul Meunier, deceased, late of Clermont, France (by Xavier Gillet, executor), assignor to Isover Saint-Gobain, Paris, France

Division of Ser. No. 860,574, May 7, 1986, Pat. No. 4,769,277. This application Feb. 16, 1988, Ser. No. 155,738
Claims priority, application France, May 7, 1985, 85 06916
The portion of the term of this patent subsequent to Sep. 6, 2005, has been disclaimed.
Int. Cl.^{4} D04H *1/08*
U.S. Cl. 428—280 18 Claims



1. Substratum for soil-free cultivation formed of a mineral fiber felt whose by-volume mass is less than 50 kg/m^3.

4,879,173
GLASS MAT WITH REINFORCING BINDER

Brian G. Randall, Stone Mountain, Ga., assignor to Georgia-Pacific Corporation, Atlanta, Ga.

Filed Jan. 6, 1988, Ser. No. 141,998
Int. Cl.^{4} B32B *15/00*
U.S. Cl. 428—285 11 Claims

5. Gypsum board comprising a set gypsum core having adhered to at least one of its surfaces a non-woven glass fiber mat having a predetermined thickness and porosity and comprising glass fibers bound together by an adhesive and including also a reinforcing resinous binder on the surface of the mat and extending but partway through the thickness of the mat into the interstices thereof, so that said predetermined mat porosity is not significantly changed, the amount of the binder being such that the drying characteristics of the board are substantially the same as board comprising said mat without said binder.

4,879,174
DEVICE FOR EXPOSING COLORANT TO BE TRANSFERRED

Charles P. Marabella, Woodbury, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jan. 10, 1986, Ser. No. 818,094
Int. Cl.^{4} A61K *7/021, 9/70;* **B32B** *3/26*
U.S. Cl. 428—321.5 5 Claims

1. A device for exposing a colorant so as to enable said colorant to be transferred upon contact with a foreign surface, said device comprising a substrate having on at least one surface thereof a binder adhered to microcapsules containing a liquid, said microcapsules being present in an amount comprising 20 to 98% by weight of the combined weight of binder and microcapsules, said binder containing colorant which is wettable by said liquid, said binder being penetrable by said liquid, and said colorant being a lake.

5. A device for exposing a colorant so as to enable said colorant to be transferred to a surface, said device comprising

(1) at least two sheets bound by a single layer of a non-pressure sensitive adhesive composition layer,
(2) said adhesive composition layer containing a microcapsule having an average size of between 4 and 100 microns, said microcapsule containing a liquid therein and a colorant on the exterior wall of said microcapsule, at least 50% of the colorant associated with said microcapsule being exterior to said microcapsule and said liquid being capable of wetting said colorant, and the cohesive strength of the adhesive composition layer being less than the strength of the bond between said adhesive composition and said sheets, and the tensile rupture strength of said microcapsules being less than the cohesive strength of the adhesive composition.

4,879,175
DEVICE FOR EXPOSING COLORANT TO BE TRANSFERRED

Josef V. Ugro, Jr., Mahtomedi, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Dec. 11, 1985, Ser. No. 807,855
Int. Cl.^{4} A61K *7021, 9/70;* **B32B** *3/26*
U.S. Cl. 428—321.5 7 Claims

1. A device for exposing a colorant so as to enable said colorant to be transferred to a surface, said device comprising

(1) at least two sheets bound by a single layer of a non-pressure sensitive adhesive composition layer,
(2) said adhesive composition layer containing a microcapsule of a dispersion of solid non-magnetic colorant material in a gel, waxy or low-temperature melting solid carrier phase encapsulated within a polymeric shell characterized by the fact that the surface of the solid material has adsorbed thereon a second material which increases the oleophilicity of the surface of the solid colorant material, and
(3) said microcapsules having an average diameter between 4 and 100 micrometers, the cohesive strength of the adhesive composition layer being less than the strength of the bond between said adhesive composition and said sheets, and the tensile rupture strength of said microcapsules being less than the cohesive strength of the adhesive composition.

4,879,176
SURFACE MODIFICATION OF SEMICRYSTALLINE POLYMERS

Andrew J. Ouderkirk; Douglas S. Dunn, and Robert W. Warner, all of St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 25,845, Mar. 16, 1987, abandoned. This application Apr. 27, 1988, Ser. No. 186,813
Int. Cl.^{4} B32B *27/00, 27/08*
U.S. Cl. 428—323 36 Claims

1. A polymer article comprising a semicrystalline polymer in the form of a layer, sheet, film or coating having on at least one surface thereof areas having thicknesses of at least 5 nm of the same polymer in a quasi-amorphous state, said areas comprising from 5% to 100% of said at least one surface, wherein said semicrystalline polymer comprises a polymer selected from the group consisting of poly(vinyl chloride), poly(vinylidene chloride), polytetrafluoroethylene, nylon, polyurethane, polyester, polyolefin, and copolymers thereof.

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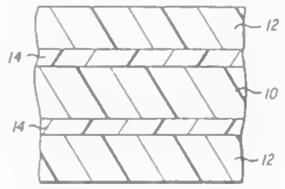
4,879,177
MONOAXIALLY ORIENTED SHRINK FILM

Peter R. Boice, Taylors, S.C., assignor to W. R. Grace & Co., Duncan, S.C.

Filed Nov. 13, 1987, Ser. No. 120,273
Int. Cl.⁴ B32B *7/02*

U.S. Cl. 428—339 5 Claims



1. A multilayer film, oriented in primarily one direction, comprising:
- (a) a core layer comprising a copolyester;
- (b) two outer layers each comprising ethylene propylene copolymer, polypropylene, or blends thereof; and
- (c) two intermediate layers each bonding the core layer to a respective outer layer, and comprising an ethylene copolymer; and
- (d) film having a shrink tension in the longitudinal direction in the range of between about 750 and 1200 p.s.i.

4,879,178
SURGICAL PRESSURE SENSITIVE ADHESIVE SHEET PRODUCT

Robert L. Sun, Stanhope, and James F. Kenney, Mendham, both of N.J., assignors to Johnson & Johnson Patient Care, Inc., New Brunswick, N.J.

Division of Ser. No. 2,316, Jan. 12, 1987, Pat. No. 4,762,888, which is a continuation-in-part of Ser. No. 634,716, Jul. 26, 1984, abandoned. This application May 27, 1988, Ser. No. 199,654
Int. Cl.⁴ C09J *7/02, 7/04*

U.S. Cl. 428—355 2 Claims

1. A surgical pressure sensitive sheet product comprising a flexible backing having supported thereon a hot melt pressure sensitive adhesive composition suitable for application to human skin, which by means of reversible hydrogen bond formation and dissociation possesses the reversible properties of both (i) strong cohesive strength at ambient temperature, and also (ii) a melt viscosity at elevated coating temperatures such that it can be used in hot melt coating equipment, said composition comprising:
- A. from about 70 to 85 parts by weight of an acrylic copolymer having a low Tg in the range of from −20° C. to −80° C. comprising:
  - (a) from 85 to 95 parts by weight of an alkyl acrylate monomer wherein the alkyl group contains 4 to 12 carbon atoms and
  - (b) from 5 to 15 parts by weight of 1(2)-methyl-3-oxa-4-oxo-5-aza-nonyl methacrylate
- B. from about 15 to 30 parts by weight of an acrylic copolymer having a high Tg in the range of from 10° C. to 40° C. comprising:
  - (a) from about 85 to 95 parts by weight of an alkyl methacrylate monomer wherein the alkyl group contains 1 to 12 carbon atoms and
  - (b) from about 5 to 15 parts by weight of 1(2)-methyl-3-oxa-4-oxo-5-aza-nonyl methacrylate.

4,879,179
ORGANIC REINFORCING FIBERS WITH BUNDLE SEPARATION DURING FIBER CUTTING

David S. Cordova, Midlothian, Va.; Hugh H. Rowan, Chapel Hill, N.C., and John A. Young, Chester, Va., assignors to Allied-Signal Inc., Morris Township, Morris County, N.J.

Filed Aug. 27, 1986, Ser. No. 900,925
Int. Cl.⁴ D02G *3/00*

U.S. Cl. 428—361 15 Claims

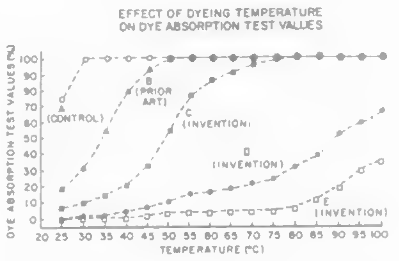
1. Synthetic multifilament yarn selected from the group consisting of polyester, aliphatic polyamide, aramid and olefin, for reinforcement of plastic composites, said yarn having been coated with a composition to enhance stiffness of the yarn for cutting and interfilament coherency and having deposited on the outer surface of the yarn 0.1 to 1.0 weight percent, based on weight of the yarn, of a partitioning agent selected from the group consisting of talc, alumina trihydrate, calcium carbonate, polyolefin powder or granules, and a metallic soap selected from the group consisting of calcium stearate, zinc stearate, lead stearate, magnesium stearate, and aluminum stearate, wherein said composition to enhance stiffness and interfilament coherency comprises an aqueous solution of carboxyl-terminated, oil-free alkyd resin based on aliphatic glycol or a glycol ether containing 2 to 12 carbon or carbon plus ether oxygen with a combination of aromatic di- or trifunctional carboxylic acids, said resins having a degree of esterification below the gel point of the resins.

4,879,180
STAIN-RESISTANT NYLON FIBERS

Randolph C. Blyth, Gulf Breeze, and Pompelio A. Ucci, Pensacola, both of Fla., assignors to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 180,589, Apr. 7, 1988, which is a continuation of Ser. No. 914,507, Oct. 2, 1986, Pat. No. 4,680,212, which is a continuation of Ser. No. 834,804, Mar. 3, 1986, abandoned, which is a continuation-in-part of Ser. No. 643,606, Aug. 23, 1984, abandoned, which is a continuation of Ser. No. 562,370, Dec. 16, 1983, abandoned. This application Nov. 7, 1988, Ser. No. 268,823
Int. Cl.⁴ B32B *27/34*

U.S. Cl. 428—395 5 Claims



1. A dyed nylon carpet fiber characterized in being coated with a sufficient amount of a sulfonated condensation product containing —SO_3X radicals, where X is hydrogen or a cation, such that when 64 ounces (1892.5 ml) of an aqueous solution of cherry flavored soft drink premix containing 0.054 grams per liter of Red Dye No. 40 is poured onto a carpet having a pile consisting of said fibers from a height of one meter and left overnight followed by washing of said pile for a removal of excess solution therefrom, no visual evidence of said Red Dye No. 40 remains on said pile.

4,879,181
SINTERED SPHERICAL PELLETS CONTAINING CLAY AS A MAJOR COMPONENT USEFUL FOR GAS AND OIL WELL PROPPANTS

Jeremiah J. Fitzgibbon, Lafayette, La., assignor to Carbo Ceramics Inc., Irving, Tex.

Continuation of Ser. No. 712,909, Mar. 15, 1985, abandoned, and a continuation-in-part of Ser. No. 347,210, Feb. 9, 1982, abandoned, which is a continuation of Ser. No. 565,429, Dec. 27, 1983, abandoned, which is a division of Ser. No. 405,055, Aug. 4, 1982, Pat. No. 4,427,068, which is a continuation-in-part of Ser. No. 347,210, Feb. 9, 1982, abandoned. This application Apr. 20, 1987, Ser. No. 40,534
Int. Cl.⁴ B32B *18/00;* **C09K** *7/00*

U.S. Cl. 428—402 14 Claims

1. A gas and oil well proppant comprising a plurality of composite, sintered, spherical pellets having a permeability to brine at about 200° F. (93.3° C.) which deceases not more than about three-fourths when the applied pressure on said pellets is increased from 2,000 to 10,000 psi (140 to 700 kg/cm^2), said pellets being prepared from a mixture of calcined clay and calcined bauxite, said mixture containing at least 40 percent clay on a dry weight basis, and said pellets having an alumina to silica ratio on a dry weight basis from about 9:1 to 1.17:1, more than 6.12 weight percent of other than alumina and silica, a diameter of between 0.1 and about 2.5 millimeters, an apparent specific gravity of less than 3.40 but greater than 2.75 g/cc and a bulk density greater than 88 lbs./cubic ft.

4,879,182
METHOD OF COATING CARBON BODIES

J. Kenneth Presswood, and Alethea H. O'Quinn, both of Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

Filed Oct. 24, 1988, Ser. No. 261,614
Int. Cl.⁴ B32B *27/00, 27/06, 9/00*

U.S. Cl. 428—408 15 Claims

1. A method sealing monolithic carbon bodies which comprises
- (a) applying to a vacuum-porous carbon body a coating formulation composed of a carbon-filled solution of a polyamic acid formed by reaction between pyromellitic acid dianhydride and a 2,2-bis[4-(aminophenoxy)phenyl]-hexafluoropropane, and
- (b) heat curing the coated body to cause the polyamic acid to imidize into a thermally cured polyimide and thereby rendering the coated portion of the carbon body capable of holding a vacuum.

13. A normally vacuum porous carbon body having thereon a coating formed by (a) applying to a surface thereof a coating formulation composed of a carbon-filled solution of a polyamic acid formed by reaction between (a) pyromellitic acid dianhydride and a 2,2-bis-[4-(aminophenoxy)phenyl]hexafluoropropane, and (b) heat curing the coated body to cause the polyamic acid to imidize into a thermally cured polyimide and thereby rendering the coated portion of the carbon body capable of holding a vacuum.

4,879,183
METHOD TO MANUFACTURE A BLINDAGED GLASS

Jose R. Mannheim, Av. La Pradera 164, Lima, Peru

Filed Aug. 27, 1987, Ser. No. 89,994
Claims priority, application Peru, Jul. 8, 1987, 123453
Int. Cl.⁴ B32B *17/10, 27/40*

U.S. Cl. 428—437 6 Claims

1. Blindaged glass, comprising the following laminated parts:
- a first and outer rigid impact scrifice sheet formed by a laminated glass sheet;
- an intermediate and elastic expansion core adjoining said first and outer rigid impact element, said intermediate and elastic expansion core being formed by a smelted bulk of about eighteen to thirty smelted layers of polyvinyl butyral with about 0.5 inch to 0.8 inch in thickness, and

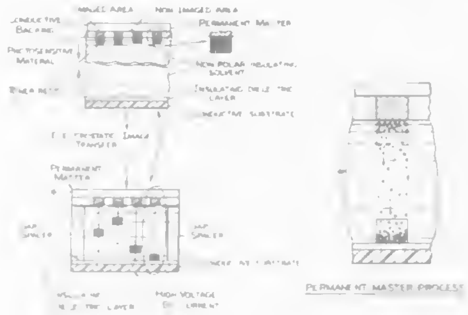
- a third and rigid protective element adjacent to said intermediate and elastic core, said third and rigid protective element being formed by a laminated assembly of a glass sheet bonded with a last and outer polycarbonate sheet.

4,879,184
METHOD OF HIGH RESOLUTION OF ELECTROSTATIC TRANSFER OF A HIGH DENSITY IMAGE TO A RECEIVING SUBSTRATE

David P. Bujese, Butler, and Gary W. Schmidt, Park Ridge, both of N.J., assignors to Olin Hunt Specialty Products Inc., West Paterson, N.J.

Continuation-in-part of Ser. No. 158,168, Nov. 19, 1987, Pat. No. 4,786,576, which is a continuation of Ser. No. 883,797, Jul. 9, 1986, abandoned, which is a continuation of Ser. No. 848,669, Apr. 4, 1986, Pat. No. 4,661,431, which is a continuation-in-part of Ser. No. 655,346, Sep. 27, 1984, abandoned. This application Nov. 15, 1988, Ser. No. 271,456
Int. Cl.⁴ G03G *13/22*

U.S. Cl. 430—126 18 Claims



1. A method of fabricating a toned pattern on a nonabsorbent receiving surface electrically isolated from ground, comprising the steps of:
- (a) establishing a charged electrostatic latent image area on an electrostatically imageable surface;
- (b) developing the electrostatic latent image area by applying to the electrostatically imageable surface charged toner particles suspended in a liquid comprised at least partially of a nonpolar insulating solvent to form a first liquid layer with a first liquid surface, the charged toner particles being directed to the latent image area of the electrostatically imageable surface to form a developed latent image of a predetermined pile height;
- (c) applying to the nonabsorbent receiving surface a liquid comprised at least partially of a nonpolar insulating solvent to form a second liquid layer with a second liquid surface;
- (d) establishing an electric field between the electrostatically imageable surface and the nonabsorbent receiving surface by connecting a D.C voltage directly across a conductive electrode and the electrostatically imageable surface, the conductive electrode being connected to the nonabsorbent receiving surface;

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(e) placing the nonabsorbent surface adjacent to the electrostatically imageable surface so that a gap is maintained therebetween and the first liquid surface contacts the second liquid surface to create a liquid transfer medium across the liquid-filled gap, the liquid-filled gap being of a depth greater than the pile height of the toner particles;

(f) transferring the developed latent image from the electrostatically imageable surface through the liquid to the nonabsorbent receiving surface to form a transferred toner particle image in an imaged area and define non-imaged areas where toner particles are absent;

(g) maintaining the gap during transfer of the developed latent image between the electrostatically imageable surface and the nonabsorbent receiving surface between at least about 1 mil and about 20 mils.

4,879,185

HEAT TRANSFER MATERIAL

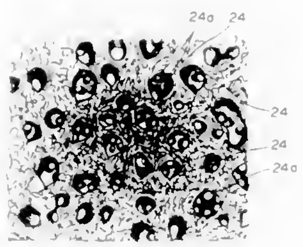
Yasuo Masuda, Urawa; Tsutomu Takahashi, Ohmiya; Yoshio Takizawa, Hasuda, and Naokazu Yoshiki, Kitamoto, all of Japan, assignors to Mitsubishi Kinzoku Kabushiki Kaisha, Japan

Continuation of Ser. No. 928,876, Nov. 7, 1986, abandoned. This application Jul. 20, 1988, Ser. No. 221,990

Claims priority, application Japan, Nov. 11, 1985, 60-252357; Nov. 11, 1985, 60-252358; Nov. 12, 1985, 60-253184; Feb. 22, 1986, 61-37736; Sep. 19, 1986, 61-221064; Sep. 19, 1986, 61-221065

Int. Cl.⁴ F28F *13/18*

U.S. Cl. 428—687 **17 Claims**



1. A heat-transfer material comprising a body of metal, said body including on a surface thereof a porous electroplated layer having re-entrant cavities of generally cylindrical shape, said re-entrant cavities having on an inner surface thereof at least one internal cavity smaller in size than said re-entrant cavity.

4,879,186

PHOTOLUMINESCENT MATERIALS FOR OUTPUTTING REDDISH-ORANGE LIGHT AND A PROCESS FOR MAKING THE SAME

Joseph Lindmayer, Potomac, Md., assignor to Quantex Corporation, Rockville, Md.

Continuation-in-part of Ser. No. 870,809, Jun. 6, 1986, Pat. No. 4,830,875, which is a continuation-in-part of Ser. No. 786,095, Oct. 10, 1985, Pat. No. 4,705,952. This application Jan. 22, 1988, Ser. No. 147,215

Int. Cl.⁴ B32B *9/00;* **B05D** *5/06;* **C09K** *11/08;* **G03G** *5/16*

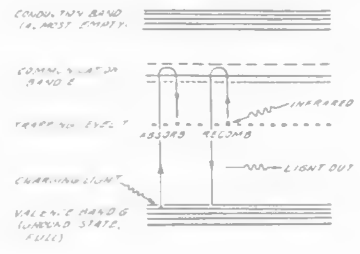
U.S. Cl. 428—691 **12 Claims**

1. An electron trapping photoluminescent infrared stimulable phosphor having a peak infrared sensitivity within the range of 1.12 to 1.22 microns and emitting in response to infrared radiation an output of reddish-orange light, comprising:

a base material comprising substantially calcium sulfide;

a first dopant of samarium provided in a quantity of between 20 and 300 parts per million by weight; and

a second dopant selected from the group of europium oxide, europium fluoride, europium chloride, and europium sulfide provided in a quantity of between 300 and 1500 parts per million by weight.



4,879,187

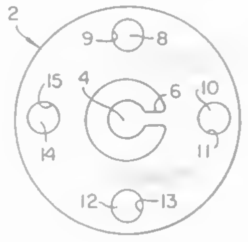
BATTERY TERMINAL FUSE

Dennis Biegger, North Ridgeville, Ohio, assignor to Eveready Battery Company, St. Louis, Mo.

Filed Oct. 22, 1987, Ser. No. 97,577

Int. Cl.⁴ H01M *14/00, 2/26*

U.S. Cl. 429—7 **12 Claims**



1. An electrochemical cell comprising an active anode material and an active cathode material assembled in a container closed with a cover which has a terminal secured within and through said cover by a glass-to-metal seal and which terminal is a first terminal of the cell, which first terminal is insulated from a second terminal of the cell and wherein said first terminal is in electronic contact with one of the active materials and said second terminal is in electronic contact with the other active material; wherein a first electrode strip comprising the active cathode material superimposed on and overlapping a second electrode strip comprising the active anode material and a separator disposed between said first electrode strip and said second electrode strip are rolled into a coiled electrode assembly such that said first electrode strip is electronically insulated from said second electrode strip by said separator and an edge of at least one electrode strip protrudes from the coiled electrode assembly at one end and electronically contacts a conductive tab which tab in turn is secured to said first terminal in said cover; said conductive tab providing an electronic path between said first terminal and the active material in electronic contact with said first terminal, said conductive tab comprising a first conductive portion integrally connected to the remaining portion of the conductive tab by a narrow conductive strip, said first conductive portion being secured to said first terminal and said remaining portion of the tab being in electronic contact with the active material, and wherein the width of the narrow strip is selected so that if the current in the cell exceeds a predetermined amperage, the strip will burn and break the electronic path to said first terminal thereby producing an open circuit in the cell.

4,879,188

BYPASS ELEMENT FOR SAFEGUARDING BATTERY CELLS

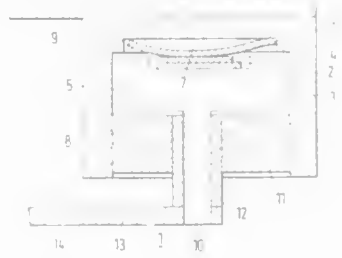
Henner Meinhold, Sandhausen; Botho Ziegenbein, Neckarsteinach, and Gunther Petri, Sandhausen, all of Fed. Rep. of Germany, assignors to BBC Brown Boveri Aktiengesellschaft, Mannheim, Fed. Rep. of Germany

Filed Jun. 30, 1988, Ser. No. 213,527

Claims priority, application Fed. Rep. of Germany, Jul. 1, 1987, 3721754

Int. Cl.⁴ H07M *14/00;* **H02J** *7/00*

U.S. Cl. 429—7 **7 Claims**



1. Bypass element for a battery having a plurality of series-connected groups of electrochemical battery cells, each group having a plurality of parallel-connected branches of battery cells based on alkali metal, chalcogen and an alkali ion-conducting solid electrolyte, the bypass element being connected in parallel with each respective battery cell or with each respective group of battery cells for safeguarding the battery cells by bypassing the cells when a predeterminable maximum charging capacity of the battery cells is reached, said bypass element comprising a series-connection of first and second semiconductor components, said components being capable of assuming a high-impedance and a low impedance state with different current/voltage characteristics in response to current or voltage applied to the cell, said first semiconductor component having a lower leakage current in the high-impedance state than said second semiconductor component, said second semiconductor component changing from the high-impedance to the low-impedance state at a higher voltage or higher current than said first semiconductor component, and said first semiconductor component changing from the high-impedance to the low-impedance state exactly when a maximum charging voltage of the battery cell or of the group of battery cells is reached, including a housing formed of an electrically conductive material, a fusible component disposed in said housing along with said semiconductor components, and positive and negative electrical connecting elements connected to said housing, each of said semiconductor components having first and second connecting terminals, the housing including an electrically conducting contact element in the form of a spring electrically conductively connecting said first connecting terminal of said first semiconductor component through said housing to said negative connecting elements of said housing, the housing further including a rod-shaped internal conductor directly electrically conductively connecting said second connecting terminal of said second semiconductor component to said positive connecting element of said housing, and said second connecting terminal of said first semiconductor component being electrically conductively connected to said first connecting terminal of said second semiconductor component.

4,879,189

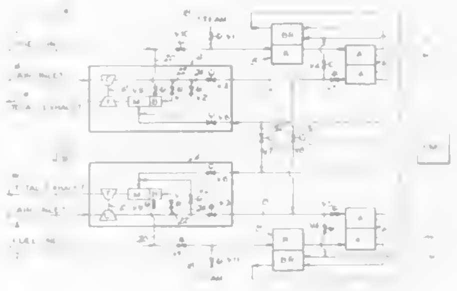
FUEL CELL AIR PRESSURIZATION SYSTEM AND METHOD

Daniel J. Snopkowski, Wethersfield, Conn., assignor to International Fuel Cells Corporation, South Windsor, Conn.

Filed May 27, 1988, Ser. No. 199,818

Int. Cl.⁴ H01M *8/00, 8/04*

U.S. Cl. 429—13 **7 Claims**



1. A fuel cell power station comprising:

(a) a plurality of fuel cell power modules each of which includes:
  (i) a fuel processing subsystem for reforming raw hydrocarbon fuel to a hydrogen-enriched fuel gas;
  (ii) an air pressurization subsystem for pressurizing air entering said modules to superatmospheric operating pressures and including a turbine-compressor;
  (iii) a power generating subsystem for electrochemically generating electrical current from the hydrogen-enriched fuel gas and air;
  (iv) a pressure air feed line conveying pressurized air from said compressor to said power generating system; and
  (v) a reformer burner exhaust line conveying hot exhaust products to said turbine;

(b) means providing an interconnection between said air pressurization subsystems in at least two of said power generation modules including a first line interconnecting pressurized air fuel lines in the power generation modules, and a second line interconnecting the reformer burner exhaust lines in the power generation modules, whereby an air processing subsystem in one power generation module can provide pressurized air for more than one power generation module;

(c) valve means in said interconnection;

(d) sensor means for monitoring electric current output of said power generation modules; and

(e) control means operably connected to said sensor means, to said air pressurization subsystems and to said valve means, to open and close the latter when the electric current output of the power modules reaches predetermined less-than-full-load levels and to concurrently shut down or start up an air pressurizing subsystem in one of the power generation modules.

4,879,190

ELECTROCHEMICAL CELL

Jorgen S. Lundsgaard, Svendborg, Denmark, assignor to MHB Joint Venture, Dayton, Ohio

Filed Aug. 30, 1988, Ser. No. 238,071

Int. Cl.⁴ H01M *6/10*

U.S. Cl. 429—94 **21 Claims**

1. An electrochemical cell comprising:

a relatively thin strip of anode material having flat opposing surfaces;

first and second electrolyte layers coated on said opposing surfaces;

first and second relatively thin strips of cathode material superposed to said first and second electrolyte layers,

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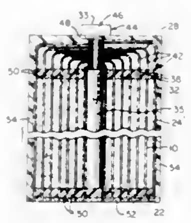
respectively, thereby forming a cell laminate with said electrolyte layers and said anode strip;

a cathode current conductor strip; and



said cell laminate being deformed such that both said first and second strips of cathode material contact said cathode current conductor strip along substantially the entire lengths of said strips of cathode material.

4,879,191

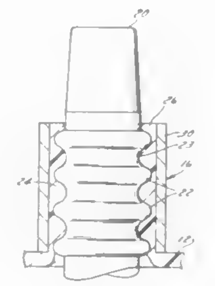
CRIMP TERMINAL FOR A BATTERY

John F. Sindorf, Pewaukee, Wis., assignor to Globe-Union Inc., Milwaukee, Wis.

Filed Mar. 23, 1989, Ser. No. 327,746

Int. Cl.⁴ H01M *2/30*

U.S. Cl. 429—181 5 Claims



1. A battery having a casing with a top and at least one terminal post extending upward through an opening in said top;

(a) said terminal post having a plurality of separated ridges and recesses each substantially circumscribing said terminal post along one region thereof;

(b) a tubular member integral with said top and extending upward therefrom and mating along its internal surface with said ridges and recesses; and

(c) a collar positioned about and compressed against said tubular member with a substantially radially directed force sufficient to maintain said tubular member in a liquid-tight sealed interface with said terminal post along said one region thereof.

4,879,192

SECONDARY CELL

Shigeoki Nishimura, Katsuta; Kazunori Fujita, Toukai; Hiroyuki Sugimoto, Hitachi; Atsuko Tohyama, Hitachi; Noboru Ebato, Hitachi, and Shinpei Matsuda, Tohkai, all of Japan, assignors to Hitachi Ltd. and Showa Denka K.K., both of Tokyo, Japan

Filed Sep. 20, 1984, Ser. No. 652,476

Claims priority, application Japan, Sep. 21, 1983, 58-173056

Int. Cl.⁴ H01M *6/16*

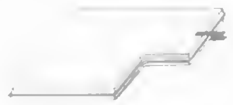
U.S. Cl. 429—198 17 Claims

1. A polymer secondary cell comprising:

a positive electrode;

a negative electrode, wherein at least one of said positive electrode and said negative electrode is composed of a polymer having conjugated double bonds; and

an electrolyte interposed between the positive and negative electrodes, wherein, during charging and discharging of said secondary cell, electrochemical reactions occur to form, as reaction products, radicals which can destroy said conjugated double bonds;



said secondary cell further comprising at least one of (1) radical scavengers which react with said radicals to remove said radicals prior to said radicals destroying the conjugated double bonds, and (2) adsorbents, other than polyacetylene, which adsorb the reaction products so as to prevent destruction of the conjugated double bonds, said at least one of (1) radical scavengers and (2) adsorbents being incorporated in at least one of the electrolyte and positive and negative electrodes.

4,879,193

LIGHT SENSITIVE MATERIAL FOR MAKING LITHOGRAPHIC PRINTING PLATE THEREFROM

Yoshikazu Takaya, and Kazuo Yokoyama, botb of Nagaokakyo, Japan, assignors to Mitsubishi Paper Mills, Ltd., Tokyo, Japan

Filed Mar. 16, 1988, Ser. No. 168,906

Claims priority, application Japan, Mar. 17, 1987, 62-63472

Int. Cl.⁴ G03C *5/54, 1/80*

U.S. Cl. 430—14 6 Claims

1. A light sensitive material for making a lithographic printing plate therefrom by utilizing a silver complex diffusion process which comprises a polyester film made hydrophilic by coating with an organic copolymer as a support and at least one undercoat layer, a silver halide emulsion layer and an image receiving layer containing as physical development nuclei layer provided on said support in succession,

wherein an undermost layer contiguous to the support contains a polyfunctional epoxy compound having at least three epoxy groups in molecule and a gelatin.

4. A method for making a lithographic printing plate which comprises subjecting the light sensitive material of claim 1 to imagewise exposure and development with an alkali developer in the presence of a silver halide solvent.

5. A lithographic printing plate made by the method of claim 4, wherein said lithographic printing plate comprises the support, the undermost layer, the undercoat layer, the silver halide emulsion layer, and the image receiving layer containing the physical development nuclei layer.

4,879,194

TRI-LEVEL, HIGHLIGHT COLOR IMAGING USING TONOGRAPHY

Christopher Snelling, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed May 2, 1988, Ser. No. 189,871

Int. Cl.⁴ G01D *15/06*

U.S. Cl. 430—53 7 Claims

1. Method of forming tri-level images, said method including the steps of:

using ion projection apparatus, forming a tri-level latent electrostatic image on a charge retentive surfce which image comprises first and second image areas and a background area which are at discrete voltage levels;

electrically biasing a first developer member to a voltage level that is offset from said background area, in the direction of said first image area;

electrically biasing a second developer member to a voltage level that is offset from said background area, in the direction of said second image area;

using said first developer member, applying a first toner to said charge retentive surface for developing said first image area; and

using said second developer member, applying a second toner to said charge retentive surface for developing said second image area.

4,879,195

LASER-SENSITIVE ELECTROPHOTOGRAPHIC MATERIAL

Kunitaka Toyofuku, Sakura; Hiroaki Sato, Yonago, and Kohei Micbikawa, Yokohama, all of Japan, assignors to Oji Paper Co., Ltd., Tokyo, Japan

Filed Dec. 16, 1988, Ser. No. 285,556

Claims priority, application Japan, Dec. 18, 1987, 62-318933

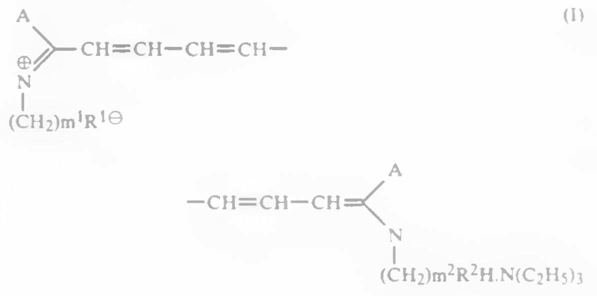
Int. Cl.⁴ G03G *5/09*

U.S. Cl. 430—89 7 Claims

1. A laser-sensitive electrophotographic material comprising

(A) an electroconductive substrate; and

(B) a laser-sensitive electrophotographic layer formed on a surface of the substrate and comprising a finely divided photoconductive zinc oxide, a resinous binder, a sensitizing coloring material and a sensitizing assistant, said sensitizing coloring material comprising at least one member selected from the group consisting of the compounds of the formulae (I) and (II):

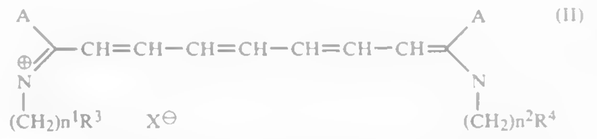


(I)

$$\overset{\displaystyle\mathrm{A}}{\underset{\substack{\overset{\oplus}{\mathrm{N}}\\ |\\ (\mathrm{CH_2})m^1\mathrm{R}^{1\ominus}}}{\rangle}}-\mathrm{CH{=}CH{-}CH{=}CH-}$$

$$-\mathrm{CH{=}CH{-}CH{=}}\overset{\displaystyle\mathrm{A}}{\underset{\substack{\mathrm{N}\\ |\\ (\mathrm{CH_2})m^2\mathrm{R}^2\mathrm{H.N(C_2H_5)_3}}}{\langle}}$$

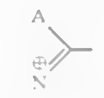
and



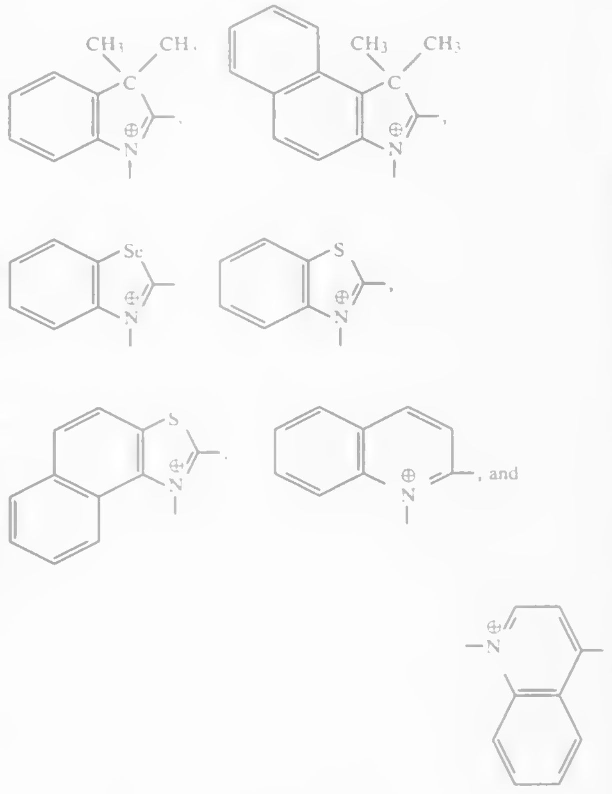
(II)

$$\overset{\displaystyle\mathrm{A}}{\underset{\substack{\overset{\oplus}{\mathrm{N}}\\ |\\ (\mathrm{CH_2})n^1\mathrm{R}^3}}{\rangle}}-\mathrm{CH{=}CH{-}CH{=}CH{-}CH{=}CH{-}CH{=}}\overset{\displaystyle\mathrm{A}}{\underset{\substack{\mathrm{N}\\ |\\ (\mathrm{CH_2})n^2\mathrm{R}^4}}{\langle}}\qquad \mathrm{X}^{\ominus}$$

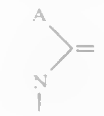
in which formulae m^1 and m^2 represent respectively and independently from each other, an integer of 1 to 8, R^1 and R^2 represent respectively, and independently from each other, a member selected from the group consisting of —COO and —SO_3 radicals, n^1 and n^2 represent respectively, and independently from each other, an integer of 1 to 8, R^3 and R^4 represent respectively, and independently from each other, a member selected from the group consisting of a hydrogen atom and —CH=CH_2 , —COOH, —SO_3H, —COONa, —SO_3Na, —COOK and —SO_3K radicals, X represents a member selected from the group consisting of chroline, bromine and iodine atoms and —$C10_4$ radical, the terminal group of the formula



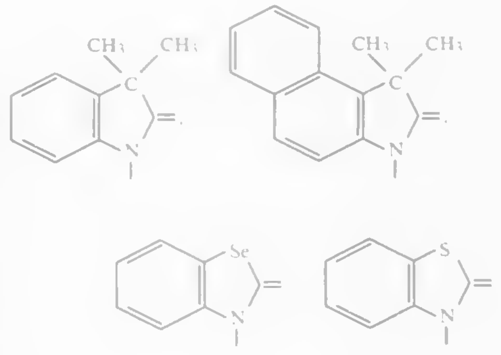
is selected from the group consisting of and the terminal group of the formula



and the terminal group of the formula



is selected from the group consisting of



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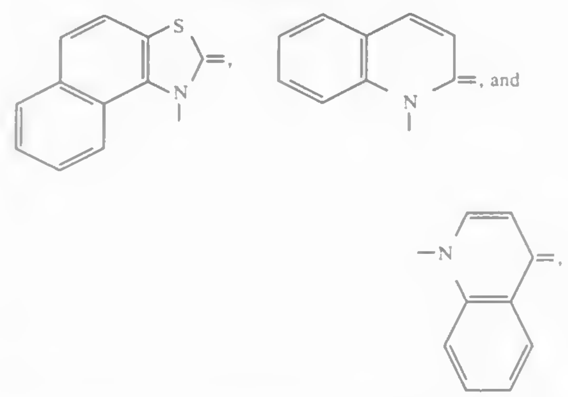
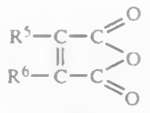


and the sensitizing assistant comprising at least one carboxylic acid anhydride of the formula (III):


(III)

wherein R^5 and R^6 represent respectively, and independently from each other, a member selected from the group consisting of a hydrogen atom and substituted and unsubstituted alkyl radicals having 1 to 8 carbon atoms and phenyl radical.

4,879,196

ELECTROPHOTOGRAPHIC METHOD FOR REVERSAL OR POSITIVE-POSITIVE IMAGE FORMATION

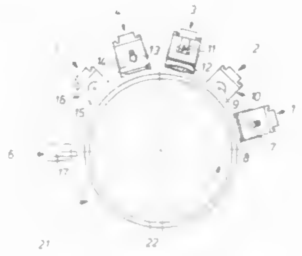
Jozef A. Van Biesen, Boechout; Guido F. Daes, Boom, and Jan B. Verstringe, Mortsel, all of Belgium, assignors to Agfa-Gevaert N.V., Mortsel, Belgium

Filed Jun. 18, 1987, Ser. No. 63,467

Claims priority, application European Pat. Off., Jul. 1, 1986, 86201151.7

Int. Cl.⁴ G03G *13/22*

U.S. Cl. 430—100 6 Claims



1. An electrophotographic copying method for producing reversal copies from an original using a photoconductive recording material including a photoconductive layer by the steps of:

(I) uniformly exposing said photoconductive layer to light within its photosensitivity range and below the range wherein the ratio of the decrease in optical density (ΔD) of the photoconductive layer with respect to wavelength increment (Δλ in nm) is at least 0.02,

(II) uniformly electrostatically charging said layer by means of a corona discharge,

(III) imagewise exposing the layer corresponding to said original to light of a wavelength shorter than the wavelength of the light used in step (I),

(IV) repeating step (I),

(V) repeating step (II), the extent of exposure and wavelength differences of the exposing light in steps (I) and (III) being such that step (V) results in the presence in those areas of the layer which were exposed in step (III) of electrostatic charges greater than the charges present in the unexposed areas thereof in step (III), and

(VI) developing the pattern of those greater charges by means of developer material comprising electrostatically charged toner particles of opposite sign to said greater charges.

4,879,197

METHOD OF DEVELOPING ELECTRONIC PHOTOGRAPH WITH LIQUID DEVELOPER AND CLEANING EXCESS THEREOF

Isao Kohmura; Takao Senga; Akira Furukawa; Hirokazu Yamamoto; Mamoru Nakatani, and Jun Yamada, all of Nagaokakyo, Japan, assignors to Mitsubishi Paper Mills, Ltd., Tokyo, Japan

Continuation of Ser. No. 849,378, Apr. 8, 1986, abandoned. This application Sep. 27, 1988, Ser. No. 251,066

Claims priority, application Japan, Apr. 12, 1985, 60-78062; Jun. 4, 1985, 60-122329; Jun. 5, 1985, 60-123326; Jun. 11, 1985, 60-127668; Sep. 18, 1985, 60-207630

Int. Cl.⁴ G03G *13/10*

U.S. Cl. 430—119 10 Claims

1. A process of developing images on a photosensitive material for electrophotography which includes the steps of developing the images with a liquid developer of the positive charge type containing a carrier liquid, a positive charge toner particle, a charge controlling agent which imparts positive charge to the toner particle and a compound having a polyoxyethylene group and removing an excess developer by means of a pair of squeeze rolls made of materials different from each other.

4,879,198

MAGNETIC CARRIER PARTICLES

Serge M. Tavernier, Lint; Joannes J. Van Beek, Ravels, and Pierre L. van Daele, Wilrijk, all of Belgium, assignors to AGFA-Gevaert N.V., Mortsel, Belgium

Filed Apr. 7, 1988, Ser. No. 178,929

Claims priority, application European Pat. Off., Apr. 24, 1987, 87200778

Int. Cl.⁴ G03G *9/14*

U.S. Cl. 430—106.6 13 Claims

1. A particulate triboelectrically developer composition for the magnetic brush toner-carrier development of electrostatic charge patterns, which comprises finely divided toner particles and carrier particles, said carrier particles having a particle size of about 35–150 μm and comprising finely divided magnetite powder dispersed in a resin binder and said toner particles having a smaller particle size, wherein:

(1) said magnetite powder is a mixture of magnetites comprising one type (A) of magnetite having an oil absorption number in the range of 10 to 20 g/100 g pigment and another type (B) of magnetite having an oil absorption number in the range of 20 to 40 g/100 g pigment, the difference in said oil absorption numbers being sufficient to permit homogeneous distribution of said magnetite powder in said resin binder, the weight ratio of (A) to (B) being in the range of 0.3 to 3.0, and said magnetites both having a non-needle like shape and an average particle size in the range of 0.05 to 3 μm,

(2) said binder consists for at least 80% by weight of a resin that has a softening point above 80° C., contains hydrophilic functional groups and has an acid number in the range of 5 to 50 mg KOH/g, said resin being a partially cross-linked polyester resin produced by condensation reaction of at least one polyol of the group consisting of ethylene glycol, triethylene glycol and an alkoxylated bisphenol with at least one dicarboxylic acid of the group consisting of maleic acid, fumeric acid, itaconic acid, malonic acid, and isophthalic acid, and a sufficient amount of a polyacid having at least 3 carboxylic acid groups to partially cross link said resin and to impart said acid number thereto, and

(3) said carrier particles have a size in the range of 20 to 150 μm, have a magnetite content of at least 70% by weight of the total carrier content, obtain an induced magnetic moment of at least 20 emu/g in an applied field of 1,000 gauss, have a remanence in emu/g of at least 3, and have a coercitivity in Oe at least 60.

4,879,199

PROCESS FOR PREPARING ENCAPSULATED COLOR TONER COMPOSITIONS

Robert J. Gruber, Pittsford; Raymond A. Yourd, III, Rochester; Paul C. Julien, West Webster; John F. Knapp, Fairport, and Steven B. Bolte, Rochester, all, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 764,023, Aug. 9, 1985, abandoned. This application Oct. 20, 1988, Ser. No. 262,249

Int. Cl.⁴ G03G *9/08*

U.S. Cl. 430—137 24 Claims

1. A process for preparing encapsulated toner particles which comprises blending together resin particles, colored pigment particles, and a waxy substance with a molecular weight of from about 500 to about 20,000, micronizing the resulting mixture to form toner sized particles, and permitting the waxy substance to form an encapsulating continuous shell on the surface of the toner particles by subjecting the formed particles to heat spheroidization.

4,879,200

LIGHT-SENSITIVE MATERIAL CONTAINING SILVER HALIDE, REDUCING AGENT, POLYMERIZABLE COMPOUND, AND A QUATERNARY AMMONIUM DEVELOPMENT ACCELERATOR

Yutaka Oka, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

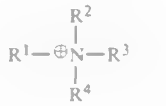
Filed Oct. 6, 1987, Ser. No. 105,157

Claims priority, application Japan, Oct. 6, 1986, 61-238871

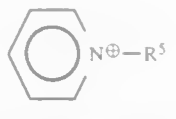
Int. Cl.⁴ G03C *1/72, 11/12*

U.S. Cl. 430—138 8 Claims

1. A light-sensitive material comprising a light-sensitive layer containing silver halide, a reducing agent and an ethylenically unsaturated polymerizable compound provided on a support, wherein the light-sensitive layer contains a salt comprising a quaternary ammonium ion and an anion selected from the group consisting of a halogen ion, an acetate ion, a perchlorate ion, a sulfonate ion, an oxalate ion, a carbonate ion, a sulfite ion and a phosphoric hydrogen ion, said salt being contained in the light-sensitive layer in an amount of from 0.1 to 200 weight% based on the total silver content of the silver halide, and said quaternary ammonium ion having the following formula (I) or (II):


(I)

$$R^1-{}^{\oplus}\overset{\overset{\displaystyle R^2}{|}}{\underset{\underset{\displaystyle R^4}{|}}{N}}-R^3$$


(II)

in which each of R^1, R^2, R^3 and R^4 independently is a monovalent group selected from the group consisting of an alkyl group, a cycloalkyl group, an alkenyl group, an alkynyl group, an aralkyl group, an aryl group, and an alkoxy group, each of which may have one or more substituent groups; R^5 is a monovalent group selected from the group consisting of an alkyl group, a cycloalkyl group, an alkenyl group, an alkynyl group, an aralkyl group, an aryl group and an alkoxy group, each of which may have one or more substituent groups; the pyridinium ring may be condensed with one or more benzene rings, and the pyridinium ring and the condensed pyridinium ring may have one or more substituent groups.

4,879,201

METHOD OF MAKING A LITHOGRAPHIC PLATE COMPRISING MICROCAPSULES

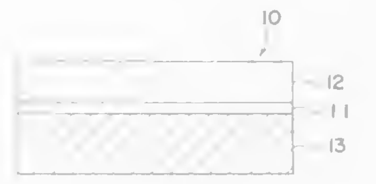
Akira Hasegawa, Kawashiri, Japan, assignor to Fuji Photo Film Co., Ltd., Miniami-ashigara, Japan

Filed Jan. 20, 1988, Ser. No. 145,839

Claims priority, application Japan, Jan. 20, 1987, 62-12095

Int. Cl.⁴ G03C *1/72, 7/00*

U.S. Cl. 430—138 12 Claims



1. A process for the preparation of a lithographic plate comprising the steps of:

exposing imagewise to a radiation a presensitized lithographic plate which comprises a hydrophilic layer and a light-sensitive layer containing silver halide, a reducing agent, an ethylenically unsaturated polymerizable compound and a hydrophilic binder provided in order on a hydrophilic support wherein the silver halide, the reducing agent and the polymerizable compound are contained in lipophilic microcapsules which are dispersed in the light-sensitive layer;

heating the exposed light-sensitive layer for development simultaneously with or after the above step, whereby the polymerizable compound within the area where a latent image of the silver halide has been formed is cured by polymerization to form a polymer;

heating the developed layer to a temperature of not higher than a thermal softening point of the resulting polymer but not lower than a thermal softening point of shell material of the microcapsules, whereby the polymerizable compound within the area where a latent image of the silver halide has not been formed runs out of the microcapsules and is cured by polymerization; and

removing the microcapsules together with the hydrophilic layer from the area where a latent image of the silver halide was formed.

4,879,202

RADIATION IMAGE STORAGE PANEL AND PROCESS FOR THE PREPARATION OF THE SAME

Yuichi Hosoi, Chigasaki; Satoshi Arakawa, Minami-ashigara, and Kenji Takahashi, Odawara, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jul. 13, 1987, Ser. No. 72,698

Claims priority, application Japan, Jul. 11, 1986, 61-163284; Feb. 2, 1987, 62-22032; Jul. 1, 1987, 62-166130; Jul. 3, 1987, 62-167630

Int. Cl.⁴ G03C *5/16;* **G01T** *1/00;* **G01J** *1/58*

U.S. Cl. 430—139 29 Claims

1. A process for the preparation of a radiation image storage panel which has a phosphor layer comprising a stimulable phosphor, which comprises steps of molding a phosphor layer-forming material containing a stimulable phosphor into a sheet and sintering the molded product to form a phosphor layer

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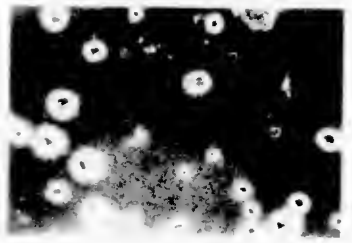
25. A radiation image storage panel having a sintered stimulable phosphor layer which consists essentially of a sintered stimulable phosphor, has a relative density of not less than 70%, and is binder free.



4,879,203

PROCESS FOR PRODUCING MASKED POSITIVE COLOR IMAGES BY THE SILVER DYE BLEACH PROCESS

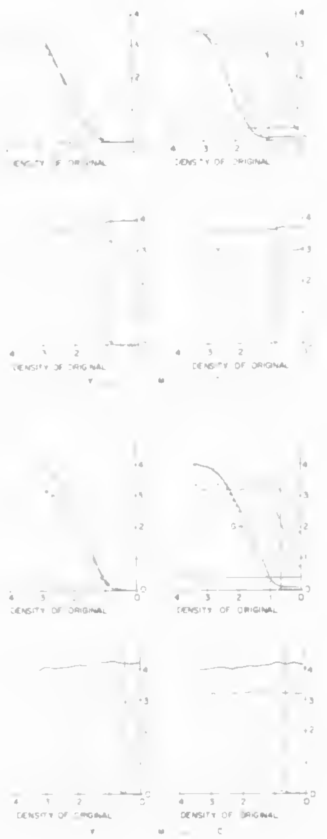
Urs J. Fürholz, Marly, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland

Filed Apr. 4, 1988, Ser. No. 177,344

Claims priority, application Switzerland, Apr. 6, 1987, 1313/87

Int. Cl.⁴ G03C *5/52, 7/04*

U.S. Cl. 430—378 11 Claims



1. A process for producing masked positive colour images by the silver dye bleach process by exposure, development, dye bleaching, silver bleaching and fixing, with the use of a photographic material which, in each of at least two layers, contains a dye which can be bleached imagewise and the absorption maximum of which corresponds in each case to one of the three principal colours red, green and blue, each dye being associated with a silver halide emulsion layer sensitive in a defined spectral region and, in this material,

(a) the dye, the undesired secondary colour density of which is to be compensated, being associated with a silver halide emulsion layer consisting at least partially of silver iodide,

(b) at least one second dye, the principal colour density of which corresponds to a secondary colour density, which is to be compensated, of the first dye, and an iodide ion-free silver halide emulsion being present in a further layer,

(c) a furtner layer, adjacent to the layer (b), containing colloidal nuclei capable of depositing metallic silver from soluble silver complexes, if appropriate an insensitive, not spectrally sensitized iodide-free silver halide emulsion and, if appropriate, a development inhibitor, and

(d) a separating layer being present between the layers (a) and (c), and the developer solution, with which the material is treated, containing a complex former which is capable of producing water-soluble and diffusible silver complexes, wherein the developer solution contains 0.3 to 1.0 mol/l of a bromide as the complex former.

4,879,204

SILVER HALIDE PHOTOGRAPHIC ELEMENT CONTAINING ANHYDAZINE COMPOUND AND SPECIFIC DYES

Kunio Ishigaki; Toshiro Takahashi; Yuji Mihara; Keiichi Adachi; Shigeru Ohno; Masahiro Okada, and Naomi Saeki, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 63,753, Jun. 22, 1987, abandoned, which is a continuation of Ser. No. 823,861, Jan. 29, 1986, abandoned. This application Aug. 16, 1988, Ser. No. 232,526

Claims priority, application Japan, Jan. 29, 1985, 60-14960; Feb. 1, 1985, 60-18445; Mar. 19, 1985, 60-54883; Mar. 22, 1985, 60-57942; Mar. 25, 1985, 60-60118

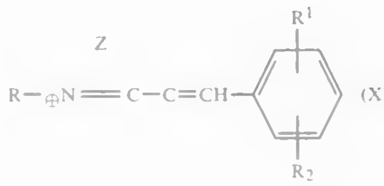
Int. Cl.⁴ G03C *1/08*

U.S. Cl. 430—512 16 Claims

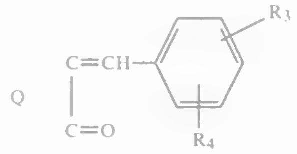
1. A high contrast silver halide photographic material capable of producing an image having a contrast of higher than 10 in gamma rendered safe for development under a safe light comprising a support having formed thereon at least one silver halide emulsion layer and at least one light-insensitive hydrophilic colloid layer, wherein at least one of the layers consisting of at least one silver halide emulsion layer and said at least one light-insensitive hydrophilic colloid layer contains from 1×10^{-6} mol to 5×10^{-2} mol per mol of silver halide of hydrazine derivative selected from the group consisting of aryl hydrazines wherein a sulfinic acid residue is bonded to a hydrazo moiety and hydrazine derivatives of formula (XI)

$$R_{51}\text{-NHNH-G-}R_{52} \qquad \text{(XI)}$$

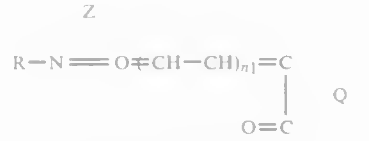
wherein R_{51} represents an aliphatic or aromatic group, R_{52} represents a hydrogen atom, a substituted or unsubstituted alkyl group, a substituted or unsubstituted aryl group, a substituted or unsubstituted alkoxy group, or a substituted or unsubstituted aryloxy group; and G represents a carbonyl group, a sulfonyl group a sulfoxy group, a phosphoryl group, or an N-substituted or unsubstituted imino group, and wherein at least one of said at least one light-insensitive hydrophilic colloid layer formed on the uppermost silver halide emulsion layer, but not said light sensitive silver halide emulsion layer, contains a dye having an absorption covering the wavelength region of the safe light n an amount of from 10^{-3} g/m² to 1 g/m², said dye being selected from the group represented by the formula (a), (b), (c), (d), (e) and (f):



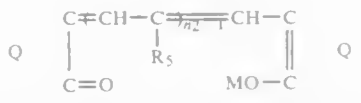
(a)



(b)

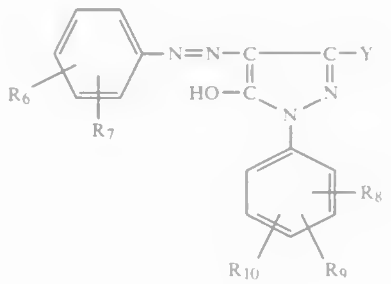


(c)

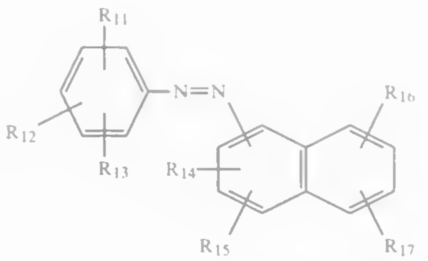


(d)

wherein Z represents a non-metallic atomic group necessary for forming heterocyclic nuclei of benzothiazole, naphthothiazole, or benzoxazole; Q represents an atomic group necessary for forming pyrazolone, barbituric acid, thiobarbituric acid, isoxazolon, 3-oxythionaphthene, or 1,3-indanedione; R represents a substituted or unsubstituted alkyl group; R_1, R_2, R_3 and R_4 each represents a hydrogen atom, an alkoxy group, a dialkylamino group or a sulfo group; R_5 represents a hydrogen atom or a halogen atom; M represents a hydrogen atom, a sodium atom; X represents an anion, m, n_1 and N_2 each represents 1 or 2 when m is 1, the dye forms an intramolecular salt;



(e)



(f)

wherein Y represents an alkyl group or a carboxy group; R_6, R_7, R_8, R_9, R_{10}, R_{11}, R_{12}, R_{13}, R_{14}, R_{15}, R_{16} and R_{17} each represents a hydrogen atom, an alkyl group, a hydroxy group, an amino group, an acylamino group, a carboxy group or a sulfo group; said R_{12} and R_{13} may combine with each other to form a benzene ring.

4,879,205

INFORMATION STORAGE MEDIUM AND A METHOD OF MANUFACTURING THE SAME

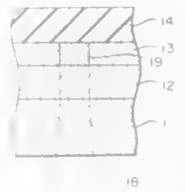
Katsumi Suzuki, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 15, 1987, Ser. No. 96,507

Claims priority, application Japan, Jan. 20, 1987, 62-10339; Jan. 20, 1987, 62-10340; Jan. 20, 1987, 62-10341; Jan. 20, 1987, 62-10342

Int. Cl.⁴ G03C *1/72, 1/80*

U.S. Cl. 430—523 14 Claims



1. An information storage medium comprising

a substrate;

a recording layer adapted to undergo phase transformation between different crystal phases when exposed to a light beam, said recording layer containing an InSb alloy;

a first protective layer interposed between said substrate and said recording layer; and

a second protective layer disposed on said recording layer;

said first and second protective layers including an amorphous silicon-containing material.

4,879,206

SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL

Masahiro Asami, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

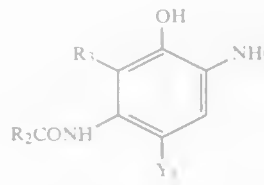
Continuation of Ser. No. 892,014, Aug. 1, 1986, abandoned. This application Dec. 27, 1988, Ser. No. 290,201

Claims priority, application Japan, Aug. 5, 1985, 60-172017

Int. Cl.⁴ G03C *1/19, 1/20, 7/34*

U.S. Cl. 430—550 4 Claims

1. A silver halide color photographic material which comprises a support having provided thereon at least one silver halide emulsion layer containing a cyan dye image-forming coupler represented by the following general formula (I), said emulsion layer containing silver chlorobromide grains containing 40 to 95 mol % bromide in which tabular silver halide grains having a means aspect ratio of 5 to 8 amount to 85% or more based on the total projection area of the whole grains, and being spectrally sensitized with a cyanine dye of the trimethine or pentamethine type or a merocyanine dye, which dye has a desensitization degree of 10 or more,



(I)

wherein R_1 and R_2 each represents a substituted or unsubstituted aliphatic, aromatic or heterocyclic group; R_3 represents a hydrogen atom, a halogen atom, a substituted or unsubstituted aliphatic or aromatic group or an acylamino group, and further R_3 may be non-metallic atomic groups which form with R_2 a nitrogen-containing 5- or 6-membered ring; Y_1 represents a hydrogen atom, or a group which is eliminable upon an oxidative coupling reaction with a developing agent, and n represents 0 or 1; and further, the coupler may take a poly-

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meric form, including dimeric form, via a group represented by R_1, R_2 or Y_1.

4,879,207

SAFELIGHT FOR SILVER HALIDE LIGHT-SENSITIVE PHOTOGRAPHIC MATERIAL

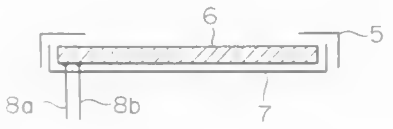
Kazuhiro Yoshida, and Yasuhiko Takamuki, both of Hino, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Apr. 12, 1988, Ser. No. 180,776

Claims priority, application Japan, Apr. 14, 1987, 62-92843; Apr. 14, 1987, 62-92844; May 28, 1987, 62-132753; Oct. 28, 1987, 62-274391

Int. Cl.^{4} G03C *1/04*

U.S. Cl. 430—564 **2 Claims**



1. A method of handling a silver halide light-sensitive photographic material during at least one step in the manufacturing, using, or processing thereof, said method comprising handling said photographic material under light substantially free from wavelength components to which said photographic material is sensitive, said light being irradiated from a safelight apparatus comprising an electroluminescent element light source,

said safelight apparatus comprising a color filter layer positioned further from a light emission layer and a transparent electrode layer of said electroluminescent element.

4,879,208

PROCESS FOR PREPARING SILVER HALIDE GRAINS

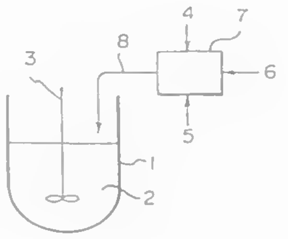
Shigeharu Urabe, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jan. 18, 1989, Ser. No. 298,446

Claims priority, application Japan, Jan. 18, 1988, 63-007851

Int. Cl.^{4} G03C *1/00*

U.S. Cl. 430—569 **13 Claims**



1. A process for manufacturing silver halide grains, which comprises the steps of:

(A) providing a mixer vessel and a reactor vessel, said mixer vessel being separate from said reactor vessel and said reactor vessel having contained therein an aqueous protective colloid solution and in which silver halide grains are grown;

(B) feeding an aqueous water-soluble silver salt solution, an aqueous water-soluble halide solution and an aqueous protective colloid solution into said mixer vessel;

(C) forming a fine silver halide grain-containing solution by mixing the thus fed solutions in said mixer vessel;

(D) immediately feeding the thus formed fine silver halide grain-containing solution into said reactor vessel; and

(E) stirring said solution in said reactor vessel to grow uniform silver halide grains therein.

4,879,209

PHOTOGRAPHIC PROTEINACEOUS LAYERS COMPRISING DEXTRAN DERIVATIVES

Joan T. Vermeersch, Deinze; Daniël Timmerman; Hubert Vandenabeele, both of Mortsel, and Jacques L. Vervecken, Berchem, all of Belgium, assignors to AGFA-GEVAERT, N.V., Mortsel, Belgium

Filed Dec. 15, 1987, Ser. No. 133,080

Claims priority, application European Pat. Off., Dec. 23, 1986, 86202376.9

Int. Cl.^{4} G03C *1/30*

U.S. Cl. 430—623 **12 Claims**

1. Method of hardening a proteinaceous layer of a photographic silver halide element by incorporating a modified dextran in said proteinaceous layer, wherein said modified dextran is a reaction product of dextran and at least one reagent selected from the group consisting of an alkyl haloformate, a substituted alkyl haloformate, an aryl haloformate, and a substituted aryl haloformate.

4,879,210

METHOD AND APPARATUS FOR TEACHING SIGNING

Harley Hamilton, 626 Collingwood Dr., Decatur, Ga. 30032

Filed Mar. 3, 1989, Ser. No. 318,658

Int. Cl.^{4} G09B *5/06*

U.S. Cl. 434—112 **16 Claims**

1. Apparatus for teaching signing including a tape having a story recorded thereon, said story being divided into a plurality of portions wherein each portion comprises an integrated part of said story, each said portion of said story being between natural breaks in said story, and further including a plurality of recordings of a person signing, each recording of said plurality of recordings of a person signing comprising a recording of a person signing a summary of one portion of said plurality of portions of said story, said recordings of a person signing being interspersed between said portions, a given portion and the summary of said given portion being juxtaposed.

4,879,211

RAPID IMMUNOAGGLUTINATION TEST FOR PRESENCE OF HIV IN BODY FLUIDS

Chang Y. Wang, Long Island, and James J. G. Wang, Flushing, both of N.Y., assignors to United Biomedical Inc., Lake Success, N.Y.

Filed Nov. 30, 1987, Ser. No. 126,269

The portion of the term of this patent subsequent to Apr. 5, 2005, has been disclaimed.

Int. Cl.^{4} G01N *33/569*

U.S. Cl. 435—5 **3 Claims**

1. An immunoagglutination method for the detection of the presence of HIV body fluids comprising:

A. Preparing substantially pure polyclonal anti-HIV IgG from serum which had been previously determined to be positive for antibodies to HIV and negative to antibodies to HTLV-I, HBsAg, HBcAg and EBV by (i) affinity chromatography over a protein A column; wherein protein A is coupled to crosslinked agarose beads via chemically stable amide bonds; or (ii) salt precipitation followed by ion exchange chromatography;

B. Adsorbing the substantially purified polyclonal anti-HIV IgG on to carboxylate modified latex beads having a particle size of about 1 um in diameter;

C. Mixing on a slide, a drop of unknown serum with a drop of 0.01M PBS buffer at a pH of about 7.0;

D. Mixing on a second slide, a drop of normal serum with the same buffer;

E. Adding to each slide a drop of 0.01M PBS buffer containing from about 0.12% weight:volume of the latex beads absorbed with purified polyclonal anti-HIV IgG;

F. Allowing the slides to incubate at room temperature for about 0.5 minutes to about 2.5 minutes;

G. Examining the slides within about three minutes from step (E) to determine the degree of agglutination, of the unknown serum sample compared to the normal serum wherein the presence of virus is shown by the agglutination of the latex beads to from larger particles.

4,879,212

PEPTIDE COMPOSITION AND METHOD FOR THE DETECTION OF ANTIBODIES TO HTLV-III

Chang Y. Wang, Great Neck, and James J. G. Wang, Flushing, both of N.Y., assignors to United Biomedical Inc., Lake Success, N.Y.

Continuation-in-part of Ser. No. 847,102, Apr. 2, 1986, Pat. No. 4,735,896, which is a continuation-in-part of Ser. No. 837,566, Mar. 4, 1986, abandoned, which is a continuation-in-part of Ser. No. 774,644, Sep. 11, 1985, abandoned. This application Feb. 10, 1987, Ser. No. 13,014

The portion of the term of this patent subsequent to Apr. 5, 2005, has been disclaimed.

Int. Cl.^{4} C12Q *1/70;* G01N *33/53*

U.S. Cl. 435—5 **52 Claims**

1. A peptide composition having specific immunoreactivity to antibodies to HTLV-III comprising a peptide with about 35 amino acids having an amino acid sequence:

Arg-Ile-Leu-Ala-Val-Glu-Arg-Tyr-Leu-Lys-Asp-Gln-Gln-Leu-Leu-Gly-Ile-Trp-Gly-Cys-Ser-Gly-Lys-Leu-Ile-Cys-Thr-Thr-Ala-Val-Pro-Trp-Asn-Ala-Ser , or analogues thereof, as long as the immunoreactivity to antibodies to HTLV-III derived from the three dimensional conformation is preserved substantially.

4. An immunoassay method for the detection of antibodies to HTLV-III and diagnosis of AIDS, ARC or pre-AIDS conditions comprising:

A. coating a solid support with an effective amount of the peptide composition according to claim 1 as an antigen;

B. Adding a test sera diluted with a buffer wherein the antibodies to HTLV-III in the test sera form peptide-antibody complexes with the peptide composition;

C. incubating the mixture; and

D. detecting the presence of the peptide-antibody complexes.

4,879,213

SYNTHETIC POLYPEPTIDES AND ANTIBODIES RELATED TO EPSTEIN-BARR VIRUS EARLY ANTIGEN-DIFFUSE

Robert I. Fox, La Jolla, and Richard Houghton, Solana Beach, both of Calif., assignors to Scripps Clinic and Research Foundation, La Jolla, Calif.

Filed Dec. 5, 1986, Ser. No. 938,643

Int. Cl.^{4} G01N *33/569;* A61K *39/12*

U.S. Cl. 435—5 **17 Claims**

7. The method of claim 6 wherein the first immunoreactant is labeled prior to determining according to step (e) by:

(a) admixing a biologically active labeled receptor that binds to human immunoglobulin present in the first immunoreactant to form a labeled second immunoreactant, said labeled receptor being capable of signalling the presence of said labeled receptor in said second immunoreactant; and

(b) maintaining the admixture so formed under biological assay condition for a predetermined period of time sufficient for said labeled receptor to form a second immunoreactant with any anti-EA-D antibodies present as first immunoreactant; and

(c) determining the presence of the labeled immunoreactant

4,879,214

DIFFERENTIATION OF NUCLEIC ACID SEGMENTS ON THE BASIS OF NUCLEOTIDE DIFFERENCES

John S. Kornher, Claymont, and Kenneth J. Livak, Wilmington, both of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 15, 1988, Ser. No. 272,068

Int. Cl.^{4} C12Q *1/68*

U.S. C[illegible] 08—10/89 **10 Claims**

1. A process for distinguishing nucleic acid segments on the basis of nucleotide differences, which comprises

synthesizing separately complementary nucleic acid strands on each of at least two target nucleic acid templates using a nucleic acid polymerase and nucleoside triphosphate substrates, wherein at least one of the natural nucleoside triphosphate substrates is completely replaced with a mobility-shifting analog;

and comparing the mobility of the separately synthesized strands in single-stranded form through a size-fractionation medium.

4,879,215

CONCENTRATING IMMUNOCHEMICAL TEST STRIP

Litai Weng, Mountain View; David Calderhead, Menlo Park; Pyare Khanna, San Jose, and Edwin F. Ullman, Atherton, all of Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Continuation of Ser. No. 701,464, Feb. 14, 1985, Pat. No. 4,740,468. This application Mar. 4, 1988, Ser. No. 164,308

The portion of the term of this patent subsequent to Apr. 26, 2005, has been disclaimed.

Int. Cl.^{4} G01N *33/53*

U.S. Cl. 435—7 **19 Claims**

1. A method for determining the presence of an analyte in a sample suspected of containing said analyte, which analyte is a member of a specific binding pair ("sbp member") consisting of ligand and its complementary receptor, which method comprises:

(a) contacting, with a test solution containing said sample and a first sbp member capable of binding to said analyte, a contact portion of bibulous material capable of being traversed by said test solution by capillary migration,

said bibulous material containing a second sbp member non-diffusively bound to a small situs on said bibulous material separated from said contact portion, the surface area of said situs being substantially less than that of said bibulous material,

said second sbp member having the characteristic of binding said first sbp member when said first sbp member is bound to said analyte,

with the proviso that, where said second sbp member is able to bind said first sbp member when said first sbp member is not bound to said analyte, an analyte analog capable of binding said first sbp member is non-diffusively bound to said bibulous material at least between said small situs and said contact portion,

(b) allowing the test solution to traverse at least a portion of said bibulous material by means of capillary migration,

(c) detecting the presence of the first sbp member at said situs.

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4,879,216

SPECIFIC ANTIBODY AGAINST HEART MUSCLE LIGHT CHAINS, A PROCESS FOR THE PREPARATION THEREOF AND A REAGENT CONTAINING IT

Klaus Hallermayer, Munich; Siegfrid Looser, Weilheim, and Hugo Katus, Bammental, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GMBH, Mannheim, Fed. Rep. of Germany

Filed Mar. 8, 1988, Ser. No. 165,288

Claims priority, application Fed. Rep. of Germany, Mar. 11, 1987, 3707746

Int. Cl.^{4} G01N *33/577, 33/569*

U.S. Cl. 435—7 20 Claims

1. Substantially pure antibody which specifically binds to heart muscle myosin light chain and which has a cross reactivity of less than 5% against skeletal muscle myosin light chain.

4,879,217

TEST FOR RHIZOCTONIA BROWN AND YELLOW PATCH

Frank P. Petersen, Beverly; Gary D. Grothaus, Delran, and Sally A. Miller, Pennsauken, all of N.J., assignors to Agri-Diagnostics Associates, Cinnaminson, N.J.

Filed Apr. 28, 1987, Ser. No. 43,307

Int. Cl.^{4} G01N *33/569;* **C12Q** *1/04;* **C12P** *21/00;* **C12N** *5/00*

U.S. Cl. 435—7 40 Claims

21. A method for detecting the presence or absence of an antigen of a species of the genus Rhizoctonia in a sample suspected of containing the antigen comprising:

specifically binding any said antigen present in said sample to a monoclonal antibody to Rhizoctonia to form a binary complex,

wherein said monoclonal antibody is conjugated to a detectable label; and

detecting the presence or absence of said label in said binary complex in order to detect the presence or absence of said antigen.

4,879,218

ANTIBODY FOR *C.DIFFICILE*

Tracy D. Wilkins, Blacksburg, and David M. Lyerly, Radford, both of Va., assignors to Virginia Tech Intellectual Properties, Inc.

Continuation of Ser. No. 740,419, Jun. 3, 1985, abandoned, which is a continuation-in-part of Ser. No. 683,150, Dec. 18, 1984, abandoned, which is a continuation-in-part of Ser. No. 417,379, Sep. 13, 1982, Pat. No. 4,533,630. This application Jun. 20, 1988, Ser. No. 211,070

The portion of the term of this patent subsequent to Aug. 6, 2002, has been disclaimed.

Int. Cl.^{4} G01N *33/535, 33/577*

U.S. Cl. 435—7 34 Claims

1. Monoclonal antibody for toxin A of *C. difficile* which immunoprecipitates toxin A of *C. difficile.*

4,879,219

IMMUNOASSAY UTILIZING MONOCLONAL HIGH AFFINITY IGM ANTIBODIES

Jack R. Wands, Waban, Mass.; Vincent R. Zurawski, Jr., West Chester, Pa., and Schoemaker, Hubert J. P., Newton, Mass., assignors to General Hospital Corporation, Boston, Mass.

Filed Sep. 19, 1980, Ser. No. 188,735

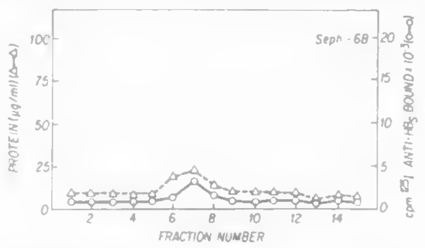
Int. Cl.^{4} G01N *53/00;* **A61K** *39/395*

U.S. Cl. 435—7 9 Claims

1. An immunoassay method utilizing an antibody to assay for a substance comprising hepatitis B-surface antigen (HBsAg) determinants which comprises the steps of:

contacting a test sample containing said substance comprising HBsAg determinants with said antibody; and

determining the presence of said substance in said sample; wherein said antibody is a monoclonal high affinity IgM antibody having a binding affinity constant for said HBsAg determinants of at least 10^9M^{-1}.



4,879,220

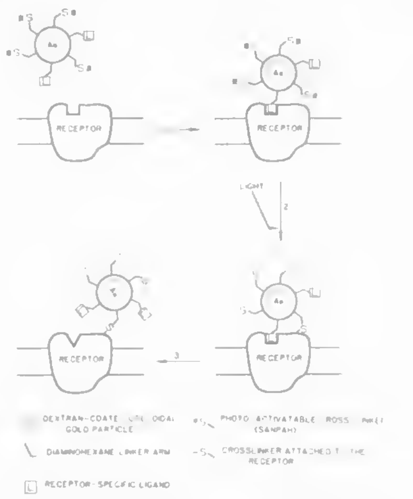
CROSSLINKING RECEPTOR-SPECIFIC PROBES FOR ELECTRON MICROSCOPY

Randall J. Mrsny; G. Bruce Birrell, and Johannes J. Volwerk, all of Eugene, Oreg., assignors to State of Oregon Acting By and Through the State Board of Higher Education On Behalf of the University of Oregon, Eugene, Oreg.

Filed Nov. 18, 1986, Ser. No. 932,437

Int. Cl.^{4} G01N *33/53*

U.S. Cl. 435—7 39 Claims


Au
RECEPTOR
LIGHT
DEXTRAN-COATED COLLOIDAL GOLD PARTICLE
PHOTO ACTIVATABLE CROSSLINKER (SANPAH)
DIAMINOHEXANE LINKER ARM
CROSSLINKER ATTACHED TO THE RECEPTOR
RECEPTOR-SPECIFIC LIGAND

14. A probe for labeling cellular material with a colloidal sized particle, the probe comprising:

a colloidal sized particle;

a ligand capable of joining with a receptor on cellular material; and

a cross linking agent capable of reacting with the cellular material to provide a covalent bond between the probe and the cellular material.

28. The method of claim 27 wherein the ligand and the crosslinking agent are attached to the particle by dextran.

4,879,221

PROCESS FOR DETERMINATION OF γ-GTP ACTIVITY

Kuniaki Tokuda; Seiji Morii, both of Kawagoe, and Kazuhiko Yamanishi, Tokyo, all of Japan, assignors to Wako Pure Chemical Industries, Ltd., Osaka, Japan

Filed Sep. 2, 1986, Ser. No. 902,897

Int. Cl.^{4} C12Q *1/48;* **G01N** *31/00*

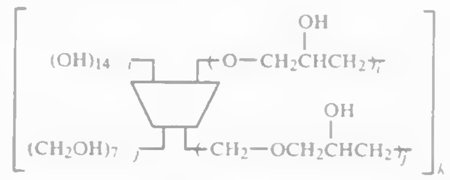
U.S. Cl. 435—15 9 Claims

1. A process for determining τ-glutamyl transpeptidase activity which comprises

adding to a sample a substrate solution comprising τL-glutamyl-p-nitroanilide and a modified cyclodextrin of the formula:

$$\beta\text{-CD}(-\text{OH})_{21-x}[-\text{OC}_n\text{H}_{2n-(m-1)}(-\text{OH})_m]_x \qquad (I)$$

wherein CD is a cyclodextrin residue; m is an integer of 1 to 10; n is an integer of 1 to 5, provided that $2n-(m-1)\geqq 0$; and x is 3 to 21, or a modified cyclodextrin of the formula:



(II)

wherein i is zero to 3; j is 1 to 5; and k is 2 to 5, and adding to the sample an acceptor solution containing an acceptor for glutamic acid, in this order or a reverse order, and

quantitatively measuring p-nitroaniline generated from τ-L-glutamyl-p-nitroanilide by τ-glutamyl transpeptidase activity, wherein the amount of p-nitroaniline is an indication of the activity of gamma-glutamyl-transpeptidase activity.

4,879,222

METHOD OF ISOLATING TUMOR-SECRETED PRODUCTS USING A NOVEL PROTEIN-FREE MEDIUM

Edward M. Alderman, Dedham; James W. Fett, Waltham, and Bert L. Vallee, Brookline, all of Mass., assignors to President and Fellows of Harvard College, Cambridge, Mass.

Filed Aug. 28, 1986, Ser. No. 901,101

Int. Cl.^{4} C12P *21/00;* **C12N** *05/00*

U.S. Cl. 435—68 3 Claims

1. A method of isolating a mammalian tumor-secreted product comprising maintaining mammalian anchorage-dependent colonic adenocarcinoma cells in a maintenance medium containing about 5 mM to about 12 mM of L-glutamine and devoid of exogenous protein for more than ten days and isolating said tumor-secreted product from the medium.

4,879,223

METHOD FOR PRODUCING PROTEIN CONTAINING NONPROTEIN AMINO ACIDS

Tatsuo Miyazawa; Shigeyuki Yokoyama, both of Bunkyo, and Tetsuo Miyake, Koda, all of Japan, assignors to Wakunaga Seiyaku Kabushiki Kaisha, Osaka, Japan

Filed Apr. 25, 1988, Ser. No. 186,075

Claims priority, application Japan, Apr. 24, 1987, 62-101581

Int. Cl.^{4} C12P *21/00*

U.S. Cl. 435—68 9 Claims

1. In a method wherein an organism capable of producing a protein is provided with a nutrient source containing a nonprotein amino acid whereby a protein comprising the nonprotein amino acid copolymerized therein is produced, the improvement which comprises subjecting the organism to conditions such that growth of the organism or the protein synthesis associated with the growth is suppressed, the suppression being such that it takes place even when the nutrient source is free from the nonprotein amino acid.

4,879,224

DNA SEQUENCES, RECOMBINANT DNA MOLECULES AND PROCESSES FOR PRODUCING HUMAN PHOSPHOLIPASE INHIBITOR POLYPEPTIDES

Barbara P. Wallner, Cambridge; R. Blake Pepinsky, Watertown, and Jeffrey L. Garwin, Bedford, all of Mass., assignors to Biogen, Inc., Cambridge, Mass.

Filed Jan. 10, 1985, Ser. No. 690,146

Int. Cl.^{4} C12N *1/14, 1/16, 5/00, 7/00, 15/00, 1/20;* **C07H** *21/00;* **C12P** *21/00*

U.S. Cl. 435—68 9 Claims

1. A recombinant DNA molecule comprising a DNA sequence coding for a phospholipase inhibitor polypeptide and being selected from the group consisting of:

(a) the cDNA insert of ALC,

(b) DNA sequences which hybridize to the cDNA insert of ALC and which code on expression for a phospholopase inhibitor, and

(c) DNA sequences which are degenerate as a result of the genetic code to either of the foregoing DNA sequences and which code on expression for a phospholipase inhibitor.

4,879,225

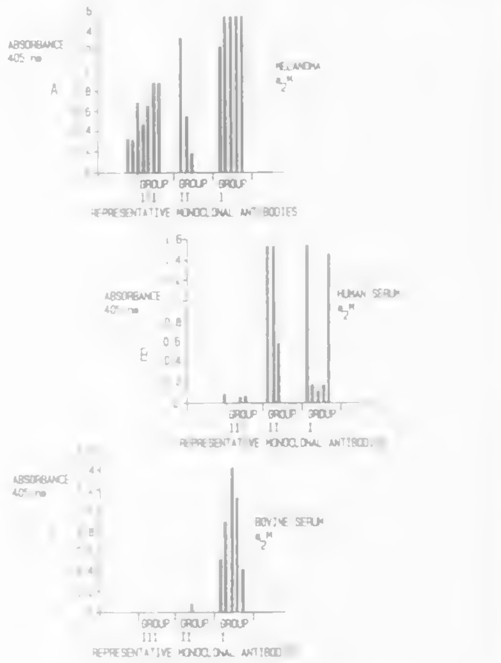
ENHANCED PRODUCTION OF ANTIBODIES UTILIZING INSOLUBILIZED IMMUNE COMPLEXES

Alton C. Morgan, Jr., Edmonds; Clive S. Woodhouse, and Robert F. McIntyre, both of Seattle, all of Wash., assignors to NeoRx Corporation, Seattle, Wash.

Continuation-in-part of Ser. No. 876,828, Jun. 20, 1986. This application Mar. 11, 1987, Ser. No. 24,632

Int. Cl.^{4} C12P *21/00;* **C12N** *5/00, 15/00;* **A61K** *39/00*

U.S. Cl. 435—68 58 Claims



1. A method for enhancing production of antibodies, comprising the steps of:

absorbing antibody onto insolubilized protein A, thereby forming an immunosorbent;

combining an antigen with said immunosorbent, forming an insolubilized immune complex;

immunizing an animal with said insolubilized immune complex.

4,879,226

NOVEL HUMAN PHYSIOLOGICALLY ACTIVE POLYPEPTIDE

Robert B. Wallace, West Covina, Calif., and Hirataka Itoh, Fuji, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Apr. 6, 1984, Ser. No. 597,372

Int. Cl.^{4} C12P *21/00;* **C12N** *15/00, 1/20;* **C07H** *15/12*

U.S. Cl. 435—68 40 Claims

1. An isolated physiologically active human tumor necrosis factor polypeptide comprising an amino acid sequence represented by the following formula:

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Ser Ser Ser Arg Thr Pro Ser Asp Lys Pro Val Ala His Val Val
Ala Asn Pro Gln Ala Glu Gly Gln Leu Gln Trp Leu Asn Arg
Arg Ala Asn Ala Leu Leu Ala Asn Gly Val Glu Leu Arg Asp
Asn Gln Leu Val Val Pro Ser Glu Gly Leu Tyr Leu Ile Tyr
Ser Gln Val Leu Phe Lys Gly Gln Gly Cys Pro Ser Thr His
Val Leu Leu Thr His Thr Ile Ser Arg Ile Ala Val Ser Tyr
Gln Thr Lys Val Asn Leu Leu Ser Ala Ile Lys Ser Pro Cys Gln
Arg Glu Thr Pro Glu Gly Ala Glu Ala Lys Pro Trp Tyr Glu
Pro Ile Tyr Leu Gly Gly Val Phe Gln Leu Glu Lys Gly Asp
Arg Leu Ser Ala Glu Ile Asn Arg Pro Asp Tyr Leu Asp Phe
Ala Glu Ser Gly Gln Val Tyr Phe Gly Ile Ile Ala Leu

wherein Gln stands for a glutamine residue, Asp an aspartic acid residue, Pro a proline residue, Tyr a tyrosine residue, Val a valine residue, Lys a lysine residue, Glu a glutamic acid residue, Ala an alanine residue, Asn an asparagine residue, Leu a leucine residue, Phe a phenylalanine residue, Gly a glycine residue, His a histidine residue, Ser a serine residue, Thr a threonine residue, Ile an isoleucine residue, Trp a tryptophan residue, Arg an arginine residue, and Cys a cysteine residue, or a variant of said polypeptide having all of the activity of human tumor necrosis factor.

4,879,227

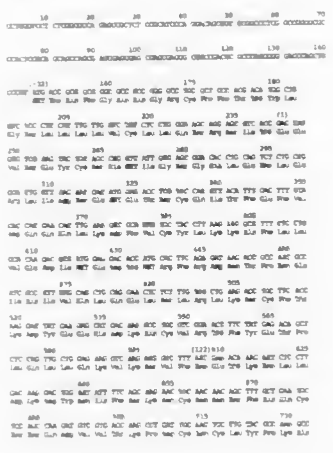
PRODUCTION OF A RECOMBINANT HUMAN COLONY STIMULATING FACTOR

Steven C. Clark, Winchester, and Gordon G. Wong, Cambridge, both of Mass., assignors to Genetics Institute, Inc., Cambridge, Mass.

Filed May 6, 1986, Ser. No. 860,377

Int. Cl.^{4} C12P *21/02;* **C12N** *15/00;* **C07H** *15/12*

U.S. Cl. 435—70 **5 Claims**



1. A process for producing a protein capable of stimulating proliferation of monocytic cells in both human and mouse bone marrow assays comprising culturing host cells containing a DNA vector which contains a DNA sequence encoding the polypeptide sequence encompassing the mature form of the protein of FIG. 2, the DNA sequence being in operative association with an expression control sequence and recovering the protein so produced from the cultured host cells.

4,879,228

MICROBIAL PRODUCTION OF POLYFRUCTOSE

Thomas D. Mays, and Ellen L. Dally, both of Columbia, Md., assignors to IGI Biotechnology, Inc., Columbia, Md.

Filed Jan. 4, 1985, Ser. No. 689,238

Int. Cl.^{4} C12P *19/04;* **C12N** *1/20;* **C12R** *1/01*

U.S. Cl. 435—101 **1 Claim**

1. In a process for the production of a water-soluble levan by anaerobically fermenting a nutrient growth medium feedstock having a carbon source consisting esesntially of a source of an assimilable sugar selected from the group consisting of sucrose, raffinose, and mixtures thereof with a microorganism capable of converting the sugar to levan and ethanol under nutient growth conditions, the improvement wherein the microorganism is a member of the genus Zymomonas which has the levan-producing characteristics of *Zymamonas mobilis* ATCC Deposit No. 39,985, the growth medium has initial sugar concentration of at least about 10% by weight and an initial concentration of an assimilable source of nitrogen no more than about half of that which would be optimal for the production of ethanol and wherein the fermentation is conducted at a temperature at least about 5° C. below the optimum temperature for the production of ethanol, thereby increasing the amount of available fructose converted to levan.

4,879,229

METHOD FOR PREPARING 2,5-DIKETO-D-GLUCONIC ACID

Takayasu Sonoyama; Shigeo Yagi; Bunji Kageyama, all of Osaka, and Masahiro Tanimoto, Hyogo, all of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

Continuation of Ser. No. 925,538, Oct. 28, 1986, abandoned, which is a continuation of Ser. No. 288,332, Jul. 30, 1981, abandoned. This application Sep. 12, 1988, Ser. No. 243,215

Claims priority, application Japan, Aug. 14, 1980, 55-112406

The portion of the term of this patent subsequent to Sep. 24, 2002, has been disclaimed.

Int. Cl.^{4} C12P *7/60, 7/58*

U.S. Cl. 435—138 **23 Claims**

1. A substantially biologically pure culture consisting essentially of a microorganism of the genus Erwinia which is capable of producing a recoverable quantity of 2,5-diketo-D-gluconic acid or a salt thereof upon cultivation in the presence of D-glucose and which is selected from the group consisting of *Erwinia citreus* ATCC 31623, *Erwinia punctata* ATCC 31624, *Erwinia punctata* ATCC 31625, *Erwinia punctata* ATCC 31626, *Erwinia punctata* ATCC 31627, *Erwinia terreus* ATCC 31628, *Erwinia terreus* ATCC 31629, *Erwinia terreus* ATCC 31630, and *Erwinia terreus* ATCC 31631.

4,879,230

ESCHERICHIA COLI CANDIDA MALTOSA SACCHAROMYCES CEREVISIAE SHUTTLE VECTORS AND METHOD FOR MAKING

Masamichi Takagi, Fuchu; Keiji Yano, Tokyo; Ichiro Shibuya, and Minoru Morikawa, both of Kashiwa, all of Japan, assignors to Nikka Whisky Distilling Co., Ltd., Tokyo, Japan

Filed Dec. 24, 1985, Ser. No. 813,193

Claims priority, application Japan, Sep. 27, 1985, 60-212187; Sep. 27, 1985, 60-212188

Int. Cl.^{4} C12N *15/00, 5/00;* **C12P** *19/34*

U.S. Cl. 435—172.3 **4 Claims**

1. A process for producing a plasmid comprising:
(a) preparing a gene library of *C. maltosa* by partially digesting total *C. maltosa* DNA with Sau3AI and ligating the fragments into the BamHI restriction site of YEp13;
(b) transforming *E. cali* cells with the plasmids prepared in step (a), isolating ampicillin resistant, tetracycline sensitive colonies therefrom, and recovering plasmid DNA from the isolated colonies;
(c) transforming a leucine-dependent strain of *C. maltosa* with the plasmids recovered in step (b), growing said transformed cells in a leucine-free medium and isolating plasmid DNA from the surviving colonies;
(d) transforming *E. cali* with the plasmid isolated in step (c), isolating ampicillin resistant colonies, and recovering the plasmid DNA therefrom;
(e) digesting the plasmid recovered in step (d) with BamHI, and isolating the 3.4 Kb TRA region;
(f) digesting plasmid YEp13 with Bgl II to isolate the Leu 2 gene and annealing the Leu 2 gene into the EcoRI site of pBR322; and
(g) digesting the plasmid formed in step (f) with XhoI and annealing the DNA fragment obtained in step (e) into the XhoI restriction site.

4,879,231

TRANSFORMATION OF YEASTS OF THE GENUS PICHIA

David W. Stroman, Bartlesville, Okla.; James M. Cregg; Michael M. Harpold, both of San Diego, Calif., and George T. Sperl, Gurnee, Ill., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Oct. 30, 1984, Ser. No. 666,579

The portion of the term of this patent subsequent to Jun. 6, 2006, has been disclaimed.

Int. Cl.^{4} C12N *15/00, 5/00, 7/00*

U.S. Cl. 435—172.3 **18 Claims**

1. A process for transforming a host yeast strain of *Pichia pastoris,* which is defective in at least one biosynthetic pathway, said process comprising:
(a) contacting the host yeast strain with a sulfhydryl group reducing agent;
(b) contacting the product cells of step (a) with a cell wall degrading reagent under conditions suitable for the formation and maintenance of spheroplasts;
(c) contacting the spheroplasts generated in step (b) with a hybrid plasmid which is capable of functioning as a selectable marker to complement said defect under conditions suitable for transformation; and
(d) treating the product of step (c) under cell wall regenerating conditions wherein said conditions suitable for the formation of spheroplasts comprise:
(i) 10–100 μg of cell wall degrading reagent per 10 mL of cell suspension; wherein said cell suspension is prepared by suspending exponentially growing cells in SCE buffer;
(ii) maintained at 25–35° C.;
(iii) for 15–60 minutes;
and wherein said contacting conditions suitable for transformation comprise:
(i) 2–10 volumes of $CaCl_2$-polyethylene glycol solution per volume of spheroplast-containing suspension;
(ii) maintained at 20–30° C.;
(iii) for 5–30 minutes
and where said cell wall regenerating conditions comprise:
(i) adding transformed spheroplasts to regeneration agar, wherein said regeneration agar comprises:
about 1 M sorbitol,
about 0.1 M dextrose,
about 7 g/L yeast nitrogen base, and
about 3% agar;
(ii) maintained at 25–35° C.;
(iii) for about 3–10 days.

4,879,232

MULTILAYERED STRUCTURE CONTAINING IMMOBILIZED BLUD-GREEN ALGAE

J. Gavin MacDonald, Decatur, and Ronald S. Nohr, Roswell, both of Ga., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed Mar. 17, 1987, Ser. No. 26,597

Int. Cl.^{4} C12N *11/12, 11/08, 1/12;* **C05F** *11/08*

U.S. Cl. 435—179 **21 Claims**

1. A nutrient-producing, multilayered structure having a thickness which is substantially less than either its breadth or width, which structure comprises:
A. a first layer which comprises a composite consisting essentially of a substantially water-insoluble support having a surface energy of from about 30 dynes per cm to about 115 dynes per cm to which nitrogen-fixing filamentous blue-green algal heterocyst cells are attached, said support being either particulate or fibrous and substantially free of substances which have a significant deleterious effect on the viability of the immobilized algae, which attached algal heterocyst cells, when allowed to grow in a nitrogen deficient environment, fix nitrogen at a rate which is substantially greater than that of such cells not so attached;
B. a second layer adjacent to and contiguous with at least a portion of a first surface of said first layer and attached to said first layer in such a manner as to substantially maintain said second layer adjacent to and contiguous with said first surface; and
C. a third layer adjacent to and contiguous with at least a portion of a second surface of said first layer and attached to said first layer in such a manner as to substantially maintain said third layer adjacent to and contiguous with said second surface; wherein partially transparent to actinic radiation.

4,879,233

NOVEL *ASPERGILLUS NIVEUS* MICROORGANISM USED FOR THE CHIRAL REDUCTION OF CARBONYL GROUPS

William Charney, Montclair, N.J., assignor to Schering Corporation, Kenilworth, N.J.

Filed Feb. 10, 1989, Ser. No. 309,461

Int. Cl.^{4} C12N *1/16;* **C12R** *1/66;* **C12P** *7/02*

U.S. Cl. 435—254 **1 Claim**

1. A biologically pure culture of the fungus *Aspergillus niveus,* ATCC 20922, said culture being capable of chiral reduction of ketones.

4,879,234

PROCESS FOR THE PURIFICATION AND RECOVERY OF FORMATE-DEHYDROGENASE (FDH) FROM *CANDIDA BOIDINII,* AND FDH-CONTAINING PRODUCT

Arno Cordes, Salzgitter; Maria-Regina Kula, Niederzier-Hambach; Karl-Heinz Kroner, Wolfenbüttel, and Wolfgang Stach, Salzgitter, all of Fed. Rep. of Germany, assignors to Gesellschaft fur Biotechnologische Forschung mbH (GBF), Braunschweig, Fed. Rep. of Germany

Filed Jul. 30, 1986, Ser. No. 891,868

Claims priority, application Fed. Rep. of Germany, Jul. 30, 1985, 3527268

Int. Cl.^{4} C12N *9/02;* **C12R** *1/72*

U.S. Cl. 435—189 **14 Claims**

1. Process for the purification and recovery of formate-dehydrogenase enzyme from *Candida boidinii* cells, which comprises:
(a) disintegrating the enzyme-containing cells to obtain a mixture of cell material and the enzyme; and
(b) affinity extracting the enzyme from the mixture with an aqueous 2-phase extracting agent, one phase of which contains a triazine dyestuff bonded to an inert, water-soluble polymer.

4,879,235

PROCESS FOR PRODUCING PROTEASE BY CULTIVATING A PROTEASE-PRODUCING MOLD IN A LIQUID MEDIUM

Hiroshi Motai; Yaichi Fukushima, both of Noda; Tetsuro Fukase, and Harumichi Itoh, both of Atsugi, all of Japan, assignors to The Japanese Research and Development Association for Bioreactor System, Tokyo, Japan

Filed Nov. 21, 1986, Ser. No. 933,177

Claims priority, application Japan, Nov. 29, 1985, 60-267326; Dec. 27, 1985, 60-292988

Int. Cl.^{4} C12N *9/62, 9/50, 9/60, 1/16*

U.S. Cl. 435—225 **5 Claims**

1. In a process for producing protease by cultivating a protease-producing mold belonging to the genus Aspergillus in a liquid culture medium, wherein the improvement comprises continuously adding, in response to a measurement of total extracellular nitrogen, a liquid medium containing a protein

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material to the liquid culture medium after substantial termination of proliferation of the mold cells, in a manner which maintains the nitrogen concentration in the extracellular liquid culture medium at 0.05% (W/V) or below.

4,879,236

METHOD FOR PRODUCING A RECOMBINANT BACULOVIRUS EXPRESSION VECTOR

Gale F. Smith, and Max D. Summers, both of Bryan, Tex., assignors to The Texas A&M University System, College Station, Tex.

Continuation of Ser. No. 609,697, May 16, 1984, abandoned, which is a continuation-in-part of Ser. No. 498,858, May 27, 1983, Pat. No. 4,745,051. This application Apr. 16, 1987, Ser. No. 40,367

The portion of the term of this patent subsequent to May 17, 2005, has been disclaimed.

Int. Cl.⁴ C12N *7/00, 21/00, 15/00*

U.S. Cl. 435—235 11 Claims

1 A recombinant baculovirus expression vect-r, capable of expressing a selected heterologous gene in a host insect cell, wherein said expression vector is a baculovirus genome comprising at least one selected heterologous gene inserted into the polyhedrin gene at a position ranging from the polyhedrin transcriptional start signal to the ATG start site and under the transcriptional control of a baculovirus polyhedrin promoter.

4,879,237

USE OF PEPTIDES IN CONTROL OF CELL ATTACHMENT AND DETACHMENT

Eric I. Rudslahti, Rancho Santa Fe; Edward G. Hayman, Oceanside, and Michael D. Pierschbacher, San Diego, all of Calif., assignors to La Jolla Cancer Research Foundation, La Jolla, Calif.

Filed May 24, 1985, Ser. No. 738,078

Int. Cl.⁴ C12N *5/00*

U.S. Cl. 435—240.2 9 Claims

1. A method of controlling the Arg-Gly-Asp mediated attachment of animal cells to substrates comprising the steps of:

(a) contacting a substrate normally capable of accepting cells with cells normally capable of attaching to such substrate; and

(b) contacting the substrate with a solution containing a polypeptide consisting essentially of the sequence GLY-ARG-GLY-ASP-ALA-PRO.

4,879,238

DEODORANT AND METHOD FOR PREPARING AND STORING SAME

Kosei Hata, Osaka, Japan, assignor to Seikenkai, Japan

Continuation of Ser. No. 260,487, May 4, 1981, abandoned, which is a continuation of Ser. No. 799,319, May 23, 1977, abandoned. This application Apr. 30, 1984, Ser. No. 604,417

Int. Cl.⁴ C12N *1/38, 1/36, 1/20*

U.S. Cl. 435—244 29 Claims

1. A method for culturing a living, autotrophic bacteria for the deodorization of excrement which comprises culturing said bacteria in a medium comprising said excrement containing one or more S-, N- and C-containing compounds which are present as foul-smelling substances in said excrement and/or an amino acid selected from the group consisting of cystine, cysteine, methionine, glycine, glutamic acid, alanine, aminobutyric acid, lysine, trysosine and histidine, said culturing being conducted for a time and under conditions to effect multiplication of the autotrophic bacteria sufficient to provide deodorization of said excrement, wherein said one or more S-, N- and C-containing compounds and/or amino acids are present in an amount sufficient to accelerate the rate of growth of the bacteria when they enter logarithmic phase relative to the rate of growth in the absence of said S-, N- and C-containing compounds and/or amino acids.

4,879,239

METHOD OF CULTURING FREEZE-DRIED MICROORGANISMS AND RESULTANT PREPARATION

Pierre-Marc Daggett, Rockville, and Frank P. Simione, Olney, both of Md., assignors to American Type Culture Collection, Rockville, Md.

Continuation-in-part of Ser. No. 548,418, Nov. 3, 1983, Pat. No. 4,672,037. This application Sep. 9, 1986, Ser. No. 905,175

The portion of the term of this patent subsequent to Jun. 9, 2004, has been disclaimed.

Int. Cl.⁴ C12N *1/20, 1/16, 1/04;* **C12Q** *1/06*

U.S. Cl. 435—252.1 6 Claims

1. A freeze-dried preparation of microorganisms comprising a population of viable microorganisms which survive freeze-drying and nutrient medium in a sealed vessel, said nutrient medium added prior to freeze-drying, wherein the population of viable microorganisms which survive freeze-drying is determined prior to freeze-drying to ensure that the population of viable microorganisms which survive freeze-drying relative to the concentration and volume of nutrients in said nutrient medium is sufficient to support substantial logarithmic growth of the population of viable microorganisms in said preparation upon rehydration with a fixed volume of water, wherein said fixed volume of water is sufficient to initiate substantial logarithmic growth of said population of viable microorganisms in said preparation and a sufficient amount of colloidal component to form said freeze-dried preparation of microorganisms into a plug.

4,879,240

MICROBIAL CONTROL OF HYDROGEN SULFIDE PRODUCTION BY SULFATE REDUCING BACTERIA

Kerry L. Sublette, Tulsa, Okla.; Maron E. Woolsey, Tulsa, Okla.; Francis S. Manning, Tulsa, Okla.; Anne D. Montgomery, San Antonio, Tex., and Michael J. McInerney, Norman, Okla., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Jul. 19, 1988, Ser. No. 221,152

Int. Cl.⁴ C12N *1/20*

U.S. Cl. 435—252.1 10 Claims

1. A method of controlling the biogenic production of sulfide in an environment containing sulfate and sulfate-reducing bacteria and sulfide produced by the conversion of said sulfate by said sulfate-reducing bacteria wherein said sulfate-reducing bacteria would otherwise continue to convert said sulfate to sulfide comprising the step of introducing into said environment a strain of *Thiobacillus dentrificans* which is resistant to sulfide concentrations in excess of 200 μm.

4,879,241

TYLOSIN RESISTANCE-CONFERRING GENE, DESIGNATED TLRB, FOR USE IN STREPTOMYCES AND OTHER ORGANISMS

Virginia A. Birmingham, Carmel, and Eugene T. Seno, Indianapolis, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Jun. 5, 1986, Ser. No. 871,051

Int. Cl.⁴ C12N *1/20, 15/00, 1/00;* **C12P** *21/00, 11/34;* **C12R** *1/465;* **C07H** *15/12*

U.S. Cl. 435—253.5 22 Claims

1. The insulated tlrB gene of *Streptomyces fradiae.*

4,879,242

METHOD OF SYRINGING REACTION BEAD IN EXAMINATION OF BLOOD OR THE LIKE AND APPARATUS THEREOF

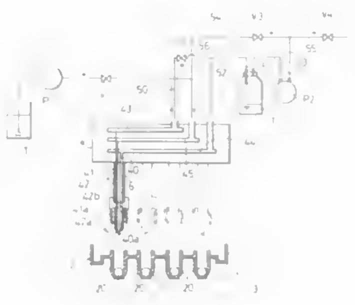
Yasunobu Tsukioka, 1389-33, Tsurugasone, Yashio-shi, Saitama-ken, Japan

Filed Jan. 16, 1987, Ser. No. 4,146

Claims priority, application Japan, Nov. 18, 1986, 61-274968

Int. Cl.⁴ G01N *35/00*

U.S. Cl. 436—54 7 Claims



1. An apparatus for exposing reaction beads to a fluid, comprising:

bead containing means for holding a reaction bead, comprising a flask;

support means for supporting said flask;

a liquid supply nozzle for supplying liquid to a reaction bead in said flask supported by said holding means, said liquid supply nozzle having one free end portion and one terminal end portion;

a suction nozzle, distinct from said liquid supply nozzle, for suctioning liquid out from said flask, said suction nozzle having one terminal end portion and one free end portion;

an air jet nozzle for blowing air into said flask simultaneously with the suctioning of liquid out from said flask by said suction nozzle, said air jet nozzle having one free end portion and one terminal end portion;

means for simultaneously positioning said free end portions of said suction nozzle and said air jet nozzle within said flask so that said free end of said air jet nozzle is positioned on one side of said flask and said free end of said suction nozzle is positioned on an opposite side of said flask; and

means for blowing air into said flask through said air jet nozzle simultaneously with said suctioning of liquid out from said flask by said suction nozzle.

4,879,243

USE OF SUBSTITUTED ORTHO-QUINONES AS ELECTRON TRANSFER AGENTS IN ANALYTICAL DETERMINATIONS

Albert J. Mura, and Robert W. Zercie, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 26, 1987, Ser. No. 53,916

The portion of the term of this patent subsequent to May 24, 2005, has been disclaimed.

Int. Cl.⁴ G01N *33/48*

U.S. Cl. 436—63 7 Claims

1. A method for the determination of an analyte in a liquid comprising the steps of:

A. at a pH of 9 or less contacting a sample of the liquid with a composition comprising

(a) an electron transfer agent (ETA) which is a stable, ethanol soluble 1,2-benzoquinone with methoxy groups or a fused 1,4-dioxane ring in positions 4 and 5 or with a substituted or unsubstituted lower alkoxy group at position 4 and a fused five- or six-membered carbocyclic or hetercyclic ring at positions 5 and 6, said substituents being present such that the reduction potential, $E_{1/2}$, of said ETA falls within the range of about −320 to 400 mV,

(b) a reducible composition which provides a detectable species when reduced by the ETA, and

B. detecting said detectable species.

4,879,244

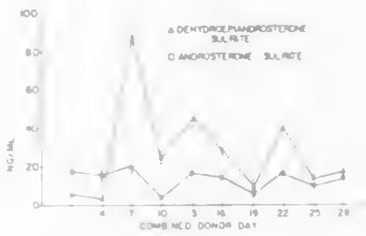
BIRTH CONTROL METHOD INVOLVING MONITORING OF AXILLARY ANDROSTENOL AND DEHYDROEPIANDROSTERONE

Winnifred B. Cutler, Haverford; George Preti, Horsham, both of Pa., and George R. Huggins, Parkton, Md., assignors to Monell Chemical Senses Center and University of Pennsylvania, both of Philadelphia, Pa.

Division of Ser. No. 695,053, Jan. 25, 1985, Pat. No. 4,670,401. This application Jan. 20, 1987, Ser. No. 5,240

Int. Cl.⁴ G01N *33/487*

U.S. Cl. 436—65 11 Claims



1. A birth control method comprising the steps of.

(a) determining the onset of the fertile period of a human female by monitoring the variation in concentration in the axillary secretions of said female of a compound selected from the group consisting of androstenol and a dehydroepiandrosterone, by beginning said monitoring at the cessation of menses until a first significant increase in a concentration of at least one of said compounds indicates the onset of the fertile period; and

(b) causing said human female to avoid exposure to fertilization beginning from about that time until at least about 1 day following the expected time of ovulation.

4,879,245

MEASURING THE CONCENTRATION OF TWO COMPONENTS IN A GAS BLEND

Alois Ruse, Oberursel, Fed. Rep. of Germany, assignor to Hartmann & Braun AG, Frankfurt am Main, Fed. Rep. of Germany

Filed Aug. 5, 1985, Ser. No. 762,714

Claims priority, application Fed. Rep. of Germany, Aug. 4, 1984, 3428814; Sep. 4, 1984, 3432444

Int. Cl.⁴ G01N *33/00*

U.S. Cl. 436—124 3 Claims

1. Method for ascertaining the concentration of two components in a gaseous blend, wherein the gases are amenable for reacting with each other, comprising the steps of:

using a single analyzer and a reaction chamber in an input path for the analyzer and bypassing that reaction chamber for alternatingly ascertaining a depleted and an unde-

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pleted concentration of the component with the larger concentration;

measuring the concentration of that one of the two components expected to have a larger concentration, by means of said single analyzer, including as substeps bypassing the reaction chamber and storing temporarily a measured value as measured by the analyzer when bypassing the reaction chamber, and indicating a representation of that measured value;

causing the two components to react to form a new compound such that one of the two components having a smaller concentration, is completely used up by the reaction to obtain said depleted concentration;

measuring a residual concentration of the first, mentioned larger concentration component following the reaction in the reaction chamber to thereby ascertain that portion of that larger concentration component not used up by the reaction, and storing separately a resulting measuring value; and

forming the difference between the two measured values as indication and representation of the component with the smaller concentration.

4,879,246

METHOD AND DEVICE FOR MINERALIZATION OF CARBONACEOUS MATERIAL

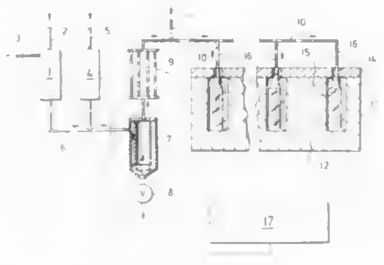
Petr Püschel; Zdenek Formánek, both of Most; Václav Krivanek, Louny-Dobromerice; Antonín Pokorny, Most; Anna Vlasáková, Most, and Alena Stuchíková, Most, all of Czechoslovakia, assignors to Tessek sdruzeni Praha, Prague, Czechoslovakia

Filed Nov. 3, 1987, Ser. No. 116,435

Claims priority, application Czechoslovakia, Nov. 3, 1986, 7950-86; Jun. 18, 1987, 4502-87

Int. Cl.^{4} G01N *25/22, 31/12*

U.S. Cl. 436—145 11 Claims



1. Method for the mineralization of a carbonaceous material specimen comprising the steps of

heating the specimen to a temperature ranging from 300 to 400 degrees C. for 6 to 20 hours at atmospheric pressure in a stream of oxygen at a rate of 0.03 to 0.15 ml per second per gram of specimen,

adding to the stream of oxygen, in an amount of 1 to 6 volume percent, a gas possessing a higher oxidation strength than that of oxygen, said gas being selected from the group consisting of ozone, nitrogen, oxides, chlorine and mixtures thereof.

2. An apparatus for the mineralization of a carbonaceous material specimen comprising

a heatable block having a flat bottom, and

mineralization flasks having necks;

said heatable block being provided with cylindrical holes for inserting the mineralization flasks containing the specimens;

a lid provided with openings for the necks of the mineralization flasks; said mineralization flasks having a cylindrical shape that conically tapers towards the neck;

a plurality of capillaries loosely inserted into the necks of said flasks; and

a distributor of a mineralization of gas mixture, said capillaries being connected to said distributor for feeding said gas mixture into said flasks.

4,879,247

METHOD AND APPARATUS FOR ISOCRATIC AFFINITY CHROMATOGRAPHY

Sten Ohlson, Lund, Sweden, assignor to Perstorp Biolytica, Sweden

Filed Feb. 26, 1988, Ser. No. 160,579

Claims priority, application Sweden, Mar. 6, 1987, 8700949

Int. Cl.^{4} G01N *33/53;* **B01D** *15/08*

U.S. Cl. 436—527 14 Claims

1. A method for separating a substance from a heterogeneous solution by isocratic affinity chromatography comprising the steps of:

providing a stationary phase comprising microparticulate carriers having ligands bound thereto, said ligands being capable of weakly interacting with said substance wherein the thermodynamic dissociation constant for the interaction between said substance and ligand is greater than about 10^{-3};

contacting said heterogeneous solution with said stationary phase under isocratic conditions where said substance weakly interacts with said ligand to provide separation of said substance from said heterogeneous solution under isocratic conditions.

4,879,248

ASSAY FOR TRICHOTHECENES

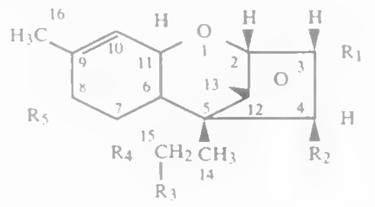
Fun S. Chu; Ru-Dong Wei, and Guang S. Zhang, all of Madison, Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed Apr. 28, 1987, Ser. No. 43,648

Int. Cl.^{4} G01N *33/531, 33/543, 33/537;* **B63H** *1/08*

U.S. Cl. 436—543 7 Claims

1. An assay for the presence in a sample of a trichothecene having at least three hydroxyl groups at the R_1-R_5 positions, the trichothecene having the formula:



the assay comprising the steps of:

converting a hydroxyl group of the trichothecene to an organic moiety linked to the remainder of the trichothecene by oxygen, so as to form a variant with no more than two hydroxyl groups at the R_1-R_5 positions; and

adding an antibody capable of binding to the variant j and determining the presence of said trichothecene in said sample as a measure of said antibody binding to said variant.

4,879,249

LINKER COMPOUNDS, LINKER-COMPOUND-LIGANDS AND LINKER-COMPOUND-RECEPTORS

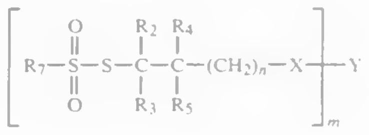
Thomas O. Baldwin, 801 Delma Dr.; Thomas F. Holzman, 807 D Nauidad, both of Bryan, Tex. 77801; Paul S. Satoh, 1424 Surrey, Portage, Mich. 49081, and Frederick S. Yein, 907 Boswell La., Kalamazoo, Mich. 49007

Division of Ser. No. 469,852, Feb. 25, 1983, Pat. No. 4,614,712. This application Mar. 17, 1986, Ser. No. 840,187

Int. Cl.^{4} G01N *33/532;* **C07D** *213/62, 209/48*

U.S. Cl. 436—543 2 Claims

2. A linker-compound-ligand or a linker-compound-receptor of the formula



$$\left[R_7-\overset{\overset{\displaystyle O}{\|}}{\underset{\underset{\displaystyle O}{\|}}{S}}-S-\overset{\overset{\displaystyle R_2}{|}}{\underset{\underset{\displaystyle R_3}{|}}{C}}-\overset{\overset{\displaystyle R_4}{|}}{\underset{\underset{\displaystyle R_5}{|}}{C}}-(CH_2)_n-X-\right]_m Y$$

wherein

R_7 is a lower alkyl group having from 1 to 6 carbon atoms; phenyl; phenyl substituted with fluoro, nitro or a lower alkyl group having from 1 to 4 carbon atoms; 2-pyridyl; or 4-pyridyl; n is zero to 15;

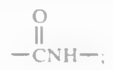
R_2 and R_3 are the same and are hydrogen, methyl or ethyl;

R_4 and R_5 are the same and are hydrogen, methyl or ethyl; or R_2, R_3.

R_4 and R_5 taken together with the carbon atoms to which they are attached represent a cycloalkyl group having from 4 to 6 carbon atoms, or represent 1,4-phenylene with the proviso that when R_7 is a lower alkyl group having one carbon atom or phenyl substituted with a lower alkyl group having one carbon atom and n is zero and each of R_2, R_3, R_4 and R_5 is hydrogen,

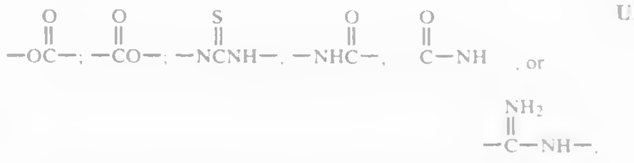
m is an integer equivalent to the number of reactive functions present on the ligand or receptor capable of reacting with the linker compound;

X represents the functional linkage between the linker compound and the ligand or receptor and is



$$-\overset{\overset{\displaystyle O}{\|}}{C}NH-;$$

—NR— wherein R is hydrogen or any group which may be present on the ligand or receptor functional secondary amine;



$$-O\overset{\overset{\displaystyle O}{\|}}{C}-;\ -\overset{\overset{\displaystyle O}{\|}}{C}O-;\ -N\overset{\overset{\displaystyle S}{\|}}{C}NH-,\ -NH\overset{\overset{\displaystyle O}{\|}}{C}-,\ \overset{\overset{\displaystyle O}{\|}}{C}-NH\text{, or }-\overset{\overset{\displaystyle NH_2}{\|}}{C}-NH-.$$

Y represents the ligand or receptor to be labeled or assayed absent the functional group which reacted with the linker compound.

4,879,250

METHOD OF MAKING A MONOLITHIC INTERLEAVED LED/PIN PHOTODETECTOR ARRAY

Eric Y. Chan, Mercer Island, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Sep. 29, 1988, Ser. No. 251,134

Int. Cl.^{4} H01L *31/18, 21/20*

U.S. Cl. 437—3 9 Claims

1. A process for fabricating an integrated optical device, comprising the steps of:

in a single epitaxial growth operation and in succession on a substrate, growing an intrinsic layer, a first confining layer, an active light emitting layer, a second confining layer, and a cap layer;

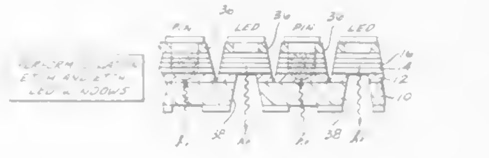
depositing an insulating layer on said cap layer;

opening a plurality of first holes through said insulating layer to said cap layer;

diffusing a conductivity effecting material through said first holes into said intrinsic layer;

opening a plurality of second holes through said insulating layer to said cap layer;

forming first and second metal p-contacts on said insulating layer, one of said first metal p-contacts being formed through each of said first holes, one of said second metal p-contacts being formed through each of said second holes;



forming metal n-contacts on a side of said substrate that lies opposite said insulating layer, said metal n-contacts being arranged to leave portions of said substrate exposed, one of said exposed portions lying opposite each of said first and second metal p-contacts;

etching an isolation groove between each of said first and second metal p-contacts, said grooves extending into said intrinsic layer; and

etching windows through said substrate and said intrinsic layer to said first confining layer, one of said windows being etched opposite each of said second metal p-contacts.

4,879,251

METHOD OF MAKING SERIES-CONNECTED, THIN-FILM SOLAR MODULE FORMED OF CRYSTALLINE SILICON

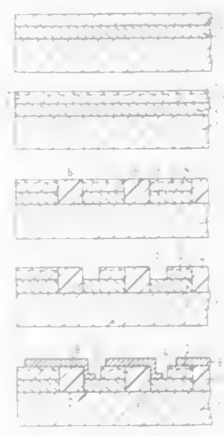
Wolfgang Kruebler, Unterhaching, and Peter Milla, Munich, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jul. 21, 1988, Ser. No. 222,505

Claims priority, application Fed. Rep. of Germany, Aug. 20, 1987, 3727826

Int. Cl.^{4} H01L *31/18, 27/14*

U.S. Cl. 437—4 11 Claims



1. A method for manufacturing a series-connected, thin-film solar cell module of crystalline silicon comprising the steps of

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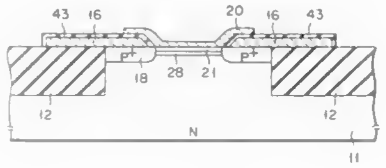
(a) applying an electrically conductive layer (2) over the surface of a large-area substrate (1) of glass or ceramic;
(b) applying a polycrystalline, p-doped silicon layer (3) to the surface of said conductive layer (2) which has a grain size of 200 through 500 micrometers;
(c) forming a pn-junction (4) in said silicon layer (3) by introducing n-dopant atoms or, respectively, ions;
(d) forming trenchs in said electrically conductive layer (2) and said silicon layer (3) to produce strips where the trenches extend down onto the surface of the substrate (1) with a spacing of about 1 to 2 cm;
(e) filling said trenches with an electrically insulating material (6);
(f) forming holes (7) for the series-interconnection of the individual cells, which are formed to a depth in the silicon layer (3) until the electrically conductive layer (2) which forms the back electrode (2) is exposed; and
(g) applying a metallic grid structure (8, 9) to the surface of said silicon layer (3) with a silk screening method, such that the grid structure (8, 9) forms a front electrode (9) and also forms an electrical contact (8) to the back electrode (2) of the respectively neighboring strip cell that lies exposed through holes (7).

4,879,252
SEMICONDUCTOR DEVICE AND A METHOD OF MANUFACTURING THE SAME

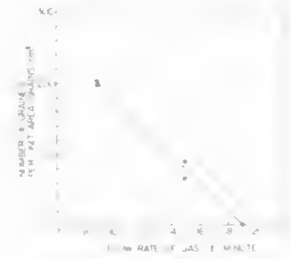
Shigeru Komatsu, Kitakyushu, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Jan. 25, 1988, Ser. No. 148,332
Claims priority, application Japan, Jan. 27, 1987, 62-15223
Int. Cl.⁴ H01L *21/265*
U.S. Cl. 437—31 6 Claims



1. A method of manufacturing a semiconductor device comprising the steps of:
forming an insulating layer in a semiconductor substrate, for defining a semiconductor region of a first conductivity type separated from other semiconductor regions;
forming a first silicon dioxide layer, a silicon nitride layer and a first polysilicon semiconductor layer of the first conductivity type and a high impurity concentration on said semiconductor region in a successive manner in the order specified, and patterning these layer to form a layered structure on an emitter forming region;
forming a second polysilicon semiconductor layer on the semiconductor structure, and patterning the second layer;
implanting impurity ions of a second conductivity type into said second polysilicon semiconductor layer;
thermally heating the semiconductor structure resulting from the previous step to diffuse the impurity implanted in said second polysilicon semiconductor layer into said semiconductor region, so that a first region of the second conductivity type, which is in contact with said insulating layer and is between the insulating layer and the emitter forming region is formed in said semiconductor region, and to diffuse the impurity inplanted in said first polysilicon semiconductor layer into that portion of said second polysilicon semiconductor layer, to change the conductivity type of said portion of said first polysilicon semiconductor layer from said second conductivity type to said first conductivity type;
removing said first polysilicon semiconductor layer and said portion of the first conductivity type of said second polysilicon semiconductor layer;
thermally heating the semiconductor structure to form a second silicon dioxide layer on said first polysilicon layer to be thicker than said first silicon dioxide layer under said silicon nitride layer;
removing said silicon nitride layer and said first silicon dioxide layer to expose said semiconductor region;
forming a third polysilicon semiconductor layer on the semiconductor structure, and patterning the third layer;
implanting impurity ions of the second conductivity type into said third polysilicon semiconductor layer, and thermally heating the third layer to diffuse the impurity implanted therein into said semiconductor region to form a second region of the second conductivity type acting as an active base region in contact with said first region of the second conductivity type; and
forming a region of the first conductivity type acting as an emitter region in a part of said second region of the second conductivity type by implanting impurity ions of the first conductivity type into said third polysilicon semiconductor layer, and thermally heating the third structure.

4,879,253
METHOD FOR FABRICATING A SEMICONDUCTOR DEVICE USING A BPSG LAYER CONTAINING HIGH CONCENTRATIONS OF PHOSPHORUS AND BORON

Hidetoshi Wakamatsu, Tokyo, Japan, assignor to Oki Electric Industry Co., Ltd., Tokyo, Japan
Filed Sep. 27, 1988, Ser. No. 250,135
Claims priority, application Japan, Sep. 28, 1987, 61-240629
Int. Cl.⁴ H01L *21/90*
U.S. Cl. 437—41 10 Claims

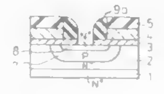


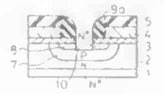
6. A method for fabricating a semiconductor device including an insulating borophosphosilicate glass layer, the method comprising the steps of:
(a) providing a semiconductor substrate having an element region and a separation region thereon by formation of a thermally oxidized SiO_2 film;
(b) forming a gate insulating film on the element region;
(c) forming a first conductive layer over the construction obtained in the above step;
(d) removing the first conductive layer and the gate insulating layer selectively to expose part of the substrate;
(e) forming a diffusion layer on the exposed portions of the semiconductor substrate;
(f) forming, over the entire surface of the substrate obtained the above step, a borophosphosilicate glass layer which contains about 2 to 5 wt % of boron and about 5 to 8 wt % of phosphorus provided that the total content is in the range of from 7 to 10 wt %;
(g) subjecting the substrate to thermal treatment at a temperature of not lower than 940° C. format least 15 minutes in an atmospheric gas supplied at a flow rate of not lower than 19 liters/minute so that the borophosphosilicate glass layer becomes smooth on the surface thereof without formation of undesirable grains on the surface;
(h) forming an opening in the smooth borophosphosilicate layer; and

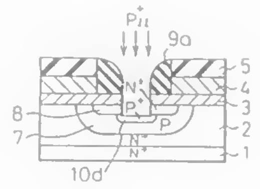
(i) forming a second conductive layer on a region including the opening.

4,879,254
METHOD OF MANUFACTURING A DMOS

Yukio Tsuzuki, Nukata, and Masami Yamaoka, Anjo, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan
Filed Jun. 9, 1988, Ser. No. 204,375
Claims priority, application Japan, Jun. 10, 1987, 62-144245
Int. Cl.⁴ H01L *21/316*
U.S. Cl. 437—41 7 Claims



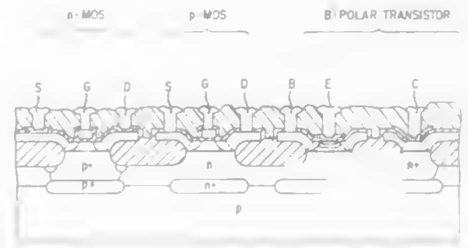




1. A method of manufacturing a semiconductor device, which comprises the steps of:
forming a first conductivity-type layer, having a low impurity atom concentration, on one main surface of a substrate;
forming a first insulating layer on one main surface of said first conductivity-type layer followed by forming a gate electrode layer and a second insulating layer successively on a region of said first insulating layer;
forming, in said first conductivity-type layer, both a second conductivity-type region and a first conductivity-type region having a narrower width than that of said second conductivity-type region by doping impurities into said first conductivity-type layer utilizing said second insulating layer as a mask:
forming a side wall of an insulating material on at least a side portion of said gate electrode layer;
forming a conductive portion penetrating through said first conductivity-type region and extending into said second-conductivity-type region utilizing said second insulating layer and said insulating material on said side wall as a mask;
excessively etching said insulating material on said side wall, said first insulating layer, and said second insulating layer to widen an area defined by said side wall;
forming a first electrode electrically connected to said first conductivity-type region and said second-conductivity-type region through said conductive portion on a main surface of said first conductivity-type layer; and
forming a second electrode on an opposite side of a main surface of said substrate.

4,879,255
METHOD FOR FABRICATING BIPOLAR-MOS DEVICES

Tatsuya Deguchi, and Fumitake Mieno, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan
Filed Jun. 1, 1988, Ser. No. 200,863
Claims priority, application Japan, Jun. 4, 1987, 62-140351
Int. Cl.⁴ H01L *21/225, 21/76*
U.S. Cl. 431—59 2 Claims



1. A method for fabricating a bipolar-MOS (metal oxide semiconductor) device including an n channel MOS-FET (field effect transistor), a p channel MOS-FET and an npn bipolar transistor, each fabricated in a silicon single crystal layer grown in openings formed in a field oxide layer covering a silicon substrate, said process comprising the steps of:
(a) forming a field oxide layer over said silicon substrate, said field oxide layer having openings at the portions where said n channel MOS-FET, p channel MOS-FET and said npn bipolar transistor are fabricated;
(b) growing epitaxial single crystal silicon layers over the surfaces of said substrate exposed in said openings, simultaneously growing a polysilicon layer over said field oxide layer;
(c) patterning said polysilicon layer so as to separate into said single crystal silicon layers and adjacent polysilicon layers thereof, said separate adjacent polysilicon layers being source and drain contact regions of said n channel MOS-FET and p channel MOS-FET, and base and collector contact regions of said bipolar transistor;
(d) forming gate electrodes on said single crystal silicon layers with a gate oxide film at the portions where said n channel and p channel MOS-FET are fabricated, and forming a base mask layer on said single crystal silicon layer adjacent to said base contact region;
(e) selectively implanting p type impurities into said single crystal silicon layers and said adjacent polysilicon layers by ion implantation by using said gate electrode on said p channel MOS-FET portion and said base mask layer as masks so as to form a source region and a drain region in said single crystal silicon layer for said p channel MOS-FET and said source contact region and said drain contact region in said adjacent polysilicon layer for said p channel MOS-FET, and to form said base contact region in said adjacent polysilicon layer for said pnp bipolar transistor and an external base region in said single crystal silicon layer for said pnp bipolar transistor;
(f) selectively implanting n type impurities into said single crystal silicon layers and said adjacent polysilicon layers by ion implantation by using said gate electrode on said n channel MOS-FET portion as a mask so as to form a source region and a drain region in said single crystal silicon layer for said n channel MOS-FET and said source contact region and said drain contact region in said adjacent polysilicon layer for said p channel MOS-FET, and to form a collector contact area in said single crystal silicon layer for said npn bipolar transistor and said collector contact region in said adjacent polysilicon layer for said npn bipolar transistor;
(g) removing said base mask layer;
(h) introducing p-type impurities into said single crystal silicon layer in which said external base region is formed

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so as to form an internal base region extending to said external base region; and

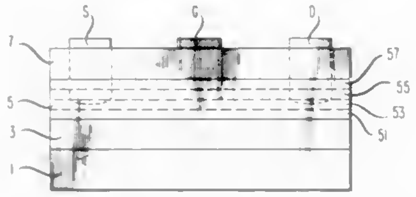
(i) selectively introducing n type impurities into said internal base region to form an emitter region in said internal base region, wherein a vertical non bipolar transistor is formed in said single crystal silicon layer on the npn bipolar transistor portion.

4,879,256
METHOD OF CONTROLLING THE ORDER-DISORDER STATE IN A SEMICONDUCTOR DEVICE

John C. Bean, New Providence, and Abbas Ourmazd, Middletown, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Mar. 28, 1989, Ser. No. 331,063
Int. Cl.⁴ H01R *21/20*

U.S. Cl. 437—131 6 Claims



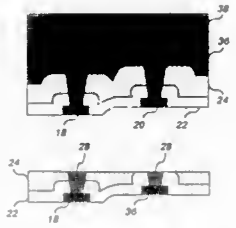
1. In the manufacture or use of a semiconductor device, a method for ordering at least a disordered portion of at least one semiconductor-alloy epitaxial layer comprising Ge_xSi_{1-x}, x greater than or equal to 0.0 and less than or equal to 1.0, said method comprising a step of heating said portion to a temperature which lies below a critical temperature, said heating being applied as said layer is in a strained state.

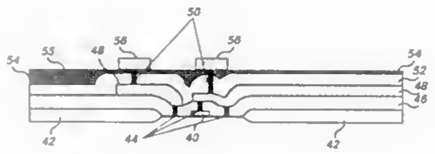
4,879,257
PLANARIZATION PROCESS

Roger Patrick, Palo Alto, Calif., assignor to LSI Logic Corporation, Milpitas, Calif.

Filed Nov. 18, 1987, Ser. No. 122,245
Int. Cl.⁴ H01L *21/283, 21/316*

U.S. Cl. 437—195 12 Claims





11. A method for manufacturing a multilayer integrated circuit comprising:

(a) forming a plurality of components on an integrated circuit substrate to form a first component layer;

(b) forming a layer of interconnecting metallization over said components;

(c) depositing a first layer of dielectric material over said metallization layer;

(d) depositing a second layer of dielectric material over said first layer of dielectric material;

(e) masking said second dielectric layer wherein said mask permits etching in those areas where a contact with said first layer of interconnecting metallization is desired;

(f) etching to produce cavities through said first and second dielectric layers wherein said cavities expose said first layer of interconnecting metallization in those areas where contact with said first layer of interconnecting metallization is desired;

(g) filling said cavities with metal to form metal filled cavities;

(h) depositing a layer of photoresist over said second dielectric layer and said metal filled cavities;

(i) etching the integrated circuit with a chemistry which etches dielectric, metal and photoresist at substantially the same rate wherein said etching removes said photoresist and portions of said dielectric and metal filled cavities to expose said metal filled cavities and produce a top surface on said integrated circuit which is substantially planar;

(j) depositing another interconnecting metallization layer on said planar surface wherein said metallization layer contacts said metal filled cavities in selected areas; and

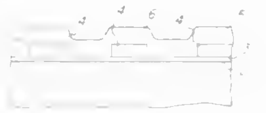
(k) Repeating steps (c) through (j) to form additional layers of interconnecting metallization patterns.

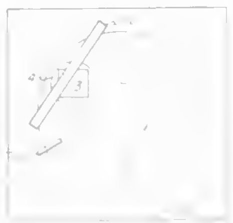
4,879,258
INTEGRATED CIRCUIT PLANARIZATION BY MECHANICAL POLISHING

Wayne G. Fisber, Allen, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 31, 1988, Ser. No. 238,954
Int. Cl.⁴ H01L *21/304, 21/306*

U.S. Cl. 437—225 7 Claims





1. A process for producing a substantially planar surface on a semiconductor wafer after said wafer has been polished and subsequent processing has been accomplished which results in a nonplanar surface, comprising the steps of:

contacting said nonplanar surface of said wafer to an abrasive by a substantially constant pressure;

moving said wafer and said abrasive relative to each other for a time period while maintaining said substantially constant pressure to cause mechanical removal of material from said wafer;

monitoring the composition of said removed material, and;

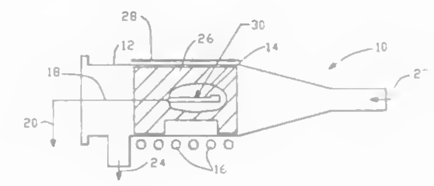
releasing said wafer and said abrasive from contact when a predetermined composition is detected.

4,879,259
RAPID THERMAL ANNEALING OF GALLIUM ARSENIDE WITH TRIMETHYL ARSENIC OVERPRESSURE

Scott K. Reynolds, San Mateo County; Dietrich W. Vook, Santa Clara, and James F. Gibbons, Santa Clara County, all of Calif., assignors to The Board of Trustees of the Leland Stanford Junion University, Stanford, Calif.

Continuation of Ser. No. 101,462, Sep. 28, 1987, abandoned. This application Feb. 1, 1989, Ser. No. 306,268
Int. Cl.⁴ H01L *21/383*

U.S. Cl. 437—247 9 Claims



1. A method of rapid thermal annealing of a silicon implanted Ga/As wafer comprising the steps of

locating and supporting the Ga/As wafer within an annealing chamber,

introducing arsenic from a gas source into said furnace in the region surrounding wafer,

heating the walls of said annealing chamber more rapidly than said wafer to create a wall temperature higher than the condensation point of said arsenic, preventing arsenic condensation on the walls,

annealing said wafer in said arsenic atmosphere to achieve a high activation efficiency.

4,879,260
ALUMINA-ZIRCONIA CERAMIC

William R. Manning, Richmond, Mich., assignor to Champion Spark Plug, Toledo, Ohio

Continuation-in-part of Ser. No. 893,609, Aug. 6, 1986, Pat. No. 4,751,207. This application Jun. 8, 1988, Ser. No. 204,597
The portion of the term of this patent subsequent to Jun. 14, 2005, has been disclaimed.
Int. Cl.⁴ C03C *14/00;* C04B *35/10, 35/48*

U.S. Cl. 501—32 6 Claims

1. A ceramic consisting essentially of from 1 to 15 percent of glass and 99 to 85 percent of a mixture of particulate Al_2O_3 and particulate ZrO_2, the particulates all being finer than 15 microns in ultimate particle size, ZrO_2 constituting from $\frac{1}{4}$ to 4 percent based upon the weight of ZrO_2 and Al_2O_3 in the ceramic, and said glass constituting a vitreous phase bonding the particulates into a dense, gas impervious structure, and being a calcium magnesium silicate glass containing from 45 to 80 percent of SiO_2, from 8 to 55 percent of CaO and MgO, and not more than 15 percent of Al_2O_3.

4,879,261
LOW DIELECTRIC CONSTANT COMPOSITIONS

Ian Burn, Hockessin, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 3,259, Jan. 13, 1987, Pat. No. 4,766,027. This application Aug. 23, 1988, Ser. No. 236,072
Int. Cl.⁴ C03C *14/00*

U.S. Cl. 501—32 8 Claims

1. An alkali-free composition for forming a ceramic dielectric body having a dielectric constant less than 5.0, which is a mixture of finely divided particles consisting essentially of:

(a) 70-85% by weight silica particles and

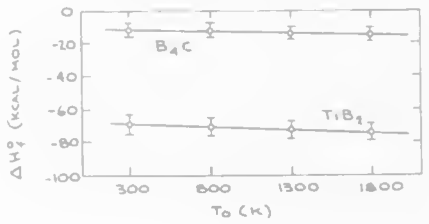
(b) 15-30% by weight zinc borate flux particles.

4,879,262
COMBUSTION SYNTHESIS OF BORIDE AND OTHER COMPOSITES

Danny C. Halverson, Modesto; Beverly Y. Lum, Livermore, and Zuhair A. Munir, Davis, all of Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jul. 28, 1988, Ser. No. 225,413
Int. Cl.⁴ C04G *35/52*

U.S. Cl. 501—87 12 Claims



1. A combustion synthesis method of forming B_4C rich B_4C/TiB_2 composites, comprising:

forming a powder compact of powdered B, C and Ti, or oxides thereof, or hydrides thereof, or mixtures thereof in ratios which produce a B_4C rich composite of selected B_4C/TiB_2 mole ratio;

preheating the powder compact to a predetermined initial temperature prior to combustion, the temperature being determined by the selected B_4C/TiB_2 mole ratio;

producing a self-propagating combustion wave in the powder compact to produce a B_4C/TiB_2 composite of the selected B_4C rich mole ratio.

4,879,263
SLIDING MEMBER OF HIGH STRENGTH AND HIGH ABRASION RESISTANCE

Katsutoshi Komeya, Kanagawa; Hashimoto, Masahiro, Kamakura; Katsutoshi Nishida, and Michiyasu Komatsu, both of Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 17, 1985, Ser. No. 776,836
Claims priority, application Japan, Sep. 18, 1984, 59-194990
Int. Cl.⁴ C04B *35/56*

U.S. Cl. 501—97 5 Claims

1. A sliding member of high strength and high abrasion resistance, preponderantly comprising elongated particles of β-phase silicon nitride and not more than 20% by weight, based on the total amount of said sliding member, of a matrix phase enveloping said silicon nitride particles, said particles having major diameters of not more than 60 μm and aspect ratios of not less than 5, said sliding member having a relative density of not less than 98%, and

said sliding member consisting essentially of silicon nitride and effective amounts of an oxide of a rare earth element, aluminum oxide and a member selected from the group consisting of titanium oxide, zirconium oxide and magnesium oxide, said sliding member formed by mixing not more than 10% by weight of the oxide of a rare earth

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element, not more than 10% by weight of aluminum oxide, not more than 5% by weight of at least one member selected from the group consisting of titanium oxide, zirconium oxide and magnesium oxide, (excluding the case wherein both said oxide of rare earth and aluminum oxide both account for 0% by weight) with silicon nitride powder in proportions such that the ratio of said oxide of rare earth element to aluminum oxide will fall in the range of 0.5 to 10, and sintering the resultant mixture.

4,879,264

METHOD OF MAKING CATALYST AND CATALYST PRECURSOR CONTAINING VANADIUM AND ANTIMONY

Mark A. Toft, Lakewood; James F. Brazdil, Jr., Mayfield Village, and Linda C. Glaeser, Lyndhurst, all of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Filed Nov. 14, 1988, Ser. No. 270,987

Int. Cl.^{4} B01J *23/18, 23/22, 35/08*

U.S. Cl. 502—8 20 Claims

1. A method of making a catalyst precursor having vanadium and antimony in oxide form in the atomic ratio of Sb to V in the range from 0.8 to 4, by aging an aqueous solution containing the monoperoxovanadium ion, $VO(O_2)_+$, until a vanadium-containing sol or gel is formed, and reacting said vanadium while in said aqueous sol or gel form, with an antimony compound which contains Sb having a valence of 3, thereby reducing the average valence of the vanadium to less than 5 and oxidizing antimony to a valence state of 5.

4,879,265

HYDROPROCESSING CATALYST AND PHOSPHOROUS AND CITRIC ACID CONTAINING IMPREGNATING SOLUTION

Howard D. Simpson, Irvine, and Pauline B. Borgens, Diamood Bar, both of Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

Continuation-in-part of Ser. No. 825,058, Jan. 31, 1986, Pat. No. 4,743,359, which is a division of Ser. No. 595,260, Mar. 30, 1984, Pat. No. 4,568,450, which is a division of Ser. No. 409,583, Aug. 19, 1982, Pat. No. 4,455,390. This application May 10, 1988, Ser. No. 192,379

Int. Cl.^{4} B01J *27/19, 27/185, 21/04;* **C10G** *45/08*

U.S. Cl. 502—211 44 Claims

1. A catalytic composition prepared by the method comprising the steps of (1) impregnating porous refractory support particles with an aqueous impregnating solution comprising (a) one or more Group VIB metal components, (b) one or more phosphorus components and (c) citric acid, said citric acid in a mole ratio to said Group VIB metal components calculated as the Group VIB metal trioxide of less than 1 to 1, said solution having a pH less than 1.0 and (2) calcining the impregnated support particles to produce a catalytic composition containing a Group VIB metal component and a phosphorus component on said porous refractory oxide support.

4,879,266

CATALYST FOR PREPARATION OF DIMETHYL CARBONATE

Ajit K. Bhattacharya, Hopewell Junction, N.Y., assignor to Texaco Inc., White Plains, N.Y.

Division of Ser. No. 652,246, Sep. 20, 1984, Pat. No. 4,785,130. This application Jul. 14, 1988, Ser. No. 218,766

Int. Cl.^{4} B01J *31/02*

U.S. Cl. 502—164 11 Claims

1. A composition of matter comprising

(a) a copper hydrocarbonoxy halide $Cu(OR')X$ wherein R' is a hydrocarbon group selected from the group consisting of alkyl, alkaryl, aralkyl, cycloalkyl, and aryl and X is halide; and

(b) at least one second component selected from the group consisting of BX_3, BR'_3, $B(OR')_3$, $R'R_3PX$, and $R'R_3NX$ wherein R is selected from the same group as R'.

4,879,267

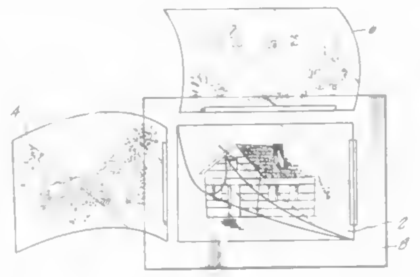
METHOD FOR COLOR AND BLACK AND WHITE REPRODUCTION AND FORMULATION USED THEREWITH

Charles P. Collier, Santa Barbara, Calif., assignor to Fluorographic Services, Inc., Santa Barbara, Calif.

Filed Dec. 14, 1987, Ser. No. 132,401

Int. Cl.^{4} B41M *5/16*

U.S. Cl. 503—201 16 Claims



1. A method of photographic color reproduction of artwork comprising:

adding a solution comprising a colorless coloring agent to colored art materials;

preparing a drawing using said colored art materials with the colorless coloring agent incorporated therein;

sraying the artwork with an acidic spray which causes the colorless coloring agent to become colored;

photographically reproducing the drawing; and

restoring the artwork to its original color by applying an alkaline solution to the artwork.

4,879,268

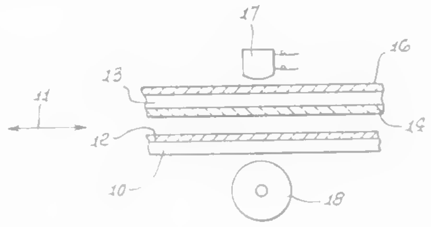
MULTIPLE DOCUMENT PARALLEL PRINTING APPARATUS

Dunstan P. Sheldon, 1752 W. Altadena, Altadena, Calif. 91001

Filed Mar. 30, 1987, Ser. No. 31,703

Int. Cl.^{4} B41M *5/22*

U.S. Cl. 503—201 2 Claims



1. In the method of thermal printing on multiple sheets and employing a thermal head, the steps including

(a) providing a first paper sheet having a coating on one side thereof, the coating consisting of color developer,

(b) providing a separate and second paper sheet having a leuco dye coating on one side thereof and bringing the sheets together to locate the dye coating in facing relation to the color developer layer, to contact same, the second paper sheet readily separable from the first paper sheet.

(c) providing said thermal head to contain electrically heated elements forming alphanumeric or graphic characters,

(d) the second paper sheet provided with a thermal coating at the opposite side thereof, the thermal coating containing a leuco dye and color developer therefor characterized as becoming exposed at locations where heat is applied to said coating from the heated elements at the thermal head,

(e) and providing a backer and locally urging said sheets relatively toward one another between said thermal head and the backer while traveling the sheets lengthwise together relative to the head and backer, at between 1 and 2 inches per second and while locally and simultaneously transferring heat from said head elements to said sheets, via the thermal coating,

(f) said backer comprising a roller, and said sheets being held in adjacent relation between said head and roller,

(g) said roller being elongated, and including the step of orienting said roller widthwise of said sheets which are elongated and traveled lengthwise relative to the head and roller.

4,879,269

PRESSURE SENSITIVE COPY MATERIAL

Naoya Takahasbi, Yokohama; Satoshi Narui, Ayase, and Eiichi Matsuzaka, Kawasaki, all of Japan, assignors to Nippon Petrochemicals Co., Ltd., Japan

Continuation of Ser. No. 946,535, Dec. 24, 1986, abandoned. This application Apr. 3, 1989, Ser. No. 333,791

Claims priority, application Japan, Dec. 26, 1985, 60-297156

Int. Cl.^{4} B41M *5/16, 5/22*

U.S. Cl. 503—213 8 Claims

1. A pressure sensitive copy material using an electron accepting developer and an electron donating coupler which develops a color by contacting with said developer, said pressure sensitive copy material being characterized by employing phenyl-sec-butylphenyl-methane as a solvent for said electron donating coupler, wherein at least 60% of the phenyl-sec-butylphenyl-methane is the meta- or para-isomer or a mixture thereof.

4,879,270

METHOD OF FORMING SUPERCONDUCTING CERAMICS BY ELECTRODEPOSITION

MacRae Maxfield, Plainfield; Ray H. Baughman, Morris Plains; Zafar Igbal, Morristown, and Helmut Eckhardt, Madison, all of N.J., assignors to Allied-Signal Inc., Morris Township, Morris County, N.J.

Filed Apr. 29, 1988, Ser. No. 188,772

Int. Cl.^{4} H01L *39/00;* **C25D** *5/02*

U.S. Cl. 505—1 10 Claims

1. In a method of forming deposits of superconducting ceramics comprising the steps of (a) electrodepositing onto a substrate a mixture of metals, of the type and in proportions sufficient to be oxidized into ceramic, and (b) oxidizing said electrodeposited mixture on said substrate, under conditions sufficient to result in a superconducting ceramic deposit, the improvement wherein the electrodepositing step is conducted in a manner such that a patterned deposit results, with said oxidation step being conducted on said patterned deposit to result in a patterned superconducting deposit.

4,879,271

SCHIFF BASE REACTION PRODUCTS OF ALKYL ANTHRANILATES AND ORGANOLEPTIC USES THEREOF AND DEODORANCY USES THEREOF

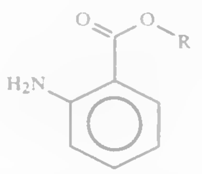
Braja D. Mookherjee, Holmdel; Robert W. Trenkle, Point Pleasant, both of N.J.; Nicholas Calderone, Laurel Hollow, N.Y., and Keith P. Sands, Marlboro, N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 171,778, Mar. 22, 1988, Pat. No. 4,806,363. This application Oct. 7, 1988, Ser. No. 255,023

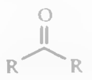
Int. Cl.^{4} A61K *7/46*

U.S. Cl. 512—20 12 Claims

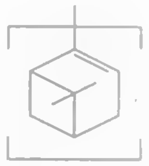
1. A schiff base reaction product produced according to the process of reacting an alkyl anthranilate having the structure

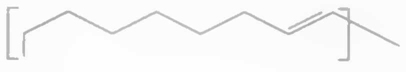


wherein R'' represents methyl or ethyl with a carbonyl-containing compound having the structure:

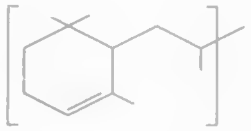


wherein R' represents hydrogen or methyl and R is a moiety selected from the group consisting of:





and



9. A process for augmenting or enhancing the aroma of a perfume composition, cologne or perfumed article comprising the step of intimately admixing with said perfume composition, cologne or perfumed article, an aroma augmenting or enhancing quantity of the schiff base reaction product defined according to claim 1

4,879,272

METHOD AND COMPOSITION FOR PREVENTING THE ADSORPTION OF A MEDICINE

Naoto Shimoda, and Tsutomu Kawaguchi, both of Saitama, Japan, assignors to Chugai Seiyaku Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 4, 1985, Ser. No. 784,640

Claims priority, application Japan, Oct. 9, 1984, 59-210460

The portion of the term of this patent subsequent to Feb. 21, 2006, has been disclaimed.

Int. Cl.^{4} A61K *37/02;* **C07K** *15/14*

U.S. Cl. 514—8 4 Claims

1. A method of preventing erythropoietin in an aqueous solution from being adsorbed on the inner surface of the wall of a container by incorporating in the aqueous solution one or more additives selected from the group consisting of human serum albumin and bovine serum albumin.

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GLUCAGON HOMOLOGS AND THERAPEUTIC USE THEREOF

Robert B. Merrifield, Cresskill, N.J., assignor to The Rockefeller University, New York, N.Y.

Filed May 22, 1987, Ser. No. 53,407

Int. Cl.⁴ A61K *37/28;* **C07K** *7/10, 7/34*

U.S. Cl. 514—12 **16 Claims**

1. des-His^1-[Glu^9] glucagon.

4,879,274

EXTERNAL MEDICATION FOR SKIN

Tetsuro Kamiya; Shuichi Tsuchiya, and Kenji Hara, all of Utsunomiya, Japan, assignors to Kao Corporation, Tokyo, Japan

Filed Sep. 12, 1986, Ser. No. 906,375

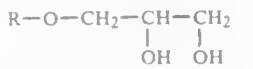
Claims priority, application Japan, Sep. 27, 1985, 60-213961

Int. Cl.⁴ A61K *47/00*

U.S. Cl. 514—12 **20 Claims**

1. An external medication comprising as essential components:

(A) an α-monoglyceryl ether having formula (I):



$$\mathrm{R{-}O{-}CH_2{-}\underset{\underset{\textstyle OH}{|}}{CH}{-}\underset{\underset{\textstyle OH}{|}}{CH_2}}$$

(I)

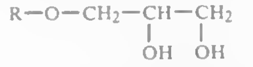
wherein R is a C_{10-24} alkyl or alkenyl group;

(B) a physiologically active material selected from the group consisting of corticosteroids, antimicrobial agents, fungicidal agents, vitamins, antihistamines, local anesthetics and coronary vasodilators; and

(C) an oily material which is in the form of a liquid or paste at 15° C.

2. An external medication comprises as essential components:

(A) an α-monoglyceryl ether having the formula



$$\mathrm{R{-}O{-}CH_2{-}\underset{\underset{\textstyle OH}{|}}{CH}{-}\underset{\underset{\textstyle OH}{|}}{CH_2}}$$

(I)

wherein R is C_{10-24} alkyl or alkenyl group;

(B) a physiologically active material selected from the group consisting of acetaminophen, acetylsalicylic acid, methyl salicylate, glycol salicylate, mefenamic acid, flufenamic acid, indomethacin ibuporfen, diclofenac, alclofenac, oxyphenbutazoone, phenylbutazone, allantoin, l-menthol, camphor, guaiazulene, azulene, glycyrrhetic acid, dipotassium glycyrrhetiate, tinoridine hydrochloride, 5-fluorourasil, cyclophosphamide, busulfan, actinomycin, morphine, codeine, nalorphine, pentazocine, barbital, thiopental, chlorpromazine, reserpine, estradiol, and methyltestosterone; and

(C) an oily material which is in the form of a liquid or paste at 15° C.

4,879,275

PENETRATION ENHANCERS FOR TRANSDERMAL DELIVERY OF SYSTEMIC AGENT

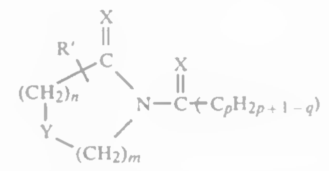
Gevork Minaskanian, Irvine, and James V. Peck, Costa Mesa, both of Calif., assignors to Nelson Research & Development Co., Irvine, Calif.

Continuation-in-part of Ser. No. 103,445, Sep. 30, 1987. This application May 27, 1988, Ser. No. 199,454

Int. Cl.⁴ A01N *31/19, 31/40, 43/36*

U.S. Cl. 514—24 **13 Claims**

1. A method for topically enhancing penetration of systemically active agents through the skin or mucosal membranes of humans and animals and into the bloodstream, wherein said method comprises the topical administration of an effective amount of a systemically active agent and an effective systemic penetrating amount of a membrane penetration enhancer having the structural formula



wherein X represents sulfur, oxygen or 2 hydrogen radicals; Y represents —CH_2—, —NH—or oxygen; n and m are integers of from 1 to 3; p is an integer of from 3 to 17; wherein p≧9; q is 2, 4, 6 or 8; and R′ is selected from the group consisting of H, a lower alkyl group having from 1 to 4 carbon atoms, phenyl, lower alkyl or halogen substituted phenyl, acetamido, halogen, piperidinyl, lower alkyl or halogen substituted piperidinyl, carbalkoxy, carboxamide, and alkanoyl.

4,879,276

METHOD FOR REDUCING SERUM URIC ACID LEVELS

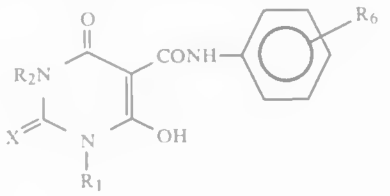
Arthur D. Brewer, Puslinch, Canada, assignor to Uniroyal Chemical Ltd./Uniroyal Chemical Ltee, Don Mills, Canada

Continuation-in-part of Ser. No. 919,922, Oct. 16, 1987, abandoned, which is a continuation of Ser. No. 827,479, Feb. 5, 1986, abandoned, which is a continuation of Ser. No. 699,720, Mar. 21, 1985, abandoned, which is a continuation of Ser. No. 65,267, Oct. 26, 1984, abandoned, which is a continuation-in-part of Ser. No. 562,693, Dec. 19, 1983, abandoned. This application Jan. 11, 1988, Ser. No. 142,626

Int. Cl.⁴ A61K *31/70, 31/505, 31/515*

U.S. Cl. 514—43 **2 Claims**

1. A method for reducing serum uric acid levels in a mammal, which comprises administering to the mammal an effective amount of a compound of the formula:



wherein

R_1 and R_2 may each independently be hydrogen; alkyl, or phenyl, phenalkyl, phenalkenyl or phenalkynyl, the alkyl, alkenyl or alkynyl moieties of which have from one to six carbon atoms;

R_6 is at least one substituent selected from the group consisting of hydrogen; halogen; alkyl, alkenyl, alkynyl, alkoxy or phenyl, phenalkyl, phenalkenyl or phenalkynyl, the alkyl, alkenyl, alkynyl or alkoxy moieties of which have from one to six carbon atoms;

X is oxo or thioxo; and the pharmaceutically acceptable addition salts thereof.

4,879,277

ANTIVIRAL COMPOSITIONS AND METHODS

Hiroaki Mitsuya, Rockville, and Samuel Broder, Bethesda, both of Md., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Continuation-in-part of Ser. No. 2,898, Jan. 13, 1987, abandoned, which is a continuation-in-part of Ser. No. 937,925, Dec. 4, 1986, abandoned, which is a continuation-in-part of Ser. No. 769,017, Aug. 26, 1985, abandoned. This application Aug. 11, 1987, Ser. No. 84,054

Int. Cl.⁴ A61K *31/70;* **C07D** *473/16*

U.S. Cl. 514—49 **17 Claims**

1. A method for treating a patient infected with HIV comprising administering to said patient an effective amount of a composition comprising 2′,3′-dideoxycytidine, a salt, or an ester thereof in a pharmaceutically acceptable carrier.

4,879,278

ISOLATION AND STRUCTURAL ELUCIDATION OF THE CYTOSTATIC LINEAR DEPSIPEPTIDE DOLASTATIN 15

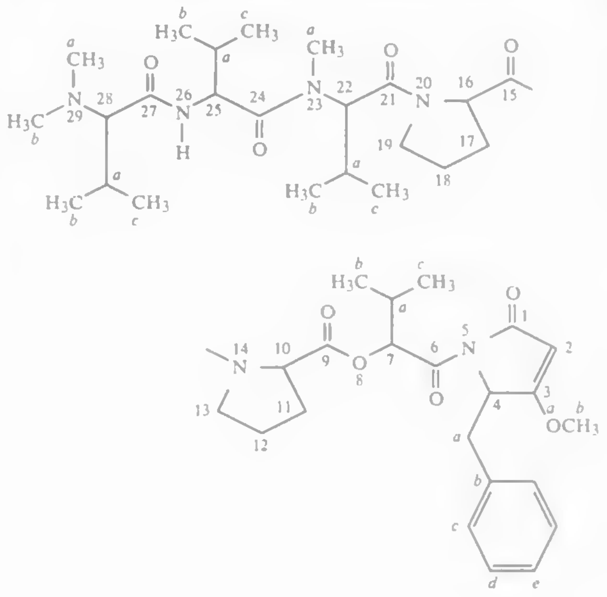
George R. Pettit, Paradise Valley, and Yoshiaki Kamano, Tempe, both of Ariz., assignors to Arizona Board of Regents, Tempe, Ariz.

Filed May 16, 1989, Ser. No. 352,851

Int. Cl.⁴ A61K *37/02;* **C07K** *7/06*

U.S. Cl. 514—17 **8 Claims**

1. A cell growth inhibitory substance denominated dolastatin 15 and having the structural formula:



4,879,280

DIALYSIS SOLUTION FOR USE IN INTRAPERITONEAL DIALYSIS

Günther Seyffart; Wolfgang Rothe, both of Oberursel; Volker Bartz, Giessen, all of Fed. Rep. of Germany, and Volker Bartz, Giessen, all of Fed. Rep. of Germany, assignors to Fresenius AG, Bad Homburg, Fed. Rep. of Germany

Continuation of Ser. No. 420,574, Sep. 20, 1982, abandoned. This application Oct. 4, 1985, Ser. No. 783,802

Claims priority, application Fed. Rep. of Germany, Sep. 24, 1981, 3138104

Int. Cl.⁴ A61K *31/70*

U.S. Cl. 514—53 **8 Claims**

1. A method of intraperitoneal dialysis comprising:

introducing an aqueous composition into the patient's abdomen such that said composition makes its way into the peritoneal cavity of said patient, said composition comprising:

a saccharide as an osmotically active substance and at least one substance for regulating the electrolyte balance in the patient, said saccharide is selected from the group consisting of lactose, saccharose, trehalose, celloboise, gentioboise, meliboise, rutinose, inulin, pectin, and raffinose, the amount of said saccharide being sufficient such that the said composition has an osmotic pressure of 300 to 700 mosm/l.

4,879,281

ARTIFICIAL SALIVA COMPOSITION

Ken-ichiro Shibasaki, Chiba; Hiroshi Itoi, Kamagaya; Shouichi Ohkubo, Tokyo, and Hiroshi Sano, Narashino, all of Japan, assignors to Lion Corporation, Tokyo, Japan

Filed Mar. 18, 1987, Ser. No. 27,388

Claims priority, application Japan, Mar. 24, 1986, 61-66135

Int. Cl.⁴ A61K *31/70*

U.S. Cl. 514—55 **5 Claims**

1. A method of treating hydrodipsia comprising orally administering to a subject suffering from hydrodipsia an artificial saliva composition consisting essentially of at least one buffering compound selected from the group consisting of chitins and chitosans in a medium suitable for an oral composition.

4,879,282

MEDICAL APPLICATION FOR HEPARIN AND RELATED MOLECULES

Michael J. Saliba, Jr., 5582 Thnnderbird La., La Jolla, Calif. 92037

Filed Mar. 17, 1987, Ser. No. 27,195

Int. Cl.⁴ A61K *31/725, 31/70*

U.S. Cl. 514—56 **8 Claims**

1. A method for facilitating transplanting organs, tissues or cells, comprising:

contacting said organs, tissues or cells with a first composition consisting essentially of compounds selected from the group consisting of heparin, heparinoids, and heparin sulfate in a first physiologically acceptable solution having an acidic pH and at a concentration of about 1,500–5,000 units per milliliter, prior to removal of said organs, tissues or cells from a donor patient;

contacting said organs, tissues or cell removed from said donor patient with a second composition consisting essentially of compounds selected from the group consisting of heparin, heparinoids or heparin sulfate in a physiologically acceptable solution having an acidic pH and at a concentration of about 1,500–40,000 units per milliliter; and

transplanting said organs, tissues or cells into a recipient patient, said recipient patient being treated with a third composition consisting essentially of heparin, heparinoids or heparin sulfate in a physiologically acceptable solution in an amount effective to inhibit rejection of said organs, tissues or cells from said recipient patient and reducing the requirement for immunosuppressive drugs.

4,879,283

SOLUTION FOR THE PRESERVATION OF ORGANS

Folkert D. Belzer, and James H. Southard, both of Madison, Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Continuation-in-part of Ser. No. 784,435, Oct. 3, 1985, Pat. No. 4,798,824. This application Dec. 29, 1987, Ser. No. 139,530

The portion of the term of this patent subsequent to Jan. 17, 2006, has been disclaimed.

Int. Cl.⁴ A61K *31/715*

U.S. Cl. 514—60 **12 Claims**

1. A solution for the preservation and storage of organs intended for implantation in a patient requiring such implantation, comprising:

a pharmacologically acceptable storage solution having a solution osmolality of about 320 mOsm/liter and including a lactobionate salt; and

about 5 weight percent hydroxyethyl starch, wherein said starch is substantially free of ethylene glycol, ethylene chlorohydrin, sodium chloride and acetone and has a molecular weight of from about 150,000 to about 350,000 daltons.

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NAPHTHALENE DERIVATIVES HAVING RETINOID TYPE ACTION, THE PROCESS FOR PREPARATION THEREOF AND MEDICINAL AND COSMETIC COMPOSITIONS CONTAINING THEM

Gérard Land, Saint-Gratien; Jean Maignan, Tremblay les Gonesse; Serge Restle, Aulnay Sous Bois, and Gérard Malle, Villiers S/Morin, all of France, assignors to L'Oreal, Paris, France

PCT No. PCT/FR86/00123, § 371 Date Dec. 5, 1986, § 102(e) Date Dec. 5, 1986, PCT Pub. No. WO86/06064, PCT Pub. Date Oct. 23, 1986

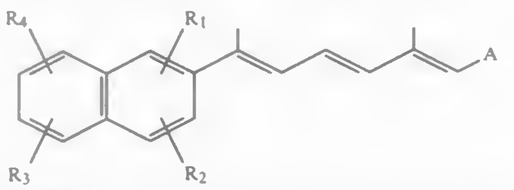
PCT Filed Apr. 14, 1986, Ser. No. 2,708

Claims priority, application France, Apr. 15, 1985, 85 05606

Int. Cl.⁴ C07C *57/42, 103/58;* **A61K** *7/00, 31/19*

U.S. Cl. 514—62 **18 Claims**

1. A chemical compound having the formula



(VI)

wherein

R_1, R_2, R_3, and R_4 are distributed on either of the rings or on both at once and are each, independently, selected from the group consisting of hydrogen, a linear or branched C_1–C_6 alkyl, OH and C_1–C_6 alkoxy; and

A is selected from the group consisting of

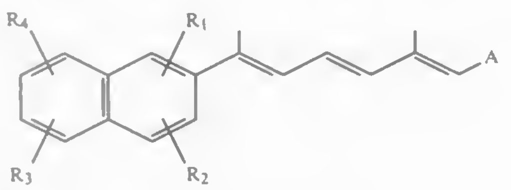
(i) —COR_5 wherein R_5 is selected from the group consisting of hydrogen when at least one of R_1 to R_4 is other than hydrogen; C_1–C_6 alkyl; amino; amino mono-or-disubstituted by C_1–C_6 alkyl or by C_1–C_6 alkyl mono-or polysubstituted by OH or by C_1–C_6 alkyl interrupted by one or more hetero atoms selected from the group consisting of O, S, and N, unsubstituted or substituted by one or more OH groups; arylamino; benzylamino; alicyclic amino; and N-heterocyclic amino radical,

(ii) an amide group of an amino acid or of a glucosamine; and

(iii) —$COOR_6$ wherein R_6 is selected from the group consisting of hydrogen, C_1–C_6 alkyl when one of R_1 to R_4 is other than hydrogen, C_1–C_6 mono- or polyhydroxyalkyl, aryl and benzyl, or OR_6 is (i') $C_6H_9O_6$ —radical derived from glucose, (ii') $C_6H_{11}O_6$ —radical derived from mannitol or (iii') $C_{11}H_9O_4$ —radical derived from erythritol;

or an isomer or salt thereof.

5. A medicinal composition comprising in a pharmaceutically acceptable carrier at least one compound having the formula



(VIA)

wherein

R_1, R_2, R_3, and R_4 are distributed on either of the rings or on both at once and are each, independently, selected from the group consisting of hydrogen, a linear or branched C_1–C_6 alkyl, OH and C_1–C_6 alkoxy; and

A is selected from the group consisting of

(i) —COR_5 wherein R_5 is selected from the group consisting of hydrogen when at least one of R_1 to R_4 is other than hydrogen; C_1–C_6 alkyl; amino; amino mono- or disubstituted by C_1–C_6 alkyl or by C_1–C_6 alkyl mono-or polysubstituted by OH or by C_1–C_6 alkyl interrupted by one or more hetero atoms selected from the group consisting of O, S, and N, unsubstituted or substituted by one or more OH groups; arylamino; benzylamino; alicyclic amino; and N-heterocyclic amino radical,

(ii) an amide group of an amino acid or of a glucosamine; and

(iii) —$COOR_6$ wherein R_6 is selected from the group consisting of hydrogen, C_1–C_6 alkyl when one of R_1 to R_4 is other than hydrogen, C_1–C_6 mono- or polyhydroxyalkyl, aryl and benzyl, or OR_6 is (i') $C_6H_9O_6$ —radical derived from glucose, (ii') $C_6H_{11}O_6$ —radical derived from mannitol or (iii') $C_{11}H_9O_4$ —radical derived from erythritol;

or an isomer or salt thereof.

4,879,285

FERTILITY CONTROL

Christopher O'Neill, Greenwich, Australia, assignor to Royal North Shore Hospital and Area Health Service, St. Leonards, Australia, a part interest

Filed Aug. 18, 1987, Ser. No. 86,900

Claims priority, application Australia, Aug. 22, 1986, PH07642

Int. Cl.⁴ A61K *31/13, 31/557, 31/66*

U.S. Cl. 514—75 **19 Claims**

1. A method of controlling fertility in a female mammal in-vivo or in-vitro which comprises artificially varying the concentration of platelet activating factor (PAF) or PAF analogue around the fertilized embryo so as to control cell division and/or implantation in the uterus.

14. A contraceptive composition for reducing fertility in a female mammal which comprises an effective amount of an antagonist for 1-O-alkyl-2-O-acetyl-sn-glycero-3-phosphocholine (platelet activating factor-PAF), and an effective amount of a further post-coital contraceptive agent, together with a pharmacetically acceptable carrier.

4,879,286

CYCLOPHOSPHAMIDE

Abn S. Alam, Libertyville; Kenneth J. Koziol, Bensenville, and John N. Kapoor, Lake Forest, all of Ill., assignors to Lyphomed, Inc., Rosemont, Ill.

Cootinuation of Ser. No. 8,598, Jan. 28, 1987, abandoned. This application Apr. 4, 1988, Ser. No. 178,761

Int. Cl.⁴ A61K *31/66*

U.S. Cl. 514—110 **1 Claim**

1. A storage-stable, liquid oncolytic formulation for parenteral administration comprising a solution of cyclophosphamide in a substantially anhydrous carrier which comprises about 80 percent propylene glycol and about 20 percent polyethylene glycol, wherein the cyclophosphamide is present in an effective amount up to about one gram per milliliter of solution.

4,879,287

PHARMACEUTICAL COMPOSITION

Norman A. Orr, and Michael J. Greenway, both of Worthing, England, assignors to Beecham Group p.l.c., England

Continuation-in-part of Ser. No. 940,285, Dec. 11, 1986, abandoned. This application Dec. 21, 1988, Ser. No. 288,023

Claims priority, application United Kingdom, Dec. 13, 1985, 8530796

Int. Cl.⁴ A61K *31/56*

U.S. Cl. 514—171 **6 Claims**

1. A pharmaceutical composition for topical application to humans or domestic mammals comprising the hydrated crystalline calcium salt of mupirocin, and a corticosteroid intimately mixed therewith.

4,879,288

NOVEL DIBENZOTHIAZEPINE ANTIPSYCHOTIC

Edward J. Warawa, Wilmington, Del., and Bernard M. Migler, Cherry Hill, N.J., assignors to ICI Americas Inc., Wilmington, Del.

Filed Mar. 20, 1987, Ser. No. 28,473

Claims priority, application United Kingdom, Mar. 27, 1986, 8607684

Int. Cl.⁴ C07D *417/04;* **A61K** *31/555*

U.S. Cl. 514—211 **8 Claims**

1. A compound of formula II
and acid addition salts thereof.

2. A compound as claimed in claim 1 wherein said acid addition salts are phamaceutically acceptable acid addition salts.

5. A pharmaceutical composition comprising a compound of claim 2 in an amount sufficient to manage a psychotic condition in a living mammal in need of such treatment in association with a non-toxic pharmaceutically acceptable diluent or carrier.

6. A pharmaceutical composition comprising a compound of claim 2 in an amount sufficient to reduce hyperactivity in a living mammal in need of such treatment in association with a non-toxic pharmaceutically acceptable diluent or carrier.

4,879,289

METHOD OF AMELIORATING EPILEPTIC SEIZURES

Ray H. Zobrist, and William R. Morrone, both of Olathe, Kans., assignors to Marion Laboratories, Inc., Kansas City, Mo.

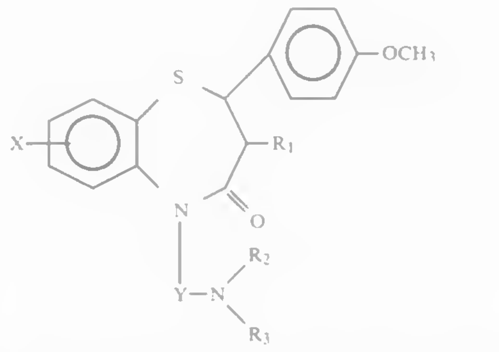
Filed May 24, 1988, Ser. No. 198,054

Int. Cl.⁴ A61K *31/55*

U.S. Cl. 514—211 **10 Claims**

1. A method for ameliorating generalized tonic-colnic type epileptic seizures in mammals comprising systemically administering to a mammal in need of such treatment an effective daily dose of up to 360 mg of a compound having the formula.

I



wherein X is hydrogen, a lower straight chain or branched alkyl, hydroxy, a halogen or a lower straight chain or branched alkyl halide; Y is a lower straight chain or branched alkyl; R_1 is hydrogen, hydroxyl or acetyloxy; R_2 and R_3 are each a lower straight chain or branched alkyl or a non-aromatic cycloalkyl, and pharmaceutically acceptable salts thereof.

4,879,290

AGENTS FOR THE PREVENTION OF RANKING FIGHTS IN PIGS

Peter Kurka, Hilden, and Leppold Goetze, Wuppertal, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

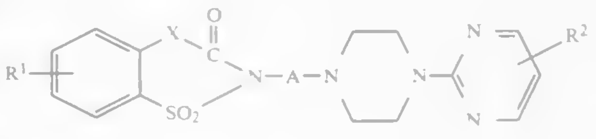
Filed Jun. 6, 1988, Ser. No. 203,039

Claims priority, application Fed. Rep. of Germany, Jun. 16, 1987, 3720074

Int. Cl.⁴ A61K *31/54, 31/50*

U.S. Cl. 514—223.2 **6 Claims**

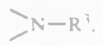
1. A method of suppressing ranking fights during assembly of groups of pigs which comprises administering to such pigs an amount effective therefor of a 2-pyrimidinyl-1-piperazine derivative of the formula (I)



in which

R^1 and R^2 each independently represents at least one radical selected from the groups consisting of hydrogen, C_{1-4}-alkyl, halogen, hydroxyl, nitro, C_{2-4}-alkenyl, C_{1-4}-alkoxy, C_{1-4}-alkylthio, C_{1-4}-halogenoalkyl, C_{1-4}-halogenoalkoxy and C_{1-4}-halogenoalkylmercapto,

X is a direct bond or a radical



R^3 is hydrogen or C_{1-4}-alkyl, and

A is an optionally substituted alkylene radical with up to 6 C atoms,

or a physiologically acceptable salt thereof.

4,879,291

N-ALKYL-2,6-DIMETHYLMORPHOLINOCARBOXAMIDE SALTS, THEIR PREPARATION, AND THEIR USE AS FUNGICIDES

Lothar Banasiak; Wilfried Edlich, both of Potsdam; Horst Lyr, Eberswalde; Eva Nega, and Marianne Sunkel, both of Potsdam-Babelsberg, all of German Democratic Rep., assignors to Institut fuer Pflanzenschutzforschung Kleinmachnow der Akademie der Landwirtschaftswissensbafen der DDR, Kleinmachnow, Fed. Rep. of Germany

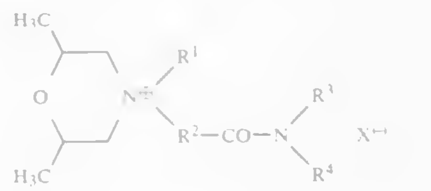
Division of Ser. No. 881,392, Jul. 2, 1986, Pat. No. 4,737,498. This application Dec. 30, 1987, Ser. No. 139,797

Claims priority, application German Democratic Rep., Jul. 5, 1985, 278324

Int. Cl.⁴ A01N *43/84;* **C07D** *265/30*

U.S. Cl. 514—237.8 **7 Claims**

1. An N-alkyl-2,6-dimethylmorpholinocarboxamide salt of the formula (I)



(I)

wherein, R^1 is a straight-chain or branched alkyl of 6 to 20 carbon atoms, R^2 is a straight-chain or branched alkylene of 1 to 6 carbon atoms, R^3 is hydrogen or a straight-chain or branched alkyl of 1 to 4 carbon atoms, R^4 is monochlorophenyl and X^- is an anion of a non-phytotoxic acid.

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CERTAIN-PHENOXY-PHENOXY-ALKYLENE-OXY-PYRIMIDINES OR SYMMETRICAL TRIAZINES, THIO-ANALOGUES THEREOF, HAVING INSECTICIDAL ACTIVITY

Sumio Nishida; Noritada Matsuo, both of Hyogo; Makoto Hatakoshi, Osaka, and Hirosi Kisida, Hyogo, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

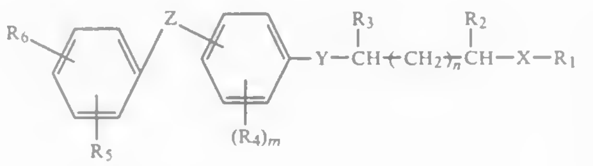
Division of Ser. No. 40,796, Apr. 21, 1987, Pat. No. 4,751,225, which is a continuation of Ser. No. 601,284, Apr. 17, 1984, abandoned. This application Mar. 22, 1988, Ser. No. 171,851

Claims priority, application Japan, Apr. 25, 1983, 59-73400

Int. Cl.⁴ C07D *239/30, 251/28;* **A01N** *43/54, 43/66*

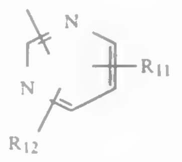
U.S. Cl. 514—241 **37 Claims**

1. A nitrogen-containing heterocyclic compound of the formula:

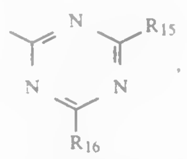


wherein

R$_1$ is one of the following groups:



or



in which R$_{11}$, R$_{12}$, R$_{15}$ and R$_{16}$ are, the same or different, each a hydrogen atom, a halogen atom, a C$_1$–C$_4$ alkyl group, a C$_1$–C$_4$ alkoxy group, a C$_1$–C$_4$ alkylthio group, a trifluoromethyl group or a nitro group;

R$_2$ and R$_3$ are, the same or different, each a hydrogen atom, a halogen atom or a methyl group;

R$_4$ is a halogen atom or a methyl group;

R$_5$ and R$_6$ are, the same or different, each a hydrogen atom, a halogen atom, a C$_1$–C$_4$ alkyl group, a C$_1$–C$_4$ alkoxy group, a C$_1$–C$_4$ haloalkyl group or a C$_1$–C$_4$ haloalkoxy group;

X, Y and Z are, the same or different, each an oxygen atom, a sulfur atom or a methylene group;

m is an integer of 0 to 4; and

n is an integer of 0 to 2.

27. A method for preventing or exterminating insects which comprises applying an insecticidally effective amount of the compound according to claim **3** to the insects.

4,879,293

PYRROLS [3,4-8]PYRAZINE DERIVATIVES, THEIR PRODUCTION AND USE AS ANTI-ANXIETY AGENTS

Kentaro Hiraga, Nagaokakyo, and Yoshiaki Saji, Kawanishi, both of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

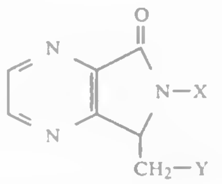
Division of Ser. No. 832,138, Apr. 23, 1986, Pat. No.

Claims priority, application PCT Int'l Appl., Apr. 2, 1982, PCT/JP82/00096; Oct. 7, 1982, PCT/JP82/00401; Feb. 5, 1983, PCT/JP83/00032

Int. Cl.⁴ A61K *31/535, 31/505, 31/50, 31/495, 31/445, 31/44, 31/40, 31/41, 31/47;* **C07D** *401/10, 413/14, 409/14*

U.S. Cl. 514—249 **8 Claims**

1. A compound of the formula



wherein X is a cyclic group of the class consisting of phenyl, naphthyl, pyridyl, pyridazinyl, pyrazinyl, pyrimidinyl, quinolyl, naphthyridinyl, thiazolyl, benzothiazolyl or C$_{3-7}$ cycloalkyl, which cyclic group is attached through a carbon atom thereof and is unsubstituted or substituted by one halogen or C$_{1-4}$ alkoxy; and Y is —COOH, —COOR$_1$ or —CO—NR^{2}R^3, wherein R^1 is C$_{1-4}$ alkyl, phenyl-C$_{1-4}$ alkyl or phenyl, and wherein R^2 and R^3 are the same or different members of the class consisting of hydrogen, C$_{1-4}$ alkyl, phenyl-C$_{1-4}$ alkyl, phenyl, thiazolyl or benzothiazolyl, which are unsubstituted or substituted by a member of the class consisting of halogen, hydroxyl, C$_{1-4}$ alkoxy, C$_{2-5}$ alkoxycarbonyl and di-C$_{1-4}$ alkylamino, or wherein NR^{2}R^3 is a cyclic group of the class consisting of pyrrolidinyl, piperidino, hexahydroazepinyl, piperazinyl, morpholino or thiazolidinyl, which cyclic group is unsubstituted or substituted by a member of the class consisting of hydroxyl, C$_{1-4}$ alkoxy, C$_{1-4}$ alkyl, C$_{2-5}$ alkoxycarbonyl, phenyl-C$_{1-4}$ alkyl, phenyl, piperidino and pyridyl; or pharmaceutically acceptable salts thereof.

4,879,294

OPTHALMIC COMPOSITION

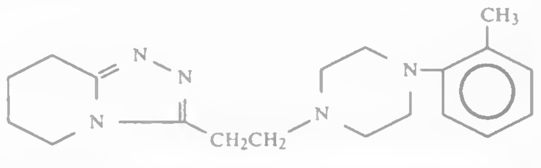
Ronald D. Schoenwald, Iowa City, Iowa, assignor to Angelini Pharmaceuticals Ltd., River Edge, N.J.

Filed Jan. 28, 1988, Ser. No. 149,249

Int. Cl.⁴ A61K *31/50, 31/42, 31/40*

U.S. Cl. 514—253 **5 Claims**

1. An ophthalmic composition comprising polydimethylsiloxane with a viscosity of 3–70 centistokkes and a therapeutically effective amount of the ophthalmic drug dapiprazole of the formula



or its non-toxic pharmaceutically acceptable salts thereof.

4,879,295

N-TETRAZOLYL THIAZOLECARBOXYAMIDE DERIVATIVES AND THEIR USE

Junji Yoshinaga, Neyagawa; Takeshi Shoyaki, Suita; Takao Kakita, Toyonaka; Hiromi Ozeki, Osaka; Nobuko Sugimoto, Ashiya, and Yoshiko Kato, Kobe, all of Japan, assignors to Sawai Pharmaceutical Co., Ltd., Japan

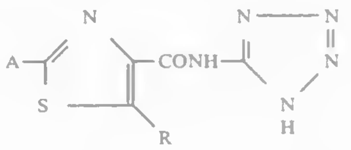
Filed Sep. 17, 1987, Ser. No. 98,015

Claims priority, application Japan, Sep. 27, 1986, 61-229207; Jan. 12, 1987, 62-004541; Jul. 17, 1987, 62-178431

Int. Cl.⁴ C07D *417/12, 417/14*

U.S. Cl. 514—255 **8 Claims**

1. A compound of the formula:



wherein

A is C$_1$–C$_6$ alkyl group; an aryl group which is unsubstituted or substituted with at least one substituent selected from hydroxy, alkoxy, aryl-(C$_1$–C$_6$) alkoxy, C$_1$–C$_6$ alkylcarbonyloxy, halo-(C$_1$–C$_6$) alkyl, halogen, nitro and amino; a 5- or 6-membered heterocyclic group containing one or two ring hetero atoms selected from the group consisting of oxygen, nitrogen and sulfur; or a condensed heterocyclic group as defined above and a benzene nucleus, the heterocyclic group and the condensed heterocyclic group being unsubstituted or substituted with at least one substituent selected from hydroxy, C$_1$–C$_6$ alkyl and halogen and

R is hydrogen or a C$_1$–C$_6$ group, or a pharmaceutically acceptable salt thereof, wherein aryl is phenyl, biphenyl, or naphthyl on a C$_{1-6}$-alkyl substituted phenyl, biphenyl or naphthyl.

4,879,296

XANTHINE DERIVATIVES

Susan M. Daluge, and Harry J. Leighton, both of Chapel Hill, N.C., assignors to Burroughs Wellcome co., Research Triangle Park, N.C.

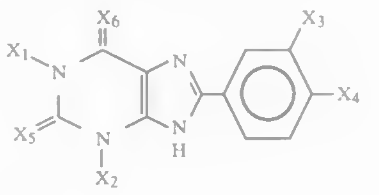
Filed Apr. 25, 1986, Ser. No. 856,719

Claims priority, application United Kingdom, Apr. 27, 1985, 8510758

Int. Cl.⁴ C07D *473/06;* **A61K** *31/52*

U.S. Cl. 514—263 **19 Claims**

1. A compound of formula (I):



(I)

wherein:

X$_1$ and X$_2$ are the same or different and are hydrogen, C$_{1-6}$ alkyl, C$_{2-6}$ alkenyl or C$_{7-12}$ aralkyl optionally substituted in the aryl ring by at least one substituent selected from C$_{1-6}$ alkyl, C$_{1-6}$ alkoxy, hydroxy, halo, nitro, amino, azido and cyano, provided that both X$_1$ and X$_2$ are not hydrogen;

one of X$_3$ and X$_4$ is hydrogen, C$_{1-6}$ alkyl, trifluoromethyl, C$_{1-6}$ alkoxy, halo, nitro, amino, C$_{1-6}$ alkoxycarbonyl or carboxy and the other is a group -Y-Z where Y is C$_{2-6}$ alkenylene, or C$_{3-6}$ alkenylenoxy, C$_{2-6}$ alkynylene or C$_{3-6}$ alkynyleneoxy and Z is carboxy, sulphonyl or pohosphonyl or a C$_{1-9}$ alkyl ester, a C$_{7-12}$ aralkyl ester or a C$_{6-12}$ aryl ester thereof, or is 5-tetrazolyl; and

X$_5$ and X$_6$ are the same or different and are oxygen or sulphur;

pharmaceutically acceptable thereof.

4,879,297

FATTY ACIDS AND THEIR SMALL CHAIN ESTERS AS PENETRATION ENHANCERS IN AQUEOUS SYSTEMS

Majid Mahjour, Netcong; Bernadette E. Mauser, Lyndhurst, and Mahdi B. Fawzi, Flanders, all of N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

Continuation of Ser. No. 056,520, Jun. 1, 1987, abandoned. This application May 23, 1989, Ser. No. 364,549

Int. Cl.⁴ A61V *31/44*

U.S. Cl. 514—282 **10 Claims**

1. A pharmaceutical composition adapted for transdermal delivery of a therapeutically effective amount of a natural or synthetic opioid to the systemic circulation of a mammal consisting essentially of an aqueous suspension containing:

a therapeutically effective amount of a natural or synthetic opioid or a pharmaceutically acceptable salt thereof;

an effective amount of a saturated or unsaturated fatty acid of 8–18 carbon atoms or a C$_1$–C$_4$ alkyl ester thereof, and a pharmaceutically acceptable excipient.

4,879,298

NOVEL METHOD AND COMPOSITION

Francoise Delevallee, Fontenay Sous Bois, and Pierre Potier, Paris, both of France, assignors to Roussel Uclaf, Paris, France

Filed Apr. 12, 1988, Ser. No. 180,380

Claims priority, application France, Apr. 15, 1987, 87 05362

Int. Cl.⁴ A61K *31/44*

U.S. Cl. 514—282 **6 Claims**

1. A method of relieving pain in warm-blooded animals comprising administering to warm-blooded animals an analgesically effective amount of a central analgesic which is less than that normally used and sufficient forskoline to potentialize the central analgesic simultaneously or successively at times from a few seconds up to 15 hours, the central analgesic; forskoline ratio being 1 part by weight to 0.01 to 20 parts by weight.

4,879,299

TREATMENT OF HEART CONDITIONS WITH SPARTEIN COMPOUNDS

Uwe Schoen, Burgdorf; Wolfgang Kehrbach, Hanover; Bernd Hachmeister, Isernhagen; Gerd Buschmann, Hanover, and Ulrich G. Kuehl, Gehrden, all of Fed. Rep. of Germany, assignors to Kali-Chemie Pharma GmbH, Hanover, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 875,311, Jun. 17, 1986, Pat. No. 4,755,520. This application Dec. 18, 1987, Ser. No. 135,109

Claims priority, application Fed. Rep. of Germany, Jun. 22, 1985, 3522475; Dec. 19, 1986, 3643402

Int. Cl.⁴ A61K *31/435;* **C07D** *471/22*

U.S. Cl. 514—286 **11 Claims**

1. A method of treating a heart condition in a mammal comprising the step of administering to said mammal an effective heart condition improving amount of a spartein derivative corresponding to the Formula (I)

$$S—(CH_2)_n—A \qquad (I)$$

in which

S is a 17-spartein nucleus

n is 0 or 1, and

A is 2-furyl, 2-thienyl or 2-(N-loweralkyl)-pyrryl when n=0, or 3-furyl or 3-thienyl when n=1, or pyridyl, or a phenyl group of the Formula (II)

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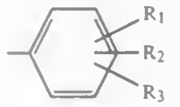
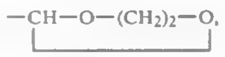

(II)

in which R_1, R_2 and R_3 are individually selected from the group consisting of hydrogen, lower alkyl containing 1 to 4 carbon atoms, lower alkoxy containing 1 to 4 carbon atoms, chlorine, flourine, fromine trifluoromethyl,


$-CH-O-(CH_2)_2-O,$

hydroxy, or $-CO-R_4$ in which R_4 is hydrogen, lower alkoxy containing 1 to 4 carbon atoms, hydroxy, amino or mono-or di-lower alkyl substituted amino, or two adjacent ones of R_1, R_2 and R_3 together form an alkylene dioxy group containing 1 or 2 carbon atoms; or a pharmaceutically acceptable acid addition salt thereof.

4,879,300

NOVEL PIPERIDINE DERIVATIVES

Antonio Giordani, and Vittorio Vecchietti, both of Milan, Italy, assignors to Dr. Lo. Zambeletti S.p.A., Italy

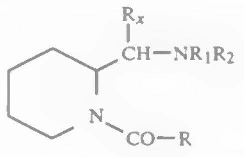
Filed Dec. 21, 1987, Ser. No. 135,839

Claims priority, application United Kingdom, Dec. 22, 1986, 8630639; Aug. 29, 1987, 8720492

Int. Cl.⁴ A61K *31/445;* C07D *401/06*

U.S. Cl. 514—317 19 Claims

1. A compound, or a solvate or salt thereof, of formula I:

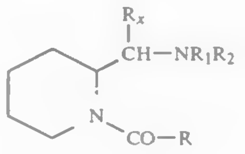

I

in which:

R_1 and R_2 are each hydrogen, alkyl of 1 to 6 carbon atoms, alkenyl of 2 to 6 carbon atoms, cycloalkyl of 3 to 6 carbon atoms or cycloalkylalkyl of 4 to 12 carbon atoms or together form polymethylene of 3 to 6 carbon atoms or alkenylene of 4 carbon atoms, provided that R_1 and R_2 are not simultaneously hydrogen;

Rx is alkyl of 1 to 6 carbon atoms or phenyl, or Rx together with R_1 form a $-(CH_2)_3-$ or $-(CH_2)_4-$ group; and

R has the formula II


I

in which

n is 0, 1 or 2,

m is 0, 1 or 2,

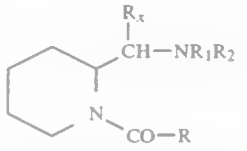
m' is 0, 1 or 2, provided m+m' is equal to or less than 2;

X is a direct bond or O, S or NR_5 in which R_5 is hydrogen or alkyl or 1 to 6 carbon atoms,

Ar is phenyl and each of R_3 and R_3^a is nitro, cyano, alkoxy of 1 to 6 carbon atoms, alkyl of 1 to 6 carbon atoms, haloalkoxy of 1 to 6 carbon atoms, haloalkyl of 1 to 6 carbon atoms, haloalkenyl of 2 to 6 carbon atoms, haloalkynyl of 2 to 6 carbon atoms, or halogen, or, when m is 2, and m' is 0 two R_3's form polymethylene of 3 to 6 carbon atoms, or each of R_3 and R_3^1 is $-COOR_6$, $-CONR_7R_8$, $-SO_{3R9}$, $-SO_2NR_{10}R_{11}$ or $-COR_{12}$, wherein R_6, R_7, R_8, R_9, R_{10}, R_{11} and R_{12} are independently hydrogen or alkyl of 1 to 6 carbon atoms; and

R_4 is hydrogen or alkyl of 1 to 6 carbon atoms.

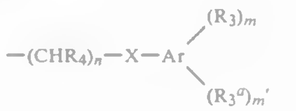
14. A method of treating pain in mammals which comprises administering to a mammal in need thereof an analgesically effective amount of a compound of the formula I:


1

or a solvate or a pharmaceutically acceptable salt thereof wherein R_1 and R_2 are each hydrogen, alkyl of 1 to 6 carbon atoms, alkenyl of 2 to 6 carbon atoms, cycloalkyl of 3 to 6 carbon atoms or cycloalkylalkyl of 4 to 12 carbon atoms or together form polymethylene of 6 to 6 carbon atoms or alkenylene of 4 carbon atoms, provided that R_1 and R_2 are not simultaneously hydrogen;

Rx is alkyl of 1 to 6 carbon atoms or phenyl, or Rx together with R_1 form a $-(CH_2)_3-$ or $-(CH_2)_4-$ group; and

R has the formula II


$-(CHR_4)_n-X-Ar\genfrac{}{}{0pt}{}{(R_3)_m}{(R_3^a)_{m'}}$ (II)

in which

n is 0, 1 or 2,

m is 0, 1 or 2,

m' is 0, 1 or 2, provided m+m' is equal to or less than 2;

X is a direct bond or O, S or NR_5 in which R_5 is hydrogen or alkyl or 1 to 6 carbon atoms,

Ar is phenyl and each of R_3 and R_3^a is nitro, cyano, alkoxy of 1 to 6 carbon atoms, alkyl of 1 to 6 carbon atoms, haloalkoxy of 1 to 6 carbon atoms, haloalkyl of 1 to 6 carbon atoms, haloalkenyl of 2 to 6 carbon atoms, haloalkynyl of 2 to 6 carbon atoms, or halogen, or, when m is 2, and m' is 0 two R_3's form polymethylene of 3 to 6 carbon atoms, or each of R_3 and R_3^a is $-COOR_6$, $-CONR_7R_8$, $-SO_3R_9$, $-SO_2NR_{10}R_{11}$ or $-COR_{12}$, wherein R_6, R_7, R_8, R_9, R_{10}, R_{11} and R_{12} are independently hydrogen or alkyl of 1 to 6 carbon atoms; and

R_4 is hydrogen or alkyl of 1 to 6 carbon atoms.

4,879,301

ANTIALLERGIC AND ANTIINFLAMMATORY BENZOTHIAZOLINONE DERIVATIVES

Suminori Umio, Kawanishi; Shizuo Kozasa, Suita, and Takahiro Yabuuchi, Takarazuka, all of Japan, assignors to Hoel Pharmaceutical Co., Ltd., Osaka and Research Institute for Production Developement, Kyoto, both of, Japan

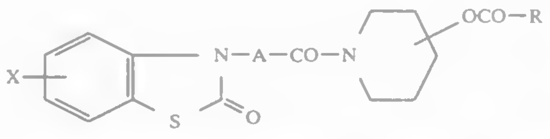
Filed Apr. 26, 1988, Ser. No. 186,439

Claims priority, application Japan, Apr. 28, 1987, 62-106961; Feb. 1, 1988, 63-21754

Int. Cl.⁴ A61K *31/445;* C07D *417/06*

U.S. Cl. 514—321 4 Claims

1. A benzothiazolinone derivative of the formula



in which A is a lower alkylene group, X is a halogen atom, and

R is $-CH_2CH_2COOH$ or $-CH{=}CHCOOH$; or a pharmaceutically acceptable salt thereof.

3. An anti-allergic or anti-inflammatory composition comprising a carrier and an anti-allergic- or anti-inflammatory-effective amount of the benzothiazolinone derivative or salt of claim 1.

4,879,302

CERTAIN OXIMINO-CYCLOPROPANE CARBOXYLATES HAVING INSECTICIDAL ACTIVITY

Jean Tessier, Vincennes; Jean-Pierre Demoute, Montreuil-sour-Bois, and Joseph Cadiergue, Aulnay sous Bois, all of France, assignors to Roussel Vclaf, Romainville, France

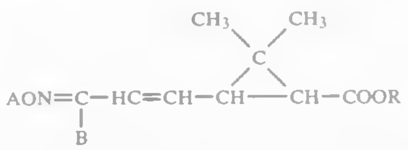
Filed Oct. 29, 1987, Ser. No. 114,534

Claims priority, application France, Oct. 30, 1986, 86-15124

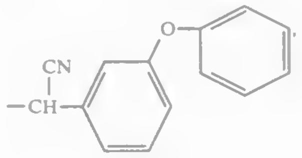
Int. Cl.⁴ C07C *69/743, 121/48;* A01N *43/40, 53/00*

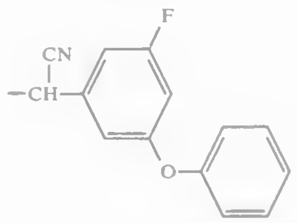
U.S. Cl. 514—351 18 Claims

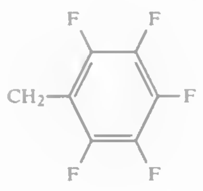
1. All possible stereoisomeric forms and mixtures thereof of a compound of the formula

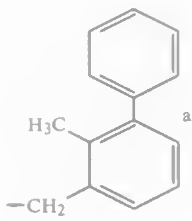


wherein A is selected from the group consisting of hydrogen, alkyl of 1 to 18 carbon atoms and alkenyl of 2 to 18 carbon atoms unsubstituted or substituted with one halogen, B is selected from the group consisting of hydrogen and methyl and R is selected from the group consisting of



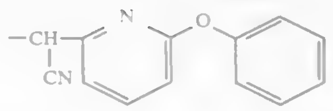






and

-continued



13. A method of combatting insects comprising contacting insects with an insecticidally effective amount of a compound of claim 1.

4,879,303

PHARMACEUTICALLY ACCEPTABLE SALTS

Edward Davison, Margate, and James I. Wells, Canterbury, both of England, assignors to Pfizer Inc., New York, N.Y.

Continuation of Ser. No. 30,658, Mar. 25, 1987, abandoned. This application Oct. 13, 1988, Ser. No. 256,938

Claims priority, application United Kingdom, Apr. 4, 1986, 8608335

Int. Cl.⁴ C07D *211/86;* A61K *31/455*

U.S. Cl. 514—356 11 Claims

1. The besylate salt of amlodipine.

4,879,304

OPHTHALMIC COMPOSITIONS AND PROCESS FOR PREPARING

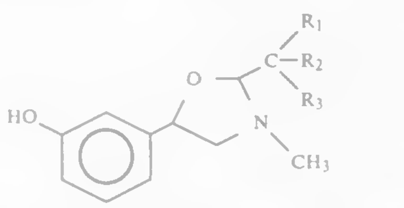
Ronald D. Schoenwald, Iowa City, Iowa, assignor to Angelini Pharmaceuticals Ltd., River Edge, N.J.

Filed May 1, 1987, Ser. No. 45,913

Int. Cl.⁴ A61K *31/42*

U.S. Cl. 514—374 8 Claims

1. An ophthalmic composition comprising polydimethysiloxane with a viscosity of 3-70 centistokes and a therapeutically effective amount of an ophthalmic drug of the formula


II

wherein R_1, R_2 and R_3 are any aliphatic combinations of C_1–C_5, and R_1 may also be hydrogen or the non-toxic pharmaceutically acceptable salts thereof.

4,879,305

USE OF β-(FLUOROMETHYLENE)-5-HYDROXYTRYPTOPHAN AND DERIVATIVES AS PRODRUGS AND MAO INHIBITION

Ian A. McDonald, Loveland; Michael G. Palfreyman, Cincinnati, both of Ohio, and Jean-Noël Collard, Bischheim, France, assignors to Merrell Dow Pharmaceuticals, Cincinnati, Ohio

Division of Ser. No. 53,212, May 21, 1987, Pat. No. 4,822,812. This application Dec. 2, 1988, Ser. No. 278,904

Int. Cl.⁴ C07D *209/16;* A61K *31/405*

U.S. Cl. 514—419 13 Claims

7. A method for inhibiting monoamine oxidase in the brain which comprises administering to a patient in need thereof an effective amount of a compound of the formula

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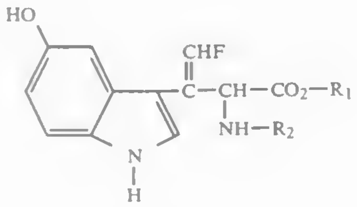
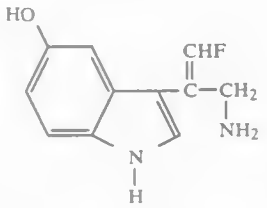


wherein R_1 is hydrogen or a lower alkyl group and R_2 is hydrogen or a formyl group; or a non-toxic pharmaceutically acceptable salt thereof, in combination with an effective amount of an aromatic L-amino acid decarboxylase (AADC) inhibitor.

10. A compound of the formula:



or a non-toxic pharmaceutically acceptable salt thereof.

4,879,306

COMPOSITION KILLING OR INHIBITING THE GROWTH OF MICROORGANISMS AND THE USE THEREOF

Wolf-Dieter Henkels, Edingen-Neckarh, and Marion Balzer, Neckarbischofsheim, both of Fed. Rep. of Germany, assignors to Grace Service Chemicals GmbH, Heidelberg, Fed. Rep. of Germany

Filed Sep. 27, 1985, Ser. No. 780,784

Claims priority, application Fed. Rep. of Germany, Oct. 9, 1984, 3436989

Int. Cl.^{4} A01N *37/34, 43/26*

U.S. Cl. **514—441** 8 Claims

1. A composition for killing or inhibiting microorganisms in industrial materials or water systems comprising a mixture of 4,5-dichloro-1,2-dithiol-3-one (DDO) and dibromonitrilopropionamide (DBNPA) in amounts effective to provide a synergistic microbicidal activity.

4,879,307

DIOXOLANE ANTIBACTERIAL COMPOSITIONS

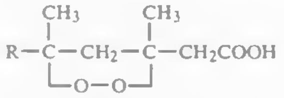
Asbok D. Patil, King of Prussia, Pa., assignor to Harbor Branch Oceanographic Institution, Inc., Ft. Pierce, Fla.

Continuation-in-part of Ser. No. 107,164, Oct. 13, 1987, abandoned, which is a continuation-in-part of Ser. No. 825,061, Feb. 4, 1986, abandoned. This application Aug. 9, 1988, Ser. No. 230,036

Int. Cl.^{4} A61K *31/335;* **C07D** *317/04*

U.S. Cl. **514—467** 4 Claims

1. A compound of the formula:



$$R-\overset{CH_3}{\underset{|}{C}}-CH_2-\overset{CH_3}{\underset{|}{C}}-CH_2COOH \quad (\text{ring: } -O-O-)$$

wherein R is a n-alkyl group $C_{13}H_{27}$, $C_{14}H_{29}$, $C_{15}H_{31}$, $C_{16}H_{33}$, or $C_{17}H_{35}$.

4,879,308

AQUEOUS NITROGLYCERIN INJECTION AND MANUFACTURING PROCESS

Abu S. Alam, Libertyville; Utpal G. Joshi, Hanover Park; Jairaj U. Mehta, Forest Park; Fakrul A. A. Sayeed, Mundelein, and John N. Kapoor, Lake Forest, all of Ill., assignors to LyphoMed, Inc.

Filed Aug. 11, 1987, Ser. No. 84,631

Int. Cl.^{4} A61K *31/21*

U.S. Cl. **514—509** 20 Claims

1. An aqueous solution of nitroglycerin that is sterile, nonpyrogenic, adjustable for tonicity, and suitable for intravenous injection in mammals requiring treatment with nitroglycerin consisting essentially of sterile water for injection, lactose, and nitroglycerin, said nitroglycerin being present at a concentration of at least about 0.5 mg/ml; the solution containing no organic solvents and being stable for at least 1 year.

4,879,309

MERCAPTO-ACYLAMINO ACIDS AS ANTIHYPERTENSIVES

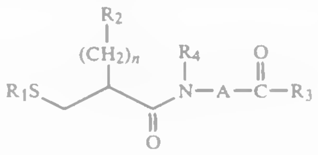
Ronald J. Doll, Maplewood, and Bernard R. Neustadt, West Orange, both of N.J., assignors to Schering Corporation, Kenilworth, N.J.

Continuation-in-part of Ser. No. 250,035, Sep. 27, 1988, abandoned. This application Jan. 30, 1989, Ser. No. 304,881

Int. Cl.^{4} A61K *31/24, 31/195;* **C07C** *149/273*

U.S. Cl. **514—513** 16 Claims

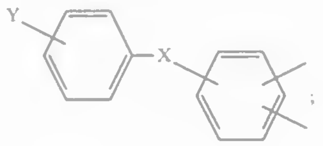
1. A compound having the structural formula



wherein

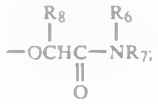
R_1 is H or $R_5CO—$;

R_2 is $Y—C_6H_4—$, $Y—C_6H_4S—$, $Y—C_6H_4O—$, $Y—C_6H_4CH_2S—$, $Y—C_6H_4CH_2O—$, α-naphthyl, β-naphthyl, β-naphthyl, diphenylmethyl or



;

R_3 is $—OR_6$, $—NR_6R_7$ or



$$-O\overset{R_8}{\underset{}{\overset{|}{C}}}H\underset{\underset{O}{\|}}{C}-\overset{R_6}{\overset{|}{N}}R_7;$$

R_4 is hydrogen, lower alkyl or aryl lower alkyl;

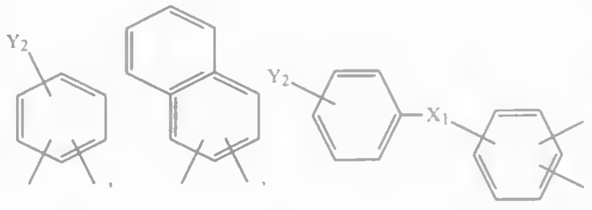
R_5 is lower alkyl, hydroxylower alkyl, lower alkoxy lower alkyl; (di-lower alkyl) amino lower alkyl, $Y_1—C_6H_4—$-lower alkyl, lower alkoxy, $Y_1—C_6H_4—$, naphthyl;

R_6 and R_7 are independently hydrogen, lower alkyl or substituted lower alkyl wherein the substituents are selected from the group consisting of 1 or 2 hydroxy groups, 1 or 2 lower alkoxy groups, lower alkoxy lower alkoxy, halogeno, halogeno lower alkoxy, amino, mono- or di-lower alkylamino, aryl, or substituted aryl wherein the substituents on aryl are 1–3 substituents selected from the group consisting of lower alkyl, hydroxy, halogeno, lower alkoxy and amino;

R_8 is hydrogen, alkyl, carboxyalkyl, mercaptoalkyl, alkylthioalkyl, aminoalkyl, hydroxyalkyl, phenylalkyl, hydroxyphenylalkyl, guanidinoalkyl, or carbamoylalkyl;

n is 0–3;

A is



X and X_1 are independently a bond, —O—, —S—, or $—CH_2—$;

Y, Y_1 and Y_2 are independently 1 to 3 substituents selected from the group consisting of hydrogen, lower alkyl, cyclolower alkyl, lower alkoxy, OH, F, Cl, Br, I, —CN, $—CO_2H$, $—CO_2—$lower alkyl, $—CH_2NH_2$, $—CONH_2$ and aryl;

wherein aryl means mono-cyclic or fused ring bicyclic aromatic groups having 6 to 10 ring members or a pharmaceutically acceptable acid addition salt thereof.

13. An antihypertensive pharmaceutical composition comprising an antihypertensive effective amount of a compound of claim 1 in a pharmaceutically acceptable carrier.

4,879,310

NEW CYANOHYDRIN IODOPROPARGYL ETHERS, PROCESS FOR THEIR PREPARATION AND THEIR USE AS MICROBICIDES

Gerold Schade, Cologne; Wilfried Paulus, and Hans-Georg Schmitt, both of Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

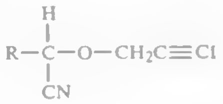
Filed May 3, 1988, Ser. No. 189,580

Claims priority, application Fed. Rep. of Germany, May 19, 1987, 3716682

Int. Cl.^{4} C07C *121/30, 121/48;* **A01N** *37/34*

U.S. Cl. **514—519** 3 Claims

1. A cyanohydrin iodopropargyl ether of the formula



$$R-\underset{\underset{CN}{|}}{\overset{\overset{H}{|}}{C}}-O-CH_2C\equiv CI$$

wherein

R is C_2–C_{14}-alkyl, C_2–C_{14}-alkenyl, C_5–C_8-cycloalkyl or -cycloalkenyl or C_2–C_{14}-alkyl, or C_2–C_{14}-alkenyl which is substituted by chlorine or bromine, or C_5–C_8-cycloalkyl and C_5–C_8-cycloalkenyl which is substituted by C_1–C_4-alkyl or chlorine or bromine.

3. A method of combating microorganisms comprising treating a material or adding to a material subject to microbial change or destructive a microbiocidally effective amount of a cyanohydrin iodopropargyl ether according to claim 1.

4,879,311

DERIVATIVES OF BENZOYLOXYACETIC ACID, AND PREPARATION AND FORMULATIONS THEREOF FOR THERAPEUTIC USE

Raffaello Giorgi; Marisa Conti, and Giorgio Pifferi, all of Milan, Italy, assignors to Inverni della Beffa S.p.A., Via Ripamonti, Italy

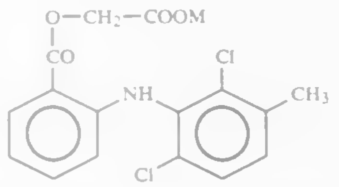
Filed Jul. 21, 1988, Ser. No. 222,552

Claims priority, application United Kingdom, Jul. 29, 1987, 8717997

Int. Cl.^{4} A61K *31/24;* **C07C** *101/447*

U.S. Cl. **514—533** 7 Claims

1. A compound having the general formula



(I)

wherein M denotes hydrogen or one equivalent of a pharmaceutically acceptable inorganic or organic cation.

4,879,312

METHOD FOR ENHANCING OR PROVOKING ANGIOGENESIS USING ANGIOGENICALLY ACTIVE OMEGA-3 POLYUNSATURATED FATTY ACIDS

Ahmad R. Kamarei, Lexington; Michael Klibaner, Brookline, and Denise Peton, Boston, all of Mass., assignors to Angio Medical Corporation, New York, N.Y.

Filed Mar. 7, 1988, Ser. No. 164,789

Int. Cl.^{4} A61K *31/20*

U.S. Cl. **514—560** 8 Claims

1. Method for provoking or enhancing angiogenesis in a subject in need of enhanced angiogenic activity comprising locally administering to said subject an angiogenically active omega-3 polyunsaturated fatty acid in an angiogenically effective amount.

4,879,313

NOVEL PLATELET-AGGREGATION INHIBITORS

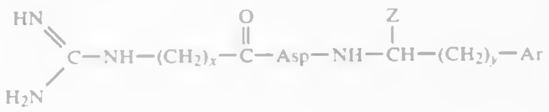
Foe S. Tjoeng, Manchester, and Steven P. Adams, St. Charles, both of Mo., assignors to Mosanto Company, St. Louis, Mo.

Filed Jul. 20, 1988, Ser. No. 221,703

Int. Cl.^{4} A61K *31/21*

U.S. Cl. **514—616** 10 Claims

1. A peptide mimetic compound having the following chemical structure



wherein

x = 6 to 10,

y = 0 to 4,

Z = H, COOH, $CONH_2$ or C_{1-6}alkyl,

Ar = phenyl, biphenyl or napthyl, each substituted with 1 to 3 methoxy groups, or an unsubstituted phenyl, biphenyl, napthyl, and

Asp = aspartic acid residue.

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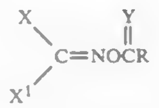
4,879,314

DIHALOFORMALDOXIME

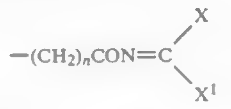
Adam C. Hsu, 1686 Heebner Way, Lansdale, Pa. 19446
Filed Jan. 8, 1986, Ser. No. 817,217
Int. Cl.⁴ A61K *31/15*
U.S. Cl. 514—640 **54 Claims**

1. A compound of the formula:



$$\begin{matrix} X \\ X^1 \end{matrix}{>}C{=}NO\overset{Y}{\overset{\|}{C}}R$$

wherein X and X1 are the same or different halo, Y is O or S; R is alkyl, haloalkyl, alkenyl, alkoxycarbonyl, alkoxycarbonylalkyl, aryl, aryloxyalkyl, substituted aryl, and aryloxyalkyl wherein the substituent is selected from one or more halo, lower alkyl, lower alkoxy, halo lower alkyl, nitro, fluosulfonyl lower alkanoyloxy, aralkyl, arylhaloalkyl, aralkenyl, cycloalkyl, cycloalkylalkyl, arylthio, alkythio, haloalkylthio, heterocycle containing from 3 to 5 nuclear carbon atoms and from 1 to 3 heteroatoms or a radical of the formula:



$$-(CH_2)_nCON{=}C{<}\begin{matrix} X \\ X^1 \end{matrix}$$

wherein, X, X^1 and Y are as defined above and n is an integer of from 1 to 4.

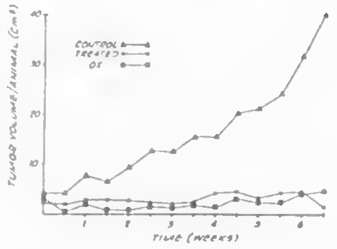
33. A method for controlling bacteria which comprises incorporating into or onto the locus to be treated a fungically effective amount of the compound of claim 1.

4,879,315

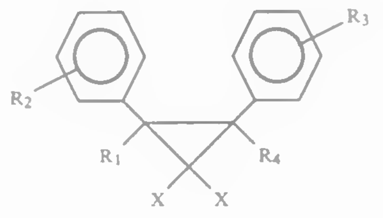
CYCLOPROPYL ANALOGS AS ANTI-ESTROGENIC, ANTI-TUMOR AND FEMALE FERTILITY AGENTS

Robert A. Magarian, and Joseph T. Pento, both of Norman, Okla., assignors to The Board of Regents for the University of Oklahoma, Norman, Okla.

Continuation-in-part of Ser. No. 363,429, Mar. 30, 1982, abandoned, which is a continuation-in-part of Ser. No. 166,255, Jul. 7, 1980, abandoned, which is a continuation-in-part of Ser. No. 128,040, Mar. 7, 1980, abandoned. This application Sep. 21, 1987, Ser. No. 98,945
Int. Cl.⁴ A61K *31/03*
U.S. Cl. 514—754 **2 Claims**



1. A method for inducing anti-estrogenic activity in a mammal in need of such activity comprising administering to the mammal an anti-estrogenically effective, non-toxic dosage of the compound having the structure

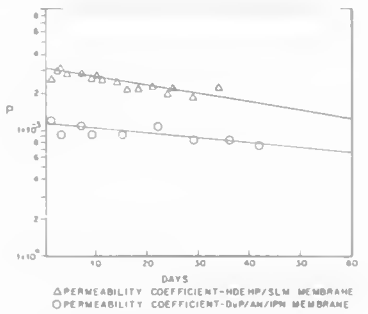


wherein:
X is chlorine;
R_1 is a hydrogen atom;
R_2 is a hydrogen atom;
R_3 is a hydrogen atom;
R_4 is a hydrogen atom; and
the compound is characterized by a cis structure.

4,879,316

INTERPENETRATING POLYMER NETWORK ION EXCHANGE MEMBRANES AND METHOD FOR PREPARING SAME

Spiro D. Alexandratos, Knoxville, Tenn.; Pier R. Danesl, Vienna, Austria, and E. Philip Horwitz, Naperville, Ill., assignors to The University of Tennessee Research Corporation, Knoxville, Tenn.
Filed Feb. 26, 1987, Ser. No. 19,441
Int. Cl.⁴ C08D *5/20*
U.S. Cl. 521—27 8 Claims



1. An ion exchange membrane for the extraction of ions from aqueous solutions and transport of the ions across the membrane comprising a microporous polymeric support film interpenetrated by an ion exchange polymer to form an interpenetrating polymer being formed from a monomer selected from the class consisting of diundecenyl phosphate and allyl 2-ethylexyl phosphate and comonomers thereof, wherein said polymer includes network, said ion exchange polymer including a main polymer backbone, ion exchange ligands for transporting the ion across the membrane, and ligand support groups branching laterally from said backbone at spaced apart locations along said backbone, said ion exchange ligands being supported on said support groups at positions laterally spaced from said backbone by a sufficient distance such that there is sufficient ligand mobility to provide for transport of the ions between adjacent ligands by flexure of said support groups relative to said backbone, whereby the spacing between said ligand support groups along said main polymer backbone is selected to control the transport of water through the membrane.

4,879,317

METHOD FOR REDUCING SILICONE FOAM DENSITY AND SILICONE FOAM COMPOSITIONS

Kennith A. Smith, Clifton Park, N.Y., and Connie L. Haig, Evansville, Ind., assignors to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 235,135, Aug. 23, 1988, abandoned. This application Jan. 24, 1989, Ser. No. 302,105
Int. Cl.⁴ C08J *9/02*
U.S. Cl. 521—82 6 Claims

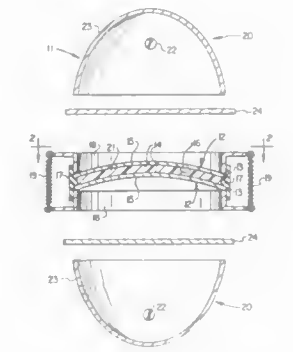
1. A foamable composition comprising by weight,
(A) 100 parts of a vinyl-terminated polydiorganosiloxane,
(B) 0.5–50 parts of a hydride polysiloxane consisting essentially of a mixture of 20% to 85% by weight of a substantially linear hydride polysiloxane and 15% to 80% by weight of cyclic hydride polysiloxane,
(C) 0.2–10 parts of a hydroxylated material consisting essentially of a mixture of 0% to 40% by weight of a $C_{(1\text{-}8)}$ alkanol and 60% to 100% by weight of water, and
(D) an effective amount of a platinum catalyst.

4,879,318

PLASTIC LENS COMPOSITION AND METHOD FOR THE PRODUCTION THEREOF

N. Thornton Lipscomb, and Omar M. Buazza, both of Louisville, Ky., assignors to Ophthalmic Research Group International, Inc., Louisville, Ky.

Continuation-in-part of Ser. No. 21,913, Mar. 4, 1987, abandoned, which is a continuation-in-part of Ser. No. 823,339, Jan. 28, 1986, Pat. No. 4,728,469. This application Nov. 18, 1988, Ser. No. 273,428
Int. Cl.⁴ C08F *2/50, 18/24, 220/28, 220/20*
U.S. Cl. 522—42 3 Claims



1. A plastic lens composition comprising:
(a) from about 22.0 to about 29.0 percent by weight of bisphenol A diallyl carbonate;
(b) from about 13.0 to about 25.0 percent by weight of 1.6 hexanedioldimethacrylate;
(c) from about 15.0 to about 19.0 percent by weight of trimethylol propane triacrylate;
(d) from about 12.0 to about 18.0 percent by weight of tetraethylene glycol diacrylate;
(e) from about 12.0 to about 19.0 percent by weight of tripropylene glycol diacrylate;
(f) from about 2.0 to about 3.0 percent by weight of styrene;
(g) from about 0.02 to about 0.03 percent by weight of 1-hydroxycyclohexyl phenyl ketone; and
(h) an effective amount of a mold release agent.

4,879,319

ANHYDROUS REFRACTORY PLASTIC

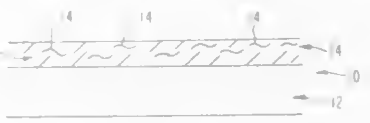
Gustav O. Hughes, Pittsburgh, Pa., assignor to Dresser Industries, Inc., Dallas, Tex.
Filed Feb. 24, 1987, Ser. No. 18,356
Int. Cl.⁴ C08K *3/34*
U.S. Cl. 523—139 6 Claims

1. An anhydrous monolithic refractory plastic consisting essentially of 100 parts by weight of a refractory aggregate, and a bonding and plasticizing agent consisting of; for each 100 parts by weight of said aggregate, about 3 to 10 parts by weight of a powdered novolak resin having a particle size of −60 mesh or finer and about 4 to 15 parts by weight of a glycol solvent.

4,879,320

INTUMESCENT FIRE-RETARDANT COATING MATERIAL

Otis H. Hastings, 130 E. Crescent Ave., Mahwah, N.J. 07430
Filed Mar. 15, 1989, Ser. No. 323,806
Int. Cl.⁴ C08K *21/14*
U.S. Cl. 523—179 46 Claims



1. A fire-retardant coating material, comprising:
a) a fluid intumescent base material having a foaming agent, a blowing agent, a charring agent, a film-forming binder, and a solvent;
b) a refractory fibrous material dispersed in said intumescent material;
c) said refractory fibrous material consisting of aluminum oxide (Al_2O_3) in the range of 40% to 55% by weight, silicon dioxide (SiO_2) in the range of 40% to 55% by weight, and one or more of the compounds selected from the group consisting of ferric oxide (Fe_2O_3), titanium dioxide (TiO_2), potassium oxide (KO_2), sodium oxide (Na_2O), and zirconium oxide (ZrO_2), said compounds being in the range of 0.1% to 5.0% by weight;
d) said refractory fibrous material having at least short fibers with a bulk length of 1/32" to 1";
e) said fire-retardant coating material for coating housing and building frames and the like to render same highly fire resistant.

4,879,321

ARTICLES OF FILLED SYNTHETIC POLYMERIC MATERIALS AND GLASS BEAD FILLER THEREFOR

Pierre Laroche, Nalinnes, Belgium, assignor to Glaverbel, Brussels, Belgium

Division of Ser. No. 041,667, Apr. 20, 1987, Pat. No. 4,761,440, which is a continuation of Ser. No. 754,452, Jul. 11, 1985, abandoned. This application Mar. 30, 1988, Ser. No. 175,287
Claims priority, application United Kingdom, Jul. 12, 1984, 8417740
Int. Cl.⁴ C08K *9/00, 9/06*
U.S. Cl. 523—203 13 Claims

13. Coated glass beads suitable for use as a filler material for synthetic polymers, said coated glass beads comprising glass beads bearing at least one coating of at least two coating agents, which at least two coating agents comprise at least one silicon-functional silane, and at least one synthetic polymer, which at least one synthetic polymer has either a glass transition temperature (T_g) which is lower than 15° C. or shock-absorbing properties and is selected from the group consisting of polymers and copolymers of butadienes, acrylonitriles, acrylates and aliphiatic urethanes, said coated glass beads

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having a total coating amount ranging from 0.02 up to 1% by weight based on the weight of uncoated glass beads.

4,879,322

CONTINUOUS PROCESS FOR THE PRODUCTION OF AQUEOUS POLYURETHANE UREA DISPERSIONS

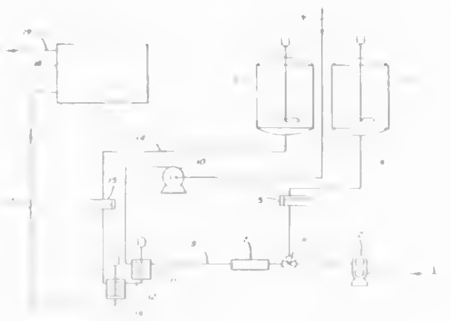
Peter H. Markusch, McMurray, Pa.; Arthur W. Mason, Sistersville, W. Va., and Wolfgang D. Wenzel, Berg-Gladbach, Fed. Rep. of Germany, assignors to Mobay Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 914,908, Oct. 21, 1986, Pat. No. 4,742,095, which is a continuation-in-part of Ser. No. 758,925, Jul. 25, 1985, abandoned. This application May 2, 1988, Ser. No. 188,823

The portion of the term of this patent subsequent to May 3, 2005, has been disclaimed.

Int. Cl.⁴ C08G *18/10*

U.S. Cl. 523—322 10 Claims



1. A continuous process for the production of an aqueous polyurethane-urea dispersion which comprises

(a) mixing an emulsifiable isocyanate-terminated prepolymer with an aqueous medium in a low shear, stator-rotor dynamic mixer operating at a speed of about 500 to 8000 rpm utilizing a mixing wattage of about 0.3 to 10 watts/cc and a mixing volume of at least about 0.1 liters, the average residence time of the aqueous medium and the prepolymer being about 1 to 30 seconds and the overall flow rate through the dynamic mixer being at least about 50 to 5000 kg/h wherein said mixer has levels of discs arranged in sets of at least one disc which is perpendicular to and attached to the rotor and at least one disc which is perpendicular to the rotor and attached to the stator such that the distance between said levels of discs is about 2 to 50 mm, and

(b) reacting the dispersed isocyanate-terminated prepolymer prepared in (a) with a polyamine chain extender to form an aqueous polyurethane-urea dispersion.

4,879,323

SYNTHETIC ALKALI METAL ALUMINO-SILICATES, METHODS AND USES, COMPOSITIONS AND THEIR METHODS OF PREPARATION

Satish K. Wason, Macon, Ga., assignor to J. M. Huber Corporation, Rumson, N.J.

Division of Ser. No. 116,805, Nov. 3, 1987, Pat. No. 4,812,299, which is a continuation-in-part of Ser. No. 875,120, Jun. 17, 1986. This application Jan. 19, 1989, Ser. No. 298,718

Int. Cl.⁴ C08K *3/34, 3/22;* C08J *3/22*

U.S. Cl. 523—351 11 Claims

1. A color concentrate composition which comprises a plastic resin and an alkali metal alumino-silicate having a composition in terms of mole ratio of oxides as follows:

$$xM_2O{:}Al_2O_3{:}ySiO_2{:}zH_2O$$

wherein x is the number of moles of alkali metal oxide and is an integer of 0.01 to 2.0, M is an alkali metal, y is the number of moles of SiO_2 associated with the compositions and is an integer of 2.0 to 20.0, and z is the number of moles of bound water and is an integer of 1.0 to 5.0, wherein primary particles of said alkali metal alumino-silicate comprise a core of clay platelets having an integral adjacent area of essentially amorphous alkali metal silicate base-kaolin clay reaction product.

4,879,324

THERMOPLASTIC MOLDING COMPOSITIONS BASED ON POLYCARBONATES, POLYESTERS AND POLYAMIDES

Dietrich Lansberg; Erhard Seiler, both of Ludwigshafen, and Hans-Georg Braun, Gruenstadt-Sausenheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Continuation of Ser. No. 127,035, Nov. 27, 1987, abandoned. This application Feb. 16, 1989, Ser. No. 311,392

Claims priority, application Fed. Rep. of Germany, Nov. 29, 1986, 3640875

Int. Cl.⁴ C08L *77/00, 67/00, 63/00*

U.S. Cl. 523—400 11 Claims

1. A thermoplastic molding composition containing as essential components

(A) from 1 to 90% by weight of a polycarbonate,
(B) from 1 to 90% by weight of a polyester,
(C) from 1 to 90% by weight of a polyamide,
(D) from 0.5 to 30% by weight of a polymeric component having substantially freely accessible hydroxyl groups, which polymeric component is
(1) a polycondensate of an aliphatic or aromatic diol or polyol with an epihalohydrin,
(2) a polyolefin, polystyrene or rubber elastomer, each having freely accessible hydroxyl groups,
(3) a polymer or copolymer containing a vinylphenylcarbinol,
(4) a polymer or copolymer containing a vinylphenol, or
(5) a phenol-formaldehyde polycondensate, which polymeric component is not identical to component (A), (B) or (C), and in addition
(E) from 0 to 30% by weight of an impact-modifying rubber and
(F) from 0 to 60% by weight of a fibrous or particulate filler.

4,879,325

PAINT COMPOSITION FOR CATION ELECTRODEPOSITION PAINTING

Hitoshi Kimura, Chigasaki; Shigenori Kazama, Yokosuka; Akitoshi Shirasaka, Uruyasu; Kiyoshi Taki, Narashino, and Yukihiro Manabe, Amagasaki, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama and Shinto Paint Co., Ltd., Amagasaki, both of, Japan

Filed Jul. 31, 1987, Ser. No. 79,970

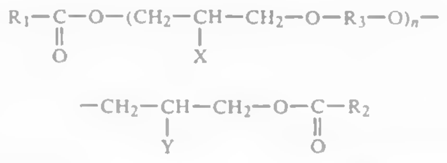
Claims priority, application Japan, Aug. 5, 1986, 61-182825

Int. Cl.⁴ C08F *283/10*

U.S. Cl. 523—404 25 Claims

1. A paint composition for cation electrodepositionn painting, comprising:

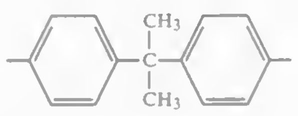
a first component which is basic unsaturated modified epoxy ester expressed by the general formula:



$$R_1-\underset{\underset{O}{\|}}{C}-O-(CH_2-\underset{\underset{X}{|}}{CH}-CH_2-O-R_3-O)_n-$$

$$-CH_2-\underset{\underset{Y}{|}}{CH}-CH_2-O-\underset{\underset{O}{\|}}{C}-R_2$$

where R_1 and R_2 are functional groups at least one of which is an α,β-ethylenic double bond containing group, and the remainder is an unsaturated fatty acid chain; R_3 is a group expressed by the formula:



; and X and Y are functional groups whose total number is n+1 in which not less than one functional group is a group containing both a tertiary amine function and a urethane function, and the remainder are hydroxyl groups (—OH); n being an integer ranging from 1 to 20; and

a second component which is a basic unsaturated modified polydiene compound which is a reaction product of (1) a polydiene compound having a molecular weight ranging from 500 to 10,000 and unsaturated double bonds with an iodine value ranging from 50 to 500, and containing oxirane oxygen ranging from 3 to 12% by weight, (2) a secondary amine, and (3) an α,β-ethylenic unsaturated carboxylic acid.

4,879,326

CATIONIC EMULSIONS OF BITUMINOUS BINDERS OF THE TYPE BITUMEN/POLYMER AND CATIONIC EMULSIFYING SYSTEM PREFERABLY UTILIZABLE FOR OBTAINING SAID EMULSIONS

Francis Demangeon, Dardilly, and Emile Lopez, Vienne, both of France, assignors to ELF France, Paris, France

Division of Ser. No. 932,502, Oct. 14, 1986, Pat. No. 4,772,648. This application Jul. 8, 1988, Ser. No. 216,836

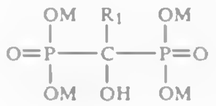
Claims priority, application France, Feb. 15, 1985, 85 02211

The portion of the term of this patent subsequent to Sep. 20, 2005, has been disclaimed.

Int. Cl.⁴ C08K *5/17, 5/53;* C08L *5/00, 95/00*

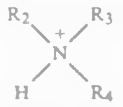
U.S. Cl. 524—61 21 Claims

1. Cationic emulsions of bituminous binders of the bitumen/-polymer type, which are formed from a dispersion of an organic phase comprised of a bitumen/polymer binder in an aqueous phase containing a cationic nitrogen containing emulsifying agent in an amount representing from about 0.03% to 3% by weight of the emulsion and an acid, said acid being present in a quantity such that the cationic emulsifying agent is rendered water-soluble and the pH of said aqueous phase has a value of from about 3 to 9; wherein said aqueous phase contains an adjuvant consisting of at least one water soluble sequestering salt of phosphonic acid in which the sequestration power in respect to the metallic ions is equivalent, in a pH range of from about 3 to about 9, to a fixation of at least 5 mg. calcium ions per gram of salt, said salt having the formula



$$O=\underset{\underset{OM}{|}}{\overset{\overset{OM}{|}}{P}}-\underset{\underset{OH}{|}}{\overset{\overset{R_1}{|}}{C}}-\underset{\underset{OM}{|}}{\overset{\overset{OM}{|}}{P}}=O$$

wherein R_1 is a hydrocarbyl radical of from C_1 to C_{10} and M, which can be identical or different, designates a hydrogen atom or a group M_1; at least one M group is an M_1 group, said M_1 being selected from the group consisting of an alkaline metal atom, $-N^+H_2{}_3-NH_2$, and a radical of the formula



wherein the R_2 to R_4 symbols can be identical or different, and each represents one hydrogen atom or a nonvalent hydrocarbyl radical from C_1 to C_8 which can contain one or more functional groups, and wherein two of the radicals R_2 to R_4 can combine to form a heterocyclic group with the nitrogen atom to which they are bonded, the concentration of the adjuvant in the aqueous phase of the emulsion being from about 0.005% to about 0.5% by weight of the emulsion; wherein said emulsion contains by weight from about 30% to about 85% of bitumen/-polymer binder; wherein the cationic emulsifying agent pr ®sent in the emulsion is formed by association of one or more emulsifying agents A selected from the group consisting of quaternary ammonimum salts with one or more emulsifying agents B selected among the cationic emulsifying agents having in their molecule, at least three functional groups selected among the group amines and amides in a manner such that at least one of said functional groups is an amine group, and wherein the weight ratio of the total quantity of the compound or compounds A to the total quantity of A and B compounds is from about 5% to about 95%.

4,879,327

NEW PHOSPHOROUS ACID SALTS, COMPOSITIONS CONTAINING THEM, AND THEIR APPLICATION AS FIREPROOFING AGENTS

Pierre Poisson, Bernay; Nadine Rivas, Saint-Ouen du Tilleul, and Pierre Deloy, Levallois Perret, all of France, assignors to Atochem, Paris la Defense, France

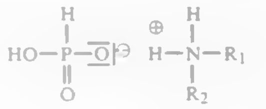
Filed Mar. 31, 1988, Ser. No. 175,822

Claims priority, application France, Mar. 31, 1987, 87 04488

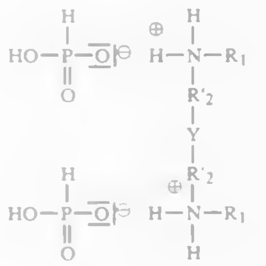
Int. Cl.⁴ C08K *5/51;* C07F *9/06, 9/65*

U.S. Cl. 524—93 21 Claims

1. A phosphorous acid salt of formula (I) or (II):



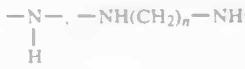
$$HO-\underset{\underset{O}{\|}}{\overset{\overset{H}{|}}{P}}-\overline{\underline{O}}|^{\ominus}\quad H-\underset{\underset{R_2}{|}}{\overset{\overset{H}{|}}{\overset{\oplus}{N}}}-R_1 \qquad (I)$$



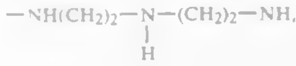
$$\begin{array}{lc} HO-\underset{\underset{O}{\|}}{\overset{\overset{H}{|}}{P}}-\overline{\underline{O}}|^{\ominus} & H-\overset{\overset{H}{|}}{\overset{\oplus}{N}}-R_1 \\ & | \\ & R'_2 \\ & | \\ & Y \\ & | \\ & R'_2 \\ & | \\ HO-\underset{\underset{O}{\|}}{\overset{\overset{H}{|}}{P}}-\overline{\underline{O}}|^{\ominus} & H-\underset{\underset{H}{|}}{\overset{\oplus}{N}}-R_1 \end{array} \qquad (II)$$

in which:

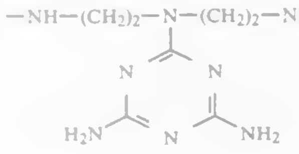
R_1 is a hydrogen atom, an unsubstituted aliphatic hydrocarbon radical containing from 1 to 6 carbon atoms, a cycloaliphatic radical or a phenyl radical, or one of said radicals substituted by at least one halogen atom or amino group;
R_2 is an s-triazine, 1,2,4-triazolyl, benzimidazolyl, heptazine, or 1,3-diazine or is identical to R_1;
R_1 and R_2 together form a divalent group consisting of two said radicals connected by an ≧NH residue, —S—, or a methylene residue, or the two radicals R_1 in (II) together form a divalent radical;
R'_2 is a triazine; and
Y is a group selected from



$$-\underset{\underset{H}{|}}{N}-,\ -NH(CH_2)_n-NH-\ \text{with n from 2 to 6,}$$



$$-NH(CH_2)_2-\underset{\underset{H}{|}}{N}-(CH_2)_2-NH,\ \text{or}$$



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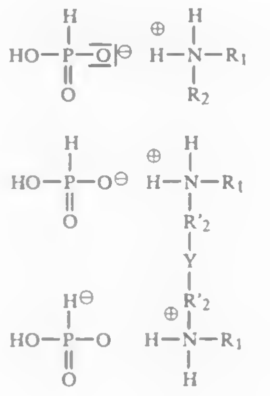
or a single bond.

18. A fireproofed plastic comprising a plastic containing, in an amount sufficient to fireproof said plastic, a phosphorous acid salt of formula (I) or (II):



(I)

(II)

in which:

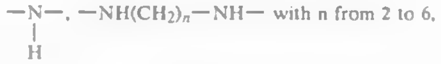
R$_1$ is a hydrogen atom, an unsubstituted aliphatic hydrocarbon radical containing from 1 to 6 carbon atoms, a cycloaliphatic radical or a phenyl radical or one of said radicals substituted by at least one halogen atom or amino group;

R$_2$ is a s-triazine, 1,2,4-triazolyl, benzimidazolyl, heptazine, or 1, 3-diazine or is identical to **R**$_1$;

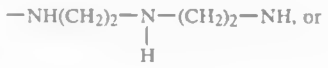
R$_1$ and R$_2$ together form a divalent group consisting of two said radicals connected by an NH residue, —S—, or a methylene residue, or the two radicals R$_1$ in (II) together form a divalent radical;

R'$_2$ is a triazine; and

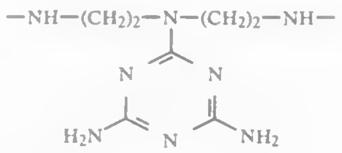
Y is a group selected from



$-\underset{H}{\underset{|}{N}}-$, $-NH(CH_2)_n-NH-$ with n from 2 to 6,



$-NH(CH_2)_2-\underset{H}{\underset{|}{N}}-(CH_2)_2-NH$, or



or a single bond.

4,879,328

AROMATIC POLYESTER COMPOSITION AND PROCESS FOR PRODUCING THE SAME

Hiroo Karasawa; Kiichi Kometani, and Kiyomi Okita, all of Nagoya, Japan, assignors to Toray Industries, Tokyo, Japan

Filed May 13, 1988, Ser. No. 193,951

Claims priority, application Japan, May 18, 1987, 62-119057; Jul. 10, 1987, 62-173438; Jul. 10, 1987, 62-173439

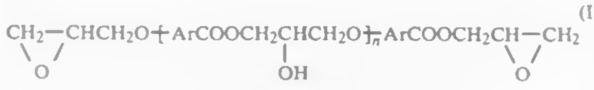
Int. Cl.⁴ C08K *5/15;* **C08L** *67/04*

U.S. Cl. 524—109 31 Claims

1. A polyester composition comprising:

(a) 100 parts by weight of an aromatic polyester;

(b) 0.005–10 parts by weight of an epoxy compound of the formula (I):



$$\underset{\diagdown O \diagup}{CH_2-CH}CH_2O{+}ArCOOCH_2\underset{OH}{CH}CH_2O{+}_{n}ArCOOCH_2\underset{\diagdown O \diagup}{CH-CH_2} \quad (I)$$

(wherein Ar means C$_6$-C$_{20}$ aromatic group or C$_6$-C$_{20}$ alicyclic group, n means an integer of 0–20); and

(c) 1–70 parts by weight of at least one elastomer which has at least one functional group selected from the group consisting of epoxy groups, carboxyl group, carboxylate ester groups, carboxylic acid amide groups, acid anhydride group, imide groups, carboxylate salt groups, hydroxyl group, amino group and cyano group, the elastomer having a tensile modulus of 1–6,000 kg/cm$_2$.

4,879,329

IMPACT RESISTANT FLAME-RETARDANT RESIN COMPOSITION

Masafumi Hongo, Hatsukaichi, and Mitsuaki Noda, Obtake, both of Japan, assignors to Mitsubishi Rayon Company Ltd., Tokyo, Japan

Filed Oct. 18, 1988, Ser. No. 259,536

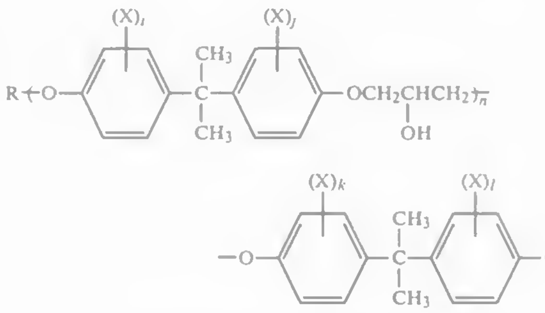
Int. Cl.⁴ C08K *5/13, 5/06*

U.S. Cl. 524—114 7 Claims

1. An impact resistant flame-retardand resin composition comprising:

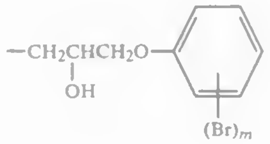
100 parts by weight of a polymer mixture comprising a polycarbonate resin (A), a rubber-reinforced vinyl copolymer (B) and, optionally, a vinyl polymer (C);

from 3 to 50 parts by weight of a high molecular weight halogenated compound of the following formula I having a halogen content of at least 10% by weight:



(I)

wherein n is an average polymerization degree of from 35 to 100, each X independently represents hydrogen, chlorine or bromine, each of i, j, k and l is an integer of from 1 to 4, and each of R and R' independently is hydrogen, a methyl group, an epoxypropyl group, a phenyl group or



wherein m is 0, 1, 2 or 3; and from 2 to 30 parts by weight of an antimony compound.

4,879,330

POLYMER MIXTURE COMPRISING A POLYPHENYLENE ETHER, A BLOCK COPOLYMER, A PHOSPHATE ESTER AND ADDITIVES

Johannes W. J. De Munck, Huybergen, and Johannes H. G. M. Lohmeijer, Hoogerheide, both of Netherlands, assignors to General Electric Company, Selkirk, N.Y.

Filed Mar. 17, 1987, Ser. No. 26,593

Claims priority, application Netherlands, Mar. 17, 1986, 8600670

Int. Cl.⁴ C08K *5/51;* **C08L** *7/04*

U.S. Cl. 524—151 14 Claims

1. A flexible polymer mixture which comprises the following constituents:

30–40% by weight of polyphenylene ether;

30–40% by weight of block copolymer copolymer;

20–35% by weight of phosphate ester,

the sum of the said constituents being 100% by weight, wherein the mixture does not comprise a crosslinking agent.

4,879,331

SELF-LUBRICATING THERMOPLASTIC RESIN WEAR PART

Toshihiko Endo, and Nobuyuki Matsunaga, both of Fuji, Japan, assignors to Polyplastics Co., Ltd., Osaka, Japan

Filed May 24, 1988, Ser. No. 197,873

Claims priority, application Japan, May 29, 1987, 62-134177

Int. Cl.⁴ C08K *5/54*

U.S. Cl. 524—267 3 Claims

1. A self-lubricating wear part having improved anti-friction and anti-frictional noise characteristics formed of a thermoplastic resin composition which consists essentially of (i) between 99.9 to 60 parts by weight of a thermoplastic polyester or polyacetal resin, (ii) between 0.05 to 20 parts by weight of a silicone oil having a viscosity of 150,000 cSt or more, and (iii) between 0.05 to 20 parts by weight of a lubricating oil having a viscosity of 3,000 cSt or less.

4,879,332

HALOGEN-FREE FLAME RESISTING SYNTHETIC RESIN COMPOSITION

Nobuo Saito, and Mitsuo Noda, both of Chiba, Japan, assignors to Dainichiseika Color & Chemicals Mfg. Co. Ltd., Tokyo, Japan

PCT No. PCT/JP87/00593, § 371 Date Apr. 5, 1988, § 102(e) Date Apr. 5, 1988, PCT Pub. No. WO88/00959, PCT Pub. Date Feb. 11, 1988

PCT Filed Aug. 7, 1987, Ser. No. 183,760

Claims priority, application Japan, Aug. 9, 1986, 61-187472

Int. Cl.⁴ C08K *3/22;* **C08L** *101/00;* **C09K** *21/02*

U.S. Cl. 524—436 12 Claims

1. A self-extinguishing, halogen-free flame retardant composition comprising 70 to 30 parts by weight of at least one thermoplastic synthetic resin, 30–70 parts by weight of magnesium hydroxide having an average particle size of 0.1 to 10 μm, and 0.5–15 parts by weight of a synthetic silicate which is a noncrystalline silica having an amorphous steric chain of Si-O-Si-O in its structure.

4,879,333

AQUEOUS PRESSURE SENSITIVE ADHESIVE COMPOSITIONS

Glenn R. Frazee, Kenosha, Wis., assignor to S. C. Johnson & Son, Inc., Racine, Wis.

Continuation-in-part of Ser. No. 302,050, Jan. 25, 1989, abandoned, which is a continuation-in-part of Ser. No. 125,313, Nov. 25, 1987, abandoned, which is a continuation of Ser. No. 905,593, Sep. 9, 1986, abandoned. This application Feb. 24, 1989, Ser. No. 316,268

Int. Cl.⁴ C08F *2/16;* **C08K** *3/20*

U.S. Cl. 524—460 37 Claims

1. A method for preparing a reaction mixture which contains an aqueous pressure-sensitive adhesive composition, utilizing an emulsion-polymerization reaction, wherein emulsion particles form upon initiation of the emulsion-polymerization reaction, the method comprising the steps of:

combining, in a reactor, initial-feed ingredients comprising water and an emulsion-polymerization surfactant;

agitating the reactor contents and subjecting the reactor contents to an inert atmosphere;

heating the agitated reactor contents to a predetermined reaction temperature;

adding into the agitated reactor monomer-feed ingredients comprising an emulsion-polymerizable monomer mixture and an effective amount of an initiator for initiating the emulsion-polymerization reaction, wherein either the initial-feed ingredients or the monomer-feed ingredients further comprise an effective amount of a stabilizer for preventing coagulation of the emulsion particles; and

adding to the agitated reactor, prior to completion of the emulsion-polymerization reaction, an effective amount of a polymeric resin, soluble or dispersible in water or in alkali, and having a number average molecular weight of about 1,000 to about 20,000, for producing in the reactor a reaction mixture containing an aqueous pressure-sensitive adhesive composition having an adhesive value of at least 6.6 ounces per linear inch.

4,879,334

ORGANOPOLYARYLSILANES, PROCESS FOR MANUFACTURING THE SAME AND FIBERS COMPRISING THE SAME

Yoshio Hasegawa, Higashi, and Kiyohito Okamura, Mito, both of Japan, assignors to The Foundation: The Research Institute for Special Inorganic Materials, Ibaraki, Japan

PCT No. PCT/JP87/00147, § 371 Date Nov. 6, 1987, § 102(e) Date Nov. 6, 1987, PCT Pub. No. WO87/05612, PCT Pub. Date Sep. 24, 1987

PCT Filed Mar. 10, 1987, Ser. No. 131,139

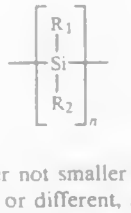
Claims priority, application Japan, Mar. 11, 1986, 61-51397; Mar. 11, 1986, 61-51398

Int. Cl.⁴ C08F *283/00*

U.S. Cl. 525—474 23 Claims

1. An organopolyaromaticsilane which is characterized in that aromatic ring segments derived from a pitch that is soluble in an organic solvent and having a skeleton mainly comprising an aromatic condensed ring structure and organosilane segments having a skeleton mainly comprising carbosilane and polysilane structures are randomly bonded to each other with a silicon-carbon linkage intervening therebetween and further characterized by being soluble in an organic solvent

wherein the polysilane is a linear, cyclic or ramified polymer having a main chain structure represented by the general formula,



$$\left[\begin{array}{c} R_1 \\ | \\ -Si- \\ | \\ R_2 \end{array}\right]_n$$

wherein n is an integer not smaller than 2, and R$_1$ and R$_2$ which are the same or different, are hydrogen, halogen, alkyl having up to 6 carbon atoms or aryl having up to 12 carbon atoms, respectively.

4,879,335

BLACK LIQUID COLORANT AND POLYESTER FIBERS DOPE-DYED THEREWITH

Fumio Hirota, Tokyo; Tsutomu Kado, Kawagoe; Shosuke Oku, and Noboru Watanabe, both of Sabae, all of Japan, assignors to Toyo Ink Mfg. Co., Ltd., Tokyo and Nippon Ester Company Ltd., Okazaki City, both of, Japan

Filed Sep. 22, 1987, Ser. No. 99,534

Claims priority, application Japan, Sep. 30, 1986, 61-229775

Int. Cl.⁴ C08K *9/02;* **C08L** *67/02*

U.S. Cl. 524—495 8 Claims

1. Black dope-dyed polyester fibers which comprise a polyester blended with a black liquid colorant comprising 5–50 weight % of oxidation-neutralization-treated carbon black obtained by subjecting a gas phase oxidized carbon black to a wet oxidation treatment with a peroxide and a subsequent neutralization with an alkali, and 95–50 weight % of liquid dispersion medium.

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4,879,336

NOVEL COATING SLIPS

Bernd Schilling, Burghausen, and Karl-Ernst Fickert, Emmerting, both of Fed. Rep. of Germany, assignors to Wacker-Chemie GmbH, Fed. Rep. of Germany

Continuation of Ser. No. 55,199, May 28, 1987, abandoned. This application Nov. 17, 1988, Ser. No. 272,634

Claims priority, application Fed. Rep. of Germany, Jul. 8, 1986, 3622820

Int. Cl.^{4} C08L *29/04*

U.S. Cl. 524—503 **6 Claims**

1. In a coating slip for coating flat surfaces comprising an aqueous dispersion, with a solids content of 8 to 65% by weight, of 100 parts by weight of a pigment, 3 to 30 parts by weight of synthetic high-molecular-weight binder based on copolymers of acrylates, styrene, butadiene and unsaturated carboxylic acid esters and 0.5 to 2 parts by weight of a cobinder, the improvement comprising using a cobinder polymer containing a large degree of hydroxyl groups comprising (a) 50 to 95% by weight of vinyl alcohol units, (b) 5 to 50% by weight of 1-alkylvinyl alcohol units to 1 to 4 alkyl carbon atoms, (c) 0 to 20% by weight of vinyl acylate units, (d) 0 to 20% by weight of allyl alcohol units and (e) 0 to 5% by weight of other polymerizable monomers.

4,879,337

POLYOL RESIN COATING COMPOSITION CONTAINING NON-AQUEOUS POLYMER DISPERSION AND ALIPHATIC SULFONIC ACID COMPOUND

Klshio Shibato, Kamakura, and Masataka Kawamura, Fujisawa, both of Japan, assignors to Nippon Oil and Fats Co., Ltd., Tokyo, Japan

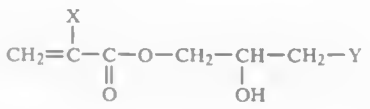
Filed Nov. 2, 1987, Ser. No. 115,868

Claims priority, application Japan, Nov. 11, 1986, 61-266650; May 14, 1987, 62-117797; Sep. 1, 1987, 62-216285

Int. Cl.^{4} C08F *265/04;* **C08L** *51/08, 61/28*

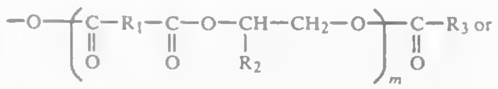
U.S. Cl. 524—504 **4 Claims**

1. A higher solid coating composition, comprising 100 parts by weight of a solid resin mixture comprising 30 to 90 parts by weight of a polyol resin and 10 to 70 parts by weight of an alkyletherified melamine resin, 0.2 to 10 parts by weight as an aliphatic sulfonic acid of an aliphatic sulfonic acid compound having a carbon number of 4 to 22, and 1 to 100 parts by weight as a polymer solid content of a non-aqueous polymer dispersion, said non-aqueous polymer dispersion consisting essentially of (a) 40 to 80% by weight of an organic solvent component, (b) 10 to 505 by weight of particle component insoluble in said component (a), and (c) 5 to 40% by weight of a dispersion stabilizer component soluble in said component (a) and capabale of stably dispersing said component (b) into said component (a), said dispersion stabilizer component comprising a product obtained by polymerizing 20 to 100% by weight of a vinyl type monomer containing a polyester chain group represented by the following formula with 0 to 80% by weight of a second vinyl type monomer:



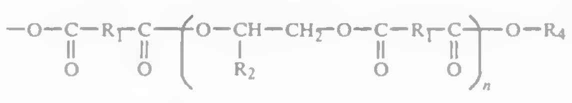
$$CH_2{=}\overset{\overset{\displaystyle X}{|}}{C}-\underset{\underset{\displaystyle O}{\|}}{C}-O-CH_2-\underset{\underset{\displaystyle OH}{|}}{CH}-CH_2-Y$$

wherein X is a hydrogen atom or a methyl group, Y is



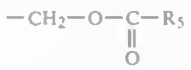
$$-O-\left(\underset{\underset{O}{\|}}{C}-R_1-\underset{\underset{O}{\|}}{C}-O-\underset{\underset{R_2}{|}}{CH}-CH_2-O\right)_m-\underset{\underset{O}{\|}}{C}-R_3 \text{ or}$$

-continued



$$-O-\underset{\underset{O}{\|}}{C}-R_1-\underset{\underset{O}{\|}}{C}-\left(O-\underset{\underset{R_2}{|}}{CH}-CH_2-O-\underset{\underset{O}{\|}}{C}-R_1-\underset{\underset{O}{\|}}{C}\right)_n-O-R_4$$

m and n are from 1 to 10, R_1 is a residue of acid anhydride having a carbon number of 2 to 6, R_2 is a phenyl group, an alkyl or aromatic group having a carbon number of 5 to 19,



$$-CH_2-O-\underset{\underset{O}{\|}}{C}-R_5$$

group (R_5 is an alkyl or aromatic group having a carbon number of 3 to 17, or $-CH_2-O-R_6$ group (R_6 is an alkyl or aromatic group having a carbon number of 4 to 18, R_3 is an alkyl group or a residue of aromatic monocarboxylic acid having a carbon number of 1 to 20, and R_4 is a residue of saturated aliphatic, alicyclic or aromatic monovalent alcohol having a carbon number of 1 to 18.

4,879,338

POLY(ARYL ETHER KETONE) COMPOSITIONS

Frank W. Mercer, Belmont; Michael F. Froix, Los Altos, and Tai C. Cheng, Mountain View, all of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Filed Feb. 13, 1985, Ser. No. 701,279

Int. Cl.^{4} C08L *71/04*

U.S. Cl. 524—508 **6 Claims**

1. A composition comprising a blend of a poly(aryl ether ketone) and from about 1% to about 50% of poly(2,6-dimethyl-p-phenylene oxide).

4,879,339

STORAGE STABLE AND ROOM TEMPERATURE-CURABLE ORGANOPOLYSILOXANE COMPOSITION

Masa^hika Yoshino, Annaka, Japan; Nobuyuki Hasebe, Rancho Palos Verdes, Calif.; Hironao Fujiki, and Hiroshi Inomata, both of Takasaki, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Mar. 3, 1988, Ser. No. 163,434

Claims priority, application Japan, Mar. 4, 1987, 62-49184

Int. Cl.^{4} C08L *5/13, 83/04*

U.S. Cl. 524—740 **7 Claims**

1. A room temperature-curable storage stable organopolysiloxane composition which comprises, in admixture:

(A) 100 parts by weight of an organopolysiloxane having a viscosity of at least 50 centipoise at 25° C. and at least two vinyl groups bonded to the silicon atoms in a molecule;

(B) an organohydrogenpolysiloxane having at least three hydrogen atoms directly bonded to the silicon atoms in a molecule in an amount sufficient to provide from 0.5 to 4.0 moles of the silicon-bonded hydrogen atoms per mole of the vinyl groups bonded to the silicon atoms in the component (A);

(C) a catalytic amount of a platinum compound;

(D) from 20 to 600 parts by weight of an inorganic filler;

(E) from 5 to 80 parts by weight of an aliphatic hydrocarbon compound which is liquid or semi-solid at room temperature; and

(F) a compound selected from the group consisting of erythrobic acid, sodium erythorbate, 2,6-ditert-butyl p-cresol, tocopherol, butyl hydroxy anisole and propyl gallate, in an amount of at least 10 ppm by weight based on the aliphatic hydrocarbon compound as the component (E).

4,879,340

ADSORBENT COMPOSED OF POROUS BEADS OF CHITOSAN AND ADSORPTION METHOD USING SAME

Soyao Moriguchi; Hiroshi Suzuki, both of Yokohama; Hiroko Watanabe, Meguro; Motoaki Satoh, Yokosuka; Michio Abe, Sagamihara, and Yasuo Iwata, Ota, all of Japan, assignors to Showa Denko Kabushiki Kaisha and Kawasumi Kagaku Kougiyou Kabushiki Kaisha, both of Tokyo, Japan

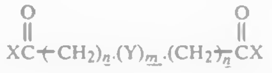
Filed Aug. 19, 1987, Ser. No. 86,989

Claims priority, application Japan, Aug. 19, 1986, 61-192141; Aug. 19, 1986, 61-192142; Aug. 19, 1986, 61-192143; Aug. 19, 1986, 61-192144; Feb. 18, 1987, 62-33472

Int. Cl.^{4} C08F *283/00;* **B01J** *1/04;* **C08B** *37/08*

U.S. Cl. 525—54.2 **22 Claims**

1. An adsorbent composed of porous beads of crosslinked chitosan constituted of glucosamine, having protein A or a lectin covalently bonded to said porous beads of crosslinked chitosan, wherein said crosslinked chitosan is obtained by crosslinking uncrosslinked chitosan with a crosslinking agent selected from the group consisting of dicarboxylic acids and halides thereof represented by formula (I):



$$\overset{\overset{O}{\|}}{XC}\!\left(CH_2\right)_{\underline{n}}\cdot(Y)_{\underline{m}}\cdot\left(CH_2\right)_{\underline{n}}\overset{\overset{O}{\|}}{C}X$$

(I)

wherein X represents a chlorine or bromine atom or a hydroxyl group; Y represents a cyclohexylene, phenylene, methylphenylene or dimethylphenylene group; m is 0 or 1, and n is 0 or an integer of from 1 to 7;

and diisocyanates represented by formula (III);

$$OCN-CH_2)_n\cdot(Y)_m\cdot(CH_2)_nNCO \qquad (III)$$

wherein Y, m and n are as defined above;

said protein A or lectin being covalently bonded via a bonding group to at least a part of the amino groups of the glucosamine constituting said chitosan and at least a part of the amino groups of said crosslinking agent of the formula (III) when present, said bonding group comprising a combination group having a carboxyl group introduced by reaction of said amino groups with an alkanedicarboxylic anhydride having from 4 to 16 carbon atoms; provided that

substantially all of the amino groups other than the amino groups to which said protein A or lectin is covalently bonded via the combination group are acylated with an acyl group having from 2 to 6 carbon atoms.

4,879,341

POLYESTER/POLYAMIDE RESIN COMPOSITIONS CONTAINING GRAFTED POLYOLEFIN AND MOLDED PRODUCTS THEREOF

Tatsuo Tsumiyama; Toshiro Shimada; Yoshifumi Akagawa; Satoru Nakamoto, and Teruo Takada, all of Ube, Japan, assignors to Ube Industries, Ltd., Ube, Japan

Filed May 26, 1988, Ser. No. 199,337

Claims priority, application Japan, Jun. 3, 1987, 62-138180; Aug. 27, 1987, 62-211389; Feb. 12, 1988, 63-28746

Int. Cl.^{4} C08L *77/00*

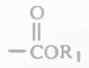
U.S. Cl. 525—66 **16 Claims**

1. A resin composition comprising:

100 parts by weight of a mixture comprising (a) from 5 to 95% by weight of polyamide and (b) from 95 to 5% by weight of a thermoplastic polyester; and

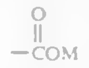
(c) from 0.5 part to 40 parts by weight of a grafted polyolefin modified product formed by graft polymerization of an addition polymer having a peroxy bond in its molecular chain to a modified polyolefin having a functional group in its molecular chain;

said modified polyolefin is a polymer formed by introducing a monomer having at least one kind of functional group selected from the group consisting of a carboxylic acid group, a carboxylic acid metal salt group, a carboxylic acid exter group, an acid anhydride group, an epoxy group, an acid amide group and an imide group, represented by Formula (I) to (VI) shown below, into a polyolefin obtained using as main monomer components, ethylene and an alpha-olefin or diene having 3 to 20 carbon atoms, and wherein Formula (I) to (VI) are



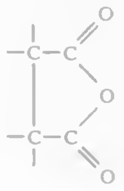
$$-\overset{\overset{O}{\|}}{C}OR_1$$

(I)

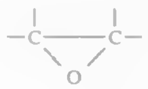


$$-\overset{\overset{O}{\|}}{C}OM$$

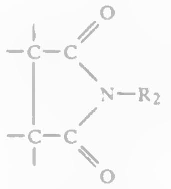
(II)



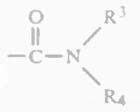
(III)



(IV)



(V)



(VI)

wherein R_1 to R_4 each represent a hydrogen atom or an aliphatic, alicyclic or aromatic residual group having 1 to 30 carbon atoms and M represents a mono- to trivalent metal.

4,879,342

THERMOPLASTIC POLYCARBONATE MOULDING COMPOSITIONS

Hans-Jürgen Kress; Winfried Paul, both of Pittsburgh, Pa.; Horst Peters, Leverkusen, Fed. Rep. of Germany; Christian Lindner, Cologne, Fed. Rep. of Germany, and Josef Buekers, Krefeld, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 933,249, Nov. 21, 1986, Pat. No.

Claims priority, application Fed. Rep. of Germany, Dec. 3, 1985, 3542678; European Pat. Off., Nov. 20, 1986, 86116070.3; Japan, Nov. 27, 1986, 61-280917

The portion of the term of this patent subsequent to Oct. 11, 2005, has been disclaimed.

Int. Cl.^{4} C08L *69/00, 83/10*

U.S. Cl. 525—67 **11 Claims**

1. A thermoplastic moulding composition containing

(A) 55 to 95 parts by weight, relative to 100 parts by weight of A+B, of polydiorganosiloxanepolycarbonate block copolymer having an average molecular weight $\overline{M}_w$ of 10,000–200,000 and having a content of aromatic carbonate structure units between 75% by weight and 99% by weight and a content of diorganosiloxy units between 25% and 1.0% by weight, the block copolymers being prepared, starting from polydiorganosiloxanes containing

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α,ω-bishydroxyaryloxy end groups, with a degree of polymerization $\overline{P}_n$ of 5 to 100,

(B) 5 to 45 parts by weight, relative to 100 parts by weight of A+B, of a random copolymer of 95–70% by weight of styrene, α-methylstyrene or ring-substituted styrenes or mixtures of said vinyl aromatics and 5–30% by weight of maleic anhydride, and

(C) 1 to 4.5 parts by weight, relative to 100 parts by weight of A+B, of one or more graft polymers of
  (C 1) 5 to 90 parts by weight of a mixture of
    (i) 50 to 95% by weight of styrene, α-methylstyrene, ring-substituted styrene, methacrylate or mixtures thereof and
    (ii) 50 to 5% by weight of (meth)acrylonitrile, methyl methacrylate, maleic anhydride, N-substituted maleimide or mixtures thereof, on
  (C 2) 95 to 10 parts by weight, or a rubber having a glass transition temperature ≦10° C.

4,879,343

HEAT AND IMPACT RESISTANT RESIN COMPOSITION

Yuji Aoki, Yokkaichi, and Hiroaki Miyazaki, Suzuka, both of Japan, assignors to Mitsubishi Monsanto Chemical Company, Tokyo, Japan

PCT No. PCT/JP87/00931, § 371 Date Aug. 5, 1988, § 102(e) Date Aug. 5, 1988, PCT Pub. No. WO88/04309, PCT Pub. Date Jun. 16, 1988

PCT Filed Dec. 1, 1987, Ser. No. 243,338

Claims priority, application Japan, Dec. 11, 1986, 61-295592; Feb. 19, 1987, 62-36574

Int. Cl.⁴ C08L *51/04, 55/02, 79/08*

U.S. Cl. 525—71 12 Claims

1. A heat and impact resistant resin composition which comprises:

(i) from 5 to 89 parts by weight of a graft copolymer resin (A) obtained by graft polymerizing from 30 to 75 parts by weight of a monomer mixture comprising from 30 to 80% by weight of an aromatic vinyl monomer, from 10 to 50% by weight of an N-substituted maleimide monomer, from 10 to 40% by weight of a vinyl cyanide monomer and from 0 to 30% by weight of another vinyl monomer copolymerizable with these monomers, provided that the total amount of the monomer mixture is 100% by weight, onto from 25 to 70 parts by weight of a conjugated diene rubber (a) which is a rubbery polymer containing at least 50% by weight of a conjugated diene monomer component and having a glass transition temperature of not higher than 0° C.;

wherein said conjugated diene rubber (a) has an average particle size within a range of from 0.1 to 0.5 μm in its latex form as dispersed in water;

wherein said N-substituted maleimide monomer is at least one monomer selected from the group consisting of maleimide, N-phenylmaleimide, N-(o-methylphenyl)maleimide, N-(m-methylphenyl)maleimide, N-(p-methylphenyl)maleimide and N-cyclohexylmaleimide;

(ii) from 10 to 90 parts by weight of a copolymer resin (B) obtained by polymerizing a monomer mixture comprising from 30 to 80% by weight of an aromatic vinyl monomer, from 10 to 50% by weight of an N-substituted maleimide monomer, from 10 to 40% by weight of a vinyl cyanide monomer and from 0 to 30% by weight of other vinyl monomer copolymerizable with these monomers, provided that the total amount of the monomer mixture is 100% by weight, or an imido group-containing copolymer resin (B′) obtained by reacting a primary amine or ammonia, or both, with a copolymer obtained by polymerizing a monomer mixture comprising from 30 to 80% by weight of an aromatic vinyl monomer, from 5 to 50% by weight of maleic anhydride and from 0 to 40% by weight of another vinyl monomer copolymerizable with these monomers, provided that the total amount of the monomer mixture is 100% by weight;

(iii) from 1 to 45 parts by weight of a graft copolymer resin (C) obtained by graft polymerizing from 83 to 98 parts by weight of a monomer mixture comprising from 55 to 85% by weight of an aromatic vinyl monomer and from 15 to 45% by weight of a vinyl cyanide monomer, provided that the total amount of the monomer mixture is 100% by weight, onto from 2 to 17 parts by weight of a conjugated diene rubber (c), wherein said conjugated diene rubber (c) is a rubbery polymer containing at least 50% by weight of a conjugated diene monomer component, having a glass transition temperature of not higher than 0° C., and an average particle size of more than 0.5 μm and not more than 5 μm; and

(iv) from 0 to 50 parts by weight of a copolymer resin (D) obtained by polymerizing a monomer mixture comprising from 55 to 85% by weight of an aromatic vinyl monomer and from 15 to 45% by weight of a vinyl cyanide monomer, provided that the total amount of the monomer mixture is 100% by weight, and also

provided that the total amount of the copolymer resins (A), (B) or (B,), (C) and (D) is 100 parts by weight, wherein the weight ratio of the conjugated diene rubber (a) for the graft copolymer resin (A) to the conjugated diene rubber (c) for the graft copolymer resin (C) is within a range of conjugated diene rubber (a)/conjugated diene rubber (c)=97/3 to 50/50, and wherein the total amount of the conjugated diene rubber (a) and the conjugated diene rubber (c) contained in the resin composition is within a range of 5 to 40% by weight relative to the entire resin composition.

4,879,344

ACRYLIC/SILICONE RESINS FOR POWDER COATINGS

James T. K. Woo, Medina; John C. Reising, Avon; Richard M. Marcinko, North Royalton, all of Ohio, and David E. Miles, Port Huron, Mich., assignors to The Glidden Company, Cleveland, Ohio

Filed Aug. 8, 1988, Ser. No. 229,269

Int. Cl.⁴ C08F *8/00*

U.S. Cl. 525—100 6 Claims

1. A powder paint coating composition containing a thermosetting polymeric binder obtained by blending and extruding components comprising by weight:

50% to 75% of a low molecular weight hydroxyl functional acrylic copolymer having a Tg above about 40° C., the copolymer comprising copolymerized ethylenically unsaturated monomers between 50% and 73% acrylic monomer, between 7% and 30% hydroxyl functional monomer, with the balance being other ethylenically unsaturated monomer; and

25% to 50% of a solid cyclic silicone resin have a Tg above about 40° C., said silicone resin having at least two hydroxyl groups per silicone molecule and a number average molecular weight between about 600 and 8,000.

4,879,345

FLUOROPOLYMER BASED COATING COMPOSITION FOR ADHESION DIRECT TO GLASS

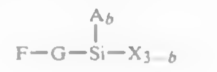
Bruce A. Connelly, Gibsonia; Matthew E. Wehrle, New Kensington, and Paul P. Greigger, Allison Park, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jul. 27, 1988, Ser. No. 224,837

Int. Cl.⁴ C08F *8/00*

U.S. Cl. 525—104 30 Claims

1. A coating composition, comprising a fluoropolymer, a film forming adjuvant resin which is different from the fluoropolymer and adapted to react with the group represented by F in the functional organosilane of formula I and which is selected from the group consisting of acrylic resins, polypoxide resins, polyester resins, aminoplast resins and mixtures thereof; and an amount effective to promote adhesion of a functional organosilane represented by formula I:



$$F-G-\overset{A_b}{\overset{|}{\mathrm{Si}}}-X_{3-b} \tag{I}$$

wherein

A represents an organo group containing from 1 to 18 carbon atoms,

G represents an organo group containing from 2 to 10 carbon atoms,

X represents a hydrolyzable group,

b is an integer from 0 to 2, and

F represents amino, polyamino, epoxy, glycidoxy, mercapto, cyano, allyl, vinyl, urethano, halo, isocyanato, ureido, imidazolinyl, acrylato or methacrylato.

4,879,346

BLENDS OF A SILICONE-POLYCARBONATE BLOCK COPOLYMER WITH A COMPATIBILIZED ALLOY OF POLYPHENYLENE ETHER RESIN/POLYESTER RESIN

Richard C. Bopp, West Coxsackie, and John B. Yates, III, Glenmont, both of N.Y., assignors to General Electric Company, Selkirk, N.Y.

Filed Jun. 10, 1988, Ser. No. 205,264

Int. Cl.⁴ C08F *8/00*

U.S. Cl. 525—146 19 Claims

1. A thermoplastic composition comprising: (a) silicone-polycarbonate copolymer; and (b) an admixture comprised of polyphenylene ether resin, polyester resin and aromatic polycarbonate resin.

4,879,347

GRAFT POLYMERIZATION PREFORMER AND METHOD OF MANUFACTURING THE SAME

Yasuo Moriya; Nobuyoshi Suzuki, and Hirosbi Goto, all of Aicbi, Japan, assignors to Nippon Oil and Fats Co., Ltd., Tokyo, Japan

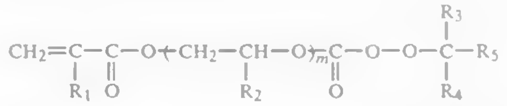
Divislon of Ser. No. 149,746, Jan. 29, 1988. This application Apr. 14, 1989, Ser. No. 339,057

Claims priority, application Japan, Jan. 31, 1987, 62-21127; May 11, 1987, 62-114021; Aug. 10, 1987, 62-199612; Aug. 10, 1987, 62-199615; Aug. 10, 1987, 62-199618

Int. Cl.⁴ C08F *255/02, 255/04, 255/06, 255/08*

U.S. Cl. 525—263 13 Claims

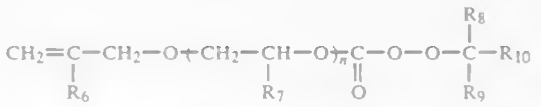
1. A method of manufacturing a graft polymerization preformer comprising the steps of suspending (a) 100 parts by weight of ethylene homopolymer, copolymer or mixture thereof in (b) water, adding to the resultant suspension a solution obtained by dissolving in (c) 5 to 400 parts by weight of one or more vinyl monomers selected from the group consisting of vinyl aromatic monomers, acrylic or methacrylic ester monomers and mixtures thereof, acrylonitrile, methacrylonitrile and vinyl ester monomers, (d) from 0.1 to 10 parts by weight, with respect to 100 parts by weight of said vinyl monomer, of one or more radical polymerizable organic peroxides represented by the formula



$$CH_2{=}\underset{R_1}{\underset{|}{C}}-\underset{O}{\underset{\|}{C}}-O\!\left(CH_2-\underset{R_2}{\underset{|}{CH}}-O\right)_{\!m}\underset{O}{\underset{\|}{C}}-O-O-\overset{R_3}{\overset{|}{\underset{R_4}{\underset{|}{C}}}}-R_5 \tag{1}$$

where R_1 represents a hydrogen atom or an alkyl group with a carbon number of 1 to 2, R_2 a hydrogen atom or a methyl group, R_3 and R_4 respective alkyl groups with carbon numbers of 1 to 4, R_5 an alkyl, phenyl or alkyl-substituted phenyl group with a carbon number of 1 to 12 or a cycloalkyl group with a carbon number of 3 to 12, and m is 1 or 2,

or the formula



$$CH_2{=}\underset{R_6}{\underset{|}{C}}-CH_2-O\!\left(CH_2-\underset{R_7}{\underset{|}{CH}}-O\right)_{\!n}\underset{O}{\underset{\|}{C}}-O-O-\overset{R_8}{\overset{|}{\underset{R_9}{\underset{|}{C}}}}-R_{10} \tag{II}$$

where R_6 represents a hydrogen atom or alkyl group with a carbon number of 1 to 4, R_7 a hydrogen atom or a methyl group, R_8 and R_9 represents alkyl groups with carbon numbers of 1 to 4, R_{10} and alkyl, phenyl or alkyl-substituted phenyl group with carbon number of 1 to 12 or cycloalkyl group with carbon number of 3 to 12, and n being 0, 1 or 2,

and (e) radical polymerization initiator with a decomposition temperature of 40° to 90° C. for a half reduction period of 10 hours such that it constitutes 0.01 to 5 parts by weight per 100 parts by weight of the sum of said vinyl monomer(s) and said radical polymerizable organic peroxide, heating the resultant mixture under a condition that decomposition of said initiator does not substantially take place whereby to impregnate said ethylene polymer with said vinyl monomer(s), radical polymerizable organic peroxide and radical polymerization initiator, and when the content of free vinyl monomer(s), radical polymerizable organic peroxide and radical initiator is reduced to be 50% by weight or less of the initial value, elevating the temperature of said water suspension to cause copolymerization of said vinyl monomer(s) and said radical polymerizable organic peroxide in said ethylene polymer.

4,879,348

CROSSLINKED AND GRAFTED OVERPOLYMER ACRYLATE RUBBERS

David E. Henton, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 915,466, Oct. 6, 1986, abandoned. This application Sep. 29, 1988, Ser. No. 250,577

Int. Cl.⁴ C08L *51/04;* **C08F** *265/04*

U.S. Cl. 525—305 12 Claims

1. A composition of matter in the form of an overpolymer comprising (1) a rubbery alkyl acrylate polymer, (2) a crosslinked and grafted overcoat of a polymer having a Tg value of greater than about 20° C., and (3) a grafted and uncrosslinked overcoat of a polymer having a Tg value of greater than about 20° C. said overcoat polymers comprising copolymers of styrene and acrylonitrile containing from about 10 to about 40 weight percent acrylonitrile and from 0 to 50 weight percent methylmethacrylate and wherein in the polymerization of said uncrosslinked overcoat, greater than 30 percent of the polymer is grafted.

4,879,349

SELECTIVE HYDROGENATION PROCESS

Ronald J. Hoxmeier, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Nov. 5, 1987, Ser. No. 116,981

Int. Cl.⁴ C08F *8/04*

U.S. Cl. 525—332.8 36 Claims

1. A method for preparing a selectively hydrogenated copolymer having a residual ethylenic unsaturation of at least 2 and no more than about 20 percent, the method comprising:

(a) providing an unsaturated copolymer comprising monomer units of at least two different conjugated diolefins, at least one of said conjugated diolefins being an unsubstituted linear conjugated diolefin capable of imparting Type I ethylenic unsaturation to the copolymer and the other of said conjugated diolefins selected from monomers capable of imparting 2 to about 20%, based on total copolymer ethylenic unsaturation, Type II ethylenic unsaturation;

(b) contacting said unsaturated copolymer, in solution, at a temperature within range of about 40° C. to about 110° C., with hydrogen at a partial pressure within range of from

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about 100 psig to about 1000 psig in the presence of an amount of a selective hydrogenation catalyst and for a time effective for selective hydrogenation of at least about 90% of the Type I and less than about 10% of the Type II ethylenic unsaturation; and

(c) recovering a selectively hydrogenated copolymer having a residual ethylenic unsaturation of at least 2 and not more than about 20 percent.

4,879,350

DEHYDROGENATED POLYCYCLOPENTADIENE

Bernd Tieke, Giffers, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

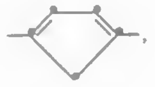
Filed Sep. 11, 1987, Ser. No. 95,074

Claims priority, application Switzerland, Sep. 19, 1986, 3757/86

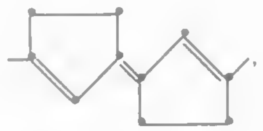
Int. Cl.⁴ C08F *8/06*

U.S. Cl. 525—332.1 5 Claims

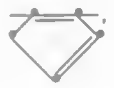
1. A dehydrogenated polycyclopentadiene which is insoluble in organic solvents, having a specific conductivity of at least 10^{-7} S.cm^{-1} and containing essentially the recurring structural units of the formulae III to VIII



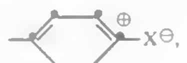
(III)



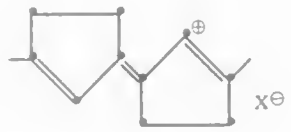
(IV)



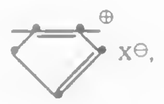
(V)



(VI)



(VII)



(VIII)

in which X⊖ is an anion derived from iodine or from a metal pentahalide or metalloid pentahalide.

4,879,351

ISOMERIZED TERPENE TACKIFIER RESINS

Robert W. Schluenz, Panama City, Fla., assignor to Arizona Chemical Company, Panama City, Fla.

Filed Aug. 15, 1988, Ser. No. 232,024

Int. Cl.⁴ C08F *8/00*

U.S. Cl. 525—332.1 12 Claims

1. A method for producing tackifier resins of improved compatibility with elastomers from terpene polymers or copolymers of terpene and hydrocarbon monomers which comprises isomerization of said polymers or copolymers by heating them to a temperature between 200° to 260° C. in the presence of an effective catalytic amount of iodine.

4,879,352

ADDUCTS OF AN AMINOALCOHOL AND NITRILE RUBBER

Janet B. Fulton, and Philip D. Edwards, both of Sarnia, Canada, assignors to Polysar Limited, Sarnia, Canada

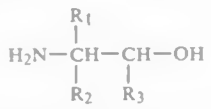
Filed Dec. 30, 1988, Ser. No. 291,964

Int. Cl.⁴ C08F *8/32*

U.S. Cl. 525—329.3 10 Claims

1. A method to prepare an adduct of

(a) an aminoalcohol of the formula



$$H_2N-\underset{R_2}{\overset{R_1}{CH}}-\underset{R_3}{CH}-OH$$

wherein R_1 is selected from H and methyl,

R_2 is selected from H and methyl,

R_3 is selected from H, a C_{1-5} alkyl and aryl, and

(b) a rubbery copolymer of a C_{3-5} α,β unsaturated nitrile and a C_{4-6} conjugated diene, said method consisting of
   - (i) providing a solution of said copolymer and said aminoalcohol,
   - (ii) adding to said solution a metal compound selected from zinc acetate and cadmium acetate, and
   - (iii) heating said solution to a temperature of from 100° to 180° C.

4,879,353

BROMINATION OF POLYSTYRENE USING BROMINE AS THE REACTION SOLVENT

David C. Sanders; John L. Sands, and Joseph L. Stahl, all of West Lafayette, assignors to Great Lakes Chemical Corporation, West Lafayette, Ind.

Continuation of Ser. No. 7,778, Jan. 28, 1987, abandoned. This application Oct. 28, 1988, Ser. No. 266,245

Int. Cl.⁴ C08F *8/22*

U.S. Cl. 525—357 6 Claims

1. A process for producing brominated styrenic polymers containing about 10% to 75% by weight bromine comprising the steps of:

reacting a styrene homo- or co-polymer having an MPS molecular weight of from about 300 to about 1,500,000 under substantially anhydrous conditions with bromine chloride in the presence of from about 5 up to about 100 parts of liquid bromine per part of styrenic polymer as the sole reaction medium and a Lewis acid halide catalyst at a temperature of from about −20° C. up to about 60° C., the bromine chloride having been formed in situ by the addition of chlorine to the liquid bromine reaction solvent and in which the degree of bromination of the styrenic polymer is controlled by adjusting the molar ratio of chlorine to styrenic polymer; and

thereafter recovering the brominated styrenic polymer thereby produced.

4,879,354

MISCIBLE BLENDS OF AN AMIDE AND/OR IMIDE CONTAINING POLYMER AND A POLYARYLATE

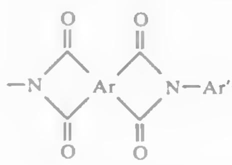
James E. Harris, Piscataway; Markus Matzner, Edison, both of N.J., and Lloyd M. Robeson, Macungie, Pa., assignors to Amoco Corporation, Chicago, Ill.

Continuation of Ser. No. 82,869, Aug. 6, 1987, abandoned, which is a continuation-in-part of Ser. No. 16,744, Feb. 19, 1987, abandoned, which is a continuation-in-part of Ser. No. 894,198, Aug. 7, 1986, abandoned. This application Aug. 29, 1988, Ser. No. 237,991

Int. Cl.⁴ C08L *67/00, 77/08*

U.S. Cl. 525—425 9 Claims

1. A miscible blend comprising a polyarylate and a polycarbonomide, said polycarbonomide comprising recurring units having the formula:



wherein Ar is an aromatic carbocyclic radical consisting of two aromatic nuclei linked through a divalent bridging group and Ar' is an aromatic carbocyclic radical consisting of a plurality of aromatic nuclei linked through isopropylidene moieties, and wherein said polycarbonomide comprises greater than about 5 wt. % isopropylidene moieties.

4,879,355

COMPATIBLE TRICOMPONENT POLYMER BLENDS

Ronald R. Light, and Robert W. Seymour, both of Kingsport, Tenn., assignors to Eastman Kodak, Rochester, N.Y.

Filed Sep. 29, 1988, Ser. No. 250,650

Int. Cl.⁴ C08F *20/00*

U.S. Cl. 525—439 11 Claims

1. A clear polymer blend, the polymeric components consisting essentially of:

(1) 25–90 wt. % of a glycol copolyester having repeat units from 1,4 cyclohexanedimethanol, terephthalic acid and an alkylene glycol;

(2) 70–5 wt. % of a polycarbonate resin; and

(3) 5–45 wt. % of an aromatic polyester having repeat units from isophthalic acid or terephthalic acid/isophthalic acid mixtures and Bisphenol A.

4,879,356

METHOD OF MANUFACTURING SINGLE-COMPONENT POLYURETHANE BAKING ENAMELS

Rainer Gras, Bochum, Fed. Rep. of Germany, assignor to Huels Aktiengesellschaft, Marl, Fed. Rep. of Germany

Filed Sep. 9, 1988, Ser. No. 242,303

Claims priority, application Fed. Rep. of Germany, Nov. 21, 1987, 3739478

Int. Cl.⁴ C08L *75/05, 75/04*

U.S. Cl. 525—440 18 Claims

1. A method of manufacturing a single-component PUR baking enamel comprising:

preparing a binder which is the reaction product of a partially blocked polyisocyanate (A) having a free NCO content >10 wt% and a total NCO content of 21–37 wt.% and a hydroxyl group-containing polyhydroxy compound having more than two hydroxy groups per molecule; and

combining the reaction product with baking enamel additives in a solvent employable for baking enamels.

4,879,357

NOVEL POLY(ALKYLENE CARBONATE) POLYAHLS HAVING MORE THAN ONE PENDANT ACID GROUP

Robert F. Harris, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Oct. 2, 1986, Ser. No. 914,686

Int. Cl.⁴ C08F *283/02*

U.S. Cl. 525—462 25 Claims

1. An acid-functional polymer having a poly(alkylene carbonate) backbone and on the average greater than one terminal acid group per molecule.

4,879,358

PROCESS FOR FLUORINATING LINEAR ALTERNATING POLYKETONE POLYMERS AND ARTICLES PRODUCED THEREFROM

John R. Kastelic, Katy, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Sep. 29, 1988, Ser. No. 250,884

Int. Cl.⁴ C08G *67/02*

U.S. Cl. 525—539 19 Claims

1. A process for fluorinating a linear alternating polymer of carbon monoxide and at least one ethylenically unsaturated hydrocarbon wherein said process comprises exposing a linear alternating polymer of carbon monoxide and at least one ethylenically unsaturated hydrocarbon to a gas mixture, wherein said gas mixture comprises 0.1–100% by volume fluorine and 0–99.9% by volume nitrogen at a temperature sufficient to cause a reaction between at least a portion of the polymer and the fluorine.

4,879,359

PROCESS FOR POLYMERISING ETHYLENE USING A CHROMIUM OXIDE CATALYST

Claude Chamla, Marignane, and John G. Speakman, Sausset les Pins, both of France, assignors to BP Chemicals Limited, London, England

Filed Dec. 24, 1987, Ser. No. 138,501

Claims priority, application France, Dec. 29, 1986, 8618289

Int. Cl.⁴ C08F *2/34, 4/22*

U.S. Cl. 526—105 8 Claims

1. A process for the polymerisation of ethylene or the copolymerisation of ethylene and at least one other alpha-olefin in the gaseous phase, in the presence of a catalyst comprising a chromium oxide compound supported on silica, alumina, or mixtures thereof, or coprecipitates thereof, and activated by a thermal treatment in a non-reducing atmosphere at a temperature of at least 250° C. and at most equal to the temperature at which the support begins to sinter, the catalyst being used in the form of a powder of a prepolymer prepared during a prepolymerisation stage consisting essentially of contacting the catalyst with ethylene, alone or mixed with at least one other alpha-olefin, in the presence of an organometallic compound selected from organoaluminum, organomagnesium and organozinc compounds or a mixture of these compounds, until the prepolymer contains per gram 4×10^{-5} to 3 milligram-atoms of chromium, the process being characterised in that the prepolymer powder is subjected after the prepolymerisation and before use to at least one extraction operation comprising:

(1) contacting at a temperature of between 20 and 110° C. and with agitation the prepolymer in an inert atmosphere with a solution comprising:
   - (a) an inert hydrocarbon liquid in a quantity between 0.5 and 50 liters per kilogram of prepolymer and
   - (b) one or more organometallic compounds or an addition complex of at least two organometallic compounds, being soluble in the inert hydrocarbon liquid, and having the general formula:

$$RMR'_{(n-1)}$$

wherein M is a metal selected from aluminum, magnesium, zinc or boron, R is a hydrogen atom or an alkyl group comprising 1 to 12 carbon atoms or an alcoholate group comprising 1 to 12 carbon atoms and n is an integer corresponding to the valency of the metal M, the quantity of the organometallic compound used being such that the number of milligram-atoms of metal M is between 0.05 and 50 per kg of polymer, and

(2) separating and eliminating the liquid phase of the resulting mixture from the prepolymer in an inert atmosphere by filtration or decantation of the prepolymer and by drying the prepolymer in partial vacuum or by means of an inert hot gas flow, so that the prepolymer is obtained in

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the form of a powder substantially free from hydrocarbon liquid.

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POLYPHENYLENE ETHER RESIN COMPOSITION

Yoshinobu Kobayashi; Tosio Itou, and Takayuki Inoue, all of Mie, Japan, assignors to Mitsubishi Petrochemical Co., Ltd., Tokyo, Japan

Filed Mar. 11, 1988, Ser. No. 167,238

Claims priority, application Japan, Mar. 13, 1987, 62-58561

Int. Cl.⁴ C08G *65/48;* **C08L** *63/08, 71/04*

U.S. Cl. 525—396 **11 Claims**

1. A polyphenylene ether resin composition consisting essentially of (a) a polyphenylene ether resin, (b) a polyester resin, and (c) from 0.1 to 10 parts by weight, per 100 parts by weight of the total of the components (a) and (b), of an epoxideized liquid polybutadiene having an oxirane oxygen content of at least 0.07% by weight, said polyester resin being present in an amount of from 10 to 95% by weight based on the total amount of the components (a) and (b).

4,879,361

PREPARATION OF BEAD POLYMERS FROM WATER-SOLUBLE, ETHYLENICALLY UNSATURATED MONOMERS

Gerd Rehmer, Bobenheim-Boxheim; Manfred Niessner, Ludwigshafen; Wilfried Heide, Freinsheim; Heinrich Hartmann, Limburgerhof, and Karl-Clemens Peters, Bad Durkheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Mar. 16, 1988, Ser. No. 168,825

Claims priority, application Fed. Rep. of Germany, Mar. 26, 1987, 3709921

Int. Cl.⁴ C08F *2/00*

U.S. Cl. 526—201 5 Claims

1. An improved process for preparing a polymer in bead form from water-soluble, ethylenically unsaturated monomers by reverse suspension polymerization of a suspension of an aqueous solution of the monomers in an inert hydrophobic liquid in the presence of a polymerization initiator and of a protective colloid, the improvement comprising using as the protective colloid a graft polymer obtainable by grafting a polymer (A) containing

(a) from 40 to 100% by weight of an aromatic monovinyl monomer,
(b) from 0 to 60% by weight of a monoethylenically unsaturated carboxylic acid of 3 to 6 carbon atoms, maleic anhydride and/or itaconic anhydride and
(c) from 0 to 20% by weight of other monoethylenically unsaturated monomers,

as copolymerized units with the proviso that the sum of the weight percentages (a) to (c) is always 100 and the polymer (A) has a molecular weight (number average) from 500 to 20,000 and a hydrogenation iodine number from 1.3 to 51 with a monomer mixture of

(1) from 70 to 100% by weight of an acrylic ester and/or methacrylic ester of a monohydric alcohol containing from 1 to 20 carbon atoms,
(2) from 0 to 15% by weight of a monoethylenically unsaturated carboxylic acid of 3 to 6 carbon atoms, maleic anhydride and/or itaconic anhydride,
(3) from 0 to 10% by weight of an acrylic monoester and/ or methacrylic monoester of a not less than dihydric alcohol,
(4) from 0 to 15% by weight of an aromatic monovinyl monomer and
(5) from 0 to 7.5% by weight of acrylamide and/or methacrylamide with the proviso that the sum of the weight percentages (1) to (5) is always 100, at up to 150° C. in an inert hydrophobic diluent in the presence of a polymerization initiator, the monomers being used in an amount from 97.5 to 50% by weight based on the mixture of polymer (A) and monomers.

4,879,362

MODIFIED POLYTETRAFLUOROETHYLENE RESINS

Richard A. Morgan, Vienna, W. Va., assignor to E. I. DuPont De Nemours and Company, Wilmington, Del.

Filed Dec. 31, 1987, Ser. No. 140,249

Int. Cl.⁴ C08F *16/24*

U.S. Cl. 526—247 10 Claims

1. A dispersion-process-produced non-melt-processible tetrafluoroethylene copolymer comprising recurring units of tetrafluoroethylene and a comonomer selected from the class consisting of hexafluoropropylene, perfluoro (alkyl vinyl ether) where the alkyl group has 1–4 carbons, and a mixture of them; with enough comonomer present in the shell to cause the copolymer to compound uniformly with an elastomer or plastic without forming visible agglomerates.

4,879,363

ORGANIC GLASS FOR OPTICAL PARTS

Yoshiharu Fujio; Kanemasa Matsukuma, and Toshihiko Nishimoto, all of Amagasaki, Japan, assignors to Daiso Co., Ltd., Osaka, Japan

Filed Oct. 12, 1988, Ser. No. 256,469

Claims priority, application Japan, Oct. 15, 1987, 62-261268

Int. Cl.⁴ C08F *18/18*

U.S. Cl. 526—314 8 Claims

1. An organic glass for optical parts which comprises a copolymer of

(a) 40 to 80 wt. % of a diallyl phthalate monomer,
(b) 10 to 35 wt. % of an allyl benzoate monomer, and
(c) 5 to 50 wt. % of a glycol bis(allylcarbonate) monomer.

4,879,364

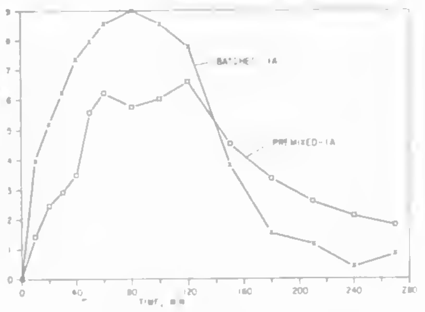
FILM OF CARBOXYLATED ACRYLATE LATEX, AND ARTICLE MADE THEREFROM

Vic Stanislawczyk, Sheffield Lake, Ohio, assignor to The B.F. Goodrich Company, Akron, Ohio

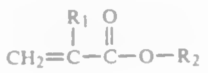
Continuation-in-part of Ser. No. 921,166, Oct. 20, 1986, abandoned. This application Feb. 13, 1989, Ser. No. 310,262

Int. Cl.⁴ G08F *122/02*

U.S. Cl. 526—318.2 15 Claims



1. An elastomeric self-supporting film consisting essentially of predominantly acrylate-containing, crosslinked polymer chains including repeating units derived from itaconic acid and an acrylate represented by the structure



$$CH_2{=}\overset{\overset{\displaystyle R_1}{|}}{C}{-}\overset{\overset{\displaystyle O}{\|}}{C}{-}O{-}R_2 \qquad (1)$$

wherein

R_1 is hydrogen or methyl;
R_2 represents C_1–C_{20} alkyl, C_2–C_7 alkoxyalkyl, C_2–C_7 alkylthioalkyl, or C_2–C_7 cyanoalkyl;
said crosslinking is effected by a crosslinking monomer present in an amount in the range from 0.1 phr to 20 phr;

said itaconic acid is present in the range from about 1 phr to about 20 phr:
at least 40 phr of said acrylate in said film is present as an alkyl acryla hich alkyl is C_4–C_8; and,
said film has a T_g in the range from −20° C. to −60° C., a tensile strength of at least 300 psi at 350% elongation, and less than a 20% hysteresis loss.

4,879,365

HIGH PREFORMANCE ONE-COMPONENT URETHANE COMPOSITIONS WITH EXCELLENT WEATHERING PROPERTIES AND METHOD FOR MAKING AND USING SAME

Glenn H. Petschke, Lancaster, and Bernard Taub, Williamsville, both of N.Y., assignors to NL Chemicals, Inc., New York, N.Y.

Filed Nov. 14, 1988, Ser. No. 270,750

Int. Cl.⁴ C08G *18/28*

U.S. Cl. 528—49 41 Claims

1. A compound comprising at least one oxazolidine ring chemically combined from the nitrogen atom of the ring through an alkylene-urethane linking group to a tetramethylxylylenediisocyanate prepolymer radical, said prepolymer radical containing at least one isocyanate group.

4,879,366

PREPARATION OF AROMATIC OLIGOMERS

Viktors Jansons, Los Gatos, and Heinrich C. Gors, Mountain View, both of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Continuation of Ser. No. 87,111, Aug. 18, 1987, abandoned, which is a division of Ser. No. 790,030, Oct. 22, 1985, Pat. No. 4,721,771, which is a continuation-in-part of Ser. No. 772,182, Aug. 30, 1985, abandoned, which is a continuation of Ser. No. 659,741, Oct. 11, 1984, abandoned, which is a continuation-in-part of Ser. No. 594,503, Mar. 29, 1984, abandoned, which is a continuation-in-part of Ser. No. 481,083, Mar. 31, 1983, abandoned. This application Jan. 11, 1989, Ser. No. 296,907

Int. Cl.⁴ C08G *2/00, 4/00*

U.S. Cl. 528—125 25 Claims

1. A method for the preparation of an arylene ketone or an arylene sulfone oligomer which comprises reacting, in the presence of free Lewis acid and a complex between a Lewis acid and a Lewis base, a monomer system comprising

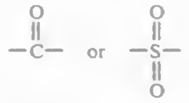
the combination of at least one activated monomer of the formula

H—(A2)—H

and, in an amount approximately equimolar with said activated monomer, at least one monomer of the formula

X—B—(A3—B)$_n$—X

wherein
A2 and A3 are divalent aromatic moieties, which can be the same or different,
B is



$$-\overset{\overset{\displaystyle O}{\|}}{C}- \quad \text{or} \quad -\overset{\overset{\displaystyle O}{\|}}{\underset{\underset{\displaystyle O}{\|}}{S}}-$$

H is a hydrogen displaceable under Friedel-Crafts conditions, X is a group displaceable under Friedel-Crafts conditions, and n is 0–2, said reaction being conducted under such conditions as to produce an oligomer having an inherent viscosity of less than 0.6 and having at least 2 repeat units.

4,879,367

PROCESS FOR THE PREPARATION OF ALIPHATIC POLYCARBONATES WITH ALKOXY SILANE INITIATOR

Karl-Erwin Piejko, Cologne; Bruno Bömer, Bergisch Gladbach; Hans-Josef Buysch, Krefeld, and Michael Hüllmann, Heppenheim, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

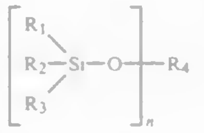
Filed Jun. 29, 1988, Ser. No. 212,817

Claims priority, application Fed. Rep. of Germany, Jul. 14, 1987, 3723194

Int. Cl.⁴ C08G *63/62*

U.S. Cl. 528—371 10 Claims

1. A process for the preparation of an aliphatic polycarbonate comprising polymerizing a cyclic, aliphatic carbonate in the presence of an initiator and a catalyst, wherein the initiator is an alkoxy silane of the formula



I

in which

R_1, R_2 and R_3 independently of one another are C_1–C_4-alkyl,
n is an integer from 1 to 6 and
R_4 is an n-valent aliphatic hydrocarbon radical or an n-valent substituted aliphatic hydrocarbon radical, and wherein the catalyst is a nucleophilic catalyst which is known from group transfer polymerization.

4,879,368

OLIGOBENZYLATED HYDROXYCARBOXYLIC ACID DERIVATIVE

Artur Botta, Krefeld, and Gert Jabs, Odenthal-Gloebusch, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

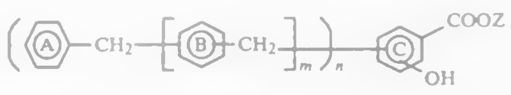
Filed Oct. 2, 1987, Ser. No. 104,732

Claims priority, application Fed. Rep. of Germany, Oct. 17, 1986, 3635311

Int. Cl.⁴ C08G *61/02*

U.S. Cl. 528—397 5 Claims

1. An oligobenzylated aromatic acid of the following formula I



I

in which

Z denotes hydrogen, alkyl having 1 to 6 C atoms or

$$\begin{matrix}M\\Z\end{matrix}$$

M denotes metal cation
z denotes 1 to 4,
n denotes 1 to 4,
m denotes 0 to 20 subject to the proviso that
m+n denotes at least 2, rings A, B and C are unsubstituted or substituted independently of each other or the ologobenzylated aromatic acid can be in bimolecular form wherein 2 radicals of the formula I are linked with each other and wherein the substituents on rings A, B and C represent the members for completing a 6-membered carbocyclic ring with the benzene nucleus.

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4,879,369

METHOD OF REMOVING LIGNIN FROM TALL OIL

Carlton G. Force, Mt. Pleasant, S.C., assignor to Westvaco Corporation, New York, N.Y.

Filed Jan. 20, 1988, Ser. No. 146,200

Int. Cl.^{4} C09F *1/02;* **B01D** *3/14*

U.S. Cl. 530—205 4 Claims

1. A method of processing tall oil for use as an emulsifier in the polymerization of rubber comprising the steps of:

sparging crude tall oil at a temperature of between about 350° F. and 400° F. with a carrier gas for at least about one hour to depolymerize and remove lower molecular weight lignin materials from the crude tall oil, then

heat-treating the sparged crude tall oil at a temperature of between about 500° F. and 525° F. for about two hours to polymerize any lignin remaining therein, then

fractionally distilling the crude tall oil, said distilling including the removal of a pitch fraction containing polymerized lignin, then

disproportionating the tall oil by heating the distilled tall oil in the presence of a disproportionation catalyst at a temperature of about 425° F. and then

sparging the disproportioned tall oil with a carrier gas to remove said disporportionation catalysts.

4,879,370

GLUTATHIONE DELIVERY SYSTEM

Alton Meister, New York, N.Y., assignor to Cornell Research Foundation, Inc., Ithaca, N.Y.

Division of Ser. No. 68,306, Jul. 1, 1987, Pat. No. 4,784,685, which is a division of Ser. No. 817,696, Jan. 10, 1986, Pat. No. 4,710,489, which is a continuation-in-part of Ser. No. 557,555, Dec. 2, 1983, abandoned. This application Jul. 27, 1988, Ser. No. 225,672

Claims priority, application Japan, Apr. 22, 1985, 60-86974; Apr. 22, 1985, 60-86975; Apr. 22, 1985, 60-86976

Int. Cl.^{4} C07K *5/08*

U.S. Cl. 530—331 3 Claims

1. Substantially pure monomethyl glutathione, only the glycine carboxyl group being esterified.

4,879,371

SOLID PHASE PEPTIDE SYNTHESIS

Daniel P. Getman, St. Louis, and Robert M. Heintz, Ballwin, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

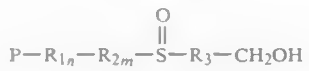
Division of Ser. No. 946,558, Dec. 24, 1986, Pat. No. 4,764,595. This application Jun. 20, 1988, Ser. No. 208,942

Int. Cl.^{4} C07K *1/04, 1/06*

U.S. Cl. 530—334 5 Claims

1. A method of synthesizing a peptide comprising

(a) anchoring protected carboxyl terminal amino acid to a resin of the formula



$$P—R_{1n}—R_{2m}—\overset{\overset{O}{\|}}{S}—R_3—CH_2OH$$

where R_1 is a substituted or unsubstituted aromatic, R2 is an alkyl having from 1 to 20 carbon atoms, R_3 is a substituted or unsubstituted phenyl and n and m independently equal 0 or 1 to form a benzyl ester linkage;

(b) deprotecting the anchored amino acid;

(c) neutralizing the anchored amino acid to convert to an amine;

(d) coupling a protected carboxyl terminal amino acid to the amine of step (c);

(e) repeating steps (b), (c) and (d) to synthesize the desired peptide on the resin of step (a);

(f) reducing the sulfoxide to a sulfide; and

(g) cleaving the peptide from the resin to obtain the synthesized peptide.

4,879,372

FIBER REACTIVE COMPOUND HAVING SYM-TRIAZINE AND AMINOBENZOYLAMINE MOIETIES

Toshihiko Morimitsu, Minoo; Naoki Harada, Suita, and Takashi Omura, Ashiya, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

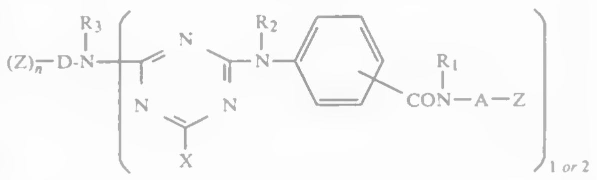
Filed Nov. 6, 1987, Ser. No. 117,552

Claims priority, application Japan, Nov. 14, 1986, 61-272572

Int. Cl.^{4} C09B *62/085, 62/09, 62/51, 62/513*

U.S. Cl. 534—618 8 Claims

1. A compound represented by the formula,



wherein X is chloro or fluoro, R_1, R_2 and R_3 independently of one another are each hydrogen or alkyl unsubstituted or substituted with hydroxy, cyano, C_{1-4} alkoxy, halogeno, carboxy, carbamoyl, C_{1-4} alkoxycarbonyl, C_{1-4} alkylcarbonyloxy, sulfo or sulfamoyl, A is unsubstituted phenylene or naphthylene unsubstituted or substituted with sulfo, Z is $—SO_2CH═CH_2$ or $—SO_2CH_2CH_2Y$ in which Y is a group splittable by the action of an alkali, D is an anionic dye moiety, and n is 0, 1 or 2.

4,879,373

1-(DICHLORO-4′-SULFAMOYL OR SUBSTITUTED SULFAMOYL-PHENYAZO)-2-HYDROXY-3-PHENYLCARBAMOYL OR SUBSTITUTED PHENYLCARBAMOYL-NAPHTHALENES

Bansi L. Kaul, Biel-Benken, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

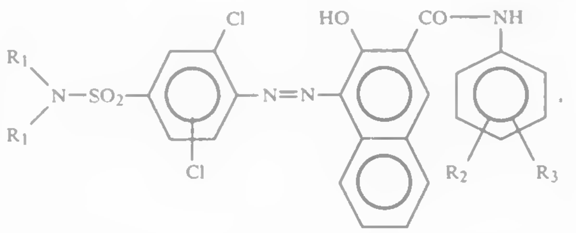
Continuation of Ser. No. 812,871, Dec. 23, 1985, abandoned, which is a division of Ser. No. 659,246, Oct. 10, 1984, Pat. No. 4,623,397, which is a division of Ser. No. 410,175, Aug. 20, 1982, abandoned. This application Feb. 19, 1987, Ser. No. 16,300

Claims priority, application Fed. Rep. of Germany, Aug. 28, 1981, 3134126

Int. Cl.^{4} C09B *29/01, 19/20;* **D06P** *1/44*

U.S. Cl. 534—864 19 Claims

1. A compound of the formula



wherein

each R_1 is independently hydrogen, C_{1-8}alkyl, cyclohexyl or C_{2-3}alkyl substituted by 1 or 2 substituents selected from halo, hydroxy, cyano, methoxy, ethoxy and (C_{1-2}alkoxy)-carbonyl, and

each of R_2 and R_3 is independently hydrogen, chloro, bromo, methyl, methoxy or ethoxy.

4,879,374

BOVINE INTERLEUKIN-1β DNA SEQUENCE

Douglas P. Cerretti; Brian S. Davis, and Charles R. Maliszewski, all of Seattle, Wash., assignors to Immunex Corporation, Seattle, Wash.

Filed Mar. 13, 1987, Ser. No. 25,462

Int. Cl.^{4} C07H *19/073*

U.S. Cl. 536—27 6 Claims

1. An isolated DNA segment encoding bovine interleukin-1β (bIL-1β).

2. An isolated DNA segment having a nucleotide sequence encoding the following amino acid sequence:

Ala Pro Val Gln Ser Ile Lys Cys Lys Leu Gln Asp Arg Glu Gln

Lys Ser Leu Val Leu Ala Ser Pro Cys Val Leu Lys Ala Leu His

Leu Leu Ser Asp Glu Met Asp Arg Glu Val Val Phe Cys Met

Ser Phe Val Gln Gly Glu Glu Arg Asp Asp Lys Ile Pro Val

Ala Leu Gly Ile Lys Asp Lys Asp Leu Tyr Leu Ser Cys Val

Lys Lys Gly Asp Thr Pro Thr Leu Gln Leu Glu Glu Val Asp

Pro Lys Val Tyr Pro Lys Arg Asp Met Glu Lys Arg Phe Val

Phe Tyr Lys Thr Glu Ile Lys Asp Thr Val Glu Phe Glu Ser

Val Leu Tyr Pro Asp Trp Tyr Ile Ser Ser Ser Gln Ile Glu

Glu Arg Pro Val Phe Leu Gly His Phe Arg Gly Gly Gln Asp

Ile Thr Asp Phe Arg Met Glu Thr Leu Ser Pro

3. An isolated DNA segment having the following sequence of nucleotides:

GCA CCC GTG CAG TCA ATA AAG TGC AAA CTC CAG

GAC AGA GAG CAA AAA TCC CTG GTG CTG GCT AGC

CCA TGT GTG CTG AAG GCT CTC CAC CTC CTC TCA

CAG GAA ATG AAC CGA GAA GTG GTG TTC TGC ATG

AGC TTT GTG CAA GGA GAG GAA AGA GAC AAC

AAG ATT CCT GTG GCC TTG GGT ATC AAG GAC AAG

AAT CTA TAC CTG TCT TGT GTG AAA AAA GGT GAT

ACG CCC ACC CTG CAG CTG GAG GAA GTA GAC CCC

AAA GTC TAC CCC AAG AGG AAT ATG GAA AAG

CGC TTT GTC TTC TAC AAG ACA GAA ATC AAG AAT

ACA GTT GAA TTT GAG TCT GTC CTG TAC CCT AAC

TGG TAC ATC AGC ACT TCT CAA ATC GAA GAA AGG

CCC GTC TTC CTG GGA CAT TTT CGA GGT GGC CAG

GAT ATA ACT GAC TTC AGA ATG GAA ACC CTC TCT

CCC

4,879,375

PREPARATION OF HYALURONIC ACID FROM SYNOVIAL FLUID

David Cullis-Hill, 111 Bronte Road, Bondi Junction N.S.W., Australia (2022)

PCT No. PCT/AU86/00129, § 371 Date Feb. 9, 1987, § 102(e) Date Feb. 9, 1987, PCT Pub. No. WO86/06728, PCT Pub. Date Nov. 20, 1986

PCT Filed May 7, 1986, Ser. No. 2,699

Claims priority, application Australia, May 9, 1985, PH0496

Int. Cl.^{4} C07H *5/04;* **C07G** *17/00*

U.S. Cl. 536—55.1 22 Claims

1. A method of preparing high purity hyaluronic acid with a protein impurity of less than or equal to 0.5% w/w from synovial fluid comprising the steps of:

(a) removing high molecular weight impurities, if present, from the synovial fluid;

(b) dissolving a metallic salt and free radical inhibitor in the synovial fluid;

(c) precipitating hyaluronic acid and protein by adding sufficient of a water miscible alcohol to said synovial fluid;

(d) separating the precipitate from step (c) and dissolving the hyaluronic acid contained therein in a solution in which the protein is insoluble;

(e) adding an effective amount of a free radical inhibitor to the step (d) solution;

(f) digesting the protein by treating said solution with an effective enzyme at a temperature of about 37° C. for a period of from 2 to 3 hours; and

(g) recovering hyaluronic acid.

4,879,376

TRITERPENE SAPONINS HAVING ANTI-INFLAMMATORY, MUCOLYTIC AND ANTIEDEMIC ACTIVITIES, PROCESS FOR THE PREPARATION THEREOF AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Piero Foresta; Orlando Ghirardi, both of Rome; Bruno Gabetta, and Aldo Cristoni, both of Milan, all of Italy, assignors to Sigma-Tau Industrie Farmaceutiche Riunite S.p.A., Rome and Inverni Della Beffa Industria Chimico Farmeceutica Derivati Naturali, Milan, both of, Italy

Filed Jun. 26, 1987, Ser. No. 67,948

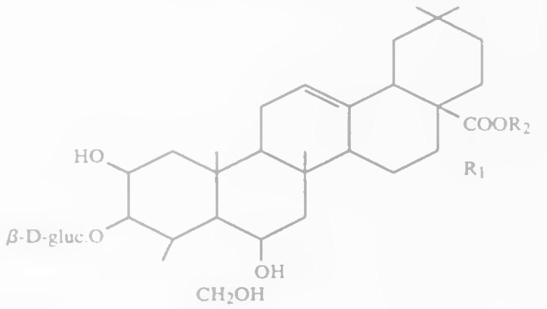
Claims priority, application Italy, Jul. 1, 1986, 48208 A/86

Int. Cl.^{4} A61K *31/705, 31/70, 35/78*

U.S. Cl. 536—18.1 8 Claims

1. A triterpene saponin of the general formula

(I)



wherein:

R_1 is H or OH, and

R_2 is a tetrasaccharide residue having 573 mass units or a pentasaccharide residue having 705 mass units, wherein R_2 is attached to the C-28 carboxyl by an ester bond.

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4,879,377

NUCLEOSIDE PROCESS

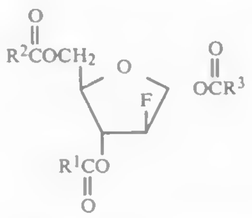
Steven P. Brundidge, Wolcott; Henry G. Howell; Chester Sapino, Jr., both of East Syracuse, all of N.Y., and Chou Hong-Tann, Berkeley Heights, N.J., assignors to Bristol-Myers Company, New York, N.Y.

Continuation of Ser. No. 795,551, Nov. 6, 1985, abandoned, which is a division of Ser. No. 574,329, Nov. 18, 1983, Pat. No. 4,625,020. This application Jul. 28, 1988, Ser. No. 227,416

Int. Cl.⁴ C07H *1/00*

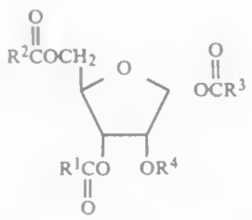
U.S. Cl. 536—18.2 **14 Claims**

1. The process for preparing the 1,3,5-tri-O-acyl-2-deoxy-2-fluoroarabinofuranoside ester of Formula VI



VI

wherein R^1, R^2, and R^3 are the carbonyl attached organic groups of carboxylic acyl groups having 1 to 20 carbon atoms and selected from alkanoyl, aroyl, and substituted aroyl wherein said substituent is alkyl, alkoxy, halo, nitro, or dinitro which comprises contacting potassium acid fluoride with the ribofuranoside ester of Formula V



V

wherein R^1, R^2, and R^3 have the same meaning as above and R^4 is the 1-imidazosulfonyl or the $—SO_2F$ group in an organic liquid reaction medium at 75°–170° C. until maximal production of product has occurred.

4,879,378

POLYSILOXANES WITH PENDANT STERICALLY HINDERED PHENOL MOIETY CONNECTED TO THE SILICON ATOM VIA A CARBONYLYOXY-CONTAINING LINK

George N. Foster, Bloomsbury, N.J.; Herbert E. Petty, Bethel, Conn., and Charles H. Blevins, II, Beacon, N.Y., assignors to Union Carbide Chemicals and Plastics Company Inc., Danbury, Conn.

Filed Mar. 30, 1989, Ser. No. 330,811

Int. Cl.⁴ C07F *7/08*

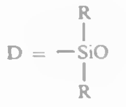
U.S. Cl. 556—439 **11 Claims**

1. A polysiloxane of the formula:

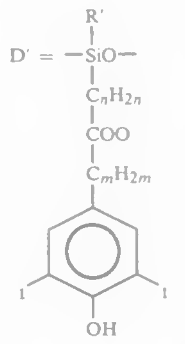
$$MD_xD'_yM \qquad (I)$$

wherein

$M = R''R_2SiO_{\frac{1}{2}}-$



$$D = -\overset{\overset{\displaystyle R}{|}}{\underset{\underset{\displaystyle R}{|}}{Si}}O$$



R = phenyl or a lower alkyl group;

R' = phenyl, phenethyl or an alkyl group having 1 to about 8 carbon atoms;

R'' = phenyl or an alkyl group or an alkoxy group having from 1 to about 30 carbon atoms;

t = tert-butyl;

n has a value of from 0 to about 10;

m has a value of about 2 to about 10;

x has a value of from 0 to about 250; and

y has a value of from 4 to about 250.

4,879,379

NOVEL PLATINUM-STEROID COMPLEXES

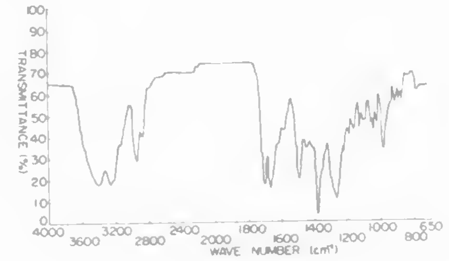
Yoshinori Kidani, and Masahide Noji, both of Nagoya, Japan, assignors to Yoshinori Kidani, Aichi, Japan

Filed Sep. 17, 1987, Ser. No. 99,298

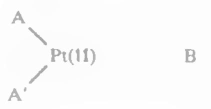
Claims priorjty, application Japan, Sep. 19, 1986, 61-219428

Int. Cl.⁴ C07J *1/00*

U.S. Cl. 540—3 9 Claims

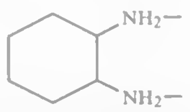


1. An antitumor platinum(II)-steroid complex represented by the general formula (I)

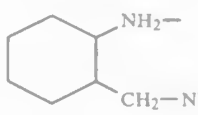


$$\begin{matrix} A \diagdown & & \\ & Pt(II) & \qquad B \\ A' \diagup & & \end{matrix} \qquad (I)$$

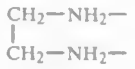
wherein A and A′ taken together form a 1,2-cyclohexanediamine ligand of the formula:



where the 1- and 2-amino groups have a configuration selected from cis-, trans-l- and trans-d-, relative to the cyclohexane ring; or A and A′ taken together form a 2-(aminomethyl)cyclohexylamine ligand of the formula:



where the 1-amino group and 2-aminomethyl group have a configuration selected from cis-l-, cis-d-, trans-l- and trans-d-, or a mixture thereof, relative to the cyclohexane ring; or A and A′ taken together form an ethylenediamine ligand of the formula:



$$\begin{matrix} CH_2—NH_2— \\ | \\ CH_2—NH_2— \end{matrix}$$

or A and A′ each denote a group NH_3—, and B denotes a steroid compound which coordinates the platinum(II) atom and is selected from the group consisting of cortisone, hydrocortisone, prednisone, prednisolone, methylprednisone, methylprednisolone, 17-α-hydroprogesterone, estrone, estriol, progestrone, cholic acid, deoxycholic acid, androsterone, testosterone and testosterone propionate, or a nitrate of the platinum(II)-steroid complex of the formula (I).

4,879,380

PROCESS FOR CONDITIONING CRUDE POLYHALOGENATED PIGMENTS USING A HETEROCYCLIC ORGANIC SOLVENT

John Henry Banties, and Thomas Edward Donegan, both of Holland, Mich., assignors to BASF Corp., Parsippany, N.J.

Filed May 5, 1988, Ser. No. 190,457

Int. Cl.⁴ C09B *47/00*

U.S. Cl. 540—137 **11 Claims**

1. A process for conditioning crude polyhalogenated phthalocyanine pigments, the process comprising:

(a) combiining the polyhalogenated phthalocyanine pigment crude with a heterocyclic organic liquid in which the pigment has a solubility of between 1 part in 10^3 and 1 part in 10^6, the ratio of pigment to organic liquid being between 1.5:1 and 3.5:1 on a weight basis, whereby a mixture is formed; and

(b) mixing the mixture under high shear conditions so that polyhalogenated phthalocyanine pigment crystals are produced.

4,879,381

7-(SUBSTITUTED OR UNSUBSTITUTED AMINO) 3-SUBSTITUTED METHYL-^{3}CEPHEM-4-CARBOXYLIC ACID

Hiroshi Sadaki; Narita Hirokazu; Hiroyuki Imaizumi, all of Toyama; Yoshinori Konishi, Takaoka; Takihiro Inaba, Namerikawa; Tatsuo Hirakawa, Toyama; Hideo Taki, Sagamihara; Masaru Tai, Toyama; Yasuo Watanabe, Toyama, and Isamu Saikawa, Toyama, all of Japan, assignors to Toyoma Chemical Company, Ltd., Tokyo, Japan

Division of Ser. No. 654,681, Sep. 26, 1984, Pat. No. 4,673,738, which is a division of Ser. No. 304,912, Sep. 23, 1981, Pat. No. 4,489,072. This application Mar. 6, 1987, Ser. No. 22,433

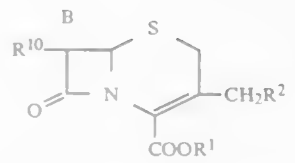
Claims priority, application Japan, Sep. 25, 1980, 55-132253; Nov. 12, 1980, 55-158184; Dec. 13, 1980, 55-175263

The portion of the term of this patent subsequent to Jun. 16, 2004, has been disclaimed.

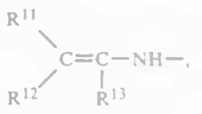
Int. Cl.⁴ C07D *31/545*

U.S. Cl. 540—222 5 Claims

1. A 7-(substituted or unsubstituted amino)-3-substituted methyl-Δ^3-cephem-4-carboxylic acid represented by the following formula or a salt thereof:

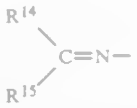


wherein R^1 represents a hydrogen atom or a carboxyl protecting group; R^2 represents a 1,2,4-triazolyl group in which carbon atoms in the 1,2,4-triazolyl ring may be substituted by one or two substituents selected from the group consisting of halogen, C_{1-14}-alkyl, benzyl, phenethyl, 4-methylbenzyl, naphthylmethyl, phenyl, naphthyl, indanyl, C_{2-10}-alkenyl, hydroxyl, protected hydroxyl, oxo, C_{1-14}-alkylthio, nitro, cyano, amino, protected amino, C_{1-14}-alkylamino, di-C_{1-14}-alkylamino, C_{1-12}-acyl, C_{1-12}-acyloxy, C_{1-12}-acyl-C_{1-14}-alkyl, carboxyl, protected carboxyl, carbamoyl, amino-C_{1-14}-alkyl, N-C_{1-14}-alkylamino-C_{1-14}-alkyl, N,N-di-C_{1-14}-alkylamino-C_{1-14}-alkyl, hydroxy-C_{1-14}-alkyl, hydroxyimino-C_{1-14}-alkyl, C_{1-14}-alkoxy-C_{1-14}-alkyl, carboxy-C_{1-14}-alkyl, C_{1-14}-alkoxyarbonyl-C_{1-14}-alkyl, benzyloxycarbonyl-C_{1-14}-alkyl, phenethyloxycarbonyl-C_{1-14}-alkyl, 4-methylbenzyloxycarbonyl-C_{1-14}-alkyl, naphthylmethyloxycarbonyl-C_{1-14}-alkyl, sulfo-$_{1-14}$-alkyl, sulfo, sulfamoyl-C_{1-14}-alkyl, carbamoyl-C_{1-14}-alkyl, carbamoyl-C_{2-10}-alkenyl and N-hydroxycarbamoyl-C_{1-14}-alkyl, with the proviso that when two substituents are selected from hydroxyl, protected hydroxyl, amino, protected amino, carboxyl and protected carboxyl, the combinations of hydroxyl and protected hydroxyl, amino and protected amino, and carboxyl and protected carboxyl are to be excluded, said 1,2,4-triazolyl group being attached to the exomethylene group at the 3-position of the cephem ring through a carbon-nitrogen bond; R^{10} represents an amino group, a protected amino group represented by the formula



$$\begin{matrix} R^{11} \diagdown & & \\ & C{=}C—NH—, & \\ R^{12} \diagup & | & \\ & R^{13} & \end{matrix}$$

or by the formula



$$\begin{matrix} R^{14} \diagdown & \\ & C{=}N— \\ R^{15} \diagup & \end{matrix}$$

in which R^{11}, R^{12}, R^{13}, R^{14} and R^{15}, which may be identical or different, are hydrogen atoms or C_{1-14}-alkyl, C_{2-10}-alkenyl, C_{3-7}-cycloalkyl, C_{5-7}-cycloalkenyl, phenyl, naphthyl, indanyl, benzyl, phenethyl, 4-methylbenzyl, naphthylmethyl, furyl, thienyl, pyrrolyl, pyrazolyl, imidazolyl, thiazolyl, isothiazolyl, oxazolyl, isoxazolyl, thiadiazolyl, oxadiazolyl, thiatriazolyl, oxatriazolyl, triazolyl, tetrazolyl, pyridyl, N-methylpiperidinyl, quinolyl, phenazinyl, 1,3-benzodioxolanyl, benzofuryl, benzothienyl, benzoxazolyl, benzothiazolyl, coumarinyl or acyl groups in which the above-mentioned heterocyclic groups are attached to adjacent carbon atom through carbon-carbon bond, which acyl can be derived from formic acid, acetic acid, propionic acid, butanoic acid, isobutanonic acid, pentanoic acid, methoxyacetic acid, methylthioacetic acid, acrylic acid, crotonic acid, cyclohexanoic acid, cyclopentaneacetic acid, cyclohexaneacetic acid, cyclohexanepropionic acid or cyclohexadieneacetic acid; and B represents a hydrogen atom or a C_{1-5}-alkoxy group.

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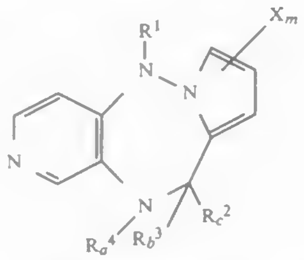
4,879,382
PYRIDO(3,4-F)PYRROLO(1,2-B)(1,2,5)TRIAZEPINES

Richard C. Effland, Bridgewater; Larry Davis, Sergentsville; Kevin J. Kapples, Little York, and Gordon E. Olsen, Somerset, all of N.J., assignors to Hoechst-Roussel Pharmaceuticals, Inc., Somerville, N.J.

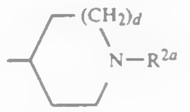
Filed Jul. 25, 1988, Ser. No. 223,847
Int. Cl.⁴ C07D *471/14*

U.S. Cl. 540—554 **30 Claims**

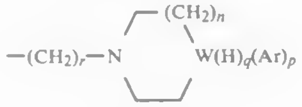
1. A compound of the formula:



wherein R^1 is loweralkyl, arylloweralkyl, or aminoloweralkyl; R^2 is hydrogen, loweralkyl, arylloweralkyl, aminoloweralkyl, aryl or a group of the formula



wherein d is an integer having a value of zero or 1 and R^{2a} is hydrogen, loweralkyl, arylloweralkyl or aminoloweralkyl; R^3 is hydrogen or loweralkyl, or together with R^2 constitutes a radical of the formula =O; R^4 is hydrogen, loweralkyl, arylloweralkyl, aminoloweralkyl, formyl, loweralkylcarbonyl, aminocarbonyl, arylaminocarbonyl, or a group of the formula



wherein W is carbon or nitrogen, Ar is aryl, q is an integer having a value from zero to 2, inclusive, p is an integer having a value of zero or 1, with the proviso that the sum of p and q is 1 when W is nitrogen and 2 when W is carbon, n is an integer having a value of zero or 1, and r is an integer having a value from 2 to 4, inclusive; X is halogen, loweralkyl, loweralkenyl, formyl or loweralkanol; m is an integer having a value of zero or 1; the dotted line is an optional bond; and a, b, and c, are integers having values of zero or one with the proviso that in the presence of said optional bond a is zero and the sum of b plus c is one, and in the absence of said optional bond a, b, and c each have a value of 1.

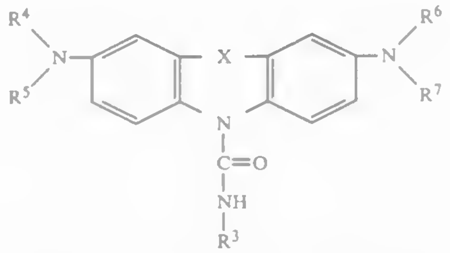
4,879,383
UREA DERIVATIVES

Yoshitsugu Sakata, Otsu; Kazunari Hashidume, Wakayama; Tsutomu Iwata, Kobe; Toyoharu Mukai, Daito, and Masaaki Kida, Suita, all of Japan, assignors to Wako Pure Chemical Industries, Ltd., Osaka, Japan

Filed Jun. 29, 1987, Ser. No. 67,050
Claims priority, application Japan, Jul. 1, 1986, 61-155872
Int. Cl.⁴ C07D *265/38, 279/30*

U.S. Cl. 544—37 **4 Claims**

1. A urea derivative represented by the formula:



wherein X is S or O; each of R^4, R^5, R^6 and R^7 is independently selected from the group consisting of a C_1–C_6 alkyl group, a carboxy (C_1–C_6 alkyl) group, a hydroxy (C_1–C_6 alkyl) group and a (C_1–C_6 alkoxy) (C_1–C_6 alkyl) group;

R^3 is selected from the group consisting of a carboxy (C_1–C_6 alkyl) group, a (C_1–C_6 alkoxy) carbonyl group, a (C_1–C_6 alkyl) carbonyl group, an arylsulfonyl group, a sulfoaryl group, a carboxyaryl group, and a modified carboxy (C_1–C_6 alkyl) group wherein the carboxy moiety is in the form of a salt of an alkali metal, the aryl moiety in said arylsulfonyl group, sulfoaryl group and carboxyaryl group being selected from the group consisting of phenyl, tolyl, methoxyphenyl, naphthyl, methylnaphthyl and methoxynaphthyl.

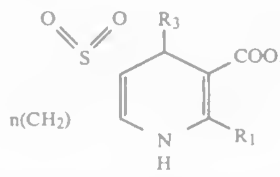
4,879,384
PREPARATION OF THIOCYCLOALKNO [3,2-B] PYRIDINES

Charles F. Schwender, Califon, and John H. Dodd, Lebanon, both of N.J., assignors to Ortho Pharmaceutical Corporation, Raritan, N.J.

Filed Jun. 15, 1988, Ser. No. 220,134
Int. Cl.⁴ C07D *495/04*

U.S. Cl. 546—114 **1 Claim**

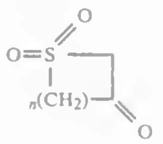
1. A process for preparing a compound of the formula



I

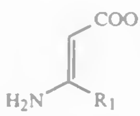
wherein n is an integer from 1 to 12; R_1 is hydrogen, amino, alkyl, haloalkyl or CH_2OR_2; R_2 is straight chained or branched alkyl having 1 to 8 carbon atoms, cycloalkyl having 3 to 7 carbon atoms, or alkylene-X, wherein X is alkoxy, hydroxy, halo, p-tosyloxy, mesyloxy, pyridyl, amino or $-NR_4R_5$, wherein R_4 and R_5 are the same or different and are selected from hydrogen, alkyl, cycloalkyl, phenyl, benzyl, phenylethyl, or R_4, R_5 and the nitrogen atom to which they are attached form a 5, 6 or 7 membered heterocyclic ring which optionally contains an oxygen or sulfur atom or an additional nitrogen atom, or said heterocyclic ring may be fused to a benzene ring, and in the instance wherein said heterocyclic ring is piperazino, said piperazino may optionally be substituted in the 4-position with the substituent R_6 which is selected from alkyl, cycloalkyl, benzyl, phenyl, or phenyl substituted by alkoxy, halo, alkyl, nitro or trifluoromethyl; R_3 is 2-pyridyl, 3-pyridyl, 3-pyridyl substituted at positions 2, 4, 5 or 6 with one or more groups selected from halogen, nitro, alkoxy, alkylthio, cyano, carbalkoxy, difluoromethoxy, difluoromethylthio or alkylsulfonyl; 2-thienyl, 3-thienyl, 2,1,3-benzoxadiazolyl, 2,1,3-benzthiadiazolyl or phenyl optionally substituted at positions 2 through 6 with one or more groups selected from hydrogen, alkyl, alkoxy, cyano, carbalkoxy, alkylthio, difluoromethoxy, difluoromethylthio, alkylsulfonyl, halo, nitro or trifluoromethyl; or the pharmaceutically acceptable acid and base addition salts thereof;

which process comprises reacting a compound of the formula (V)



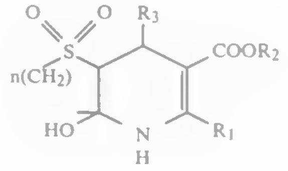
V

with a compound of formula (VI)



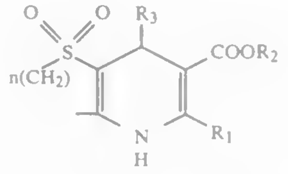
VI

and a compound of the formula R_3CHO (VII), to prepare a compound of the formula (VIII);



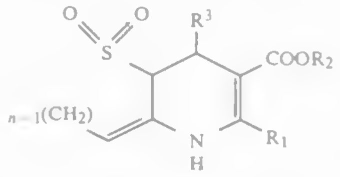
VIII

in the instance wherein n is 2, and thereafter dehydrating said compound (VIII) in order to prepare compound of the formula (Ia)



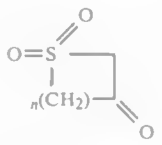
Ia

or to prepare a compound of the formula (XII)



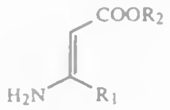
XII

in the instance wherein N is 3–12, by reacting a compound of the formula (V)



V

with a compound of the formula (VI)

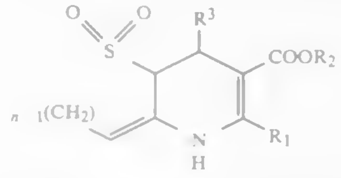


VI

and a compound of the formula (VII)

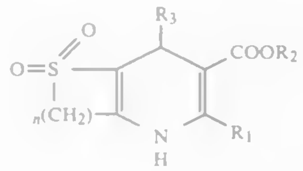
R_3CHO (VII)

to form a compound of the formula (XII)



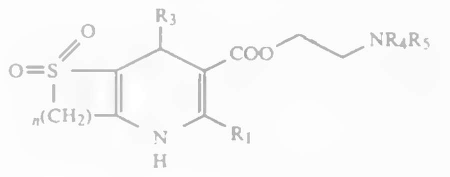
XII

and thereafter, if desired, converting compound **XII** to compound Ib by heating compounds XII with ethanolic hydrogen chloride or toluene to form a compound of the formula (Ib)



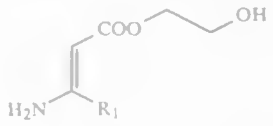
Ib

or in the instance wherein it is desired to prepare a final compound of the formula (Id)



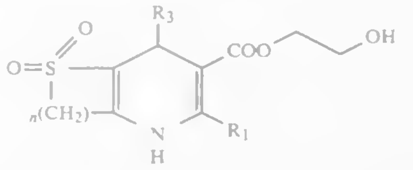
Id

reacting a compound of the formula (V) with a compound of the formula (VIa)



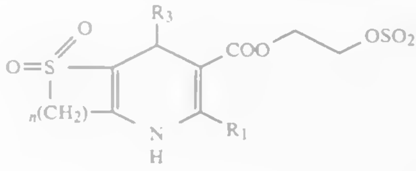
VIa

and a compound of the formula R_3CHO (VII) in order to prepare a compound of the formula (Ic)



Ic

then reacting said compound (Ic) with a compound of the formula YSO_2Cl, wherein Y is p-methylphenyl or alkyl, in order to prepare a compound of the formula (X)



X

and thereafter reacting said compound (X) with a compound of the formula HNR_4R_5 (XI) to prepare a compound of the formula (Id)

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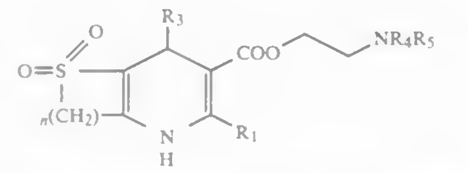


Id

wherein in formulas Id, VIa, Ic and X represents an ethylene moiety.

4,879,385

SUBSTITUTED HYDROXYALKYL-AZOLES AND THEIR USE AS ANTIMYCOTICS

Hans-Ludwig Elbe, Wuppertal; Karl H. Büchel, Burscheid; Klaus Schaller, and Manfred Plempel, both of Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

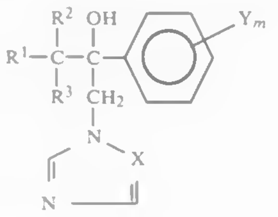
Continuation of Ser. No. 663,285, Oct. 22, 1984, abandoned, which is a continuation of Ser. No. 476,096, Mar. 17, 1983, abandoned. This application Jun. 15, 1987, Ser. No. 62,251

Claims priority, application Fed. Rep. of Germany, Apr. 2, 1982, 3212388

Int. Cl.⁴ A61K *31/41, 31/415;* **C07D** *249/12, 233/60*

U.S. Cl. 514—383 14 Claims

1 A substituted hydroxyalkyl-azole of the formula



in which

- R^1 represents phenyl or —O—phenyl, each of which is monosubstituted to disubstituted by identical or different substituents, the phenyl substituents having the meaning of Y;
- R^2 represents straight-chain or branched alkyl having 1 to 4 carbon atoms;
- R^3 represents straight-chain or branched alkyl having 1 to to 4 carbon atoms;
- X represents a nitrogen atom or the CH group;
- Y represents halogen or alkyl having 1 to 4 carbon atoms, alkoxy and alkylthio, each having 1 to 4 carbon atoms, halogenoalkyl and halogenoalkoxy and halogenoalkylthio, each having 1 to 2 carbon atoms and 1 to 5 identical or different halogen atoms, and represents phenyl, phenoxy, phenylalkyl and phenylalkoxy which have 1 to 2 carbon atoms in the alkyl part or in the alkoxy part, and each of which are optionally substituted by halogen and alkyl having 1 to 2 carbon atoms and m represents the number 0, 1, 2 or 3.

4,879,386

ANTI-TUMOR DC-52 COMPOUNDS

Hiromitsu Saito, Sagamihara; Yoichi Uosaki; Akira Sato, both of Machida; Tadashi Hirata, Yokohama; Makoto Morimoto, Shizuoka, and Tadashi Ashizawa, Numazu, all of Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., tokyo, Japan

PCT No. PCT/JP87/00708, § 371 Date May 25, 1988, § 102(e) Date May 25, 1988, PCT Pub. No. WO88/02369, PCT Pub. Date Apr. 7, 1988

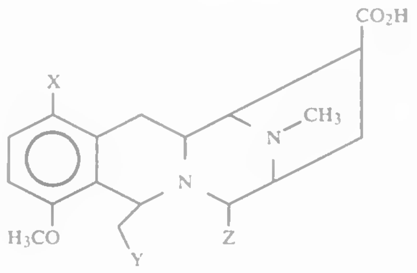
PCT Filed Sep. 28, 1987, Ser. No. 207,639

Claims priority, application Japan, Oct. 1, 1986, 61-233801

Int. Cl.⁴ A61K *31/495;* **C07D** *471/18, 498/22*

U.S. Cl. 544—343 1 Claim

1. Derivatives of DC-52 represented by the formula:



wherein X is chlorine, bromine, iodine, hydroxyl, formyl, hydroxyiminomethyl, cyano, nitro, amino or lower alkanoylamino; and Y is hydroxyl and Z is cyano, and pharmacologically acceptable salts thereof.

4,879,387

METHOD FOR MANUFACTURE OF PHTHALIC ANHYDRIDE

Tadanori Hara, Kitakyushu, Japan, assignor to Nippon Steel Chemical Co., Ltd., Tokyo, Japan

Filed Apr. 5, 1988, Ser. No. 177,990

Claims priority, application Japan, Apr. 10, 1987, 62-087143

Int. Cl.⁴ C07D *307/89*

U.S. Cl. 549—248 17 Claims

1. A method for the manufacture of phthalic anhydride by the catalytic oxidation of at least one raw material selected from the group consisting of naphthalene and ortho-xylene which comprises contacting a mixed gas containing naphthalene or orhoxylene or both and a molecular oxygen-containing gas with a catalyst bed comprising a first catalyst packed on the upstream side of the flow of said mixed gas and a second catalyst packed on the downstream side of the flow, wherein the first catalyst is deposited on a nonporous inactive carrier, said first catalyst having a catalytically active component consisting essentially of 90 to 67% by weight of titanium dioxide, 8 to 30% by weight of vanadium pentoxide, 2 to 5% by weight of cesium compound and 0.11 to 0.2 of cesium compound/vanadium pentoxide (molar ratio) (calculated as Cs_2SO_4), wherein specific surface area of the catalytically active component is at least 20 m^2/g, and the second catalyst is deposited on the nonporous inactive carrier, said catalyst having a catalytically active component composed of 94 to 67% by weight of titanium dioxide, 5 to 30% by weight of vanadium pentoxide and not more than 0.1% by weight of an alkali metal compound (calculated as sulfate), wherein specific surface area of the catalytically active component is at least 5 m^2/g.

4,879,388

EXTRACTION OF METAL VALUES

Peter M. Quan, Rochdale; David Stewart, Royton, and Anthony J. Nelson, Middleton, all of England, assignors to Imperial Chemical Industries, PLC, London, England

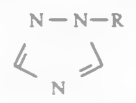
Continuation of Ser. No. 912,660, Sep. 29, 1986, abandoned, which is a continuation of Ser. No. 663,696, Oct. 22, 1984, abandoned. This application Feb. 29, 1988, Ser. No. 165,350

Claims priority, application United Kingdom, Nov. 17, 1983, 8330715

Int. Cl.⁴ C07D *249/08*

U.S. Cl. 548—262 9 Claims

1. A process for extracting copper values from aqueous solutions of metal salts containing halide or pseudo halide anions which comprises contacting the aqueous solution with a solution in a water-immiscible organic solvent of a 1-substituted-1,2,4-triazole of the formula:



where R is: (1) a hydrocarbyl group, R_1, containing from 9 to 36 carbon atoms; or (2) a group of the formula:

$$—(X)_n—(CO—Y)_m$$

wherein X is (i) a methylene linking group wherein one or both H atoms are optionally replaced by a halogen atom, cyano group, nitro group or lower alkyl group, or (ii) a vinylene linking group $R_4—C{=}C—R_5$ wherein R_4 and R_5 are separately hydrogen or a halogen atom, cyano group, nitro group or lower alkyl group or the group CO—Y, or (III) a phenylene group optionally substituted by a halogen atom, or (iv) a linking group of the formula:

$$—CO—A—$$

where

- A is an ortho phenylene linking group, optionally substituted by one or more halogen atoms, a cyano group, a nitro group or a lower alkyl group, and
- n is 1 or 0; and wherein
- Y is OR_2 or R_3 where R_2 and R_3 are hydrocarbyl groups containing from 9 to 36 carbon atoms and m is from 1 to 3.

4,879,389

CHIRAL PHOSPHINOPYRROLIDINE COMPOUNDS AND THEIR USE FOR ASYMMETRIC SYNTHESIS OF OPTICALLY ACTIVE COMPOUNDS

Kazuo Achiwa, 11-17, Kamiashiarai 2-chome, Shizuoka-shi, Shizuoka-ken, Japan

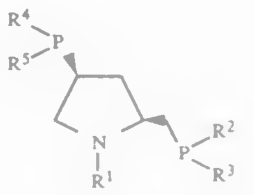
Filed Jun. 25, 1987, Ser. No. 66,251

Claims priority, application Japan, Jun. 25, 1986, 61-147167; Mar. 9, 1987, 62-52177; Mar. 9, 1987, 62-52178

Int. Cl.⁴ C07F *9/65, 7/18;* **C07B** *53/00;* **B01J** *31/02*

U.S. Cl. 548—412 6 Claims

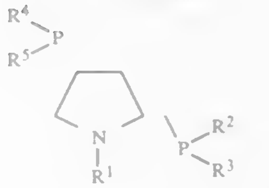
1. Chiral phosphinopyrrolidine compounds of the formula:



(I)

or

-continued



(I')

wherein R^1 is a hydrogen atom, —COR, —COOR, —CONHR or $—SO_2—R$ where R is an alkyl or aryl group, R^2 and R^3 each represent independently, phenyl, napthyl, furyl, thienyl, pyrrolyl, pyridyl, pyrazinyl, pyrimidyl, pyridazinyl, quinolyl or isoquinolyl, which may be substituted with one or more halogen atoms, hydroxyl, alkyl or alkoxyl groups; and R^4 and R^5 represent, independently C_1–C_8 straight chain or branched chain alkyl, alkenyl or alkynyl groups which may be substituted with one or more halogen atoms, hydroxyl or alkoxy groups; and C_5–C_8 cycloalkyl, cycloalkenyl or cycloalkynyl, which may be substituted with one or more halogen atoms, hydroxyl, alkyl or alkoxy groups.

4,879,390

DELTA-BUTYROLACTAMS, THEREOF, PROCESSES FOR THE PREPARATION THEREOF AND THEIR MEDICAL USE

Yen-rong Chen; Ming-he Yang; Liang Huang; Geng-tao Liu, all of Beijing, China, and Ulrich Benz, Duesseldorf, Fed. Rep. of Germany, assignors to Chinese Academy of Medical Sciences, Beijing, China and Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

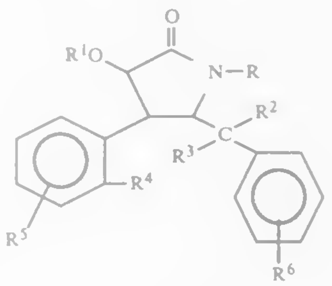
Continuation of Ser. No. 769,097, Aug. 26, 1985, abandoned. This application Apr. 27, 1988, Ser. No. 186,540

Claims priority, application Fed. Rep. of Germany, Aug. 24, 1984, 3431257

Int. Cl.⁴ C07D *207/38, 491/08*

U.S. Cl. 548—453 9 Claims

1. A compound of the formula



wherein

- R is an alkyl, aryl or aralkyl group having from 1 to 10 carbon atoms;
- R^1 represents an alkyl, aryl or aralkyl group having from 1 to 10 carbon atoms, a carboxylic acid acyl group having from 1 to 18 carbon atoms or together with R^3 represents a chemical bond;
- R^2 represents hydrogen or together with R^3 represents oxygen;
- R^3 represents hydrogen, hydroxy, an alkoxy, aryloxy or aralkyloxy group having from 1 to 10 carbon atoms, an acyloxy group having from 1 to 18 carbon atoms, together with R^1 or R^4 *l represents a chemical bond or together with R2* represents oxygen;
- R^4 is hydrogen, together with R^3 represents a chemical bond or has the meaning of R^5; and
- R^5 and R^6 which are the same or different, represent hydrogen, an alkyl, aryl or aralkyl group having from 1 to 10 carbon atoms, an alkoxy, aryloxy or aralkoxy group having from 1 to 10 carbon atoms, a carboxylic acid acyl group having from 1 to 18 carbon atoms, CF_3, OCF_3, nitro, hydroxy, halogen, amino, dialkylamino having from 1 to 4 carbon

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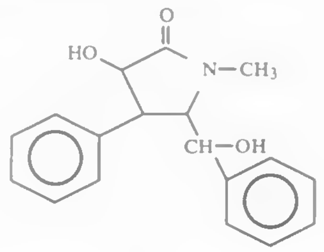
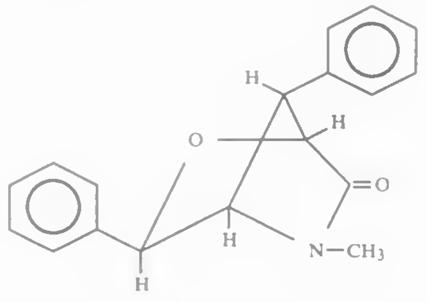
atoms in the alkyl groups, carboxy, SO_3H or carboxylic acid acylamino having 1 to 18 carbon atoms.

6. A substantially pure stereoisomer of the formula



9. The substantially pure compound of the formula



4,879,391

1-PHENYL-2(1H,3H)-INDOLONE PSYCHOTHERAPEUTIC AGENTS

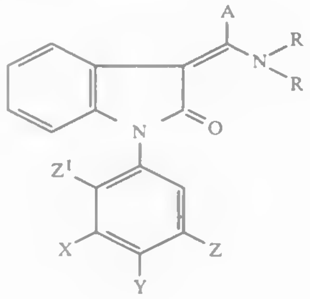
Harry R. Howard, Jr., Bristol, and Reinhard Sarges, Mystic, both of Conn., assignors to Pfizer Inc., New York, N.Y.

Division of Ser. No. 641,071, Aug. 15, 1984, which is a division of Ser. No. 420,544, Sep. 20, 1982, Pat. No. 4,476,307. This application Aug. 3, 1987, Ser. No. 81,262

Int. Cl.⁴ C07D *209/34*

U.S. Cl. 548—486 **31 Claims**

1. A compound of the formula



wherein:

A is hydrogen or methyl;

R is hydrogen, methyl or ethyl;

X is hydrogen, (C_1–C_2)alkyl; (C_1–C_2)alkkoxy, (C_1–C_2)alkylthio; chloro, fluoro or trifluoromethyl;

Y is hydrogen, (C_1–$C_{2\neq}$)*alkyl,* (C_1–C_2)alkoxy or (C_1–C_2)alkylthio; and

Z and Z^1 are each independently hydrogen or methyl; with the provisos that:

at least one of X, Y, Z and Z^1 is other than hydrogen;

at least one of X and Y is other than (C_1–C_2)alkoxy; and

when R is methyl, A is also methyl.

4,879,392

PROCESS FOR MAKING PERHYDROINDOLE-2-CARBONXYLIC ACID

Francis Brion, Gagny; Jean Buendia, Le Perreux sur Marne, and Christian Marie, Noisy le Sec, all of France, assignors to Roussel Uclaf, Paris, France

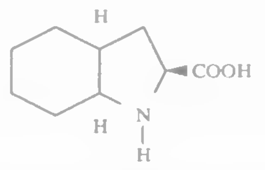
Filed Oct. 21, 1987, Ser. No. 111,982

Claims priority, application France, Oct. 22, 1986, 86 14650

Int. Cl.⁴ C07D *209/18*

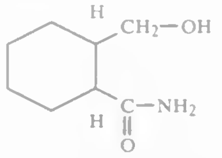
U.S. Cl. 548—492 **7 Claims**

1. A process for the asymmetric preparation of a compound of the formula



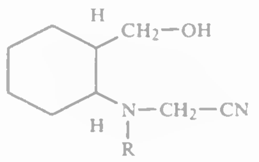
I

wherein the hydrogens at 3a and 7a are of cis or trans configuration and their non-toxic, pharmaceutically acceptable acid addition salts consisting essentially of submitting a compound of the formula



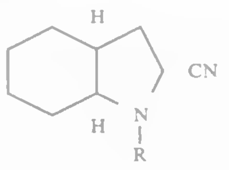
II

to a Hoffman reaction and reacting the resulting product with formaldehyde, cyanide ions and an acid chloride, bromide or iodide of benzoic acid or an alkyl carboxylic acid of 1 to 5 carbon atoms to obtain a compound of the formula



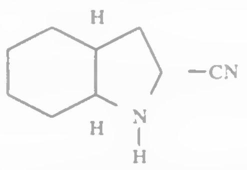
III

wherein R is acyl of benzoic acid or alkyl carboxylic acid of 1 to 5 carbon atoms, cyclizing the latter to form a compound of the formula



IV

selectively hydrolyzing the latter with a dilute aqueous mineral acid to obtain a compound of the formula



IV'

and subjecting the latter to hydrolysis with a concentrated aqueous mineral acid to form the acid addition salt of a compound of Formula I.

4,879,393

4-BENZYLOXY-3-PYRROLIN-2-ON-1-YL ACETAMIDE PRODUCTION

Thomas Meul, Visp, Switzerland, assignor to Lonza Ltd., Gampel/Valais, Switzerland

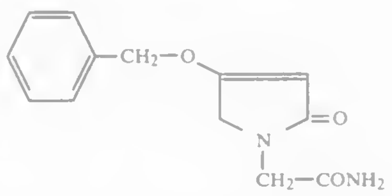
Division of Ser. No. 60,262, Jun. 10, 1987. This application Apr. 14, 1988, Ser. No. 181,710

Claims priority, application Switzerland, Jun. 26, 1986, 2567/86

Int. Cl.⁴ C07D *207/38*

U.S. Cl. 548—544 **16 Claims**

1. Process for the production of 4-benzyloxy-3-pyrrolin-2-on-1-yl acetamide of the formula:



comprising converting a 4-(C_1-C_2) alkoxy-3-pyrrolin-2-on-1-yl acetic acid (C_1-C_4) alkyl ester with benzyl alcohol in the presence of an acid to 4-benzyloxy-3-pyrrolin-2-on-1-yl acetic acid benzyl ester, and converting said 4-benzyloxy-3-pyrrolin-2-on-1-yl acetic acid benzyl ester with ammonia to said 4-benzyloxy-3-pyrrolin-2-on-1-yl acetamide.

4,879,394

REACTION OF OLEFINS WITH MALEIC ANHYDRIDE

Herbert E. Fried, and Charles L. Edwards, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 120,255, Nov. 13, 1987, abandoned. This application May 4, 1988, Ser. No. 190,283

Int. Cl.⁴ C07D *307/60*

U.S. Cl. 549—255 **4 Claims**

1. In a process for the reaction of olefinically unsaturated hydrocarbons with maleic anhydride to form the corresponding alkenyl succinic anhydride in the presence of an additive which reduces the formation of black solids and improves product color, the improvement which comprises utilizing a dialkyl zinc as additive.

4,879,395

VITAMIN E INTERMEDIATE

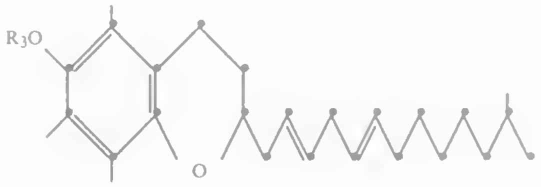
David L. Coffen, Glen Ridge, N.J.; Rudolf Schmid, Munchenstein/BL, Switzerland, and Mark J. Sebastian, Plainfield, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 30,798, Mar. 27, 1987, Pat. No. 4,789,750. This application Sep. 9, 1988, Ser. No. 242,382

Int. Cl.⁴ C07D *311/72*

U.S. Cl. 549—408 **2 Claims**

1. A compound of the formula:



wherein the dotted bond forms a double bond or is hydrogenated to form a single bond; and R_3 taken together with its attached oxygen atom forms an ether hydroxy protecting group.

4,879,396

SELECTIVE EXTRACTION OF CO_2 AND ARGON FROM ETHYLENE OXIDE RECYCLE SYSTEM

Brian J. Ozero, New York, N.Y., assignor to Scientific Design Company, Inc., Little Ferry, N.J.

Continuation of Ser. No. 729,340, May 1, 1985, abandoned. This application Mar. 6, 1987, Ser. No. 22,498

Int. Cl.⁴ C07D *301/10*

U.S. Cl. 549—534 **1 Claim**

1. In a process for the production of ethylene oxide which comprises:

(a) feeding an ethylene containing stream and an oxygen feed containing 75 to 95 mole % oxygen to a reaction zone;

(b) reacting as a gas mixture comprising 5–30 mole % ethylene and 5–9 mole % molecular oxygen in the presence of 1 to 25 mole % argon, 5 to 25 mole % CO_2, 0.2 to 1.0 mole % H_2O and 25 to 70 mole % combined CH_4 and N_2 in a reaction zone at temperatures of 150° to 450° C. and pressures of 150–350 psia over a silver catalyst;

(c) removing product ethylene oxide from the reaction gas mixture and;

(d) recycling a portion of the ethylene oxide depleted stream back to (a) wherein the improvement comprises:

(e) passing 50 to 100% of the reaction gas mixture after ethylene oxide removal to the shell side of a semipermeable membrane separation unit which efficiently and selectively extracts both CO_2 and argon and in which a 20 to 400 psi pressure differential is maintained between membrane sides, said selective extraction of CO_2 being substantially equal to the amount of CO_2 formed in said zone and said selective extraction of argon being substantially equal to the amount of argon entering said reaction zone in said oxygen feed;

(f) separating a permeate stream comprising about 0.3 to 3.0 of the stream fed to the semipermeable membrane separation unit, said permeate stream being enriched in CO_2 and argon and containing:

  (i) an amount of CO_2 equal to 3–25% of the CO_2 in the stream fed to said semipermeable membrane separation unit and substantially equal to the CO_2 formed in said reaction unit; and

  (ii) an amount of argon equal to 0.4–4.0% of the argon in the stream fed to said semipermeable membrane separation unit and substantially equal to the amount of argon entering said reaction zone in said oxygen feed; and

(g) recovering a non permeate stream depleted in CO_2 and argon and

(h) combining said non permeate stream of (g) with that portion of said reaction gas mixture, which after ethylene oxide removal is not passed to said semipermeable membrane separation unit to provide the recycle of (d).

4,879,397

NOVEL GALLIUM ARSENIDE PRECURSOR AND LOW TEMPERATURE METHOD OF PREPARING GALLIUM ARSENIDE THEREFROM

Klaus H. Theopold, and Erin K. Byrne, both of Ithaca, N.Y., assignors to Cornell Research Foundation, Inc., Ithaca, N.Y.

Filed Nov. 3, 1987, Ser. No. 116,212

Int. Cl.⁴ C07F *7/02*

U.S. Cl. 556—11 **6 Claims**

1. Arsinogallane compound having the formula $R_2GaAs(SiR'_3)_2$ wherein R is selected from the group consisting of a cycloaliphatic group, an alkyl substituted cycloaliphatic group and an alkyl substituted aromatic group and R' is alkyl.

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4,879,398
PROCESS FOR PRODUCING 2,6-DISUBSTITUTED TYROSINE

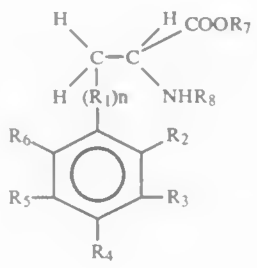
Daniel P. Getman, St. Louis; Roy A. Periana, St. Peters, and Dennis P. Riley, St. Louis, all of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Dec. 31, 1987, Ser. No. 139,999

Int. Cl.⁴ C07F *7/10*

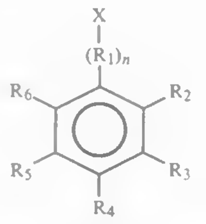
U.S. Cl. 556—413 12 Claims

1. A process for the production of predominantly one enantiomorph of a 2,6-disubstituted phenyl amino acid of the structure:

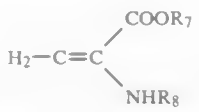


wherein

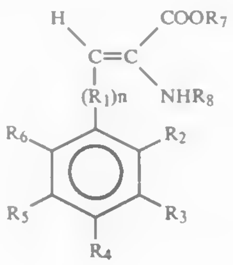
R$_1$ is methylene or ethylene, n is l or 1,
R$_2$ and R$_6$ are independently alkyl, aryl, chloro, fluoro, alkoxy, carboalkoxy or nitro and
R$_3$, R$_4$ and R$_5$ are independently hydrogen, alkyl, aryl, chloro, fluoro, alkoxy, carboalkoxy or nitro,
R$_7$ is an acid-protecting group and
R$_8$ is an amine-protecting group, comprising:
(1) coupling a substituted phenyl compound of the structure:



wherein X is bromo, iodo, or diazonium, with an acylamino acrylate of the structure:

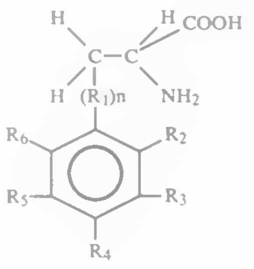


to form a substituted Z-3-(disubstituted phenyl) amino-protected acrylate of the structure:



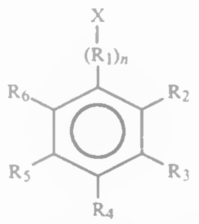
and
(2) asymmetrically hydrogenating the acrylate obtained to form the desired enantiomorph of the 2,6-disubstituted phenyl amino acid.

11. A process for the production of predominantly one enantiomorph of a 2,6-disubstituted phenyl amino acid of the structure:

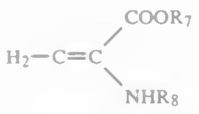


wherein

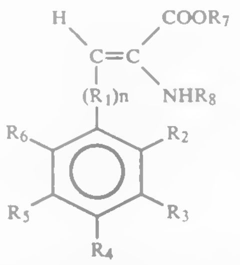
R$_1$ is methylene or ethylene, n is 0 or 1,
R$_2$ and R$_4$ are independently alkyl, aryl, chloro, fluoro, alkoxy, carboalkoxy or nitro and
R$_3$, R$_4$ and R$_5$ are independently hydrogen, alkyl, aryl, chloro, fluoro, alkoxy, carboalkoxy or nitro, comprising
(1) coupling a substituted phenyl compound of the structure:



wherein X is bromo, iodo, or diazonium and n is 0 or 1, with an acylamino acrylate of the structure:



wherein R$_7$ is an acid-protecting group and R$_8$ is an amino-protecting group, to form a substituted Z-3(disubstituted phenyl) amino-protected acrylate of the structure:



(2)asymmetrically hydrogenating the acrylate obtained to form the desired enantiomorph of the 2,6disubstituted phenyl amino acid,
(3) deprotecting the protected 2,6 disubstituted phenyl amino acid.

4,879,399
ETHER SULFATES OF A MIXTURE OF BRANCHED 1-DECANOLS

Anthony Latella, Flanders, N.J., and Robert V. Casciani, Matthews, N.C., assignors to Sandoz Ltd., Basel, Switzerland

Continuation of Ser. No. 74,633, Jul. 17, 1987, abandoned, which is a continuation of Ser. No. 819,181, Jan. 15, 1986, abandoned. This application Jul. 29, 1988, Ser. No. 226,266

Int. Cl.⁴ C07C *141/02*

U.S. Cl. 558—34 9 Claims

1. A compound of formula 1,

$$R(OC_3H_6)_m(OC_2H_4)_nOSO_3M \qquad 1$$

wherein

R is the residue of a mixture of primary, aliphatic alcohols, at least 70 mol % of which is branched 1-decanols, the remaining components consisting essentially of primary, aliphatic alcohols having an average of 8 to 12 carbon atoms;
m is an integer 2 to 13;
n is an integer 6 to 15;
and M is a cation;
or a mixture of said compounds.

4,879,400
PROCESS FOR PRODUCING ALPHA-(BENZYLIDENE)ACETONYLPHOSPHONATES

Kiyotomo Seto; Hiroo Matsumoto, and Ryozo Sakoda, all of Funabashi, Japan, assignors to Nissan Chemical Industries Ltd., Tokyo, Japan

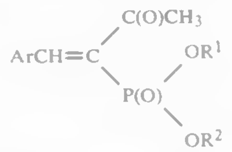
Filed Jan. 19, 1988, Ser. No. 145,042

Claims priority, application Japan, Jan. 21, 1987, 62-011752

Int. Cl.⁴ C07F *9/21*

U.S. Cl. 558—83 7 Claims

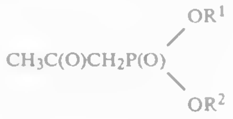
1. A process for producing an α-(benzylidene)acetonylphosphonate of the formula:



wherein Ar is a phenyl group substituted by at least one substituent selected from the group consisting of fluorine, chlorine, bromine, nitro, chloromethyl, dichloromethyl, trichloromethyl, trifluoromethyl, $—CO_2R^7$ wherein R^7 is $C_1–C_5$ alkyl, $—CONR^7R^8$ wherein R^7 is as defined above and R^8 is $C_1–C_5$ alkyi, $—C(O)R^7$ wherein R^7 is as defined above, $—OC(O)R^7$ wherein R^7 is as defined above, $—OSO_3R^7$ wherein R^7 is as defined above, $—OCF_3$, $—S(=O)_2R^7$ wherein R^7 is as defined above, —CN and $—SO_3R^7$ wherein R^7 is as defined above, and each or R^1 and R^2, which are the same or different, is a saturated or unsaturated $C_1–C_{12}$ aliphatic group, or R^1 and R^2 together form 1,2-ethylene, 1,3-propylene or 1,4-butylene, which is unsubstituted or substituted by from one to four $C_1–C_3$ alkyl groups, which comprises:
(a) reacting an aldehyde of the formula:

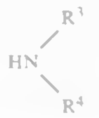
$$ArCHO \qquad (I)$$

wherein Ar is as defined above, with an acetonylphosphonate of the formula:



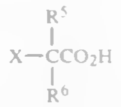
(II)

wherein R^1 and R^2 are as defined above, in the presence of a secondary amine of the formula.



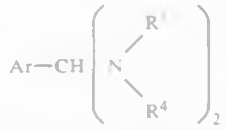
(IV)

wherein each of R^3 and R^4, which are the same or different, is $C_1–C_4$ alkyl, or R_3 and R_4 together form 1,4-butylene or 1,5-pentylene, which is unsubstituted or substituted by from one to four $C_1–C_2$ alkyl groups, $—CH_2CH_2OCH_2CH_2—$ or $—CH_2CH_2NHCH_2CH_2—$, and an α-halogeno fatty acid of the formula:



$$X—\overset{R^5}{\underset{R^6}{C}}CO_2H \qquad (V)$$

wherein X is fluorine, chlorine, bromine or iodine, and each of R^5 and R^6, which are the same or different, is hydrogen, fluorine, chlorine, bromine, iodine or $C_1–C_4$ alkyl; or
(b) reacting a compound of the formula:



wherein Ar, R^1 and R^2 are as defined above, with an acetonylphosphonate of the formula II as defined above, in the presence of an α-halogeno fatty acid of the formula V as defined above, and wherein the compounds of the formulas I, II, IV, V and VI are reacted in the following molar ratios: I:II:IV:V being 0.8–1.2:0.8–1.2:0.01–2.4:0.01–2.4; and II:V:VI being 0.8–1.2:1-.6–2.4:0.8–1.2; and further wherein said reactions are conducted in a temperature range of about 0° to 100° C.

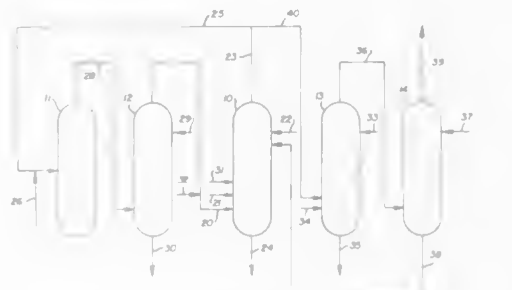
4,879,401
PROCESS FOR REMOVAL OF IMPURITIES IN ALKYL NITRITE FORMATION

Arthur R. Doumaux, Jr., Charleston, and James R. Nelson, S. Charleston, both of W. Va., assignors to Union Carbide Chemicals and Plastics Company Inc., Danbury, Conn.

Filed Sep. 29, 1987, Ser. No. 102,370

Int. Cl.⁴ C07C *77/00*

U.S. Cl. 558—488 25 Claims



1. A process for removing impurities from the gaseous product stream of an alkyl nitrite production zone comprising:
(a) contacting at least a portion of the gaseous product stream containing nitric oxide, alkyl nitrite and impurities recovered from an alkyl nitrite production zone, a lower

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alcohol and oxygen in a reaction zone to produce a recovery stream substantially free of nitric oxide, said oxygen being present in said reaction zone in an amount such that the mole ratio of nitric oxide to oxygen in said reaction zone is in the range of from about 4:1 to about 2:1 and said lower alcohol being present in said reaction zone in an amount such that the mole ratio of nitric oxide to lower alcohol is about 1:1 or less;
(b) withdrawing said recovery stream from said reaction zone, said recovery stream containing alkyl nitrite and impurities and being substantially free of nitric oxide;
(c) removing at least a portion of the alkyl nitrite from said recovery stream; and
(d) purging at least a portion of said recovery stream from which the alkyl nitrite has been removed.

4,879,402

(METHYL)ACRYLIC ACID DERIVATIVES CONTAINING URETHANE GROUPS

Jürgen Reiners, Leverkusen; Wolfgang Podszun; Jens Winkel, both of Cologne; Carlhans Süling, Odenthal, and Gerhard Klein, Monheim, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

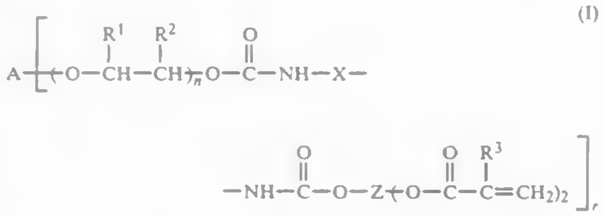
Filed Jul. 10, 1987, Ser. No. 72,467

Claims priority, application Fed. Rep. of Germany, Jul. 25, 1986, 3625202; Feb. 3, 1987, 3703130

Int. Cl.⁴ C07C *125/04*

U.S. Cl. 560—26 **6 Claims**

1. A (meth)acrylic acid derivative, containing urethane groups, of the formula



$$A\left[\left(O-\overset{R^1}{CH}-\overset{R^2}{CH}\right)_n O-\overset{O}{\overset{\|}{C}}-NH-X-NH-\overset{O}{\overset{\|}{C}}-O-Z\left(O-\overset{O}{\overset{\|}{C}}-\overset{R^3}{C}=CH_2\right)_2\right]_r \quad (I)$$

wherein

A is a straight-chain or branched aliphatic radical having 2 to 20 carbon atoms in a carbon chain and optionally containing 1 to 3 oxygen bridges, an aromatic radical having 6 to 24 carbon atoms, an araliphatic radical having 7 to 26 carbon atoms or a cycloaliphatic radical having 6 to 26 carbon atoms,

r represents the number of chains starting from A and denotes a number from 2 to 6,

R^1 and R^2 are identical and denote hydrogen or are different and denote hydrogen and methyl, n denotes a number from 0 to 5, independently for each chain starting from A,

X is a divalent, straight-chain or branched aliphatic radical having 2 to 24 carbon atoms in a carbon chain, an aromatic radical having 6 to 26 carbon atoms in a carbon chain, an araliphatic radical having 7 to 26 carbon atoms in a carbon chain or a monocycloaliphatic radical having 6 to 26 carbon atoms in a carbon chain, it being possible for the aliphatic, aromatic, araliphatic and/or monocycloaliphatic radicals to contain 1 or 2 oxygen bridges and for several of the alphatic, aromatic, araliphatic and/or monocycloaliphatic radicals to be linked via optionally substituted methylene groups,

Z denotes a trivalent, straight-chain or branched aliphatic hydrocarbon radical which has 3 to 15 carbon atoms in a carbon chain and can optionally contain 1 to 3 oxygen bridges and can optionally be substituted by 1 to 3 (meth-)acrylate radicals, and

R^3 denotes hydrogen or methyl, independently for each chain starting from A.

4,879,403

PROCESS FOR THE PREPARATION OF CIS, ENDO-2-AZABICYCLO-[3.3.0]-OCTANE-3-CARBOXYLIC ACIDS

Volker Teetz, Hofheim am Taunus; Rolf Geiger, Frankfurt am Main; Hansjörg Urbach, Kronberg/Taunus; Reinhard Becker, Wiesbaden, and Bernward Schölkens, Kelkheim, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

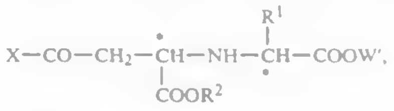
Continuation of Ser. No. 915,957, Oct. 3, 1986, abandoned, which is a continuation of Ser. No. 658,903, Oct. 9, 1984, abandoned, which is a division of Ser. No. 477,081, Mar. 21, 1983, abandoned, which is a continuation-in-part of Ser. No. 438,757, Nov. 3, 1982, abandoned. This application Nov. 2, 1988, Ser. No. 267,753

Claims priority, application Fed. Rep. of Germany, Nov. 5, 1981, 3143946; Jul. 17, 1982, 3226768

Int. Cl.⁴ C07C *101/10*

U.S. Cl. 560—38 **5 Claims**

1. A method for making a compound of the formula



$$X-CO-CH_2-\underset{COOR^2}{\overset{*}{C}H}-NH-\underset{*}{\overset{R^1}{C}H}-COOW',$$

wherein the chirality centers labelled with an asterisk both have the S-configuration and wherein

R^1 is methyl or 4-aminobutyl, which may be acylated;

R^2 is (C_1-C_6)-alkyl;

X is (C_1-C_6)-alkyl, (C_2-C_6)-alkenyl, (C_5-C_9)-cycloalkyl or (C_6-C_{12})-aryl, which can be mono-, di- or trisubstituted by (C_1-C_4)-alkyl, (C_1-C_4)-alkoxy, hydroxyl, halogen, nitro, amino, (C_1-C_4)-alkylamino, di-(C_1-C_4)-alkylamino, and/or by methylenedioxy, or

X is indol-3-yl; and

W' is an esterifying group removable by hydrogenolysis, which method comprises reacting an S-alpha-aminoacid ester of the formula

$$H_2N-C^{*}H(R^1)-CO_2W'$$

with a keto-acrylic acid ester of the formula

$$X-CO-CH=CH-COOR^2$$

to give a reaction product predominantly containing the desired compound and then isolating the desired compound from said reaction product by crystallization.

4,879,404

NOVEL SALICYLATES, THEIR SALTS, PHARMACEUTICAL COMPOSITIONS CONTAINING THEM AND PROCESS FOR PREPARING SAME

János Fischer; László Dobay; Mihály Major; Elemér Ezer; Judit Matuz; Katalin Sághy; György Hajós, and László Szporny, all of Budapest, Hungary, assignors to Richter Gedeon Vegyeszeti Gyar Rt, Budapest, Hungary

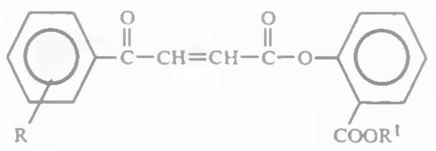
Filed Sep. 26, 1988, Ser. No. 248,970

Claims priority, application Hungary, Sep. 25, 1987, 4303/87

Int. Cl.⁴ C07C *69/76*

U.S. Cl. 560—051 **11 Claims**

1. A 4-Oxo-4-(substituted phenyl)butenoyl-salicylate of the formula (I),



(I)

wherein

R stands for hydrogen, halogen, C_{1-4}alkyl, C_{1-4}alkoxy or a C_{1-4}acylamino group;; and

A^1 is hydrogen or a carboxyl-protective group of E and/or Z configuratio or a salt thereof.

4,879,405

PREPARATION OF PENTENOIC ESTERS

Fritz Naeumann, Mannheim; Wolfgang Hoelderich, and Franz Merger, both of Frankenthal, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Jun. 10, 1988, Ser. No. 205,335

Int. Cl.⁴ C07C *67/30, 67/343*

U.S. Cl. 560—211 **11 Claims**

1. A process for preparing a pentenoic ester, which comprises: heating a formylvaleric ester at from 50° to 400° C. in the presence of a zeolite or one or more phosphates selected from the group consisting of aluminum phosphate, silicon aluminum phosphate, boron aluminum phosphate, silicon iron aluminum phosphate, cerium phosphate, zirconium phosphate, boron phosphate, iron phosphate and strontium phosphate.

4,879,406

PREPARATION OF PENTENOIC ESTERS FROM FORMYLVALERIC ESTERS

Franz Merger, Frankenthal; Juergen Frank, Schwetzingen; Uwe Vagi, Speyer, and Rolf Fischer, Heidelberg, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Jun. 10, 1988, Ser. No. 205,354

Claims priority, application Fed. Rep. of Germany, Jun. 15, 1987, 3719937

Int. Cl.⁴ C07C *67/30, 67/343*

U.S. Cl. 560—211 **13 Claims**

1. A process for the preparation of a pentenoic ester which comprises: heating a 3- and/or 4-formylvaleric ester to 50°-400° C. in the presence of a catalyst which contains one or more elements of subgroup VIII of the Periodic Table.

4,879,407

PROCESS FOR THE PREPARATION OF ETHYL TRIFLUOROACETATE

Louis Amiet, Lyons, France, assignor to Rhone-Poulenc Chimie, Cedex, France

Filed Oct. 16, 1987, Ser. No. 109,052

Claims priority, application France, Oct. 16, 1986, 86 14606

Int. Cl.⁴ C07C *69/63;* **B01D** *3/34*

U.S. Cl. 560—227 **39 Claims**

1. A process for the preparation of ethyl trifluoroacetate, comprising:

in a first stage, contacting trifluoroacetic acid with a slight excess of ethanol in the presence of concentrated sulfuric acid and a solvent for a time sufficient to achieve a first esterification, said solvent being present in an amount sufficient to solubilize trifluoroacetic acid and ethyl trifluoroacetate, having a boiling point higher than that of trifluoroacetic acid, and having a specific gravity less than 1 and which solvent does not form an azeotrope with ethyl trifluoroacetate and thereafter carrying out a phase separation and removing the resulting sulfuric layer;

in a second state, introducing an additional quantity of sulfuric acid and trifluoroacetic acid and reacting for a time sufficient to achieve a second esterification and then carrying out a phase separation and removing the resulting sulfuric layer; and

in a third stage, distilling the mixture obtained from the second stage to recover ethyl trifluoroacetate.

4,879,408

CYCLOALIPHATIC DIISOCYANATES OPTIONALLY IN THE FORM OF ISOMER MIXTURES AND A PROCESS FOR THEIR PRODUCTION

Hartmut Knöfel, Odenthal-Erberich; Michael Brockelt, Bergisch-Gladbach; Stefan Penninger, and Herbert Stutz, both of Dormagen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

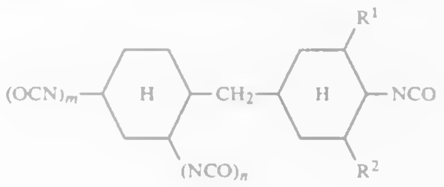
Continuation of Ser. No. 531,389, Sep. 12, 1983, abandoned. This application Apr. 7, 1987, Ser. No. 35,571

Claims priority, application Fed. Rep. of Germany, Sep. 25, 1982, 3235573

Int. Cl.⁴ C07C *69/00*

U.S. Cl. 560—330 **5 Claims**

1. A diisocyanate corresponding to the formula



in which

R_1 and R_2 may be the same or different and each radical represents hydrogen or a C_1-C_{12}-alkyl group, provided that at least one of the radicals R^1 and R^2 represents an alkyl radical, and

m and n each represent 0 or 1, provided that the sum of m+n is 1 and that when m or n represents 0, the free valency is saturated by hydrogen, and in which diisocyanate isomers may be present.

4,879,409

CYCLOALIPHATIC DIISOCYANATES, OPTIONALLY IN THE FORM OF ISOMERIC MIXTURES AND A PROCESS FOR THEIR PREPARATION

Hartmut Knöfel, Odenthal-Erberich; Michael Brockelt, Bergisch-Gladbach; Stefan Penninger, and Herbert Stutz, both of Dormagen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

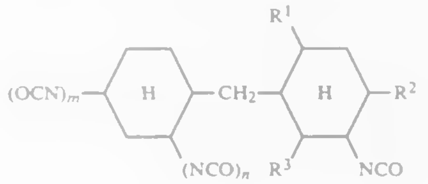
Continuation of Ser. No. 531,388, Sep. 12, 1983, abandoned. This application Apr. 7, 1987, Ser. No. 35,417

Claims priority, application Fed. Rep. of Germany, Sep. 22, 1982, 3234996

Int. Cl.⁴ C07C *69/00*

U.S. Cl. 560—330 **5 Claims**

1. A diisocyanate corresponding to the formula



in which

R^1, R^2 and R^3 may be the same or different with each radical representing hydrogen or a C_1-C_{12} alkyl group, provided that two of the radicals R^1, R^2 and R^3 represent hydrogen and the third radical represents an alkyl group, and

n and m each represent 0 or 1, provided that the sum of m+n equals 1 and when m or n=0, the free valency is saturated by hydrogen and in which C_1-C_{12}-monoalkyl-substituted methylene-bis-(cyclohexylisocyanate)-isomers may be present in the diisocyanate in an amount of up to 40 wt %.

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4,879,410

PREPARATION OF PRIMARY ARALKYL URETHANES AND UREAS AND ISOCYANATES DERIVED THEREFROM

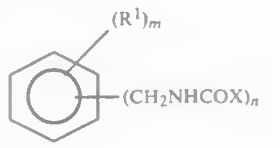
Balwant Singh, Stamford; Laurence W. Chang, New Haven, and William A. Henderson, Jr., Stamford, all of Conn., assignors to American Cyanamid Company, Stamford, Conn.

Filed Nov. 3, 1986, Ser. No. 926,070

Int. Cl.⁴ C07C *119/00, 125/06, 127/01*

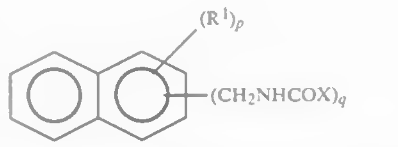
U.S. Cl. 560—344 23 Claims

1. A process for production of a urethane or urea selected from the formulae:



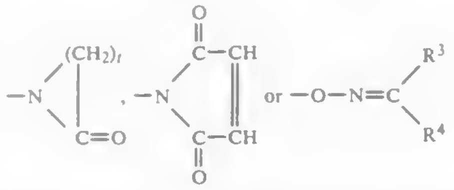
(I)

or



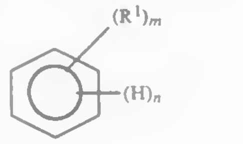
(II)

or a mixture of (I) and (II) wherein X is selected from —OR, —NR$^2{}_2$,



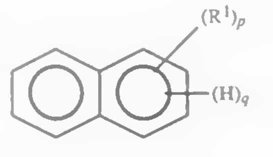
R is alkyl or hydroxy alkyl of from about 1 to about 6 carbon atoms, aryl of from about 6 to about 10 carbon atoms or aralkyl of from about 7 to about 10 carbon atoms, R^1 is hydrogen or alkyl of from about 1 to about 30 carbon atoms, R^2 is alkyl of from about 1 to 6 carbon atoms, R^3 is as defined for R^1, R^4 is as defined for R^2, and when taken together, R^3 and R^4, are $—CH_2(CH_2)_3CH_2—$ or $—CH_2(CH_2)_2CH_2—$, n is an integer of 1 to 2 and m is 6-n, q is an integer of 1 or 2 and p is 8-q, and t is an integer of from 2 to 6, said process comprising reacting

(a) an aromatic hydrocarbon of the formula



(III)

or



(IV)

wherein R^1, m, n, p and q are as above defined, with

(b) a carbamate of the formula

$H_2N—COX$

wherein X is as above defined; trioxymethylene, paraform, formcels and condensation products of (b) and the forementioned; and

(d) an effective catalytic amount of an acid catalyst at a temperature of from about 30° C. to about 150° C. until formation of said urethane or urea compound (I), (II), or a mixture thereof is substantially complete.

4,879,411

METHOD FOR RACEMIZATION OF OPTICALLY ACTIVE SERINE

Ken-ichi Ishiwata, Yokohama; Takeshi Nakamura, Zushi; Nobuyoshi Makiguchi, Fujisawa; Shoichiro Miyahara, Yokohama; Toshio Matsumoto, and Kazunari Nitta, both of Oomuta, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Filed Jul. 18, 1988, Ser. No. 219,781

Claims priority, application Japan, Aug. 5, 1987, 62-194333

Int. Cl.⁴ C07B *55/00*

U.S. Cl. 562—401 9 Claims

1. A method for racemizing optically active serine comprising treating the optically active serine in an alkaline aqueous solution in the presence of pyridoxal phosphate or salicylaldehyde and an alkaline compound.

4,879,412

PURIFICATION PROCESS OF METHACRYLIC ACID

Kozo Iwasaki, Yokohama; Morimasa Kuragano, Osaka; Minoru Koshibe, Osaka; Yoshihiro Sezaki, Osaka; Katsuji Yoguchi, Kitakanbara, and Yoshio Koyama, Osaka, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc. and Kyowa Gas Chemical Industry Co., Ltd., both of Toyko, Japan

Filed Mar. 3, 1986, Ser. No. 835,737

Claims priority, application Japan, Mar. 14, 1985, 60-49248; Apr. 10, 1985, 60-74351; Jun. 25, 1985, 60-136882

Int. Cl.⁴ C07C *51/42*

U.S. Cl. 562—600 4 Claims

1. A process for the purification of a solution of methacrylic acid, said methacrylic acid being prepared by subjecting a compound selected from the group consisting of isobutylene, tertiary butanol, methacrolein and isobutyl aldehyde to catalytic oxidation with a molecular oxygen-containing gas in the presence of steam, which comprises;

extracting said solution of methacrylic acid containing maleic acid and citraconic acid with an organic solvent;

contacting said extract or methacrylic acid obtained by distilling the organic solvent from the extract, with a basic anion-exchange resin, thereby removing maleic acid and citraconic acid from said solution of methacrylic acid;

recovering citraconic acid by applying maleic acid as an eluent to the citraconic acid-maleic acid containing basic anion-exchange resin obtained from said contact step; and then

contacting the eluted resin obtained with a strong alkali, thereby eluting maleic acid from the resin and regenerating the resin for reutilization.

4,879,413

PROCESS FOR THE PREPARATION OF A SOLID ADDUCT OF SULFURIC ACID AND UREA

Hansjörg Buser, Marly, and Adolf Morand, Villars-sur-Glane, both of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

Continuation of Ser. No. 921,848, Oct. 23, 1986, abandoned, which is a continuation of Ser. No. 420,535, Sep. 20, 1982, abandoned, which is a division of Ser. No. 235,388, Feb. 17, 1981, Pat. No. 4,366,232. This application Sep. 12, 1988, Ser. No. 244,632

Claims priority, application Switzerland, Feb. 22, 1980, 1435/80

Int. Cl.⁴ C07C *127/01*

U.S. Cl. 564—63 4 Claims

1. A process for the preparation of an adduct of sulfuric acid and urea, with a urea/sulfuric acid ratio of 2:1 or 1:1, which comprises introducing the solid urea in the indicated ratio into a precisely 100% sulfuric acid (mono-hydrate), the rate at which the urea is introduced and the external cooling being so matched to one another that the temperature is between 70° and 100° C. during the mixing period, and converting the neutral or acid urea-sulfate thus obtained into the solid form by cooling.

4,879,414

POLYTHIOLS AND USE AS EPOXY RESIN CURING AGENTS

Grannis S. Johnson, Maplewood; Reuben H. Grinstein, Denville; Stuart J. Hartman, Livingston, and Raymond P. Dallago, Highland Park, all of N.J., assignors to Henkel Corporation, Ambler, Pa.

Filed Feb. 17, 1988, Ser. No. 156,692

Int. Cl.⁴ C07C *87/28, 87/60;* **C08G** *59/66*

U.S. Cl. 564—388 14 Claims

1. Polythiols having the following structure: $(XSCH_2CHOHCH_2)_b\text{-}A\text{-}R\text{-}N\text{-}(CH_2CHOHCH_2SX)_2$, wherein R is a divalent hydrocarbon moiety selected from the group consisting of aromatic, substituted aromatic, cycloaliphatic, substituted cycloaliphatic, or aliphatic hydrocarbon moieties; A is N or O; X is —H or —R'SH, where R' is alkylene, cycloalkylene, or alkylene substituted aromatic; and when A is 0, b is 1 and when A is N, b is 2.

4,879,415

PROCESS FOR THE PREPARATION OF CHLORONITROANILINES AND CHLORONITROPHENOLS

Bernhard Albrecht, Buus, Switzerland, and Jürgen Beyrich, Huttingen, Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 829,333, Feb. 14, 1986, abandoned. This application Nov. 25, 1987, Ser. No. 129,425

Claims priority, application Switzerland, Feb. 22, 1985, 827/85

Int. Cl.⁴ C07C *85/24, 79/32*

U.S. Cl. 564—412 9 Claims

1. In a process for the preparation of a chloronitroaniline or chloronitrophenol by chlorinating a nitroaniline or nitrophenol in hydrochloric acid, wherein the improvement comprises comprises simultaneously adding to said hydrochloric acid separate streams of a nitroaniline or nitrophenol and of a chlorinating agent.

4,879,416

PREPARATION OF BIDENTATE LIGANDS

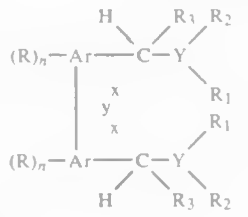
Thomas A. Puckette; Thomas J. Devon; Gerald W. Phillips, and Jerome L. Stavinoha, all of Longview, Tex., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 23, 1987, Ser. No. 123,407

Int. Cl.⁴ C07F *9/02, 9/66*

U.S. Cl. 568—13 21 Claims

1. A process for preparing a bidentate ligand of the formula



wherein

each Ar is independently selected from aromatic ring compounds having 6 up to 14 carbon atoms;

the x bonds and the y bonds are attached to adjacent carbon atoms on the ring structures;

each R, when present as a substituent, is independently selected from alkyl, alkoxy, aryloxy, aryl, aralkyl, alkaryl, alkoxyalkyl, cycloaliphatic, halogen, alkanoyl, alkanoyloxy, alkoxycarbonyl, carboxyl, cyano or formyl radicals;

n is a whole number in the range of 0–4 where Ar is phenyl; 0–6 where Ar is naphthyl; and 0–8 where Ar is phenanthryl or anthracenyl;

each R$_1$ and R$_2$ is independently selected from alkyl, aryl, aralkyl, alkaryl or cycloaliphatic radicals or substituted derivatives thereof; wherein substituted derivatives thereof are selected from alkoxy, aryloxy, alkoxyalkyl, halogen, alkanoyl, alkanoyloxy, alkoxycarbonyl, cyano, carboxyl or formyl substituted compounds;

each R$_3$ is independently selected from hydrogen and the R$_1$ substituents;

each of the above alkyl groups or moieties is a straight or branched chain of 1–20 carbons; preferably 1–8 carbons;

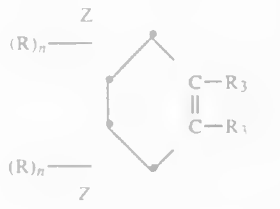
each aryl group contains 6–10 ring carbons;

each cycloaliphatic group contains from 4–8 ring carbons; and

each Y is independently selected from the elements N, P, As, Sb and Bi;

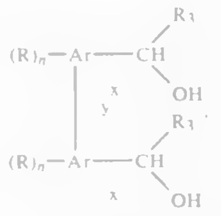
said process comprising the steps,

(1) contacting with ozone under ozonolysis conditions a suspension in a hydroxylic reaction medium of a reactant selected from phenanthrene or a phenanthrene derivative having the structure:

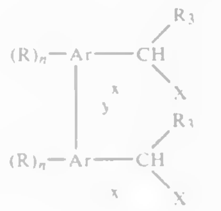


wherein each Z 4 through 12 carbon fragment completing a single aromatic ring or a fused ring system, respectively, to form an ozonated intermediate;

(2) contacting said ozonated intermediate with a reducing agent under conditions appropriate to form a diol having the structure:



(3) contacting with diol with an activating agent comprising a latent displaceable functional group, X, under conditions sufficient to convert the diol to a difunctional biaryl compound having the structure:



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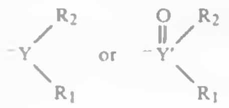
wherein X is a functional group which can be displaced under nucleophilic substitution conditions,

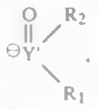
(4) contacting said difunctional biaryl compound with an anion having the structure:



wherein Y' is selected from the group consisting of P, As, Sb and Bi;

in a molar ratio of anion to difunctional biaryl compound in the range of about **1/1** up to **20/1** under conditions appropriate to displace X and thereby form the above bidentate ligand or an oxygenated intermediate product thereof; and

(5) optionally reducing the oxygenated intermediate product when the oxy-anion,



is employed as the anion in step (**4**).

4,879,417

PROCESS FOR CARBONYLATION OF ALKENES TO KETONES

Eit Drent, Amsterdam, Netherlands, assignor to Shell Oil Company, Houston, Tex.

Filed Jul. 25, 1988, Ser. No. 223,815

Claims priority, application United Kingdom, Aug. 3, 1987, 8718307

Int. Cl.^{4} C07C *45/50*

U.S. Cl. 568—387 **17 Claims**

1. A process for the preparation of ketones which comprises carbonylating an alkene with carbon monoxide in the presence of a hydrogen source selected from the group consisting of hydrogen containing gas, water and mixtures thereof, and a catalyst system, containing a noble metal of the Group VIII of the Periodic Table of the Elements, wherein said catalyst system comprises:

component (a)—a ruthenium compound, and

component (b)—at least one acid selected from the group consisting of hydrohalogenic acids and carboxylic acids having a pKa value ≦3 (measured at 25° C. in aqueous solution),

wherein said carbonylation is carried out in a water miscible solvent, at a pressure in the range from about 20 bar to about 100 bar and at a temperature in the range of about 70° C. to about 200° C.

4,879,418

PROCESS FOR THE PREPARATION OF ALDEHYDES

Hanswilhelm Bach, Duisburg; Helmut Bahrmann, Hamminkeln-Brunen; Boy Cornils, Hofheim; Wilhelm Gick, Duisburg; Volker Heim, Oberhausen; Werner Konkol, Oberhausen, and Ernst Wiebus, Oberhausen, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

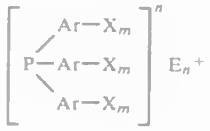
Filed Aug. 1, 1988, Ser. No. 226,768

Claims priority, application Fed. Rep. of Germany, Aug. 6, 1987, 3726128

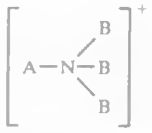
Int. Cl.^{4} C07C *45/50*

U.S. Cl. 568—454 **36 Claims**

1. The process for the preparation of aldehydes comprising reacting at least one olefin of **2** to **20** carbon atoms with carbon monoxide and hydrogen in the liquid phase in the presence of water, a catalyst comprising rhodium in metallic form or as a compound and at least one water soluble phosphine of the formula



wherein each Ar is an aryl radical, X is a sulfonic acid group, and E is a mixture of an alkali metal ion or ammonium ion and a quaternary ammonium ion of the formula



wherein A is an alkyl of 6 to 20 carbon atoms and each B is individually an alkyl of 1 to 4 carbon atoms, each m is 0 or 1 and n is an integer from 2 to 3.

4,879,419

HYDROXYL-TERMINATED POLYEPICHLOROHYDRIN POLYMERS

Birger Johannessen, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jul. 1, 1985, Ser. No. 750,910

Int. Cl.^{4} C07C *43/12, 43/11;* **C08G** *65/24, 59/68*

U.S. Cl. 568—606 **11 Claims**

1. A polyepichlorohydrin product having a number average molecular weight of at least 2000 and a polydispersity of less than 1.2, said product comprising predominantly secondary hydroxyl-terminated polyepichlorohydrin polymer and essentially no non-hydroxyl functional cyclic ether oligomer, said product being made by polymerizing epichlorohydrin in the presence of anhydrous stannic chloride catalyst, a strong carboxylic acid co-catlyst, and an alcohol as an initiator.

4,879,420

PREPARATION OF MIXTURES OF BUTANEDIOLS

Richard E. Ernst, Kennett Square, Pa., assignor to E.I. du Pont de Nemours and Company, Wilmington, Del.

Filed May 6, 1988, Ser. No. 190,907

Int. Cl.^{4} C07C *29/38, 31/20, 41/00;* **C07D** *307/02*

U.S. Cl. 568—617 **18 Claims**

7. A process for preparing a mixture of 1,4-butanediol and a 2-alkyl-1,4-butanediol comprising bringing together at an initial pH in the range between about 8 and 14, and a temperature and pressure effective for reaction:

(a) hydrogen,

(b) a hydrogenation catalyst,

(c) 4-hydroxybutyraldehyde, 2-hydroxytetrahydrofuran or a mixture of the same, and

(d) an aldehyde of the structure

R—CHO

wherein R is hydrogen or an alkyl radical containing 1 to 4 carbon atoms,

in a 4-hydroxybutyraldehyde/2-hydroxytetrahydrofuran: aldehyde weight ratio in the range between about 2:1 and 200:1.

11. In a process for preparing a mixture of tetrahydrofuran and 3-alkyltetrahydrofuran by cyclizing diols, the improvement comprising using as the diol starting material the mixture of 1,4-butanediol and 2-alkyl-1,4-butanediol prepared in accordance with the process of claim 7.

15. In a process for preparing a copolymer from a mixture of tetrahydrofuran and 3-alkyltetrahydrofuran, the improvement comprising adding a polymerization catalyst to the mixture of tetrahydrofuran and 3-alkyltetrahydrofuran produced in accordance with the process of claim **11** and holding the resulting mixture under conditions effective for polymerization.

4,879,421

METHOD FOR PREPARING OPTICALLY ACTIVE BINAPHTHOL AND SPIROIBIINDANOL

Romas J. Kazlauskas, Montreal, Canada, assignor to General Electric Company, Schenectady, N.Y.

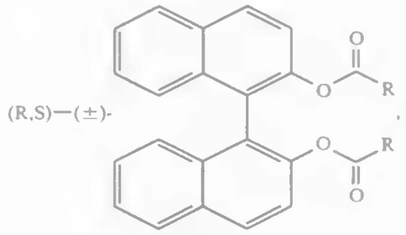
Filed Aug. 15, 1988, Ser. No. 232,248

Int. Cl.^{4} C07C *39/38, 39/14*

U.S. Cl. 568—737 **14 Claims**

1. A method for preparing optically active (S)-(−)-1,1'-bi-2-naphthol, comprising the steps of

(a) reacting at a pH in the range of about 6 to about 8 an aqueous solution of pancreatic cholesterol esterase and an organic solution of an (R,S)-(+)-1,1',-bi-2-naphthol-organic carboxylic acid diester represented by the formula:



, [R,S—I],

the pancreatic cholesterol esterase being present in an amount, sufficient to effect asymmetric hydrolysis of (S)-(−)-1,1'-bi-2-naphthol-organic carboxylic acid diester contained in the diester of formula [R,S-I] and represented by the formula: t,0231

to produce a mixture comprising (S)-(−)-1,1'-bi-2-napthanol and (R)-(+)-1,1,'-bi-2-napthanol-organic carboxylic diester, and

(b) separating said binapthanol from said diester.

4,879,422

METHOD FOR PRODUCING CYCLOALKANOL

Tamio Shirafuji, and Kiyomi Sakai, both of Niibama, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Jun. 27, 1988, Ser. No. 211,881

Claims priority, application Japan, Jul. 7, 1987, 62-170027

Int. Cl.^{4} C07C *29/04*

U.S. Cl. 568—835 **11 Claims**

1. A method for producing a cycloalkanol by hydrating a cycloalkene having 5-8 carbon atoms with water at a temperature in the range of 50°-200° C. in the presence of a catalyst obtained by ion-exchanging all or a part of the ion-exchangeable cations of a crystalline gallium silicate with hydrogen ions, said gallium silicate

(1) having the general formula, $xMnO.Ga_2O_3.ySiO_2.zH_2O$ (wherein x represents a real number of from 0.7 to 1.1, M represents a cation, n represents 2/, y represents a real number of from 5 to 300, z represents a real number of from 0 to 200), and

(2) being characterized in that X-ray diffractometry thereof gives main peaks showing the following lattice spacings and relative intensities data,

Lattice spacing (Å)	Relative intensity (I/I_0)
11.1 ± 0.3	Strong
10.0 ± 0.3	Strong
3.85 ± 0.1	Strongest
3.75 ± 0.1	Strong
3.65 ± 0.1	Medium

4,879,423

2-CHLORO-3,6-DIFLUORO-BENZYL HALIDE

Michael J. Robson, Bracknell, England, assignor to Imperial Chemical Industries PLC, London, England

Division of Ser. No. 481,948, Apr. 4, 1983, Pat. No. 4,778,822. This application Aug. 10, 1988, Ser. No. 230,368

Claims priority, application United Kingdom, May 21, 1982, 8214906

Int. Cl.^{4} C07L *19/08*

U.S. Cl. 570—127 **2 Claims**

1. 2-chloro-3,6-difluorobenzyl halide.

4,879,424

CONVERSION OF ALKANES TO GASOLINE

Mohsen N. Harandi, Lawrenceville, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Sep. 19, 1988, Ser. No. 246,392

Int. Cl.^{4} C07C *2/12*

U.S. Cl. 585—322 **19 Claims**

1. A process for converting an aliphatic hydrocarbon feedstream comprising paraffins to gasoline comprising the steps of:

(a) heating said feedstream in a first heat exchange unit;

(b) withdrawing said heated feedstream;

(c) adding said feedstream to a first reaction zone containing zeolite catalyst whereby said zeolite catalyst is at least partially deactivated;

(d) withdrawing an effluent from said first reaction zone comprising olefins, aromatics, and unreacted paraffins;

(e) withdrawing said partially deactivated zeolite catalyst from said first reaction zone;

(f) cooling said effluent in a second heat exchange unit;

(g) withdrawing said cooled effluent;

(h) adding said partially deactivated zeolite catalyst to a second reaction zone; and

(i) adding said cooled effluent to said second reaction zone containing partially deactivated zeolite catalyst particles, whereby at least a portion of olefins present in the effluent are oligomerized.

4,879,425

OLIGOMERIZATION OF OLEFINS

Simon G. Kukes, Naperville, Ill.; Robert L. Banks, and Jesse R. Harris, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed May 26, 1988, Ser. No. 198,947

Int. Cl.^{4} C07C *2/10*

U.S. Cl. 585—350 **14 Claims**

1. A process for oligomerizing monolefins which comprises contacting

(a) a feed which comprises at least one monolefin containing 2 to 4 carbon atoms per molecule with

(b) a catalyst composition consisting essentially of a physical mixture of

(i) tungsten oxide being supported by a material consisting essentially of silica and

(ii) a pillared interlayered smectite clay;

under such contacting conditions as to obtain a product comprising at least one hydrocarbon which contains 5 to 12 carbon atoms per molecule.

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PALLADIUM-CATALYZED ARYLATION OF CYCLOALKENES

Richard C. Larock, and Bruce E. Baker, both of Ames, Iowa, assignors to Iowa State University Research Foundation, Inc., Ames, Iowa

Filed May 9, 1988, Ser. No. 191,896

Int. Cl.⁴ C07C *1/20*

U.S. Cl. 585—469 16 Claims

1. A method of high yield arylation of cycloalkenes, comprising:

(a) reacting an aryl halide with a cycloalkene in the presence of a small but reaction promoting effective amount of a palladium(O) source or a palladium(II) ion source, and an alkali metal salt;

(b) said reaction occurring in a reaction yield enhancing polar organic solvent.

4,879,427
METHANE CONVERSION

John A. Sofranko, West Chester, Pa., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Dec. 29, 1988, Ser. No. 291,701

Int. Cl.⁴ C07C *2/00*

U.S. Cl. 585—500 8 Claims

1. In a process for oxidative conversion of methane to higher hydrocarbons wherein a mixture of methane and gaseous oxidant is contacted at reaction conditions with a solid oxidative contact agent which is essentially free of reducible metal oxide, the improvement which comprises carrying out said contact of the presence of a chalcogen promoter.

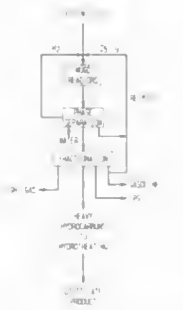
4,879,428
UPGRADING LOWER OLEFINS

Mohsen N. Harandi, 12 Catbird Ct., Lawrenceville, N.J. 08648, and Hartley Owen, 5 Riverview Ter., Belle Mead,, N.J. 08502

Filed Mar. 3, 1988, Ser. No. 163,498

Int. Cl.⁴ C07C *2/12*

U.S. Cl. 585—533 13 Claims



1. A continuous process for upgrading lower olefinic feedstock to higher hydrocarbons rich in $C_{10}+$ distillate product, comprising:

contacting said feedstock with a shape selective medium pore oligomerization acid zeolite catalyst under rection conditions in a conversion zone at elevated temperature and pressure in the presence of hydrogen to convert olefins to heavier hydrocarbons;

recovering hot reaction effluent stream containing light gas, C_5-C_9 intermediate hydrocarbon and $C_{10}+$ distillate hydrocarbons;

cooling said effluent stream to recover a liquid stream comprising C_5+ hydrocarbons;

recycling a first portion of said liquid stream to said conversion zone;

fractionating a second portionof said liquid stream in a multistage distillation tower to recover a distillate hydrocarbon product stream comprising $C_{10}+$ hydrocarbons and a light overhead gas stream;

recovering an overflash liquid stream rich in C_5-C_9 intermediate hydrocarbons from an upper stage of said distillation tower;

recycling said overflash liquid stream to said conversion zone in combination with said first portion of said liquid stream.

4,879,429
SOLID BASE, PROCESS FOR PREPARING THE SAME AND USE OF THE SAME IN PREPARATION OF INTERNAL OLEFINS

Gohfu Suzukamo, Ibaraki, and Masami Fukao, Shiga, both of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Division of Ser. No. 155,848, Feb. 16, 1988, Pat. No. 4,822,764. This application Jan. 31, 1989, Ser. No. 304,228

Claims priority, application Japan, Feb. 16, 1987, 62-32790; Feb. 16, 1987, 62-32791; Feb. 16, 1987, 62-32792; Feb. 16, 1987, 62-32793

Int. Cl.⁴ C07C *5/25, 5/23*

U.S. Cl. 585—670 21 Claims

1. A process for preparing an internal olefin comprising isomerizing an olefin in the presence of a catalyst comprising a solid base which is obtainable by reacting alumina with an alkali metal hydroxide and an alkali metal hydride or reacting water-containing alumina with an alkali metal hydride in an amount more than the molar equivalent of water contained in the water-containing alumina, at a temperature of 200° to 500° C. in an inert gas atmosphere.

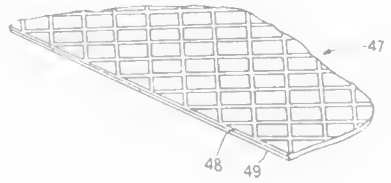
4,879,430
PATTERNED ADHERENT FILM STRUCTURES AND PROCESS FOR MAKING

Kenneth Hoffman, Columbus, Ga., assignor to Plicon Corporation, Columbus, Ohio

Filed May 14, 1987, Ser. No. 50,057

Int. Cl.⁴ B65B *53/00*

U.S. Cl. 428—35.1 6 Claims



1. A web of plastic wherein one surface layer thereof has been subjected to patterned corona discharge treatment whereby the face of such surface layer has discontinuous pattern areas therein comprising corona discharge treated areas separated by untreated surface areas adjacent thereto and spacing the treated areas.

4,879,431
TUBELESS CELL HARVESTER

Joseph Bertoncini, Gaithersburg, Md., assignor to Biomedical Research and Development Laboratories, Inc., Gaithersburg, Md.

Filed Mar. 9, 1989, Ser. No. 323,607

Int. Cl.⁴ C12M *1/12*

U.S. Cl. 435—311 31 Claims

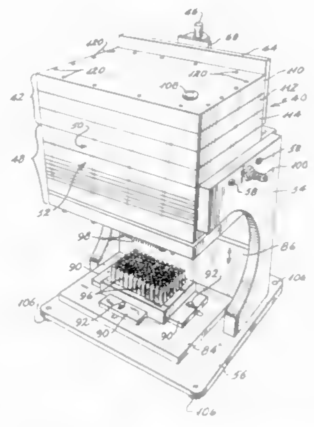
1. A multi layered cell harvester for removing, filtering and adding precise quantities of wash fluids or reagents comprising:

(a) a multi layered bottom section having a filter paper support layer;

(b) a multi layered top section having a manifold and means for positioning said multi layered top section with respect to said multi layered bottom section;

(c) a plurality of sample removal needles disposed in between one of the layers of said multi layered bottom section;

(d) a plurality of filtration channels disposed in said multi layered bottom section and in said multi layered top section connecting said plurality of sample removal needles with said manifold in said multi layered top section;



(e) a plurality of wash or reagent addition needles disposed in between one of the layers of said multi layered bottom section;

(f) a wash or reagent reservoir disposed in between one of the layers of said multi layered bottom section; and

(g) a plurality of wash or reagent addition channels connecting said reservoir with said plurality of wash or reagent needles and providing a substantially equal volume distribution of wash fluid or reagent to a plurality of test tubes by equalizing the length of each of said plurality of wash or reagent addition channels from the tip of each wash or reagent addition needle to said reservoir or by increasing the diameter of one or more of said wash or reagent addition channels or a combination thereof.

4,879,432
METHOD FOR MEASURING THE COAGULATION OF BLOOD PLASMA

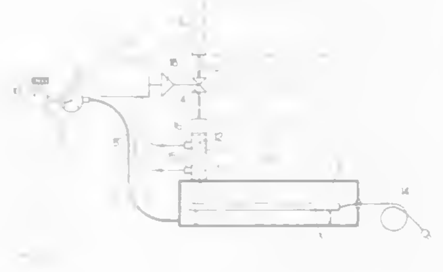
Didier Vieillard, Polyclinique du Parc Route d'Asseveot, 59600 Maubeuge, France

Continuation of Ser. No. 850,623, Apr. 11, 1986, abandoned. This application Nov. 30, 1988, Ser. No. 277,510

Claims priority, application France, Apr. 11, 1985, 85 05472

Int. Cl.⁴ G01N *33/86*

U.S. Cl. 436—69 5 Claims



1. A method for measuring the coagulation time of blood plasma comprising the steps of:

(a) introducing the plasma and at least one reagent initiating coagulation of said plasma in a substantially vertical tube having an upper part while noting a reference time,

(b) introducing through the upper part of said tube into said plasma, solid particles having a high degree of wettability and having dimensions of about a few microns, for forming a continuous stream of said particles moving downwardly into said plasma,

(c) automatically detecting the occurrence of the instantaneous stop of downward motion of said particles in said plasma through optoelectronic means, said occurrence of said stop of downward motion indicating coagulation of said plasma, while noting the time of occurrence of said stop, and

(d) measuring the time difference between the reference time and the time of occurrence of said stop of downward motion of particles.

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4,879,433

PARALLEL CABLE BUS WITH INTERNAL PATH LENGTH COMPENSATION

John B. Gillett, Woodstock; Fred H. Lohrey, Poughkeepsie, and Jerry A. Lorenzen, Stone Ridge, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 31, 1988, Ser. No. 265,064

Int. Cl.^{4} H01B *7/08*

U.S. Cl. 174—32 **7 Claims**

1. A high performance flat cable comprising:
a plurality of conductors arranged parallel side-by-side in a common plane in a dielectric body;
said conductors within said body being relatively close at one of the remote ends and fanning out from said one end to provide more widely spaced parallel conductors; and
said conductors being of equal path lengths from said one end to an opposite end.

4,879,434

SUBASSEMBLY CASE INCLUDING A FLAT SHEET METAL SHIELD FASTENED WITH V-SHAPED SPRING CLIPS

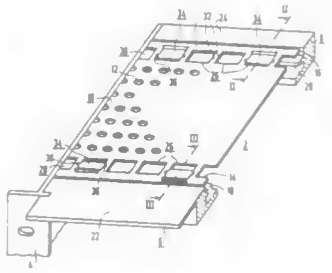
Eugen Assel, Knetzgau; Burkhard Dasbach, Steinbach, and Bruno Gebhard, Forchheim, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Oct. 11, 1988, Ser. No. 256,047

Claims priority, application Fed. Rep. of Germany, Oct. 30, 1987, 8714497

Int. Cl.^{4} H05K *7/18, 9/00*

U.S. Cl. 174—35 R **4 Claims**



1. A subassembly case comprising: front and rear members having corresponding front and rear recessed shoulders; a flat sheet shield made of a conductive material and having a plurality of venting holes, and two bearing areas, each bearing area having a row of rectangular holes, each hole having a short side, said holes being arranged with said short sides being adjacent; and a plurality of V-shaped fastening spring clips made of a conductive material disposed in said rectangular holes, each spring clip having a leg terminating in a hook for engaging one of said recessed shoulders.

4,879,435

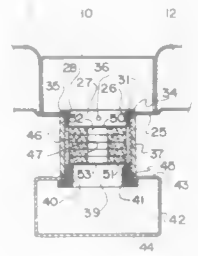
FITTING FOR THE UNDERSIDE OF A CELLULAR FLOOR

Charles N. Domigan, Coolville, Ohio, assignor to Butler Manufacturing Company, Kansas City, Mo.

Filed Aug. 9, 1988, Ser. No. 230,035

Int. Cl.^{4} H02G *3/22*

U.S. Cl. 174—48 **10 Claims**



1. In combination, a floor and a fitting:
the floor including a raceway cell having a bore formed in the bottom thereof;
the fitting including;
a hollow cylindrical member, one end of which engages the bottom of said cell in alignment with said bore;
a junction box having a top wall with an opening and a bottom with a removable cover, the junction box being spaced from the bottom of said cell and the other end of said cylindrical member engaging the top wall of the junction in alignment with the opening in the top wall;
means engaging the inside of the bottom of said cell and engaging the underside of the top wall of said junction box to secure said cylindrical member and the junction box to said cell; and
fire-retarding means located between said removable cover and the bottom of said cell and arranged to permit passage of conductors.

4,879,436

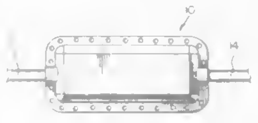
CLOSURE FOR TELECOMMUNICATIONS CABLE

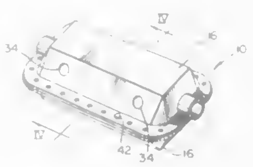
R. Brian Braham, Saskatoon, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Aug. 18, 1988, Ser. No. 233,648

Int. Cl.^{4} H02G *15/113*

U.S. Cl. 174—92 **7 Claims**





1. A closure structure for a telecommunications cable splice comprising two housing parts which are sealably connectable together, each housing part:
having a base;
a continuous outer wall extending from one side of the base to a free end of the outer wall; an inner wall disposed within the outer wall, the inner wall extending in a direc-

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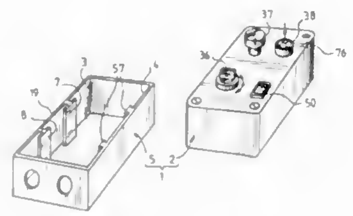
tion away from the base to a free end of the inner wall spaced inwardly from the free end of the outer wall; the inner wall providing a boundary for an inner chamber which is open at the free end of the inner wall, the base also forming a part of the said boundary;

the inner and outer walls also forming boundaries for an outer chamber which is open between the free ends of the inner and outer walls; and the free ends of the two walls defining recesses for receiving cables through the structure across the outer chamber and into the inner chamber; the two housing parts being securely connectable one to the other so that, except at the recesses in the free ends, the free ends of the inner walls of the two housing parts seal together to connect the inner chambers to define a splice chamber and the free ends of the outer walls of the two housing parts seal together to connect the outer chambers to define a sealant chamber for containing moisture blocking material, the recesses in the free end surfaces of the walls coacting in the assembly to provide cable entrance openings into the splice chamber through the sealant chamber.

4,879,437
MANUALLY CONTROLLED SWITCHING APPARATUS

Pierre Dard, Le Pecq, and Fabrice Maës, Ermont, both of France, assignors to La Telemecanique Electrique, France
Filed Jan. 19, 1988, Ser. No. 144,977
Claims priority, application Fed. Rep. of Germany, Sep. 30, 1987, 8713155[U]
Int. Cl.⁴ H01H *9/02*
U.S. Cl. 200—1 R 7 Claims



1. A switching apparatus comprising:

i. a case having a base and a lid, said base having side walls and a bottom wall; said side walls having upper edges;

ii. at least one switching unit arranged in said base for providing a free space between said side walls and said switching unit;

iii. manual control members mounted on the lid and accessible from the outside of the case;

iv. the switching unit having actuating members controlled from said manual control members and housed on said base;

v. elongate slides formed in said side walls in a direction at right angles to said bottom wall and,

vi. support members forming elongate slide parts which slidingly cooperate with said elongate slides and supporting parts substantially parallel to said bottom wall, said actuating members being mounted on said supporting parts in said free space.

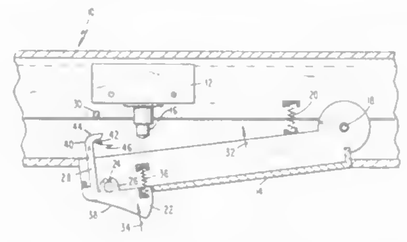
4,879,438
LOCK-ON/LOCK-OFF SWITCH FOR POWER TOOL

Charles D. Winchester, Easley, S.C., assignor to Ryobi Motor Products Corp., Pickens, S.C.
Filed Aug. 1, 1988, Ser. No. 226,578
Int. Cl.⁴ H01H *9/06*
U.S. Cl. 200—61.85 19 Claims

1. In a switching apparatus for activating a driving motor of a motor driven device to operate the device, said device being mounted on a housing, said housing comprising blocking means, the switching apparatus including a switch for selectively closing and breaking an electrical path to provide and remove electric current to and from the motor, respectively, a manually operable power actuating lever for actuating an armature of the switch, and locking means for preventing operation of the actuating lever to actuate the armature of the switch to close the electrical path, the improvement comprising:

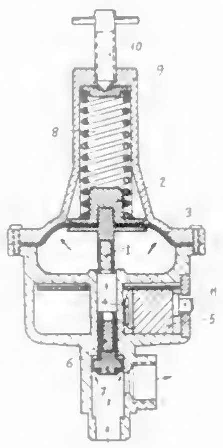
control means for controlling operation of said locking means, said control means operable for constraining movement of said locking means to be in a direction substantially parallel to a direction of movement of said actuating lever, said control means comprising trigger means engageable by a finger of the operator while engaging said actuating lever to actuate the switch, said trigger means comprising cooperating means, said cooperating means comprising an abutment surface for abutting against said blocking means thereby to block movement of the actuating lever to prevent actuation of the armature of the switch; and

mounting means for mounting said control means to said actuating lever, said mounting means comprising pivot means for pivoting said control means about an axis substantially parallel to an operator engageable surface of said actuating lever to move said abutment surface away from said blocking means over the path of travel of said locking means.



4,879,439
APPARATUS FOR CONTROLLING START UP AND STOP DOWN OF A HYDRAULIC PUMP

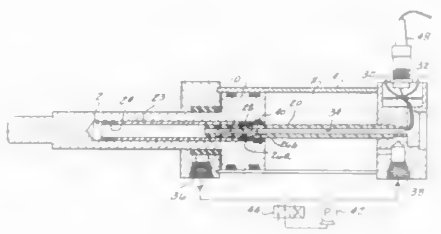
Fernando Banus Garcia, C. Sant Ramon, 6, 08230 Matadepera Barcelona, Spain
Filed Dec. 14, 1988, Ser. No. 284,075
Claims priority, application Spain, Dec. 18, 1987, 8800189
Int. Cl.⁴ H01H *35/34*
U.S. Cl. 200—81.9 M 7 Claims



1. Apparatus for controlling start up and stop down of a hydraulic pump, of the kind comprising a flow detector supplying, for a predetermined minimum value of flow, a start up signal for the pump, a pressure detector supplying, for a predetermined minimum value of the pressure, a start up signal for the pump, and impeller means for the pressure detector, characterized by the fact that the pressure detector comprises a movable part (1.2) which is integral with a membrane (3) closing a cavity (3b) communicating with the hydraulic network, and a fixed part (4,5) arranged in the apparatus body at the displacement position of the movable part (1,2), the impeller means for the movable part of the pressure detector are constituted of a spring (8) mounted between the said movable part (1,2) and the apparatus body (9), the flow detector comprising a part (6,7) which is movable in the vertical direction and performs the function of gravity closing valve, and a fixed part (4,5) which is arranged in the apparatus body.

4,879,440
PROXIMITY SWITCH FOR A CYLINDER

Robert K. Lymburner, 4085 Clinton Dr., Clinton River Mobile Park, Mt. Clemens, Mich. 48043
Continuation-in-part of Ser. No. 141,552, Jan. 7, 1988, Pat. No. 4,803,318. This application Dec. 13, 1988, Ser. No. 283,818
Int. Cl.⁴ H01H *35/38*
U.S. Cl. 200—82 R 18 Claims



1. A proximity switch comprising:

a movable member traveling along a fixed path between a first position and a second position, said movable member having an aperture extending parallel to the fixed path from one end of the movable member toward another end of the movable member;

a housing enclosing a portion of the movable member to form a first expansible fluid chamber between a first end of the housing and the movable member, and forming a separate second expansible fluid chamber between a second end of the housing and the movable member, wherein expansion of the first fluid chamber drives the movable member to the first position and expansion of the second fluid chamber drives the movable member to the second position;

a sensor-supporting member connected to one end of the housing and extending parallel to the fixed path toward another end of the housing, said sensor-supporting member having a non-electrically conductive portion engaged within the aperture of the movable member;

separate fixed sensor means mounted on the non-electrically conductive portion of the sensor-supporting member said respective sensor means being electrically insulated from each other within said aperture; and

electrically conductive contact means within the aperture of the movable member and movable therewith to bridge the respective sensor means when in the first position.

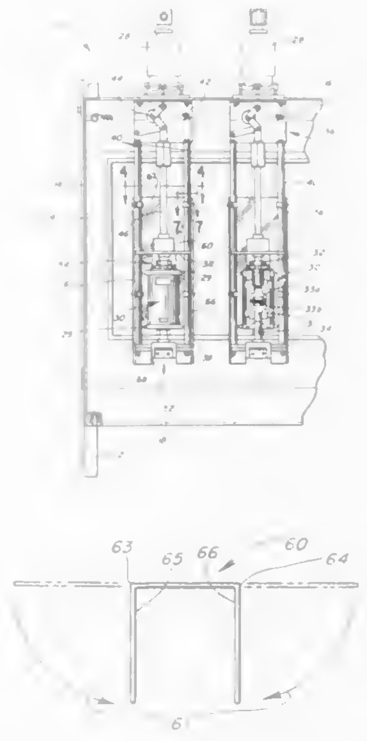
4,879,441
DIELECTRIC BARRIER FOR A VACUUM INTERRUPTER

Sidney R. Hamm, Muskego, and Ronald A. Wainio, South Milwaukee, both of Wis., assignors to Cooper Industries, Inc.
Filed Aug. 4, 1988, Ser. No. 228,338
Int. Cl.⁴ H01H *33/66*
U.S. Cl. 200—144 B 20 Claims

1. With a high voltage interrupter of the type characterized by a container having at least one peripheral wall and an end wall, having therein a plurality of generally parallel vacuum switches which are spaced apart from each other and the walls of the container, having a mechanism which is carried by the end wall and which operates each vacuum switch, and having current exchange means for supplying electrical current from the end wall to the ends of each vacuum switch, each vacuum switch having a pair of cooperating oppositely disposed electrical contacts, one of the contacts being moved relative to the other contact by the mechanism and the other contact being electrically connected to the current exchange means by a conductor which disposed between the peripheral wall and the vacuum switch, apparatus comprising:

(a) stringer means, carried by the container, for carrying each vacuum switch at a spaced distance from the walls of the container, said stringer means comprising at least one elongated stringer which is arranged generally parallel to the longitudinal axis of the vacuum switch and at a spaced distance from the vacuum switch; and

(b) an open dielectric barrier for at least one switch, said barrier being carried by said stringer at a spaced distance from the walls of the container and being spaced apart from and generally around said one vacuum switch, said barrier having a longitudinal dimension which is substantially greater than the longitudinal dimension of said one switch, having one generally flat smooth side which is disposed between said one switch and the other switch, having another generally flat smooth side which is disposed between said one switch and the current exchange conductor for said one switch, and having an open side for visual inspection of said one switch.



4,879,442
TISSUE CONTAINER AND WASTE TISSUE RECEPTACLE

Robert L. Giovine, 665 Bancroft Rd., Brick Town, N.J. 08723
Filed Aug. 22, 1988, Ser. No. 234,925
Int. Cl.⁴ B65D *69/00*
U.S. Cl. 206—233 1 Claim

1. A receptacle for the selective removal of tissues and storage of soiled tissues comprising an enclosed container having opposing first and second surfaces with said opposing

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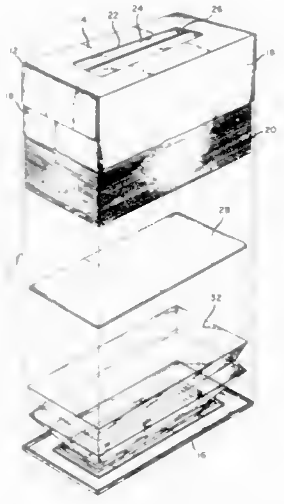
surfaces being secured together by a circumferential sidewall, said first opposing surface having an aperture therethrough;

a movable partition disposed in said container, said movable partition substantially parallel to said first and second opposing surfaces;

a plurality of unused tissues disposed between said movable partition and said first opposing surface, said tissues selectively removable through said aperture of said first surface;

an expandable receptacle positioned between said movable partition and said second opposing surface, said expandable receptacle comprising a plastic envelope, said plastic envelope having a longitudinal aperture slit coincident with a longitudinal aperture positioned in said second opposing surface, said plastic envelope and said longitudinal aperture providing a deformable seal, for receipt of soiled tissues, said expandable plastic envelope, expanding to occupy the void left from the depletion of unused tissues, said soiled tissues being positioned within said expandable plastic bag receptacle, through said deformable seal, said soiled tissues thereby disposing said movable partition towards said first opposing surface for the further selective removal of unused tissues.



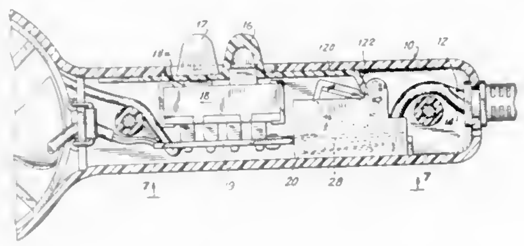
4,879,443
WATERPROOF SWITCH ASSEMBLY FOR ELECTRICAL APPLIANCES

Vito Carlucci, Stratford, and Raymond Kunz, Monroe, both of Conn., assignors to Clairol Incorporated, New York, N.Y.

Division of Ser. No. 84,585, Aug. 12, 1987, Pat. No. 4,751,485. This application Mar. 25, 1988, Ser. No. 173,701

Int. Cl.⁴ H01H *9/06*

U.S. Cl. 200—293.1 1 Claim



1. In an electrical, hand-held appliance having a manually operated power on/off switch, said appliance operating on electrical power from a power source when said on/off switch is closed, the improvement comprising:

an auxiliary switch interposed between said power on/off switch and said power source,

an actuating means interconnecting said power switch and said auxiliary switch, said actuating means adapted to move in response to manual operation of said power switch and thereby operate said auxiliary switch, said actuating means comprising:

a cap adapted to mate with a movable part of said on/off switch; restraining means limiting the motion of said cap to one dimension; an extension member secured to one side of said cap; a cam projection secured to said extension member, said cam projection adapted to move said auxiliary switch between an on position in response to linear motion of said cap in one direction and an off position in response to linear motion of said cap in the opposite direction.

4,879,444
APPARATUS FOR THE HEAT TREATMENT OF INSULATING MATERIALS USING MICROWAVE ENERGY AND HOT GAS

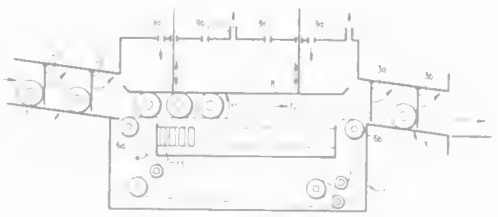
Bernard Bichot, Clermont, and Bernard Louis, Liancourt, both of France, assignors to Isover Saint-Gobain, Courbevoie, France

Division of Ser. No. 173,043, Mar. 28, 1988, which is a continuation of Ser. No. 943,827, Dec. 17, 1986, abandoned, which is a continuation of Ser. No. 628,266, Jul. 6, 1984, abandoned. This application Aug. 4, 1988, Ser. No. 210,084

Claims priority, application France, Jul. 8, 1983, 8311401

Int. Cl.⁴ H05B *6/78*

U.S. Cl. 219—10.55 A 8 Claims



1. Apparatus for the heat treatment of products based on mineral fibres containing a binder in solution in water, capable of being hardened by reactions of polymerisation and/or polycondensation, comprising:

a metal container impervious to microwaves and equipped with a conveyor device for conveying the products through said container, said products comprising discrete objects having a substantially circular cross section;

at least one source of ultra-high frequency microwave radiation directed in a direction towards the objects;

a source of hot gas which gas is directed to the surface of the objects, the conveyor device comprising, means for rolling said objects substantially without sliding about an axis forming an angle other than zero with the direction of the microwaves,

wherein the conveyor device and means for rolling comprise, in combination, a movable belt and a ceiling of fixed plates, between which, and in contact with which, may be situated the objects, the displacement of the belt causing the displacement of the objects at half the speed of the belt and causing the rolling thereof.

4,879,445
SEAM WELDING APPARATUS WITH EDGE DETECTION

Hitoshi Kawano; Mitsuhiro Hayashi; Yukio Yamamoto, and Kunikatsu Ban, all of Ise, Japan, assignors to N.P.W. Technical Laboratory Co., Mie and Shinko Electric Co., Ltd., Tokyo, both of, Japan

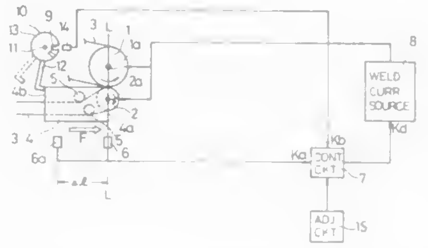
PCT No. PCT/JP87/00481, § 371 Date Apr. 14, 1988, § 102(e) Date Apr. 14, 1988, PCT Pub. No. WO88/00105, PCT Pub. Date Jan. 14, 1988

PCT Filed Jul. 7, 1987, Ser. No. 184,551

Claims priority, application Japan, Jul. 7, 1986, 61-103857[U]; Jul. 7, 1986, 61-158969

Int. Cl.⁴ B23K *11/06*

U.S. Cl. 219—64 3 Claims



1. A seam welding apparatus using wire electrodes (3) running along outer peripheries of upper and lower roller electrodes (1, 2) disposed opposed to each other, in which apparatus a cylindrical body to be welded, which has an overlap section (S) formed by overlapping either edges of a metal plate or a surface-treated metal plate, is fed together with said wire electrodes between said roller electrodes, and said overlap section is heated and partially fused by a current flowing through and between said roller electrodes, thereby seam-welding said overlap section, comprising:

(a) a feeder (10) for feeding said overlap section between said roller electrodes by pushing a trailing edge of said cylindrical body, said feeder including a disk-like member (13) rotatable about a shaft (11), a slit (9) defined in said disk-like member, and a feed arm (12) having one end mounted on said shaft and another end adapted to engage said trailing edge of said cylindrical body; and

(b) an approach switch (14) for detecting the position of said slit as an indication that a leading edge of said cylindrical body is disposed at a nip between said roller electrodes.

4,879,446
INTERNAL WIRE GUIDE FOR GTAW WELDING

Gene E. Morgan, Camarillo, and Gerald E. Dyer, Canoga Park, both of Calif., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

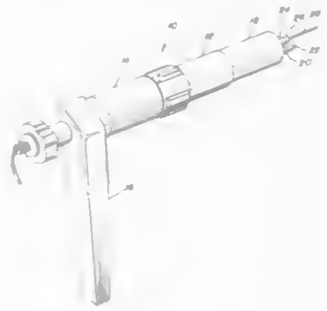
Filed Dec. 5, 1988, Ser. No. 279,625

Int. Cl.⁴ B23K *9/16*

U.S. Cl. 219—75 5 Claims

1. In a welding torch for gas tungsten arc welding apparatus comprising a housing for supporting an axially extending annular nozzle having an exhaust opening at one end and an axially extending tungsten electrode, said electrode being disposed substantially coaxially within the nozzle, means for supplying electricity to said electrode and means for supplying an inert gas to said nozzle for shielding said electrode from oxidizing conditions,

the improvement comprising an axially elongated filler metal wire guide disposed internally within said housing and extending entirely through said nozzle spaced from the periphery of the nozzle, the axis of elongation of said guide within said nozzle always being substantially parallel to said electrode, and said guide and said electrode projecting through said nozzle beyond said one end.



4,879,447
PISTON ACTUATED WELDING GUN WITH PIVOTING ARM

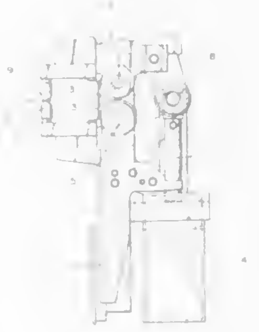
Shigeru Umeda, Kanagawa, Japan, assignor to Obara Corporation, Tokyo, Japan

Filed Aug. 19, 1988, Ser. No. 234,477

Claims priority, application Japan, Feb. 3, 1988, 63-21873

Int. Cl.⁴ B23K *11/10*

U.S. Cl. 219—86.25 10 Claims



1. A welding gun comprising:

a fixed arm having an electrode at one end thereof and fixedly connected with a housing of a pressure cylinder at the other end thereof, and a first pin provided at a middle portion of the fixed arm, the fixed arm being swingably mounted on a base by the first pin and the pressure cylinder having a piston provided with a rod at the distal end thereof;

a movable arm having an electrode at one end thereof, said movable arm electrode generally opposing the electrode of the fixed arm, said movable arm having a second pin at the other end thereof for pivotally connecting the movable arm to the rod of the piston, and a middle portion of the movable arm having a third pin between the electrode and the second pin; and

the first and third pins as respectively provided at the middle portions of the fixed arm and the movable arm being sidewardly spaced apart and joined together by a pivotal link for pivotally connecting the fixed arm and the movable arm.

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4,879,448

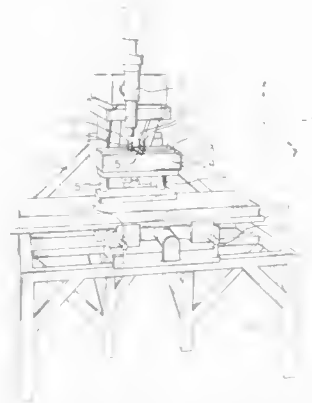
APPARATUS FOR LASER WELDING AND ANNEALING

Edward C. Folger, Melbourne, and Glenn S. Witerski, Palm Bay, both of Fla., assignors to Storage Technology Corporation, Louisville, Colo.

Filed Oct. 24, 1988, Ser. No. 261,837

Int. Cl.^{4} B23K *26/00*

U.S. Cl. 219—121.63 22 Claims



1. Apparatus for sequentially welding and annealing one or more sites on a workpiece using a beam of laser light transmitted along a fixed axis, which beam of laser light is focused at a predetermined focal point, comprising:

means for securing said workpiece in the path of said transmitted beam of laser light with a site on said workpiece located at said predetermined focal point of said transmitted beam of laser light to weld said site on said workpiece;

means for transporting said securing means along said fixed axis of said transmitted beam of laser light a predetermined distance to maintain said site on said workpiece in said path of said transmitted beam of laser light outside said focal point of said transmitted beam of laser light to anneal said site on said workpiece;

means for translating said securing means in directions normal to said axis of said transmitted beam of laser light for welding and annealing said site on said workpiece when said site on said workpiece is greater in size than said focal point of said transmitted beam of laser light.

4,879,449

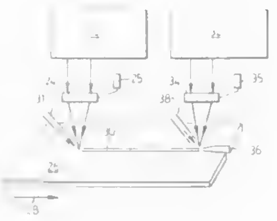
MEANS OF ENHANCING LASER PROCESSING EFFICIENCY OF METALS

Walter W. Duley, P.O. Box 453, King City, Ontario, Canada (L0G 1K0), and Grant Kinsman, c/o York University, 4700 Keele St., Downsview, Ontario, Canada (M3J 1P3)

Division of Ser. No. 8,656, Jan. 30, 1987. This application May 12, 1988, Ser. No. 192,921

Int. Cl.^{4} B23K *26/00*

U.S. Cl. 219—121.6 9 Claims



1. A work piece having a surface exhibiting a high reflectivity to laser radiation of a first wavelength and having formed thereon by a laser of a second wavelength a pattern of reduced reflectivity relative to the reflectivity of the first laser to enhance coupling between said surface and laser radiation of said first wavelength, said pattern exhibiting an increased surface roughness relative to said surface formed by evaporation and melting of said surface by said laser of said second wavelength.

4,879,450

LASER WELDING TECHNIQUE

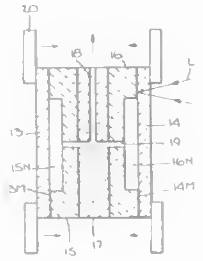
Jean-Pascal Valentin, Povilley; Pierre Maitre, Besancon, both of France, and Masahiro Kazahaya, Southampton, Pa., assignors to Fischer & Porter Company, Warminster, Pa.

Filed Dec. 2, 1988, Ser. No. 279,175

Claims priority, application France, Dec. 2, 1987, 87 17102

Int. Cl.^{4} B23K *26/00*

U.S. Cl. 219—121.64 9 Claims



1. A laser welding technique for welding together without using brazing material two parts having complementary faces, one of the parts being transparent to a laser beam and having a face composed of minute cavities, the face of the other part having light disruptive characteristics, said technique comprising the steps of:

(a) bringing the complementary faces of the parts together to create an interfacial region therebetween; and

(b) projecting a laser beam through the transparent part in a direction substantially normal to the face thereof which complements the face of the other part and focusing the beam onto the interfacial region, the focused beam being intercepted by the light disruptive face of the other part and being scattered thereby into the cavities in the face of the transparent part to produce multiple internal reflections therein generating sufficient heat which is entrapped in the region to cause the parts at their complementary faces to superficially melt and fuse.

4,879,451

LASER CUT VIDEO DISPLAY TERMINAL FILTER SCREEN

Mark Gart, Novato, Calif., assignor to Sun-Flex Company, Inc., Novato, Calif.

Filed Jul. 14, 1988, Ser. No. 219,537

Int. Cl.^{4} B23K *26/18*

U.S. Cl. 219—121.69 10 Claims

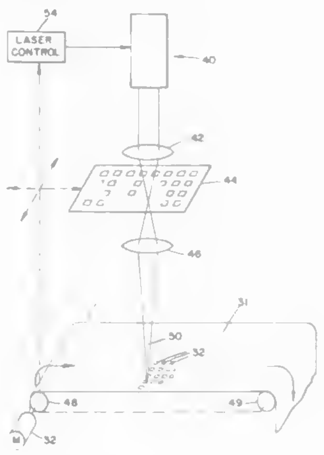
1. A method of forming a radiation and reflection filter screen for a video display terminal comprising the steps of:

placing a sheet stock of plastic material on a substantially flat surface;

focusing a beam of coherent electrical energy toward said plastic sheet on said surface;

moving said beam in a predetermined pattern to move said beam across and longitudinally along said sheet stock;

pulsing said beam in accordance with said movement to direct said focused beam in discrete areas across and along said sheet; and



controlling said focusing, pulsing and movement of said beam to cause said beam to ablate said sheet stock in said predetermined pattern.

4,879,452

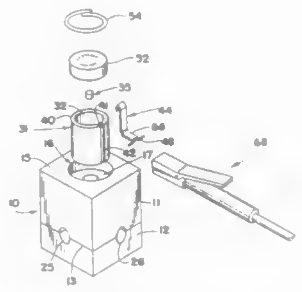
EXOTHERMIC WELDING APPARATUS AND METHOD

David P. Kovarik, Eastlake, and Michael D. Amos, Burton, both of Ohio, assignors to Erico International Corporation, Solon, Ohio

Filed Apr. 4, 1988, Ser. No. 177,075

Int. Cl.^{4} B23K *23/00*

U.S. Cl. 219—130.4 38 Claims



1. A sealed package of exothermic welding material comprising a cup-shape ceramic container for such material, a heat consumable cap over the top of said container, a tap hole in the bottom of said container closed by a heat consumable disk, and a pair of insulated ignition wires extending from the exterior of the container to the interior of the container and having exposed spaced ends forming a spark gap embedded in the exothermic material.

4,879,453

SELF-REGULATING BASEBOARD HEATER AND SYSTEM

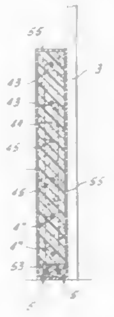
Donald M. Cunningham, Pittsburgh, Pa., assignor to Emerson Electric Co., St. Louis, Mo.

Division of Ser. No. 829,943, Feb. 18, 1986, Pat. No. 4,689,470. This application Jun. 10, 1987, Ser. No. 60,739

Int. Cl.^{4} H05B *3/14*

U.S. Cl. 219—213 12 Claims

1. A baseboard heating system for a room having a plurality of walls comprising a self-regulating heat producing strip disposed along each wall of a room, said strip extending substantially the entire length of a base of each wall, said strip including a plurality of pairs of spaced apart electrical conductors extending longitudinally along the base of at least one wall and spaced therefrom, self-limiting conductive material in physical contact with and forming a plurality of heat generating zones, said heat generating zones being formed between the conductors of each pair of the conductors and between conductors of adjacent pairs, and an electrically insulative jacket longitudinally covering all the pairs of conductors and the self-limiting conductive material, said strip further including two power conductors electrically insulated from each other and from the self-limiting conductive material, said power conductors extending longitudinally along the strip, and means for connecting the power conductors to a power source.



4,879,454

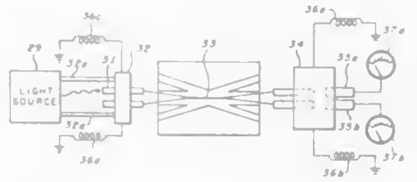
FIBER OPTIC FABRICATION FURNACE

David W. Gerdt, Charlottesville, Va., assignor to Sperry Marine Inc., Charlottesville, Va.

Filed Sep. 6, 1988, Ser. No. 240,986

Int. Cl.^{4} H05B *1/02;* **G02B** *6/38*

U.S. Cl. 219—494 17 Claims



1. An apparatus for fabricating fiber optic devices comprising:

a body of thermal insulating material and predetermined geometrical cross-section having a fiber channel extending through said body from a first end thereof to a second end thereof, and a plurality of coil channels positioned about said fiber channel each having openings to said fiber channel at a mutually aligned location whereby heat may pass from said coil channel to said fiber channel, and an insertion slot extending from said first end to said second end of said body and from an outer surface of said body to said fiber channel, thereby providing a passage way for inserting optic fibers into said fiber channel;

coil means positioned in said coil channels for providing heat in response to electrical current flowing therethrough; and

means coupled to said coil means for supplying said electrical current.

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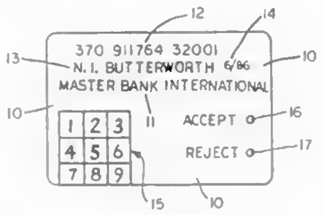
SELF-VERIFYING TRANSACTION CARDS

Nathan I. Butterworth, 6840 S. 284 W., and Lynda M. Butterworth, 6806 S. Baldwin, both of West Jordan, Utah 84084

Filed Jun. 17, 1985, Ser. No. 745,147

Int. Cl.⁴ G06K *5/00;* G06F *15/30*

U.S. Cl. 235—280 5 Claims



1. A transaction or authorization card, such as a credit card, check guarantee card or identification card, said card comprising:

data input means which is built into the card as a self-contained integral component card, said data input means being adapted to generate data by manual manipulation thereof by a holder of the card;

memory means which is also built into the card as a self-contained integral component of the card, said memory means being adapted to be programmed with and store security coded data;

programming means included in said card as a self-contained integral component of the card for the holder of the card to (1) initially enter said coded data into said memory means and (2) to enter replacement coded data for existing coded data at any time, wherein following the initial entry of said coded data, said programming means is activated only by entry of the existing coded data and a coded request for entering replacement coded data;

analyzer means which is also built into the card as a self-contained integral component of the card, said analyzer means being adapted to receive data generated by said data input means and for comparing the data from said input means with the coded data held in said memory means; and

indicator means which is also built into the card as self-contained integral component of said card and which is associated with said analyzer means, said indicator means being adapted to give a visual indication of acceptable use of said card when the analyzer means determines that the data which has been manually entered through said data input means by the holder of said card is the same as the coded data held in said memory of said card, said indicator means further adapted to give a visual indication to reject use of the card when the analyzer means determines that the data which has been manually entered through said data input means by the holder of said card is not the same as the coded data held in said memory means of said card.

4,879,456

METHOD OF DECODING A BINARY SCAN SIGNAL

Craig D. Cherry; Andrew P. Taussig, both of Eugene, and Michael T. Brooks, Veneta, all of Oreg., assignors to Spectra-Physics, Inc., San Jose, Calif.

Filed Jun. 18, 1987, Ser. No. 64,110

Int. Cl.⁴ G06K *7/10*

U.S. Cl. 235—462 20 Claims

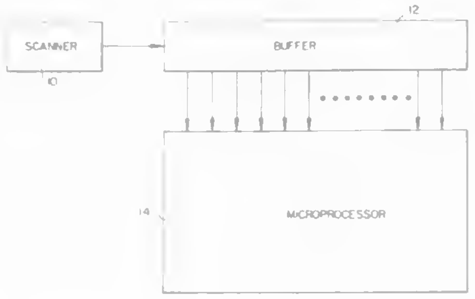
1. A method of decoding a binary scan signal consisting of a bit sequence produced by an electro-optical scanning device as the device scans bar code symbols on a label, the bits in said sequence corresponding to light and dark spaces making up said bar code symbols, comprising the steps of:

a. supplying said binary scan signal to a storage buffer such that said buffer contains a plurality of bits most recently produced by said scanning device,

b. selecting a portion of said bit sequence which defines a large light space,

c. subjecting the bits in the sequence following those defining said large light space to a series of tests to determine whether such bits were produced by scanning a bar code symbol which is valid in one or more of several bar codes,

d. decoding tyhe bar code symbol in the codes in which it is valid,



e. subjecting the next bits to the sequence to a series of tests to determine whether such bits were produced by scanning a bar code symbol which is valid in any of the bar codes in which the previously decoded bar code symbol is valid,

f. decoding the bar code symbol in the codes in which it and the previously decoded bar code symbol are valid, and

g. repeating steps e. and f. above until all bar code symbols on the label have been decoded.

4,879,457

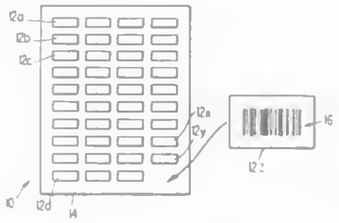
METHOD FOR ETCHING A BAR CODE ON METAL

Richard Ludden, 6030 Adams St., Lincoln, Nebr. 68507

Continuation-in-part of Ser. No. 114,066, Oct. 29, 1987, Pat. No. 4,791,284. This application Dec. 12, 1988, Ser. No. 282,586

Int. Cl.⁴ G06K *19/02*

U.S. Cl. 235—487 13 Claims



1. A method for etching a bar code having a plurality of dark bars on a metal surface, comprising the steps of:

(a) preparing a carrier web having a plurality of elongated openings, each opening corresponding in size and position to a respective dark bar of the bar code;

(b) adhesively attaching the carrier web to the metal surface, the adhesive attachment bonding the web to the metal surface so that fluid cannot seep between the web and the metal surface;

(c) electrochemically etching the metal surface through the openings in the web, step (c) including electrochemically etching the metal surface using an AC current to produce a dark metal compound where the metal is exposed through the openings; and

(d) removing the web from the metal surface.

4,879,458

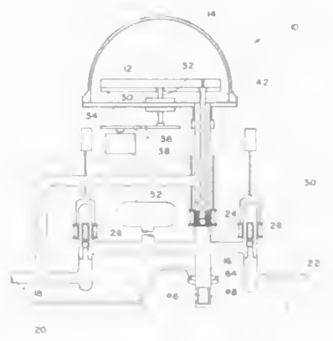
AUTOMATIC SAMPLE SYSTEM FOR MASS SPECTROMETER

Robert J. Brunfeldt, and James C. Jackson, both of Bartlesville, Okla., assignors to R. J. Brunfeldt Company, Inc., Bartlesville, Okla.

Continuation of Ser. No. 765,835, Aug. 15, 1985. This application Sep. 4, 1987, Ser. No. 94,018

Int. Cl.⁴ H01J *49/04*

U.S. Cl. 250—288 1 Claim



1. An automated sample inlet system to a mass spectrometer (MS) comprising:

(a) holder means for retaining a plurality of sample ampules and sequentially releasing individual sample ampules to drop by gravity, each of said individual sample ampules comprising a low melting enclosure containing a volatile sample;

(b) a sealed enclosure surrounding said holder means with means to maintain said sealed enclosure under substantially constant vacuum at ambient temperature;

(c) a vaporizing chamber within a heated oven, means within said vaporizing chamber for sequentially receiving said individual sample ampule, for melting said low melting enclosure, and thus releasing said volatile sample within said vaporizing chamber and producing a vaporized sample, said vaporizing chamber having a first valve means to sequentially release said vaporized sample to said MS and a second valve means to sequentially evacuate said vaporizing chamber;

(d) a conduit means having one end in vacuum communication with said sealed enclosure with the other end of said conduit means within said heated oven in sealed communication with said vaporizing chamber, said conduit means positioned to convey said released individual sample ampoule from said sealed enclosure to said vaporizing chamber;

(e) an inverted ball and seat valve means located in that portion of said conduit within said heated oven to: (i) control the entry of said sample ampule from said sealed enclosure to said vaporizing chamber after said evacuation of said vaporizing chamber, and thereafter isolate said sample ampule within said vaporizing chamber.

4,879,459

AUTOMATIC POWER CONTROLLER FOR SEMICONDUCTOR LASER

Kiyoshi Negishi, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

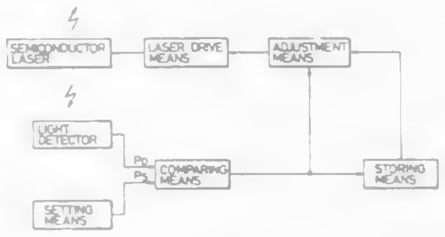
Filed Feb. 16, 1988, Ser. No. 157,184

Claims priority, application Japan, Feb. 16, 1987, 62-32868

Int. Cl.⁴ G01J *1/32*

U.S. Cl. 250—205 10 Claims

1. An automatic power controller for a semiconductor laser, comprising: a light detector for detecting the intensity of light emitted from said laser; means for setting a reference value P_S; means for comparing the detected value P_D of said intensity with the set reference value P_S and for outputting a binary value representing a result of said comparison; adjustment means for providing an adjustment value depending on the result of said comparison; laser drive means for causing an electrical current corresponding to said adjustment value to flow through said laser; and storage means for sequentially storing the result of said comparison; said adjustment means operable for increasing said adjustment value when $P_D<P_S$ and for decreasing said adjustment value when $P_D>P_S$, wherein said adjustment value is set when said sequentially stored result is sequentially shifted in said storage means a prescribed number of times of two or more.



4,879,460

GYROSLABILIZED OPTICAL RADIATION DEFLECTION DEVICE PROVIDING A STABILIZED RADIATION SENSITIVITY LOBE

Lars J. Schleimann-Jensen, Danderyd; Alf E. Engding, Akersberga, and Anders F. Aström, Farsta, all of Sweden, assignors to U.S. Philips Corporation, New York, N.Y.

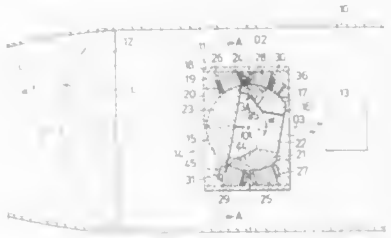
PCT No. PCT/SE87/00253, § 371 Date Mar. 30, 1988, § 102(e) Date Mar. 30, 1988, PCT Pub. No. WO87/07706, PCT Pub. Date Dec. 17, 1987

PCT Filed May 20, 1987, Ser. No. 150,369

Claims priority, application Sweden, Jun. 30, 1986, 8602506

Int. Cl.⁴ G01J *1/20*

U.S. Cl. 250—230 R 5 Claims



1. A gyro stabilized optical radiation deflection device for mounting in an envelope which includes a transmitter and/or receiver of radiation outgoing from or incoming to such envelope, said device being in the radiation path from/to such transmitter or receiver and providing a directed sensitivity lobe for said radiation, said envelope being subject to motions relative to fixed spatial reference directions; said deflection device comprising: a rotatable deflection body having a spherical outer contour and which is seated in a spherical recess in a support which is fixedly connected to said envelope, so that said body is movable in three rotational degrees of freedom in said recess; and means for imparting rapid rotation to said body about a spin axis which substantially coincides with the direction of said radiation sensitivity lobe, so that said body serves as a gyro rotor; characterized in that:

a central portion of said rotor and a central portion of said recess are prisms transparent to said radiation, and to-

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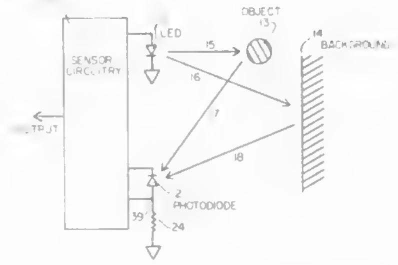
gether form an adjustable diffraction prism for deflecting said radiation sensitivity lobe;
said prism portions of said recess and said gyro motor each have a wall serving as an input/output surface for said radiation; and
said prism portions of said recess and said gyro rotor are of materials having refractive indices such that an angular change in the direction of said envelope relative to the spin axis of said gyro rotor causes said diffraction prism to produce a corresponding angular change in direction of outgoing and/or incoming radiation thereto, whereby a corresponding angular change in direction of said radiation sensitivity lobe is produced relative to said envelope.

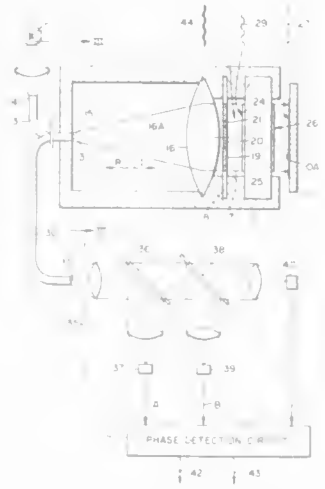
4,879,461
ENERGY FIELD SENSOR USING SUMMING MEANS
Harald Philipp, 15320 NE. 11th, K326, Bellevue, Wash. 98007
Filed Apr. 25, 1988, Ser. No. 185,843
Int. Cl.⁴ G01N *9/04*
U.S. Cl. 250—221 20 Claims



1. An apparatus for sensing a disturbance within a sensing region, comprising:
an emitting means for emitting a field of energy, said field of energy being disturbed by a change in said sensing region;
sensing means for receiving energy from the emitted field of energy to produce a corresponding sensing signal;
signal generation means for producing an electrical signal complementary in nature to the sensing signal that includes a digital to analog converter means for digital control of the amplitude of the electrical signal complementary to the sensing signal;
summing means for adding the sensing signal and the electrical signal complementary to the sensing signal to create a summation signal whose amplitude is less than the sensing signal or opposite in polarity to the sensing signal; and
detection means responsive to the summation signal to create a detection signal indicative of an energy field disturbance, such means including a conversion means to translate the detection signal to a digital signal proportionate to the level of the detection signal.

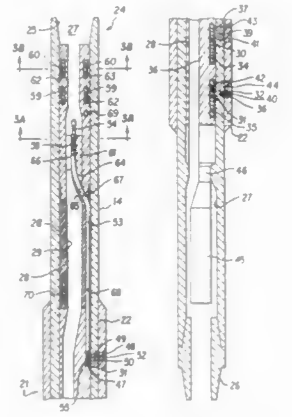
4,879,462
OPTO-ELECTRONIC SCALE-READING APPARATUS HAVING SPATIAL FILTER FOR WAVELENGTH SEPARATION
William F. N. Stephens, Glos, United Kingdom, assignor to Renishaw plc, Wotton-under-Edge, United Kingdom
PCT No. PCT/GB87/00435, § 371 Date Feb. 18, 1988, § 102(e) Date Feb. 18, 1988, PCT Pub. No. WO87/07945, PCT Pub. Date Dec. 30, 1987
PCT Filed Jun. 22, 1987, Ser. No. 159,364
Claims priority, application United Kingdom, Jun. 21, 1986, 8615197
Int. Cl.⁴ H01J *5/16, 40/14*
U.S. Cl. 250—237 G 11 Claims

1. A opto-electrcnic scale reading apparatus comprising
a scale defined by spaced lines, the spacing of said lines defining a nominal periodicity; and
a read head moveable relative to said scale in the direction of the spacing of said lines, said read head including:
a projecting means for projecting a beam of incident light;
a fringe generator disposed in the path of said incident beam, said fringe generator generating on said scale a fringe pattern having said nominal periodicity, said scale transmitting light defining said fringe pattern; and



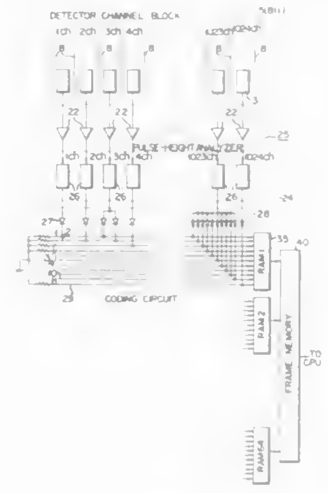
spatial filter means disposed in the path of the light transmitted by said scale, said filter means preventing the passage therethrough of a fringe pattern whose spatial periodicity departs from said nominal periodicity by more than a given value.

4,879,463
METHOD AND APPARATUS FOR SUBSURFACE FORMATION EVALUATION
Peter D. Wraight, Missouri City; Edouard Marienbach, Houston; Jean-Michel Hache, Sugar Land; Erik Rhein-Knudsen, and Mike Evans, both of Missouri City, all of Tex., assignors to Schlumberger Technology Corporation, Houston, Tex.
Filed Dec. 14, 1987, Ser. No. 132,494
Int. Cl.⁴ G01V *5/00*
U.S. Cl. 250—270 46 Claims



3. An apparatus for investigating properties of earth formations surrounding a borehole comprising:
a. a tubular body adapted to be coupled to a drill string and adapted to permit the downward flow of drilling fluid therethrough;
b. a neutron source positioned within said tubular body on its cylindrical axis and adapted to permit the downward flow of drilling fluid therearound for bombarding the formation with high energy neutrons and for producing secondary radiation as a result of neutron-formation interaction;
c. first secondary radiation detector means positioned within said tubular body at a first spaced location from said neutron source for detecting secondary radiation and for generating a first signal indicative thereof;
d. second secondary radiation detector means positioned within said tubular body at a second spaced location from said neutron source for detecting secondary radiation and for generating a second signal indicative thereof;
e. a gamma ray source positioned against the interior side of said tubular body at an axial position different from the position of said neutron source and permitting the downward flow of drilling fluid on one side thereof through the interior of said tubular body;
f. first gamma ray detecting means positioned at a first spaced location from said gamma ray source against the interior side of said tubular body for detecting gamma rays and for generating a third signal indicative thereof, said first gamma ray detecting means comprising a first gamma ray scintillator coupled to a photomultiplier;
g. second gamma ray detecting means positioned at a second spaced location from said gamma ray source against the interior side of said tubular body for detecting gamma rays and for generating a fourth signal indicative thereof, said second gamma ray detecting means comprising a second gamma ray scintillator coupled to a photomultiplier, said first and second gamma ray detecting means being adapted to permit the downward flow of drilling fluid on one side thereof through the interior of said tubular body; and
h. means for combining said first and second signals and said third and fourth signals to respectively generate signals indicative of formation porosity and a formation characteristic selected from the group comprising formation density and formation photoelectric absorption coefficient.

4,879,464
RADIATION IMAGING APPARATUS
Kazuhiro Iinuma, Tochigi, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Continuation of Ser. No. 641,574, Aug. 16, 1984, abandoned. This application Feb. 5, 1987, Ser. No. 14,201
Claims priority, application Japan, Aug. 19, 1983, 58-150987; Nov. 24, 1983, 220983
Int. Cl.⁴ G01T *1/208*
U.S. Cl. 250—361 R 24 Claims



1. A radiation imaging apparatus comprising:
means for detecting radiation emitted from an object under investigation to which a radioactive substance has been administered, said detecting means including;
a plurality of detector elements equally divided into a first number of detector subblocks, and
means for generating electric pulse signals each representing the radiation detected by said detector elements in said detector subblocks;
a plurality of pulse-height analyzer sections each coupled to a different one of said detector elements in said detector subblocks to analyze said electric pulse signals, said analyzer sections each including means for selecting only those of said electric pulse signals having at least a predetermined signal level;
means for coding said electric pulse signals selected by said pulse-height analyzer sections and for separately producing coded signals representing unique detection positions in each of said detector subblocks;
first memory means for temporarily storing said coded signals from said coding means within a predetermined time period into first memory positions, said first memory positions being organized as a matrix array with each corresponding to a different detector subblock;
second memory means for storing said coded signals from said first memory means in second memory positions organized in accordance with said matrix array, said coded signals in said second memory means representing an image data signal of said object; and
means for displaying said image data signal as a radiation distribution map.

4,879,465
DETECTOR MODULE FOR SCINTILLATION CAMERAS
Dennis E. Persyk, Barrington, and Hamill James J., Rolling Meadows, both of Ill., assignors to Siemens Gammasonics, Inc., Des Plaines, Ill.
Continnation-in-part of Ser. No. 913,798, Sep. 30, 1986, Pat. No. 4,810,885. This application Mar. 29, 1988, Ser. No. 174,574
Int. Cl.⁴ G01T *1/164*
U.S. Cl. 250—363.02 5 Claims

1. A detector module for scintillation cameras, comprising:
a plurality of elongated scintillator strips which have like physical dimensions and are elongated between first and second ends, one half of said plurality being of NaI(Tl) and the other half of said plurality being of CsI(Na), the scintillator strips being so arranged that they together define a region whih extends between first and second sides with all of the first ends of the scintillator strips lying on the first side and all of the second ends of the scintillator strips lying on the second side, the scintillator strips being arranged in a succession of NaI(Tl)-CsI(Na) pairs in a manner that adjacent scintillator strips are always of different scintillator materials;
a plurality of photodiodes, each being uniquely associated

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with a particular pair of adjacent scintillator strips and being optically linked to the first ends thereof;
means for establishing a thermal gradient between the first and second sides;
a photomultiplier tube optically linked to the scintillator strips to register scintillation events occurring therein; and
means for determining the decay time of scintillation events detected by the photomultiplier tube.

4,879,466

SEMICONDUCTOR RADIATION DETECTOR

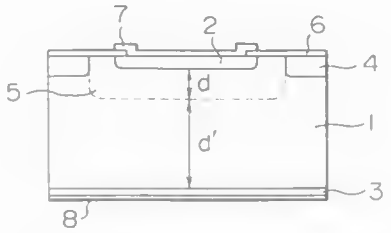
Hiroshi Kitaguchi, Ibaraki; Shigeru Izumi, Tokyo, and Satoshi Suzuki, Mito, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 29, 1988, Ser. No. 150,205

Claims priority, application Japan, Feb. 6, 1987, 62-24563

Int. Cl.⁴ G01T *1/24;* H01L *27/14*

U.S. Cl. 250—370.14 **13 Claims**



1. A semiconductor radiation detector, comprising:
a p-n junction;
a substrate layer provided adjacent to a depletion layer formed at said p-n junction and having a radiation absorbing layer of a silicon equivalent thickness not smaller than 140 μm; and
a channel stopper provided in the surface of said substrate layer and surrounding said p-n junction, to prevent said depletion layer from spreading along the surface of said substrate layer.

4,879,467

APPARATUS FOR THE TRANSLATORY MANIPULATION OF AN ELEMENT SUCH AS AN AXLE

Jean F. Muller, Metz; Francois G. Tollitte, Verdun; Gabriel Krier, Metz; Serge Dominiak, Ars sur Moselle; Andre Eberhardt, Metz, and Marcel Berveiller, Woippy, all of France, assignors to Universite de Metz, Metz, France

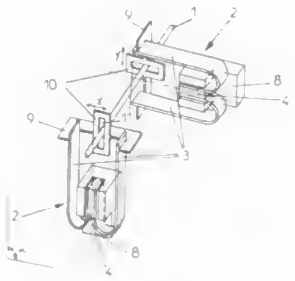
PCT No. PCT/FR87/00509, § 371 Date Aug. 23, 1988, § 102(e) Date Aug. 23, 1988, PCT Pub. No. WO88/04599, PCT Pub. Date Jun. 30, 1988

PCT Filed Dec. 22, 1987, Ser. No. 249,573

Claims priority, application France, Dec. 23, 1986, 86 18244

Int. Cl.⁴ B01D *59/44;* G01K *5/10;* G01N *21/00*

U.S. Cl. 250—288 **17 Claims**



1. Apparatus for translatory manipulation, of an element (1), such as an axle, characterized in that it comprises a displacement device (2) for each direction in space in which the axle (1) is to be manipulated, each displacement device (2) comprising two blades (3) prestressed in opposition, constituted by an alloy that is pseudoelastic or has shape memory, disposed on opposite sides of heating and/or cooling means (4) giving rise to a thermal gradient between the two blades (3) and thus their martensitic transformation causing their deformation.

4,879,468

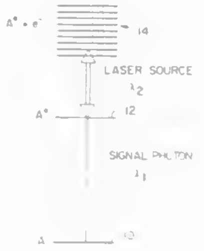
PHOTOIONIZATION OPTICAL FILTER AND DETECTOR

John C. Brock, Redondo Beach, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed Oct. 28, 1985, Ser. No. 791,663

Int. Cl.⁴ G01J *5/36*

U.S. Cl. 250—374 **15 Claims**



9. A method of detecting signal photons at a selected narrow bandwidth and low signal level, comprising the steps of:
selecting an atomic or molecular system to provide absorption of signal photons of the desired wavelength;
absorbing signal photons in a vapor cloud of the selected atomic or molecular system and thereby transforming atoms or molecules of the vapor to a selected excited metastable state, in numerical proportion to the number of signal photons of the particular wavelength admitted into the chamber;
optically pumping a large proportion of the metastable-state atoms or molecules to an ionized state in which electrons are freed; and
collecting the free electrons means of an electric field.

4,879,469

MIXED MEDIA FOR KINESTATIC CHARGE DETECTORS

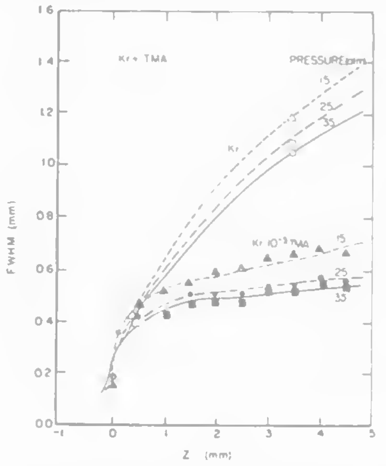
Frank A. DiBianca, Chapel Hill, N.C., assignor to University of North Carolina, Chapel Hill, N.C.

Filed May 13, 1988, Ser. No. 193,527

Int. Cl.⁴ G01T *1/185*

U.S. Cl. 250—374 **17 Claims**

1. A detection medium for use in a kinestatic charge detector, said medium comprising a mixture of xenon gas and one or more gases containing molecules composed on one or more



atomic constituents, wherein at least one of said gases has a higher atomic number than said xenon gas.

4,879,470

PHOTOELECTRIC CONVERTING APPARATUS HAVING CARRIER ELIMINATING MEANS

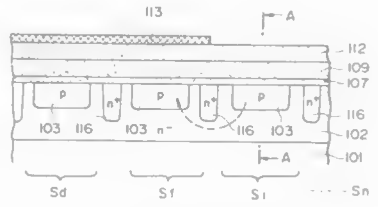
Shigetoshi Sugawa; Yoshio Nakamura, both of Atsugi; Nobuyoshi Tanaka, Tokyo, and Isamu Ueno, Atsugi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 13, 1988, Ser. No. 143,186

Claims priority, application Japan, Jan. 16, 1987, 62-006252; Jan. 16, 1987, 62-006255; Mar. 31, 1987, 62-077951

Int. Cl.⁴ H01J *40/14*

U.S. Cl. 250—578 **24 Claims**



1. A photoelectric converting apparatus comprising:
a plurality of photosensors divided into an opening portion and a light shielding portion; and
means for biasing at least one photosensor provided between the photosensors in said light shielding portion and the photosensors in the opening portion to prevent a flow of photosignals from said opening portion to said light shielding portion.

4,879,471

RAPID-SCANNING INFRARED SENSOR

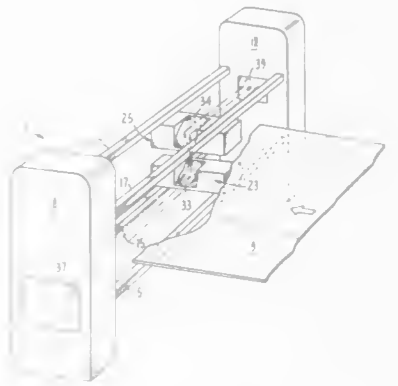
John A. Dahlquist, Palo Alto, Calif., assignor to Measurex Corporation, Cupertino, Calif.

Filed Mar. 25, 1987, Ser. No. 29,805

Int. Cl.⁴ G01J *1/00;* G01N *21/81*

U.S. Cl. 250—359.1 **23 Claims**

1. A system for measuring optically-sensitive properties relating to the composition of travelling webs of sheet material during manufacture, comprising:
(a) first track means mounted to extend generally parallel to one face of a travelling web in the cross direction;
(b) a stationary light source means arranged to direct collimated light, having ranges of wavelengths, parallel to the first track means;
(c) first parabolic reflector means mounted to travel along the first track means and to focus the collimated light as rays directed directly from the first parabolic reflector means. onto the adjacent face of the web;
(d) second track means mounted to extend generally parallel to the first track means adjacent the opposite face of the web;



(e) second parabolic reflector means mounted to travel along the second track means to immediately collect rays that are transmitted through the web from the first parabolic reflector means; and
(f) stationarily-mounted light detector means to detect rays collected by the second parabolic reflector means at least at two selected ranges of wavelengths to provide measurement of optical absorption properties relating to the composition of the travelling web at selected locations.

4,879,472

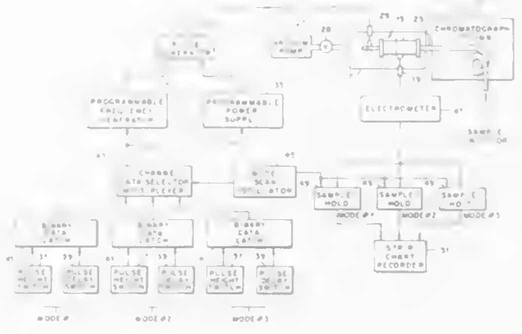
MULTIPLEXED ELECTRONICALLY PROGRAMMABLE MULTIMODE IONIZATION DETECTOR FOR CHROMATOGRAPHY

Marcus B. Wise, Kingston, and Michelle V. Buchanan, Knoxville, both of Tenn., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed May 19, 1988, Ser. No. 196,693

Int. Cl.⁴ G01N *27/70*

U.S. Cl. 250—379 **14 Claims**



1. A device for detecting and differentiating organic compounds by electron affinity, comprising:
an electron capture cell including a pair of electrodes communicating with said cell and an ionization radiation source disposed therein;
means for injecting gaseous compounds into said cell;
means for detection and measurement of electric current

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variation in said cell as a function of the composition of said gaseous compounds in said cell;

means for providing a constant subatmospheric pressure within said cell; and

means for applying programmed sequences of bias voltage pulses to said pair of electrodes of said cell at selected different intervals to alter the detection mode response of said cell.

4,879,473

ELECTRON-BEAM EXPOSURE APPARATUS

Nobuyuki Zumoto; Masahiko Sakamoto, and Susumu Hoshinouchi, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 23, 1988, Ser. No. 248,071

Claims priority, application Japan, Sep. 25, 1987, 62-238636

Int. Cl.⁴ H01J *37/00*

U.S. Cl. 250—492.2 3 Claims

1. An electron-beam exposure apparatus for exposing a substrate by an electron-beam in which beam position data in an X-axis direction and in a Y-axis direction which are supplied from a pattern data storing means or a pattern data generating means, are applied to an electron-beam deflection means (21, 22) after digital-to-analog conversion, comprising: means (33) for removing correction data which can be expressed as a cubic function, correction data storing means (10) for storing correction data other than data which can be expressed by a cubic function, adding means (17, 18) for adding the correction data from the correction data storing means to beam position data in both the X- and Y-axis directions; digital-to-analog converting means (19, 20) for subjecting output signals from the adding means to digital-to-analog conversion; and an analog arithmetic operation means (35) for subjecting outputs from the digital-to-analog converting means to analog correction based on either a deflection correction control signal (36) or a predetermined cubic-function, wherein the electron-beam deflection is corrected.

4,879,474

CONTACT-FREE OPERATING ELECTRONIC SWITCHGEAR

Jean-Luc LaMarche, Langenargen, Fed. Rep. of Germany, assignor to i f m Electronic GmbH, Fed. Rep. of Germany

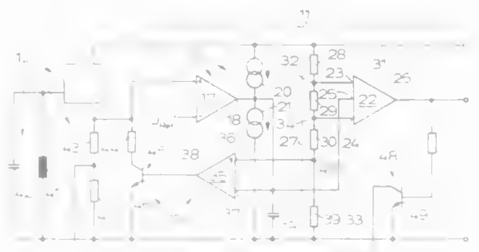
Filed Jul. 7, 1988, Ser. No. 216,173

Claims priority, application Fed. Rep. of Germany, Jul. 7, 1987, 3722334

Int. Cl.⁴ H01H *35/00;* **G01N** *27/00*

U.S. Cl. 307—116 16 Claims

1. A contact-free operating electronic switchgear, comprising an oscillator capable of being externally affected, a switching amplifier having at least two operating units disposed downstream of the oscillator, an electronic switch which can be controlled by the oscillator via the switching amplifier, a supply circuit for the provision of a supply voltage for the oscillator and for the switching amplifier, and a control circuit between the two operating units of the switching amplifier and the oscillator, wherein the control circuit controls the oscillator such that the oscillator also oscillates when it is externally affected.



4,879,475

DEVICE AND METHOD FOR MAINTAINING A VOLTAGE LEVEL IN A CONTROL CIRCUIT

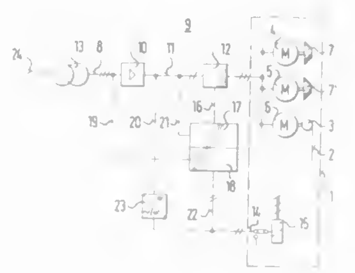
Joachim Rüge, Monchengladbach; Gregor Kathke, and Helmut Schlösser, both of Viersen, all of Fed. Rep. of Germany, assignors to W. Schlafhorst & Co., Fed. Rep. of Germany

Continuation of Ser. No. 103,898, Oct. 2, 1987, abandoned. This application Dec. 28, 1988, Ser. No. 290,854

Claims priority, application Fed. Rep. of Germany, Oct. 3, 1986, 3633627

Int. Cl.⁴ H02J *9/00*

U.S. Cl. 307—68 3 Claims



1. A device for temporarily maintaining a voltage level in a control circuit for auxiliary devices of a textile machine, the textile machine having a motor means which receives current supplied by a line voltage, comprising:

an intermediate direct current circuit connected to the control circuit via a coupling device; a converter;

a converter control means; a line voltage sensing means connected to the line voltage;

wherein said intermediate direct current circuit and said converter are connected in series between the line voltage and the motor means;

said converter is controllable by said converter control means to supply current from the line voltage to the motor means and to reversibly supply current generated by the residual inertial energy of the motor to the control circuit; and

said converter control means being connected to the line voltage sensing means and being responsive to the line voltage sensing means to control the converter in accordance with the requirement that the converter is reversed to supply current generated by the motor means to the control circuit when the line voltage sensing means senses a drop voltage level in the line voltage.

4,879,476

METHOD AND APPARATUS FOR TRANSMITTING SIGNALS

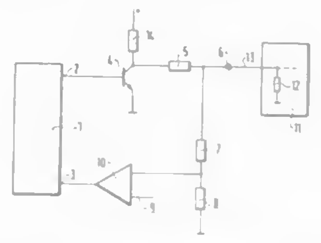
Hartmut Schweizer, Korntal, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jul. 5, 1984, Ser. No. 627,744

Claims priority, application Fed. Rep. of Germany, Sep. 6, 1983, 3332037

Int. Cl.⁴ H02J *1/00*

U.S. Cl. 307—10.1 4 Claims



1. In a method of transmitting signals in a serial form from a control device to a diagnostic device of a motor vehicle by means of a diagnostic data-conducting lead interconnected between the diagnostic device and the control device, the improvement comprising the steps providing current source means immediately in the control device so that signals are transmitted from the control device to the diagnostic device through said data-conducting lead as a current, and measuring voltage at said diagnostic data lead to detect whether the diagnostic device is connected to the control device whereby diagnostic data are automatically transmitted from the control device to the diagnostic device when the connection of the diagnostic device with the control device is detected.

4,879,477

PROCEDURE AND CIRCUIT ARRANGEMENT FOR SWITCHING ON AN INDUCTANCE SUBJECT TO REMANENCE

Michael Krüger, Edingen-Neckarhausen, Fed. Rep. of Germany, assignor to Heidelberger Druckmaschinen AG, Heidelberg, Fed. Rep. of Germany

Filed Apr. 17, 1987, Ser. No. 40,573

Claims priority, application Fed. Rep. of Germany, Apr. 25, 1986, 3614057

Int. Cl.⁴ H03K *17/22*

U.S. Cl. 307—239 9 Claims

1. Method of switching an inductance having remanence, on to and off from an AC voltage source by means of a controlled switch, comprising the steps of: forming a signal representing predetermined phase angles of said AC-voltage source corresponding to the magnetic state of the inductance before switching it on, and switching said controlled switch on by means of said signal.

4,879,478

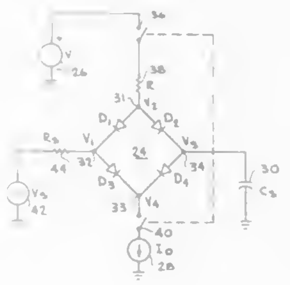
FAST SAMPLE AND HOLD CIRCUIT

Eugen Gershon, Los Gatos, Calif., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Continuation of Ser. No. 771,434, Aug. 30, 1985, abandoned. This application Aug. 21, 1987, Ser. No. 88,989

Int. Cl.⁴ G11C *27/02*

U.S. Cl. 307—353 30 Claims



1. A sample and hold circuit comprising:

an input terminal for receiving an input signal to be sampled;

a charge storage means to create an output signal at an output terminal in proportion to the amount of charge stored therein;

current source means for supplying a constant current;

voltage source means for supplying a constant voltage at an output terminal;

a bridge means coupled between said input terminal and said charge storage means and coupled to said current source means and to said voltage source means for selectively charging said charge storage means either with a variable current from said voltage source means or discharging said charge storage means with a fixed current drawn by said current source means depending upon the relative magnitudes of said input signal and said output signal to thereby change said output signal until it substantially matches said input signal;

a resistor coupled between said output terminal of said voltage source means and said bridge means for limiting the maximum current which can be drawn from said voltage source means.

4,879,479

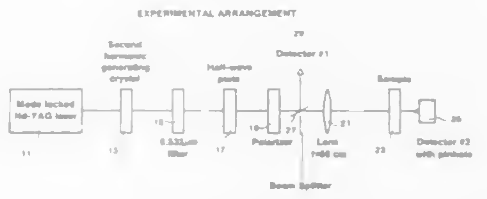
POLY-YNE NONLINEAR OPTICAL MATERIALS

Claude C. Frazier, Ellicott City; Shekhar Guha, Columbia, and Wenpeng Chen, Bethesda, all of Md., assignors to Martin Marietta Corporation, Bethesda, Md.

Filed Aug. 5, 1987, Ser. No. 81,785

Int. Cl.⁴ G02F *1/35*

U.S. Cl. 307—425 43 Claims



15. A device for optical switching, frequency conversion, and protection of sensory organs and optical and electronic sensors which comprises a dry, free-standing cast film of a power-limiting, polymerized transition metal poly-yne having repeating units of the formula:

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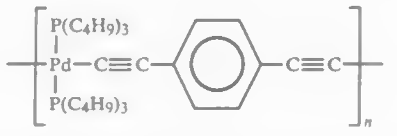


interposed in the path of a laser light so as to have a nonlinear optical effect thereupon.

4,879,480
BICMOS GATE ARRAY

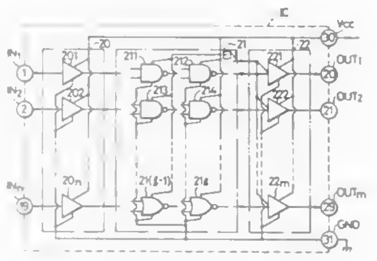
Yukio Suzuki, Hinode; Ikuro Masuda; Masahiro Iwamura, both of Hitachi; Shinji Kadono, Fussa; Akiro Uragami, Takasaki; Masayoshi Yoshimura, Maebashi, and Toshiaki Matsubara, Takasaki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 102,245, Sep. 28, 1987, abandoned, which is a continuation of Ser. No. 8,467, Jan. 29, 1987, abandoned, which is a continuation of Ser. No. 575,567, Jan. 31, 1984, Pat. No. 4,689,503. This application Sep. 2, 1988, Ser. No. 240,450

Claims priority, application Japan, Jan. 31, 1983, 58-12711; Jan. 31, 1983, 58-12712; Jan. 31, 1983, 58-12713

Int. Cl.⁴ H03K *19/01*

U.S. Cl. 307—446 19 Claims



1. A semiconductor integrated circuit comprising:

(1) an input circuit having input and output terminals, said input circuit performing a switching operation responding to an input signal received at said input terminal and including means for providing an output signal at said output terminal; and

(2) an internal logic block including a plurality of gate circuits, said internal logic block performing logic operations on input signals received at input terminals of said plurality of gate circuits and generating output signals based upon the logic operations at output terminals of said plurality of gate circuits, wherein said output terminal of said input circuit is commonly connected with input terminals of said plurality of gate circuits in accordance with a predetermined gate array type arrangement, and said means for providing the output signal in said input circuit includes a first bipolar output transistor, a base of which responds to said input signal received at said input terminal, a current flowing through a collector-emitter path of said first bipolar output transistor charging or discharging a capacitance at said output terminal of said input circuit and a second bipolar output transistor, a base of which is supplied with a base drive signal responding to said input signal, a current flowing through a collector-emitter path of said second bipolar output transistor charging or discharging said capacitance, wherein said collector-emitter path of said second bipolar output transistor is connected in series with said collector-emitter path of said first bipolar output transistor between a first and a second operating potential, wherein said charging or discharging operation executed by said second bipolar transistor is opposite to the charging or discharging operation executed by said first bipolar transistor, wherein said input circuit further includes a CMOS buffer circuit, an input of which responds to said input signal and an output of which generates said base drive signal for said second bipolar output transistor,

wherein the logic operations of said internal logic block is determined in accordance with the predetermined gate array type arrangement, and

wherein said plurality of gate circuits of said internal logic block are formed in accordance with the predetermined gate array type arrangement to include a plurality of quasi-CMOS circuits and a plurality of CMOS circuits, input stages of said quasi-CMOS circuits being composed of P-channel and N-channel MOSFETs and output stages of said quasi-CMOS circuits being composed of bipolar transistors, each of said CMOS circuits including P-channel and N-channel MOSFETs.

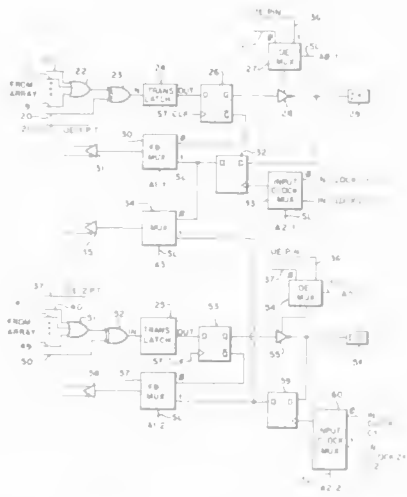
4,879,481
DUAL I/O MACROCELL FOR HIGH SPEED SYNCHRONOUS STATE MACHINE

Jagdish Pathak, Los Altos Hills; Stephen M. Douglass, Santa Clara, and Dov-Ami Vider, Sunnyvale, all of Calif., assignors to Cypress Semiconductor Corporation, San Jose, Calif.

Filed Sep. 2, 1988, Ser. No. 241,015

Int. Cl.⁴ H03K *19/177*

U.S. Cl. 307—465 6 Claims



1. An input/output macrocell for a programmable logic device, said macrocell being coupled to a state clock to receive a state clock signal to operate a programmable array as a synchronous state machine and being coupled to a first and a second output of said array, said input/output macrocell comprising:

a first and a second input/output connector means;

a first and a second state register, said first state register having an input, an output and a complementary output and having a clock input, said clock input being coupled to receive a state clock signal, said second state register having an input, an output and a complementary output and having a clock input being also coupled to receive said state clock signal, said input of said first state register being coupled to said first output of said array through a first transparent latch, said input of said second state register being coupled to said second output of said array through a second transparent latch;

a first and a second tri-state latched output driver, said first tri-state latched output driver having an input, an output and a control input for receiving a first output enable signal, said output of said first tri-state latched output driver being coupled to said first input/output connector means, said input of said first tri-state latched output driver being coupled to said output of said first state register to provide the signal present on said output of said first state register to said first connector means when said first output enable signal is active, said second tri-state latched output driver having an input, an output and a control input for receiving a second output enable signal, said output of said second tri-state latched output driver being coupled to said second input/output connector means, said input of said second tri-state latched output driver being coupled to said output of said second state register to provide the signal present on said output of said second state register to said second connector means when said second output enable signal is active;

a first and a second feedback multiplexer, said first feedback multiplexer having an output coupled to a first input to said programmable array and having a first and a second input which are selected between by a first select line means, said second feedback multiplexer having an output coupled to a second input to said programmable array and having a first and a second input which are selected between by a second select line means, said first input of said first feedback multiplexer being coupled to said complementary output of said first state register and said first input of said second feedback multiplexer being coupled to said complementary output of said second state register;

a first and a second input register, said first input register having an input and an output and a clock input, said clock input being coupled to receive a first input clock signal, said input of said first input register being coupled to said first connector means and said output of said first input register being coupled to said second input of said first feedback multiplexer, said second input register having an input, an output and a clock input, said clock input of said second input register being coupled to receive a second input clock signal, said input of said second input register being coupled to said second connector means and said output of said second input register being coupled to said second input of said second feedback multiplexer;

a first and a second input clock multiplexer, said first input clock multiplexer having a first and a second input for receiving a first and a second clock signal and having an output being coupled to said clock input of said first input register to provide said first input clock signal and having a third select line means for selecting between said first and said second clock signals, said second input clock multiplexer having a first and a second input for receiving said first and said second clock signals and having an output being coupled to said clock input for said second input register to provide said second input clock signal and having a fourth select line means for selecting between said first and said second clock signals;

an input multiplexer having an output being coupled to a third input to said programmable array, and having a first and a second input, said first input of said input multiplexer being coupled to said output of said first input register and said second input of said input multiplexer being coupled to said output of said second input register, said input multiplexer having a fifth select line means for selecting between said first input and said second input of said input multiplexer.

4,879,482
LINEAR PULSE MOTOR

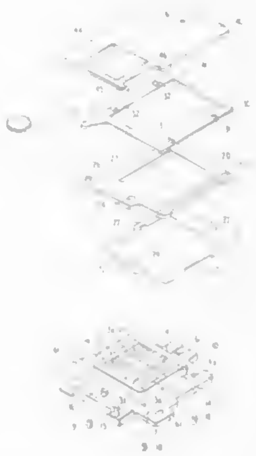
Masanori Murofushi, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jun. 30, 1988, Ser. No. 213,864

Claims priority, application Japan, Jun. 30, 1987, 62-164258; Jun. 30, 1987, 62-164259; Jun. 30, 1987, 62-164260; Jun. 30, 1987, 62-164261; Jun. 30, 1987, 62-164263

Int. Cl.⁴ H02K *41/03*

U.S. Cl. 310—12 26 Claims



1. A linear pulse motor comprising:

a stationary body having a projecting portion in which magnetic pole members are disposed, and a flat portion surrounding said projecting portion, said magnetic pole members having a plurality of first teeth arranged in an array in a first direction;

a guide member provided on said flat portion of said stationary body and having a first guide groove extending in said first direction;

adjusting members for adjusting a position of said guide member by moving said guide member in directions parallel to and perpendicular to said flat portion; and

a movable body provided above said guide member through a rotatable member which is engaged with said first guide groove, said movable body having a plurality of second teeth which are arranged in an array in said first direction and positioned to face said first teeth at a spacing from said first teeth.

4,879,483
MOLDED MULTI-PART GENERATOR FAN

Manoj M. Barahia, Manchester, Mo., assignor to Century Electric, Inc., St. Louis, Mo.

Filed Jun. 3, 1988, Ser. No. 201,886

Int. Cl.⁴ H02K *9/06;* **F04D** *29/28*

U.S. Cl. 310—63 20 Claims

1. In a rotating dynamo electric machine, said dynamo electric machine having a driven member secured to a driving member of said machine, said driven and driving members

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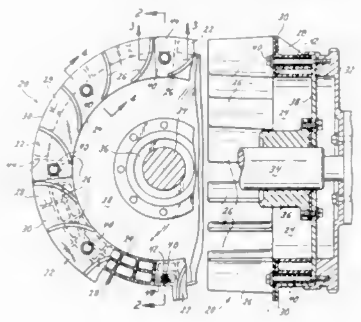
comprising a drive train, the improvement comprising a plastic annular fan attached to the drive train said fan including a plurality of overlying interlocking sectoral fan parts, and said fan having means to cool the machine as the drive train rotates.



4,879,484

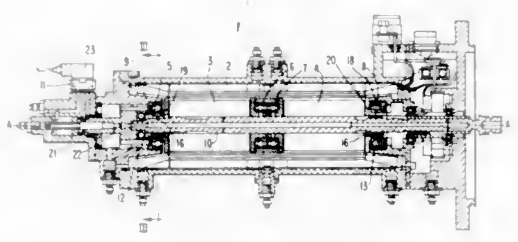
ALTERNATING CURRENT GENERATOR AND METHOD OF ANGULARLY ADJUSTING THE RELATIVE POSITIONS OF ROTORS THEREOF

John B. Huss, Rockford, Ill., assignor to Sundstrand Corporation, Rockford, Ill.

Filed Jun. 17, 1988, Ser. No. 208,114

Int. Cl.⁴ H02K *16/00*

U.S. Cl. 310—114 10 Claims



1. An alternating current generator comprising stator means having an output winding for producing an output voltage, rotor means within said stator means, said rotor means including first and second magnetic rotors rotatable about a common axis, and means for angularly adjusting said first and second rotors relative to one another about said common axis, said means for angularly adjusting including means for rotating each of said first and second rotors in opposite directions relative to the other for affecting a relative angular adjustment of the rotors, wherein said means for rotating simultaneously rotates each of said rotors a like amount in opposite directions during a relative angular adjustment.

4,879,485

PERMANENT MAGNET ROTOR

Giampiero Tassinario, Florence, Italy, assignor to Mavilor Systemes S.A., Switzerland

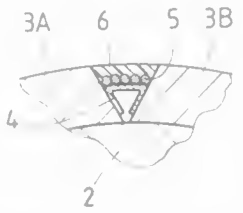
Filed Aug. 25, 1988, Ser. No. 236,996

Claims priority, application Switzerland, Sep. 16, 1987, 3565/87

Int. Cl.⁴ H02K *21/12*

U.S. Cl. 310—156 11 Claims

1. A permanent magnet rotor for an electric motor, the rotor comprising a cylinder forming its body and provided with a plurality of curved permanent magnets disposed on the periphery of the cylinder, and secured in a predetermined manner to the body of the rotor, wherein the magnets are secured by adhesive bonding to the rotor and spaced apart in the peripheral direction so as to form axial interstices, wherein said interstices are partly filled with continuous tensioned thread of nonmagnetic material which passes from one interstice to another, passing alternately over plane faces of the rotor, and that the remainder of space in each interstice is filled with a resin.



4,879,486

PERMANENT-MAGNET GENERATOR USED FOR AN IGNITION DEVICE OF AN INTERNAL COMBUSTION ENGINE

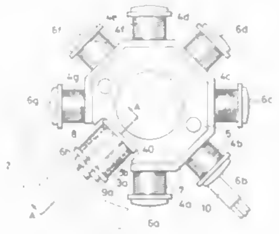
Shigeru Yumiyama, Katsuta, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 6, 1988, Ser. No. 141,146

Claims priority, application Japan, Jan. 21, 1987, 62-9872

Int. Cl.⁴ F02P *1/02;* **H02K** *37/12*

U.S. Cl. 310—254 1 Claim



1. A permanent-magnet generator used for an ignition device of an internal combustion engine comprising:

a rotor fitted on a rotational driving shaft of the internal combustion engine and mounted for rotation about an axis;

permanent magnets on a circumference of the rotor;

a stator core having a plurality of salient poles facing toward the permanent magnets of the rotor each with a coil positioned around the outer periphery of each salient pole; and

a plurality of salient pole wound coils for charging a condenser used for ignition arranged in steps along an axial direction of said stator core;

wherein axial lengths along a radial direction with respect to the rotational axis of said plurality of salient pole wound coils are longer than the corresponding lengths of the other salient pole wound coils on said stator core.

4,879,487

SURFACE-ACOUSTIC-WAVE DEVICE

Kazuyoshi Sugai; Kiyotaka Sato, and Hiroshi Nishizato, all of Tokyo, Japan, assignors to Clarion Co., Ltd., Tokyo, Japan

Filed May 19, 1988, Ser. No. 196,123

Claims priority, application Japan, May 26, 1987, 62-130618; May 26, 1987, 62-130619

Int. Cl.⁴ H01L *41/08*

U.S. Cl. 310—313 A 6 Claims

1. A surface-acoustic-wave device comprising:

a semiconductor substrate;

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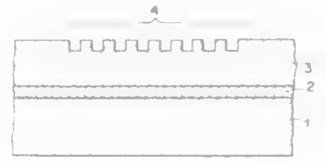
a piezoelectric layer provided on one surface of said semiconductor substrate;

a glassy layer provided on one surface of said piezoelectric layer on a side of said piezoelectric layer remote from said substrate; and



a plurality of grooves which are spaced periodically and which are provided in a surface of said glassy layer located on a side thereof remote from said piezoelectric layer, said grooves extending transversely with respect to a surface acoustic wave travelling direction.

4,879,488

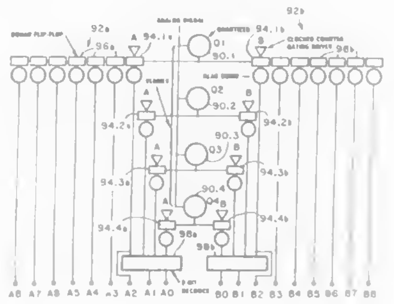
VERNIER FOR SUPERCONDUCTING ANALOG-TO-DIGITAL CONVERTER

Arnold H. Silver, Rancho Palos Verdes, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed May 6, 1988, Ser. No. 190,965

Int. Cl.⁴ H03M *1/00*

U.S. Cl. 341—171 14 Claims



7. A superconducting analog-to-digital converter, comprising:

a plurality of (2^n) of quantizers in the form of superconducting quantum interference devices (SQUID's), where n is a positive integer, configured to generate voltage pulses at periodically spaced quantization levels of an analog signal current applied to the quantizers, adjacent current quantization levels being separated by a uniform current quantum of Δi, where Δi is the change in analog signal current between adjacent quantization levels associated with any one of the quantizers;

means for supplying substantially equal analog signal currents to the plurality of quantizers;

means for applying a different bias current to each of the plurality of quantizers, such that the quantization levels are offset from each other in a uniform manner to provide for interpolation between adjacent quantization levels of a single quantizer, the quantizer bias currents having respective values of 0, $\Delta i/2^n$, $2\Delta i/2^n$, and so forth up to $(2^{n-1})\Delta i/2^n$; and

means for monitoring the voltage pulses output by the quantizers to determine the digital equivalents of changes in the analog signal current, to obtain a set of quantization levels interleaved between normally spaced quantization levels thereby permitting increased resolution or an increased sampling rate from the converter.

4,879,489

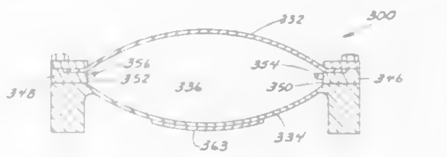
RADIATION-EMITTING DEVICES

Paul R. Goudy, Jr., Bayside, Wis., assignor to Photo Redux Corp., Milwaukee, Wis.

Division of Ser. No. 827,549, Feb. 10, 1986, Pat. No. 4,721,875. This application Jan. 25, 1988, Ser. No. 147,499

Int. Cl.⁴ H01J *61/30, 61/52*

U.S. Cl. 313—15 20 Claims



1. In a radiation-emitting device of the type having an envelope, a gas contained within the envelope, and spaced electrode means within the envelope, the improvement comprising:

said envelope including a first elongated principal member having an outwardly convex radiation-transmitting unsupported portion which is under compression and substantially free of discontinuities, and a separate inwardly concave second elongated principal member, said principal members being in fixed relative position and defining a volume of substantially constant cross-section along its length, said principal members being configured and located such that said volume is less than that of a cylinder of diameter equal to the largest cross-dimension of said volume;

the second principal member being radiation-reflective;

the first and second principal members together have two pairs of corresponding opposed edges along the length of the envelope volume, said largest inner cross-dimension being substantially equal to the spacing from one pair of opposed edges to the other;

first and second mounting means secured with respect to the principal members and having inward portions facing each other across said volume; and

first and second electrode means mounted along the inward portions of the first and second mounting means, respectively.

4,879,490

GAS DISCHARGE DEVICES WHEREIN ELECTRONS ARE INJECTED INTO A HIGH FIELD REGION

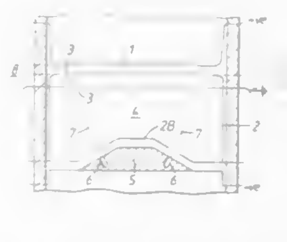
Clifford R. Weatherup, Chelmsford, United Kingdom, assignor to English Electric Valve Company Limited, Chelmsford, United Kingdom

Filed Aug. 21, 1987, Ser. No. 87,923

Claims priority, application United Kingdom, Aug. 30, 1986, 8621022; Jul. 29, 1987, 8718005

Int. Cl.⁴ H01J *17/46*

U.S. Cl. 313—601 18 Claims



1. A gas discharge device comprising, within a gas-filled envelope, an anode, a cathode and means for injecting electrons into a high field region, having no electrodes therein, between said anode and said cathode for initiating a discharge

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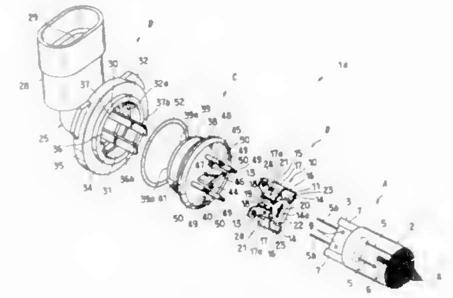
within said high field region, said device acting as a switch for allowing conduction through said device when triggered by said electrons entering said high field region.

4,879,491
ELECTRIC LAMP ASSEMBLY

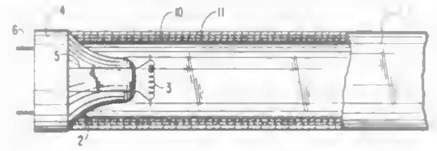
Yasuo Hirozumi; Susumu Kanematsu; Yasuyoshi Numajiri; Mikio Watanabe, and Mitsuhiro Okano, all of Shizuoka, Japan, assignors to Koito Seisakusho Co., Ltd., Tokyo, Japan
Filed Jul. 6, 1988, Ser. No. 215,537
Claims priority, application Japan, Jul. 6, 1987, 62-168388
Int. Cl.^{4} H01J *5/48, 5/50*
U.S. Cl. 313—318 6 Claims



1. An electric lamp assembly comprising:
a bulb unit including a filament, lead lines extending from said filament to the outside of the bulb unit and a hermetic seal portion, said lead lines extending through said hermetic seal portion;
a bulb holder including a looped band portion which grips the hermetic seal portion of the bulb unit having the leading ends of said lead lines projected outward from said bulb holder, said bulb holder having radially outwardly extending foot portions each having at least one opening formed therethrough;
a core structure including a circular plate portion of molded plastic and supporting pins which extend from said circular plate portion, said supporting pins being respectively inserted into said openings of said foot portions of said bulb holder and welded to the foot portions to achieve a tight connection between said core structure and said bulb holder;
a base structure having a hollowed entrance into which said core structure is snugly received, said base structure having two conducting plate members contained therein, said conducting plate members being welded with said lead lines; and
guide means for guiding the leading ends of said lead lines and those of said conducting plate members thereby to facilitate the welding between said conducting plate members and said lead lines upon assembling the electric lamp assembly; and
wherein said guide means comprises:
first means defining in said circular plate portion two slits for receiving the respective leading ends of said conducting plate members; and
second means defining in said circular plate portion two bores for receiving the respective leading ends of said lead lines, said bores extending along and being merged with said slits respectively.

4,879,492
FLUORESCENT LAMP HAVING A MULTI-LAYER PHOSPHOR OPTIMIZED FOR LUMEN OUTPUT, COLOR RENDERING AND COST

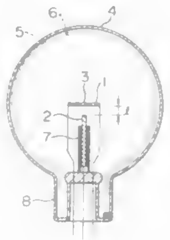
Frank M. Latassa, Morgantown, W. Va., and William E. Wilson, Danvers, Mass., assignors to North American Philips Corp., New York, N.Y.
Filed Sep. 30, 1988, Ser. No. 252,205
Int. Cl.^{4} H01J *61/48*
U.S. Cl. 313—487 9 Claims



1. In a fluorescent lamp having a phosphor excited during lamp operation to emit visible light, the improvement comprising:
a first layer comprising a halophosphate phosphor having CIE color coordinates within a four step MacAdam oval centered on X=0.382 and Y=0.384 and exterior to the standard cool white oval;
a second layer of a rare earth activated phosphor having approximately the same color coordinates as said first layer of phosphor and disposed with an area density of at least approximately 2.7 milligrams per square inch and covering said first layer of phosphor;
the ratio of the area density of the rare earth activated phosphor to the area density of the halophosphate-containing phosphor being between 0.088 to 0.222; and
the lamp having a color rendering index equal to at least 60.

4,879,493
LOW-PRESSURE DISCHARGE LAMP

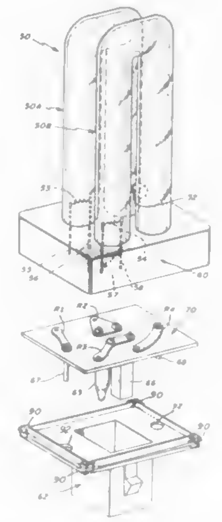
Hiromistu Mastuno, Hachioji; Seiichi Murayama; Tetsuo Ono, both of Kokubunji, and Yoshio Watanabe, Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Nov. 30, 1987, Ser. No. 126,789
Claims priority, application Japan, Dec. 2, 1986, 61-285853
Int. Cl.^{4} H01J *61/22*
U.S. Cl. 313—641 18 Claims



1. A low-pressure discharge lamp comprising a discharge vessel defining an airtight space therein, at least one pair of electrodes disposed in said discharge vessel, one of said electrodes which acts as an anode being located at least partially in a zone of negative glow, and discharge gases enclosed in said discharge vessel including a rare gas as an essential component thereof, said rare gas being selected from the group consisting of argon and krypton, and a lamp voltage of said low-pressure discharge lamp when expressed in volts is between (Vm−2) and (Vm+4), where Vm is the lowest metastable potential of said rare gas.

4,879,494
FLUORESCENT LAMP STARTER ASSEMBLY

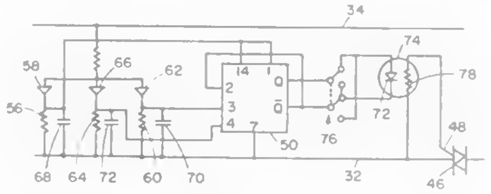
Billy W. Tuttle, Williamsport, Pa., assignor to GTE Products Corporation, Danvers, Mass.
Filed Feb. 26, 1987, Ser. No. 19,389
Int. Cl.^{4} H01J *17/34*
U.S. Cl. 315—61 18 Claims



1. In a fluorescent lamp including a fluorescent tube having electrode means supported therein, and a base from which the fluorescent tube is supported, a circuit board assembly for support in said lamp base and comprising; a lamp starter circuit, a circuit board having conductive runs thereon, pin means extending outside from within said base for enabling energy coupling to said electrode means, means for supporting the pin means from said circuit board, means connecting the lamp starter circuit to the circuit board conductive runs, and means connecting the lamp electrode means to the circuit board conductive runs.

4,879,495
ILLUMINATION CONTROL METHODS AND MEANS

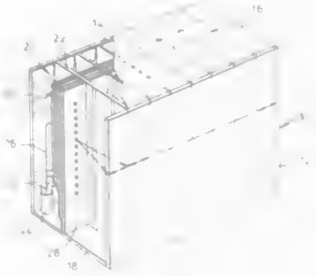
Yujiro Yamamoto, 1201 Via La Jolla, San Clemente, Calif. 92672
Filed Oct. 6, 1986, Ser. No. 915,781
Int. Cl.^{4} H05B *37/00*
U.S. Cl. 315—362 5 Claims



1. A fluorescent tube lighting system comprising, in combination:
a plurality of fluorescent lamps;
an energizing circuit for supplying electrical energy to said lamps in parallel from a common source;
a first switch and a second switch, each of said switches being effective in one state of actuation to interrupt, and in another state of actuation not interrupt, a circuit in which connected;
said first switch being connected in series in said energizing circuit with each of said lamps;
said second switch being connected in series in said energizing circuit with less than all of said lamps; and
said second switch being responsive to a predetermined change in the state of said first switch to change the state of said second switch in that said second switch is responsive to change state from said one state to said other state in response to the second change of state from said one to said other state in said first switch provided that the second change of state in the first switch occurs within a predetermined time interval following a preceeding change of state in said first switch.

4,879,496
DISPLAY TUBE

Alan G. Knapp, Crawley; Daphne L. Lamport, Caterham; Derek Washington, Wallington, and Alfred W. Woodhead, Caterham, all of United Kingdom, assignors to U.S. Philips Corporation, New York, N.Y.
Continuation of Ser. No. 437,583, Oct. 29, 1982, abandoned.
This application Apr. 9, 1986, Ser. No. 850,441
Claims priority, application United Kingdom, Nov. 9, 1981, 8133688
Int. Cl.^{4} H01J *29/70*
U.S. Cl. 315—366 12 Claims



1. A flat panel display tube comprising an evacuated envelope having substantially flat, parallel, spaced-apart front and rear walls and a plurality of support members extending between the front and rear walls for substantially the full height of the envelope, said support members dividing the interior of the envelope into a plurality of modules, said front wall comprising a glass faceplate supporting a luminescent screen on an interior surface thereof;
characterized in that each module includes an arrangement for minimizing divergence of an electron beam propagating therein, comprising:
(a) means for producing a low current electron beam, said means being arranged to direct said electron beam along a first path substantially parallel to the rear wall;
(b) first deflection means in the rear of the envelope for deflecting the electron beam from the first path into one of a plurality of substantially parallel second paths extending toward the screen;
(c) second deflection means disposed along one of said first and second paths to effect scanning of the beam transverse to said path; and
(d) a channel plate electron multiplier extending transversely to the second path and includig a multiplicity of electron-multiplying channels, each disposed to receive electrons from the low current electron beam as it travels along a respective one of the second paths, and to produce a high current electron beam traveling along the second path toward the screen

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4,879,497

METHOD AND DEVICE FOR MEASURING THE TEMPERATURE OF A BRUSHLESS D-C MOTOR

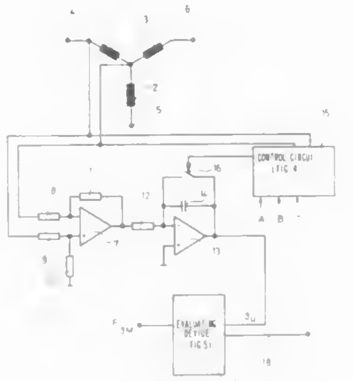
Helmut Meyer, Dossenheim, and Jürgen Seeberger, Heidelberg, both of Fed. Rep. of Germany, assignors to Heidelberger Druckmaschinen AG, Heidelberg, Fed. Rep. of Germany

Filed Oct. 27, 1988, Ser. No. 263,001

Claims priority, application Fed. Rep. of Germany, Oct. 27, 1987, 3736303

Int. Cl.⁴ H02K *29/00*

U.S. Cl. 318—254 8 Claims



1. Method for determining the temperature of a brushless d-c motor with a permanent-magnet rotor and an at least three-phase winding with electronic commutation, which comprises determining the curve of an EMF induced in a winding during one phase wherein the winding is in currentless condition, and evaluating the temperature therefrom.

6. Device for determining the temperature of a brushless d-c motor with a permanent-magnet rotor and an at least three-phase winding, with electronic commutation, comprising an integrator having an input for receiving an EMF induced in the winding, a control device connected to said integrator for starting integration at an instant of zero passage of the EMF and for stopping the integration at the beginning of a subsequent commutation signal, and a circuit post-connected to said integrator for storing the integral of the EMF within a measuring time period in the form of a temperature-proportional signal.

4,879,498

DC MOTOR DRIVE SYSTEM FOR REDUCING START-UP CURRENT

Tooru Shinohara, and Masahito Iwatsubo, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

PCT No. PCT/JP87/00585, § 371 Date Jun. 6, 1988, § 102(e) Date Jun. 6, 1988, PCT Pub. No. WO88/01111, PCT Pub. Date Feb. 11, 1988

PCT Filed Aug. 5, 1987, Ser. No. 184,496

Claims priority, application Japan, Aug. 6, 1986, 61-184830

Int. Cl.⁴ H02P *6/02*

U.S. Cl. 318—254 26 Claims

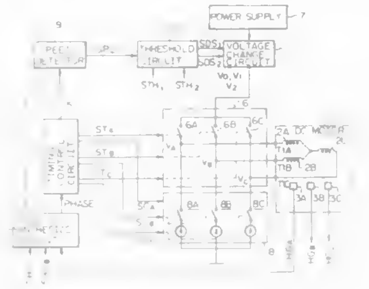
1. A direct-current motor drive system comprising:

a DC motor;

means, connected to said DC motor, for detecting a rotation of a rotor of said DC motor and outputting a rotational signal;

power supply means, connected to said DC motor, for supplying drive power to said DC motor;

current drive means, operatively connected to a coil of said DC motor and providing a constant current passing through said coil supplied with the drive power during a normal operatin of said DC motor, said power supply means receiving the rotational signal from said rotational detecting means, and sequentially increasing a voltage therefrom in multi-steps in response to the increase of the rotational signal during a start-up operation of said DC motor, a current defined by said voltage and passing through said current drive means being reduced to a value less than a predetermined value.



4,879,499

INDUSTRIAL ROBOT'S ARTICULATE DEVICE

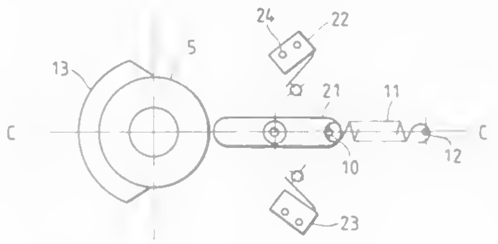
Masanari Iwata, Aichi, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 1, 1988, Ser. No. 239,371

Claims priority, application Japan, Sep. 1, 1987, 62-216373

Int. Cl.⁴ B25J *19/06*

U.S. Cl. 318—568.16 7 Claims



1. An industrial robot's articulate device, comprising:

first means constituted by one of a first arm and a base;

second means constituted by a second arm, which is rotatably connected to said first means;

an electric motor provided on said first means for rotating said second means;

a transmission shaft rotatably supported by said first means for transmitting the output of said electric motor to said second means; and

a detecting mechanism for detecting the position of said second means with respect to said first means, said detecting mechanism including a dog secured to said transmission shaft, a swing lever swingably coupled to said first means to pose in alternative postures according to the directions of rotation of said dog, and detecting means for detecting the alternative postures of said swing lever.

4,879,500

CONTROLLER FOR MAGNETIC BEARING SYSTEM

Yoichi Kanemitsu, Kanagawa, Japan, assignor to Ebara Research Co., Ltd., Fujisawa and Ebara Corporation, Tokyo, both of, Japan

Filed Dec. 19, 1988, Ser. No. 286,013

Int. Cl.⁴ G05D *23/275*

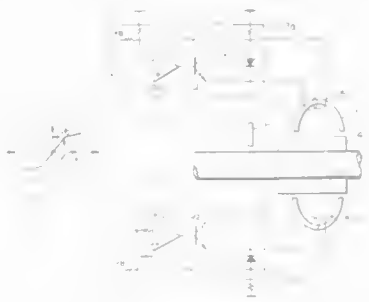
U.S. Cl. 318—632 5 Claims

1. A controller for a magnetic bearing system of the type having a rotor yoke made of a magnetic material which is rigidly secured to a rotary shaft, a pair of electromagnet stators rigidly secured to a casing with a minute gap provided between the same and said rotor yoke, each stator having a coil

for generating magnetomotive force, a displacement sensor for measuring relative displacement between said rotary shaft and said casing, and a combination of a compensation circuit and a power amplifier for controlling the level of magnetic attraction force acting between said rotor yoke and said pair of electromagnet stators on the basis of a signal output from said displacement sensor, said controller comprising:

said power amplifier including two operational amplifiers which are supplied with a signal output from said compensation circuit and two power transistors for amplifying the respective outputs of said operational amplifiers,

wherein the signal output from said compensation circuit is input to both the non-inverting input terminal of one of said operational amplifiers and the inverting input terminal of the other operational amplifier, and an exciting coil bias voltage is input to the respective inverting input terminals of the two operational amplifiers in parallel to said input signal.



4,879,501

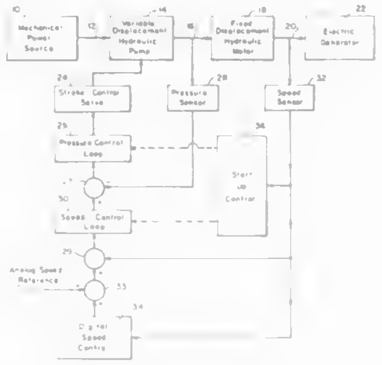
CONSTANT SPEED HYDROSTATIC DRIVE SYSTEM

Lambert Haner, Rocky River, Ohio, assignor to Commercial Shearing, Inc., Youngstown, Ohio

Filed Dec. 10, 1982, Ser. No. 448,648

Int. Cl.⁴ G05D *16/00*

U.S. Cl. 318—645 12 Claims



1. A constant speed generator drive system adapted for use with a variable speed engine comprising:

a. a variable displacement hydraulic pump connected to a powered rotating shaft;

b. a hydraulic motor;

c. hydraulic lines operatively connecting said hydraulic motor to said hydraulic pump;

d. a drive shaft connecting said hydraulic motor to an electrical generator;

e. means for controlling the displacement of said hydraulic pump relative to the magnitude of a direct current signal applied thereto;

f. means for delivering a direct current signal to said displacement controlling means responsive to the hydraulic pressure in said hydraulic lines;

g. speed sensor means;

h. means for controlling the rotational speed of said drive shaft relative to said speed sensor means;

i. timing reference means; and

j. digital trim control means for adjusting said speed sensor means to correspond to said timing reference means.

4,879,502

SPEED CONTROL APPARATUS AND METHOD FOR MOTORS

Tunehiro Endo, Hitachiota; Nobuaki Kato, Katsuta; Kenichi Iizuka, Ashikaga, and Fumio Tajima, Ibaraki, all of Japan, assignors to Hitachi, Ltd. and Hitachi Engineering Co., Ltd., both of Tokyo, Japan

Continuation of Ser. No. 822,258, Jan. 24, 1986, abandoned. This application May 10, 1988, Ser. No. 192,357

Claims priority, application Japan, Jan. 28, 1985, 60-12592; May 31, 1985, 60-116451

Int. Cl.⁴ H02P *5/40*

U.S. Cl. 318—723 12 Claims

1. A speed control apparatus for a motor which drives a load device with a periodical change of its load in response to a speed command, comprising:

a control unit for controlling current or voltage supplied to said motor from a power source on the basis of a current command or voltage command corresponding to a desired speed of said motor;

means for dividing each period of said change of load into at least n divisions, where n=2;

means for detecting motor speed at each of said n divisions,

read/write storage means for independently storing n pieces of current command data or voltage command data corresponding to said n divisions;

means for comparing said speed command with said motor speed detected by said detecting means to determine the deviation between said motor speed and said speed command and for then rewriting said data in said storage means at each of said n divisions in accordance with the determined deviation so as to decrease the deviation; and

means for producing said current command or said voltage command according to said current command data or said voltage command data at each of said n divisions so as to provide said current command or said voltage command to said control unit

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4,879,503

BLOWER MOTOR CONTROL FOR AN AIR CONDITIONER

Hideki Aoki; Mitsuru Murata, and Hirotaka Sakamoto, all of Shizuoka, Japan, assignors to Mitsubishi Denki Kabushiki Kaihsa, Tokyo, Japan

Filed Aug. 24, 1988, Ser. No. 235,480

Claims priority, application Japan, Aug. 24, 1987, 62-209861

Int. Cl.⁴ H20P *5/40*

U.S. Cl. 318—809 6 Claims

1. A blower motor control for an air conditioner, said air

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conditioner including an ac motor for driving an air circulating blower comprising:

rotation speed detecting means for detecting a rotation speed of the motor;

a means for supplying AC power to the motor;

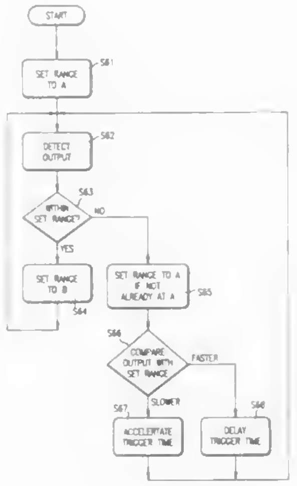
zero cross timing detecting means for detecting zero cross timing of the power source voltage;

phase shifting means for shifting the phase of the voltage supplied to the motor;

output determining means for comparing the rotation speed detected by the rotation speed detecting means to a set target rotation speed to determine a conduction angle for the motor;

phase control output means for controlling the phase shifting means based on the conduction angle determined by the output determining means and the output from the zero cross timing detection means; and

means for outputting the rotation speed from the rotation speed detecting means when the detected speed is not within a present allowable deviation range (A) which is centered with respect to the target rotation speed, and for resetting the output determining means to a new conduction angle for bringing the actual rotation speed closer to the target rotation speed and for outputting the new conduction angle to the phase control output means; and further for, when the actual rotation speed is within the range (A), outputting from the determining means the same conduction angle as the previous one and for changing the allowable deviation range centered with respect to the target rotation speed in the output determining means from the range (A) to a new allowable deviation range (B) which is wider than the range (A) and yet further for when the rotation speed detected by the rotation speed detecting means is within the range (B) for outputting the same angle as the previous one to the phase control output means; and for after the allowable deviation range has changed from the range (A) to the range (B), when the actual rotation speed is not within the range (B), for causing the output determining means to set a new conduction angle for bringing the actual rotation speed closer to the target rotation speed and for outputting the new conduction angle to the phase control output means, and for centering the allowable deviation range with the target rotation speed in the output determining means from the range (B) to the range (A) which is narrower than the range (B).



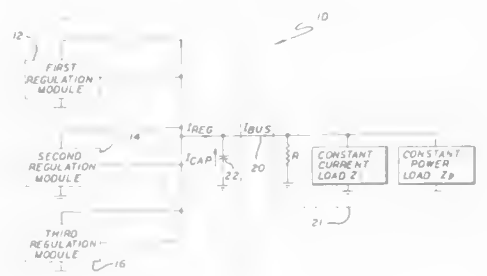
4,879,504
DIGITAL SWITCHING VOLTAGE REGULATOR HAVING TELESCOPED REGULATION WINDOWS

Michael J. McVey, Manhattan Beach, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Sep. 15, 1988, Ser. No. 244,378

Int. Cl.^{4} G05F *1/46*

U.S. Cl. 323—272 16 Claims



1. A digital switching voltage regulator comprising:

first voltage regulation module means for regulating, within a first voltage regulation window defined by first upper and lower threshold voltages, the voltage across a load operatively coupled to said regulator in response to a first current level drawn by said load and

second voltage regulation module means for regulating said load voltage within a second voltage regulation window in response to a second current level drawn by said load, said second window being centered within said first window about a common load voltage and being defined by second upper and lower threshold voltages, said second upper threshold voltage being lower than said first upper threshold voltage and said second lower threshold voltage being higher than said first lower threshold voltage.

4,879,505
TEMPERATURE AND POWER SUPPLY COMPENSATION CIRCUIT FOR INTEGRATED CIRCUITS

Jeffrey G. Barrow, Oak Ridge, N.C., and Adrian P. Brokaw, Burlington, Mass., assignors to Analog Devices, Inc., Norwood, Mass.

Division of Ser. No. 945,654, Dec. 23, 1986, Pat. No. 4,742,331. This application May 2, 1988, Ser. No. 189,284

Int. Cl.^{4} G05F *3/08*

U.S. Cl. 323—312 16 Claims

1. In an electronic circuit having a monolithic integrated circuit with at least one integrated resistor with a first temperature coefficient and having a resistor external to said integrated circuit with a second temperature coefficient different from said first temperature coefficient, the improvement comprising an integrated bias circuit for deriving a current from said external resistor which current is compensated for temperature-induced changes in the value of said integrated resistor, said bias circuit comprising

means for passing a current which varies with said temperature-induced changes in the value of said integrated resistor through said integrated resistor to develop a voltage which is independent of said temperature induced changes in the value of said integrated resistor,

means for sensing said voltage developed across said integrated resistor, and

means for producing a voltage across said external resistor which is proportional to said voltage developed across said integrated resistor.

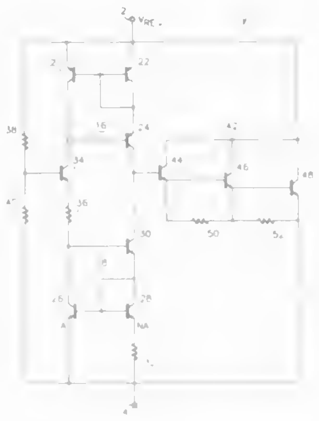
4,879,506
SHUNT REGULATOR

Jeffrey J. Braun, Mesa, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 2, 1988, Ser. No. 227,384

Int. Cl.^{4} G05F *3/20*

U.S. Cl. 323—314 2 Claims



1. An integrated shunt regulator for providing a regulated voltage at an output thereof, comprising:

a first current mirror having a common terminal coupled to the output of the shunt regulator, and first and second terminals at which first and second currents are supplied;

a second current mirror having first and second terminals coupled to said first and second terminals of said first current mirror respectively and a common terminal, and including first and second transistors having a base, collector and emitter and operated at different current densities such that a voltage is produced there between having a positive temperature coefficient;

a first resistor coupled in series to the emitter of one of said first and second transistors across which said positive temperature voltage is developed;

a third transistor having a base, a collector coupled to said first terminal of said first current mirror and an emitter coupled to said first terminal of said second current mirror via said second resistor wherein a voltage is developed at said base which is a function of the current flowing in said first resistor; and

a resistive divider coupled between the output of the regulator and said common terminal of said second current mirror and to said base of said third transistor for establishing the regulated voltage the magnitude of which is proportional to said voltage developed at said base of said third transistor.

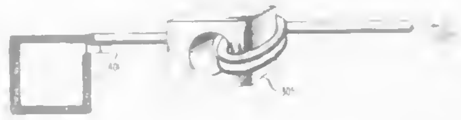
4,879,507
NOISE MEASUREMENT PROBE

Douglas C. Smith, Rumson, N.J., assignor to American Telephone and Telegraph Company, New York, N.Y. and AT&T Information Systems Inc., Morristown, N.J.

Filed Dec. 23, 1988, Ser. No. 289,288

Int. Cl.^{4} G01R *19/55*

U.S. Cl. 324—57 N 14 Claims



1. A probe for use with electrical measurement apparatus, said probe comprising

a plurality of electrical conductors, at least one of said conductors being adapted to couple a signal between an end of said probe and said apparatus and at least one other of said conductors being adapted to couple ground between said probe end and said apparatus; and

at least one loop of an electrically conductive material formed at said end, said loop connecting said one of said conductors to said other one of said conductors, said loop including a portion which is substantially straight and has a length sufficiently small to enable said portion to pick up signals from a circuit under test by magnetic induction and to determine which conductors in a group of such conductors in said circuit under test conduct a noise signal.

4,879,508
CAPACITANCE-TYPE MEASURING DEVICE FOR ABSOLUTE MEASUREMENT OF POSITIONS

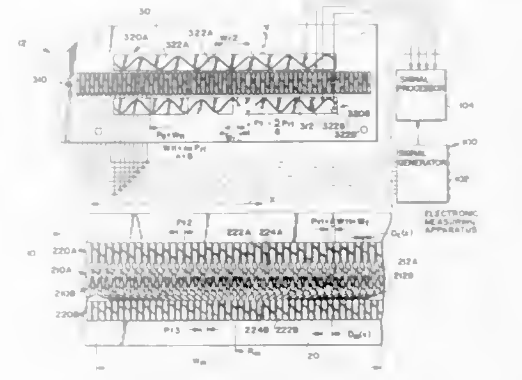
Nils I. Andermo, Kirkland, Wash., assignor to Mitutoyo Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 30,346, Mar. 26, 1987, abandoned, Ser. No. 31,049, Mar. 26, 1987, abandoned, and Ser. No. 35,859, Apr. 8, 1987, abandoned. This application May 31, 1988, Ser. No. 200,368

Claims priority, application Japan, Apr. 4, 1986, 61-078948; Apr. 4, 1986, 61-078947; Apr. 9, 1986, 61-083205; Apr. 11, 1986, 61-083470; Apr. 15, 1986, 61-087839

Int. Cl.^{4} G01R *27/26;* G08C *19/16*

U.S. Cl. 324—61 R 32 Claims



1. Capacitive-type measuring apparatus comprising:

first and second support members, said support members being relatively displaceable with respect to each other, and at least one of said support members being displaceable relative to a measurement axis;

an array of first transmitter electrodes disposed on said first support member in alignment with said measurement axis;

an array of first receiver electrodes disposed on said second support member in alignment with said measurement axis

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and such that differing portions of said first receiver electrode array are capacitively coupled with said first transmitter electrode array in dependence on the relative positions of said supporting members; and

an array of second transmitter electrodes disposed on said second support member in relative alignment with said first receiver electrode array, each of said second transmitter electrodes being electrically connected to a corresponding one of said first receiver electrodes so as to be offset from the corresponding first receiver electrode by an amount which is a predetermined function of the position of the second transmitter electrode relative to a reference position on said measurement axis.

4,879,509

ZERO-PHASE-SEQUENCE VOLTAGE SENSING APPARATUS

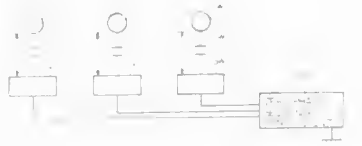
Taro Sometani, Hamamatsu; Naotoshi Takaoka, Aichi; Mitsuo Aida, Komaki; Mitsuharu Kudomi, Koaan; Yasuhiro Tanahashi, Gifu, and Katsunori Aoki, Inuyama, all of Japan, assignors to Energy Support Corporation, Aichi, Japan

Division of Ser. No. 923,560, Oct. 27, 1986, Pat. No. 4,804,922. This application Oct. 24, 1988, Ser. No. 261,441

Claims priority, application Japan, Nov. 1, 1985, 60-246763; Nov. 9, 1985, 60-251495; Nov. 9, 1985, 60-251496

Int. Cl.⁴ G01R *19/00;* **H02H** *3/26*

U.S. Cl. 324—108 5 Claims



1. A zero-phase-sequence voltage sensing apparatus for distribution lines comprising:

a plurality of voltage sensors, each disposed with an insulation space to a corresponding distribution line for sensing a voltage on the corresponding distribution line, each said sensor including an amplifier circuit for outputting a signal having a waveform similar to that of a displacement current from

the corresponding distribution line, and a filter circuit for extracting a signal having predetermined frequencies from said amplifier circuit and outputting a signal having an alternating current waveform similar to the potential of the corresponding distribution line; and

a zero-phase sensing unit including an adder circuit for synthesizing the output signals from the respective voltage sensors and producing a zero-phase-sequence voltage signal, said adder circuit including operational amplifier means for synthesizing output signals from each of the plurality of voltage sensors and for generating a zero-phase-sequence voltage signal.

4,879,510

ELECTRICAL INDICATOR HAVING AN OPTICAL POSITION ENCODER

Akio Itoh, Saitama, Japan, assignor to Jeco Co., Ltd., Japan

Filed Dec. 23, 1987, Ser. No. 137,462

Claims priority, application Japan, Dec. 27, 1986, 61-202461[U]

Int. Cl.⁴ G01R *1/20, 5/20, 11/30*

U.S. Cl. 324—150 11 Claims

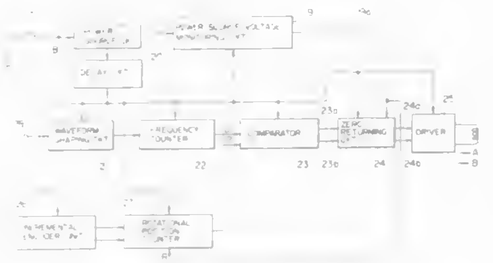
1. An indicator responsive to a received input signal comprising:

an indicating member;

indicating member driving means for rotating said indicating member in response to an electrical signal;

an encoder plate mechanically linked to said indicating member and rotatable therewith;

rotational position detecting means responsive to the rotation of said encoder plate to generate an encoded signal corresponding to the rotational position of said indicating member; and



indication position control means responsive to the received input signal and said encoder signal to generate said electrical signal activating said indicating member driving means to rotate said indicating member to the position indicated by the received input signal.

4,879,511

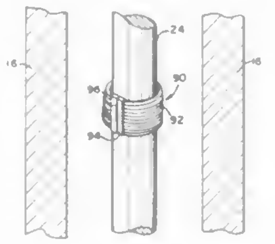
FLAT, MULTICONDUCTOR CABLE COIL DEVICE FOR IN SITU DETECTING OF AXIAL MOTION OF A GENERALLY CYLINDRICAL MEMBER

Robert L. Leon, Roslyn, Pa., assignor to Liberty Technology Center, Inc., Conshohocken, Pa.

Division of Ser. No. 87,541, Aug. 20, 1987, Pat. No. 4,805,451. This application Oct. 31, 1988, Ser. No. 265,082

Int. Cl.⁴ G01P *3/52;* **F16K** *37/00;* **H01F** *27/28*

U.S. Cl. 324—163 4 Claims



1. A device for in situ detecting of axial motion of a generally cylindrical member in which both ends of the member are unavailable for the installation of a prewound coil, the device comprising:

a predetermined length of generally flat, multiconductor cable;

a first connector component secured to one end of the cable, the first connector component having a plurality of electrical contacts, the number of contacts being at least two greater than the number of conductors of the cable;

a second connector component secured to the other end of the cable, the second connector component having a plurality of electrical contacts, the number of contacts being at least two greater than the number of conductors of the cable, the two connector components being interconnected with the cable surrounding the cylindrical member so that the contacts of the first and second connector components interengage to connect together predetermined conductors of the cable to form two generally parallel, independent coils extending around the cylindrical member, the ends of the coils being located on the first and second connector components and accessible for external connection;

a current source electrically connected to the accessible ends of one of the coils for imparting current flow through the one coil; and

display means electrically connected to the accessible ends of the other of the coils for receiving induced voltages proportional to the velocity of axial movement of the cylindrical member through the coils and for indicating the received voltages as an indication of the velocity of axial motion of the cylindrical member.

4,879,512

CIRCUIT FOR PROCESSING A PSEUDO-OSCILLATORY SIGNAL, ESPECIALLY FOR INDUCTIVE PROXIMITY DETECTORS

Didier Leonard, Hiersac; Jean-Marie Periot, La Couronne, and Pierre Petit, Champniers, all of France, assignors to La Telemecanique Electrique, France

Filed Apr. 22, 1988, Ser. No. 184,852

Claims priority, application France, Apr. 23, 1987, 87 05960

Int. Cl.⁴ G01B *7/14;* **G01D** *5/20*

U.S. Cl. 324—207 5 Claims

1. An inductive proximity detector comprising:

(i) an oscillating circuit having a capacitor and a coil connected together between a hot point terminal and a reference terminal;

(ii) a power supply source having a hot point terminal at a first potential and a reference terminal at a second potential substantially lower than said first potential, and a first controllable switch connecting said hot point terminal of the source to the hot point terminal of the oscillating circuit, said first switch having a first control input;

(iii) a comparator comparing the voltage at the hot point terminal of the oscillating circuit with a predetermined reference voltage level for generating at an output thereof output square waves signals indicative of the damping of the oscillating circuit as a function of the distance of an object to be detected;

(iv) logic circuit means having a first input connected to said hot point terminal, a second input connected to the output of the comparator, a third input receiving periodic pulses for initializing charge-discharge cycles of the oscillating circuit and an output connected to said first control input for applying to said first control input further square wave signals controlling the opening and closing of the first switch;

(v) a second controllable switch having a second control input connected to the output of the logic circuit means, and

(vi) further circuit means generating and applying to said reference terminal of the oscillating circuit a further potential substantially equal to half of said first potential when the second switch is open, said second switch connecting the said reference terminal of the oscillating circuit to the power supply reference terminal at said second potential and thus applying said second potential to the reference terminal of the oscillating circuit when the second switch is closed.

4,879,513

DEVICE FOR MEASURING PAPER OR THE LIKE LYING ON A SUPPORT

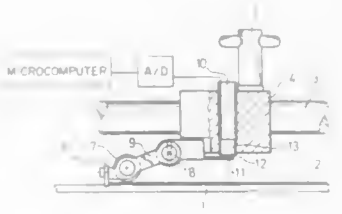
Nikolaus Spiegel, Walldorf; Karlheinz Krestyn, Leimen, and Theobald Blaser, Dielheim, all of Fed. Rep. of Germany, assignors to Heidelberger Druckmaschinen AG, Heidelberg, Fed. Rep. of Germany

Filed Feb. 19, 1988, Ser. No. 158,230

Claims priority, application Fed. Rep. of Germany, Feb. 19, 1987, 3705304

Int. Cl.⁴ B65H *7/12;* **G01B** *7/06;* **G01D** *3/02*

U.S. Cl. 324—207 9 Claims



1. Device for measuring the thickness of paper lying on a support by engaging the sheet at only one location, the device having a pull guide arranged above the paper including a pivot bearing with a lever formed of two arms rigidly mounted thereon, and a pull roller located at an end of one arm of the lever and engageable at the one location with the surface of a sheet of the paper arriving on the support, the pull guide also comprising distance measuring means located at the end of the other arm of the lever for measuring a movement executed by the lever for issuing a signal in proportion with the magnitude of the distance traversed by said movement, and means connected to said distance measuring means for electronically evaluating said signal.

4,879,514

MAGNETIC RESONANCE IMAGING DEVICE COMPRISING A DIGITAL TRANSMITTER/RECEIVER

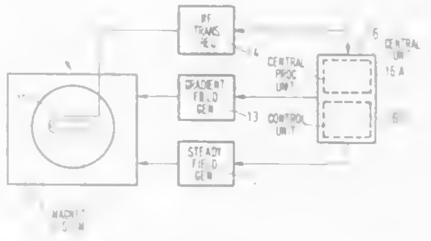
Antoon F. Mehlkopf, and Johannes H. Den Boef, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 19, 1988, Ser. No. 196,534

Claims priority, application Netherlands, May 19, 1987, 8701195

Int. Cl.⁴ G01R *33/20*

U.S. Cl. 324—309 10 Claims



1. A magnetic resonance imaging device comprising a magnet system for generating a steady, uniform magnetic field and gradient magnetic fields in a measurement space, a transmitter/receiver including a transmitter section for generating modulated RF signals for exciting magnetic resonance signals in said measurement space in successive measurement sequen-

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ces, said excited magnetic resonance signals being characterized by a frequency band, means for generating a reference signal having a frequency in the neighborhood of but outside said frequency band, a receiver section for detecting received magnetic resonance signals within said frequency band by mixing said received magnetic resonance signals with said reference signal to form demodulated magnetic resonance signals and a sampling circuit for sampling the demodulated magnetic resonance signals, the frequency of the sampling circuit being chosen so tha the frequency band of the sampled demodulated magnetic resonance signal is situated to only one side of the frequency 0 Hz, and means for retaining synchronization of phase information in the sampled demodulated magnetic resonance signals in the successive measurement sequences.

4,879,515

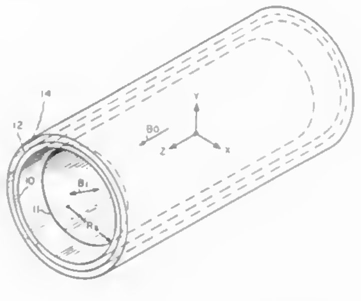
DOUBLE-SIDED RF SHIELD FOR RF COIL CONTAINED WITHIN GRADIENT COILS OF NMR IMAGING DEVICE

Peter B. Roemer, and William A. Edelstein, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 22, 1988, Ser. No. 288,344

Int. Cl.⁴ G01R *33/20*

U.S. Cl. 324—318 4 Claims



1. A radio-frequency (RF) shield, for use interposed between a set of gradient coils and at least one RF coil in an NMR imaging device, comprises: a member of a laminate, having a dielectric sheet between a pair of conductive sheets, formed into a cylinder with a different one of said sheets forming a different one of interior and exterior conductive surfaces; each surface having opposed first and second half-cylinders with each half-cylinder having a like plurality of conductive streamline loop portions which are each defined by at least one nonconductive cut line etched through the sheet, between each pair of adjacent loop portions and parallel to RF current flow induced therein; and each half-cylinder having a single radial cut line separating each loop portion thereof into a generally C-shaped conductive loop portion and substantially opposite to the cut line in the same half-cylinder in the opposite one of the exterior and interior surfaces, to cause a pair of capacitive elements of maximized value to be present in series in each loop to provide a set of essentially short circuits for any RF current induced in either conductive sheet of the shield by the field of the at least one RF coil, while passing any field from said gradient coil set in substantially unattenuated manner.

4,879,516

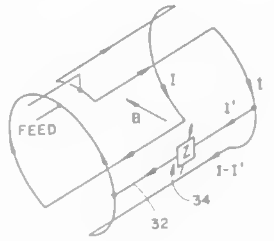
PRECISION ELECTRICAL ADJUSTMENT OF QUADRATURE COIL ISOLATION

Mehrdad Mehdizadeh, University Hts.; John L. Patrick, Euclid, and George J. Misic, Novelty, all of Ohio, assignors to Picker International, Inc., Highland Hts., Ohio

Continuation-in-part of Ser. No. 120,475, Nov. 13, 1987, Pat. No. 4,839,594, and a continuation-in-part of Ser. No. 86,277, Aug. 17, 1987, Pat. No. 4,841,248, and a continuation-in-part of Ser. No. 931,726, Nov. 17, 1986, Pat. No. 4,752,738, and a continuation-in-part of Ser. No. 765,708, Aug. 14, 1985, Pat. No. 4,793,356. This application May 26, 1988, Ser. No. 199,202

Int. Cl.⁴ G01R *33/20*

U.S. Cl. 324—318 15 Claims



1. A magnetic resonance apparatus comprising:

a main magnetic field means for generating a main magnetic field;

a radio frequency transmitter for transmitting radio frequency signals;

a radio frequency receiver for receiving radio frequency magnetic resonance signals;

a quadrature coil assembly mounted adjacent the magnetic field and operatively connected with at least one of the radio frequency transmitter and receiver, the quadrature coil assembly including a first coil, a second coil, and a shunt path for adjusting relative isolation of the first and second coils, at least one of the first and second coils being a saddle coil, under a constant current, the first coil generates a magnetic field in a first direction and the second coil generates a magnetic field in a second direction, the first and second directions being at a generally perpendicular angle relative to each other; and

a means for adjusting current flow along the shunt path such that the shunt path current adjusting means adjusts the relative angle of the first and second directions.

4,879,517

TEMPERATURE COMPENSATION FOR POTENTIOMETRICALLY OPERATED ISFETS

James G. Connery, Ambler, and Earl W. Shaffer, Jr., Lansdale, both of Pa., assignors to General Signal Corporation, Stamford, Conn.

Filed Jul. 25, 1988, Ser. No. 224,510

Int. Cl.⁴ G01N *27/56*

U.S. Cl. 324—438 20 Claims

2. Apparatus for determining the pIon activity of a sample, comprising:

a potentiometrically operated ISFET probe for immersion in said sample, said ISFET producing a change in its output signal in response to changes in the ion activity of said sample;

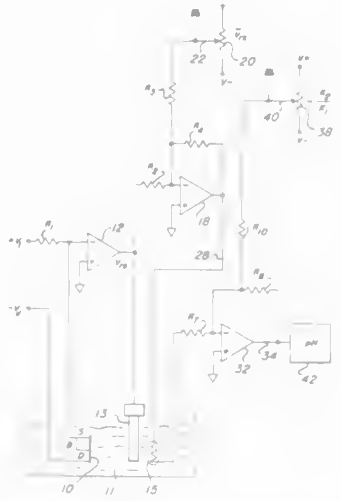
means for operating said ISFET at a constant drain-source voltage and a particular drain-source current which is independent of the characteristics of said ISFET

subtracting means for subtracting from said ISFET output signal a signal representative of the isopotential voltage of the probe at said constant current;

a temperature sensitive probe having a characteristic which is responsive to the temperature of the sample upon immersion in the sample;

means for producing a modification of the output of said first subtracting means, said modification being in accordance with the product of the Nernst factor and the absolute temperature of the sample as represented by the temperature responsive characteristic of said temperature sensitive probe; and

adding means for further modifying the modified output of the subtracting means by adding a quantity representative of the isopotential pIon value of the probe, whereby the output of the adding means is a signal indicative of the pIon value of the sample which is independent of changes in the temperature of the sample.



4. Apparatus in accordance with claim 2 in which said temperature sensitive probe is a negative temperature coefficient thermistor.

4,879,518

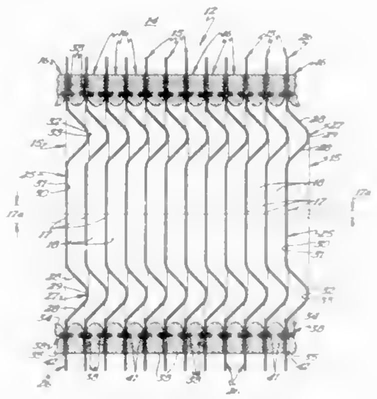
LINEAR PARTICLE ACCELERATOR WITH SEAL STRUCTURE BETWEEN ELECTRODES AND INSULATORS

John H. Broadhurst, Golden Valley, Minn., assignor to Sysmed, Inc., Eden Prairie, Minn.

Filed Oct. 13, 1987, Ser. No. 107,093

Int. Cl.⁴ H05H *9/00, 5/02*

U.S. Cl. 328—233 7 Claims



1. A linear accelerator including a vacuum chamber, a pressure chamber exteriorly of the vacuum chamber, source means for producing a directed beam of charged particles inside the vacuum chamber, a target against which the beam of charged particles is directed,

a plurality of similar circular electrodes disposed in substantially uniformly spaced apart, side-by-side relation, each electrode being formed of an alloy comprised of iron, nickel, and cobalt, and each electrode having a substantially flat central portion, a substantially flat circumferential portion, and an axially offset portion located intermediate the central and circumferential portions, each electrode having a centrally located opening in the central portion thereof, the major portion of each electrode being disposed within the vacuum chamber, and the spacing between adjacent electrodes defining a vacuum gap, means electrically connecting the electrodes to a source of electrical power,

a plurality of similar annular support insulators, each being formed of a glass material having the same thermal expansion rate as the electrodes, each insulator having opposed front and rear surfaces and having an inner surface, each front and rear surface of each insulator having an annular groove therein, said grooves in each insulator being disposed in annular alignment, and

a plurality of annular metallic inserts, each being positioned and fused within the recess of an insulator, and each being formed of the same alloy as the electrodes, means metallically bonding the annular inserts of each insulator to the circumferential portions of a pair of adjacent electrodes to form a seal thereat.

4,879,519

PREDISTORTION COMPENSATED LINEAR AMPLIFIER

Robert E. Myer, Denville, N.J., assignor to American Telephone and Telegraph Company, AT&T Bell Labs, Murray Hill, N.J.

Filed Oct. 31, 1988, Ser. No. 265,187

Int. Cl.⁴ H03F *1/32*

U.S. Cl. 330—149 25 Claims

1. A distortion compensation circuit for a power amplifier having a prescribed distortion characteristic comprising;

means for receiving one or more input signals including at least one carrier signal in a predetermined frequency range;

a first circuit path having an input connected to the receiving means and an output including a first amplifier with a predetermined gain and substantially the same prescribed distortion characteristic as the power amplifier responsive to the one or more input signals for generating an output signal including a component corresponding to the one or more input signals modified by said predetermined gain and a distortion component corresponding to the prescribed distortion characteristic;

a second circuit path having an input connected to the receiving means and an output for transferring the one or more input signals without distortion;

first means for combining the output of the first circuit path with the transferred one or more input signals from the output of the second circuit path to form a signal corresponding to the distortion component of the first circuit path output signal;

second means for combining the distortion component signal

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from the first combining means with the output signal of the first circuit path to form a signal having a component corresponding to the one or more input signals modified by the predetermined gain and a component corresponding to the distortion characteristic of the first amplifier in inverted phase relationship thereto; and

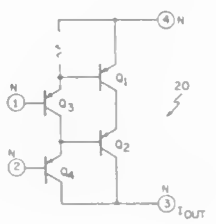
means for controlling the signal formed in the first combining means including

means for detecting a carrier signal in the prescribed frequency range;

means connected to the output of the first combining means for monitoring the detected carrier signal at the output of the first combining means; and

means in the second circuit path responsive to the output of said monitoring means for adjusting the magnitude and phase of the signal applied to the second circuit path to minimize the monitored carrier signal.

4,879,520
HIGH ACCURACY CURRENT SOURCE AND HIGH ACCURACY TRANSCONDUCTANCE STAGE
Gerald M. Cotreau, Melbourne, Fla., assignor to Harris Corporation, Melbourne, Fla.
Filed Oct. 27, 1988, Ser. No. 263,189
Int. Cl.⁴ H03F *3/45*
U.S. Cl. 330—257 34 Claims



3. A current source comprising:

a first and second transistor having their emitter-collector paths connected in series between a first reference terminal and an output terminal; and

correction means connected to bases of said first and second transistors and said output terminal for adding current to said output terminal as a function of base current of said first and second transistors, and for sensing incremented current through said second transistor and adding said sensed incremented current to said output terminal to cancel the effect of said second transistor on the impedance of said output terminal.

4,879,521
DIFFERENTIAL AMPLIFIER
Michael V. Bredemann, Rio Rancho, N. Mex., and Forest S. Seitz, Beaverton, Oreg., assignors to Honeywell Inc., Minneapolis, Minn.
Filed Jan. 23, 1989, Ser. No. 299,909
Int. Cl.⁴ H03F *3/45*
U.S. Cl. 330—258 10 Claims

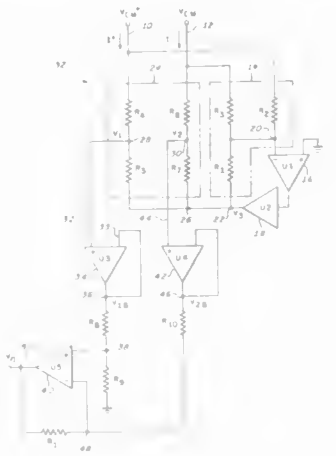
1. A differential amplifier for extracting a differential signal component in the presence of a substantially greater common mode signal, comprising:

first and second input terminals for receiving respective differential signal and common mode signal voltage components applied thereto,

a first summing network having first and second impedance elements respectively coupled to said first and second terminals and to a common junction for producing a signal representative of said common mode signal,

an amplifier having an input and an output, said input coupled to said first summing network for producing a signal proportional to and in a sense opposing said common mode signal,

a second summing network comprising a plurality of further impedance elements having first and second nodes coupled respectively to said first and second input terminals and a third node coupled to said output of said amplifier for combining said common mode signal and said opposing signal so as to produce a null value thereof and to transmit at least a portion of said differential signal to a pair of output terminals coupled respectively to points intermediate of pairs of said plurality of impedance elements,



differential gain means having a pair of input terminals for receiving said portion of said differential signal and providing an amplified output thereof substantially independent of said common mode signal, and

impedance isolating means having an output coupled to said input terminals of said differential gain means and an input coupled to said intermediate points of said second summing network for isolating said second summing junction from an input impedance of said differential gain means.

4,879,522
INTEGRATED COMPLEMENTARY PUSH-PULL B FINAL STAGE
Johann Mattfeld, Obersulm, Fed. Rep. of Germany, assignor to Telefunken electronic GmbH, Heilbronn, Fed. Rep. of Germany
Filed Aug. 12, 1988, Ser. No. 231,528
Claims priority, application Fed. Rep. of Germany, Aug. 22, 1987, 3728078
Int. Cl.⁴ H03F *3/26*
U.S. Cl. 330—263 4 Claims

1. A complementary push-pull class B final stage having first and second complementary driver transistors and having third and fourth complementary driver transistors whose emitters are directly interconnected,

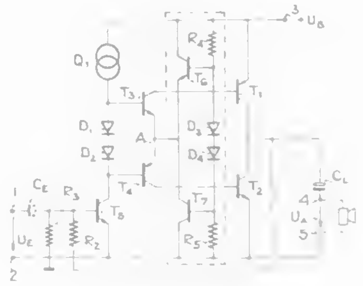
wherein an integratable circuit is disposed between the connected emitters of the third and fourth driver transistors and an operating voltage

the integratable circuit having dynamic low impedance such that about half of the operating voltage drops across the integratable circuit, and wherein the integratable circuit includes:

(a) fifth and sixth complementary transistors whose emitters are connected together and linked to the connected emitters of the third and fourth complementary transistors, and whose collectors are connected respectively to first and second terminals of the operating voltage source,

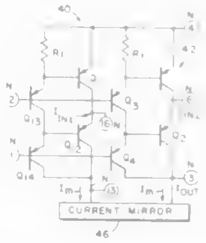
(b) a first resistor arranged between said first terminal of the operating voltage source and the base of the fifth transistor,

(c) a second resistor disposed between the second terminal of the operating voltage source and the base of the sixth transistor, and



(d) two diodes connected in series and oriented in the conducting direction with regard to the operating voltage, for connecting the bases of the fifth and sixth complementary transistors.

4,879,523
HIGH ACCURACY, HIGH IMPEDANCE DIFFERENTIAL TO SINGLE-ENDED CURRENT CONVERTER
Gerald M. Cotreau, Melbourne, Fla., assignor to Harris Corporation, Melbourne, Fla.
Filed Nov. 18, 1988, Ser. No. 272,908
Int. Cl.⁴ H03F *3/04*
U.S. Cl. 330—288 20 Claims



1. A differential current to single-ended current converter including first and second variable current sources having first and second current input terminals and first and second output terminals, respectively, and subtracting means for subtracting output current at said first output terminal from the current at said second output terminal, said second output terminal being said converter's output terminal;

wherein said second variable current source includes a first transistor having its emitter-collector path connected in series between a first reference terminal and said converter's output terminal, and includes a second transistor having its emitter-collector path connected between said subtracting means and said converter's output terminal; and

including correction means connected to bases of said first and second transistors and the emitter-collector path of said second transistor for sensing incremental current through said first and second transistors and providing said sensed incremental current to said emitter-collector path of said second transistor to cancel the effect of the incremental current through said first and second transistors on the impedance at said converter's output terminal

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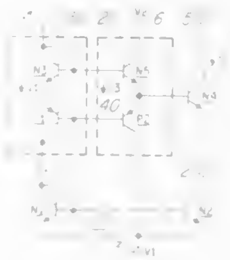
4,879,524
CONSTANT CURRENT DRIVE CIRCUIT WITH REDUCED TRANSIENT RECOVERY TIME
Kenneth M. Bell, Windom, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
Filed Aug. 22, 1988, Ser. No. 234,987
Int. Cl.⁴ H03F *3/26*
U.S. Cl. 330—288 22 Claims



1. A constant current drive circuit, comprising.

a current amplifier having a first terminal coupled via a threshold conduction device to a circuit input terminal and having a second terminal coupled via the conduction path of an output transistor to a circuit output terminal; and

a bi-directional amplifier coupled to supply a voltage produced by said threshold conduction device to a control electrode of the output transistor for causing an output current to be supplied to said circuit output terminal proportional to an input current supplied to said input terminal, the bi-directional amplifier being biased for continuous conduction of operating current to provide a low impedance node at the control electrode of the output transistor, the bi-directional amplifier further being responsive to transients of either polarity at the control electrode for enhancing the recovery time of the drive circuit for abrupt changes in output voltage at said circuit output terminal

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4,879,525
HIGH GAIN RF AMPLIFIER WITH DIRECTIONAL COUPLER FEEDBACK
Stephen J. Larkin, Palm Bay, Fla., assignor to Q-Bit Corporation, Palm Bay, Fla.
Filed Dec. 5, 1988, Ser. No. 279,771
Int. Cl.⁴ H03F *1/34, 3/191*
U.S. Cl. 330—294 10 Claims

1 A signal amplifier comprising:

a first amplifier stage having an input to which input signals to be amplified by said amplifier are coupled, and an output:

a second amplifier stage having an input coupled to the output of said first amplifier stage and an output;

a directional coupler coupled to the output of said second amplifier stage for deriving an amplified output signal

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therefrom and being coupled to provide a feedback path between the output of said second amplifier stage and said first amplifier stage; and

further feedback means for coupling said second amplifier stage to said first amplifier stage.

4,879,526

INTEGRATED AUDIO AMPLIFIER ELECTRONICALLY COMMUTABLE FROM A SINGLE ENDED OR STEREO CONFIGURATION TO A BALANCED OR BRIDGE CONFIGURATION AND VICEVERSA

Edoardo Botti, Mortara, and Aldo Torazzina, Monza, both of **Italy, assignors to SGS-Thomson Microelectronics,** s.r.l., **Italy**

Filed Sep. 19, 1988, Ser. No. 246,111

Claims priority, application Italy, Sep. 30, 1987, 83659 A/87

Int. Cl.⁴ H03F *3/68*

U.S. Cl. 330—295 8 Claims

1. An integrated audio amplifier which is commutable from a stereo configuration to a bridge configuration and vice versa, in a package having at least seven pins of which: two output pins, two input pins, a power supply pin, a ground pin and an SVR pin for a common mode signals rejection function, comprising

a first and a second operational amplifier each being formed by an output gain stage whose output terminal is respectively connected to one of said two output pins of the integrated audio amplifier, and respectively, by at least a single and by at least two distinct, first and second input differential stages, the output terminals of which are respectively connected in common and to the input of the relative output gain stage;

two distinct feedback resistor networks for a stereo configuration connected, respectively, between the output terminal of an output gain stage and a respective inverting input terminal of at least said single and of at least the first of said two distinct input differential stages;

a third feedback resistor network for a bridge configuration connected between the output terminals of said two output gain stages and to an inverting input terminal of at least said single and of said second of said two distinct input differential stages;

a noninverting input of at least said single input differential stage and of said first of said two distinct input differential stages being connected, respectively, to one and to the other of said two input pins;

a noninverting input of said second of said two distinct input differential stages of said second operational amplifier being connected to a common potential node of the integrated audio amplifier;

a comparator having a transition threshold fixed by means of a constant reference voltage and having an input and an output terminal;

the output terminal of said comparator being connected to an on-off control terminal of at least said second of said two distinct input differential stages of said second operational amplifier and to an input terminal of an inverter stage having an output terminal which is connected to at least an on-off control terminal of at least said first of said two distinct input differential stages of said second operational amplifier;

the input terminal of said comparator being connected to a common potential node the voltage level of which is imposed by means external to the integrated audio amplifier;

said level of voltage imposed determining a state of the comparator and the switching on of one and the switching off of the other of said first and second distinct input differential stages of at least said second operational amplifier;

means for powering the integrated audio amplifier;

means for coupling an audio signal to be amplified to said input pins; and

means capable of applying a DC voltage to said SVR pin having an intermediate value comprised between the voltage applied to said power supply pin and the voltage of said ground pin.

4,879,527

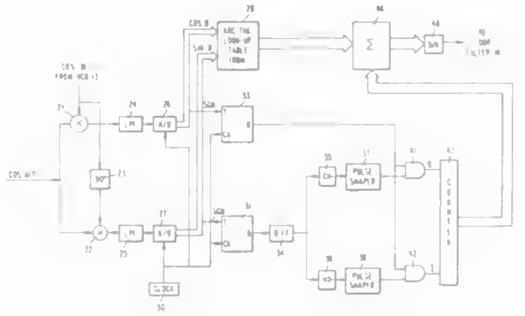
PHASE LOCK LOOP AND IMPROVED PHASE DETECTOR THEREFOR

Michael Geile, Loveland; Mark Dapper, Cincinnati, and Terrance Hill, Fairfield, all of Ohio, assignors to Cincinnati Electronics Corporation, Cincinnati, Ohio

Filed Jan. 23, 1989, Ser. No. 301,527

Int. Cl.⁴ H03L *7/08;* **H03K** *5/26*

U.S. Cl. 331—1 A 31 Claims



1. Apparatus for deriving a signal having a magnitude indicative of the phase difference between first and second signals having similar but not necessarily the same frequencies comprising means responsive to the first and second signals for deriving third and fourth signals having amplitudes respectively representing the amplitudes of orthogonal components of the difference frequency of the first and second signals, and means responsive to the third and fourth signals for deriving fifth, sixth and seventh signals respectively indicative of (a) the cycle difference of the third and fourth signals, (b) the fractional cycle phase difference of the third and fourth signals, and (c) a combination of the amplitudes of fifth and sixth signals.

4,879,528

ULTRASONIC OSCILLATION CIRCUIT

Masakazu Gotanda, Sagamihara, Japan, assignor to Olympus **Optical Co., Ltd., Tokyo, Japan**

Filed Aug. 30, 1988, Ser. No. 238,186

Int. Cl.⁴ H03L *7/10, 7/12;* **G05D** *19/02*

U.S. Cl. 331—4 18 Claims

1. An ultrasonic oscillation circuit for generating a driving signal for driving an ultrasonic vibrating element comprising:

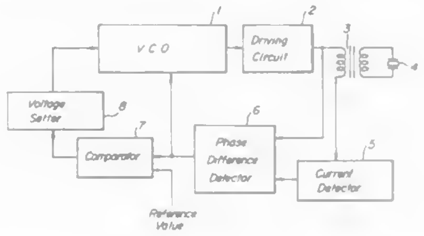
oscillating means having a control input for generating an oscillation signal having a frequency in accordance with a control signal supplied to said control input;

driving means for supplying said oscillation signal from the oscillating means to the ultrasonic vibrating element as a driving signal;

phase difference detecting means for detecting a phase difference between a voltage and a current of the driving signal supplied to the ultrasonic vibrating element;

means for supplying the control signal corresponding to said phase difference to said control input of said oscillating means;

comparing means for comparing said phase difference with a reference value to generate an output signal each time the phase difference exceeds the reference value; and



resetting means for responding to said output signal from the comparing means and supplying a control signal to said control input of said oscillating means, said resetting means comprising a semiconductor switch connected to said control input of said oscillating means, said output signal from said comparing means being supplied to a control input of said semiconductor switch to change said control signal to a level such that the frequency of the oscillation signal from the oscillating means is reset to a predetermined frequency.

4,879,529

PHASE CONTROL LOOP WITH INTERRUPTED CONTROL

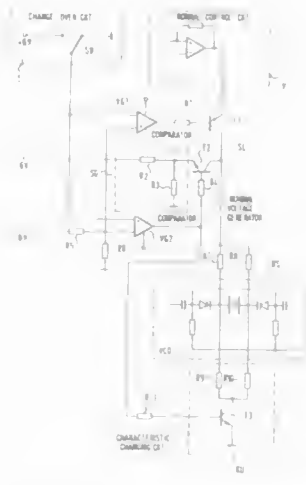
Volkmar Schroth, Nürnberg, and Horst Levin, Lauf, both of **Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.**

Filed Oct. 5, 1988, Ser. No. 253,785

Claims priority, application Fed. Rep. of Germany, Oct. 17, 1987, 3735188

Int. Cl.⁴ H03L *7/14, 1/02*

U.S. Cl. 331—14 12 Claims



1. A phase control loop comprising a voltage-controlled oscillator, a source of normal control voltage connected to control the voltage-controlled oscillator, and a control substitution circuit that interrupts control by said source and allows the voltage-controlled oscillator to operate with a nominal control voltage,

characterized in that said control substitution circuit comprises means for reducing the sensitivity of said voltage-controlled oscillator to changes in a control voltage applied to the osillator while control by said source is interrupted.

4,879,530

MONOLITHICALLY INTEGRATABLE PHASE SHIFTER VCO

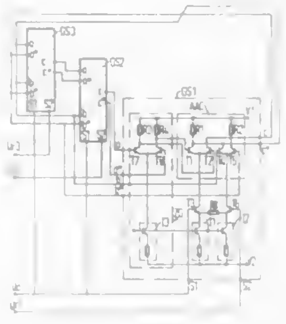
Wilhelm Wilhelm, and Winfried Birth, both of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Nov. 14, 1988, Ser. No. 270,741

Claims priority, application Fed. Rep. of Germany, Nov. 19, 1987, 3739210

Int. Cl.⁴ H03B *5/24, 27/00*

U.S. Cl. 331—45 7 Claims



1. Phase shifter oscillator assembly, comprising a phase shifter oscillator having a voltage-controllable output frequency and including at least first and last fundamental circuits,

each of said fundamental circuits including:

an amplifier adding circuit having a symmetrical first input, a symmetrical second input, and an output,

a control input connected to said control inputs of all of the other fundamental circuits for receiving a tuning potential for varying a ratio of an amplification operative between said symmetrical first input and said output of said amplifier adding circuit to an amplification operative between said symmetrical second input and said output of said amplifier adding circuit,

a reference input for receiving a respective reference potential,

a symmetrical first input of said fundamental circuit including a first input pair with a first non-inverting input and a first inverting input,

a symmetrical second input of said fundamental circuit forming said symmetrical second input of said amplifier adding circuit and including a second input pair with a second non-inverting input and a second inverting input,

a symmetrical signal output including an output pair with a non-inverting signal output and an inverting signal output, and

a symmetrical timing element having an input connected to said symmetrical first input of said fundamental circuit and having an output forming said symmetrical first input of said amplifier adding circuit;

said first input pair of each of said fundamental circuits being associated with said output pair of only one other of said fundamental circuits, said first non-inverting input of said first fundamental circuit being connected to said non-inverting signal output of one other of said fundamental circuits, and said first inverting input of said first funda-

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mental circuit being connected to said inverting signal output of said same other fundamental circuit,

said non-inverting signal output of said first fundamental circuit being connected to said first inverting input of said last fundamental circuit and to said second inverting inputs of all of said fundamental circuits, and said inverting signal output of said first fundamental circuit being connected to said first non-inverting input of said last fundamental circuit and to said second non-inverting inputs of all of said fundamental circuits;

at least one of said signal outputs of at least one of said fundamental circuits forming a signal output of the phase shifter oscillator.

4,879,531

INDUCTIVE PROXIMITY SWITCH OSCILLATOR HAVING SAME ACTIVATING RANGE FOR FERROUS AND NONFERROUS METALS

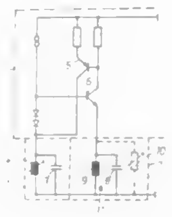
Burkhard Tigges, Sundern, and Dierk Brasse, Schalksmuehle, both of Fed. Rep. of Germany, assignors to Werner Turck GmbH & Co., KG, Halver, Fed. Rep. of Germany

Filed Apr. 29, 1988, Ser. No. 188,220

Claims priority, application Fed. Rep. of Germany, Apr. 30, 1987, 3714433

Int. Cl.⁴ H03K *17/95;* **G01V** *3/10*

U.S. Cl. 331—65 8 Claims



1. Inductive proximity switch comprising an oscillator circuit with a frequency resonant circuit determining a frequency of oscillation of the oscillator circuit and an impedance member determining an amplification factor of the oscillator circuit, the impedance member containing an impedance resonant circuit with a sensor coil responsive to the approach of a metallic trigger, wherein the oscillation condition of the oscillator circuit changes at a critical impedance value of the impedance member associated with a switching distance of the trigger, such that the resonant frequency of the frequency resonant circuit and the critical impedance value of the impedance member are tuned to the coordinates of a point of intersection of the impedance/frequency characteristics of the oscillator circuit, resulting in the same switching distance for a nonferrous trigger and for a ferrous trigger.

4,879,532

METHOD AND APPARATUS FOR PHASE CONJUGATE OPTICAL MODULATION

David M. Shemwell, Dallas, and Cyrus D. Cantrell, Richardson, both of Tex., assignors to Board of Regents, The University of Texas System, Austin, Tex.

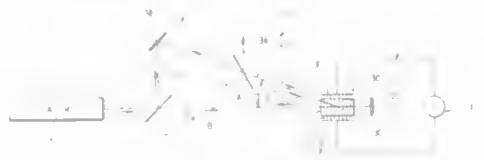
Filed May 3, 1984, Ser. No. 606,678

Int. Cl.⁴ H01S *3/098, 3/23*

U.S. Cl. 330—4.3 10 Claims

1. A method of modulating a phase conjugate laser beam comprising the steps of:

creating a phase hologram within a nonlinear semiconductor medium by causing a plurality of laser beams to overlap along a substantially coincident beam path through said nonlinear semiconductor medium; and



dispersing the phase hologram by establishing an electric field directed substantially transversely to said beam path through said nonlinear semiconductor medium to modulate the intensity of the diffracted light.

4,879,533

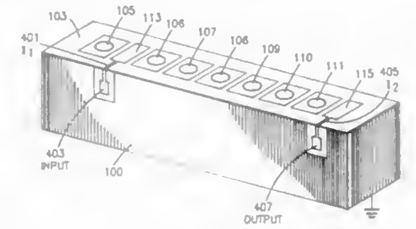
SURFACE MOUNT FILTER WITH INTEGRAL TRANSMISSION LINE CONNECTION

David M. de Muro; John G. Stillmank, both of Schaumburg, and Duane C. Rabe, Rolling Meadows, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 1, 1988, Ser. No. 176,541

Int. Cl.⁴ H01P *1/202, 7/04*

U.S. Cl. 333—206 45 Claims



1. A surface mountable dielectric block filter which directly mounts on a conductive surface of a substrate, comprising:

a volume of dielectric material having at least two conductive resonators within said volume of dielectric material and extending from a first surface of said volume of dielectric material to a second surface of said volume of dielectric material, said second surface and at least part of a third surface of said volume of dielectric material being substantially covered with a conductive material;

a first electrode disposed on said first surface of said volume of dielectric material for coupling to a first one of said at least two resonators;

a first terminal disposed on said third surface of said volume of dielectric material for directly connecting to the conductive surface of the substrate; and

a first transmission line disposed on at least one surface of said volume of dielectric material, said first transmission line having first and second ends, coupled at said first end to said first electrode and coupled at said second end to said first terminal.

4,879,534

CONNECTING ELEMENT FOR WAVEGUIDES

Georg Spinner, Am Eichberg 12, 8152 Feldkirchen-Westerham, Fed. Rep. of Germany

Filed Aug. 11, 1988, Ser. No. 231,189

Claims priority, application Fed. Rep. of Germany, Aug. 14, 1987, 3727198

Int. Cl.⁴ H01P *5/00*

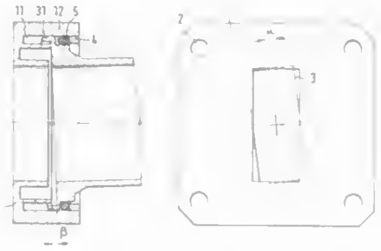
U.S. Cl. 333—257 8 Claims

1. A connecting element for waveguides, comprising:

a first waveguide section;

a second waveguide section; and

choke means for electrically coupling said first and second waveguides, said first and second waveguide sections being mechanically connectable via said choke means for permitting said waveguide sections to be displaced in an axial direction, to be tilted and to be rotated relative to each other, said choke means including a first section extending between facing connecting planes of said first and second waveguide sections and an axial section provided in one of said waveguide sections, said first waveguide section being provided at its periphery with an axial annular groove extending radially outside said axial section of said choke means, and said second waveguide section being provided with a circumferential collar projecting at least in an axial direction and engaging in said annular groove.



4,879,535

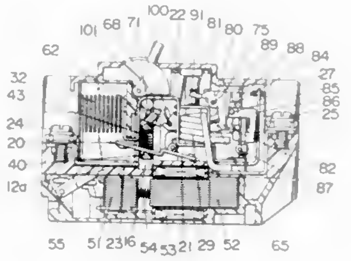
REMOTELY CONTROLLABLE CIRCUIT BREAKER

Tamotsu Mori, and Makoto Yasuda, both of Shijonawate, Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed May 17, 1988, Ser. No. 195,054

Int. Cl.⁴ H01H *75/00*

U.S. Cl. 335—14 12 Claims



1. A remotely controllable circuit breaker comprising:

power contact means adapted to be connected in a power circuit for managing an electric load;

a collapsible mechanical linkage connected to close and open said power contact means;

an electromagnet having excitation coil means and an armature, said excitation coil means connected in a control circuit to be energized and deenergized upon receiving a remote control signal, said armature being movable in response to the energization and deenergization of said excitation coil means between an actuated position of driving said power contact means through said mechanical linkage into the closed condition and a rest position of driving said power contact means through said mechanical linkage into the open condition;

a control switch connected in said control circuit with said excitation coil;

a manual handle movable between an ON-position and OFF-position and connected to close said control switch when it is moved to the ON-position and open the same when it is moved to the OFF-position,

fault current sensing means for sensing a fault current passing through said main contact means;

tripper means cooperative with said fault current sensing means and operatively connected to said collapsible mechanical linkage for directly actuating the latter independently of said electromagnet to unlatch and release the same into a collapsed position of opening said power contact means from a latched position of keeping the power contact means closed in response to a fault current condition sensed by said fault current sensing means; and

said manual handle being mechanically isolated from said collapsible mechanical linkage as far as the latter is moved to open and close said power contact means while kept in said latched position.

4,879,536

ELECTROMAGNETIC RELAY

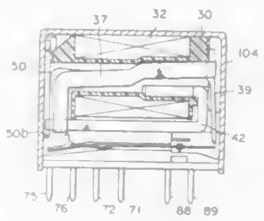
Jisei Taguchi; Yutaka Miura; Kenji Iwanaga, all of Atsugi, and Manabu Tada, Hiratsuka, all of Japan, assignors to Anritsu Corporation, Tokyo, Japan

Filed Sep. 28, 1988, Ser. No. 250,338

Claims priority, application Japan, Sep. 30, 1987, 62-246184; Sep. 30, 1987, 62-149379[U]

Int. Cl.⁴ H01H *51/08*

U.S. Cl. 335—128 6 Claims



1. An electromagnetic relay comprising:

a cylindrical bobbin having a through hole;

a coil wound around an outer surface portion of said bobbin;

a yoke and an armature inserted in said through hole;

a hinge spring supporting a proximal end portion of said armature;

a drive card mounted on a distal end portion of said armature;

movable contact springs driven when said drive card abuts against said movable contact springs;

break and make contacts brought into contact with and moved away from said movable contact springs;

a step formed at a middle portion of the outer surface of said cylindrical bobbin, said bobbin having a large-diameter outer surface portion at one side of said step, and a smaller-diameter outer surface portion at the other side of said step;

4,879,537

MAGNETIC SUSPENSION AND MAGNETIC FIELD CONCENTRATION USING SUPERCONDUCTORS

David B. Marshall; Roger E. De Wames; Peter E. D. Morgan, and Joseph J. Ratto, all of Thousand Oaks, Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Jul. 25, 1988, Ser. No. 223,591

Int. Cl.⁴ H01F *7/22*

U.S. Cl. 335—216 13 Claims

1 A device for suspending a load comprising.

a support,

a superconductor supported by the support;

a magnetic field penetrating the superconductor;

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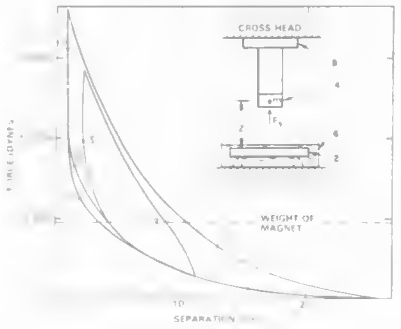
a magnet suspended below the superconductor, the magnet providing a magnetic moment which is substantially aligned parallel to and in the same direction as the magnetic field; and



a means for coupling the load to the magnet.

4,879,538

MAGNET SYSTEM FOR NUCLEAR MAGNETIC RESONANCE TOMOGRAPHY DEVICES

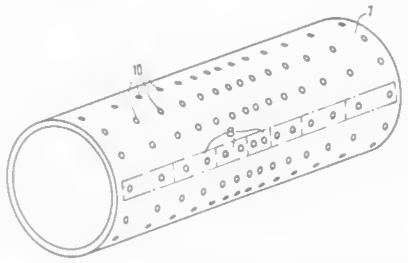
Guenther Pausch, Effeltrich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Aug. 1, 1988, Ser. No. 226,878

Claims priority, application Fed. Rep. of Germany, Aug. 14, 1987, 3727234

Int. Cl.⁴ H01F *3/00*

U.S. Cl. 335—298 6 Claims



1. A magnet system for generating a homogeneous magnetic field in an examination volume of a nuclear magnetic resonance tomography apparatus, said magnet system comprising:

magnetic means for generating a magnetic field in said examination volume;

a surface surrounding said examination volume, said surface being permanently divided into a plurality of non-overlapping surface elements, each of said surface elements having an expanse increasing in a longitudinal direction of said surface from inside to outside, with successive ones of said surface elements disposed in contact with each other; and

a plurality of iron laminaee attached and matched in size to selected ones of said surface elements to homogenize said magnetic field.

4,879,539

LAMINATED COIL FOR AN EDDY-CURRENT TYPE STRONG AC MAGNETIC FIELD GENERATOR

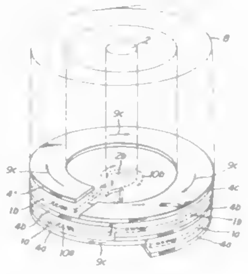
Kazuo Bessho, Kanazawa, Japan, assignor to Kanazawa University, Kanazawa, Japan

Filed Feb. 8, 1989, Ser. No. 307,524

Claims priority, application Japan, Mar. 7, 1988, 63-51704

Int. Cl.⁴ H01F *5/00*

U.S. Cl. 335—299 2 Claims



1. A laminated coil for an eddy-current type strong AC magnetic field generator with a plurality of eddy-current carrying conductor disks, each disk having a central hole and a radial slit extending from the central hole, said coil comprising a plurality of annular conductor plates having radial slits respectively, and a plurality of insulation rings with radial slits respectively, each turn of the coil being formed of a coaxial lamination of one said annular conductor plate and at least one said insulation ring with the radial slits of the annular conductor plate and the insulation rings being aligned in one radial direction, adjacent turns of the coil being coaxially laminated one of the other so as to allow insertion of one said conductor disks therebetween in an insulated manner, the radial slits of the adjacent turns of the coil being displaced in circumferential direction in such a manner that a slitted end of the annular conductor plate of each turn is brought into contact with the annular conductor plate of an immediately neighboring turn through the radial slits of said each turn and the conductor disk.

4,879,540

DATA EXCHANGING SYSTEM USING A BAR CODE READER

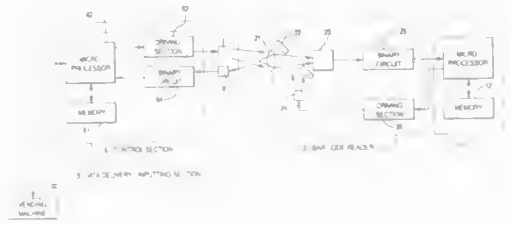
Kobei Ushikubo, Gunman, Japan, assignor to Sanden Corporation, Gunma, Japan

Continuation of Ser. No. 931,799, Nov. 18, 1986, abandoned. This application Nov. 14, 1988, Ser. No. 271,411

Claims priority, application Japan, Nov. 18, 1985, 60-257982

Int. Cl.⁴ G06K *7/10*

U.S. Cl. 235—385 7 Claims



1. A vending machine comprising a data exchange system for exchanging administrative and operating data between the vending machine and an electrical device, the data exchange system being resident within the vending machine, each vending machine comprising:

data delivery means for converting administrative data of vending machine status in the form of width-modulated electrical pulses to data in the form of width-modulated optical pulses which optical pulses resemble a bar code;

data receiving means for receiving operating data for vending machine operation in the form of width-modulated optical pulses transmitted from other machines and devices and converting the received data to width-modulated electrical pulses; and

control means for controlling the operation of said data delivery means and for decoding the width-modulated electrical signals received from said data receiving means, the control means comprising memory means for storing administrative information which is to be transmitted and for storing operating information which has been received.

4,879,541

SUPERVISORY CONTROL SYSTEM

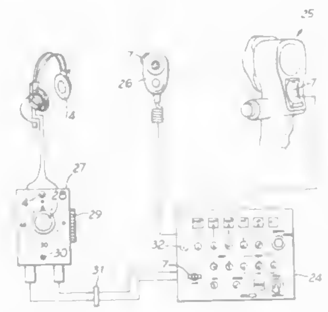
Marian Stefanlu, Willowdale, Canada; Paul Gran, Kfar Saba, Israel; Haim Feiner, deceased, late of Herzlia, and Ilana Feiner, heiress, Tel Aviv, both of Israel, assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 868,174, May 22, 1986, abandoned, which is a continuation of Ser. No. 478,825, Mar. 25, 1983, abandoned. This application Mar. 16, 1988, Ser. No. 168,719

Claims priority, application United Kingdom, Apr. 7, 1982, 8210326

Int. Cl.⁴ H04Q *9/00*

U.S. Cl. 340—825.070 15 Claims



1. A method for dynamically altering the operational characteristics of a supervisory control system having at least one central station for communicating with a plurality of signal processing units each having a unit address and operational parameters stored therein, each of the plurality of signal processing units being operable to repeat a message from the central to another signal processing unit, comprising the steps of:

(a) receiving a message including at least a unit address and a command signal trom the central station;

(b) modifying at least one parameter in response to said command signal;

(c) operating, thereafter, upon each received message to generate a second message addressed to another of the plurality of signal processing units, and optionally operating upon said received message to perform a function designated therein, until said modified parameter is restored.

4,879,542

ALARM SYSTEMS

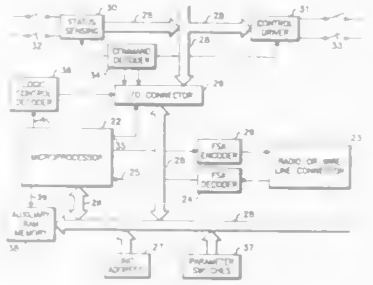
Adrian C. Elsey, The Middle House, Maidenhatch, Pangbourne, Reading RG8 8HJ, Berks, United Kingdom

Filed Aug. 24, 1988, Ser. No. 235,905

Int. Cl.⁴ G08B *27/00, 1/00*

U.S. Cl. 340—326 16 Claims

1. An alarm system for an aircraft having a conventional radio/telecommunication (CR/T) system controlled by an radio telephony (R/T switch, said alarm system comprising first timer means operable, in use, to produce an electrical output signal on timing out, visual alarm means responsive to said output signal from said first timer means, second timer means responsive to said output signal from said first timer means to initiate its operation and operable to produce an electrical output signal on timing out for energising audio alarm means, and rest means associated with said first timer means, whereby first a visual alarm is provided followed by an audio alarm unless said first timer means is rest prior to said second timer means timing out, said reset means comprising switch means actuated by actuation of said R/T switch.



4,879,543

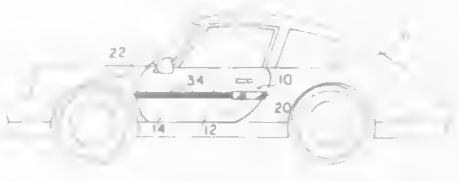
AUTOMOBILE DOOR GUARD

Leonard B. Smith, Sr., 4662 Conwell Dr., Annandale, Va. 22003

Filed Jun. 3, 1988, Ser. No. 201,783

Int. Cl.⁴ B60Q *1/00*

U.S. Cl. 340—473 9 Claims



1. A protective device for removable attachment alternatively to the free end or between the free end and the hinged end of the exterior of an automobile door comprising:

A plurality of longitudinally displaceable protective strips including at least a primary protective strip member and a terminal protective strip member;

a cushioned housing member including at least a front portion and a rear portion, said terminal protective strip member rigidly affixed within said cushioned housing member, said cushioned housing member providing encasing means for said plurality of protective strips,

door gripping means pivotably attached to said primary protective strip and said rear portion of said housing for engaging said door either by both door gripping means attached to the free end, or the gripping means attached to opposite edges of said door, channel means disposed throughout said plurality of protective strips and including yieldable retention means, spanning said protective strips,

whereby upon longitudinally extending said plurality of protective strips, said protective device is attachable to said door, thus providing protection thereto.

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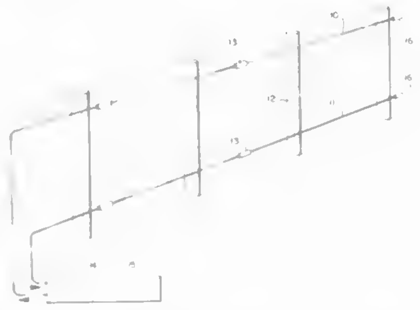
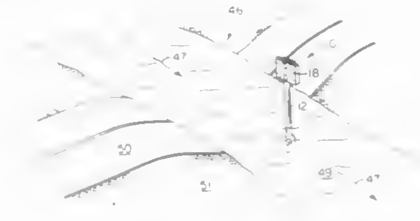
4,879,544
INTRUSION DETECTION SYSTEM
Melvin C. Maki, and Walter J. Feller, both of Kanata, Canada, assignors to Control Data Canada Limited, Ottawa, Canada
Filed Nov. 4, 1987, Ser. No. 116,585
Claims priority, application Canada, Nov. 6, 1986, 522371
Int. Cl.⁴ G08B *13/18*
U.S. Cl. 340—552 22 Claims



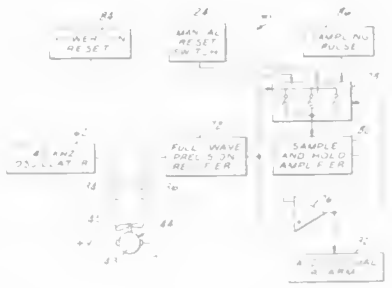
1. An intrusion detection system comprising:
a transceiver including a source of r.f. energy, a receiver and signal processing means for extracting information from any received r.f. signal;
at least one coaxial cable coupled to said transceiver to conduct r.f. energy from the source and transfer r.f. energy to the receiver; and
at least one coupled wave device positioned on the cable and adapted to locally transfer r.f. energy between a transmission mode within the cable and a guided mode along the exterior of the cable.

4,879,545
SAFETY INDICATOR DEVICE FOR LOW WATER CROSSING
Alberto B. Aguilar, P.O. Box 1413, Uvalde, Tex. 78802
Filed Mar. 14, 1988, Ser. No. 167,865
Int. Cl.⁴ G08B *21/00*
U.S. Cl. 340—624 5 Claims



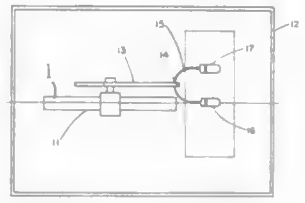
1. A signaling device for signaling when characteristics of water over a low-water crossing are excessively dangerous, comprising:
an elongate support pipe positioned approximately vertically;
an electrical circuit including a battery;
triggering means rigidly connected to said elongate support pipe and electrically connected in said electrical circuit for closing said electrical circuit;
a means for conveying a signal comprising a sign and a blinking light element, said sign being mounted to said elongate support pipe and being provided with a warning message, said blinking light element being electrically connected in said electrical circuit;
an elongate member positioned within said elongate support pipe in slidable relation therewith an operatively connected at a first end to said triggering means for actuating said triggering means, said elongate member being provided with a stop rigidly connected thereto;
a first means for actuating said triggering means when water rises within said elongate support pipe to a predetermined height, said first actuating means comprising a float slidably received within said support pipe and rigidly mounted to a second end of said elongate member;
apertures received through the wall of said elongate support pipe at predetermined locations thereon, for enabling water to rise within said elongate support pipe to an elevation which represents the danger of water surrounding said elongate support pipe, said apertures being adapted for prohibiting the obstruction thereof by debris;
a second means for actuating said triggering means when water rises to a predetermined height within the support pipe, said second actuating means comprising a float having a hole therethrough, said elongate member being received through the hole of said second actuating means;
a straining means mounted to said elongate support pipe for straining particulate matter from water flowing through said apertures; and
a drain hole for permitting water to exit from within said elongate support pipe.

4,879,546
ULTRASONIC HAND-HELD REFRIGERANT LEAK DETECTOR
Byron J. Dunham, Sherwood; Gary P. Murray, Montpelier, and Don A. Bulla, Bryan, all of Ohio, assignors to Kent-Moore Corporation, Warren, Mich.
Continuation of Ser. No. 126,936, Nov. 30, 1987, abandoned. This application Apr. 26, 1989, Ser. No. 344,422
Int. Cl.⁴ G08B *17/10*
U.S. Cl. 340—632 22 Claims



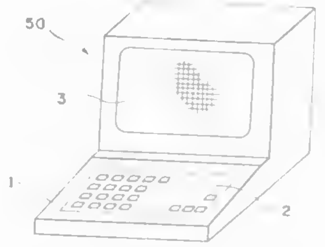
1. Apparatus for detecting presence of contaminants in air comprising: sensor means including a spaced pair of radiant energy transducers, means for admitting a test air sample between said transducers, means for continuously applying a periodic signal to one of said transducers to launch radiant energy toward the other of said transducers, means including rectifier means coupled to said other of said transducers for providing an electrical measurement signal as a continuing d.c. output signal that is a function of velocity of radiant energy between said transducers, means for selectively sampling and electrically storing said measurement signal, means for deriving a reference signal from said sampled and stored measurement signal, means for continuously comparing said measurement signal to said reference signal, alarm means coupled to said continuous comparing means for indicating an alarm condition when a difference between said reference and measurement signals exceeds a preselected threshold indicating an increase in contaminants between said transducers, and means coupled to said continuously comparing means and to said alarm means and responsive to a change in said measurement signal indicating a decrease in contaminants following an indication of alarm condition at said alarm means for automatically resampling and storing said measurement signal as a new reference signal and thereby automatically terminating said indication of alarm condition at said alarm means.

4,879,547
GAS ZONE VALVE EMERGENCY ALARM SYSTEM
August J. Pryslak, Denver, Colo., assignor to Valve Alert Systems, Inc., Englewood, Colo.
Filed Sep. 29, 1988, Ser. No. 251,126
Int. Cl.⁴ G08B *21/00;* **F16K** *37/00*
U.S. Cl. 340—686 13 Claims



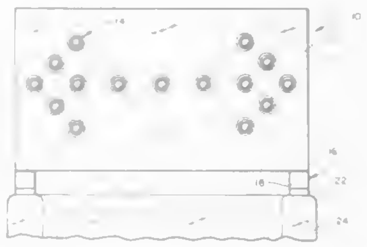
6. A gas valve system, comprising:
valve means including movable handle means, said handle means of said valve means being adapted to cut off gas flow in a predetermined situation;
fiber optic bundle means for transmitting light and having a portion for engaging said handle means wherein, when said handle means is moved, said fiber optic bundle portion is moved; and
light detecting means responsive to said fiber optic bundle means for indicating whether said handle means of said valve means has been moved whereby gas flow is affected by said handle means movement.

4,879,548
FLAT KEYBOARD ARRANGEMENT
Akira Mitarai, Yamatokoriyama, and Hachizou Yamamoto, Soraku, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Feb. 2, 1988, Ser. No. 151,618
Claims priority, application Japan, Feb. 2, 1987, 62-23081; Feb. 4, 1987, 62-23966; Feb. 4, 1987, 62-23967; Feb. 10, 1987, 62-28981; Feb. 10, 1987, 62-28982
Int. Cl.⁴ G09G *1/00*
U.S. Cl. 340—712 5 Claims



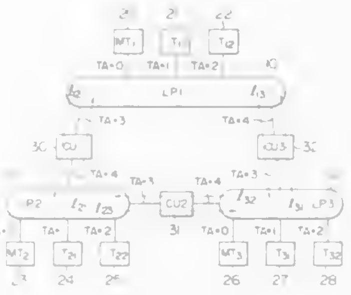
1. A flat keyboard arrangement comprising:
a color liquid crystal display means having a screen divided into a number of blocks, said blocks corresponding to an equal number of key units and capable of producing any natural color;
table means for storing color data for each of said blocks, and for storing function data representing a function assigned to each of said blocks, wherein said table means stores both a color and a function for each of said blocks;
means for driving said color liquid crystal display means to display said blocks in colors in accordance with the color data stored in said table means; and
a transparent touch switch arrangement placed on said color liquid crystal display means, said transparent touch switch arrangement having a transparent sheet in which a number of transparent touch switches comprising said key units are located correspondingly to said blocks of the screen to define touch keys.

4,879,549
SHROUD ATTACHMENT
George W. Eby, 29188 S. Grayshill Rd., Colton, Oreg. 97017
Filed Dec. 19, 1984, Ser. No. 683,695
Int. Cl.⁴ G08G *3/00*
U.S. Cl. 340—815.2 10 Claims



1. In combination with a warning device including a panel having a front face and at least one orifice of predetermined size extending through the panel; a lamp having a back portion received within the orifice, said lamp further having an annular portion bounded by opposite sides and one side of the annular portion lying against said face of the panel in a region of the panel face extending about the periphery of the orifice; a shroud attachment comprising:
a tubular shroud having one end abutting the other side of the annular portion of the lamp with said region of the face of the panel and one end of the shroud retaining the lamp on the panel; and
shroud carrier means mounting said shroud on the panel, said carrier means including a collar portion fitted about the periphery of said one end of said shroud and a flange portion extending about said collar portion, substantially normal to the axis of the collar portion, attaching said carrier means to the panel.

4,879,550
METHOD AND SYSTEM FOR LOOP COMMUNICATION
Yusuke Hino; Tohru Horimoto; Hideaki Gemma; Toshiharu Iwata, and Kimitoshi Yamada, all of Hadano, Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Jun. 9, 1986, Ser. No. 871,995
Claims priority, application Japan, Jun. 19, 1985, 60-133289
Int. Cl.⁴ H04Q *3/00;* **H04J** *3/00*
U.S. Cl. 340—825.050 9 Claims



1. A loop communication system, comprising a plurality of loop communication paths interconnected through loop coupling devices, each loop communication path having a first

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message terminal for sending a first message frame including routing information and at least one second terminal for sending and receiving a second message frame on said loop communication paths; and each of said loop coupling devices including means responsive to said first message frame received from a loop communication path for storing routing information carried by said first message frame for controlling the transfer of second message frames between the loop communication paths connected thereto, means for receiving a second message frame from a loop communication path, and means for selectively sending a received second message frame from one loop communication path to another or back to said one loop communication path on the basis of said stored routing information.

4,879,551
SWITCHING ARRAY WITH CONCURRENT MARKING CAPABILITY

Christos J. Georgiou, White Plains; Yeong-Chang L. Lien, Briarcliff Manor, and Kiyoshi Maruyama, Chappaqua, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 26, 1985, Ser. No. 727,468
Int. Cl.⁴ H04Q *1/00*

U.S. Cl. 340—825.870 7 Claims

1. A cross-point switching array system, comprising:

an array of cross-points for selectively connecting each of a plurality of first lines to any of a plurality of second lines;

an array of controlling means, each controlling means controlling a connection across one of said crosspoints, each said controlling means comprising:

first memory means for storing a present connection value, the output of said first memory means presently determining said connection; and

second memory means associated with said first memory means, for storing a future connection value; and

said system further comprising:

means for concurrently transferring said future connection value from each said second memory means to the associated first memory means wherein said transferred future connection value becomes said present connection value.

4,879,552
VARIABLE CAPACITANCE TYPE ENCODER

Yoshihiro Arai, Tokyo; Kouji Sasaki, and Takanori Ohsaki, both of Kanagawa, all of Japan, assignors to Mitutoyo Mfg. Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 866,787, May 23, 1986, abandoned. This application Apr. 20, 1988, Ser. No. 185,348

Claims priority, application Japan, May 23, 1985, 60-111826; May 23, 1985, 60-111827; May 27, 1985, 60-114474

Int. Cl.⁴ G01D *5/243;* G01B *7/30*

U.S. Cl. 340—870.37 5 Claims

1. A variable capacitance type encoder comprising:

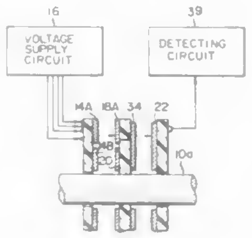
a rotary disc which is rotatably mounted on a frame body and rotates in accordance with the amount of movement of a probe; and

first and second fixed plates which are secured to said frame body such as to be opposed to each other with said rotary disc therebetween;

wherein at least one of said first and second fixed plates is provided with a first transmitting electrode composed of a plurality of consecutive electrode elements to which alternating voltages of different phases are applied and which are annularly arranged at regular intervals in the circumferential direction of said at least one of said fixed plates;

at least one of said first and second fixed plates is provided with a second transmitting electrode which is composed of a plurality of consecutive electrode elements aligned in the radial direction, with respect to the center of said at least one fixed plate, with a corresponding electrode of said first transmitting electrode and to each of said second transmitting electrode is applied an alternating voltage 180° out-of-phase with respect to that applied to its corresponding electrode element of said first transmitting electrode and which are annularly arranged at regular intervals in the circumferential direction of said at least one of said fixed plates;

wherein said rotary disc is provided with first and second receiving electrodes which are opposed to a plurality of said consecutive first and second transmitting electrodes, respectively, and which receive signals of a common phase by electrostatic coupling, said first and second receiving electrodes being disposed at positions which are spaced from each other at a predetermined phase interval in terms of mechanical angle with respect to the center of rotation;



wherein an output electrode is provided on a surface of at least one of said fixed plates for fetching the receiving signals from said first and second receiving electrodes, whereby the rotary displacement of the rotary disc is detected on the basis of the output signal of said output electrode which varies in accordance with the rotation of said rotary disc;

wherein said first fixed plate is provided with said first transmitting electrode composed of said plurality of electrode elements to which alternating voltages of different phases are applied and which are annularly arranged at regular intervals in the circumferential direction of said first fixed plate, and said second transmitting electrode composed of said plurality of electrode elements to each of which an alternating voltage 180° out of phase with respect to that applied to each electrode element of said first transmitting electrode and which are annularly arranged on the inside of said first transmitting electrode at regular intervals in the circumferential direction of said first fixed plate; and

wherein the electrode elements of the first and second transmitting electrodes and the first and second receiving electrodes each form concentric rings with one on the outer peripheral side of a surface of said first fixed plate and other on the inner peripheral side of said surface;

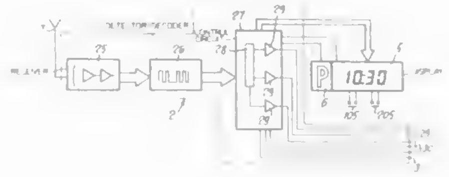
whereby displacement of the rotary disk is detected precisely without being effected by eccentricity, whirling or offset which may exist among the fixed plates and rotary disk.

4,879,553
ELECTRONIC PARKING TIME INDICATOR FOR AUTOVEHICLFS

Nardino Righi, Via Manigo 2, Milano, Italy, assignor to Dante Siano and Nardino Righi, Italy

Filed Jul. 12, 1988, Ser. No. 217,828
Int. Cl.⁴ B60Q *1/48;* G08B *1/00*

U.S. Cl. 340—932.2 15 Claims



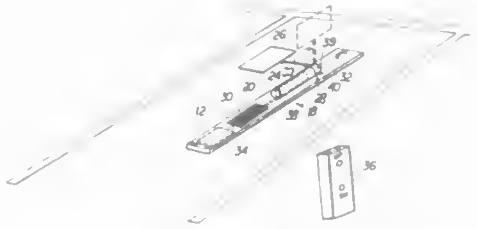
1. An electronic device for indicating the parking time of motor-vehicles, particularly for parking in the areas requiring a parking-time disc-indicator, or the like, said electronic device comprising a remote-control unit including a receiver arranged within the motor-vehicle and provided with an electronic digital clock having an associated display which is clearly visible from the outside, and with a small-sized transmitter, said transmitter including an electronic digital minute-counter having a respective display, and the transmitter further including a control member for, when actuated, causing the indication of the time on the electronic digital clock of the receiver to be made visible and to be simultaneously locked on the display of the electronic digital clock of the receiver, and causing, at the same time, starting of the electronic digital minute-counter of the transmitter.

4,879,554
BARRIER ASSEMBLY FOR A PARKING SPACE

Jorge Diaz-Silveira, 9817 NW. 4th Ter., Miami, Fla. 33172

Filed Mar. 11, 1988, Ser. No. 167,667
Int. Cl.⁴ G08G *1/14*

U.S. Cl. 340—932.2 14 Claims



1. A barrier assembly designed to guard a parking space for an automobile and prevent entry therein of an unauthorized vehicle, said barrier assembly comprising:

(a) a base secured within the parking space substantially at ground level and dimensioned to include a height sufficient to allow passage of an automobile thereover,

(b) barrier means movably mounted on said base and selectively positionable between a blocking position and a retracted position for selectively blocking or allowing access to the parking space,

(c) drive means mounted on said base and connected to said barrier means for positioning thereof between said blocking position and said retracted position,

(d) power supply means connected to said drive means for providing activating power thereto,

(e) control means connected to said drive means and structured for activation thereof and selected disposition of said barrier means between said blocking position and said retracted position,

(f) said barrier means comprising two support portions each having an elongated configuration and each being interconnected to said drive means by a different connecting shaft, each of said connecting shafts extending outwardly from said drive means in substantially opposite directions from one another and rotatably driven by said drive means between said blocking position and said retracted position, and

(g) said support portions being dimensioned to allow passage thereover of a vehicle into the parking space when the barrier means is disposed in said retracted position.

4,879,555
ABSOLUTE LINEAR POSITION DETECTION DEVICE

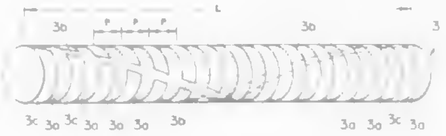
Wataru Ichikawa, Tokyo, and Yuji Matsuki, Sayama, both of Japan, assignors to Kabushiki Kaisha SG, Tokyo, Japan

Filed Aug. 4, 1986, Ser. No. 893,254

Claims priority, application Japan, Aug. 9, 1985, 60-175145

Int. Cl.⁴ H03M *1/22*

U.S. Cl. 341—13 18 Claims



1. Absolute position detection device comprising:

a member having a first pattern which repeats change in the longitudinal direction of the member with a predetermined pitch and a second pattern which changes in the longitudinal direction of the member with a pitch which is different at least from that of the first pattern, these patterns being formed of a predetermined material and disposed on the member; and

a detection head section provided in proximity to this member and responding individually to the first pattern and the second pattern on said member, said detection head section changing its relation of correspondence to the respective patterns in accordance with its linear position with respect to said member and producing output signals in accordance with the relation of correspondence to the respective patterns;

wherein said second pattern consists of a pattern which is of a different form from said first pattern; and

wherein said first and second patterns are disposed in a mixed state in a common region on said member.

4,879,556
JOYSTICK CONTROL UNIT USING MULTIPLE SUBSTRATES

Johannes J. Duimel, Klimmen, Netherlands, assignor to Huka Developments B.V., Oldenzaal, Netherlands

Filed Oct. 26, 1987, Ser. No. 113,245

Claims priority, application Netherlands, Oct. 27, 1986, 8602697

Int. Cl.⁴ G05G *9/04;* H01H *35/02*

U.S. Cl. 341—20 29 Claims

1. A joystick control comprising, in combination

controller means subjected to spring forces biasing said means towards a neutral position,

a transmitting coil made of electrically conducting paths on a substrate,

a plurality of receiving coils made by electrically conducting paths on a substrate and positioned at predetermined

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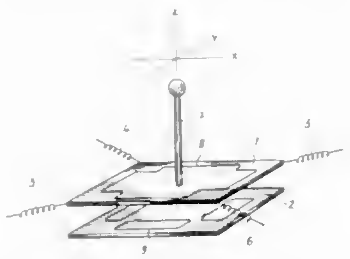
three-dimensional locations in relation to the transmitting coil,
characterized in that
the receiving coils are on a first substrate,
the transmitting coils is on a second substrate,
one of the substrates is connected to the controller means and is together therewith movable in relation to the other substrate, which is located at a substantially fixed position, and
the spring forces acting on the controller means also acting on the substrate connected to said controller means such that the controller means has at least two degrees of freedom,
whereby the transmitting coil and receiving coils being embodied such that unique combinations of output signals can be generated which are characteristic of each of the degrees of freedom of the controller means.

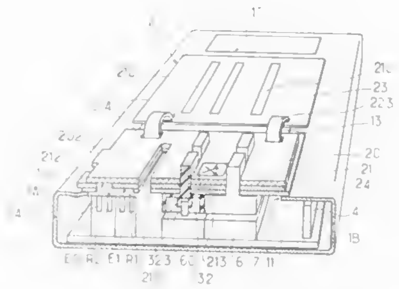


4,879,557

GENERAL PURPOSE KEYBOARD FOR CENTRAL PROCESSING UNIT WITH MICROPROCESSOR AND USE OF THIS KEYBOARD WITH A MICROCOMPUTER

Patrick Roche, Fontenay Le Fleury, France, assignor to La Souterraine S.A., Marseille, France

Filed Nov. 6, 1987, Ser. No. 118,490
Int. Cl.⁴ G06F *3/02*
U.S. Cl. 341—23 11 Claims



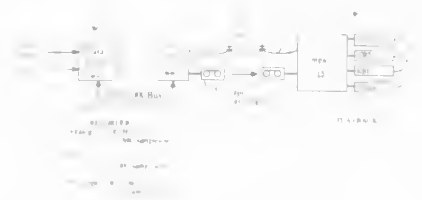
1. A multi-purpose keyboard assembly for a central processing unit with a microprocessor (**9**) comprising: a housing having at least one set (**300**) of variable allocation keys, a booklet (**2**) removably fixed on the housing, said booklet comprising at least two pages (**30**), (**21**) indicating the allocation of the keys; a first remote means of detection comprising light emitting cells (**E0,E1**) and photoelectric receivers (**R0,R1**) mounted on the housing for detecting the position of the pages (**20**), (**21**) of the booklet (**2**); a means for providing codes to the central processing unit (**9**) in response to the detection of the position of the pages (**20**), (**21**) of the booklet (**2**) and in response to the actuation of a key (**32**) of the keyboard belonging to the one set (**300**) of keys, said means for providing codes comprising a scanning keyboard interface (**45**), (**46**), a keyboard processing unit (**40**) a data bus (**401**) and a programmable read only memory (**431**); said scanning keyboard interface (**45**) being connected through the data bus (**401**) to the processing unit (**40**); the programmable read only memory (**43**) containing tables (**T1,T4**) corresponding to the keys and the codes to be provided to the central processing unit (**9**) according to the position of the pages (**20**), (**21**) of the booklet detected by the first remote means.

4,879,558

DATA COMPRESSION APPARATUS AND METHOD FOR DATA RECORDER WITH WAVEFORM ENVELOPE DISPLAY

Scott C. Swanson, Roswell, Ga., assignor to Sangamo Weston, Inc., Norcross, Ga.

Continuation-in-part of Ser. No. 940,999, Dec. 12, 1986. This application Jan. 22, 1987, Ser. No. 5,962
Int. Cl.⁴ H03M *7/00*
U.S. Cl. 341—51 45 Claims



1. An electrical power line waveform envelope monitoring and display apparatus, comprising:
means connectable to an electrical power line for sampling signals representative of the peaks of waveforms occurring on said electrical power line and for providing a plurality of digital samples;
means for compressing said plurality of digital samples and for providing a compressed data set for transmission over a communication link;
means for transmitting said compressed data set over said communication link;
means for decompressing said compressed data set after transmission over said communication link and for providing a plurality of decompressed digital samples; and
means for displaying an envelope waveform reconstructed from said decompressed digital samples corresponding to the envelope of signals occurring on said electrical power line.

4,879,559

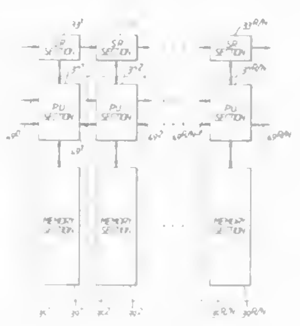
AZIMUTH PROCESSOR FOR SAR SYSTEM HAVING PLURALITY OF INTERCONNECTED PROCESSING MODULES

Bernard Arambepola, Colchester, United Kingdom, assignor to The General Electric Company p.l.c., London, United Kingdom

Filed Aug. 17, 1988, Ser. No. 233,251
Claims priority, application United Kingdom, Aug. 17, 1987, 8719395
Int. Cl.⁴ G01S *13/90, 7/44*
U.S. Cl. 342—25 12 Claims

1. An azimuth processor for a synthetic aperture radar system, which comprises a plurality of data processing modules, each associated with a different set of range line samples of the radar echo signals, each module including a memory to store the sets of samples from M successive range lines and data processing means for processing the samples contained in the memory for producing azimuth processed range line samples,

and adjacent modules being interconnected so that samples required for processing by a module and not contained in its memory due to the range migration effect may be obtained from another module.

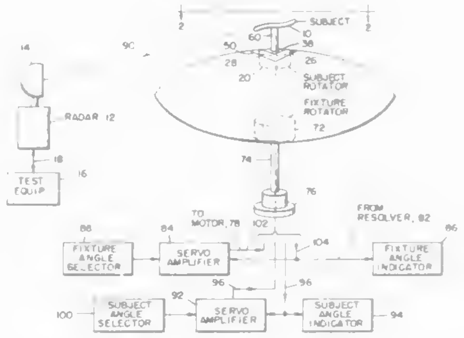


4,879,560

RADAR TEST DEVICE WITH ROTATOR INSIDE SUBJECT-SUPPORT FIXTURE

Mark A. McHenry, Stanford, Calif., assignor to Northrop Corporation, Hawthorne, Calif.

Filed Jul. 6, 1988, Ser. No. 215,675
Int. Cl.⁴ G01S *7/40*
U.S. Cl. 342—165 5 Claims



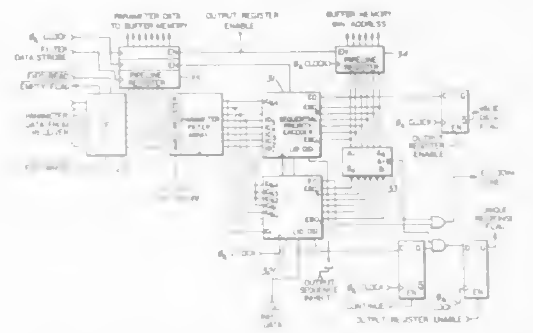
1. A radar test assembly of low radiation cross section for rotatably supporting a test subject to be illuminated by a radar signal from the antenna of a radar set comprising:
a fixture,
first rotator means for rotating the fixture,
a platform for supporting the test subject,
means for mounting said platform on said fixture,
second rotator means for rotating the platform relative to the fixture,
said fixture including a shield extending outwardly from an edge of the platform to form an envelope enclosing said first rotator and the platform and including an opening therein for receiving a test subject to be attached to the platform, the shield having electrically conducting surfaces inclined relative to a direction of propagation of radiation from the antenna for directing reflections of radiation emanating from the fixture away from the antenna, the fixture extending in curved fashion to form a body enclosing the rotator and the platform; and
a radiation seal extending from the edge of the opening in the fixture to interface between a surface of the fixture and the platform.

4,879,561

FILTER SYSTEM FOR RADAR APPLICATIONS

Robert J. Inkol, Orleans, Canada, assignor to Her Majesty the Queen in Right of Canada, Canada

Filed Sep. 1, 1988, Ser. No. 239,312
Claims priority, application Canada, Feb. 4, 1988, 558103
Int. Cl.⁴ G01S *7/44*
U.S. Cl. 342—195 15 Claims



1. A filter system for filtering interleaved pulse descriptor words in received radar signals, the filter system comprising:
(a) a filter array unit for comparing parameters contained in each pulse descriptor word with sets of parameter ranges, the comparison of each parameter with each set of parameter ranges being made simultaneously, the filter array unit having a separate indicator output for each set of parameter ranges, the indicator output associated with a particular set of parameter ranges being activated whenever the compared parameters of the pulse descriptor word match the particular set of parameter ranges;
(b) a first sequential priority encoder unit having an hierarchical order to its inputs and producing an ordered sequence of encoded binary outputs uniquely corresponding to the inputs which are active at that time, the indicator outputs of the filter array unit being connected to the inputs of the first encoder unit; and,
(c) a first memory unit divided into a series of memory areas equal in number to the number of indicator outputs of the filter array unit, each of the memory areas being addressed by a respective different one of the possible binary outputs of the first encoder unit; whereby each pulse descriptor word is placed into that memory area which corresponds with the priority encoding of the indicator outputs that are activated when that pulse descriptor word is compared with the sets of parameter ranges in the filter array unit.

4,879,562

SLOTTED MICROSTRIP ANTENNA WITH FERRITE COATING

Richard A. Stern, Allenwood, and Richard W. Babbitt, Fair Haven, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 9, 1989, Ser. No. 295,613
Int. Cl.⁴ H01Q *1/38, 3/44*
U.S. Cl. 343—700 MS 9 Claims

1. In a microstrip antenna including a bottom microstrip circuit including an array of microstrip lines of a conductive metal, a dielectric layer in contact with and overlying said microstrip circuit, and a metal ground plane in contact with and overlying said dielectric layer wherein said ground plane includes a metallic surface with rows of radiating slots etched through the metallic surface such that each row of slots over-

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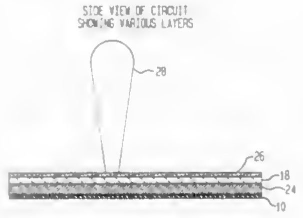
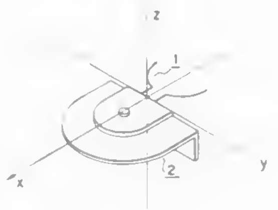
lies a particular microstrip line in said bottom microstrip circuit, the improvement of applying a thin coating of ferrite



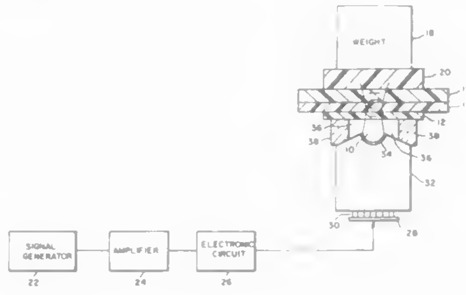
material to the surface of the metal ground plane not in contact with the dielectric layer.

4,879,563
CIRCULARLY POLARIZED COMPLEMENTARY ANTENNA WITH PATCH AND DIPOLE ELEMENTS
Shigeki Takeda, and Akihiro Takahashi, both of Tokyo, Japan, assignors to Kyocera Corporation, Kyoto, Japan
Filed Oct. 26, 1988, Ser. No. 262,607
Claims priority, application Japan, Oct. 30, 1987, 62-275071; Oct. 30, 1987, 62-275072
Int. Cl.⁴ H01Q *21/00*
U.S. Cl. 343—725 4 Claims



1. An antenna comprising:
a half-wavelength dipole antenna in the form of a semicircular ring at a specified frequency;
an E_{110}-mode patch antenna having a semicircular substantially planar configuration at said frequency;
means for coupling received power from said dipole antenna and said patch antenna in 90° phase difference to produce circular polarization reception characteristics; and
said dipole antenna and said patch antenna being adjacently disposed so the distance between them is relatively short compared to a wavelength at said frequency so as to minimize deviation of circular polarization characteristics.

4,879,564
ULTRASONIC DYE IMAGE FUSING
Michael E. Long, Fairport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Feb. 2, 1989, Ser. No. 305,263
Int. Cl.⁴ G01D *15/00*
U.S. Cl. 346—25 4 Claims

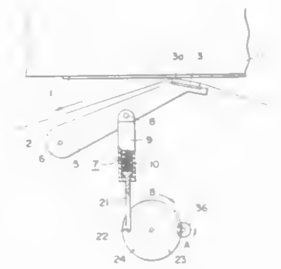


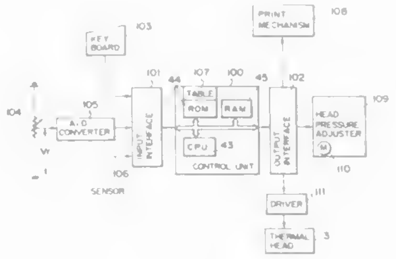
1. In a thermal printing system in which a dye image is formed in a receiver, the improvement comprising:
ultrasonic transmission means for focussing ultrasonic energy at a position in or near the receiver to heat the receiver to fuse the dye image into the receiver.

4,879,565
INK JET PRINTER
Katsuyuki Fujii, Azuchi, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan
Filed Jan. 27, 1989, Ser. No. 303,760
Claims priority, application Japan, Jan. 27, 1988, 63-14590
Int. Cl.⁴ G01D *18/00*
U.S. Cl. 346—75 14 Claims

7. In an ink jet printer that can electrically charge ink droplets and project them through an electric field towards a target surface during a normal printing operation with the capacity of deflecting the charged ink droplets relative to the path of uncharged ink droplets for capturing the charged ink droplets before the target surface, the improvement comprising:
alignment means for adjusting the path of the charged ink droplets relative to the uncharged ink particles including means for varying the relative interaction of the charged ink droplets and the electric field to a lesser degree during an alignment procedure than during a printing operation.

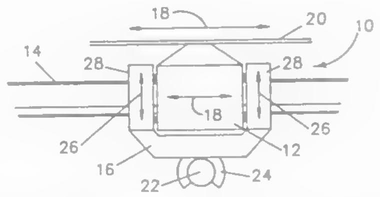
4,879,566
THERMAL RECORDING APPARATUS
Tadashi Hanabusa, Zushi, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Jan. 11, 1988, Ser. No. 141,772
Claims priority, application Japan, Jan. 13, 1987, 62-5810; Dec. 16, 1987, 62-316007
Int. Cl.⁴ G01D *15/10;* **B41J** *11/20, 3/20*
U.S. Cl. 346—76 PH 17 Claims





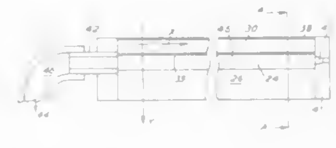
1. A thermal recording apparatus for image recording on a recording medium, comprising:
a thermal head for image recording on said recording medium;
discrimination means for discriminating the species of said recording medium; and
pressure varying means for varying the force for maintaining the pressing condition by said thermal head on said recording medium according to the species thereof discriminated by said discrimination means.

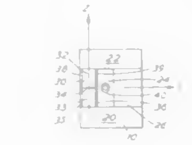
4,879,567
CARRIAGE COUPLING DEVICE SYSTEM FOR PEN PLOTTER
James Lawrence, Irvine, Calif., assignor to Sanders Associates, Inc., Nashua, N.H.
Filed Aug. 19, 1987, Ser. No. 86,846
Int. Cl.⁴ G01D *15/16;* **F16C** *21/00*
U.S. Cl. 346—139 R 9 Claims



1. In a carriage coupling drive system for a pen plotter including a moving carriage slidably mounted on a shaft between the ends of and carrying a U-shaped pen-carrying yoke in combination therewith for longitudinal sliding motion along the shaft and rotary motion about the shaft, the improved low-friction, low-play bearing system for supporting and separating the carriage and yoke with minimum longitudinal play between them during longitudinal movement and stopping comprising:
(a) a pair of annular ball-bearing thrust bearings disposed over the shaft between respective ends of the yoke and the carriage; and
(b) annular bias spring means disposed over the shaft for creating a longitudinal expansion force between the carriage and yoke on one end of the carriage resisting longitudinal play between the carriage and the yoke.

4,879,568
DROPLET DEPOSITION APPARATUS
W. Scott Bartky, Chicago, Ill.; Anthony D. Paton; Stephen Temple, both of Cambridge, United Kingdom, and A. John Michaelis, Glen Ellyn, Ill., assignors to AM International, Inc., Chicago, Ill.
Filed Jan. 4, 1988, Ser. No. 140,764
Claims priority, application United Kingdom, Jan. 10, 1987, 8700531; Jan. 10, 1987, 8700533
Int. Cl.⁴ G01D *15/16;* **B41J** *3/04*
U.S. Cl. 346—140 R 35 Claims





1. A pulsed droplet deposition apparatus comprising a liquid droplet ejection nozzle, a pressure chamber with which said nozzle communicates and from which said nozzle is supplied with liquid for droplet ejection, a shear mode actuator comprising peizo-electric material and electrode means for applying an electric field thereto, and liquid supply means for replenishing in said chamber liquid expelled from said nozzle by operation of said actuator, wherein said actuator is disposed so as to be able under an electric field applied between said electrode means to move in relation to said chamber in shear mode in the direction of said field to change the liquid pressure in said chamber and thereby cause droplet ejection from said nozzle.

4,879,569
MULTIPLE SOURCE CHARGED PARTICLE GENERATION
Igor Kubelik, Mississauga, Canada, assignor to Delphax Systems, Mississauga, Canada
Filed Dec. 14, 1988, Ser. No. 284,267
Int. Cl.⁴ G01D *15/00*
U.S. Cl. 346—159 13 Claims

1. A charge generating device comprising:

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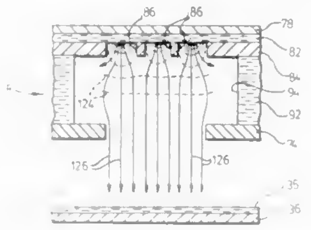
first and second electrodes;

a dielectric between the first and second electrodes; and



the second electrodes defining independent discharge locations with each of said discharge locations comprising a plurality of discharge sites.

4,879,570

BROADCASTING WAVE RECEPTION ANTENNA

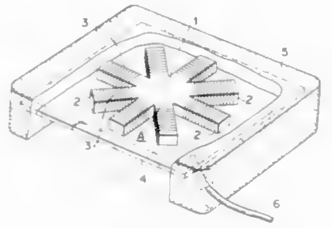
Akio Takizawa, and Syozo Saito, both of Saitama, Japan, assignors to Nippon Antenna Co., Ltd., Tokyo, Japan

Filed Mar. 16, 1988, Ser. No. 168,647

Claims priority, application Japan, Mar. 24, 1987, 62-69981; Jan. 28, 1988, 63-18664

Int. Cl.⁴ H01Q *7/08*

U.S. Cl. 343—713 12 Claims



1. A broadcasting wave reception antenna apparatus comprising:

a flat magnetic member having a center portion and a plurality of projections extending radially outwardly from said center portion in respective directions which all lie in a common plane;

a plurality of coils, each said coil being wound around a respective said projection of said magnetic member, a first group of said coils being connected in series with each other between a first pair of first and second nodes, and the rest of said coils being a second group connected in series with each other between a second pair of first and second nodes;

a cable having two conductors which are each connected to said first node of a respective said pair;

a vehicle body wall having spaced first and second wall members; and

a soft resilient member having a large compression ratio, having a thickness greater than the distance between said first and second wall members, and having said magnetic member and said coils fully embedded therein, said resilient member being disposed between said first and second wall members under compression and said magnetic member and coils being spaced from each of said wall members.

4,879,571

DUPLEX PRINTING DEVICE

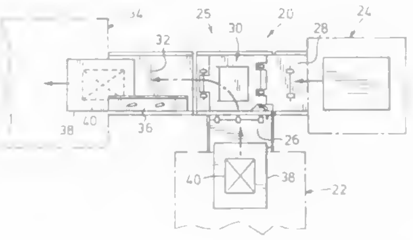
Paul E. Plasscheart, Limehouse, Canada, assignor to Delphax Systems, Mississauga, Canada

Filed Nov. 30, 1987, Ser. No. 126,160

Claims priority, application Canada, Dec. 3, 1986, 524416

Int. Cl.⁴ G03B *27/32, 27/52*

U.S. Cl. 355—26 5 Claims



1. Apparatus for selectively imaging one side or both sides of sheets, the apparatus comprising:

first imaging means to image first sides of the sheets when both sides are to be imaged;

means defining a first entry path for receiving the sheets serially from the imaging means;

a transfer station for receiving the sheets from the first entry path in a first plane and including sheet inverting means for turning the sheets over and into a second plane adjacent to and spaced from the first plane;

means defining a second entry path for delivering sheets serially to be imaged on one side only, the second entry path delivering sheets to the transfer station in the second plane;

means defining an exit path for receiving sheets from the transfer station in said second plane;

second imaging means for receiving sheets from the exit path to image one side of the sheets originating from the second entry path and to image the second sides of sheets originating at the first imaging means; and

said sheet inverting means including a curler positioned in the first entry path for initiating a curl in the sheet so that the sheet then turns over, the curler being out of alignment with the second entry path so that sheets passing along the second entry path move past the curler without engagement.

4,879,572

READER-PRINTER

Kazuhiko Onuki, Tokyo; Masami Maetani, Ohmiya; Masahiko Ito, Yokohama, and Shinji Murata, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 74,146, Jul. 16, 1987, abandoned. This application May 13, 1988, Ser. No. 195,392

Claims priority, application Japan, Jul. 26, 1986, 61-176350; Nov. 8, 1986, 61-266196

Int. Cl.⁴ G03B *13/28*

U.S. Cl. 355—45 10 Claims

1. A reader-printer comprising:

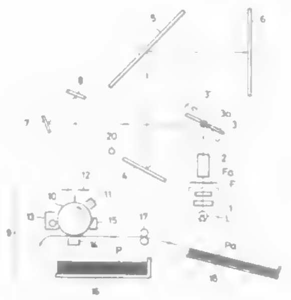
a first mirror rotatable to a first position in which it is capable of forming a reader optical path for projecting an image onto a screen and a second position in which it is capable of forming a printer optical path for projecting the image onto a photosensitive surface;

a second mirror disposed in said reader optical path for directing light reflected by said first mirror to said screen;

a third mirror disposed in said printer optical path for directing light reflected by said first mirror to said photosensitive surface;

drive means for rotating said first mirror to said first position and said second position; and

detecting means for detecting a quantity of light from said image, said detecting means disposed outside said reader optical path and said printer optical path and disposed at a position where it receives the light reflected by said first mirror when said first mirror is rotated to a predetermined angular position different from said first and second positions.



4,879,573

CLAMPING FRAME FOR CONTACT PRINTERS OF WORKING MASKS

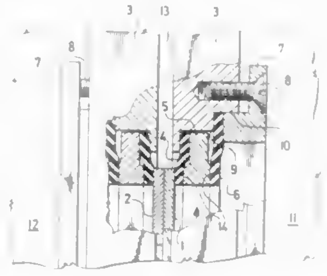
Bohumil Slavata, Prague, Czechoslovakia, assignor to TESLA, koncernovy podnik, Prague, Czechoslovakia

Filed Apr. 22, 1988, Ser. No. 185,004

Claims priority, application Czechoslovakia, Apr. 24, 1987, 2899-87

Int. Cl.⁴ G03B *27/28*

U.S. Cl. 355—125 7 Claims



1. A clamping frame for a contact printer comprising a stable part and a mobile part of substantially equal design, each of said parts comprising a clamping frame body with a central opening, each body being separated by a central passage;

said central opening having a two stepped profile formed by an external recess and an internal recess, such that the central opening is smaller at said internal recess, facing said central passage;

a thrust frame and a supporting frame and a first and second packing;

said second packing lying adjacent said internal recess with and said supporting frame lying adjacent said second packing;

said first packing lying adjacent said external recess and said thrust frame lying adjacent said first packing.

4,879,574

COPYING APPARATUS HAVING AN AUTOMATIC DOCUMENT FEEDER AND AT LEAST TWO OPERATION MODES

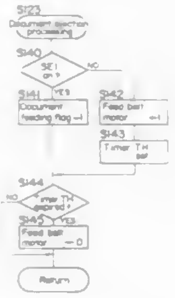
Minoru Nakamura, and Masazumi Ito, both of Toyohashi, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Sep. 29, 1987, Ser. No. 102,580

Claims priority, application Japan, Jun. 13, 1987, 62-147206

Int. Cl.⁴ G03G *21/00*

U.S. Cl. 355—204 12 Claims



1. A copying apparatus, comprising.

a document glass;

a document pressing means that can be opened and closed to the document glass;

means for feeding copying papers;

means for storing image formed papers;

image forming means that is operable not only in a first operation mode wherein the image of the document set on the document glass is formed onto the copying paper fed by the copying paper feeding means, and the image formed paper is ejected into the storing means, but may also be selectively operated in a second operation mode wherein the copying paper fed by the copying paper feeding means is ejected into the storing means without forming the image of the document;

means for detecting the opening action of the document pressing means;

means for raising an alarm upon the failure to detect the opening action of the document pressing means after the image forming operation; and

means for inhibiting the operation of the alarm means after the image forming operation in the second operation mode.

4,879,575

COPYING APPARATUS WITH PROVISION FOR DELAYED RESET IN THE EVENT OF PAPER EXHAUSTION

Syuzi Maruta, Toyokawa, and Masazumi Ito, Toyohashi, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Oct. 5, 1987, Ser. No. 104,376

Claims priority, application Japan, Oct. 7, 1986, 61-238567

Int. Cl.⁴ G03G *21/00*

U.S. Cl. 355—208 8 Claims

1. A copying apparatus comprising:

means for forming an image on copy paper;

means for storing copy paper;

detection means for detecting a paper empty condition in said paper storing means;

input means for inputting a copy condition;

means for giving a copy instruction;

means for automatically resetting the input copy condition to a standard state if the copy instruction is not given within a first predetermined period of time after the operation of said image forming means; and

means for maintaining the copy condition input by said input

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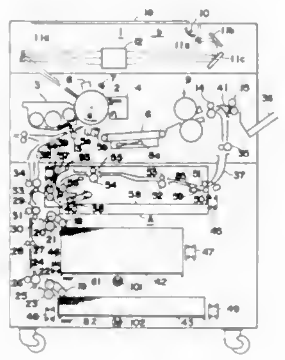
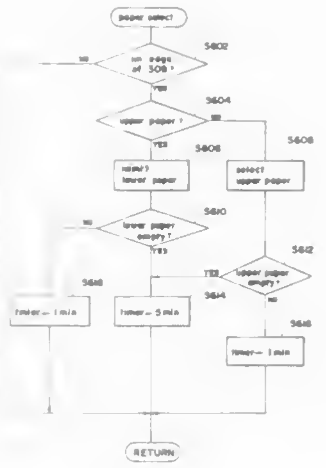
means for a second predetermined period of time, being longer than said first predetermined period of time, after the detection of the paper empty condition by said detection means and for automatically resetting the input copy condition to a standard state when said second predetermined period of timer has elapsed after detection of the paper empty condition.





4,879,576

EXPOSURE CONTROL DEVICE AND METHOD

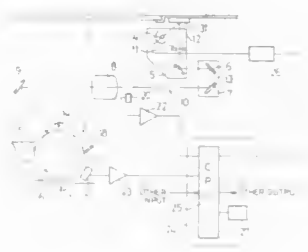
Yoshikazu Naito, Osaka, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Mar. 10, 1988, Ser. No. 166,390

Claims priority, application Japan, Mar. 13, 1987, 62-59180; Mar. 13, 1987, 62-59181; Mar. 13, 1987, 62-59182

Int. Cl.⁴ G03G *15/04, 21/00*

U.S. Cl. 355—214 8 Claims



1. A control system for varying the exposure of an original in an electrostatic image forming system, comprising:

a light source responsive to voltage input;

means for positioning an original document for exposure by the light source;

means for applying an initial predetermined voltage to the light source;

means for developing an electrostatic image of the original including a photosensitive member that received the image;

a reference pattern that is positioned for exposure by the light source and development by the photosensitive member;

means for sampling the image density of the reference pattern;

means for sampling the image density of the image of the reference pattern developed on the photosensitive member including a sensor;

memory means for storing a predetermined table of values corresponding to a relationship between the density of the reproduced reference pattern and the sensor;

means for defining a relationship between the light source voltage and the density of the reproduced reference pattern as modified by the value in the memory means;

comparator means for comparing the measured image density with a predetermined image density to produce a correction signal, and

means for providing a fixed increment adjustment of the relationship between the light source voltage and the density of the reproduced reference pattern in response to the correction signal, whereby a light surface voltage is determined for an exposure operation from the density of the reproduced reference pattern.

4,879,577

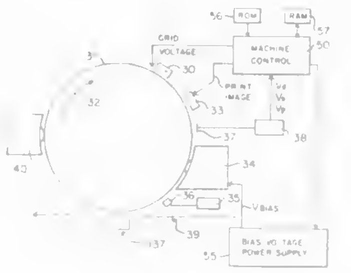
METHOD AND APPARATUS FOR CONTROLLING THE ELECTROSTATIC PARAMETERS OF AN ELECTROPHOTOGRAPHIC REPRODUCTION DEVICE

Saied A. Mabrouk, Boulder, and Gerald L. Wheeler, Longmont, both of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 19, 1988, Ser. No. 183,216

Int. Cl.⁴ G03G *15/00*

U.S. Cl. 355—208 18 Claims



1. A method for establishing electrostatic parameters of a DAD electrophotographic reproduction device, said device having a photoconductor, a charging station for charging said photoconductor, an imaging station which is operable to form a discharged area latent image on said photoconductor in accordance with an image to be reproduced, and a developer station operable to deposit toner on said latent image, said developer station including a development electrode connected to a source of development electrode voltage, comprising the steps of:

determining the saturation voltage of said photoconductor;

establishing said electrostatic parameters as a function of said determined saturation voltage; and

adjusting the magnitude of said development electrode voltage as a function of said determined saturation voltage.

17. A DAD reproduction device comprising:

a reusable photoconductor that cycles through a series of process stations during the process of producing reproductions, said process stations including in cycle order:

a controllable charging station operable to charge said photoconductor to an image background charge level;

a controllable intensity imaging station selectively operable to discharge said photoconductor to (1) a photoconductor-saturation latent image voltage level in a photoconductor image area, and (2) a relatively higher patch latent image voltage level in a photoconductor patch area;

charge sensing means operable to sense said photoconductor-saturation voltage level;

a developer station having a controllable development electrode bias voltage source, and being operable to deposit a high quantity of toner on said photoconductor image area, and a lower quantity of toner on said photoconductor patch area; and

toner concentration control means operable to determine the quantity of toner deposited on said photoconductor patch area;

reference means providing a reference photoconductor charge vector and a reference development bias vector;

means for controlling said charge source as a function of said photoconductor-saturation voltage level and said charge vector reference; and

means controlling said bias voltage source as a function of said photoconductor-saturation voltage level and said bias vector reference.

4,879,578

PAPER FEEDING DEVICE AND A PAPER GUIDING DEVICE IN A COPYING APPARATUS

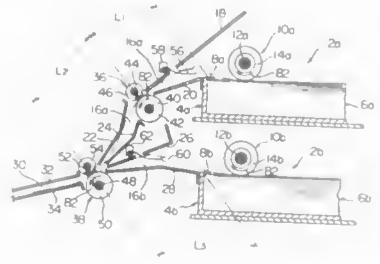
Masahiko Hisajima; Hiroshi Kimura, both of Osaka; Yutaka Shigemura, Hyogo; Isao Yada, Osaka; Yoichiro Irie, Osaka; Kiyoshi Morimoto, Osaka, and Takashi Nagashima, Osaka, all of Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 349,544, Feb. 17, 1982, abandoned. This application Jan. 14, 1985, Ser. No. 691,372

Claims priority, application Japan, Mar. 2, 1981, 56-28445; Mar. 10, 1981, 56-32265[U]; Mar. 10, 1981, 56-32266[U]

Int. Cl.⁴ B65H *3/44*

U.S. Cl. 355—234 4 Claims



1. In a copying machine including an original supporting plate, an optical unit, means defining a copying zone through which copying paper passes to have formed thereon a copy of an original document supported on the original supporting plate, means reciprocally mounting one of the original supporting plate and the optical unit for scanning an image of the original document supported on the original supporting plate to enable formation of a copy of the original document on copying paper passing through the copying zone, means defining a first paper loading section and a second paper loading section, each paper loading section to be loaded with a stack of copying paper sheets, a first paper delivery mechanism and a second paper delivery mechanism, the paper delivery mechanisms disposed respectively in the first and second paper loading sections, means defining a first paper introducing passage and a second paper introducing passage, the paper introducing passages extending respectively from the first and second paper loading sections and terminating in a common point of junction, means defining a paper conveying passage extending from the common point of junction to the copying zone, and means responsive to performance of a copying operation for selectively actuating either the first paper delivery mechanism or the second paper delivery mechanism, the improvement comprising a first conveyor roller pair and a second conveyor roller pair disposed respectively in the first paper introducing passage and at the point of junction or at a downstream part of the paper conveying passage such that each of the length of the path of a copying paper between the first paper loading section and the first conveyor roller pair and the length of the path of a copying paper between the first conveyor roller pair and the second conveyor roller pair is shorter than the minimum length in the moving direction of a paper sheet loaded in the first paper loading section and the length of the path of a copying paper between the second paper loading section and the second conveyor roller pair is shorter than the minimum length in the moving direction of a paper sheet loaded in the second paper loading section, drive means for simultaneously driving the first and second conveyor roller pairs, a first detector positioned in the first paper introducing passage upstream of the first conveyor roller pair and responsive to a copying paper delivered from the first paper loading section by the action of the first paper delivery mechanism assuming a buckled condition as a result of the leading edge thereof abutting against the first conveyor roller pair for detecting such buckled copying paper and stopping the operation of the first paper delivery mechanism, a second detector positioned in the second paper introducing passage upstream of the second conveyor roller pair and responsive to a copying paper delivered from the second paper loading section by the action of the second paper delivery mechanism assuming a buckled condition as a result of the leading edge thereof abutting against the second conveyor roller pair for detecting such buckled copying paper and stopping the operation of the second paper delivery mechanism, and means responsive to scanning movement of the one of the original supporting plate and the optical unit to a first predetermined position when the first detector has detected a copying paper in the buckled condition for actuating the drive means to simultaneously drive the first and second conveyor roller pairs and transport paper along said paper conveying passage and responsive to scanning movement of the one of the original supporting plate and the optical unit to a second predetermined position when the second detector has detected a copying paper in the buckled condition for actuating the drive mechanism to simultaneously drive the first and second conveyor roller pairs and transport paper along the paper conveying passage, whereby the copying paper is conveyed through the copying zone in synchronism with the scanning of the image of the original document to properly position the copy thereof on the copying paper regardless of whether the copying paper came from the first paper loading section or the second paper loading section.

4,879,579

IMAGE RECORDING APPARATUS

Takemi Yamamoto, Nagoya, and Kenji Sakakibara, Ichinomiya, both of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Japan

Filed Nov. 17, 1988, Ser. No. 272,722

Claims priority, application Japan, Nov. 27, 1987, 62-301105

Int. Cl.⁴ G03G *15/00, 15/01*

U.S. Cl. 355—235 11 Claims

1. An image recording apparatus for recording an image corresponding to image information on an original, onto a photo-sensitive recording medium by a slit scanning exposure system, which comprises:

selection means for selectively designating resolution of the image to be recorded onto said recording medium;

resolution control means for generating a control signal on the basis of said designated resolution;

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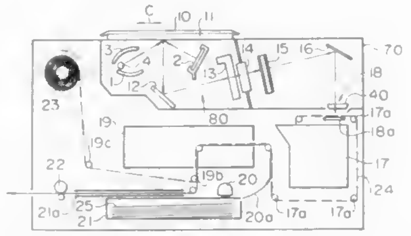
slit-width adjusting means operative in response to said control signal from said resolution control means, for adjusting an opening width of a variable exposure slit arranged at an exposure station at which said recording medium is exposed; and



scanning-speed adjusting means operative in response to said control signal from said resolution control means, for adjusting scanning speed at which said original is scanned.

4,879,580

IMAGE PROCESSING APPARATUS

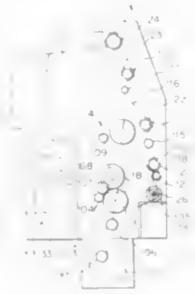
Tokuzo Kaneda, Tokyo, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Jun. 8, 1988, Ser. No. 203,996

Claims priority, application Japan, Jun. 8, 1987, 62-141384; Apr. 27, 1988, 63-102431

Int. Cl.^{4} G03G *15/00*

U.S. Cl. 355—295 10 Claims



1. An image processing apparatus comprising:
a photoconductive element;
an optical unit for forming a latent image on said photoconductive element;
a developing device for developing the latent image on said photoconductive element to produce a toner image;
a transferring device for transferring the toner image from said photoconductive element to a transfer material;
a fixing device constituted by a fixing roller and a pressing roller for fixing the toner which has been transferred to the transfer material;
fixing device drive means for driving said fixing device;
first support means for supporting said photoconductive element and said optical unit; and
second support means for supporting said fixing device and said fixing device drive means, said second support means being isolated from said first support means.

4,879,581

TRANSFERRED ELECTRON DEVICE WITH PERIODIC BALLISTIC REGIONS

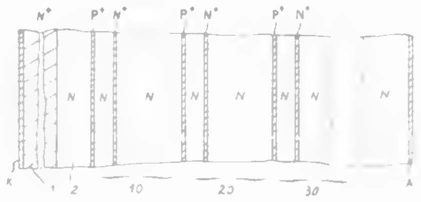
Félix Diamand, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Jul. 9, 1987, Ser. No. 71,361

Claims priority, application France, Jul. 9, 1986, 86 09976

Int. Cl.^{4} H01L *27/26. 27/12. 47/02*

U.S. Cl. 357—3 3 Claims



1. A transferred electron device including an N+ doped semiconductor substrate having one face provided with a metal contact forming a cathode and an other face coated with an N doped semiconductor inut layer followed by an active semiconductor structure with a metal contact forming an anode, wherein said semiconductor structure is a periodic structure including a succession of elementary cells, each cell having a short N doped ballistic region between two very thin semiconductor layers, strongly doped respectively P+ and N+, and a longer N doped transit region, said ballistic region allowing the electrons to be brought to a high energy level in a time less than the collision time, and the transit region allowing the electron energy to be brought down by relaxation to a value very much less than the transfer energy.

4,879,582

FIELD-EFFECT TRANSISTOR

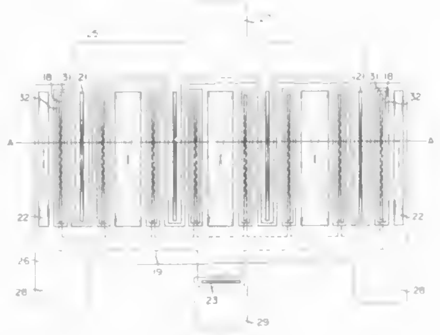
Takashi Kimura; Takao Kato, and Kazuo Endo, all of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jun. 23, 1987, Ser. No. 65,596

Claims priority, application Japan, Jun. 25, 1986, 61-148604

Int. Cl.^{4} H01L *29/78*

U.S. Cl. 357—23.12 5 Claims



1. A field-effect transistor device which comprises:
a semiconductor substrate of a first conductivity type;
drain and source regions of a second conductivity type formed in said semiconductor substrate;
a channel region of said first conductivity type positioned between said drain and source regions;
a drain electrode layer having a finger portion extending on and connected to said drain region and a base portion extending beyond said drain region;
a source electrode layer having a finger portion extending on and connected to said source region and a base portion extending beyond said source region;
a first gate insulation layer formed on said semiconductor substrate;
a gate electrode layer formed on a portion of said first gate insulation layer on said channel region and having an extension protruding beyond said channel region;
a second gate insulation layer formed on said gate electrode layer;
a gate bonding electrode layer connected to said gate electrode layer via a first contact hole formed in said second gate insulation layer; and
a conductive layer connected to said gate electrode layer via a second contact hole formed in said second gate insulation layer, said conductive layer being formed above said channel region.

4,879,583

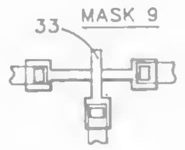
DIFFUSED FIELD CMOS-BULK PROCESS AND CMOS TRANSISTORS

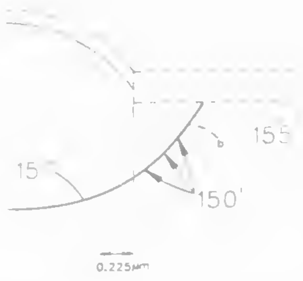
Frank Z. Custode, Norco, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Division of Ser. No. 837,560, Mar. 3, 1986, Pat. No. 4,749,662. This application Oct. 7, 1987, Ser. No. 105,413

Int. Cl.^{4} H01L *27/02*

U.S. Cl. 357—42 3 Claims





1. A CMOS device comprising, in combination:
a P doped substrate;
an N-channel transistor having an active region in the substrate surrounded by field oxide over the P doped substrate and in the P doped substrate;
a P diffused field region in the substrate beneath at least a portion of the field oxide contiguous with the active region;
an N+ source and drain in the active region and a doped polysilicon gate over insulation between the source and drain;
insulated electrical connections to each of the source, drain and gate;
said field oxide underlying the active region for no greater distance than 0.225 microns at any point around the active region and the field oxide exhibiting an abrupt transition from the active region to the field region characterized by a slope of approximately 3.8;
a P-channel transistor having an active region in the substrate surrounded by field oxide;
an N-diffused well under the P-channel transistor; a P+ source and drain in the P-channel active region and a doped polysilicon gate between the source and drain;
insulated electrical connections to each of the P-channel transistor source, drain and gate; and,
said field oxide underlying the P transistor active for no greater distance than 0.225 microns at any point around said last mentioned active region and said field oxide exhibiting an abrupt transition from the P-channel transistor active region to the P-channel section field region characterized by a slope of approximately 3.8.

4,879,584

SEMICONDUCTOR DEVICE WITH ISOLATION BETWEEN MOSFET AND CONTROL CIRCUIT

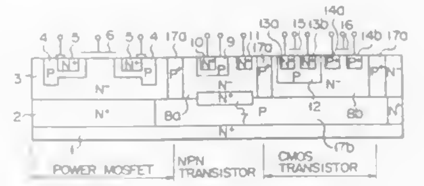
Yosuke Takagi, Yokohama; Yu Ohata, Tokyo; Koichi Kitahara, Kawasaki, and Tsuyoshi Kuramoto, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Feb. 10, 1988, Ser. No. 154,275

Claims priority, application Japan, Feb. 13, 1987, 62-29553

Int. Cl.^{4} H01L *27/02*

U.S. Cl. 357—43 10 Claims



1. A semiconductor device comprising:
a power gate-insulated MOS field effect transistor having a drain region and a control circuit element formed on a common semiconductor substrate, said drain region having a high and a low resistance region, said high resistance region overlaying said low resistance region;
a first area including at least a portion of said high resistance region of the drain region of the power gate-insulated MOS field effect transistor, said first area having a predetermined resistivity value; and
a second area including at least a portion of the area in which said control circuit element is formed, said second area being disposed contiguous to said first area, said second area having a resistivity value less than said predetermined resistivity value of the first area.

4,879,585

SEMICONDUCTOR DEVICE

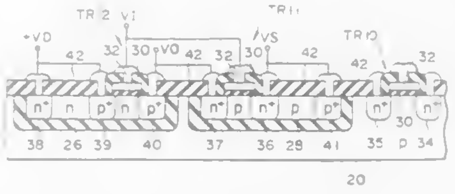
Toshiro Usami, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 80,487, Jul. 31, 1987, abandoned, which is a continuation of Ser. No. 717,694, Mar. 29, 1985, abandoned. This application Jun. 15, 1988, Ser. No. 206,903

Claims priority, application Japan, Mar. 31, 1984, 59-63567

Int. Cl.^{4} H01L *27/08*

U.S. Cl. 357—49 12 Claims



1. A semiconductor device, which is subjected to a thermal oxidation treatment process at a temperature of over 900° C. during manufacture of the device, comprising:

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a wafer having a semiconductor substrate comprised of one conductivity type semiconductor material and having a main surface divided into a plurality of chip forming areas, each chip forming area including (1) at least one insulation layer of silicon dioxide, (2) at least one semiconductor region insulated from said semiconductor substrate by said insulation layer, and (3) a main surface substantially in the same plane as the main surface of said semiconductor substrate;

an array of semiconductor memory elements formed in said semiconductor substrate included in said chip forming area, said array of semiconductor memory elements formed in said semiconductor substrate constituting a semiconductor memory;

semiconductor elements formed in said semiconductor region, said semiconductor elements formed in said semiconductor region constituting a data processing unit for processing data stored in said semiconductor memory; and

means for preventing warping of said wafer resulting from said thermal oxidation treatment process, said means comprising

(1) the total area of the main surface of said wafer which is occupied by semiconductor regions insulated from said semiconductor substrate by insulation layers in said chip forming areas being less than 30% of the area of the main surface of said wafer which wafer area includes the total area of the main surfaces of said semiconductor regions and the total area of the main surfaces of said insulation layers in said chip forming areas, and

(2) those portions of said semiconductor substrate in each of said chip forming areas which lie under at least part of said insulation layers and at least part of said array of semiconductor memory elements in said semiconductor substrate being integrally formed of said one conductivity type semiconductor material.

4,879,586
SEMICONDUCTOR COMPONENT

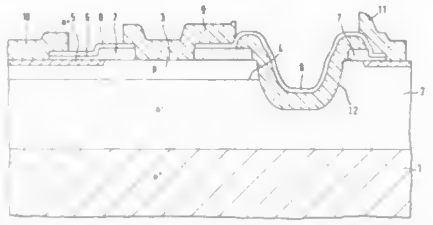
Doris Broström, and Lennart Ryman, both of Heilbronn, Fed. Rep. of Germany, assignors to Telefunken electronic GmbH, Heilbronn, Fed. Rep. of Germany

Filed Nov. 5, 1986, Ser. No. 927,492

Claims priority, application Fed. Rep. of Germany, Nov. 29, 1985, 3542166

Int. Cl.⁴ H01L *21/516, 21/31*

U.S. Cl. 357—54 10 Claims



1. In a high-voltage transistor including a semiconductor body having emitter, base and collector zones, respective electrodes for said emitter, base and collector zones disposed on a surface of said semiconductor body, an oxygen or nitrogen doped silicon layer disposed on at least the portions of the surface of said semiconductor body between said electrodes, and a glass layer provided between said doped silicon layer and said surface of said semiconductor body, the improvement wherein the portion of said doped silicon layer disposed between said base and collector electrodes is connected at one of its ends to said base electrode and is connected at its other end to said collector electrode.

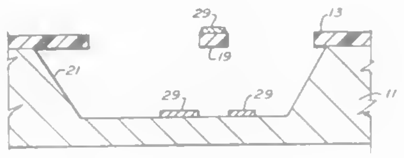
4,879,587
APPARATUS AND METHOD FOR FORMING FUSIBLE LINKS

John H. Jerman, Palo Alto, Calif., assignor to Transensory Devices, Inc., Fremont, Calif.

Filed Nov. 13, 1986, Ser. No. 930,653

Int. Cl.⁴ H01L *27/04, 23/52*

U.S. Cl. 357—55 9 Claims



1. A fusible link comprising:

a semiconductor substrate;

an electrically insulating layer disposed on said substrate;

a pair of conductor elements on the surface of said insulating layer opposite said substrate;

a fuse conductor layer on the surface of said insulating layer opposite said substrate electrically coupling said conductor elements; and

said insulating layer and said substrate defining a cavity adjacent said fuse conductor layer such that a bridge is formed over said cavity, said bridge being a portion of said insulating layer upon which said fuse conductor layer is disposed, said fuse conductor layer on said bridge being sized such that a predetermined electrical power input to said fuse conductor layer produces an open circuit between said pair of conductor elements, the relative sizing of said fuse conductor layer on said bridge and said portion of said insulating layer being such that said portion of said insulating layer provides substantial mechanical support for said portion of said fuse conductor layer thereon and, in conjunction with said cavity, substantially decreases the thermal conductivity from said fuse conductor layer thereon to said substrate.

4,879,588
INTEGRATED CIRCUIT PACKAGE

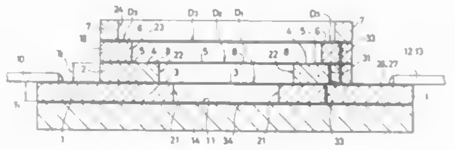
Akira Ohtsuka; Tomoji Goto, both of Hyogo, and Masao Ida, Tokyo, all of Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka and Nippon Telegraph and Telephone Corporation, Tokyo, both of, Japan

Filed Jan. 19, 1988, Ser. No. 145,068

Claims priority, application Japan, Jan. 19, 1987, 62-10929

Int. Cl.⁴ H01L *23/48, 29/44, 29/60, 39/02*

U.S. Cl. 357—68 12 Claims



1. An integrated circuit package comprising:

a first ceramic plate formed with a first opening at its central portion and provided with a plurality of signal transmitting metallized wiring connections on its upper surface extending from said first opening to respective external edges of said first ceramic plate, and having a plurality of electric power supplying metallized wiring traces extending from said external edge to an intermediate portion of said first ceramic plate inward of said first opening;

a plurality of ceramic plates, laminated on said first ceramic plate, and each having a respective opening, each of which is larger in size than said first opening and each having a larger opening than any openings on ceramic plates therebelow to form a stepwise increase in opening sizes, each of said ceramic plates having a metallized power-source, extending continuously along four sides of a surface thereof;

a metal bottom plate of good thermal conductively fixed to a lower surface of said first ceramic plate and provided with an electric conductor on at least a whole upper surface thereof; and

a plurality of signal transmitting lead frames, each fixed to an external end of one of said signal transmitting metallized wiring connections at said external edge of said first ceramic plate;

a plurality of electric-power supplying lead frames, each fixed to an external end of a respective one of said electric-power supplying metallized wiring traces,

said plurality of ceramic plates formed with a plurality of through-holes for connecting said electric-power supplying metallized wiring traces, said metalized power-source surface, and said electric conductor on the upper surface of said bottom plate to each other;

wherein a size of said wiring and thickness of said ceramic layers is maintained constant so that said signal transmission metallized wiring connections have a characteristic impedance determined by a ratio L/C of a capacitance C between the respective electric conductors on the upper surfaces of said metal bottom plate and a second ceramic plate, to an inductance L determined by said size of said wirings, is maintained constant.

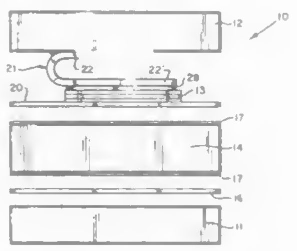
4,879,589
HERMETIC LEADLESS SEMICONDUCTOR DEVICE PACKAGE

Frederic Saint-Cyr, Signal Hill, Calif., assignor to Semetex Corporation, Torrance, Calif.

Filed Jan. 25, 1988, Ser. No. 148,017

Int. Cl.⁴ H01L *23/42*

U.S. Cl. 357—79 6 Claims



1. An hermetic leadless package for a planar silicon diode chip, comprising a planar base made of conductive material for forming a first contact to one side of said diode chip, a spacing frame of dielectric material sealed on said base and forming a cavity dimensioned for receiving said diode chip, said diode chip being disposed in said cavity with said one side electrically connected to said base, a cover made of conductive material sealed on said frame for forming a second contact to said diode chip on a side thereof opposite said one side of said diode chip and sealed over said spacing frame, and a spring means made of conductive material disposed between said cover and said diode chip for electrically connecting said cover to a side of said diode chip opposite said one side.

4,879,590
COLOR BAR AND AUDIO SIGNAL GENERATOR

Walter K. Guillot, 4646 Chelsea Dr., Baton Rouge, La. 70809, and Robert D. Brinkman, Chanute, Kans., assignors to Walter K. Guillot and L. J. Thibodeaux, both of Baton Rouge, La., a part Interest

Filed Apr. 22, 1988, Ser. No. 185,067

Int. Cl.⁴ H04N *17/02*

U.S. Cl. 358—10 31 Claims

1. A hand-held modulator which comprises:

(a) a self-contained electrical power source;

(b) first means converting power from said source into a 1000 cycle line wave audio tone signal of one volt, peak to peak at zero levelout;

(c) first output connection means for said signal;

(d) second means converting power from the power source at least into composite video color bars of one volt, peak to peak, of the U.S. NTSC standard type; and

(e) second output connection means for such composite video color bars;

said first means comprising:

(i) a square wave driver adapted to be energized by the self-contained power source, and

(ii) a sine wave and current driver integrated circuit to receive the output signal from the square wave driver and adapted to transform such signal into a 1000 cycle sine wave audio tone signal of one volt, peak to peak at zero levelout.

10. A hand-held modulator which comprises:

(a) a self-contained electrical power source;

(b) first means converting power from said source into a 1000 cycle line wave audio tone signal of one volt, peak to peak at zero levelout;

(c) first output connection means for said signal;

(d) second means converting power from the power source at least into composite video color bars of one volt, peak to peak, of the U.S. NTSC standard type; and

(e) second output connection means for such composite video color bars;

said second means including an EPROM matrix coupled to receive the outputs from a video graphics circuit and having decoder means interposed between a loop returning the output from the EPROM matrix to the video graphics circuit and thence to output driver means producing an output of color bars at one volt peak to peak into a 75 ohm load.

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4,879,591

IMAGE PICKUP APPARATUS COMPENSATING AN IMAGE SIGNAL FOR VARIATIONS IN COLOR TEMPERATURE

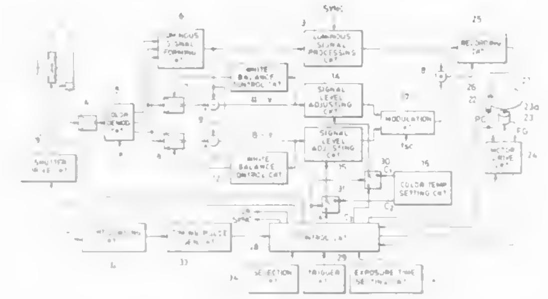
Masahiro Takei, Yohokama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 16, 1987, Ser. No. 3,771

Claims priority, application Japan, Jan. 31, 1986, 61-18191; Jan. 31, 1986, 61-18192; Jan. 31, 1986, 61-18193

Int. Cl.⁴ H04N *9/04*

U.S. Cl. 358—29 C 40 Claims


SYNC
LUMINOUS SIGNAL PROCESSING CKT
WHITE BALANCE CONTROL CKT
SIGNAL LEVEL ADJUSTING CKT
MODULATION CKT
COLOR TEMP SETTING CKT
WHITE BALANCE CONTROL CKT
SELECTION CKT
TRIGGER CKT
EXPOSURE TIME SETTING CKT
MOTOR DRIVE CKT
25
26
22
23a
23
PC
FG
24
30
16
31
29

1. An image pickup apparatus for picking up an image under an illumination whose color temperature changes periodically, said apparatus comprising:

image pickup means for producing an image signal in response to a received image;

detection means for detecting a phase relationship between a timing of producing the image pickup signal and the change in the color temperature of the illumination;

control means for (1) controlling the timing of producing said image signal in the image pickup means based on the output of the detection means, and (2) for controlling color balance among a plurality of color signals involved in said image signal in accordance with the detected phase relationship.

4,879,592

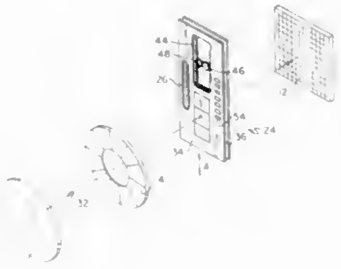
CAMERA WITH TWO-BLADED SHUTTER MECHANISM WITH MULTIPLE FILTER APERTURES DISPOSED FOR RELATIVE MOVEMENT TO PROVIDE SEQUENTIAL COLOR SEPARATION EXPOSURES

Paul W. Ernest, Arlington, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed May 2, 1988, Ser. No. 189,374

Int. Cl.⁴ H04N *9/07, 1/028;* G03B *9/08, 33/08*

U.S. Cl. 358—42 12 Claims



1. A color separation shutter mechanism comprising:

a pair of elongated shutter blade elements disposed in at least partially superimposed relation for relative movement with respect to each other along respective predetermined paths which cross a select image light path;

drive means operatively connecting each of said shutter blade elements for moving each of said blade elements independently of each other along said predetermined paths across the select image light path;

one of said blade elements comprising at least a first filtered aperture for transmitting lightwaves therethrough within a first select range of wavelengths and a second filtered aperture for transmitting lightwaves therethrough within a second select range of wavelengths different from said first select range, and the other of said blade elements comprising at least one aperture for transmitting lightwaves therethrough at least within all the select ranges transmitted by all the apertures of said one shutter blade element, said drive means being operable to position said shutter blade elements relative to each other in at least a first position wherein one of said filtered apertures from said one blade element overlaps said one aperture from said other blade element to transmit image defining light within said first wavelength range along said image light path and then a second position wherein the other of said filtered apertures from said one blade element overlaps said one aperture from said other blade element to transmit image defining light within said second wavelength range along said image light path, and wherein said other shutter blade element includes an opaque portion immediately adjacent its said one aperture, said opaque portion being drivable into scene light blocking position along said image light path during the intervals during which said one blade element is driven from one filtered aperture position aligned with the image light path to another filtered aperture position aligned with the image light path and at the end of an exposure interval.

4,879,593

METHOD OF AND APPARATUS FOR PERFORMING LOW-VOLTAGE CORRECTION OF HIGH-VOLTAGE DEFLECTION SIGNALS FOR ELECTROSTATIC-DEFLECTION CAMERA TUBES IN A COLOR VIDEO CAMERA

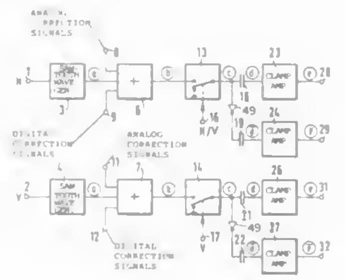
Harald Eschelbach, Mannheim, and Wolfram Klemmer, Langen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Mar. 4, 1988, Ser. No. 164,014

Claims priority, application Fed. Rep. of Germany, Mar. 13, 1987, 3708229

Int. Cl.⁴ H04N *9/093, 3/23, 5/228;* H03K *4/08*

U.S. Cl. 358—51 8 Claims


ANALOG CORRECTION SIGNALS
SAW TOOTH WAVE GEN
CLAMP AMP
DIGITAL CORRECTION SIGNALS
ANALOG CORRECTION SIGNALS
DIGITAL CORRECTION SIGNALS
H
V
8
13
23
28
29
31
32
49
17
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27
R/V

1. Method of producing deflection signals for electrostatic deflection camera tubes for producing color video signals having horizontal (H) and vertical (V) video blanking intervals, said method including the steps of generating sawtooth deflection signals of horizontal (H) scanning frequency and of vertical (V) scanning frequency at low voltage, then superposing correction signals thereon to modify the signal position, magnitude and shape and thereby produce corrected horizontal (H) and vertical (V) deflection signals, followed by capacitively converting said corrected H and V deflection signals into high voltage horizontal (H) and vertical (V) deflection signals, and further comprising the steps of:

prior to the step of capacitively converting corrected H and V deflection signals into high voltage signals, blanking out said corrected H and V deflection signals and substituting a keyed-in low voltage reference voltage for intervals within the said respective H and V blanking intervals of said color video signals and after said converting step, clamping said high voltage H and V deflection signals to a high voltage reference potential in substantially the same intervals in which the respectively corresponding corrected H and V deflection signals were blanked out and said keyed-in low voltage reference voltage was substituted.

4,879,594

REPRODUCTION OF COLORED IMAGES

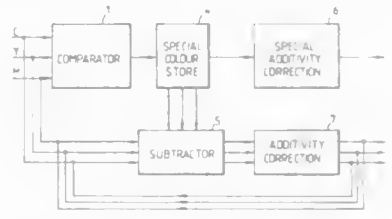
Peter W. Stansfield, Hertfordshire, and Alastair Reed, Bedfordshire, both of England, assignors to Crosfield Electronics Limited, London, England

Filed Sep. 23, 1988, Ser. No. 248,072

Claims priority, application United Kingdom, Sep. 23, 1987, 8722406

Int. Cl.⁴ H04N *1/46*

U.S. Cl. 358—80 9 Claims



1. A method of reproducing a coloured original image represented by first signals, defining the colour content of pixels of said original image in terms of a first set of colour components, in which at least two separations are prepared representing respective colour components of a second set different from said first set comprises for each pixel of said original image

(i) ranking said colour components of said second set in order of similarity to said pixel;

(ii) selecting a value for the highest ranked colour component for which each of said first set of colour component values defining said selected colour component does not exceed the corresponding pixel values;

(iii) adjusting said pixel values to take account of the selected value of said colour component of said second set; and,

(iv) repeating steps (ii) and (iii) for each of the remaining colour components of said second set in the order of ranking.

4,879,595

TECHNIQUE FOR REPRODUCING AN IMAGE READ FROM A COLOR ORIGINAL

Hiroshi Niki, Hachioji; Masahiko Matsunawa, Fussa; Hiroyuki Yamamoto, Yokohama, and Yoshinori Abe, Hino, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Oct. 17, 1986, Ser. No. 921,324

Claims priority, application Japan, Oct. 22, 1985, 60-236767; Dec. 26, 1985, 60-294891; Dec. 26, 1985, 60-294893; Dec. 26, 1985, 60-294895; Dec. 26, 1985, 60-294898; Dec. 26, 1985, 60-294900

Int. Cl.⁴ G03F *3/08;* H04N *1/46*

U.S. Cl. 358—80 19 Claims

1. A color image processing apparatus comprising:

optical means for obtaining optical color information corresponding to a plurality of colors of an original color image,

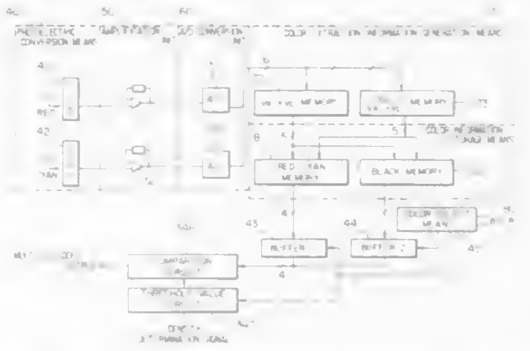
photoelectric conversion means for converting said optical color information into respective electric signals,

color extraction means for extracting color information signals from said electric signals,

selecting means for generating selection signals to sequentially select said extracted color information signals,

control means for outputting selected color information signals based on said extracted color information signals and said selection signals, and

multiple coding means for coding said outputted selected color information signals into multiple coded signals by comparing said outputted selected color information signals with a threshold value,


PHOTOELECTRIC CONVERSION MEANS
COLOR INFORMATION GENERATION MEANS
MEMORY
RED CYAN MEMORY
BLACK MEMORY
COLOR INFORMATION ... MEANS
BUFFER
42
43
44
4
5
6
8

wherein said control means includes means for providing a luminance signal obtained from said color extraction means and for inputting the luminance signal to said multiple coding means in response to a monochrome code selection signal from said selecting means to enable said original color image to be reproduced as a monochrome image.

4,879,596

STEREOSCOPIC CAMERA APPARATUS WHICH INCORPORATES CAMERAS AND CAN COMMONLY ADJUST DIRECTIONS OF THE CAMERAS

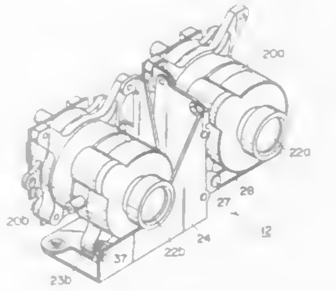
Kenichi Miura, and Hiromichi Kobayashi, both of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jan. 5, 1989, Ser. No. 293,672

Claims priority, application Japan, Jan. 8, 1988, 63-1195

Int. Cl.⁴ H04N *13/02*

U.S. Cl. 358—88 6 Claims



1. An electronic image pickup device comprising:

first and second image pickup means which are independent of each other so as to obtain a stereoscopic image;

a supporting member which can support said first and second image pickup means so that optical axes of said first and second image pickup means are directed in the same direction;

first and second supporting means for supporting said first and second image pickup means on said supporting member to be pivotal in a first plane direction so as to perform adjustment in the first plane direction perpendicular to the optical axes of said first and second image pickup means;

third supporting means for supporting said first or second image pickup means on said supporting member to be pivotal in a second plane direction so as to perform adjust-

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ment in the second plane direction perpendicular to the first plane direction; and

fourth supporting means for supporting said second or first image pickup means on said supporting member to be pivotal in a third plane direction so as to perform adjustment in the third plane direction perpendicular to the first and second plane directions.

4,879,597

PROCESSING OF VIDEO IMAGE SIGNALS

Nicholas Barton, Wokingham; Robert Billing, Crowthorne, and Paul K. Burgess, Wokingham, all of Great Britain, assignors to Questech Limited, Wokingham, England

Filed Jan. 26, 1988, Ser. No. 148,610

Int. Cl.⁴ H04N *5/262, 13/00, 13/02*

U.S. Cl. 358—88 9 Claims

1. A method of processing a video image signal, wherein in order to enable image information from said signal to be modified in accordance with an apparent position of said information in three dimensional space with reference to a two dimensional image screen, there is provided in association with said image signal a Z-axis reference signal the value of which represents the instantaneous distance of the scanning point of the video raster of said screen, in a direction perpendicular to the plane of the image screen, from a plane the position of which is computed in three dimensions with reference to the plane of the image screen and which is intended to be represented as containing the relevant image information of the video signal, wherein the plane which is to be represented as containing said image information is a plane that is inclined with reference to said image screen and said Z-axis signal is derived for each field of the image signal from three computed, fixed values, namely a first value corresponding to the distance from the origin of the video raster to said inclined plane, in a direction perpendicular to the image screen, and second and third values corresponding to the rates of change of said distance in the horizontal and vertical directions of the image screen, by continuously incrementing said first value with said second and third values in synchronism with the movement of the scanning point of said video raster.

4,879,598

INFRARED VIDEO CAMERA SHADING CORRECTION DEVICE

Toshiki Seto, Kanagawa, Japan, assignor to Mitsubishi Denki K.K., Tokyo, Japan

Filed Nov. 28, 1988, Ser. No. 276,893

Claims priority, application Japan, Jan. 22, 1988, 63-12035

Int. Cl.⁴ H04N *5/33, 5/14*

U.S. Cl. 358—113 2 Claims

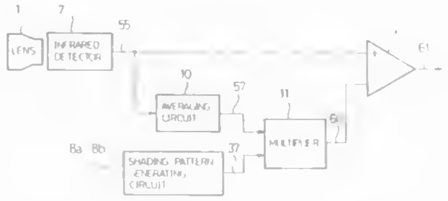
1. A device for correcting a shading in an infrared video camera including an optical section and an infrared image pickup section, which comprises:

an averaging circuit for averaging during a few frames an output of said infrared image pickup section to provide an average output;

a shading pattern generator for generating a shading pattern signal similar to that of said optical section;

a multiplier for multiplying said average output by said shading pattern signal to provide a multiplication output; and

a subtractor for subtracting said multiplication output from an infrared video output of said image pickup section.



4,879,599

METHOD OF SUB-SAMPLING INTERPOLATION

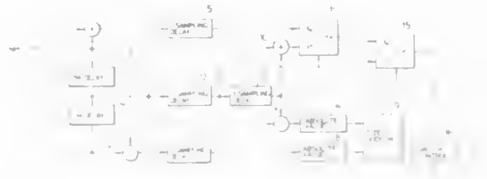
Tsutomu Honda, Saitama, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Mar. 31, 1988, Ser. No. 176,002

Claims priority, application Japan, Mar. 31, 1987, 62-77994

Int. Cl.⁴ H04N *7/13*

U.S. Cl. 358—138 7 Claims



1. A method of sub-sampling interpolation in a sub-sampling transmission system comprising the steps of:

successively transmitting sampled values obtained by sub-sampling a picture signal in each of a plurality of successive periods, each having a predetermined length, said plurality of successive periods being N times the period of one picture field (N being a natural number);

receiving said transmitted sampled values; and

interpolating non-transmitted sampled values in each of said periods of predetermined length from said sampled values transmitted within at least two periodsampled values in each of said periods of predetermined length from said sampled values transmitted within at least two periods of predetermined length, said two periods including the period of said non-transmitted sampled values, so as to reproduce said picture signal; wherein said interpolation step comprises the steps of:

calculating two one-directional interpolation sampled values for interpolating said non-transmitted sampled values with sampled values which are part of said sampled values transmitted in said two periods of predetermined length and are obtained at two groups of sampling points arranged respectively in the horizontal scanning direction and in the vertical scanning direction with respect to sampling points of said non-transmitted sampled values;

detecting two one-directional high frequency components at said sampling points of said non-transmitted sampled values using said sampled values at said two groups of sampling points, respectively, arranged in the horizontal scanning direction and in the vertical scanning direction;

comparing respective absolute values of said two one-directional high frequency components with each other;

mixing said two interpolation sampled values with each other, with the ratio of the one of said two interpolation sampled values in the direction along which said absolute

value is smaller than the other absolute value along the other direction to the other one of said two interpotation sampled values being larger than 1; and

interpolating said non-transmitted sampled values from the two mixed interpolation sampled values.

4,879,600

IMAGE SENSING APPARATUS WITH CONTROL FOR VARYING THE READOUT METHODOLOGY

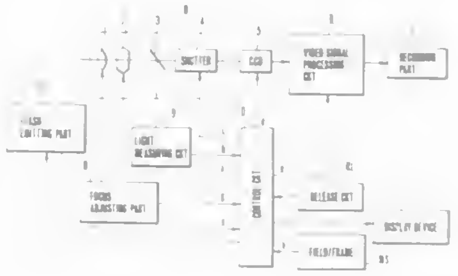
Makoto Ise, Tokyo, and Tadashi Okino, Kanagawa, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

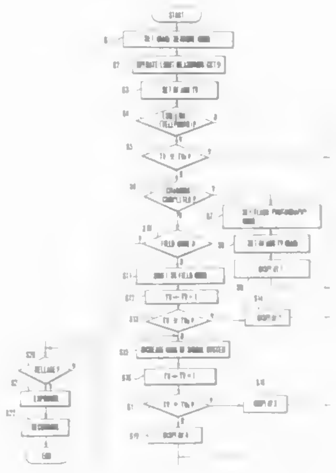
Filed Mar. 21, 1988, Ser. No. 170,767

Claims priority, application Japan, Mar. 27, 1987, 62-071596; Mar. 27, 1987, 62-071598; May 18, 1987, 62-118863

Int. Cl.⁴ H04N *5/238*

U.S. Cl. 358—213.19 25 Claims





1. An image sensing apparatus comprising:

(a) an optical system for forming an image of an object to be photographed;

(b) image sensing means for photo-electrically converting said formed image into an electrical image signal to be accumulated; and

(c) control means for changing a method for reading out said electrical image signal from said image sensing means in accordance with information on a focal length of said optical system.

4,879,601

SYSTEM AND METHOD OF PROVIDING IMAGES FROM SOLID STATE SENSOR

Arnold L. Buck, Watertown, and Allan C. Green, Framingham, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Nov. 14, 1988, Ser. No. 271,006

Int. Cl.⁴ H04N *3/14*

U.S. Cl. 358—213.22 6 Claims

1. In an electronic imaging camera of the type which can be selectively operated in either a moving or still picture mode of operation and including a solid state image sensor comprising: a two-dimensional light sensing array including a plurality of photoresponsive pixel elements arranged in columns and rows, each photoresponsive pixel element responding to incident image defining light to provide a corresponding electronic information signal, a two-dimensional memory including a plurality of electronic information signal storage elements arranged in columns and rows, means for transferring the electronic information signal from the photoresponsive pixel elements to the storage elements in a manner whereby the electronic information signals from the rows of photoresponsive pixel elements are transferred to the columns of storage elements, and register means for transferring the electronic information signals from the memory in a select order whereby at least two electronic information signals from different columns of photoresponsive elements in the light sensing array can be simultaneously transferred during the moving picture mode of operation, the improvement including timing control means for transferring the electronic information signals during said still picture mode of operation from said memory array by way of a single register in a manner whereby the electronic information signals from the pixels of each succeeding row of pixels of the light sensing array are transferred in ordered groupings of pixels in which the pixels of each group are interspersed with the pixels of the remaining groups.

4,879,602

ELECTRODE PATTERNS FOR SOLID STATE LIGHT MODULATOR

William E. Glenn, Ft. Lauderdale, Fla., assignor to New York Institute of Technology, Old Westbury, N.Y.

Continuation-in-part of Ser. No. 94,382, Sep. 4, 1987. This application Aug. 18, 1988, Ser. No. 232,923

Int. Cl.⁴ H04N *5/74*

U.S. Cl. 358—233 20 Claims

1. In a video display apparatus for generating images represented by input video signals, said apparatus including: an array of semiconductor devices arranged in a pattern of rows and columns and having respective electrodes to which charge can be applied in accordance with the input video signals; a layer of deformable material disposed over said electrodes; a conductive/reflective layer disposed over said deformable

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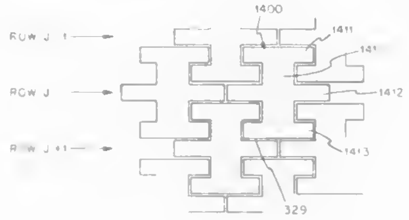
layer; and optical means for converting deformations of the conductive/reflective layer into an image; the improvement comprising:

the electrodes of said array having at least three electrically connected fingers such that at least one of said fingers is interleaved with fingers of an electrode in a row above in said array and at least another of said fingers is interleaved with said fingers of an electrode of a row below in said array; and



means for applying video signals to said devices.

4,879,603

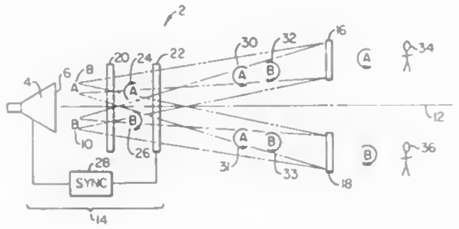
MULTIPLE IMAGE, SINGLE DISPLAY SYSTEM AND METHOD

Arthur L. Berman, Milpitas, Calif., assignor to Kaiser Aerospace & Electronics Corp., Oakland, Calif.

Filed Aug. 15, 1988, Ser. No. 232,350

Int. Cl.⁴ H04N *5/445, 7/08*

U.S. Cl. 358—242 15 Claims



1. A multiple image, single display system comprising:

a display source providing first and second alternating visual images along a light path at a chosen rate and at first and second wavelengths;

an active polarizer assembly, synchronously coupled to the display source and positioned along the light path, which polarizes the first image with a first polarization orientation and the second image with a second polarization orientation;

a first, wavelength sensitive user polarizer positioned downstream of the polarizer assembly, associated with a first user which blocks transmission of light at about the second wavelength and the second polarization orientation: and

a second, wavelength sensitive user polarizer, positioned downstream of the polarizer assembly, associated with a second user which blocks transmission of light at about the first wavelength and the first polarization orientation;

whereby the first viewer sees the first image but not the second image and the second viewers sees the second image but not the first images without substantially affecting the non-display source vision of the users.

4,879,604

IMAGE READING APPARATUS

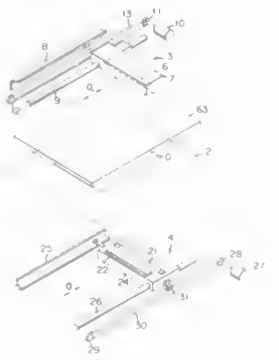
Takashi Koshiyouji, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jul. 19, 1988, Ser. No. 221,400

Claims priority, application Japan, Jul. 22, 1987, 62-182725

Int. Cl.⁴ H04N *1/04*

U.S. Cl. 358—474 14 Claims



1. An image reading apparatus for reading image data formed on an original, comprising:

means for placing an original having an image to be read, said original placing means being formed of a light-transmitting material;

means for pressing the original placed on said original placing means thereagainst, said original pressing means having a predetermined light reflectivity and a predetermined light transmissivity;

first light source for irradiating light to the original through said original pressing means;

second light source for irradiating light to the original through said original placing means; and

selection means for selecting one of said first and second light sources from which light is to be irradiated.

4,879,605

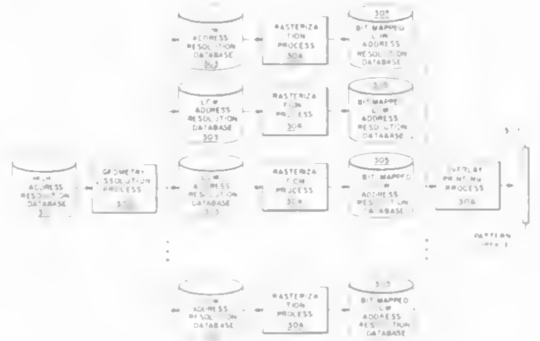
RASTERIZATION SYSTEM UTILIZING AN OVERLAY OF BIT-MAPPED LOW ADDRESS RESOLUTION DATABASES

Paul A. Warkentin, Aloha; Michael L. Rieger; Chris A. Michalski, both of Portland, and Matthew J. Jolley, Hillsboro, all of Oreg., assignors to ATEQ Corporation, Beaverton, Oreg.

Filed Feb. 29, 1988, Ser. No. 161,986

Int. Cl.⁴ H04N *1/21, 1/22;* **G01D** *9/42;* **G06F** *15/40*

U.S. Cl. 358—296 23 Claims


HIGH ADDRESS RESOLUTION DATABASE
GEOMETRY RESOLUTION PROCESS
LOW ADDRESS RESOLUTION DATABASE
RASTERIZATION PROCESS 304
BIT MAPPED LOW ADDRESS RESOLUTION DATABASE
OVERLAY PRINTING PROCESS 306
PATTERN
302
303
305

1. A method for producing a high address resolution printed pattern from a high address resolution database, comprising the steps of:

producing a plurality of low address resolution databases based on said high address resolution database, said plurality of low address resolution database comprising a plurality of overlay patterns corresponding to said high address resolution printed pattern;

producing a plurality of low address resolution patterns from said low address resolution databases; and

printing each of said low address resolution patterns overlayed on each other, said printing step comprising the steps of printing a first set of low address resolution patterns utilizing a first plurality of pixels; and

printing a second set of said low address resolution patterns utilizing a second plurality of pixels, said second plurality of pixels offset and centered from said first plurality of pixels.

4,879,606

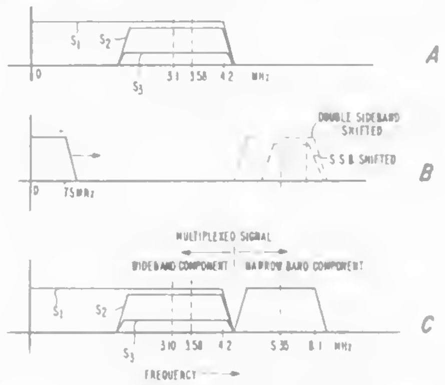
EDTV RECORDING APPARATUS

James M. Walter, Columbus; Krishnamurthy Jonnalagadda, Plainsboro, and Robert E. Flory, Princeton, all of N.J., assignors to General Electric Company, Princeton, N.J.

Filed Jun. 6, 1988, Ser. No. 205,146

Int. Cl.⁴ H04N *9/79*

U.S. Cl. 358—330 11 Claims



1. Apparatus for recording an extended definition video signal comprising:

a source of video signal;

an extended definition television signal encoder coupled to said source and responsive to said video signal for generating a wideband video signal representing luminance and chrominance information; and generating a narrow band video signal representing differences between horizontal video signal lines which are separated in one of a spatial and temporal dimension;

modulator means for frequency shifting said narrow band signal to produce a modulated signal occupying a frequency band above the frequency band occupied by said wideband signal;

combining means, coupled to said modulator means and said encoder for combining said wideband signal and the frequency shifted narrow band signal to produce a combined signal; and

means including composite video signal recording means coupled to said combining means for recording said combined signal.

4,879,607

MAGNETIC CARD READER DEVICE

Darrell G. Redemacher, Freeville, N.Y., assignor to XCP, Inc., Dryden, N.Y.

Filed Jul. 8, 1988, Ser. No. 216,030

Int. Cl.⁴ G11B *25/04*

U.S. Cl. 360—2 14 Claims

1. A magnetic card reader device for reading magnetically recorded data from a magnetic stripe on a card and recording data on said stripe; comprising

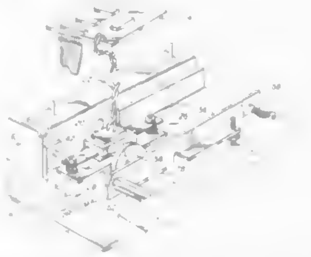
a frame;

a drive drum mounted on said frame and rotatable in a forward direction to draw said card in a distal direction and rotatable in a reverse direction to expel said card in a proximal direction, said drive drum having first and second resilient tires carried thereon at positions axially spaced on said drum;

an adjustable vertically magnetic recording/pickup head positioned opposite a card travel plane from said drive drum at the position of said first tire;

floating head support means mounting said head to said frame for permitting movement of said head towards and away from said drive drum to accommodate variations in thickness of said card, and including means permitting deflection of said head when said card is drawn in, but not when said card is expelled;

an idler pulley positioned opposite the card travel plane from said drive drum and positioned to urge said card against said second tire;



an idler arm pivotally mounted on said frame and resiliently urging said idler towards said second tire but yielding to permit said idler pulley to deflect away from the drive drum to accommodate variations in the thickness of said card; including stop means holding said idler pulley out of contact with said second tire when no card is between the idler pulley and the drive drum;

drive means for rotating said drive drum in the forward and reverse directions; and

circuit means for receiving the recorded data from said head when the card is drawn in and feeding data to the head to be recorded when the card is expelled.

4,879,608

APPARATUS FOR GENERATING INDEX SIGNALS, FOR USE IN MAGNETIC RECORDING/REPRODUCING APPARATUSES

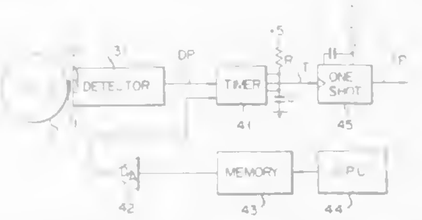
Masaki Sano, Fuji, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Division of Ser. No. 878,245, Jun. 25, 1986, Pat. No. 4,769,597. This application Jun. 23, 1988, Ser. No. 210,374

Claims priority, application Japan, Jun. 28, 1985, 60-132129; Sep. 30, 1985, 60-216426

Int. Cl.⁴ G11B *5/09*

U.S. Cl. 360—51 4 Claims



1. An index siganl control circuit for magnetic recording medium, comprising:

sensor means for detecting a rotation of a magnetic recording medium;

pulse signal output means for outputting at least one pulse signal each time said magnetic recording medium rotates once on the basis of an output signal of said sensor means;

memory means for storing preset adjustment data, said adjustment data corresponding to a time interval after said

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pulse signal output means output the pulse signal until an index pulse signal is output; and

index pulse signal output means for outputting said index pulse signal on the basis of the adjustment data stored in said memory after an expiration of a period of time corresponding to the adjustment data from the generation of the pulse signal which is output from said pulse signal output means.

4,879,609

ROTARY HEAD TYPE RECORDING APPARATUS HAVING AN ERASING FUNCTION BASED ON RECORDING MODE

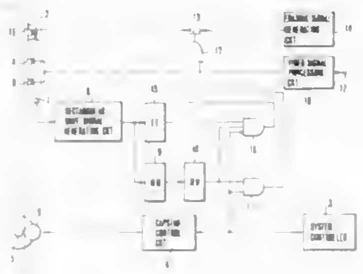
Susumu Kozuki, Tokyo; Koji Takahashi, Kanagawa; Keiji Satoh, Tokyo; Kenichi Nagasawa, Kanagawa; Hiroo Edakubo, Tokyo, and Mitsubiro Otokawa, Kanagawa, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 870,617, Jun. 4, 1986, abandoned. This application Nov. 23, 1988, Ser. No. 277,479

Claims priority, applicatioo Japan, Jun. 13, 1985, 60-128560

Int. Cl.⁴ G11B *5/02, 15/14*

U.S. Cl. 360—66 8 Claims



1. A rotary head type recording apparatus which can record information signals on a tape-shaped magnetic recording medium based on a plurality of kinds of recording modes in which relative speeds of said tape-shaped magnetic recording medium and a recording head are different from each other, comprising:

(A) running drive means for driving a tape-shaped magnetic recording medium;

(B) a rotary type erasing head for performing erasion by tracing said tape-shaped magnetic recording medium in an oblique direction with respect to the running direction of said tape-shaped magnetic recording medium;

(C) a rotary type magnetic head for tracing said tape-shaped magnetic recording medium in the same direction as that traced by said rotary type erasing head;

(D) running speed changeover means for controlling said running drive means depending on the kinds of said recording modes and changing over the running speed of said tape-shaped magnetic recording medium;

(E) signal-for-erasion generating means for intermittently generating a signal for erasion and supplying said signal for erasion to said rotary type erasing head; and

(F) control means for varying an output cycle of said signal for erasion generated by said signal-for-erasion generating means, depending upon said kinds of said recording modes.

4,879,610

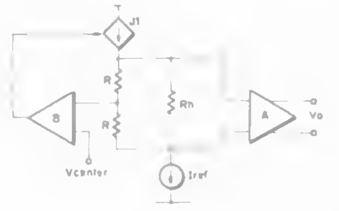
PROTECTIVE CIRCUIT FOR A MAGNETORESISTIVE ELEMENT

Stephen A. Jove, Watsonville; Klaas B. Klaassen; Calvin S. Nomura, both of San Jose, and Jacobus C. L. vanPeppen, San Jose, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 28, 1988, Ser. No. 250,784

Int. Cl.⁴ G11B *5/02, 5/127*

U.S. Cl. 360—67 25 Claims



1. A protection circuit for a magnetoresistive element comprising;

a magnetoresistive element having a first and a second terminal;

a first current source coupled to said first terminal of said MR element for producing a bias current through said magnetoresistive element;

a second current source coupled to said second terminal of said magnetoresistive element to produce a reference current;

circuit means coupled across said first and said second terminals of said magnetoresistive element for sensing the center potential of said MR element substantially midway between said first and said second terminal; and

feedback circuit means responsive to the sensed center potential of said magnetoresistive element to adjust the current output of said first current source to maintain said center potential to a predetermined reference voltage.

4,879,611

RECORD MODE SETTING APPARATUS RESPONSIVE TO TRANSMITTED CODE CONTAINING TIME-START INFORMATION

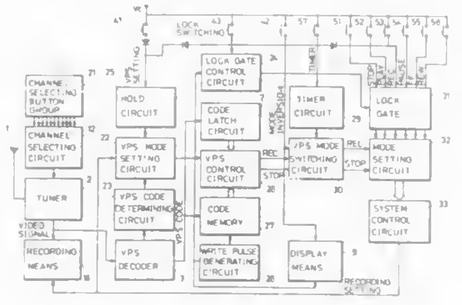
Kumiko Fukui, Shijonawate; Tatsuaki Doumura, Higashiosaka, and Shigeo Okamoto, Ikoma, all of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Jul. 30, 1987, Ser. No. 79,745

Claims priority, application Japan, Aug. 1, 1986, 61-182513; Aug. 20, 1986, 61-194517

Int. Cl.⁴ G11B *15/18, 5/02*

U.S. Cl. 360—69 5 Claims



1. A record mode setting apparatus for use in a video tape recorder, said video tape recorder including a tuner for detecting from a broadcasting signal a video signal which may include a VPS code indicating at least scheduled starting time of a program, recording means for recording the video signal detected by said tuner, and recording switch means for setting said recording means to be ready for operating, said record mode setting apparatus comprising:

VPS code deriving means for deriving the VPS code from a video signal detected by said tuner;

VPS setting switch means for setting a recording based on a VPS;

storing means responsive to operation of said VPS setting switch means for storing the VPS code derived from said VPS code deriving means; and

VPS control means for comparing the VPS code derived from said VPS code deriving means with an output from said storing means and being responsive to the result of the comparison for generating a control signal for controlling operation of said recording means which is ready for operating by operation of said record switch.

4,879,612

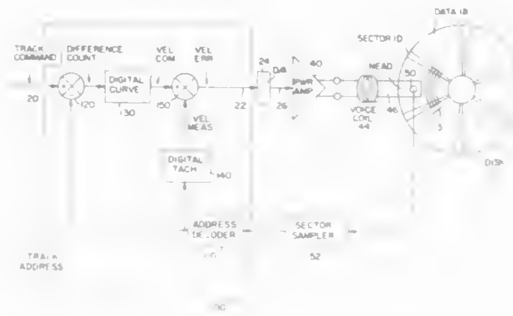
HEAD POSITIONING SERVO-MECHANISM WITH ERROR REDUCTION CAPABILITIES

Robin J. Freeze, Milpitas, and John L. Grimsley, Los Altos, both of Calif., assignors to Data Technology Corporation, Santa Clara, Calif.

Filed Nov. 26, 1986, Ser. No. 935,687

Int. Cl.⁴ G11B *21/08, 21/10*

U.S. Cl. 360—78.06 23 Claims



1. A velocity servo system for a disk drive, said servo system being responsive to digital signals and generating a control signal for moving a read head of the disk drive from a current track position to a commanded track position, said servo system comprising:

(a) means for reading current track address information and servo bursts recorded on a disk in said disk drive and for generating threshold signals when said read servo bursts are of a predetermined amplitude;

(b) an appropriately programmed data processing system providing:

(1) decoding means responsive to the current track address read by the reading means and to the threshold signals for generating a current half track address;

(2) first comparator means for comparing the current half track address with the commanded track position to generate half tracks-to-go digital data in response thereto;

(3) means for generating commanded acceleration data in response to the half tracks-to-go data and to successive half track addresses;

(4) means responsive to the current half track address for predicting the half track address the read head will be positioned over when said reading means is next able to read track address data;

(5) means for comparing the current half track address data with predicated half track address data; and

(6) means for substituting the current half track address data with the predicated half track address data when the difference between the predicted half track address data and the decoded half track address data exceeds a predetermined amount; and

(7) means responsive to said half tracks-to-go digital data for adjusting said predetermined amount as a function of the value of said half tracks-to-go digital data; said servo system further including:

(c) digital to analog converter for converting said commanded acceleration data to said control signal.

4,879,613

CASSETTE TAPE RECORDER FOR MULTIPLE CASSETTE TAPES

Satoru Koizumi; Daisuke Teshima, and Yoshio Katayama, all of HigashiHiroshima, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

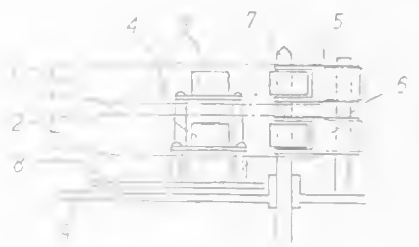
Cootinuation of Ser. No. 852,625, Apr. 16, 1986, abandoned. This application Aug. 1, 1988, Ser. No. 227,480

Claims priority, application Japan, Apr. 17, 1985, 60-81897; May 20, 1985, 60-109953; May 20, 1985, 60-109954; May 20, 1985, 60-109955

The portion of the term of this patent subsequent to Jan. 10, 2006, has been disclaimed.

Int. Cl.⁴ G11B *15/68*

U.S. Cl. 360—92 10 Claims



1. A tape recorder comprising:

a cassette tape compartment in which a plurality of cassette tapes are detachably loaded,

a capstan on which said plurality of cassette tapes housed in said cassette tape compartment are coaxially mounted,

a separate roller means for driving each of said plurality of cassette tapes, each of said roller means being mounted so that it can be pressed against said capstan,

a single control means for selecting any of said plurality of tapes to be driven by said roller means, said single control means being a selector button,

means commonly used for all cassette tapes for selecting one of a plurality of cassette tape drive modes;

means including said roller means for driving any selected cassette tape in said selected one of said drive modes,

a playback and/or recording head provided for each of the plurality of cassette tapes; and

means for electrically operating said playback and/or recording head provided for each of the cassette tapes, for playback or recording on at least one of said plurality of cassette tapes.

4,879,614

APPARATUS FOR DRIVING A REEL IN A TAPE CARTRIDGE FOR A MAGNETIC INSTRUMENT

Fuyuki Nakagome, Kodaira, Japan, assignor to Nakamichi Corporation, Kodaira, Japan

Filed May 25, 1988, Ser. No. 198,766

Claims priority, application Japan, May 27, 1987, 62-80126[U]

Int. Cl.⁴ G11B *15/67, 15/26, 23/027*

U.S. Cl. 360—93 3 Claims

1. An apparatus for driving a reel in a tape cartridge including reel locking means having a non-rotary forced member disposed at a center of said reel in said tape cartridge for a magnetic instrument, said apparatus comprising;

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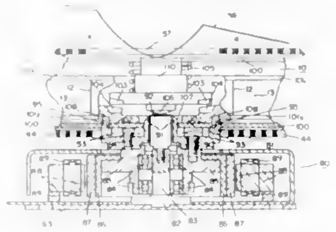
reel drive means to engage said reel to rotatively drive said reel;



and non-rotary unlocking means disposed at a central axis of said reel drive means to force said non-rotary forced member so as to displace said reel locking means whereby said reel is unlocked.

4,879,615
CARTRIDGE TRANSFER MECHANISM FOR A DISK FILE APPARATUS

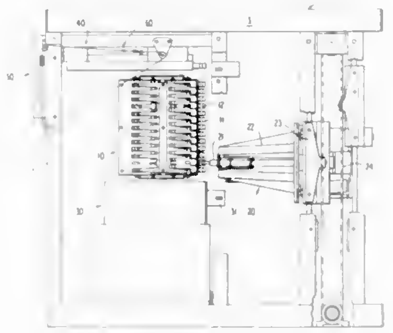
Shunichi Teranishi, Anjo, and Takeshi Hayashi, Kariya, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Aichi, Japan

Filed Dec. 24, 1987, Ser. No. 137,704

Claims priority, application Japan, Dec. 26, 1986, 61-314348

Int. Cl.⁴ G11B *17/12, 17/22*

U.S. Cl. 369—34 3 Claims



1. In a disk file apparatus comprising an accommodating shelf having a multiplicity of accommodating spaces provided therein in a vertical row for receiving a multiplicity of cartridges in said accommodating spaces, respectively, with each cartridge having a disk received therein, coding means for transferring information to or from either side of the disk receivied in each of said cartridges and carrier means arranged to move vertically along the front surface of said accommodating shelf, draw out a selected one of said cartridges and load said cartridge into said coding means with the proper orientation, wherein the improvement comprises a transfer mechanism disposed in said apparatus above said accommodating shelf for access by said carrier means, said apparatus having a feed and discharge port adjacent said transfer mechanism through which cartridges may be inserted into said transfer mechanism from the outside of said apparatus and removed from said transfer mechanism to the outside of said apparatus, said transfer mechanism mechanism comprising a rotatable mechanism having cartridge receiving means adapted to be positioned adjacent said feed and discharge port in a first position of said rotatable mechanism and disposed adjacent said carrier means in a second position of said rotatable mechanism and means for rotating said rotatable mechanism between said firsts and second positions.

4,879,616
MAGNETIC DISC PACK LOADING MECHANISM

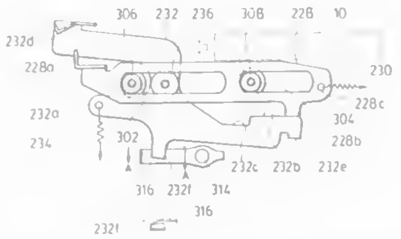
Shigeru Ando, Tokyo, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 4, 1987, Ser. No. 129,115

Claims priority, application Japan, Dec. 4, 1986, 61-289820; Dec. 15, 1986, 61-298412

Int. Cl.⁴ G11B *17/04*

U.S. Cl. 360—99.06 4 Claims



1. A magnetic disc pack loading mechanism for positioning a magnetic disc pack in a recording or reproducing position by moving a pack holder containing said magnetic disc pack therein in the same direction with the direction to insert said magnetic disc pack into said pack holder and thereafter moving said pack holder in the longitudinal direction of a rotary drive shaft perpendicular to said magnetic disc pack insertion direction, said magnetic disc pack loading mechanism comprising:

a pop-up member disposed in said pack holder in a manner to be free to advance or retreat and provided in a tip of said pop-up member with an engagement portion located in an area for insertion of said magnetic disc pack within said pack holder, said pop-up member being adapted to advance against the energization force of a spring acting in the discharge direction f said magnetic disc pack with said engagement portion thereof engaged with the leading end of said magnetic disc pack when said magnetic disc pack is inserted into said pack holder with a given pushing force;

a pre-lock lever disposed rotatably in said pack holder and provided in the tip of said pop-up member with an engagement portion being energized by a spring in a direction for engagement with said magnetic disc pack, said pre-lock lever being adapted to be able to provisionally lock said magnetic disc pack within said pack holder with said engagement portion thereof engaged with said magnetic disc pack when said pre-lock lever is rotated a given amount; and,

a cam mechanism including a cam portion provided in one of said pop-up member and said pre-lock lever and a cam follower portion in the other, said cam mechanism being adapted to prevent said pre-lock lever against rotation before said pop-up member advances a given distance and to allow said pre-lock lever to rotate in said engagement direction after said pop-up member advances said given distance.

4,879,617
ACTUATOR ASSEMBLY FOR HARD DISK DRIVES

Joseph M. Sampietro, Tarzana, and Khosrow Mohajerani, Newbury Park, both of Calif., asslgnors to Rigidyne Corporation, Simi Valley, Calif.

Filed Mar. 25, 1988, Ser. No. 173,618

Int. Cl.⁴ G11B *5/55*

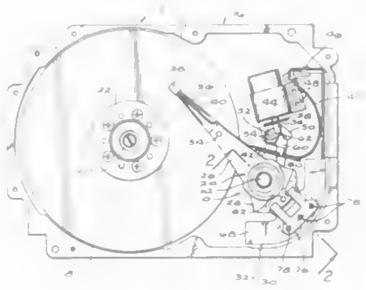
U.S. Cl. 360—106 23 Claims

1. A process for assembling a coil assembly to a pivotable actuator for use in a disk drive system, the steps comprising:

providing an actuator having an arm assembly and a counterbalance, the counterbalance including a recess situated generally opposite the arm assembly with respect to a pivot axis of the actuator, the counterbalance recess including a dovetail receiving portion having at least two precision positioning surfaces;

providing a coil assembly having a bobbin, the bobbin including a base, a core which extends from the base, and a dovetail extending from the base opposite the core, the dovetail being dimensioned to fit within the receiving portion of the counterbalance recess and including at least two precision positioning surfaces;

sliding the base and dovetail of the bobbin into the counterbalance recess;



applying a directional force to the coil assembly to cause the precision positioning surfaces of the bobbin dovetail to engage the corresponding precision positioning surfaces of the counterbalance recess; and

fixing the coil assembly to the actuator with the precision positioning surfaces engaged, so that upon removal of the directional force applied to the coil assembly, the precision positioning surfaces remain engaged.

4,879,618
WIND BREAKING ASSEMBLY FOR A MAGNETIC HEAD

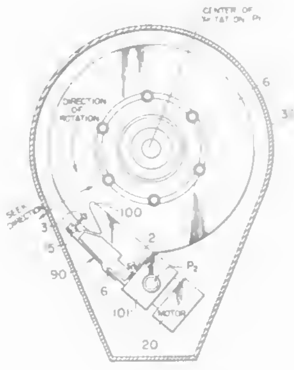
Muneo Iida; Masanobu Honda; Katsumi Kawamura; Hiroshi Daito; Yoshihiko Miyake, all of Odawara; Shouichi Setone, Ebina; Hatsuo Takahashi, Chigasaki, and Michihiro Nakanishi, Odawara, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 943,909, Dec. 19, 1986, abandoned. This application Sep. 23, 1988, Ser. No. 248,377

Claims priority, application Japan, Dec. 23, 1985, 60-287707

Int. Cl.⁴ G11B *5/55*

U.S. Cl. 360—106 12 Claims



1. An actuator for a magnetic disk device comprising: a plurality of magnetic disks

a plurality of riged head arms having a predetermined length between two ends, one end of each being fixed to a carriage;

a plurality of resilient gimbals each having one end fixed to the other end of a corresponding head arm; a plurlityof magnetic heads, each supported on another end of said respective gimbal;

a drive source for driving said carriage so that the magnetic heads are moved in a radial direction of said magnetic disks;

each of said head arms comprising first and second branching portions;

said first and second branching portions being unitary parts of a plate-shaped member having a surface which is parallel to the surfaces of the magnetic disks;

said first branching portion supporting one or said plurality of magnetic heads through one of said gimbals so as to position said magnetic head above a recording surface of a magnetic diskf and

said second branching portion extending toward the axis of rotation of said magnetic disks to a position that is radially inside of the position of said first branching portion above the recording surface of said magnetic disk and disposed on a windward side of the magnetic head supported by said first portion.

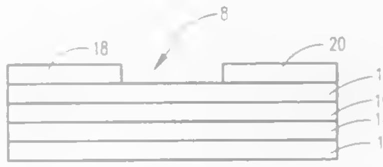
4,879,619
MAGNETORESISTIVE READ TRANSDUCER

Robert E. Fontana, Jr., San Jose; James K. Howard, Morgan Hill; James H. Lee, and Haralambos Lefakis, both of San Jose, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 28, 1988, Ser. No. 173,956

Int. Cl.⁴ G11B *5/39*

U.S. Cl. 360—113 4 Claims



1. A magnetoresistive read transducer comprising:

a thin film of magnetoresistive conductive layer formed of ferromagnetic material;

a thin film spacer layer in contact with said magnetoresistive layer, said thin film spacer layer comprising a material selected from the group consisting of nichrome and nichrome with chromium oxide; and

a thin film of soft magnetic material in contact with said thin film spacer layer so that said thin film of soft magnetic material is positioned parallel to but spaced from said magnetoresistive layer whereby a transverse bias can be produced in at least a part of said magnetoresistive layer to maintain said transverse biased part of said magnetoresistive layer in a linear response mode.

4,879,620
MAGNETIC HEAD FOR FLEXIBLE DISK DRIVE

Akihiko Yamashita, Koide, Japan, assignor to Alps Electric Co., Ltd., Japan

Filed Jan. 28, 1988, Ser. No. 149,634

Claims priority, application Japan, May 26, 1987, 62-79598[U]

Int. Cl.⁴ G11B *5/20, 5/27*

U.S. Cl. 360—123 5 Claims

1. A magnetic head for a flexible disk which includes a slider, a magnetic core securely mounted on said slider, a coil bobbin mounted on said magnetic core and having a coil wound thereon, and a support plate for supporting said slider thereon, and wherein lead wires of said coil are lead out to a location on or above an upper face of said support plate, comprising a flange of said coil bobbin which is located at an end

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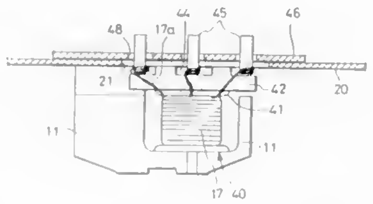
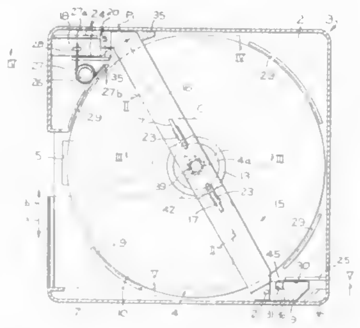
of said coil bobbin adjacent said support plate, and a number of terminals corresponding to said lead wires of said coil provided uprightly on said flange and having ends of the corresponding lead wires secured thereto, said terminals extending upwardly through and above said upper face of said support plate; wherein said flange includes projections defining one recess for each terminal, a base portion of each terminal being located in said one recess.



4,879,621
DISK RESTRAINT

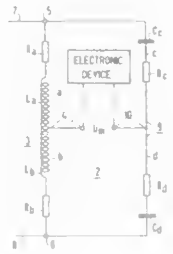
Davis W. Chamberlin, St. Paul; Vurnen J. Leonard, Minneapolis, both of Minn., and Osamu Koizumi, Sendai, Japan, assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn. and Sony Corporation, Tokyo, Japan
Filed Jul. 11, 1988, Ser. No. 217,439
Int. Cl.⁴ G11B *23/03*
U.S. Cl. 360—133 13 Claims



1. A cartridge for a disc having at least one magnetic surface comprising:
a top wall generally parallel to the plane of said disc;
a bottom wall generally parallel to said top wall and said plane of said disc;
side walls connecting said top and said bottom walls to form an enclosure surrounding said disc;
a camming surface extending from the surface of said top wall facing said disc toward said disc; and
a resilient restraint spanning said disc and supported beyond the extent of said disc and slideable within said cartridge between a first position wherein a portion of said restraint engages said camming surface to be forced toward said disc and capture said disc between said restraint and said bottom wall and a second position wherein said restraint is free of contact with said camming surface and resiliently retracts out of contact with said disc.

4,879,622
CIRCUIT FOR MONITORING A SUPERCONDUCTING MAGNET WINDING

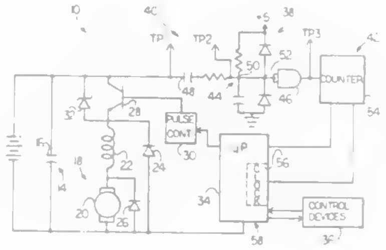
Lutz Intichar, Erlangen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany
Continuation of Ser. No. 716,018, Mar. 26, 1985, abandoned. This application May 20, 1987, Ser. No. 52,656
Claims priority, application Fed. Rep. of Germany, Apr. 6, 1984, 3413127
Int. Cl.⁴ H02H *7/00*
U.S. Cl. 361—19 3 Claims



1. An improvement to a quench detection circuit which is connected to a superconducting magnet and which includes an electronic device,
the magnet being of a type which includes two series-connected sub-windings connected together at an intermediate tap point,
the circuit being connected across the magnet and to the sub-windings and including two series-connected sub-branches connected together at a junction point, each of the sub-branches including a resistor and the sub-branches being connected in a manner that the tap and junction points form diagonal points of a bridge circuit,
and said electronic device being connected to said diagonal points,
the improvement comprising two capacitors, each connected in a corresponding one of the sub-branches.

4,879,623
VOLTAGE TRANSIENTS

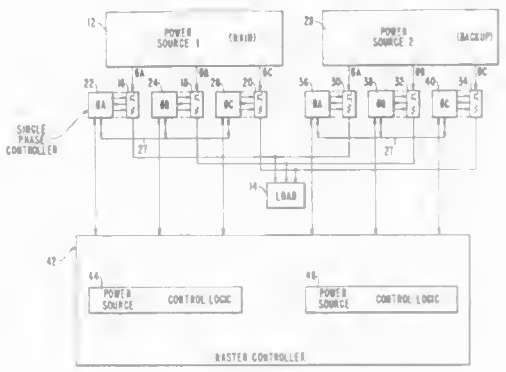
Kenneth A. Baumgartner, Peoria, Ill., and William Pickering, University Heights, Ohio, assignors to Caterpillar Industrial Inc., Mentor, Ohio
Filed Dec. 2, 1985, Ser. No. 803,285
Int. Cl.⁴ H02H *7/09*
U.S. Cl. 361—33 14 Claims



1. Apparatus which protects an electrical circuit from damage caused by variations in the nominal voltage level of electrical power supplied to the electrical circuit, the electrical circuit including a motor circuit, comprising:
power supply means for supplying direct current to said motor circuit, said direct current having a nominal direct current voltage value and as associated transient voltage component;
smoothing means for limiting the amplitude of said transient voltage component to a predetermined maximum value relative to said nominal direct current voltage value;
a motor connected across said power supply means;
pulse control means for delivering time modulated current pulses from said power supply means to said motor;
sensing means for controllably producing a fault signal in response to the amplitude and frequency of occurrence of said transient voltage component exceeding predetermined maximum values; and
override means for receiving said fault signal and responsively modifying said time modulated current pulses delivered from said pulse control means.

4,879,624
POWER CONTROLLER

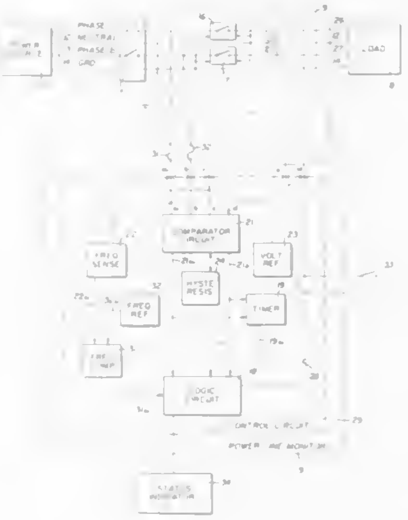
Gregory D. Jones; William R. Owens, both of Rockford; Clifford G. Thiel, Stillman Valley, and Clive M. Danby, Rockford, all of Ill., assignors to Sundstrand Corporation, Rockford, Ill.
Filed Dec. 24, 1987, Ser. No. 137,582
Int. Cl.⁴ H02J *3/00*
U.S. Cl. 361—65 17 Claims



9. A power supply of an electrical load comprising:
(a) a first power source having at least two phases, each power source phase having
(i) an associated first power source phase switching means disposed between the first power source phase and the electrical load, each first power source phase switching means having a first conductivity permitting current flow between the associated first power source phase and the electrical load in response to either the absence of a fault condition in the first power source phase or in response to a second power source trip signal and a second conductivity blocking current flow between the first power source phase and the electrical load in response to a first power source phase trip signal, and
(ii) a first power source phase controller controlling the conductivity of the associated first power source switch, detecting the presence of a fault condition, and generating the first power source phase trip signal in response to detection of a fault condition in the first power source phase.
(b) a second power source having an identical number of phases as the first power source, each second power source phase having
(i) an associated second power source switching means disposed between the second power source phase and the electrical load, each second power source switching means having a first conductivity permitting current to flow between the second power source phase and the electrical load and a second conductivity blocking current flow between the second power source phase and the electrical load, each second power source phase not being connected to the electrical load during operation of the first power source when the first power source trip signal has not been generated by at least one of the phases of the first power source, and
(ii) a second power source phase controller controlling the conductivity of the associated second power source phase and detecting a fault condition in an associated phase of the second power source and generating a fault signal in response to the detection of the fault condition;
(c) a master controller, responsive to each of the phase controllers of the first and second power sources and the generation of a first power source trip signal by at least one of the phases of the first power source and the absence of the second power source trip signal to cause the phases of the first power source to be disconnected from the electrical load by changing the conductivity of the associated first power source switching means to the second conductivity and to cause the phases of the second power source to be connected to the electrical load upon the detection of zero voltage in each of the second power source phases by changing the conductivity of the associated second power source switching means to the first conductivity and generating the second power trip signal in response to a fault signal generated by at least one of the phase controllers of the second power source.

4,879,625
VOLTAGE MONITOR

Richard A. Potenzone, 20675 SW. 162 Ave., Miami, Fla. 33187
Filed Dec. 11, 1987, Ser. No. 131,852
Int. Cl.⁴ H01H *5/20*
U.S. Cl. 361—90 18 Claims



1. Voltage monitor for monitoring the output voltage of a power source being connectable to a load through at least two phase leads and a neutral lead, comprising: a reference voltage source, comparator means for comparing the output voltage with said reference voltage for producing an affirmative output if said output voltage is within a given range of said reference voltage, and switch means including a switch in each of said phase leads being responsive to said affirmative output for connecting said load to said power source.

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4,879,626
OVERLOAD RELAY WITH ADJUSTABLE THRESHOLD INDICATOR

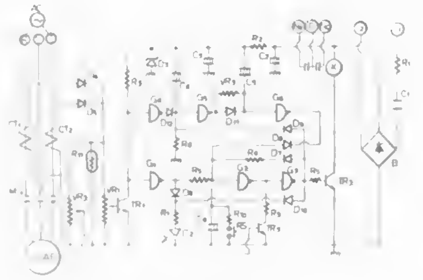
In S. Kim, Samig Apt. 10-dong 615, 134-21, Cheongdam-dong, Kangnam-ku, Seoul, Rep. of Korea

Continuation of Ser. No. 157,139, Feb. 10, 1988, abandoned, which is a continuation of Ser. No. 770,094, Aug. 28, 1985, abandoned. This application Oct. 7, 1988, Ser. No. 256,138

Claims priority, application Rep. of Korea, Sep. 1, 1984, 84-5375; May 2, 1985, 85-2996; May 2, 1985, 85-2997

Int. Cl.^{4} H02H *3/093*

U.S. Cl. 361—93 2 Claims



1. An overload relay circuit for a single phase or a three phase alternating current, said overload relay circuit receiving a constant DC voltage from a power supply circuit having two DC terminals and comprising:

a relay connected between said DC terminals of said power supply circuit;

a current transformer having a secondary coil with an output terminal, said current transformer detecting an overload current signal of said single phase or three phase alternating current drawn by a load;

rectification means for rectifying said overload current signal detected by said current transformer;

means for amplifying said rectified overload current signal;

temperature compensation means adjacent said secondary coil of said current transformer for detecting temperature changes and compensating for errors caused by detected temperature changes;

overload display means responsive to said rectified overload current signal and being energized to display an overload current condition of said load, said overload current condition occurring when the current drawn by said load exceeds an overload current set point;

means for adjusting said overload current set point while said overload display means and load are energized to a new overload current set point exceeding the current drawn by said load so as to extinguish said overload display means;

overload relay operating means responsive to said rectified overload current signal for energizing said relay upon detection of said overload current signal, the energization of said relay eliminating the overload current condition of said load; and

relay operation delay means responsive to said rectified overload current signal for delaying the operation of said overload relay operating means a predetermined amount of time after energizing of said overload display means.

4,879,627
DIFFERENTIAL CAPACITIVE PRESSURE SENSOR WITH OVER-PRESSURE PROTECTION

Daniel H. Grantham, Glastonbury, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Dec. 30, 1988, Ser. No. 292,281

Int. Cl.^{4} G01L *9/12*

U.S. Cl. 361—283 14 Claims

1. A differential capacitive pressure sensor of the silicon-on-silicon type having over-pressure protection, comprising:

a first conductive silicon base having a pressure port through it to an exterior area whose pressure variation is to be sensed;

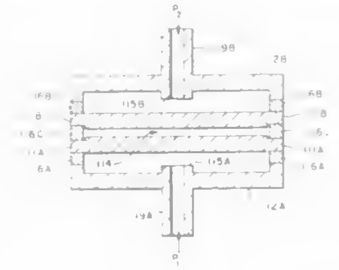
a first conductive silicon flexible, elastic diaphragm having an exterior side exposed to said pressure port of said first base, said diaphragm being capable of flexing movement due to changes in pressure on its exterior side; and

a first non-conductive spacing wall between said first silicon base and said first silicon diaphragm, said first spacing wall providing a peripheral wall extending between and joining said first silicon base and said first silicon diaphragm;

a second conductive silicon base having a pressure port through it to an exterior area whose pressure variation is to be sensed;

a second conductive silicon flexible, elastic diaphragm having an exterior side exposed to said pressure port of said second base, said diaphragm being capable of flexing movement due to changes in pressure on its exterior side; and

a second non-conductive spacing wall between said second silicon base and said second silicon diaphragm, said second spacing wall providing a peripheral wall extending between and joining said second silicon base and said second silicon diaphragm; and



a centrally located, third, non-conductive spacing wall located between said first and said second diaphragms joining them together in spaced, parallel, juxtaposed relationship; said third spacing wall and said first and second diaphragms forming an evacuated, reference cavity chamber between them; each said diaphragm backing the other said diaphragm up; the flexing movement of each of said silicon diaphragm due to the changes in pressure on its exterior side through its respective pressure port causing the capacitance of the sensor to vary; the spacing between said two diaphragms being small, the backing presence of one diaphragm to the other diaphragm limiting the amount of deflection of said one diaphragm, lending extra stiffness and resistance to further flexing to said one diaphragm when they come into contact, said other diaphragm thereby providing said one diaphragm with over-pressure protection.

4,879,628
HIGH VOLTAGE MEASUREMENT CAPACITOR

Bernhard Goetz, 55 W. 14th St., New York, N.Y. 10011

Filed Oct. 18, 1988, Ser. No. 259,247

Int. Cl.^{4} H01G *4/04*

U.S. Cl. 361—327 9 Claims

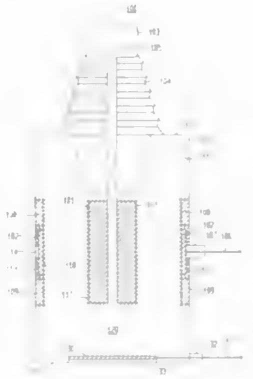
1. A capacitor for use with a high voltage line, the capacitor including:

a hollow cylindrical housing with the axial direction of the housing having a horizontal orientation, the housing defining a cavity and including a vertical protrusion in the circular wall of the cylinder defining a reservoir;

a cylindrical high voltage (HV) electrode aligned axially with the housing and disposed proximate to the center line of the cavity;

first and second HV bushings attached to the opposing transverse ends of the housing;

first and second HV leads introduced into the cavity via the first and second HV bushings and wherein the internal end of each of the HV leads couples to the HV electrodes at its opposing transverse ends and the external end of each of the HV leads forms first and second HV terminals accessible for series insertion into the high voltage line;



a cylindrical low voltage (LV) electrode arranged in coaxial relation between the housing and the HV electrodes;

a LV bushing attached to the circular wall of the housing;

a LV lead introduced into the cavity via the LV bushing and wherein the internal end of the LV lead couples to the LV electrode and the external end of the LV lead forms a LV terminal; and

a non-gaseous dielectric material filling the cavity and a portion of the reservoir.

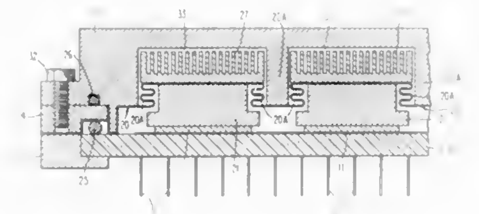
4,879,629
LIQUID COOLED MULTI-CHIP INTEGRATED CIRCUIT MODULE INCORPORATING A SEAMLESS COMPLIANT MEMBER FOR LEAKPROOF OPERATION

Jerry I. Tustaniwskyj, Mission Viejo, and Kyle G. Halkola, San Diego, both of Calif., assignors to Unisys Corporation, Blue Bell, Pa.

Filed Oct. 31, 1988, Ser. No. 264,749

Int. Cl.^{4} H01L *23/36, 23/40*

U.S. Cl. 361—385 8 Claims



1. A liquid cooled integrated circuit module that includes a substrate having a major surface, a plurality of integrated circuit chips which are spaced apart on said substrate surface in a non-coplanar fashion, a single seamless compliant member that covers all of said chips and is attached to said substrate, thermally conductive studs which lie between said seamless member and said chips and which conduct heat therebetween, and a rigid cover over said seamless compliant member which forms channels for a liquid coolant and which attaches to said substrate such that said compliant member and said studs and said chips are squeezed together; wherein to compensate for said non-coplanarity and accommodate a small spacing between chips, said seamless compliant member has pleated regions with each such region having pleats which run zigzagged alongside of said studs perpendicular to said substrate surface.

4,879,630
HOUSING FOR AN ELECTRONIC CIRCUIT

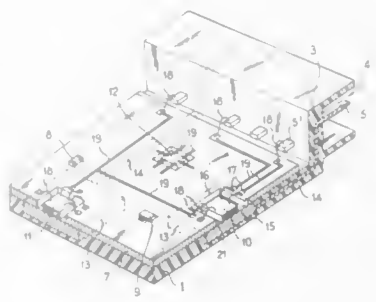
Michel Boucard, Tournefeuille; Christian Thirion, Auterive, and Christian Maurel, Toulouse, all of France, assignors to Bendix Electronics S.A., Toulouse, France

Filed Sep. 1, 1988, Ser. No. 239,718

Claims priority, application France, Sep. 3, 1987, 87 12241

Int. Cl.^{4} H05K *7/20*

U.S. Cl. 361—386 9 Claims



1. A housing for an electronic circuit comprising:

at least one electronic power component;

at least one radiator means embedded in the housing and having one surface in thermal and electrical contact with an electrode of said component, said one surface being flush with an internal surface of the housing; and

an electrical connecting pin integral with said radiator means, said pin embedded in the housing, said pin extending from the housing for forming an external connection.

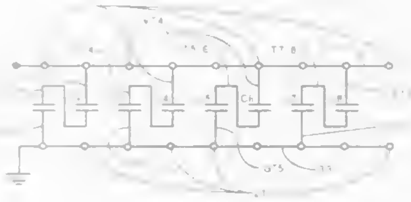
4,879,631
SHORT-RESISTANT DECOUPLING CAPACITOR SYSTEM FOR SEMICONDUCTOR CIRCUITS

Gary M. Johnson, and Leland R. Nevill, both of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

Filed Jan. 18, 1989, Ser. No. 298,736

Int. Cl.^{4} H05K *7/20*

U.S. Cl. 361—386 15 Claims



9. In combination with a circuit-board-mounted array of row-and-column-addressable digital logic components, a decoupling capacitor system between a Vcc bus and a Vss bus comprising two or more series-connected capacitors.

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4,879,632
COOLING SYSTEM FOR AN ELECTRONIC CIRCUIT DEVICE

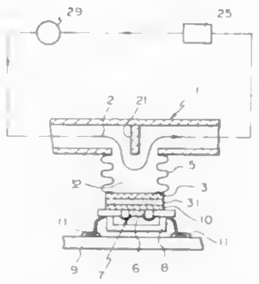
Haruhiko Yamamoto, Yokohama; Masahiro Suzuki, Inagi; Yoshiaki Udagawa, Tokyo; Mitsuhiko Nakata, Kawasaki; Koji Katsuyama, Yokohama; Izumi Ono, Hachioji, and Shunichi Kikuchi, Yokohama, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Oct. 3, 1986, Ser. No. 914,942

Claims priority, application Japan, Oct. 4, 1985, 60-221209; Oct. 4, 1985, 60-152137; Nov. 19, 1985, 60-259384; Dec. 3, 1985, 60-273068; Dec. 3, 1985, 60-273069; Dec. 3, 1985, 60-273070; Dec. 3, 1985, 60-273071; Dec. 3, 1985, 60-273072; Dec. 3, 1985, 60-273073; Jan. 28, 1986, 61-017031

Int. Cl.⁴ H05K *7/20*

U.S. Cl. 361—386 36 Claims



1. In an electronic circuit device comprising a printed circuit board supporting thereon at least one electronic circuit component connected thereto by first solder means, a cooling system for the component including a cooling module which comprises a conduit for coolant flow, a first heat transfer plate directly exposed to the flow of the coolant for transferring the heat dissipated from the circuit component to the coolant, second solder means between the heat transfer plate and the circuit component for establishing a compliant contact between the first heat transfer plate and the circuit component through the second solder means, and elastic means connected to the first heat transfer plate for resiliently biasing the first heat transfer plate toward the circuit component, said second solder means having a melting point which is lower than that of the first solder means so as to ensure that the second solder means melts at a temperature where the first solder means remains solid.

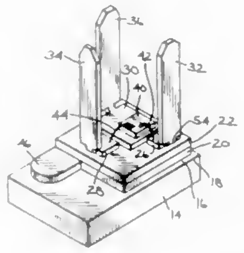
4,879,633
DIRECT BOND CIRCUIT ASSEMBLY WITH GROUND PLANE

Lance R. Kaufman, 131 N. White Oak Way, Mequon, Wis. 53092

Filed Apr. 12, 1988, Ser. No. 180,474

Int. Cl.⁴ H05K *7/20*

U.S. Cl. 361—386 6 Claims



1. An electric circuit assembly comprising:

an electrically insulating thermally conductive base substrate;

an electrically conductive metallic ground plane on said base substrate;

an electrically insulating thermally conductive intermediate substrate on said ground plane;

said base substrate extending laterally beyond said ground plane and said intermediate substrate;

an electrically conductive metallic lead frame having a pad portion on said intermediate substrate and having an extension portion extending laterally beyond said ground plane and said intermediate substrate;

said ground plane being directly bonded to said base substrate, said intermediate substrate being directly bonded to said ground plane, said lead frame pad portion being directly bonded to said intermediate substrate, all by heating said base substrate, said ground plane, said intermediate substrate and said lead frame to a temperature below the melting point of said ground plane and said lead frame to form a eutectic with said ground plane and said lead frame which wets said base substrate, said ground plane, said intermediate substrate and said lead frame, and cooling said base substrate, said ground plane, said intermediate substrate and said lead frame, with said ground plane bonded to said base substrate therebelow and said intermediate substrate thereabove, and said lead frame pad portion bonded to said intermediate substrate therebelow.

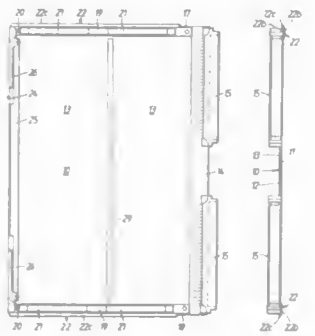
4,879,634
RACK MOUNTED CIRCUIT BOARD

Alan J. Storrow, and Nigel J. Knighton, both of Northampton, England, assignors to Plessey Overseas Limited, Ilford, England

Filed Nov. 13, 1987, Ser. No. 121,023

Int. Cl.⁴ H05K *7/20*

U.S. Cl. 361—388 7 Claims



1. A rack-mountable circuit board of substantially rectangular shape comprising a substrate having a first surface whereon a printed circuit is provided, a second surface having a thermally conductive heat management layer bonded thereto, said second surface supporting components in thermal contact with said heat management layer, said board having two opposite edges, a guide mounted at each of said opposite edges, said guides providing first portions in thermal contact with said heat management layer, second portions presenting conduction surfaces at said second surface of the substrate, and third portions, in the plane of said substrate, presenting clear margins enabling the board to be inserted, in use, in a convection cooled box, and connectors mounted on and projecting from said second surface adjacent but inwardly of said third portions of said edge guides, the board further including board clamping means mounted longitudinally of said first portions of said edge guides, in opposition to said second portions, and serving upon actuation to urge said second portions into thermal contact with cold surfaces of a conduction cooled box when the board is mounted therein.

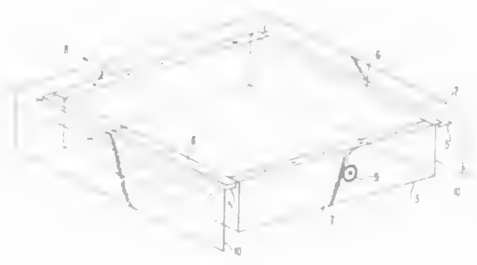
4,879,635
MOUNTING CHASSIS FOR A GRAPHICS FUNCTION CONTROL UNIT

Robert T. Collins, Bedford, Mass.; John D. Quinn, Hudson, N.H., and Stephen A. Fidrych, Boxboro, Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Aug. 7, 1987, Ser. No. 83,655

Int. Cl.⁴ H05K *7/14*

U.S. Cl. 361—391 3 Claims



1. A mounting for electronic components of a function control unit of a pedestal-type work station, comprising:

a self-contained electronics chassis holding the electronic components of the function control unit, the electronics chassis having a rear side and at least one connector on the rear side connecting the electronics chassis to portions of the pedestal-type workstation said chassis rear side being the only side having an electrical connector mounted thereon;

a housing enclosing the electronics chassis, the housing also comprising a part of the pedestal-type workstation, the housing having a closed front, and an open rear side receiving the electronic chassis and an inside the housing having no electrical connector mounted thereon;

a high resolution color graphics display terminal supported by the housing, the display terminal comprising part of the pedestal-type workstation; and

means for removably mounting the electronics chassis inside the housing, the electronics chassis being electronically insulated from the inside of the housing.

4,879,636
PROJECTOR-TYPE HEAD LAMP FOR VEHICLES

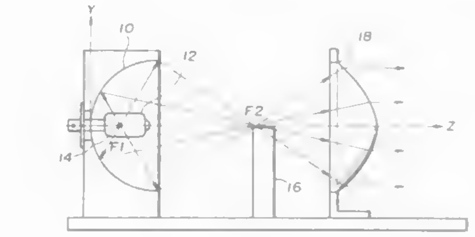
Hirofumi Yamagishi, Isehara; Tooru Segoshi, Yokohama; Kouji Shigemura; Yutaka Nakata, both of Isehara; Hirokazu Yoneyama, Hiratsuka, and Mototsugu Yamashita, deceased, late of Atsugi, all of Japan (by Takemi Yamashita, heir), assignors to Nissan Motor Company, Yokohama and Ichikoh Industries, Tokyo, both of, Japan

Filed Jun. 17, 1988, Ser. No. 207,815

Claims priority, application Japan, Jun. 17, 1987, 62-149236

Int. Cl.⁴ B60Q *1/04*

U.S. Cl. 362—61 4 Claims



1. A projector-type head lamp for vehicles, comprising:

a reflector having an inside reflector surface of a predetermined geometrical shape and provided with a light source at one of the foci thereof;

a shade disposed near the other focus of said reflector and which is intended to shape the light beam reflected at said inside reflective surface; and

a lens means of converging the light beam shaped by said shade and having a focal plane near the other focus of said reflector;

said light source being a discharge lamp having a single temperature with a spatially continuous brightness distribution.

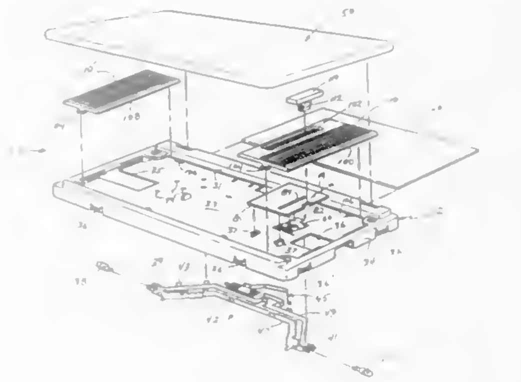
4,879,637
LIGHT CONTROL CIRCUIT FOR VANITY MIRROR ASSEMBLY

Russell L. Clark, Zeeland; Kim L. Van Order, Hamilton; Michael J. Suman, and Todd A. Zandbergen, both of Holland, all of Mich., assignors to Prince Corporation, Holland, Mich.

Filed Nov. 4, 1988, Ser. No. 267,178

Int. Cl.⁴ F21V *33/00*

U.S. Cl. 362—141 17 Claims



1. An illuminated vanity mirror assembly including a variable resistance circuit for providing a dimming control comprising:

an electrical circuit board having a resistance material extending along a predetermined length of one side of said board;

electrical contact means for selectively engaging said resistance material;

means for mounting said circuit board and said contact means for movement relative to each other to provide a variable resistance to said contact means; and

means for electrically coupling said contact means to lamp means associated with the vanity mirror for selectively varying the intensity of light from said lamp means.

4,879,638
SPOTLIGHT ARRANGEMENT

Ernest J. Pavelin, Harlow, England, assignor to Thorn EMI plc, London, England

Continuation of Ser. No. 94,995, Sep. 10, 1987, Pat. No. 4,829,412. This application Mar. 6, 1989, Ser. No. 318,906

Claims priority, application United Kingdom, Sep. 10, 1987, 8621848

Int. Cl.⁴ F21V *13/04*

U.S. Cl. 362—294 1 Claim

1. A spotlight comprising an enclosure having a light-reflective, interior surface; a light transmissive cover for said enclosure, the cover having a central opening; and light source means comprising a mirror reflector and a lamp within the

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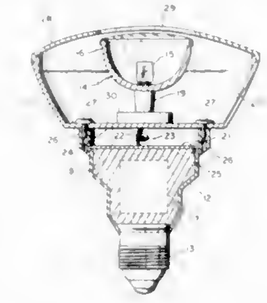
reflector, the light source means being mounted within the enclosure directly behind the central opening for passing light from the light source means into the enslosure behind the cover and thereby illuminating the cover from behind.



4,879,639
POWER CONVERTER FOR DRIVING AN AC MOTOR AT A VARIABLE SPEED

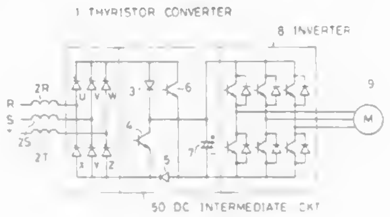
Takashi Tsukahara, Kawasaki, Japan, assignor to Fuji Electric Co., Ltd., Kawasaki, Japan

Filed May 10, 1988, Ser. No. 192,313

Claims priority, application Japan, May 11, 1987, 62-113955

Int. Cl.^{4} H02M *5/45*

U.S. Cl. 363—37 **9 Claims**



1. A power converter for driving an AC motor at a variable speed, comprising:

a thyristor converter connected to an AC power source for rectifying an AC voltage from said AC power source; said thyristor converter having first and second DC terminals;

a DC intermediate circuit including a smoothing capacitor for charging therein a rectified output from said thyristor converter, a first diode, a second diode, a first semiconductor switch, a second semiconductor switch; said smoothing capacitor having first and second terminals; said first and second DC terminals of said thyristor converter being respectively connected to said first and second terminals of said smoothing capacitor through said first and second diodes, respectively, in a polarity relationship corresponding to forward conversion by said thyristor converter during driving of said AC motor; and during braking operation of said AC motor, said first and said second DC terminals of said thyristor converter being respectively connected to said first and said second terminals of said smoothing capacitor through said first and second semiconductor switches, respectively, in a polarity relationship corresponding to reverse conversion by said thyristor converter, whereby during driving of said AC motor, one of said first and second semiconductor switches is turned off, while the other one of said first and second semiconductor switches is caused to perform a high frequency switching operation or both of said first and second semiconductor switches are simultaneously interrupted; and during braking operation, one of said first and second semiconductor switches is rendered conductive while the other one of said first and second semiconductor switches is caused to perform a high frequency switching operation; a voltage type inverter having two terminals respectively connected to two terminals of said smoothing capacitor for inverting a DC voltage across said two terminals of said smoothing capacitor into an AC voltage having a variable frequency and a variable voltage, said AC voltage being supplied to said AC motor;

A control means for operating said thyristor converter substantially at a predetermined maximum forward conversion output voltage during driving of said AC motor, and for operating said thyristor converter substantially at a predetermined maximum reverse conversion output voltage during braking operation of said AC motor; and

an inductive element disposed in series with at least one of the AC and DC sides of said thyristor converter.

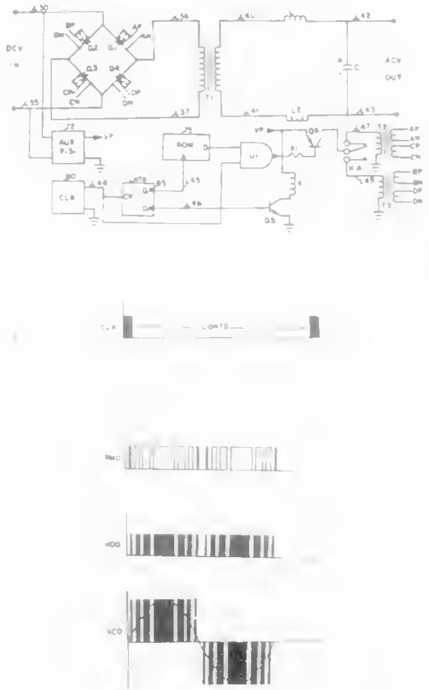
4,879,640
ROM DRIVEN PWM INVERTER

Pawan K. Das, 101 Kent Ave., Marlton, N.J. 08053

Filed Jun. 8, 1988, Ser. No. 203,917

Int. Cl.^{4} H02M *7/5387*

U.S. Cl. 363—41 **7 Claims**



7. A device for generating AC power from a DC source supplying an input voltage, comprising:

input means for inputting the input voltage from the DC source;

output means for outputting a device output voltage from said device;

switching circuit means for automatically switching the input voltage;

output filter means for filtering the device output voltage to a desired AC output voltage level;

control circuit means for controlling the switching circuit means, comprising:

read only memory means, having an output, for storing switching control data;

means for repeatedly turning on and off said switching circuit means based upon the switching control data; and

NAND gate means for modulating the output of said read only memory means; and

auxiliary power supply means for generating auxiliary DC power from the DC source to supply power to said control circuit means.

4,879,641
ANALOG MULTIPLEX FOR SENSING THE MAGNITUDE AND SENSE OF THE CURRENT THROUGH A H-BRIDGE STAGE UTILIZING A SINGLE SENSING RESISTANCE

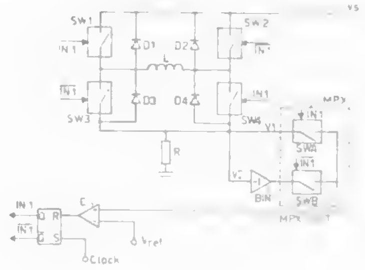
Domenico Rossi, Cilavegna, and Andrea Cuomo, Milano, both of Italy, assignors to SGS-Thomson Microelectronics S.R.L., Italy

Filed Oct. 28, 1988, Ser. No. 263,935

Claims priority, application Italy, Nov. 2, 1987, 8366 A/87

Int. Cl.^{4} H02M *3/24*

U.S. Cl. 363—98 **5 Claims**



3. In a combination, H-bridge stage for driving a load in a switching mode by means of a clocked square-wave driving signal and an inverted signal thereof, and circuit means for sensing the magnitude and directions of the electric current flowing through the load, said H-bridge comprising:

two pairs of switches arranged in a bridge configuration for receiving the driving and the inverted signals, respectively, and functionally switching the load between a supply node and a virtual ground node of the bridge stage, and recirculation diodes connected across said switches;

said sensing circuit means including:

a single sensing resistor connected between the virtual ground node and a real ground node of the circuit;

an analog, two input, multiplex having two switches driven, respectively, by the driving signal and by the inverted driving signal, the input corresponding to the switch driven by the driving signal being connected to the virtual ground node and the input corresponding to the switch driven by the inverted driving signal being connected to the output of an inverting analog buffer having an input connected to the virtual ground node; and

a comparator having two input terminals and an output terminal, an output of said analog multiplex being connected to a first input terminal of said comparator and a reference voltage being applied to a second input terminal of said comparator.

4,879,642
SERVO LOOP PROCESSOR IN ASSOCIATION WITH A CENTRAL PROCESSING UNIT FOR CLOSED LOOP CONTROL OF A SERVO SYSTEM

Jacob H. Malka, Fair Lawn, and Glenn J. Ahern, Wood-Ridge, both of N.J., assignors to Allied-Signal Inc., Morris Township, Morris County, N.J.

Filed Oct. 18, 1984, Ser. No. 662,321

The portion of the term of this patent subsequent to Feb. 7, 2004, has been disclaimed.

Int. Cl.^{4} G05B *19/29;* G06F *15/46*

U.S. Cl. 364—131 **13 Claims**

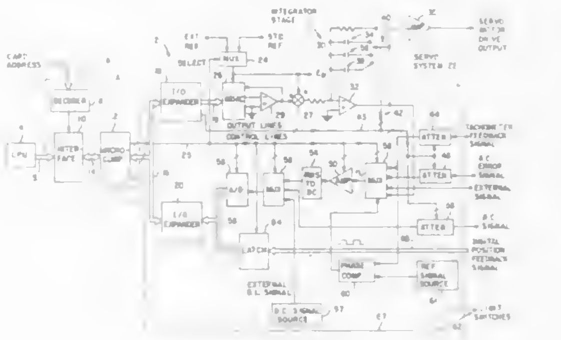
1. A servo loop processor in association with a central processing unit for closed loop control of a servo system, characterized by:

interface means connected to the central processing unit;

the interface means including information processing means in communication with the central processing unit, whereby servo loop parameters and servo system motor characteristics are downloaded from the central processing unit to the information processing means, said information processing means providing control signals;

first means connected to the information processing means and responsive to control signals therefrom for providing a signal for driving the servo system motor, said first means including a first multiplexer receiving a plurality of reference signals and connected to the information processing means and controlled by a control signal therefrom for selecting one of the reference signals and for providing a reference signal corresponding to the selected signal, means connected to the first multiplexer and receiving the corresponding reference signal, and connected to the information processing means and controlled by a control signal therefrom for controlling the amplitude of the corresponding reference signal and for providing an amplitude controlled signal, means for combining the corresponding reference signal and the amplitude controlled signal and for providing a combined signal, integrator means connected to the combining means for integrating the combined signal, and means connected to the integrator means and responsive to the integrated combined signal for providing a signal for driving the servo system motor; and

second means connected to the information processing means, the first means and the servo system, and responsive to a control signal from the information processing means and the signal from the first means for selectively applying feedback signals from the servo system to the information processing means.



4,879,643
DECENTRALIZED CAUTIOUS ADAPTIVE CONTROL SYSTEM

Abhijit J. M. Chakravarty, Renton; Dagfinn Gangsaas, Bellevue, both of Wash., and John B. Moore, Weetangaera, Australia, assignors to The Boeing Company, Seattle, Wash.

Filed Nov. 19, 1987, Ser. No. 122,780

Int. Cl.^{4} G05B *13/02*

U.S. Cl. 364—148 **20 Claims**

1 Apparatus for controlling a plant producing a plant output vector in response to an input control vector, comprising:

means for filtering said plant output vector into a plurality of filtered output vectors, each comprising a separate frequency band of said plant output vector;

means for producing in response to each said filtered output

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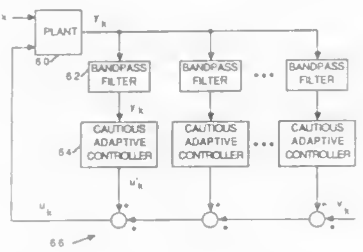
vector a separate feedback control vector in accordance with an adjustable transfer function; and

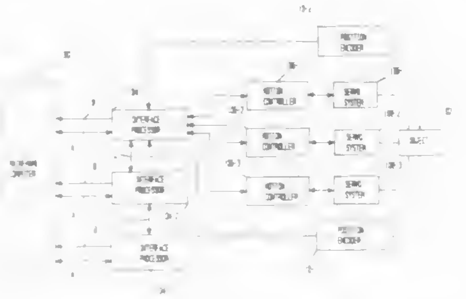

PLANT
BANDPASS FILTER
BANDPASS FILTER
BANDPASS FILTER
CAUTIOUS ADAPTIVE CONTROLLER
CAUTIOUS ADAPTIVE CONTROLLER
CAUTIOUS ADAPTIVE CONTROLLER
60
62
64
66

means for forming said input control vector in response to a combination of feedback control vectors.

4,879,644
OBJECT POSITIONING APPARATUS AND METHOD

R. Marc Gottshall, Des Moines, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Dec. 30, 1987, Ser. No. 139,840
Int. Cl.⁴ G05B *13/00*
U.S. Cl. 364—167.01 18 Claims



1. A network for positioning an object, comprising:

a mainframe computer for providing macro-commands indicative of the desired movement of the object;

interface processing means for providing a plurality of micro-commands in response to each macro-command received from said mainframe computer;

servo means responsive to an applied signal for moving the object;

feedback encoder means responsive to the movement of said servo means for providing a feedback signal indicative thereof;

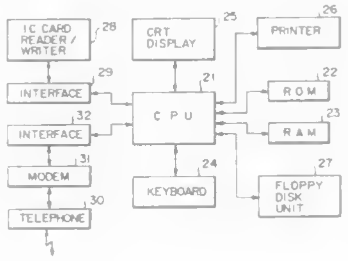
motion control means responsive to the micro-commands provided by said interface means for providing the applied signal to said servo means, said motion control means being further responsive to the feedback signal provided from said feedback encoder to vary the applied signal; and

position encoder means for providing position data indicative of the position of the object, said position encoder means being coupled to supply the position data to said interface processing means, said interface processing means being adapted to process the position data and supply the processed position data to said mainframe computer.

4,879,645
DATA PROCESSING DEVICE WITH HIGH SECURITY OF STORED PROGRAMS

Masuo Tamada, Yokohama; Hitoshi Kokuryo, Sagamihara; Shinsuke Tamura, and Hiroshi Ozaki, both of Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 714,862, Mar. 22, 1985, abandoned.
This application Feb. 10, 1988, Ser. No. 157,109
Claims priority, application Japan, Mar. 31, 1984, 59-63618
Int. Cl.⁴ G06F *15/30;* G06K *5/00*
U.S. Cl. 364—200 12 Claims



1. An IC card designed for use with a read/write terminal device and having a card-shaped housing, comprising:

memory means for storing data and programs, the programs including a specific program which must be kept secret from uses of the IC card;

password identification means for receiving a password supplied from said terminal device and judging whether or not the password is correct, according to predetermined criteria;

arithmetic operation means, connected to said memory means, for running a program specified by a command from said terminal device when the password is judged to be correct by said password identification means;

means for judging whether or not the program specified by said command is the specific program;

means for counting the number of times the specific program is run, the counted number being cleared when the IC card is powered off; and

means for (1) preventing the specific program from being run by said arithmetic operation means after the counter number reaches a predetermined value and for (2) allowing the specific program to run by said arithmetic operation means after the counted number is cleared until the counted number reaches the predetermined value.

4,879,646
DATA PROCESSING SYSTEM WITH A PIPELINED STRUCTURE FOR EDITING TRACE MEMORY CONTENTS AND TRACING OPERATIONS DURING SYSTEM DEBUGGING

Junichi Iwasaki, and Hisao Harigai, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

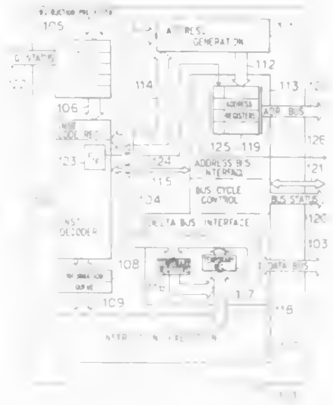
Filed Apr. 20, 1987, Ser. No. 39,900
Claims priority, application Japan, Apr. 18, 1986, 61-90702
Int. Cl.⁴ G06F *9/38, 11/22, 11/26, 11/28*
U.S. Cl. 364—200 10 Claims

1. An information processing system including a microprocessor having a multi-stage pipeline structure, comprising:

an instruction decoding unit having an instruction decoder for decoding a received instruction code and having status indicating means having an output changing at a real time base when a predetermined instruction code, which can be used as an index in a program trace performed after a program to be tested has been executed, is decoded by said instruction decoder, said status indicating means maintaining said output when an instruction code other than said predetermined instruction code is decoded by said instruction decoder;

address generating means coupled to said instruction decoding unit to receive at least a portion of a decoded instruction code outputted from said instruction decoder for generating an address for reading and/or writing of an operand required by said decoded instruction code;

bus control means including first register means coupled to said address generating means for temporarily holding said address for reading and/or writing of said operand required by said decoded instruction code and second register means coupled to said status indicating means for temporarily holding the output of said status indicating means when said decoded instruction code is outputted from said instruction decoder, said bus control means operating, when a bus cycle is started on the basis of said address held in said first register means, to output a content of said second register means to an external of said microprocessor in synchronism with an output timing of said address held in said first register means during a bus cycle period of said microprocessor; and



storage means for storing information outputted from said microprocessor sequentially as time-series data, said information including said address held in said first register means and said content of said second register means,

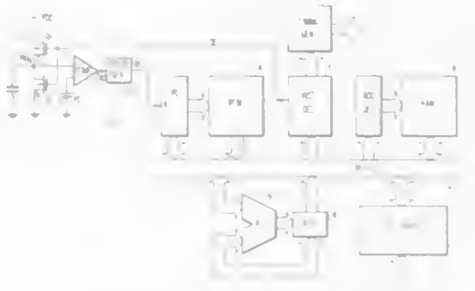
said time-series data is edited by discriminating whether the bus cycle of said microprocessor belongs to a bus cycle following an instruction on or before said predetermined instruction code for changing the output of said status indicating means or a bus cycle following an instruction on or after said predetermined instruction code, with reference to said content of said second register means stored in said storage means and indicating the output information of said status indicating means.

4,879,647
WATCHDOG TIMER CIRCUIT SUITED FOR USE IN MICROCOMPUTER

Akira Yazawa, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jun. 11, 1986, Ser. No. 873,020
Claims priority, application Japan, Jun. 11, 1985, 60-126676
Int. Cl.⁴ G06F *11/28, 11/00;* G04F *8/00*
U.S. Cl. 364—200 15 Claims

12. A microcomputer comprising a program memory storing a series of instrucitons, said series of instructions periodically including a predetermined instruction, a program counter designating each address of said program memory to read each instruction from said program memory, an instruction decoder decoding the instruction read from said program and outputting decoded signals, said instruction decoder including means for producing a first control signal taking a first logic level whenever said predetermined instruction is read from said program memory and taking a second logic level when other instructions are read from said program memory, execution means responsive to said decoded signals for executing the instruction read from said program memory, a first terminal supplied with a power voltage, a second terminal supplied with a reference voltage, a power-on clear terminal, a capacitor connected between said power-on clear terminal and said second terminal, a detection circuit connected to said power-on clear terminal for detecting a voltage across said capacitor to produce a second control signal when said voltage across said capacitor is smaller than a predetermined level, a clear circuit generating a reset pulse in response to said second control signal and resetting said program counter to an initial state by use of said reset pulse, means for latching said reset pulse to produce a charging control signal until said program counter reaches a predetermined count value, a first field effect transistor connected between said first terminal and said power-on clear terminal for charging, when turned ON, said capacitor, a second field effect transistor connected between said power-on clear terminal and said second terminal in parallel with said capacitor for discharging, when turned ON, said capacitor, means responsive to said charging control signal for turning said first field effect transistor ON, means responsive to said first logic level of said first control signal for turning said first field effect transistor ON, and means responsive second logic level of said first control signal for turning said second field effect transistor ON, whereby said program counter is reset to said initial state not only when said power voltage is switched on to be supplied to said first terminal but when said predetermined instruction is not read from said program memory over a predetermined of time.



4,879,648
SEARCH SYSTEM WHICH CONTINUOUSLY DISPLAYS SEARCH TERMS DURING SCROLLING AND SELECTIONS OF INDIVIDUALLY DISPLAYED DATA SETS

Nancy P. Cochran, 35 Main St., Nyack, N.Y. 10960, and Susan Byrnes, East Hartford, Conn., assignors to Nancy P. Cochran, Nyack, N.Y.

Filed Sep. 19, 1986, Ser. No. 909,293
Int. Cl.⁴ G06F *3/14*
U.S. Cl. 364—300 38 Claims

1. A method of selecting desired data sets from a plurality of data sets that are categorized and sequentially ordered into a plurality of lists, comprising the steps of:

continuously displaying a plurality of categorical identifiers at respective coordinates on a display medium, at least some of said categorical identifiers being displayed simultaneously during at least a portion of the displaying of said categorical identifiers, and each of said categorical identifiers corresponding to at least one of said plurality of lists;

providing two control inputs, one as a scrolling control and a second as a select control;

sequentially displaying, one at a time, data sets in one list corresponding to a respective one of said displayed categorical identifiers upon sequential application of said scrolling control,

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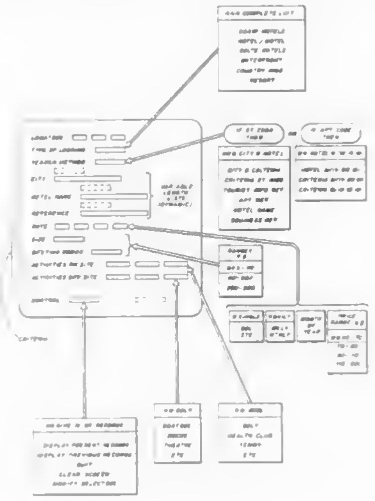
selecting a desired data set that is currently displayed and selecting another of said displayed categorical identifiers corresponding to another one of said plurality of lists, both upon application of said select control;

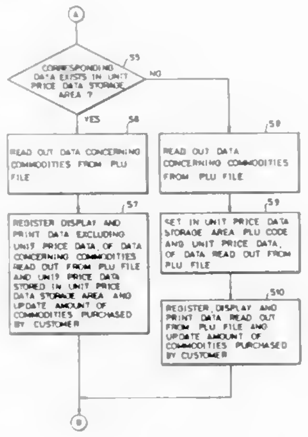
sequentially displaying, one at a time, sequential data sets of respective additional lists next to said another displayed categorical identifier and any desired additional displayed categorical identifiers, upon application of said scrolling control; and

selecting respective data sets of said another displayed categorical identifier and each of said desired additional displayed categorical identifiers, and moving to respective ones of each of said desired additional displayed categorical identifiers, both upon application of said select control.



4,879,649
TRANSACTION PROCESSING APPARATUS HAVING PLU FUNCTION

Hiroaki Ishii, Ootsu, Japan, assignor to Omron Tateisi Electronics Co., Kyoto, Japan
Filed Jan. 25, 1988, Ser. No. 147,728
Claims priority, application Japan, Jan. 28, 1987, 62-17801; Apr. 16, 1987, 62-93982
Int. Cl.^{4} G07G *1/12*
U.S. Cl. 364—405 5 Claims


A
CORRESPONDING DATA EXISTS IN UNIT PRICE DATA STORAGE AREA ?
55
NO
YES
54
READ OUT DATA CONCERNING COMMODITIES FROM PLU FILE
57
REGISTER DISPLAY AND PRINT DATA EXCLUDING UNIT PRICE DATA OF DATA CONCERNING COMMODITIES READ OUT FROM PLU FILE AND UNIT PRICE DATA STORED IN UNIT PRICE DATA STORAGE AREA AND UPDATE AMOUNT OF COMMODITIES PURCHASED BY CUSTOMER
59
READ OUT DATA CONCERNING COMMODITIES FROM PLU FILE
59
SET IN UNIT PRICE DATA STORAGE AREA PLU CODE AND UNIT PRICE DATA, OF DATA READ OUT FROM PLU FILE
510
REGISTER, DISPLAY AND PRINT DATA READ OUT FROM PLU FILE AND UPDATE AMOUNT OF COMMODITIES PURCHASED BY CUSTOMER
B

1. A transaction processing apparatus comprising:

first means for storing in advance and respectively for each commodity, commodity identification data and other commodity data corresponding to the commodity identified by the commodity identification data, said other commodity data including unit price data,

second means for storing commodity identification data and corresponding unit price data,

means for entering commodity identification data,

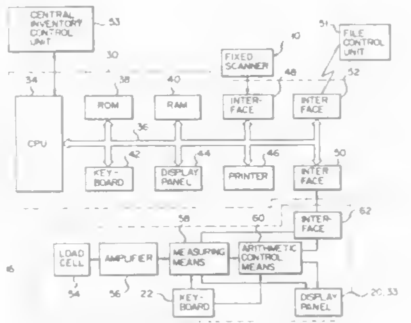
means responsive to the entry of the commodity identification data with said entering means for registering the data concerning a commodity corresponding to the entered commodity identification data,

means for determining whether or not the unit price data corresponding to the entered commodity identification data is already stored in said second storing means each time the commodity identification data is entered with said entering means, and

control means responsive to a determination by said determining means that the unit price data entered by said entering means is not stored in said second storing means for reading out from said first storing means the data concerning commodities corresponding to the commodity identification data entered with said entering means and storing the entered commodity identification data and the data concerning commodities corresponding to the entered commodity identification data in said second storing means and for registering the data concerning commodities read out from said first storing means with said registering means, and responsive to a determination by said determining means that the unit price data corresponding to the commodity identification data entered with said entering means is stored in said second storing means for registering the unit price data corresponding to the commodity identification data stored in said second storing means and data, excluding the unit price data, concerning commodities corresponding to the entered commodity identification data which is stored in said first storing means.

4,879,650
POS REGISTER SYSTEM WITH COMBINED OPTICAL SCANNER AND WEIGHING MACHINE

Yukuo Kurimoto, and Takayoshi Endo, both of Shizuoka, Japan, assignors to Tokyo Electric Co., Ltd., Tokyo, Japan
Filed Oct. 30, 1986, Ser. No. 925,816
Claims priority, application Japan, Nov. 7, 1985, 60-249372
Int. Cl.^{4} G07G *1/14;* **G01G** *19/40*
U.S. Cl. 364—405 5 Claims



1. A point-of-sale register system, comprising:

an electronic cash register connected to a central inventory control unit to serve as a terminal device of a point-of-sale system;

a substantially free standing electronic weighing machine electrically connected to said electronic cash register including measuring means for weighing a product, said measuring means being electrically connected to said electronic cash register for supplying to the electronic cash register an electrical signal corresponding to the measured weight of the product, said weighing machine being separate from said cash register and being separable from and removably mounted on an outer surface of a check-out counter;

optical scanner means mounted on top of said weighing machine, in a direction in which gravity acts, said optical scanner means including:

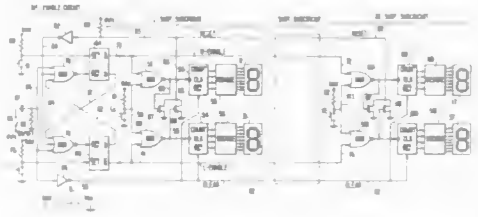
receiving means for receiving a product to be weighed thereon, said receiving means transmitting a weight of a product placed on said receiving means to said measuring means of said weighing machine for measuring the weight of the product placed on said receiving means; and

optical scanning means electrically connected to said electronic cash register for optically scanning a bar code on a product placed on said receiving means and for providing to the electronic cash register an electrical signal corresponding to the scanned bar code; and

wherein the weight of the product placed on said receiving means of said optical scanner means is measured by said measuring means of said weighing machine, and the bar code on the product placed on said receiving means of said optical scanner means is scanned by said optical scanning means.

4,879,651
GAME POINT SCORING AND ANALYZING DEVICE

Robert E. Little, Jr., G-5 Harbour West Condominiums, Rocky Mount, N.C. 27801
Continuation of Ser. No. 851,215, Apr. 14, 1986, abandoned. This application Jan. 5, 1989, Ser. No. 293,536
Int. Cl.^{4} G06F *15/44;* **G08B** *23/00*
U.S. Cl. 364—411 9 Claims



1. A game point scoring and analyzing device for tabulating and displaying for a plurality of different shot categories the number of shots in each category which resulted in game points won and lost by an individual during a game, comprising:

(a) an electronic circuit mounted within a portable display case of a size to be worn on the individual's wrist, means for providing power to the electronic circuit through an ON/OFF switch, said electronic circuit including first and second electronic counters and first and second numerical displays for each shot category, said first numerical displays representing points won by the individual and said second numerical displays representing points lost by the individual, each of said electronic counters having a clock terminal for increasing a count and having a counter reset terminal for resetting the counter to zero;

(b) first and second counter control gates connected to said first and second electronic counters, respectively, each of said counter control gates having first and second inputs and an output connected to said clock terminal of the associated electronic counter and operates in response to said first and second inputs being enabled to increment the associated electronic counter;

(c) a point-won and a point-lost enable circuit, said point-won enable circuit including input terminal means and output terminal means, said output terminal means of said point-won enable circuit being connected to said first inputs of said first counter gate for each of said first electronic counters, said point-lost enabling circuit including input terminal means and output terminal means, said output terminal means of said point-lost enable circuit being connected to said first input of said second counter gate for each of said second electronic counters;

(d) a point-won button means operative when actuated to enable said input terminal of said point-won enable circuit, and a point-lost button means operative when actuated to enable said input terminal of said point-lost enable circuit;

(e) a plurality of shot button means, one for each different shot category, each shot button means being connected to said second inputs of both said first and second counter gates in each different shot category, and each shot button means being manually operable to enable said second inputs of said first and second counter gates; and

(f) and gate means coupled with said first and second counter control gates for each different shot category and said point-won and point-lost enable circuits, and operative to establish a required sequence which requires the pressing of said point-won or said point-lost button means prior to the pressing of a shot button means in order to increment a count in any of said first and second electronic counters;

(g) said input terminal means of said point-won and point-lost enable circuits respectively, include a point-won flipflop and a point-lost flipflop, each flipflop including a set and a reset terminal, said gate means including first and second enable circuit gates, said first enable circuit gate having an output coupled to the reset terminal of said point-won flipflop and having an input connected to said first counter control gates, said second enable circuit gate having an output coupled to the reset terminal of said point-lost flipflop and having an input connected to said second counter control gates, said first and second enable circuits being operative to reset both flipflops whenever any of said first or second counter control gates increments an electronic counter,

(h) said first and second enable circuit gates have second inputs, said second input of said first enable circuit gate being connected to an output of said point-lost flipflop and said second input of said second enable circuit gate being connected to an output of said point-won flipflop, said second inputs of said first and second enable circuit gates being operative to deliver outputs to reset one flipflop when the other flipflop is set, whereby the information regarding points won and lost in each of the plurality of different shot categories is readily available for immediate use by the individual while a game is in progress.

4,879,652
METHOD FOR PRODUCING THREE-DIMENSIONAL IMAGES FROM NUCLEAR DATA

David J. Nowak, Greendale, Wis., assignor to General Electric Company, Milwaukee, Wis.
Filed Sep. 4, 1987, Ser. No. 93,437
Int. Cl.^{4} G06F *15/42*
U.S. Cl. 364—413.18 6 Claims

1. A method for producing a shaded image from data acquired with a nuclear imaging tomographic scanner, the steps comprising:

(a) acquiring a sequence of two-dimensional frames of nuclear event data which is reconstructed to form a three-dimensional array of data V(x,y,z) which indicates the number of nuclear events at a three-dimensional matrix of points throughout a volume of interest;

(b) extending into the volume of interest a projector from a pixel in a projection plane to determine the distance between that pixel in the projection plane and the boundary of an object within the volume of interest, including the steps of:

(i) extending the projector an incremental distance away from the projection plane,

(ii) calculating the number of nuclear events at the current position of the projector from the three-dimensional array of data, V(x,y,z),

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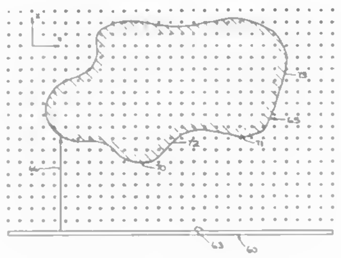
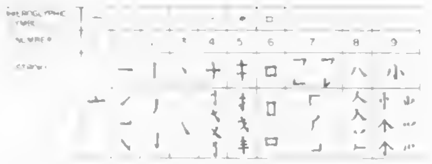
(iii) comparing the calculated number of nuclear events with a pre-established threshold value,
(iv) reiterating steps i-iii if the threshold value is not reached, otherwise,
(v) calculating the location at which the projector intersects the object's boundary by interpolating between the current calculated number of nuclear events and the calculated number of nuclear events from the previous iteration to arrive at a location between the projector's current position and its position for the previous iteration;

(c) producing a two-dimensional array of distance data D(z,y) by repeating step (b) for each pixel in the projection plane; and
(d) producing a two-dimensional display data array DS(z,y) by assigning a brightness value to each element in the display data array which is a function of the distance value of its corresponding element in the distance array D(z,y).



4,879,653
SELECTION SYSTEM FOR IDEOGRAPHIC CHARACTERS BY TOUCH TYPING USING PHONETIC/HIEROGLYPHIC CODES

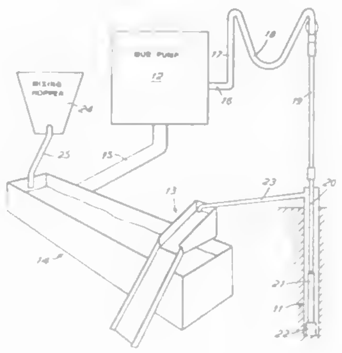
Yoshinori Shinoto, 42,3-chome, Sakuradai, Nerima-Ku, Tokyo, Japan
Continuation of Ser. No. 741,688, Jun. 6, 1985, abandoned. This application Nov. 30, 1987, Ser. No. 125,729
Claims priority, application Japan, Jun. 7, 1984, 59-115584
Int. Cl.⁴ G06F *3/02*
U.S. Cl. 364—419 3 Claims

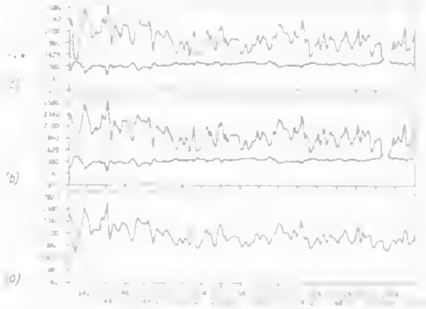


1. A system for ideographic character selection comprising, storing means for storing a plurality of ideographic characters each of which has ideographic elements, means for forming by touch typing on a keyboard combinatorial headwords which have one-to-one correspondence with the ideographic characters stored in the storing means, means for combining a selected phonogram word with a selected hieroglyphic word to obtain selected one of the combinatorial headwords, and selector means for selecting a desired ideographic character output in correspondence with selection instruction thereto with the selected one of the combinatorial headwords obtained.

4,879,654
DRILLING FLUID

Sue Bruce, Huntingdon, England, assignor to Schlumberger Technology Corporation, Houston, Tex.
Filed Feb. 1, 1988, Ser. No. 150,815
Claims priority, application United Kingdom, Feb. 10, 1987, 8702920
Int. Cl.⁴ E21B *21/08;* **G01N** *9/04*
U.S. Cl. 364—422 9 Claims



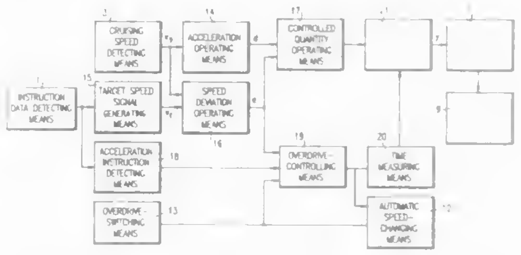


1. A method for improving the process of drilling a deviated borehole through a subsurface formation by determining a safe value of the density of drilling fluid to be circulated through the borehole while the deviated borehole is being drilled, the method comprising the steps of:
a determining the in-situ stress state of the formation at the site of the borehole,
b. converting the in-situ stress state of step a. into the stresses that exist in the projected direction of the borehole axis and in two orthogonal directions perpendicular to that borehole axis;
c. in response to step b. and to an assumed drilling fluid density, calculating the stress which will occur at the borehole wall as a function of depth when the borehole is drilled,
d. determining formation pore pressure as a function of depth,
e. in response to step c, determining the value of drilling fluid density at a given depth which satisfies a tensile failure criterion of the material forming the borehole wall,
f. in response to step c, determining at least one value of drilling fluid density at said given depth which satisfies a shear failure criterion of the material forming the borehole wall,
g. in response to step d, calculating a drilling fluid density value which gives drilling fluid pressure equal to the formation pore pressure as a function of depth,

h. at said given depth, in response to at least the valve obtained in step (e), determining a maximum value for the drilling fluid density,
i. at said given depth, selecting as a minimum value for the drilling fluid density, the higher of the values obtained at that depth in steps f and g, and
j. mixing solid and liquid drilling fluid components in such proportion that the density of the drilling fluid lies between the selected valvues of steps h and i.

4,879,655
CONSTANT SPEED CRUISING CONTROL APPARATUS

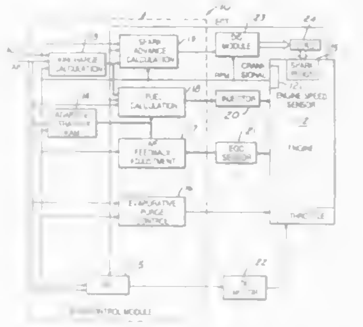
Akihiko Mori, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Apr. 4, 1988, Ser. No. 177,327
Claims priority, application Japan, Apr. 15, 1987, 62-93526
Int. Cl.⁴ B60K *41/00*
U.S. Cl. 364—426.04 2 Claims


CRUISING SPEED DETECTING MEANS
ACCELERATION OPERATING MEANS
CONTROLLED QUANTITY OPERATING MEANS
INSTRUCTION DATA DETECTING MEANS
TARGET SPEED SIGNAL GENERATING MEANS
SPEED DEVIATION OPERATING MEANS
ACCELERATION INSTRUCTION DETECTING MEANS
OVERDRIVE-CONTROLLING MEANS
TIME MEASURING MEANS
OVERDRIVE-SWITCHING MEANS
AUTOMATIC SPEED-CHANGING MEANS
1
3
7
9
13
14
15
16
17
18
19
20

1. A constant speed cruising control apparatus for an automobile which comprises:
a cruising speed detecting means for detecting a cruising speed of an automobile;
an acceleration speed operating means for calculating an acceleration speed at predetermined time intervals on the basis of the output of said cruising speed detecting means;
an instruction data detecting means for detecting instruction data from a driver;
a target speed signal generating means for generating a target speed signal on the basis of said instruction data;
a speed deviation operating means for calculating the deviation between the cruising speed of the automobile and a target speed;
a driving force controlling means for controlling the driving force of said automobile;
a controlled quantity operating means for receiving an acceleration signal from said acceleration speed operating means and a speed deviation signal from said speed deviation operating means so that a controlled quantity for controlling the driving force of the automobile is operated so as to coincide the cruising speed with the target speed;
an overdrive-switching means for generating an overdrive switching signal which permits or prohibits overdrive-cruising of the automobile;
an acceleration instruction detecting means for receiving said instruction data to detect the demand of acceleration by said driver;
an overdrive-controlling means for receiving said overdrive-switching signal and said speed deviation signal and said acceleration instruction signal and for generating an overdrive controlling signal prohibiting the overdrive cruising of the automobile;
a time measuring means for measuring a first predetermined time from the time when said overdrive cruising prohibiting signal is generated, and for measuring a second predetermined time from the time when said overdrive cruising prohibiting signal is stopped;
a controlled quantity signal outputting means for outputting to said drive force controlling means a signal of a controlled quantity which is so corrected as to reduce the driving force for the automobile during said first and second predetermined times; and
an automatic speed-changing means which receives said overdrive-switching signal and said overdrive controlling signal to automatically control the change of speed of the automobile.

4,879,656
ENGINE CONTROL SYSTEM WITH ADAPTIVE AIR CHARGE CONTROL

John H. Quigley, West Bloomfield, and Roger K. Feller, Canton, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.
Filed Oct. 26, 1987, Ser. No. 112,789
Int. Cl.⁴ F02M *17/00;* **F02B** *3/00*
U.S. Cl. 364—431.05 14 Claims



1. An engine control system for controlling an engine by determining engine load based upon engine air charge comprising:
an air charge determination means for determining the amount of engine air charge and generating a signal as a function of engine throttle angle which defines engine load;
storage means for storing, as a function of received engine speed and engine air charge, a desired engine spark advance in a first table, a desired engine fuel quantity in a second table;
an engine speed sensor for sensing engine speed and generating a signal as a function of engine speed;
reference means for storing a base air charge as a function of a received engine speed;
an exhaust gas oxygen sensor coupled functionally and operationally to an exhaust of the engine for generating a feedback signal as a function of an air fuel ratio supplied to the engine;
a logic operation means coupled to said air charge determination means, said exhaust gas oxygen sensor, said storage means, said reference means and said engine speed sensor for determining the desired engine spark advance and fuel quantity by using the determined air charge to determine a position on an air charge axis of said first and second tables and using the sensed engine speed to determine a position on an engine speed axis of said first and second tables, thereby determining the desired engine spark advance and fuel quantity for engine operation, and for modifying engine air charge adaptively based upon feedback from said exhaust gas oxygen sensor to maintain stoichiometry which, in turn, results in change in the engine spark advance and fuel quantity.

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4,879,657
SYSTEM AND METHOD FOR ELECTRONICALLY CONTROLLING A VEHICULAR ENGINE OPERATION HAVING A SAFE FUNCTION

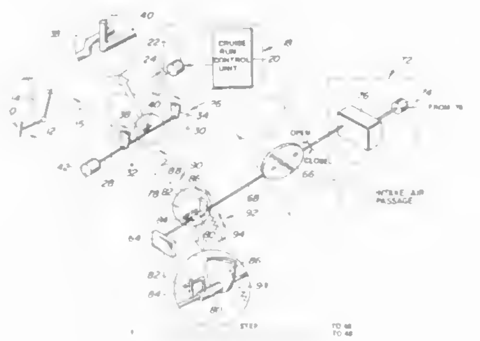
Minoru Tamura, Kanagawa; Shinji Katayose, Tokyo; Terukiyo Murakami, and Hisashi Izumi, both of Kanagawa, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

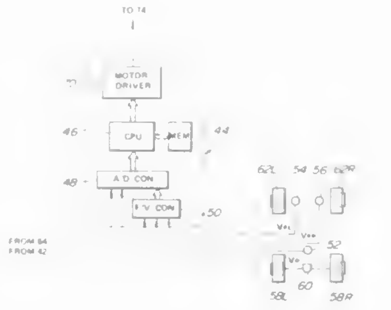
Filed Mar. 17, 1988, Ser. No. 169,500

Claims priority, application Japan, Mar. 26, 1987, 62-72676

Int. Cl.⁴ B60K *31/02;* **F02D** *41/26*

U.S. Cl. 364—431.07 30 Claims





21. A system for controlling a vehicular engine operation, comprising:

(a) first means for electronically controlling a vehicular engine driving force adjusting mechanism associated with the engine in accordance with a first operating variable of a vehicular accelerator which corresponds to a desired parameter of the engine driving force mechanism adjusting and for determining a target parameter according to the first operating variable of the accelerator, so that a present parameter of the driving force adjustment mechanism coincides with the target parameter determined according to the first operating variable;

(b) second means for automatically controlling the parameter of the engine driving force adjusting mechanism in response to a command to set current vehicle speed to a desired cruise speed without operation of the accelerator so that the parameter of the engine driving force adjusting mechanism coincides with a second operating variable which corresponds to the set cruise speed and the vehicle speed is maintained at the desired cruise speed; and

(c) third means for preventing a further increase of the engine driving force adjusting parameter of the engine driving force adjusting mechanism which would result in the parameter exceeding both of the first and second operating variables.

4,879,658
NAVIGATION SYSTEM USING ANGULAR RATE SENSOR

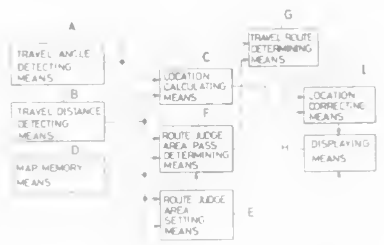
Makoto Takashima; Yoshihito Aoki, and Takahiro Oikawa, all of Shizuoka, Japan, assignors to Yazaki Corporation, Japan

Filed Feb. 9, 1988, Ser. No. 154,106

Claims priority, application Japan, Feb. 10, 1987, 62-27279; Feb. 10, 1987, 62-27280; Feb. 10, 1987, 62-27281

Int. Cl.⁴ G06F *15/50*

U.S. Cl. 364—449 12 Claims


A
TRAVEL ANGLE DETECTING MEANS
B
TRAVEL DISTANCE DETECTING MEANS
D
MAP MEMORY MEANS
C
LOCATION CALCULATING MEANS
F
ROUTE JUDGE AREA PASS DETERMINING MEANS
E
ROUTE JUDGE AREA SETTING MEANS
G
TRAVEL ROUTE DETERMINING MEANS
I
LOCATION CORRECTING MEANS
DISPLAYING MEANS

1. A navigation system for displaying travel locations of a vehicle on a displayed map, comprising:

(a) means for detecting vehicle travel angle;

(b) means for detecting vehicle travel distance;

(c) means, coupled to said vehicle travel angle detecting means and said vehicle travel distance detecting means, for calculating vehicle locations on the basis of the detected vehicle travel angles and distances;

(d) means for storing map information data including branch points;

(e) means, coupled to said map information data storing means, for setting a route judge area at each branch point to determine a route along which the vehicle travels from a branch point;

(f) means, coupled to said vehicle distance detecting means, said map storing means and said route judge area setting means, for determining a condition of a vehicle passing into the set route judge area when a distance between a current vehicle location and a succeeding branch point becomes shorter than a first predetermined distance and a condition of a vehicle passing through the set route judge area when a distance between a position, at which the vehicle enters the set route judge area, and a current vehicle location becomes longer than a second predetermined distance;

(g) means, coupled to said vehicle travel angle detecting means and said route judge area pass determining means, for determining a travel route at each branch point by comparing a travel angle detected by said travel angle detecting means with map data stored in said map data storing means when the vehicle has passed through the set route judge area;

(h) means, coupled to said vehicle location calculating means and said travel route determining means, for correcting said calculated vehicle locations so as to be located along a road on a displayed map in accordance with predetermined expressions, said vehicle location calculating means further correcting a vehicle after-turn location at each branch point by matching a vehicle turn point obtained when said route judge area pass determining means detects that the vehicle has passed through said route judge area with a map branch point within the route judge area; and

(i) means, coupled to said correcting means, said map data storing means, said route judge area setting means, and said route judge area pass determining means, for displaying a map stored in said map information data storing means and vehicle locations calculated by said calculating means and corrected by said location correcting means.

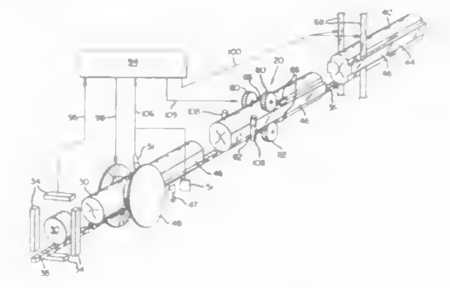
4,879,659
LOG PROCESSING SYSTEMS

William P. Bowlin, Rte. 10, Box 206, Shreveport, La. 71129; Michael P. Knerr, 499 S. 9th, Ridgefield, Wash. 98642, and Jeffrey D. Ballance, 4723Bramblewood, Albany, Oreg. 97321

Filed Nov. 24, 1987, Ser. No. 125,019

Int. Cl.⁴ B02C *25/00*

U.S. Cl. 364—468 13 Claims



1. A computer controlled processing system for lumber production comprising;

a computer,

a sequence of processing stations for processing a log segment including; an excess material removing station for generating opposed flat side surfaces on the log segment, said flat side surfaces determined by the computer to become sides of boards to be severed from said log segments; a profiling station for forming profiled edges above and below said flat side surfaces to become the side edges of the boards to be severed from the log segment, and a severing station for severing the boards from the log segments,

a conveyance means establishing a path of conveyance and having continuous control of the log segment in conveying the log segment along the path and through the above defined sequence of processing stations, and the improvement that comprises;

scanning means prior to the profiling station for obtaining data of the configuration of the log segment in three dimensions, and said computer receiving said data and projecting the optimum side boards obtainable from the log segment including location and angular orientation of the side boards relative to the log segments conveyed along the path of conveyance; and

said profiling station including adjustable profiling heads and said computer controlling the adjustable profiling heads, said profiling heads being continuously responsive to said computer to form the edges of the projected side boards during conveyance of the log segment through the profiling station.

4,879,660
THREAD CUTTING MACHINE WITH SYNCHRONIZED FEED AND ROTATION MOTORS

Koichi Asakura, Toyoake; Makoto Demura, Toyokawa, and Takenori Matsumoto, Kasugai, all of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Mar. 28, 1988, Ser. No. 174,508

Claims priority, application Japan, Mar. 31, 1987, 62-80524; Apr. 2, 1987, 62-82128; Aug. 28, 1987, 62-215820; Aug. 28, 1987, 62-215821

Int. Cl.⁴ B23G *1/16;* **G05B** *19/18*

U.S. Cl. 364—474.15 10 Claims

7. In a thread cutting machine including a spindle for holding a thread cutting tool, a spindle head for supporting said spindle, a spindle motor for rotating said spindle, a feed motor for driving said spindle head, a detector for detecting a rotating position of said spindle, a detector for detecting a feed position and a feed amount of said spindle head, and wherein thread cutting working is conducted under synchronous driving operation of said spindle motor and said feed motor, said thread cutting machine comprising:

means for computing a rotation deviation between a rotation instruction and a rotating position of said spindle detected by the rotating position detector;

means operatively connected to said rotation deviation computing means for driving said spindle motor in accordance with the rotation deviation;

means for computing a rotation speed and an acceleration;

means for computing a feed instruction corresponding to the computed feed speed and acceleration on the basis of a thread pitch;

means operatively connected to said feed instruction computing means for computing a feed correction value corresponding to the detected rotating position of said spindle on the basis of the thread pitch;

means operatively connected to said feed correction computing means and said feed position detector for computing a feed deviation between the feed correction value and the detected feed amount of the spindle head;

means operatively connected to said feed deviation computing means for correcting the feed instruction on the basis of said feed deviation; and

means operatively connected to said correcting means for driving the feed motor in accordance with said corrected feed instruction.

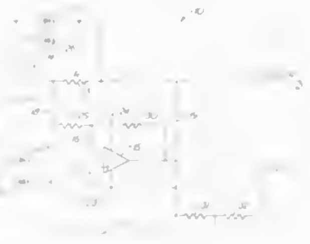
4,879,661
BI-DIRECTIONAL CIRCUIT TO INTERFACE BETWEEN A LOW CURRENT DEVICE AND HIGH CURRENT TESTER

Floyd W. Olsen, Endicott, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 2, 1987, Ser. No. 104,326

Int. Cl.⁴ G01R *19/00;* **H03M** *5/00*

U.S. Cl. 364—483 12 Claims



1. An interface circuit for connecting test instrumentation reflecting at least 100 pico farads of capacitive loading at its terminals, to test a low current monolithic device, said interface circuit comprising:

input buffer amplifier means with an input terminal connected to a device under test to provide a driving voltage at an output terminal to drive said test instrumentation in

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response to a voltage output from said low current monolithic device;

sensing resistance means connected with said input buffer amplifier means for matching, along with an internal resistance of said input buffer amplifier means, a resistance reflected by said test instrumentation; and

operational amplifier circuit means in said interface circuit connected to drive said monolithic device in response to a voltage across said sensing resistance means that is developed by said test instrumentation.

4,879,662

FLUID FLOW SELF CALIBRATION SCHEME

John J. Vicari, and Peter J. Suttie, both of Rockford, Ill., assignors to Sundstrand Corporation, Rockford, Ill.

Filed Mar. 11, 1988, Ser. No. 167,033

Int. Cl.⁴ G06F *25/00*

U.S. Cl. 364—510 8 Claims

1. A method of providing an in-flight accurate fluid flow rate calibration curve for a metering system comprising:

providing pressurized fluid for utilization by a receiver through conduits including a first shut-off valve that is intermittently operated during flight and a variable area metering valve;

providing a plurality of fixed calibration orifices, each with a pressure drop sensor and calibrated at a particular, different set point such that for a given pressure drop across the orifice the flow rate through that orifice is precisely known;

supplying said pressurized fluid through said variable area metering valve to a selected one of said fixed calibration orifices in sequence during flight while said first shut-off valve is closed; and

recording the precise position of said variable area metering valve in the memory correlated with the known flow rates associated with each of said calibration orifices for subsequent retrieval and use during flight for controlling said variable area metering valve to regulate the flow rate to said receiver.

4,879,663

METHOD FOR DETERMINING POINTS IN SPACE GUIDING THE MOVEMENT OF A ROBOT ARM

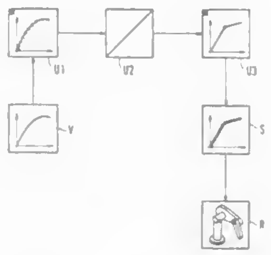
Diethelm Fuehrer, Uttenreuth, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Jul. 9, 1987, Ser. No. 71,481

Claims priority, application Fed. Rep. of Germany, Jul. 9, 1986, 3623070

Int. Cl.⁴ G05B *19/18*

U.S. Cl. 364—513 2 Claims



1. A data processing method for determining points in space guiding the control of a robot arm having a predetermined position tolerance, the points defining break points in successive continuous linear motion sections of the robot arm which, in total, approximate an ideal motion trajectory for the robot arm, the method comprising the steps of:

(a) resolving by means of a converter the ideal motion trajectory into N short linear segments from a starting point on the ideal motion trajectory, through N-1 successive intermediate points, to a destination point on the ideal motion trajectory;

(b) storing the coordinates of the N+1 points of the N ideal motion trajectory linear segments;

(c) storing the coordinates of the starting point of the trajectory as a current starting point of a first extended line and therefore as a first point in space from which the robot arm is to be moved;

(d) utilizing the intermediate point on the ideal motion trajectory immediately following the current starting point as a first extension point and as a current auxiliary point for a temporary fixation of the extended line in space from the current starting point through the current auxiliary point toward a current extension point;

(e) defining the extended line in space by the coordinates of the current starting point and the coordinates of the current auxiliary point;

(f) establishing the current extension point on the extended line as that point on the extended line closest to a next following previously unconsidered intermediate point on the ideal motion trajectory;

(g) calculating the minimum distance between the next following previously unconsidered intermediate point on the ideal motion trajectory and the current extension point;

(h) if the distance is greater than the predetermined position tolerance of the robot arm, storing an immediately preceding extension point in memory as the break point of a robot arm linear motion section and as a current starting point of a subsequent robot arm linear motion section;

(i) if the distance is less than the predetermined position tolerance of the robot arm, dividing the distance between the current auxiliary point and the just considered intermediate point on the ideal motion trajectory in accordance with a count of the already considered intermediate points since the determination of the current starting points and relocating the current auxiliary point to a dividing point closest to the current auxiliary point;

(j) repeating the process steps (e) through (i) until the test of step (h) is satisfied;

(k) repeating steps (d) through (k) until all N+1 trajectory points have been considered; and

(l) moving the robot arm between the points in space determined in steps (a)–(k).

4,879,664

THREE-DIMENSIONAL POSITION SENSOR AND THREE-DIMENSIONAL POSITION SETTING SYSTEM

Toshimitsu Suyama, Ohmorinishi, and Yasutomo Fujimori, Yokohama, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

PCT No. PCT/JP86/00033, § 371 Date Jan. 23, 1987, § 102(e) Date Jan. 23, 1987

PCT Filed Jan. 28, 1986, Ser. No. 23,553

Claims priority, application Japan, May 23, 1985, 60-110909; Aug. 9, 1985, 60-175517; Oct. 22, 1985, 60-235678

Int. Cl.⁴ G01B *11/00;* **G01C** *15/00*

U.S. Cl. 364—518 18 Claims

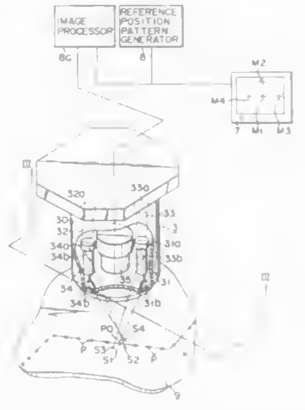
1. A three-dimensional position sensor for detecting a three-dimensional position and a posture with respect to a position setting point indicated on an object, comprising:

a sensor body;

projecting means having a first projector for projecting a first light beam onto the object so as to form a first bright spot thereon to detect a distance between said sensor body and the position setting point, and a plurality of second projectors mounted on said sensor body for projecting a plurality of second light beams onto the object so as to form a plurality of second bright spots cooperating with the first bright spot to form at least a triangle, said projecting means being arranged to obliquely project the light beams onto the object to form said first and second bright spots on a surface of the object, the plurality of bright spots being formed to constitute at least three vertices of the triangle;

image pickup means for picking up an image including the bright spots formed on the object by said projecting means, the position setting point indicated on the object, and the surface of the object; and

image processing means for electrically reading the bright spots and the position setting point which are picked up by said image pickup means and for detecting the three-dimensional position and the posture of said sensor body with respect to the object on the basis of the first and second bright spots



wherein said image processing means includes means for detecting the distance between said sensor body and the position setting point through the first bright spot formed on the object upon emission of the exclusive light beam from said first projector; and

wherein said projecting means comprises illuminating means for illuminating the surface of the object at a brightness level falling between a brightness level of the first and second bright spots and that of external disturbing light.

4,879,665

MEDICAL PICTURE FILING SYSTEM

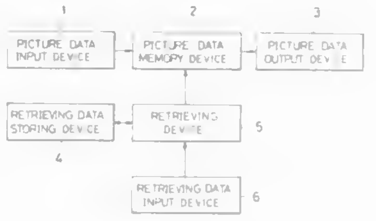
Yuichiro Akatsuka, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Sep. 4, 1985, Ser. No. 772,517

Claims priority, application Japan, Sep. 29, 1984, 59-202982

Int. Cl.⁴ G06F *15/42*

U.S. Cl. 364—518 11 Claims


1
2
3
PICTURE DATA INPUT DEVICE
PICTURE DATA MEMORY DEVICE
PICTURE DATA OUTPUT DEVICE
RETRIEVING DATA STORING DEVICE
RETRIEVING DEVICE
5
4
RETRIEVING DATA INPUT DEVICE
6

1. A medical picture filing system for storage and retrieval of input picture data from a video signal, said medical picture filing system comprising;

picture data input means for inputting said video signal representing said input picture data;

picture data memory means connected to said picture data input means, said picture data memory means for storing said input picture data;

retrieving means connected to said picture data memory means, said retrieving means for determining storage addresses for said picture data in said picture data memory means, said retrieving means for retrieving said picture data from said picture data memory means;

retrieving data input means connected to said retrieving means, said retrieving data input means for receiving retrieving data input thereto, said retrieving data being information which describes said picture data;

retrieving data storing means connected to said retrieving means, said retrieving data storage means for storing said addresses of said input picture data, said retrieving data storing means for storing said retrieving data about said input picture data input from said retrieving data input means; and

picture data output means connected to said picture data memory means, said picture data output means for outputting said picture data from said picture data memory means when said picture data is retrieved from said picture data memory means by said retrieving means,

wherein said retrieving data is formed as a block of information which is common to all input picture data obtained in a one-time examination.

4,879,666

INFORMATION OUTPUT DEVICE HAVING DATA BUFFER FOR PERFORMING BOTH CHARACTER POSITIONING AND CHARACTER EXPANSION/COMPRESSION

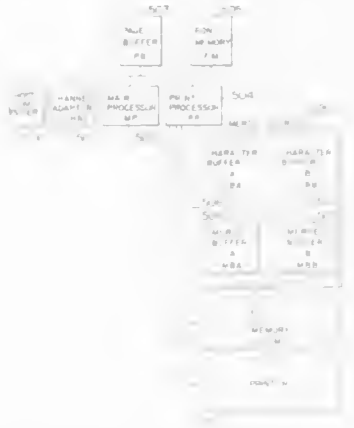
Nobumitsu Kembo, Hadano, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed May 15, 1987, Ser. No. 49,937

Claims priority, application Japan, May 19, 1986, 61-114038; Jan. 20, 1987, 62-10193

Int. Cl.⁴ G06K *15/00*

U.S. Cl. 364—519 6 Claims



1. An information output device comprising:

a font memory for storing character data;

a full-dot memory for storing data read from the font memory through a buffer circuit at any desired position within the full-dot memory;

said buffer circuit connected between said font memory and said full-dot memory, including at least one data buffer having a write word direction and a read word direction which are orthogonal to each other;

a control unit coupled to said buffer circuit and having memory means for storing information to specify data to be read from said font memory and information to specify a manner of expansion/compression of the data to be stored in said full-dot memory and a position for storage therein, and controller means for controlling said buffer circuit to effect writing of data from said font memory into said buffer circuit and reading of data from said buffer circuit into said full-dot memory as dot-expanded or dot-compressed data in accordance with said expansion/compression information at a selected position in said full-dot

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memory by shifting the data read from said font memory by an amount determined by said position information during the writing of the data into said data buffer to position the data in said data buffer and reading said data from said data buffer into said full-dot memory while expanding or compressing the data; and

information output means for reading and outputting the data stored in said full-dot memory;

wherein the number of data buffers is at least two and the two data buffers are buffers having the same function and which operate alternately to store data from said font memory.

4,879,667

PROCESS FOR GENERATING A COMPUTER MODEL OF AN ALTERABLE STRUCTURE

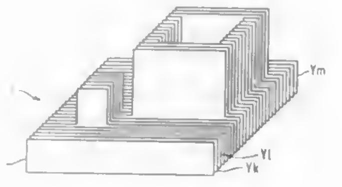
Werner Gorski, Haslach, and Josef Huber, Engelsberg, both of Fed. Rep. of Germany, assignors to Dr. Johannes Heidenhain GmbH, Traunreut, Fed. Rep. of Germany

Continuation of Ser. No. 691,666, Jan. 15, 1985, abandoned. This application Aug. 2, 1988, Ser. No. 227,464

Claims priority, application Fed. Rep. of Germany, Feb. 3, 1984, 3403677

Int. Cl.⁴ G06F *15/40;* G06G *7/48;* G06K *9/00*

U.S. Cl. 364—522 7 Claims



1. A process for generating a data structure for a computer model of a structure which is alterable by an object having a defined path, said process comprising the following steps:

(a) defining a two dimensional grid over a two dimensional contour defined by the structure, said grid comprising a multiplicity of grid points, each addressable by a unique set of coordinates in a first plane;

(b) assigning a respective first signal to each of the grid points, each first signal indicative of the thickness of the structure in a third dimension at the coordinates of the respective grid point; and

(c) altering selected ones of the first signals in response to the object and the path of the object in order to simulate alteration to the structure.

4,879,668

METHOD OF DISPLAYING INTERNAL SURFACES OF THREE-DIMENSIONAL MEDICAL IMAGES

Harvey E. Cline, Schenectady; Siegwalt Ludke, Scotia, and William E. Lorensen, Ballston Lake, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 19, 1986, Ser. No. 943,357

Int. Cl.⁴ G06F *15/42*

U.S. Cl. 364—522 8 Claims

1. An apparatus for displaying three-dimensional structure surfaces, said apparatus comprising:

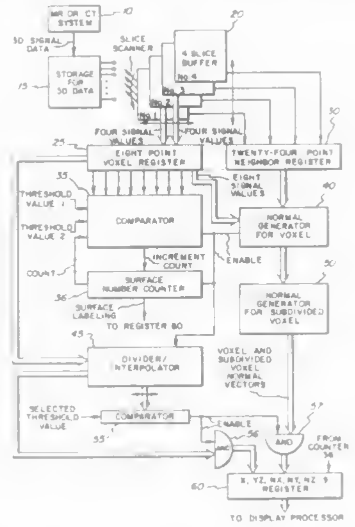
means for storing three-dimensional signal patterns, each signal pattern containing a value of at least one physical property measured at each of regularly spaced three-dimensional grid locations within a three-dimensional body;

means for sequentially and progressively scanning through said three-dimensional signal patterns in said storing means to retrieve those three-dimensional signal patterns associated with a preselective unidirectional sequence of said grid locations within said body;

means for comparing each value of said retried signal patterns with at least one threshold value;

counter means having an output which is set responsive to said comparing means indicating that a present value of the sequence of signal patterns has traversed across any one of said at least one threshold value, for labelling each surface traversed in the single direction of said unidirectional sequence;

means for tessellating the output of said comparing means to generate polygonal surfaces which approximate an intersection of surfaces determined by said at least one threshold value; with voxel elements being defined by said grid;



means for indicating, for each of said polygonal surfaces, surface depth information as determined by said counter means;

display processor means receiving, from at least said tessellating means, the tessellated comparing means output and for converting said output to a display format; and

means for displaying surfaces determined by said at least one threshold value, said displaying means being driven by said display processor means.

4,879,669

SENSOR SIGNAL PROCESSOR

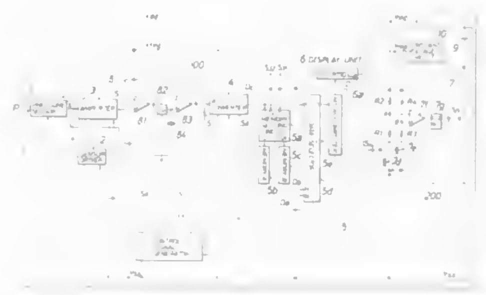
Hiroyuki Kihara, Kodaira, and Kazuya Mitaki, Hoya, both of Japan, assignors to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Mar. 16, 1988, Ser. No. 168,728

Claims priority, application Japan, Mar. 17, 1987, 62-61870; Oct. 23, 1987, 62-266311

Int. Cl.⁴ G06F *15/20;* G04B *17/20, 9/00*

U.S. Cl. 364—550 6 Claims



1. A sensor signal processing apparatus comprising:

a power source unit including,

a battery,

a constant voltage circuit powered by said battery for supplying a constant voltage, and

a voltage detector for detecting a voltage drop in said battery having a comparator for comparing a terminal voltage of said battery with the voltage supplied by said constant voltage circuit;

a sensor for detecting physical information;

an analog signal processor for inputting and processing a sensor signal output from said sensor which is driven by said constant voltage circuit;

an A/D converter for converting the sensor signal, processed by said analog signal processor, into digital information data output and which is driven by said constant voltage circuit;

a data processor for generating sensor information data from the digital information data output from said A/D converter including,

first and second memories for storing first and second digital information data output from said A/D converter, respectively,

sensor characteristic calculating means for calculating a sensor characteristic equation on the basis of the first and second digital information data stored in said first and second memories and converting the digital information data output from said A/D converter into the sensor information data by applying the sensor characteristic equation calculated by said sensor characteristic calculating means to the digital information data, and

a control signal generator for generating control signals for controlling operations of said power source unit, said sensor, said analog signal processor, said A/D converter, and said data processor.

4,879,670

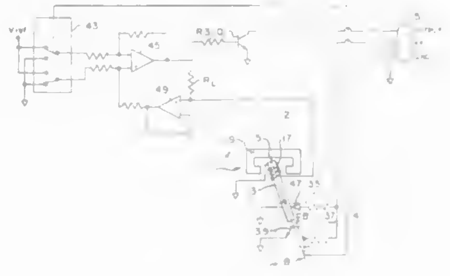
VEHICLE WHEEL ALIGNMENT TRANSDUCER, SYSTEM AND METHOD

Nicholas J. Colarelli, III, St. Louis County, Mo., assignor to Hunter Engineering Company, Bridgeton, Mo.

Filed Nov. 2, 1987, Ser. No. 115,117

Int. Cl.⁴ G01B *7/00*

U.S. Cl. 364—559 43 Claims



4. An apparatus for measuring an alignment characteristic of a vehicle wheel comprising:

a transducer mountable in a fixed geometrical relationship with respect to a vehicle wheel, said transducer including means responsive to an alignment characteristic of the vehicle wheel for generating a digital signal having a duty cycle related to the value of the alignment characteristic being measured; and

means responsive to the duty cycle of the digital signal for determining the value of the alignment characteristic;

said transducer including a movable arm drivable along its path of travel to a first predetermined position, said arm being subjected by gravity to a force tending to make the arm move towards a vertical reference, the magnitude of the force being a function of the alignment characteristic of the vehicle wheel being measured.

4,879,671

DIGITAL MEASUREMENT OF RELATIVE DISPLACEMENT USING STORED CORRECTION ADDRESS DATA

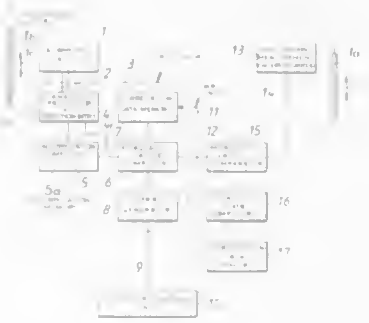
Heinz Rieder, St. Pantaleon, and Max Schwaiger, Ostermiething, both of Austria, assignors to RSF - Elektronik Gesellschaft m.b.H., Tarsdorf, Fed. Rep. of Germany

Continuation of Ser. No. 96,252, Sep. 8, 1987, abandoned, which is a continuation of Ser. No. 750,528, Jun. 28, 1985, abandoned. This application Nov. 14, 1988, Ser. No. 273,171

Claims priority, application Austria, Jul. 3, 1984, 2139/84

Int. Cl.⁴ G01B *11/02, 21/02;* G01C *25/00;* G06F *11/00*

U.S. Cl. 364—562 8 Claims



1. A method of digitally measuring displacement increments with automatic correction which comprises the steps of:

(a) relatively displacing a scale having periodically repeating graduations separated by fixed increments and a scanner responsive to said scale and determining locations along said scale at which correction increments for measured displacement are necessary for respective positions of relative displacement of said scanner and said scale which exceed a predetermined threshold measurement error;

(b) storing in a correction data memory addresses corresponding to said locations of necessary scale correction increments for measured displacement which exceed said predetermined threshold measurement error at respective addresses for the scale locations corresponding to said positions and storing a plus or a minus sign for each said scale correction increment representing whether said scale correction increment lies respectively above or below a measured displacement by providing a respective plus and a respective minus address memory and storing each said correction address only in the plus address memory when said scale correction increment lies above said measured displacement and only in the minus address memory when said scale correction increment lies below said measured displacement;

(c) following said correction determination, displacing said scale and said scanner relatively and generating signals representing the latter relative displacement and movement past said locations;

(d) generating from said signals an output value corresponding to the successive scanning of said graduations, thereby forming a succession of measured values associated with successive locations of the scale which are scanned;

(e) reading from said correction data memory addresses corresponding to respective scale correction increments stored for each said scale location at which the respective scale correction increment exceeded said predetermined threshold measurement error;

(f) correcting said respective scale correction increments for a particular said address for a respective location, the corresponding measured value; and

(g) outputting the measured value of the displacement corrected as in step (f).

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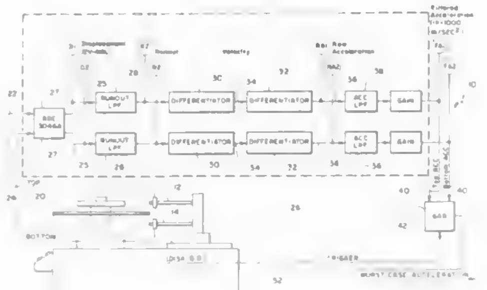
4,879,672

METHOD AND APPARATUS FOR TESTING RUNOUT VELOCITY AND ACCELERATION ON A SURFACE

Philip R. Pombrio, Jr., Papillion, Nebr., assignor to Control Data Corporation, Minneapolis, Minn.

Filed Aug. 21, 1987, Ser. No. 87,837
Int. Cl.^{4} G01P *3/44;* **G01B** *21/30*
U.S. Cl. 364—566 10 Claims



1. A method for testing a surface for the largest acceleration associated with an irregularity on the surface from a signal representing the displacement between a fixed probe and the surface passing beneath the probe, said method comprising the steps of:

producing a plurality of data points representative of substantially instantaneous acceleration of the displacement over time between the fixed probe, and the surface passing under the probe;

transforming said plurality of data points into an exponential distribution curve;

determining the largest acceleration associated with an irregularity on the surface from said exponential distribution curve; and

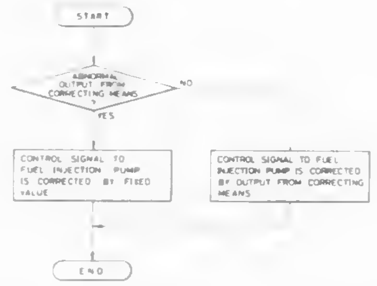
comparing the determined largest acceleration associated with an irregularity on a surface to a selected level of acceleration.

4,879,673

METHOD AND DEVICE FOR CORRECTING A FUEL INJECTION QUANTITY IN A DIESEL ENGINE

Masaomi Nagase; Yoshiyasu Ito; Mikio Kizaki; Kiyotaka Matsuno, all of Toyota; Keisuke Tsukamoto, Nagoya, and Fumiaki Kobayashi, Toyota, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Japan

Filed Jul. 21, 1986, Ser. No. 887,659
Claims priority, application Japan, Jul. 25, 1985, 60-164963
Int. Cl.^{4} G06F *15/20;* **F02M** *39/00*
U.S. Cl. 364—571.01 7 Claims


START
ABNORMAL OUTPUT FROM CORRECTING MEANS
YES
NO
CONTROL SIGNAL TO FUEL INJECTION PUMP IS CORRECTED BY FIXED VALUE
CONTROL SIGNAL TO FUEL INJECTION PUMP IS CORRECTED BY OUTPUT FROM CORRECTING MEANS
END

1. A method of correcting a fuel injection quantity in a diesel engine, comprising correcting a shift in an engine rotation pulse and dispersion of responses of an electromagnetic spill valve by correcting means which provide a fixed output, correcting a control signal to a fuel injection pump in response to said fixed output from said correcting means,

detecting abnormal outputs from said correcting means; and

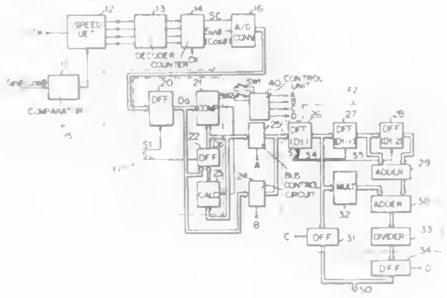
correcting a control signal to said fuel injection pump by use of a fixed value when the output from said correcting means is abnormal.

4,879,674

INPUT CIRCUIT FOR A DIGITAL PHASE LOCKED LOOP

Kenzaburou Iijima, and Yoshinori Hayashi, both of Shizuoka, Japan, assignors to Yamaha Corporation, Japan

Filed Jan. 14, 1988, Ser. No. 143,964
Claims priority, application Japan, Jan. 16, 1987, 62-7904
Int. Cl.^{4} G06F *15/31*
U.S. Cl. 364—724.03 2 Claims



1. An input circuit for a digital phase locked loop circuit, the input circuit comprising;

an A/D converter having means to receive an input signal;

a first filter coupled to said A/D converter and performing a first calculation ($D_{k-1}+1$) when D_k is larger than D_{k-1}, a second calculation ($D_{k-1}-1$) when D_k is smaller than D_{k-1}, and a third calculation (D_{k-1}) when D_k is equal to D_{k-1}, wherein D_k and D_{k-1} are current and one-time previous values of a first output signal from said A/D converter;

a second filter coupled to said A/D converter via said first filter and performing a fourth calculation $(2 \cdot D_t + D_{t-1} + D_{t-2})/4$, wherein D_t, D_{t-1} and D_{t-2} are current, one-time previous and two-times previous values of a second output signal from said A/D converter; and

means for selectively transferring a signal to the digital phase locked circuit after either said calculation by said first filter, after said calculation by second filter, or after said calculations by both said first and second filters.

4,879,675

PARITY GENERATOR CIRCUIT AND METHOD

Timothy B. Brodnax, Arlington, Va., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 17, 1988, Ser. No. 156,626
Int. Cl.^{4} G06F *11/10*
U.S. Cl. 364—738 10 Claims

1. An improved parity generator for the sum output of an adder having a first input operand A with M high order bits AH and N low order bits AL and a second input operand B having M high order bits BH and N low order bits BL, where A and B are to be added and the sum of which is to have its parity established, comprising:

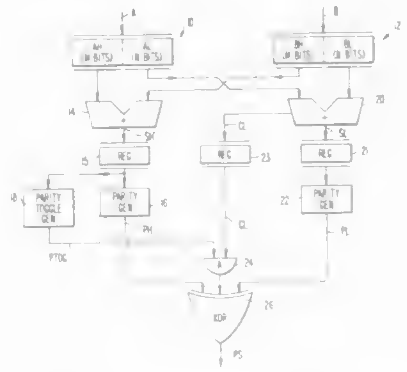
an M bit adder having a first M bit operand AH and a second M bit operand BH and producing an M bit high order sum SH';

a first parity generator connected to the sum out of said M bit adder for producing a high order parity bit PH';

a parity toggle means having an input connected to the sum output of said M bit adder for producing a parity toggle bit having a binary value of one if there are an even number of ones to the right of the first zero in the sum output of said M bit adder or alternately producing a parity toggle bit having a binary value of zero if there are an odd number of ones to the right of the first zero in the sum output of said M bit adder;

an N bit adder having said N bit value AL applied as a first operand input thereto and having said N bit value BL applied as a second operand input thereto and producing an N bit low order sum SL and a low order carry bit CL;

a second parity generator having an input connected to said sum output of said N bit adder, for producing a low order parity bit PL;



an ANDing means having a first input connected to said parity toggle bit output from said parity toggle means and a second input connected to said low order carry bit CL output from said N bit adder, and having an output;

an exclusive ORing means having a first input connected to said output of said ANDing means, a second input connected to said high order parity bit PH' from said first parity generator and a third input from said low order parity bit PL from said second parity generator, the output of said exclusive ORing means being the parity of the sum of the operand A and B;

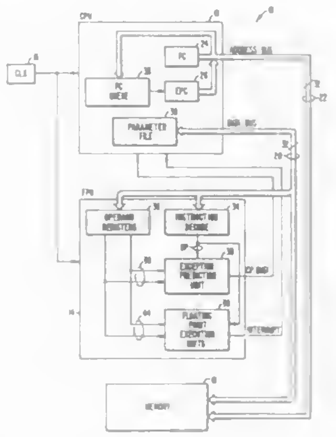
whereby the parity of the sum of two operands is produced.

4,879,676

METHOD AND APPARATUS FOR PRECISE FLOATING POINT EXCEPTIONS

Craig C. Hansen, Mountain View, Calif., assignor to MIPS Computer Systems, Inc., Sunnyvale, Calif.

Filed Feb. 29, 1988, Ser. No. 161,543
Int. Cl.^{4} G06F *7/48*
U.S. Cl. 364—748 6 Claims



1. In a data processing system of the type having at least a pair of processor units, a one of processor units being operable to perform floating point computations on first and second operands, each having an exponent field and a fractional field, the other processor units being operable to perform other data processing tasks in parallel with floating point computations being performed by the one processor unit, a method of performing floating point computations, the method comprising the steps of:

forming, for each different type of floating point computation to be performed by the one processor unit, floating point exception causing criteria;

comparing a combination of the exponent fields of the first and the second operands to the floating point exception causing criteria for the floating point computation to be performed;

generating a floating point exception prediction signal when the comparing step indicates, pursuant to the criteria used, the possibility that an exception will occur;

temporarily halting operation of the other processor unit in response to existence of the floating point exception prediction signal;

performing the floating computation; and

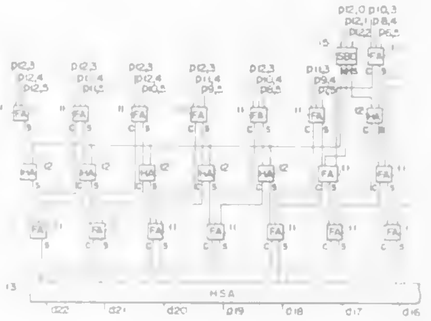
resuming operation of the other processor unit if the computation does not result in an actual floating point operation.

4,879,677

PARALLEL ADDER CIRCUIT WITH SIGN BIT DECODER FOR MULTIPLIER

Mikio Shiraishi, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 21, 1988, Ser. No. 171,105
Claims priority, application Japan, Mar. 30, 1987, 62-76647
Int. Cl.^{4} G06F *7/52*
U.S. Cl. 364—760 15 Claims



1. In a multiplier for determining the product of a multiplier and a multiplicand using Booth's algorithm and for producing a series of partial products in 2's complement format, each of the partial products containing a sign bit, a parallel adder circuit comprising:

sign bit decoder means, connected to receive said sign bits of at least two of said partial products, for generating outputs; and

partial product adding means, coupled to receive said partial products and the output of said sign bit decoder means, for producing the product of said multiplier and multiplicand, said partial product means including a plurality of bit adding means for producing different bits of said product, each of said bit adding means being coupled to receive corresponding bits of said partial products, and selected ones of said bit adding means being coupled to receive at least one of the outputs of said sign decoding means,

wherein said sign bit decoder means is connected to receive two sign bits A and B and produce two single bit outputs S ($=A \oplus B$) and N ($=A+B$).

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4,879,678

PROGRAMMABLE SEQUENCE CONTROLLER WITH OPERATION CODES PARTIALLY SUPPLYING JUMP TO ADDRESSES OF MACHINE LANGUAGE INSTRUCTION

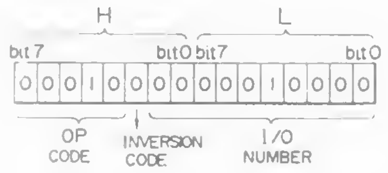
Naohiro Kurokawa, and Ryoichi Abe, both of Shibata, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

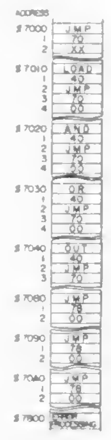
Filed Feb. 15, 1985, Ser. No. 702,264

Claims priority, application Japan, Mar. 26, 1984, 59-58056

Int. Cl.⁴ G06F *9/22, 11/16, 9/30, 9/32*

U.S. Cl. 364—900 6 Claims





1. A programmable sequence controller, comprising:

first read/write memory means for storing therein a sequence program provided by the user and including a combination of sequence instructions having different operation codes corresponding to different functions;

second memory means storing therein a plurality of different machine language instructions, corresponding to said different functions of said sequence instructions, at addresses that are an arithmetic combination of a single number and said operation codes of said sequence instructions respectively;

said second memory means storing therein, at a head address, a head jump instruction with a non-designated jump-to address;

said second memory means storing therein a jump to said head address as a terminal part of each of said machine language instructions;

processing means for processing said sequence program on the basis of said machine language instructions fetched from said second memory means to produce operation results; and

instruction transfer means for reading out the sequence instruction to be executed from said first memory means and transferring the operation code of the sequence instruction to be executed to said processing means as part of the jump-to address of said head jump instruction;

said processing means executing said head jump instruction with the jump-to address that is the arithmetic combination of said single number and said operation code of the sequence instruction to be executed to jump to and execute the machine language instruction corresponding to the sequence instruction to be executed;

input means for transferring input signals from outside the controller into said processing means;

output means for transferring an operation result of said processing means to external equipment; and

address bus means and data bus means interconnecting said first and second memory means, said processing means, said instruction transfer means, said input means, and said output means.

4,879,679

DYNAMIC RANDOM ACCESS MEMORY HAVING STORAGE GATE ELECTRODE GROUNDING MEANS

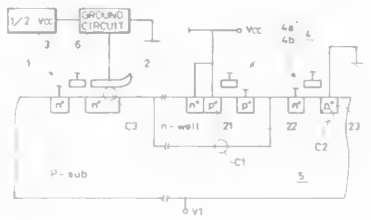
Shigeru Kikuda, and Hiroshi Miyamoto, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisna, Tokyo, Japan

Filed Mar. 2, 1988, Ser. No. 163,017

Claims priority, application Japan, Jun. 11, 1987, 62-147251

Int. Cl.⁴ G11C *11/24, 11/34;* H01L *29/78;* H03K *3/01*

U.S. Cl. 365—149 5 Claims



1. A dynamic random access memory device provided on a semiconductor substrate, comprising:

a memory cell including a capacitor for storing electric charges as information, said capacitor having a storage gate electrode to which a potential other than a ground potential is applied when said device is in normal operation;

a peripheral circuit including a CMOS circuit; and

grounding means responsive to the voltage appearing at a power supply connection, and including switching means for applying the ground potential to said storage gate electrode only in a predetermined period immediately after a start of application of a power supply voltage to said device.

4,879,680

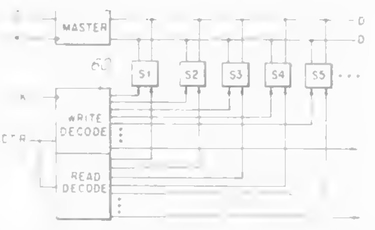
MULTI-SLAVE MASTER-SLAVE FLIP-FLOP

Dirk R. Luckett, Dallas, Tex., and James P. Parkerson, Portland, Me., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Oct. 18, 1985, Ser. No. 789,285

Int. Cl.⁴ G11C *7/00, 19/00, 19/28*

U.S. Cl. 365—154 4 Claims



1. A multiple slave master-slave flip-flop, comprising:

a flip-flop master cell having a data input and a clock input;

a plurality of single-bit flip-flop slave cells connected in parallel and each coupled to said master cell;

each of said slave cells including address input means; each of said slave cells being responsive to a write signal, a predetermined address on said address input means and both a data input and clock input at said flip-flop master to store said data therein; each of said slave cells being responsive to a read signal and said predetermined address on said address input means to read out therefrom data stored therein

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4,879,681

SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE

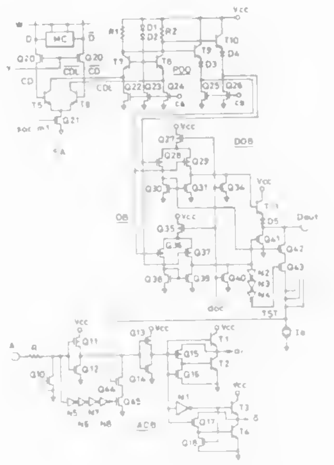
Hideo Miwa, Kodaira; Kazuhiro Tsuruoka, Tokyo; Koudou Yamauchi; Hitoshi Endoh, both of Ohme, and Masanori Odaka, Kodaira, all of Japan, assignors to Hitachi, Ltd. and Hitachi VLSI Engineering Corp., both of Tokyo, Japan

Continuation of Ser. No. 137,734, Dec. 24, 1987. This application Jan. 5, 1989, Ser. No. 293,760

Claims priority, application Japan, Dec. 24, 1986, 61-306462

Int. Cl.⁴ G11C *13/00*

U.S. Cl. 365—189.01 34 Claims



1. A semiconductor integrated circuit device comprising:

external input terminals to which external input signals are to be supplied;

a first input circuit connected to said external input terminals and generating internal signals in accordance with said external input signals;

an internal circuit connected to said first input circuit and generating internal output signals in response to said internal signals;

an output circuit having input nodes connected to said internal circuit and an output node connected to an external terminal, and generating an external output signal in accordance with said internal output signals;

a first power source wiring connected to said first input circuit and supplying a predetermined power source voltage;

control means connected to said output circuit, for controlling said output circuit so that the output node of said output circuit attain a high impedance state; and

input circuit control means connected to said first input circuit, for detecting a change of the output node of said output circuit to the high impedance state by said control means in a transition period in which a potential of said external output signal generated by said output circuit changes, and for changing a threshold voltage of said first input circuit based on the detected change.

4,879,682

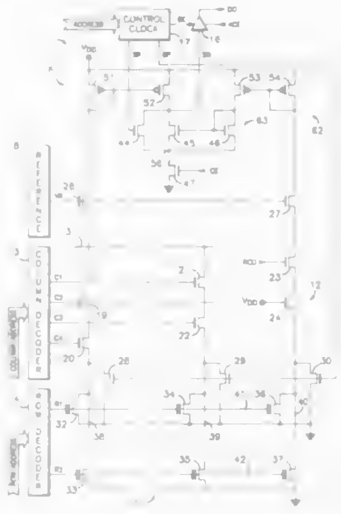
SENSE AMPLIFIER PRECHARGE CONTROL

Bruce E. Engles, Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 15, 1988, Ser. No. 244,368

Iot. Cl.⁴ G11C *13/00*

U.S. Cl. 365—189.01 15 Claims



12. A memory comprising:

an array comprised of word lines, bit lins, and memory cells, wherein the word lines and bit lines intersect and the memory cells are located at the intersections of the bit lines and word lines, each memory cell is in either a first or second state, each memory cell draws current representative of its state;

sense amplifier means having a first input and a second input for comparing current drawn from said first input to the current drawn from said second input and providing an output signal;

decoder means for selectively coupling one of said bit lines to the first input of said sense amplifier;

a plurality of first transistors, each of said first transistors coupled to a respective bit line and enabled by a precharge signal being active, each of said first transistors having a first gain;

a reference bit line;

a second transitor coupled to said reference bit line, enabled by said precharge signal being active, and having a second gain, said second gain greater than said first gain;

coupling means for coupling the reference bit line to the second input of the sense amplifier in response to a reference signal becoming active, said reference signal becoming active a predetermined time period after the precharge signal is no longer active.

4,879,683

A GAAS REGISTER FILE HAVING A PLURALITY OF LATCHES

Virgilio N. Garcia, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Sep. 28, 1987, Ser. No. 101,620

Int. Cl.⁴ G11C *7/00;* H03K *19/094*

U.S. Cl. 365—189.05 6 Claims

1. A GaAs register file comprising:

a plurality of latches, each latch having a data input terminal and a write enable circuit having a write enable strobe connected thereto, said write enable circuit comprising:

a first input circuit including at least a single GaAs gate with an input and at least a first and second output;

a second input circuit including at least a single input gate with an input and a first output;

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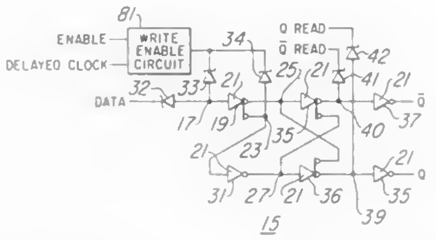
a first combining circuit with inputs connected to the first outputs of the first and second circuits and including an output;

a plurality of series connected GaAs gates having an input and an output with an input being connected to a second output of the first input circuit; and



a second combining circuit with inputs connected to an output of the first combining circuit and the output of the plurality of series connected GaAs gates and having its output connected to the write enable strobe.

4,879,684
WRITE-READ CIRCUIT

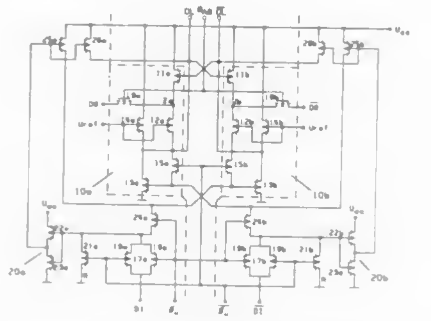
Mathias Krauss, and Horst-Guenter Schniek, both of Dresden, German Democratic Rep., assignors to Jenoptik Jena GmbH, Jena, German Democratic Rep.

Filed Mar. 16, 1988, Ser. No. 168,842

Claims priority, application German Democratic Rep., Apr. 16, 1987, 3018814

Int. Cl.⁴ G11C *7/00*

U.S. Cl. 365—189.11 5 Claims



1. In a read-write circuit for a CMOS memory connected to the read-write circuit via first and second data memory lines and two selector transistors, the memory being controlled by a bit line decoder and having one pair of bit lines each connected to a sensor flip-flop, the read-write circuit being furthermore connected by first and second data input lines to a data input buffer and being connected by first and second data output lines to a data output driver, the read-write circuit including first and second read circuits associated with said first and second data memory lines, respectively, the improvement wherein the first and second data input lines are connected by first and second transfer gates to the inputs of first and second inverters and via first and second n-transistors, respectively, to the gates of third and fourth low-resistance n-transistors in the second and first read circuits, respectively, first and second low-resistance p-transistors being connected to the outputs of the first and second inverters, respectively, for connecting a supply voltage to the first and second data memory lines, respectively, and wherein fifth and sixth n-transistors are connected between the inputs of the first and second inverters and a ground reference, and further comprising means for rendering said first and second transfer gates conductive and rendering said fifth and sixth n-transistors non-conductive during writing to said memory.

4,879,685
SEMICONDUCTOR MEMORY DEVICE WITH INTERNAL ARRAY TRANSFER CAPABILITY

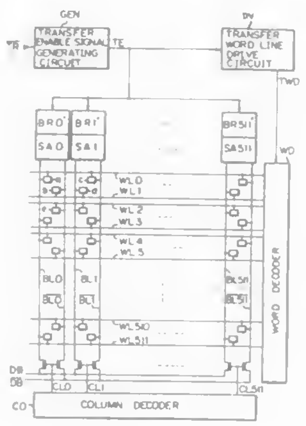
Yoshihiro Takemae, Tokyo, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 786,250, Dec. 18, 1985, abandoned. This application Feb. 16, 1989, Ser. No. 311,367

Claims priority, application Japan, Oct. 15, 1984, 59-215866

Int. Cl.⁴ G11C *7/00, 11/40;* G09G *1/14*

U.S. Cl. 365—189.11 10 Claims



1. A semiconductor memory device, comprising:

a plurality of word lines;

a plurality of bit lines;

a memory cell array, including:

- a plurality of memory cells connected between said word lines and said bit lines at intersections of said word lines and bits lines; and
- a plurality of sense amplifiers, each connected to a pair of bit lines, for amplifying a difference in potential between respective said bit lines;

a plurality of bit line reset means, each connected to a pair of said bit lines, for resetting all said bit lines to a reset potential both before and after a read/write cycle; and

transfer control means for arbitrarily selecting a first word line and thereafter selecting a second word line, and for simultaneously reading out data in each memory cell within the array connected to said first word line to each bit line and thereafter simultaneously writing data in each bit line amplified by said sense amplifier to each corresponding memory cell within the array connected to said second word line and producing a parallel data transfer, within the array, from memory cells corresponding to the first word line to memory cells corresponding to the second word line, said transfer control means including inhibit means, connected to said bit line reset means, for inhibiting resetting of said bit lines during the parallel data transfer, directly writing potentials developed on said bit lines during the reading out into memory cells connected to said second word line during the writing.

4,879,686
SEMICONDUCTOR MEMORY DEVICE WITH A DATA CLEAR CIRCUIT

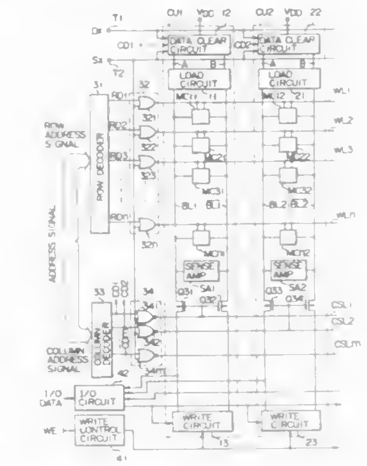
Azuma Suzuki, Yokohama; Takayuki Ootani, Tokyo, and Mitsuo Isobe, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa, Japan

Filed Mar. 3, 1988, Ser. No. 163,750

Claims priority, application Japan, Mar. 6, 1987, 62-51354

Int. Cl.⁴ G11C *7/00, 11/40*

U.S. Cl. 365—189.11 12 Claims



1. A semiconductor memory device comprising:

a memory cell array having a plurality of memory cells;

bit line means having a pair of first and second bit lines connected to a number of specified memory cells of said memory cell array;

mode-selecting means for selecting one of a first mode and a second mode;

memory cell-selecting means for driving one of the specified memory cells when set in the first mode, and for driving all specified memory cells when set in the second mode;

input data supply control means for supplying externally input data to the bit lines when set in the first mode, and for supplying no data to the bit lines when set in the second mode; and

bit-line potential control means connected to said first and second bit lines for raising the potential of the first and second bits lines to a high level when set in the first mode, and for raising the potential of the first bit line to the high level and lowering the potential of the second bit line to a low level when set in the second mode.

4,879,687
MEMORY DEVICE HAVING VALID BIT STORAGE UNITS TO BE RESET IN BATCH

Tadashi Okamoto, Hirakata; Hiroshi Kadnta, Toyonaka; Jiro Miyake, Moriguchi; Ichiro Okabayashi, and Yoshinori Maeda, both of Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

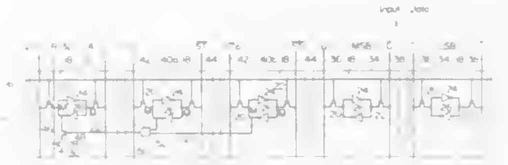
Filed Jun. 8, 1987, Ser. No. 59,763

Claims priority, application Japan, Jun. 13, 1986, 61-138529

Int. Cl.⁴ G11C *7/00, 11/40*

U.S. Cl. 365—200 5 Claims

1. A memory device comprising plural word data storage units, each word data storage unit having plural data bit cells for storing word data, a plurality of status bit cells for indicating the status of said data, and a valid bit cell storing valid bits for indicating the validity of said data, said valid bit cell having a reset circuit, and said reset circuit being connected to one reset line and connected to a status setting circuit capable of operating the reset circuit only when the outputs of status bit cells having a specified status, whereby only the valid bit cell of the word data storage unit in which the output of status bit cell has a specified status when a reset signal is applied to one reset line being reset in batch, said reset circuit comprising first and second switches composed of transistors for connecting in series between a portion holding the data of memory cells of said valid bits and a constant potential portion; wherein said status setting circuits disposed on all words receive outputs from said status bits on individual words to generate an output used as the input to said first switch, and wherein said one reset line is used as an input to said second switch for all words.



4,879,688
IN-SYSTEM PROGRAMMABLE LOGIC DEVICE

John E. Turner; David L. Rutledge, both of Beaverton, and Roy D. Darling, Forest Grove, all of Oreg., assignors to Lattice Semiconductor Corporation, Hillsboro, Oreg.

Continuation-in-part of Ser. No. 707,662, Mar. 4, 1985, Pat. No. 4,761,768. This application May 13, 1986, Ser. No. 862,815

Int. Cl.⁴ H03K *19/77;* G06F *11/26*

U.S. Cl. 365—201 42 Claims

1. An integrated in-system programmable logic device, operable during a normal device operating state to receive logical input signals and provide output signals in dependence on predetermined logic functions implemented by selective connection of input lines to product term lines, comprising:

- a first set of device input terminals dedicated to receiving input logical data;
- a second set of device terminals dedicated to the function of receiving input logical data or providing output logical data;
- a programmable array, said array including a plurality of input lines, a plurality of product term lines and a plurality of output lines, said input lines being coupled to respective ones of said device input terminals;
- said programmable array comprising an array of nonvolatile memory cells arranged in rows and columns, each cell

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associated with predetermined ones of said input lines and said product term lines and arranged to selectively connect said input line to said product term line in dependence on the cell state, each cell comprising a cell selection element and an electrically erasable and reprogrammable nonvolatile memory element which retains a selected cell state upon interruption of device power;

a first device utility terminal dedicated for device utility functions;

data receiving means for receiving cell selection data and row programming data through said first device utility terminal during a device utility state;

means for programming the cells of said array to predetermined conditions in dependence on said cell selection and programming data during said utility state; and

means for isolating said first set of device input terminals from said array and from said programming means during said utility state;

whereby said device may be programmed to a desired configuration during said utility state while installed in a user's system without the necessity for voltage and timing requirements on said input terminals.

4,879,689

NONVOLATILE SEMICONDUCTOR MEMORY DEVICE

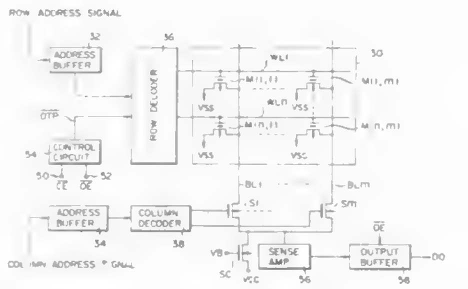
Shigeru Atsumi; Sumio Tanaka, both of Tokyo; Shinji Saito, and Nobauki Otsuka, both of Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 25, 1987, Ser. No. 30,065

Claims priority, application Japan, Mar. 31, 1986, 61-71139

Int. Cl.^{4} G11C *11/40, 29/00*

U.S. Cl. 365—201 12 Claims



1. A nonvolatile semiconductor memory device comprising:

a memory cell array including a plurality of memory cells which are each formed of a nonvolatile transistor;

a plurality of word lines each connected to the memory cells in the same row;

a plurality of bit lines each connected to the memory cells in the same column;

first selecting means connected to receive an address signal for selecting one of said word lines in accordance with said address signal and driving the memory cells connected to the selected word line;

second selecting means connected to receive said address signal for selecting one of said bit lines in accordance with said address signal and supplying a predetermined voltage to the selected bit line;

output means connected to said bit lines for supplying output data corresponding to the potential of the selected bit line;

a control terminal for receiving a control signal of first and second levels; and

control means coupled to said control terminal for generating a selection control signal prohibiting the selecting operation of said first selecting means in response to the control signal of said first level and permitting the selecting operation in response to the control signal of said second level, said second selecting means being capable of selecting said one of said bit lines at times when said selection control signal is generated.

4,879,690

STATIC RANDOM ACCESS MEMORY WITH REDUCED SOFT ERROR RATE

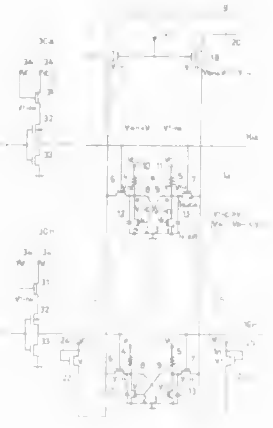
Kenji Anami; Katsuki Ichinose, and Tomohisa Wada, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 11, 1988, Ser. No. 231,063

Claims priority, application Japan, Sep. 7, 1987, 62-223299; Sep. 25, 1987, 62-242308; Jun. 10, 1988, 63-144320

Int. Cl.^{4} G11C *13/00*

U.S. Cl. 365—201 22 Claims



1. A static random access memory having a reduced soft error rate, comprising:

a plurality of word lines,

a plurality of bit line pairs arranged intersecting with said plurality of word lines,

a plurality of memory cells each connected to an intersection of each of said word lines and each of said bit line pairs,

a potential source for generating a power-supply potential and a ground potential, and

word line selecting means for selecting a single word line from among said plurality of word lines and applying a predetermined potential to the word line,

each of said memory cells comprising

- a first load element having one terminal coupled to said power-supply potential and another terminal in which information of a low or high level is stored,
- a second load element having one terminal coupled to said power-supply potential and another terminal in which information of a high or low level is stored,
- a first information storing transistor element connected between the other terminal of said first load element and said ground potential and having a control terminal connected to the other terminal of said second load element,
- a second information storing transistor element connected between the other terminal of said second load element and said ground potential and having a control terminal connected to the other terminal of said first load element,
- a third accessing transistor element connected between one of each of said bit line pairs and the other terminal of said first load element and having a control terminal connected to a corresponding one of said word lines, and
- a fourth accessing transistor element connected between the other of each of said bit line pairs and the other terminal of said second load element and having a control terminal connected to a corresponding one of said word lines,
- said third and fourth accessing transistor elements having a first threshold voltage, and

potential establishing means for setting the potential difference between a potential on the word line selected by said word line selecting means and a potential on a bit line to which information of a high level is read out at the time of selecting the word line to be smaller than said first threshold voltage of said third and fourth transistor elements so that soft errors are reduced.

4,879,691

OPTICAL RECORDING SYSTEM WITH OPTICAL RECORDING MEDIUM HAVING MULTILEVEL RECORDING SURFACE FOR TRACKING

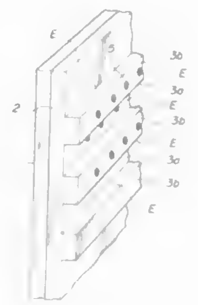
Hidefumi Suzuki, Tokyo, Japan, assignor to CSK Corporation, Tokyo, Japan

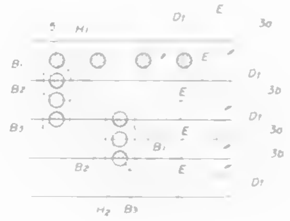
Continuation of Ser. No. 99,002, Sep. 21, 1987, abandoned. This application Jan. 19, 1989, Ser. No. 300,258

Claims priority, application Japan, Sep. 20, 1986, 61-222724; Sep. 20, 1986, 61-222725

Int. Cl.^{4} G11C *7/00, 13/04, 13/00*

U.S. Cl. 365—215 28 Claims





1. An optical recording system comprising an optical recording medium and means for reading data from said optical recording medium,

said optical recording medium including a data recording region having a face formed on a substrate in a stepped configuration comprising adjacent elongated recessed surface portions and elongated raised surface portions, each said recessed and raised surface portions parallel to a major surface of said substrate, said recessed surface portions and said raised surface portions positioned at respective different heights relative to said major surface of said substrate and alternately arranged across said recording region, said recessed surface portions and said raised surface portions each providing a data track, a boundary edge between any two adjacent recessed and raised surface forming a tracking line,

said data recording means having an optical system including a read head for reading data from said data track of said optical recording medium, and tracking means for detecting said boundary edge between recessed and raised portions of said optical recording medium and positioning said read head in response thereto.

28. An optical recording system including means for reading data from an optical recording medium and means for reading data from said optical recording medium, said optical recording medium having a data recording face, which comprises recessed and raised portions formed on said data recording face arranged alternately and both extending in a data reading/writing direction providing data tracks; and boundary edges formed and defined between respective adjacent raised portions, which edges extend along the data tracks and form tracking lines, said data reading means including means responsive to the boundary edges as tracking lines for tracking said data tracks while reading data from said medium.

4,879,692

DYNAMIC MEMORY CIRCUIT WITH IMPROVED SENSING SCHEME

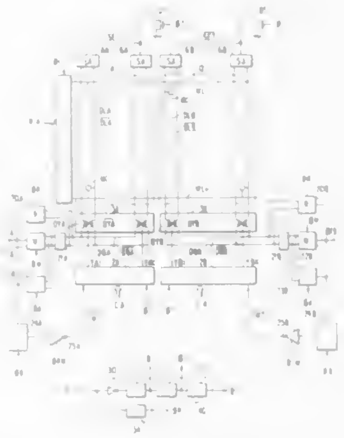
Kazuo Tokushige, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jun. 6, 1988, Ser. No. 202,847

Claims priority, application Japan, Jun. 4, 1987, 62-140811

Int. Cl.^{4} G11C *8/00, 7/00*

U.S. Cl. 365—230.03 4 Claims



1. A dynamic memory circuit comprising first and second memory arrays, each of said first and second arrays including a plurality of word lines arranged in rows, a plurality of digit lines arranged in columns normal to the direction of said rows of word lines, and a plurality of memory cells arranged in a matrix of rows and columns and coupled to said word lines and said digit lines, a row selection circuit coupled to the word lines of said first and second memory arrays for operatively selecting one of the word lines of said first memory array and one of the word lines of said memory array simultaneously in response to row address information, a first data line, a plurality of first transfer gates connected between said first data line and the digit lines of said first memory array, a second data line, a plurality of second transfer gates connected between said second data line and the digit lines of said second memory array, a first data input circuit coupled to said first data line and operatively supplying a first input data signal thereto, a second data input circuit coupled to said second data line and operatively supplying a second input data thereto, a plurality of first sense amplifiers connected to the digit lines of said first memory array for operatively amplifying levels at the digit lines of said first memory array, a plurality of second sense amplifiers connected to the digit lines of said second memory array for operatively amplifying levels at the digit lines of said second memory array, first means for receiving a first control signal taking one of first and second levels, second means for receiving a second control signal taking one of the first and second levels, a first column decoder circuit coupled to said first transfer gates and said first means, said first column decoder enabling one of said first transfer gates when said first control signal is at said first level and enabling all of said first transfer gates when said first control signal is at said second level, a

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second column decoder circuit coupled to said second transfer gates and said second means, said second column decoder enabling one of said second transfer gates when said second control signal is at said first level and enabling all of said second transfer gates when said second control signal is at said second level, a first sense control circuit coupled to said first sense amplifiers for enabling said first sense amplifiers simultaneously in response to a sense enable signal, and a second sense control circuit coupled to said second sense amplifiers for enabling said second sense amplifiers in response to said sense enable signal.

4,879,693

DEVICE FOR THE SELF-SYNCHRONIZATION OF THE OUTPUT CIRCUITS OF A MEMORY USING A THREE-STATE GATE

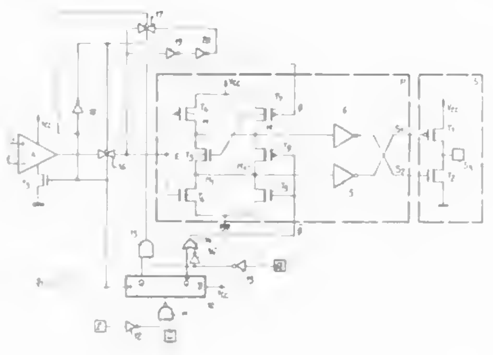
Richard Ferrant, Aix En Provence, France, assignor to SGS-Thomson Microelectronics S.A., Paris, France

Filed Dec. 3, 1987, Ser. No. 128,169

Claims priority, application France, Dec. 5, 1986, 86 17041

Int. Cl.^{4} G11C *8/00*

U.S. Cl. 365—233 9 Claims



1. A self-synchronization device for output circuits of memories working in an internal clock mode, comprising a "3-state" gate connected to the output of read amplifiers, the working of said memories being monitored by read and operation control signals $\overline{W}$ and $\overline{E}$, said device comprising a sequential logic circuit which allows the "3-state" gate to go into low impedance only at the instant when a datum is available at the output of the read amplifiers.

4,879,694

DIFAR DEMULTIPLEXER CIRCUIT

Gilbert R. Grado, Tustin, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Mar. 4, 1988, Ser. No. 164,050

Int. Cl.^{4} H04B *1/59*

U.S. Cl. 367—3 6 Claims

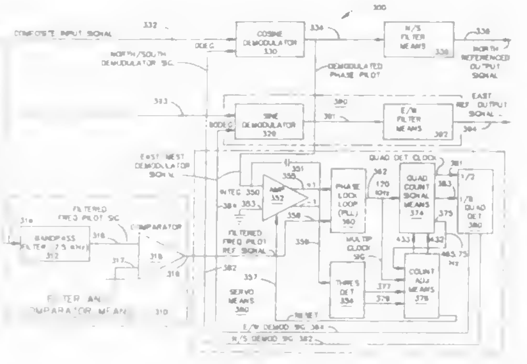
1. A demultiplexer circuit responsive to a composite input signal from a sonar bouy, said composite signal having signal components characterized as; a received audio signal having cosine and sine components, each component having an amplitude proportional to the amplitude of the received audio signal times the respective cosine and sine of the angle between the source of the audio signal and a frame reference referenced to the reference system of said sonar bouy receiving the audio signal, the cosine component being modulated by a reference carrier signal and the sine component being modulated by a quadrature reference carrier signal, said quadrature reference carrier signal being characterized as leading the reference carrier signal by 90 degrees;

- a constant amplitude fixed frequency pilot having a frequency equal to one half the frequency of said reference carrier signal; and,
- a constant amplitude phase pilot signal having a frequency equal to the frequency of said reference carrier signal, the phase pilot signal being phase shifted to lag the reference carrier signal by an angle equal to the sum of 90 degrees and an angle proportional to the heading angle measured between magnetic north and the reference axis of said reference frame;

the demultiplexer circuit providing a north referenced output signal proportional to the amplitude of the received audio signal times the cosine of the angle between magnetic north and the reference frame reference axis and an east referenced output signal proportional to the amplitude of the received audio signal times the sine of the angle between magnetic north and the reference frame reference axis;

said demultiplexer circuit comprising:

- filter ano comparator means responsive to said composite signal for providing a filtered frequency pilot reference signal having a frequency equal to one half the frequency of said reference carrier signal; and,
- sine demodulator means responsive to said composite signal and to an east/west demodulator signal for providing said east referenced output signal;



- cosine demodulator means responsive to said composite signal and to a north/south demodulator signal for providing a demodulated phase pilot signal and said north referenced output signal;
- north/south filter means responsive to the output signals from said cosine demodulator means for filtering said demodulated phase pilot signal to provide said north referenced output signal;

a servo means responsive to said filtered frequency pilot reference signal and to said demodulated phase pilot signal for generating and controlling the phase of said north-/south demodulator signal and said east/west demodulator signal using a single phase locked loop, said servo means being characterized to phase shift said north/south and east/west demodulator signals to adjust the outputs of said sine and cosine demodulator means to remove all error bias from said demodulated phase pilot signal, said error bias being measured with respect to a reference potential such as ground.

4,879,695

METHOD OF LOCATING A MEMBER IN A BOREHOLE

Alan Meadows, Stretton, England, assignor to Coal Industry (Patents) Limited, London, England

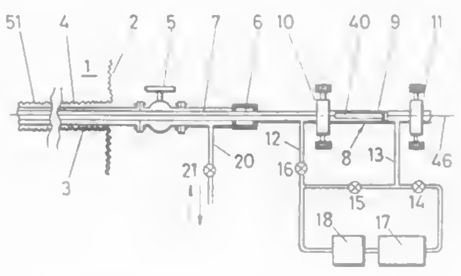
Filed Dec. 9, 1988, Ser. No. 281,857

Claims priority, application United Kingdom, Jan. 28, 1988, 8801881

Int. Cl.^{4} G01V *1/00*

U.S. Cl. 367—25 17 Claims

1. A method of locating a member in a borehole comprising the steps of inserting a tubular open ended casing into the borehole with part of the casing extending outside of the borehole, filling the borehole casing with a slow setting grout by pumping the grout down the centre of the casing until the grout flows back out of an annulus formed between the outside of the casing and the borehole wall, fitting a breech assembly to the part of the casing extending beyond the borehole, inserting an anchor module connected to one end of a rope into the breech assembly pumping more grout into the casing so as to convey the anchor and the rope into the casing, connecting a member to the rope, entering the member into the breech assembly and continuing pumping grout so as to convey the member with an attached signal cable into the casing, the pumping being continued until the anchor module passes from the distal end of the casing and is secured in the downhole end of the borehole.



4,879,696

METHOD AND APPARATUS FOR INITIATING SEISMIC DATA STORAGE IN AN ISOLATED DISTRIBUTED RECORDING SYSTEM

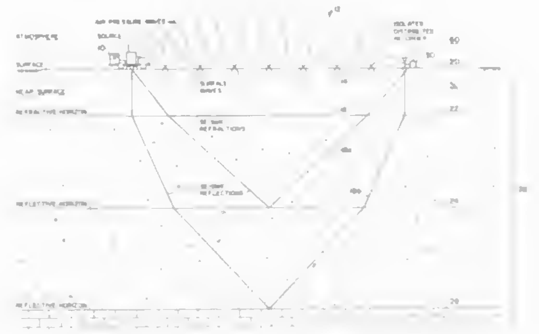
Richard J. Kostelnicek, Dickinson, and Raul R. Montes, Houston, both of Tex., assignors to Exxon Production Research Company, Houston, Tex.

Filed Mar. 27, 1986, Ser. No. 845,156

The portion of the term of this patent subsequent to Feb. 21, 2006, has been disclaimed.

Int. Cl.^{4} G01V *1/22*

U.S. Cl. 367—76 35 Claims



1. A method for initiating seismic data storage in an Isolated Distributed Recording System, including the steps of:

(a) generating an encoded seismic signal, utilizing an acoustic energy source, which will penetrate to a sub-surface refractive horizon;

(b) detecting a refraction of said controlled seismic signal from the refractive horizon with at least one isolated distributed recorder;

(c) correlating said refracted seismic signal with a preselected correlating signal; and

(d) upon correlation between said correlating signal and said refracted seismic signal, triggering the isolated distributed recorder to store incoming seismic data.

4,879,697

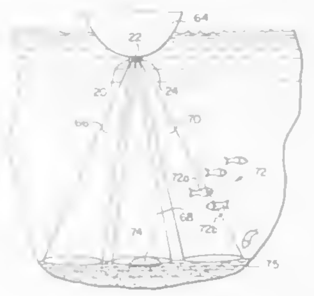
SONAR FISH FINDER APPARATUS PROVIDING SPLIT-SCREEN DISPLAY

Darrell J. Lowrance, Tulsa, and Ronald G. Weber, Owasso, both of Okla assignors to Lowrance Electronics, Inc., Tulsa, Okla

Filed Aug. 5, 1988, Ser. No. 228,680

Int. Cl.^{4} G01S *15/96*

U.S. Cl. 367—111 12 Claims



1. A fish finder system for a boat and other watercraft for determining and displaying the location of fish or other targets in the body of water surrounding the boat, said system comprising:

- electromechanical transducer means for transmitting sound waves into the body of water along three separate paths, substantially in the form of three closely spaced, conically shaped sound beams, respectively directed centrally under the boat and to left and right sides thereof into three corresponding areas of the body of water, for receiving corresponding echoes from obstructions in the paths of said sound waves including echoes from any fish in said paths and for generally electrical signals in accordance with the received echoes;
- electrical transmitter means connected to said transducer means for controlling transmission of said sound waves by said transducer means;
- receiver means connected to said transducer means for receiving and processing the electrical signals produced by said transducer means and for producing an output in accordance therewith;
- microprocessor means connected to said receiver means for converting the output of said receiver means into electrical data representative of display images of the three areas of the body of water; and
- visual display means, connected to said microprocessor means and including a screen, for simultaneously displaying images in the form of cross sections of the water in the three areas corresponding to said electrical data at three separate side by side locations on said screen to provide separate, simultaneous indications of the presence or absence of fish in the three areas.

4,879,698

PIEZOPOLYMER ACTUATORS

Edwin Langberg, Medford, N.J., assignor to Sensor Electronics, Inc., Mount Laurel, N.J.

Filed Nov. 3, 1988, Ser. No. 266,864

Int. Cl.^{4} H04R *23/00*

U.S. Cl. 367—140 13 Claims

1. An actuator comprising

- a base;
- a first and a second pin made from electrically conducting material, said first pin and said second pin fastened parallel to each other at the base;
- a means for applying a driving voltage to said pins at the base;
- a winding, slidably disposed with respect to the pins, comprising a strip of piezopolymer film, said strip having a

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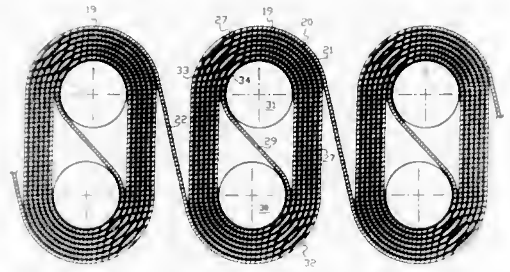
distension direction coincident with an axis of the winding and said strip comprising a first electrode on a first face of said piezopolymer strip and a second electrode on a second face of said piezopolymer strip, said winding following a path between and around said first pin and said second pin, for providing a sliding surface contact between said first electrode and said first pin and between said second electrode and said second pin, whereby the



driving voltage applied thorough the pins and through a sliding contact between pins and the electrodes, to the electrodes, causes a distension of the piezopolymer winding with respect to and along the pins, said distension constituting a mechanical response of the actuator to the driving voltage; and

a means for coupling a mechanical load to the distension of the winding.

4,879,699

AUDIO OUTPUT DEVICE

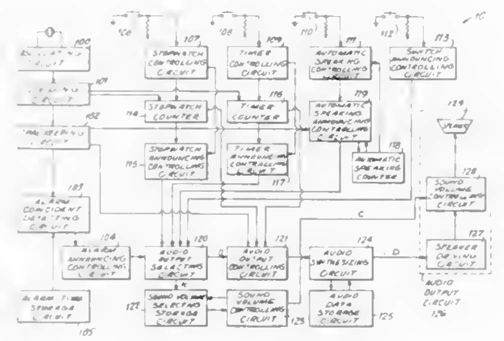
Yumi Sakamoto, Suwa, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan

Filed Sep. 23, 1988, Ser. No. 248,524

Claims priority, application Japan, Sep. 25, 1987, 62-241118; Apr. 13, 1988, 63-90999

Int. Cl.^{4} G04B *21/08, 23/02*

U.S. Cl. 368—63 63 Claims



1. An audio output device, comprising:

selecting means for selecting among a group of audio functions including user requested time of day;

synthesizing means for producing audio data corresponding to the audio function selected;

sound volume means for producing a predetermined sound volume control signal corresponding to the audio function selected; and

audio output means for producing an audio output at a predetermined level of sound volume based on the audio data and sound volume control signal.

4,879,700

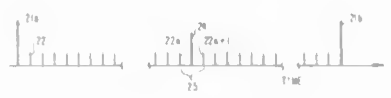
METHOD AND APPARATUS FOR DETERMINING THE TIME BETWEEN TWO SIGNALS

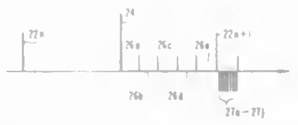
Alan D. MacIntyre, Irvine, Calif., assignor to Ball Corporation, Muncie, Ind.

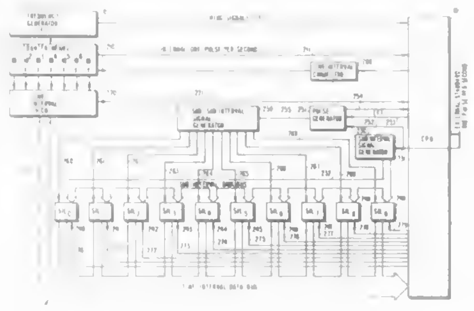
Filed May 4, 1987, Ser. No. 45,355

Int. Cl.^{4} G04F *8/00*

U.S. Cl. 368—117 14 Claims







1. A time interval counter for determining the time interval between an external signal and one of a series of timed signals occurring at known time intervals, comprising:

first means, operated by the external signal, for producing a plurality of binary outputs spaced from each other by a plurality of known time intervals that are substantially less than the known time interval of the series of timed signals, said plurality of binary outputs forming a coded representation of the time interval following the external signal;

second means, operated by the timed signal following the external signal, for producing a plurality of sequential outputs spaced from each other by a plurality of known sub-time intervals that are substantially less than the known time intervals of the binary outputs of the first means; and

third means for storing the plurality of binary outputs and coded representations of the time interval after the external signal at each of the sub-time intervals produced by said second means, and for determining the time interval between the external signal and the timed signal following the external signal by decoding the stored binary outputs and coded representations of the time interval following the external signal, by comparing the stored coded representations of the time interval following the external signal at each of the sub-time intervals to determine the number of sub-time intervals represented by any change in the stored coded representations, and by combining the decoded time interval and number of sub-time intervals to determine the total time interval following the external signal.

4,879,701

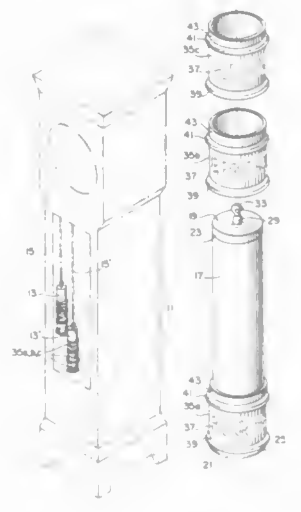
MEMORIALIZED CASE CLOCKS

James H. Kelly, Pulaski, Va., assignor to Pulaski Furniture Corporation, Pulaski, Va.

Filed Sep. 6, 1988, Ser. No. 240,201

Int. Cl.^{4} G04B *15/00;* G04C *21/00*

U.S. Cl. 368—136 14 Claims



1. In a case clock including a hanging generally elongated weight, an improvement for memorializing the same which comprises an ornamental annular band surrounding said weight over at least a portion of its length and supported thereby, said band carrying on an exterior surface thereof indicia commemorating an event to be memorialized.

4,879,702

WRIST WATCH

Kenneth H. Gardner, P.O. Box 1276, Bridgetown, Barbados

Filed Jun. 22, 1988, Ser. No. 209,731

Claims priority, application United Kingdom, Jun. 26, 1987, 8715065

Int. Cl.^{4} G04B *37/00*

U.S. Cl. 368—282 13 Claims

1. A wrist watch having a watch body and a flexible wrist band, the watch body

and wrist band being adapted, to hold the watch body at the side of a wear's wrist,

wherein the wrist band includes a closure means and a substantially flat relatively less flexible portion separated from the watch body by a flexible portion of the band, the less flexible portion extending over sufficient of the circumference of the band to lie on an elongate portion of the wearer's wrist to locate the watch body at the side of the wrist and to prevent rotation of the watch around the wrist.

4,879,703

MAGNETO-OPTIC MEMORY APPARATUS WITH DEFECT DETECTION OF RECORDING MEDIUM DURING ERASING OPERATION

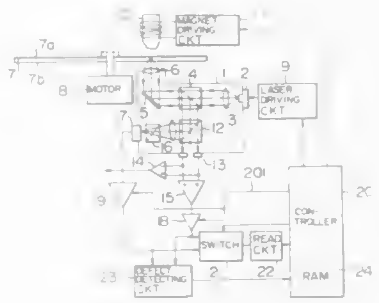
Toshimitsu Kaku, Sagamihara; Yoshito Tsunoda, Mitaka, and Kazuo Shigematsu, Saitama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 8, 1987, Ser. No. 71,178

Claims priority, application Japan, Jul. 9, 1986, 61-159608

Int. Cl.^{4} G11B *11/12*

U.S. Cl. 369—13 14 Claims



1. A magneto-optic memory apparatus comprising:

a recording medium having a perpendicular magnetic film;

illumination means for focusing a laser beam on said recording medium;

laser driving means for causing the intensity of said laser beam to correspond to a reproducing operation, a recording operation and an erasing operation;

magnetic field generating means for applying a magnetic field to said recording medium in recording and erasing periods;

driving means for driving said magnetic field generating means so that the magnetic field applied to said recording medium in the recording period is opposite in direction to the magnetic field applied to said recording medium in the erasing period;

first detection means for detecting a signal indicative of a reflected light quantity, by using reflected light from said recording medium;

second detection means for detecting a magnetization signal indicative of magnetization information recorded in said perpendicular magnetic film by using said reflected light;

variable gain amplifying means connected to at least one of said first and second detection means, the gain of said variable gain amplifying means in a reproducing period being made different from the gain of said variable gain amplifying means in the erasing period;

defect detecting means for detecting a defect on said recording medium on the basis of an output signal from said variable gain amplifying means during an erasing operation; and

control means for storing the position of a defect detected by said defect detecting means, and for controlling said laser driving means on the basis of stored position information to enable proper recording of data without requiring a read after write operation

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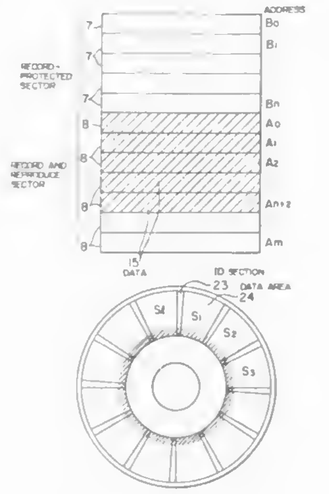
4,879,704
OPTICAL DISK, OPTICAL DISK RECORDING AND REPRODUCING APPARATUS AND COPY PREVENTIVE METHOD FOR OPTICAL DISKS

Youji Takagi, Kadoma; Isao Satoh, Neyagawa; Makoto Ichinose, Sakai; Yoshihisa Fukushima, Osaka, and Yuzuru Kuroki, Toyonaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Jul. 16, 1987, Ser. No. 74,291
Claims priority, application Japan, Jul. 21, 1986, 61-171231
Int. Cl.⁴ G11B *11/12, 23/28*
U.S. Cl. 369—14 6 Claims



1. An optical disk recording and reproducing apparatus for recording and reproducing data from an optical disk divided into a plurality of sectors each thereof being preliminarily formatted with an address with m and n each representing a given positive integer, said apparatus comprising:

means for only reproducing data from said optical disk sectors respectively designated by addresses B_0 to B_n; and

means for recording and reproducing data from said optical disk sectors respectively designated by addresses A_0 to A_m,

said sectors designated by said addresses B_0 to B_n serving as record-protected sectors and being adapted for the reproduction of data only irrespective of said optical disk comprising a read only-type optical disk, a DRAW-type optical disk or an erasable optical disk,

whereby data having at least part thereof recorded on said record protected sectors designated by said addresses B_0 to B_n is protected from being recorded on the same address sectors of another recordable optical disk.

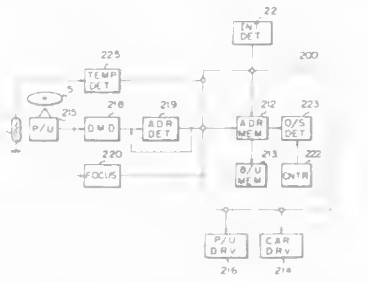
4,879,705
AUTOMATIC LOADING DISC PLAYER

Yoshio Aoyagi, Kawagoe; Hiroyuki Hirano, Tokorozawa; Toshiyuki Kimura, Kawagoe; Susumu Niinuma, Kawagoe; Minoru Yoshioka, Kawagoe; Akira Haeno, Kawagoe; Takashi Sato, Kawagoe; Yoshiro Nishi, Kawagoe; Yoshihiko Watanabe, Kawagoe; Fumihiko Yokogawa, Tokorozawa; Keiichi Matsumoto, Tokorozawa, and Youichi Ogawa, Tokorozawa, all of Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Continuation of Ser. No. 727,747, Apr. 26, 1985, abandoned. This application Sep. 12, 1988, Ser. No. 244,641
Claims priority, application Japan, Apr. 27, 1984, 59-062307[U]; Apr. 27, 1984, 59-085783; Apr. 27, 1984, 59-062305[U]; May 31, 1984, 59-111838
Int. Cl.⁴ G11B *3/00, 21/08*
U.S. Cl. 369—32 12 Claims

1. An automatic disc player comprising signal pickup means operative to read information from a disc on which at least one of program and control signals including address information is recorded and to convert the information read from the disc into electric signals, the signal pickup means being movable with respect to the disc in a predetermined direction within the player and the signals being read from the disc at an information pickup spot which is movable with respect to the tracks on the disc, and pickup drive means operative to drive said signal pickup means for movement with respect to the disc in the player, wherein the improvement comprises:

a counter operative to count addresses at predetermined time intervals for producing a signal representative of an expected address indicative of the position to which said pickup means is expected to move in the next, said expected address thus being renewed at said predetermined time intervals;



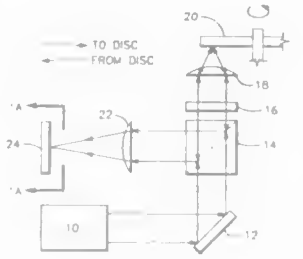
a detector circuit operative to constantly detect a discrepancy between the newest one of the addresses read from the disc by said signal pick up means and said expected address and to produce a discrepancy detection signal each time when said discrepancy is found to exist; and

pickup drive control means for actuating said pickup drive means to drive said pickup means for movement to a position dictated by the expected address when said discrepancy detection signal appears successively a predetermined number of times.

4,879,706
METHOD AND APPARATUS FOR FOCUS AND TRACKING IN AN OPTICAL DISK SYSTEM

Wai-Won Lee, Capertino, Calif., assignor to Laser Magnetic Storage International Company, Colorado Springs, Colo.

Filed Jul. 29, 1987, Ser. No. 79,653
Int. Cl.⁴ G11B *5/09, 20/22*
U.S. Cl. 369—45 20 Claims



1. Apparatus useful in maintaining focus in a disk data-storage system, comprising:

radiation source means for producing a read/write beam of radiation;

focus means for focusing said read/write beam on the disk, wherein a portion of said read/write beam is reflected from the disk to produce a reflected beam;

optical element means for simultaneously producing from said reflected beam, first and second beams, said first beam at a detector plane having at least a portion non-overlapping relation to said second beam;

first detector means at said detector plane for producing a first signal electrically representative of said first beam;

second detector means to produce a second signal electrically representative of said second beam;

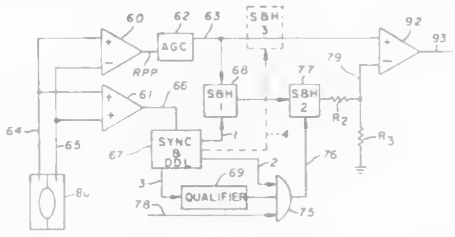
means for combining said first signal and said second signal to produce a third signal, said third signal varying as a function of said degree of focus; and

a fourth signal produced using said second detector means, said fourth signal varying as a function of radial tracking of said read/write beam.

4,879,707
OPTICAL DISK TRACKING AND SEEKING SYSTEMS SPECIFIC TRACK FORMATS USING DISCONTINUITIES

Kurt W. Getreuer, Colorado Springs, Colo.; Johannes J. Verboom, Bergeijk, Netherlands, and Pierre R. Sonneville, Weert, both of Netherlands, assignors to Laser Magnetic Storage International Company, Colorado Springs, Colo.

Continuation of Ser. No. 760,439, Jul. 30, 1985, abandoned. This application Jan. 25, 1988, Ser. No. 148,028
Int. Cl.⁴ G11B *7/09, 7/007*
U.S. Cl. 369—46 7 Claims



1. A record carrier wherein said record carrier has an information layer having tracks for storage of data, said tracks being comprised of longitudinally disposed sectors, each sector having an associated header and data area, said tracks being so arranged and disposed to form a diffraction grating, said record carrier comprising:

a first record carrier modulation means located in said record carrier sector header, said first record carrier modulation means comprising at least one discontinuity,

a second record carrier modulation means located in said record carrier sector header a predetermined distance from said first record carrier modulation means and including at least one qualifier modulation means, said qualifier modulation means includes a first pair of adjacent pits longitudinally separated from a triplet of adjacent pits that is longitudinally separated from a second pair of adjacent pits, a first discontinuity is located intermediate said first pair of adjacent pits and said triplet of adjacent pits, and a second discontinuity is located intermediate said triplet of adjacent pits and said second pair of adjacent pits, and

a third record carrier modulation means including timing means, said third record carrier modulation means located in said record carrier sector header and said data area.

4,879,708
OPTICAL DISK TRACKING AND SEEKING SYSTEMS SPECIFIC TRACK FORMATS USING WOBBLED PITS

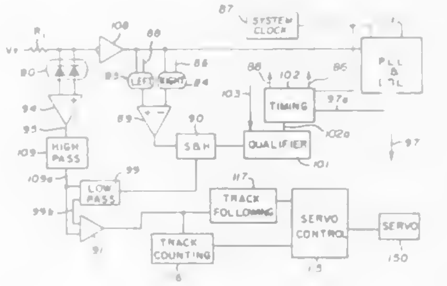
Kurt W. Getreuer, Colorado Springs, Colo., and Johannes J. Verboom, Bergeyk, Netherlands, assignors to Laser Magnetic Storage International Company, Colorado Springs, Colo.

Continuation of Ser. No. 760,440, Jul. 30, 1985, abandoned. This application Jan. 25, 1988, Ser. No. 147,906
Int. Cl.⁴ G11B *7/09, 7/007*
U.S. Cl. 369—46 9 Claims

1. An improved record carrier for use with a data storage apparatus wherein said record carrier has an information layer having tracks for storage of data, said tracks being comprised of longitudinally disposed sectors, each sector having an associated header, said record carrier comprising:

wobbled record carrier modulation means located in said record carrier sector headers, said wobbled record carrier modulation means including a first pair of non-reflective pits in a reflective surface located on a first side of and off-center from one track center, a second pair of non-reflective pits in a reflective surface of said record carrier information layer located on a second side of and off-center from said one track center, and a third pair of non-reflective pits in a reflective surface of said record carrier information layer located substantially along said one track center and said third pair of non-reflective pits being positioned along said one track center between said first and second pairs of non-reflective pits, and

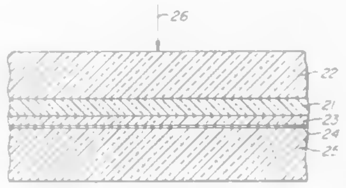
record carrier modulation clocking means.



4,879,709
DYE-POLYMER OPTICAL DATA STORAGE MEDIA WITH IMPROVED RECORDING SENSITIVITY

Bryan K. Clark, Sunnyvale, Calif., assignor to Tandy Corporation, Ft. Worth, Tex.

Filed Feb. 5, 1988, Ser. No. 152,690
Int. Cl.⁴ G11B *7/24*
U.S. Cl. 369—284 11 Claims



1. An optical data storage medium comprising:

a rigid substrate;

an expansion layer joined on one side to said rigid substrate, said expansion layer being absorptive of light at a first wavelength and reversibly expandable thereupon;

a retention layer joined to said expansion layer on the side opposite said rigid substrate, said retention layer having a glass transition temperature above ambient temperature and thereby convertible between a rubbery state permitting deformation in response to forces exerted thereon by said expansion layer and a glassy state substantially nonresponsive to said forces, said retention layer being absorptive of light at a second wavelength distinct from said first wavelength and further at least about 50% absorptive of light at said first wavelength passing through it in a single pass.

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4,879,710

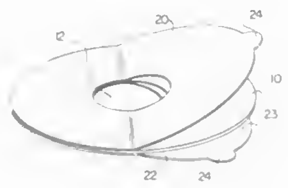
OPTICAL DISC PROTECTOR AND METHOD FOR APPLYING SAME

Mutsuo Iijima, 7-15 Ichiba Higashi Nakamachi, Tsurumi-ku, Yokohama City, Kanagawa, Japan

Filed Apr. 20, 1988, Ser. No. 183,923

Int. Cl.⁴ G11B *7/24*

U.S. Cl. 369—291 6 Claims



2. A protective cover for an optical disc having substantially flat opposing surfaces comprising:

a substantially transparent annular sheet having a top and bottom surface and an inner and an outer circumference;

an inner ring of adhesive applied to said bottom surface adjacent to said inner circumference; and

an outer ring of adhesive applied to said bottom surface adjacent to said outer circumference.

said bottom surface, when said protective cover is applied to said optical disc, being substantially in contact with one of said substantially flat opposing surface of said optical disc, and further comprising a first peelable layer on said top surface and a second peelable layer on said bottom surface.

4,879,711

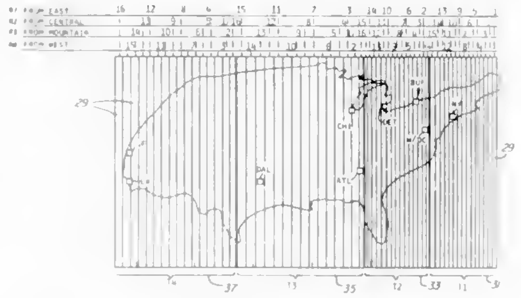
SATELLITE COMMUNICATIONS SYSTEM EMPLOYING FREQUENCY REUSE

Harold A. Rosen, Santa Monica, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Continuation-in-part of Ser. No. 96,983, Aug. 14, 1986, Pat. No. 4,819,227. This application Oct. 14, 1987, Ser. No. 108,831

Int. Cl.⁴ H04Q *11/02*

U.S. Cl. 370—50 13 Claims



1. A method of communicatively interconnecting any of a plurality of terminals within an area on the earth using an earth-orbiting communications satellite, comprising the steps of:

(A) forming a first plurality of groups of radio frequency beams respectively between each of a plurality of essentially contiguous zones covering said area on the earth and said satellite, the beams in said groups thereof carrying communications signals over the same first preselected range of frequencies, such that said first preselected range of frequencies is reused by the beams for all of said zones;

(B) separating each group of said radio frequency beams into first and second sets thereof respectively carrying communications signals over first and second sets of frequencies within said first preselected range of frequencies, and spatially distributing said first preselected range of frequencies over each of the zones as a function of frequency such that the frequencies of one set of said beams in one zone is spatially separated from the frequencies of one set of said beams in a zone substantially contiguous to said one zone;

(C) alternately transmitting the first and second sets of said beams between said zones and said satellite by simultaneously transmitting the beams in the first set thereof for all the zones and then simultaneously transmitting the beams in the second set thereof for all the zones.

4,879,712

COMMUNICATIONS SWITCH

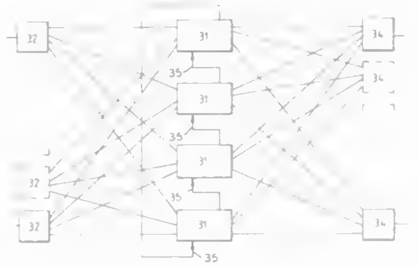
Morgan Littlewood, Unit 8, 17 Como Avenue, South Yarra, Melbourne, Australia (3141)

Filed Sep. 1, 1988, Ser. No. 239,236

Claims priority, application United Kingdom, Sep. 2, 1987, 8720605

Int. Cl.⁴ H04J *3/26*

U.S. Cl. 370—60 17 Claims



1. A communications switch comprising a plurality of synchronised packet switches (**31**) connected by data links to a plurality of switch input nodes (**32**) and with the synchronised packet switch (**31**) connected by data links to a plurality of switch output nodes (**34**), at least one of the synchronised packet switches (**31**) recirculating packets to another of the synchronised packet switches (**31**) via a recirculated data highway (**35**).

4,879,713

SATELLITE-BASED VEHICLE COMMUNICATION/POSITION DETERMINATION SYSTEM

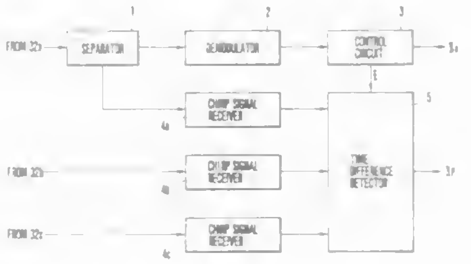
Osamu Ichiyoshi, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Sep. 27, 1988, Ser. No. 249,943

Claims priority, application Japan, Sep. 30, 1987, 62-246285

Int. Cl.⁴ H04J *1/02;* **H04B** *7/85*

U.S. Cl. 370—75 1 Claim



1. A satellite-based vehicle communication/position determination system comprising:

N geostationary satellites, N being an integer greater than or equal to 3; at least one vehicle station; and a base station, each of said vehicle station comprising:

a low-directivity antenna for performing radio-wave exchange with said N geostationary satellites;

vehicle station FDM (frequency division multiplex) receiving means for frequency-selectively receiving a signal in a communication frequency channel assigned to the self station from various signals in a plurality of communication frequency channels received at said low directivity antenna;

vehicle station receiving control means for transmitting a signal output of said vehicle station FDM receiving means as a receiving signal to a following circuit, and detecting a base station control signal from the signal output;

chirp signal generating means for generating a chirp signal for performing frequency sweep over all the bandwidth of a satellite network at a predetermine sweep rate for a predetermined period of time in response to a frame sync signal detected and formed by said vehicle station FDM receiving means; and

vehicle station transmitting means for transmitting a communication signal including a position determination start signal from said low-directivity antenna to said N geostationary satellites in the communication frequency channel assigned to the self station, interrupting the transmission of the communication signal for a period of time designated by a control signal from said base station and transmitting the chirp signal from said low-directivity antenna during the interruption period, and

said base station comprising:

N high-directivity antennas for respectively performing radio-wave exchange with said N geostationary satellites;

base station FDM transmitting means for transmitting, from at least one of said N high-directivity antennas to the corresponding geostationary satellite, signals in one or a plurality of communication frequency channels in which the communication signal including the base station control signal for designating a time period for which the chirp signal is to be transmitted is inserted;

base station FDM receiving means for receiving and demodulating signals in one or a plurality of communication frequency channels received at one of said N high-directivity antennas;

base station reception control means for transmitting the signal output from said base station FDM receiving means to a following circuit as a receiving signal, and detecting a start signal from the signal output;

N chirp signal receiving means including chirp filters for performing pulse compression processing of the chirp signals received at said N high-directivity antennas; and

time difference detecting means for detecting time differences among N compressed pulses sent from said N chirp signal receiving means in response to the detection of the start signal, and forming a position determination signal for calculating the position of the vehicle station.

4,879,714

CHANNEL ASSIGNMENT SYSTEM FOR LOOP NETWORK

Kazutoshi Maeno, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Nov. 19, 1985, Ser. No. 799,582

Claims priority, application Japan, Nov. 20, 1984, 59-245326; Nov. 20, 1984, 59-245327

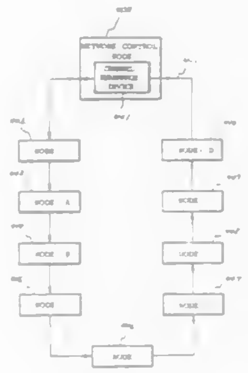
Int. Cl.⁴ H04J *3/16*

U.S. Cl. 370—85.7 3 Claims

1. A communication network comprising:

a plurality of nodes connected in series with one aother in a single loop communication system in which information from a node is transmitted to other nodes using a time division channel switching method, and

a network control node connected in said single loop, said network control node including means for rearranging channel assignments by cyclically shifting the channels after every round through said single loop, said channel assignment rearranging means operative for rearranging channel assignments on a number, n, of channels smaller in number than a number, N, of nodes communicating with each other such that $n = N - 1$, where n and N are integers and N is greater than 2,



wherein $N-1$ channels are assigned upon establishment of communication between N nodes, where information from each node is simultaneously transmitted to the remaining $N-1$ nodes by using said $N-1$ channels on said loop system.

4,879,715

TERMINAL EQUIPMENT IDENTIFIER CONTROLLING CIRCUIT

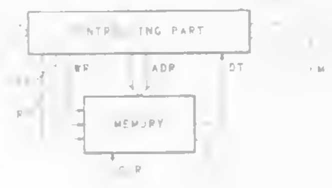
Takeo Nakabayashi, and Hideki Andou, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed Aug. 22, 1988, Ser. No. 217,011

Claims priority, application Japan, Jan. 19, 1988, 63-9951

Int. Cl.⁴ H04J *3/24*

U.S. Cl. 370—92 5 Claims



1. A terminal equipment identifier controlling circuit, for use in a communication apparatus which identifies terminal equipment by means of terminal equipment identifiers, comprising:

a memory, having a plurality of address storage locations, associated with a given terminal equipment unit;

means, coupled to said memory, for supplying said memory with a given terminal equipment identifier as an address signal;

means, coupled to said memory and to said supplying means, for writing binary data, indicating whether said given terminal equipment unit is to respond to said given terminal equipment identifier to a storage location of said memory corresponding to said address signal given by said supplying means;

means, coupled to said memory, for reading said binary data from said storage location; and

means, coupled to said reading means, for responding to said data associated with said given terminal equipment identifier when said read binary data indicates said terminal

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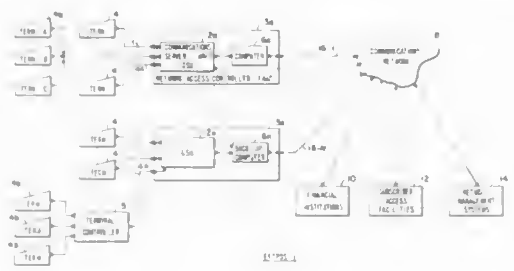
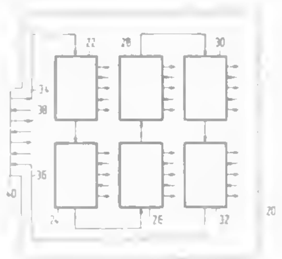
equipment has been assigned said terminal equipment identifier.

4,879,716
RESILIENT DATA COMMUNICATIONS SYSTEM
Lance McNally, Townsend; Anthony J. Booth, Boxboro, and Peter S. Morley, Pepperell, all of Mass., assignors to BULL HN Information Systems Inc., Billerica, Mass.
Filed Dec. 23, 1987, Ser. No. 137,315
Int. Cl.^{4} G06F *11/16*
U.S. Cl. 371—8.2 4 Claims



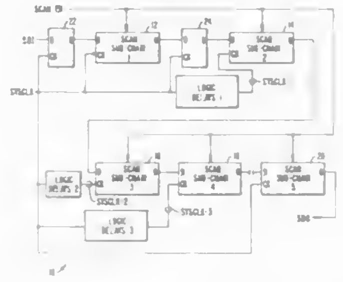
1. A resilient data communications system for transferring information between a subscriber and a communication network, the data communications system comprising:
a. terminal means;
b. relay switching means;
c. a plurality of conversion means;
d. a bus means;
e. a plurality of network processor means;
f. a computer means; and
g. control module means,
wherein in the data communications system:
a. the terminal means is connected to the relay switching means;
b. the relay switching means is connected between the terminal means and the plurality of conversion means;
c. the plurality of conversion means is connected between the relay switching means and the bus means;
d. the bus means is connected between the plurality of conversion means and the plurality of network processor means;
e. the plurality of network processor means is connected between the bus means and the computer means, and there is also a connection from the plurality of network processor means to said communication network;
f. the computer means is connected between the plurality of network processor means and said communication network; and
g. the control module means is connected between the plurality of network processor means and a control input of the relay switching means
and wherein further in the data communications system:
a. the terminal means is for passing serial digital data bidirectionally between the relay switching means and a subscriber operating a keyboard and viewing a display;
b. the relay switching means is adapted to select one certain of the plurality of conversion means in response to a signal at its input from the control module means and to pass serial digital data bidirectionally between the terminal means and the one certain of the conversion means;
c. the conversion means is adapted to convert data bidirectionally between serial digital data and parallel data bytes, to transmit parallel data bytes bidirectionally to or from the bus means, and to transmit serial digital data bidirectionally to or from the relay switching means;
d. the plurality of network processor means is adapted to convert data bidirectionally between parallel data bytes and serial digital data, to transmit parallel data bytes bidirectionally to or from the bus means, and responsive to the computer means to transmit serial digital data bidirectionally to or from the computer means; and
e. the computer means is adapted to transmit serial data bidirectionally from or to the communications network responsive to control signals thereon, and to send control signals to the plurality of network processor means,
and wherein further the plurality of network processor means is adapted to detect, responsive to signals from the computer means, that the computer means has ceased to function and to thereupon request, via its connection to said communications network, control signals from the computer means of a different resilient communications systems, and the computer means is adapted to receive via said communications network requests for control signals from the network processor means of a different communications system and to provide such control signals via said communications network,
whereby if at least two resilient communications systems are connected to a communications network, functionality of both may be maintained despite failure of the computer means of one of them.

4,879,717
TESTABLE CARRIERS FOR INTEGRATED CIRCUITS
Wilhelm A. Sauerwald, Eindhoven; Johannes DeWilde, Hilversum; Karel J. E. Van Eerdewijk, Best; Franciscus P. M. Beenker, and Marinus T. M. Segers, both of Eindhoven, all of Netherlands, assignors to U.S. Philips Corp., New York, N.Y.
Division of Ser. No. 902,910, Sep. 2, 1986. This application Sep. 2, 1988, Ser. No. 239,714
Claims priority, application Netherlands, Sep. 11, 1985, 8502476
Int. Cl.^{4} G06F *11/00*
U.S. Cl. 371—22.3 8 Claims



1. A boundary-scan testable carrier provided with a first and a second integrated circuit mounted thereon and provided with a multibit data path therebetween, said first circuit having a first attachment to a serial bidirectional on-carrier bus such that said first circuit receives a first test control bit string followed by a serial test pattern, and said first circuit having a serial-to-parallel conversion means for feeding said serial test pattern to a multibit output buffer in said first circuit and connected to said data path, said second circuit having a multibit input buffer connected to said data path, a second attachment from said second circuit to said bus for receiving from said bus a second test control bit string and outputting to said bus a serial result pattern as received from said multibit input buffer via a parallel-to-serial conversion means, said result pattern representing a test result of an interconnection function via said data path as controlled by said first and second test control bit strings.

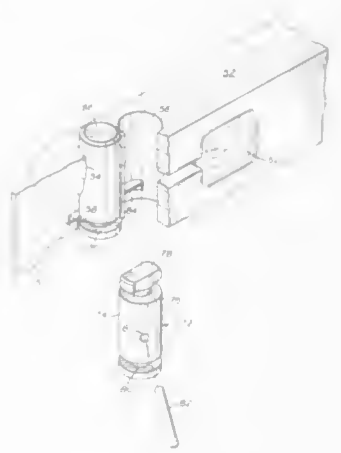
4,879,718
SCAN DATA PATH COUPLING
Martin W. Sanner, San Jose, Calif., assignor to Tandem Computers Incorporated, Cupertino, Calif.
Filed Nov. 30, 1987, Ser. No. 126,998
Int. Cl.^{4} G01R *31/28*
U.S. Cl. 371—22.3 3 Claims



1. In a digital logic unit of the type including a plurality of logic elements, such as AND gates and OR gates, and elemental memory units (MUs), such a flip-flops, latches, registers, and counters, that are connected to function as a part of the logic unit during a normal mode, where the MUs are serially connected to form the register elements of a scan line shift register (SR) during a scan mode, where a system clock signal (SCLK) is received at an SCLK input, and where the scan SR is used to shift a scan data pattern, received at a scan SR input, into the SR register elements during the scan mode to test the operability of the stages and interconnections of the logic unit, a system for preventing corruption of the scan data pattern comprising:
means, coupled to every SR register element, for serially connecting the SR register elements during the scan mode with each SR register element having a clock input for receiving a delayed version of SCLK with the magnitude of the delay relative to the undelayed SCLK signal determined by the delays induced by the particular logic elements connecting the SCLK input port to said clock input of a particular SR register element;
a first scan sub-chain of serially connected SR register elements including only SR register elements receiving a delayed version of SCLK having a delay of a first fixed magnitude;
a second scan sub-chain of serially connected SR register elements including only SR register elements receiving a delayed version of SCLK having a delay of a second fixed magnitude, with said first magnitude being greater than said second magnitude and with said first scan sub-chain being nearer to the scan SR input than said second scan sub-chain.

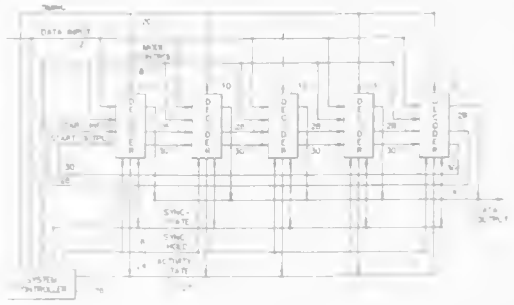
4,879,719
LATCHING MECHANISM
Alex C. Dumestre,III, Covington, La., assignor to Western Atlas International, Inc., Houston, Tex.
Filed Feb. 17, 1988, Ser. No. 157,298
Int. Cl.^{4} G01V *1/38*
U.S. Cl. 367—20 18 Claims

1. An apparatus for coupling a device to a marine cable, said apparatus comprising:
(a) first mounting means fixed to said cable and having an aperture therein;
(b) second mounting means fixed to said device including pin means and a locking means each adapted for engaging said aperture of said first mounting means, said locking means further comprising:
(1) a cylinder having a second end disposed within said second mounting means adjacent and parallel to said pin means, and a first end extending from the second mounting means to engage the aperture;
(2) cam means defined at the first end of the cylinder;
(3) means engaging said second end of the cylinder for exerting a tensional force upon the cylinder within the second mounting means; and



(c) means for rotating said locking means thereby placing the cam in a locked and unlocked position within the aperture, for detachably coupling said device to said cable.

4,879,720
DECODER RING SYSTEM
William A. Shumate; Daniel R. Kindred, both of San Diego; Franklin P. Antonio, Del Mar; Steven H. Gardner, San Diego; Krishnanand Kelkar, La Jolla, Calif.; Thomas R. Bilotta, Vista, and Steven L. Rogers, San Diego, all of Calif., assignors tn M/A-Com Government Systems, Inc., San Diego, Calif.
Filed Mar. 10, 1988, Ser. No. 166,187
Int. Cl.^{4} G06F *11/10*
U.S. Cl. 371—43 22 Claims



1. A decoding system capable of outputting Viterbi-decoding-algorithmdecoded data at a predetermined rate that is greater than a given rate at which coded data is processed in accordance with said algorithm by a single decoder to produce the decoded data, comprising
a data input bus;
a data output bus;
a ring of decoders, with each decoder coupled to the input bus for receiving coded data from the input bus and coupled to the output bus for providing decoded data onto the output bus;
wherein each said decoder includes
an input buffer for responding to a start-input signal from a preceding decoder in the ring by buffering a block of the received coded data;
means for providing a start-input signal to a succeeding decoder in the ring at such time as to cause the succeeding decoder to receive a block of coded data from the input

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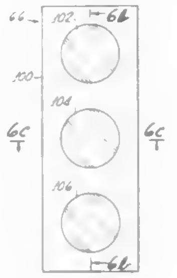
bus that overlaps the block of coded data received from the input bus by the instant said decoder;
processing means for processing the buffered block of coded data in accordance with a Viterbi decoding algorithm at a given rate to produce decoded data;
an output buffer for buffering the block of decoded data;
means for responding to a start-output signal provided by a preceding decoder in the ring by causing the buffered decoded data to be provided onto the data output bus at a predetermined rate that is greater than the given rate at which the coded data is processed to produce the decoded data; and
means for providing a start-output signal to the succeeding decoder in the ring to cause the succeeding decoder to provide a portion of the buffered decoded data therein onto the data output bus at a predetermined rate and at such time as to be continuous from and not overlap the portion of the buffered decoded data provided onto the output data bus from the instant said decoder.

4,879,721

PHASE LOCKED LASER ARRAY

Michael T. Braski; Charles H. Wissman, both of Carlsbad; Richard A. Tilton, San Diego, and Paul F. Robusto, Carlsbad, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.
Filed Nov. 21, 1988, Ser. No. 274,117
Int. Cl.⁴ H01S *3/098*
U.S. Cl. 372—18 12 Claims

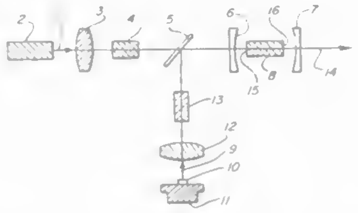


1. A waveguide laser array comprising:
a laser body having a common, physically unpartitioned, cavity,
a laser medium within the cavity,
first and second reflectors secured to the body at opposite ends of the cavity, said first reflector including first and second areas of relatively high reflectivity spaced from one another by areas of relatively low reflectivity,
a first set of electrode disposed on opposite sides of said cavity and extending substantially the length of the cavity,
a second set of electrodes adjacent said first set, said second set being disposed on opposite sides of said cavity and extending substantially the full length of said cavity, and
first and second RF exciting power sources connected to provide RF exciting signals to said first and second sets of electrodes respectively to produce laser energy oscillations of substantially the same frequency in functionally separate and isolated regions along the length of said cavity, said regions being aligned with respective ones of said areas of relatively high reflectivity.

4,879,722

GENERATION OF COHERENT OPTICAL RADIATION BY OPTICAL MIXING

George J. Dixon, Lutz, Fla.; Douglas W. Anthon, and John H. Clark, both of Wheaton, Ill., assignors to Amoco Corporation, Chicago, Ill.
Continuation-in-part of Ser. No. 78,373, Jul. 27, 1987. This application Nov. 25, 1987, Ser. No. 125,161
Int. Cl.⁴ H01S *3/10*
U.S. Cl. 372—21 30 Claims

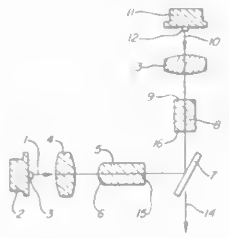


16. An apparatus for generating coherent optical radiation which comprises:
(a) means for generating coherent optical radiation of a first frequency, w_1;
(b) means for generating coherent optical radiation of a second frequency, w_2, which comprises a laser diode;
(c) an optical cavity;
(d) means for introducing said radiation of a first frequency and said radiation of a second frequency into said optical cavity; and
(e) nonlinear optical means within said optical cavity for converting said radiation of a first frequency and said radiation of a second frequency into coherent optical radiation of a third frequency, w_3, by optical mixing.

4,879,723

INTRACAVITY GENERATION OF COHERENT OPTICAL RADIATION OF OPTICAL MIXING

George J. Dixon, Lutz, Fla.; Douglas W. Anthon, and John H. Clark, both of Wheaton, Ill., assignors to Amoco Corporation, Chicago, Ill.
Filed Jul. 27, 1987, Ser. No. 78,373
Int. Cl.⁴ H01S *3/10*
U.S. Cl. 372—21 45 Claims

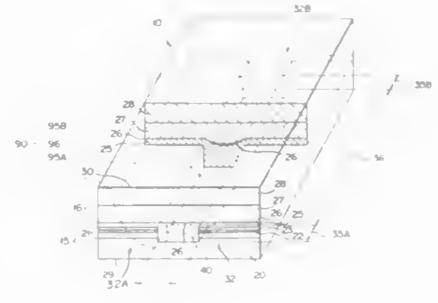


23. An apparatus for generating coherent optical radiation which comprises:
(a) means for generating coherent optical radiation of a first frequency, w_1, which comprises a lasant material within an optical cavity;
(b) means for generating coherent optical radiation of a second frequency, w_2, which is outside of said optical cavity and comprises laser diode;
(c) means for introducing said radiation of a second frequency into said optical cavity; and
(d) nonlinear optical means within said optical cavity for interacting with said radiation of a first frequency and said radiation of a second frequency to generate coherent optical radiation of a third frequency, w_3.

4,879,724

SEMICONDUCTOR LASER

Kenji Matsumoto, Yokohama, and Haruki Kurihara, Tokyo, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed May 17, 1988, Ser. No. 195,684
Claims priority, application Japan, May 18, 1987, 62-118905
Int. Cl.⁴ H01S *3/19*
U.S. Cl. 372—46 4 Claims



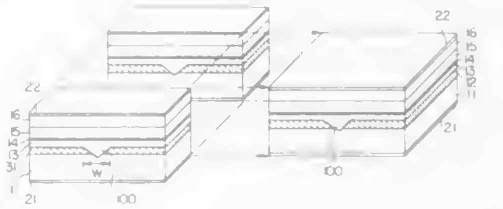
1. A semiconductor laser comprising:
a substrate including a semiconductor basement of a first conductivity type and a semiconductor current-blocking-layer of a second conductivity type formed on said basement;
a straight channel groove formed within said basement;
a first cladding layer of the first conductivity type grown on said substrate by a liquid-phase-epitaxy (LPE);
a semiconductor active layer formed on said first cladding layer and grown by the LPE;
a second cladding layer of the second conductivity type formed on said active layer;
a semiconductor ohmic contact layer of the second conductivity type formed on said second cladding layer;
a first metal electrode disposed on said semiconductor ohmic layer;
a second metal electrode disposed on a lower surface of said semiconductor basement; and
a pair of cleaved facets perpendicular to said channel groove and forming front and back ends of a laser cavity with said channel groove having a constant width throughout said laser cavity and a shallow channel portion of a first height in the vicinity of said cleaved facets and a deep channel portion of a second height, higher than said first height, in a middle portion of said laser cavity.

4,879,725

SEMICONDUCTOR LASER DEVICE HAVING EXTENDED FACET LIFE

Hidenori Kawanishi, Higashiosaka; Masahiro Yamaguchi, Tokai; Hiroshi Hayashi, Kyoto; Taiji Morimoto, and Shinji Kaneiwa, both of Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Aug. 30, 1988, Ser. No. 238,728
Claims priority, application Japan, Sep. 4, 1987, 62-222766
Int. Cl.⁴ H01S *3/19*
U.S. Cl. 372—48 5 Claims

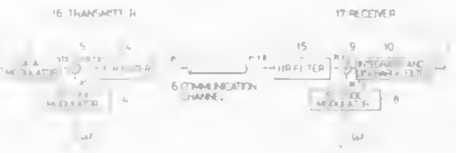
1. In a semiconductor laser device comprising a p-type semiconductor substrate and a multi-layered crystal structure with an active layer for laser-oscillating operation, the said multi-layered crystal structure being disposed on said substrate and having a striped channel area through which current is supplied to said active layer and a light-absorbing area positioned outside of said channeled area by which a difference between the amount of light to be absorbed inside said channeled area and the amount of light to be absorbed outside said channeled area is created, which causes a difference in the effective refractive index of said active layer, resulting in an optical waveguide in said active layer, wherein said light-absorbing area comprises a p-type semiconductor substance in the vicinity of at least one of both facets, and comprises an n-type semiconductor where it is not a p-type semiconductor.



4,879,726

SPREAD SPECTRUM COMMUNICATIONS SYSTEM

Masaki Kobayashi; Yoshio Itoh, both of Tokyo, and Hiroji Kusaka, 173, 1-cho, Hojo-machi, Sakai-shi, Osaka, 591, all of Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo and Hiroji Kusaka, Osaka, both of, Japan
Filed Oct. 6, 1987, Ser. No. 104,889
Claims priority, application Japan, Oct. 8, 1986, 61-238125
Int. Cl.⁴ H04K *1/00*
U.S. Cl. 375—1 19 Claims



13. A spread spectrum communications system comprising:
a transmitter including:
means for modulating a data signal containing transmit data;
means for multiplying said modulated data signal with a modulated spread spectrum code and for producing an output corresponding to the multiplication product; and
an FIR filter for receiving said output of said multiplying means and producing a transmit signal, said FIR filter including multipliers having predetermined coefficients selected to suppress the peaks of said transmit signal from said FIR filter; and
a receiver linked to said transmitter by a communication channel to receive said transmit signal from said transmitter, said receiver comprising:
a filter having a characteristic inverse to that of said FIR filter, for receiving said signal and supplying an output corresponding thereto; and
means for multiplying said output of said filter in said receiver with a modulated spread spectrum signal to restore the modulated transmit data.

4,879,727

ADAPTIVE THRESHOLD SAMPLING CONTROLLER

Nallepilli S. Ramesh, San Jose, Calif.; Suresh Cheemalavagu, Austin, Tex., and Anders Erikson, Bandhagen, Sweden, assignors to Advanced Micro Devices Inc., Sunnyvale, Calif.
Filed Sep. 5, 1986, Ser. No. 904,540
Int. Cl.⁴ H04L *25/06*
U.S. Cl. 375—76 5 Claims

4. A method of enabling the selective sampling of marks in a sequence of frames complying with CCITT standards to permit frame by frame adjustment of the threshold voltage of a data detector in terminal equipment of a communication system, said frames each having a plurality of bit positions including predetermined bit positions for B-marks, D-marks, F-marks and L-marks, said method comprising the steps of.

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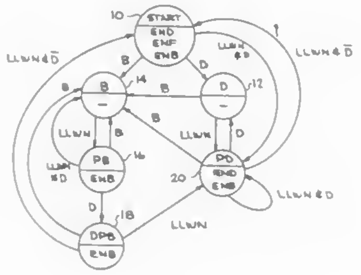
(1) sequentially testing said bit positions in a previous said frame of said sequence,
(2) enabling the sampling of only B-bit positions in the current said frame when said sequential testing of bit positions in said previous frame produces a high B-bit mark prior to a high D-bit mark,
(3) enabling the sampling of both B-bit positions and D-bit positions in the current said frame when said sequential testing of bit positions in said previous frame produces a high D-bit mark prior to a high B-bit mark,



(4) enabling the sampling of only the F-bit position in the current said frame when said sequential testing of bit positions in said previous frame produces no high B-bit marks and no high D-bit marks, and
(5) buffering the signal strength of the sampled bit position for use in adjusting said threshold voltage.

4,879,728

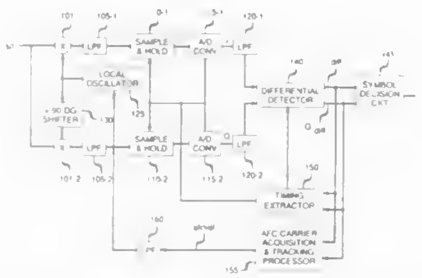
DPSK CARRIER ACQUISITION AND TRACKING ARRANGEMENT

Joseph A. Tarallo, Bedminster, N.J., assignor to American Telephone and Telegraph Company, AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jan. 31, 1989, Ser. No. 304,680

Int. Cl.^{4} H04L *27/22*

U.S. Cl. 375—80 **32 Claims**



1. In an MDPSK communication receiver including a frequency source, means for translating a received MDPSK signal having inphase I and quadrature phase Q components to a prescribed band and means for demodulating the prescribed band MDPSK signal, a method for synchronizing the frequency of the receiver frequency source with the carrier frequency of the received MDPSK signal comprising in the steps of:

forming a signal representative of the inphase component of the phase difference between immediately successive received symbols for each symbol of the prescribed band MDPSK signal;
forming a signal representative of the quadrature phase component of the phase difference between immediately successive received symbols for each symbol of the prescribed band MDPSK signal;
defining a preamble interval in the received MDPSK signal during which a prescribed sequence of symbols is received;
comparing the inphase difference component signals of the symbols of the preamble interval with the quadrature phase difference component signals of the symbols of the preamble interval to form at least one signal representative of a predetermined relationship between the inphase difference component signals and the quadrature phase difference component signals of the preamble interval; and
adjusting the frequency of the receiver frequency source responsive to the at least one predetermined relationship signal.

4,879,729

APPARATUS FOR THE DECODING CODED FREQUENCY MODULATED SIGNALS

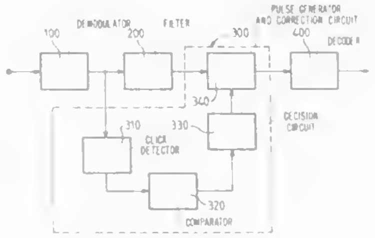
Philippe Salembier, Paris, and Moustanir Lamnabbi, Limeil-Brevannes, both of France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 21, 1988, Ser. No. 223,459

Claims priority, application France, Jul. 24, 1987, 87 10580

Int. Cl.^{4} H04B *1/10*

U.S. Cl. 375—104 **8 Claims**



1. A circuit for decoding coded frequency-modulated signals having a frequency demodulator, a detector coupled to the frequency demodulator and including detection and comparison circuits for detecting noise pulse signals, a pulse-generating circuit coupled to the detector, and a correction circuit coupled to the pulse generating circuit for eliminating perturbing effects of noise pulse signals wherein the detector comprises a linear filter having a transfer function of the type

$$H(f) = \frac{DESAC^*(f) \cdot CLIC(f)}{DESP(num) + DESP(BC)}$$

where f is frequency, $DESAC^*(f)$ is a conjugated transfer function of a de-emphasis filter provided for the frequency modulation, CLIC(f) is a spectrum forming a noise pulse signal, DESP(num) is a spectral power density of a signal, and DESP(BC) is a spectral power density of continuous noise, and wherein the comparison circuit provides a zero signal or an output signal of the detector dependent on the output signal level with respect to a reference threshold, and further comprises

decision means coupled between the comparison circuit and the pulse-generating circuit for determining temporal position and polarity, of each noise pulse signal transmitted to the correction circuit.

4,879,730

JITTER TOLERANT CIRCUIT FOR DUAL RAIL DATA

Nirmal S. Virdee, Phoenix, and Hamid R. Baradaran, Glendale, both of Ariz., assignors to Siemens Transmission Systems, Inc., Phoenix, Ariz.

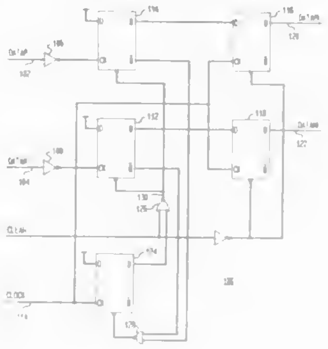
Filed May 31, 1988, Ser. No. 200,387

Int. Cl.^{4} H03K *5/05;* H04L *7/00*

U.S. Cl. 375—106 **10 Claims**

1. A data timing circuit for converting half-width input data on a pair of data input lines into a full-width data output, comprising:

first and second flip-flop means for receiving said input data from said input lines respectively at clock inputs of said flip-flop means and having data outputs;
means for adapting said clock inputs of said first and second flip-flop means such that the leading edges of said input data clocks logic high pulses to the data outputs of said first and second flip-flop means;
pulse generation means receiving a train of clock pulses, for generating a reset pulse on the next positive clock edge occurring after said leading edges of said input data clocks logic high pulses to the data outputs of said first and second flip-flop means, to enable said first and second flip-flop means to receive further data input;



third and fourth flip-flop means having data inputs coupled to the data outputs of said first and second flip flops, whereby said data coupled to data inputs of said, third and fourth flip-flops is outputted to the data outputs thereof as full-width data by said next positive clock edge; and
means for clocking said pulse generation means with a clock signal such that jitter present in said input data having greater than one half a data unit interval but less than one data unit interval with respect to said clock signal does not cause error in said transfer of data and resetting of said flip-flops.

4,879,731

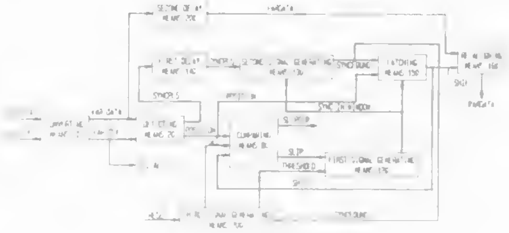
APPARATUS AND METHOD FOR SYNC DETECTION IN DIGITAL DATA

Richard K. Brush, Los Altos, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed Aug. 24, 1988, Ser. No. 235,869

Int. Cl.^{4} H04L *7/04*

U.S. Cl. 375—116 **23 Claims**



1. An apparatus for locating a sync pattern in a digital data stream, comprising:

means, responsive to said digital data stream, for detecting the sync pattern, for generating a first signal in response to a condition in which said sync pattern occurs at a position in said digital data stream within a window about an expected position of said sync signal and for setting a width of said window in accordance with a value of a threshold signal; and
means, responsive to said first signal for generating said threshold signal to have (a) a first value causing said window to have a first width in response to a condition in which said first signal occurs within a predefined interval, and (b) a second value causing said window to have a second width greater than said first width in response to a condition in which said first signal does not occur within said predefined interval.

4,879,732

ODOMETER WITH DISTANCE TRAVELED AND DISTANCE REMAINING DISPLAYS

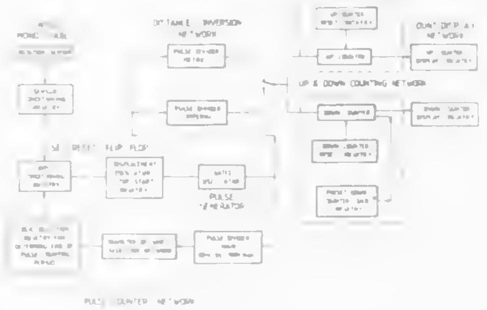
Zbigniew Dorosz, 3 Barkly Avenue, Richmond, Victoria, Australia

Filed Sep. 22, 1987, Ser. No. 99,544

Claims priority, application Australia, Sep. 22, 1986, PH8160

Int. Cl.^{4} G01C *22/00*

U.S. Cl. 377—24.2 **8 Claims**



1. A portable programmable, self-contained odometer for use on a wheeled golf buggy, said odometer being mounted or adapted to be mounted on said golf buggy, said odometer having input means for receiving data relating to the distance travelled by said golf buggy from a motion sensor associated with said buggy, said odometer deriving distance travelled from said data, said odometer including a resettable up counter for determining distance travelled, the output of said up counter being used to display distance travelled on a first portion of a display means, said up counter being able to be reset at any time to set the count thereof to zero, a programmable down counter for determining distance travelled from a predetermined value, the output of said down counter being used to display distance remaining to a predetermined point on a said second portion of said display means, said distance travelled and said distance remaining to a predetermined point being displayed simultaneously on said display means, said up counter and said down counter being independent of each other, whereby the distance count programmed into said down counter as displayed on said second portion of said display means remains undisturbed irrespective of the distance count or resetting of said up counter as displayed on said first portion of said display means.

4,879,733

TIMER ARCHITECTURE FOR MULTI-TASK COMPUTERS AND FOR SERIAL DATA DECODING

Kenneth R. Burch, Austin, Tex., and Mario A. Rivas, West Palm Beach, Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jan. 28, 1988, Ser. No. 149,323

Int. Cl.^{4} H03K *21/38, 21/10*

U.S. Cl. 377—44 **11 Claims**

1. A timer comprising output means;
a plurality of modulo counters including a first and a second modulo counter with interrupts generated as a function of respective first and second different modulus values, each modulo counter having an input and an output; and
means for configuring the outputs of said plurality of mod-

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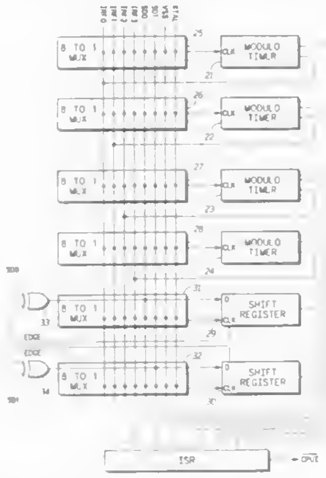
ulo counters into one of either first or second configurations, wherein the input of said first modulo counter is coupled to a clock source and the output of said first modulo counter is coupled to the input of said second modulo counter and that an output of said second modulo counter is coupled to said output means in the first configuration whereby interrupts are generated according to said first and second modulus values in series, and wherein the input of said second modulo counter is coupled to said clock source and the output of said second modulo counter is coupled to the input of said first modulo counter and that an output of said first modulo counter is coupled to said output means in said second configuration whereby interrupts are generated according to said second and first modulus values in series.



4,879,734
INSPECTION APPARATUS AND METHOD USING X-RAYS

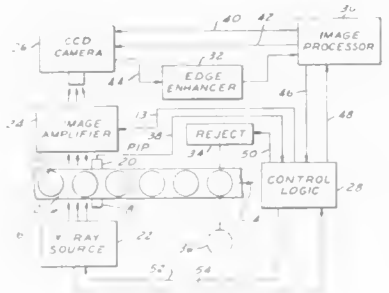
Jay G. Schreckendgust, Victor, N.Y.; James E. Pantelleria, and Mark M. Bergeron, both of Pontiac, Mich., assignors to X-Ray Industries, Inc., Troy, Mich.

Filed Dec. 9, 1986, Ser. No. 939,603

Claims priority, application Rep. of Korea, Dec. 9, 1985, 9246/1985

Int. Cl.⁴ G01N *23/02*

U.S. Cl. 378—57 15 Claims



1. Apparatus for inspecting the contents of each of a plurality of containers continuously moving through an inspection station, comprising:

X-ray pulse generation means responsive to a first control signal for directing a pulse of X-rays through a container moving through said inspection station and resulting in the production of an X-ray image of the contents of said container for a pre-defined length of time , said X-ray image varying in amplitude as a function of time and having a peak portion occurring in time between the beginning and end of said pulse of X-rays;

image amplifying means responsive to a second control signal for amplifying said X-ray image for only

said peak portion

of said X-ray image to produce a substantially blurr-free optical image of said moving container;

camera means responsive to a third control signal for storing a set of optical image data representing

said substantially blurr-free optical image;

image processing means coupled with said camera means for automatically analyzing said set of optical image data to ascertain the contents of said container; and,

control means for generating said first, second and third control signals in synchronized relationship to each other.

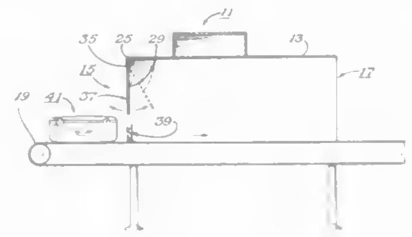
4,879,735
BAGGAGE INSPECTION CONVEYOR BAFFLE AND METHOD

Robert W. Owens, 1813 Westlake Ter., White Settlement, Tex. 76107

Filed May 31, 1988, Ser. No. 200,247

Int. Cl.⁴ G21C *11/00*

U.S. Cl. 378—57 6 Claims



5. An improved baggage inspection device, comprising in combination:

conveyor means for transporting baggage from a first location to a second location;

a housing disposed above said conveyor means having an input port proximal to said first location and an output port proximal to said output port, each having an upper boundary defined by said housing and a lower boundary defined by said conveyor means;

means for non-intrusive inspection of said baggage horizontally disposed upon said conveyor means;

a substantially rigid planar baffle pivotally suspended from said upper boundary of said input port for substantially covering an upper selected region of said input port leaving a lower selected region of said input port proximal to said conveyor means uncovered, providing a clearance between said baffle and said conveyor means of substantially at least eight inches vertical height, wherein said lower selected region of said input port accomodates the passage of briefcase type baggage only when horizontally disposed upon said conveyor means, and wherein said substantially rigid planar baffle pivots to allow the passage of oversize baggage having a horizontal height exceeding said clearance.

4,879,736
X-RAY EXAMINATION APPARATUS

Ulf Bergman, Spanga; Jurgen Sommer, Sollentuna, and Arne Borggren, Jarfalla, all of Sweden, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Nov. 22, 1988, Ser. No. 274,275

Int. Cl.⁴ G21K *7/00*

U.S. Cl. 378—181 8 Claims

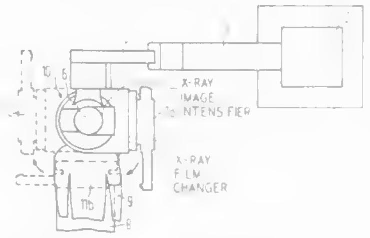
1. An x-ray examination installation for examining a patient comprising: means for generating an x-ray beam in which said patient is disposed, and having a central ray;

an x-ray image intensifier having an image axis substantially coincident with said central ray;

an x-ray film changer;

means for mounting said x-ray film changer so that said x-ray film changer can be optionally moved through about 90° between an exposure position in front of said x-ray image intensifier and a standby position out of said x-ray beam; and

bearing means at least partially surrounding said x-ray image intensifier in a plane substantially perpendicular to said image axis, said x-ray film changer being attached to said bearing means and displaceable along said bearing means.



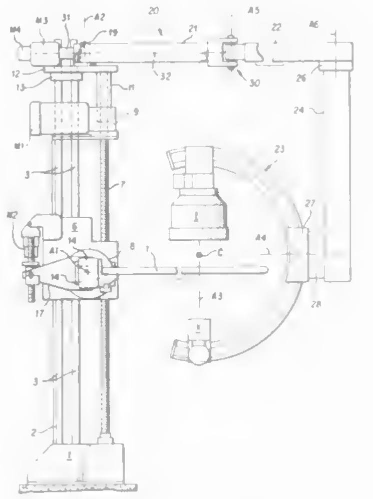
4,879,737
ARTICULATED X-RAY STAND ARM

John K. Grady, XRE Corporation, 300 Foster St., Littleton, Mass. 01460

Filed Mar. 13, 1989, Ser. No. 322,499

Int. Cl.⁴ H05G *1/02*

U.S. Cl. 378—196 7 Claims



1. X-ray apparatus for examination of a patient comprising:

an upright standard;

a patient table extending laterally from the standard;

a two-limbed support with an X-radiation source on one arm and an X-radiation receptor on the other arm; and

an arm pivoted to the standard on a first vertical axis and extending the pivot end of the standard to a free end connected to the two-limbed support to hold the source and receptor on a radiation axis through the table, the arm being articulately jointed between its pivoted end and free end on a second vertical axis intermediate the standard and support so as to selectively position the support at either side of the table, while supporting the X-radiation source and receptor and the patient table on a single floor based standard.

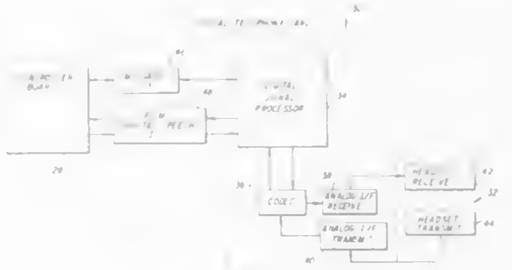
4,879,738
DIGITAL TELEPHONY CARD FOR USE IN AN OPERATOR SYSTEM

John F. Petro, Raleigh, N.C., assignor to Northern Telecom Limited, Montreal, Canada

Filed Feb. 16, 1989, Ser. No. 311,288

Int. Cl.⁴ H04B *3/20*

U.S. Cl. 379—3 32 Claims



1. A device for establishing a desired operator audio level in an operator position means, comprising:

(a) processor means for processing digital signals for generating a desired receive audio level in an operator position means for use by an operator;

(b) conversion means for converting analog speech transmit signal from a telephone transmit means to digital for input to said processor means and for converting digital receive signal from said processor means to analog receive signal for input to a telephone receive means;

(c) means for connecting said processor means to a telecommunications network; and

(d) said processor means including control means for said operator for permitting said operator to modify the desired receive audio level.

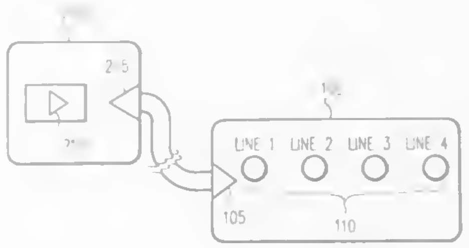
4,879,739
WIRING TEST DEVICE AND METHOD

Henry M. Forson, 4218 Downing St., Annandale, Va. 22003

Filed Dec. 14, 1988, Ser. No. 284,391

Int. Cl.⁴ H04B *3/46*; **H04M** *1/24*

U.S. Cl. 379—21 14 Claims



1. A system for detecting faults in a line which consists of a plurality of wires therein, comprising:

a generating means having a generating port, which is removably connectable to one end of said line, for generating coded pulsed signals on each of said plurality of wires, and

a receiving means having a receiving port, which is removably connectable to an opposite end of said line, for receiving and displaying said coded pulsed signals generated by said generating means, wherein

said coded pulsed signals are uniquely distinct signals for each of said plurality of wires.

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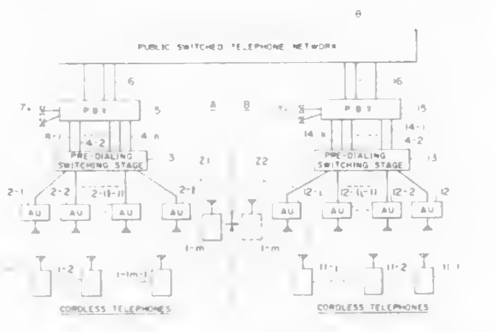
4,879,740

WIDE AREA CORDLESS TELEPHONE SYSTEM HAVING MEANS FOR AVOIDING DOUBLE REGISTRATIONS

Noriaki Nagashima; Kohji Monma, both of Tokyo, and Yoshitoshi Murata, Kanagawa, all of Japan, assignors to NEC Corporation and Nippon Telegraph and Telephone Corporation, both of Tokyo, Japan

Filed Apr. 4, 1988, Ser. No. 177,273
Claims priority, application Japan, Apr. 3, 1987, 62-83586
Int. Cl.⁴ H04Q *7/04*
U.S. Cl. 379—61 4 Claims


8
PUBLIC SWITCHED TELEPHONE NETWORK
PBX
PRE-DIALING SWITCHING STAGE
AU
CORDLESS TELEPHONES
CORDLESS TELEPHONES

1. A wide area cordless telephone system covering a service area which is divided into a plurality of local areas, comprising:

- a plurality of home position portable cordless telephone provided in each one of said local areas, each of said home position cordless telephones having a corresponding line terminal in a telephone switching system and multi-channel access means for establishing a two-way radio link, transmitting a registration request through the established link upon entry of a manual command and subsequently transmitting an acknowledgement upon receipt of a response identifying a local area, said request identifying the cordless telephone which transmitted the request;
- a plurality of access units provided in said one local area for establishing said radio links with said home position cordless telephones and non-home position cordless telephones belonging to another level area; and
- a pre-dialing switching stage provided in said one local area for establishing a connection between said access units and line terminals of said telephone switching stage including control means connected to said access units for receiving said request and acknowledgement therethrough, transmitting a response identifying the local area of said pre-dialing switching stage through one of said access units on receiving a registration request and assigning a reserved line terminal of said telephone switching system to a non-home position cordless telephone if the same is identified by the received request, and making registration of a cordless telephone on receiving an acknowledgement identifying the same local area as identified by said transmitted response.

4,879,741

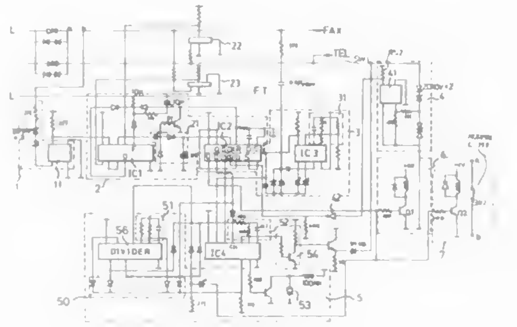
FAX/TELEPHONE SWITCHING DEVICE

Frank Liu, Taipei, Taiwan, assignor to Unisource Corp., Taiwan

Filed Nov. 23, 1987, Ser. No. 124,001
Int. Cl.⁴ H04M *11/00*
U.S. Cl. 379—100 1 Claim

1. A fax/telephone switching device for a fax machine comprising a calling circuit (1), a call-detection circuit (2), a tone-detector circuit (3), a telephone-hold circuit (4), a telephone sounding circuit (5), a first switch control circuit (6) having a first switch for voice communication, and a second switch control circuit (7) having a second switch for fax transmission;

said calling circuit (1) comprising a photo-coupler (11) electrically connected to said call-detection circuit (2);
said calling circuit actuated by an input signal which is rectified by a power source circuit;
said photo-coupler (11) sending a high-level signal to said call-detection circuit (2);
said call-detection circuit (2) comprising a plurality of inverters, a charged circuit (21) and a first D-type flip-flop;
said signal from said photo-coupler (11) being converted to a low-level signal by said inverter, and inputting said low-level signal into said D-type flip-flop after being charged by said charged circuit (21);
said tone-detector circuit (3) including a tone-detector integrated circuit, an RC circuit (31) and a second D-type flip-flop connected to said tone-detector integrated circuit; an output of said first D-type flip-flop being connected to an input of said second D-type flip-flop;
said RC circuit (31) producing a constant frequency signal;
said tone-detector integrated circuit connected to said RC circuit (31) and storing said constant frequency signal as a reference frequency for comparing with said input signal;
said second D-type flip-flop connected to a second inverted integrated circuit and first switch control circuit (6);
said second inverted integrated circuit connected to said second switch control circuit (7);
said tone-detector integrated circuit sending a low-level signal to said second inverted integrated circuit when said tone-detector integrated circuit detects that said input signal has a frequency equal to said reference frequency;



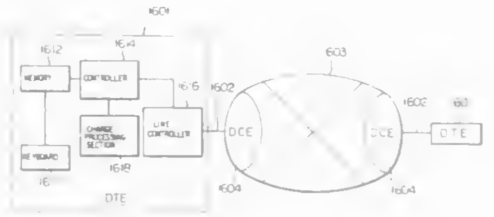
said second inverted integrated circuit converting said low-level signal to a high-level signal and sending said high-level signal to said second D-type flip-flop;
said second D-type flip flop sending a high-level signal to said first switch control circuit (6) to set said first switch on;
said second inverted integrated circuit sending a low-level signal to said second switch control circuit (7) to set said second switch off;
said telephone-hold circuit (4) being connected to and controlled by said second D-type flip-flop of said tone-detector circuit (3);
said telephone sounding circuit (5) comprising a blind-tone oscillator (52), a buzzer oscillator (51), a divider (56) and a buzzer (53);
an input of said blind-tone oscillator (52) being connected to an output of said second D-type flip-flop;
an input of said buzzer oscillator (51) being connected to an output of said second inverted integrated circuit;
said second D-type flip-flop enabling said blind-tone oscillator (52) when said second D-type flip-flop receives said high-level signal from said second inverted integrated circuit, and said blind-tone oscillator (52) producing a blind-tone to notify a telephone-caller to wait;
said second inverted integrated circuit enabling said buzzer oscillator (51) to actuate said divider (56) to drive said buzzer (53) when said second inverted integrated circuit receives said low-level signal from said tone-detector integrated circuit;
second and third photo-coupling devices (22), (23) connected to said power source circuit and actuated by said input signal;
said photo-coupling devices (22), (23) connected to inputs of said calling circuit (1);
said third photo-coupling device (23) connected to a reset pin of said first D-type flip-flop;
when said input signal being for fax transmission, said second photo-coupling device (22) being actuated; and
said third photo-coupling device (23) being actuated so as to enable said first D-type flip-flop and to actuate said buzzer oscillator (51) and said blind-tone oscillator (52) when said input signal being for voice transmission.

4,879,742

CHARGING SYSTEM IN DATA COMMUNICATION NETWORK

Hidenobu Taniguchi, and Tatsuo Kawatobi, both of Yokohama, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 5, 1988, Ser. No. 228,983
Claims priority, application Japan, Ang. 10, 1987, 62-198064
Int. Cl.⁴ H04M *15/00*
U.S. Cl. 379—111 3 Claims



1. A charging system in a data communication network comprising:

first means for negotiating, prior to effecting a data communication between a calling terminal and a called terminal via the network, a charge ratio between charges for the data communication to be paid by the calling and called terminals and allowing said calling terminal to initiate the data communication on an agreement between said calling terminal and said called terminal for the charge ratio;
second means for charging said calling terminal and said called terminal based on the charge ratios at a disconnection of the call; and
third means for respectively notifying the charge information to said calling terminal and said called terminal.

4,879,743

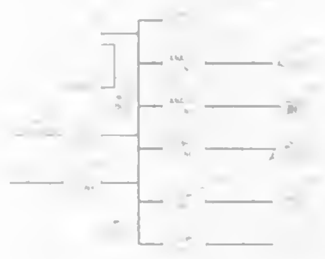
PBX AND ADJUNCT USING MULTI-FREQUENCY TONES FOR COMMUNICATION THEREBETWEEN

Edmund T. Burke, West Long Branch; Daniel H. Dawdy, Marlboro, and Timothy M. Rubert, W. Long Branch, all of N.J., assignors to American Telephone and Telegraph Company, New York, N.Y. and AT&T Information Systems Inc., Morristown, N.J.

Filed Oct. 3, 1988, Ser. No. 252,477
Int. Cl.⁴ H04M *7/06*
U.S. Cl. 379—142 20 Claims

1. A controller for use in a communication system connected to a communication line for receiving incoming calls and connected to an adjunct over a station set communication facility, said controller comprising

means responsive to an incoming call addressed to said adjunct received over said line for sending a ringing signal over said station facility to said adjunct and
means responsive to an off-hook signal from said adjunct for outpulsing over said station facility to said adjunct a plurality of multifrequency tones containing information identifying the type of call to be completed to enable said adjunct to respond to said incoming call, said outpulsing



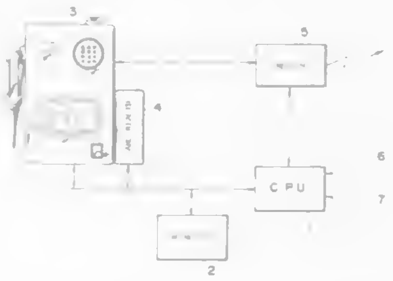
occurring prior to said controller connecting and incoming call to said adjunct.

4,879,744

CARD-OPERATED TELEPHONE

Hisashi Tasaki, and Kimikazu Endo, both of Kyoto, Japan, assignors to Omron Tateisi Electronics Co., Kyoto, Japan

Continuation of Ser. No. 882,186, Jul. 7, 1986, abandoned. This application Jun. 28, 1988, Ser. No. 212,136
Claims priority, application Japan, Jul. 10, 1985, 60-150007
Int. Cl.⁴ H04M *17/02*
U.S. Cl. 379—144 7 Claims



1. A card-operated telephone having a card reader for reading card data, which is inclusive of value, stored in a telephone card, which telephone permits a user to communicate within the limits of the value included in the card data and comprises:

means for determining whether the telephone card is being used a first time;
means for reading and storing dialing data in a case where the telephone card is being used a first time;
writing means for writing the stored dialing data into the telephone card at the end of communication in the case where the telephone card is being used a first time; and
automatic dialing means, operative when the telephone card is used other than a first time, for transmitting a dialing signal based on the dialing data read from the telephone card.

4,879,745

HALF-DUPLEX SPEAKERPHONE

Ygal Arbel, Sunnyvale, Calif., assignor to IBM Corporation, San Jose, Calif.

Filed Oct. 12, 1988, Ser. No. 253,610
Int. Cl.⁴ H04M *1/60*
U.S. Cl. 379—389 25 Claims

14. A speakerphone including a transmit audio path for conveying, when active, a transmit signal including a speech signal and a receive audio path for conveying, when active, a

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receive signal including a speech signal, the speakerphone comprising:

first means for generating an estimate of the power of the transmit signal;

second means for generating an estimate of a noise signal component associated with the transmit audio path;

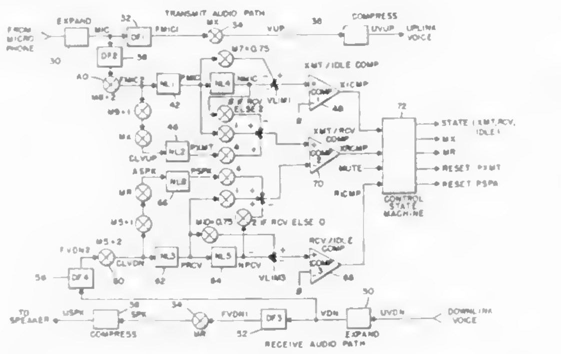
third means for generating an estimate of an echo signal component associated with the transmit audio path;

fourth means for generating an estimate of the power of the receive signal;

fifth means for generating an estimate of a noise signal component associated with the receive audio path;

sixth means for generating an estimate of an echo signal component associated with the receive audio path;

first means for comparing the estimate of the power of the transmit signal to the estimate of the noise signal for the transmit audio path, the first comparing means having an output for indicating if the transmit audio path is conveying speech signals;



second means for comparing the estimate of the power of the receive signal to the estimate of the noise signal for the receive audio path, the second comparing means having an output for indicating if the receive audio path is conveying speech signals;

third means for comparing the estimate of the transmit audio path signal power, noise signal and echo signal with the estimate of the receive audio path signal power, noise signal and echo signal, the third comparing means having an output for indicating whether the transmit audio path or the receive audio path is active; and

means, coupled to and responsive to the output of each of the first, the second and the third comparing means, for selecting at least a transmit state, wherein the transmit audio path is active, a receive state, wherein the receive audio path is active, or an idle state, wherein neither the transmit or the receive audio paths are active.

4,879,746

VOICE COMMUNICATION LINK INTERFACE APPARATUS

Robert F. Young, and Vladimir Kraz, both of Santa Cruz, Calif., assignors to Plantronics, Inc., Santa Cruz, Calif.

Filed Dec. 30, 1987, Ser. No. 139,853

Int. Cl.⁴ H04M *1/60*

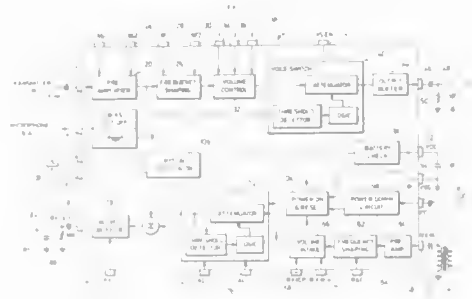
U.S. Cl. 379—399 6 Claims

1. Apparatus for interfacing a two-way voice communication instrument to a communication link, comprising:

a transmit signal channel to provide an electrical voice signal to the communication link; and

a receive signal channel to provide a received electrical voice signal to the communication instrument,

the receive signal channel including a circuit providing compression limiting to the received electrical voice signal as a function of the frequency and amplitude of the received electrical voice signal and a volume control circuit programmable to a preset gain within the total range of gain adjustment, said volume control providing an increase in volume at a first rate and a reduction in volume at a second, faster rate.



4,879,747

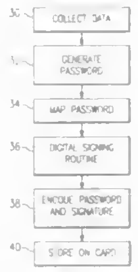
METHOD AND SYSTEM FOR PERSONAL IDENTIFICATION

Frank T. Leighton, 965 Dedham St., Newton Center, Mass. 02159, and Silvio Micali, 224 Upland Rd., Cambridge, Mass. 02140

Filed Mar. 21, 1988, Ser. No. 170,734

Int. Cl.⁴ H04K *1/00*

U.S. Cl. 380—23 26 Claims



1. A method for enabling an authorized user of a personal identification card to effect a transaction using a transaction terminal, comprising the steps of:

generating a first data string having a portion thereof which is derived from a physical characteristic of the authorized user and need not be retained secret;

mapping the first data string using a predetermined function F to generate a second data string Q having a length substantially less than the length of the first data string;

digitally signing the second data string with a private key of a public-key cryptosystem pair to generate a signature corresponding to the second data string, the public-key cryptosystem pair also having a public key M;

encoding the first data string and the signature to generate an encoded first data string/signature;

storing the encoded first data string/signature on the personal identification card;

receiving the personal identification card at the transaction terminal;

decoding the encoded first data string/signature on the received personal identification card to generate the first data string and a received signature;

mapping the first data string with the predetermined function F to generate the second data string;

digitally verifying, using the public key M of the public-key cryptosystem pair, whether the received signature can be generated from the second data string;

if the received signature can be generated from the second data string using the public key, generating an indication that the received signature is valid;

generating a representation from the first data string; and

displaying the representation and the indication on a display of the transaction terminal to enable an operator thereof to verify that the user is authorized to effect a transaction using the personal identification card.

4,879,748

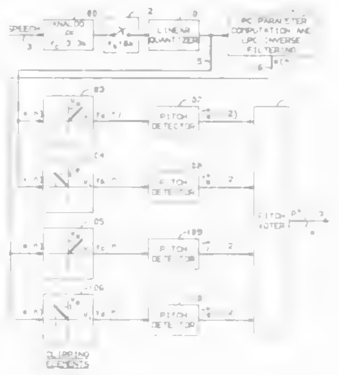
PARALLEL PROCESSING PITCH DETECTOR

Joseph Picone, Forest Park, and Dimitrios Prezas, Park Ridge, both of Ill., assignors to American Telephone and Telegraph Company, New York, N.Y. and AT&T Bell Laboratories, Murray Hill, N.J.

Filed Aug. 28, 1985, Ser. No. 770,633

Int. Cl.⁴ G10L *7/02*

U.S. Cl. 381—49 13 Claims



1. A pitch detector system for human speech comprising:

means for storing a predetermined number of evenly spaced samples of instantaneous amplitude of said speech as a speech frame;

means for generating residual samples from said speech samples;

a plurality of identical means each responsive to an individual predetermined portion of said residual samples of said frame for estimating a pitch value of said frame;

another plurality of identical means each responsive to an individual predetermined portion of said speech samples of said frame for estimating a pitch value of said frame;

means for calculating a final pitch value from the estimated pitch values from each of said plurality and said other plurality of estimating means wherein an unvoiced speech frame is indicated by said calculated pitch value being equal to a predefined value and a voiced frame is indicated by said calculated pitch value being equal to a value other than said predefined value;

said calculating means comprises means responsive to all of said estimated pitch values having a value different than said predefined value for setting said calculated pitch value equal to the arithmetic average of a subset of said estimated pitch values, said subset comprising all of said estimated pitch values except the lowest magnitude value and the highest magnitude value;

means for constraining said final pitch value so that the calculated pitch value is consistent with calculated pitch values from previous frames;

said constraining means comprises means responsive to a first sequence of frames comprising a voiced frame and an unvoiced frame and a second voiced frame for generating a new calculated pitch value having an arithmetic relationship to the calculated pitch values of the frames of said first sequence;

said generating means comprises a new pitch value generating means responsive to a second sequence of frames comprising an unvoiced frame and a voiced frame and a second unvoiced frame for generating a new calculated value indicating an unvoiced frame; and

said new pitch value generating means further reponsive to a third sequence of frames comprising a voiced frame and a second voiced frame and a third voiced frame for generating a new calculated pitch value having an arithmetic relationship to the calculated pitch values of the frames of said third sequence.

4,879,749

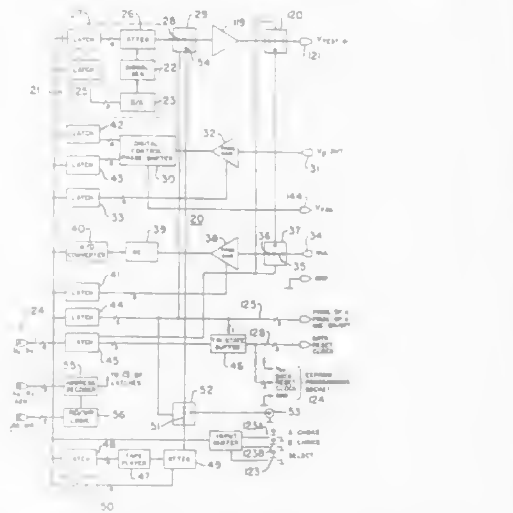
HOST CONTROLLER FOR PROGRAMMABLE DIGITAL HEARING AID SYSTEM

Harry Levitt, Livingston, N.J.; Richard S. Dugot, New York, N.Y., and Kenneth W. Kopper, River Edge, N.J., assignors to Audimax, Inc., Hackensack, N.J.

Division of Ser. No. 879,214, Jun. 26, 1986, Pat. No. 4,731,850. This application Feb. 12, 1988, Ser. No. 155,374

Int. Cl.⁴ H04R *29/00, 25/00*

U.S. Cl. 381—68.4 6 Claims



1. A host controller for producing data from a computer for a programmable hearing aid to cancel acoustic feedback comprising means for receiving signals from the hearing aid and measuring phase and amplitude, means for receiving signals from the hearing aid indicative of the summation of acoustic feedback and acoustic feedback cancellation signals, and means controlled by the computer for adjusting the phase and amplitude necessary to eliminate acoustic feedback and produce a null summation.

4,879,750

HEARING AID WITH CERUMEN TRAPPING GAP

Peter Nassler, Eckental, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Dec. 11, 1985, Ser. No. 807,893

Claims priority, application Fed. Rep. of Germany, Dec. 15, 1984, 8436783[U]; Feb. 20, 1985, 8504765[U]

Int. Cl.⁴ H04R *25/00, 25/02*

U.S. Cl. 381—68.6 13 Claims

1. A hearing aid of the type in which, during use, an earpiece closes off the ear canal and a distal end of a sound-conducting tube extends into the auditory meatus, and in which the tube is mounted to the earpiece, the hearing aid comprising:

a protrusion surrounding said distal end and extending from said earpiece; and

a cap detachably secured to said protrusion, said cap being perforated to permit sound to travel into the ear and

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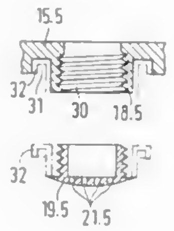
wherein said cap and said earpiece form a cerumen-trapping gap;



wherein said earpiece of said hearing aid has a substantially flat end plate adjacent said protrusion and said end plate bears a groove which surrounds said protrusion.

4,879,751
AUDIO PRODUCTION CONSOLE

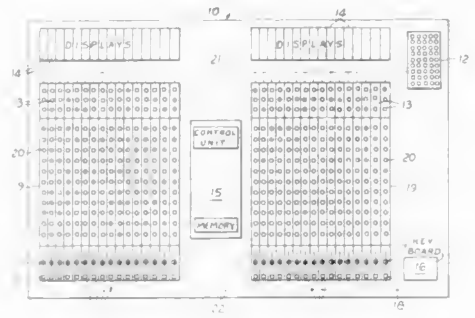
Nicholas Franks, Wilmslow, and Graham A. Langley, Knutsford, both of England, assignors to Amek Systems & Controls Limited, Salford, England

Filed Jun. 24, 1987, Ser. No. 65,877

Claims priority, application United Kingdom, Jun. 27, 1986, 8615758; Nov. 13, 1986, 8627191

Int. Cl.⁴ H04B *1/00*

U.S. Cl. 381—119 12 Claims



1. An audio production console, comprising:

a plurality of inputs;

at least one output bus;

a plurality of separate identical input modules, each of said input modules being connected between a corresponding one of said inputs and said at least one output bus, each of said input modules comprising a plurality of circuit means and a plurality of switching means, said plurality of circuit means and said plurality of switching means being interconnected so as to define a plurality of potential signal paths with the corresponding input module between said plurality of circuit means for a signal from a corresponding one of said inputs, each of said plurality of circuit means being for modifying the audio characteristics of an audio signal from said corresponding input; and

a common control means for all of said plurality of input modules, which control means controls said switching means so as to select at least one of said plurality of potential signal paths as at least one actual signal path of said audio signal from said corresponding input.

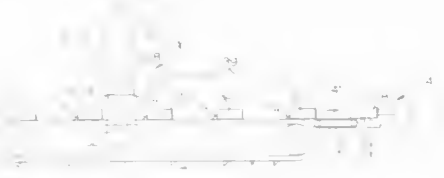
4,879,752
LUMBER OPTIMIZER

Jan E. Aune; Terence J. Arden, and Mary S. Yap, all of Vancouver, Canada, assignors to MacMillan Bloedel Limited

Filed Nov. 18, 1987, Ser. No. 122,336

Int. Cl.⁴ G06K *9/78*

U.S. Cl. 382—1 14 Claims



1. A lumber optimizer system comprising a conveyor means for transporting flitches on a path of travel through said system, a profiling station having optical sensing means to generate a signal defining the profile of each said flitch as each said flitch is transported through said profiling station by said conveyor means, a data acquisition station having means for directing a line of X-rays extending substantially across said path and from one side to an opposite side of each said flitch as said flitch traverses said line, said x-rays passing through each said flitch as each said flitch is moved through said data acquisition station by said conveyor means and discrete side by side means for locally sensing the amount of said x-rays passing through each said flitch along said line thereby to provide data indicating the densities of local areas of each said flitch along said line, means forming a density map of said densities of substantially all said local areas of each said flitch from said data, image analysis means to analyze said density map to discriminate defects including knots in said flitch and to determine the size and location of said defects in said flitch, means for to determine a sawing solution based on size and location of said defects in said flitch as determined by said image analysis means, and on said signal defining the profile of each said flitch from said optical sensing means, a sawing means, means to adjust said sawing means in accordance with said sawing solution so generated for each said flitch, a flitch positioning means, and means to adjust said flitch positioning means to orient each said flitch relative to said sawing means as determined by said sawing solution for each respective said flitch.

4,879,753
THRESHOLDING ALGORITHM SELECTION APPARATUS

Ahmed M. El-Sherbini, Giza, Egypt, assignor to Wang Laboratories, Inc., Lowell, Mass.

Continuation of Ser. No. 846,376, Mar. 31, 1986. This application Sep. 16, 1988, Ser. No. 246,940

Int. Cl.⁴ G06K *9/00*

U.S. Cl. 382—50 6 Claims

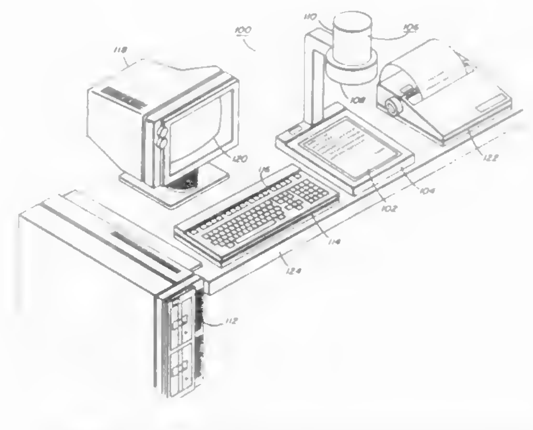
1. An image digitizer comprising:

(A) a preliminary thresholder for receiving signals representing the optical intensity of pixels of an image and producing a preliminary binary bitmap representation of the image suitable for discrimination between text and grey scale image;

(B) a text thresholder for receiving signals representing the optical intensity of pixels of the image to be digitized and producing a binary bitmap representation of the imge according to a text thresholding algorithm;

(C) a grey scale imge thresholder for receiving signals representing the optical intensity of pixels of the image and producing a binary bitmap representation of the image according to a grey scale image thresholding algorithm; and

(D) thresholder selection means
  (a) for computing from the preliminary binary bitmap an average run length for each of a plurality of regions of the image,
  (b) for comparing the computed average run length of each region with a predetermined run length threshold to categorize each region as either a text type or a grey scale type image,
  (c) for causing the text thresholder to be applied to regions of the image determined to be of the text type, and
  (d) for causing the grey scale image thresholder to be applied to regions of the image determined to be of the grey scale type.



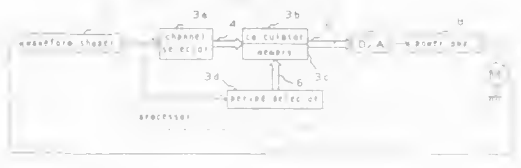
4,879,754
SPEED CONTROLLER

Kunihira Tadashi, Osaka, and Hiroshi Minakuchi, Shiga, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Mar. 14, 1989, Ser. No. 324,039

Int. Cl.⁴ H02P *5/16*

U.S. Cl. 388—810 10 Claims



1. A speed controller comprising:

period detecting means for detecting a period of alternating-current (AC) signal containing information of a rotational speed of a rotating object;

memory means for storing the detected period value detected by said period detecting means;

calculation means for calculating an error output from said detected period value and a reference speed value;

driving means for supplying said rotating object with a driving power based on said error output; and

correction-value computing means for computing a correction value from two continuous detected period values stored in said memory and the reference speed value.

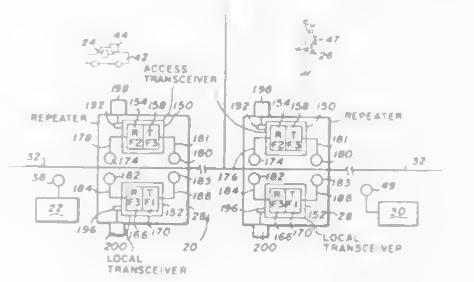
4,879,755
MEDIUM FREQUENCY MINE COMMUNICATION SYSTEM

Larry G. Stolarczyk, Raton; Kurt A. Smoker, Las Cruces; Gerald J. Boese, Raton; William E. Mondt, Albuquerque; Marvin L. Hasenack, Jr., Raton, all of N. Mex.; James L. Zappanti, Trinidad, Colo.; Seth A. Smith, and Edward D. Moore, both of Raton, N. Mex., assignors to Stolar, Inc., Raton, N. Mex.

Filed May 29, 1987, Ser. No. 56,559

Int. Cl.⁴ H04B *13/02*

U.S. Cl. 455—3 24 Claims



1. A method for communicating in mines which comprises:

a. inductively coupling a first radio and a second radio to a transmission line electrical conductor that extends into a mine, the first radio and the second radio each including a receiver for receiving one frequency F1 and a transmitter for transmitting on at least one frequency F2 different from said frequency F1 with the frequencies F1 and F2 both lying in the medium frequency range;

b. inductively coupling at least one access transceiver to said transmission line electrical conductor, the access transceiver having a receiver for said frequency F2 and a transmitter for transmitting a frequency F3 different from said frequencies F1 and F2;

c. inductively coupling at least one local transceiver to said transmission line electrical conductor within said mine, the local transceiver having a receiver for receiving said frequency F3 and a transmitter for transmitting said frequency F1;

d transmitting a first signal carrying information to be communicated from the first radio on the frequency F2;

e. receiving said first signal at said access transceiver;

f. retransmitting said first signal from said access transceiver on the frequency F3 as a second signal carrying said information to be communicated;

g. receiving said second signal at at least one of said local transceivers;

h. retransmitting said second signal from said local transceiver on the frequency F1 as a third signal carrying said information to be communicated; and

i. receiving said third signal at said receiver of said second radio whereby said information to be communicated is conveyed from said first radio to said second radio.

4,879,756
RADIO BROADCAST COMMUNICATION SYSTEMS

John K. Stevens, 8 Alexander Street, Brampton, Ontario, Canada (L6V 1T0), and Paul 1. Waterhouse, 8 Main Street, Lynden, Ontario, Canada (L0R 1T0)

Division of Ser. No. 909,548, Sep. 22, 1986, Pat. No. 4,821,291. This application Jan. 6, 1988, Ser. No. 141,242

Int. Cl.⁴ H04B *7/24;* **H04Q** *7/00*

U.S. Cl. 455—39 15 Claims

1. A radio broadcast system comprising a base broadcast transmitter/receiver and at least one module broadcast receiver/transmitter comprising:

means for generating at the base transmitter/receiver a

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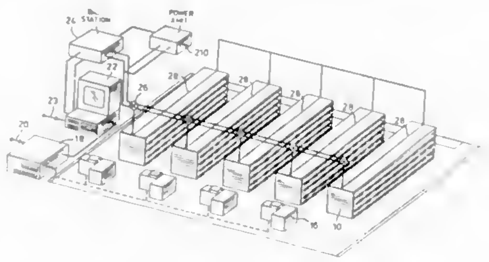
reference carrier in the form of sequential discrete envelopes thereof, each of duration of a predetermined period, and for transmitting the reference carrier to each module broadcast receiver/transmitter;

means for generating at the base transmitter/receiver a base data word within the period of a respective envelope and for transmitting the base data word to the module receiver/transmitter within the period of the respective envelope;

means in the module receiver/transmitter for receiving each reference carrier discrete envelope and in response thereto enable the module receiver/transmitter for operation with the base data word, for generating a corresponding module data word to be transmitted, for receiving the base data word, and for generating in response to reception of the base data word a timing period which is interposed between the received base data word and the module data word to be transmitted, and which is of length such that the corresponding module data word is also within the same envelope period as the received base data word; and

means in the module transmitter/receiver for transmitting the module data word for reception by the base broadcast transmitter/receiver upon termination of the said timing period.



4,879,757

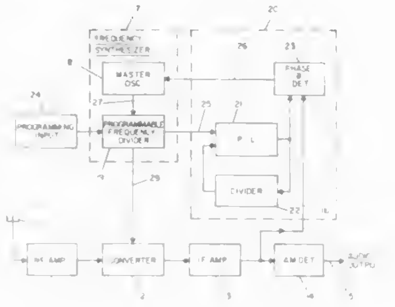
TWEET ELIMINATION, OR REDUCTION, IN SUPERHETERODYNE RECEIVERS

Bernard D. Loughlin, Centerport, N.Y., assignor to Hazeltine Corp., Greenlawn, N.Y.

Filed May 7, 1987, Ser. No. 46,754

Int. Cl.⁴ H04B *1/16*

U.S. Cl. 455—182 6 Claims



1. In a superheterodyne receiver, having a predetermined intermediate frequency (IF) band and a nominal IF, apparatus for preventing or reducing an undesirable frequency relation which may exist between a received radio frequency (RF) signal and the resulting actual IF signal, comprising:

first means for supplying a local oscillator (LO) signal at selected different nominal frequencies and whose specific actual frequency can be controlled, and for also supplying a second signal representative of the nominal IF of said receiver, said LO signal and said second signal being derived from a single master oscillator;

second means for supplying a received RF signal;

third means for combining said RF signal and said LO signal to develop an IF signal within said IF band;

fourth means, responsive to said second signal and to said IF signal, for developing a control signal representative of the existance of said undesirable frequency relation between said RF signal and said IF signal;

and means for applying said control signal to said first means, for controlling the frequency of said master oscillator, and therefore said LO signal, so as to prevent or reduce said undesirable frequency relation.

4,879,758

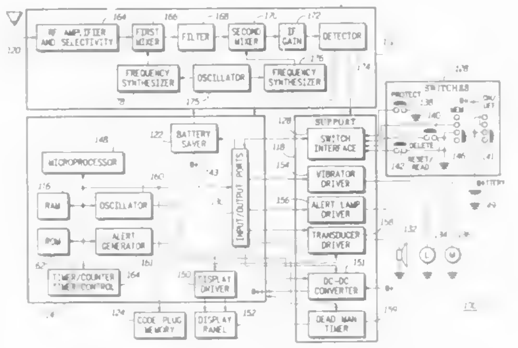
COMMUNICATION RECEIVER SYSTEM HAVING A DECODER OPERATING AT VARIABLE FREQUENCIES

Michael J. DeLuca, Boca Raton, and Jeffrey B. Reed, Lake Worth, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jan. 2, 1987, Ser. No. 276

Int. Cl.⁴ H04B *1/10*

U.S. Cl. 455—296 27 Claims



1. A method for minimizing spurious interference signals generated in a receiver receiving an information signal modulated upon one of a plurality of carrier frequencies, the receiver including

a frequency receiving means for receiving and demodulation information modulated upon at least one carrier frequency,

information processing means for processing the demodulated information signal, and

an oscillator for providing a clock signal for said information processing means, the clock signal having a selectable clock frequency, wherein the spurious interfering signals are generated by said information processing means and are a function of the frequency of the clock signal, said method comprising the steps of:

(a) determining a clock frequency corresponding to a carrier frequency wherein the spurious interfering signals are reduced;

(b) determining the carrier frequency of the frequency receiving means; and

(c) selecting the clock frequency corresponding to the determined carrier frequency.

4,879,759

HOLDING STRUCTURE FOR A PAGING RECEIVER HAVING EXTRA FUNCTIONS

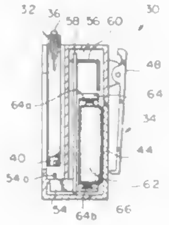
Takeshi Matsumoto; Takashi Oyamada, and Sigeki Hayasaka, all of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Jan. 11, 1988, Ser. No. 141,747

Claims priority, application Japan, Jan. 8, 1987, 62-1580[U]; Jan. 26, 1987, 62-10336[U]; Aug. 28, 1987, 62-131782

Int. Cl.⁴ H04B *1/08*

U.S. Cl. 455—348 21 Claims



1. A holding structure for holding a paging receiver comprising:

receiver housing means accommodating a thin body portion of said receiver which is made up of at least a receiver section, an antenna section, speaker section and a battery section; and

extra function adding means electrically and mechanically connectable to said body portion of said receiver for selectively adding a plurality of extra functions to said paging receiver;

said receiver housing means comprising a housing member, a first electrical connecting member provided in said housing member and first locking means provided in said housing member;

said extra function adding means comprising a support member, a second electrical connecting member connectable to said first connecting member, second locking means engageable with said first locking means, and guide members for individually guiding opposite side walls of said housing member when said body of said receiver is connected to said extra function adding means.

4,879,760

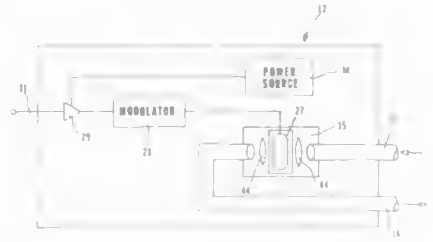
OPTICAL FIBER TRANSMISSIVE SIGNAL MODULATION SYSTEM

Mark W. Kroll, Minnetonka, and Mark R. Pommrehn, Eden Prairie, both of Minn., assignors to Cherne Medical, Inc., Minneapolis, Minn.

Filed Jun. 10, 1987, Ser. No. 60,741

Int. Cl.⁴ H04B *9/00*

U.S. Cl. 455—605 17 Claims



1. A signal modulation system comprising:

a. first and second optical fibers;

b. first station communicatively connected to said first and said second optical fibers and having means to transmit an unmodulated light carrier signal through said first optical fiber and first means to convert a modulated light signal from said second optical fiber to a demodulated electrical signal for output; and

c. a second station communicatively connected to said first and said second optical fibers and having means to receive an input signal, a power source connected to said means to receive, second means to convert said input signal to a modulating signal, an electro-optical modulator constructed and arranged to modulate transmission of said unmodulated light carrier signal from said first optical fiber to said second optical fiber, said electro-optical modulator being responsive to said modulating signal, and means to direct said unmodulated light carrier signal emitted from said first optical fiber to said electro-optical modulator for transmission to said second optical fiber, said power source comprising one or more transparent photovoltaic batteries disposed in-line with and between said first optical fiber and said electro-optical modulator.

4,879,761

BISTABLE OPTICALLY CLOCKED OPTICAL SIGNAL REGENERATOR

Roderick P. Webb, Woodbridge, England, assignor to British Telecommunications, plc, London, England

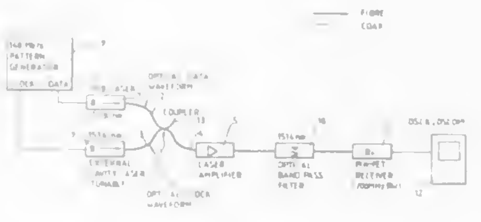
PCT No. PCT/GB87/00360, § 371 Date Jan. 19, 1988, § 102(e) Date Jan. 19, 1988, PCT Pub. No. WO87/07458, PCT Pub. Date Dec. 3, 1987

PCT Filed May 26, 1987, Ser. No. 143,857

Claims priority, application United Kingdom, May 28, 1986, 8612956

Int. Cl.⁴ H04B *9/00*

U.S. Cl. 455—601 8 Claims



1. An optical signal regenerator comprising:

an optical coupler having a first input for an optical information signal, a second input for optical clock pulses and an output for a combined signal,

an optical clock signal generator which generates the optical clock pulses and applies them to the second input and including power control means which controls the power of the optical clock pulses to a level just below the bistable threshold of the laser amplifier;

a resonant laser amplifier located downstream of the output of the coupler and arranged to receive the combined signal and, in use, output a regenerated optical information signal; and

means for applying a bias current to the laser amplifier, in use, biasing the amplifier to a level below its lasing threshold with the power of the optical clock pulses being just below the bistable threshold of the amplifier, so that, when an optical information signal is fed into the first input during the application of an optical clock pulse to the second input the bistable threshold of the amplifier is exceeded causing a sudden jump in the power of the optical output of the amplifier to provide a regenerated optical information signal.

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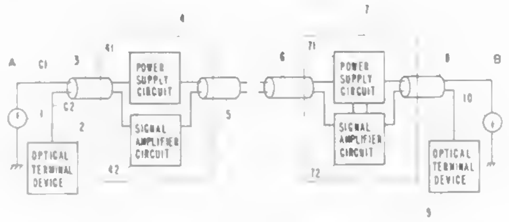
4,879,762

OPTICAL REPEATER AND REGULATED CURRENT FEEDING SYSTEM FOR THE SAME

Ken Hanyuda, Yokohama, and Michimasa Ohara, Kawasaki, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan
Filed Nov. 21, 1986, Ser. No. 933,114
Claims priority, application Japan, Nov. 25, 1985, 60-262461
Int. Cl.⁴ H04B *9/00*
U.S. Cl. 455—601 6 Claims

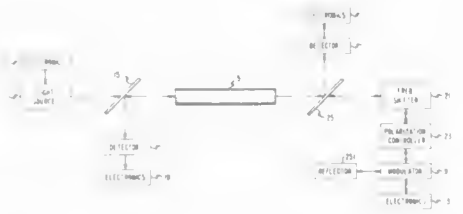


1. An optical repeater, having an input and an output, which is coupled to an optical transmission line formed by an optical fiber and a conductor, said optical repeater comprising:
- an electrical circuit including:
  - means for converting a first optical signal, received at the input of said optical repeater, to an electrical signal;
  - means for amplifying the electrical signal;
  - means for converting the amplified electrical signal to a second optical signal; and
  - means for transmitting the second optical signal from the output of said optical repeater; and
- power supply means for supplying power to said electrical circuit directly connected in series with the conductor including:
  - means for receiving a regulated DC current signal directly from the conductor; and
  - means for dropping the voltage and raising the current of the regulated DC current signal, and for supplying a DC current signal, having a current higher than the current of the regulated DC current signal, to said electrical circuit, said means for dropping comprising a switched capacitor circuit having an input connected to said conductor and an output connected to said electrical circuit, producing a voltage on the output lower than the voltage on the input, and a current on the output higher than the current of the regulated DC current signal.

4,879,763

OPTICAL FIBER BIDIRECTIONAL TRANSMISSION SYSTEM

Thomas H. Wood, Highlands, N.J., assignor to AT&T Bell laboratories American Telephone and Telegraph Company, New York, N.Y.
Filed Feb. 21, 1986, Ser. No. 832,153
Int. Cl.⁴ H04B *9/00*
U.S. Cl. 455—607 10 Claims

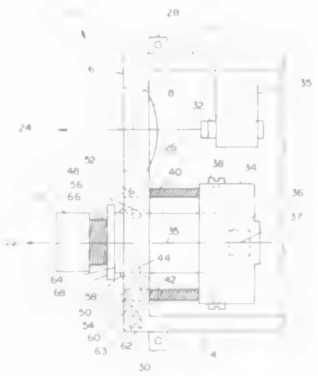


1. An optical communication system comprising a first terminal, a second terminal, and an optical fiber for optically connecting said first terminal to said second terminal;
- said first terminal comprising a light source for generating optical signals to be launched into said optical fiber and a first photodetector for receiving optical signals from said optical fiber;
- said second terminal comprising a second photodetector for receiving optical signals from said optical fiber, means for modulating optical signals from a reflector means to be launched into said optical fiber, and said reflector means for reflecting optical signals received from said light source via said means for modulating back into said means for modulating; and
- at least one of said terminals comprises means for performing a predetermined translation of said optical signals to be launched into said optical fiber to reduce coherent Rayleigh noise.

4,879,764

APPARATUS AND METHOD FOR ALIGNMENT OF FIXED COMMUNICATION LASER STATIONS

Richard K. Walter, Manheim, Pa., assignor to Laser Communications, Inc., Lancaster, Pa.
Filed May 28, 1987, Ser. No. 55,128
Int. Cl.⁴ H04B *9/00*
U.S. Cl. 455—607 4 Claims



1. An apparatus for alignment of a laser beam transmitted from a fixed laser transmitting-receiving station so that the transmitted beam can be made parallel to a beam received by the same station, comprising:
- a mounting plate;
- a laser source attached to the mounting plate by a means preventing relative movement between the laser source and the mounting plate;
- a lens attached to the mounting plate by a means preventing relative movement between the lens and the mounting plate, with the lens oriented so that its centerline is parallel to and centered upon a beam generated by the laser source, and with the lens projecting from one face of the mounting plate;
- a support surface which forms part of the outside surface of the laser transmitting-receiving station, the support surface being rigidly attached to a station support means, and the support surface including a clearance hole through which the lens penetrates, a pivot means attached to the support surface and engaging the lens, and at least two threaded through holes; and
- at least two threaded rods each with one end screwed into the threaded holes in the support surface and the other end projecting toward and contacting the mounting plate, with the end within the threaded hole containing a means by which to turn the threaded rod, the turning means being accessible from outside the laser transmitting-receiving station.

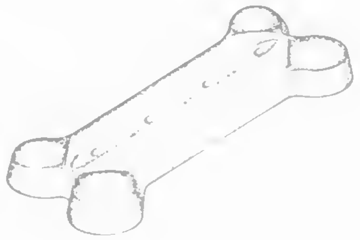
DESIGNS

NOVEMBER 7, 1989

304,385

CANINE BISCUIT

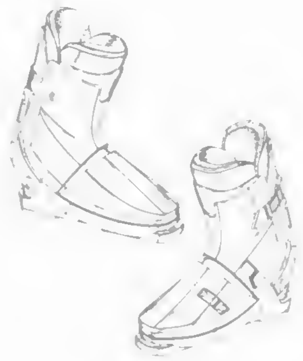
Albert Spiel, Yonkers, N.Y., and Henry C. Spanier, Milford, N.J., assignors to Nabisco Brands, Inc., East Hanover, N.J.
Filed Jan. 5, 1987, Ser. No. 951
Term of patent 14 years
U.S. Cl. D1—106



304,386

SKI BOOT

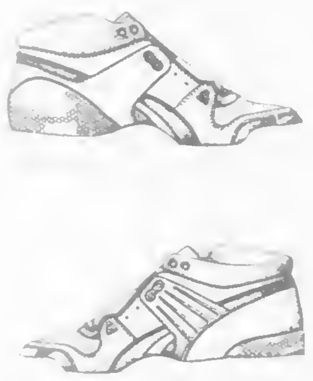
Shin-ichi Iwama, Higashi-kurume, Japan, assignor to Daiwa Seiko, Inc., Tokyo, Japan
Filed Jul. 20, 1987, Ser. No. 75,077
Claims priority, application Japan, Jan. 27, 1987, 62-2889
Term of patent 14 years
U.S. Cl. D2—276



304,387

SHOE UPPER

Paul D. Brown, Hingham, Mass., assignor to Reebok International Ltd., Canton, Mass.
Filed Sep. 12, 1988, Ser. No. 242,503
Term of patent 14 years
U.S. Cl. D2—314



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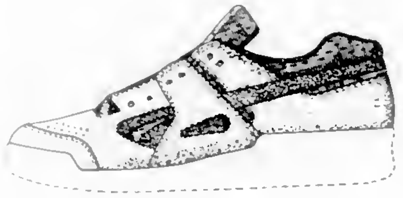
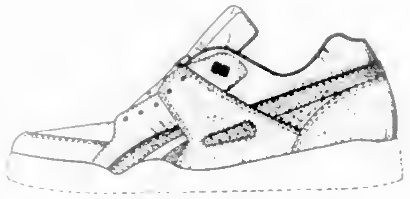
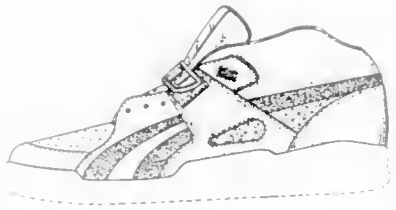
304,388

SHOE UPPER

Paul D. Brown, Hingham, Mass., assignor to Reebok International Ltd., Stoughton, Mass.
Filed Feb. 8, 1989, Ser. No. 307,571
Term of patent 14 years
U.S. Cl. D2—314



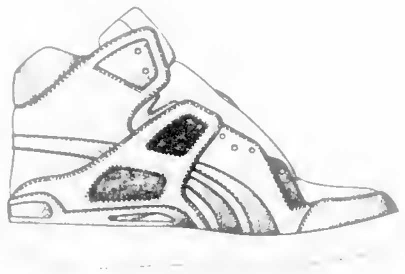


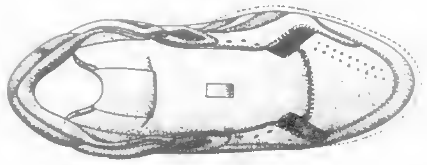


304,389

SHOE UPPER

David E. Miller, Carver, Mass., assignor to Reebok International Ltd., Canton, Mass.
Filed Feb. 8, 1989, Ser. No. 307,572
Term of patent 14 years
U.S. Cl. D2—314

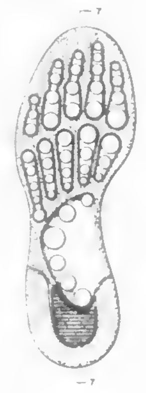


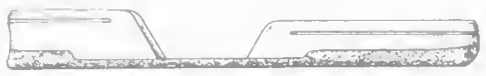


304,390

SHOE SOLE

Kiyotaka Nakano, Kurume, Japan, assignor to Nippon Rubber Co., Ltd., Tokyo, Japan
Filed Feb. 10, 1987, Ser. No. 13,266
Claims priority, application Japan, Sep. 5, 1986, 61-35301
Term of patent 14 years
U.S. Cl. D2—320

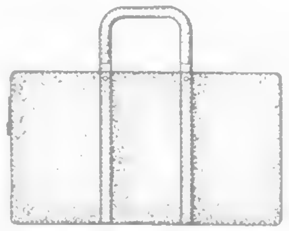




304,391

CARRYING CASE

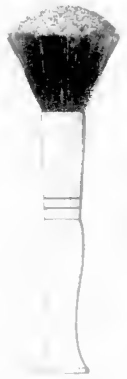
Daniel J. Brunell, Spotswood, N.J., assignor to E.C. Leather Goods, Inc., Cranbury, N.J.
Filed Jun. 4, 1986, Ser. No. 870,697
Term of patent 14 years
U.S. Cl. D3—71

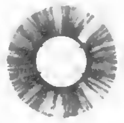


304,392

COSMETIC BRUSH

Maurice M. Reich, 19 Gathering Rd., Pine Brook, N.J. 07058
Filed Feb. 27, 1989, Ser. No. 316,313
Term of patent 14 years
U.S. Cl. D4—135

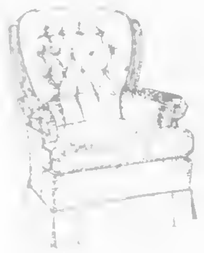


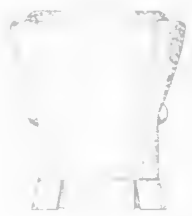


304,393

SWIVEL ROCKER

Clement M. Lange, Jr., Huntingburg, Ind., assignor to Best Chairs, Inc., Ferdinand, Ind.
Filed Mar. 1, 1988, Ser. No. 162,471
Term of patent 14 years
U.S. Cl. D6—334

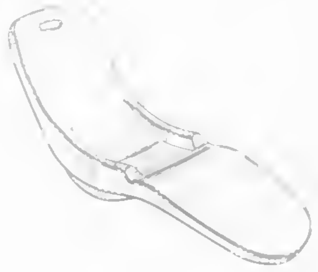




304,394

CHAIR/LOUNGE

Warren E. Harmer, Eastwood, Australia, assignor to W. E. Harmer Associates Pty. Ltd., Eastwood, Australia
Filed Jan. 12, 1988, Ser. No. 143,593
Term of patent 14 years
U.S. Cl. D6—361



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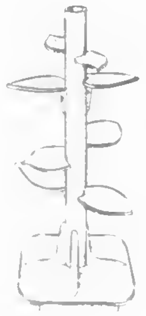
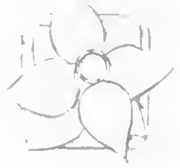
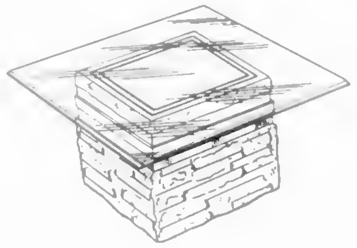
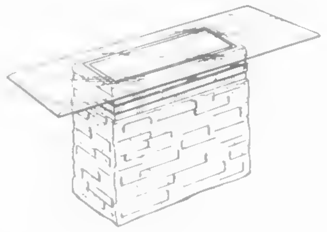
304,395
FLORAL DISPLAY STAND
Vernon R. Taylor, 5108 Eleventh St., Northeast, Washington, D.C. 20011
Filed Sep. 18, 1986, Ser. No. 908,682
Term of patent 14 years
U.S. Cl. D6—405

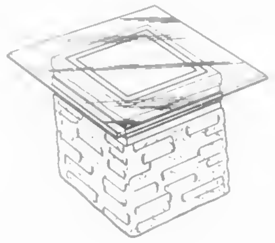




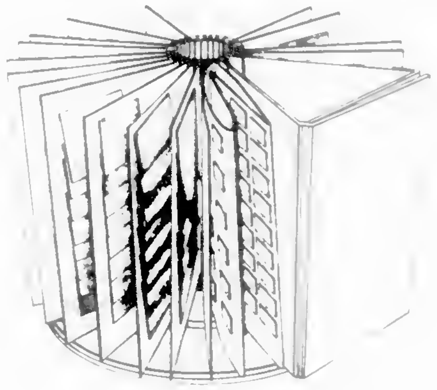
304,396
TABLE
Steven J. Pitchersky, 4509 Kenbridge Dr., Greensboro, N.C. 27410, and Edwin Goldstein, 160 Overbrook Ave., Hackensack, N.J. 06041, assignors to Steven J. Pitchersky, Greensboro, N.C. and Edwin Goldstein, Hackensack, N.J.
Filed Apr. 14, 1989, Ser. No. 338,132
Term of patent 14 years
U.S. Cl. D6—451

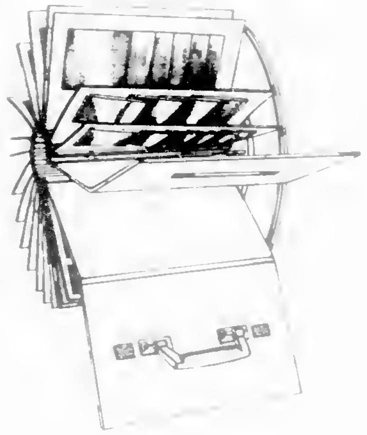




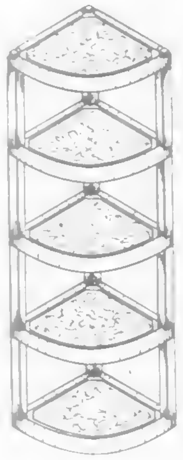


304,397
DISPLAY STAND
Jeffrey Wright, and Judith L. Hvizdak, both of 1608 E. Second St., Scotch Plains, N.J. 07076
Filed May 19, 1986, Ser. No. 864,881
Term of patent 14 years
U.S. Cl. D6—454

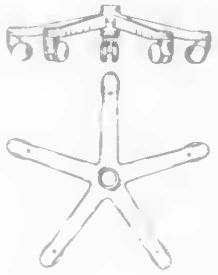




304,398
CORNER UNIT
Charles R. Goetz, Carnegie, Pa., assignor to Alco Industries, Inc., Valley Forge, Pa.
Filed Sep. 3, 1986, Ser. No. 903,578
Term of patent 14 years
U.S. Cl. D6—479



304,399
CHAIR BASE WITH CASTERS
Jerome C. Caruso, Lake Forest, Ill.; Ludovic A. Perl, North York, Canada, and Robert M. Shane, Berrien Springs, Mich., assignors to Shepherd Products U.S., Inc., St. Joseph, Mich.
Filed Jul. 27, 1987, Ser. No. 78,476
Term of patent 14 years
U.S. Cl. D6—498



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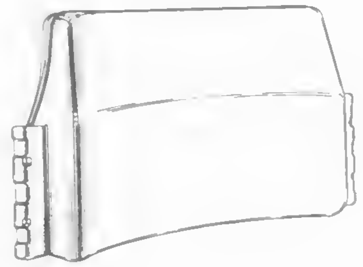
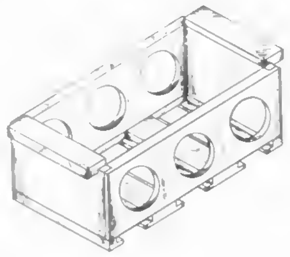
304,400
BACK FOR A STADIUM SEAT

Wilmer R. Schultz, 584 Pine St., Emmaus, Pa. 18049
Filed Nov. 5, 1986, Ser. No. 927,417
Term of patent 14 years
U.S. Cl. D6—502



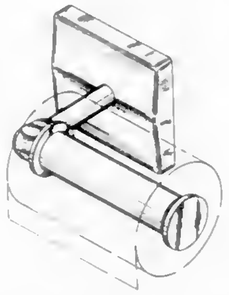
304,401
COMBINED WINE AND GLASS RACK

Leonard A. Wagner, 1903-B Peppertree St., Durham, N.C. 27705
Filed Jan. 20, 1987, Ser. No. 4,698
Term of patent 14 years
U.S. Cl. D6—514



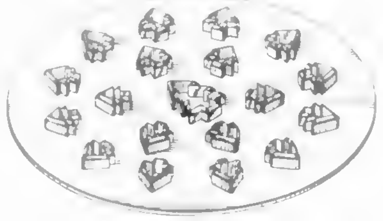
304,402
PAPER DISPENSER

James R. Van Hoose, 7721 Hartly Rd., Vacaville, Calif. 95688
Filed Sep. 23, 1987, Ser. No. 99,988
Term of patent 14 years
U.S. Cl. D6—523



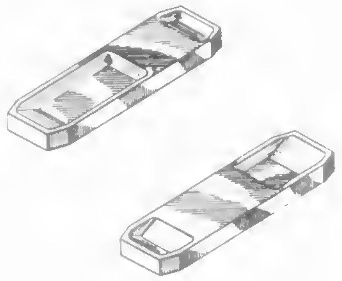
304,403
CUTTER FOR PIE TOP DOUGH

Joan P. Wolff, Harrison, N.Y., assignor to Rowoco Inc., Elmsford, N.Y.
Filed Feb. 13, 1987, Ser. No. 14,643
Term of patent 14 years
U.S. Cl. D7—43



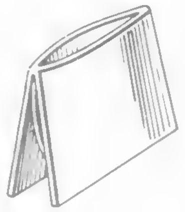
304,404
MEASURING SPOON

William E. Bounds, 3737 W. 240th St., Torrance, Calif. 90505
Filed Jan. 21, 1987, Ser. No. 5,738
Term of patent 14 years
U.S. Cl. D7—50



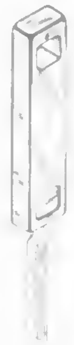
304,405
PITA BREAD SANDWICH HOLDER

Lois B. Levick, 32 Savoy Rd., Framingham, Mass. 01701
Filed Apr. 7, 1986, Ser. No. 850,884
Term of patent 14 years
U.S. Cl. D7—70



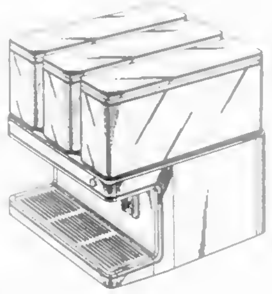
304,406
HANDLE FOR KITCHEN UTENSIL

Jane Aocona, and Bruce Ancona, both of New York, N.Y., assignors to M. Kamenstein, Inc., White Plains, N.Y.
Filed Dec. 22, 1988, Ser. No. 290,084
Term of patent 14 years
U.S. Cl. D7—152



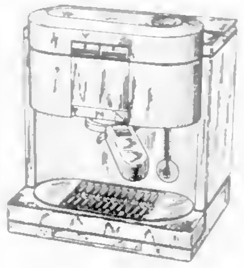
304,407
BEVERAGE DISPENSER

Gregory Fossella, Boston, Mass., assignor to Jet Spray Corp., Norwood, Mass.
Filed Jun. 12, 1986, Ser. No. 873,338
Term of patent 14 years
U.S. Cl. D7—308



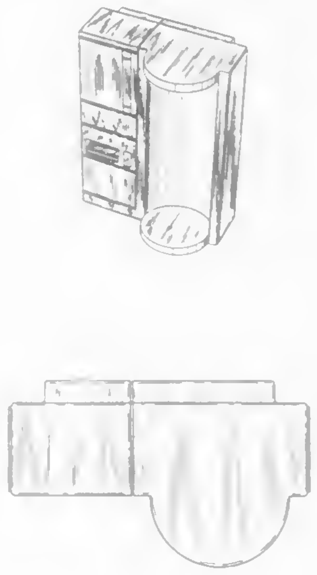
304,408
COFFEE MAKER

Aloysius J. M. Beeren, Haren, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Sep. 10, 1986, Ser. No. 905,992
Claims priority, application Benelux, Mar. 13, 1986, 60944-00
Term of patent 14 years
U.S. Cl. D7—309



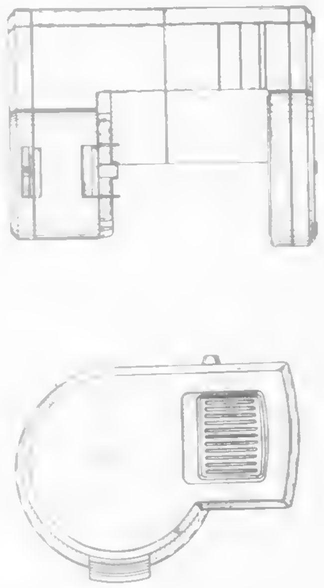
304,409
COFFEEMAKER

Aloysius J. M. Beeren, Haren, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Oct. 16, 1986, Ser. No. 919,928
Claims priority, application Benelux, Apr. 23, 1986, 61047-01
Term of patent 14 years
U.S. Cl. D7—309



304,410
COFFEE MAKER

Masao Tsuji, Old Lyme, Conn., assignor to North American Philips Corp., New York, N.Y.
Filed Dec. 17, 1986, Ser. No. 943,287
Term of patent 14 years
U.S. Cl. D7—309



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304,411
MICROWAVE OVEN

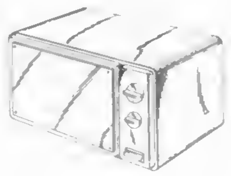
Seung H. Yoo, Buchon, Rep. of Korea, assignor to Gold Star Co., Ltd., Seoul, Rep. of Korea

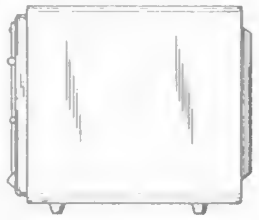
Filed Feb. 18, 1987, Ser. No. 16,177

Claims priority, application Rep. of Korea, Aug. 27, 1986, Des. 86-12209

Term of patent 14 years

U.S. Cl. D7—351





304,412
MICROWAVE OVEN

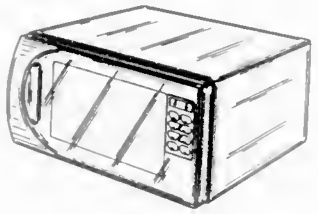
Hiroshi Nishibori, Osaka, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

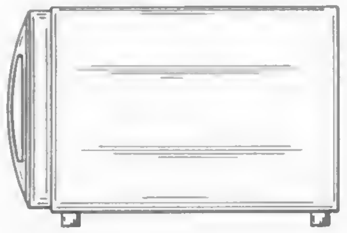
Filed Jul. 27, 1987, Ser. No. 78,473

Claims priority, application Japan, Feb. 19, 1987, 62-6391

Term of patent 14 years

U.S. Cl. D7—351





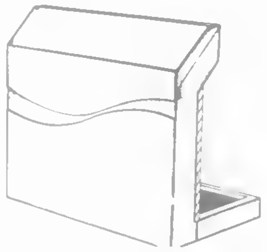
304,413
TOWER FOR A BEVERAGE DISPENSER

Alvin H. Schechter, New York, N.Y., and Carl R. Thompson, Stratford, Conn., assignors to The Coca-Cola Company, Atlanta, Ga.

Division of Ser. No. 841,750, Mar. 5, 1986. This application Nov. 3, 1988, Ser. No. 266,746

Term of patent 14 years

U.S. Cl. D7—397



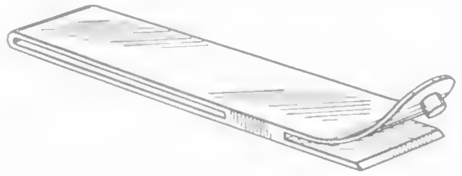
304,414
CAN OPENER

Ronald Ely, 2136 Boundary, San Diego, Calif. 92104

Filed Mar. 16, 1987, Ser. No. 25,999

Term of patent 14 years

U.S. Cl. D8—18



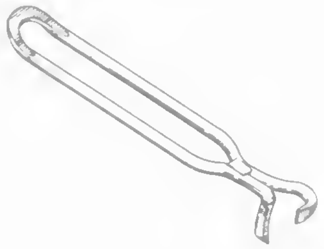
304,415
PAINT CAN RIM PIERCER

James L. Regan, P.O. Box 1176, Fairbanks, Ak.

Filed Mar. 19, 1987, Ser. No. 28,081

Term of patent 14 years

U.S. Cl. D8—18



304,416
STAPLER

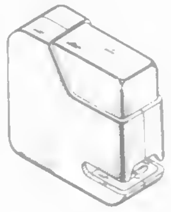
Shintaro Tanigami, Tokyo, Japan, assignor to Elm Industry Co., Tokyo, Japan

Filed Oct. 27, 1986, Ser. No. 923,700

Claims priority, application Japan, May 31, 1986, 61-20944

Term of patent 14 years

U.S. Cl. D8—49



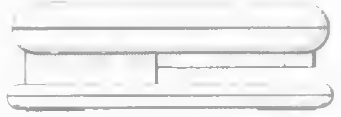
304,417
STAPLER

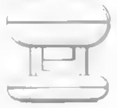
Mel Evenson, San Pedro, Calif., assignor to Eldon Industries, Inc., Inglewood, Calif.

Filed May 26, 1987, Ser. No. 54,362

Term of patent 14 years

U.S. Cl. D8—50





304,418
SCISSORS

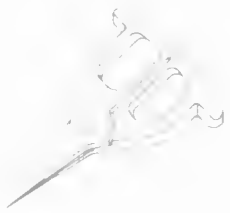
Shintaro Tsuji, Tokyo, Japan, assignor to Sanrio Company, Ltd., Tokyo, Japan

Filed Apr. 16, 1987, Ser. No. 39,596

Claims priority, application Japan, Oct. 18, 1986, 61-041136[U]

Term of patent 14 years

U.S. Cl. D8—57



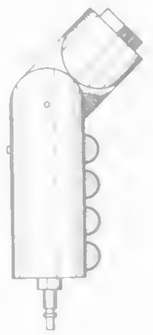
304,419
ANGULARLY ADJUSTABLE PNEUMATIC HAMMER

Rex P. Henck, and Loral A. Henck, both of 1321 E. 59th St., Kansas City, Mo. 64110

Filed Aug. 8, 1986, Ser. No. 894,822

Term of patent 14 years

U.S. Cl. D8—61



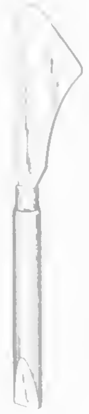
304,420
PALETTE KNIFE

William Alexander, Nanaimo, Canada, assignor to W. Alexander Magic Art Supplies, Inc., Salem, Oreg.

Filed May 18, 1987, Ser. No. 51,125

Term of patent 14 years

U.S. Cl. D8—98



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304,421
EXTENSION TUBE CLIP

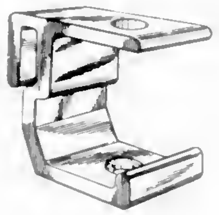
Gary J. Holdaway, North Rocks, Australia, assignor to Hawker Pacific Pty. Limited, North Rocks, Australia

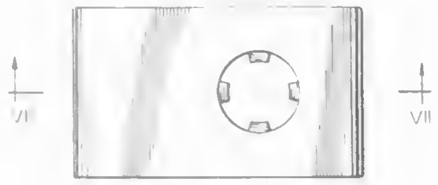
Filed May 12, 1986, Ser. No. 862,600

Claims priority, application Australia, Nov. 15, 1985, 3250/85

Term of patent 14 years

U.S. Cl. D8—373





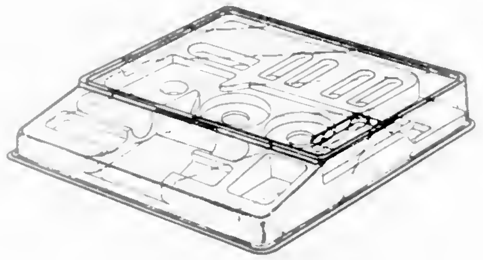
304,422
PLATFORM CONTAINER WITH TRANSPARENT LID

Robert D. Holewinski, Lakehurst, N.J., assignor to Johnson & Johnson Consumer Products, Inc., New Brunswick, N.J.

Filed Mar. 10, 1986, Ser. No. 842,047

Term of patent 14 years

U.S. Cl. D9—347



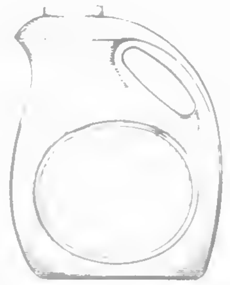
304,423
CONTAINER BODY FOR LIQUIDS OR THE LIKE

Ted L. Beaver, Roselle, Ill., assignor to Continental Plastic Containers, Inc., Norwalk, Conn.

Filed Sep. 8, 1986, Ser. No. 905,052

Term of patent 14 years

U.S. Cl. D9—376



304,424
TAMPER PROOF CONTAINER CLOSURE

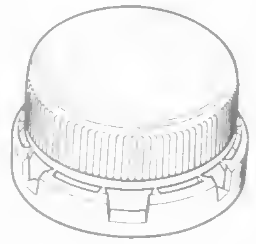
Robert J. Dawson, Victoria, Australia, assignor to Dawson Electrics Pty. Ltd., Victoria, Australia

Filed Jan. 27, 1986, Ser. No. 822,527

Claims priority, application Australia, Jul. 30, 1985, 2027/85

Term of patent 14 years

U.S. Cl. D9—453



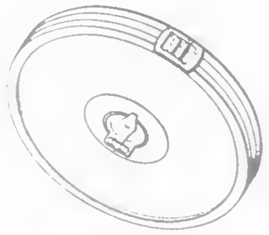
304,425
TAPE MEASURE CASE

Koichi Hara, 30, Sangayama-cho, and Akira Hara, 1250-25, Katsuragi-cho, both of Kishiwada-shi, Osaka, Japan

Filed Oct. 17, 1986, Ser. No. 920,349

Term of patent 14 years

U.S. Cl. D10—12



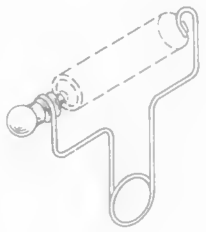
304,426
BATTERY TESTER

Donald C. Bergstedt, 2043 Magnolia Ave., Petaluma, Calif. 94952

Filed Jul. 25, 1986, Ser. No. 889,261

Term of patent 14 years

U.S. Cl. D10—77



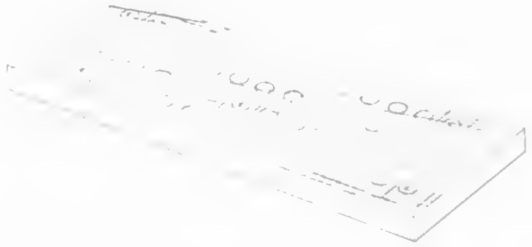
304,427
HARDNESS TESTING BLOCK

Ernest Biddle, Rosemont, Pa., assignor to King Tester Corporation, King of Prussia, Pa.

Filed Oct. 31, 1986, Ser. No. 926,233

Term of patent 14 years

U.S. Cl. D10—83



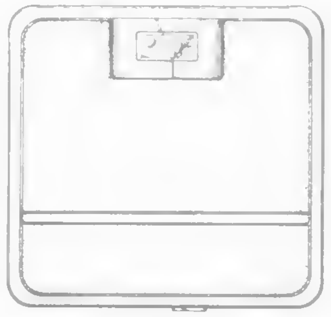
304,428
DOMESTIC SCALE

Glen D. Kemnitz, Laurel, Miss., assignor to Sunbeam Corporation, Downers Grove, Ill.

Filed Nov. 14, 1986, Ser. No. 931,456

Term of patent 14 years

U.S. Cl. D10—92



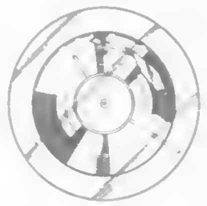
304,429
WATCH FACE

Martin Hirschhorn, Holmdel, N.J., assignor to Time in Motion, Inc., Freehold, N.J.

Filed Oct. 27, 1986, Ser. No. 923,686

Term of patent 14 years

U.S. Cl. D10—126



304,430
BRACELET

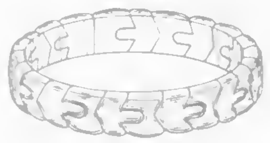
Paolo Bulgari, Rome, Italy, assignor to Partecipazioni Bulgari S.p.A., Rome, Italy

Filed Apr. 30, 1987, Ser. No. 44,115

Claims priority, application Italy, Oct. 31, 1986, 3621/86[U]

Term of patent 14 years

U.S. Cl. D11—6



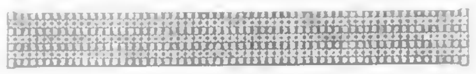
304,431
EXPANSION BRACELET

Murray L. Cowan, Norwood, Mass., assignor to Textron Inc., Providence, R.I.

Filed Jul. 20, 1987, Ser. No. 77,404

Term of patent 14 years

U.S. Cl. D11—25



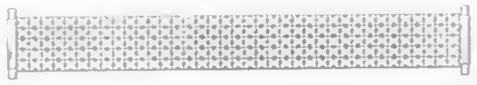
304,432
EXPANSION BRACELET

Murray L. Cowen, Norwood, Mass., assignor to Textron Inc., Providence, R.I.

Filed Jul. 20, 1987, Ser. No. 77,405

Term of patent 14 years

U.S. Cl. D11—25



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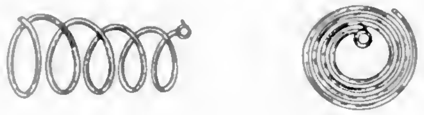
EARRING

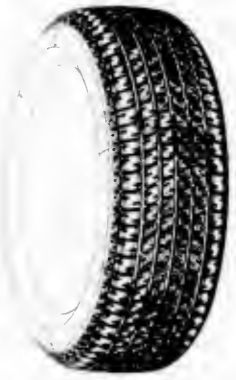
Theo McConnell, Jr., 706 7th St., Pitcairn, Pa. 15140
Filed Sep. 22, 1986, Ser. No. 910,444
Term of patent 14 years
U.S. Cl. D11—78



304,434

VEHICLE TIRE

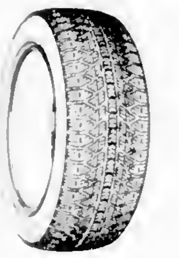
Georg Schüller, Vienna, Austria, assignor to Semperit Reifen Aktiengesellschaft, Vienna, Austria
Filed Mar. 9, 1987, Ser. No. 23,269
Claims priority, application Austria, Dec. 4, 1986, 6597
Term of patent 14 years
U.S. Cl. D12—146



304,435

AUTOMOBILE TIRE

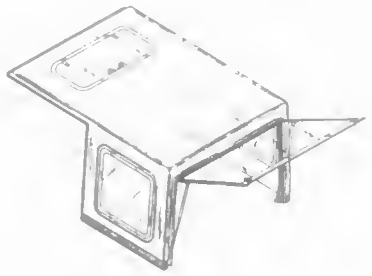
Yasuo Himuro, and Tetsuro Kobayashi, both of Tokyo, Japan, assignors to Bridgestone Corporation, Tokyo, Japan
Filed May 20, 1987, Ser. No. 52,348
Claims priority, application Japan, Nov. 21, 1986, 61-45849
Term of patent 14 years
U.S. Cl. D12—146



304,436

REMOVABLE VEHICLE TOP

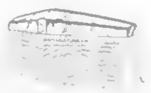
Andrew A. Pike, Aguanga, Calif., assignor to Fleet Air, Gardena, Calif.
Filed Feb. 24, 1987, Ser. No. 18,065
Term of patent 14 years
U.S. Cl. D12—156



304,437

GRILLE CAP FOR A VEHICLE

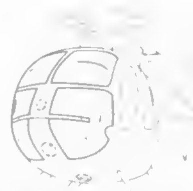
David D. Eash, Columbia, Md., assignor to E&G Classics, Inc., Columbia, Md.
Filed Nov. 4, 1988, Ser. No. 267,007
Term of patent 14 years
U.S. Cl. D12—190



304,438

HELICOPTER WINDSHIELD UNIT

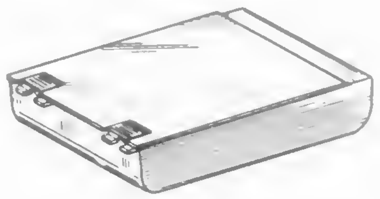
Herman H. Waldrup, Arlington, Tex., assignor to Heli Plex, Inc., Arlington, Tex.
Filed May 21, 1987, Ser. No. 52,570
Term of patent 14 years
U.S. Cl. D12—345



304,439

BATTERY PACK

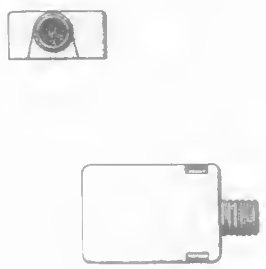
Thomas Mitchell, Houston, and Drew D. Granzow, Spring, both of Tex., assignors to Compaq Computer Corporation, Houston, Tex.
Filed Oct. 14, 1988, Ser. No. 257,799
Term of patent 14 years
U.S. Cl. D13—8



304,440

PROTECTIVE CASE FOR STORAGE BATTERY TERMINAL POST AND BATTERY CABLE END CONNECTED THERETO

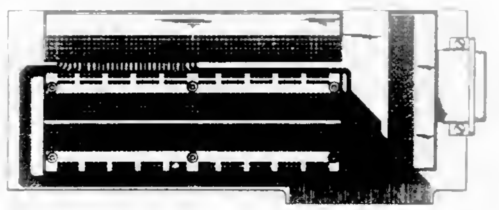
Robert C. Drake, Cincinnati, Ohio, assignor to Dorman Products, Inc., Cincinnati, Ohio
Filed May 21, 1986, Ser. No. 865,611
Term of patent 14 years
U.S. Cl. D13—10



304,441

BREADBOARDING CARD FOR A PERSONAL COMPUTER

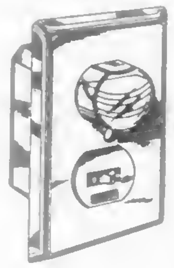
Keith Edmonds, Shelton, Conn., assignor to Interplex Electronics, Inc., New Haven, Conn.
Filed Jul. 8, 1986, Ser. No. 883,328
The portion of the term of this patent subsequent to Sep. 19, 2003, has been disclaimed.
Term of patent 14 years
U.S. Cl. D13—24



304,442

LIGHT CONTROL

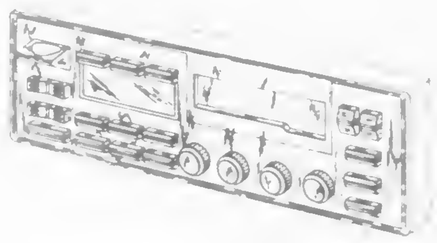
Kenneth R. Fenne, Glen Ellyn, Ill., assignor to Pittway Corporation, Northbrook, Ill.
Filed Feb. 2, 1988, Ser. No. 151,264
Term of patent 14 years
U.S. Cl. D13—32



304,443

FRONT CONTROL PANEL FOR A VEHICULAR COMBINED TAPE PLAYER AND RADIO OR THE LIKE

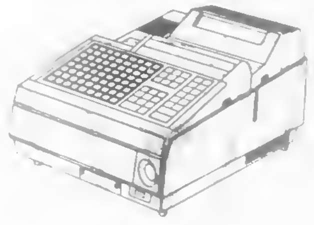
Clive A. Grinyer, London, England, and Eugene P. Papak, Sterling Heights, Mich., assignors to Ford Motor Company, Dearborn, Mich.
Filed Apr. 17, 1986, Ser. No. 856,094
Term of patent 14 years
U.S. Cl. D14—258



304,444

POINT OF SALE TERMINAL

Shiro Ikeya, Kawasaki, Japan, assignor to Nitsuko Limited, Kanagawa, Japan
Filed Sep. 5, 1986, Ser. No. 904,233
Claims priority, application Japan, Mar. 11, 1986, 61-8377
Term of patent 14 years
U.S. Cl. D14—105



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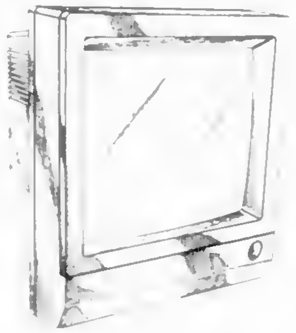
VIDEO DISPLAY

Lawrence M. Kuba, Nashua, N.H., assignor to Wang Laboratories, Inc., Lowell, Mass.

Filed Nov. 10, 1986, Ser. No. 929,136

Term of patent 14 years

U.S. Cl. D14—113



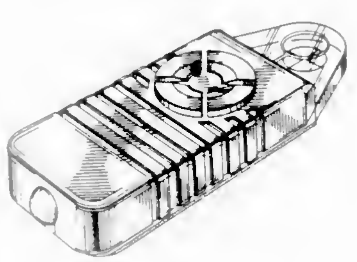
304,446
FOUR BUTTON CURSOR

Rick L. Hoover, Glendale, and James L. Rodgers, Mesa, both of Ariz., assignors to Kurta Corporation, Phoenix, Ariz.

Filed Nov. 10, 1986, Ser. No. 929,761

Term of patent 14 years

U.S. Cl. D14—114



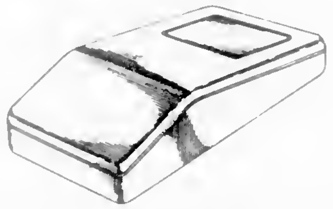
304,447
HOUSING FOR MOVABLE CURSOR CONTROL FOR A VIDEO DISPLAY

Steven Adams, San Jose; William Bull, Sunnyvale, and Stephen Peart, Los Gatos, all of Calif., assignors to Apple Computer Inc., Cupertino, Calif.

Filed Mar. 31, 1987, Ser. No. 33,482

Term of patent 14 years

U.S. Cl. D14—114



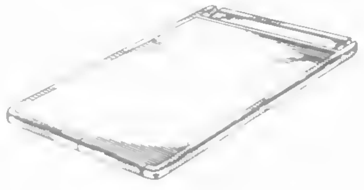
304,448
INTEGRATED CIRCUIT MEMORY MODULE

Michael De La Cruz, Saratoga, and Sigmar W. Willnauer, Portola Valley, both of Calif., assignors to Apple Computer Inc., Cupertino, Calif.

Filed Apr. 16, 1987, Ser. No. 39,529

Term of patent 14 years

U.S. Cl. D14—114



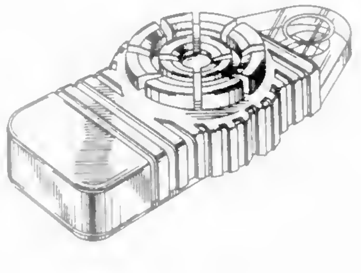
304,449
CURSOR

James L. Rodgers, Mesa, and Rick L. Hoover, Glendale, both of Ariz., assignors to Kurta Corporation, Phoenix, Ariz.

Filed Jun. 19, 1987, Ser. No. 65,002

Term of patent 14 years

U.S. Cl. D14—114



304,450
FACSIMILE TRANSCEIVER

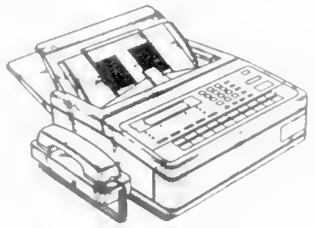
Hideyuki Hosogai, and Junji Morihiro, both of Nagano, Japan, assignors to Matsushita Graphic Communication Systems, Inc., Tokyo, Japan

Filed Nov. 19, 1987, Ser. No. 123,072

Claims priority, application Japan, Jun. 19, 1987, 62-25148

Term of patent 14 years

U.S. Cl. D14—118



304,451
KEY BOARD FOR A COMPUTER

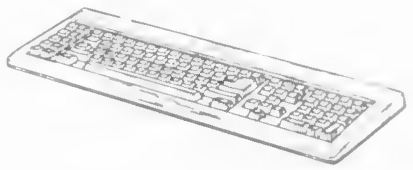
Katsuji Kagayama, Nara; Benito Misbiro, Osaka, and Yoshihiko Sugiyama, Nara, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Sep. 5, 1986, Ser. No. 904,311

Claims priority, application Japan, Mar. 31, 1986, 61-11672

Term of patent 14 years

U.S. Cl. D14—115



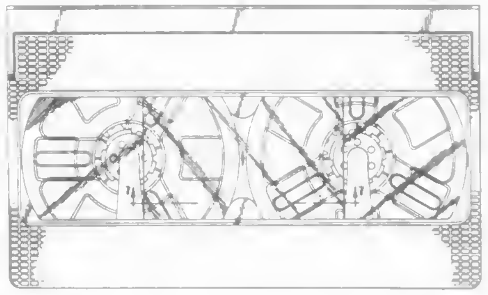
304,452
TAPE CASSETTE

Paul J. Gelardi, Cape Porpoise, and Robert B. MacLeod, Jr., Kennebunkport, both of Me., assignors to Shape Inc., Biddeford, Me.

Filed Aug. 14, 1986, Ser. No. 896,200

Term of patent 14 years

U.S. Cl. D14—121



304,453
CLOCK RADIO

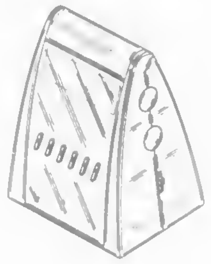
Takashi Matsushima, Osaka, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Oct. 27, 1987, Ser. No. 114,136

Claims priority, application Japan, May 7, 1987, 62-18039

Term of patent 14 years

U.S. Cl. D14—170



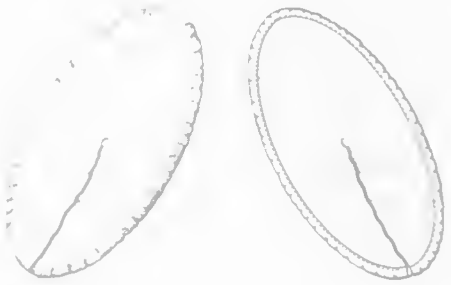
304,454
SATELLITE DISH COVER

John R. Serres, 1840 E. Lincoln Rd., Woodhurn, Oreg. 97071

Filed Jul. 7, 1986, Ser. No. 882,766

Term of patent 14 years

U.S. Cl. D14—231



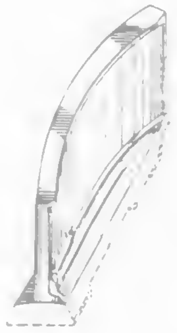
304,455
VANE FOR THROWING WHEEL

James H. Carpenter, Hagerstown, Md., assignor to Pangborn Corporation, Hagerstown, Md.

Filed Nov. 3, 1986, Ser. No. 926,241

Term of patent 14 years

U.S. Cl. D15—126



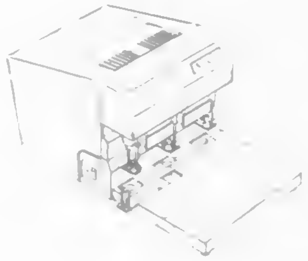
304,456
PAPER HOLE DRILL

Yoshihiro Takahashi, Tokyo, Japan, assignor to Plus Corporation, Japan

Filed Mar. 27, 1987, Ser. No. 30,902

Term of patent 14 years

U.S. Cl. D15—132



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304,457

PRINTER FOR CASH REGISTER

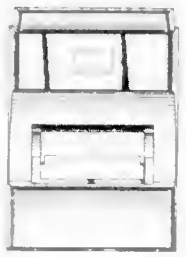
Akira Tsukada, Osaka, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

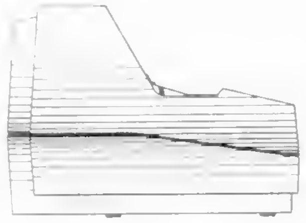
Filed Oct. 29, 1986, Ser. No. 924,508

Claims priority, application Japan, Apr. 30, 1986, 61-16795

Term of patent 14 years

U.S. Cl. D18—13





304,458

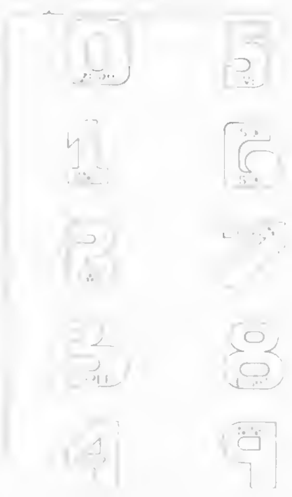
NUMERAL FONT

William H. Mowry, Jr., Ionia, N.Y., assignor to The Standard Register Co., Dayton, Ohio

Division of Ser. No. 794,986, Nov. 4, 1985. This application Aug. 22, 1986, Ser. No. 899,234

Term of patent 14 years

U.S. Cl. D18—24



304,459

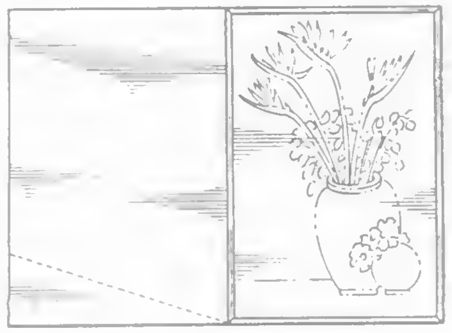
COMBINED PICTURE GREETING CARD AND DISPLAY MEANS

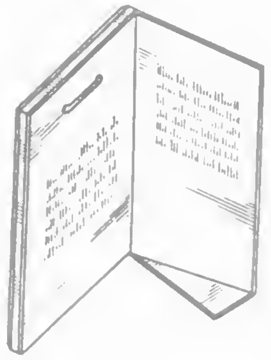
Gary F. Lambert, 834 Lincoln Blvd., Unit #3, Santa Monica, Calif. 90403

Filed Oct. 9, 1986, Ser. No. 917,379

Term of patent 14 years

U.S. Cl. D19—2





304,460

COMBINED DESK STAND

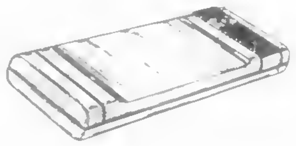
Siegfried Hölterscheidt, Hückelhoven, Fed. Rep. of Germany, assignor to Walter Henkels GmbH, Ratheim, Fed. Rep. of Germany

Filed Apr. 10, 1986, Ser. No. 851,402

Claims priority, application Fed. Rep. of Germany, Jan. 6, 1986, MR168

Term of patent 14 years

U.S. Cl. D19—77



304,461

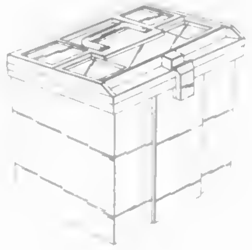
COMPARTMENTED FILE BOX

Kenneth C. Foran, Wooster, and Thomas J. David, Worthington, both of Ohio, assignors to Rubbermaid Incorporated, Wooster, Ohio

Filed Aug. 7, 1986, Ser. No. 894,171

Term of patent 14 years

U.S. Cl. D19—86



304,462

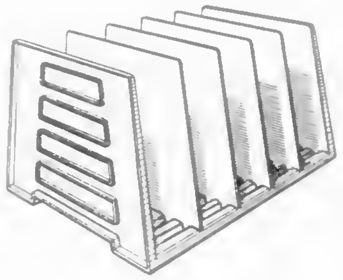
VERTICAL FILE SORTER

Dale M. Evans, Windsor, Wis., assignor to EVCO Office Products, DeForest, Wis.

Filed Dec. 11, 1986, Ser. No. 941,947

Term of patent 14 years

U.S. Cl. D19—90



304,463

WATER GAME HOUSING

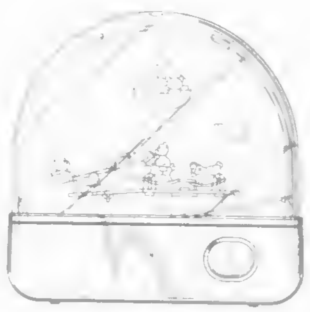
Makiko Watanabe, Tokyo, Japan, assignor to Tomy Kogyo Co., Inc., Tokyo, Japan

Filed Mar. 11, 1987, Ser. No. 24,405

Claims priority, application Japan, Sep. 13, 1986, 61-36244

Term of patent 14 years

U.S. Cl. D21—12



304,464

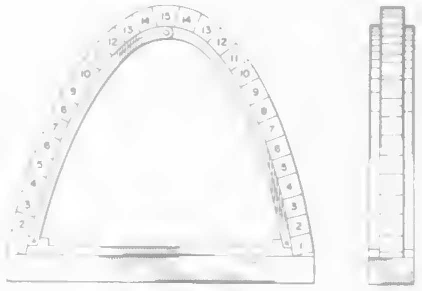
CATENARY ARCH BUILDING TOY

Donald L. Andrews, 5802 Sanibel Captiva Rd., Sanibel, Fla. 33957

Filed Jul. 10, 1987, Ser. No. 71,721

Term of patent 14 years

U.S. Cl. D21—59



304,465

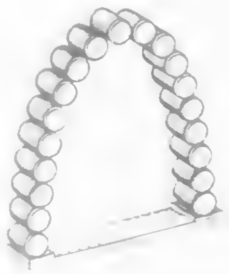
CATENARY ARCH BARREL BUILDING TOY

Donald L. Andrews, 5802 Sanibel Captiva Rd., Sanibel, Fla. 33957

Filed Mar. 18, 1988, Ser. No. 169,764

Term of patent 14 years

U.S. Cl. D21—59



304,466

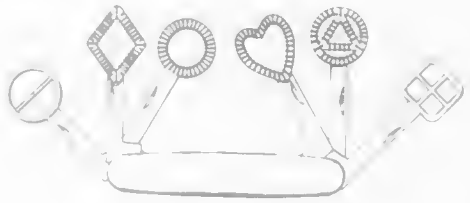
MULTIRING BUBBLE TOY

Michael P. Glickman, Chicago, Ill., assignor to Strombecker Corporation, Chicago, Ill.

Filed Dec. 28, 1987, Ser. No. 138,677

Term of patent 14 years

U.S. Cl. D21—61



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304,467

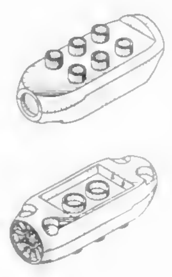
ENGINE FOR A TOY AIRCRAFT

Erik P. Tapdrup, Virum, Denmark, assignor to Interlego A.G., Baar, Switzerland

Filed Dec. 2, 1987, Ser. No. 128,483

Term of patent 14 years

U.S. Cl. D21—91



304,468

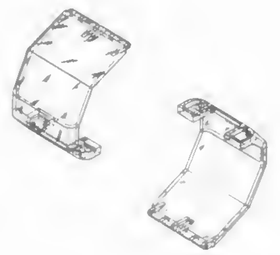
COCKPIT ELEMENT FOR A TOY AIRCRAFT

Erling T. Dideriksen, Billund, Denmark, assignor to Interlego A.G., Switzerland

Filed Dec. 2, 1987, Ser. No. 128,488

Term of patent 14 years

U.S. Cl. D21—91



304,469

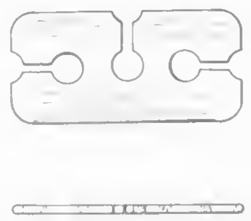
TOY CONSTRUCTION PIECE

János Kövesdi, Budapest, Hungary, assignor to Konsumex Kulkerskedelmi Vallalat, Hungary

Filed Jan. 23, 1987, Ser. No. 6,648

Term of patent 14 years

U.S. Cl. D21—108



304,470

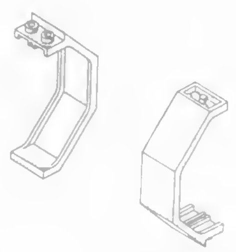
TOY CURVED WALL ELEMENT

Jens N. Knudsen, Billund, Denmark, assignor to Interlego A.G., Baar, Switzerland

Filed Dec. 2, 1987, Ser. No. 128,484

Term of patent 14 years

U.S. Cl. D21—108



304,471

CONNECTOR ELEMENT FOR A CONSTRUCTION TOY

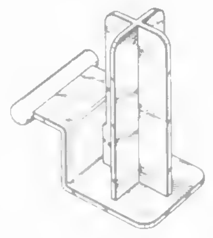
Vic Bertrand, Dollard des Ormeaux, Canada, assignor to The Ritvik Group Inc., Dorval, Canada

Filed Sep. 21, 1987, Ser. No. 99,209

Claims priority, application Canada, May 6, 1987, 06-05-87-11

Term of patent 14 years

U.S. Cl. D21—141



304,472

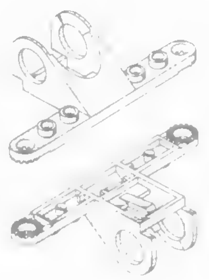
HOUSING FOR A TOY STEERING GEAR ROD

Ole V. Poulsen, Vejle, Denmark, assignor to Interlego A.G., Switzerland

Filed Dec. 2, 1987, Ser. No. 127,873

Term of patent 14 years

U.S. Cl. D21—141



304,473

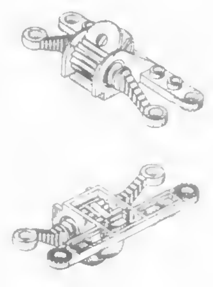
STEERING GEAR FOR A TOY VEHICLE

Ole V. Poulsen, Vejle, Denmark, assignor to Interlego A.G., Switzerland

Filed Dec. 2, 1987, Ser. No. 128,528

Term of patent 14 years

U.S. Cl. D21—141



304,474

TOY ANIMAL

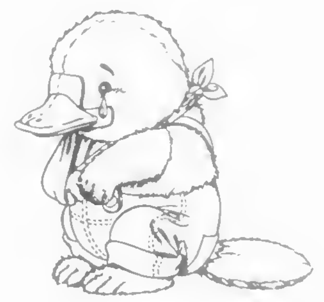
Henry Neville, Lane Cove, Australia, assignor to Down Under Orphans Pty. Ltd., New South Wales, Australia

Filed Aug. 18, 1986, Ser. No. 897,770

Claims priority, application Australia, Feb. 19, 1986, 4241/86

Term of patent 14 years

U.S. Cl. D21—148



304,475

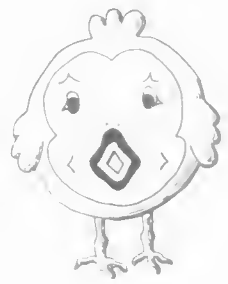
STUFFED TOY FIGURE

Gwendolyn A. Fiust, 526 Hellwig La., West Islip, N.Y. 11795

Filed Dec. 19, 1986, Ser. No. 943,596

Term of patent 14 years

U.S. Cl. D21—160



304,476

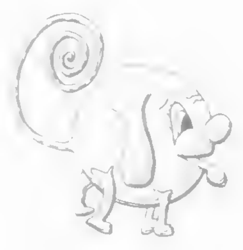
STUFFED TOY FIGURE

Gwendolyn A. Fiust, 526 Hellwig La., West Islip, N.Y. 11795

Filed Dec. 19, 1986, Ser. No. 943,592

Term of patent 14 years

U.S. Cl. D21—161



304,477

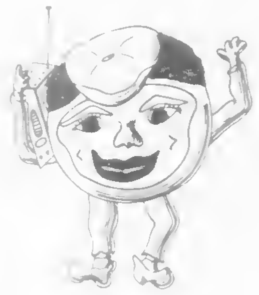
STUFFED TOY FIGURE

Gwendolyn A. Fiust, 526 Hellwig La., West Islip, N.Y. 11795

Filed Dec. 19, 1986, Ser. No. 943,591

Term of patent 14 years

U.S. Cl. D21—171



304,478

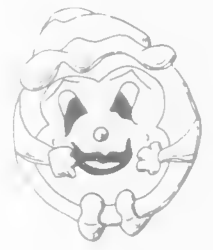
STUFFED TOY FIGURE

Gwendolyn A. Fiust, 526 Hellwig La., West Islip, N.Y. 11795

Filed Dec. 19, 1986, Ser. No. 943,597

Term of patent 14 years

U.S. Cl. D21—171



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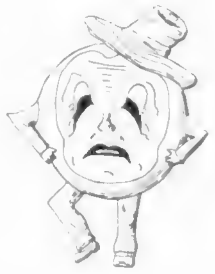
STUFFED TOY FIGURE

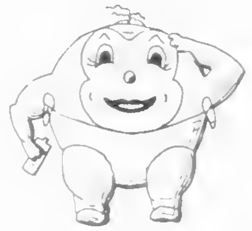
Gwendolyn A. Fiust, 526 Hellwig La., West Islip, N.Y. 11795
Filed Dec. 19, 1986, Ser. No. 943,600
Term of patent 14 years
U.S. Cl. D21—171



304,480

STUFFED TOY FIGURE

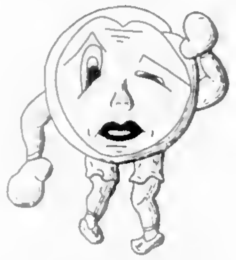
Gwendolyn A. Fiust, 526 Hellwig La., West Islip, N.Y.
Filed Dec. 19, 1986, Ser. No. 943,921
Term of patent 14 years
U.S. Cl. D21—171



304,481

STUFFED TOY FIGURE

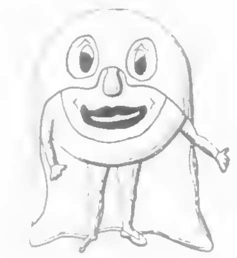
Gwendolyn A. Fiust, 526 Hellwig La., West Islip, N.Y. 11795
Filed Dec. 19, 1986, Ser. No. 943,589
Term of patent 14 years
U.S. Cl. D21—177



304,482

STUFFED TOY FIGURE

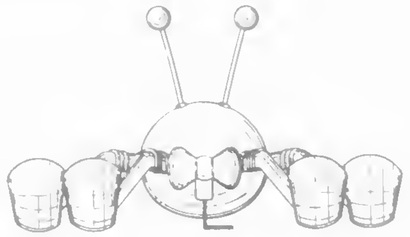
Gwendolyn A. Fiust, 526 Hellwig La., West Islip, N.Y. 11795
Filed Dec. 19, 1986, Ser. No. 943,595
Term of patent 14 years
U.S. Cl. D21—177



304,483

PULL TOY

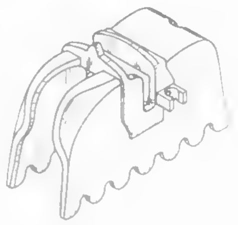
Harry S. Thomson, Richmond; David M. Raffo, and John A. Pape, both of Hitchin, all of England, assignors to Hestair Kiddicraft Limited, Bristol, England
Filed Apr. 22, 1986, Ser. No. 857,447
Claims priority, application United Kingdom, Nov. 4, 1985, 1030228
Term of patent 14 years
U.S. Cl. D21—105



304,484

TOY CAPARISON

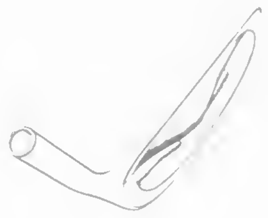
Jens N. Knudsen, Billund, Denmark, assignor to Interlego A.G., Switzerland
Filed Dec. 2, 1987, Ser. No. 127,887
Term of patent 14 years
U.S. Cl. D21—189



304,485

GOLF IRON HEAD

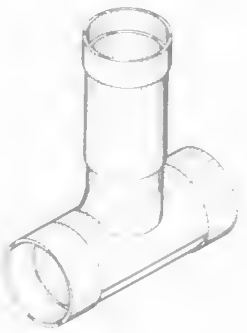
D. Clayton Long, Albany, Ga., assignor to MacGregor Golf Company, Albany, Ga.
Filed Jun. 24, 1987, Ser. No. 66,098
Term of patent 14 years
U.S. Cl. D21—220



304,486

HOUSING FOR A SHUT-OFF VALVE

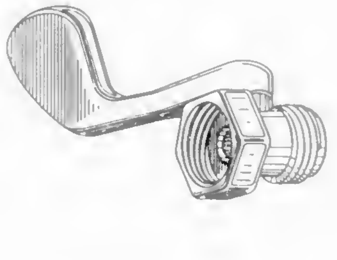
Paul S. Elder, Meeker, Colo., and Harold E. Damratowski, Alda, Nebr., assignors to Elder Valve, Inc., Meeker, Colo.
Filed Feb. 24, 1986, Ser. No. 836,564
Term of patent 14 years
U.S. Cl. D23—233



304,487

FLOW CONTROL VALVE AND NOZZLE

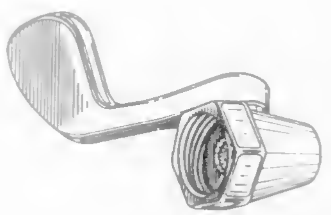
Robert W. Hengesbach, 7886 Mentor Rd., Mentor, Ohio 44060
Continuation of Ser. No. 860,758, May 5, 1986, which is a continuation-in-part of Ser. No. 461,872, Jan. 28, 1983, and Ser. No. 461,873, Jan. 28, 1983. This application Jul. 26, 1988, Ser. No. 224,252
Term of patent 14 years
U.S. Cl. D23—245



304,488

COMBINED FLOW CONTROL VALVE AND NOZZLE

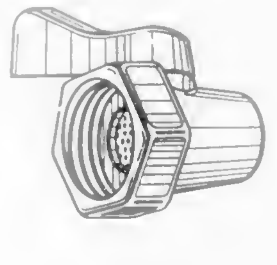
Robert W. Hengesbach, 7886 Mentor Rd., Mentor, Ohio 44060
Continuation of Ser. No. 860,759, May 5, 1986, which is a continuation-in-part of Ser. No. 461,872, Jan. 28, 1983, and Ser. No. 461,873, Jan. 28, 1983. This application Jul. 26, 1988, Ser. No. 224,253
Term of patent 14 years
U.S. Cl. D23—245



304,489

COMBINED FLOW CONTROL VALVE AND NOZZLE

Robert W. Hengesbach, 7886 Munson Rd., Mentor, Ohio 44060
Continuation-in-part of Ser. No. 224,252, Jul. 26, 1988, and Ser. No. 224,253, Jul. 26, 1988, each is a continuation of Ser. No. 860,758, May 5, 1986, abandoned, and Ser. No. 860,759, May 5, 1986, abandoned, each is a continuation-in-part of Ser. No. 461,872, Jan. 28, 1983, Pat. No. D. 285,478, and Ser. No. 461,873, Jan. 28, 1983, Pat. No. D. 285,479. This application Oct. 7, 1988, Ser. No. 255,525
Term of patent 14 years
U.S. Cl. D23—245



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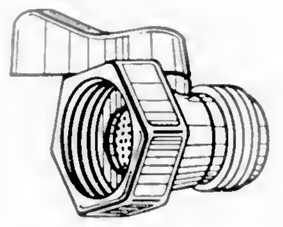
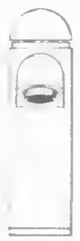
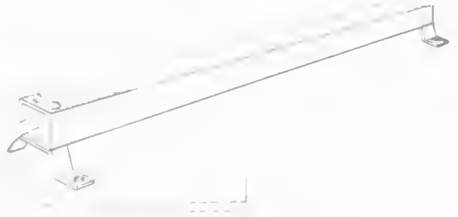
304,490
FLOW CONTROL VALVE
Robert W. Hengesbach, 7886 Munson Rd., Mentor, Ohio 44060
Continuation-in-part of Ser. No. 224,252, Jul. 26, 1988, and Ser. No. 224,253, Jul. 26, 1988, each is a continuation of Ser. No. 860,758, May 5, 1986, abandoned, and Ser. No. 860,759, May 5, 1986, abandoned, each is a continuation-in-part of Ser. No. 461,872, Jan. 28, 1983, Pat. No. D. 285,478, and Ser. No. 461,873, Jan. 28, 1983, Pat. No. D. 285,479. This application Oct. 7, 1988, Ser. No. 255,527
Term of patent 14 years
U.S. Cl. D23—245



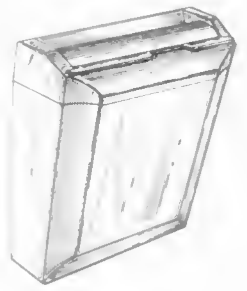
304,491
SPOUT
Herbert Reinecke, Iserlohn, Fed. Rep. of Germany, assignor to Aloys F. Dornbracht GmbH & Co., Iserlohn, Fed. Rep. of Germany
Filed Sep. 8, 1986, Ser. No. 905,235
Claims priority, application Fed. Rep. of Germany, Mar. 13, 1986, MR-7474; Aug. 25, 1986, MR-7498
Term of patent 14 years
U.S. Cl. D23—255



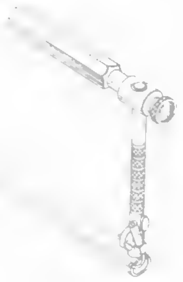
304,492
ELECTRIC HEATING ELEMENT
Terri Tiitinen, Pellavakuja 7, SF-04400 Järvenpää , Finland
Filed Sep. 11, 1986, Ser. No. 906,781
Term of patent 14 years
U.S. Cl. D23—386



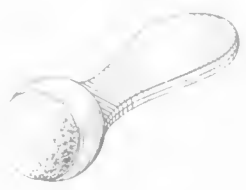
304,493
CONTAINER FOR DISPOSING OF HYPODERMIC NEEDLES AND OTHER SHARP MEDICAL ITEMS
Richard A. Bemis, Sheboygan, Wis., assignor to Bemis Manufacturing Company, Sheboygan Falls, Wis.
Filed Jun. 1, 1987, Ser. No. 56,791
Term of patent 14 years
U.S. Cl. D24—8



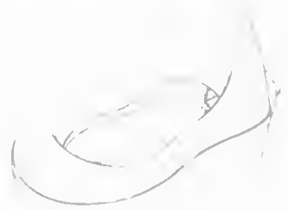
304,494
LARYNGOSCOPE
Frederic P. Rosenwald, Churchville, and Andrew J. Furey, Philadelphia, both of Pa., assignors to Pilling Company, Fort Washington, Pa.
Filed Jun. 11, 1987, Ser. No. 62,045
Term of patent 14 years
U.S. Cl. D24—18

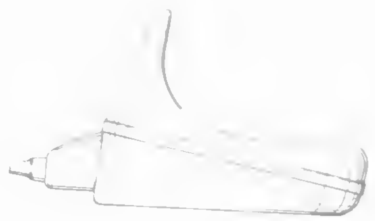


304,495
SCAR MASSAGING ROLLER
James Tyo, and Diane Tyo, both of 633 E. Walnut, Green Bay, Wis. 54301
Filed Feb. 6, 1987, Ser. No. 11,849
Term of patent 14 years
U.S. Cl. D24—36

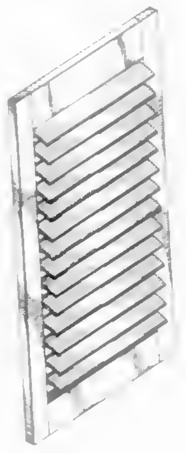


304,496
FEMALE URINAL
Madeline Thomas, Godalming, England, assignor to H. G. Wallace Limited, Colchester, England
Filed Jun. 26, 1987, Ser. No. 66,712
Term of patent 14 years
U.S. Cl. D24—54

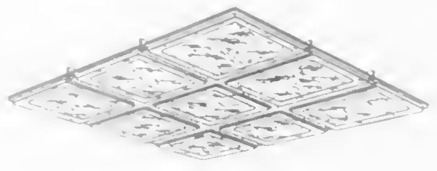




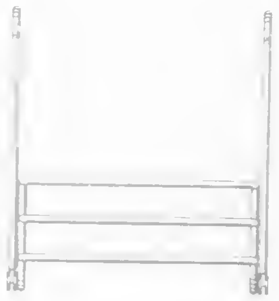
304,497
WINDOW SHUTTER
Kenneth W. Briggs, Sr., Rice, Tex., assignor to Rushman Draperies, Inc., Dallas, Tex.
Filed Jun. 4, 1987, Ser. No. 57,854
Term of patent 14 years
U.S. Cl. D25—47



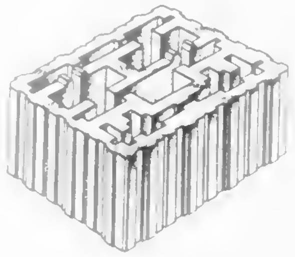
304,498
SUBCEILING PANEL UNIT
Bruce P. Carey, Saugus, Calif., assignor to USG Interiors, Inc., Chicago, Ill.
Filed Sep. 30, 1986, Ser. No. 913,863
Term of patent 14 years
U.S. Cl. D25—58



304,499
FOLDING STAIR UNIT
Orley D. Rogers, Farwell, and Kenneth E. Staten, Clare, both of Mich., assignors to Stageright Corporation, Clare, Mich.
Filed May 12, 1988, Ser. No. 194,572
Term of patent 14 years
U.S. Cl. D25—62



304,500
SIX CAVITY BUILDING BLOCK
Emerson J. VanWassehnova, and Percy K. Sagar, both of Shawnee, Kans., assignors to Lithibar Matik, Inc., Holland, Mich.
Filed Feb. 17, 1987, Ser. No. 15,867
Term of patent 14 years
U.S. Cl. D25—114



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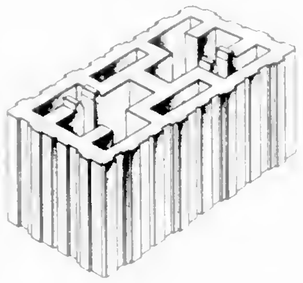
FOUR CAVITY BUILDING BLOCK

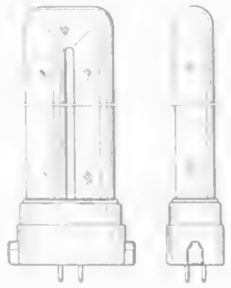
Emerson J. VanWassehnova, and Fercy K. Sagar, both of Shawnee, Kans., assignors to Lithibar Matik, Inc., Holland, Mich.
Filed Feb. 17, 1987, Ser. No. 15,868
Term of patent 14 years
U.S. Cl. D25—114



304,502

COMPACT FLUORESCENT LAMP

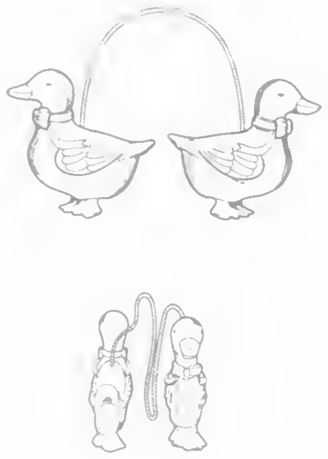
Albert Heidemann, Munich, and Michael Kappler, Friedberg, both of Fed. Rep. of Germany, assignors to Osram GmbH, Munich, Fed. Rep. of Germany
Filed Feb. 9, 1987, Ser. No. 12,301
Claims priority, application Fed. Rep. of Germany, Aug. 20, 1986, DM/007379
Term of patent 14 years
U.S. Cl. D26—3



304,503

PAIR OF LINKED CANDLES

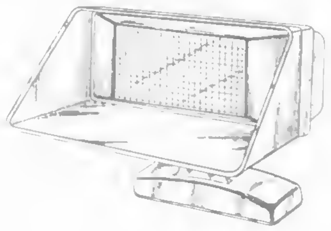
Michael C. B. Lam, Ground Floor, Kwai Bo Industrial Building, 40 Wong Chuk Hang Road, Aberdeen, Hong Kong
Filed Aug. 28, 1986, Ser. No. 901,473
The portion of the term of this patent subsequent to Oct. 31, 2003, has been disclaimed.
Term of patent 14 years
U.S. Cl. D26—7



304,504

AUXILIARY AUTOMOTIVE VEHICLE BRAKE LIGHT

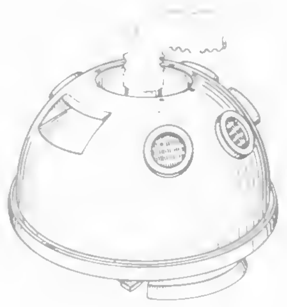
Cheng Pin Chen, 26, Alley 14, Lane 64, Chung Shan Rd., Sec. 2, Chung Ho, Taiwan
Filed May 28, 1986, Ser. No. 867,747
Term of patent 14 years
U.S. Cl. D26—28



304,505

UNDERWATER POOL CLEANING APPARATUS

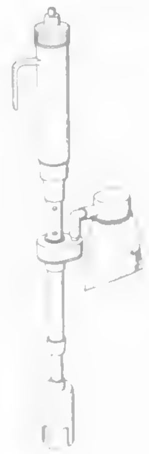
Robert W. Maier, Kentfield; Charles J. Patterson, Orinda; Deiter Rief, Rohnert Park; John Gard, Mountain View, and Herman E. Frentzel, Kentfield, all of Calif., assignors to Aquanaut, Inc., Corte Madera, Calif.
Filed Oct. 2, 1986, Ser. No. 914,749
Term of patent 14 years
U.S. Cl. D32—1



304,506

AQUARIUM CLEANER

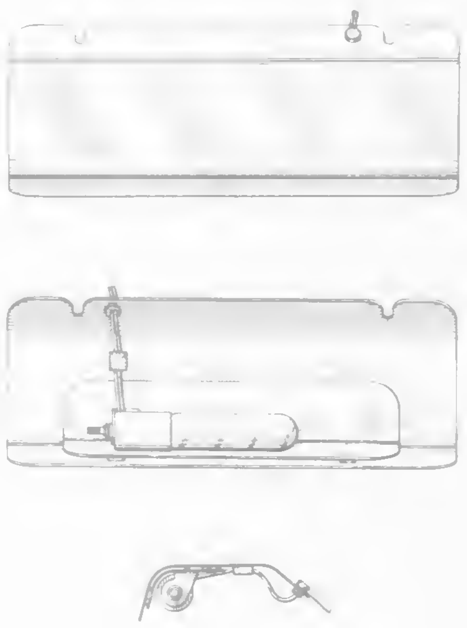
Kazutoshi Tominaga, Higashi Osakashi, Japan, assignor to Kabushiki Kaisha Tominaga Jyushi Kogyosho, Higashi Osakashi, Japan
Filed Sep. 11, 1986, Ser. No. 906,190
Claims priority, application Japan, Apr. 28, 1986, 61-16108
Term of patent 14 years
U.S. Cl. D30—106



304,507

ELECTRIC LIGHTING FIXTURE PRIMARILY INTENDED FOR USE WITH LECTERNS

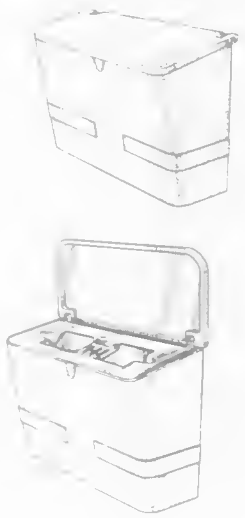
Mel Evenson, San Pedro, Calif., assignor to Eldon Industries, Inc., Inglewood, Calif.
Filed Mar. 27, 1987, Ser. No. 30,544
Term of patent 14 years
U.S. Cl. D26—76



304,508

ASHTRAY FOR AUTOMOBILE DOORS

Pierre Charet, and Duke Kraai, both of Miami, Fla., assignors to Rally Manufacturing, Ioc., Miami, Fla.
Filed Dec. 5, 1986, Ser. No. 938,752
Term of patent 14 years
U.S. Cl. D27—105



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304,509

COSMETIC CAP OR SIMILAR ARTICLE

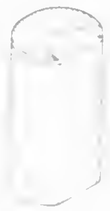
Karena Bakic, Varese, Italy, assignor to Cosmede Anstalt, Vaduz, Liechtenstein

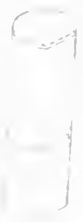
Filed Apr. 6, 1987, Ser. No. 34,565

Claims priority, application Fed. Rep. of Germany, Oct. 31, 1986, URA 1410/86

Term of patent 14 years

U.S. Cl. D28—84





304,510

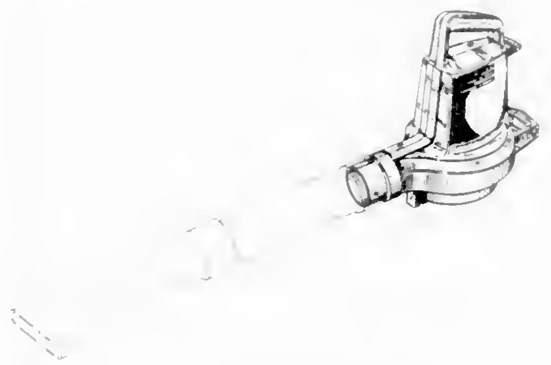
COMBINED BLOWER AND VACUUM UNIT

Michael Baker, Gloster, La.; Jerry E. Stuart, Lake Havasu, Ariz., and William H. Schultz, Northbend, Ill., assignors to White Consolidated Industries, Inc., Cleveland, Ohio

Filed Jul. 6, 1987, Ser. No. 69,622

Term of patent 14 years

U.S. Cl. D32—15



304,511

RECHARGEABLE VACUUM CLEANER

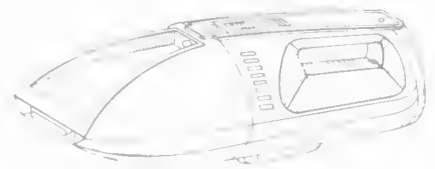
John S. Yuen, Kowloon, Hong Kong, assignor to John Manufacturing Limited, Kowloon, Hong Kong

Filed Mar. 27, 1987, Ser. No. 31,831

Claims priority, application United Kingdom, Sep. 29, 1986, 1037013

Term of patent 14 years

U.S. Cl. D32—18



304,512

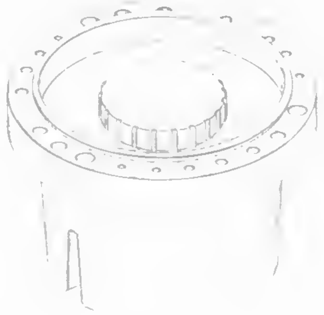
COMBINED ARTIST'S BRUSH HOLDER AND CLEANING VESSEL

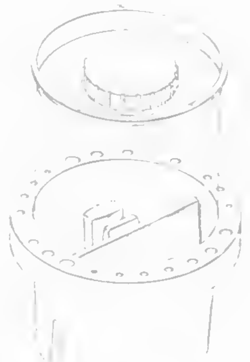
Carroll C. Byers, Chamblee, Ga., and Sheldon Schmidt, Paramus, N.J., assignors to Loew-Cornell, Inc., Teaneck, N.J.

Filed Dec. 9, 1987, Ser. No. 130,674

Term of patent 14 years

U.S. Cl. D32—35





304,513

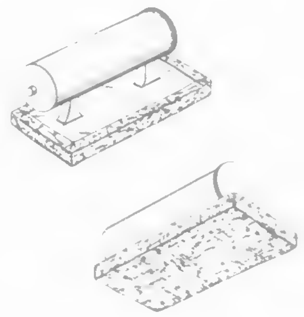
DUSTING AND WAXING DEVICE

Carmen V. Loffredo, 29291 Rhona Dr., Laguna Niguel, Calif. 92656

Filed May 6, 1987, Ser. No. 47,702

Term of patent 14 years

U.S. Cl. D32—40



304,514

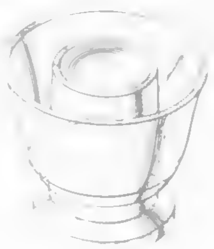
COMMUNION CUP

Edward Vezirian, 110 Firwood, Irvine, Calif. 92714, and Earle L. Hinton, 851 Brighton, La Habra, Calif. 90631

Filed Aug. 25, 1986, Ser. No. 900,004

Term of patent 14 years

U.S. Cl. D99—25



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LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 7TH DAY OF NOVEMBER, 1989

NOTE.—Arranged in accordance with the first significant character or word of the name
(in accordance with city and telephone directory practice).

A and A Realty Company: *See—*

Kaye, John A., 4,878,922, Cl. 44-502.000.

A & L Laboratories, Inc.: *See—*

Pochard, Guy; and Steiner, Creighton, 4,878,951, Cl. 134-22.170.

A. O. Smith Corporation: *See—*

Pfeffer, John D., 4,878,482, Cl. 126-375.000.

A.P.T. Anlagen fur Pyrotechnik GmbH: *See—*

Verheyden, G. M. C., Jr., 4,878,838, Cl. 432-8.000.

A. Stephen u. Soehne GmbH & Co.: *See—*

Otto, Friedrich, 4,878,627, Cl. 241-199.120.

A. W. Schlottmann: *See—*

Sanders, John T., 4,879,027, Cl. 210-123.000.

Abe, Michio: *See—*

Moriguchi, Soyao; Suzuki, Hiroshi; Watanabe, Hiroko; Satoh, Motoaki; Abe, Michio; and Iwata, Yasuo, 4,879,340, Cl. 525-54.200.

Abe, Ryoichi: *See—*

Kurokawa, Naohiro; and Abe, Ryoichi, 4,879,678, Cl. 364-900.000.

Abe, Yoshinori: *See—*

Niki, Hiroshi; Matsunawa, Masahiko; Yamamoto, Hiroyuki; and Abe, Yoshinori, 4,879,595, Cl. 358-80.000.

Abel, James C., to Atlantic Richfield Company. Viscometer apparatus and method. 4,878,377, Cl. 73-59.000.

Abrams, Richard; and Swartz, Conrad M., to Somatics, Inc. Electroconvulsive therapy apparatus and method for automatic monitoring of patient seizures. 4,878,498, Cl. 128-419.00S.

Achiwa, Kazuo. Chiral phosphinopyrrolidine compounds and their use for asymmetric synthesis of optically active compounds. 4,879,389, Cl. 548-412.000.

Acocella, John: *See—*

Herron, Lester W.; Lussow, Robert O.; Nufer, Robert W.; Schwartz, Bernard; Acocella, John; and Reddy, Srinivasa N., 4,879,156, Cl. 428-137.000.

Adachi, Keiichi: *See—*

Ishigaki, Kunio; Takahashi, Toshiro; Mihara, Yuji; Adachi, Keiichi; Ohno, Shigeru; Okada, Masahiro; and Saeki, Naomi, 4,879,204, Cl. 430-512.000.

Adair, Edwin L. Rigid video endoscope with heat sterilizable sheath. 4,878,485, Cl. 128-6.000.

Adam, Colin M.; Bye, Richard L.; Das, Santosh K.; and Skinner, David J., to Allied-Signal Inc. Rapidly solidified aluminum based, silicon containing alloys for elevated temperature applications. 4,878,967, Cl. 148-437.000.

Adam, Colin M.; Bye, Richard L.; Das, Santosh K.; and Skinner, David J., to Allied-Signal Inc. Rapidly solidified aluminum based silicon containing, alloys for elevated temperature applications. 4,879,095, Cl. 420-548.000.

Adamantech, Inc.: *See—*

Moore, Robert E., 4,879,062, Cl. 252-315.100.

Adamek, Jan; Schaich, Karl-Heinz; and Heck, Wolfgang, to Dr. Ing. h.c.f. Porsche Aktiengesellschaft. Method and manual apparatus for the semimechanical galvanizing of sheet metal surfaces. 4,879,015, Cl. 204-224.00R.

Adams, Steven P.: *See—*

Tjoeng, Foe S.; and Adams, Steven P., 4,879,313, Cl. 514-616.000.

Adamski, Maximilian; Kosrow, Robert L.; and Ruderman, Stephen, to Union Special Corporation. Hemmer seamer assembly. 4,878,445, Cl. 112-311.000.

Adamson, Lee F., to Specialty Equipment Companies, Inc. Cooking apparatus. 4,878,424, Cl. 99-349.000.

Adkins, Kelvin P., to Imperial Chemical Industries Plc. Electroconductive coating composition. 4,879,064, Cl. 252-500.000.

Advanced Micro Devices, Inc.: *See—*

Gershon, Eugen, 4,879,478, Cl. 307-353.000.

Ramesh, Nallepilli S.; Cheemalavagu, Suresh; and Erikson, Anders, 4,879,727, Cl. 375-76.000.

Advanced Nuclear Fuels Corporation: *See—*

van Swam, Leo F.; Blair, Thomas R.; and Ho, Quang D., 4,879,088, Cl. 376-252.000.

Advanced Products & Technologies: *See—*

Rondel, Stephen A.; and Dobson, James B., 4,878,701, Cl. 292-288.000.

Aebischer, Patrick; Valentini, Robert F.; and Galletti, Pierre M., to Pfizer Hospital Products Group, Inc. Devices for neural signal transmission. 4,878,913, Cl. 623-12.000.

Aerion Industries, Inc.: *See—*

Brunton, James L., 4,879,115, Cl. 424-694.000.

AGFA-Gevaert N.V.: *See—*

Tavernier, Serge M.; Van Beek, Joannes J.; and van Daele, Pierre L., 4,879,198, Cl. 430-106.600.

Van Biesen, Jozef A.; Daes, Guido F.; and Verstringe, Jan B., 4,879,196. Cl. 430-100.000.

Vermeersch, Joan T.; Timmerman, Daniel; Vandenabeele, Hubert, and Vervecken, Jacques L., 4,879,209, Cl. 430-623.000.

Agri-Diagnostics Associates: *See—*

Petersen, Frank P.; Grothaus, Gary D.; and Miller, Sally A., 4,879,217, Cl. 435-7.000.

Aguilar, Alberto B. Safety indicator device for low water crossing. 4,879,545, Cl. 340-624.000.

Ahern, Glenn J.: *See—*

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Yamaguchi, Yoshihiro; Watanabe, Kiminori; Nakagawa, Akio; Furukama, Kazuyoshi; Fukuda, Kiyoshi; and Tanzawa, Katsujiro, to Kabushiki Kaisha Toshiba. Dielectrically isolated semiconductor substrate. 4,878,957, Cl. 148-33.300.

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Yang, Robert K.; Sharma, Shri C.; Sheu, Shan-Shan; and Shaw, James J., to Warner-Lambert Company. Confectionery delivery system for antipyretics. 4,879,108, Cl. 424-440.000.

Yano, Hisashi; Ihara, Hiroyuki; and Yabumoto, Junsuke, to Mitsubishi Oil Co., Ltd. Integrated separator for solid and gas contaminants in engine oil. 4,878,924, Cl. 55-204.000.

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- Zurawski, Vincent R., Jr.: *See—*
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LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 7TH DAY OF NOVEMBER, 1989

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- Ishikawa, Katsukiyo; Nishijima, Kanji; and Seio, Mamoru, to Nippon Paint Co., Ltd. Method for preparing a printed circuit board. Re. 33,108, Cl. 156-659.100.
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- Alco Industries, Inc.: *See—*
  - Goetz, Charles R., 304,398, Cl. D6-479.000.
- Alexander, William, to W. Alexander Magic Art Supplies, Inc. Palette knife. 304,420, 11-7-89, Cl. D8-98.000.
- Aloys F. Dornbracht GmbH & Co.: *See—*
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  - Ancona, Jane; and Ancona, Bruce, 304,406, Cl. D7-152.000.
- Ancona, Jane; and Ancona, Bruce, to M. Kamenstein, Inc. Handle for kitchen utensil. 304,406, 11-7-89, Cl. D7-152.000.
- Andrews, Donald L. Catenary arch building toy. 304,464, 11-7-89, Cl. D21-59.000.
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- Baker, Michael; Stuart, Jerry E.; and Schultz, William H., to White Consolidated Industries, Inc. Combined blower and vacuum unit. 304,510, 11-7-89, Cl. D32-15.000.
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LIST OF PLANT PATENTEES

Holtkamp Reinhold, Sr. African violet plant named Gemini 7,053, 11-7-89, Cl.69.000.

Sapia, Flavio. Carnation plant named Milly. 7,054, 11-7-89, Cl. 71.000.

Sapia, Flavio. Carnation plant named Milly 7,054, 11-7-89, Cl 71 000.

LIST OF STATUTORY INVENTION REGISTRATIONS

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Ancheta, Antonio D. Two cycle internal combustion engine. H701, 11-7-89, Cl. 123-65.0VB.

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  Hooper, John O.; Heydlauff, Bruce M ; and Dillinger, Robert B., H710, Cl. 342-434.000.

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Farinacci, Anthony L. Probe nose training cartridge. H700, 11-7-89, Cl. 102-529.000.

Fuji Photo Film Co., Ltd.: *See—*
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Furutachi, Nobuo: *See—*
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Harada, Kiyoshi; Takahashi, Kazuo; and Kawasaki, Mikio, to Konica Corporation. Exposure device. H711, 11-7-89, Cl. 355-67.000.

Hartman, Richard L., to United States of America, Army. Method of stellar navigation using an optical correlator. H712, 11-7-89, Cl. 364-456.000.

Heydlauff, Bruce M.: *See—*
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Hooper, John O.; Heydlauff, Bruce M.; and Dillinger, Robert B., to United States of America, Navy. Horizon reference system for a rotating body. H710, 11-7-89, Cl. 342-434.000.

Hu, Chemning; and Terrill, Kyle W., to United States of America, Navy. Method of preventing latch-up failures of CMOS integrated circuits. H707, 11-7-89, Cl. 437-26.000.

Kawasaki, Mikio: *See—*
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May, Roger A.; and Link, Frank B., to United States of America, Air Force. Automatic target detection and recognition. H713, 11-7-89, Cl. 364-517.000.

McDowell, Vaughn P., to United States of America, Navy Serial data word processing arrangement. H714, 11-7-89, Cl. 364-900.000.

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    West, Leonard R., H709, Cl. 219-523.000.

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CLASS 164	
16	4,878,533
154	4,878,534
CLASS 165	
114	4,878,535
119	4,878,536
156	4,878,537
CLASS 166	
264	4,878,538
303	4,878,539
369	4,878,540
CLASS 168	
4	4,878,541
CLASS 172	
1	4,878,542
2	4,878,543
40	4,878,544
776	4,878,545
CLASS 173	
163	4,878,546
CLASS 174	
32	4,879,433
35 R	4,879,434
48	4,879,435
92	4,879,436
CLASS 175	
53	4,878,547
248	4,878,549
296	4,878,550
340	4,878,548
CLASS 177	
139	4,878,551
212	4,878,552
CLASS 178	
18	4,878,553
CLASS 180	
19.3	4,878,554
68.3	4,878,555
140	4,878,556

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	4,878,557
219	4,878,558
244	4,878,559
CLASS 181	
130	4,878,560
188	4,878,561
CLASS 187	
127	4,878,562
CLASS 188	
71.5	4,878,563
73.31	4,878,564
378	4,878,565
CLASS 192	
13 R	4,878,566
18 B	4,878,568
18 R	4,878,567
45	4,878,569
	4,878,570
48.91	4,878,571
98	4,878,572
CLASS 194	
338	4,878,573
CLASS 198	
369	4,878,574
391	4,878,575
494	4,878,576
803.9	4,878,577
809	4,878,578
CLASS 200	
1 R	4,879,437
61.85	4,879,438
81.9 M	4,879,439
82 R	4,879,440
144 B	4,879,441
293.1	4,879,443
CLASS 203	
89	4,879,004
CLASS 204	
1 T	4,879,005
1.5	4,879,006
15	4,879,007
56.1	4,879,018
72	4,879,008
98	4,879,009
105 R	4,879,010
157.15	4,879,012
157.42	4,879,011
180.2	4,879,013
190	4,879,014
224 R	4,879,015
242	4,879,016
298	4,879,017
CLASS 206	
0.84	4,878,579
216	4,878,580
233	4,879,442
416	4,878,581
CLASS 208	
111	4,879,019
130	4,879,020
413	4,879,021
CLASS 209	
166	4,879,022
241	4,879,023
352	4,879,024
559	4,879,025
580	4,878,582
CLASS 210	
123	4,879,026
	4,879,027
169	4,879,028
198.2	4,879,029
238	4,879,030
321.61	4,879,032
360.2	4,879,031
396	4,879,033
400	4,879,034
416.4	4,879,035
500.38	4,879,036
634	4,879,037
635	4,879,038
	4,879,039
637	4,879,040
640	4,879,041
642	4,879,042
651	4,879,043
654	4,879,044
695	4,879,045
747	4,879,046
756	4,879,047
768	4,879,048
777	4,879,049
CLASS 211	
41	4,878,583
59.1	4,878,584
87	4,878,585
106	4,878,586
CLASS 212	
271	4,878,587
CLASS 215	
11.2	4,878,588
252	4,878,589
CLASS 219	
10.55 A	4,879,444
64	4,879,445
75	4,879,446
86.25	4,879,447
121.6	4,879,449
121.63	4,879,448
121.64	4,879,450
121.69	4,879,451
130.4	4,879,452
213	4,879,453
494	4,879,454
CLASS 220	
1 T	4,878,590
22	4,878,591
23.83	4,878,592
67	4,878,593
254	4,878,594
306	4,878,595
331	4,878,596
404	4,878,597
CLASS 222	
1	4,878,598
	4,878,599
105	4,878,600
137	4,878,601
161	4,878,602
167	4,878,603
209	4,878,604
CLASS 224	
42.41	4,878,605
208	4,878,606
CLASS 226	
24	4,878,607
CLASS 227	
120	4,878,608
CLASS 228	
4.5	4,878,609
6.2	4,878,610
180.2	4,878,611
CLASS 229	
40	4,878,612
75	4,878,613
CLASS 235	
280	4,879,455
385	4,879,540
462	4,879,456
487	4,879,457
CLASS 239	
10	4,878,614
45	4,878,615
167	4,878,616
265.35	4,878,617
265.39	4,878,618
318	4,878,619
383	4,878,620
458	4,878,621
690.1	4,878,622
CLASS 241	
5	4,878,623
29	4,878,624
37	4,878,625
57	4,878,626
199.12	4,878,627
CLASS 242	
7.08	4,878,628
18 PW	4,878,629
43 R	4,878,630
55.2	4,878,631
199	4,878,632
268	4,878,633
CLASS 244	
115	4,878,634
137.1	4,878,635
155 A	4,878,636
159	4,878,637
CLASS 246	
34 CT	4,878,638
CLASS 248	
73	4,878,639
297.2	4,878,640
309.1	4,878,641
311.2	4,878,642
475.1	4,878,643
674	4,878,644
680	4,878,645
CLASS 250	
205	4,879,459
221	4,879,461
230 R	4,879,460
237 G	4,879,462
270	4,879,463
288	4,879,458
	4,879,467
359.1	4,879,471
361 R	4,879,464
363.02	4,879,465
370.14	4,879,466
374	4,879,468
	4,879,469
379	4,879,472
492.2	4,879,473
578	4,879,470
CLASS 251	
9	4,878,646
30.05	4,878,647
63	4,878,648
121	4,878,649
129.15	4,878,650
172	4,878,651
181	4,878,652
CLASS 252	
2	4,879,050
8.75	4,879,051
25	4,879,053
32.5	4,879,052
41	4,879,054
62.54	4,879,055
74	4,879,056
99	4,879,057
174.25	4,879,058
299.4	4,879,059
299.61	4,879,060
299.62	4,879,061
315.1	4,879,062
370	4,879,063
500	4,879,064
600	4,879,065
606	4,879,066
609	4,879,067
CLASS 254	
134.3 FT	4,878,653
CLASS 260	
397	4,879,068
397.2	4,879,069
CLASS 261	
26	4,879,075
CLASS 264	
1.4	4,879,072
22	4,879,073
24	4,879,074
28	4,879,076
40.1	4,879,077
41	4,879,078
56	4,879,079
63	4,879,080
101	4,879,081
106	4,879,082
122	4,879,083
295	4,879,084
564	4,879,085
CLASS 266	
159	4,878,654
184	4,878,655
CLASS 270	
53	4,878,656
CLASS 271	
9	4,878,657
183	4,878,658
218	4,878,659
293	4,878,660
CLASS 272	
52	4,878,661
118	4,878,662
134	4,878,663
CLASS 273	
11 R	4,878,664
34 R	4,878,665
79	4,878,666
81.2	4,878,667
128 R	4,878,668
148 R	4,878,669
158	4,878,670
176 R	4,878,671
186 A	4,878,672
186 C	4,878,673
213	4,878,674
251	4,878,675
CLASS 277	
24	4,878,676
105	4,878,677
235 A	4,878,678
CLASS 279	
19.4	4,878,679
CLASS 280	
30	4,878,680
32.7	4,878,681
42	4,878,682
96.1	4,878,683
189	4,878,691
288.1	4,878,684
304.1	4,878,685
602	4,878,686
605	4,878,687
693	4,878,688
731	4,878,689
741	4,878,690
804	4,878,692
CLASS 281	
45	4,878,693
CLASS 285	
24	4,878,694
39	4,878,695
61	4,878,696
250	4,878,697
342	4,878,698
CLASS 292	
143	4,878,699
241	4,878,700
288	4,878,701
307	4,878,702
CLASS 294	
1.5	4,878,703
54.5	4,878,704
116	4,878,705
CLASS 296	
37.1	4,878,706
91	4,878,707
97.7	4,878,708
CLASS 297	
68	4,878,709
	4,878,710
CLASS 299	
9	4,878,711
10	4,878,712
39	4,878,713
67	4,878,714
CLASS 303	
110	4,878,715
CLASS 305	
21	4,878,716
CLASS 307	
10.1	4,879,476
68	4,879,475
116	4,879,474
239	4,879,477
353	4,879,478
425	4,879,479
446	4,879,480
465	4,879,481
CLASS 310	
12	4,879,482
63	4,879,483
114	4,879,484
156	4,879,485
254	4,879,486
313 A	4,879,487
CLASS 313	
15	4,879,489
318	4,879,491
487	4,879,492
601	4,879,490
641	4,879,493
CLASS 315	
61	4,879,494
362	4,879,495
366	4,879,496
CLASS 318	
254	4,879,497
	4,879,498
568.16	4,879,499
632	4,879,500
645	4,879,501
723	4,879,502
809	4,879,503
CLASS 323	
272	4,879,504
312	4,879,505
314	4,879,506
CLASS 324	
57 N	4,879,507
61 R	4,879,508
108	4,879,509
150	4,879,510
163	4,879,511
207	4,879,512
	4,879,513
309	4,879,514
318	4,879,515
	4,879,516
438	4,879,517
CLASS 328	
233	4,879,518
CLASS 330	
4.3	4,879,532
149	4,879,519
257	4,879,520
258	4,879,521
263	4,879,522
288	4,879,523
	4,879,524
294	4,879,525
295	4,879,526
CLASS 331	
1 A	4,879,527
4	4,879,528
14	4,879,529
45	4,879,530
65	4,879,531
CLASS 333	
206	4,879,533
257	4,879,534
CLASS 335	
14	4,879,535
128	4,879,536
216	4,879,537
298	4,879,538
299	4,879,539
CLASS 340	
326	4,879,542
473	4,879,543
552	4,879,544
624	4,879,545
632	4,879,546
686	4,879,547
712	4,879,548
815.2	4,879,549
825.050	4,879,550
825.070	4,879,541
825.870	4,879,551
870.37	4,879,552
932.2	4,879,553
	4,879,554
CLASS 341	
13	4,879,555
20	4,879,556
23	4,879,557
51	4,879,558
171	4,879,488
CLASS 342	
25	4,879,559
165	4,879,560
195	4,879,561
CLASS 343	
700 MS	4,879,562
713	4,879,570
725	4,879,563
CLASS 346	
25	4,879,564
75	4,879,565
76 PH	4,879,566
139 R	4,879,567
140 R	4,879,568
159	4,879,569
CLASS 350	
3.66	4,878,717
3.69	4,878,718
3.75	4,878,719
6.4	4,878,720
6.6	4,878,721
96.14	4,878,723
	4,878,724
96.15	4,878,725
	4,878,726
96.17	4,878,727
	4,878,728
96.18	4,878,729
96.2	4,878,722
96.21	4,878,730
	4,878,731
96.23	4,878,732
	4,878,733
99	4,878,734
131	4,878,735
162.13	4,878,736
167	4,878,737
334	4,878,738
336	4,878,739
337	4,878,740
339 F	4,878,741
347 V	4,878,742
357	4,878,743
447	4,878,744
469	4,878,745
507	4,878,746
511	4,878,747
CLASS 351	
44	4,878,748
52	4,878,749
212	4,878,750
CLASS 354	
410	4,878,751
CLASS 355	
26	4,879,571
45	4,879,572
125	4,879,573
204	4,879,574
208	4,879,575
	4,879,577
214	4,879,576
234	4,879,578
235	4,879,579
295	4,879,580
CLASS 356	
152	4,878,752
237	4,878,753
376	4,878,754
382	4,878,755
406	4,878,756
432	4,878,757
CLASS 357	
3	4,879,581
23.12	4,879,582
42	4,879,583
43	4,879,584
49	4,879,585
54	4,879,586
55	4,879,587
68	4,879,588
79	4,879,589
CLASS 358	
10	4,879,590
29 C	4,879,591
42	4,879,592
51	4,879,593
80	4,879,594
	4,879,595
88	4,879,596
	4,879,597
113	4,879,598
138	4,879,599
213.19	4,879,600
213.22	4,879,601
233	4,879,602
242	4,879,603
296	4,879,605
330	4,879,606
474	4,879,604
CLASS 360	
2	4,879,607
51	4,879,608
66	4,879,609
67	4,879,610
69	4,879,611
78.06	4,879,612
92	4,879,613
93	4,879,614
99.06	4,879,616
106	4,879,617
	4,879,618
113	4,879,619
123	4,879,620
133	4,879,621
CLASS 361	
19	4,879,622
33	4,879,623
65	4,879,624
90	4,879,625
93	4,879,626
283	4,879,627
327	4,879,628
385	4,879,629
386	4,879,630
	4,879,631
	4,879,632
	4,879,633
388	4,879,634
391	4,879,635
CLASS 362	
61	4,879,636
141	4,879,637
294	4,879,638
CLASS 363	
37	4,879,639

41	4,879,640
98	4,879,641
CLASS 364	
131	4,879,642
148	4,879,643
167.01	4,879,644
200	4,879,645
	4,879,646
	4,879,647
300	4,879,648
405	4,879,649
	4,879,650
411	4,879,651
413.18	4,879,652
419	4,879,653
422	4,879,654
426.04	4,879,655
431.05	4,879,656
431.07	4,879,657
449	4,879,658
468	4,879,659
474.15	4,879,660
483	4,879,661
510	4,879,662
513	4,879,663
518	4,879,664
	4,879,665
519	4,879,666
522	4,879,667
	4,879,668
550	4,879,669
559	4,879,670
562	4,879,671
566	4,879,672
571.01	4,879,673
724.03	4,879,674
738	4,879,675
748	4,879,676
760	4,879,677
900	4,879,678
CLASS 365	
149	4,879,679
154	4,879,680
189.01	4,879,681
	4,879,682
189.05	4,879,683
189.11	4,879,684
	4,879,685
	4,879,686
200	4,879,687
201	4,879,688
	4,879,689
	4,879,690
215	4,879,691
230.03	4,879,692
233	4,879,693
CLASS 366	
56	4,878,759
101	4,878,758
149	4,878,760
CLASS 367	
3	4,879,694
20	4,879,719
25	4,879,695
76	4,879,696
111	4,879,697
140	4,879,698
CLASS 368	
63	4,879,699
117	4,879,700
136	4,879,701
282	4,879,702
CLASS 369	
13	4,879,703
14	4,879,704
32	4,879,705
34	4,879,615
45	4,879,706
46	4,879,707
	4,879,708
284	4,879,709
291	4,879,710
CLASS 370	
50	4,879,711
60	4,879,712
75	4,879,713
85.7	4,879,714
92	4,879,715
CLASS 371	
8.2	4,879,716
22.3	4,879,717
	4,879,718
43	4,879,720
CLASS 372	
18	4,879,721
21	4,879,722
	4,879,723
46	4,879,724
48	4,879,725
CLASS 374	
124	4,878,761
CLASS 375	
1	4,879,726
76	4,879,727
80	4,879,728
104	4,879,729
106	4,879,730
116	4,879,731
CLASS 376	
173	4,879,086
216	4,879,087
252	4,879,088
399	4,879,089
462	4,879,090
CLASS 377	
24.2	4,879,732
44	4,879,733
CLASS 378	
57	4,879,734
	4,879,735
181	4,879,736
196	4,879,737
CLASS 379	
3	4,879,738
21	4,879,739
61	4,879,740
100	4,879,741
111	4,879,742
142	4,879,743
144	4,879,744
389	4,879,745
399	4,879,746
CLASS 380	
23	4,879,747
CLASS 381	
49	4,879,748
68.4	4,879,749
68.6	4,879,750
119	4,879,751
CLASS 382	
1	4,879,752
50	4,879,753
CLASS 383	
33	4,878,762
65	4,878,763
72	4,878,764
116	4,878,765
CLASS 384	
130	4,878,766
140	4,878,767
279	4,878,768
618	4,878,769
CLASS 388	
308	4,878,770
810	4,879,754
CLASS 400	
70	4,878,771
120	4,878,772
234	4,878,773
CLASS 401	
15	4,878,774
132	4,878,775
CLASS 402	
4	4,878,776
CLASS 403	
205	4,878,777
CLASS 404	
105	4,878,778
112	4,878,779
CLASS 405	
38	4,878,780
52	4,878,781
119	4,878,782
169	4,878,783
CLASS 406	
70	4,878,784
194	4,878,785
CLASS 408	
86	4,878,786
181	4,878,787
230	4,878,788
CLASS 409	
143	4,878,789
CLASS 411	
34	4,878,790
55	4,878,791
339	4,878,792
387	4,878,793
395	4,878,794
501	4,878,795
CLASS 414	
141.7	4,878,796
161	4,878,797
280	4,878,798
331	4,878,799
401	4,878,800
411	4,878,801
523	4,878,802
789.5	4,878,803
CLASS 415	
9	4,878,821
111	4,878,804
169.1	4,878,805
CLASS 416	
5	4,878,806
7	4,878,807
132 B	4,878,808
151	4,878,809
203	4,878,810
215	4,878,811
241 B	4,878,812
CLASS 417	
2	4,878,813
63	4,878,814
	4,878,815
76	4,878,816
222 S	4,878,817
308	4,878,818
514	4,878,819
CLASS 418	
203	4,878,820
CLASS 419	
19	4,879,091
CLASS 420	
418	4,879,092
422	4,879,093
476	4,879,094
548	4,879,095
561	4,879,096
CLASS 422	
67	4,879,097
101	4,879,098
177	4,879,099
186.05	4,879,100
CLASS 423	
163	4,879,101
235	4,879,102
329	4,879,103
450	4,879,104
CLASS 424	
44	4,879,105
54	4,879,106
70	4,879,107
83	4,879,109
85.2	4,879,111
85.8	4,879,110
85.9	4,879,112
88	4,879,113
95	4,879,114
411	4,879,117
440	4,879,108
448	4,879,118
449	4,879,119
682	4,879,116
694	4,879,115
CLASS 425	
14	4,878,822
116	4,878,823
139	4,878,824
290	4,878,825
384	4,878,826
434	4,878,827
541	4,878,828
CLASS 426	
2	4,879,121
102	4,879,122
105	4,879,123
113	4,879,124
120	4,879,125
272	4,879,126
325	4,879,127
392	4,879,128
506	4,879,129
533	4,879,130
583	4,879,131
634	4,879,132
653	4,879,133
CLASS 427	
1	4,879,134
2	4,879,135
	4,879,136
27	4,879,137
38	4,879,139
	4,879,140
213	4,879,141
227	4,879,142
387	4,879,143
CLASS 428	
1	4,879,144
14	4,879,145
35	4,879,147
35.1	4,879,430
35.7	4,879,146
40	4,879,148
41	4,879,149
43	4,879,150
53	4,879,151
73	4,879,152
76	4,879,153
81	4,879,154
131	4,879,155
137	4,879,156
157	4,879,157
159	4,879,158
161	4,879,159
192	4,879,160
195	4,879,161
196	4,879,162
198	4,879,163
209	4,879,164
212	4,879,165
	4,879,166
215	4,879,167
218	4,879,138
224	4,879,168
230	4,879,169
233	4,879,170
259	4,879,171
280	4,879,172
285	4,879,173
321.5	4,879,174
	4,879,175
323	4,879,176
339	4,879,177
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569	4,879,208
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195	4,879,257
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247	4,879,259
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103	4,878,852
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	231	304,454
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	132	304,456
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04 :	4,878,270		4,878,845		4,879,603		4,878,930	13	4,878,307		4,879,533
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PATENT AND TRADEMARK OFFICE
Jeffrey M. Samuels, *Acting Commissioner*

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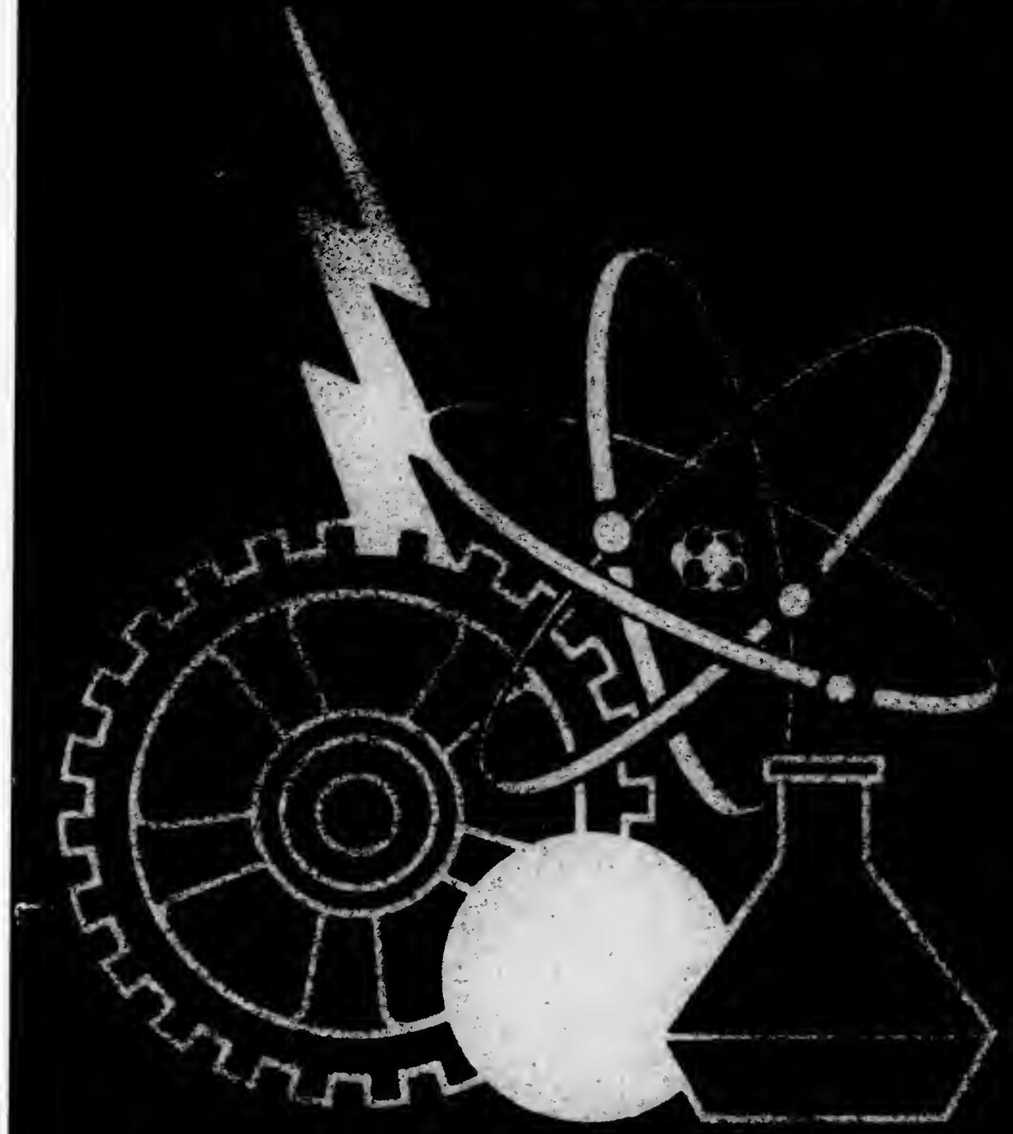
NOVEMBER 14, 1989



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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1107 O.G. 5 on Oct. 3, 1989.

For use of the European Patent Office as an International Searching Authority for international applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 5 on Sept. 28, 1982.

For use of the European Patent Office as an International Preliminary Examining Authority for international applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2 on July 7, 1987 and at 1091 O.G. 2 on June 7, 1988.

The search fee of the European Patent Office was changed due to a difference in the exchange rate of the U.S. dollar in relation to the German Mark as of Sept. 1, 1989, and was announced in the *Official Gazette* at 1105 O.G. 36 on Aug. 15, 1989.

International PCT fees were changed on June 1, 1989 due to a difference in the exchange rate of the U.S. dollar in relaton to the Swiss Franc and were announced in the *Official Gazette* at 1102 O.G. 90 on May 30, 1989.

Certain domestic PCT fees and charges for International Search and Preliminary Examination have been changed effective Apr. 17, 1989 and were announced in the *Official Gazette* at 1100 O.G. 24 on Mar. 7, 1989.

The current schedule of PCT fees (in U.S. dollars) is as follows:

Transmittal fee:	170.00
Search Fee	
U.S. Patent and Trademark Office (USPTO) as International Searching Authority (ISA)	
—No corresponding prior U.S. national application filed	550.00
—Corresponding prior U.S. national application filed	380.00
—Supplemental search fee, per additional invention	150.00
European Patent Office as ISA	1040.00
Preliminary examination fee	
USPTO as International Preliminary Examining Authority (IPEA)	
—Search fee paid to USPTO as ISA.	400.00
—Additional examination fee, per additional invention	130.00
—ISA not the USPTO	600.00
—Additional examination fee, per additional invention	200.00
International fees	
Basic fee	436.00
Basic Supplemental fee (for each page over 30)	9.00
Designation fee per country or region for the first 10 national or regional offices	106.00
Designation fee for 11th and subsequent designations	No Charge
Handling fee	134.00

U.S. National Stage fees

	Small Entity	Regular
USPTO was IPEA	165.00	330.00
USPTO was ISA but not IPEA	185.00	370.00
USPTO was neither ISA nor IPEA	250.00	500.00
USPTO was IPEA and all claims presented satisfied provisions of PCT Article 33(2) to (4)	25.00	50.00
—For each independent claim in excess of 3	18.00	36.00
—For each claim in excess of 20	6.00	12.00
—For each application containing a multiple dependent claim	60.00	120.00
—Surcharge for filing national fee or oath or declaration after the time limit applicable under PCT Article 22 or 39.1	60.00	120.00
—Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39.1	30.00	30.00

Sept. 12, 1989.

DONALD J. QUIGG,
Assistant Secretary and Commissioner of Patents and Trademarks.

Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d), effective Nov. 1, 1984, provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on application filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(k) or (l), as amended effective Apr. 17, 1989. If the maintenance fee is not paid in a patent requiring such payment the patent will expire on the 4th, 8th or 12th anniversary of the patent.

Attention is drawn to the patents which were issued on November 11, 1986, for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,621,377 through 4,622,695
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on November 9, 1982 for which maintenance fees due at 7 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,357,714 through 4,358,858
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

The current amounts of the maintenance fees due at 3 years and six months and seven years and six months are set forth in 37 CFR 1.20(e), (f), (h) and (i), as amended effective Apr. 17, 1989, which are reproduced below:

37 CFR § 1.20 Post-issuance fees

"(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant....$245.00

"(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 8 years; the fee is due by seven years and six months after the original grant....$495.00"

"(h) For maintaining an original or reissue patent except a design or plant patent, based on an application filed on or after Aug. 27,1982, in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§1.9(f))	$245.00
By other than a small entity	$490.00"

"(i) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Aug. 27, 1982, in force beyond 8 years; the fee is due by seven years and six months after the original grant:

By a small entity (§1.9(f))	$495.00
By other than a small enttity	$990.00"

The amounts of the surcharges as amended effective Apr. 17, 1989, are set forth in 37 CFR 1.20 (k), (l) and (m) which are reproduced below:

"(k) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months , seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980 and before Aug. 27,1982....$120.00

"(l) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Aug. 27, 1982:

By a small entity(§1.9(f))	$60.00
By other than a small entity	$120.00"

"(m) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay is shown to the satisfaction of the Commissioner to have been unavoidable....$550.00"

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fees

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th, or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED AUGUST 27, 1989
DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
4,536,895	06/466,918	08/27/85
4,536,896	06/495,415	08/27/85
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4,537,246	06/559,782	08/27/85
4,537,256	06/503,595	08/27/85
4,537,261	06/585,240	08/27/85
4,537,268	06/544,895	08/27/85
4,537,279	06/515,981	08/27/85
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4,537,293	06/594,431	08/27/85
4,537,295	06/438,482	08/27/85
4,537,297	06/457,143	08/27/85
4,537,302	06/441,799	08/27/85
4,537,309	06/532,861	08/27/85
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4,537,333	06/285,346	08/27/85
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Patent Number	Serial Number	Issue Date
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4,537,389	06/565,292	08/27/85
4,537,393	06/502,189	08/27/85
4,537,398	06/457,742	08/27/85
4,537,399	06/627,512	08/27/85
4,537,403	06/553,584	08/27/85
4,537,407	06/584,372	08/27/85
4,537,414	06/477,283	08/27/85
4,537,421	06/567,742	08/27/85
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4,537,447	06/382,650	08/27/85
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4,537,450	06/494,622	08/27/85
4,537,451	06/469,998	08/27/85
4,537,452	06/425,664	08/27/85
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4,537,463	06/625,206	08/27/85
4,537,467	06/505,278	08/27/85
4,537,474	06/355,757	08/27/85
4,537,480	06/500,069	08/27/85
4,537,483	06/612,646	08/27/85
4,537,486	06/595,826	08/27/85
4,537,503	06/417,191	08/27/85
4,537,522	06/509,687	08/27/85
4,537,526	06/672,236	08/27/85
4,537,527	06/383,167	08/27/85
4,537,534	06/507,765	08/27/85
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4,538,047	06/555,364	08/27/85
4,538,056	06/698,742	08/27/85
4,538,064	06/441,167	08/27/85
4,538,074	06/525,864	08/27/85
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4,538,103	06/412,866	08/27/85
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4,538,208	06/612,554	08/27/85
4,538,210	06/479,996	08/27/85
4,538,215	06/552,698	08/27/85
4,538,221	06/483,001	08/27/85
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4,538,230	06/437,891	08/27/85
4,538,256	06/442,123	08/27/85
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4,538,278	06/414,503	08/27/85
4,538,285	06/472,375	08/27/85
4,538,296	06/516,040	08/27/85

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

4,482,063, Re. S. N. 416,605, Filed Oct. 2, 1989, Cl. 211/69.1, COMPUTER TERMINAL SUPPORT AND HAND REST, Joseph J. Berke, et al., Owner of Record: *Inventor*, Attorney or Agent: Theodore W. Olds, Ex. Gp.: 355

4,676,074, Re. S. N. 374,466, Filed June 30, 1989, Cl. 62/277, REFRIGERATION SYSTEM FOR A COUNTER-TOP OR WALL-MOUNTED VENDING MACHINE, Annis R. Morgan Jr., Owner of Record: *Coca Cola Co., Atlanta, Ga.*, Attorney or Agent: Anthony L. Birch, Ex. Gp.: 344

4,685,221, Re. S. N. 391,800, Filed Aug. 9, 1989, Cl. 34/155, STEAM-SHOWER APPARATUS AND METHOD OF USING SAME, Bruce F. Taylor, Owner of Record: *Thermo Flectron, Auburn, Ind.*, Attorney or Agent: Anthony M. Lourusso, Ex. Gp.: 344

4,697,937, Re. S. N. 417,795, Filed Oct. 5, 1989, Cl. 384/486, BEARING ARRANGMENT WITH A SEAL, Ove Karlsson, et al., Owner of Record: *SKF Mekonprodukter Ab, Katrineholm, Sweden*, Attorney or Agent: Eugene E. Renz, Jr., Ex. Gp.: 245

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b).

4,159,933, Reexam. No. 90/001,863, Requested Oct. 14, 1989, Cl. 204/280R, SAMPLE CONCENTRATOR, William B. Allington, et al., Owner of Record: *Instrumentation Specialties Co., Lincoln, Ne.*, Attorney or Agent: Vincent L. Carney, Ex. Gp.: 110, Requester: E-C Apparatus Corp., St. Petersburg, Fla.

4,164,464, Reexam. No. 90/001,864, Requested Oct. 13, 1989, Cl. 204/299, SAMPLE CONCENTRATOR, William B. Allington, Owner of Record: *Instrumentation Specialties Co., Lincoln, Ne.*, Attorney or Agent: Vincent L. Carney, Ex. Gp.: 110, Requester: E-C Apparatus Corp., St. Petersburg, Fla.

4,330,280, Reexam. No. 90/001,860, Requested Oct. 10, 1989, Cl. 433/90, EJECTOR HOLDER FOR CAPSULE-LIKE CARTRIDGE, Emery Dougherty, Owner of Record: *Dentsply Research & Dev. Corp., Milford De.*, Attorney or Agent: C. Hercus Just, Ex. Gp.: 330, Requester: Centrix Inc., Milford, Conn.

4,511,207, Reexam. No. 90/001,861, Requested Oct. 10, 1989, Cl. 350/96.150, FIBER OPTIC DATA DISTRIBUTOR, Steven A. Newton, et al., Owner of Record: *The Board of Trustees of Leeland Stanford Jr. University, Stanford, Calif.*, Attorney or Agent: Knobbe, Martens, Olson & Bear, Ex. Gp: 250, Requester: Owner

4,760,248, Reexam. No. 90/001,859, Requested Oct. 6, 1989, Cl. 235/472, PORTABLE LASER DIODE SCANNING HEAD, Jerome Swartz, et al., Owner of Record: *Symbol Technologies, Inc., Bohemia, N. Y.*, Attorney or Agent: Daniel McGlynn, Ex. Gp.: 230, Requester: Owner

4,790,553, Reexam. No. 90/001,862, Requested: Oct. 11, 1989, Cl. 280/242OWC, LIGHTWEIGHT WHEELCHAIR HAVING SWING-AWAY FOOTREST ASSEMBLY, James Okamoto, Owner of Record: *Motion Designs Inc., Fresno, Calif.*, Attorney or Agent: Flehr, Hohbach, Test, et al., Ex. Gp.: 310, Requester: Ernest & Jenning Inc., Caarillo, Calif.

Service by Publication

A petition to cancel the registration identified below having been filed, and the notice of such proceeeding sent by certified mail to registrant at the last known address having been returned by the Postal Service as undeliverable, notice is hereby given that unless the registrant listed herein, its assigns or legal representatives shall enter an appearance within thirty days from the date of this publication, the cancellation will be proceeded with as in the case of default.

University Communications, Inc., Rahway, N. J., Reg. No. 882,907, for the mark "BUSINESS WORLD", Canc. No. 17,901.

Developmental Sciences, Inc., City of Industry, Calif., Reg. No. 1,047,202, for the mark "PHANTOM", Canc. No. 18,090.

ERMA S. BROWN
Administrator of the
Trademark Trial and
Appeal Bord
For JEFFERY M. SAMUELS
Assistant Commissioner for
Trademarks

Filing of Certain Papers with the Board of Patent Appeals and Interferences by Facsimile Transmission

A facsimile machine has recently been installed at the Board of Patent Appeals and Interferences (Board). Accordingly, a party who wishes to file papers in a patent application or reexamination proceeding in which an appeal is pending and which is located at the Board may do so via the Board's facsimile machine, the telephone number of which is (703)557-8642. Normally, the file of a patent application or reexamination proceeding in which an appeal is pending is forwarded to the Board approximately six weeks after the examiner's answer has been mailed.

Certain papers in interference proceedings may also be filed via the Board's facsimile machine, for example, motions, briefs, designations of lead attorney, etc. The following are *excluded*: transcripts of depositions or of interrogatories, cross-interrogatories or recorded answers; preliminary statements; exhibits; and evidentiary records under 37 CFR 1.653.

All papers filed with the Board by facsimile transmission are subject to the provisions, requirements and exclusions stated in the Commissioner's Notice of October 19, 1988 (1096 O.G. 30, Nov. 15, 1988), entitled "Filing of Certain Papers and Authorization to Charge Deposit Accounts by Facsimile Transmission."

October 17, 1989

SAUL I. SEROTA
Chairman
Board of Patent Appeals and
Interferences

Application for Recordation of Trade Name: "TRIPLE FAT GOOSE"

Action: Notice of Application for Recordation of Trade Name
Summary: Application has been filed pursuant to section 133.12, Customs Regulations (19 CFR 133.12), for the recordation under section 42 of the Act of July 5, 1946, as amended (15 U. S. C. 1124), of the trade name "TRIPLE FAT GOOSE", used by Turbo Sportsware, Inc., a corporation organized under the laws of the State of New Jersey, located at One Walnut Street, Perth Amboy, New Jersey 08862.

The application states that the trade name is used in connection with men's and boy's down filled outwear and active sportswear. The merchandise is manufactured in Korea.

Before final action is taken on the application, consideration will be given to any relevant data, views, or arguments submitted in writing by any person in opposition to the recordation of this trade name. Notice of the action taken on the application for recordation of this trade name will be published in the Federal Register.

Date: Comments must be received on or before October 30, 1989.

Address: Written comments should be addressed to U. S. Customs Service, Attention: Value, Special Programs and Admissibility Branch, 1301 Constitution Ave., N. W. (Room 2104), Washington, D. C. 20229.

For Further Information Contact: Velma Taylor, Value, Special Programs and Admissibility Branch, 1301 Constitution Ave., N. W. Washington, D. C. 20229 (202-566-5765).

Aug. 23, 1989

MARVIN M. AMERNICK
Chief.
Value, Special Programs
and Admissibility Branch

Patents Availible for License or Sale

Inquiries about the Patents listed below should be directed to Constant V. David, 4952 Field St., San Diego, Calif. 92110

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4,379,701	BOUYANT APPARATUS PROPFLLEDBY A HUMAN OPERATOR
4,399,654	POWER PLANT HAVING A FREE-PISTON COMBUSTION MEMBER
4,432,735	HUMAN PROPELLED BOUYANT ANNUALAR FLOAT WITH REMOVABLE PONTOON STABILIZER
4,535,724	TRAINING AND CARE APPARATUS FOR HORSES
4,543,67	WATER SAVING INSERT FOR TOILET TANKS
4,558,971	CONTINUOUS PIPELINE FABRICATION METHOD
4,560,473	MACERATOR- DECANTER
4,561,131	DUAL FLUSH TOILET FOR WATER SAVING
4,561,656	BAR RIDING WHEEL
4,617,697	MOLDABLE HANDLE ADAPTER
4,629,629	METHOD FOR PROCESSINGAVOCODOS
4,650,400	HELICOPTER BLADE-PITCH ADJUSTING SYSTEM
4,653,274	METHOD OF CONTROLLING A FREE-PISTON EXTERNAL-COMBUSTION ENGINE
4,665,703	EXTERNAL COMBUSTION ENGINE WITH AIR-SUPPORTED FREE PISTON
4,699,727	DOUBLE-BAR RIDING WHEEL AND METHOD OF USING SAME
4,683,541	ROTARY FLUIDIZED-BED COMBUSTION SYSTEM
4,697,986	HELICOPTER BLADE CYCLIC PITCH CONTROL SYSTEM
4,730,795	HELIPANE
4,739,668	INFINITELY VARIABLE (IV) POSITIVE DRIVE SYSTEM
4,749,121	THREE-BAR AND BALL GAME APPARATUS AND METHOD OF USING SAME
4,747,269i	VARIABLE SPEED POWER-TRANSMITTING SYSTEM
4,760,701	EXTERNAL COMBUSTION ROTARY ENGINE
4,815,294	GAS TURBINE WITH EXTERNAL FREE-PISTON COMBUSTOR
4,818,834	FLEXIBLE CONFORMABLE VANES MADE OF CARBONANCEOUS MATERIALS
4,833,469	OBSTACLE PROXIMITY DECTECTOR FOR MOVING VEHICLE AND METHOD FOR USE THEREOF

PATENT PENDING:

Serial No.	
07/037,512	METHOD FOR FABRICATING AND INSERTING REINFORCING SPIKES IN A 3-D REINFORCED STRUCTURE
07/335,949	SERVO-POWER SYSTEM FOR HELI PANE BLADE ACTUATION AND METHOD THEREOF
07/335,994	SHOCK-ABSORBING SYSTEM FOR PULSED NUCLEAR POWER PLANT

4,266,112 WEB-CUTTING PROCESS, William P. Niedermeyer, 1024 Mount Mary Dr., Green Bay, Wisc. 54301

4,482,939 DIRECTIONALLY VARIABLE LIGHTING ASSEMBLY, Andrew Tishman, Enterprises Inc., 170 East 88th St. #8B New York, N. Y. 10128

4,576,178 AUDIO SIGNAL GENERATOR, David Johnson, Box 68, 436 East 69th St., New York, N. Y. 10021

4,702,704 TETRAHEDRAL CONDON STERO-TABLE, Leonard R. Svensson, Birch, Stewart, Kolach & Birch, 301 N. Washington St., P.O. Box 747, Falls Church, Va. 22046

4,828,690 HAND TOOL FOR SIFTING DEBRIS FROM SAND SOIL, Obed Montez, 1050 C St., Salinas, Calif. 93905

4,834,727 EYE DROPPER BOTTLE ATTACHMENT FOR POST-SURGICAL AND GENERAL USE, Dr. Samuel M. Cope, 265 Western Promenade, Portland, Ma. 04102

4,845,788 WATER FILLABLE MATTRESS WITH COVER, Jeanette L. Myer, 7251 Hickory Ave., Orangevale, Calif. 95662

Errata

The following registration numbers were inadvertently listed as canceled in the "Trademark Registration Cancelled, Section 8" section of the Trademark Official Gazette of August 15, 1989:

TM 218 1,237,056 Aug. 15, 1989

TM 218 1,237,058 Aug. 15, 1989

TM 218 1,237,059 Aug. 15, 1989

Consequently, the above-identified registrations are still active.

Oct. 17, 1989
PATRICIA M. DAVIS
Administrator for
Trademark Operations

In the "Trademark Registration Renewed" section of the Trademark Official Gazette of April 11, 1989, the Prior U. S. Class for Registration No. 505,821 was incorrectly classified in Class 34.

The classification as corrected is Prior U. S. Class 14.

Oct. 17 1989
PATRICIA M. DAVIS
Administrator for
Trademark Operations

Registration Number 1,237,057, listed in the "Trademark Registrations Canceled, Section 8" section of the Trademark Official Gazette of August 15, 1989 was inadvertenly canceled as to International Classes 11 and 12.

TM 218 1,237,056 Aug. 15, 1989

Consequently, the above-identified registration is still active for International Classes 11 and 12.

Oct. 17, 1989
PATRICIA M. DAVIS
Administrator for
Trademark Operations

PATENT NOTICES

Certificates of Correction For Week of November 14, 1989

PP. 5,984
PP. 6,712
PP. 6,721
RE. 32,714
D. 299,084
D. 300,255
D. 300,627
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	Milwaukee Public Library	(414) 278-3247

PATENT EXAMINING CORPS

JAMES E. DENNY, Acting Assistant Commissioner
STEPHEN G. KUNIN, Acting Deputy Assistant Commissioner
CONDITION OF PATENT APPLICATIONS AS OF October 7, 1989

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 110—D. E. TALBERT, Director	5-26-87
ORGANIC CHEMISTRY GROUP 120—S. N. ZAHARNA, Director	6-16-87
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 130—R. F. WHITE, Director	4-15-87
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 150—J. O. THOMAS, Director	5-14-87
BIOTECHNOLOGY, GROUP 180—J. E. KITTLE, Director	9-10-86
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—D. G. Kelly, Director	9-24-87
SPECIAL LAWS ADMINISTRATION, GROUP 220—K. L. CAGE, Director	2-27-87
INFORMATION PROCESSING, STORAGE, AND RETRIEVAL, GROUP 230—G. GOLDBERG, Director	5-28-87
PACKAGES, CLEANING, TEXTILES, AND GEOMETRICAL INSTRUMENTS, GROUP 240—TRYGVE M. BLIX,Director	5-27-88
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 250—EDWARD E. KUBASIEWICZ, Director	8-18-87
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 260 S. LEVY, Acting Director	8-17-87
DESIGN, GROUP 290—K. L. CAGE, Director	2-6-86
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director	5-18-88
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 320—N. GODICI, Acting Director	4-13-88
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 330—J. J. LOVE, Director	4-20-87
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 340—C. CROYLE, Acting Director	2-26-88
GENERAL CONSTRUCTIONS, PETROLEUM AND MINING ENGINEERING, GROUP 350—A. L. SMITH, Director	1-3-89

Expiration of patents: The patents within the range of numbers indicated below expire during October 1989, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151

Patents	Numbers 3,694,814 to 3,702,011 inclusive
Plant Patents	None

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REEXAMINATIONS

NOVEMBER 14, 1989

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 3,891,585 (1156th)

ELASTOMERIC PAVEMENT REPAIR COMPOSITION FOR PAVEMENT FAILURE AND A METHOD OF MAKING THE SAME

Charles H. McDonald, 3130 W. Pierce St., Phoenix, Ariz. 85009
Reexamination Request No. 90/001,591, Aug. 30, 1988.
Reexamination Certificate for Patent No. 3,891,585, issued Jun. 24, 1975, Ser. No. 376,919, Jul. 5, 1973.
Continuation-in-part of Ser. No. 589,190, Oct. 21, 1966.
Int. Cl.^{4} C08C *11/68, 17/22;* **C08D** *9/00;* **C08L** *95/00;* **C08J** *3/02*
U.S. Cl. 523—307

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **11–20** is confirmed.

Claims **1** and **9** are determined to be patentable as amended.

Claims **2–8** and **10**, dependent on an amended claim, are determined to be patentable.

1. An elastomeric pavement repair material which consists essentially of paving grade asphalt with a penetration range of 10 through 300 and particulate non-oil resistant asphalt soluble rubber which have been mixed *at an elevated temperature* in a ratio of about two to about three parts asphalt to about one part rubber and which have been heated together at a temperature within the range of about 350° and about 500° F. to form a jellied composition.

9. An elastomeric pavement repair material which consists essentially of paving grade asphalt with a penetration range of 10 through 300 and rubber tire buffings of non-oil resistant asphalt soluble rubber which have been mixed *at an elevated temperature* in a ratio of about 2 to about 3 parts asphalt to about one part rubber and which have been *heated* together at a temperature within the range of about 350° and about 500° F. to form a jellied composition.

11. A method of preparing an elastomeric pavement repair material which includes the steps of:

heating paving grade asphalt with a penetration range of 10 through 300 to a temperature within the range of from about 350° to about 500° F.;

adding one part particulate, non-oil resistant asphalt soluble rubber to the heated asphalt in the ratio of about two to about three parts of asphalt to one part rubber; and

mixing the resulting asphalt and rubber mixture to form a jellied composition.

B1 4,027,367 (1150th)

SPRAY BONDING OF NICKEL ALUMINUM AND NICKEL TITANIUM ALLOYS

Henry S. Rondeau, Shaker Heights, Ohio, assignor to Virginia C. Rondeau, Executrix of State of Henry S. Rondean
Reexamination Request No. 90/001,481, Apr. 4, 1988.
Reexamination Certificate for Patent No. 4,027,367, issued Jun. 7, 1977, Ser. No. 598,822, Jul. 24, 1975.
Int. Cl.^{4} B05D *1/06;* **B32B** *15/04, 15/20*
U.S. Cl. 428—652

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims 1–7, 10–16 are determined to be patentable as amended.

Claims 8, 9 and 17, dependent on an amended claim, are determined to be patentable.

New claims 18–20 are added and determined to be patentable

1. A method of thermal spraying a substrate to deposit a self-bonding coating on such substrate, comprising supplying an electric arc thermal spray gun with a wire feed comprising an alloy of nickel and aluminum or titanium, and using such electric arc thermal spray gun, spraying said wire feed onto such substrate to coat the same thereby to establish a diffusion bond between such coating and such substrate to provide a self-bonding coating on such substrate *without exothermic reaction of composite materials during spraying.*

B1 4,199,219 (1151st)

DEVICE FOR SCANNING AN OBJECT WITH A LIGHT BEAM

Akiyoshi Suzki, Tokyo, and Yoichi Hirabayashi, Machida, both of Japan, assignors to Canon Kabushiki Kaisha
Reexamination Request No. 90/001,682, Dec. 28, 1988.
Reexamination Certificate for Patent No. 4,199,219, issued Apr. 22, 1980, Ser. No. 790,072, Apr. 22, 1977.
Int. Cl.^{4} G02B *26/10*
U.S. Cl. 350—6.1

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

New claims 5–17 are added and determined to be patentable.

The patentability of claims 1–4 is confirmed.

1. A device for scanning an object having a flat reflection surface and an inclined surface with a certain inclination with respect to the flat reflection surface, comprising:

a. means for forming a relatively thin fixed light beam;
b. a defector for deflecting the light beam from the light forming means to scan across the object;
c. a lens system for receiving the deflected light beam from said deflector, including an objective lens facing the object, the optical axis of which objective lens is perpendicular to the flat reflection surface of said object and having a light source side focal plane, said objective lens being substantially so disposed that said deflected light beam continuously passes through the center of said light source side focal plane as it is being deflected;
d. a light detector for detecting light which has been reflected from said object and passed through said objective lens; and
e. optical filter means interposed between said objective lens and said light detector, for intercepting light from the flat reflection surface of said object and for directing the light from the inclined reflection surface to said light detector.

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B1 4,203,130 (1152nd)
INFORMATION DISPLAYING SYSTEM

Joseph A. Doumit, New Iberia, La., and Robert E. Weiblen, Towson, Md., assignors to Dial-A-Channel, Inc., New Iberia, La.
Reexamination Request No. 90/001,595, Sep. 1, 1988.
Reexamination Certificate for Patent No. 4,203,130, issued May 13, 1980, Ser. No. 758,553, Jan. 11, 1977.
Int. Cl.⁴ H04N *11/00, 5/265*
U.S. Cl. 358—1

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **5–19** is confirmed.

Claim **3** is cancelled.

Claim **1** is determined to be patentable as amended.

Claims **2** and **4**, dependent on an amended claim, are determined to be patentable.

New claims **20–27** are added and determined to be patentable.

1. A system for continuously transmitting program schedule information over an informational television channel including: a plurality of data sources[,]*;* video mixing means connected to said sources *through a digital video signal generator* for combining information received therefrom *with a sync signal* to produce a composite video modulating output[,]*;* sequence control means connected to said sources for selection of the information fed to the mixing means[, and]*; through the digital video signal generator* clock means connected to the sequence control means for timing and updating the selected information fed *through the digital video signal generator* to the mixing means*; memory means for storing data representing a plurality of program listings fed thereto from a data source; and means for selecting readout of program listings data from the memory means to the digital video signal generator.*

B1 4,420,909 (1153rd)
WAFERING SYSTEM

Robert E. Steere, Jr., Boonton, N.J., assignor to Silicon Technology Corporation, Oakland, N.J.
Reexamination Request No. 90/001,684, Nov. 30, 1988.
Reexamination Certificate for Patent No. 4,420,909, issued Dec. 20, 1983, Ser. No. 320,097, Nov. 10, 1981.
Int. Cl.⁴ B24B *7/20*
U.S. Cl. 51—73 R

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **4–19** is confirmed.

Claims **1–3, 20, 22** and **26** are cancelled.

Claims **21** and **23** are determined to be patentable as amended.

Claims **24** and **25**, dependent on an amended claim, are determined to be patentable.

New claims **27–39** are added and determined to be patentable.

4. A wafering system comprising
a rotary cutting blade having a bore and a cutting edge about said bore for severing a wafer from a delivered ingot;
a chuck assembly having a head for engaging a severed wafer from the ingot; and
means for moving said head between a rest position on one side of said blade and a wafer holding position on an opposite side of said blade, said means for moving said head including a carriage, a carriage guide extending tranversely of said blade, means for reciprocating said carriage along said guide, an arm secured to said head, an arm assembly having said arm secured therein and being pivotally mounted on said carriage, and means for pivoting said arm assembly to move said head through said bore in said blade.

B1 4,424,956 (1154th)
DRAPABLE CONSUMABLE HEAT RETENTION SHIELD FOR HOT METAL CARS

Louis A. Grant, Pittsburgh, and Arthur F. Trunzo, White Oak, both of Pa., assignors to Standard Steel Sponge
Reexamination Request No. 90/001,514, May 18, 1988.
Reexamination Certificate for Patent No. 4,424,956, issued Jan. 10, 1984, Ser. No. 368,277, Apr. 14, 1982.
Continuation-in-part of Ser. No. 342,517, Jan. 25, 1982.
Int. Cl.⁴ F27D *3/00*
U.S. Cl. 266—248

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1–8** are cancelled.

New claims **9–11** are added and determined to be patentable.

9. A lightweight manually positionable, drapable, consumable, heat retention shield for conserving the heat of the interior lining of a hot metal car into which hot metal is to be poured through an aperture in the hot metal car, said heat retention shield comprising:
a panel having a first metallic lattice, a second metallic lattice spaced from said first metallic lattice and a fibrous refractory sheet located between said first metallic lattice and said second metallic lattice, said metallic lattices comprising cross-strips along said fibrous refractory sheet and fastening means connecting said first and second metallic lattices to retain said fibrous refractory sheet therebetween, said panel being formed with a depressed cavity spaced from the periphery thereof, said depressed cavity having a bottom wall and side walls and end walls extending upwardly from the periphery of said bottom wall, and a flange extending outwardly away from said sidewalls and said end walls, a peripheral support frame of combustible material supporting said periphery of said fibrous refractory sheet, whereby said bottom wall, said side walls and said end walls are adapted to extend downwardly from said panel into the aperture in a hot metal car when the heat retention shield is in place on a hot metal car and said outwardly extending flange of said panel is adapted to rest on the exterior surface of a hot metal car when the heat shield is in place on the car and is draped thereover, said heat retention shield being held in place on the hot metal car by placing said bottom wall, said side walls and said end walls of said depressed cavity into the aperture in the hot metal car without any mechanical means attaching said heat retention shield to the hot metal car and whereby hot metal poured into the hot metal car through the aperture is poured into said depressed cavity to force the heat shield through the aperture into the hot metal car wherein it is consumed.

B1 4,514,636 (1155th)
ION TREATMENT APPARATUS

Monroe L. King, Austin, Tex., assignor to Eaton Corporation
Reexamination Request No. 90/001,575, Aug. 9, 1988.
Reexamination Certificate for Patent No. 4,514,636, issued Apr. 30, 1985, Ser. No. 640,538, Aug. 13, 1984.
Continuation of Ser. No. 523,908, Aug. 16, 1983, abandoned, and a continuation of Ser. No. 185,075, Sep. 8, 1980, abandoned, which is a division of Ser. No. 75,401, Sep. 14, 1979, Pat. No. 4,261,762.
Int. Cl.⁴ G01N *23/00;* **H01L** *21/00*
U.S. Cl. 250—443.1

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1, 2** and **5** are determined to be patentable as amended.

Claims **3, 4** and **6**, dependent on an amended claim, are determined to be patentable.

1. An apparatus for treating substantially flat wafer articles with a focused ion beam comprising:
a high vacuum chamber [adapted to be] evacuated to a pressure a substantial number of orders of magnitude below 1 torr, sufficient to enable formation and focusing of said ion beam,
a treating station within said high vacuum chamber, means for producing, focusing and directing said ion beam onto wafer articles at the treating station,
a mounting member having a substantially[,] flat, temperature-controlled support surface on which each wafer is positioned at the treating station, and means for controlling the temperature of the wafer comprising
an open clamping member for engageing one flat surface of said wafer at its periphery to clamp the other flat surface of said wafer against said substantially flat support surface of said mounting member,
said focused beam passing through the opening of said clamping member to said one surface of said wafer,
means for introducing, to the interface between the surface of the wafer and the surface of the mounting member, gas under subatmospheric pressure of sufficient value to enable the gas to have substantial heat conductance, said pressure being greater than about 1 torr,
whereby effective heat transfer by conduction is obtained between said surfaces of said wafer and mounting member due to the presence of said conductive gas in the short paths that exist between the urged-together surfaces while leakage of said gas into said high vacuum chamber is substantially inhibited by said clamping of said surfaces against one another, thereby to prevent said gas from influencing said treatment.

B1 4,636,207 (1157th)
DISPOSABLE GARMENT WITH BREATHEABLE LEG CUFFS

Kenneth B. Buell, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio
Reexamination Request No. 90/001,495, Apr. 21, 1988.
Reexamination Certificate for Patent No. 4,636,207, issued Jan. 13, 1987, Ser. No. 522,438, Aug. 11, 1983.
Continuation-in-part of Ser. No. 441,825, Nov. 15, 1982, abandoned.
Int. Cl.⁴ A61F *13/16*
U.S. Cl. 604—370

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claim **1** is determined to be patentable as amended.

Claims **2** and **3**, dependent on an amended claim, are determined to be patentable.

New claims **4–11** are added and determined to be patentable.

1. A disposable diaper comprising [a liquid permeable topsheet,] a liquid impermeable backsheet, *a liquid permeable topsheet secured to said backsheet,* and an absorbent element interposed [therebetween] *between said topsheet and said backsheet*; said diaper having two lateral end margins and two longitudinal side margins; said longitudinal side margins being contoured in that said side margins are non-linear over at least a portion of their respective lengths; said diaper further having two longitudinally extending *breathable* cuffs adapted to contact the legs of a wearer when said diaper is in use; each of said cuffs comprising *a side flap extending outwardly from and along* at least a portion of [one] *each* of said longitudinal side margins; *of said absorbent element in at least a portion of said diaper, each of said side flaps having an outer surface, an inner surface, and a distal edge spaced outwardly from said longitudinal side margin of said absorbent element and forming said longitudinal side margin of said diaper;* each of said cuffs having been rendered elastically contractible by the association therewith of elastic means affixed to said diaper; wherein each of said cuffs is permeable to vapor over at least a portion of its extent, each of said cuffs comprises at least one separate element affixed to said diaper, *said separate element of said cuff comprising said outer surface of said cuff*; each of said cuffs comprises at least one portion permeable to vapor and at least one portion impermeable to vapor; and wherein in each cuff at least one portion permeable to vapor is intermediate the distal edge of said cuff and said adsorbent element and at least one portion impermeable to vapor is intermediate said portion permeable to vapor and said absorbent element, and the portion permeable to vapor comprises from about 5% to about 75% of said cuff.

B1 4,704,621 (1158th)
PRINTING DEVICE

Robertus van Cooten, Grubbenvorst; Dick Simons, Venlo; Bontko Witteveen, Venlo; Willem T. Draai, Venlo; Johannes G. V. van Striphout, Beek en Donk, and Martinus J. Huijben, Grubbenvorst, all of Netherlands, assignors to OCE-Nederland B.V., Venlo, Netherlands
Reexamination Request No. 90/001,743, Apr. 3, 1989.
Reexamination Certificate for Patent No. 4,704,621, issued Nov. 3, 1987, Ser. No. 825,044, Jan. 31, 1986.
Claims priority, application Netherlands, Feb. 6, 1985, 8500319
Int. Cl.⁴ G01D *15/00*
U.S. Cl. 346—153.1

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **2** and **14–16** are cancelled.

Claims **1, 3, 5, 8, 11, 13, 17, 18** and **19** are determined to be patentable as amended.

Claims **4, 6, 7, 9, 10** and **12**, dependent on an amended claim, are determined to be patentable.

1. A printing device comprising a moveable image-forming medium on a support, the surface of which forms a dielectric layer; an image-forming station disposed along the trajectory of the image-forming medium having a magnetic roller with an electrically conductive nonmagnetic outer sleeve with magnets disposed inside the sleeve; a means for supplying electrically conductive toner particles to a linear zone in the image-forming station; and a plurality of electrodes for generating an electric field corresponding to a desired image pattern, said

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electrodes extending in the direction of movement of the image-forming medium and disposed so as to be insulated from one another and covered by a dielectric layer wherein each electrode can be actuated by a voltage source **[**and**]** *by means of induction electrodes which are placed in registration with the electrodes on the image-forming medium, said induction electrodes being in trailing contact with the dielectric layer such that* each electrode can generate an electric field across the dielectric layer over part of the zone wherein image formation takes place when in the image-forming station.

REISSUES

NOVEMBER 14, 1989

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 33,110

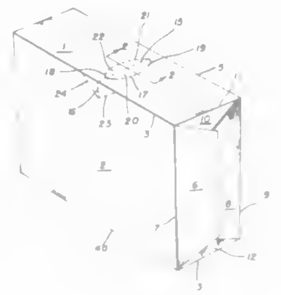
CARRYING HANDLE FOR A CAN CARTON

Prentice J. Wood, Hapeville, and Erwin Doerr, Dunwoody, both of Ga., assignors to The Mead Corporation, Dayton, Ohio

Original No. 46,536,86, dated Mar. 31, 1987, Ser. No. 851,533, Apr. 14, 1986. Application for reissue Aug. 15, 1988, Ser. No. 232,001

Int. Cl.⁴ B65D *5/46*

U.S. Cl. 229—117.13 **9 Claims**



9. A carrying handle for a carton formed from a unitary blank for packaging a plurality of cans and having interconnected top, bottom and side walls and end closure panels, said handle comprising a perforated slit formed in and extending transversely in said top wall, a first transverse handle flap struck from said top wall and foldably joined thereto by a first fold line, and a second transverse handle flap struck from said top wall and foldably joined thereto by a second fold line, said first and said second fold lines being of arcuate configuration and said perforated transverse slit defining coincidental transverse edges of both of said handle flaps.

Re. 33,111

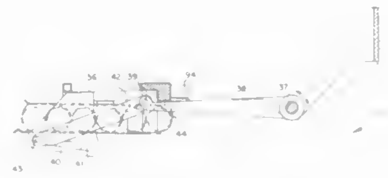
METHOD AND APPARATUS FOR AUTOMATICALLY DOFFING AND DONNING TAKE-UP PACKAGES ON A WINDER

Kurt W. Niederer, Charlotte, N.C., assignor to Belmont Textile Machinery Company, Belmont, N.C.

Original No. 4,591,105, dated May 27, 1986, Ser. No. 597,636, Apr. 6, 1984. Application for reissue May 26, 1988, Ser. No. 199,117

Int. Cl.⁴ B65H *67/04*

U.S. Cl. 242—18 A **34 Claims**



1. In a strand processing machine for winding a strand from a strand supply source onto a take-up package, a yoke having a chuck for holding the take-up package, a drive roll for driving the take-up package to thereby wind the strand thereon, a guide for guiding the strand onto the take-up package in a pre-determined pattern, means for stopping yarn feeding and rotation of the drive roll, a strand cutter for cutting the stationary strand from the take-up package to be doffed and a conveyor for receiving a full take-up package from the yoke and moving it to a discharge point, the improvement which comprises a positive control apparatus for doffing a full take-up package from and donning an empty take-up package onto the yoke, said doffing and donning apparatus comprising:

(a) means for pivoting the yoke away from the drive roll under positive control to the conveyor;

(b) means for depositing the full take-up package on the conveyor;

(c) means for returning the empty chuck of the yoke to a donning position in closely spaced-apart relation from the driving position of the empty take-up package against the drive roll;

(d) means for moving an empty take-up package to the chuck of the yoke at its position in said closely spaced-apart relation from the driving position against the driving roll whereupon the empty take-up package is donned into the chuck of the yoke; and

(e) means for attaching the free end of the strand to be wound onto the take-up package in said closely spaced-apart relation from the driving position of the take-up package against the drive roll;

whereby the strand remains relatively taut as the take-up package moves into contact with the drive roll is not susceptible to tangling or being jerked by the take-up package as winding starts.

14. In a strand processing machine for winding a strand from a strand supply source onto a take-up package, a yoke having a chuck for holding the take-up package, a drive roll for driving the take-up package in a driving position to thereby wind the strand thereon, magazine means for receiving and holding a plurality of empty take-up packages for being donned onto the chuck of the yoke, the improvement which comprises an apparatus for donning an empty take-up package onto the yoke, said donning apparatus comprising:

(a) means for moving an empty chuck of the yoke to a donning position in closely spaced-apart relation from the driving position of the empty take-up package against the drive roll;

(b) means for moving the magazine means to the chuck of the yoke at the donning position in said closely spaced-apart relation from the driving position against the drive roll whereupon one of the empty take-up packages in the magazine means is donned into the chuck of the yoke in closely spaced-apart relation from the drive roll; and

(c) means for attaching a free end of the strand to be wound onto the take-up package in said closely spaced-apart relation from the driving position of the take-up package against the drive roll; whereby the strand remains relatively taut as the take-up package moves into contact with the drive roll and is not susceptible to tangling or being jerked by the take-up package as winding starts.

Re. 33,112

APPARATUS FOR HOUSING AND DEPLOYING A RADAR DETECTOR IN AN AUTOMOTIVE VEHICLE

Timothy N. Durham, Rte. 8, Box 153, Conway, S.C. 29526

Original No. 4,684,164, dated Aug. 4, 1987, Ser. No. 923,415, Oct. 27, 1986. Application for reissue Jul. 8, 1988, Ser. No. 216,778

Int. Cl.⁴ B60R *7/04*

U.S. Cl. 296—37.7 **10 Claims**

8. Apparatus for housing an electronic device in a stored, con-

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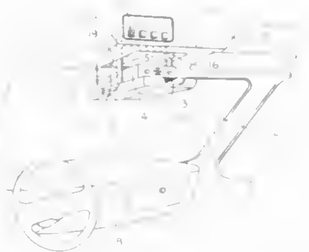
cealed position behind an exposed inner surface of a vehicle and for deploying the electronic device in an operable position, comprising:

a support for the electronic device;

means for carrying the support for movement from the stored position to the operable position;

electrically operated means for moving said means carrying said support from the stored position to the operable position and for returning the support to the stored position; and



switch means for actuating the electrically operated means for moving the support from the stored position to the operable position and back again, the switch means automatically actuating said electrically operated means in response to a change in the operating condition of the vehicle;

whereby said electronic device may be readily moved and stored out of sight when the vehicle is not in operation and returned to operable position.

Re. 33,113

PRESSURE SENSITIVE RECORDING PAPER

Masataka Kiritani; Hiroharu Matsukawa, both of Fujinomiya, and Masayuki Aoki, Ashigara, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

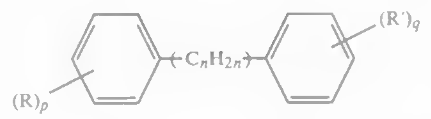
Original No. 3,836,383, dated Sep. 17, 1974, Ser. No. 193,151, Oct. 27, 1971. Application for reissue Sep. 17, 1976, Ser. No. 724,186

Claims priority, application Japan, Oct. 27, 1970, 45-94877

Int. Cl.^{4} B41M *5/16, 5/22*

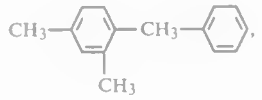
U.S. Cl. 503—213 7 Claims

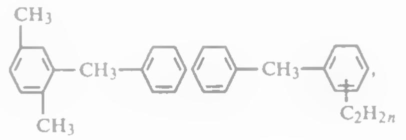
1. A pressure sensitive recording paper comprising a support having coated thereon a layer of color former, said color former dissolved in at least one compound represented by the following formula:

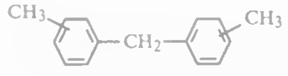


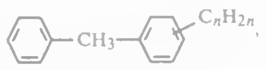
wherein n is an integer of 1 to 8, R and R' each represent a member selected from the group consisting of alkyl groups containing one to eight carbon atoms, and a hydrogen atom, p and q represent the number of alkyl groups, p+q being an integer of 1 to 3, and R and R' may be the same.

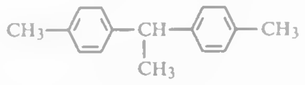
2. The pressure sensitive recording paper as claimed in claim 1, wherein said compound is a member selected from the group consisting of:

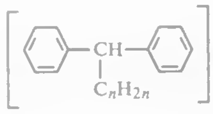




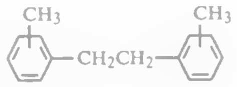








and



PLANT PATENTS

GRANTED NOVEMBER 14, 1989

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

7,055

MINIATURE ROSE PLANT 'MORJOYC'

Ralph S. Moore, Visalia, Calif., assignor to Sequoia Nursery, Calif.

Filed Oct. 3, 1988, Ser. No. 252,904

Int. Cl.^{4} A01H *5/00*

U.S. Cl. Plt.—7 1 Claim

1. A new and distinct variety of miniature rose plant of hardy, dwarf, bushy, rounded to upright, much branched habit, substantially as illustrated and described, characterized by buds and flowers of bright orange to orange red; the bud and flower resembling the variety Sheri Anne (U.S. Plant Pat. No. 3,826) in form; and further characterized by a plant of vigorous and compact growth habit, easy to propagate from cuttings or by budding, with an abundance of small to medium size semi-glossy to matt foliage and an abundance of flowers borne both singly and in loose clusters of 3 to 5 or more.

7,056

AFRICAN VIOLET PLANT NAME WEST VIRGINIA

Reinhold Holtkamp, Sr., Werther Strasse 112, D4294 Isselburg, Fed. Rep. of Germany

Filed Oct. 26, 1988, Ser. No. 262,578

Int. Cl.^{4} A01H *5/00*

U.S. Cl. Plt.—69 1 Claim

1. A new and distinct cultivar of African violet named West Virginia, as described and illustrated, and particularly characterized by its single, pink, wavy and frilled flowers with darker center radiating irregularly into the 2 small petals; dark pink line on the edges, especially of the two small petals; strong, upright flower stems that curve toward the center to form a compact bouquet above the leaves; dark green slightly serrated leaves, profuse flowering, vigorous growth habit, flowering 10–11 weeks after potting, and its long lasting and non-dropping flowers.

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PATENTS

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ERRATA

For CLASS	See PATENT NO.
427-069	4,880,475
210-169	4,880,531
525-067	4,880,554
552-297	4,880,571
562-021	4,880,575
562-828	4,880,576
428-623	4,880,614
423-210	4,880,685
430-551	4,880,733
435-007	4,880,752
503-220	4,880,763
502-065	4,880,787
425-190	4,880,792
424-470	4,880,830
548-152	4,880,894
525-468	4,880,908
549-458	4,880,939
313-495	4,881,017
341-070	4,881,059
381-104	4,881,123
369-046	4,881,204
364-400	4,881,219
378-035	4,881,257

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PATENTS

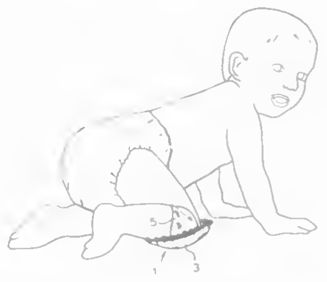
GRANTED NOVEMBER 14, 1989

GENERAL AND MECHANICAL

4,879,765

INFANT KNEE PAD

Daphne Bailie, and Brian Bailie, both of 129 Sylvan Avenue, Scarborough, Canada
Filed Sep. 27, 1988, Ser. No. 249,723
Claims priority, application Canada, Oct. 1, 1987, 548395
Int. Cl.⁴ A41D *13/06*
U.S. Cl. 2—24 8 Claims



1. A child's knee pad comprising a forward pad and a rearward securing elasticized strap having a width of about $\frac{1}{4}$ to $\frac{1}{3}$ of the length of the pad which is somewhat oval shaped with a convex inner and a concave outer surface and thinning downwardly in thickness for preshaping and fitting to a child's knee.

4,879,766

BRASSIERE AND/OR ATTACHMENT

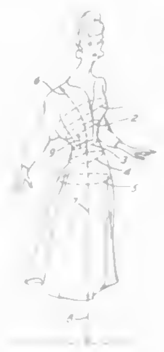
Harold L. Hull, 401 Sp. 43, Sparks, Nev. 89431, and Althea P. Tafte, 2760 S. Virginia, Sp. 17, Reno, Nev. 89502
Filed Mar. 7, 1988, Ser. No. 164,802
Int. Cl.⁴ A41C *3/00*
U.S. Cl. 2—101 4 Claims

1. A brassiere comprising;
(a) a front section having a pair of breast supporting cups;
(b) a pair of shoulder strap portions;
(c) a back section;
(d) a plurality of loops fixed to the bottom edge of the front section suitable for the insertion of a thumb or finger and
(e) a pull strap affixed to substantially the center of the said back section with its free end being free of all obstructions to allow said end to be tucked underneath the side or front edge of the brassiere and being of sufficient length to enable the wearer to reach it and to pull said brassiere into place.

4,879,767

DRESSES FOR WOMEN

Diane Hart, Flat 10, 156 Southerland Avenue, London W9 1HP, United Kingdom
Filed Nov. 13, 1987, Ser. No. 120,136
Claims priority, application United Kingdom, Nov. 14, 1986, 8627277
Int. Cl.⁴ A41D *27/00*
U.S. Cl. 2—243 B 13 Claims



1. A method of making a dress for a woman comprising the steps of:
(a) obtaining from a prospective wearer of said dress circumferential vertically spaced measurements at levels of the bust, the waist and the hips and longitudinal measurements taken from the shoulder to the waist at the rear, from the shoulder to the waist over the bust, from the waist to the underbust level, from the waist to the floor and from the waist to a chosen hem level;
(b) providing pre-cut panels of dresses to be made from said measurements of prospective wearers in a plurality of basic sizes, each basic size being furnished as a plurality of panels of varied lengths and widths and each panel having an edge extending parallel with waist level for seaming to a corresponding edge extending parallel with waist level of an adjacent panel which is disposed at a significant spacing from waist level;
(c) utilising said measurements obtained from a prospective wearer to select for the dress to be made from said panels provided, panels in the correct basic size and of width and length best suited to said obtained measurements; and
(d) seaming together said selected panels to form a dress in accordance with said obtained measurements.

4,879,768

NON-SLIP STRAP PAD

David L. McClees, Lewiston, Me.; John S. McClees, Jr., Towson, Md., and Michael P. McConnell, Durham, N.H., assignors to Talus Corp., Lewiston, Me.
Filed May 4, 1988, Ser. No. 190,132
Int. Cl.⁴ A41D *27/26*
U.S. Cl. 2—268 18 Claims

1. A shoulder strap assembly for carrying objects comprising
a strap for attachment to the object to be carried and having a portion adapted to be positioned over the shoulder and external to the clothing of the user,
pad means on the underside of said strap for preventing the strap from slipping off the shoulder of the user and comprising a resiliently padded portion of wedge shape positioned at and immediately underlying the portion of the strap to be worn over the shoulder and external to the clothing of the user,

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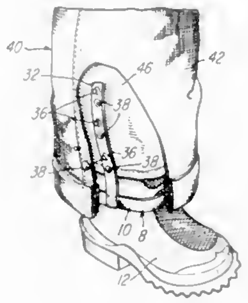
said wedge shape padded portion being such that the thick edge of the wedge is worn to the outside and the thin edge of the wedge to the inside relative to the shoulder of the wearer,

said wedge-shaped padded portion being of foam rubber or plastic and substantially the same width as said strap, and the height of said wedge being such as to increase the plane of the user's shoulder to a plane level with the ground or inclined from neck to shoulder.

4,879,769

FIREFIGHTER'S BOOT AND TROUSER ATTACHMENT

William L. Grilliot, and Mary I. Grilliot, both of 1986 Home Ave., Dayton, Ohio 45417
Filed Jul. 5, 1988, Ser. No. 215,300
Int. Cl.⁴ A41F *9/00*
U.S. Cl. 2—312 10 Claims



1. For use with a firefighter's boots and firefighter's trousers, as the firefighter's trousers normally cover a significant part of the firefighter's boots, an attachment device comprising a band which is adapted to encompass a firefighter's boot, strap means connected to the band and extending from the band, fastener means carried by the strap means, complementary fastener means carried by the firefighter's trousers and releasably attachable to the fastener means carried by the strap means, the attachment device thus attaching the firefighter's trousers, to the firefighter's boot.

4,879,770

EYEWEAR

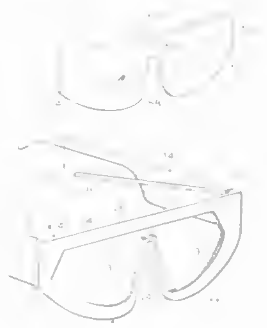
Steven J. Vacilotto, 22 North Park Drive, North York, Canada M6L 1K2
Filed Nov. 2, 1987, Ser. No. 115,794
Int. Cl.⁴ A61F *9/02*
U.S. Cl. 2—441 10 Claims

1. Eyewear of a type supported by temples comprising:

a unitary lens, and

a hard frame comprising opposed side portions and a nose portion bridging between said portions, the inner periphery of said side portions and said nose portion having a continuous channel extending therealong;

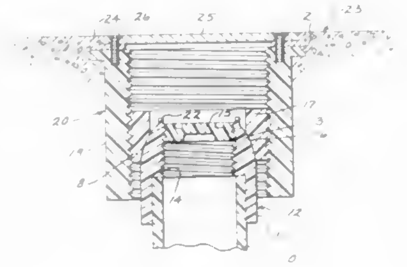
said frame further including a top member interconnecting said side portions adjacent their upper ends, at least a portion of said top member being movable between a first position wherein said channel is open along its length so as to permit said lens to be inserted into said channel, and a second position wherein said top member portion acts to lock said lens into said channel.



4,879,771

FLOOR CLEAN-OUT ASSEMBLY

James Piskula, P.O. Box 26174, Milwaukee, Wis. 53226
Filed Feb. 29, 1988, Ser. No. 161,800
Int. Cl.⁴ E03F *5/04*
U.S. Cl. 4—191 1 Claim



1. A floor clean-out assembly for a drain pipe comprising:

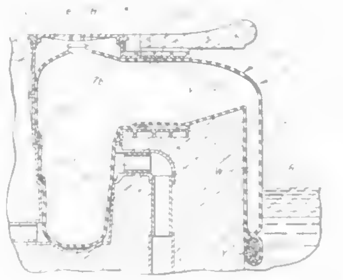
a tubular adapter having a central lumen extending therethrough, said adapter having a bottom for connection to a drain pipe and a top shaped to serve as the ball of a ball and socket; and, an extension means open at both ends and having a central lumen extending therethrough, said extension means having a socket adjacent one end for the top of the adapter and means at the other end to receive a floor plate to close said lumen, said extension means being comprised of a collar which has said socket at its bottom and a threaded exterior; and, a sleeve which has a threaded interior at one end which mates with the threaded exterior of the collar so that the sleeve can be turned and moved vertically along said collar to adjust the other end of the sleeve to the height of a floor.

4,879,772

DEVICE FOR CLOSING OFF A POOL SKIMMER

David M. Meloney, Jr., 857 Killarney Pass, Mundelein, Ill. 60060
Filed Oct. 13, 1987, Ser. No. 108,101
Int. Cl.⁴ E04H *3/18*
U.S. Cl. 4—506 6 Claims

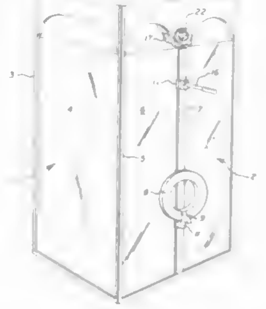
1. A device in combination with a pool having a skimmer to close off an interior portion of the skimmer when the pool is to be shut down for a prolonged period of time and the surface of the water within the pool is beneath a predetermined level; said skimmer comprising a housing mounted adjacent to but recessed from an exposed side wall surface of the pool and having an interior portion provided with a first segment communicating with the water surface when at the predetermined level and a second segment communicating with said first segment and disposed beneath said predetermined water level, a surface skimming inlet extending substantially laterally from said exposed side wall surface and communicating with the first segment whereby, when the pool water surface is at said predetermined level there is flow of surface water through said surface skimming inlet into said housing interior portion first segment through the second segment and out through a pump suction outlet port communicating with the second segment; said device comprising an inflatable member formed of a pliable, expansible waterproof material, said member, when in a deflated condition, being positioned within said skimmer housing interior portion, and when subsequently inflated substantially occupying and conforming to the configuration of the housing interior portion and effecting sealing off the inlet from the outlet port; and valve means carried on said inflatable member for controlling inflating and deflating of said member.



4,879,773

SHOWER CABINET

Nils R. Bergmark, Ringvägen 14, S-930, 47 Byske, Sweden
PCT No. PCT/SE87/00414, § 371 Date May 11, 1988, § 102(e) Date May 11, 1988, PCT Pub. No. WO88/01843, PCT Pub. Date Mar. 24, 1988
PCT Filed Sep. 14, 1987, Ser. No. 149,570
Claims priority, application Sweden, Sep. 16, 1986, 8603903
Int. Cl.⁴ A47K *3/22*
U.S. Cl. 4—612 12 Claims



1. A shower cabinet including a substantially floor length vertical opening means for ingress and egress therefrom, said shower cabinet comprising:

pivotable door screen means operable to allow said ingress or egress, said door screen means including stiffening strip means formed along a vertical center line of at least one face of said screen means;

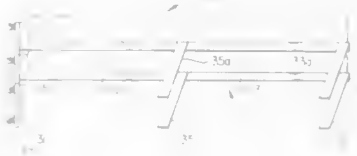
said stiffening strip means comprising pivotal support means for pivotally attaching said door screen means on a vertical axis at its center whereby said door screen means are operable to rotate substantially 180 degrees on said axis, said axis disposed within said full length vertical opening means, and;

said stiffening strip means further comprises selectable seat means disposed on said strip means.

4,879,774

NESTABLE BED

Herbert A. Sanders, 8904 Crosswind Dr., Fort Worth, Tex. 76179
Filed Jan. 19, 1988, Ser. No. 145,573
Int. Cl.⁴ A47C *19/00*/*21/00*
U.S. Cl. 5—8 14 Claims



1. A set of beds, which comprises:

a plurality of rectangular frames, each of said frames being adapted to receive a mattress, each frame defining a plane having a longitudinal axis and a transverse axis;

a pair of first legs mounted to a first end of each frame, said first legs lying in a plane perpendicular to said longitudinal axis, said first legs being unparallel to each other;

a pair of second legs mounted spaced apart from each other on opposite sides of each frame, said second legs lying in spaced apart planes perpendicular to said transverse axis, said second legs being nonperpendicular to the plane defined by said frame;

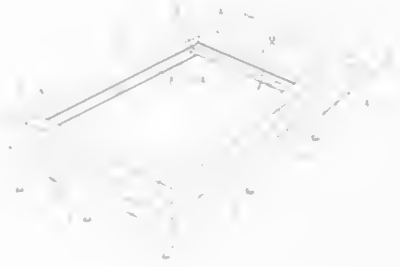
and a mattress carried by each of said frames;

wherein said frames are stacked on top of each other with their ends and sides coincident with each other and their mattresses in close proximity to each other.

4,879,775

REINFORCED RAIL ASSEMBLY FOR WATERBEDS

Donald W. Keefer, Pasadena, Md., assignor to Classic Corporation, Jessup, Md.
Continuation-in-part of Ser. No. 70,125, Jul. 6, 1987, Pat. No. 4,771,491, which is a continuation of Ser. No. 906,610, Sep. 10, 1986, abandoned, which is a continuation of Ser. No. 775,015, Sep. 11, 1985, abandoned. This application Apr. 22, 1988, Ser. No. 185,006
Int. Cl.⁴ A47C *19/00, 27/08*
U.S. Cl. 5—400 9 Claims



1. An assembly forming reinforced waterbed walls comprising:

a plurality of cushions defining outer walls of a waterbed when assembled, each cushion having an inner face, a top face and a bottom face; and

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a reinforcing bar positioned adjacent each cushion, each reinforcing bar having first, second and third members, said first member extending into said cushion from said inner face at a position intermediate said top and bottom faces, said second member extending from said first member along said inner face, and said third member extending from said second member away from said cushion and oriented substantially coplanar with said bottom face.

4,879,776

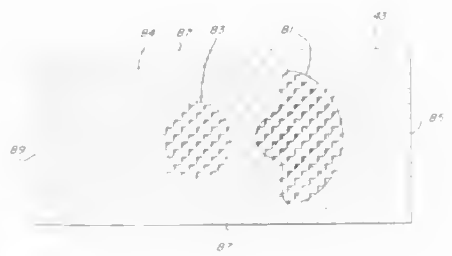
ANATOMICALLY CONFORMABLE FOAM SUPPORT PAD

David L. Farley, 18672 Evergreen Ave., Yorba Linda, Calif. 92686

Filed Apr. 4, 1988, Ser. No. 176,925

Int. Cl.^{4} A47C *27/14*

U.S. Cl. 5—436 20 Claims



9. A convoluted foam pillow for supporting the head and neck of a body, comprising:

a bottom;

a general support area formed by peaks arranged in rows, wherein each peak has a substantially flat top and is spaced from any adjacent peak in the same row by a valley; and

a generally T-shaped head and neck support area formed by peaks arranged in rows, wherein each peak has a substantially flat top and is spaced from any adjacent peak in the same row by a valley, wherein each of said peaks has a substantially uniform peak thickness said valleys of said general support area and said valleys of said head and neck support area each having an average valley thickness, wherein said average valley thickness of said valleys in said head and neck support area is less than said average valley thickness of said valleys in said general support area, thereby forming an area of greater capacity to conform to the shape of said head and said neck of said body.

4,879,777

FLUIDIZED PATIENT SUPPORT SYSTEM

Vernon L. Goodwin, Charlotte, N.C., assignor to Support Systems International, Inc., Charleston, S.C.

Continuation of Ser. No. 62,176, Jun. 12, 1987, Pat. No. 4,776,050, which is a continuation of Ser. No. 796,780, Nov. 12, 1985, Pat. No. 4,672,699, which is a division of Ser. No. 571,557, Jan. 17, 1984, Pat. No. 4,564,965. This application Jun. 8, 1988, Ser. No. 204,204

The portion of the term of this patent subsequent to Oct. 11, 2005, has been disclaimed.

Int. Cl.^{4} A47C *27/08, 31/02*

U.S. Cl. 5—453 4 Claims

1. An improved mobile patient support system, comprising:

(a) a generally oval shaped tank having a bottom wall, side walls, and an open top, said side walls having a contoured upper rim that extends laterally outward therefrom to a maximum dimension that is less than the width of a passageway through which said system is designed to be used;

(b) a wheeled support housing received beneath said tank and being secured thereto;

(c) fluid diffuser means received within said tank and spaced above said bottom wall;

(d) a plenum chamber defined beneath and in fluid communication with said fluid diffuser means;

(e) a mass of granular material received within said tank atop of said fluid diffuser means;

(f) fluid pressure generating means in communication with said plenum chamber, said fluid pressure generating means being actuatable for generating fluid pressure within said plenum chamber adequate to diffuse through said fluid diffuser means and fluidize said granular material atop of said fluid diffuser means sufficient to support a patient thereon;

(g) a flexible sheet removably secured about said upper rim of said tank, said flexible sheet being porous to the passage of fluid and impervious to the passage of said granular material; and

(h) a resilient rim cover nondestructively removable and securable by hand unaided by any tool about said upper rim of said tank for securing said flexible sheet, said resilient rim cover having a generally smooth upper surface; said resilient rim cover having a lower surface contoured for snap fitting engagement with said contoured upper rim and for receiving said flexible sheet between said contoured upper rim and said rim cover without extending through said sheet; said rim cover cooperating with said upper rim to retain said flexible sheet therebetween with adequate force to prevent the weight of the patient from pulling said flexible sheet from between said contoured upper rim and said resilient rim cover when said granular material is in a fluidized or a non-fluidized state.

4,879,778

HEEL MOLDER

Michael M. Becka, Nashua, and William Walega, Hollis, both of N.H., assignors to International Shoe Machine Corporation, Nashua, N.H.

Continuation-in-part of Ser. No. 186,417, Apr. 26, 1988, abandoned. This application Dec. 2, 1988, Ser. No. 278,983

Int. Cl.^{4} A43D *11/00*

U.S. Cl. 12—146 D 8 Claims

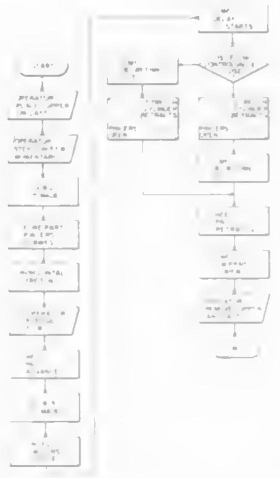
1. A method of heel molding of a footwear upper assembly that includes a last, a footwear upper draped about the last and an insole disposed on the last bottom, to form the heel part of the upper having a margin that extends outwardly from the insole, the heel part of the upper including a thermally-activated material that is deformable when heated above a threshold temperature and relatively non-deformable below the threshold temperature, said thermally-activated material having a thermally-activated adhesive on each major surface thereof, said method comprising the sequential and somewhat overlapping steps:

receiving the upper assembly with a preheated upper thereon by a spindle;

pressing the last with the preheated upper thereon firmly onto the spindle;

grasping the upper at its toe or forward region and drawing the preheated upper on the toe direction of the footwear upper assembly to stretch the heel part of the heated upper about the heel portion of the last;

while the heel part of the upper is thus stretched about the heel portion of the last, applying a pad adapted to exert a substantially uniform pressure to form or shape the upper about the heel portion of the last and the shank portion of the last;



wiping the heel part of the heated upper while the pad is in engagement with clamping the heel part of the upper against the last, to press the margin onto the insole whereby the thermally-activated material and heel part of the upper and other parts of the heel region of the preheated upper are forced into intimate contact with last, pad and wiping mechanism to cause the thermally-activated material and other upper parts to adhere to each other forming a laminated structure and to cool sufficiently for said laminated structure to take a permanent preformed set to a shape induced by conformity to the last; and

applying bedding pressure operable to apply high bedding force between the wiped margin and the wipers and sufficient to overcome the inherent mechanical memory of the upper to achieve sharp molding definition, i.e., a sharp edge between the side of the upper and the wiped margin thereof.

4,879,779

DEVICE FOR CLEANING A COOKING GRATE

Harvey A. Zalevsky, R.D. #2 Box 267E, Export, Pa. 15632, and David A. Leah, P.O. Box 10971, Irvine, Calif. 92702

Filed Oct. 11, 1988, Ser. No. 255,704

Int. Cl.^{4} A47L *17/00*

U.S. Cl. 15—104.92 14 Claims

1. A device for cleaning cooking by-products from a cooking grate having a predetermined thickness with a cleaning fluid, said device comprising:

a container having an interior cavity and an open top which are both dimensioned to receive the cooking grate;

said container being for containing the cleaning fluid within said interior cavity to a level adjacent said open top for substantially immersing the cooking grate;

said container having a pair of parallel side wall means;

said pair of said parallel side wall means having interior surfaces at least partially defining said interior cavity;

said interior surfaces being separated by a predetermined distance greater than said predetermined thickness for receipt of said cooking grate therebetween;

at least one of said interior surfaces having resiliently deflectable abrasion means mounted thereon;

said resiliently deflectable abrasion means of said at least one of said interior surfaces extending into said interior cavity toward the other of said interior surfaces for scrubbing the cooking by-products from the cooking grate;

said resiliently deflectable abrasion means including a plurality of resiliently deflectable elements having abrasive surface portions which are located outwardly of said at least one of said interior surfaces and within said interior cavity;

said each of said resiliently deflectable elements being elongated and extending across said at least one of said interior surfaces and being separated, by spaces within said interior cavity, from adjacent ones of said plurality of said resiliently deflectable elements on the same interior surface;

said spaces comprising means for collecting the cooking by-products being dislodged from said cooking grate by said resiliently deflectable elements;

said spaces being between said resiliently deflectable elements of said plurality;

means for selectively separating said side wall means for exposing said interior surfaces and said resiliently deflectable abrasion means thereof for cleaning away the dislodged cooking by-products adhering thereto.

4,879,780

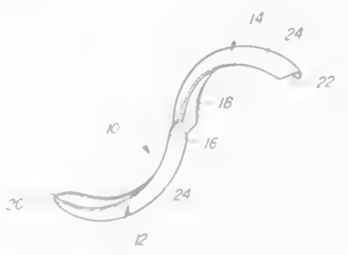
S-SHAPED JOINTER TOOL WITH SYMMETRIC BLADE AND HANDLE

Alfreda J. Prebeck, 38105 Reimold, Mt. Clemens, Mich. 48045

Continuation of Ser. No. 111,853, Oct. 23, 1987, abandoned. This application Mar. 28, 1989, Ser. No. 329,458

Int. Cl.^{4} E04G *21/20*

U.S. Cl. 15—105.5 1 Claim



1. A jointer tool for smoothing martar joints between rows of bricks:

said jointer tool being comprised solely by two identical but reversed convexly arcuate sections;

each section having an inner end and an outer end, said inner

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ends meeting and being directly connected to each other at a common point of tangency at a middle of the tool such that said sections form a pair of connected, continuously curved and oppositely placed smooth surfaces;

said inner ends including outwardly flared opposed arcuate side portions which extend laterally from the convexly arcuate sections;

each section having a uniform circular segment cross-section throughout its length;

each convexly arcuate section having an identical circular radius for forming an S-shaped tool with the sections being symmetrical to each other, but reversed, about said common point of tangency;

the outer end of each section is rounded so that a point of contact between the tool and mortar joint can reach an outer end of a section during pivoting of the tool without marring the mortar joint being smoothed;

said outer ends of said arcuate sections being disposed on a straight line passing through said common point of tangency;

such that each arcuate section of the tool is used as a handle and a working blade and said tool being pivoted by wrist movement of the user as the tool is swung in an arc so that the point of tool contact with a mortar joint being smoothed moves outward along the convexly arcuate section being used as a working blade toward the outer end of the section as the tool is moved along the joint.

4,879,781

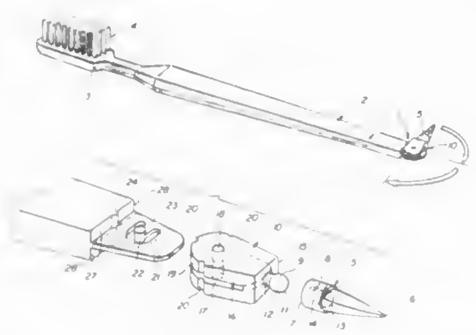
TOOTHBRUSH WITH POSITIONABLE STIMULATOR TIP

Joseph A. Desimone, Bricktown, N.J., assignor to Johnson & Johnson Consumer Products, Inc., New Brunswick, N.J.

Filed Aug. 19, 1988, Ser. No. 234,247

Int. Cl.^{4} A61H *13/00*

U.S. Cl. 15—110 16 Claims



1. In a toothbrush having a handle and an interdental device rotatably attached to said handle, the improvement wherein:

(a) said device is mounted for rotation about an axis which is movable between a first position and a second position; and

(b) positioning means are provided which hold said device in a predetermined orientation when said axis is in said first position and permits movement of said device when said axis is in said second position.

4,879,782

BLIND CLEANING DEVICE

Jeff A. Jacobson, 409 Emerald Bay, Laguna Beach, Calif. 92651

Filed Jan. 19, 1988, Ser. No. 144,967

Int. Cl.^{4} A47L *4/02*

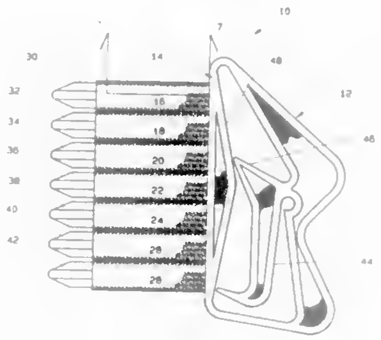
U.S. Cl. 15—210 A 7 Claims

1. A blind cleaning device comprising:

a mounting bar member;

at least one axially-extending finger member mounted to and projecting from said mounting-bar member, said finger member having an integral detent means on an end which is remote from said mounting-bar member for releasably retaining a cleaning roller in operative position on said finger member, said finger member being adapted to slideably and rotatably support a generally-cylindrical axially-hollow cleaning roller in a frictional fit, said finger member being longer than said cleaning roller and being adapted to extend axially through said cleaning roller, and means for accommodating a wide variation in tolerance between said finger and cleaning roller without substantially changing said frictional fit; and

means for grasping mounted to said mounting-bar member.



4,879,783

DEVICE, ESPECIALLY RECIPROCATING STROKE WIPER SYSTEM FOR MOTOR VEHICLES

Bruno Egner-Walter, Heilbronn; Eckhardt Schmid, Brackenbeim, and Wolfgang Scholl, Gemmrigheim, all of Fed. Rep. of Germany, assignors to ITT SWF Auto-Electric GmbH, Bietigheim-Bissingen, Fed. Rep. of Germany

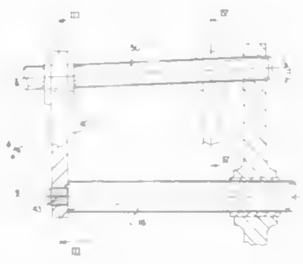
PCT No. PCT/EP87/00668, § 371 Date Jun. 30, 1988, § 102(e) Date Jun. 30, 1988, PCT Pub. No. WO88/03487, PCT Pub. Date May 19, 1988

PCT Filed Nov. 4, 1987, Ser. No. 223,203

Claims priority, application Fed. Rep. of Germany, Nov. 7, 1986, 3638073

Int. Cl.^{4} B60S *1/26*

U.S. Cl. 15—250.21 4 Claims



1. A device, especially a reciprocating stroke wiper system for motor vehicles, comprising a piston which is movably guided in a housing for movement along the axis thereof, and a projecting arm fixed on said piston and protected against twisting, said projecting arm radially projecting from this piston and enclosing a guiding element fixed at a certain distance of the piston housing, guiding areas of the guiding element and of a guiding fork gliding along each other during the motion of the piston, the guiding area on the guiding element being smaller than on the guiding fork and the distance between the effective guiding areas and the axis of the piston changing during the motion.

4,879,784

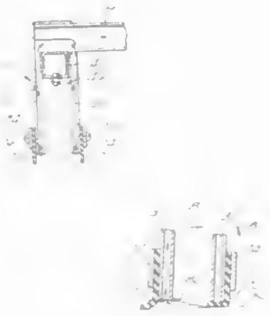
BI-DIRECTIONAL SQUEEGEE JET WAND

William Shero, 30961 Steeplechase, San Juan Capistrano, Calif. 92675

Continuation of Ser. No. 900,769, Aug. 26, 1986, abandoned. This application Aug. 9, 1988, Ser. No. 230,071

Int. Cl.^{4} A47L *7/00, 9/02*

U.S. Cl. 15—322 8 Claims



1. An improved cleaning wand for use in cleaning floors comprising:

a vacuum head having front and rear vacuum ports directed generally at right angles to said floor;

means disposed between said front and rear vacuum ports for spraying a cleaning solution upon a floor surface;

a handle cooperating with said vacuum head to manipulate said vacuunm head in a forward and reverse direction upon the floor surface, said handle being further adapted to alternately tilt said vacuum head in said forward and said reverse directions as the operator manipulates said vacuum head in such directions; and

at least one squeegee blade positioned outside of and adjacent to at least one of said vacuum ports, each such squeegee blade being directed downwardly from said vacuum head and terminating at a point below said vacuum ports and said means for spraying cleaning solution such that when said vacuum head is in its operative position said squeegee blade(s) will be in direct contact with said floor, with said vacuum ports and said means for spraying cleaning solution being held above said floor, said squeegee blade(s) being further adapted to assume an angular configuration of approximately ninety degrees thereby blocking said adjacent vacuum port upon movement of said vacuum head in the direction of each such squeegee blade.

4,879,785

SWIVEL BEARING FOR A DOOR-HOLDING ROD FOR A DOOR-HOLDING DEVICE FOR MOTOR VEHICLES

Karl-Heinz Tölle; Heinz-Walter Heinemann, both of Wuppertal; Jürgen Brockhaus, Remscheid, and Wolfgang Fiebrich, Halver, all of Fed. Rep. of Germany, assignors to ED. Scharwächter GmbH & Co. KG, Remscheid, Fed. Rep. of Germany

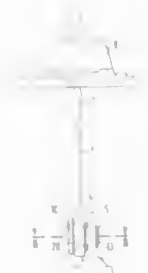
Filed Jul. 15, 1988, Ser. No. 220,017

Claims priority, application Fed. Rep. of Germany, Jul. 15, 1987, 3723424

Int. Cl.^{4} E05C *17/04;* E05D *5/10*

U.S. Cl. 16—82 13 Claims

1. A door-holding device for motor vehicle doors, comprising a door-holding rod having first and second ends, a carrier member attached to a structural door component, the first end of the door-holding rod freely swivelably connected to the carrier member, the second end of the door-holding rod extending through a holder housing mounted on another structural door component door or door post, the door-holding rod having along its length increased thickness portions protruding outwardly transversely of the longitudinal direction of the door-holding rod, the door-holding rod and the carrier member defining openings, a bolt having an axis extending through the openings of the door-holding rod and of the carrier member, so that the door-holding rod is freely swivelable relative to the bolt, while the carrier member is non-rotatable relative to the bolt, the carrier member formed by a single shaped piece, the bolt having a head, a spring mounted between the head of the bolt and the carrier member, the bolt having a shaft portion with smooth running surfaces, a conical clutch-type, axially and radially acting means for supporting the door-holding rod on the smooth running surfaces of the bolt, wherein the support of the door-holding rod on the smooth running surfaces is automatically centering and free of play and wherein the axially and radially acting means include corresponding conically widening portions provided on the opening of the door-holding rod and on the shaft portion of the bolt.



4,879,786

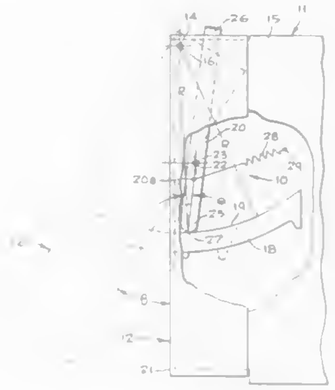
LOW PROFILE TILT LOCK MECHANISM WITH PIVOTABLE LOCKING LINK TO ENGAGE CAM SURFACE

Robert N. Olson, Sunnyvale, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed Apr. 8, 1988, Ser. No. 179,150

Int. Cl.^{4} E05C *17/64;* E05D *11/08*

U.S. Cl. 16—341 5 Claims



1. A tilt lock mechanism for a pivotable panel assembly comprising a base member and at least one panel element mounting on the base member for pivotable movement about an axis generally perpendicular to adjacent faces of the base member and the panel element, the tilt lock mechanism comprising:

the axis including a first pivot pin mounted on the base member to define a first pivot axis member;

the at least one panel element mounted on the base member for movement about the first pivot axis;

a cam surface rigidly mounted on the panel element and disposed for movement adjacent the base member;

a second pivot pin mounted on the base member and displaced from the first pin, the second pivot pin defining a second pivot axis;

a locking link mounted on the second pivot pin, the link

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having a first end portion disposed for engagement with the cam surface and a second portion exterior of the base member selectively moveable in a direction to release the locking; and

a biasing member connected between the locking link and the base member, to urge the locking link in a first direction and into engagement with the cam surface, to lock the panel assembly in a selected position, the biasing member being movable in an opposite direction to release the locking link from engagement with the cam surface and permit the panel assembly to freely move about the first pivot axis.

5. A method for tilting and locking a pivotable panel assembly comprising a base member and at least one panel element mounted on the base member for pivotable movement about an axis generally perpendicular to adjacent faces of the base member and the panel element, at a selected, tilted position, the tilt-lock method comprising:

defining a first pivot axis on the base member;

mounting the panel element on the base member for movement about the first pivot axis;

rigidly mounting a cam surface on the panel element for movement adjacent the base member;

defining a second pivot axis on the base member displaced from the first pivot axis;

mounting a locking link on the base member for movement about the second pivot axis, said link having a first end portion disposed for engagement with the cam surface and a second portion exterior of the base member selectively moveable in a direction to release the locking link;

connecting a biasing member between the locking link and the base member, to urge the locking link in a first direction and into engagement with the cam surface, to lock the panel assembly in a selected position, the biasing member movable in an opposite direction to release the locking link from engagement with the cam surface and permit the panel assembly to freely move about the first pivot axis.

4,879,787

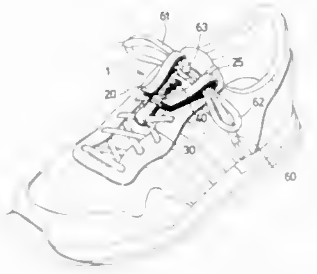
SHOE LACE KNOT SECURING DEVICE

Thomas J. Walls, 4201 E. Maple Manor, Muncie, Ind. 47302

Filed Oct. 3, 1988, Ser. No. 252,469

Int. Cl.⁴ F16G *11/00*

U.S. Cl. 24—712.2 53 Claims



1. A shoe lace knot securing device comprising a body, a pair of straps each having two ends wherein one end of each strap is permanently attached to one end of the said body and the other end of each strap is free and wherein the said straps extend outward from the said end of the said body, and an anchor loop provide at the other end of the said body, wherein the said body is provided with a fastener adapted to coact with a fastener on each of the said straps to detachably couple the free end of each of the said straps to the said body, and wherein each of the said straps is provided with a fastener adapted to coact with a fastener on the said body to detachably couple the free end of each of the said straps to the said body, and wherein each of the said straps is provided with a loop type fastener adapted to coact with shoe lace fibers to restrain movement of the lace.

4,879,788

DRAWING MACHINE

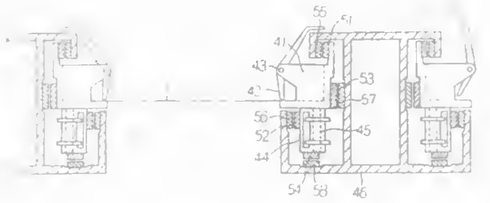
Tsutomu Suzuki; Tatsushi Seko; Kuniharu Tobita; Saburo Matsubayashi; Nobuhiko Kougo; Kiyoshi Ogawa, all of Nagoya; Susumu Taniguchi, Nagasaki; Masaharu Minami, Takasago; Masayuki Hayakawa, Nagoya, and Noriyuki Kawada, Hiroshima, all of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 876,200, Jun. 19, 1986, abandoned. This application Aug. 17, 1988, Ser. No. 233,922

Claims priority, application Japan, Jun. 25, 1985, 60-138121; Aug. 19, 1985, 60-181280; Aug. 19, 1985, 60-181281; Aug. 23, 1985, 60-184016; May 8, 1986, 61-105534

Int. Cl.⁴ D06C *3/04*

U.S. Cl. 26—94 2 Claims



1. A horizontal drawing machine for pinching the selvage edges of a web-like film, continuously laterally stretching the film in a crosswise direction, and releasing the film after stretching, said machine comprising:

rail means defining a film inlet section and a film outlet section, said rail means diverging from the film inlet section to the film outlet section;

a clip-propelling unit for driving a plurality of clip means along said rail means;

a plurality of clip means attached to said clip propelling unit for pinching the selvage edges of a web-like film and stretching the web-like film when said clip-propelling unit drives said plurality of clip means along said rail means from the film inlet section to the film outlet section;

first magnet means on said plurality of clip means;

second magnet means on said rail means in spaced opposed relation to said first magnet means;

said first magnet means repelling said second magnet means for opposing the weight of said plurality of clip means and the weight and stretching force of the web-like film pinched thereby for floating said plurality of clip means spaced from said rail means for eliminating abraded particles generated when said plurality of clip means moves along said rail means;

magnetically-actuated clips on each of said plurality of clip means, said magnetically-actuated clips being magnetically and mechanically actuatable;

magnetic clip opening and closing means disposed along said rail means, and said magnetic clip opening and closing means having third magnet means for opening and closing said magnetically-actuated clips for pinching and releasing the web-like film when said plurality of clip means is moved along said rail means; and

mechanical clip opening and closing means disposed along said rail means, said mechanical clip opening and closing means having a mechanical member for physically contacting said magnetically-actuated clips for opening and closing said magnetically-actuated clips for pinching and releasing the web-like film when said plurality of clip means is moved along said rail means and said magnetic clip opening and closing means has failed to open or close said magnetically-actuated clips.

4,879,789

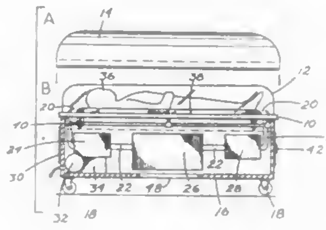
MORTUARY DISPLAY PLATFORM

Donnell E. Bak, P.O. Box 443, Paradise, Calif. 95967

Filed Jun. 13, 1988, Ser. No. 205,649

Int. Cl.⁴ A01N *1/00*

U.S. Cl. 27—11 8 Claims



1. A refrigerated mortuary display platform comprising:

a display platform;

said display platform being a substantially rectangular panel having horizontal surfaces faced upwardly and downwardly, said panel being of sufficient thickness and size to support a human cadaver laid on said upwardly faced surface lengthwise on a rectangular mattress pad, there being end space and side space for venting and for attachment of coverings, there being detachable pallbearer handles fastened to the sides of said display platform, rectangularly there being shaped air passage vent openings cut through said display platform adjacent the ends thereof, said air passage vent openings covered by hinged vent doors spring biased to maintain a closed sealed position except when forced open from below by an opening means;

a transparent dome being primary of said coverings;

said transparent dome configured substantially rectangularly, opened downwardly, having upwardly rounded corners to form said dome, and structured of clear viable material in a size to encompass said cadaver, said mattress pad, and said air vents and form a controlled environmental cavity thereabout, there being and edge-aligned grooved track in said upwardly faced surface of said display platform sized to fit and retain said downwardly opened side of said transparent dome, the downwardly edge thereof;

a wheeled housing base;

said wheeled housing base being a box-like structure opened upwardly and downwardly and having an opened c section, said wheeled housing base being sized to join with and support said display platform, there being rubberized wheels pivotally affixed one each adjacent the four corners under said wheeled housing base providing mobility and supporting the downwardly side of said wheeled housing base a minimum of six inches above floor level, said wheeling base affixed with electrical powering means with operational circuitry, and controlling means with operational circuitry operating a refrigerator unit, a dehumidifier unit, and an air purifying unit connected by air ducts inwardly turned and upwardly widened into insert shafts fitting inside said air passage vent openings in said display platform providing air passage into said controlled environment cavity inside said transparent dome with said refrigerator unit, said dehumidifier unit, and said air purifying unit with said air duct connections affixed in operational alignment inside said wheeled housing base, there being connected in said controlling means monitoring means with automatic adjustment controls for maintaining set humidity and temperature levels in said transparent dome;

a burial cover being secondary of said coverings;

said burial cover opaque and of similar configuration to said transparent dome being sufficiently larger to encompass said transparent dome and having a downwardly opened side sized and shaped for the edges thereof to conform with and somewhat overlap in paralleling alignment the perimeter edging of said display platform, there being means for fastened said burial cover to said display platform with edge to edge alignment, the assemblage of said burial cover and said display platform with said display platform removed from said wheeled housing base providing a unitary burial container.

4,879,790

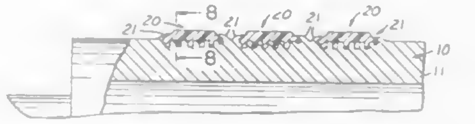
METHOD OF MAKING A PROJECTILE HAVING A DRIVING BAND

Harold E. Garrett, Santa Ana, Calif., assignor to Ford Aerospace Corporation, Newport Beach, Calif.

Continuation of Ser. No. 41,029, Apr. 20, 1987, abandoned, which is a division of Ser. No. 934,525, Nov. 24, 1986, Pat. No. 4,754,708. This application Sep. 2, 1988, Ser. No. 243,223

Int. Cl.⁴ B21K *21/06*

U.S. Cl. 29—1.2 2 Claims



1. A method of fabricating a projectile for an ammunition round, including the steps of:

forming an elongated projectile;

knurling a plurality of longitudinally adjacent circumferential paths around the circumference of said projectile to form a plurality of circumferentially alternating longitudinal ridges and valleys;

bending pairs of circumferentially adjacent ridges toward each other forming therebetween a restraining region;

molding a plastic driving band around said projectile so said driving band is mechanically coupled to said projectile by the restraining regions; and

wherein the step of bending pairs of circumferentially adjacent ridges toward each other includes bending longitudinally adjacent portions of a first ridge in opposing directions thereby forming a plurality of hook means along said first ridge, adjacent ones of said hook means on said first ridge being curved in opposing circumferential directions, and longitudinally adjacent hook means on said first ridge partially defining circumferentially and longitudinally displaced restraining areas.

4,879,791

METHOD OF PRODUCING A PITTED ROLL FOR AN OFFSET LITHO PRINTING PRESS

Rolf Herb, Frankenthal, Fed. Rep. of Germany, assignor to Albert-Frankenthal AG, Frankenthal, Fed. Rep. of Germany

Filed Dec. 6, 1988, Ser. No. 280,443

Claims priority, application Fed. Rep. of Germany, Dec. 24, 1987, 3744131

Int. Cl.⁴ B21D *53/00*

U.S. Cl. 29—148.4 D 11 Claims

1. A method of producing a pitted roll for use in an offset litho press inking unit and having an inner superficial layer of a material with an affinity for offset litho ink and thereon an outer superficial layer of ceramic material and with pits in the ceramic material, said method comprising the steps of firstly

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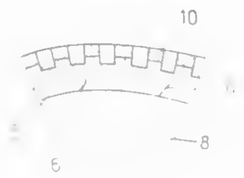
coating a plain roll member with a material with an affinity for ink and then with ceramic material, whereafter the roll member is pit-engraved to penetrate the ceramic layer and to extend into the layer of material having an affinity for ink.



4,879,792
METHOD OF BALANCING ROTORS

Gerald J. O'Connor, Jupiter, Fla., assignor to UnitedTechnologies Corporation, Hartford, Conn.

Filed Nov. 7, 1988, Ser. No. 268,138

Int. Cl.⁴ F16F *15/22;* **B21K** *3/00*

U.S. Cl. 29—156.4 R 6 Claims

1. A method of balancing a rotor having a finite number of potential weight locations, using preselected class weights and limitation on the amount of weights to be used: rotating the rotor;

measuring the true initial unbalance magnitude and angle of the rotor unbalance;

calculating the applied unbalance magnitude and angle for each possible selection of weight classes and weight locations within said limitation;

determining a plurality of calculated residual unbalances by vector summing said initial unbalance magnitude and angle with each calculated applied unbalance magnitude and angle;

selecting the minimum value of said calculated residual unbalance magnitudes; and

installing the weights producing said minimum value at the locations producing said minimum value.

4,879,793
METHOD OF MANUFACTURING TURBINE WHEEL DISKS WITH LOCALLY HIGH INTERNAL COMPRESSIVE STRAINS IN THE HUB BORE

Erwin Stuecker, Essen-Frintrop, and Gerhard Roettger, Muelheim/Ruhr, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

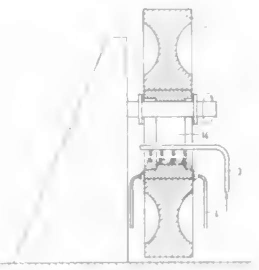
Filed Mar. 16, 1988, Ser. No. 168,670

Claims priority, application Fed. Rep. of Germany, Mar. 16, 1987, 3708507

Int. Cl.⁴ B23P *15/04*

U.S. Cl. 29—156.8 R 4 Claims

1. Method for manufacturing rotatable parts of rotary machines having a hub bore in a hub region with a central axis, which comprises pre-turning a contour at the hub region having a shape as seen in the direction of the central axis differing from the shape of a hub contour to be produced, performing the step of pre-turning the contour by forming regions of the pre-turned contour being oversized by a given amount as compared to the hub contour to be produced, and by forming at least one additional ring being oversized as compared to the hub contour to be produced by an amount greater than the given amount, heat-treating at least the hub region of a rotatable part, cooling at least the hub region having the pre-turned contour with a coolant fluid after the heat-treatment to produce internal compressive strains in the hub region, and reducing the pre-turned contour after the cooling to the hub contour to be produced.



4,879,794
METHOD OF MAKING SHOCK ABSORBING WHEELS

Tobin Djerf, Port Isabel, Tex., assignor to Unarco Industries, Inc., Chicago, Ill.

Division of Ser. No. 137,978, Dec. 28, 1987, Pat. No. 4,818,034. This application Jan. 3, 1989, Ser. No. 272,945

Int. Cl.⁴ B21K *1/38*

U.S. Cl. 29—159.1 19 Claims

1. A method of making a shock absorbing wheel, comprising the steps of

forming a pair of identical disk-like hub sections each penetrated by a central aperture having an axis perpendicular to the plane of such hub section, and penetrated by a plurality of interlock apertures symmetrically disposed around the periphery of such hub section;

then mating said pair of identical disk-like hub sections, without forming a rigid interconnection therebetween, with said central aperture of each such hub section in coaxial alignment with said central aperture of the other of such hub sections and with each of said interlock apertures of each such hub section in alignment with one of said interlock apertures of the other of such hub sections so that each pair of aligned interlock apertures forms a continuous passageway through such mated pair of said identical disk-like hub sections; and

then forming a solid unitary tire of resilient material about the periphery of said mated pair of identical disk-like hub sections such that said tire extends symmetrically over the non-mated surface of each of such hub sections toward the center thereof a sufficient distance to overlie each of said plurality of interlock apertures and extends through the passageway formed by each pair of aligned interlock apertures to form a plurality of interlocking strands of tire material to simultaneously resiliently interconnect said pair of identical disk-like hub sections to each other and resiliently interconnect said solid unitary tire to said pair of identical disk-like hub sections.

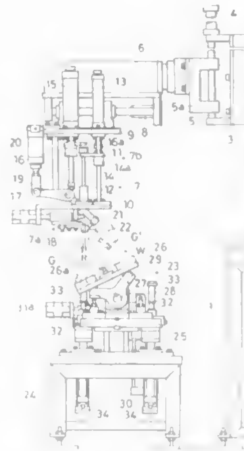
4,879,795
VALVE INSERTING APPARATUS FOR AN INTERNAL COMBUSTION ENGINE

Katsumi Nakamura; Norio Honda; Kazufumi Tamura, all of Suzuka, and Akifumi Kobayashi, Yokkaichi, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo and Dainichi Kogyo Kabushiki Kaisha, Yokkaichi, both of, Japan

Filed Jan. 22, 1988, Ser. No. 146,949

Int. Cl.⁴ B23P *19/04*

U.S. Cl. 29—214 4 Claims



1. A valve inserting apparatus for inserting an intake valve into an intake valve guide on an intake side of an internal combustion engine and an exhaust valve into an exhaust valve guide on an exhaust side of the internal combustion engine, both valve guides being attached to a cylinder head of the internal combustion engine in such a manner that longitudinal axial lines of both valve guides may cross each other obliquely, said valve inserting apparatus comprising:

a pair of valve supply means, one of the pair located at a first position for supply the intake valve, a head portion of the intake valve facing in an upward direction, and the other of the pair located at a second position for supplying the exhaust valve, a head portion of the exhaust valve also facing in an upward direction;

a jig means for locating the cylinder head relative to the valve supply means, located at a third position, having a jig plate which can hold the cylinder head set thereon in such a manner that a cylinder head surface toward a combustion chamber may be facing in an upward direction; and

a valve inserting means for selecting either an intake or exhaust valve from one of said pair of valve supply means and for inserting said selected intake or exhaust valve in the cylinder head, said valve inserting means being movable between the first and the third positions and between the second and the third positions and comprising a holding means, for detachably holding said selected valve, and a valve push-in means for pushing said selected valve into place on the cylinder head;

wherein said jig means includes a jig base on which the jig plate is pivotally supported to be swingable on a horizontal shaft for swinging from a horizontal position to one swung position at which an axial line of the intake valve guide extends vertically toward the valve inserting means and to another swung position at which an axial line of the exhaust valve guide extends vertically toward the valve inserting means, so that said valve inserting means can insert into the intake valve guide an intake valve supplied from said one of the pair of valve supply means when the jig plate is swung to said one swung position and said valve inserting means can insert into the exhaust valve guide an exhaust valve supplied from said other of the pair of valve supply means when the jig plate is swung to said another swung position.

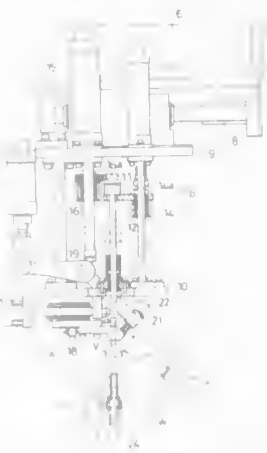
4,879,796
VALVE INSERTING APPARATUS FOR AN INTERNAL COMBUSTION ENGINE

Katsumi Nakamura; Shigeyuki Koide; Norio Honda; Kazufumi Tamura, all of Suzuka, and Akifumi Kobayashi, Yokkaichi, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo and Dainichi Kogyo Kabushiki Kaisha, Yokkaichi, both of, Japan

Filed Jan. 22, 1988, Ser. No. 146,948

Int. Cl.⁴ B23P *19/04*

U.S. Cl. 29—214 7 Claims



1. A valve inserting apparatus for an internal combustion engine, a cylinder head of the engine being supported by a jig means such that a surface of said cylinder head on a combustion chamber side is positioned facing upward, such that a longitudinal axis of a valve guide which is assembled to the cylinder head is kept vertical while a valve is inserted into the valve guide from thereabove by said valve inserting apparatus, said valve inserting apparatus comprising:

a valve inserting means, located above said cylinder head for movement relative to the cylinder head, said valve inserting means including a valve holding means for detachably, swingably, holding the valve with a head portion of said valve facing upward and said valve inserting means further including a valve push means for pushing in said valve into said valve guide; and

a suction means for moving into contact with a lower end of the valve guide of the cylinder head to supply suction thereto, while said valve is being located therein said suction means being supported on said jig means and being located beneath said cylinder head and coaxial with the longitudinal axis of the valve guide, wherein said valve push-in means comprises an upwardly and downwardly movable push rod having a weight attached to an upper end portion of said push rod, and wherein said valve inserting means includes a first detecting means for detecting whether or not the push rod is at a first predetermined reference position, said first predetermined reference position being a position of said push rod when the rod is

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in abutment with the valve and whereby when said push rod is in said first predetermined reference position said valve inserting means is lowered to where a lower end of the valve has been inserted into an upper end of the valve guide to a predetermined depth.

4,879,797
AN ASSEMBLING JIG FOR ASSEMBLING A FLY WHEEL AND AN IGNITION COIL TO AN ENGINE

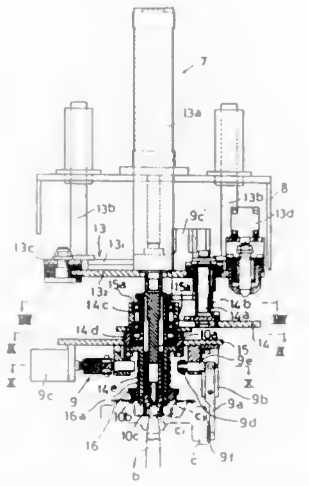
Teruo Yoshioka; Shoji Nakano, and Yutaka Sato, all of Sayama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 28, 1988, Ser. No. 250,781

Claims priority, application Japan, Jul. 21, 1986, 61-169777; Jul. 21, 1986, 61-169778

Int. Cl.⁴ B23P *19/04*

U.S. Cl. 29—240 1 Claim



1. An assembling jig used for a process in which a fly wheel is assembled to an end portion of a crankshaft of an engine and an ignition coil is assembled to an engine main body to face a circumferential surface of said fly wheel, said assembling jig comprising:

a spring;

a moving mechanism provided with a driving plate which is movable to advance and to retreat in an axial direction of said crankshaft, said driving plate being provided with a first fastening means for fastening said fly wheel to said crankshaft;

a jig frame attached to said showing mechanism;

an urging plate which is movable to retreat against an action of said spring along the axial direction thereof, and in such a direction that said urging plate moves away from said crankshaft, said urging plate being supported by said driving plate;

a rotary plate which is turnable about said axis, said rotary plate being attached to said urging plate, and said rotary plate being provided with a first holding means for holding said fly wheel;

a movable frame which is movable to advance and to retreat in a radial direction about said axis, said movable frame being attached to said driving plate, said movable frame being provided with a second holding means for holding said ignition coil, and said movable frame being provided with a second fastening means for fastening said ignition coil to an engine main body; and

a shim provided on either one of said urging plate and said movable frame, said shim being movable to advance toward and to retreat from a space left between said ignition coil and said fly wheel.

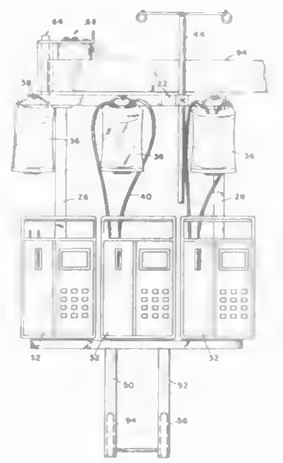
4,879,798
METHOD FOR PATIENT EQUIPMENT TRANSPORT AND SUPPORT SYSTEM

John H. Petre, Cleveland Heights, Ohio, assignor to The Cleveland Clinic Foundation, Cleveland, Ohio

Division of Ser. No. 886,207, Jul. 15, 1986, Pat. No. 4,795,122. This application Sep. 29, 1988, Ser. No. 251,189

Int. Cl.⁴ B23P *11/00, 19/04*

U.S. Cl. 29—434 3 Claims



1. A method for support and transport of hospital patient care items comprising:

providing a transport bracket sized for support of a plurality of the hospital patient care items, said bracket including a mating means for selective attachment to a hospital bed and a service column,

selectively attaching the transport bracket to a hospital bed at a time when the patient care items are to be transported on said bracket attached with the bed which carries a patient; and,

selectively attaching the transport bracket to the service column at a place of patient care and thereafter unattaching the transport bracket from the bed at a time when the patient care items are to be supported on said bracket locating near the patient.

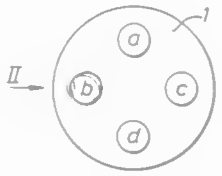
4,879,799
HEAT-RECOVERABLE ARTICLE

Richard C. Sovish, Waterloo; Frank K. A. Selleslags, Haasrode, and Marc F. L. Moisson, Strombeek Bever, all of Belgium, assignors to Raychem Corporation, Menlo Park, Calif.

Continuation of Ser. No. 71,535, Jul. 9, 1987, abandoned, which is a continuation of Ser. No. 845,658, Mar. 28, 1986, abandoned, which is a division of Ser. No. 79,335, Sep. 22, 1979, Pat. No. 4,579,148, which is a continuation of Ser. No. 846,322, Oct. 28, 1977, abandoned. This application Mar. 4, 1988, Ser. No. 168,594

Int. Cl.⁴ B23P *11/02*

U.S. Cl. 29—447 4 Claims



1. A method of differentially recovering heat-recoverable conduits, which comprises:

(1) providing an article comprising a plurality of heat-recoverable conduits whose mutual proximity is such that heat required to recover one conduit might otherwise cause at least partial recovery of a proximate conduit;

(2) inserting a plug member into said proximate conduit thereby blocking said proximate conduit, said plug member comprising:

(a) a first hollow part which lies inside a length of said proximate conduit in contact with a wall thereof, and

(b) a second part attached to the first part so that the second part can at least be partially detached so as to leave the conduit open with the hollow first part still in position inside the conduit but removable so that recovery of said proximate conduit can be effected, said first hollow part in combination with said second part capable of blocking said proximate conduit; and

(3) heating said one conduit while said proximate conduit remains blocked.

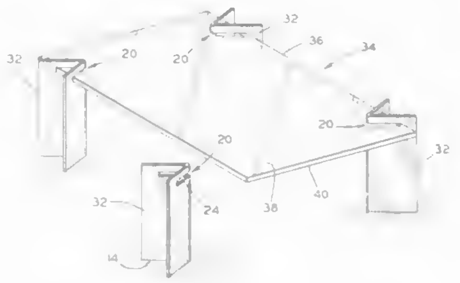
4,879,800
METHOD OF PRODUCING A COLUMNAR SUPPORT STRUCTURE

Sally H. Rumman, P.O. Box 39, Sylvania, Ohio 43560

Filed Jul. 29, 1988, Ser. No. 225,896

Int. Cl.⁴ B23P *11/02*

U.S. Cl. 29—450 1 Claim



1. A method of producing an article of furniture having at least one columnar support structure comprising the steps of:

(a) providing a top having generally parallel upper and lower planar surfaces and a predetermined thickness;

(b) providing a blank of planar sheet material having a first upper edge and a second lower edge joined by opposed side edges;

(c) forming at least one rectangular opening in said blank, said opening including opposed first and second sides disposed parallel to the lower edge, and spaced apart a predetermined distance slightly greater than the thickness of said top;

(d) providing an axis on said blank intersecting said opening and normal to the second lower edge, the axis dividing said blank into first and second portions;

(e) bending said blank about said axis effecting relative displacement of the first and second portions and said opening therein thereby producing a support structure having a convex side and a concave side;

(f) providing said upper and lower sides of said opening with elastomeric pads; and

(g) assembling the columnar support structure on one edge of said top whereby the top is inserted into yieldably gripping engagement with said pads in the rectangular opening in the convex side of the support structure and supported on the second side thereof.

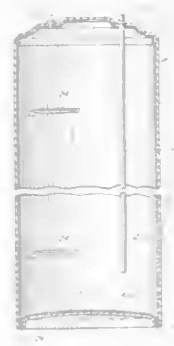
4,879,801
CATHODICALLY PROTECTED WATER HEATER

James S. Stubbe, Milwaukee; James L. Chevalier, Mequon, and Edwin C. Pow, Menomonee Falls, all of Wis., assignors to A. O. Smith Corporation, Milwaukee, Wis.

Division of Ser. No. 200,468, May 31, 1988, Pat. No. 4,838,208, which is a division of Ser. No. 131,576, Dec. 11, 1987, Pat. No. 4,783,896, which is a continuation-in-part of Ser. No. 940,430, Dec. 11, 1986, abandoned. This application Apr. 26, 1989, Ser. No. 343,957

Int. Cl.⁴ B21D *53/00;* **B23P** *15/26;* **B21K** *29/00*

U.S. Cl. 29—455.1 4 Claims



1. A method of fabricating a water heater vessel for containing and heating water, comprising the steps of providing a steel head having a central section and an annular flange extending longitudinally from said central section, said flange terminating un a lower annular edge, said head having an inner surface to be exposed to the water, providing a steel generally cylindrical shell having an inner annular surface, applying a layer of a material resistant to corrosion by water to said inner surface of said shell, thermally spraying a coating of a metal anodic to steel on the inner surface of said head and on said flange and extending said coating substantially to said lower edge, positioning said head within the end portion of said shell with the lower edge of said flange projecting downwardly at least to the end of said shell with said surfaces disposed in lapping relation, and joining said end portion of said shell to said flange by a weld extending directly through said anodic metal coating whereby said metal coating on said head flange flows about said weld and contacts said material on said shell to hydraulically seal off said weld from contained water and provide a corrosion barrier and anodic surface to contained water at the location of said weld.

4,879,802
GRIPPER FOR TOOLS OF A MACHINE TOOL

Winkler, Hans-Henning, Tuttlingen, and Eugen Rüschle, Mühlheim, both of Fed. Rep. of Germany, assignors to Chiron-Werke GmbH & Co. KG, Tuttlingen, Fed. Rep. of Germany

Filed May 10, 1988, Ser. No. 192,188

Claims priority, application Fed. Rep. of Germany, May 22, 1987, 3717201

Int. Cl.⁴ B23Q *3/157*

U.S. Cl. 29—568 4 Claims

1. A machine tool comprising:

(a) a working spindle;

(b) a stationary stopper element;

(c) a tool holder magazine; and

(c) transfer means for transferring tool holders between said tool holder magazine and said working spindle, said transfer means having a movable gripper for gripping said tool holders and having

a hand with two jaws being each arranged pivotally about an axis and being each provided with two cams, respectively, for pivoting said jaws into a first operating position with

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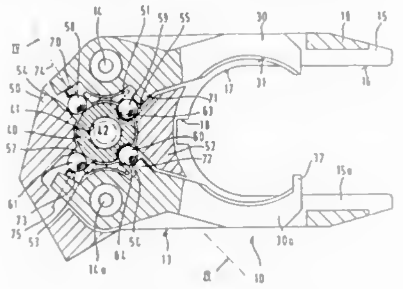
said jaws closed for gripping one of said tool holders in a form-locking relationship or into a second operating position, respectively, with said jaws spread apart for introducing one of said tool holders between said jaws or for removing said tool holder therefrom, respectively,

an axially displaceable, spring-loaded bolt being provided with four guiding surfaces extending at an angle relative to a longitudinal bolt axis, said guiding surfaces being distributed over a bolt periphery in oppositely directed pairs,

four bolts being arranged one each between one of said guiding surfaces and one each of said cams to pivote said jaws between said first operating position with said spring released and said second operating position with said spring compressed by alternately urging a first and a second of said bolts against a first and a second of said cams on one each of said jaws by means of a first and a second of said guiding surfaces or urging a third and a fourth of said bolts against a third and a fourth of said cams on one each of said jaws by means of a third and a fourth of said guiding surfaces, and



displacement means for displacing said movable gripper to bring said spring-loaded bolt into mechanical contact with said stationary stopper element thereby axially displacing said bolt.

4,879,803
METHOD FOR MOUNTING A PLURALITY OF BRUSHES

Norio Semura, Aichi; Masumi Tsuchida, Toyokawa, and Yoshihiro Shimamura, Kosai, all of Japan, assignors to ASMO Co., Ltd., Kosai, Japan

Filed Jul. 29, 1988, Ser. No. 226,055

Claims priority, application Japan, Aug. 14, 1987, 62-201929; Oct. 29, 1987, 62-165740

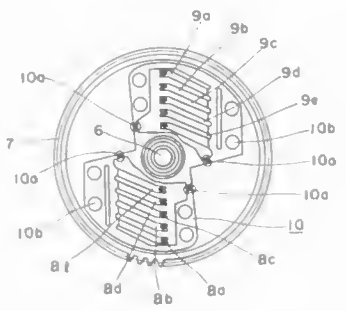
Int. Cl.⁴ H02K *15/02*

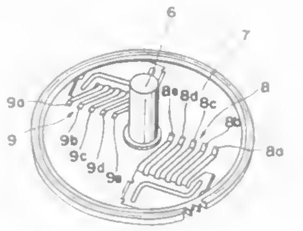
U.S. Cl. 29—598 **5 Claims**

1. A method for mounting a plurality of brushes in a mechanism for detecting a rotational position of an actuator, said mechanism including a base body adapted to be affixed to a motor driven output shaft of the actuator, each of said brushes including a group of comb-shaped slide terminals, said brushes mounted on said base body in generally symmetrically relationship such that said slide terminals are adapted to slide on switching patterns and cause the motor to stop upon said slide terminals reaching edges of the switching patterns, said method comprising the steps of:

providing said slide terminals on a common plate having narrow portions interconnecting sections of said plate containing respective groups of said slide terminals,

mounting said plate fixedly on a surface of said base body in a preselected position, and





severing said narrow portions of said plate to separate said plate sections from one another.

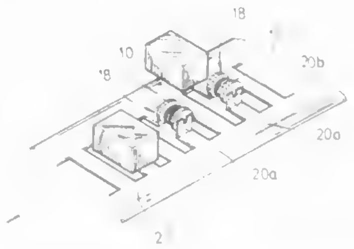
4,879,804
METHOD OF FABRICATING A COIL

C. Y. Chiang, No. 238-6, Shian Chuang Tze Yeong An, Hsin Wu, 32707 Tao Yuan, Taiwan

Filed Sep. 30, 1988, Ser. No. 252,069

Int. Cl.⁴ H01F *41/00*

U.S. Cl. 29—605 1 Claim



1. A method of fabricating a coil comprising the steps of:

forming a frame having a pair of opposingly displaced vertically disposed supporting legs each of said supporting legs having a notch formed within an upper portion thereof;

mounting an axial coil, said axial coil having a ferrite core and an electrically conducting wire extending along a center line of the ferrite core, said electrically conducting wire extending from opposing axial ends of said ferrite core between said supporting legs by placing said wire in said notches;

severing opposing ends of said conducting wire extending beyond said notches;

joining the conducting wire to said axial ends of the ferrite core;

encapsulating the combined supporting legs and the axial coil with resin thereby forming an enclosed structure; and,

bending a lower part of each supporting leg upwardly along a respective outer surface of said structure thereby forming electrodes at the respective ends of the coil.

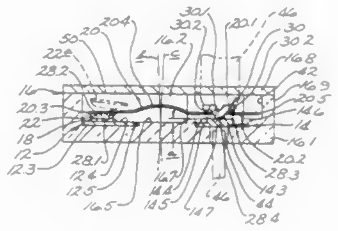
4,879,805
METHOD FOR MAKING A CIRCUIT INTERRUPTER DEVICE

Donald Tomkinson, North Attleboro, and John R. D'Entremont, Foxboro, both of Mass., assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 44,866, Apr. 30, 1987, Pat. No. 4,780,698. This application Aug. 18, 1988, Ser. No. 233,392

Int. Cl.⁴ H01H *11/06*

U.S. Cl. 29—622 **5 Claims**



1. A method for making a circuit interrupter device comprising the steps of blanking a pair of terminals from a flat metal strip in selected spaced relation to each other and blanking carrier portions of the strip connected to the terminals for temporarily maintaining the terminals in said spaced relation, molding an electrically insulating housing around the terminals including a first housing side having selected portions of the terminals embedded therein so that respective side surfaces of the embedded terminal portions are exposed from the housing material at said one housing side and including a second housing side adjacent said one housing side having ends of the respective terminals extending through said second housing side, securing first contact means to the exposed side surface of the embedded portion of one of the terminals, securing a thermostat metal element having movable contact means thereon to the exposed side surface of the embedded portion of the other of said terminals so that the thermostat metal element extends closely along said one housing side for moving the movable contact means into and out of engagement with the first contact means in response to occurrence of selected thermostat element temperatures, and blanking the carrier portions of the flat metal strip from the terminals to leave the terminals supported in the housing material molded thereon.

5. A method for making a condition responsive device comprising the steps of providing a pair of elements in spaced relation on a base, securing first contact means to one of the base elements, providing a thermostat metal element having movable contact means at one end and having a relatively long and narrow projection weld means thereon adjacent an opposite end thereof, engaging said projection weld means with the other base element with the projection weld means extending along a line of engagement with the other base element and rotating the thermostat metal element around that line of engagement for engaging the movable contact means with the first contact means with selected contact force, and resistance welding the thermostat metal element to the other base element along said line of engagement for securing the thermostat element to that other element to move the movable contact means into and out of engagement with the first contact means in response to occurrence of selected thermostat element temperatures.

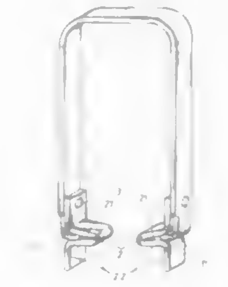
4,879,806
TOOL FOR DIP-TYPE ICS

Yee C. Feng, 5F-1, No. 189, Chang An E. Rd., Sec. 2, Taipei, Taiwan

Filed Aug. 3, 1988, Ser. No. 227,876

Int. Cl.⁴ H05K *3/30*

U.S. Cl. 29—741 **9 Claims**



1. A tool for a DIP-type IC comprising:

an inverted U-shaped body having two elastic parallel arms respectively having two free ends and means for inserting said IC on a PCB and for removing said IC from said PCB,

said means including a lip on each of said free ends for removing said IC and an end piece rotatably fastened to each arm, each end piece having a surface for inserting said IC and a recess for covering said lip during said inserting, whereby said end piece is rotated away from said lip during said removing and is rotated to cover said lip during said inserting.

4,879,807
METHOD OF MAKING A SEALED COAXIAL CABLE SPLICE

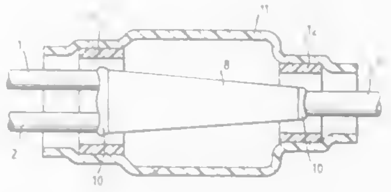
Philippe Roucaute, Chambly, France, assignor to Raychem Pontoise S.A., France

Filed Jun. 2, 1988, Ser. No. 201,704

Claims priority, application United Kingdom, Jun. 8, 1987, 8713369

Int. Cl.⁴ H01B *13/20*

U.S. Cl. 29—828 **12 Claims**



1. A method of forming a sealed electrical connection to a coaxial cable which comprises a central conductor, a cable shield separated from the central conductor by a dielectric, and a cable jacket located over the shield, which method comprises:

(a) forming an electrical connection between the central conductor of the coaxial cable and another conductor;

(b) positioning a first heat-shrinkable sleeve so that it extends over the coaxial cable and the other conductor with one end positioned around the coaxial cable, and positioning a quantity of thermoplastic sealing material over the jacket of the coaxial cable so that part of the quantity of thermoplastic sealing material extends beyond said end of the sleeve the heat-shrinkable sleeve containing a shield por-

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tion for connecting the shield of the coaxial cable to another shielding element;

(c) heating the heat-shrinkable sleeve to form an insulated electrical connection in which the shield portion of the heat-shrinkable sleeve is electrically connected to the shield of the coaxial cable and part of the quantity of thermoplastic sealing material extends beyond said end of the recovered heat-shrinkable sleeve; and

(d) positioning an outer element of a thermoplastic sealing material about said end of the first sleeve and recovering a second heat-shrinkable sleeve over said first sleeve and said outer element so that said outer element is enclosed within the second heat-shrinkable sleeve and fuses with the thermoplastic sealing material so that the thermoplastic sealing material and the thermoplastic element together form a barrier against ingress of moisture to the electrical connection

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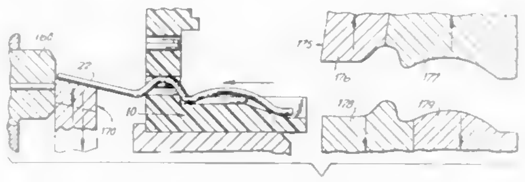
4,879,808

METHOD FOR MAKING PLASTIC LEADED CHIP CARRIER

Donald A. Smith; William H. Carter, both of Union City; Howard E. Dingfelder, Corry; Dale L. Burgess, Union City, and Alan B. Gates, Corry, all of Pa., assignors to Barnes Group Inc., Bristol, Conn.

Filed Aug. 10, 1988, Ser. No. 230,810
Int. Cl.⁴ H01R *9/16*

U.S. Cl. 29—845 27 Claims



1. A method for making a plastic leaded chip carrier comprising the steps of:

aligning a base having a plurality of apertures with a wire feed device;

advancing one end of a wire from said wire feed device from one side of said base and through a first aperture therein such that said wire end extends from said base;

forming a predetermined configuration of the wire at said end which has passed through the first aperture of said base;

retracting said formed wire end into said aperture so that said predetermined configuration lockingly engages said wire end with said aperture; and

cutting said wire so that said wire end forms a pin locked in said first aperture for conducting electrical information through said base.

4,879,809

METHOD AND APPARATUS FOR TERMINATING RIBBON CABLES

Vincent Nicholas, Spring Hill, and Paul P. Siwinski, Seminole, both of Fla., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Mar. 15, 1988, Ser. No. 168,350
Int. Cl.⁴ H01R *43/02;* **B23P** *19/00*

U.S. Cl. 29—860 19 Claims

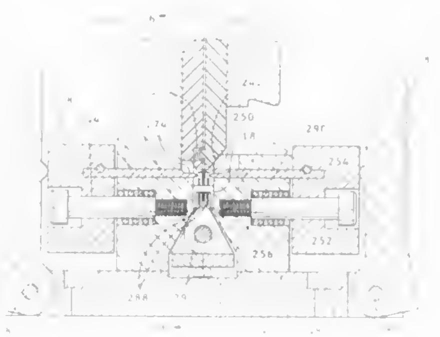
1. A method of handling a ribbon cable formed of electrical conductors in a web of electrical insulation in association with the attaching thereof with a connector, comprising the steps of:

(a) releasably coupling a guide member to the cable at a predetermined location with respect to the end of the cable;

(b) moving the guide member and coupled cable end through a series of processing stations whereat the guide member functions to accurately locate the cable end with respect to the operating mechanisms at the processing stations, such processing stations being operative for the attaching of the cable end with a connector; and

(c) removing the guide member from the cable.

17. Apparatus for handling a ribbon cable formed of electrical conductors in a web of electrical insulation during the attaching thereof to a connector, comprising a guide member releasably coupleable with the cable a+ a predetermined location with respect to the end of the cable; and means to sequentially couple the guide member and cable end in operative relationship with a series of processing stations whereat the guide member functions to accurately locate the cable end with respect to the operating mechanisms of the processing stations, such processing stations being operative for the attaching of the cable end to a connector.



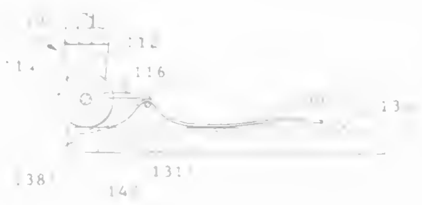
4,879,810

METHOD FOR ELECTRICAL WIRING UTILIZING WIRE RETAINER

Ronald G. Sergeant, Miami, Fla., and Allen F. VanDerStuyf, Kernersville, N.C., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Dec. 17, 1987, Ser. No. 134,325
Int. Cl.⁴ H01R *43/04*

U.S. Cl. 29—861 10 Claims



1. In a method of forming electrical wiring harnesses intended to interconnect components incorporated into structural units of apparatus, the steps comprising:

a. providing a first element forming a structural part of an apparatus served by the harness to be formed with grooves extending in a surface of said element in a pattern to form such harness,

b. providing a second element including wire retention means, said second element having grooves aligned with the grooves of the first element,

c. providing wires of sufficient lengths to fill the said grooves of said elements,

d. inserting a segment of each wire into a groove of said second element,

e. inserting the second element in an abutting engagement with the said first element whereby the said grooves are aligned,

f. bringing wire driving means to bear against the surface of said second element, and

g. causing relative movement between said wire driving means and said first and second elements to implant the wires in the grooves of said first element.

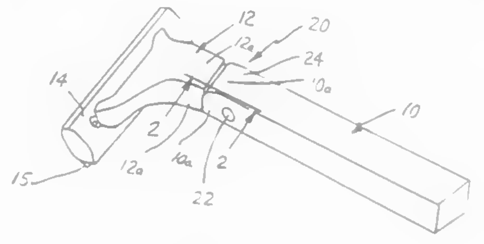
4,879,811

SAFETY RAZOR

Daniel J. Cooney, 31360 Old Cannon Rd., Birmingham, Mich. 48010

Filed Oct. 1, 1987, Ser. No. 103,836
Int. Cl.⁴ B26B *21/14*

U.S. Cl. 30—89 10 Claims



1. A safety razor comprising:

a first elongate handle, a second elongate handle having a blade-carrying head adjacent an end thereof and hingedly connected adjacent another end to the first handle to establish a hinge joint between the handles, said handles being configured to nest one inside the other adjacent the hinge joint with the outer of said nested handles having spaced apart side walls and an intermediate wall between the side walls forming an elongate recess for receiving the inner of said handles adjacent said hinge joint, and means for biasing the second handle adjacent the hinge joint toward the skin of the person shaving, said biasing means being disposed in said recess.

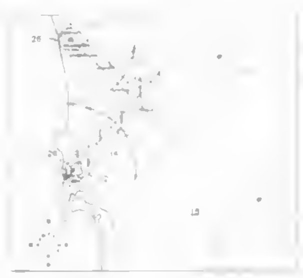
4,879,812

AERIAL MAP NAVIGATIONAL AID

Randolph W. Rabb, 7910 Pat St., La Mesa, Calif. 92042

Filed Aug. 31, 1988, Ser. No. 238,902
Int. Cl.⁴ B43l *7/00*

U.S. Cl. 33—1 MP 12 Claims



1. A system for determining a position of a craft on a map based on a pair of compass direction readings from a receiver tuned to receive signals from a pair of spaced apart transmitting stations whose locations are indicated on the map, comprising:

a pair of elongate arms;

a pair of releasably connectable and rotatable attachment mechanisms, each having a first part secured to an inner end of a corresponding one of the arms and a second part with a quantity of adhesive on an underside thereof for attachment to the map;

a pair of friction bearing means for each permitting a corresponding one of the arms to be manually rotated relative to the second part of its corresponding attachment mechanism while also maintaining a fixed rotational position of the one arm when it is manually released; and

a pair of compass rose disks each having a quantity of an adhesive on an underside thereof for attachment to the map over a pre-printed compass rose marking on the map surrounding the location of one of the transmitting stations and for having the second part of a corresponding attachment mechanism adhered to the center thereof;

whereby the arms may be rotated to positions corresponding the compass direction readings and a position on the map adjacent the crossing of a pair of outer ends of the arms will represent the position of the craft on the map.

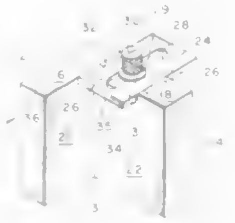
4,879,813

APPARATUS FOR INSPECTING TWIST DRILLS

Jeffrey T. Silva, 4616 Exeter St., Annandale, Va. 22003

Filed Apr. 8, 1988, Ser. No. 179,317
Int. Cl.⁴ G01B *5/20*

U.S. Cl. 33—201 6 Claims



1. An apparatus for determining the concentricity of the chisel ridge and the symmetry of the outer corners of the said apparatus, cutting edges of the point of a twist drill comprising an upstanding V-shaped blocked defining first and second legs having flat inner surfaces positioned at a right angle to one another, said legs having flat upper and lower surfaces which parallel one another and which are at a right angle to said inner surfaces, said upper services lying in a common plane, a reference plate having a forward end and a length which is longer than the width of said second leg, the upper surface of said second leg being formed with a channel paralleling said first leg to slidably receive said reference plate, said reference plate having a longitudinally extending slot therein, and threaded means connected to said channel and received in said longitudinally extending slot to releasably fix said reference plate in said channel, and the forward end of said reference plate terminating in a wedge having a tip which parallels the inner surface of said second leg.

4,879,814

METHOD AND APPARATUS FOR BORESIGHT ALIGNMENT OF ARMORED BATTLEFIELD WEAPONS

Barry M. Wallace, and Ross Fasolino, both of Garland, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 28, 1987, Ser. No. 92,020
Int. Cl.⁴ G01B *11/26*

U.S. Cl. 33—234 7 Claims

1. A method of aligning a gun comprising the steps of:

(a) providing a boresight device in a shell casing having an aligned laser therein, said laser being aligned by

(1) providing an optically flat mirror;

(2) aligning an alignment laser so that the light beam emanating therefrom is normal to the flat surface of said mirror;

(3) providing an alignment tool having a mirrored surface and securing said boresight device so that the axis of said device is normal to said mirrored surface;

(4) adjusting said mirrored surface to be normal to the light beam emanating from said alignment laser, and

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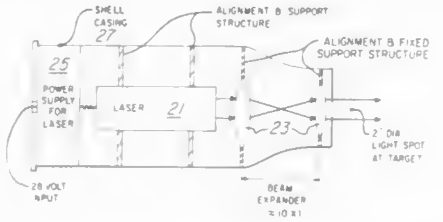
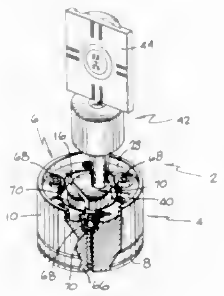
(5) adjusting the aligned laser so that a light beam emanating therefrom is normal to the flat surface of said optically flat mirror;
(b) placing the shell in the breech of a gun to be aligned;


SHELL CASING
27
ALIGNMENT & SUPPORT STRUCTURE
ALIGNMENT & FIXED SUPPORT STRUCTURE
25
POWER SUPPLY FOR LASER
LASER
21
23
2" DIA LIGHT SPOT AT TARGET
28 VOLT INPUT
BEAM EXPANDER ≈10 X1

(c) projecting a beam of light from the aligned laser toward a target; and
(d) adjusting the gun to project the beam onto the target.

4,879,815
ALIGNMENT APPARATUS

Peter Vischer, Golden, Colo., assignor to Adolph Coors Company, Golden, Colo.
Filed Oct. 13, 1988, Ser. No. 256,984
Int. Cl.⁴ G01C *15/00*
U.S. Cl. 33—293 16 Claims

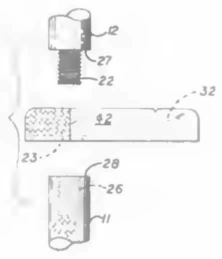


1. Apparatus for use in an optical alignment system comprising:

a housing adapted to be permanently mounted in a fixed support surface for providing a level base support;
said housing having an open top end and a closed bottom end and a central longitudinal axis;
said housing having at least a first bore having a generally cylindrical inner surface and a longitudinal axis coinciding with said central longitudinal axis of said housing means;
said closed bottom end having an inner surface facing said at least a first bore, said inner surface being substantially planar;
target means for providing an optical target to be properly positioned along a centerline;
plug means for providing a support for said target means, said plug means being rotatably mounted in said at least a first bore;
said plug means having at least one generally cylindrical outer surface having a longitudinal axis and a diameter slightly smaller than the diameter of said generally cylindrical inner surface of said at least a first bore so that said plug means are snugly received in said at least a first bore and said longitudinal axis of said plug means coincides with said longitudinal axis of said at least a first bore;
said plug means having a substantially planar bottom surface extending parallel to said inner surface of said bottom end for mating engagement therewith;
an eccentric bore extending through said plug means and having a longitudinal axis spaced from and parallel to said longitudinal axis of said at least one bore; and
said target means having a support stem for mating engagement in said eccentric bore for positioning and supporting said optical target so that rotation of said plug means moves said optical target in lateral directions.

4,879,816
COMBINATION RANGE POLE AND BUBBLE-LEVEL THEREFOR

Anthony H. Sierk, 904 Pelm Trail, Delray Beach, Fla. 33483
Filed Oct. 24, 1988, Ser. No. 261,095
Int. Cl.⁴ G01C *15/06*
U.S. Cl. 33—295 8 Claims

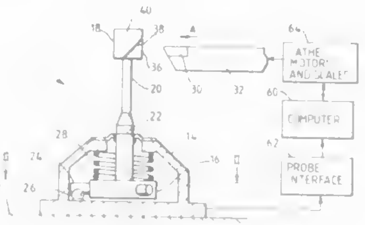


1. A combination of a sectionalized range pole and bubble-level indicating device therefor comprising:

(A) a plurality of pole sections, each of said sections comprising two flat end surfaces normal to the length thereof, a threaded extension central to one of said surfaces and a matching threaded opening central to the other of said surfaces,
(B) a bubble-level supporting member comprising opposing parallel flat faces, said member comprising a wall defining a hole through said faces, said extension passing through said hole and said faces pressing upon said surfaces when said sections are connected said bubble-level supporting member being precisely normal to said pole sections, and
(C) a bubble-level mounted on said supporting member.

4,879,817
CHECKING THE SETTING OF A TOOL

David R. McMurtry, Wotton-under-Edge, United Kingdom, assignor to Renishaw plc, England
Filed Nov. 3, 1987, Ser. No. 116,142
Claims priority, application United Kingdom, Nov. 15, 1986, 8627374
Int. Cl.⁴ G01B *21/04*
U.S. Cl. 33—502 16 Claims

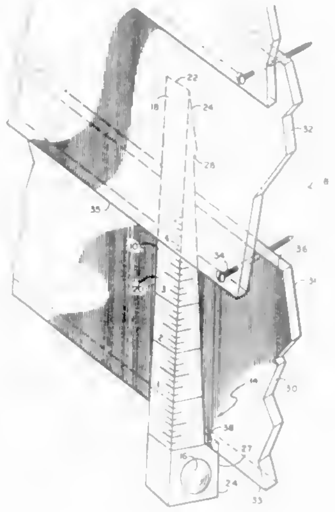


1. A stylus tip for a tool-setting probe for a machine tool, configured relative to a set of first, second and third orthogonal axes and having:

means for attachment of the tip to the tool-setting probe;
a first datum surface located on the tip normal to said first axis and accessible by movement of a tool along a first line parallel to said first axis; and
a second datum surface located on the tip lateral of said first datum surface in a direction of said second axis, and accessible by movement of said tool along a second line parallel to said first axis, said first and second lines being spaced apart in said direction of said second axis;
wherein said second datum surface extends at a non-90° angle with respect to said first datum surface and said third orthogonal axis.

4,879,818
CLAPBOARD SLIDE GAUGE

Nicholas J. Beaulieu, 2 Spruce St., Gardiner, Me. 04345
Filed Jan. 26, 1989, Ser. No. 301,891
Int. Cl.⁴ G01B *3/30*
U.S. Cl. 33—646 1 Claim



1. A device for installation of a lower clapboard under the next adjacent upper clapboard, comprising:

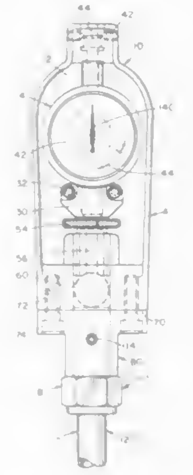
a body member having a base, an upper tip portion and a top extending at an angle to said base forming a wedge shape for insertion under said upper clapboard;
a clapboard receipt notch having an upper and lower portion defined in said base adapted to receive a clapboard, said clapboard receipt notch having a notch base at its lower portion;
a measurement scale on said device with its 0 point aligned with said notch base; and
a clapboard slide arc defined in the upper portion of said clapboard receipt notch to allow easy removal of said device when said lower clapboard is tacked in place by the clapboard slide arc sliding over the top front edge of said lower clapboard being installed when the device is withdrawn after positioning said lower clapboard under said upper clapboard a distance corresponding to a desired measurement on said scale aligned with the base of said upper clapboard.

4,879,819
GAUGE FOR COUPLING COMPONENT

Lonnie E. Johnston, Bedford, and Steven J. Volcansek, Garfield Heights, both of Ohio, assignors to Crawford Fitting Company, Solon, Ohio
Filed Oct. 5, 1988, Ser. No. 253,962
Int. Cl.⁴ G01B *5/14*
U.S. Cl. 33—833 26 Claims

1. A gauge assembly for fittings of the type including a coupling nut having a threaded internal opening and adapted to encircle a cylindrical member and a ferrule positioned on the cylindrical member, the gauge being used for determining the pull up of the ferrule and the deformation or swaging that the cylindrical member has undergone, the gauge assembly comprising:

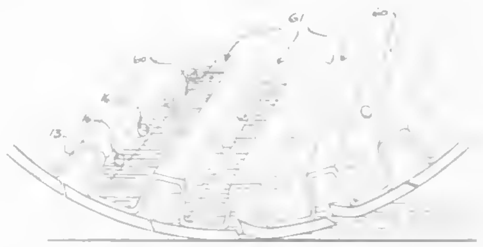
an indicating unit having a readout means for showing whether the swaging of the cylindrical member is within tolerances; and,
a piston movably mounted in said indicating unit and operatively connected to said readout means, said piston comprising:
a body having a bore,



an external thread means on said body circumferentially of said bore for threadedly engaging the threaded internal opening of the coupling nut carried on the cylindrical member, and
a means within said bore for aligning the cylindrical member with said bore and limiting the extent of movement of the cylindrical member into said bore.

4,879,820
APPARATUS FOR REMOVING WATER FROM THE GROUND

Hugh R. McLaughlin, Dublin, Ireland, assignor to Zestful Holdings Limited, Douglas, Isle of Man
Filed Aug. 3, 1988, Ser. No. 227,574
Int. Cl.⁴ E01H *1/00*
U.S. Cl. 34—71 10 Claims



1. An apparatus for removing water from the ground, comprising at least one ground-engaging drum including a hollow cylinder mounted for rotation about a substantially horizontal axis, a plurality of recesses substantially parallel to the rotational axis of the cylinder formed in the outer surface of the cylinder around the periphery thereof, a non-porous sheet of resilient material covering the outer surface of the cylinder, a plurality of slits in the covering sheet over the recesses in the cylinder, such slits normally being closed but being capable of opening under the pressure of water built up in front of the drum, as the latter is moved across the ground, to permit such water to enter the recesses in the region of ground contact, the slits closing away from the region of ground contact to retain the water in the recesses, and apertures in the recesses to permit water retained therein to discharge into the interior of the

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cylinder at a certain height within the cylinder, the apparatus further including means within the cylinder for collecting water discharged from the recesses.

4,879,821

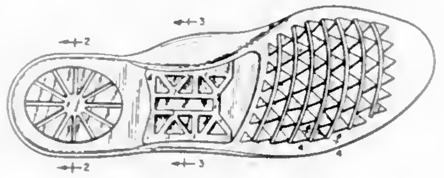
INSOLE CONSTRUCTION

Kenneth Graham, Wakefield, Mass.; Kenton D. Geer, Exeter, N.H., and Katherine Bednarski, Amesbury, Mass., assignors to Hyde Athletic Industries Inc., Peabody, Mass.

Filed Sep. 4, 1987, Ser. No. 94,483

Int. Cl.⁴ A43B *13/38, 13/40, 21/32*

U.S. Cl. 36—44 **10 Claims**



1. An insole construction for a walking shoe and the like comprising

an insole layer of resilient compressible material having a forward portion for supporting the ball of the foot and toes of a wearer, an instep portion for supporting the instep of the foot and a heel portion for supporting the heel of the wearer; said heel portion having upwardly flared peripheral walls defining a heel cup and said instep portion having upwardly flared peripheral walls defining a flexible support for a wearer's instep and with the peripheral walls of the instep portion projecting outwardly more on the medial than the lateral side of said insole construction;

an insert having a greater stiffness and less compressibility than said insole layer positioned below and secured to said insole layer and having an instep section and a heel section, said instep section having a width that is at least ½ but less than the width of said instep portion whereby pronation by the wear may be controlled;

said heel section formed with an enlarged opening through which a segment of said heel portion projects, said heel section having an upwardly flared sidewall engaging the sidewall of said heel portion of the lower periphery thereof providing support for the lower of said flared walls.

4,879,822

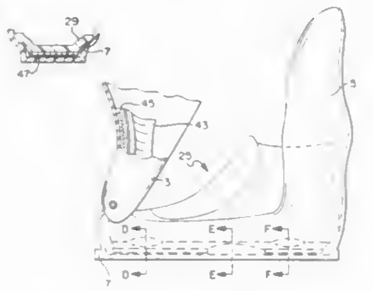
SKI BOOT AND SPORT SHOE ASSEMBLY

Jaye B. Hayes, 691 Orchard Dr., N.W., Lancaster, Ohio 43130

Division of Ser. No. 869,279, Jun. 2, 1986, Pat. No. 4,747,221. This application May 26, 1988, Ser. No. 198,988

Int. Cl.⁴ A43B *5/04*

U.S. Cl. 36—119 **4 Claims**



1. A ski boot for use with a sport shoe, comprising:

a rigid footbed defining a floor surface, said footbed having a forward portion and a rear portion;

a front cuff portion connected to said forward portion of said footbed;

a rear cuff portion connected to said rear portion of said footbed; and

substantially rigid support means provided on said footbed for supporting and suspending said shoe within said boot above said footbed floor surface so as to define a chamber between said footbed floor surface and said shoe for receiving debris such as snow and ice, said support means comprising a first pair of laterally spaced contoured support surfaces located on opposite sides of said forward portion of said footbed and a second pair of laterally spaced contoured support surfaces located on opposite sides of said rear portion of said footbed.

4,879,823

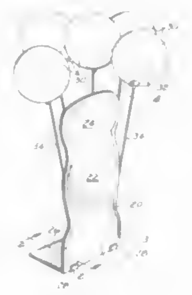
DECORATIVE MESSAGE DISPLAY

Dane H. Collins, 5242 N. 24th St., Phoenix, Ariz. 85016

Filed Jun. 6, 1988, Ser. No. 202,325

Int. Cl.⁴ G09F *1/00*

U.S. Cl. 40—124.1 **22 Claims**



1. A display apparatus, comprising:

a front panel having a message area and an image area;

a base for maintaining said front panel in an upright position;

a plurality of rods each having first and second ends;

a plurality of decorative means, each of said decorative means being an inflated balloon having a neck portion, each coupled to the first ends of one of said plurality of rods, the second end of each of said plurality of rods being inserted into said front panel; and

at least one clip for coupling said base to said front panel.

4,879,824

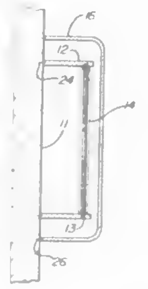
FLOATING PICTURE FRAME

Joanne Galloway, P.O. Box 520, Franklin, Mich. 48025

Filed May 31, 1988, Ser. No. 200,571

Int. Cl.⁴ A47G *1/06*

U.S. Cl. 40—152.1 **6 Claims**



1. A picture frame assembly comprising:

a pair of horizontally disposed, opposed, parallel and spaced transparent brackets, each bracket having means forming a groove disposed along the length thereof proximate a first edge thereof;

a sandwich assembly formed by a backing, a picture, and a transparent front plate, all of approximately equal size, said grooves in the brackets being sized to receive and retain substantially all of the length of the top and bottom of said sandwich therein;

means for mounting a second edge of each of the brackets on a wall, said second edge disposed spaced from and parallel to said first edge such that the sandwich retained by the grooves is supported in spaced and parallel relation thereto, which is cooperation with the transparent brackets creates the visual illusion that the picture is floating in space;

a transparent cover adapted to enclose the edges and front face of the mounted, bracketed sandwich assembly and be spaced therefrom; and

means for mounting the cover on the wall.

4,879,825

CYCLIC REARRANGEMENT APPARATUS FOR STACKED RECTANGULAR SHEETS

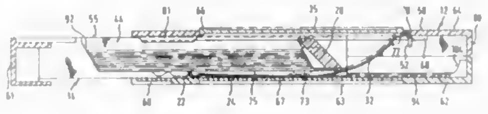
Peter Ackeret, Kusnacht, Switzerland, assignor to Licinvest AG, Chur, Switzerland

Continuation of Ser. No. 897,763, Jul. 11, 1986, Pat. No. 4,759,142. This application Jul. 7, 1988, Ser. No. 216,153

Claims priority, application Fed. Rep. of Germany, Nov. 13, 1984, 3441488

Int. Cl.⁴ G09F *11/30*

U.S. Cl. 40—513 **118 Claims**



1. Apparatus for cyclic rearrangement of a pile of substantially rectangular sheets of nominally identical thickness, said apparatus comprising a first frame part and a second frame part, said frame parts being and reciprocable relative to each other in a reciprocation direction between a closed position and an open position, the apparatus further including means for removal, upon each reciprocation of said frame parts, of an individual sheet at one end of said pile and for adding it again to the other end of said pile, said means including:

(a) separating means for separating said individual sheet from said pile, said separating means comprising:

(i) a separator element in said second frame part, said separator element having surface portions for engaging those borders of the sheets in said pile which are trailing upon start of said reciprocation from said closed position,

(ii) a support in said first frame part positioning said individual sheet relative to said separator element when said frame parts are in said closed position, said separator element having an end edge facing support in said closed position, and

(iii) spacing means cooperating with said separator element for defining a distance between said support and said end edge so as to form a passage gap for said individual sheet upon start of said reciprocation from said closed position, said distance being greater than the thickness of one sheet and less than the thickness of two sheets;

(b) feeding means for feeding sheets to said separating means;

(c) first retaining means for holding said individual sheet in said first frame part and second retaining means for holding the remainder of said pile in said second frame part; and

(d) guiding means for guiding the separated individual sheet for returning it to the other end of the remainder of the pile after having passed said passage gap.

4,879,826

ILLUMINATED CHARACTERS OF GRAPHIC SYMBOLS FOR EXTERNAL FIXING TO VEHICLES

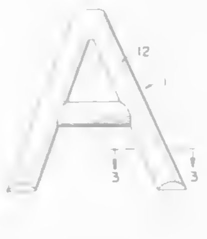
Christian A. Wittke, Gartenstrasse 17, Jagsthausen D-7109, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 29,325, Mar. 23, 1987, abandoned. This application Nov. 21, 1988, Ser. No. 274,021

Claims priority, application Fed. Rep. of Germany, Mar. 26, 1986, 36102903

Int. Cl.⁴ G09F *13/28*

U.S. Cl. 40—551 **6 Claims**



1. A low air resistance illuminated character shaped element for conforming application to the surface of a moving vehicle comprising in combination:

first and second insulating layers of deformable materials in contact with each other,

said first layer being in contact with a carrier layer serving as a support and including illuminating element conductor means associated therewith,

said second layer being in contact with a deformable arcuate shaped translucent cover member,

said second layer further having associated therewith at least one illumination member interconnected with said conductor means, and

layer assembly retention means along the edges of said cover member and said layers adapted to retain said cover member and said layers in superposed relationship.

4,879,827

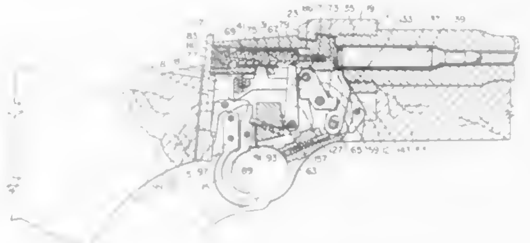
SINGLE SHOT FALLING BLOCK ACTION RIFLE

Roger Gentry, 5005 Coronet La., Arlington, Tex. 76017

Filed Feb. 5, 1988, Ser. No. 152,756

Int. Cl.⁴ F41C *7/00*

U.S. Cl. 42—23 **8 Claims**



1. A single shot rifle, comprising:

a barrel having opposing ends;

a receiver mounted on one end of the barrel, the receiver having a forward face which joins the barrel and a rearward face separated by opposing sides which define a length, a width and an interior of the receiver, the rear-

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ward face forming an arch-shaped opening into the interior;

a breechblock having a leading portion of lesser relative width than that of the receiver which extends within the interior of the receiver and which is slidably engaged within the arch-shaped opening of the receiver, the breechblock also having a trailing portion of lesser relative width than the receiver which extends outwardly from the arch-shaped opening of the receiver, whereby the breechblock is allowed upward and downward movement within the arch-shaped opening, the arch-shaped opening including a lip region which extends along the periphery of the opening, thereby defining an internal retaining ledge contained within the receiver interior adjacent the arch-shaped opening, the breechblock leading portion being provided with a mating region formed therein including a locking shoulder which contacts the retaining ledge within the receiver and breechblock as well as a recoil surface when the rifle is fired;

a stock containing the breechblock, barrel and the receiver; and

means for moving the breechblock upwardly and downwardly with respect to the receiver.

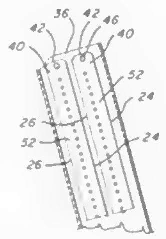
4,879,828
CONSTANT FORCE SPRING FOR CARTRIDGE MAGAZINES

Dale E. Dieringer, 7720 Teller St., Arvada, Colo. 80003, and Emil Vyprachticky, 7713 Webster Way, Arvada, Colo. 80004

Filed Feb. 29, 1988, Ser. No. 162,186

Int. Cl.⁴ F41C *25/02;* **F16F** *1/10*

U.S. Cl. 42—50 4 Claims



1. In a constant force spring having side margins, a coiled portion and an uncoiled portion, the improved anti-curl feature for eliminating jamming when such spring is used to lift a stack of shells in a multiple cartridge magazine by means of a follower, which comprises: at least one column of longitudinally-spaced apertures spaced inwardly of the side margins and extending substantially the full length of at least the uncoiled portion and wherein the apertures comprises elongated slots extending lengthwise or diagonally of the spring.

4,879,829
FAST CARTRIDGE LOADER FOR FIREARM MAGAZINES

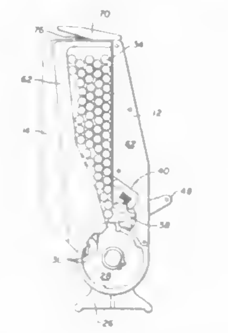
Michael K. Miller, and Warren D. Stockton, both of 405 E. 19th St., Bakersfield, Calif. 93305

Filed Nov. 3, 1988, Ser. No. 266,575

Int. Cl.⁴ F47B *39/06*

U.S. Cl. 42—87 10 Claims

1. In combination, a loader for a cartridge magazine, said magazine comprising means to receive cartridges of a predetermined size and to load said magazine with said cartridges, said loader comprising cartridge inserting means adapted to urge said cartridges one by one from said loader via said magazine cartridge receiving means into said magazine, said loader further comprising a first arm and a second arm, a cartridge platform fixed to one of said arms, a back wall joined to the other of said arms and positioned substantially parallel to said platform, said back wall and said platform being spaced apart from each other by a distance at least equal to the length of one of said cartridges of said predetermined size, means to hinge said arms to each other for motion on an axis substantially perpendicular to said platform and to said back wall, stop means defining a closed position and an open position of said arms with respect to each other, each of said arms also comprising a side wall, said loader being adapted to accept cartridges on said platform in said open position of said arms; said platform, said back wall, and said side walls on said arms all together in said closed position of said arms defining a predetermined volume at least equal to the volume of a relatively dense mass of a predetermined number of said cartridges of said predetermined size; said loader with said mass of cartridges in said predetermined volume being in a predetermined orientation with respect to the force of gravity when loading said cartridges into said magazine, and said loader comprising means to removably mount said magazine to be loaded with said cartridges in said loader with said magazine cartridge receiving means in a predetermined closely spaced relation to and below said loader's cartridge inserting means, whereby said mass of cartridges are fed through said loader and into said cartridge inserting means by the force of gravity.



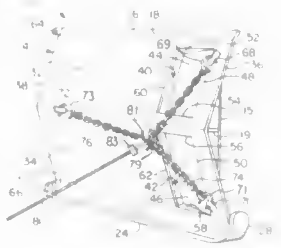
4,879,830
TRAWL DOOR

Freddie W. Quick, 2001 Fulton St. P.O. Box 8125, Southport, Fla. 32409

Filed Dec. 16, 1988, Ser. No. 285,621

Int. Cl.⁴ A01K *73/045*

U.S. Cl. 43—9.7 20 Claims



1. A trawl door comprising:

a rectangular sheet-like V-shaped member having an obtuse included angle about a central longitudinal axis forming two flat-faced portions on opposite sides of said central longitudinal axis, said member including a pair of louvers, one louver in each flat faced portion, each louver including a slat extending from a leading edge of each louver into a space between said opposite sides of said member within said obtuse included angle;

means for attaching a net tow cable arrangement to said member; and

means for attaching a trawl door tow cable arrangement to said member.

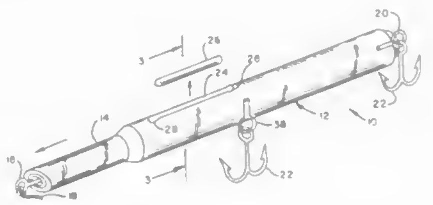
4,879,831
LIGHTING FISH LURE

Hermann H. Herrlich, 114 S. Cooliage Ave., Amityville, N.Y. 11701

Filed Apr. 8, 1988, Ser. No. 179,209

Int. Cl.⁴ A01K *85/01*

U.S. Cl. 43—17.6 2 Claims



1. A lighted fish lure comprising:

a substantially cylindrical main body of transparent material having a hook attached thereto for catching a fish; and

a tubular cavity within said main body aligned along the longitudinal axis of said body for enclosing an elongated tubular light emitting stick whereby the light emitted from said stick will illuminate the main body, the diameter of said cavity being slightly larger than the diameter of said light emitting stick and the length of said cavity along its longitudinal axis being longer than the length of said light emitting stick, said cavity having a single opening thereto coextensive with the longitudinal extension of said light emitting stick and extending radially from said cavity to the exterior of said main body, said opening including a pair of opposing substrantially parallel walls spaced apart a distance approximately equivalent to the diameter of said light emitting stick and forming a snug channel through which the light emitting stick is inserted into and removed from said cavity, the longitudinally opposite ends of said opening beyond said channel being arcuate and slightly wider than the channel to provide access to a tool for removing said light emitting stick from said cavity.

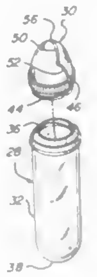
4,879,832
FISHING LURE/HOOK RECEPTACLE

Maynard E. Nelson, 160 S. Estates Dr., Salina, Kans. 67401

Filed Sep. 23, 1988, Ser. No. 248,198

Int. Cl.⁴ A01K *97/06*

U.S. Cl. 43—25.2 4 Claims



1. A fishing lure/hook receptacle operable to receive a fishing lure member attached to a fishing line therein, comprising:

(a) a main receptacle member;

(b) a receptacle cover member releasably mounted on said main receptacle member;

(c) said receptacle cover member having a slot section extended through one side thereof to receive the fishing line therethrough;

(d) said receptacle cover member when mounted on said main receptacle member operates to decrease a width of said slot section to clamp onto the fishing line; and

(e) said slot section is provided with a top slot portion integral with an offset arcuate slot portion whereupon said fishing line can be trained through said arcuate slot portion to said top slot portion.

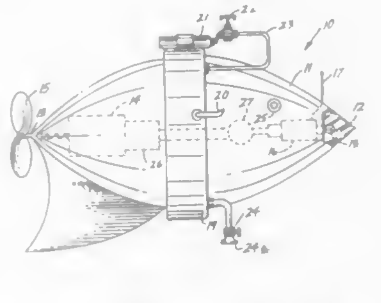
4,879,833
SHARK DIVERTING APPARATUS

Trina A. Threlkeld, 18406 Avenida Bonita, Sonora, Calif. 95370

Filed Oct. 11, 1988, Ser. No. 255,951

Int. Cl.⁴ A01K *97/00*

U.S. Cl. 43—26.1 9 Claims



1. A shark diverting apparatus for decoying sharks remote from a point of origin in travel of the apparatus through a water medium wherein said apparatus comprises,

an elongate body formed with a flotation collar surroundingly encompassing a circumference of said body, and

inflation means for selectively inflating said collar to enlarge its size, and

deflation means for slowly deflating said collar to decrease its size, and

motor means for providing power to direct said body through said water medium, and

a signal generator to provide a shark attracting signal.

4,879,834
DEPTH PLANER AND RELEASE FOR SLIDING DOWN FISHING LINE

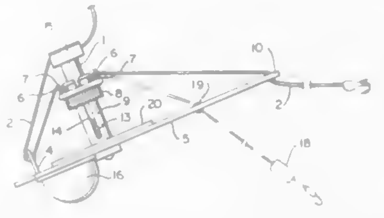
Ed Bohme, 509 - 825 Granville Street, Vancouver, British Columbia, Canada V6Z 1K9

Filed Oct. 11, 1988, Ser. No. 255,832

Claims priority, application Canada, Dec. 4, 1987, 553504

Int. Cl.⁴ A01K *97/00*

U.S. Cl. 43—43.12 14 Claims



1. A fishing tackle depth planer with a release mechanism comprising:

(a) a plug having a hole through it adapted to receive a fishing line;

(b) a sleeve adapted to receive the plug;

(c) ring means adapted to surround the sleeve and to compress the sleeve upon the plug, thereby increasing the force required to extract the plug from the sleeve;

(d) the ring means having holes through which a fishing line can be threaded and between which the fishing line can be intercepted by the plug as it is received by the sleeve.

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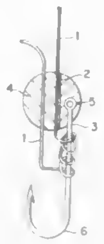
4,879,835
EYELETLESS FISHING HOOK

James M. Sprayberry, 745 Ledyard Pl., Montgomery, Ala. 36109

Filed Dec. 27, 1988, Ser. No. 289,684

Int. Cl.⁴ A01K *91/04*

U.S. Cl. 43—44.83 3 Claims



1. A fishing lacking an exterior accessible eyelet for connection to a fishing line comprising:

a hook with a barb and shaft,

an eyeletless gripping member,

said eyeletless gripping member being rigidly affixed longitudinally to the opposite end of the hook shaft from the hook barb, said gripping member further having a single open aperture which has a pair of opposite gripping surfaces with an inwardly facing bite surface into which an external flexible connecting means is disposed, said flexible connecting means passing sequentially through the gripping member around the hook shaft and returning parallel through the gripping member to the point of entry, said gripping member and flexible connecting means being affixed together by pressure closing the pair of opposite gripping surfaces of the aperture around the flexible connecting means thereby forming an extended integral unit, composed of an eyeletless hook with a gripping means gripping a flexible connecting means.

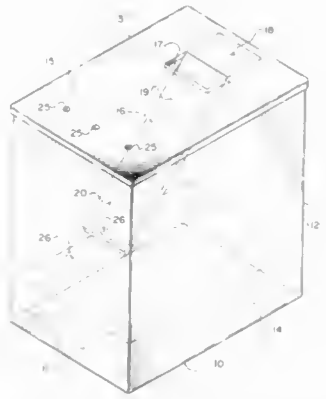
4,879,836
RODENT TRAP

Stanislaw Dolyny, 802-2nd Street East, Fort Frances, Ontario, Canada P9A 1N7

Filed Oct. 31, 1988, Ser. No. 265,394

Int. Cl.⁴ A01M *1/12, 23/14*

U.S. Cl. 43—64 10 Claims



1. A trap for rodents comprising a container having a base and side walls extending upwardly from the base to define a receptacle for water, a removable lid on the container arranged to substantially close the container, the lid defining a horizontal top platform for the container which constitutes the upper most surface of the trap, means defining an opening through the platform arranged adjacent one side wall and having a size which is a small portion of the platform and just to allow passage therethrough of the rodent, an elongate, straight continuous ramp surface and means mounting the ramp surface such that is remains in fixed stationary position relative to the container and extends from an upper end of a side of said opening adjacent said one side wall downwardly into the container, under the platform and across the container to a lower end at a position adjacent to but spaced from a side wall opposite to said one side wall of the container, the construction and inclination of the ramp being such that a rodent will commence to walk down the ramp but is inhibited from returning up the ramp, the depth o the side walls being sufficient to receive the height of the ramp and to receive a depth of water below the ramp which is sufficient to drown the rodent, a portion of the ramp surface adjacent the platform and a portion of the platform having a surface characteristic which is rougher than a portion of the ramp surface adjacent a lower end thereof.

4,879,837
DEVICE DEVELOPING AN ATTRACTIVE AND TOXIC ACTION FOR FIGHTING INSECTS

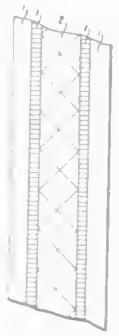
Amedeo Capizzi; Emilio Arsura, and Pia Spinelli, all of Milan, Italy, assignors to Istituto Guido Donegani S.p.A., Novara, Italy

Continuation of Ser. No. 843,723, Mar. 25, 1986, abandoned. This application Jan. 5, 1988, Ser. No. 142,245

Claims priority, application Italy, Mar. 25, 1985, 20054 A/85

Int. Cl.⁴ A01M *1/20*

U.S. Cl. 43—124 3 Claims



1. A device for combating noxious insects, consisting of a substrate of fibrils in the form of a paper of polyethylene in admixture with cellulose fibers, containing in an either adsorbed or dispersed form a pheromone, said substrate being partially coated with a layer impermeable to the pheromone consisting of a film of a substance selected from the group consisting of polyolefin, aluminum, nylon, polyester, polyvinylchloride, either alone or in admixture each other, or with other films, said layer carrying adhering to its external surface an insecticide or a substrate impregnated with an insecticide.

4,879,838
KNOCK-DOWN TOPIARY FORM

Rudy Vicenes, Cliffside Park, N.J., assignor to Speath Design, New York, N.Y.

Continuation-in-part of Ser. No. 30,546, Mar. 26, 1987. This application Sep. 21, 1987, Ser. No. 98,854

Int. Cl.⁴ A01G *17/04*

U.S. Cl. 47—45 17 Claims

1. A knock-down topiary form capable of being conveniently assembled for usage for defining a three-dimensional body-shape of a predetermined object and readily disassembled for compact shipment and storage, said knock-down topiary form comprising:

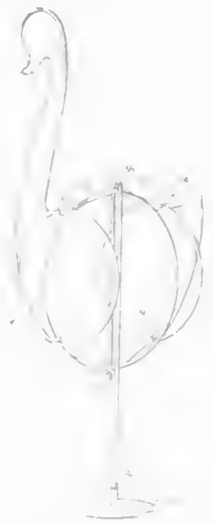
a vertically upstanding support member having upper and lower ends, the vertically upstanding support member having generally the shape of a body outline of the predetermined object formed by the perimeter of a midbody traverse plane section taken through the midbody portion of the predetermined object perpendicular to a longitudinal central plane formed by the body outline of said predetermined object, and having body-outline member receiving means at its upper end and at a position intermediate its upper and lower ends for engaging in a releasable manner another body-outline member,

at least three body-outline members,

said body-outline members each comprising a stiffly flexible, substantially flat element lying in a plane and each having a shape corresponding generally to the shape of a body outline of the predetermined object formed by the perimeter of a different predetermined plane section taken through the predetermined object,

a first of said body-outline members having generally the shape of a body outline of the predetermined object formed by the perimeter of a longitudinal central plane section taken along the longitudinal central plane of said predetermined object,

a second of said body-outline members having generally the shape of a body outline of the predetermined object formed by the perimeter of a forebody transverse plane section taken through a forebody portion of said predetermined object perpendicular to said longitudinal central plane of said predetermined object,



a third of said body-outline members having generally the shape of a body outline of the predetermined object formed by the perimeter of a rearbody transverse plane section taken through a rearbody portion of said predetermined object perpendicular to said longitudinal central plane of said predetermined object,

said first body-outline member having a first pair of opposed saddles located at two respective positions corresponding to the two positions where the body outline formed by the perimeter of said forebody transverse plane section intersects with the body outline formed by the perimeter of said longitudinal central plane section of said predetermined object,

said first body-outline member also having a second pair of opposed saddles located at two respective positions corresponding to the two positions where the body outline formed by the perimeter of said rearbody transverse plane section intersects with the body outline formed by the perimeter of said longitudinal central plane section of said predetermined object,

said first body-outline member being removably mountable in the body-outline member receiving means of said vertically upstanding support member,

said second body-outline member being removably mountable in said first pair of saddles with the plane of said second body-outline member being substantially perpendicular to the plane of said first body-outline member,

said third body-outline member being removably mountable in said second pair of saddles with the plane of said third body-outline member being substantially perpendicular to the plane of said first body-outline member, and

whereby said knock-down topiary form, being assembled by removably mounting said first body-outline member in said body-outline member receiving means on said vertically upstanding support member, removably mounting said second body-outline member in said first pair of saddles and by removably mounting said third body-outline member in said second pair of saddles with the respective planes of said vertically upstanding support member and said second and third body-outline members being substantially perpendicular to the plane of said first body-outline member, the assembled topiary form defining the three-dimensional shape of the predetermined object.

4,879,839
COATED SEEDS AND PROCESS FOR PREPARING THEM

Ignace Gago, Braine-l'Alleud, and René Detroz, Ohain, both of Belgium, assignors to Solvay & Cie. (Société Annyme), Brussels, Belgium

Division of Ser. No. 679,355, Dec. 7, 1984, Pat. No. 4,735,017. This application Apr. 4, 1988, Ser. No. 177,168

Claims priority, application France, Dec. 12, 1983, 83 19983

Int. Cl.⁴ A01C *1/06*

U.S. Cl. 47—57.6 23 Claims

1. Coated seeds comprising seeds coated with an anhydrous coating composition comprising:

a effective amounts of a polyester having a melting temperature of 80° C. or less, which polyester is a polymer of ϵ-caprolactone; and

one or more additives selected from the group consisting of plant protection products, beneficial bacteria, and fillers.

4,879,840
METHOD AND AN APPARATUS FOR MECHANIZED SETTING OUT AND HARVESTING OF CHICORY

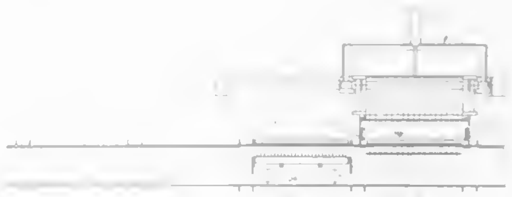
Jan W. den Daas, EV Zeddam, Netherlands, assignor to Kwekerij de Bollard B.V., Netherlands

Filed Jul. 7, 1987, Ser. No. 70,782

Claims priority, application Netherlands, Jul. 8, 1986, 8601784

Int. Cl.⁴ A01G *31/00*

U.S. Cl. 47—58 19 Claims



1. A method for mechanized setting up, raising and harvesting chicory comprising fixing chicory roots in rows on holder combs, each holder comb comprising an elongated support bar with extending stick up pins, said holder combs with chicory roots fixed on their stick up pins being subsequently placed in sprouting trays for raising chicory crops, and after raising removing said holder combs bearing raised chicory from said sprouting trays and separating the raised chicory crops from their roots still attached to said holder combs.

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4,879,841
CONVEYOR

Jorgen Sjostrand, Odense, Denmark, assignor to Bronnums Maskinfabrik A/S, Kerteminde, Denmark

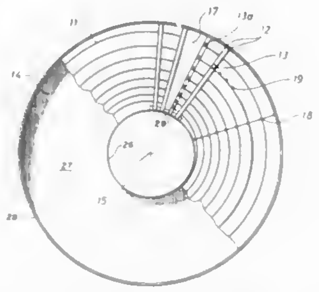
PCT No. PCT/DK87/00034, § 371 Date Dec. 7, 1987, § 102(e) Date Dec. 7, 1987, PCT Pub. No. WO87/06094, PCT Pub. Date Oct. 22, 1987

PCT Filed Apr. 3, 1987, Ser. No. 128,339

Claims priority, application Denmark, Apr. 7, 1986, 1564/86

Int. Cl.⁴ A01G *9/14, 31/02*

U.S. Cl. 47—59 8 Claims



1. A system for continually increasing spacing between potted plants as the potted plants grow larger, comprising:

upright wall means providing a horizontal path which spirals radially outwards about a vertical central axis;

an arrangement of radially directed, angularly spaced guide rails superimposed upon said upright wall means and centered upon said central axis;

said arrangement of guide rails thereby dividing said path into a plurality of cells arranged in sectors which are separated angularly from one another by intervening ones of said guide rails, each said sector of cells comprising a series of radially adjacent cells which are separated by respective turns of said wall means;

means associated with said upright wall means for supporting pots of potted plants with sidewalls of the pots in contact with said wall means and said guide rails when the pots are disposed in respective ones of said cells;

at least one of said upright wall means and said arrangement of guide rails being supported for rotation about said central axis, whereby, the plants in the pots can be provided with room to grow, by initially placing potted plants in at least some of the radially inner ones of said cells and, as the plants grow, rotating at least one of said upright wall means and said arrangement of guide rails in a sense to advance the potted plants in said radially inner ones of said cells radially outwards along said path.

4,879,842
EMERGENCY WINDOW SYSTEM

Frank Bailey, Burnley, England, assignor to Magnet PLC, Keighley, England

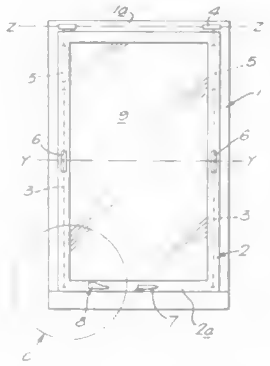
Filed Feb. 9, 1989, Ser. No. 308,016

Claims priority, application United Kingdom, Feb. 16, 1988, 8803571

Int. Cl.⁴ E05B *65/10*

U.S. Cl. 49—141 10 Claims

1. A window comprising an outer frame for securing to a structure, a sash mounted by opposed pivot means for pivotal movement about a horizontal axis relative to said outer frame, the horizontal pivot axis lying intermediate the top and bottom of said outer frame, two opposed arms supported from said top of the outer frame with each said arm extending alongside a respective side member of said outer frame for confinement within the rebate between said outer frame and said sash when the sash is closed, each said arm being supported at its upper end by a hinge mounted on said outer frame, spring means acting between said outer frame and said arms to urge said arms in a direction outwards of said outer frame, a retainer mounted on said outer frame for engagement with catch means on the lower end of at least said arm to retain the arms alongside the respective side member of said outer frame against the force of said spring means to preclude pivotal movement of said arms about their respective hinges, said opposed horizontal pivot means being connected to said sash and to said arms whereby when said retainer is so engaged with said catch means said sash can be opened and closed relative to said outer frame in a normal mode pivoting about said intermediate horizontal axis, and an actuator mounted on said sash for disengaging said catch means from said retainer whereby said arms are released for hinged movement about their upper ends under the force of said spring means to displace said arms with said sash outwardly clear of the opening in said outer frame in which said sash seats when in the closed position.



4,879,843
DUAL PURPOSE DOOR SYSTEM

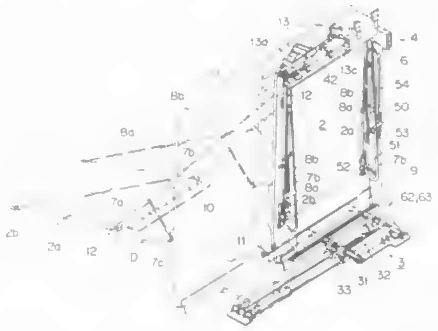
Atsushi Hamamoto, and Mikio Ichiki, both of Kobe, Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Kobe, Japan

Filed Sep. 14, 1987, Ser. No. 95,783

Claims priority, application Japan, Sep. 12, 1986, 61-214045

Int. Cl.⁴ E06B *11/00*

U.S. Cl. 49—158 20 Claims



1. A dual-purpose door system, capable of being opened in two different modes, comprising:

a door frame defined within a supporting wall;

a door mounted within said door frame;

first means for opening said door in accordance with a first one of said two different modes by moving said door long a first path which comprises movement along a first path portion in a first direction, substantially perpendicular to a plane within which said door frame and said supporting wall are disposed, to a predetermined location point, and subsequently along a second path portion in a second direction substantially perpendicular to said first direction and parallel to said plane within which said door frame and said supporting wall are disposed;

second means for opening said door in accordance with a second one of said two different modes by moving said door along a second path which comprises movement along said first path portion in said first direction, substantially perpendicular to said plane within which said door frame and said supporting wall are disposed, to said predetermined location point, and subsequently along a second path portion which is a continuation of said first path portion in said first direction beyond said predetermined location point so as to permit pivotable movement of said door about a lower edge portion thereof; and

selector means operatively cooperating with said first and second means for selectively permitting operation of said first means, while preventing operation of said second means, when said door is to be opened in accordance with said first one of said two different modes; and for selectively permitting operation of said second means, while preventing operation of said first means, when said door is to be opened in accordance with said second one of said two different modes.

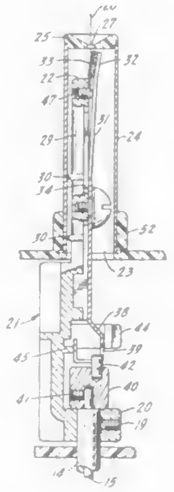
4,879,844
APPARATUS AND METHODS FOR SHARPENING POINTS

John E. Giles, 8614 Tarpon Springs Rd., Odessa, Fla. 33556

Filed Jul. 15, 1987, Ser. No. 73,572

Int. Cl.⁴ B24B *19/16*

U.S. Cl. 51—31 34 Claims



1. Apparatus for sharpening a metal point comprising:

A. means for positioning said metal point in a predetermined location;

B. an abrasive surface for contacting said metal point:

C. means for reciprocating said abrasive surface while it is in contact with said metal point comprising first rotary means rotating at a predetermined speed; and

D. means for moving said abrasive surface around said metal point while said abrasive surface is reciprocating in contact with said metal point including second rotary means rotating at a slower speed than said first rotary means.

4,879,845
MACHINE TOOL

Francisco M. D. S. Nunes, P.O. Box G, Salamhof, 7532 Bellville, South Africa 7532

Continuation of Ser. No. 120,146, Nov. 13, 1987, abandoned. This application Mar. 27, 1989, Ser. No. 328,809

Claims priority, application South Africa, Dec. 1, 1986, 86/9049

Int. Cl.⁴ B24B *7/00*

U.S. Cl. 51—98.5 13 Claims

1. A machine tool comprising

a stand having a tool mount whereby a driven tool can be mounted on the stand; and

a work-table for supporting a work-piece to be machined by the driven tool;

first and second articulated cantilever arms secured to and extending from said stand and supporting said work-table;

each articulated arm being at one end connected to the stand so as to be pivotal with respect to the stand about a first vertical pivot axis, and being at the other end connected to the work-table so as to be pivotal with respect to the work-table about a second vertical pivot axis;

each articulated arm comprising at least two arm segments, adjacent arm segments of each respective arm being interconnected so as to be pivotal with respect to one another about a further vertical pivot axis; and

the pivotal connection of said first articulated arm to the stand being spaced horizontally from the pivotal connection of said second articulated arm to the stand, and the pivotal connection of said first articulated arm to the work-table being spaced horizontally from the pivotal connection of said second articualted arm to the work-table.

4,879,846
INGOT KNOCK OUT AND GRIND MACHINE

Alan W. Menard, Bolton, and Clifford B. Turner, East Hampton, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Jul. 29, 1988, Ser. No. 226,349

Int. Cl.⁴ B24B *21/00*

U.S. Cl. 51—137 1 Claim

1. An ingot knock out and grind machine comprising:

a support frame for horizontally supporting an ingot mold containing an ingot;

hold down means secured to said frame and engageable with said ingot mold for rigidly securing said mold to said support frame;

hydraulic ram cylinder coaxially aligned with a supported ingot mold;

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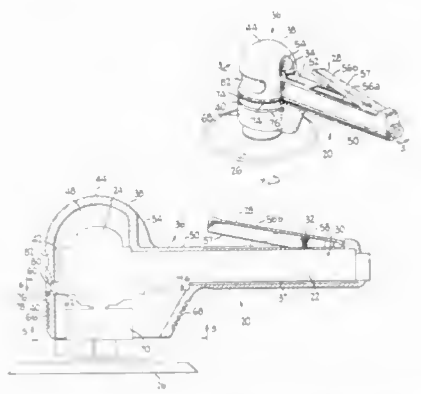
knock out actuating means for actuating said ram cylinder for pushing said ingot from said mold;
a belt grinder traversable along said ingot when said longitudinal alignment with said ingot mold for receiving said ingot from said ingot mold;
a plurality of pairs of rolling rolls also located in substantial longitudinal alignment with said ingot mold for supporting and rolling said ingot;
transfer means for transferring said ingot from said receiving rolls to said rolling rolls comprising hydraulic support cylinders for raising and lowering said receiving roles with respect to said rolling rolls;
a belt grinder traversable along said ingot when said ingot is on said rolling rolls;
traversing means for traversing said belt grinder along said ingot for grinding the circumference of said ingot; and
adjustment cylinders connected to said support frame for vertically aligning a supported ingot mole with said hudraulic ram cylinder.

4,879,847
COVER FOR PNEUMATIC TOOL

James K. Butzen, Grayslake, Ill.; Kenneth C. Happ, Silver Lake, and Robert D. Giese, Kenosha, both of Wis., assignors to Snap-on Tools Corporation, Kenosha, Wis.

Filed Mar. 13, 1989, Ser. No. 322,360
Int. Cl.⁴ B24B *23/00*
U.S. Cl. 51—170 R **24 Claims**



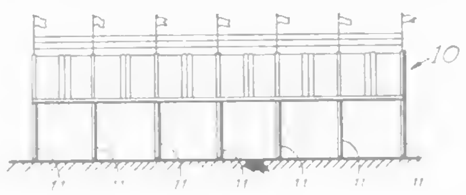
1. A cover for use with a motor and handle extending from the motor and composed of a soft, resilient, fairly rigid, thermoplastic elastomeric material of one-piece construction, said cover comprising a first body portion including a sidewall and a dome extending from said sidewall and defining a cavity to receive said motor, said dome being spaced from said motor to define a chamber between said dome and motor which serves as a muffler to reduce noise, and a hollow second body portion extending from said first body portion and having a bore to receive said handle, said cover providing a comfortable grip and insulating the hands of a user during use, said cover protecting said motor and handle from damage if dropped, damping vibration of said motor and handle, and sufficiently shielding said motor to prevent injury to said user, said cover having an external surface which is aesthetically pleasing without additional cosmetic operations to said external surface.

4,879,848
VIEWING STRUCTURE

Kenneth Gardner, and Rowland D. Hunt, both of Santa Barbara, Calif., assignors to Clamshell Partners, Ltd., Santa Barbara, Calif.

Filed Aug. 9, 1988, Ser. No. 230,404
Int. Cl.⁴ E04H *3/12*
U.S. Cl. 52—8 **16 Claims**

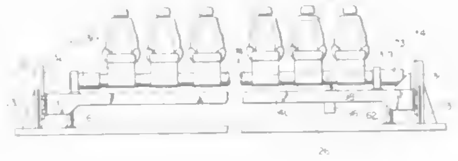
1. A viewing structure comprising a plurality of parallel arched frames pivot means at each end of each frame, the pivot means at each end of a frame having a common axis; each frame having front, top and rear portions; said front portion comprising an arcuate section, said top portion comprising a plurality of straight sections and said rear portion comprising at least one straight section; the top portion joined at its front end to the top of said front portion and joined at its rear end to the top of the rear portion the top portion inclined upwardly and rearward at a predetermined angle; a plurality of support pillars mounted on each top portion, spaced apart thereon; seating members mounted on top of the pillars and extending transversely of said arches; and floor members mounted between said pillars.



4,879,849
POINT-OF-VIEW MOTION SIMULATOR SYSTEM

Fred Hollingsworth, III, and Julian G. Angus, both of Sarasota, Fla., assignors to Omni Films International, Inc., Sarasota, Fla.

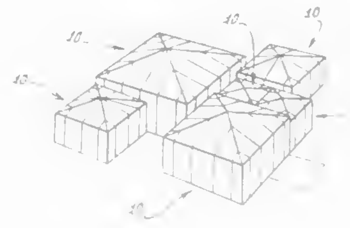
Filed Nov. 4, 1987, Ser. No. 116,924
Int. Cl.⁴ A63G *31/16*
U.S. Cl. 52—10 **15 Claims**



1. A motion simulation system comprising:
a theater having a seating area, a viewing area and a projection area;
means for projecting a moving image from said projection area to said viewing area;
a stationary base positioned within said seating area;
a plurality of adjacent seats movably positioned on said stationary base between said projecting and viewing areas;
moving means for controllably moving said seats in a plurality of directions of movement relative to said stationary base, all of said seats during the entire operation of said motion simulation system moving at the same time, in the same pattern, and being displaced from said base by the same amount, said directions of movement for each of said seats including up-and-down, side-to-side, tilt side-to-side and rotation forward-and-back, and
electronic circuit means for controlling said hydraulic moving means to synchronize the movements of said seats with the images being projected on said viewing area.

4,879,850
MODULAR BUILDING CONSTRUCTION AND METHOD OF BUILDING ASSEMBLY

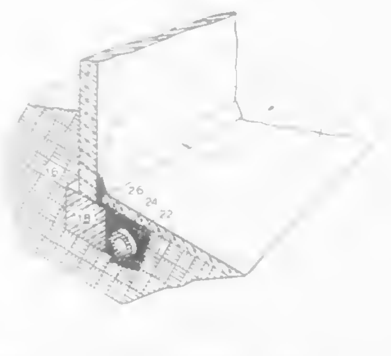
Robert B. Glassco, Pasadena, Calif., and Robert L. Noble, Carrollton, Tex., assignors to Mansion Industries, Inc., City of Industry, Calif.
Continuation of Ser. No. 797,668, Nov. 13, 1985, Pat. No. 4,748,777. This application May 2, 1988, Ser. No. 188,834
Int. Cl.⁴ E04C *2/16*
U.S. Cl. 52—82 **27 Claims**



1. A modular building, comprising:
(a) four upright walks together forming an enclosure, each of the walls including a succession of upright panels extending in a common plane, successive panels of each wall having upright lateral edges which are joined together in edge-abutting relation at joints formed therebetween, only the said panels defining the said building four walls, certain of said panels joined together to form vertical corners of the enclosure,
(b) the wall panels having uppermost edges which extend horizontally in a common horizontal plane,
(c) horizontally elongated support members with horizontal undersides mounted on and seated downwardly in flush engagement with said panel upper horizontal edges, said support members extending to and between said corners of the enclosure, each of said members having an upper support surface, the support member upper surfaces being located above said horizontal undersides of the support members,
(d) a pyramid shaped roof extending over the enclosure and defined by four like roof sections spaced about a vertical axis intersecting a peak formed by a common intersection of the four roof sections, each section including at least two roof panels extending in a common plane inclined upwardly toward said peak,
(e) said two roof panels of each section having:
  (i) lower edge portions supported by a support member upper surface as defined, and
  (ii) first lateral edge portions joined together in edge abutting relation and extending upwardly generally toward said peak,
(f) and the said roof panels of adjacent sections having second lateral edge portions joined together in edge abutting relation to support the sections laterally above the level of said plane defined by the support members, said second lateral edge portions located along lines extending diagonally from said corners to said peak,
(g) all of said wall and roof panels consisting essentially of low-strength fibrous material in compacted state, to a density of about 16 to 23 pounds per cubic foot, and a modulus of elasticity of about 17,500 to 21,500 psi, and at least two inches of thickness,
(h) adhesive mastic in said joints acting to bond successive wall panels together,
(i) tape strips bonded to successive panels of each wall at and along said upright lateral edges thereof, at outer side surfaces of the panels adjacent said edges, and at inner side surfaces of the panels, thereby bridging said joints,
(j) said tape strips comprising substantially the only joint overlapping interconnection of the panels, at and along the edges thereof,
(k) successive roof panels also bonded together and connected together as are said successive wall panels,
(l) said support members with said roof supported thereon providing a lateral stiffening means for restraining bowing of the tape and mastic interconnected wall panels.

4,879,851
HOLLOW KICK MOLDING

Joseph Boccia, 131 Searingtown Rd., Albertson, N.Y. 11507
Filed Feb. 18, 1988, Ser. No. 157,219
Int. Cl.⁴ E02D *19/00*
U.S. Cl. 52—169.5 **7 Claims**



1. A drainage system for draining water away from the interior of a building located on the ground having a surface above which a portion of the building extends, said building having a horizontally disposed base lying adjacent the ground, walls extending vertically from said base and a horizontally disposed floor located inside said walls spaced from said walls and defining therewith a continuous space for the passage of moisture therebetween, the drainage system comprising drain means deposed in a trench in the ground adjacent said base and extending around the perimeter of said floor inside said walls and beneath said space between floor and said walls, a molding comprising an elongated strip having a flat vertically disposed body provided with a straight lower edge and a shaped crown, said crown including a flat lower wall and an enclosed roof having straight upper edge, said molding having its vertically disposed body extending downwardly through said space between the wall and said floor in abuttment with the peripheral edge of said floor so that the lower wall of the crown rests on said floor and the upper edge of the enclosed roof extends toward said wall hiding said space.

4,879,852
APPARATUS FOR MAINTAINING SOIL MOISTURE

Kenneth C. Tripp, 2712 Jennifer Cir., College Station, Tex. 77840

Filed Feb. 3, 1989, Ser. No. 305,775
Int. Cl.⁴ E02D *31/00;* B05B *1/14*
U.S. Cl. 52—169.5 **8 Claims**

1. A soil moistening apparatus for the periphery of a house, building, or the like comprising:
a water supply means comprising piping,
a water sprinkling means comprised piping,
said water sprinkling means having a plurality of perforations allowing for the discharge of water,
said water sprinkling means being divided into sections along its length by a plurality of vertical dividing plates,
said water sprinkling means having along its length in at least one position between said vertical dividing plates a control valve means whereby the flow of water may be selec-

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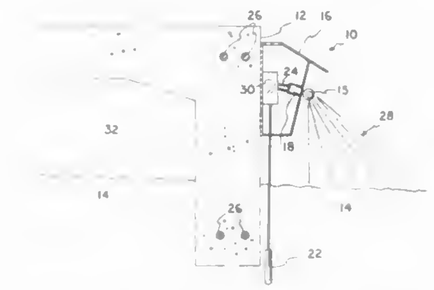
tively controlled into the sections of the sprinkler means, and



said water supply means connected to said water sprinkling means.

4,879,853

VEHICLE WINDOW AND A METHOD OF MANUFACTURING THE WINDOW

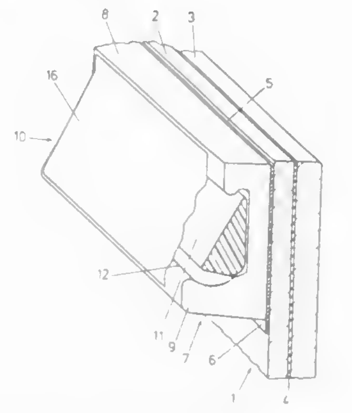
Jürg G. Braendle, Baech, and Saur Wolfgang, Buttikon, both of Switzerland, assignors to Gurit Essex AG, Freienbach, Switzerland

Filed Oct. 11, 1988, Ser. No. 255,641

Claims priority, application Switzerland, Oct. 14, 1987, 4026/87; Apr. 20, 1988, 1497/88

Int. Cl.⁴ E06B *3/00*

U.S. Cl. 52—208 **19 Claims**



1. A prefabricated vehicle window adapted to be directly glued into a frame, a flange or the like, comprising

a primer layer applied onto an edge portion of the vehicle window;

a first profiled bead consisting of an already cured adhesive material applied onto said primer layer extending along an edge portion of said vehicle window;

said already cured adhesive material having elastic properties but cannot be plastically deformed;

said first profiled bead having a generally U-shaped cross section whereby the two legs of the U-shaped profile have different height, a first leg remote from the edge of the vehicle window having a greater height than a second leg adjacent to the edge of the vehicle window;

said first profiled bead having a tub-like recess receiving a second bead consisting of a plastically deformable and/or activatable adhesive material which is chemically compatible with respect to the material of said first profiled bead.

4,879,854

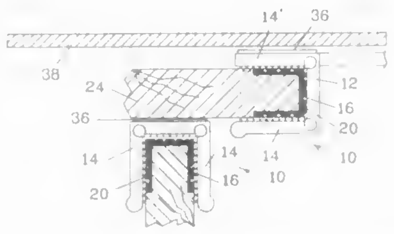
HOOK AND LOOP PARTITIONING SYSTEM

Michael D. Handler, Norwalk, Conn., assignor to Velcro Industries B.V., Amsterdam, Netherlands

Continuation of Ser. No. 893,382, Aug. 5, 1986, abandoned. This application Feb. 19, 1988, Ser. No. 161,337

Int. Cl.⁴ E04B *2/82*

U.S. Cl. 52—238.1 **10 Claims**



1. A partitioning system for offices and the like for releasably attaching partitioning components, the improvement comprising at least one preformed planar wall partition, a structure to which said wall partition is to be attached, and a touch fastening system having interconnectable first and second portions, said first portion carrying a plurality of projecting elements capable of releasably engaging cooperating projecting elements carried by said second portion, for releasably fastening said partitioning components together, said touch fastening system comprising:

(a) said preformed planar wall partition having parallel outer faces, at at least one end thereof, said outer faces carrying said first portion of the touch fastening system thereon; and,

(b) at least one U-shaped channel member, carried by said structure, having a resiliently rigid back portion interconnecting a pair of resiliently rigid opposed side portions defining inner faces, each inner face having said second portion of the touch fastening system thereon, said back portion of said U-shaped channel member being of a width so that when said U-shaped channel member receives said parallel outer faces of said end between said inner faces, with the first and second portions of the touch fastening system engaged, said inner and outer faces are substantially parallel to one another and the touch fastening system acts in shear to attach said components together, said U-shaped channel member having at least one of said side portions pivotable adjacent the closed end of the U to allow progressive disengagement of the touch fastening system when desired.

4,879,855

ATTACHMENT AND REINFORCEMENT MEMBER FOR MOLDED CONSTRUCTION FORMS

John L. Berrenberg, 3704 Valerie, NE, Albuquerque, N. Mex. 87111

Filed Apr. 20, 1988, Ser. No. 183,730

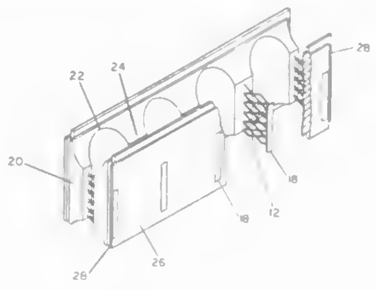
Int. Cl.⁴ E04C *1/08*

U.S. Cl. 52—309.11 **8 Claims**

1. In a molded construction form having two sidewall members of rectangular configuration having horizontal and vertical edges, and each of said members having a respective inner surface and a planar outer surface, comprising in combination:

(a) a plurality of cross members of expanded material with at least one angularly extending end, transversely connecting between said sidewall members, and

(b) a plurality of attachment surfaces, U-shaped in a side elevation, embracing said angularly extending end, forming a uniform continuous planar surface, coplanar with said outer surface of said sidewall member.



4,879,856

FLOOR SYSTEM

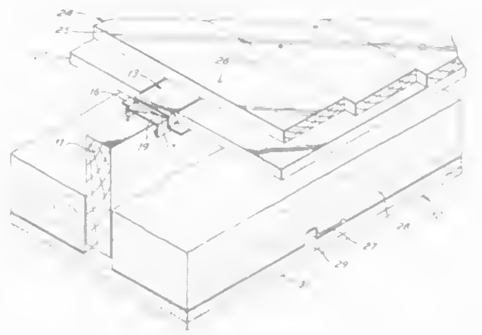
Philip E. Jones, West BridgeFord, and Robert Highet, Keyworth, both of United Kingdom, assignors to BPB Industries Public Limited Company, Sleigh, United Kingdom

Filed Oct. 27, 1988, Ser. No. 263,195

Claims priority, application United Kingdom, Oct. 29, 1987, 8725314

Int. Cl.⁴ E04B *1/74*

U.S. Cl. 52—403 **10 Claims**



1. A flooring system comprising: a plurality of spaced apart joists having respective upper edges; floor supports mounted longitudinally on said joists, each support being of inverted channel cross-section including two opposed side walls embracing said edge of a respective joist, and each support including outwardly directed longitudinal flanges extending along said opposed side walls; sound isolating material in each said support channel between the channel and the respective joist; at least one self-supporting panel member supported at opposite edges solely by neighbouring flanges of the floor supports on two adjacent joists; and floor decking extending over the panel member and secured to the floor supports.

4,879,857

RESILIENT LEVELER AND SHOCK ABSORBER FOR SPORT FLOOR

David L. Peterson, and Michael J. Peterson, both of Oakdale, Minn., assignors to Sport Floor Design, Inc., Maplewood, Minn.

Continuation of Ser. No. 873,999, Jun. 13, 1985, abandoned. This application Jun. 10, 1988, Ser. No. 206,977

Int. Cl.⁴ E04F *15/22*

U.S. Cl. 52—403 **14 Claims**

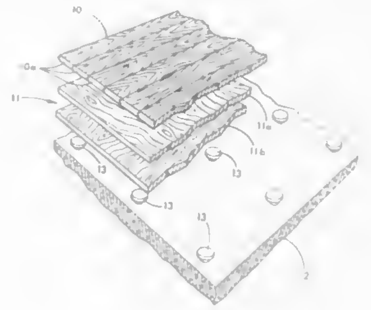
1. A floor construction for providing resilient support, comprising:

(a) a continuous playing surface;

(b) a continuous subflooring in continuous contact with and directly supporting said playing surface;

(c) a rigid solid base beneath said subflooring; and

(d) a plurality of resilient, shock-absorbing members, said shock-absorbing members being uniformly spaced apart and being located between said subflooring and said base so as to support said subflooring and playing surface, each of said shock-absorbing members including a first base portion in contact with said subflooring, said first base portion being frusto-spherical in shape, and a second portion having a domed surface in contact with said base said second portion being semi-spherical in shape, said first base portion having a greater diameter than said second portion so as to form an annular rim, wherein said domed surface becomes increasingly flattened proximate the point of contact of said domed surface with said base in response to increasing force upon said playing surface.



4,879,858

METHOD OF INSTALLING A BATHING VESSEL

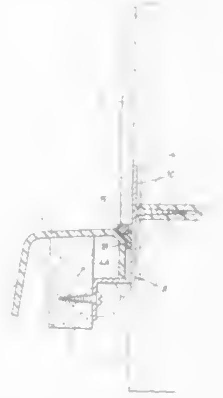
Ian S. Murdoch, N. Humberside, England, assignor to American Standard Inc., New York, N.Y.

Filed Mar. 7, 1988, Ser. No. 176,481

Claims priority, application United Kingdom, May 3, 1987, 8705115

Int. Cl.⁴ E04F *19/02*; E04G *21/00*

U.S. Cl. 52—741 **1 Claim**



1. A method of installation, in sealed relationship against at least one vertical wall, a bathing vessel of the type having a sump to contain water therein and a water drain outlet, the bathing vessel including a horizontal rim extending away from the sump and a depending skirt formed around the horizontal rim, said method comprising:

providing a frame assembly and positioning said sump of said bathing vessel therein;

supporting said bathing vessel along the upper surface of said frame so that said depending skirt lies adjacent said at least one vertical wall;

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providing a sealing strip and positioning said strip between said depending skirt and said at least one vertical wall, said sealing strip having parallel extending flanges spaced from each other by a horizontal web;

mounting at least one of said flanges to its corresponding vertical wall and frame and establishing a gap between said wall and said horizontal rim, applying a first sealing compound to form a seal between said depending skirt and one of said opposed flanges and allowing said first seal to cure and subsequently applying an outer seal adjacent to said first seal in said gap between the wall and the horizontal rim so that any movement of said bathing vessel will shift said sealing strip and said sealing compound to maintain its sealing relation between said depending skirt and the at least one of said parallel flanges, thereby preventing water from penetrating below said rim of said bathing vessel wherein at least one of said flanges of said sealing strip nests in a recess formed in at least one of said vertical walls so that the outer surface of said plane and said wall are substantially coplanar.

4,879,859

METHOD AND APPARATUS FOR CONSTRUCTING CIRCUMFERENTIALLY WRAPPED PRESTRESSED STRUCTURES UTILIZING A MEMBRANE

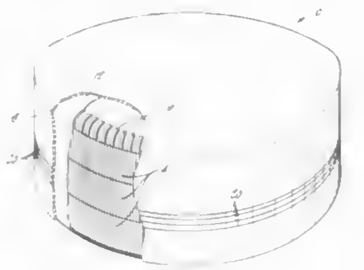
Max J. Dykmans, 1214 Pioneer Way, El Cajon, Calif. 92022-0696

Continuation-in-part of Ser. No. 559,911, Dec. 9, 1983, Pat. No. 4,776,145. This application Oct. 3, 1986, Ser. No. 915,269

The portion of the term of this patent subsequent to Oct. 11, 2005, has been disclaimed.

Int. Cl.⁴ E04B *1/16*

U.S. Cl. 52—741 **56 Claims**



1. A process for forming a domed structure with walls of composite construction on a base, comprising the steps of:

(a) locating on said base an inner membrane and inflating said membrane;

(b) placing a plurality of wall forms adjacent and inwardly to said membrane;

(c) radially supporting said plurality of wall forms by utilizing at least one truss assembly attached to said plurality of wall forms;

(d) applying fiber reinforced plastic material outwardly of said membrane;

(e) prestressing said fiber reinforced plastic by circumferentially wrapping wire, having a compressibility less than said wall forms, outside said fiber reinforced plastic material;

(f) applying a layer of fiber reinforced plastic outwardly of said wire wrapping;

(g) applying additional alternating layers of circumferential wire prestressing and fiber reinforced plastic material;

(h) removing said truss assembly and plurality of wall-form supports and deflating said membrane.

4,879,860

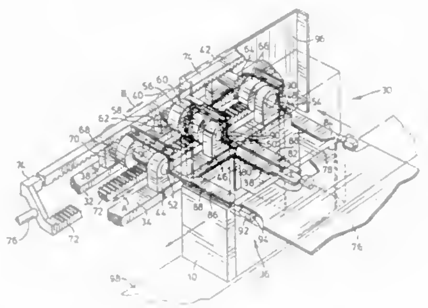
CARTON LOADING MACHINES

Marinus J. M. Langen, Toronto, and Peter Guttinger, Milton, both of Canada, assignors to H. J. Langen & Sons Limited, Mississauga, Canada

Filed Oct. 28, 1988, Ser. No. 264,074

Int. Cl.⁴ B65B *1/04, 5/06, 39/00*

U.S. Cl. 53—247 **7 Claims**



1. In a carton loading machine for use in loading items into a carton of the type which has two load storage compartments which are separated from one another by a divider wall and which has an end wall located opposite the divider wall, each compartment having an entrance which opens therefrom which is located between the divider wall and one of the end walls, the carton loading machine having first and second loading stations arranged in a side-by-side relationship in which a carton is located with its divider wall separating the stations in use, the improvements of;

first and second gate members mounted above said loading stations for pivotal movement between a first position in which the gate members extend laterally inwardly with respect to one side of the divider wall and are located above the first and second loading stations respectively and a second position in which they extend into the first and second loading stations respectively, one on either side of a divider wall of a carton in use to support the divider wall and guide load items into the load storage compartments.

4,879,861

METHOD FOR PACKAGING FIREWOOD AND THE APPARATUS THEREOF

William J. McAdams, 3006R N. Main St., Ft. Worth, Tex. 76106

Filed Apr. 20, 1988, Ser. No. 183,903

Int. Cl.⁴ B65B *53/06, 67/08*

U.S. Cl. 53—435 **8 Claims**

1. A method for producing packages of firewood comprising the steps of;

cutting trees to produce substantially constant lengths of logs,

splitting said logs to provide firewood lengths having irregularly configured peripheral surfaces,

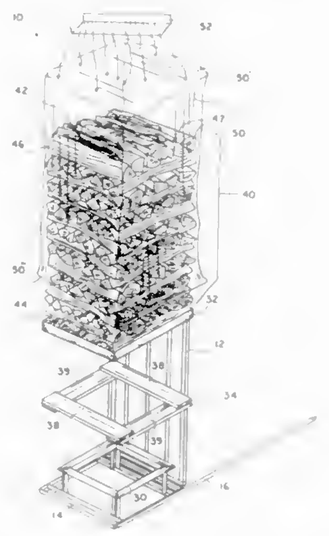
setting up a support frame having a base member including an elevated platform thereupon, said platform defining lateral dimensions less than that of said firewood lengths, said base member having front and rear portions, a vertical support member movably attached to said base member rear portion and braced by a truss member removably bracing said support member to said base member front portion,

placing a substantially square support retainer member atop said platform, said support retainer member having side dimensions substantially equal to the length of said firewood lengths and projecting laterally a substantial distance beyond said platform therebeneath,

depositing a substantially horizontal layer of parallel juxtaposed ones of said firewood lengths upon said retainer member to form a bottom most firewood layer,

depositing succeeding substantially horizontal layers of parallel juxtaposed ones of said firewood lengths atop previously deposited ones of said layers with each said succeeding layer having said firewood lengths disposed with their longitudinal axes offset substantially 90 degrees from the longitudinal axes of the firewood lengths of the preceding layer,

utilizing said vertical support member as a guide during said depositing of succeeding layers to facilitate maintenance of vertical alignment between said layers,



moving said truss member and vertical support member away from said deposited layers,

placing a bag of shrink wrap material having an open end about said layers of firewood lengths with said open end disposed below said support retainer member, and

applying heat to said bag beginning at said open end to cause said bag to shrink with said open end closing beneath said support retainer member short of said elevated platform with the balance of said bag shrinking to tightly wrap and retain all said firewood lengths in a unitary stable bundle containing said support retainer member.

4,879,862

PROCESS FOR AUTOMATICALLY PACKAGING LETTER ENVELOPES AND MAILING WALLETS INTO A CONTAINER AND AUTOMATIC PACKAGING MACHINE FOR CARRYING OUT THE PROCESS

Bert Nolte, Kirchheim, and Siegfried Leonhardt, Stuttgart, both of Fed. Rep. of Germany, assignors to Otto Ficker AG, Kirchheim/Teck, Fed. Rep. of Germany

Filed Dec. 8, 1987, Ser. No. 130,372

Claims priority, application Fed. Rep. of Germany, Dec. 8, 1986, 3641859

Int. Cl.⁴ B65B *57/20, 35/30*

U.S. Cl. 53—438 **41 Claims**

1. A process for packaging into a container envelope-like articles which exit serially from a production machine, comprising the steps of:

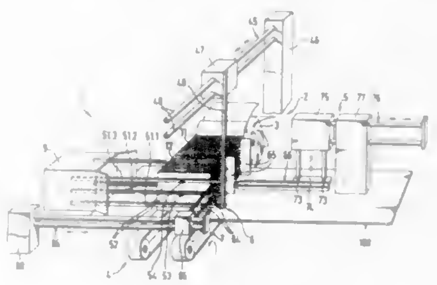
serially collecting a packaging batch comprising a plurality of envelope-like articles;

counting the envelope-like articles to identify periodically an individual article of the packaging batch which corresponds to a specific batch size of a stack to be packaged, said individual article constituting a counting article, wherein said counting step further comprises moving the counting article a predetermined distance laterally with respect to the conveying direction so that it protrudes;

conveying the packaging batch at least semi-continuously in a conveying direction in relation to the further individual articles which are supplied to the packaging batch;

moving a supporting part in the conveying direction in front of the head of the packaging batch at a speed equal to supply of the further individual articles to the packaging batch to thereby keep the batch at least approximately vertical;

when the counting article arrives at a separation point located at a predetermined distance in the conveying direction, inserting a separating part transversely relative to the conveying direction of the batch between adjacent envelope-like articles at least in the vicinity of the counting article, to define the stack and temporarily stop a portion of the packaging batch upstream of the stack, wherein said inserting step comprises first engaging and halting the protruding counting article at one edge with the separating part, whereupon a gap is formed downstream of the Counting article, and thereafter inserting the separating part into the gap;



after the separating part has been inserted between the stack and the upstream portion of the packaging batch, moving the supporting part a predetermined distance in a direction opposite to the conveying direction to thereby compress the stack to a stack length which is less than the horizontally measured width of the container;

filling the compressed stack into the container in a direction transverse to the conveying direction; and

after the stack has been transferred into the container, moving the supporting part to the separation point and retracting the separating part out of the path of movement of the upstream portion of the packaging batch.

4,879,863

APPARATUS FOR PACKAGING AN ARTICLE BY MEANS OF HEAT-SHRINKABLE FILM

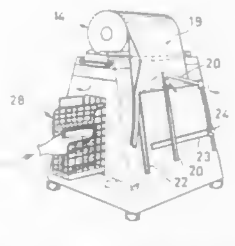
Pietro Di Bernardo, Milan, Italy, assignor to Interdibipack S.p.A., Milan, Italy

Filed Jul. 19, 1988, Ser. No. 223,065

Claims priority, application Italy, Jul. 24, 1987, 21421 A/87

Int. Cl.⁴ B65B *9/08, 53/06, 67/04*

U.S. Cl. 53—557 **4 Claims**



1. A compact machine for packaging articles in heat-shrinkable film comprising a box-shaped housing having vertically extending side walls, a top wall and a bottom wall and defining therein a thermal shrinking chamber, a support means mounted

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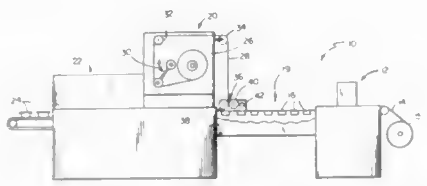
on the top of the housing for rotatably supporting a roll of two ply heat-shrinkable film so that it can be pulled down over one side wall of the housing, a support on the outside of said one side wall of the housing for holding an article that has been inserted between the plys of the film, sealing means pivotally mounted on said one wall adjacent the support for sealing at least one edge of said film together and for separating the wrapped article from the roll of film, heating means for heating the air within said chamber, an opening located in a different side wall of the housing for access to the chamber, a door for closing the opening and means for holding the wrapped article separated from the film adapted to be inserted into and supported within the chamber and removed therefrom through said opening.

4,879,864
FORM, FILL, AND SEAL APPARATUS

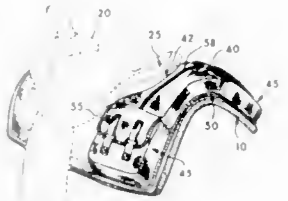
Francis P. Ventura, Upton, Mass., assignor to T W Kutter Inc., Avon, Mass.
Filed May 2, 1988, Ser. No. 189,025
Int. Cl.⁴ B65B *47/00*
U.S. Cl. 53—559 17 Claims



1. Form and fill packaging apparatus comprising
- a thermoformer where a first plastic web is formed to provide formed receptacles for receiving articles,
- a filling station where articles are placed in the formed receptacles,
- a sealing station where a second web is placed over the filled receptacles and sealed to -portions of the web around the receptacles,
- first web drive means for advancing said first web through said thermoformer, filling station and sealing station, and
- a feed mechanism that positively feeds said second web to said first web at said sealing station synchronously with the advancing of said first web.

4,879,865
SADDLE BLANKET WITH COMPARTMENTS

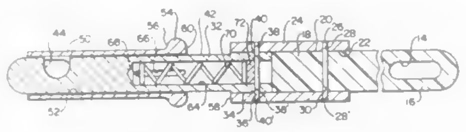
Pershing R. Van Scoyk, 7193 W. 32nd Ave., Wheat Ridge, Colo. 80033
Filed Jul. 29, 1988, Ser. No. 226,129
Int. Cl.⁴ B68C *1/12, 1/20*
U.S. Cl. 54—66 13 Claims



4. A saddle blanket for use with a horse saddle having a cantle and a skirt comprising at least one compartment having only its outermost edges attached along the periphery of the rear end portion of said saddle blanket to allow said skirt of said saddle to fit between said at least one compartment and said blanket.

4,879,866
HEAD POLE

Howard G. Millington, 29 Perry Rd., Cable, Ohio 43009
Filed Jun. 27, 1988, Ser. No. 211,590
Int. Cl.⁴ B68B *1/00*
U.S. Cl. 54—71 2 Claims

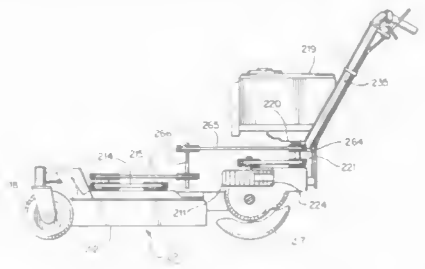


1. A head pole adapted to engage a halter ring at one end and a saddle strap at the other end to prevent lateral movement of a horse's head comprising:
- a rod;
- a saddle strap receiving means at one end of said rod adapted to receive said strap;
- a coupling member having one end receiving the other end of said rod;
- a piston affixed to the other end of said coupling member wherein said piston projects away from said rod;
- a slidable sleeve having an inner end adjacent said coupling member, an outer end remote from said coupling member, an outer surface and an axial bore defining an inner surface adapted to slide over the outer surface of said piston;
- an opening formed in said piston adapted to receive said halter ring;
- a pair of slot adjacent the outer end of said sleeve which slots overlie said piston opening;
- said sleeve movable between a first position which said sleeve outer end overlies and covers said piston opening and a second position in which said sleeve outer end is remote from said opening such that said piston opening is uncovered to receive or discharge said ring;
- wherein said ring is received within said slots when said ring is received with said piston opening;
- spring means for biasing said sleeve into said first position, and
- a rounded raised shoulder formed on the outer surface at the inner end of said sleeve wherein said raised shoulder projects radially outwardly from said sleeve outer surface to thereby provide a lateral thrust surface to enable an operator to push against said thrust surface in a direction parallel to the longitudinal axis of said sleeve and thereby move said sleeve from said first position to said second position.

4,879,867
SELF-PROPELLED MOWER WITH HYDROSTATIC DRIVE

Philip H. Wenzel, Vernon Center, N.Y., assignor to Ferris Industries, Inc., Oneida, N.Y.
Continuation-in-part of Ser. No. 63,007, Jun. 17, 1987, Pat. No. 4,787,195. This application Nov. 28, 1988, Ser. No. 276,912
Int. Cl.⁴ A01D *69/06*
U.S. Cl. 56—11.1 12 Claims

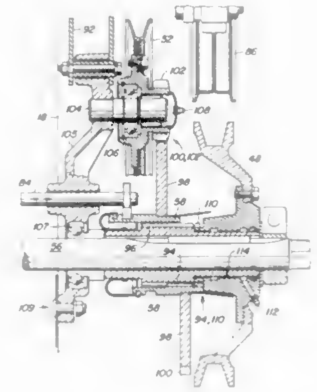
1. A self-propelled mower that comprises
- a front mower deck housing a blade assembly containing one or more movable blades;
- a rear power deck containing an engine, a pair of drive wheels and a power train coupling the engine to the drive wheels, wherein the engine has a vertically disposed output shaft positioned over the power deck, and power takeoff means for connecting the blade assembly to said output shaft;
- handle bar attached to the back of the power deck for steering the drive wheels;
- said power train including a hydrostatic transmission having an input shaft means connected to the engine, an output means, differential means having an input coupled to the hydrostatic transmission output means and a pair of differential output shafts serving as drive axles for said drive wheels, and a speed regulator to set the speed ratio of the differential output shafts to the input shaft means within a continuous range from reverse through neutral, wherein said output shaft is idle, to maximum forward; and



- control lever means positioned on the handle means that is connected to the speed regulator for setting said speed regulator at any desired position within said continuous range so that the operator can select a desired wheel speed without releasing the handle means or uncoupling the transmission from the engine.

4,879,868
REVERSER FOR HARVESTING APPARATUS

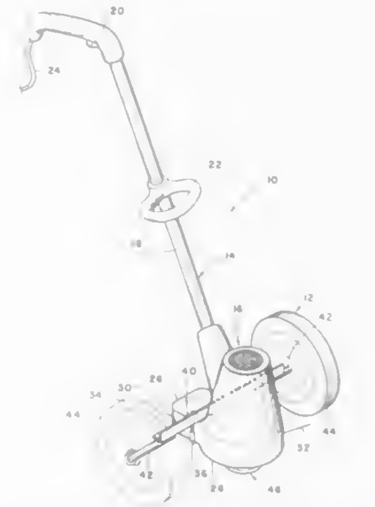
Mahlon L. Love, Geneseo, Ill., assignor to Deere & Company, Moline, Ill.
Filed May 23, 1988, Ser. No. 197,473
Int. Cl.⁴ A01D *69/08*
U.S. Cl. 56—11.2 16 Claims



1. In a mobile agricultural machine having a crop processing unit, a feeding unit for transporting a crop to the processing unit, and a power source on the machine for driving the units, the combination therewith of an improved drive system for the feeding unit, comprising:
- a first drive sheave drivingly connected to the power source;
- a first driven sheave;
- a first drive belt drivingly trained around the first drive sheave and the first driven sheave;
- a second drive sheave drivingly connected to the power source;
- a second driven sheave;
- a second drive belt drivingly trained around the second drive sheave and the second driven sheave;
- a transmission having an input selectively connected to the first driven sheave and the second driven sheave and an output drivingly connected to the feeding unit and including a driving element selectively shiftable between a forward position and a reverse position so that for a given driving direction of the input, the driving direction of the output is reversed and the feeding unit is driven in forward and reverse directions respectively, and
- control means for shifting the driving element of the transmission between its forward and reverse positions.

4,879,869
GRASS TRIMMER ATTACHMENT

Rudy R. Buckendorf, Jr., 4111 S. 43d W. Ave., Tulsa, Okla. 74107
Filed May 14, 1987, Ser. No. 49,624
Int. Cl.⁴ A01D *31/67, 34/84*
U.S. Cl. 56—12.7 13 Claims



1. A wheeled attachment for a grass trimmer, in which the trimmer includes:
- an elongated shaft,
- a grass cutting head including a grass cutting element adjacent a first end of the elongated shaft, the head further including (a housing positioned above the grass cutting element,)
- a first and a second handle on the elongated shaft for holding the grass trimmer with both hands during operation, and
- power means for driving the grass cutting element, comprising:
- a mounting member comprising a straight transverse member having a wheel assembly at each end thereof, the mounting member mounted on an upper side of the housing, and
- means for securing the mounting member detachably in position on the trimmer in a manner that the transverse member is mounted rearwardly of a vertical axis of the cutting element.

4,879,870
MOWER WITH IMPROVED STIFFENING OF THE CUTTING BAR

M. Horst Neuerburg, Saverne, France, assignor to Kuhn S.A., Saverne Cedex, France
Filed Nov. 30, 1988, Ser. No. 277,940
Claims priority, application France, Dec. 21, 1987, 87 18131
Int. Cl.⁴ A01D *34/66, 34/86*
U.S. Cl. 56—13.6 19 Claims

1. A mower comprising:
(a) a frame; and
(b) a cutting bar made of one or more sections and comprising cutting elements mounted on it, said cutting bar having two ends,
wherein:
(c) said cutting bar is of a relatively slight thickness;

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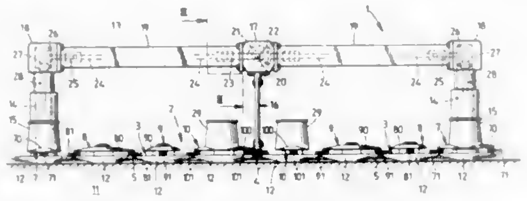
(d) said cutting bar is connected to said frame by means of a first connecting element extending in the vicinity of each one of said two ends of said cutting bar;

(e) said cutting bar is connected to said frame by at least one second connecting element extending between said two first connecting elements, said second connecting element having a front edge;

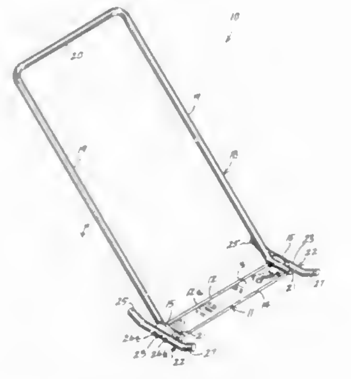
(f) on each side of said second connecting element is provided a transport element rotating around an axis pointed upwardly, the direction of rotation of said two transport elements being such that their movements of rotation diverge toward the front, seen in the direction of work; and

(g) the front edge of said second connecting element extends toward the rear and downwardly to the vicinity of a cutting plane of said cutting elements and in an operational zone of said two transport elements.



4,879,871
BEACH COMBING APPARATUS

Eldor W. Kunschke, 149 S. Shioc St., Bonduel, Wis. 54107, and Lee Nernberger, Rte. 1, Box 25, Cecil, Wis. 54111
Filed Nov. 7, 1988, Ser. No. 268,563
Int. Cl.^{4} A01B *1/22;* A01D *1/00*
U.S. Cl. 56—239 4 Claims



1. A beach combing apparatus comprising,

an elongate cutting edge coextensive along a forward side of an elongate planar central support, and said cutting edge directed outwardly of said central support, and

a curvilinear overfolded end formed coextensively along a rear edge of said central support and spaced parallel from said cutting edge at the other side of said cutting means to present a smooth non-binding surface directed outwardly of said cutting means in the direction opposite to that of said cutting edge, and

a plurality of elongate skid members wherein each skid member is secured to each end of said elongate cutting means and each skid member aligned orthogonally to said cutting edge and to said non-binding surface of said curvilinear overfolded end, and each skid member formed with a central body aligned with the central support and intersecting a plane defined by the central support with an upturned forward end aligned with said central support at an obtuse angle thereto and oriented in a like direction as said cutting edge, and a rear upturned end aligned with said central support and oriented opposite the direction of said cutting edge, and

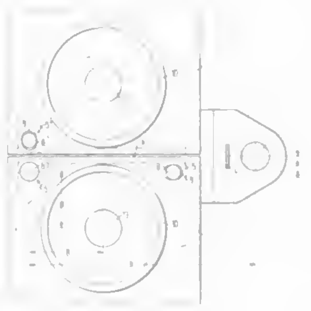
upstanding brackets are integrally and orthogonally secured relative to said central support at terminal ends of said central support orthogonal to and defining terminal ends bounding said cutting edge and said curvilinear surface wherein said brackets are formed with a plurality of through-extending apertures, and

a handle means including spaced terminal end portions each mounted to one of said brackets overlying said central support, and

wherein said terminal end portions limit upward pivotment of said handle means relative to said cutting means upon engagement with an upper surface of said central support, and each of said skid members secured to an exterior surface of a bracket and each terminal end portion of the handle secured to an interior surface of a respective bracket, and said central support includes a lower planar surface coextensive and terminating in said cutting edge at one side thereof and terminating and accepting a free edge of said overfolded edge of said curvilinear end at a spaced side, and said central support formed with an upper planar surface free of obstruction terminating with a bevel directed downwardly to said cutting edge along one side and terminating in said overfolded end forming a curvilinear surface parallel to and spaced from said cutting edge on said spaced side.

4,879,872
APPARATUS FOR POSITIONING A RING RAIL OF A TEXTILE MACHINE

Jakob Bothner, Goppingen-Jenhausen, Fed. Rep. of Germany, assignor to Zinser Textilmaschinen GmbH, Fed. Rep. of Germany
Filed Feb. 23, 1989, Ser. No. 315,343
Claims priority, application Fed. Rep. of Germany, Feb. 23, 1988, 3806203
Int. Cl.^{4} D01H *7/10*
U.S. Cl. 57—137 8 Claims



1. In a textile machine such as a ring spinning machine or the like having a row of spindles, a plurality of ring rail supports and a ring rail, the ring rail including a plurality of aligned elongate ring rail segments, each ring rail segment carrying a plurality of rings, each ring being associated with a spindle and having a traveler for guiding yarn onto its associated spindle, and each ring rail support being vertically movable along a respective vertical guide, an apparatus for maintaining a ring rail segment at a predetermined position with respect to the spindles serviced by its rings, said apparatus comprising:

a centering projection mounted on a selected one of the segment and one of its ring rail supports;

a centering bore formed in the other of the segment and said one ring rail support, said centering bore being disposed at the intersection of a longitudinal axis generally parallel to the longitudinal edge of the segment and a lateral axis generally perpendicular to the longitudinal axis and generally parallel to the lateral edge of the segment, said centering bore being compatible configured with respect to said centering projection to relatively snugly receive said centering projection;

a lateral guide projection mounted on a selected one of the segment and one of the ring rail supports;

a lateral guide bore, formed in the other of the segment and said one ring rail support associated with said lateral guide projection, for receiving said lateral guide projection therein, said lateral guide bore having a cross-sectional extent longitudinally with respect to said segment and a transverse cross-sectional extent laterally with respect to said segment, said longitudinal extent of said lateral guide bore corresponding to a cross-sectional extent of said lateral guide projection longitudinally with respect to said segment such that said lateral guide projection is relatively snugly received therein and said lateral extent of said lateral guide bore being sufficiently greater than a cross-sectional extent of said lateral guide projection laterally with respect to said segment that said lateral guide projection is slidably movable along said lateral extent of said lateral guide bore, said lateral guide bore being located with its lateral extent generally aligned with said lateral axis through said centering bore;

a longitudinal guide projection mounted on a selected one of the segment and the ring rail support other than said ring rail support associated with said lateral guide bore and projections; and

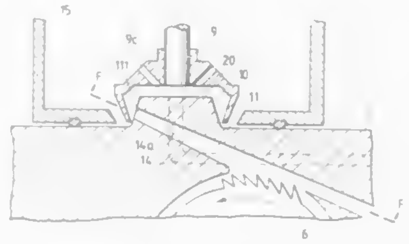
a longitudinal guide bore, formed in the other of the segment and said other ring support, for receiving said longitudinal guide projection therein, said longitudinal guide bore having a cross-sectional extent laterally with respect to said segment and a transverse cross-sectional extent longitudinally with respect to said segment, said lateral extent of said longitudinal guide bore corresponding to a cross-sectional extent of said longitudinal guide projection laterally with respect to said segment such that said longitudinal guide projection is relatively snugly received therein, and said longitudinal extent of said longitudinal guide bore being sufficiently greater than a cross-sectional extent of said longitudinal guide projection longitudinally with respect to said segment that said longitudinal guide projection is slidably movable along said longitudinal extent of said longitudinal guide bore, said longitudinal guide bore being located with its longitudinal extent generally aligned with said longitudinal axis through said centering bore, whereby the segment is maintained at a predetermined position with respect to the spindles serviced by its rings while variations in its longitudinal and lateral extent which may occur due to temperature changes or the like are automatically accommodated.

4,879,873
SPINNING UNIT IN OPEN-END SPINNING MACHINE

Susumu Kawabata; Tetsuzo Inoue, and Hiroshi Niimi, all of Aichi, Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Aichi, Japan
Filed Jul. 29, 1988, Ser. No. 225,735
Claims priority, application Japan, Jul. 31, 1987, 62-93065
Int. Cl.^{4} D01H *7/892, 7/882*
U.S. Cl. 57—413 7 Claims

1. A spinning unit of an open-end spinning machine comprising:

a rotor having an inner wall, a bottom portion and an open end opposite to said bottom portion and being arranged to rotate about a center axis perpendicular to said bottom portion; and a stationary closing member projecting into a spinning chamber of said rotor to extend over the rotational axis of the rotor and thereby close the open end of said rotor and being provided with a fiber supply duct which opens toward said inner wall of said rotor, said fiber supply duct having one side wall located at one side of said closing member and an opposite side wall located at an opposite side of said closing member and a yarn guide hole which opens at an end surface thereof opposite said bottom portion of said rotor; wherein said fiber supply duct is arranged in said closing member so that the diameter of said fiber supply duct is not larger than 90 percent of the diameter of said closing member.



4,879,874
LIQUID FUEL ROCKET ENGINE

Yukio Koyari; Eiji Sogame, both of Tokyo; Kanji Kishimoto, and Yojiro Kakuma, both of Aichi Pref., all of Japan, assignors to National Space Development Agency of Japan, Tokyo, Japan
Continuation-in-part of Ser. No. 47,163, May 6, 1987, abandoned. This application Apr. 18, 1988, Ser. No. 182,938
Claims priority, application Japan, May 7, 1986, 61-104481
Int. Cl.^{4} F02K *9/46*
U.S. Cl. 60—259 3 Claims

1. A liquid fuel rocket engine having a fuel booster means (3) for boosting the pressure of fuel component, an oxidizer booster means (4) for boosting the pressure of oxidizer component, two booster driving means for energizing said two booster means, a combustor means (6) wherein said booster fuel and oxidizer components are put into combustion to produce a combustion gas to be discharged outwardly, a combustor cooling jacket means (7) mounted operatively around the circumference of said combustor means, a high expansion nozzle means (8) extending from said combustor means (6), and an expansion nozzle cooling jacket means (9) disposed operatively around the circumference of said high expansion nozzle means (8), said engine having an outlet from said fuel booster

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means (3) connected operatively to an inlet to said combustor cooling jacket means (7), having an outlet from said combustor cooling jacket means (7) connected operatively to a fuel inlet to said combustor means (6) and to an inlet to said expansion nozzle cooling jacket means (9), and having an outlet from said expansion nozzle cooling jacket means (9) connected operatively to an inlet to said two booster driving means (5), respectively;

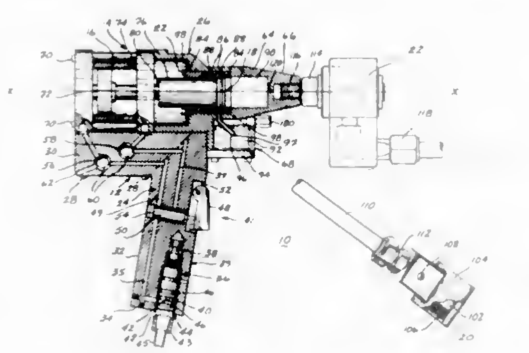
said engine is characterized in that said expansion nozzle cooling jacket means (9) comprises an alternating arrangement of upflow and downflow tube means (11, 12) along the surface of said high expansion nozzle means (8), said upflow and downflow tube means being connected to each other at their downstream ends (13), said outlet from said combustor cooling jacket means (7) being connected to the downflow tube means (11), and outlets from said upflow tube means (12) being connected to an inlet to one of said booster driving means (5), said engine being further characterized in that a non-cooled nozzle extension means (14) is disposed in the downstream position from said expansion nozzle cooling jacket means (9) and a turbine exhaust gas manifold means (15) is disposed in said non-cooled nozzle extension means (14), said turbine exhaust gas manifold means (15) being connected to one of said booster driving means (5) through a turbine exhaust gas duct means (16).

4,879,875
FASTENER DRIVING TOOL

Edward J. Davert, Seattle, and Peter D. McCowin, Enumclaw, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Mar. 22, 1988, Ser. No. 171,752
Int. Cl.⁴ F15B *7/08*

U.S. Cl. 60—588 **11 Claims**



1. A fastener driving tool for inserting remotely located fasteners into a preformed opening in a structure, comprising:

a housing;

a hydraulic pressure generating means located within said housing for generating hydraulic pressure;

a hydraulic cylinder means remotely located from said housing and having a hydraulic piston in fluid communication with said hydraulic pressure generating means, said hydraulic piston being mounted within said hydraulic cylinder means for movement between a retracted position and an extended position, such that upon activation of said hydraulic pressure generation means said hydraulic piston is extended to thereby insert at least one fastener through the preformed opening; and

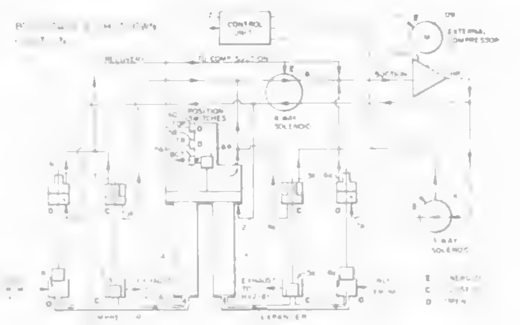
a hydraulic fluid reservoir located within said housing, said hydraulic fluid reservoir being in fluid communication with said hydraulic cylinder means only when said hydraulic pressure generating means is not generating pressure, such that fluid is directed from said reservoir to said hydraulic cylinder means to thereby replenish lost fluid in said hydraulic cylinder means.

4,879,876
CRYOGENIC REFRIGERATION APPARATUS

Warren A. Robertson, 8021 Floral View Way, Port Richey, Fla. 34668

Filed Feb. 3, 1989, Ser. No. 305,569
Int. Cl.⁴ F25B *9/00*

U.S. Cl. 62—6 **20 Claims**



1. A cryogenic refrigeration apparatus, comprising:

a compressor piston and cylinder;

an expander piston and cylinder;

a driver piston and cylinder that yokes together said compressor and expander pistons;

a position cylinder;

a first, second and third switch means positioned in specifically predetermined respective positions along the longitudinal extent of said position cylinder;

a magnet means slideably disposed within said position cylinder;

an elongate rod means interconnecting said magnet means and said driver piston so that reciprocation of said driver piston effects simultaneous and corresponding reciprocation of said magnet means within said position cylinder;

said magnet means being operative to activate, in sequence, said first, second and third switch means as said magnet means reciprocates within said position cylinder in driven relation to said driver piston;

said compressor cylinder having an inlet valve and an exhaust valve, both of which valves are confluent with a common compresor cylinder head;

said expander cylinder having an inlet valve and an exhaust valve, both of which valves are confluent with a common expander cylinder head;

means for selectively opening and closing said inlet and exhaust valves;

a logic control unit conductively coupled to said first, second and third switch means;

said means for selectively opening and closing said inlets and exhaust valves being coupled in driven relation to said logic control unit so that said logic control unit determines the opening and closing of said inlet and exhaust valves based upon the position of said driver piston;

a first heat exchanger means having a first inlet confluent with boiled off cryogenic gases from a load and having a first outlet confluent with said compressor cylinder inlet valve;

a second heat exchanger means having a first inlet confluent with said compressor cylinder exhaust valve and a second inlet confluent with said expander cylinder exhaust valve;

said expander cylinder inlet valve being confluent with said compressor cylinder exhaust valve; and

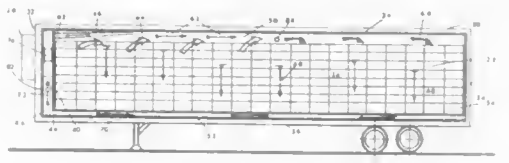
a motor driven external compressor means for driving said driver piston.

4,879,877
AIR CONDITIONING METHOD AND APPARATUS FOR REFRIGERATED VEHICLES

Gerald E. Hicke, 2468 Kingfield Way, San Jose, Calif. 95124

Filed Jul. 21, 1988, Ser. No. 222,165
Int. Cl.⁴ F25D *17/06*

U.S. Cl. 62—89 **15 Claims**



1. A refrigeration system for a vehicle with an elongated cargo containing space formed by a roof, floor, side walls and front and rear end walls, the refrigeration system being associated with a refrigeration or heating and cooling unit mounted at one end of the cargo containing space and comprising

means for isolating the refrigeration unit from the cargo containing space, the refrigeration unit having an outlet in communication with the cargo containing space adjacent its roof and an inlet in communication with the cargo containing space adjacent its floor,

a supply duct formed along the top of the cargo containing space adjacent the roof and in communication with the outlet,

a return duct formed substantially along the length of the cargo containing space by the floor and in communication with the inlet,

means for communicating gas or air from the supply duct to the return duct through and around cargo in the cargo containing space,

control means arranged along the length of the cargo containing space for regulating gas or air flow into the return duct to form a generally uniform pressure differential between the cargo containing space and the return duct in order to achieve more uniform cooling throughout the cargo containing space, and

the means for communicating gas or air from the supply duct to the return duct comprising heat barrier/spacer means arranged on vertical surfaces of the cargo containing space for allowing refrigerated gas air from the supply duct adjacent the roof toward the return duct adjacent the floor to prevent or minimize heat passage from the vertical surfaces to the cargo space.

4,879,878
AIR DAMPER ASSEMBLY FOR REFRIGERATOR/FREEZER

John Polkinghorne, Burlington, Canada, assignor to TRW Canada, Ltd., Stoney Creek, Canada

Division of Ser. No. 89,026, Jul. 24, 1987, Pat. No. 4,843,833, which is a continuation of Ser. No. 708,918, Mar. 6, 1985, abandoned. This application Apr. 15, 1988, Ser. No. 182,306
Claims priority, application Canada, Mar. 6, 1984, 448959
Int. Cl.⁴ F25D *17/04*

U.S. Cl. 62—187 **9 Claims**

1. A refrigeration apparatus comprising:

a freezer compartment;

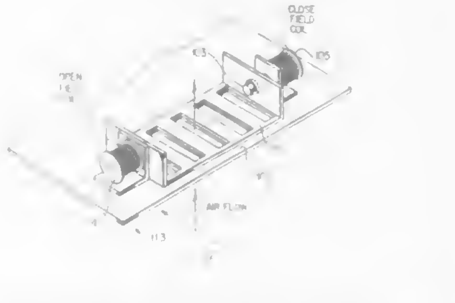
a fresh food compartment;

a cooling means for at least cooling the freezer compartment to subfreezing temperatures;

an air damper apparatus disposed in a fluid communication passage between the food compartment and at least one of the freezer compartment and the cooling means for selectively channeling cold air into the food compartment, the air damper apparatus including:

a slidably mounted damper door which is slidable between a first position in which cold air communication with the food compartment is at least partially blocked and a second position in which cold air is at least partially permitted to flow into the food compartment, the damper door being mounted such that it is gravitationally biased to remain in the selected one of the first and second positions until it receives a positive moving force;

a first and second oppositely acting electromagnetic means for selectively moving the damper door between the first and second positions in response to short, intermittently applied and separately controlled first and second electrical pulses, respectively, such that the damper door is moved to a selected one of the first and second positions



by separate momentary first and second electrical pulse and is gravitationally biased in said selected position without a continuous expenditure of electrical energy;

an open loop temperature controlling means for controlling the cooling means and for controlling the first and second electromagnetic means to maintain the freezer and food compartments generally at preselected temperatures; and,

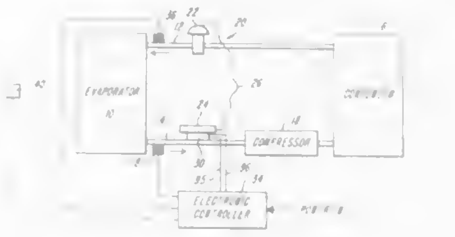
a periodic refreshing means for periodically repeating the first and second pulses such that the first and second electromagnetic means are refreshed to assure retention in the selected position.

4,879,879
APPARATUS FOR CONTROLLING A THERMOSTATIC EXPANSION VALVE

Joseph Marsala, 711 Wellman Ave., North Chelmsford, Mass. 01863, and Melvin M. Winters, 2028 Rocky Weed Rd., Berrien Springs, Mich. 49103

Filed Oct. 5, 1988, Ser. No. 253,715
Int. Cl.⁴ G05D *23/30, 15/00*

U.S. Cl. 62—202 **27 Claims**



1. Apparatus for controlling a heating or cooling system of the type including an evaporator having an inlet line and a suction line, and a thermostatic expansion valve for controlling flow of refrigerant into the evaporator, said thermostatic expansion valve including a valve in said inlet line and a thermostatic bulb coupled to said valve, said apparatus comprising:

a thermoelectric heat pump device responsive to an electrical control signal for controlling transfer of thermal energy to and from said thermostatic bulb, said thermoelectric device being positioned between said thermostatic bulb and said suction line, and being in thermal contact with said thermostatic bulb and said suction line;

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- means for sensing at least one temperature associated with said heating or cooling system; and
- electronic control means responsive to the sensed temperature for providing said electrical control signal to said thermoelectric device for maintaining a desired operating condition of said evaporator.

4,879,880

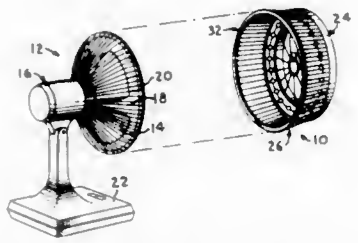
AIR TEMPERATURE REGULATOR

Frank Harrison, P.O. Box 1824, Kansas City, Mo. 64141

Filed Jan. 17, 1989, Ser. No. 297,102

Int. Cl.⁴ F25D *17/04*

U.S. Cl. 62—406 10 Claims



1. A temperature controlling apparatus for attachment to a fan having rotatable propeller for generating an air stream, said apparatus comprising:

- a plurality of individual cells containing a phase-change material therein; and
- a housing adapted for mounting to said fan, said housing including means for releasably securing said cells in said airstream and having motive means for selectively releasing said cells from said securing means in said housing,
- said individual cells being arrayed peripherally in said airstream and defining an annular, substantially uninterrupted airway between said cells and said motive means.

4,879,881

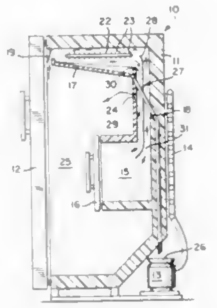
ENERGY EFFICIENT FROST-FREE REFRIGERATOR

Stephen M. Madigan, 10 Crestmont Rd., Montclair, N.J. 07042

Filed Sep. 19, 1988, Ser. No. 246,151

Int. Cl.⁴ F25D *11/02*

U.S. Cl. 62—447 43 Claims



43. An energy efficient frost free refrigerator including a freezing compartment and a cooling compartment, a single refrigerating element, temperature control means, said temperature control means adapted to actuate said refrigerating element to on and off cycles at selected temperatures, said refrigerating element located above said freezing compartment, means to direct air from said refrigerating element to said freezing compartment, means to direct air from said refrigerating element to said cooling compartment, means to direct air from said freezing compartment to said refrigerating element, means to direct air from said cooling compartment to said refrigerating element, said means to direct air from said refrigerating element to said freezing compartment and from said refrigerating element to said cooling compartment and from said freezing compartment to said refrigerating element include a channel between said refrigerating element and said freezing compartment, said channel including a plurality of passages, said passages defined by a shield, said shield ending within said freezing compartment, said shield curved at its end, at least one said passage adapted to direct air from said refrigerating element to said freezing compartment and at least one passage adapted to direct air from said freezing compartment to said refrigerating element, and said at least one passage from said freezing compartment to said refrigerating element openly at a level above said at least one passage from said refrigerating element to said freezing compartment.

4,879,882

JEWELRY WITH INTERCHANGEABLE ELEMENTS

Robert P. Johnson, and Janice A. Johnson, both of Glendale, Ariz., assignors to RPJ Development Corporation, Phoenix, Ariz.

Filed Aug. 15, 1988, Ser. No. 232,109

Int. Cl.⁴ A44C *5/02*

U.S. Cl. 63—4 18 Claims

1. A jewelry pendant having interchangeable decorative elements comprising:

- a vertical stem portion having a noncircular cross section, an upper end and a lower end, said upper end including a loop having a gap therein;
- a plurality of beads, each having at least one flat face and an opening therethrough of said noncircular cross section to permit threading said beads on said stem portion in which an uppermost one of said beds serves to close said gap of said loop; and
- clutch removably attachable to said lower end means for selectively retaining said beads on said stem portion.

4,879,883

OPENABLE RING WITH UNIQUE LOCKING AND RELEASE MEANS

Mates A. Bruner, 14 Barbara La., Havertown, Pa. 19083

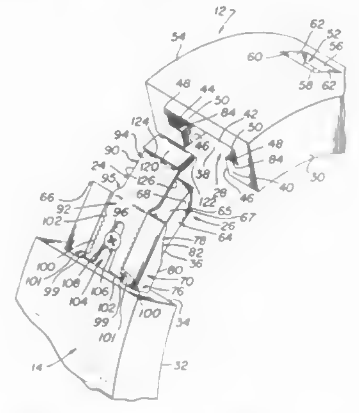
Filed Aug. 9, 1988, Ser. No. 230,285

Int. Cl.⁴ A44C *5/00*

U.S. Cl. 63—15.7 8 Claims

1. A ring to be worn as an article of jewelry about a portion of a body of a person, said ring comprising: a first rigid arcuate section having an arcuate inner surface, a substantially T-shaped recess in said first arcuate section extending along a portion of the arc of said first arcuate section and having an outer head portion of a wider transverse dimension than an inner stem portion, said head portion and stem portion being joined through upwardly facing, transversely extending support surfaces forming part of said recess, said recess having an open free end with the inner stem portion of said recess including an opening along said arcuate inner surface for communicating with the interior of the ring, said first arcuate section

including an access aperture extending through an outer surface adjacent a rear end of the substantially T-shaped recess and communicating with the outer head portion of said T-shaped recess; a second rigid arcuate section pivotably connected to said first arcuate section and having an inner surface and a rigid male extending member projecting therefrom, said male extending member including a distal portion having a transverse dimension receiveable within the stem portion of the recess through both the open free end of said recess and the opening along said arcuate inner surface of said recess, said male extending member further including a proximal portion having a substantially T-shaped transverse configuration including downwardly extending surfaces overlying the transversely extending support surfaces of the T-shaped recess when said arcuate sections are in a fully closed position, and latching means for maintaining the male extending member in a position fully inserted within said recess when the arcuate sections are in a fully closed position, said latching means including a spring element having a rear end attached to the male extending member and a forward locking section having a locking edge normally disposed within the access aperture when the arcuate sections are in a closed position to thereby maintain said arcuate sections in said closed position, a rear surface of said T-shaped recess being inclined and engageable by a surface of the spring element when the section of said spring element located in the access aperture is biased inwardly out of alignment with the access aperture to thereby provide a force between the arcuate sections in a direction for opening said arcuate sections.



4,879,884

UNIVERSAL DOUBLE-CYLINDER, MULTI-YARN-FEED CIRCULAR KNITTING MACHINE

Leopoldo Bertagnoli, Brescia, Italy, assignor to Orizio Paolo S.p.A., Brescia, Italy

Filed Jan. 26, 1988, Ser. No. 148,648

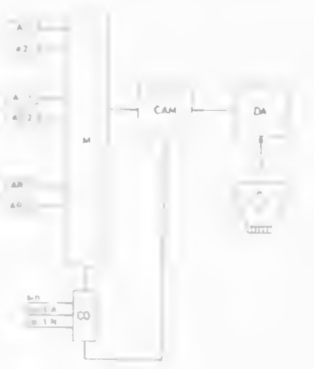
Claims priority, application Italy, Feb. 2, 1987, 19226 A/87

Int. Cl.⁴ D04B *9/10, 15/32, 15/78*

U.S. Cl. 66—14 4 Claims

1. A circular knitting machine equipped with a plurality of knitting stations, the knitting machine comprising:

- two coaxially superposed rotatable needle cylinders, each of said cylinders having a plurality of peripheral vertical aligned slots, each of said slots of the lower cylinder having inserted therein a selector element, a needle pusher and a lower slider, an upper slider being inserted in each of said slots of the upper cylinder, a plurality of double-ended needles transferrable between said slots of the lower and upper cylinders being provided for the manufacture of fabrics having rib and plain stitches;
- a stationary lower cambox having a plurality of radially fixed cams for cooperating with butts of said selector elements, needle pushers and lower sliders, said lower cambox surrounding said revolving lower cylinder;
- a stationary upper cambox having a plurality of radially fixed cams and two radially movable cams for cooperating with butts of said upper sliders, said upper cambox surrounding said revolving upper cylinder;
- first and second groups of electromechanical selection actuators each having a movable selection means for engaging the butts of said selector elements in each of said knitting stations, each of said groups of electromechanical selection actuators being preceded in the direction of cylinder revolution by a stationary extraction cam actuable with said selector elements, an electromechanical cam actuator being associated with each of said radially movable cams of said upper cambox for moving the corresponding cam between an operative position, in which the cam is engaged with the butts of the upper sliders, and an inoperative position;
- a plurality of regulating devices for regulating the length of the rib and plain stitches formed in each knitting station, said regulating devices being electromechanically driven by means of individual regulating electromechanical actuators;



- a plurality of lower and upper presses provided with undercuts for acting on corresponding ones of said lower and upper sliders and for allowing said double-ended needles to be transferred between said cylinders; and
- a central electronic control unit for sending actuation signals to said electromechanical cam actuators, said electromechanical selection actuators and said regulating electromechanical actuators, said control unit comprising processing means, a pattern analyzer, and an encoder which supplies synchronization signals, a needle counting signal for each cylinder revolution and cylinder revolution counting signals to said processing means, in accordance with rotational movement of said needle cylinders, whereby said processing means emits said actuation signals to said electromechanical cam actuators, said selection actuators and said regulating electromechanical actuators in response to signal input received from said pattern analyzer and from said encoder.

4,879,885

KNITTING MACHINE HAVING RELATIVELY ADJUSTABLE NEEDLE CAMS AND SINKER CAMS

Falk Kühn, Rottenburg, Fed. Rep. of Germany, assignor to Memminger GmbH, Freudenstadt, Fed. Rep. of Germany

Filed May 4, 1988, Ser. No. 190,033

Claims priority, application Fed. Rep. of Germany, May 19, 1987, 3716711

Int. Cl.⁴ D04B *15/24, 15/32*

U.S. Cl. 66—54 11 Claims

1. Knitting machine having

- a frame (6);
- a needle bed (1, 3);
- knitting needles (4, 5) located on the needle bed;

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sinkers (22) which are short with respect to the needles located between the needle bed;

needle cam means (14) having a needle cam control track (20) operatively coupled to the needles to move the needles between a projected position and a withdrawn position and defining an upper needle motion reversal position (45) and a lower needle motion reversal position (46);

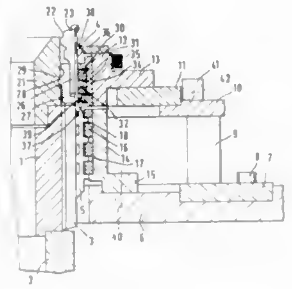
sinker cam means (12) having a sinker cam control track (33) operatively coupled to the sinkers to move the sinkers between a projected position and a withdrawn position and defining an upper sinker motion reversal position (49) and a lower sinker motion reversal position (48), said sinkers being additionally movable in a direction transverse to the longitudinal extent of the needle;

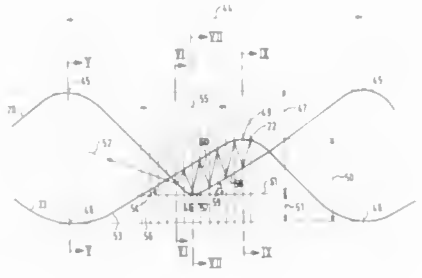
adjustment means (35) adjustably securing the sinker cam means (12) relative to the needle cam means (14) and securing the sinker cam means to the machine frame;

and wherein

the needle cam control track (20) is positioned with respect to the sinker cam control track (33) such that

a first range of movement of the needles (4) and sinkers (22) is controlled to move the needles in a direction downwardly towards the lowest withdrawn and needle reversal position (46) and counter to the direction of concurrent movement of the sinkers, and determining the length of loop stitches;





then, a second range of movement of the needles and sinkers is controlled from the position in which the needles (4) are at the lowest withdrawn, or needle movement reversal position (46) of the needle cam track and the sinker cam track has a portion which controls the sinkers for projecting movement;

a third range movement of the needles and the sinkers is controlled, in which the needles (4) and sinkers (22) move in the same direction,

wherein, for said third range of movement,

the needle cam control track (20), subsequent to said needle movement reversal position, a rising section which rising section has an essentially straight portion (58) and

the sinker cam control track (33) has a rising section which has an essentially straight portion (55),

which sinker cam control track (33) in the region of the essentially straight portion (55) thereof is essentially parallel to the essentially straight rising portion (58) of the needle cam control track (20);

wherein said adjustment means permit selective relative positioning of the needle cam means (14) and the sinker cam means (12) to position the needle cam control track (20) and the sinker cam control track (33) to place the lower needle reversal position (46) of the needle cam control track (20) to always remain in alignment with the essentially straight rising portion (55) of the sinker cam control track (33), and upon change of such selective relative positioning, maintaining intact said essentially parallel relationship of the essentially straight rising portions (58, 55) of the needle cam control track and the sinker cam control track; and

wherein the essentially straight portions (58, 55) of the needle and sinker cam control tracks (22, 23) have projection angles (59, 54) which are essentially constant throughout essentially the respective essentially straight portions of said control tracks.

4,879,886
CIRCULAR KNITTING MACHINE

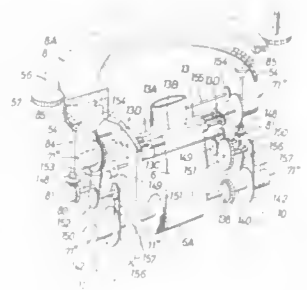
Toshihiko Okada; Toshifumi Yagi, and Satoshi Suzuki, all of Kyoto, Japan, assignors to Gunze Limited, Ayabe, Japan

Filed Apr. 27, 1988, Ser. No. 186,636

Claims priority, application Japan, May 1, 1987, 62-109554; Jul. 17, 1987, 62-110140[U]; Aug. 4, 1987, 62-195039; Oct. 19, 1987, 62-160576[U]

Int. Cl.⁴ D04B *15/88*

U.S. Cl. 66—151 17 Claims



1. A circular knitting machine including rotatable knitting means for forming a tubular knitted fabric; fabric transport means comprising a plurality of rollers for delivering knitted fabric in a hanging state from the knitting means; take-up spool means for rolling up the knitted fabric delivered in a hanging state by the transport means; a pair of opposed take-up frames which are stoppably rotated in synchronism with the knitting means by a drive transmission that is provided at an upper location of the take-up frame and includes a ring gear that is in engagement with a pinion gear; wherein, between the pair of the frames and at an upper location of the frames, the rollers of the fabric transport means are horizontally carried in parallel under the ring gear; and at a lower location of the frames, the take-up spool means is arranged parallel to the rollers of the fabric transport means; said knitting machine further comprising:

a constant-torque transmission means for magnetically transmitting a constant-torque, wherein the constant-torque transmission means comprises a drive ring, a driven ring, and a magnetic slip coupling for transferring rotation of the drive ring to the driven ring due to torque generated by a magnetic interaction between the drive ring and the driven ring which occurs upon rotation of the drive ring and which produces a constant-torque by enabling slippage between the rings when a load over a certain limit is applied to the slip coupling; wherein a mechanical transmission means is provided for rotating the drive ring of the constant-torque transmission means by force derived from rotation of the frames by the engagement between the pinion gear and the ring gear; and wherein said driven ring is coupled to the rollers of the fabric transport means.

4,879,887
CONTINUOUS FLOW WASHING MACHINE

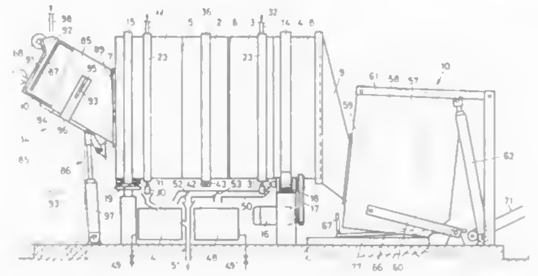
Rudolf Kägi, Hadlikon-Hinwil, and Eugen Baumgartner, Wolfhausen, both of Switzerland, assignors to Maschinenfabrik Ad. Schulthess & Co. AG, Zurich, Switzerland

Filed Mar. 25, 1988, Ser. No. 173,054

Claims priority, application Switzerland, Mar. 27, 1987, 1177/87

Int. Cl.⁴ D06F *31/00*

U.S. Cl. 68—16 8 Claims



1. Continuous flow washing machine comprising a tube (4) containing a single prewash chamber (1), a single clear wash chamber (2) and a single rinse chamber (3), wherein the prewash chamber (1) includes a first sluice gate (23), the clear wash chamber (2) includes a second sluice gate (36), and the rinse chamber (3) includes the third sluice gate (23), wherein means (43) are provided for heating clear wash water in the clear wash chamber (2) through the second sluice gate (36), wherein the prewash chamber (1) is selectively drained into a drain through the first sluice gate (23), wherein the rinse chamber (3) is drained selectively through the third sluice gate (23) into either a tank (47) comprising means for heating water in the tank or into an additional water receiving unit (48, 51) and is filled by means of a supply member (32), and wherein the prewash chamber (1) is selectively filled from the tank (47).

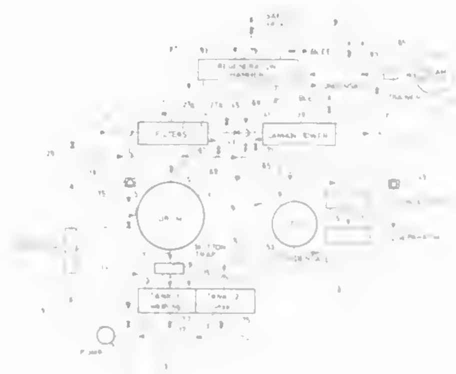
4,879,888
DRY CLEANING MACHINE

Moshe Suissa, 5561 Alpine, Côte St Luc, Quebec, Canada (H4V 2X4)

Filed Dec. 12, 1988, Ser. No. 282,499

Int. Cl.⁴ D06F *43/08*

U.S. Cl. 68—18 C 14 Claims



1. In a dry cleaning machine of the type comprising:

a rotating drum in which the laundry to be cleaned is treated with a cleaning solvent, said drum having a solvent inlet and a solvent outlet;

at least one storage tank for the solvent, said at least one tank having a solvent inlet and a solvent outlet;

a solvent feed line extending from the outlet of said at least one storage tank to the inlet of the drum, said feed line including a lint collector;

a pump for circulating the solvent from said at least one tank to the drum through the feed line;

a solvent return line extending from the outlet of the drum to the inlet of said at least one storage tank, said return line including a button trap,

a solvent filtration unit including at least one filter and means for allowing at least part of the solvent circulating through the feed line downstream the lint collector to pass through said at least one filter;

a solvent decoloration unit including a bed of activated carbon and means for allowing at least part of the solvent having passed through said at least one filter to pass through said at least one filter to pass through said carbon bed; and

a solvent distillation unit including a still, a condenser, a separator and means for allowing at least part of the solvent having passed through at least the lint collector to be fed into the still and distilled therein, then condensed in the condenser and finally returned to said at least one storage tank via the separator and a return pipe;

the improvement wherein the machine further comprises:

a regeneration unit to reactivate the carbon used in the carbon tower whenever necessary, said regeneration unit comprising:

a chamber in which the carbon to be reactivated is introduced and processed;

means for heating the chamber to evaporate the solvent dripping from the carbon to be reactivated and subsequently drying said carbon after the regeneration process has been completed,

means for injecting live steam into the heated chamber to desorb the carbon to be reactivated; and

piping means to direct the evaporated solvent and desorbsion steam from the heated chamber to the still of the solvent distillation unit.

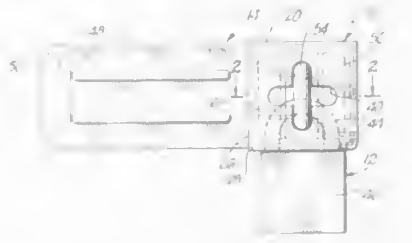
4,879,889
SHACKLE PROTECTOR

DeForrest, Sr., William, 1825 Via Burton, Anaheim, Calif. 92806

Continuation-in-part of Ser. No. 79,346, Jul. 30, 1987, Pat. No. 4,852,920. This application Sep. 28, 1987, Ser. No. 101,685

Int. Cl.⁴ E05B *67/38*

U.S. Cl. 70—56 5 Claims



1. In combination with a hasp having a slot for receiving a staple and a padlock having a shackle, a separate shackle protector which comprises:

a first plate, said first plate shaped as a quadrilateral;

a second plate, said second plate shaped as a quadrilateral;

a first wall joining said first and said second plates along the length of an edge of each of said first and second plates and positioning and fixedly holding said first and said second plates in a parallel-planar relationship with a hollow interior between said first and second plates;

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- a further wall joining at least a portion of a further edge of each of said first and said second plates, said further wall perpendicular to said first wall;
- a first elongated slot of a width and a length sufficiently greater than the dimensions of said staple of said hasp to allow said staple to be inserted through said first elongated slot, said first slot located in said first plate;
- a second elongated slot of a width and a length sufficiently greater than the dimensions of said staple of said hasp to allow said staple to be inserted through said second elongated slot, said second slot located in said second plate; and
- said shackle protector positionable over said staple of said hasp by inserting said staple of said hasp through at least one of said first or said second slots with said shackle protector secured to said staple of said hasp and protecting said padlock shackle by positioning said padlock shackle in said hollow interior between said first and said second plates with said shackle passing through said staple of said hasp.

4,879,890
EXPLOSIVE EXPANSION OF METAL TUBES

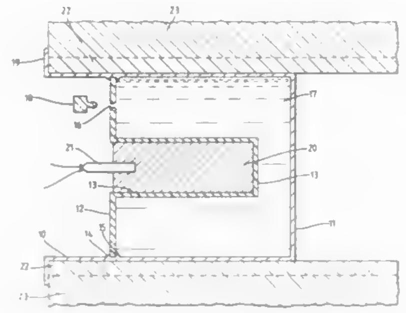
Roy Hardwick, Troon, Scotland, assignor to Imperial Chemical Industries PLC, London, England

Filed Sep. 2, 1988, Ser. No. 242,809

Claims priority, application United Kingdom, Sep. 18, 1987, 8721985

Int. Cl.⁴ B21D *26/08*

U.S. Cl. 72—62 11 Claims



1. A shock wave-transmitting insert for holding an explosive charge axially within a tubular metal element to be expanded and to transmit the shock wave from the said charge to the said tubular metal element when the charge is fired, characterised in that

the said insert comprises a hollow cylindrical container and charge-holding means to accommodate an explosive charge and locate it axially within the container, said container being adapted in use to be filled with a shock wave-transmitting liquid.

4,879,891
METHOD OF MANUFACTURING HEAT SINK APPARATUS

Howard G. Hinshaw, Dallas, Tex., assignor to Thermalloy Incorporated, Dallas, Tex.

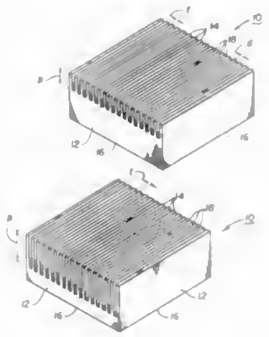
Division of Ser. No. 262,695, Oct. 26, 1988, which is a continuation of Ser. No. 42,706, Apr. 27, 1987, abandoned. This application Jun. 5, 1989, Ser. No. 361,484

Int. Cl.⁴ B21C *23/00*

U.S. Cl. 72—254 5 Claims

1. The method of forming a unitary heat sink metal body for use in removal of heat from a heat generating electronic device package comprising the steps of:

(a) extruding a unitary metal body of heat conducting material having a base surface on a first side thereof adapted to be positioned in thermally conductive contact with a heat generating electronic device package, said body including a predetermined number of parallel fins extending outwardly a first predetermined height from a side opposite said base surface, said predetermined number of parallel fins separated by a first predetermined number of parallel grooves of a first predetermined width and a first predetermined depth with the ratio of said first predetermined height to said first predetermined width being at least four to one; and



(b) sawing the first predetermined number of parallel grooves to a second predetermined depth to provide a second predetermined height to said parallel fins, whereby the ratio of the second predetermined height of said predetermined number of parallel fins to the first predetermined width of said first predetermined number of parallel grooves is at least six to one.

4,879,892
DRAWING MACHINE FOR CONTINUOUS DRAWING OF ENDLESS WIRES OR TUBES

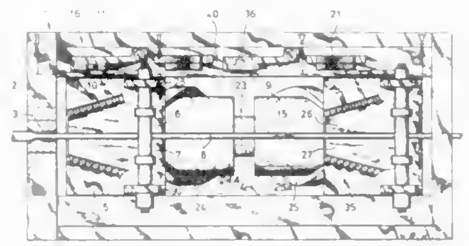
Elefterios Paraskevas, Aachen, Fed. Rep. of Germany, assignor to Kiehmaschinen GmbH, Solingen, Fed. Rep. of Germany

Filed Sep. 7, 1988, Ser. No. 241,426

Claims priority, application Fed. Rep. of Germany, Sep. 7, 1987, 3729892

Int. Cl.⁴ B21C *1/28*

U.S. Cl. 72—290 10 Claims



1. A continuous drawing machine for longitudinally drawing a workpiece comprising: a machine frame with a drawing die mounted thereon, two drawing carriages and drive means for axial displacement thereof; an arm projecting from each carriage; guideways on said machine frame for said drawing carriages on which each of said carriages is movably mounted; at least one pair of clamping jaws on each drawing carriage, the clamping jaws being displaceable towards the workpiece by means of said arm; a first cam curve mounted on said machine frame; the arm cooperating with the machine frame by means of said first cam curve located next to the starting position of working stroke of the carriage; and a second arm curve mounted on said machine frame, said first and second cam curves being separate from said drive means, said second cam curve cooperating with the arm at the end of the return stroke; the arm actuating the clamping jaws to clamp said workpiece upon cooperation with the first cam curve.

4,879,893
MULTIPURPOSE SWAGING MACHINE

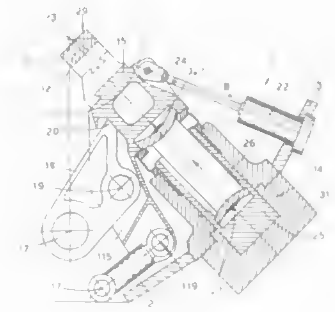
Antonino Duri' , Pradamano, and Geremia Nonini, Buttrio, both of Italy, assignors to Danieli & C. Officine Mecchaniche SpA, Nazionale, Italy

Filed Jun. 17, 1988, Ser. No. 208,043

Claims priority, application Italy, Jul. 3, 1987, 83399 A/87

Int. Cl.⁴ B21J *7/14*

U.S. Cl. 72—402 4 Claims



1. Multipurpose swaging machine comprising a hammer assembly and a return jack for repositioning the hammer assembly, wherein the hammer assembly includes a hammer support element, a power ram and a hammer, the improvement comprising:

(a) a first lever rotatably fixed to a side of the hammer support element, and

(b) an extendable first jack rotatably fitted to the same side of the hammer support element as the first lever, wherein the first jack, in an unextended position, forms a parallelogram with the first lever such that the first jack and first lever act to impart linear movement to the hammer assembly, and the first jack, in an extended position, acts with the first lever to impart hammer assembly movement along an arc of a circle.

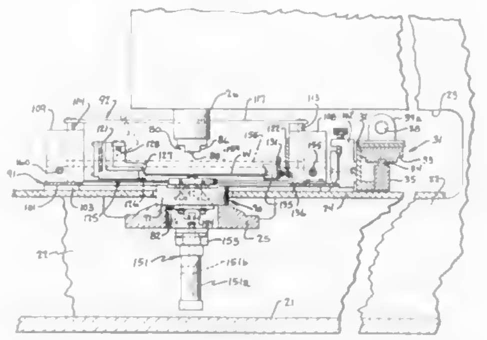
4,879,894
PRESS WITH MOVABLE WORKPIECE SUPPORT CARRIER

Roger J. Benedict, and John K. Forlow, both of Rockford, Ill., assignors to Roper Whitney Company, Rockford, Ill.

Filed Jun. 6, 1988, Ser. No. 202,934

Int. Cl.⁴ B21J *13/08, 13/16;* **B21D** *28/26*

U.S. Cl. 72—405 26 Claims



1. A press for performing successive forming operations on different areas of a workpiece having upper and lower sides, the press including stationary frame means having a work station, lower press tool means mounted on the stationary frame means below the work station, ram means mounted on the frame means above the work station and operable through a cycle having a downward punch stroke and an upward return stroke, upper press tool means mounted on the ram means, workpiece carrier means mounted for movement in a generally horizontal plane relative to the stationary frame means, workpiece support means mounted on the carrier means for movement horizontally therewith and for limited vertical movement relative thereto, means for moving the carrier means in said generally horizontal plane to position different areas of the workpiece at the work station, the upper press tool means being operative when the ram means is moved in said downward stroke to press the workpiece downwardly, and operating means for moving the workpiece support means downwardly relative to the carrier means during movement of the ram means in said downward stroke and for moving the workpiece support means upwardly relative to the carrier means during movement of the ram means in said upward return stroke, said means for moving said carrier means in a generally horizontal plane including means for moving the carrier means along a generally horizontal X-axis and means for moving the carrier means along a generally horizontal Y-axis transverse to said X-axis.

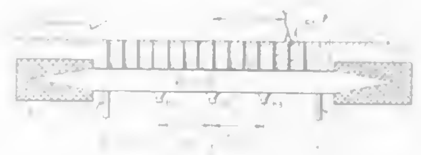
4,879,895
NORMAL SHOCK LOCATOR

Miklos Sajben, Chesterfield, Mo., assignor to McDonnell Douglas Corporation, Long Beach, Calif.

Filed Aug. 29, 1988, Ser. No. 237,073

Int. Cl.⁴ G01L *27/00*

U.S. Cl. 73—4 R 21 Claims



1. A shock position indicating apparatus comprising:

- inlet means for containing the said shock to be measured;
- multiplicity of tube means, opening into said inlet means, for providing pressure communication with said inlet means;
- cavity means for receiving pressure fluctuations, connected to said multiplicity of tube means;
- pressure transduction means, located near the ends of said cavity means, for sensing pressure fluctuations in said cavity means; and,
- tone means, adjacent said cavity means, for producing an acoustic tone within said cavity means.

4,879,896
METHOD AND APPARATUS FOR LEAK TESTING OF PIPE

Ronnie F. Miller, 1600 Chantilly St.; Arthur L. Dwyer, 101 Sapen Dr.; Darwin A. Miller, P.O. Box 1267, and Darwin L. Miller, 200 Bubby Dr., all of Houma, La. 70360

Continuation of Ser. No. 868,009, May 29, 1986, Pat. No. 4,727,749, which is a division of Ser. No. 571,823, Jan. 18, 1984, Pat. No. 4,601,194, which is a continuation-in-part of Ser. No. 458,790, Jan. 18, 1983, abandoned. This application Aug. 19, 1987, Ser. No. 86,792

The portion of the term of this patent subsequent to Mar. 1, 2006, has been disclaimed.

Int. Cl.⁴ G01M *3/04*

U.S. Cl. 73—46 12 Claims

1. An enclosure for containing a test gas adjacent a test area in a fluid carrying system, said enclosure comprising:

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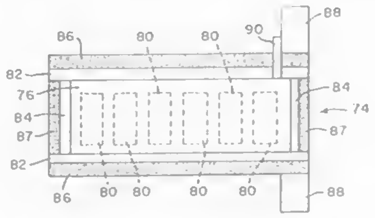
(a) a unitary, substantially gas impermeable flexible body positionable about a fluid conduit having a longitudinal axis in overlying relationship with a test area, said flexible body including a unitary joint extending substantially longitudinally in the direction of the longitudinal axis of the conduit to permit the flexible body to be spread open at said joint for application around the conduit and for removal therefrom, said joint being defined by a pair of opposed longitudinal edges, at least one of said longitudinal edges including sealing means positioned for engagement with the other of said longitudinal edges along a line parallel to the longitudinal axis of the conduit, said joint lying in an imaginary plane substantially parallel to and passing through the longitudinal axis of the conduit, said body including a stiffening bar adjacent each longitudinal edge of said joint;



(b) transversely extending, inwardly directed, annular, resilient sealing means carried by said flexible body to engage the conduit on opposite sides of the test area;

(c) spreading means carried by said body for spreading said longitudinal edges to a desired longitudinally extended opening therebetween; and

(d) closing means carried by said flexible body to permit said body to define a chamber around the test area to confine a test gas therewith.

4,879,897

METHOD AND APPARATUS FOR THE DETERMINATION OF VISCOSITY

Rodney I. Booth, Newport; David W. Edwards, Fairlight; Colin W. Wrigley, Epping, and Robert A. Orth, North Narrabeen, all of Australia, assignors to Commonwealth Scientific and Industrial Research Organization, Campbell, Australia

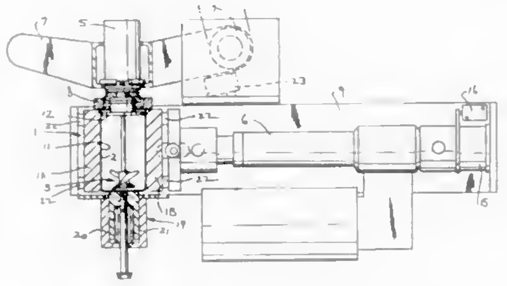
PCT No. PCT/AU86/00238, § 371 Date Apr. 17, 1987, § 102(e) Date Apr. 17, 1987, PCT Pub. No. WO87/01198, PCT Pub. Date Feb. 26, 1987

Continuation of Ser. No. 50,703, Apr. 17, 1987, abandoned. This PCT application Aug. 18, 1986, Ser. No. 328,758

Claims priority, application Australia, Aug. 19, 1985, PH2013; Feb. 13, 1986, PH4578

Int. Cl.⁴ G01N *11/14*

U.S. Cl. 73—59 14 Claims



1. A method for measuring the viscosity of a liquid at known temperatures which comprises:

(a) introducing the liquid into a vessel;

(b) positioning said liquid containing vessel within a heat transfer means wherein said heat transfer means is an axially split metallic block;

(c) rapidly adjusting the temperature of the said liquid by clamping said vessel within said heat transfer means tightly enough to slightly deform the walls of the vessel so that they substantially conform to the internal walls of said heat transfer means;

(d) stirring said liquid by rotating a stirring means within said liquid at a measured speed;

(e) simultaneously measuring the power consumed by rotating said stirring means at said speed and the temperature of the heat transfer means; and

(f) converting the measured power consumption to a viscosity measure and recording the said viscosity measure at the measured temperature.

4,879,898

APPARATUS FOR SHIELDING AND PROTECTING AN AIR FLOW RATE METER DISPOSED IN THE INTAKE TUBE OF AN INTERNAL COMBUSTION ENGINE FROM AIR COLUMN FLUCTUATIONS

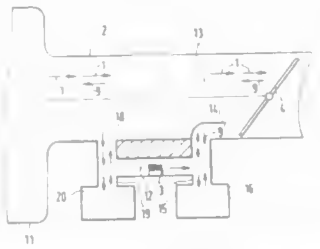
Franz Bamer, Vienna, Austria, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Mar. 12, 1985, Ser. No. 710,890

Claims priority, application Fed. Rep. of Germany, May 9, 1984, 3417052

Int. Cl.⁴ G01F *15/02*

U.S. Cl. 73—118.2 5 Claims



1. An apparatus for shielding and protecting an air flow rate meter, having a temperature-dependent resistor, which measures the mass of air aspirated by an internal combustion engine, from air column fluctuations arising in an intake tube of an engine as a result of the aspirating action of the engine, which includes an air intake tube, a conduit means connected with said air intake tube for aspirating air therethrough, said air flow rate meter is disposed in said conduit means through which a portion of said aspirated air mass flows, a first damping chamber connected to said conduit means via only one flow connection upstream of said air flow meter, and a second damping chamber connected to said conduit means downstream of said air flow rate meter and arranged to communicate with said conduit means via only one flow connection in the vicinity of said air flow rate meter.

4,879,899

SHEAR STRESS GAUGE

Patrick Leehey, Swampscott, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

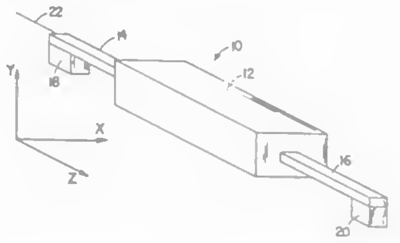
Filed Apr. 27, 1988, Ser. No. 186,891

Int. Cl.⁴ G01M *9/00*

U.S. Cl. 73—147 12 Claims

1. Shear stress gauge comprising an elongate body having a longitudinal axis oriented transverse to fluid flow, the body disposed within the viscous sublayer of the turbulent boundary layer flow across a wall, the body further having a plane of symmetry, the plane of symmetry passing through the longitudinal axis of the body and normal to the wall;

apparatus for supporting and constraining the body for deflections about the longitudinal axis; and



deflection measuring apparatus responsive to angular deflections about the longitudinal axis, the angular deflections substantially linearly related to shear stress on the wall.

4,879,900

HYDRAULIC SYSTEM IN FORMATION TEST TOOLS HAVING A HYDRAULIC PAD PRESSURE PRIORITY SYSTEM AND HIGH SPEED EXTENSION OF THE SETTING PISTONS

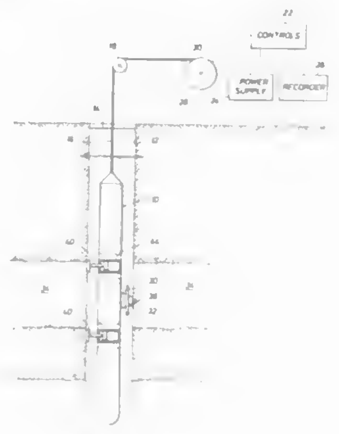
Gregory N. Gilbert, Houston, Tex., assignor to Halliburton Logging Services, Inc., Houston, Tex.

Filed Jul. 5, 1988, Ser. No. 215,144

The portion of the term of this patent subsequent to May 24, 2005, has been disclaimed.

Int. Cl.⁴ E21B *49/08*

U.S. Cl. 73—155 12 Claims



8. A formation testing tool for measuring the pressure within a formation penetrated by a well borehole comprising:

(a) sample drawing means having a snorkel and locatable within the well borehole for establishing, through the wall of the well borehole and isolated from pressures within the well borehole, a snorkel-ended direct fluid flow path communicating with an adjacent formation;

(b) fluid drawing means coupled with said sample drawing means for drawing fluid from the adjacent formation;

(c) seal means sealing around said snorkel to substantially remove the well borehole pressure from the immediate area of the snorkel-ended direct fluid flow path to enable formation fluid to define pressure acting on said sample drawing means; and

(d) means for continuously loading said seal means during operation of said fluid drawing means to prevent formation invasion by well borehole fluid.

4,879,901

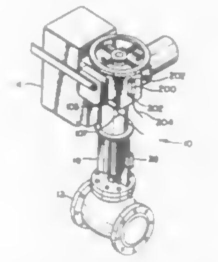
SYSTEM FOR EVALUATING THE CONDITION AND PERFORMANCE OF A VALVE AND VALVE OPERATOR COMBINATION

Robert L. Leon, Roslyn, Pa., assignor to Liberty Technology Center, Inc., Conshohocken, Pa.

Continuation-in-part of Ser. No. 87,541, Aug. 20, 1987, Pat. No. 4,805,451. This application Apr. 22, 1988, Ser. No. 185,210

Int. Cl.⁴ F16K *31/05;* G01L *05/00;* G01P *13/00*

U.S. Cl. 73—168 15 Claims



1. A device for measuring and indicating the forces on a valve stem of a valve having an operator within an operator housing, over at least a portion of the valve stroke, the device comprising:

first strain sensor means secured to a valve yoke and substantially parallel to the valve stem for sensing strains experienced by the valve yoke which are proportional to the forces on the valve yoke and are equal and opposite to the forces on the valve stem, the first strain sensor means for generating first electrical signals proportional to the forces on the valve stem;

second strain sensor means secured to the valve operator housing for sensing strains experienced by the operator housing, the second strain sensor means for generating second electrical signals proportional to forces on the operator housing; and

display means electrically connected to the first and second strain sensor means for receiving the first and second electrical signals and for indicating the forces on the valve stem and the operator housing.

4,879,902

LEVEL CONTROL STRUCTURE WITH PROBES

Peter J. Lonielo, Richfield, Minn., assignor to DRI Steem Humidifier Co., Hopkins, Minn.

Filed Aug. 12, 1988, Ser. No. 231,715

Int. Cl.⁴ G01F *23/24, 23/00*

U.S. Cl. 73—304 R 7 Claims

1. A level control structure comprising a probe assembly body member; at least one metallic cylindrical insert extending through said body member; a metallic sensing probe connected to said insert and extending outwardly from the body member;

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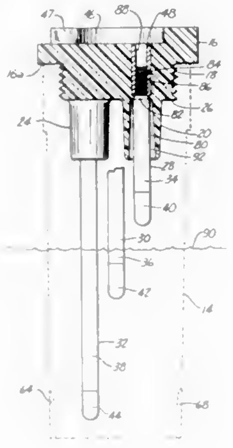
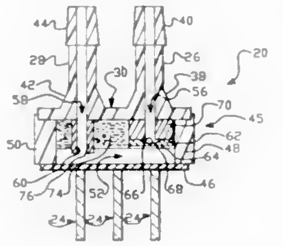
and a sleeve extending from said body member and about said probe for protecting a portion of said probe adjacent said body member, said sleeve being spaced from said probe along a selected distance of the length of the probe.



4,879,903
THREE PART LOW COST SENSOR HOUSING

Jeffery E. Ramsey, Newark; Janusz Bryzek, and Joseph R. Mallon, Jr., both of Fremont, Calif., assignors to Nova Sensor, Fremont, Calif.

Filed Sep. 2, 1988, Ser. No. 241,030
Int. Cl.⁴ G01L *7/08, 9/06, 19/14*
U.S. Cl. 73—431 40 Claims



17. A sensor apparatus comprising:

a housing formed from a thermoplastic material and defining a chamber;

wherein said housing includes an upper portion including an upper wall region having first and second vent ports formed therein, a center portion including first and second opposed side-wall regions and a lower portion including a lower wall region;

wherein said center portion is disposed between said upper and lower portions and is hermetically bonded to said upper and lower portions;

wherein said upper portion includes an integral first external tube in communication with the first vent port and includes an integral second external tube in communication with the second vent port;

a glass member bonded to said housing within the chamber, said glass member having a hole formed therein, the hole being aligned with the first vent port;

a semiconductor electromechanical sensor means including a semiconductor element including first and second surfaces, said semiconductor element being bonded to said glass member such that said first surface is in communication with the first vent port through the hole;

wherein said upper portion includes an internal conduit which extends within the chamber and is in communication with the second vent port, said internal conduit including a distal portion which is disposed deeper within the chamber than is said pressure transducer means;

at least three respect first pin terminals extending through said first side-wall region, each respective first pin terminal including a respective short segment within the chamber and a respective elongated segment outside the chamber;

at least three respective second pin terminals extending through said second side-wall region, each respective second pin terminal including a respective short segment within the chamber and a respective elongated segment outside the chamber;

first coupling means for electrically coupling said semiconductor element to said respective short segments of said respective first pin terminals;

second coupling means for electrically coupling said semiconductor element to said respective short segments of said respective second pin terminals; and

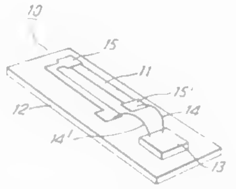
an inert gelatinous fill material partially filling the chamber such that said semiconductor element and said first and second coupling means are immersed in said fill material and such that said distal portion of said internal conduit is not immersed in said fill material;

whereby a non-filled region of the chamber is in communication with the second vent port.

4,879,904
IONIC CONDUCTIVITY ACCELEROMETER

John E. A. Shaw, West Drayton, and Brian C. Webb, Sunbury, both of England, assignors to Thorn EMI PLC, London, England

Filed Mar. 22, 1988, Ser. No. 171,549
Claims priority, application United Kingdom, Mar. 25, 1987, 8707091
Int. Cl.⁴ G01P *15/08, 15/12*
U.S. Cl. 73—517 R 7 Claims



1. A device for measuring acceleration comprising: an electrically insulative substrate; an ionically conductive layer, said layer comprising a composite layer containing an ionically conductive material and an electrically insulative inert material; and spaced apart electrodes in contact with said layer; wherein acceleration of said device is indicated by an e.m.f. generated between said spaced apart electrodes.

4,879,905
APPARATUS FOR MEASURING THE INTERNAL FRICTION OF A TRANVERSELY VIBRATING METAL SPECIMEN

Hong-Bin Chen; Lien-Kuei Chang; Shern-Ji Tsay; Tung-Sheng Chou, all of Kaohsiung, and Fong Shiue, Taipei, all of Taiwan, assignors to China Steel Corporation, Haohslung, Taiwan

Filed Oct. 11, 1988, Ser. No. 255,872
Int. Cl.⁴ G01N *29/00*
U.S. Cl. 73—579 5 Claims

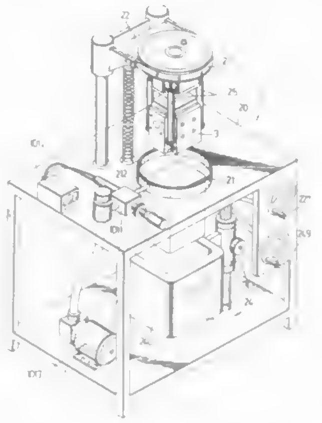
1. A measuring apparatus for measuring internal friction of a metal specimen comprising:

a machine table;

a container including a container body fixed on said machine table and having an open upper end, and a container lid covering said upper end of said container body;

an ascending device carrying said container lid thereon for moving vertically said container lid into and out of engagement with said container body, said container lid covering said container body when one is engaged with the other; and

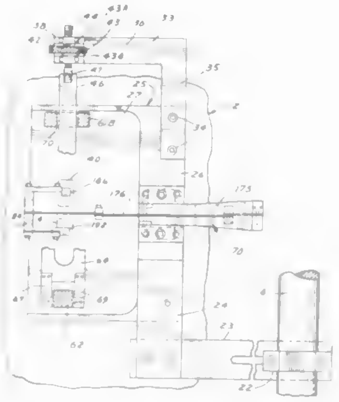
a measuring unit carried on a lower surface of said container lid and movable into said container body when said container lid engages with said container body, said measuring unit including a driving member having a channel formed therein for causing the specimen to vibrate for the purpose of measuring internal friction, a detecting member spaced apart from said driving member and having a channel formed in said detecting member for detecting the vibrations in the specimen, a cold water feeding pipe communicating with both said channels of said driving member and said detecting member, and a drain pipe also communicating with both said channels of said driving member and said detecting member.



4,879,906
VIBRATION DAMPED MOUNTING FOR EXTENSOMETER SYSTEM

Harry R. Meline, Minnetonka; Richard A. Meyer, Carver, and Nebojsa D. Kovacevic, Plymouth, all of Minn., assignors to MTS Systems Corporation, Eden Prairie, Minn.

Continuation-in-part of Ser. No. 186,367, Apr. 26, 1988. This application Jul. 29, 1988, Ser. No. 226,423
Int. Cl.⁴ G01B *5/30;* **G01N** *3/08, 17/00*
U.S. Cl. 73—826 11 Claims

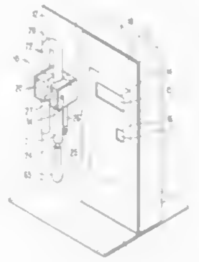


1. An extensometer apparatus comprising means for contacting a specimen for use with the extensometer apparatus, a frame mounting the means for contacting the specimen, means for indicating movement of the specimen contact means with respect to a reference position, the extensometer apparatus including a mass supported on a movable member in the apparatus transmitting vibrations to the extensometer apparatus which affect an output of the means for indicating movement, and means for coupling the mass to the member comprising a layer of damping material mounting the mass relative the member so that vibrations are not directly transmitted to the mass except through the layer of vibration damping material.

4,879,907
SOAP FILM FLOWMETER

Dwight Patterson, Fairfield, and Neil A. Levine, Davis, both of Calif., assignors to Humonics, Inc., Fairfield, Calif.

Filed Feb. 13, 1987, Ser. No. 14,577
Int. Cl.⁴ G01F *1/708*
U.S. Cl. 73—861.05 12 Claims

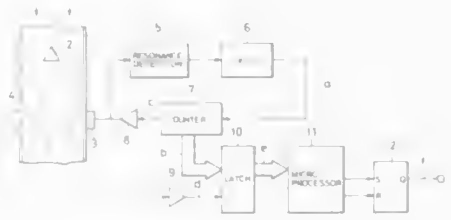


1. In a gas flowmeter for measuring the flow rate of a gas, the flowmeter having a gas flow tube with an inlet for connection to a gas flow source and an outlet, means for introducing a soap film adjacent said inlet, and means for detecting the rate of passage of a soap film within said tube between a pair of measuring location; the improvement wherein said gas flow tube includes means for substantially equalizing the pressure on opposite sides of the soap film within said tube in the region between said inlet and said detecting means to minimize the diffusion of the gas through the soap film during flow rate measurement, said pressure equalizing means comprising a U-shaped gas flow tube mounted in an inverted attitude, said U-shaped gas flow tube having first and second leg portions, said first leg portion including the gas flow inlet and having a length sufficiently great to span the pair of measuring locations, said second leg portion including the outlet.

4,879,908
SUCTION AIR MEASURING DEVICE

Kazumichi Tutumi, Hyogo, Japan, assignor to Mitisubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 11, 1988, Ser. No. 166,933
Claims priority, application Japan, Mar. 19, 1987, 62-64904
Int. Cl.⁴ G01F *1/32*
U.S. Cl. 73—861.23 2 Claims



1. A suction air measuring device for an engine, comprising a vortex generating member inserted into a suction conduit of said engine, vortex detection means for detecting a vortex signal indicative of Karman vortex generated behind said vortex generating member said vortex detection means including an ultrasonic transmitting vibrator disposed in said suction conduit together with an ultrasonic receiving vibrator such

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that an ultrasonic wave from said transmitting vibrator is phase-modulated by Karman vortex in said suction conduit and received by said receiving vibrator, said receiving vibrator outputting a phase-modulated signal, said vortex detection means further including means for obtaining a digital signal from said phase-modulated signal and means for storing said digital signal in a memory means at a predetermined period and a digitizing means for digitizing a content of said memory means to obtain a Karman vortex signal and for setting or resetting said Karman vortex signal when said digital signal of said vortex detection means starts to increase from a lower extreme thereof by a predetermined value and resetting or setting said Karman vortex signal when said digital signal of said vortex detection means decreases from an upper extreme thereof by a predetermined value.

4,879,909

VORTEX SHEDDING FLOWMETER

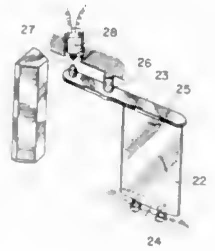
Hyok S. Lew, 7890 Oak St., Arvada, Colo. 80005

Continuation-in-part of Ser. No. 922,850, Oct. 24, 1986, Pat. No. 4,747,756, and a continuation-in-part of Ser. No. 31,901, Mar. 30, 1987, Pat. No. 4,776,222, and a continuation-in-part of Ser. No. 31,902, Mar. 30, 1987, Pat. No. 4,807,481. This application Oct. 7, 1987, Ser. No. 105,265

The portion of the term of this patent subsequent to Mar. 1, 2005, has been disclaimed.

Int. Cl.⁴ G01F *1/32*

U.S. Cl. 73—861.24 22 Claims



1. An apparatus for measuring fluid flow comprising in combination:

(a) a body including a flow passage extending from one extremity to the other extremity of the body;

(b) a vortex generator of an elongated cylindrical shape disposed across a first cross section of the flow passage; and

(c) a vortex detector comprising a planar member disposed across a second cross section of the flow passage generally parallel to the vortex generator on a plane generally parallel to the central axis of the flow passage wherein one extremity of the planar member is secured to the wall of the flow passage, a lever member including a fulcrum means disposed generally parallel to the central axis of the flow passage with one extremity connected to the other extremity of the planar member opposite to said one extremity, and a transducer means including a force receiving member connected to the lever member;

wherein said transducer means provides signals related to the frequencies of vortex shedding from the vortex generator as a measure of volume flow rate through the flow passage and the amplitudes of alternating lift forces on the planar member as a measure of mass flow rate through the flow passate.

4,879,910

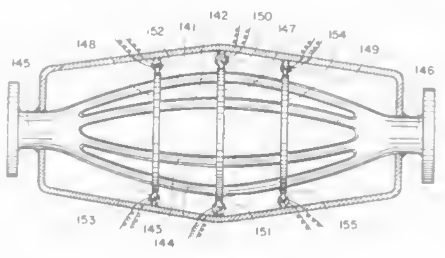
TORSIONAL VIBRATION CONVECTIVE INERTIA FORCE FLOWMETER

Hyok S. Lew, 7890 Oak St., Arvada, Colo. 80005

Continuation-in-part of Ser. No. 71,777, Jul. 10, 1987, Pat. No. 4,813,289, and a continuation-in-part of Ser. No. 78,206, Jul. 27, 1987, Pat. No. 4,829,832. This application Aug. 24, 1987, Ser. No. 88,571

Int. Cl.⁴ G01F *1/78, 1/84*

U.S. Cl. 73—861.37 6 Claims



1. A device for measuring rate of fluid flow comprising in combination:

(a) a plurality of curved conduits disposed in a converging-diverging arrangement about an central axis of assembly with first extremities connected to a first port leg and second extremities connected to a second port leg, wherein distance from the central axis of assembly to each of the curved conduits is greater at the midsection of the curved conduit than at each extremity of the curved conduit;

(b) a first interconnecting member joining together first halves of said plurality of curved conduits adjacent to the port leg, and a second interconnecting member joining second halves of said plurality of curved conduits adjacent to the second port leg;

(c) means for rotatively vibrating midsections of said plurality of curved conduits about the central axis of assembly; and

(d) means for measuring rotary vibrations of said first halves and said second halves of curved conduits;

wherein mass flow rate through said plurality of curved conduits is determind from difference in the rotary vibrations about the central axis of assembly between said first halves and said second halves of said plurality of curved conduits.

4,879,911

CORIOLIS MASS FLOW RATE METER HAVING FOUR PULSE HARMONIC REJECTION

Michael J. Zolock, Longmont, Colo., assignor to Micro Motion, Incorporated, Boulder, Colo.

Filed Jul. 8, 1988, Ser. No. 217,012

Int. Cl.⁴ G01F *1/84*

U.S. Cl. 73—861.38 23 Claims

1. A Coriolis mass flow rate meter comprising:

at least one flow conduit;

means for sensing movement of said flow conduit caused by opposing Coriolis forces induced by passage of a fluid through said flow conduit and for producing first and second sensor signals responsive to the sensed movement of said flow conduit;

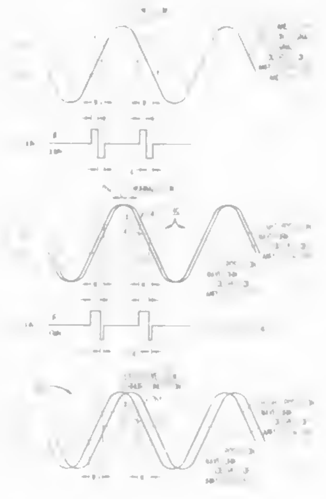
means for oscillating the flow conduit; and

circuit means responsive to said first and second sensor signals for providing a mass flow rate value of the fluid, said circuit means comprising:

means responsive to said first and second sensor signals for determining a time difference occurring among first and second measurement points located on said first sensor signal and a reference point situated on the second sensor signal and which temporally occurs between said first and

second measurement points, wherein said time difference in duration occurring between the duration of a first interval of time occurring between said first measurement point and said reference point and the duration of a second interval of time occurring between said reference point and said second measurement point and wherein said time difference is a linear function of the value of the mass flow rate of the fluid passing through said flow conduit; and

means responsive to said determined time difference for generating the mass flow rate value.



4,879,912

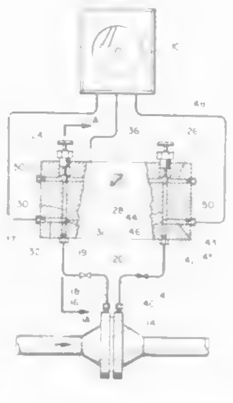
UNITIZED INSTRUMENT MANIFOLD

William H. Suckow, Amarillo, Tex., assignor to J. M. Huber Corporation, Rumson, N.J.

Filed Mar. 8, 1988, Ser. No. 165,662

Int. Cl.⁴ G01F *1/425;* G01L *13/02*

U.S. Cl. 73—861.61 17 Claims



1. In a valve manifold for controlling transmission of high pressure and low pressure signals from a pipeline containing a flow restriction orifice plate to a flow measurement instrument for measuring fluid flow through the pipeline in response to the high pressure and low pressure signals, the valve manifold, including a unitized valve body and first, second, and third valve assemblies, each valve assembly at least partially disposed within the unitized valve body and including a bonnet fixedly secured to the unitized valve body, a valve stem threadably secured within the bonnet and axially movable along a stem axis, and a plug having a sealing surface at one end of the valve stem for selectively controlling flow past the valve assembly in response to rotational movement of the valve stem; the unitized valve body including, (a) a first channel through the unitized valve body having first ports at each end thereof and having a first axis, (b) a second channel interconnecting the first channel with a second port for venting pressure from the first channel and having a second axis, (c) a third channel interconnecting the first channel with a third port for inputting the high pressure signal to the unitized valve body, and (d) a fourth channel interconnecting the first channel with a fourth port for inputting the low pressure signal to the unitized valve body, the improvement comprising:

each of the first and second valve assemblies positioned within the unitized valve body along the first channel to selectively control transmission of pressure along the first channel;

the third valve assembly positioned in the unitized valve body along the first channel and between the first and second valve assemblies, such that the sealing surface of the third valve assembly passes through the first axis of the first channel when its valve stem is moved from a fully open position wherein the first channel is roddable to a fully closed position wherein the first channel is not roddable;

an annular seating surface within the unitized valve body spaced radially about the second axis of the second channel for sealing engagement with the sealing surface of the third valve assembly, such that the second port is sealed from the first channel when the third valve assembly is in the fully closed position;

the annular seating surface being positioned radially opposite the bonnet of the third valve assembly with respect to the first axis of the first channel such that the second channel between the first channel and the second port is roddable when the third valve assembly is in the fully open position; and

a flow passageway between the unitized valve body and the plug of the third valve assembly for fluid communication along the first channel between the first and second valve assemblies when the third valve assembly is in the fully closed position

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4,879,913

TRANSDUCER FOR BENDING AND TWISTING MOMENTS

Bernard Lerat, Thones, France, assignor to Commissariat A L'Energie Atomique, Paris, France

Filed Mar. 15, 1988, Ser. No. 168,403

Claims priority, application France, Mar. 19, 1987, 87 03820

Int. Cl.⁴ G01L *5/16*

U.S. Cl. 73—862.04 8 Claims

3. Transducer for bending and twisting moments exerted between two mechanical assemblies (P, Q) comprising two rigid and substantially parallel plates (1, 2), each plate being coupled to one respective assembly, a flexible beam (3) interconnecting the two rigid plates and substantially perpendicular

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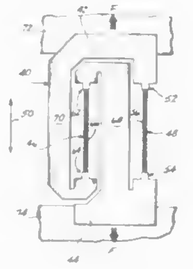
thereto and transmitting the efforts exerted between the two assemblies, a first device (6) for measuring the displacement or force characterizing the twisting moment (CZ) of the beam and a second device (7) for measuring the displacement or force characterizing one of the bending moments (CY) of the beam, the measuring devices being connected to each of the rigid plates (1, 2) and the second device (7) being substantially rectilinear and parallel to beam (3) and at least one of the displacement or force measuring devices (6, 7) being constituted by a sensitive element (22, 35) connected to each of the rigid plates by bars (20, 21) and at least one of the force measuring devices (6, 7) being prestressed, so that the tension-compression stresses undergone by bars (20, 21) and the sensitive element (35) are always in the same direction.

4,879,914
UNITARY PUSH-PULL FORCE TRANSDUCER
Brian L. Norling, Mill Creek, Wash., assignor to Sundstrand Data Control, Inc., Redmond, Wash.
Filed Feb. 27, 1989, Ser. No. 316,341
Int. Cl.⁴ G01L *1/10;* **G01P** *15/10;* **G01B** *17/04*
U.S. Cl. 73—862.59 **10 Claims**



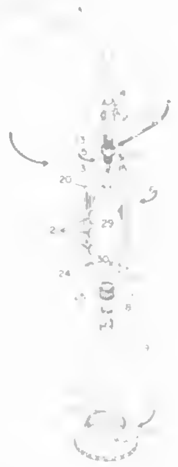
1. A force transducer capable of being attached between first and second structures, the force transducer comprising a unitary body formed from a crystalline substrate, the unitary body comprising:

first and second mounting elements for mounting the force transducer to the first and second structures, respectively;

first and second force sensing elements, each force sensing element having first and second ends, a line extending from the second end to the first end of each force sensing element defining a force sensing axis for the force sensing element, each force sensing element being sensitive to a force exerted in either direction along its force sensing axis, the force sensing elements being oriented with their force sensing axes parallel to and aligned with one another; and

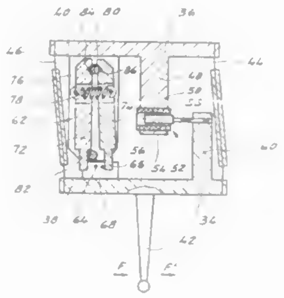
coupling means for interconnecting the mounting elements and force sensing elements such that the first force sensing element has its first end connected to the second mounting element and its second end connected to the first mounting element, and such that the second force sensing element has its first end connected to the first mounting element and its second end connected to the second mounting element, whereby a force exerted on the force transducer by the structures parallel to the force sensing axes results in a compression force on one force sensing element and a tension force on the other force sensing element.

4,879,915
SAMPLE INJECTION MEANS
R. Wilson Spencer, P.O. Box 22586, Houston, Tex. 77227
Continuation of Ser. No. 26,824, Mar. 17, 1987, Pat. No. 4,791,821. This application Dec. 20, 1988, Ser. No. 287,344
The portion of the term of this patent subsequent to Mar. 24, 2004, has been disclaimed.
Int. Cl.⁴ G01N *1/10*
U.S. Cl. 73—864.74 **1 Claim**



1. A sample injection means, comprising a single vented needle having a body, said body having an upper end and a lower end, a needle shaft extending from said lower end, said shaft having a tip thereon, an injection passageway running through said body and communicating between the exterior of said body above said shaft and the exterior of said shaft, and a vent passageway, running through said body and communicating between the exterior of said body above said shaft and the exterior of said shaft, when in use said upper end being connected to a valve and said lower end being connected to a receptacle for receiving samples.

4,879,916
CONTACT SENSOR FOR CALIPERING PIECES SUCH AS WORKPIECES
Denis Juillerat, Le Locle, Switzerland, assignor to Meseltron S.A., Switzerland
Filed Jun. 28, 1988, Ser. No. 212,636
Claims priority, application Switzerland, Jun. 29, 1987, 02 443/87
Int. Cl.⁴ G01B *5/00*
U.S. Cl. 73—865.8 **11 Claims**



1. A contact sensor for calipering pieces such as workpieces, comprising:

a feeler;

a suspension device comprising at least one first part to which the feeler is rigidly connected and a second part, the first and second parts being assembled for movement relative to one another in a first direction;

a transducer for measuring the amplitude of the relative movement of the first and second parts; and

force generating means for holding the feeler in a stable rest position and allowing the feeler to exert on the surface of a place to be calipered a bearing force which initially increases linearly and rapidly as the feeler moves away from its rest position in a calipering zone and which then increases slowly in a disengagement zone,

said force generating means comprising first elastic means connected to one of aid parts of the suspension device and deformable in said first direction, and an assembly carried by the other part of the suspension device, which assembly comprises:

abutment means,

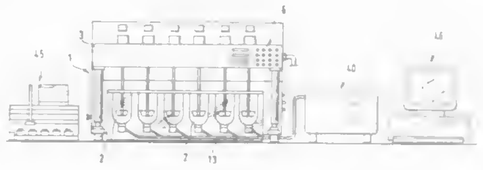
two mobile elements which interact with the first elastic means,

and second elastic means acting on said two mobile elements to permanently bias them into abutting engagement with the abutment means from opposite directions,

the first and second elastic means being such that, in the calipering zone, the mobile elements remain in contact with the abutment means to cause the first elastic means to deform and, in the disengagement zone, one of the mobile elements progressively moves away from the abutment means under the action of the first elastic means and against the action of the second elastic means which in turn is deformed,

said first elastic means comprising two oppositely acting elastic members on which the mobile elements act reciprocally in opposite directions and which are prestressed by these elements when the feeler is in the rest position to a degree sufficient for said elastic members to remain under tension to a greater or lesser degree as long as the movement of the feeler is situated within the calipering zone.

4,879,917
APPARATUS FOR DETERMINING THE ACTIVE INGREDIENT RELEASE FROM SOLUBLE PHARMACEUTICAL PRODUCTS
Heinz Eppelmann, Johannes-Calvin-Str. 15, D-6507, Ingelheim, and Franz Fahler, Birkenwaldstr. 35, D-6053, Obertshausen, both of Fed. Rep. of Germany
Filed Feb. 5, 1988, Ser. No. 152,923
Claims priority, application Fed. Rep. of Germany, Feb. 6, 1987, 3703621
Int. Cl.⁴ G06F *15/46*
U.S. Cl. 73—866 **8 Claims**



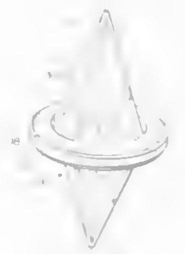
1. Apparatus for determining the release of active ingredients of soluble pharmaceutical products, said apparatus comprising:

(a) a stand having an upper section and a connector for air and liquid positioned in said upper section;

(b) at least one vessel disposed within said stand and positioned beneath said upper section, each vessel having an opening in a lower portion of said vessel and a valve communicating with said opening for emptying liquids contained in said vessel; and

(c) an agitator at least partially disposed within each vessel, each agitator having a hollow vertical shaft linked to said connector and, said each agitator having an agitator blade having channels extending across said blade to outer edges of said blade and terminating in free outlets, said channels communicating with said hollow vertical agitator shaft.

4,879,918
GYRO COMPASS
Takeshi Hojo; Kanshi Yamamoto; Shinichi Kawada, all of Kuroiso; Kazushige Murabayashi, Kawachi; Mamoru Akimoto, Kuroiso, and Michio Fukano, Ohtawara, all of Japan, assignors to Tokyo Keiki Co., Ltd., Tokyo, Japan
Filed Oct. 27, 1988, Ser. No. 363,408
Claims priority, application Japan, Oct. 28, 1987, 62-272076; Oct. 28, 1987, 62-272077
Int. Cl.⁴ G01C *19/38*
U.S. Cl. 74—5.47 **4 Claims**



1. A gyro compass comprising:

(a) a gyro case incorporating a gyro of which the spin axis is substantially horizontal;

(b) a vertical ring disposed around the outer periphery of said gyro case and for rotatably supporting said gyro case around a vertical axis;

(c) a follow-up pickup for detecting an angular displacement between said gyro case and said vertical ring around said vertical axis;

(d) an accelerometer having an input axis parallel to said spin axis;

(e) a vertical torquer mounted on said vertical ring for applying a torque of magnitude proportional to an input signal to said gyro case around said vertical axis; and

(f) a control apparatus for receiving an output signal of said accelerometer and for supplying its output to said vertical torquer, in which during a predetermined time after the gyro compass is started to operate, the output signal from said accelerometer is differentiated to produce a differentiation signal which is then supplied to said vertical torquer to reduce a settling time of the north-seeking action.

4,879,919
TRANSMISSION EQUIPPED WITH REVERSE MECHANISM
Satoshi Sekizaki, Tokyo, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 7, 1987, Ser. No. 82,515
Claims priority, application Japan, Aug. 8, 1986, 61-121011[U]
Int. Cl.⁴ F16H *5/06*
U.S. Cl. 74—337.5 **5 Claims**

1. A transmission having a reverse mechanism including a forward shift drum both ends of which are rotatably supported by an engine case, and a reverse shift drum concentrically arranged with said forward shift drum and relatively rotatably fitted to the peripheral surface of said forward shift drum, said transmission comprising

a first rotation positioning mechanism provided on one end portion of said forward shift drum for regulating a rotary position of said forward shift drum; and

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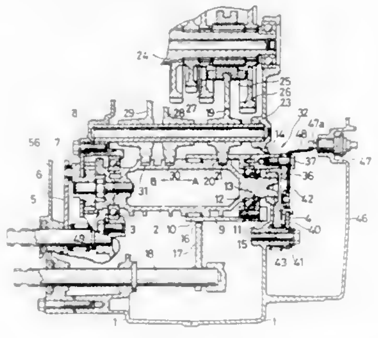
a second rotation positioning mechanism provided on said reverse shift drum at an end portion thereof opposite to said one end portion for regulating a rotary position of said reverse shift drum;



said first and second rotation positioning mechanisms being disposed at an outer side of said engine case, respectively.

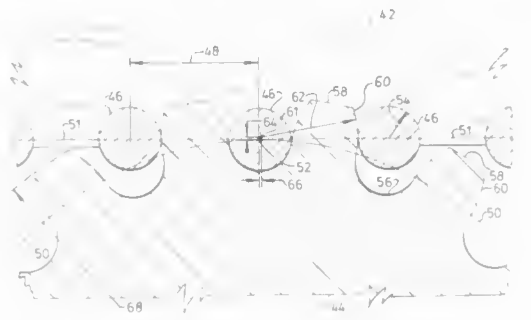
4,879,920
ANTIBACKLASH GEARS INCLUDING RACK AND PINION GEARS

Ewald F. Kerkhoff, 4365 Loch Alpine Dr. E., Ann Arbor, Mich. 48103

Filed Apr. 13, 1987, Ser. No. 37,532

Int. Cl.⁴ F16H *1/04*

U.S. Cl. 74—465 13 Claims



1. A meshing gear construction comprising a first gear having a plurality of fixed teeth extending therefrom, said teeth alternatingly separated by a plurality of roots each having a radial centerline, faces on either side of each fixed tooth, each root being a continuation of a pair of faces of two adjacent teeth, a second gear having a plurality of rollers thereon rotatble relative to the second gear, said rollers meshing with the fixed teeth of the first gear, and said meshing comprising rolling contact of at least two rollers with one first gear fixed tooth at all instants of motion wherein said rollers comprise cylindrical rollers and teh faces of said fixed teeth comprise circular arcs in profile and wherein a radial centers of fixed tooth circular arc face lies otsdie a pitch circle of the first gear and between the circular arc face and the radial centerline of an adjacent root.

4,879,921
TRANSAXLE CASING FOR AUTOMATIC TRANSMISSION

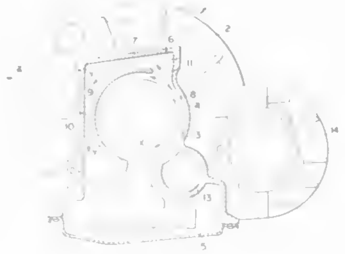
Toshiyuki Asada, Susono; Seitoku Kubo, Toyota; Shinya Nakamura, Owariasahi; Masafumi Kinoshita, Toyota, and Takaaki Kuroda, Hirokawa, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed Mar. 1, 1988, Ser. No. 162,593

Claims priority, application Japan, Mar. 4, 1987, 62-49095

Int. Cl.⁴ F16H *57/04*

U.S. Cl. 74—467 7 Claims



1. A transaxle casing structure for accommodating a transmission gear set having a plurality of rotary members arranged on a common axis, the transaxle casing comprising:

a cover wall enclosing said transmission gear set;

an oil sump disposed below said transmission gear set for receiving lubricating oil therein; and

a continuous partition disposed between a radially outermost one of said rotary members of said transmission gear set and said cover wall and generally extending from a top of said outermost rotary member to a bottom of said outermost rotary member, an oil return passage being defined between the partition and said cover wall for guiding lubricating oil into said oil sump, said oil return passage having a first opening between one end of said partition and said cover wall and a second opening between another end of said partition and said cover wall.

4,879,922
OPERATING DEVICE FOR TRANSMISSION

Kazuhiro Suzuki, Nishinomiya, Japan, assignor to Nippon Cable System Inc., Takarazuka, Japan

Filed Apr. 20, 1987, Ser. No. 39,863

Claims priority, application Japan, Sep. 2, 1986, 61-206436

Int. Cl.⁴ G05G *9/16;* **F16C** *1/10*

U.S. Cl. 74—500.5 4 Claims

1. A transmission operating device comprising:

(a) a change lever;

(b) a shift cable connected to the change lever;

(c) a ball crank having a first arm, a second arm and a middle part therebetween;

(d) a select cable connected to the first arm of the bell crank;

(e) a bearing base;

(f) an operating shaft having a supported end, a free end and a middle part, said middle part being fixed with the change lever;

(g) a first bearing provided on the bearing base to be connected with the support end of the operating shaft rotatably and inclinably;

(h) a second bearing provided at the free end of the operating shaft for rotatable connection with the second arm of the bell crank;

(i) a fixed shaft, of which one end is fixed to the bearing base, projecting from the bearing base;

(j) a third bearing provided at the other end of the fixed shaft to support the middle part of the ball crank rotatably; and

(k) a spring on said fixed shaft: with opposite ends engaging said operating shaft.

4,879,923
STEERING WHEEL

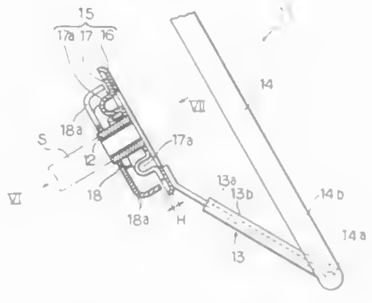
Atsushi Nagata, Nagoya, Japan, assignor to Toyoda Gosei Co., Ltd., Nishikasugai, Japan

Filed May 25, 1988, Ser. No. 198,823

Claims priority, application Japan, May 30, 1987, 62-136987

Int. Cl.⁴ B62D *1/04*

U.S. Cl. 74—552 6 Claims



1. A steering wheel capable of absorbing impact forces comprising:

(a) a core of a ring portion;

(b) a boss disposed at a center of said core of the ring portion;

(c) cores of a spoke portion disposed between said core of the ring portion and said boss;

(d) a first deformable member interposed between said boss and said cores of the spoke portion for coupling the boss with the cores of the spoke portion, and provided with a plurality of deformable arm portions extending radially from the boss and being plastically deformable; and

(e) a second deformable member fixed to the boss and disposed a predetermined distance from said first deformable member to allow said first deformable member, upon impact, to deform prior to abutting and continuing to deform along with said second deformable member.

4,879,924
GEARING FOR DRIVING THE ROLLS OF A ROLL TRAIN

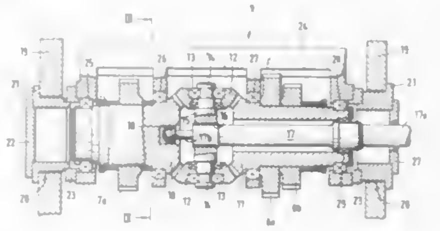
Helmut Holthoff, Düsseldorf, and Hermann Möltner, Ratingen, both of Fed. Rep. of Germany, assignors to Kocks Technik GmbH & Co., Hilden, Fed. Rep. of Germany

Filed Jul. 29, 1988, Ser. No. 225,927

Claims priority, application Fed. Rep. of Germany, Sep. 3, 1987, 3729470

Int. Cl.⁴ F16H *1/30, 1/40*

U.S. Cl. 74—799 7 Claims



1. Gear unit for driving a roll of a roll train with a number of consecutively arranged roll stands, in which a planetary gear set comprised of bevel gears is provided at at least one output shaft, the planetary gear axis or axes of which extend crosswise to the output shaft and the sun gears of which are arranged coaxially to the drive shaft, characterized in that neither the sun gears nor the other gears are supported on the output shaft, but in the gear unit housing and the latter has a cross head running parallel to the output shaft and with radially projecting bearings for supporting the gears in the region of the planetary gear set.

4,879,925
HYDRAULIC CONTROL SYSTEM FOR AUTOMATIC TRANSMISSION, INCORPORATING FAIL SAFE AND PROGRESSIVE CREEP CONTROL AND HILL HOLD CONTROL

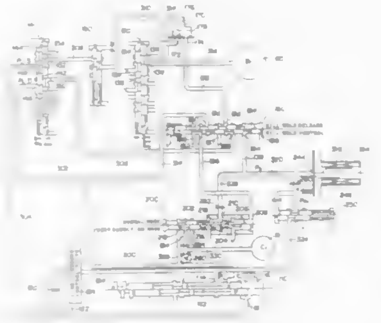
Yutaka Taga, and Yuji Kashihara, both of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed Oct. 16, 1987, Ser. No. 109,305

Claims priority, application Japan, Oct. 21, 1986, 61-250423; Oct. 21, 1986, 61-250424; Oct. 21, 1986, 61-250425; Oct. 21, 1986, 61-250426

Int. Cl.⁴ B60K *41/16*

U.S. Cl. 74—867 6 Claims



1. For an automatic transmission for a vehicle comprising an engine, comprising a source of actuating hydraulic fluid pressure, a gear transmission mechanism which comprises a power output shaft and a plurality of hydraulic fluid pressure actuated friction engaging mechanisms and which is capable of providing any one of a plurality of speed stages according to patterns of engagement and release of said hydraulic fluid pressure

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actuated friction engaging mechanism, and a hydraulic speed stage switching system having a plurality of shift valves and switching over supply and non supply of actuating hydraulic fluid pressure to said friction engaging mechanisms; said friction engaging mechanisms including a shift brake and according to engagement of which said power output shaft of said gear transmission mechanism is prevented from turning in a direction to a hydraulic hill hold control system, comprising:

- (a) a first control means for opening a port passage when said vehicle is substantially stationary and said engine is substantially in idling operational condition; and
- (b) a second control means for setting up a first hydraulic fluid passage in said hydraulic speed stage switching system when said gear transmission mechanism is switched to a certain speed stage and supplying actuating hydraulic fluid pressure to said shift brake via said port passage of said first control means and said first hydraulic fluid passage set up in said hydraulic speed stage switching system so as to engage said shift brake when said first control means opens said port passage and said gear transmission mechanism is switched to said certain speed stage.

4,879,926

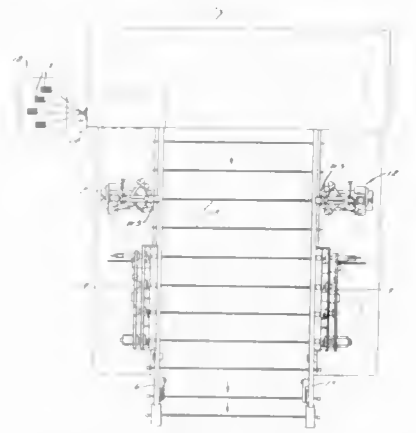
APPARATUS FOR CUTTING, CONVEYING AND PROGRAMMABLY STRIPPING WIRE SEGMENTS

Kenneth Wollermann, Mukwonago, and Ragnar Gudmestad, Wauwatosa, both of Wis., assignors to Artos Engineering Company, New Berlin, Wis.

Filed Aug. 31, 1988, Ser. No. 238,590

Int. Cl.⁴ H02G *1/12*

U.S. Cl. 81—9.51 33 Claims



1. A programmable stripper for cutting or cutting and removing selectively variable length insulation portions from the ends of insulated wire segments (**218**) sequentially presented at a workstation (WS) comprising:

- a base frame (**21**, **221**) mountable in fixed relation to said workstation;
- a carriage (**31**, **231**) mounted on said base frame for movement in a first plane (P1) toward and away from said workstation;
- a first drive means (**58**, **258**) operatively interposed between said base frame and said carriage for moving said carriage to positions closer or farther from said workstation as required by the length of said insulation portion to be cut;
- a turret (**76**, **276**) mounted on said carriage for movement relative thereto and having,
  - a plurality of individual mounting positions (**87**, **287**), and
  - an insulation cutting means (**101A**, **101B**, **301A**, **301B**) including a knife means (**91A**, **91B**, **291A**, **291B**) mounted on said turret at each of said mounting positions, said knife means movable between an open noncutting position and a closed insulation cutting position wherein a wire receiving gap exists in said knife means,
- a second drive means (**90**, **290**) for selectively moving said turret relative to said carriage to place any selected one of said cutting means, when in said open position, at said workstation;
- a first actuating means (**170**, **370**) for effecting cutting movement of said cutting means to said closed position to transversely cut said insulation and create a cut portion of insulation at the end of said wire segment;
- gripping and guiding means (**141**, **341**) mounted on said carriage and movable between an open position and a closed position relative to said cut portion of insulation;
- a second actuating means (**180**, **380**) for effecting said movement of said gripping and guiding means between said open and closed positions; and
- a third actuating means (**190**, **390**) for effecting movement of said gripping and guiding means toward said workstation when said gripping means is in said open nongripping position and away from said workstation when said gripping means is in said closed gripping position during stripping of said cut portion of insulation.

4,879,927

POSITIONING DEVICE FOR SCREWING AND UNSCREWING A NUT

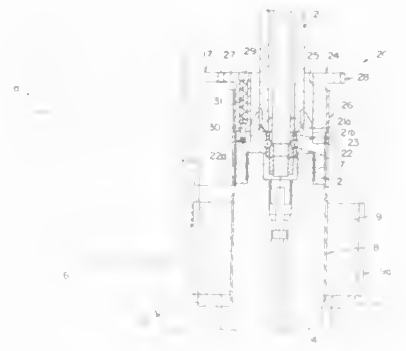
Gérard Sevelinge, Montceau Les Mines, France, assignor to Framatome, Courbevoie, France

Filed Apr. 16, 1987, Ser. No. 39,127

Claims priority, application France, Apr. 18, 1986, 86 05614

Int. Cl.⁴ B25B *21/00*

U.S. Cl. 81—56 4 Claims



1. An automatic positioning device for screwing and unscrewing an independent nut (**9**) on a screwing element (**4**) having external threads (**26**), said device comprising

- (a) an externally threaded bush (**24**) for transferring said nut (**9**);
- (b) means for axial alignment of said bush (**24**) relative to said screwing element (**4**), said means comprising an extension piece (**21**) placed on a head of said screwing element and having a centering stud (**21*a***) in its upper part, on which stud said bush (**24**) is positioned coaxially relative to an axis of said screwing element (**4**); and
- (c) means for angular alignment consisting of an axially directed retractable finger (**30**) fitted in said bush (**24**) and interacting with an adjusting washer (**22**) resting on said extension piece (**21**).

4,879,928

BALLOON STRETCHER

Scott E. Juslin, and Lee Juslin, both of Box 454, Rte. 4, Northwood, N.H. 03261

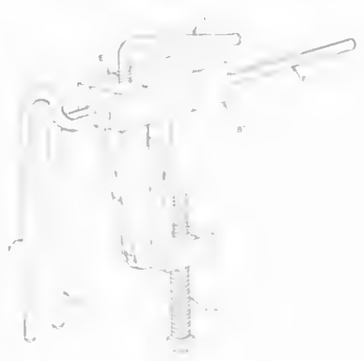
Filed Aug. 8, 1988, Ser. No. 229,537

Int. Cl.⁴ B25B *9/00*

U.S. Cl. 81—488 5 Claims

1. A device designed to be used with latex balloons five inches and larger consisting of a molded base, and adjustable

bottom bolt, cooperating with said base for clamping the device to a countertop, said base having one stationary rod and



one adjustable rod with said adjustable rod being controlled by a set screw and a finger loop.

4,879,929

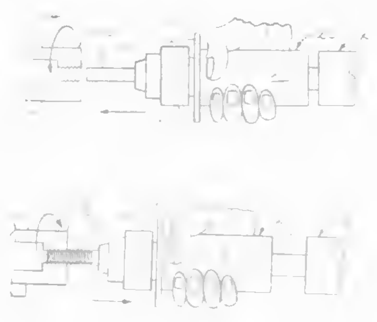
TAPPER/THREADER ASSEMBLY

Alfred C. Roth, 2388 Yost Blvd., Ann Arbor, Mich. 48104

Filed Jun. 6, 1988, Ser. No. 202,451

Int. Cl.⁴ B23B *13/12, 25/04, 31/02;* B23G *1/26*

U.S. Cl. 82—110 7 Claims



1. A tapper/threader assembly for use in a lathe having a rotatable chuck and a tail stock, said tapper/threader assembly having a locked position and an unlocked position, said assembly comprising, in combination, a generally cup-shaped sleeve housing having a mounting shaft extending from one end, a piston member mounted for reciprocation within said sleeve housing, a shank member connected to said piston member having a tapered end extending outwardly from said sleeve housing, wherein said tapered end may be received by the lathe tail stock said housing being freely rotatable relative to said piston member when said assembly is in the unlocked position, spring means urging said housing toward said piston member, said spring means positioned within said sleeve housing in surrounding relationship with said shank member, locking means for selectively preventing relative rotation between said piston member and said sleeve housing, thereby selectively providing said locked and unlocked positions and a bearing assembly mounted on said shank member adjacent said housing.

4,879,930

TOOL ARRANGEMENT HAVING ANGULAR POSITION FIXING MEANS

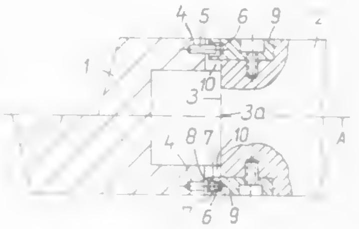
Rainer Von Haas, Geesthacht, Fed. Rep. of Germany, assignor to Fried. Krupp Gesellschaft mit beschränkter Haftung, Essen, Fed. Rep. of Germany

Filed Jun. 15, 1988, Ser. No. 207,012

Claims priority, application Fed. Rep. of Germany, Jun. 26, 1987, 3721158

Int. Cl.⁴ B23B *29/04, 29/22*

U.S. Cl. 82—158 5 Claims



1. In a rotationally symmetrical tool assembly having a rotary axis and including a first component constituted by a tool holder and having a first engagement face, a second component constituted by a tool head and having a second engagement face; said second component being removably attached to said first component such that said first and second engagement faces are in a contacting relationship with one another and are oriented perpendicularly to said rotary axis; a fitting bore provided in one of said components; a guide bore provided in the other of said components; said fitting bore and said guide bore being oriented towards one another; and a securing pin projecting from said fitting bore and extending into said guide bore for determining and maintaining a desired angular position of said second component relative to said first component; the improvement comprising

- (a) at least one additional fitting bore provided in said one of said components and at least one additional guide bore provided in said other of said components, whereby the securing pin projecting from a selected one of said fitting bores is insertable to a selected one of said guide bores to provide for a selectable angular setting of said second component with respect to said first component; and
- (b) a plug inserted in each said guide bore other than the guide bore designated to receive said securing pin upon attaching said second component to said first component for preventing said securing pin from being received by the guide bore containing said plug; said plug remaining externally of any of the fitting bores when the first and second components are in an attached state with respect to one another.

4,879,931

METHOD FOR TRANSPORTING AWAY PANEL SECTIONS CUT OFF A WORKPIECE PANEL ALONG A CUTTING PLANE IN A PANEL SAW

Erwin Jenkner, Lindenstrasse 13, Gechingen, Fed. Rep. of Germany

Filed Jan. 25, 1988, Ser. No. 147,452

Claims priority, application Fed. Rep. of Germany, Jan. 26, 1987, 3702174

Int. Cl.⁴ B26D *7/06*

U.S. Cl. 83—23 3 Claims

1. A method, in a panel saw, for transporting away at least one panel section which has been cut off a workpiece panel positioned upon a plane of support and along a cutting plane of said saw at a first machining position thereon, said method comprising the steps of:

- raising said panel section above said plane of support after a cut has been made to said workpiece panel;
- transporting said panel section along a direction parallel to

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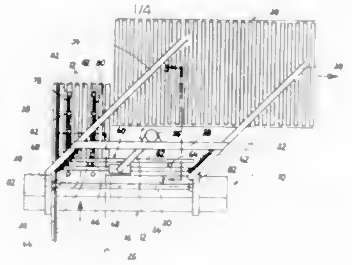
said plane of support and perpendicular to said cutting plane to a conveying device at a desired speed;

advancing said workpiece panel along a direction of advance to a new machining position relative to said panel saw at an advancing speed greater than said speed at which said panel section is transported to said conveying device;



fixing said workpiece panel in a new cutting position relative to said saw cutting plane, and

depositing said panel section on said conveying device in laterally offset relation with respect to said workpiece panel and in offset relation to said direction of advance.

4,879,932

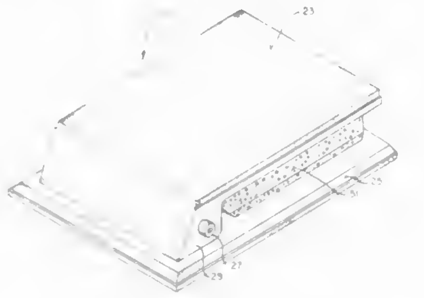
MANUALLY OPERABLE PAPER SLITTING DEVICE AND METHOD

William J. Scalise, and Donna J. Scalise, both of 10119 Stonell, St. Louis, Mo. 63123

Filed Apr. 1, 1988, Ser. No. 176,426

Int. Cl.^{4} B26F *1/18*

U.S. Cl. 83—30 5 Claims



4. The manually operable method of forming diagonally extending and spaced parallel slits in at least one individual paper sheet comprising the steps of:

positioning the individual paper sheet to be slit in aligned and squared orientation relative to a guide surface;

applying resilient, elastic and compressive hold-down forces on opposite sides of and throughout the entire dimension of the individual paper sheet to be slit and in surrounding relationship to the area of the paper to be slit prior to, during and after a slitting operations;

slitting the individual paper sheet along diagonally extending and spaced parallel slits relative to said squared and oriented paper by first piercing and then slitting the individual paper sheet beginning adjacent the pierced paper areas and extending along each of said diagonally extending and spaced parallel slits by means of a pair of slitting surfaces; applying resilient, elastic and compressive forces to the individual paper sheet around said slitting surfaces in order to both hold down the individual paper sheet during slitting and provide stripping from the slitting surfaces following slitting of the paper sheet; and

stripping the individual paper sheet from the slitting surfaces following the aforementioned slitting operation.

4,879,933

AUTOMATIC DEVICE FOR TRIMMING SHEETS OF LAMINATED MATERIAL

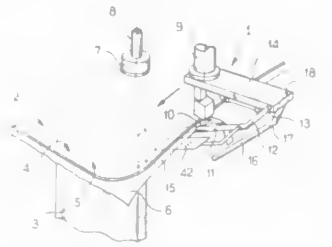
Eligio M. Floreancig, Jemeppe Sur Sambre; Jean-Claude M. Jandrain, Warnant Anhee; Desire M. Legros, Jemeppe Sur Sambre, and Jean-Claude M. Simonon, Auvelais, all of Belgium, assignors to Saint-Gobain Vitrage, Courbevoie, France

Filed Dec. 2, 1987, Ser. No. 127,462

Claims priority, application France, Dec. 2, 1986, 86 16791

Int. Cl.^{4} B26D *7/10*

U.S. Cl. 83—76.1 18 Claims



1. An automatic cutting device for trimming the parts of an intermediate sheet of plastic material which extends beyond a pane during manufacture of laminated panes, said automatic cutting device comprising:

(a) a support plate;

(b) a blade holder mounted on said support plate for sliding movement in a first direction relative to said support plate;

(c) a blade having two cutting edges carried by said blade holder and extending from said blade holder in a second direction, perpendicular to said first direction;

(d) first means mounted on said support plate for biasing said blade in said first direction;

(e) second means for heating said blade holder to an at least approximately constant temperature;

(f) a first support mounted on said support plate and located on a first side of said blade for holding a part of the sheet of plastic material to be cut in a position at least substantially perpendicular to said cutting edges of said blade;

(g) a second support mounted on said support plate and located on a second side of said blade for holding a part of the sheet of plastic material to be cut in a position at least substantially perpendicular to said cutting edges of said blade;

(h) third means for pivoting said first support back and forth between an operative and an inoperative position;

(i) fourth means for pivoting said second support back and forth between an operative and an inoperative position; and

(j) fifth means for displacing said support plate along the edge of the pane.

4,879,934

SELECTIVE WIRE FEED FOR A PLURALITY OF WIRES

Daniel T. Adlon, and Kenneth F. Folk, both of Harrisburg, Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Oct. 8, 1987, Ser. No. 107,147

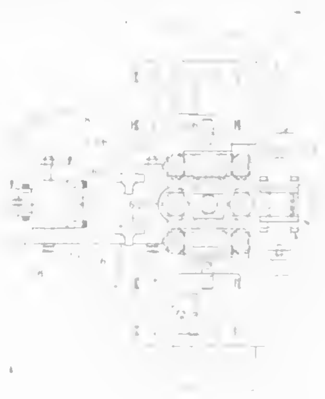
Int. Cl.^{4} B25D *1/08;* **B65H** *51/10*

U.S. Cl. 83—76.9 20 Claims

1. A wire feeding unit for selectively feeding either one of a first wire and a second wire, the wires being in parallel relationship, the wire feeding unit being characterized in that:

first, second, and third endless feeding surfaces are provided, the feeding surfaces being in side-by-side relationship with the third feeding surface being between the first and second feeding surfaces, the first and third surfaces having first opposed portions which function as first wire feeding

portions, the first wire being between the opposed portions of the first wire feeding portions, the second and third surfaces having opposed portions which function as second wire feeding portions, the second wire being between the opposed portions of the second wire feeding portions, each of the feeding surfaces being movable along its length in both directions of its length, the opposed portions of each of the first and second wire feeding portions being relatively laterally displaceable towards and away from each other between a feeding position and a non-feeding position, the opposed portions of each of the wire feeding portions being against each other when in the feeding position and being spaced apart when in the non-feeding position,



actuating means are provided for displacing either of the first and second feeding portions to their feeding positions and for moving one of the endless surfaces which is in its feeding position along its length whereby,

either one of the wires can be selectively fed in a common direction by displacing the wire feeding portions which are associated with the one wire to their feeding position and thereafter moving one of the associated surfaces along its length.

4,879,935

RECIPROCATING KNIFE CUTTER WITH FLEXIBLE DRIVE PORTION

Heinz J. Gerber, West Hartford, Conn., assignor to Gerber Scientific, Inc., South Windsor, Conn.

Filed Feb. 17, 1988, Ser. No. 156,835

Int. Cl.^{4} B26D *1/10, 7/26;* **D06H** *7/00*

U.S. Cl. 83—748 5 Claims

1. A reciprocating knife cutter comprising;

an elongated knife having a lower part with a sharpened edge extending along at least a portion of the length thereof,

a frame,

means carried by said frame engaging said lower knife portion and restraining it to reciprocating movement along a straight vertical axis of reciprocation fixed relative to said frame,

an eccentric drive member supported on said frame for driving rotation about a horizontal drive axis fixed relative to said frame, and

an elongated drive portion connected with said lower portion of said knife and extending upwardly therefrom and having an upper end connected with said eccentric drive member for rotation relative to said eccentric drive member about a horizontal eccentric axis fixed relative to said drive member and spaced from and parallel to said drive axis,

said drive portion being laterally flexible in a plane perpendicular to said eccentric axis so that as said eccentric member rotates about said drive axis said drive portion reciprocates said lower portion of said knife along said axis of reciprocation and flexes laterally to accommodate the horizontal component of motion of said eccentric axis,

said drive axis of said eccentric drive member being spaced horizontally in a plane perpendicular to said eccentric axis a substantial distance from said reciprocation axis so that the deflection of said drive portion during its downstroke is different from its deflection during its upstroke.

4,879,936

CIRCULAR SAW BLADE HAVING REMOVABLE TEETH

Donald Anderson, P.O. Box 886, Crooked River Ranch, Oreg. 97760

Filed Aug. 13, 1987, Ser. No. 85,019

Int. Cl.^{4} B27B *33/08;* **B23D** *61/06*

U.S. Cl. 83—842 4 Claims

1. A circular saw blade comprising:

(a) a disc having a periphery;

(b) a tooth retaining member pivotally mounted on said disc along the periphery thereof;

(c) a tooth disposed between said disc and said retaining member and extending radially from said disc beyond the periphery thereof, (d) said retaining member being pivotally movable between a tooth retaining position and a position removed from the tooth retaining position; and (e) cam locking means mounted on said disc adjacent said retaining member for releasably locking said retaining member to said disc in the tooth retaining position, (f) said tooth being wedged between said retaining member and said disc in response to said retaining member being in the tooth retaining position and said tooth being released in response to said retaining member being removed from the tooth retaining position, (g) said disc including a ridge having oppositely directed planar walls and a radially directed wall interconnecting the planar walls, and said retaining member being a U-shaped member having spaced parallel legs and an interconnection, said parallel legs of said U-shaped retaining member engaging said planar walls, respectively, of said ridge of said disc and said interconnection of said U-shaped retaining member confronting said radially directed wall of said ridge of said

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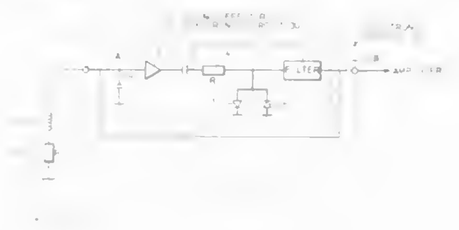
disc when said retaining member is in the tooth retaining position for wedging said tooth between said retaining member and said ridge of said disc, said cam locking means being arranged to engage said U-shaped retaining member for releasably locking said U-shaped retaining member in the tooth retaining position.

4,879,937
SOUND EFFECTOR
Taichi Hirano, Aichi, Japan, assignor to Prince Tsushinkogyo Limited, Nagoya, Japan
Filed Jan. 27, 1988, Ser. No. 149,148
Claims priority, application Japan, Apr. 28, 1987, 62-105349
Int. Cl.⁴ G10H *3/00, 1/02*
U.S. Cl. 84—699 **3 Claims**

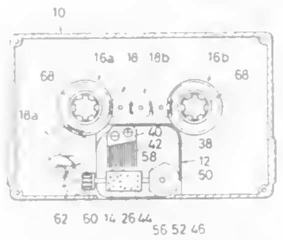


1. A sound effector for changing original sounds generated from an electric musical instrument and picked up by a pickup means having an inductance circuit into aurally improved distinctive sounds by suitably distorting the waveform in a frequency band of original sound signals to be enhanced during amplification of the original sound signals, said sound effector comprising:

a resonance circuit having a first capacitor connected with said inductance circuit of said pickup means;
an amplifier circuit composed of semiconductor elements for amplifying an output signal from said resonance circuit;
a filter circuit for receiving the output signal from said amplifier circuit and passing therethrough a signal having a predetermined frequency range;
a clipping circuit having two diodes connected between said amplifier circuit and said filter circuit; and
a positive feedback circuit having a second capacitor connected between said filter circuit and said resonance circuit and serving to positively feed back a signal passed through said clipping circuit and said filter circuit connected to said resonance circuit;
wherein the resonance frequency in said resonance circuit is higher than the frequency at which the gain of an electric circuit including said amplifier circuit, said clipping circuit and said filter circuit is maximum.

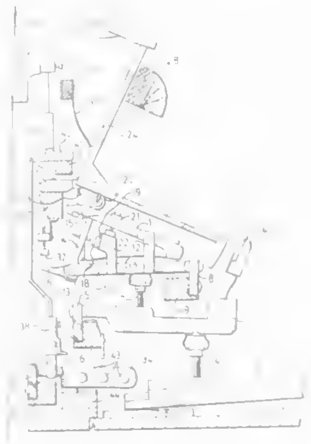
4,879,938
CASSETTE MUSIC BOX
Yasuyuki Moriyama, Nagareyama, Japan, assignor to Takara Co., Ltd., Tokyo, Japan
Filed Feb. 9, 1989, Ser. No. 308,682
Claims priority, application Japan, Apr. 30, 1988, 63-58590[U]
Int. Cl.⁴ G10F *1/06*
U.S. Cl. 84—95.2 **10 Claims**

1. A cassette music box comprising:
a casing having an inner space defined therein;
a pair of reels arranged in said casing in a manner to be rotatable and spaced from each other;
said casing being formed in a manner to permit rotation of said reels to be observed from an exterior of said casing;
a music box body arranged in said casing and including a rotating drum and a scale plate operatively engaged with said rotating drum; and



a transmission mechanism for transmitting driving force between said reels and said music box body.

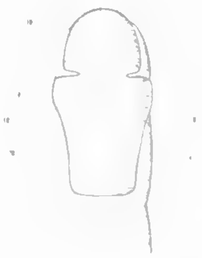
4,879,939
ACTION FOR UPRIGHT PIANO
Paul G. Wall, 4-60 Centreville Road, Kitchener, Ontario N2A 1R9, Canada
Continuation-in-part of Ser. No. 904,114, Sep. 4, 1986, abandoned. This application Mar. 22, 1988, Ser. No. 171,741
Int. Cl.⁴ G10C *3/18*
U.S. Cl. 84—240 **12 Claims**



1. In an upright piano action in which each note element of the action comprises a substantially horizontal key in the form of a lever pivotally connected to a frame member of the piano such that the back of the key is raised when the front playing portion of the key is depressed, a back check lever pivotally connected to a frame member and positioned above the back of said key to be raised by upward movement of the back of the key, at least one substantially vertically-oriented piano string installed on a frame member, a hammer-carrying shank pivotally installed on a main action rail about a horizontal axis for moving said hammer towards and away from said at least one piano string, and hammer action means arranged between said back check lever and said hammer shank for actuating said hammer in response to the upward movement of said back check lever, the improvement in which said hammer action means for each note element is installed on a key frame of the piano capable of lateral movement with respect to said piano strings, and in which said hammer action means for each note element comprises:

a catcher arm integrally connected with said hammer shank at a substantial angle such that substantially upward movement of said catcher arm produces essentially rearward movement of said hammer towards said piano string, said catcher arm including a knuckle on its lower surface and further including a catcher at its forward end for engagement with a back check provided on said back check lever when said key has been fully depressed and said hammer has rebounded from said piano string;
a grand whippen disposed above said back check lever, said grand whippen comprising: a whippen arm pivotally connected near its front end to a whippen rail; a repetition lever pivotally connected to a pivot support arm protruding upwardly from an intermediate point of said whippen arm; a jack pivotally connected to said whippen arm near the rear end of said whippen arm, said jack comprising an upwardly-directed attack arm passing through a slot provided in said repetition lever and a rearwardly-directed bell-crank arm integral with said attack arm; and spring means for biasing said attack arm of said jack forwardly against a stop for positioning directly under said knuckle and for biasing said repetition lever upwardly and against a stop such that said repetition lever does not ordinarily lie below the end of said attack arm in the area of the knuckle, said stops being attached above said whippen arm;
a regulating button positioned below said main action rail and positioned above said bell-crank arm of said jack for engaging said bell-crank arm just prior to said hammer contacting said piano string; and
a drop screw fixed with respect to said main action rail and positioned for engaging said repetition lever just prior to said hammer contacting said piano string.

4,879,940
PICK FOR STRINGED MUSICAL INSTRUMENTS
Mark L. Pereira, 1212 Kirkham St., San Francisco, Calif. 94122
Filed Oct. 3, 1988, Ser. No. 252,896
Int. Cl.⁴ G10D *3/16*
U.S. Cl. 84—322 **14 Claims**



1. A device to be worn on a human finger or thumb for use for plucking th strings of a stringed musical instrument, comprising:

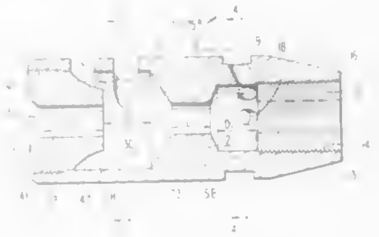
(a) a string actuating means which is worn over the nail,
(b) a body,
(c) an interface means located at the posterior end of the string actuating means adjacent to said body and connecting the string actuating means and the body, said interface means being narrower than said string actuating means and bendable such that said interface means can be bent to position the string actuating means generally parallel with the nail, as well as conforming to the curvature of said nail,
(d) a counterpresure means connected to the body, which counterpressure means extends from said body in the opposite dirction of the string actuating means and which is generally parallel with the dorsal surface of the distal phalange, and
(e) a securement means which extends lateraly from the body in the region between the string actuating means and the counterpressure means.

4,879,941
EJECTABLE CLOSING DEVICE, ESPECIALLY FOR ROCKETS WITH MUNITIONS
Thouron Repé, La Ferte St Aubin, and Denis J. Francois, Checy, both of France, assignors to Thomson-Brandt Armements, Boulogns Billancourt, France
Filed Jun. 24, 1988, Ser. No. 210,973
Claims priority, application France, Jul. 3, 1987, 87 09453
Int. Cl.⁴ F42B *25/16;* F16C *35/00*
U.S. Cl. 89—1.14 **9 Claims**

1. An ejectable closing device for a structure said device comprising:

a lid;
means for locking said lid;
means for producing a thrust outwards from said structure;
means for transmitting said thrust to said locking means, causing said locking means to unlock said lid;
spring means coupled to said transmitting means and extending under the inner edge of said lid for expelling said lid apart from said transmitting means once said lid has been unlocked.

4,879,942
MUZZLE BRAKE WITH IMPROVED STABILIZATION AND BLAST CONTROL
James B. Cave, Rt. 2 Box 2400, Bulverde, Tex. 78163
Filed Oct. 9, 1984, Ser. No. 658,839
Int. Cl.⁴ F41C *21/18*
U.S. Cl. 89—14.3 **5 Claims**



1. In a muzzle brake having a one-piece housing member including means for securing said muzzle brake to the muzzle end of a gun, said gun having a gun bore diameter, said one-piece housing member having an integral first interior spent gas impingement member with a central bore therethrough through which a bullet passes and defining first and second chambers, said first chamber being contiguous to said muzzle and volumetrically smaller than said second chamber and a closure member being threadably secured to the end of said housing member opposite the muzzle end, said closure member having a bullet outlet passage and aligned with said central

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bore and a reverse cone shape, and a plurality of apertures in said first and said second chambers for venting spent gas to ambient, the improvement wherein:

the combined length of said bullet outlet passage and said central bore being greater than three times the diameter of said gun bore diameter,

said apertures in the volumetrically small chamber being formed of circular bores which are angled away from the muzzle of said gun and are all located in the upper half of said housing member at an angle of between 70 and 75 degrees to the longitudinal axis thereof to prevent spent gases from kicking-up loose debris in the face of a shooter while shooting from a prone position, and

said outlet passage and central bore being of the same diameter, said central bore being of a length at least equal to the diameter of said bore diameter to improve stabilization and attenuate gas passage therethrough during traversal thereof by said bullet.

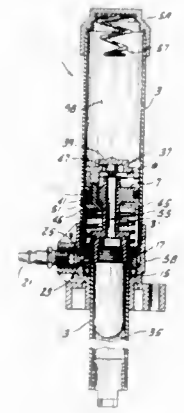
4,879,943
EXPANSIBLE CHAMBER MOTOR WITH SNAP-ACTING VALVE

Ayzik Grach, Creve Coeur, Mo., assignor to McNeil (Ohio) Corporation, St. Paul, Minn.

Filed May 17, 1988, Ser. No. 194,833

Int. Cl.⁴ F01L *15/12, 21/04;* **F01B** *7/18*

U.S. Cl. 91—224 7 Claims



1. An expansible chamber motor comprising

a cylinder,

a piston reciprocable in the cylinder,

a piston rod extending from the piston through one end of the cylinder,

the piston dividing the cylinder into a first chamber between the piston and said one end of the cylinder and a second chamber between the piston and the other end of the cylinder,

the cylinder having an inlet for delivery of pressure air thereto to said first chamber,

the piston having passaging for communication from the first to the second chamber,

the piston and piston rod having a passage for exhaust of air from the second chamber with a valve seat at the end of said passage open to said second chamber,

valve means carried by the piston for opening and closing said passaging in the piston and said exhaust passage,

said valve means being movable relative to the piston between a first position wherein said passaging in the piston is open and said exhaust passage is closed and a second position wherein said passaging in the piston is closed and said exhaust passage is open,

said valve means having a part on the side of the piston toward said one end of the cylinder which is arrested as the piston completes a stroke toward said one end of the cylinder to effect relative movement of the piston and valve means to said second position of the valve means and having a part on the other side of the piston which is arrested as the piston completes a stroke toward the other end of the cylinder to effect relative movement of the piston and the valve means to said first position of the valve means, and

a snap-acting overcentering spring means interposed between the piston and said valve means for snapping said valve means from its said first position to its said second position as the piston completes a stroke toward said one end of the cylinder, and for snapping said valve means from its said second position to its said first position as the piston completes a stroke toward said other end of the cylinder, the snap action of said valve means between its said first and second positions preventing stalling of the air motor as the piston completes its strokes,

said spring means comprising a ring affixed to one of said valve means and piston and having a central opening therethrough generally coaxial with said cylinder, and spring finger means on the ring affixed to the other of said valve means and piston, said spring finger means being in substantial compression when in the plane of the ring whereby said spring finger means is adapted to snap through the plane of the ring from a coned position on one side of the ring to a coned position on the opposite side of the ring as the piston completes each stroke in the cylinder, the snap-action of said spring finger means exerting a force on said valve means sufficient to snap the valve means to its said first or second position.

4,879,944
HYDRAULIC CONTROL VALVE

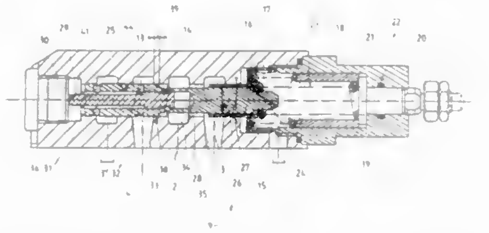
Maurice Tardy, and Louis Marcon, both of Saint-Etienne, France, assignors to Bennes Marrel, Zone Industrielle Sud, Cedex, France

Filed Apr. 14, 1988, Ser. No. 181,690

Claims priority, application France, Apr. 23, 1987, 87 05965

Int. Cl.⁴ F15B *11/00*

U.S. Cl. 91—516 16 Claims



1. A hydraulic power circuit comprising an hydraulic valve adapted to be connected between a pressurized fluid supply line and first and second lines feeding respective first and second circuits with different functions, said valve comprising:

a first fluid flow control member controlled by control means and connecting said supply line to said first circuit through said first line;

a two-position distributor device controlled by said control means and connecting said second line of said second circuit either to said supply line or to a return line,

a second fluid flow control member in said second line having an adjustable passageway adapted to respond to opposite actions from said control means and from back-pressure downstream in said second line, and comprising dashpot effect dampening means.

4,879,945
HYDRAULIC CONTROL DEVICE

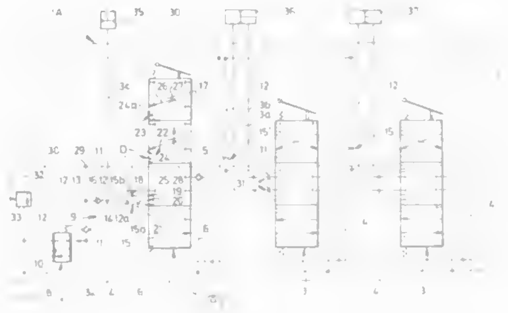
Rudolf Brunner, Baldham, and Heiner Fichtenbeiner, Gröbenzell, both of Fed. Rep. of Germany, assignors to Heilmeier & Wienlein, Fabrik fur Oel-Hydraulik GmbH & Co. KG, Fed. Rep. of Germany

Filed Jul. 5, 1988, Ser. No. 215,061

Claims priority, application Fed. Rep. of Germany, Jul. 3, 1987, 3722083

Int. Cl.⁴ F15B *11/00*

U.S. Cl. 91—518 10 Claims



1. A hydraulic control device (1A, 1B, 1C) comprising at least one distributing valve (2, 2′) connected upstream of a consuming point (35), whose control element (17, 17′) locks at least one consumer line (3) in neutral position and connects the same in two control positions (a, b) alternatingly with a pump line (4) or a return line (6), a pressure source connected to the pump line (4), a pressure balance (7) connected to the pump line (4), a slide (8) loaded by a spring (9) in the direction to the locking position for the direct returning of the pressure medium conveyed by the pressure medium source (P) and not required by the consuming point (35) from the pump line (4) into the return line (6), a control line circuit branched off from the pump line (4) which has a first, a second and a third control line (11, 12, 34, 30), the first control line (11) leading from the pump line (4) to a relief connection, which is connected to the return line (6) in the neutral position of the distributing valve (2, 2′), while the second control line (12) leads from the spring side of the pressure balance (7) to at least one load pressure bleeding connection (20, 21) of the distributing valve (2, 2′) and is connected to the first control line (119), the load pressure bleeding connection (20, 21) being connected to the consumer line (3*c*) in at least one control position (a) of the distributing valve (2, 2′), a first throttling point (14) disposed in the first control line (11) in the direction of flow to the distributing valve (2, 2′) before the connection point (13) with the second control line (12), whose input pressure is transmitted via the third control line (34) to one side of the slide (8) of the pressure balance, and a second throttling point (15, 15′) disposed in the second control line (12) behind the connection point (13), whose input pressure can be raised upon the adjustment of the control element (17, 17′) from the neutral position and transmitted to the spring side of the slide (8) of the pressure balance (7) via the second control line (12), characterized in that the input pressure of the second throttling point (15) can be raised by means of the control element (17, 17′) of the distributing valve (2, 2′) as a function of its stroke in the direction to a control position end position prior to reaching the final position in at least two steps.

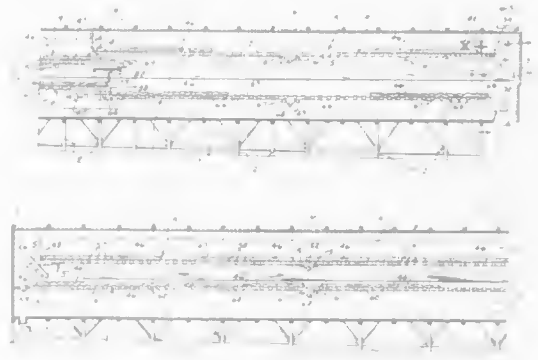
4,879,946
APPARATUS FOR MATTING AND MILLING OF CHEESE CURD

Frank W. Blodgett, and Paul R. Bokelmann, both of Fond du Lac, Wis., assignors to Damrow Company, Inc., Food du Lac, Wis.

Filed Dec. 28, 1987, Ser. No. 138,552

Int. Cl.⁴ A01J *25/00, 25/11*

U.S. Cl. 99—453 14 Claims



1. In a continuous cheese matting apparatus first conveyor means including a first porous conveying member and having an upstream end and a downstream end, feed means for feeding separate quantities of curds and whey to the upstream end of said first conveyor means to form a plurality of curd layers that are spaced along the length of said first conveyor means, each curd layer having a leading end and a trailing end, said whey draining through said first porous conveying member, second conveyor means including a second porous conveying member and having an upstream end disposed at a lower level than the downstream end of said first conveyor means and disposed to receive each curd layer from the downstream end of said first conveyor means, means responsive to the leading end of each curd layer approaching the downstream end of said first conveyor means for varying the speed of said first conveyor means to approximate the speed of said second conveyor means so that each curd layer is transferred from said first conveyor means to said second conveyor means while said first conveyor means and said second conveyor means are operating at approximately the same speed.

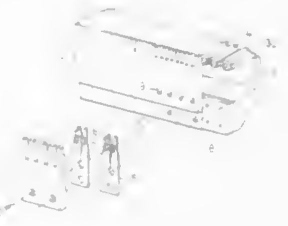
4,879,947
PRINTHEAD WHICH MINIMIZES STRAY MAGNETIC FLUX

Makoto Kurosawa, and Kenichi Igarashi, both of Ibaragi, Japan, assignors to Hitachi Koki Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 461,361, Jan. 27, 1983, abandoned. This application Nov. 16, 1987, Ser. No. 120,724

Int. Cl.⁴ B41J *3/10*

U.S. Cl. 101—93.04 7 Claims



1. A printerhead comprising:

a common yoke;

a plurality of pole pieces extending from said common yoke, said pole pieces being divided into a first group of pole

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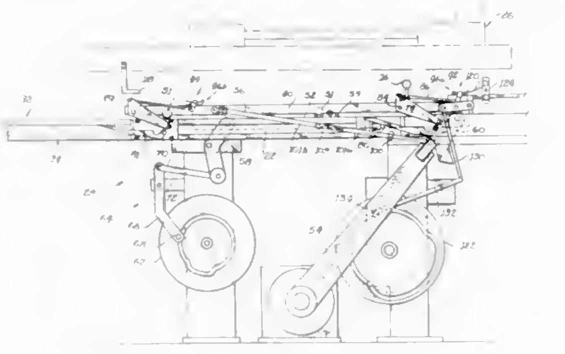
pieces and a second group of pole pieces with the pole pieces in said first group alternating with the pole pieces of said second group;
a permanent magnet coupled to said common yoke at a position opposite said pole pieces, said permanent magnet establishing a magnetic field in each of said pole pieces;
a plurality of print hammers each having a first end rigidly coupled to said common yoke at a position adjacent said permanent magnet and a second end retractable against an end of a corresponding one of said pole pieces due to the magnetic field produced by said permanent magnet; and
driving means, comprising a plurality of release coils which are provided only around pole pieces of said first group, for driving only the print hammers corresponding to said first group of pole pieces by at least substantially cancelling the magnetic field in the pole pieces of said first group to accomplish printing of said characters, wherein the magnetic field in each of the pole pieces of said second group is maintained substantially constant during printing of characters except for minor variations due to stray magnetic flux created when said release coils are driven.

4,879,948

PRESS WITH AUTOMATIC SHEET TRANSPORT MECHANISM

Henry J. Bobley, Deerfield, Ill., assignor to American Screen Printing Equipment Company, Chicago, Ill.
Filed Oct. 4, 1988, Ser. No. 253,121
Int. Cl.⁴ B41F *15/00*
U.S. Cl. 101—114 12 Claims

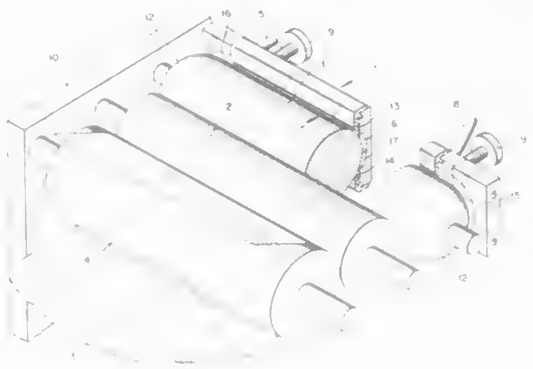


1. A printing press for use in printing on sheet stock comprising:
a frame;
a printing bed supported on said frame for supporting a sheet of stock, said printing bed being movable between an upper position for printing and a lower position, said printing bed having means to hold said sheet on said printing bed temporarily;
a print head supported on said frame for printing on said sheet;
means for transporting said sheet from an input station to the printing bed, comprising a gripper carriage and a plurality of forwardly opening grippers supported thereon, each said gripper having an upper jaw and a lower jaw and being movable between an open positon and a closed position;
said means for transporting said sheet further comprising means for translating and operating said grippers in a cycle in which said grippers (a) close upon a leading edge of a sheet of stock at a first position, (b) travel rearward, pulling said sheet to the printing bed, (c) open to release said sheet, then (d) travel forward to return to said first position;
means for moving said printing bed between its upper and lower positions in timed relation with travel of said gripper carriage such that said printing bed travels forward and downward from its upper position to remove said sheet from said grippers without interference between said sheet and said grippers after said grippers open to release said sheet.

4,879,949

REVERSE ANGLE DOCTOR BLADE ASSEMBLY

Torben Vennike, Holsted, Denmark, assignor to Ildvaco Engineering A/S, Gesten, Denmark
Filed May 18, 1988, Ser. No. 195,154
Int. Cl.⁴ B41F *9/10*
U.S. Cl. 101—157 12 Claims



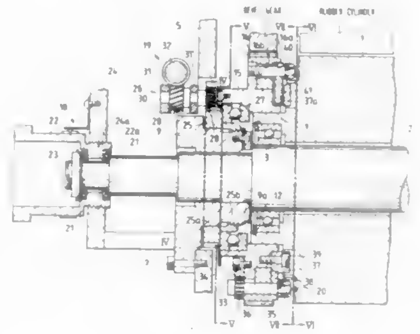
1. A liquid transfer apparatus, comprising:
reservoir means defining a reservoir chamber for holding liquid;
transfer roll means having ends mounted for rotation about an axis which does not pass through said reservoir chamber, said transfer roll means having a transfer surface intermediate said ends for rotating to retain a metered quantity of said liquid;
means for engaging said transfer roll means so that said transfer surface faces said reservoir chamber and rotating said transfer roll means about said axis so that said transfer surface retains liquid from said reservoir chamber;
at least one doctor blade means having an edge for removing excess liquid adhering to said transfer surface as said transfer roll means rotates;
the improvement being:
that said transfer roll means, which have an ordinary cylindrical surface, are evenly terminated at each end with part of an ellipsoid face, and that said doctor blade means consists of two parallel parts which contact said cylindrical surface, and which are connected at each end with semi-elliptical doctor blade parts which contact the corresponding elliptical face of said transfer roll means.

4,879,950

IMAGE POSITION ADJUSTING APPARATUS OF ROTARY PRESS MACHINE

Koji Ishii, Hiroshima, Japan, assignor to Ryobi Ltd., Hiroshima, Japan
Filed Jun. 16, 1988, Ser. No. 207,559
Claims priority, application Japan, Jun. 19, 1987, 62-154039; Jul. 20, 1987, 62-181816
Int. Cl.⁴ B41F *13/14, 13/20*
U.S. Cl. 101—217 10 Claims

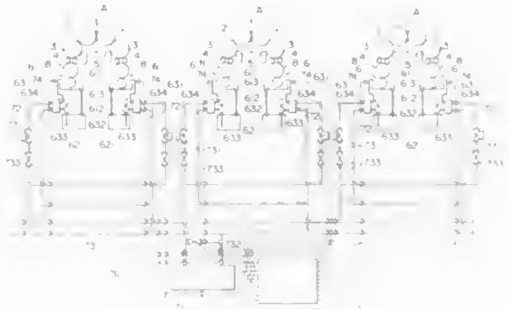
1. In an apparatus for adjusting a position of an image to be printed by a rotary printing machine in first and second directions, the printing machine having a printing cylinder, a shaft, a frame defining an inside and an outside, the printing cylinder being disposed on the inside, a bevel gear associated with the printing cylinder, and a rubber cylinder with a bevel gear for engagement with said printing cylinder bevel gear, the improvement wherein the apparatus comprises:
a plurality of first bearing means, supported on the frame, for supporting the shaft for axial movement in the second direction, the shaft having an end portion extending through the frame to the outside thereof, wherein the shaft is provided for supporting the printing cylinder for rotation;
second bearing means for supporting the printing cylinder for rotation relative to the shaft, and for axial movement in response to axial movement of the shaft;
a first handle mounted on the end portion of the shaft;
first translating means for translating rotation of the handle into axial movement of the shaft, the first translating means including a first holder mounted outside the frame and in fixed relation to the frame;
a first gear rotatably mounted outside the frame;
second translating means for translating rotation of the first gear into axial movement of the printing cylinder bevel gear; and
supporting means for rotatably and slidably supporting the printing cylinder bevel gear on the printing cylinder such that axial movement of the printing cylinder bevel gear causes relative rotation between the printing cylinder bevel gear and the rubber cylinder bevel gear which causes relative rotation between the printing cylinder and the rubber cylinder for adjusting the printing of the image in the first direction.



4,879,951

INK SUPPLYING DEVICE

Kouichi Yoshida, Machida, and Noritake Harada, Kanagawa, both of Japan, assignors to Kabushikigaisha Tokyo Kikai Seisakusho, Tokyo, Japan
Filed Oct. 19, 1988, Ser. No. 259,771
Claims priority, application Japan, Oct. 28, 1987, 62-272816
Int. Cl.⁴ B41F *31/08*
U.S. Cl. 101—363 11 Claims

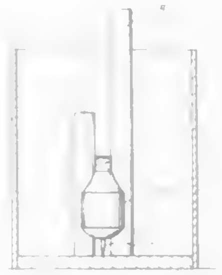


1. An ink supplying device comprising:
an inking cylinder;
means for feeding ink to said inking cylinder;
said ink feeding means comprising an ink reservoir, an ink feeding unit and means for circulating ink between the ink feeding unit and ink reservoir;
means for controlling the temperature of the ink to be fed into the inking cylinder, comprising a medium circulation unit including a medium chamber, a medium temperature detecting unit, a heater, and a cooler; a plate-type heat exchanger; means for circulating between the medium circulation unit and the heat exchanger; an ink temperature detecting unit; and a control unit for controlling the operations of the medium circulation unit to keep the temperature of the ink within a predetermined optimum range.

4,879,952

PRIMER

Richard Dowing; Jolanta Paull, and David Vince, all of Victoria, Australia, assignors to ICI Australia Operations Proprietary Ltd., Melbourne, Australia
Filed Jan. 20, 1988, Ser. No. 146,127
Claims priority, application Australia, Jan. 30, 1987, PI0122
Int. Cl.⁴ F42B *3/10;* **F42D** *1/08;* **C06C** *5/04*
U.S. Cl. 102—331 9 Claims

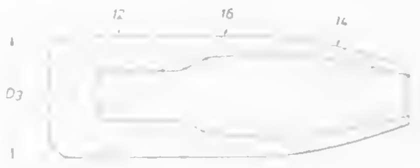


1. A primer for an explosive charge, adapted to be fired by a detonating cord, the primer comprising a charge of explosive substantially completely surrounding a sensitising charge of high explosive, the sensitising charge being enclosed within an impermeable rigid container whose external shape includes a groove extending the length of the container to receive and at least partially surround the circumference of the detonating cord.

4,879,953

BULLET

Herman L. Carter, P.O. Box 262348, Houston, Tex. 77207
Division of Ser. No. 11,582, Feb. 6, 1987, Pat. No. 4,793,037. This application Oct. 24, 1988, Ser. No. 261,755
Int. Cl.⁴ F42B *11/10*
U.S. Cl. 102—507 11 Claims



1. A bullet comprising an outer jacket of copper base material and an inner core lead bonded to the jacket, said jacket including a base portion and an ogived shaped nose portion having a wall that decreases in thickness away from the base portion, said base portion having a tensile strength sufficiently higher than the nose portion for the base portion to remain

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intact after impact with a target while the nose portion splits longitudinally and expands as the bullet travels into the target with a minimum in weight reduction.

4,879,954
FOLDABLE TABLE

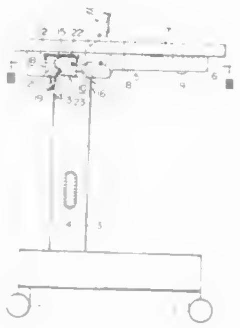
Masahiko Sawamura, 481 Sashima, and Kouji Takahashi, 192 Ashina, both of Yokosuka, Kanagawa-ken, Japan

Filed Feb. 1, 1983, Ser. No. 462,770

Claims priority, application Japan, Jan. 2, 1982, 57-12796[U]

Int. Cl.^{4} A47B *3/00*

U.S. Cl. 108—6 **9 Claims**



1. A support surface movable between two positions, comprising:
  - means for movably supporting said support surface between two positions;
  - an engagement pin fixedly mounted upon said means supporting said support surface;
  - a first latching member pivotably mounted upon said support surface, and including first and second notched portions, said first notched portion being engageable with said engagement pin so as to retain said support surface in a first one of said two positions;
  - a second latching member, fixedly secured directly upon a shaft rotatably mounted within said support surface, having a projection engageable with said second notched portion of said first latching member whereby said second latching member is disposed in a locked position so as to retain said first latching member in engagement with said engagement pin;
  - spring-biasing means for interconnecting said first and second latching members together; and
  - manually accessible lever means, fixedly connected directly to said shaft upon which said second latching member is fixedly secured, for rotating said shaft and said second latching member from said locked position to a release position so as to permit said first latching member to be disengaged from said engagement pin under the influence of said spring-biasing means whereby said support surface is able to be moved from said first one of said two positions to a second one of said two positions.

4,879,955
OFFICE WORKSTATION

Reiner Moll, Schwaeb.Gmuend-Lindach, and Andreas Utz, Spraitbach, both of Fed. Rep. of Germany, assignors to Planmoebel Eggersman GmbH & Co. KG, Espelkamp, Fed. Rep. of Germany

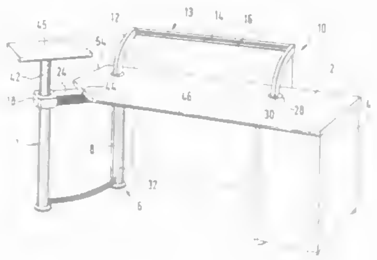
Filed Jun. 23, 1988, Ser. No. 210,507

Claims priority, application Fed. Rep. of Germany, Jun. 23, 1987, 3720639

Int. Cl.^{4} A47B *17/00*

U.S. Cl. 108—50 **28 Claims**

1. An office workstation comprising:
  - a lower frame including a plurality of vertically oriented legs;
  - a plurality of hollow joint bodies supported on said legs at upper ends thereof;
  - a plurality of hollow beams connected between said hollow joint bodies;
  - a table top vertically adjustably supported by said lower frame, said table top having at least one corner having an edge extending obliquely to an adjacent edge, and



  - wherein one of said plurality of hollow beams extends substantially perpendicularly away from and beyond said oblique edge;
  - an upper frame supported by said lower frame and including a horizontal carrier mounted between a pair of substantially vertical supports extending through said table top; and
  - wherein said legs, said joint bodies, said hollow beams and said upper frame include through openings for passage of cables.

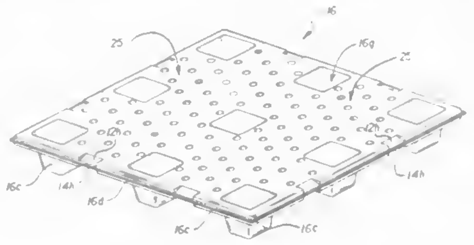
4,879,956
PLASTIC PALLET

Lyle H. Shuert, 817 N. Fieldstone, Rochester, Mich. 48063

Filed Jan. 14, 1988, Ser. No. 144,419

Int. Cl.^{4} B65D *19/38*

U.S. Cl. 108—53.3 **11 Claims**



1. A plastic pallet comprising:
  - (A) an upper generally flat polygonal plastic sheet having an upper surface and having a series of downwardly extending hollow upwardly opening protuberances each opening in said upper surface of said sheet and having a bottom wall portion;
  - (B) a lower generally flat polygonal plastic sheet having a series of upwardly extending hollow downwardly opening protuberances generally corresponding in size, number, shape and distribution pattern to said downwardly extending protuberances and each having a top wall portion;
  - (C) said bottom wall portion of each downwardly extending protuberance being fused to said top wall portion of the respective upwardly extending protuberance to form integral solid wall portions at the interface of each downwardly and upwardly extending set of protuberances so as to position said sheets in fixed parallel spaced relation to each other to define a substantially planar polygonal load bearing platform structure, said load bearing structure having an upper face;

  - (D) said pallet further including a plurality of legs spaced circumferentially about the periphery of said load bearing member and depending downwardly from said load bearing platform structure to elevate said platform structure above a support surface by a distance to allow the entry of forklifts;
  - (E) each of said legs being formed of a downwardly extending portion of each of said sheets and forming an upwardly opening pocket opening in the upper face of said load bearing member structure to allow nesting of said pallet with other pallets of similar construction;
  - (F) said protuberances comprising bosses having generally cylindrical side walls so as to each coact with the matching boss to form a generally cylindrical column extending vertically between said upper and lower sheets;
  - (G) said bosses being arranged in generally parallel rows on each sheet with each row, except where interrupted by said pockets, extending from a location proximate a first edge of said platform structure to a location proximate a second edge of said platform structure opposite said first edge;
  - (H) said bosses being substantially equally spaced along each row for the entire length of each row;
  - (I) said rows being substantially equally spaced and extending from a first row proximate a third edge of said platform structure to a final row proximate a fourth edge of said platform structure opposite said third edge;
  - (J) the distance between successive bosses in each row and the distance between adjacent rows being selected to provide a plurality of bosses between adjacent pocket openings as measured between said first and second edges as well as measured between said third and fourth edges so as to form a series of tightly spaced columns between said sheets in all major areas of said platform structure not occupied by said legs.

4,879,957
IMPACT-IMPEDING PANE/FRAME STRUCTURE

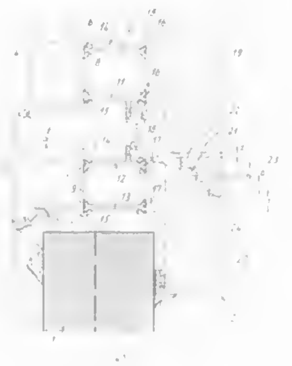
Siegfried Habicht, Leopoldshöhe; Rainer Reppert, and Eitel-Friedrich Höcker, both of Bielefeld, all of Fed. Rep. of Germany, assignors to Schuco International GmbH & Co., Fed. Rep. of Germany

Filed Jun. 17, 1987, Ser. No. 63,637

Claims priority, application Fed. Rep. of Germany, Jul. 23, 1986, 3624849

Int. Cl.^{4} E06B *05/10*

U.S. Cl. 109—79 **2 Claims**



1. An impact-impeding structure, comprising
  - (a) a pane arranged in a plane and having front and rear sides;
  - (b) impact-impeding frame means for supporting said pane, said frame means including
    - (1) an outer frame including a first longitudinal impact-impeding section arranged on at least one side of said pane; and
    - (2) an inner frame arranged within said outer frame and including a second longitudinal impact-impeding section arranged on said one side of said pane coplanar with said first impact-impeding section, said first and second impact-impeding sections each having a continuous stepped profile comprising a plurality of steps, each step including lateral and longitudinal portions, said profiles being arranged opposite each other and having corresponding configurations to define a labyrinthine gap therebetween, said gap having a longitudinal width defined between corresponding lateral step portions of said sections which decreases in the direction toward said plane, whereby when a projectile penetrates said gap, the projectile is deflected through the gap to deplete the kinetic energy of the projectile and minimize the risk of the projectile damaging said pane.

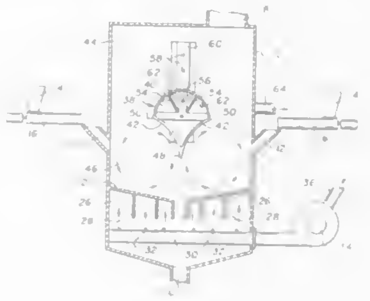
4,879,958
FLUIDIZED BED REACTOR WITH TWO ZONE COMBUSTION

John V. Allen, 1554 Matthews, Vancouver V6J 2S9; Berend Put, 4660 Pheasant Place, North Vancouver V7R 4C3, and Geoff W. Boraston, 1104 - 1265 Burnaby Street, Vancouver V6E 1P8, all of Canada

Filed Dec. 19, 1988, Ser. No. 286,134

Int. Cl.^{4} F23G *5/00, 7/00*

U.S. Cl. 110—245 **9 Claims**



1. In a fluidized bed thermal reactor comprising:
  - a main housing including:
  - a waste inlet;
  - an exhaust gas outlet;
  - an incombustible solids outlets; a base member;
  - a fluidizable medium located on the base member;
  - a plurality of gas inlets in the base member whereby a fluidizing medium located on the base member may be fluidized;
  - the improvement comprising a hollow body of generally triangular cross-section extending across the main housing and dividing the housing into upper and lower zones and having a pair of arcuate deflector surfaces;
  - a gas inlet into the body whereby gas may be fed to the interior of the body;
  - a plurality of openings in the top of the body whereby gas fed to the body through the gas inlets heated in the body may rise upwardly in the upper zone to assist in combustion in that upper zone.

4,879,959
SWIRL COMBUSTION APPARATUS

Jacob Korenberg, York, Pa., assignor to Donlee Technologies, Inc., York, Pa.

Filed Nov. 10, 1987, Ser. No. 118,933

Int. Cl.^{4} F23D *1/02*

U.S. Cl. 110—264 **27 Claims**

1. A swirl combustion apparatus, comprising:
  - a combustion chamber having a front end, a rear end and a

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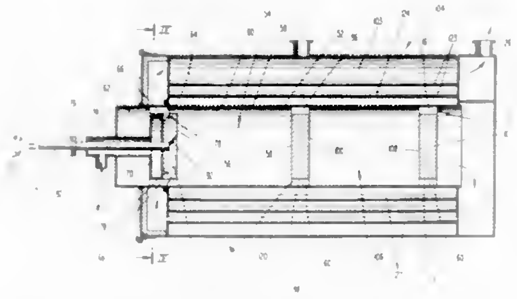
longitudinally extending substantially cylindrical wall having an inner surface;

means for supplying a peripheral swirl of air into the combustion chamber adjacent the inner surface of the cylindrical combustion chamber wall;

means for supplying fuel into the combustion chamber for mixing with the swirl of air and burning in the combustion chamber to form swirling hot combustion gases in the combustion chamber; and



means for directing the swirling hot combustion gases out of the combustion chamber in a direction substantially tangential to the inner surface of the cylindrical combustion chamber wall, said directing means including a combustion chamber rear end wall having an annular combustion chamber outlet for directing the swirling hot combustion gases out of the combustion chamber, the annular combustion chamber outlet having an outer cylindrical outlet wall with a diameter substantially equal to the diameter of the inner surface of the cylindrical combustion chamber wall.

4,879,960

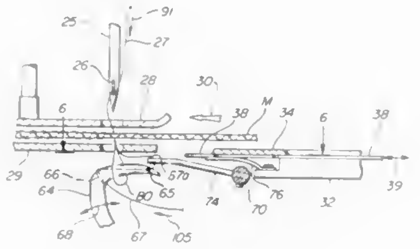
THREAD TRIMMER SYSTEM FOR IN-LINE CHAIN STITCH SEWING MACHINE

Eugene R. Prais, Hewitt, N.J., assignor to Kansai Special USA Corp., Moonachie, N.J.

Filed Jul. 22, 1988, Ser. No. 223,119

Int. Cl.⁴ D05B *57/04, 65/02*

U.S. Cl. 112—291 **11 Claims**



1. Apparatus for severing the needle and looper threads of a chain stitch formed in a piece of material by a sewing machine having a needle plate, a needle carrying the needle thread through the material and the needle plate to form a needle loop of needle thread therebelow having a needle side running to the needle, a looper carrying the looper thread through the needle loop, and a spreader receiving the looper thread from the looper, said apparatus comprising:

a stationary knife positioned below the needle plate and having an edge against which the needle and looper threads are severed;

a spring positioned below said stationary knife and biased in a direction toward said stationary knife;

a movable knife slidably mounted between said stationary knife and said spring yieldingly urging said movable knife thereagainst and having one penetrating end with a pair of axially offset barbs, a lagging barb and a leading barb closer to said penetrating end of said movable knife than said lagging barb; and

actuating means, connected to the other end of said movable knife, for extending said penetrating end through the needle loop so that said leading barb hooks the needle side of the needle loop and said lagging barb hooks the looper thread and retracting said penetrating end far enough beyond said edge of said stationary knife to sever the needle and looper threads carried by said barbs.

4,879,961

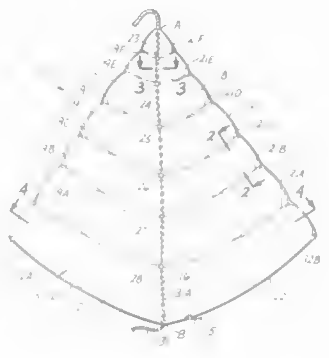
SAIL AIRFOIL DEVICE

Angel R. Aguilera, P.O. Box 1336, Crestline, Calif. 92325

Continuation-in-part of Ser. No. 228,007, Aug. 3, 1988, abandoned. This application Nov. 15, 1988, Ser. No. 271,605

Int. Cl.⁴ B63H *9/06*

U.S. Cl. 114—102 **20 Claims**



1. An airfoil device, comprising:

an inflatable structure for attachment to an existing sail to form a sail assembly, the inflatable structure being dimensioned and arranged to extend over a substantial portion of the existing sail; and

valve means for enabling a user to inflate and deflate the inflatable structure while the inflatable structure is so attached to thereby vary the shape of the sail assembly;

the inflatable structure including inner and outer layers that define an enclosed interior suitable for containing a pressurized gas for inflation purposes;

which inner and outer layers are dimensioned and arranged to provide an airfoil shape to the sail assembly when the inflatable structure is inflated;

wherein the airfoil device includes means for attaching the inflatable structure to the existing sail, the means for attaching includes means for attaching the inflatable structure to the existing sail removably, and the means for attaching the inflatable structure to the existing sail removably includes a hook-and-loop type fastener attached to the inflatable structure and reinforced loops of a head portion, foot portion, and clews of the inflatable structure.

4,879,962

CONVERTIBLE DINETTE/SLEEPER FOR RECREATIONAL BOAT

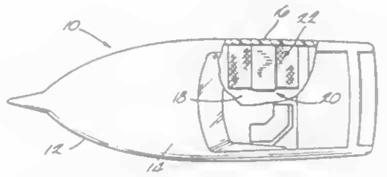
Michael W. Lathers, Metamora, Mich., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed Jul. 8, 1988, Ser. No. 216,797

Int. Cl.⁴ B63B *29/04*

U.S. Cl. 114—188 **18 Claims**

18. A table apparatus comprising a base, a table portion having a generally planar upper surface, a first support member extending generally perpendicularly to said table portion and having an upper end fixedly secured to said table portion, and a lower end, and a second support member having an upper end connected to said lower end of said first support member for pivotal movement about a first generally horizontal axis, and a lower end connected to said base for pivotal movement about a second axis generally parallel to said first axis, said first and second members being movable between a first position wherein said first and second support members are end-to-end, wherein said second support member extends upwardly from said second axis, and wherein said first support member extends upwardly from said first axis, and a second position wherein said first and second support members are side-by-side, wherein said second support member extends downwardly from said second axis, and wherein said first support member extends upwardly from said first axis.



4,879,963

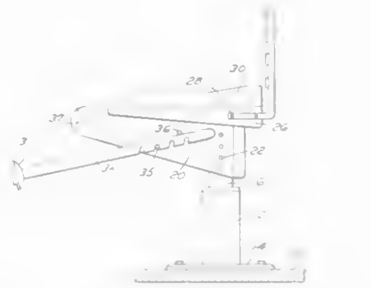
FISHING SEAT

Roland A. Dionne, Warwick, R.I., assignor to Robert N. Beliveau, Warwick, R.I.

Continuation-in-part of Ser. No. 160,760, Feb. 26, 1988, abandoned. This application Jan. 9, 1989, Ser. No. 294,310

Int. Cl.⁴ B63B *29/00*

U.S. Cl. 114—363 **6 Claims**



1. A sport fishing seat comprising a pedestal adapted for mounting on the decking stucture of a boat, a long and narrow saddle seat having a cushioned upper surface defining a seat platform and side walls, means supporting the saddle seat from the pedestal, a foot rest assembly supported by said pedestal and having foot pedal tread plates extending laterally outward from one end thereof remote from the pedestal and a butt holder for a fishing pole mounted on said seat platform, said seat platform having a narrow width whereby a fisherman's legs closely straddle the said side walls of the seat.

4,879,964

AIR BRAKE ADJUSTMENT MARKER

Donald L. Emerson, Jr., 24805 SW. Gage Rd., Wilsonville, Oreg. 97070

Filed Sep. 12, 1988, Ser. No. 242,659

Int. Cl.⁴ B60Q *11/00;* **F16D** *66/02*

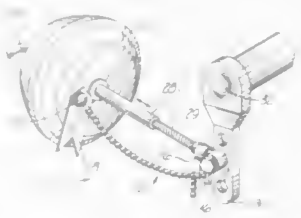
U.S. Cl. 116—28 R **18 Claims**

9. An air brake adjustment marker for use on a vehicle having an air brake system attached to the undercarriage of said vehicle, said air brake system including an air supply, an air canister operably connected to the air supply and attached to the undercarriage such that it is stationary with respect thereto, said air brake system further including a push rod extending from said air canister and movable from a retracted position to a first extended position and to a second over-extended position, and a braking mechanism operably connected to and movable by said push rod, the improvement comprising:

an adjustable length flexible member having two ends, said flexible member having a predetermined adjusted length corresponding to said first extended position;

a reusable, releasable securement means attached at an attachment point and interconnecting one end of said flexible member and one of said air canister or said push rod;

a clamp interconnecting the other end of said flexible member and the other of said air canister or said push rod;



said clamp having adjustment means to permit adjustment of the length of said flexible member; and

an indicator flag attached to said flexible member near said releasable securement means, whereby when said push rod is in its second over-extended position, said releasable securement means will release from said attachment point and drop downwardly allowing said indicator flag to drop by gravity and alert an operator of said vehicle that said air brake system requires attention.

4,879,965

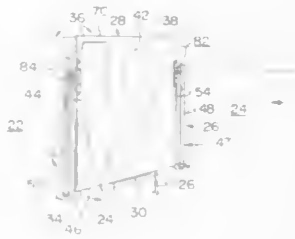
AIRPORT TWENTY-FOUR HOUR PILOT INFORMATION MARKERS

Irvin L. Valley, 1580 Weathervane Dr., Fircrest, Wash. 98466

Filed May 31, 1984, Ser. No. 616,266

Int. Cl.⁴ G09F *7/00, 13/00*

U.S. Cl. 116—209 **6 Claims**



1. An airport twenty-four hour pilot information marker, comprising:

(a) a rectangular planar panel means having reflective material on each side arranged in contrasting reflective patterns to create pilot informative indicia;

(b) an overall mounting assembly to pivotally support the panel means above the ground, whereby the panel means may deflect when the wind blows, and yet be positioned at all times to reflect airplane landing light energy, thereby to inform the pilot of indicia information, which is of value to him or to her, when he or she is maneuvering an airplane around an airport, having

right and left pivotal assemblies attached to the rectangular planar panel means at opposite edges thereof, at locations below the top of this panel means, to thereby locate a smaller area of this panel means above these pivotal assemblies, and a larger area of this panel means below these pivotal assemblies, with each of these pivotal assemblies having:

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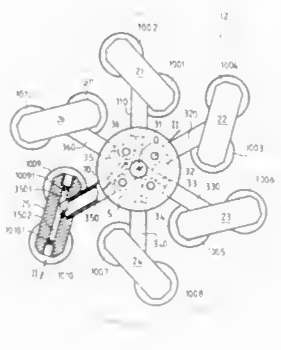
(1) an axis bolt rotatably supported in a respective support assembly;
(2) a fastener means to hold the axis bolt in place;
(3) an elongated bar secured to the axis bolt and fitted to the panel means;
(4) a fastener means to hold the panel means against the elongated bar; and
right and left support assemblies pivotally receiving near their tops the respective axis bolts, with each of these support assemblies having;
(1) a base pipe for placement in the ground;
(2) a standing pipe for partial telescoping insertion into the base pipe and supporting a pivotal assembly;
(3) a positioning means to hold the standing pipe in a selected inserted position within the base pipe;
(4) a transverse cross stop pin selectively placed in this base pipe to hold this base pipe in a relative depth position in the ground;
(5) concrete poured about the lower portions of this base pipe and completely about this transverse cross stop pin;
(6) a transverse fastener assembly to selectively position this standing pipe down into this base pipe; and
(7) sealing caps for the top of this standing pipe and for the bottom o this base pipe to keep their interiors cleaner and drier.

4,879,966

UNDERWATER PAINTING MACHINE COMPRISING A PAINT APPLICATION DEVICE WITH PULSATORY MOVEMENT ASSOCIATED WITH A ROTARY SMOOTHING DEVICE

Eugene Gourronc, Kerivoret Porspoder, France, assignor to Jean Simon, Borgo, France
Filed Jun. 30, 1986, Ser. No. 880,368
Claims priority, application France, Apr. 22, 1986, 86 05766
Int. Cl.⁴ B05C *1/00*
U.S. Cl. 118—207 **9 Claims**



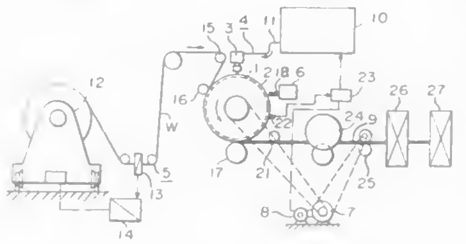
1. An underwater painting machine comprising : a paint application brush and a smoothing brush mounted on a common frame for simultaneous translation along the submerged surface to be treated, said smoothing brush having an active end surface which continuously engages said submerged surhollow shaft.

4,879,967

SEPARATOR MANUFACTURING APPARATUS FOR FORMING A SEPARATOR PLATE HAVING RIBS OF RESINOUS MATERIAL ON A BASE SHEET

Yukinori Sengoku, Nakatsugawa, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Sep. 30, 1988, Ser. No. 251,463
Claims priority, application Japan, Oct. 1, 1987, 62-248412
Int. Cl.⁴ B05C *1/08*
U.S. Cl. 118—259 **7 Claims**

1. A separator manufacturing apparatus for forming a separator plate having ribs of resinous material on a base sheet, which comprises:
a transfer roller with a plurality of annular shaping grooves having a predetermined shape corresponding in cross section to the ribs, said ribs being formed in the outer circumferential surface of said roller and extending in its circumferential direction,
a resin feeding device with a nozzle means having a plurality of nozzles positioned to separately feed a hot-melt type resin having highly adhesive properties to each of said annular shaping grooves of the transfer roller,

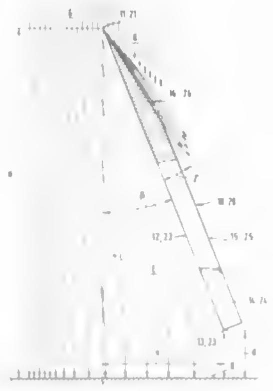


a base paper feeding device to feed a continuous base paper at a predetermined speed to a part of said outer circumferential surface of the transfer roller at the time of feeding said resin to thereby form by transfer a plurality of said ribs having a predetermined shape corresponding to the annular shaping groove on a surface of said continuous base paper, and
a parting agent coating device for applying before the feeding of said resin a thin layer of parting agent to at least a portion of said annular shaping grooves on said transfer roller.

4,879,968

SEPARATING DEVICE FOR TRIMMING THE WIDTH OF A POURED CURTAIN OF COATING MATERIAL

Martin Denz, and Diethard Kapp-Schwoerer, both of Basel, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.
Filed Feb. 24, 1988, Ser. No. 159,982
Claims priority, application Switzerland, Mar. 3, 1987, 792/87
Int. Cl.⁴ B05D *1/30*
U.S. Cl. 118—300 **9 Claims**



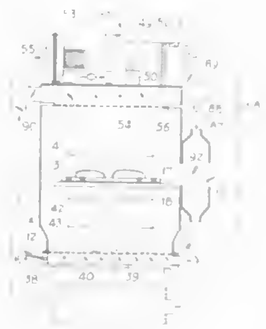
1. In a coating apparatus for pouring a curtain of coating material moving downwardly on to a substrate, moving transverse to the direction of movement of the curtain, and impinging on the substrate in a coating plane, with said curtain forming a coating layer, on said substrate, having marginal beads formed therein parallel with the direction of movement of said substrate, and a severing organ associated with at least one side of said curtain and having a foot end and an upper end thereof and being inclined with regard to the perpendicular with said foot end farther from the central region of said curtain than said upper end, said severing organ being adapted to trim the width of said curtain prior to the impingement thereof on said substrate in said coating plane extending at a short distance below said foot end, said upper severing organ end protruding into said curtain in a manner such that a marginal region of said curtain is severed from said central region thereof, and a cut-off portion of coating material constituting said marginal region is diverted laterally while the trimmed central region of said curtain adheres over a part of its downward travel to said severing organ thereby being spread and downwardly widened prior to impinging on said substrate, the improvement of said severing organ consisting essentially of a one-piece separating element comprising
- an upper end being designed as a knifelike, sharp severing edge,
- said foot end having a lower foot-end edge when said separating element is in said inclined condition,
- an inner wall surface destined for facing toward said central curtain region and having a smooth, uninterrupted face extending in only one plane from said severing edge to said lower foot end edge at said foot end,
- a rear wall surface facing away from said central curtain region having an oblique face provided at the upper end thereof and enclosing with said smooth inner wall surface an acute angle, thereby rendering said upper severing edge knifelike sharp,

the inclination of said separating element relative to the perpendicular being adjustable in a manner such that the trimmed central region of said curtain moves downward with laminar flow and with lateral spreading along said inner wall surface and is detached from said inner wall surface at said lower foot end edge and impinges on said substrate with almost the same lateral spreading as produced at said lower foot-end edge, whereby a coating deposited on a substrate by the curtain impinging thereon has formed therein only a naroow marginal bead being at most twice as high as the deposited, still undried coating layer.

4,879,969

ELECTROSTATIC FLOCKING APPARATUS

Tomoji Haranoya; Toshio Motegi, both of Ashikaga, and Masaaki Abe, Ohmiya, all of Japan, assignors to Toyo Flocking Co., Tochigi and Mesac Corporation, Tokyo, both of, Japan
Filed Jul. 17, 1987, Ser. No. 74,986
Claims priority, application Japan, Jul. 28, 1986, 61-177465; Sep. 5, 1986, 61-208032
Int. Cl.⁴ B05B *5/00*
U.S. Cl. 118—638 **7 Claims**

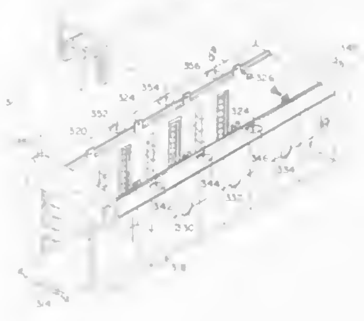


1. An electrostatic flocking apparatus comprising:
a flocking chamber;
flock support means disposed at the bottom of said flocking chamber for supporting flock within said flocking chamber,
said flock support means comprising a box, a perforated board or mesh screen defining an upper surface of the box for supporting flock, and vibratory or rocking means operatively connected to said box for vibrating or rocking said box to separate mass or masses of flock supported on the upper surface of said box into discrete fibers;
an air blow producing means for forcing a stream of air upwardly through said upper surface of said box that blows the discrete fibers supported on said upper surface upwardly in said flocking chamber;
filter means disposed at an upper portion of said flocking chamber for allowing the stream of air to discharge therethrough and for preventing the fibers blown by the stream of air to discharge therethrough;
a first electrode disposed between the upper surface of said box and said filter means;
a second electrode disposed between said first electrode and the upper surface of said box;
a third electrode disposed between said second electrode and the upper surface of said box for polarizing the discrete fibers as they are blown upwardly in said flocking chamber by the stream of air;
three power source means electrically connected to said first, second and third electrodes, respectively for impressing respective voltages on said electrodes,
the power source means of at least one of said first and said second electrodes including a polarity changeover means for changing the polarity of the voltage of the electrode to which said power source means including the polarity changeover means is electrically connected; and
workpiece support means within said flocking chamber for supporting a workpiece to be flocked between said first and said second electrodes.

4,879,970

COATING HOOD FOR APPLYING COATING COMPOUND ON CONTAINERS

Raymond W. Barkalow, Jackson; Harold S. Dick, Watchung, both of N.J., and Roger T. Guthrie, Spartanburg, S.C., assignors to M&T Chemicals Inc., Woodbridge, N.J.
Filed Apr. 21, 1987, Ser. No. 41,024
Int. Cl.⁴ C23C *16/00*
U.S. Cl. 118—719 **6 Claims**



1. A coating hood for applying uniform protective coatings to glass containers, said coating hood comprising:
(a) a pair of spaced side walls defining as space through which said containers pass from the entrance opening to an exit opening;
(b) coating air supply means defined in at least one side wall for supplying process air comprised of a coating compound entrained in a gas, to said containers;
(c) exhaust means defined in at least one side wall for receiving an output from said space; and

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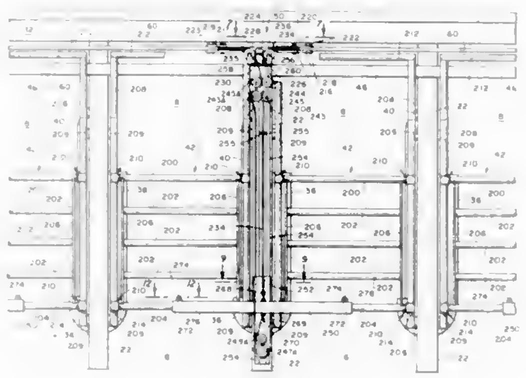
(d) means for introducing the coating compound to said coating air supply means;
(e) means for substantially diluting a film of said compound surrounding and traveling said containers to prevent escape of said coating compound through said exit opening.

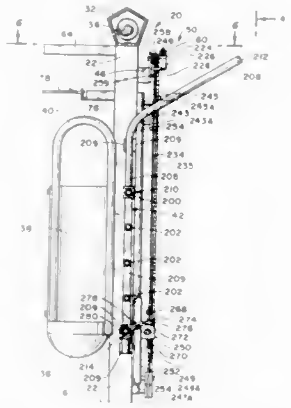
4,879,971

CONTROLLED LIFT GATE SYSTEM FOR MILKING PARLORS

August Vandenberg, 1904 Trotter Trail, Norco, Calif. 91760; Ben W. Vandenberg, 17224 Gard Ave., Artesia, Calif. 90701; Andrew W. Vanderberg, 15751 Ryon St., and Ben E. Haws, 8828 Laurel St., both of Bellflower, Calif. 90706

Filed Jun. 9, 1988, Ser. No. 204,395
Int. Cl.⁴ A01K *1/12*
U.S. Cl. 119—14.03 15 Claims





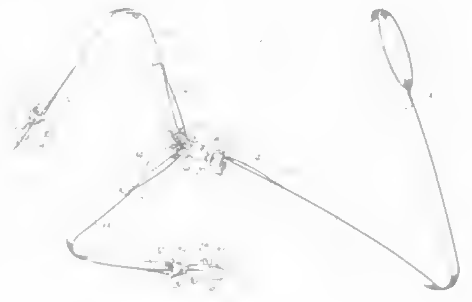
1. An improved exit gate for milking parlors, comprising:
at least one cattle station having at least one generally rectangular vertical member and a box beam secured adjacent the upper end of said vertical member and extending horizontally therefrom;
a gate pivotally secured to said vertical member for vertical movement between a raised open position and a lowered closed position;
first movement means for moving said gate connected to said gate and actuable to raise said gate, including an air cylinder mounted on said box beam, a draw-rod movable by said air cylinder between an extended and a retracted position, a traveling pulley carried by said draw-rod, a first cable having one end secured in a fixed position and passing about said traveling pulley and having the opposite end of said first cable secured to said gate, whereby actuation of said air cylinder will retract said draw-rod and said traveling pulley and cause said first cable to raise said gate and
second movement means for moving said gate connected to said gate and actuable to lower said gate in a slow and controlled manner.

4,879,972

DOUBLE PET WALKER

Dennis E. Crowe, and Julie L. Crowe, both of 5004 SW. 6th, Des Moines, Iowa 50315

Continuation of Ser. No. 106,570, Oct. 9, 1987, abandoned. This application Aug. 15, 1988, Ser. No. 233,898
Int. Cl.⁴ A01K *27/00*
U.S. Cl. 119—109 2 Claims



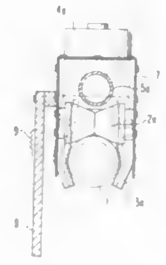
1. A double pet walker consisting of:
a first flexible line, a first loop means for selectively receiving an adult human hand therethrough on one end thereof and a second loop means for selectively receiving an adult human hand therethrough on the other end thereof;
first swivel means attached to said second loop for preventing twisting of said first flexible line;
first snap fastener means attached to said swivel means for selectively receivingly holding flexible members, said snap fastener means including means for selectively opening or closing said snap fastener means;
a second flexible line, one end of said second flexible line having a third loop means thereon large enough to receive an adult human hand therethrough, said second flexible line being substantially shorter than said first flexible line, said first snap fastener means selectively enclosing said third loop means;
second swivel means attached to the other end of said second flexible line for preventing twisting of said second flexible line;
second snap fastener means attached to said second swivel means for selective attachment to pet collars;
a first pet collar attached to said second snap fastener means;
a third flexible line, one end of said third flexible line having a fourth loop means thereon large enough to receive an adult human hand therethrough, said third flexible line being substantially shorter than said first flexible line, said first snap fastener means selectively enclosing said fourth loop means; wherein, the length of said third flexible line and the length of said second flexible line are approximately the same;
third swivel means attached to the other end of said third flexible line for preventing twisting of said third flexible line;
third snap fastener means attached to said third swivel means for selective attachment to a pet collar; and
a second pet collar attached to said second snap fastener means whereby two pets can be taken for a walk without tangling of said first, second and third flexible lines.

4,879,973

AUTOMATIC TUBE CIRCUMFERENCE SCANNING APPARATUS

Takuzo Maeyama; Kenichi Nii; Shigeru Shimojo, all of Osaka; Keiichi Iwamoto; Masaaki Torichigai, both of Nagasaki, and Kiyoshi Koizumi, Tokyo, all of Japan, assignors to The Kansai Electric Power Co., Inc., Osaka and Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, both of, Japan

Filed Jul. 1, 1988, Ser. No. 214,641
Claims priority, application Japan, Jul. 7, 1987, 62-164770
Int. Cl.⁴ F22B *37/42*
U.S. Cl. 122—379 2 Claims



1. An automatic tube circumference scanning apparatus comprising an upper support/traverse section mounted on an upper tube in a group of tubes arrayed as directed in the horizontal directions so as to be able to travel along a tube axis and to stop and grip said upper tube, a lower support/traverse section mounted on a lower tube appropriately separated from said upper tube so as to be able to travel, stop and grip said lower tube, a flexible rail extended vertically between said upper and lower support/traverse sections and fixed thereto, and a probe scanning section mounted on said rail so as to be able to move up and down, which grips any arbitrary tube between said upper and lower tubes for making a probe scan around the same tube.

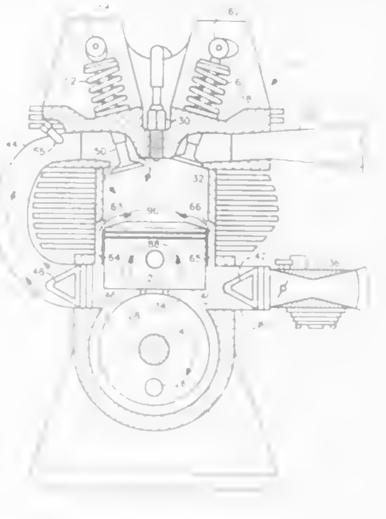
4,879,974

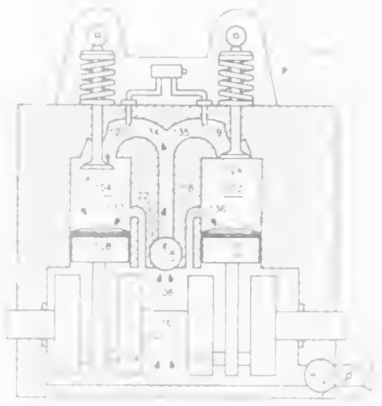
CRANKCASE SUPERCHARGED 4 STROKE, 6 CYCLE ENGINE

Gary M. Alvers, 228 S. Jackson 2A, Red Bluff, Calif. 96080

Filed Mar. 14, 1988, Ser. No. 167,490
Int. Cl.⁴ F02B *25/08*
U.S. Cl. 123—51 A 16 Claims

1. A high power, low-emission, fuel efficient, supercharged, four-stroke 6 cycle engine comprising:
means for defining a chamber having a cylindrical portion;
a piston which reciprocates in the cylindrical portion of the chamber through successive intake, compression, power and exhaust strokes respectively while six different cycles or events take place and divides the chamber into a combustion chamber and a compression chamber;
means for supplying air to the compression chamber during the compression and exhaust strokes of the piston;
a compression chamber inlet valve to prevent reverse flow back out of the compression chamber;
an intake conduit providing fluid communication between the compression chamber and the combustion chamber;
a compression chamber outlet valve interposed in the intake conduit proximate the compression chamber to prevent reverse flow from the intake conduit to the compression chamber but allows flow from the compression chamber into the intake conduit during the intake and power strokes of the piston;
an active intake valve operable to allow fluid communication from the intake conduit into the combustion chamber during the intake stroke of the piston;
means for mixing fuel with the air as it passes from the compression chamber to the combustion chamber through the intake conduit to provide a compressed combustible charge which is injected into the combustion chamber at greater than atmospheric pressure during the intake stroke of the piston; and
at least one secondary conduit providing fluid communication from the compression chamber to the interior of the combustion chamber through a secondary port located so that the port is blocked by the piston except near the bottom dead center position of the piston in order that supplemental air is fed into the combustion chamber immediately above the piston at the end of the intake stroke and beginning of the compression stroke through the secondary port to provide a stratified charge in the combustion chamber, and further secondary air is fed into the combustion chamber at the end of the power stroke and beginning of the exhaust stroke to enhance complete combustion of combusted charge.





4,879,975

ALCOHOL FUEL OPERATION CONVERSION MEANS FOR INTERNAL COMBUSTION ENGINES

John R. McC. Bennett, Melbourne, Victoria, Australia, assignor to Bennett Automotive Technology Pty., Ltd., Victoria, Australia

PCT No. PCT/AU87/00142, § 371 Date Jan. 19, 1988, § 102(e) Date Jan. 19, 1988, PCT Pub. No. WO87/07332, PCT Pub. Date Dec. 3, 1987
PCT Filed May 21, 1987, Ser. No. 175,043
Int. Cl.⁴ F02B *31/00*
U.S. Cl. 123—52 M 15 Claims

1. A carburetion and manifolding arrangement to allow the

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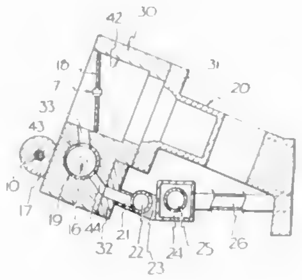
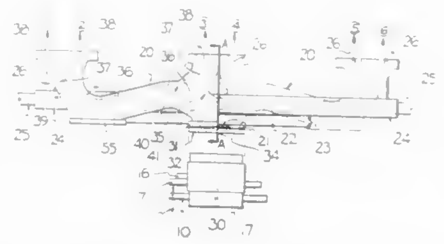
efficient operation of a six-cylinder internal combustion engine on fuels having a high latent heat of vaporisation such as ethanol and methanol comprising a variable venturi type carburetion means, a first and larger inlet manifolding means to be used during medium to high power operation, and a second and smaller inlet manifolding means to be used during starting, idling and low power operation wherein the first and larger inlet manifolding means leads to a respective cylinder-head inlet port for each cylinder and is made with a circular central entry opening having a predetermined area, leading by branching to a separate runner of an internal rectangular cross-sectional shape for each cylinder, a smooth transition from circular to rectangular shape occurring between the entry opening and a branching point of the separate runners for cylinders 3 and 4, the height of the runners being constant throughout the first and larger manifolding means at 65% of the diameter of the entry opening and the width of the runners decreasing smoothly such that the cross-sectional area of the runners is 57% of the area of the entry opening at the branching point of the separate runners to cylinders **3** and **4**, 51% of the area of the entry opening at a point mid-way between the branching point of the separate runners to cylinders **3** and **4** and a branching point of the separate runners to cylinders **1** and **2** and **5** and **6**, 46% of the area of the entry opening at the branching point of the separate runners to cylinders **1** and **2** and **5** and **6**, and 41% of the area of the entry opening at each point where the separate runners to all cylinders debouch into their respective cylinder head inlet ports.





4,879,976

REED VALVE MECHANISM FOR ENGINES

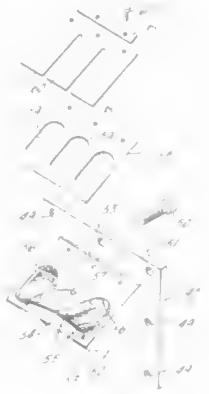
Eyvind Boyesen, Kempton, Pa., assignor to Performance Industries, Inc., Kempton, Pa.

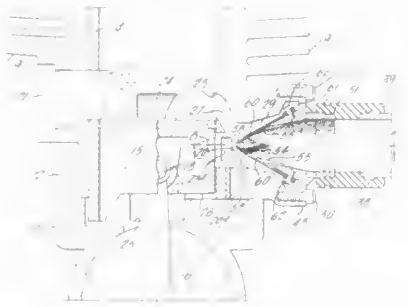
Filed Sep. 9, 1987, Ser. No. 94,548

Int. Cl.^{4} F02B *75/02*

U.S. Cl. 123—651 17 Claims

1. Reed valve mechanism for use in a fuel/air supply passage of an internal combustion engine, comprising a V-shaped reed cage with its apex presented downstream of the direction of flow through the supply passage, the reed cage having converging side walls with valve ports therein communicating with the supply passage, the side walls having planar external surfaces meeting along the reed cage apex, and reed valves overlaying the valve ports on the downstream sides of the reed cage planar surfaces, the reed cage further having at least one end wall with an interior surface defining a portion of the supply passage and being of curvilinear aeroform contour with respect to the axis of flow through the supply passage to the valve ports, the curvilinear contour of which is substantially uninterrupted upstream from the valve surface of the reed valve at least to the upstream edges of the reed valve cage, and the upstream portion of said curvilinear aeroform interior surface of said end wall being closer to the flow axis than the downstream portion of said end wall.





4,879,977

PRE-TIMED DISTRIBUTION UNIT, IN PARTICULAR FOR INTERNAL COMBUSTION ENGINES

Amedeo A. Restelli, Cernusco Lombardone, Italy, assignor to Societa Italiana Catene Calibrate Regina S.p.A., Milan, Italy

Filed Apr. 26, 1988, Ser. No. 186,241

Claims priority, application Italy, May 6, 1987, 20412 A/87

Int. Cl.^{4} F01L *1/02;* **F16H** *7/06*

U.S. Cl. 123—90.31 10 Claims

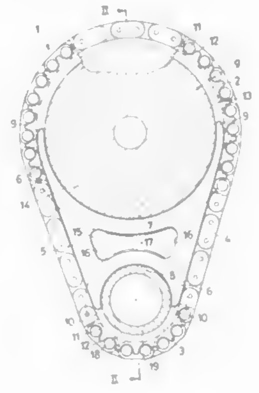
1. A pre-timed distribution unit for internal combustion engines, comprising:

a first driven sprocket wheel and a second driving sprocket wheel each having a plurality of sprocket sets;

a multiple-link chain means disposed about said two sprocket wheels;

at least one pair of adjacent sprocket sets on each sprocket wheel defining an annular space therebetween for receiving a contoured plate-shaped shoe means;

said guide shoe means extending in an inner space between said sprocket wheels;



said guide shoe means being totally contained inside said inner space.

4,879,978

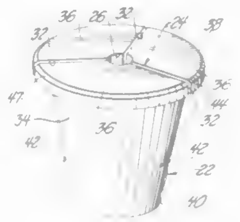
POPPET VALVE SPRING RETAINER

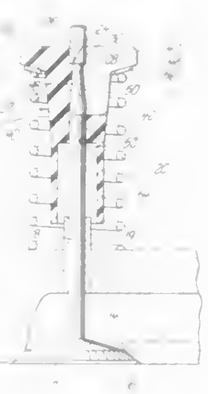
Daniel H. Pierce, 1330 Lyonhurst Rd., Birmingham, Mich. 48009

Filed Aug. 25, 1988, Ser. No. 236,553

Int. Cl.^{4} F01L *3/10*

U.S. Cl. 123—90.67 21 Claims





1. An engine apparatus including a spring retainer **(22)** of the type for retaining a return spring **(20)** on a stem **(18)** of a poppet valve **(14)**, said apparatus **(10)** comprising: a valve seat **(16)**; a valve guide **(19)**; a poppet valve **(14)** having a stem **(18)** slideably supported in said valve guide **(19)**; a return spring **(20)** associated with said stem **(18)** for urging said poppet valve **(14)** in a predetermined direction against said valve seat **(16)**; and one-piece retainer means **(22)** having an operational position on said stem **(18)** for retaining said return spring **(20)** on said poppet valve **(14)** and including a cylindrical bore **(26)** having a substantially uniform diameter surrounding said stem **(18)** when in said operational position, characterized by said retainer means **(22)** including integral self-locking means **(24)** for automatically locking said retainer means **(22)** on said stem **(18)** when said retainer means **(22)** is in said operational position, said self-locking means **(24)** extending radially inwardly from said bore **(26)**.

4,879,979

INTAKE AND EXHAUST SYSTEM THROUGH ROTATORY PORTS SHAFT, IN FOUR-STROKE MOTORS

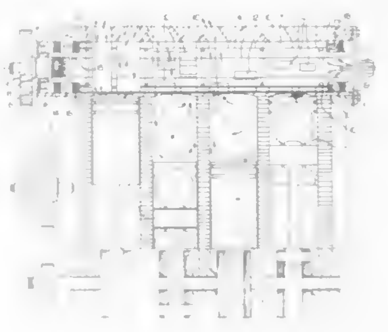
Felix O. Triguero, Virgen de la Fuencisla 33, 28027 Madrid, Spain

Filed Mar. 29, 1988, Ser. No. 174,700

Claims priority, application Spain, Mar. 30, 1987, 8700897

Int. Cl.^{4} F01L *7/00*

U.S. Cl. 123—190 BB 6 Claims



1. An intake and exhaust system for use in four-stroke motors, said system comprising:

a rotatory ports shaft, said shaft being generally hollow but having ports therethrough, said shaft having a nipple at one end and inclined bores at the other end;

a jacket, said jacket having matching ports through its cross-section, said shaft being rotatably disposed in the jacket;

a gear disposed on an end of the shaft;

ball bearings supporting opposite ends of the shaft;

an annular chamber in fluid communication with a cooling system of said motor, said inclined bores adjoining said annular chamber; and

means for introducing water into the nipple so that the water flows through the shaft and then centrifugally enters the annular chamber through the inclined bores.

4,879,980

CYLINDER HEAD FOR INTERNAL COMBUSTION ENGINES

Diego Piazzo, Turin, Italy, assignor to Fiat Auto S.p.A., Turin, Italy

Filed Sep. 22, 1988, Ser. No. 247,561

Claims priority, application Italy, Sep. 23, 1987, 67808 A/87

Int. Cl.^{4} F02F *1/47*

U.S. Cl. 123—193 H 7 Claims

1. A cylinder head for internal combustion engines for motor vehicles, comprising a body produced by casting and defining, for each cylinder, a combustion chamber which communicates on opposite sides with an intake duct and an exhaust duct through passages defined by respective intake and exhaust valve seats, wherein:

the intake ducts and the exhaust ducts open into respective intake and exhaust manifolds which are formed integrally with the body of the head by casting,

the integral intake and exhaust manifolds can be removed

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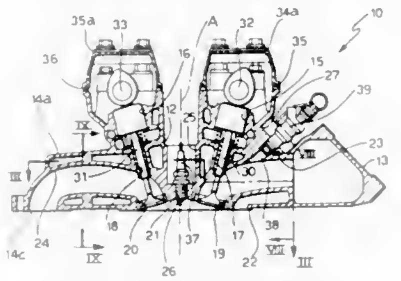
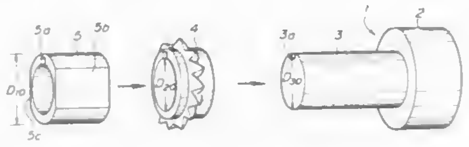
from the body of the head by milling, as a result of which the body is arranged for the fitting of added manifolds,



the body is arranged for the selective application of the fuel supply and ignition members typical of Otto-cycle or Diesel-cycle internal combustion engines respectively.

4,879,981
OIL PUMP DRIVING MECHANISM

Eiichi Matsumoto, Yokohama, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan
Filed Aug. 31, 1988, Ser. No. 238,376
Claims priority, application Japan, Sep. 3, 1987, 62-135183
Int. Cl.⁴ F02B *77/00*
U.S. Cl. 123—198 C 15 Claims



1. In an oil pump driving mechanism by which the rotation of a crankshaft of an engine is transmitted to an oil pump which is disposed about a leading end of said crankshaft with an annular input member of said oil pump concentrically disposed therebetween,

a cylindrical portion integrally defined by said leading end of the crankshaft, said cylindrical portion having the same diameter throughout the axial length thereof; and

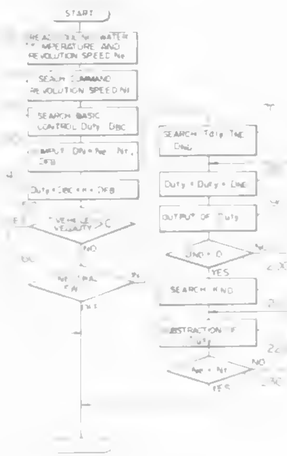
a tubular spacer member coaxially disposed on and detachably connected to said cylindrical portion to rotate therewith, said tubular spacer member having such an external shape as to be latchingly engageable with said annular input member of said oil pump.

4,879,982
METHOD OF AND APPARATUS FOR CONTROLLING ENGINE REVOLUTION SPEED

Tomiya Itakura, and Hiroshi Kamifuji, both of Katsuta, Japan, assignors to Hitachi, Ltd., Tokyo and Hitachi Automotive Engineering Co., Ltd., Katsuda, both of, Japan
Filed Aug. 22, 1988, Ser. No. 234,936
Claims priority, application Japan, Aug. 28, 1987, 62-213106
Int. Cl.⁴ F02D *41/08*
U.S. Cl. 123—339 2 Claims

1. A method of controlling revolution speed of an engine for use in an automobile having an automatic transmission through which driving power is transmitted from an engine to driving wheels, said method employing an engine revolution speed controlling apparatus which includes, at least, an auxiliary air control valve for supplying auxiliary air by-passing a throttle valve, electromagnetic means for actuating said auxiliary air control valve, a sensor for detecting the revolution speed of said engine, and control means for controlling the flow rate of said auxiliary air through said auxiliary air control valve by varying the duty of said electromagnetic means in accordance with a signal from said sensor, said method comprising the steps of:

(a) effecting an increment of said duty of said electromagnetic means after a time (Tdly) upon receipt of a signal representing that the state of said transmission has been changed from the neutral state to a power transmitting state;



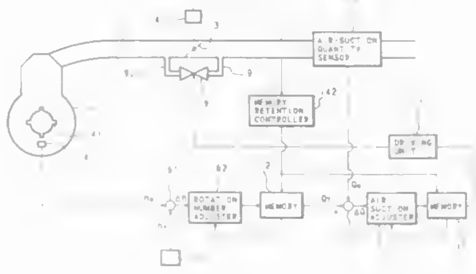
(b) maintaining the incremented state of duty for a period (T_{ND});

(c) reducing the duty at a rate (K_{ND}); and

(d) delivering the delay time (Tdly), period (T_{ND}) and the rate (K_{ND}) as functions of the cooling water temperature on the basis of the temperature of the engine cooling water.

4,879,983
APPARATUS FOR CONTROLLING NUMBER OF ROTATION OF INTERNAL COMBUSTION ENGINE

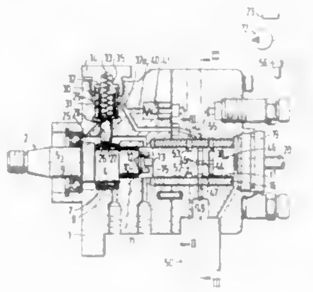
Setsuhiro Shimomura, and Yukinobu Nishimura, both of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
PCT No. PCT/JP87/00499, § 371 Date Mar. 14, 1988, § 102(e) Date Mar. 14, 1988, PCT Pub. No. WO88/00647, PCT Pub. Date Jan. 28, 1988
PCT Filed Jul. 11, 1987, Ser. No. 196,118
Claims priority, application Japan, Jul. 14, 1986, 61-166196
Int. Cl.⁴ F02D *41/16*
U.S. Cl. 123—339 2 Claims



1. An apparatus for controlling the number of the rotation of an internal combustion engine comprising; a rotation-number adjuster which generates an objective air-suction quantity and an objective air-suction tube pressure of the engine in conjunction with the number of the rotation and an objective number of the rotation of the engine; an air-suction adjuster which generates adjustment signals in conjunction with the signal output from said rotation-number adjuster and the air-suction quantity and air-suction tube pressure of the engine; an air-suction control valve which increases and decreases one of said air-suction quantity and air-suction tube pressure of the engine on receipt of a signal outputted from said air-suction adjuster; and means for retaining said air-suction quantity and the number of the rotation of the engine by stopping at least one of those operations executed by said rotation-number adjuster and said air-suction adjuster when the engine is not in idling condition.

4,879,984
FUEL INJECTION PUMP FOR INTERNAL COMBUSTION ENGINES

Helmut Rembold, Stuttgart; Ernst Linder, Muehlacker, and Gottlob Haag, Markgroningen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany
Filed Jan. 23, 1989, Ser. No. 299,587
Claims priority, application Fed. Rep. of Germany, Feb. 10, 1988, 3804025
Int. Cl.⁴ F02M *39/00*
U.S. Cl. 123—450 23 Claims



1. An electrically controlled fuel injection pump operative for direct fuel injection in an internal combustion engine having externally supplied ignition, a drive shaft (**2**, **102**), a drive cam (**4**, **7**; **104**) on said drive shaft, a plurality of cylinder bores (**32**), one each of a plurality of pump plungers (**29**) guided in one each of plurality of cylinder bores and driven at a constant stroke by said drive cam (**4**, **7**; **104**) said cam rotated by said drive shaft (**2**, **102**) of said fuel injection pump, a pump work chamber in each of said pump plungers and said cylinder bores, a longitudinal bore in said fuel injection pump, a slide valve (**46**) in said longitudinal bore which is driven in synchronism with said drive shaft, said slide valve forming a rotationally driven distributor (**15**) including a recess (**42**) in its jacket face, a radial conduit (**43**) which extends from said recess to an axial conduit (**44**), means extending from said axial conduit which communicates during rotation with a distributor opening which aligns with a plurality of conduit segments (**55**) that extend through said injection pump and which connect one each with a pressure line to a fuel injection valve for each cylinder of said engine, a relief conduit (**49**) that extends from said axial conduit to an electrically controlled valve (**50**) which is connected to a low pressure chamber, a plurality of overflow conduits in said fuel injection pump, one each of said overflow conduits extending from one each of said work chambers (**35**), each of said overflow conduits extending to one each of conduit segments (**37*a*-37*d***) in said cylinder line in planar alignment with said recess (**42**), said recess has a circumferential extent such that at least two of said conduit segments are connected with said recess at the same time during rotation of said slide valve, said electrically controlled valve (**50**) is controlled by a control circuit so that fuel pumped by each of said pump plungers and controlled by rotation of said slide valve is directed to each of said fuel injection valves while said electrically controlled valve is closed, and fuel is directed to said low pressure chamber during opening of said electrically controlled valve

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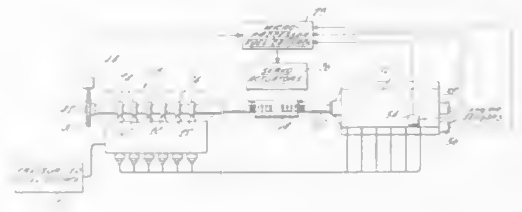
4,879,985
TIMING AND SPEED SENSOR FOR FUEL INJECTION PUMP

Eric Day, Longmeadow; Jean Paul Aubin, South Hadley, both of Mass., and Jan Peyrot, Glastonbury, Conn., assignors to AIL Corporation, Columbia, S.C.
Continuation of Ser. No. 106,973, Sep. 29, 1987, abandoned, which is a continuation of Ser. No. 796,058, Nov. 7, 1985, abandoned. This application Mar. 22, 1988, Ser. No. 175,685
Int. Cl.⁴ F02M *59/20, 65/00*
U.S. Cl. 123—501 3 Claims



1. Apparatus comprising:
a first rotating member;
a second rotating member;
coupling means for driving said second rotating member in syntony with and at variable rotational angles with respect to said first rotating member;
first sensor means for producing reference pulses indicative of the times of occurrence of only one specific reference rotational position of said first rotating member;
wheel means synchronously driven by said second rotating member and having a plurality of tooth members evenly spaced about it;
second sensor means disposed adjacent said wheel means for producing a pulse for each occurrence of a juxtaposition one of said tooth members with said second sensor means;
means responsive to said pulse from said second sensor means for providing a speed signal indicative of the rotational speed of said second rotating member, in response to the frequency or time interval between said pulses;
means for producing a time-difference signal indicative of the timer interval between each pulse from said first sensor means and a next adjacent pulse from said second sensor means; and
means responsive to said speed signal and to said time-difference signal for producing a signal which is a function of the product of said rotational speed times said time interval, and indicative of the angle between said first and second rotating members.

4,879,986
MALFUNCTION DETECTION OF AN ENGINE EXHAUST GAS RECIRCULATION SYSTEM

Masanori Sakamoto, Tokyo, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 19, 1988, Ser. No. 234,142
Claims priority, application Japan, Aug. 25, 1987, 62-212191
Int. Cl.⁴ F02M *25/06*
U.S. Cl. 123—571 6 Claims

1. A method of detecting malfunctions in an exhaust gas recirculation system for an internal combustion engine, wherein exhaust gas recirculates only when a prescribed set of operating conditions of the engine are met, and wherein a temperature sensor is provided for sensing the temperature of the exhaust gas being recirculated, said method comprising the steps of:

(a) constantly monitoring the prescribed set of engine oper-

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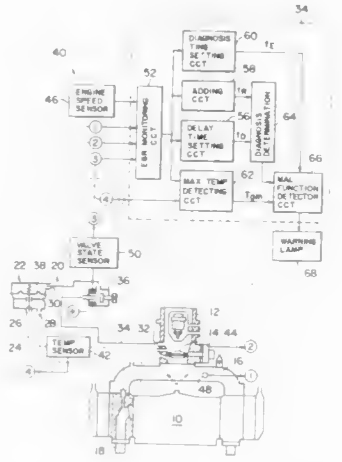
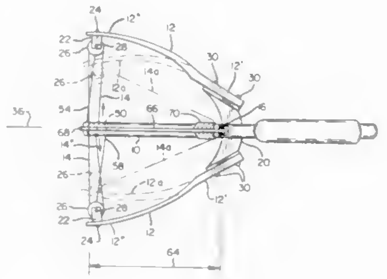
ating conditions for the commencement and progress of exhaust gas recirculation;
(b) setting up a prescribed length of delay time when the engine working conditions become satisfied;
(c) cumulatively adding up those parts of the delay time during which the engine operating conditions are met;
(d) comparing, upon lapse of the delay time, the sum of the times during which the engine operating conditions have been met, with a predetermined reference time which is less than the delay time; and
(e) detecting possible malfunctions in the exhaust gas recirculation system on the basis of the maximum temperature of the exhaust gas sensed by the temperature sensor, only in cases where the sum of the times during which the engine operating conditons have been met is not less than the reference time.



4,879,987
SHOOTING BOW

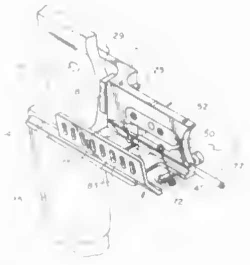
Jim Z. Nishioka, 1268 Hemlock NW., Salem, Oreg. 97304
Continuation-in-part of Ser. No. 52,274, May 21, 1987, abandoned, which is a continuation-in-part of Ser. No. 918,074, Oct. 14, 1986, abandoned. This application May 5, 1988, Ser. No. 193,153
The portion of the term of this patent subsequent to Aug. 30, 2005, has been disclaimed.
Int. Cl.⁴ F41B *5/00*
U.S. Cl. 124—25 8 Claims



1. A shooting bow comprising
an elongated frame portion,
a bowstring,
bowstring tension means on said frame operatively connected to said bowstring for providing tension in said bowstring,
a pair of rotatable bowstring guide members on said tension means,
said bowstring including a main span extending between said guide members and a pair of end spans extending from said guide members,
a bowstring catch and trigger mechanism on said frame portion for holding said bowstring in a drawn position and for releasing it to propel an arrow or projectile,
said tension means comprising a pair of arms,
each of said arms including a rigid butt portion and a flexible portion, respectively,
said bow also including means connected to said bowstring for providing a let-off of draw force required during end drawing movements of the bowstring, said means controlling bowstring travel and tension, said means being positioned on said frame portion of said bow,
said means for providing a let-off for the bowstring including a cam pivotably supported on said elongated frame portion,
said frame portion including a lateral center, said cam being positioned in said lateral center of said frame portion.

4,879,988
OVERDRAW SYSTEM FOR ARCHERY BOWS

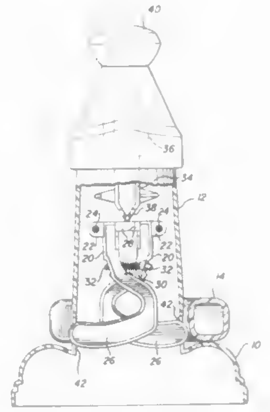
Marlow W. Larson, Ogden, Utah, assignor to Browning, Morgan, Utah
Filed Nov. 14, 1988, Ser. No. 270,054
Int. Cl.⁴ F41B *5/00*
U.S. Cl. 124—41 A 19 Claims



1. An overdraw system for archery bows having a handle riser with accessory inserts, comprising:
a mounting support structure with a longitudinal axis, said structure including:
a mounting element adapted to couple with said handle riser of an archery bow and a support extension;
an overdraw frame carried by said support extension including a bottom element with an open portion constituting an accessory window and a side guard element approximately parallel said mounting support so that said overdraw frame and mounting support cooperatively define a retaining channel; and
a locking system associated with said mounting element including a mounting bolt in mounting relationship with an accessory insert carried by said handle riser, thereby to hold said mounting element against said handle riser with said longitudinal axis approximately transverse said handle riser, first means for holding said mounting element in a selected position along said longitudinal axis and second means for urging said mounting element in a direction away from said selected position.
19. An overdraw system comprising:
an arrow enclosure having:
a base with a bottom and a top;
a cantilevered spring-biased toggle arm cantilevered from the top of said base and pivotally mounted thereto on an axis;
a curved, depending gate element carried by the distal end of said toggle arm; and
biasing means for holding said toggle arm in a normal central orientation, but adapted to permit pivoting of said arm in either direction about said axis from said normal central orientation;
said base being positioned upon mounting support structure adapted to couple with the handle riser of an archery bow.

4,879,989
TOY STACKING AND KICKING MECHANISM

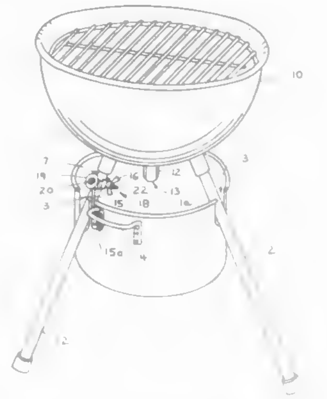
David C. Roy, and Marjorie E. C. Roy, both of Stafford Springs, Conn., assignors to The Quaker Oats Company, Chicago, Ill.
Filed Sep. 29, 1987, Ser. No. 102,110
Int. Cl.⁴ A63H *13/00*
U.S. Cl. 124—79 9 Claims



1. A mechanism for stacking and kicking generally U-shaped objects having a center opening and a passage extending from the center opening through the object at one end thereof, comprising:
a support base;
a post extending upwardly from the support base through the center opening in each of a plurality of objects for guiding and stacking said plurality of objects one above the other on the support base; and
kicking means on the post for kicking one of said objects at a time from the support base.

4,879,990
DISCHARGE COLLECTION SYSTEM

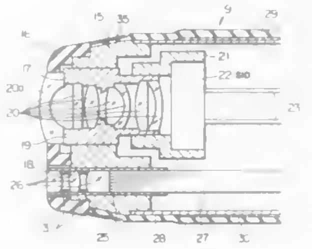
Andrew J. Clark, 1226 Sixty-second St., Downers Grove, Ill. 60516
Filed Jul. 13, 1988, Ser. No. 218,573
Int. Cl.⁴ F24B *3/00;* F23J *1/00*
U.S. Cl. 126—25 R 1 Claim



1. A discharge collection system for collecting discharge from an emitting device such as a charcoal fired barbacue grill, said grill including a discharge opening and plurality of supporting legs, said collection system comprising a high sided discharge collector which includes a bottom, an open top, side walls and a plurality of handles protruding from the side walls of the collector; said side walls include a plurality of slots therein into which the plurality of legs extend, portions of the side walls between adjacent slots extending to close proximity to said discharge opening; wherein the collector assembly is supported on at least two of said plurality of legs by a hanger assembly which is rotatable into and out of engagement with the handles; wherein the collector is supported by the hanger assembly when in the engagement position and the collector can be removed when the hanger is moved to the out of engagement position.

4,879,991
ENDOSCOPE

Hisao Ogiu, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan
Filed Nov. 10, 1987, Ser. No. 119,459
Claims priority, application Japan, Nov. 12, 1986, 61-270365
Int. Cl.⁴ A61B *1/00*
U.S. Cl. 128—6 16 Claims



1. An endoscope comprising:
an elongated insertable part having a tip at an insertable front end thereof;
a hard tip member having apertures for containing and fitting elements at said tip;
an illuminating means having an illuminating optical system fitted in a first aperture of said hard tip member;
an observing means having an image forming optical system fitted in a second aperture of said hard tip member; and
a cover made of a soft elastic flexible material, said cover being disposed around and covering a peripheral edge part of an insertable front end surface of said hard tip member and the front end surface of said hard tip member for protecting said hard tip member from shock while retaining the overall diameter of said insertable front end, said cover having a plurality of apertures aligned with said apertures of said hard tip member.

4,879,992
RIGID ELECTRONIC ENDOSCOPE

Shinichi Nishigaki, Tokyo; Takeaki Nakamura; Jun Yoshinaga, both of Hino; Masahide Kanno, Hachioji; Hisao Yabe, Hachioji; Takeshi Yokoi, Hachioji; Kazuhiko Oozeki, Hachioji; Yoshikazu Tojo, Hachioji, and Hiromasa Suzuki, Akishima, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan
Filed Apr. 26, 1988, Ser. No. 187,199
Claims priority, application Japan, Apr. 27, 1987, 62-104032
Int. Cl.⁴ A61B *1/04*
U.S. Cl. 128—6 4 Claims

1. A rigid electronic endoscope, comprising:
an endoscope having an elongated insertable portion which is connected to a front portion of an operating part, a holding part on an end portion of said endoscope, a solid state imaging means for outputting an electrical signal by

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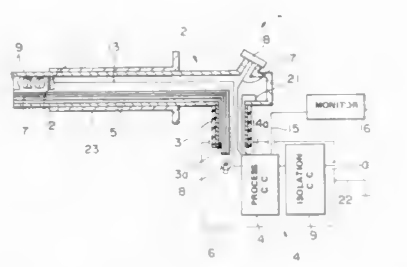
electrically converting an object image within said insertable portion, and a sheath means of said insertable portion for forming a conductive shielding means;
a signal processing means connected to said imaging means, for processing said electrical signal obtained by said endoscope, said signal processing means having a first ground terminal means; and



an external current source means connected to said signal processing means, said external current source means having a second ground terminal means, said shielding means being connected to said second ground terminal means, wherein said first ground terminal means and said second ground terminal means are isolated from each other for preventing high frequency waves on said sheath means from effecting said electrical signal output of said endoscope.

4,879,993

SHOCK WAVE SOURCE FOR GENERATING A SHORT INITIAL PRESSURE PULSE

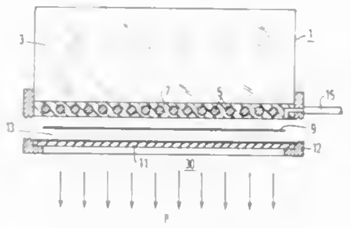
Helmut Reichenberger, Eckental, and Rudolf Schittenhelm, Erlangen, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Oct. 6, 1987, Ser. No. 105,004

Claims priority, application Fed. Rep. of Germany, Oct. 29, 1986, 3636834

Int. Cl.⁴ A61B *17/22*

U.S. Cl. 128—24 A **20 Claims**



16. A shock wave source comprising:
a high voltage pulse supply;
means adapted for connection to said high voltage power supply for generating an electromagnetic field in response to a pulse from said supply;
flexible electrically conductive means disposed adjacent said means for generating an electromagnetic field for rapidly moving away from said means for generating an electromagnetic field in response to the electromagnetic field generated thereby, said electrically conductive means having a perimeter;
flexible electrically non-conductive means disposed adjacent said electrically conductive means for mechanically interacting with said electrically conductive means as said electrically conductive means moves in response to said electromagnetic field; and
means for holding said electrically non-conductive means at a periphery thereof against said means for generating an electromagnetic field with said electrically conductive means therebetween with the perimeter of said electrically conductive means substantially mechanically unrestrained.

4,879,994

DEVICE FOR MEDICALLY TREATING HIP JOINT INSUFFICIENCY, ETC.

Hazime Watanabe, 11168-4, Sugita, Fujinomiya, Shizuoka, Japan

Filed Jan. 21, 1988, Ser. No. 146,681

Claims priority, application Japan, Apr. 16, 1987, 62-57860

Int. Cl.⁴ A61F *5/00*

U.S. Cl. 128—70 **9 Claims**

1. A device for medically treating a condition such as a hip joint problem, comprising:
a supporting post extending in a vertical direction;
a shaft extending in a vertical direction and rotatably supported at a free end of said supporting post, said shaft including a retaining device at an upper end thereof;
a swinging arm extending in a horizontal direction and supported at a lower end of said shaft, said swinging arm having a free end spaced from said shaft, said free end of said swinging arm being movable towards and away from said shaft for positioning thereof and said free end of said swinging arm comprising a bifurcated member;
a hanger for holding a body part such as a leg, said hanger comprising a hanging belt having hanger straps extending from opposite ends thereof and hanging devices at free ends of said hanger straps, said hanging devices being attached to said retaining device and said hanger straps being supported by said bifurcated member at respective portions of said hanger straps adjacent to said hanging belt; and
a presser for pressing against a body part such as a hip, said presser including a member supported on said supporting post, said member extending in a vertical direction and having a free end thereof spaced from said supporting post, said free end of said member being movable toward and away from said supporting post for positioning thereof, said presser further including a pad mounted on said free end of said member.

4,879,995

SNORKEL FOR SKIN DIVERS

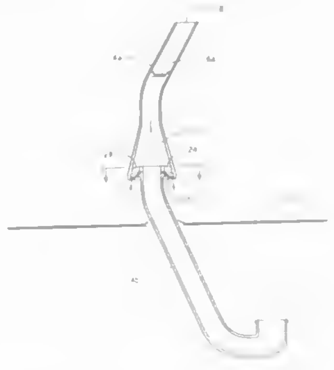
Tony Christianson, 277 Grulla Ct., Norco, Calif. 91760

Filed Oct. 13, 1987, Ser. No. 107,987

Int. Cl.⁴ B63C *11/16*

U.S. Cl. 128—201.11 **20 Claims**

1. A snorkel device comprising:
a first conduit adapted to extend above the water surface when said snorkel device is in use and supported by a diver swimming face down on the water surface, said first conduit having first and second ends thereof;
said first end of said first conduit being open whereby it is unobstructed and freely admits ambient fluid into said snorkel device;
a length of said first conduit adjacent said second end of said first conduit expands thereby forming a first chamber which has flared sides, said first chamber having bottom and ambient openings thereof;
said length of said first conduit expands such that the forces of cohesion and adhesion cause water to flow down the inner surface of said first conduit and said first chamber to said ambient opening;
a second conduit adapted to extend below the water surface, and having first and second ends thereof;



said first end of said second conduit joined to communicate fluid flow with said first chamber via said first chamber bottom opening;
mouthpiece means adjacent said second end of said second conduit and joined to communicate fluid flow with the interior of said second conduit; and
purge valve means disposed in said first chamber ambient opening and arranged to provide unidirectional fluid flow to ambient from the interior of said first chamber.

4,879,996

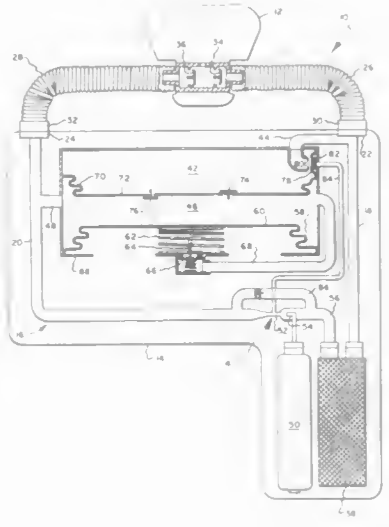
CLOSED CIRCUIT BREATHING APPARATUS

Van N. Harwood, Jr., 26 The Spur, Williamsville, N.Y. 14221; Jeffrey J. Dosch, 147 University Ave., Buffalo, N.Y. 14214, and Loyal G. Netteland, 108-1 Wimbledon Ct., West Seneca, N.Y. 14224

Filed Jan. 13, 1987, Ser. No. 2,877

Int. Cl.⁴ A62B *7/08*

U.S. Cl. 128—202.26 **20 Claims**



1. A single person portable closed circuit breathing apparatus (10) having low breathing resistance at all work rates; said apparatus comprising:
gas circulating circuit means (16) including a mask (12), exhalation passageway means (18), a carbon dioxide absorber (38), and inhalation passageway means (20) which are connected to each other in sequence to provide for gas flow from the mask to the exhalation passageway means, through the carbon dioxide absorber, to the inhalation passageway means, and then back to the mask, pump means (40) in circuit with the carbon dioxide absorber and capable when driven of forcing exhaled gases through the carbon dioxide absorber at a relatively constant volumetric rate, an exhalation gas accumulator means (42, 142) in fluid communication with the exhalation passageway means, and a collapsible inhalation gas accumulator means (46) in fluid communication with the inhalation passageway means and also in fluid communication with the exhalation gas accumulator means so that, the interconnected accumulator means maintain system gases at the same pressure to either side of the carbon dioxide absorber and permit transfer of gases from either the exhalation gas accumulator means or the inhalation gas accumulator means to the other gas accumulator means without excessive mixing of inhalation and exhalation gases, and spring means associated with said inhalation gas accumulator means to place the gas within the gas circulating circuit means at a pressure above ambient; and
a source of makeup oxygen (50) connected to the gas-circulating circuit means.

4,879,997

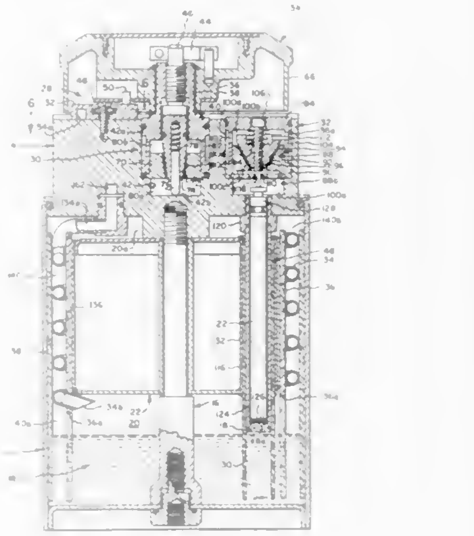
ANESTHETIC VAPORIZER

Allan M. Bickford, 1581 Hubbard Rd., East Aurora, N.Y. 14052

Filed Apr. 7, 1988, Ser. No. 178,528

Int. Cl.⁴ A61M *11/00*

U.S. Cl. 128—200.21 **7 Claims**



6. An anesthetic vaporizer including in combination:
a container for receiving liquid volatilizable anesthetic, said container having a cylindrical side wall and top and bottom walls and is fitted with a space occupying device cooperating with said container to define a lower chamber for receiving said liquid volatilizable anesthetic, an upper chamber and an annular passage adjacent said cylindrical side wall extending between said lower and upper chambers;
an inlet for receiving a gas and an outlet for discharging a mixture of the gas and volatilized anesthetic;
first conduit means for conducting said gas from said inlet to said container so as to entrain vaporized anesthetic therein

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and create a preliminary mixture of said gas and volatilized anesthetic and conducting said preliminary mixture towards said outlet, and including a spirally wound tube having a fluid impermeable wall with one end thereof disposed in flow communication with said inlet and a second end thereof disposed in flow communication with said lower chamber above the level of said liquid volatilizable anesthetic, a spiral passage bounded by the coils of said tube and a pair of cylindrical wick members extending one between said tube and said cylindrical side wall and the other between said tube and said space occupying device, said pair of wick devices having lower ends thereof extending into said lower chamber for immersion within said liquid volatilizable anesthetic, said spiral passage having one end disposed in flow communication with said lower chamber above the level of said liquid volatilizable anesthetic and a second end disposed in flow communication with said upper chamber, and an adjustable flow control valve for regulating the flow of said preliminary mixture from said upper chamber to said outlet;

second conduit means for conducting said gas from said inlet for mixing with said preliminary mixture at a point intermediate said flow control valve and said outlet to create said mixture, and including an adjustable bypass control valve for regulating the flow of said gas prior to mixing thereof with said preliminary mixture; and

one of said valves is adjustable in response to the temperature existing within said lower chamber.

4,879,998

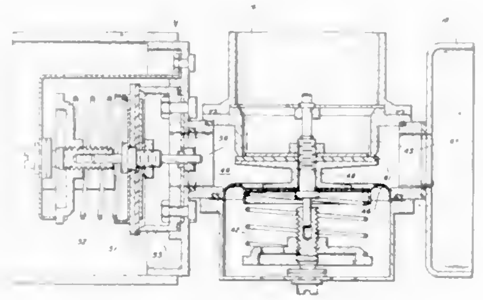
BALANCED EXHALATION VALVE FOR USE IN A CLOSED LOOP BREATHING SYSTEM

Chris M. Moellers, Davenport, Iowa, assignor to Litton Systems, Inc., Davenport, Iowa

Division of Ser. No. 90,554, Aug. 28, 1987, Pat. No. 4,774,942. This application May 6, 1988, Ser. No. 191,181

Int. Cl.⁴ A62B *9/02*

U.S. Cl. 128—205.24 3 Claims



1. A balanced exhalation valve which opens and closes in response to the exhalation cycle of a user comprising:

a flow path through the valve comprising an inlet port, a chamber, and an outlet port;

a main valve which opens into the chamber between the inlet port and the chamber;

means biasing the main valve to a normally closed position, whereby positive exhalation pressure applied to the main valve from the inlet port causes the main valve to open into the chamber, and zero pressure or negative pressure causes the main valve to close; and

flexible diaphragm balancing means coupled to the main valve for preventing a pressure increase in the chamber when the main valve is closed from increasing the force necessary to open the main valve, wherein the flexible diaphragm comprises one wall of the chamber, and pressure on the flexible diaphragm aids in opening the main valve.

4,879,999

DEVICE FOR THE DETERMINATION OF PROPER ENDOTRACHEAL TUBE PLACEMENT

Basil C. Leiman; Bruce D. Butler; Jeffrey Katz, and Henry H. Salzarulo, all of Houston, Tex., assignors to Board of Regents, The University of Texas System, Austin, Tex.

Continuation of Ser. No. 844,090, Mar. 26, 1986, abandoned. This application Jun. 5, 1987, Ser. No. 58,830

Int. Cl.⁴ A61M *16/00*

U.S. Cl. 128—207.14 26 Claims

1. An endotracheal device comprising:

(a) a tubular housing having one end adapted for insertion into a patient's trachea and an other end adapted for placement external of the patient, the housing defining lumen means therethrough from one end to the other end for allowing bidirectional passage of air into and out of the patient to ventilate the patient's lungs; and

(b) colorimetric carbon dioxide indicator means mounted within the lumen means for determining the presence of carbon dioxide therein while still permitting unimpeded bidirectional flow of air therethrough to ventilate the patient's lungs.

4,880,000

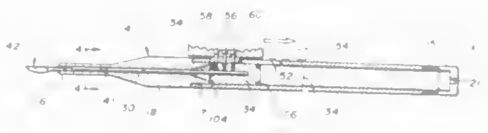
LENS INSERTION INSTRUMENT

Martin J. Holmes, Los Angeles, and Ron Harris, Claremont, both of Calif., assignors to Iolab Corporation, Claremont, Calif.

Filed Dec. 15, 1987, Ser. No. 132,290

Int. Cl.⁴ A61F *2/16*

U.S. Cl. 128—303 R 12 Claims



1. A lens holder for a surgical instrument used or inserting an intraocular lens into the eye comprising:

an elongated stylet having a proximal end and a distal end and having an exterior surface;

a flexible paddle;

means for affixing said paddle to the distal end of said stylet so that said paddle extends distally from the distal end of said stylet including a slot extending transversely into said exterior surface of said stylet for receiving a portion of said paddle; and

wherein the distal portion of said paddle includes a lens holding portion and the proximal portion of said paddle includes a mounting portion said mounting portion including margins to wrap around a distal portion of said stylet and fit into said slot.

4,880,001

PROCESS FOR CONTROLLING THE PHOTOCOAGULATION OF BIOLOGICAL TISSUE

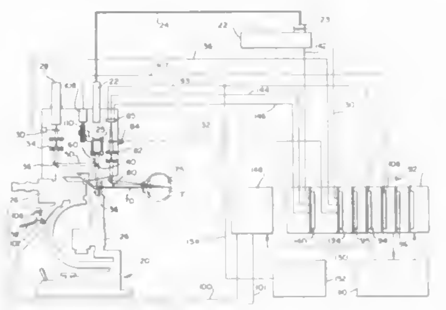
Wolfram S. Weinberg, Austin, Tex., assignor to Promed Technology, Inc., Dallas, Tex.

Division of Ser. No. 57,692, May 26, 1987, Pat. No. 4,719,912. This application Jan. 19, 1988, Ser. No. 145,140

Claims priority, application Fed. Rep. of Germany, Feb. 28, 1983, 3306981

Int. Cl.⁴ A61B *17/36*

U.S. Cl. 128—303.1 15 Claims



1. A process for controlling the photocoagulation of biological tissue in which light is imaged on a zone which includes the area to be coagulated by a treatment light source and the region around it, comprising the steps of: measuring luminance in partial areas of the zone covering the area irradiated by the treatment light source and the region around it; determining values of luminance of the partial areas; comparing the determined values of the luminance of the partial areas and the quantities derived therefrom with predetermined values; and controlling irradiation by the treatment light source in response to a change in the luminance of a partial area of the zone relative to the luminance of the same or another partial area of the zone or of a partial area of the region around the zone.

4,880,002

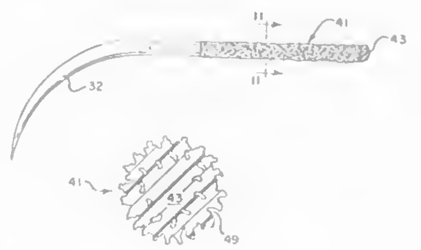
STRETCHABLE POROUS SUTURES

David C. MacGregor, Miami, Fla., assignor to Corvita Corporation, Miami, Fla.

Continuation-in-part of Ser. No. 839,545, May 30, 1985, Pat. No. 4,712,553, and a continuation-in-part of Ser. No. 54,750, May 27, 1987. This application Dec. 9, 1987, Ser. No. 130,746

Int. Cl.⁴ A61L *17/00;* **A61B** *17/06;* **C08J** *9/26*

U.S. Cl. 335.5 14 Claims



7. A non-braided surgical suture, comprising:

a suture material including: an elongated flexible, non-metallic generally cylindrical and elastomeric polymeric member having an initial, unstretched length and a plurality of pores, said elongated flexible and elastomeric member being a polyurethane or a polycarbonate having a plurality of pores has an external diameter that is no larger than that of a surgical suture, has a porous surface that promotes tissue ingrowth into said porous elongated flexible member, and is axially stretchable to a substantial extent beyond its said initial unstretched length, whereby said suture is compliant with host tissue when it is implanted; and

a needle member attached to a radially compressed end portion of said elastomeric and porous suture material.

4,880,003

CABIN FOR CARRYING OUT CRYOTHERAPY

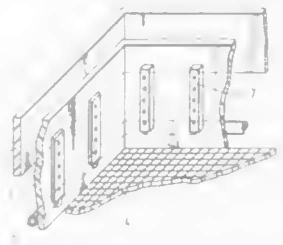
Andreas Donnerhack, Krefeld; Klemens Thoma, Krefeld-Huls; Wolfgang Volker, Tonisvorst; Thomas Stratz, and Rolf-Dieter Gallmeister, both of Bad Säckingen, all of Fed. Rep. of Germany, assignors to Messer. Griesheim, Fed. Rep. of Germany

Continuation of Ser. No. 907,321, Sep. 11, 1986, abandoned. This application Jun. 3, 1988, Ser. No. 205,510

Claims priority, application Fed. Rep. of Germany, Sep. 28, 1985, 3534630

Int. Cl.⁴ A61H *33/06*

U.S. Cl. 128—374 12 Claims



1. In a cabin for carrying out cryotherapy on an entire body of a patient with a cold treatment gas, the cabin having walls of insulating material, a door for entering the cabin, emanating devices for the treatment gas mounted on the walls, a return arrangement for the treatment gas, the improvement being in that said cabin is formed by a floor and by upstanding side walls having an upper edge spaced by a distance from the floor and by no top wall whereby said cabin is open from above to permit the head of the patient to extend above said cabin, said door being upstanding to create a closable vertical entrance into said cabin, and said distance from said upper edge of said walls to said floor of said cabin being adjustable to be level to the patient's neck.

4,880,004

IMPLANTABLE CARDIAC STIMULATOR WITH AUTOMATIC GAIN CONTROL AND BANDPASS FILTERING IN FEEDBACK LOOP

Ross G. Baker, Jr.; Richard V. Calfee, both of Houston; Edward A. Haluska, Angleton, and Stephen J. Whistler, Lake Jackson, all of Tex., assignors to Intermedics, Inc., Angleton, Tex.

Filed Jun. 7, 1988, Ser. No. 203,322

Int. Cl.⁴ A61N *1/00;* **H05G** *00/00*

U.S. Cl. 128—419 PG 34 Claims

1. Apparatus for detecting cardiac arrhythmias by analyzing ECG signals produced by the heart, comprising:

filter means forming dual signal paths having different bandpass characteristics for receiving said ECG signals, one of said signal paths constituting means for determining a

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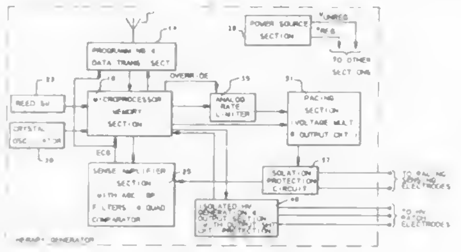
sensing level for the ECG signals, and the other of the signal paths constituting feedback loop means for determining ECG signal gain and a sensing margin which is a function of the frequency content of the ECG signal.


POWER SOURCE SECTION
TO OTHER SECTIONS
PROGRAMMING & DATA TRANS. SECT.
OVERRIDE
REED SW
MICROPROCESSOR MEMORY SECTION
ANALOG RATE LIMITER
PACING SECTION VOLTAGE MULT. & OUTPUT CKT.
CRYSTAL OSCILLATOR
ECG
SENSE AMPLIFIER SECTION WITH AGC, BP FILTERS & QUAD COMPARATOR
ISOLATION PROTECTION CIRCUIT
TO PACING SENSING ELECTRODES
TO HV PATCH ELECTRODES

4,880,005
PACEMAKER FOR DETECTING AND TERMINATING A TACHYCARDIA

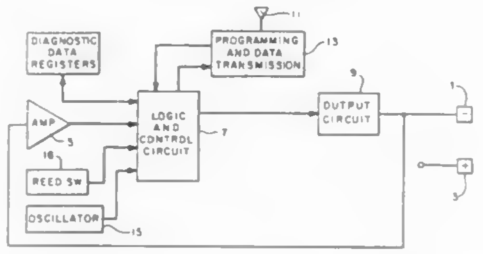
Benjamin D. Pless, Palo Alto, and Michael B. Sweeney, Mountain View, both of Calif., assignors to Intermedics, Inc., Angleton, Tex.

Continuation of Ser. No. 765,047, Aug. 12, 1985, abandoned. This application May 23, 1988, Ser. No. 198,614

Int. Cl.⁴ A61N *1/36*

U.S. Cl. 128—419 PG 38 Claims

MICROFICHE APPENDIX INCLUDED
(1 Microfiche, 47 Pages)


DIAGNOSTIC DATA REGISTERS
PROGRAMMING AND DATA TRANSMISSION
11
13
9
AMP
5
LOGIC AND CONTROL CIRCUIT
7
OUTPUT CIRCUIT
16
REED SW
OSCILLATOR
15

1. An antitachycardia pacemaker, comprising:

means for detecting electrical cardiac events occurring in at least one chamber of the heart;

means for detecting said events which exceed a selected tachycardia rate;

means for determining the relative rate stability of the events which exceed said tachycardia rate;

means responsive to said event detecting means and said stability determining means for detecting a pace-terminable tachycardia when at least a first selected number of said events exceed said tachycardia rate and a second selected number of said events have a defined rate stability; and

means responsive to said pace terminable tachycardia detecting means for pacing the heart to terminate the tachycardia.

4,880,006
BONE INGROWTH CHAMBER

Tomas Albrektsson, Mölndal, and Per Aspenberg, Lund, both of Sweden, assignors to Nobelpharma AB, Gothenburg, Sweden

Filed Nov. 23, 1987, Ser. No. 124,149

Claims priority, application Sweden, Nov. 21, 1986, 8604973

Int. Cl.⁴ A61B *5/00*

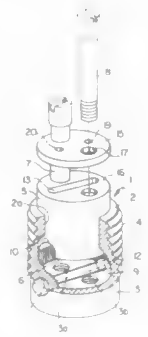
U.S. Cl. 128—630 12 Claims

1. An apparatus of a bio-compatible material for implantation in a living bone tissue and for studying bone tissue formation growth in an implant in response to a locally administered test substance, said apparatus comprising;

an outer portion with a central recess extending therethrough and a removable inner portion insertable in said central recess;

means provided in at least a bottom wall of said outer portion cooperating with a bottom wall of said inner portion to form a bone tissue ingrowth channel when said inner portion is fully inserted into said central recess, said channel being exposable for access thereto when said inner portion is removed upwardly, thereby allowing examination of said bone tissue ingrowth in said channel; and

a reservoir provided in said inner portion, said reservoir including means for fluid communication with said bone tissue ingrowth channel for supplying said test substance to said bone tissue ingrowth channel.



4,880,007
CONTRAST AGENT FOR NMR SCANNING

Peter J. Sadler, Harrow Weald; Charles T. Harding, Bovington; James D. Kelly, Amersham, and Andrew B. McEwen, Streatham, all of England, assignors to Amersham International PLC, Little Chalfont, United Kingdom

Filed Jul. 11, 1986, Ser. No. 884,622

Claims priority, application United Kingdom, Jul. 19, 1985, 8518300

Int. Cl.⁴ A61K *49/00*

U.S. Cl. 128—653 21 Claims

1. A method of investigating calcified tissue, which method comprises administering to a human patient a complex formed between (a) an amino di- or poly-phosphonate in which phosphonate groups comprise different carbon atoms, and (b) a paramagnetic metal ion, and thereafter subjecting the patient to NMR scanning.

4,880,008
VIVO ENHANCEMENT OF NMR RELAXIVITY

Randall B. Lauffer, Boston, Mass., assignor to The General Hospital Corporation, Boston, Mass.

Continuation-in-part of Ser. No. 731,841, May 8, 1985. This application May 7, 1986, Ser. No. 860,540

Int. Cl.⁴ A61K *49/00*

U.S. Cl. 128—654 11 Claims

1. A method of decreasing the NMR relaxation times (T_1 or T_2) of water protons in contact with a biological tissue, said method comprising:

providing an NMR contrast agent which does not include an antibody and which comprises a paramagnetic ion selected from the group of ions consisting of gadolinium (III), iron (III), manganese (II and III), chromium (III), copper (II), dysprosium (III), terbium (III); holmium (III), erbium (III) and europium (III), complexed with a chelating substance having at least one aryl ring which may be substituted in one or more positions with members of the group consisting of the halogens and the C_1–C_{10} alkyl groups, said contrast agent being characterized in that it is capable of binding non-covalently to ligandin, or Protein A, or HSA of said tissue and as a result of such binding is capable of enhancing relaxivity of said water protons by a factor of at least 2, compared to the relaxivity induced by said paramagnetic substance alone free in solution,

administering said NMR contrast agent to a human patient, and

subjecting said patient to NMR imaging.

4,880,009
ULTRASONIC IMAGING APPARATUS

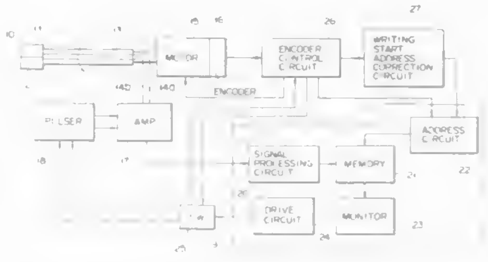
Yutaka Yanagawa, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Aug. 14, 1987, Ser. No. 85,544

Claims priority, application Japan, Aug. 15, 1986, 61-191441

Int. Cl.⁴ A61B *8/00*

U.S. Cl. 128—660.09 10 Claims



1. An ultrasonic imaging apparatus comprising: ultrasonic transducer means which is rotatably arranged and includes a plurality of ultrasonic transducer elements arranged in a circumferential direction, to perform a radial scan;

transducer rotating means for rotating said transducer means;

switching means for selectively switching said transducer elements, to select one of said transducer elements in accordance with a focal length of an ultrasonic wave, at any randomly selected position of said ultrasonic transducer means;

transducer driving means for driving the selected one of said ultrasonic transducer elements, to instantaneously scan different sectors after the switching of said transducer elements and to emit an ultrasonic beam therefrom and output echo signals corresponding to echoes;

processing means for signal-processing said echo signals and converting said echo signals into an image signal;

address means for outputting writing start address data corresponding to the selected one of said transducer elements; and

memory means for storing said image signal at an address corresponding to the writing start address data output from said address means whereby said image signal will be stored in a correct address in said memory means when said transducer means is randomly switched to change a focal length of said transducer.

4,880,010
METHOD OF AND APPARATUS FOR ULTRASONIC IMAGING

John Szilard, 12 Belvoir Drive, Loughborough, LE11 2SW, United Kingdom

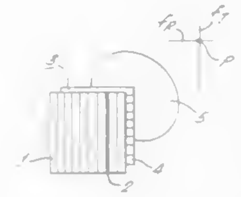
PCT No. PCT/GB87/00485, § 371 Date May 12, 1988, § 102(e) Date May 12, 1988, PCT Pub. No. WO88/00710, PCT Pub. Date Jan. 28, 1988

PCT Filed Jul. 9, 1987, Ser. No. 170,387

Claims priority, application United Kingdom, Jul. 18, 1986, 8617567

Int. Cl.⁴ A61B *8/00*

U.S. Cl. 128—661.01 17 Claims



1. A method of acoustic imaging comprising the steps of:

transmitting a line focused acoustic wave pulse signal obtained from a plurality of transmitting elements by phase delay techniques into a body; detecting return signals from any target encountered in the body by the transmitted wave pulse signal using a line focused receiver comprising a plurality of receiving elements focused using phase delay techniques and having a focal line crossing the focal line of the transmitter at a crossing point;

electronically controlling the transmitter and receiver to cause said crossing point to scan a surface within the body; and

producing an image from the return signals received by the receiver.

4,880,011
ULTRASONIC ENDOSCOPE APPARATUS

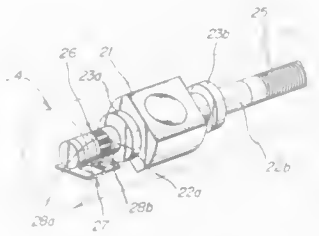
Shinichi Imade; Kazunori Shionoya; Eishi Ikuta; Koji Taguchi; Toyoo Nishiyama; Seiichi Wakamatsu, all of Hachioji, and Tatsuo Nagasaki, Yokohama, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Apr. 26, 1988, Ser. No. 186,171

Claims priority, application Japan, Apr. 30, 1987, 62-106746

Int. Cl.⁴ A61B *8/12*

U.S. Cl. 128—662.06 15 Claims



1. An ultrasonic endoscope apparatus having an elongated insertion section, a distal end of which is inserted in an object to be inspected, said ultrasonic endoscope apparatus comprising:

an ultrasonic vibrating element rotatably housed in said distal end, said ultrasonic vibrating element radiating an ultrasonic wave to obtain an image of said object;

means for rotating said ultrasonic vibrating element about a rotation axis;

a magnetic recording section provided in said distal end, said

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magnetic recording section having a given pattern of magnetization for forming a magnetic field; and
a magnetic sensor having at least one magneto-resistive element for sensing said magnetic field;
means for mounting at least one of said recording section and magnetic sensor so that it rotates integrally with said ultrasonic vibrating element to cause said magnetic sensor to sense a change of said magnetic field representing a rotation angle of said ultrasonic vibrating element.

4,880,012

ULTRASONIC PROBE

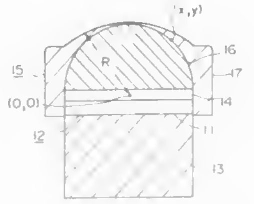
Shohei Sato, Osaka, Japan, assignor to Omron Tateisi Electronics Co., Kyoto, Japan

Filed Jan. 15, 1988, Ser. No. 144,004

Claims priority, application Japan, Jan. 19, 1987, 62-8208

Int. Cl.^{4} A61B *8/00*

U.S. Cl. 128—663.01 **1 Claim**



1. An ultrasonic probe comprising:
at least one vibrator that generates and receives ultrasonic waves; and
a composite lens disposed on the emission face of said at least one vibrator, said composite lens having a first acoustic lens layer adjacent said at least one vibrator and a second acoustic lens layer adjacent said first lens layer, said first acoustic layer having an attenuation constant at a given frequency different from the attenuation constant of said second acoustic layer at said given frequency, said second acoustic lens layer having an outer emission surface with respect to said at least one vibrator, said first acoustic lens layer and said second acoustic lens layer being configured so that the amount of attenuation of the ultrasonic wave passing through said composite lens at a point on said outer emission surface is substantially equal to that passing through said composite lens at any other point on said outer emission surface, while the focussing ability of said lens is preserved.

4,880,013

METHOD AND APPARATUS FOR DETERMINING BLOOD PRESSURE AND CARDIOVASCULAR CONDITION

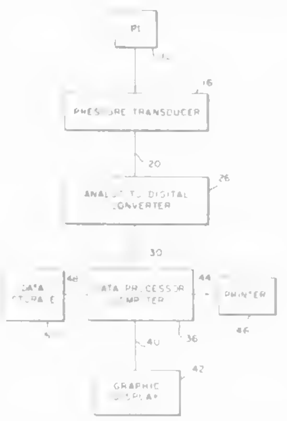
Shiu-Shin Chio, 1012 Timberland Dr., Indianapolis, Ind. 46260

Filed Mar. 24, 1988, Ser. No. 172,660

Int. Cl.^{4} A61B *5/02*

U.S. Cl. 128—681 **44 Claims**

1. A method of determining blood pressure of a patient comprising the steps of:
a. affixing a non-invasive pressure inducing means and transducer means to the patient,
b. elevating the pressure induced by the pressure inducing means to a suprasystolic pressure,
c. decreasing the pressure induced by the pressure inducing means over time to a pressure below diastolic pressure,
d. obtaining a data stream from the transducer means, the data stream including pressure data and pulsation signal data,
e. processing said data stream to create an information stream which correlates the pressure data and the pulsation signal data, the information stream including at least two pulse maximum points and at least two pulse minimum points, and
f. examining the information stream to determine at least one of the systolic, diastolic and mean arterial pressures of the patient by selecting at least one of the at least two pulse minimum points as a point for determining said at least one of the systolic, diastolic and mean arterial pressure of the patient.



4,880,014

METHOD FOR DETERMINING THERAPEUTIC DRUG DOSAGE USING BIOELECTRICAL RESISTANCE AND REACTANCE MEASUREMENTS

Barbara J. Zarowitz, 6045 Shillingham Dr., West Bloomfield, Mich. 48033, and Diana L. Twyman, 1978 Villa, Birmingham, Mich. 48008

Continuation-in-part of Ser. No. 85,850, Aug. 14, 1987, abandoned. This application Feb. 26, 1988, Ser. No. 160,589

Int. Cl.^{4} A61B *5/05*

U.S. Cl. 128—734 **11 Claims**

1. A method for determining a therapeutic drug dosage regimen for a biological subject which comprises the steps of:
providing a first equation which relates at least one of the following personal characteristics, resistance, reactance, age, height, weight and sex of the subject, to a predictive value for volume of distribution (V) for a preselected drug in said subject;
providing a second equation which relates at least one of the following personal characteristics, resistance, reactance, age, height, weight and sex of said subject, to a predictive value for elimination rate constant (K) for said preselected drug in said subject;
determining the value of said personal characteristics of said subject which are related to said first equation for the predictive value for V;
determining the value of said personal characteristics of said subject which are related to said second equation for the predictive value for K;

calculating said predictive value of V using said first equation and said value of said measured personal characteristics related to said first equation;
calculating said predictive value of K using said second equation and said value of said measured personal characteristics related to said second equation;
determining a desired therapeutic concentration of said preselected drug for said subject; and
calculating a dose and dosing interval to obtain said therapeutic concentrations of said drug using said calculated predictive values of V and K.

4,880,015

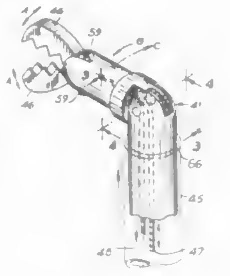
BIOPSY FORCEPS

David M. Nierman, 250 E. 87th St., Apt. 30-G, New York, N.Y. 10128

Filed Jun. 3, 1988, Ser. No. 202,169

Int. Cl.^{4} A61B *10/00*

U.S. Cl. 128—751 **24 Claims**



1. A biopsy forcep comprising:
a. a flexible catheter having a distal and proximal end, said distal end being designed so as to be placed within a patient's body to obtain a biopsy sample and said proximal end being designed so as to be located outside of said patient's body and including means for controlling components of said biopsy catheter located at about the distal end of said flexible catheter;
b. a forcep cup assembly attached to the distal end of said flexible catheter;
c. a first hinge means attached to said flexible catheter placed proximally in relation to said forcep cup assembly, said first hinge means controlling the opening and closing of said forcep cup assembly and;
d. a second hinge means attached to said flexible catheter placed proximally in relation to said first hinge means and said forcep cup assembly, said second hinge means controlling the articulation of the portion of said biopsy forcep including said forcep cup assembly and first hinge means, said second hinge means and resultant articulation being controllable from the proximal end of said flexible catheter.

4,880,016

PENILE CLAMP

Peter H. L. Worth; Ann Eaton, both of London, and Peter L. Steer, Surrey, all of England, assignors to E. R. Squibb and Sons, Inc., Princeton, N.J.

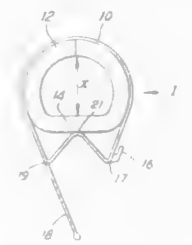
Filed May 13, 1988, Ser. No. 193,695

Claims priority, application United Kingdom, May 22, 1987, 8712189

Int. Cl.^{4} A61B *17/12*

U.S. Cl. 128—885 **3 Claims**

1. A penile clamp comprising an outer flexible member that encircles an inner cushioning member, said cushioning member dimensioned to fit around a penile shaft, said cushioning member being circular for most of its periphery but with a substantially straight portion which in use contacts the underside of the penile shaft, the portion of said outer flexible member adjacent said straight portion of said cushioning member having a configuration shaped like the letter W, the middle apex of said W contacting a central portion of said straight portion of said cushioning member and the outer apices of said W having adjustable fastening means wherein a tightening of said outer flexible member draws said outer apices closer together causing a localized pressure to be applied to a central portion of the underside of the penile shaft by the middle apex of said W.



4,880,017

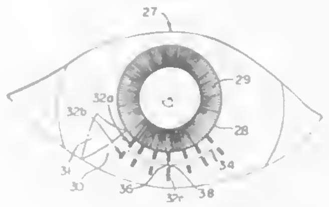
METHOD OF MAKING THE SCLERA AND/OR LIMBUS IN INTRAOCULAR SURGERY

David B. Soll, 5001 Frankford Ave., Philadelphia, Pa. 19124, and Stephen J. Failla, 39 Dogwood Dr., Chester, N.J. 07930

Filed Apr. 5, 1988, Ser. No. 177,716

Int. Cl.^{4} A61B *17/00*

U.S. Cl. 128—898 **14 Claims**



1. A method for marking the sclera and/or limbal portion of an eye prior to intraocular surgery to help control and prevent postoperative astigmatism using a marking device, wherein the marking device comprises a generally arcuate body member having opposed first and second major surfaces, and a plurality of projections extending from the first major surface, the projections being generally equiangularly spaced from each other and radially arranged in a pattern along the arc of a circle, the method comprising reflecting the conjunctiva of the eye so as to expose the sclera and/or limbus of the eye, coating waterproof ink onto the projections of the device, pressing the device onto the sclera and/or limus with sufficient pressure to transfer ink from the projections onto the sclera and/or limbus to create ink markings corresponding to the projections, the projections being spaced and aligned with respect to the sclera and/or limbus so that incisions and sutures can be made in the eye relative to the markings to standardize and define incisions and suture placement with respect to the sclera and/or limbus, and removing the device from the eye.

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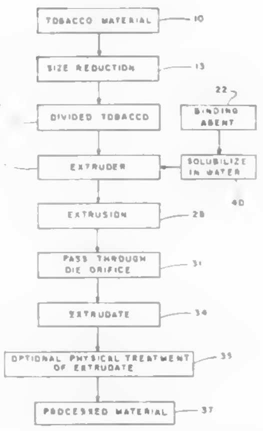
4,880,018
EXTRUDED TOBACCO MATERIALS

William H. Graves, Jr., Pfafftown; Gary W. Wallace, Winston-Salem; Bruce P. Bradford, Lewisville; Carolyn R. Carpenter; Kenneth W. Smith, both of Winston-Salem, and Howard C. Toft, Clemmons, all of N.C., assignors to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

Continuation-in-part of Ser. No. 826,462, Feb. 5, 1986, Pat. No. 4,724,850. This application Jul. 31, 1987, Ser. No. 80,715

Int. Cl.⁴ A24B *3/14*

U.S. Cl. 131—375 55 Claims



1. A process for providing smokable material in extruded form, the process comprising:

(a) contacting filler material, at least a portion of which is tobacco material, with a binding agent which includes a galactomannan and xanthan gum; and

(b) subjecting the filler material and binding agent to extrusion conditions including temperature and moisture such that the binding agent components can be solubilized and the binding agent is activated.

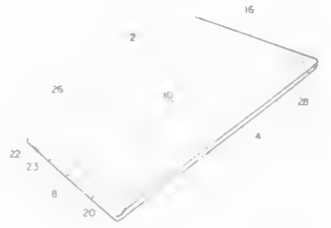
4,880,019
HAIR COLORING IMPLEMENT

Valerie J. Roubo, 154 Whitehorse Ave., Trenton, N.J. 08610

Filed Mar. 21, 1988, Ser. No. 170,802

Int. Cl.⁴ A45D *19/18*

U.S. Cl. 132—270 6 Claims



1. A hair treating implement comprising a platform with a top and a bottom having a first edge comprising a first plane surface which is beveled in relation to said top surface wherein said platform further comprises a second edge comprising a second plane surface slanted in relation to said first edge wherein said first plane surface is beveled approximately 20 degrees.

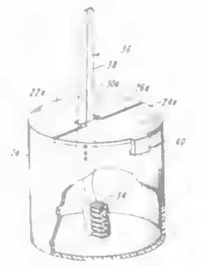
4,880,020
TRAVELING TOOTHBRUSH HOLDER

Jeffrey S. Schurgin, 57 Sears Rd., Wayland, Mass. 01778

Filed Mar. 21, 1988, Ser. No. 142,546

Int. Cl.⁴ A45D *44/18*

U.S. Cl. 132—308 6 Claims



1. A traveling toothbrush holder comprising:

a cup shaped receptacle having a side wall, a bottom, a top which is at least partially open, and a peripheral rim around the open top;

a lid on the top, having a first portion affixed to the peripheral rim of the receptacle, and a second portion hinged to the first portion and pivotable to a raised open position and to a closed position in engagement with the rim;

the lid having retaining means which includes:

an opening through a central portion of the lid on one portion of the lid, and a tab on the other portion of the lid;

the second portion of the lid in its raised position having one of the opening or tab disposed transversely to the plane of the first portion of the lid to provide access for insertion of a toothbrush through the opening;

the second portion of the lid in its closed position having the other of the opening or tab generally coplanar with the plane of the lid to engage and retain the toothbrush disposed through the lid opening.

4,880,021
DEVICE FOR CLEANING CANS

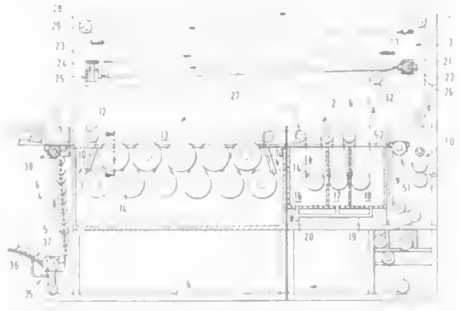
Karl Haberstroh, Hohenkrahenstr. 2,, D-7703 Rielasingen-Worblingen, Fed. Rep. of Germany

Filed Jan. 5, 1988, Ser. No. 148,659

Claims priority, application Fed. Rep. of Germany, May 7, 1986, 3615538; Aug. 1, 1986, 3626176

Int. Cl.⁴ B08B *3/02*

U.S. Cl. 134—62 15 Claims



1. A device for cleaning containers having a base and an open top connected by sidewall means which together with said base defines an internal cavity having a longitudinal axis, the improvement comprising: a wash zone, a rinse zone and a dry zone; a continuous conveyor means for transporting said containers to said wash zone, from said wash zone to said rinse zone and from said rinse zone to said dry zone, said conveyor means includes means for penetrating the internal cavity of the containers for holding said containers on said conveyor means; and drive means for driving said conveyor such that said containers pass through said wash zone and said rinse zone with said longitudinal axis located in a substantially horizontal plane wherein the cavity, sidewall means and base are cleaned and rinsed and said containers pass through said dry zone with said longitudinal axis located in a substantial vertical plane wherein said open top is directed downwards so as to allow fluid to drip from the internal cavity of the containers wherein the conveyor means loops round a feed roller with a horizontal roller shaft and is then guided approximately horizontally to a toothed gear with a vertical shaft upon entering the dry zone.

4,880,022
APPARATUS FOR TREATING SMALL ITEMS

Lars A. H. Hakansson, Lindöhällsvägen 15, S-603 65 Norrköping, Sweden

Filed Sep. 13, 1988, Ser. No. 243,757

Claims priority, application Sweden, Sep. 14, 1987, 8703548

Int. Cl.⁴ B08B *3/04*

U.S. Cl. 134—120 5 Claims

1. Apparatus for treating small items and comprising:

a treatment-liquid container (2) and a substantially cylindrical, rotatable drum (3) into which small items to be treated are introduced;

the drum (3) being journalled for rotation at the upper part of the container (2) and being provided at one end with infeed means (5) for feeding the items into said drum and with treatment-liquid supply or outfeed means (22, 23, 24, 25), and at its other end being provided with item-outfeed means (18, 19, 20) and with treatment-liquid outfeed or supply means (25; 22, 23, 24);

the drum (3) being provided on an inner surface of a shell (13) thereof with transporting devices (16) in the form of strip means which extend helically around a rotational axis of the drum (3) and which are effective, as the drum (3) rotates, in moving said items from the infeed means (5) towards the item outfeed means (18, 19, 20);

the shell (13) of the drum (3) being substantially liquid-impervious; both opposite end walls (14, 15) provided on said drum being substantially liquid-impervious with the exception of said item infeed and outfeed means and treatment liquid supply and outfeed means respectively;

the treatment-liquid supply means comprising at least one scoop means (22) which is arranged on the outside of the end wall (15) of the drum (3) and which extends radially from an opening (23, 24) in one said end wall (15) and the radially outer end of which is located on a radius, which allows said end to be immersed in the treatment liquid in the container (2) upon rotation of the drum (3), such as to collect treatment liquid from the container and supply said liquid to the drum interior through said opening (23, 24) in said end wall (15).

4,880,023
UMBRELLA FRAME

Cheing-Young Lin, No. 6, Alley 23, Lane 273, Sec. 3, Tungmen Rd., Tainan Hsien, Taiwan

Filed Oct. 3, 1988, Ser. No. 252,857

Int. Cl.⁴ A45B *3/00*

U.S. Cl. 135—25 R **8 Claims**

1. An umbrella frame comprising a stick, a plurality of outer dome ribs, a plurality of struts, and a plurality of stretcher members, wherein said stick is provided with a crown at an upper end thereof and is provided with a runner which is slidable therealong; said crown being connected to said stretcher members, said runner being connected to said struts and each, said strut being connected to said runner at one end and to a first pivotal joint on said stretcher member at another end, each said stretcher member being connected to said crown at one end thereof and to one of said first pivotal joints at another end thereof; said umbrella frame characterized in that: said umbrella frame further comprises two looped-shaped ribs on said runner, two braces each having ends, and each being connected at one end to a second pivotal joint on one of said stretcher members and at another end to said looped-shaped ribs so as to support said looped-shaped ribs, and two catchers formed on two corresponding stretcher members between said first pivotal joint and said second pivotal joint for fixing each of the corresponding looped-shaped ribs.

4,880,024
SELF-SUPPORTING TENT

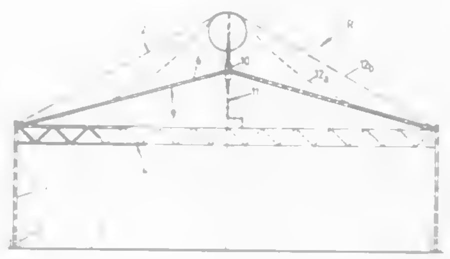
Siegfried Brell, Furstenbergstrasse 88-90, 7750 Konstanz, Fed. Rep. of Germany

Filed Apr. 10, 1987, Ser. No. 36,591

Claims priority, application Fed. Rep. of Germany, Apr. 15, 1986, 3612623

Int. Cl.⁴ E04H *15/34*

U.S. Cl. 135—101 10 Claims



1. A self-supporting tent having a roof membrane comprising at least a first, a second and a third substantially vertical side post each defining a corner of the tent and to which the roof membrane is secured; a truss member extending between the upper end of each side post, at least one truss member comprises an upper and a lower supporting rod interconnected by means of struts and the other truss members comprise an

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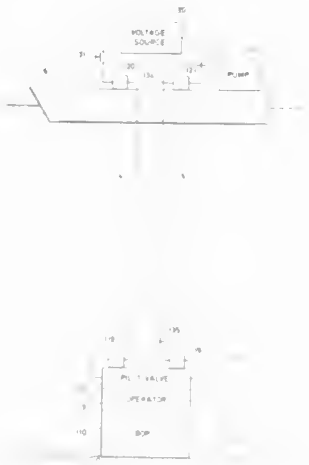
upper supporting rod supported by steadying struts against the side posts; lifting means connected to said roof membrane for selectively moving said roof membrane between an untensioned position and a tensioned position; a structural member extending between the upper end of each side post and the lifting means and defining therewith a first junction point; and at least one rod extending in a substantially vertical direction from said one truss member to said first junction point.

4,880,025
BOP CONTROL SYSTEM AND METHODS FOR USING SAME

James M. McMahan, Jr., and Roland G. Harper, Jr., both of Houston, Tex., assignors to Baroid Technology, Inc., Tex.
Continuation of Ser. No. 110,004, Oct. 19, 1987, abandoned.
This application May 1, 1989, Ser. No. 346,245
Int. Cl.⁴ H01B *1/00*
U.S. Cl. 137—1 4 Claims

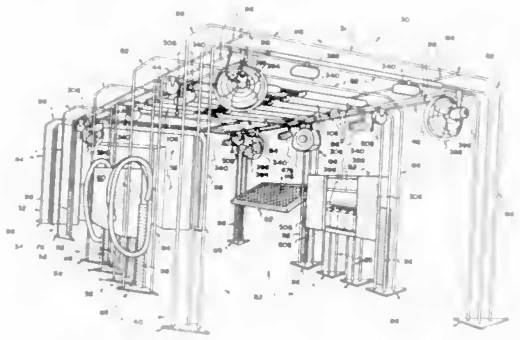


3. A method for converting a hydraulically controlled BOP subsea system having a plurality of controllable functions, comprising:
  (a) determining which of said functions is critical in controlling a blowout: and
  (b) converted the hydraulic control of said critical functions to that of being electro-hydraulically controlled.

4,880,026
INTEGRATED FREE-STANDING VEHICLE DETAILING SERVICE CENTER

F. Budd Ferre; Rowell Sims; Wesley G. Bowen, and Vibert L. Kesler, all of Salt Lake City, Utah, assignors to Parapluie, Ltd., Baar, Switzerland
Filed Jul. 28, 1988, Ser. No. 226,269
Int. Cl.⁴ B60S *3/00*
U.S. Cl. 137—234.6 47 Claims

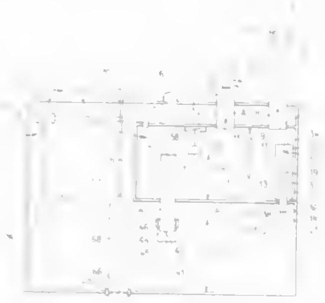
1. An integrated vehicle service center comprising:
three dimensional free-standing open framework means defining an unobstructed axially-accessible vehicle-receiving compartment, the framework means comprising a plurality of structurally interconnected frame means, each frame means comprising at least one column member on each side of the compartment and at least one beam member transversely bridging between the associated columns on each side of the compartment;
the framework means further comprising bearing means which rest unattached on the ground, floor or pavement and are associated with the lower end of at least some column member in load-transferring relation;
lighting means carried by the framework means comprising selectively illuminable light source means and means which directionally cause the source means to illuminate the compartment;
means where vehicle servicing products are disposed generally between column members;



means where vehicle servicing equipment is disposed during nonuse generally between the column members.

4,880,027
METHOD OF AND APPARATUS FOR REGULATING THE FLOW OF AT LEAST ONE GAS STREAM

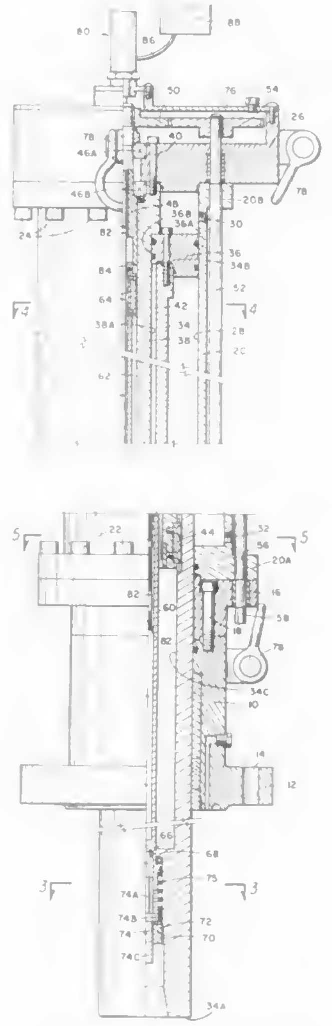
Heinrich Menge, Eissendorfer Pferdeweg 45, D-2100 Hamburg, Fed. Rep. of Germany
Filed Dec. 17, 1987, Ser. No. 134,292
Claims priority, application Fed. Rep. of Germany, Dec. 17, 1986, 3643043
Int. Cl.⁴ E03D *9/05*
U.S. Cl. 137—247.25 64 Claims



4. Apparatus for regulating the flow of at least one gas stream, comprising a control chamber having a gas-admitting inlet and a gas-discharging outlet; means for supplying into said chamber a body of sealing liquid so that the liquid fills the chamber at most up to a predetermined level below said inlet and said outlet; means for establishing at least one passage for the flow of gas from said inlet to said outlet in response to a lowering of the liquid level in a portion at least of said chamber, including a partition which divides the interior of said chamber into a first compartment in communication with said inlet and a second compartment in communication with said outlet, said compartments communicating with each other by way of said passage in response to lowering of the liquid level in said first compartment; means for raising the pressure in said chamber in the region above said level so as to render the passage accessible to the at least one gas stream by lowering the liquid level in said portion of said chamber; and means for evacuating sealing liquid from said chamber in response to raising of the pressure in said chamber in the region above said predetermined level, said evacuating means having an intake which is located below said predetermined level when said pressure raising means is idle and which is located below said outlet, said pressure raising means including means for raising the pressure in said first compartment in the region above said predetermined level so that the liquid in said second compartment rises and enters said evacuating means.

4,880,028
COMPLETION MACHINE

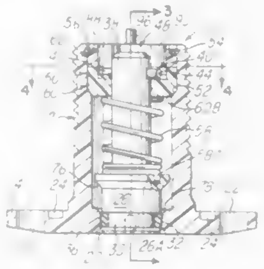
Coy D. Osburn, and James B. Sullivan, both of Tulsa, Okla., assignors to TDW Delaware, Inc., Wilmington, Del.
Filed Feb. 3, 1989, Ser. No. 305,613
Int. Cl.⁴ F16K *43/00;* F16L *55/12*
U.S. Cl. 137—315 7 Claims



1. For use in a pipeline plugging system having a plug receiving flange providing communication into the interior of a pipeline, a completion machine for attachment to the flange providing means to install or retrieve a plug from within the flange, comprising:
an elongated cylindrical housing having a flange means on the lower end adaptable to removably sealably engage a plug receiving flange and having therein a part a hydraulic cylinder having a fluid inlet and a fluid outlet port therein;
an elongated tubular control bar having an axial opening therethrough and reciprocally and non-rotatably received within said housing, the control bar having an upper and a lower end;
piston means secured to said control bar adjacent the upper end thereof and within said housing hydraulic cylinder providing means of longitudinally displacing said control bar by the application of hydraulic energy via said inlet and outlet ports;
a retention rod telescopically received within the upper end portion of said tubular control bar;
means externally of said housing of rotating said retention rod;
a retention rod extension having an upper end telescopically and non-rotatably received by said retention rod and having plug retaining means at the lower end thereof to attach
a plug therein, said plug retaining means being slidably and adjustably received within said retention rod extension during the displacement of said control bar; and
means to retain the lower end of said retention rod extension adjacent the lower end of said control bar as said control bar is reciprocated relative to said housing.

4,880,029
DRAIN VALVE

Floyd G. Koller, Dayton, Ohio, assignor to Auto-Valve, Inc., Montgomery County, Ohio
Filed Feb. 17, 1989, Ser. No. 312,748
Int. Cl.⁴ F16K *31/528, 43/00*
U.S. Cl. 137—329.06 4 Claims



1. A lightning-protected fuel drain valve of the type having means forming a non-conductive plastic housing connectable to a fuel tank and having a port opening exteriorly of said housing and said fuel tank, a non-conductive plastic valve member guided for movement along an axis extending through said housing and said port between a first position wherein a lower end portion thereof closes said port and a second position wherein said lower end portion is raised to open said port, bias means operatively engaged with said valve member to bias said valve member in a direction along said axis that would extend said valve member downwardly of said port and said housing, cooperating stop means connected with said valve member for movement therewith and first abutment means fixed relative to said housing for preventing said valve member from passing downwardly out of said port, second abutment means fixed to said housing in confronting relation to said first abutment means and cooperating with said stop means for preventing said valve member from moving upwardly along said axis by a distance sufficient that said outer end portion moves away from said port to open the same unless said valve member is first rotated about said axis to maintain said valve member in a port-closed position in the event of a lightning strike, said bias means comprising a combined compression and torsion spring that torsionally biases said valve member into a position wherein said stop means is in interfering alignment with said first abutment means and in alignment with said second abutment means, and further abutment means cooperating with said stop means for preventing said torsion spring from unwinding when said valve member is in the port-closed position or a port-open position.

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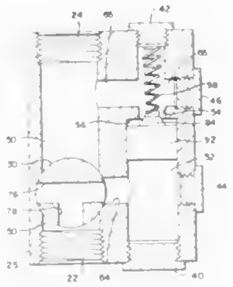
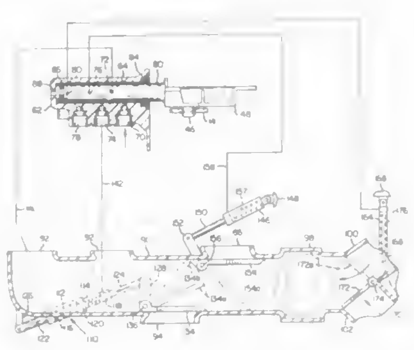
4,880,030
SAFETY FLOW CONTROL FLUID SHUTOFF DEVICE
Paul E. Terry, 23844 Via Jacara, Valencia, Calif. 91355
Filed Jul. 25, 1988, Ser. No. 224,048
Int. Cl.⁴ F16K *17/30*
U.S. Cl. 137—460 6 Claims



1. A safety flow control device for stopping the flow of fluid therethrough when there is a break or leak in the flow path downstream of said device, comprising:

(a) a housing;
(b) an inlet port located in said housing for admitting fluid to said housing;
(c) an outlet port located in said housing for discharging fluid from said housing;
(d) a cylindrical valve chamber located in said housing, said cylindrical valve chamber having a first end and a second end, said first end of said cylindrical valve chamber being in fluid communication with said fluid inlet, said cylindrical valve chamber having a first cross-sectional area;
(e) washer-shaped sealing flange located at said second end of said cylindrical valve chamber;
(f) a safety flow channel located in said housing, said safety flow chamber having a first end and a second end, said safety flow channel having a second cross-sectional area smaller than said first cross-sectional area, said first end of said safety flow channel being in fluid communication with said second end of said cylindrical valve chamber, said second end of said safety flow channel being in fluid communication with said fluid outlet;
(g) a piston valve body located for reciprocating movement in said cylindrical valve chamber, said piston valve body having a plurality of longitudinally extending apertures therethrough, said apertures being blocked by said washer-shaped sealing flange when said piston valve body abuts said washer-shaped flange; and
(h) means for biasing said piston valve body away from said washer-shaped flange, said biasing means thereby allowing fluid entering said one end of said cylinrical valve chamber to flow through said apertures and into said safety flow channel, said piston being forced against said biasing means into contact with said washer-shaped flange when a break or leak in the flow path downstream of said device;
(i) wherein said piston valve body comprises a cylindrical element of a diameter which will closely fit in said cylindrical valve chamber, while remaining free to move in said cylindrical valve chamber in a reciprocating fashion;
(j) a segment extending from the end of said cylindrical element facing said washer-shaped sealing flange, with said segment having a frustroconical portion adjacent said cylindrical segment and a cylindrical portion at the end of said frustroconical portion away from said cylindrical element;
(k) wherein said apertures are located in said cylindrical element and are spaced away from said frustroconical portion.

4,880,031
HEATER AND AIR CONDITIONING CONTROL SYSTEM
Gabriel V. Fasolino, Portland, Oreg., assignor to Sprague Aristo-Aire, Inc., Wilsonville, Oreg.
Filed Apr. 27, 1988, Ser. No. 186,918
Int. Cl.⁴ B60H *1/02*
U.S. Cl. 137—625.12 4 Claims

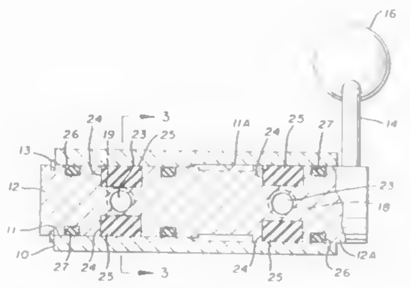


1. A heater and air conditioning control system for accomplishing multiple modes of operation of climate control means through the medium of compressed fluid and remote fluid pressure operated means, said control system comprising:

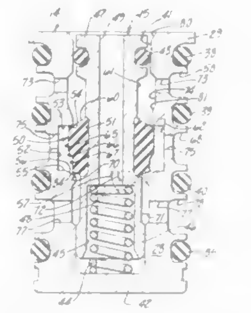
a control head comprising a body member having front and rearward ends and top and bottom portions,
mode control adjustment means on said body member movable between selected control positions,
a valve housing secured in a stationary position on said body member and having opposite ends and a cylinder area therein,
a first of said opposite ends of said housing facing said mode control adjustment means and having an opening communicating with said cylinder area,
stem means having an outer end secured to said mode control adjustment means and an inner end projecting through said opening and into said cylinder area,
a fluid pressure inlet communicating with said cylinder area,
a plurality of fluid pressure outlets all spaced along said cylinder area on the side of said fluid pressure inlet opposite from said end opening,
said fluid pressure outlets communicating with respective remote fluid pressure operated means,
and seal means consisting exclusively of a first seal at said opening to provide sealed sliding engagement of said stem means through said opening and a second seal on the inner end of said stem operating upon inward movement thereof by said mode control adjustment means to establish communication selectively between said fluid pressure inlet and one or more fluid pressure outlets.

4,880,032
MULTIPLE PORT VALVE
Kingsley A. Doutt, P.O. Box 888, Alpena, Mich. 49707
Filed Jun. 20, 1989, Ser. No. 368,801
Int. Cl.⁴ F16K *5/18, 11/085*
U.S. Cl. 137—625.19 6 Claims

1. An improvement in a multiple port valve having a valve body with a cylindrical bore therethrough, at least a pair of fluid flow passageways extending through said valve body intersecting said cylindrical bore transverse thereto and having outlets on one side of said bore and inlets on the opposite side of said bore, a cylindrical valve member rotatably positioned in said bore, secondary bores extending through said valve member forming parts of said passageways when said valve member is in a first position; the improvement comprising pockets in said valve member circumferentially spaced with respect to said secondary bores therein and positioned for registry with said passageways intersecting said cylindrical bore when said valve member is in a second position and compressed elastic rubber plugs in said pockets for expansion into and sealing said passageways intersecting said cylindrical bore whereby said cylindrical valve member may be rotated from said first position with said secondary registering with said passageways to said second position with said elastic rubber plugs closing said passageways against a known fluid pressure within.



4,880,033
POPPET VALVE
James A. Neff, Birmingham, Mich., assignor to MAC Valves, Inc., Wixom, Mich.
Filed Dec. 12, 1988, Ser. No. 282,752
Int. Cl.⁴ F15B *13/044*
U.S. Cl. 137—625.65 2 Claims



1. A three-way, normally closed, pilot air valve, including a valve body structure having a pressurized pilot air inlet port, a cylinder port, and an exhaust port, characterized in that:

(a) said valve body structure has an axial bore formed therethrough;
(b) a first passageway means is formed through the valve body structure and it connects said pressurized pilot air inlet port to the cylinder port;
(c) a second passageway means is formed through the valve body structure and it connects said exhaust port to the cylinder port;
(d) an upper, transverse, circular sharp edged poppet valve seat is formed in the axial bore, in the first passageway means, and a lower, circular inverted conical poppet valve seat is formed in the axial bore, in the second passageway means;
(e) a poppet valve spool is movably mounted in said axial bore and it is movable between a normally closed inoperative position and an open operative position;
(f) said poppet valve spool is provided with an upper, conical annular, valve member element and a longitudinally spaced apart lower, conical annular, valve member element, for sealing engagement with the upper, transverse circular sharp edged poppet valve seat and the lower, circular inverted conical poppet valve seat, respectively, so that when the poppet valve spool is in the normally closed inoperative position, the upper, conical annular, valve member element is seated on the upper, transverse circular sharp edged poppet valve seat and exerts a combined transverse and longitudinal sealing pressure thereon, and the poppet valve spool blocks communication through the first passageway means between the inlet port and the cylinder port through said axial bore while simultaneously the lower, conical annular, valve member element is in an unseated position, with communication open between the cylinder port and the exhaust port through said axial bore to allow the air under pressure entering said cylinder port to be exhausted out said exhaust port, and when the poppet valve spool is moved to the open operative position the lower, conical annular, valve member element is seated on the lower, circular inverted conical poppet valve seat and exerts a longitudinal sealing pressure thereon, and the poppet valve spool blocks communication through the second passageway means, to block exhaustion of air from the cylinder port to the exhaust port, and the upper, conical annular, valve member element is unseated to open communication between the pilot air inlet port and the cylinder port through the first passageway means to allow pressurized pilot air to flow from the pilot air inlet port to the cylinder port;
(g) the poppet valve spool is biased to the normally closed inoperative position by a return spring means engaged with the lower end of the poppet valve spool;
(h) the poppet valve spool is moved to the open operative position by a solenoid means;
(i) the upper, conical annular, valve member element has a periphery with a diameter larger than the diameter of the upper, transverse, circular sharp edged poppet valve seat, and the lower, conical annular, valve member element has a periphery with a diameter equal to the transverse, circular sharp edged poppet valve seat;
(j) the lower, conical annular, valve element has an angled valve seat engaging surface which commences at the lower end of the periphery thereof and angles downwardly and inwardly from a transverse plane, at an acute angle to form a circular corner on the lower, conical annular, valve element, which is the initial, circular contact portion of the lower, conical annular, valve element when it seats on the lower inverted conical valve seat;
(k) the diameter of the circular sharp edged valve seat, the diameter of the circular corner on the lower, conical annular, valve element, and the diameter of the axial valve spool bore are all equal to provide a balanced poppet valve spool when the poppet valve spool is in the inoperative and operative positions; and,
(l) the angled surface of the lower, circular inverted conical valve seat is formed downwardly and inwardly, from a transverse plane, to a larger acute angle than the acute angle valve seat engaging surface on the lower, conical annular, valve member element.

4,880,034
FLUID PRESSURE REGULATING APPARATUS
Shiro Takahashi, Tokyo, Japan, assignor to Man Design Co., Ltd., Tokyo, Japan
Filed Jul. 30, 1987, Ser. No. 79,411
Int. Cl.⁴ F15D *1/00*
U.S. Cl. 138—40 11 Claims

1. A fluid pressure regulating apparatus for regulating the pressure of a pressurized fluid supplied to a machine which uses the pressurized fluid as a driving source comprising:

a body having a fluid passage and means for connecting the fluid passage to pressurized fluid supplying means and the machine which uses the pressurized fluid as a driving source;
a valve seat formed in the fluid passage;
a valve body disposed in the fluid passage so as to be movable between (i) a closed position wherein the valve body is seated on the valve seat and (ii) an open position wherein the valve body is separated from the valve seat;
an actuator member movable between first and second posi-

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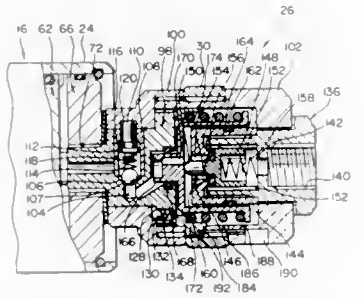
tions in the fluid passage, wherein the actuator member, at the first position thereof, allows the valve body to move toward its closed position, and wherein the valve body is driven to its open position by the movement of said actuator member from the first position thereof to the second position thereof, said actuator member being urged towards the first position thereof by the pressure of the pressurized fluid in the fluid passage which is exerted upon the valve body and transmitted to the actuator member through the valve body;

a pressure regulating ring member provided on the outer surface of the body and rotatable around an axial center line of the body;



an urging force regulating member moveably mounted within said body;

urging means provided in the body and acting between said actuator member and said urging force regulating member; and

means for coupling said pressure regulating ring member to said urging force regulating member and for translating rotational movement of said pressure regulating ring about said axial center line of said body into movement of said urging force regulating member in a direction generally parallel to said axial center line, which generally parallel movement of said urging force regulating member, in turn, varies said urging force exerted upon said actuator member by said urging means.

4,880,035

PNEUMATIC BOLSTER FOR SEALING DAMAGED WALLS OF CONTAINERS AND PIPES

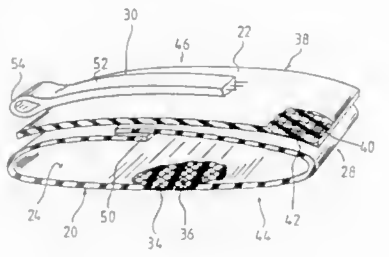
Manfred Vetter, Burg Langendorf, D-5352 Züpich, Fed. Rep. of Germany

Filed May 20, 1988, Ser. No. 196,980

Claims priority, application Fed. Rep. of Germany, May 20, 1987, 3716918

Int. Cl.⁴ F16L *55/16*

U.S. Cl. 138—99 8 Claims



1. In a sealing pad for sealing of damaged walls of containers and pipes exhibiting a leak which pad is manufactured from reinforced sections of rubber which prior to vulcanization is not vulcanized, said sections being joined by vulcanization in a press under heat, and form an air-tight inner chamber, a nipple being provided for having access to this inner chamber, said sealing pad being rectangular in shape, defining right-angled sides and having a pad-surface facing towards the leak and a pad-surface which faces away from the leak, both pad-surfaces having the same size and a rectangular shape, with the sealing pad also having on two opposite sides attachment components for a device for applying tension that encompasses the containers or pipes, wherein both the pad-surfaces are reinforced internally with flexible, linear reinforcing elements which bisect each other, the pad surface which is placed against the leak is reinforced solely with reinforcing elements which lie obliquely to the right-angled sides of the sealing pad, and the pad-surface which faces away from the leak has reinforcing elements which run parallel to the right-angled sides of the sealing pad.

4,880,036

HOSE FOR REFRIGERATING SYSTEMS

Tetsu Kitami, Hadano, and Jun Mito, Kanagawa, both of Japan, assignors to The Yokohama Rubber Co., Ltd., Tokyo, Japan

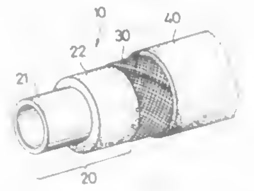
Filed Nov. 10, 1987, Ser. No. 119,175

Claims priority, application Japan, Nov. 13, 1986, 61-268517

The portion of the term of this patent subsequent to Apr. 26, 1989, has been disclaimed.

Int. Cl.⁴ F16L *9/12*

U.S. Cl. 138—137 3 Claims



1. A hose suitable for use in transporting refrigerants comprising an inner tube including a resinous inner peripheral wall and a rubbery outer peripheral wall, a reinforcing layer laminated over said outer peripheral wall, and an outer cover laminated over said reinforcing layer, said inner peripheral wall being formed by a polymeric composition comprising 40–80 percent by weight of nylon-6 or nylon-6/66, 5–30 percent by weight of nylon-11 and 10–40 percent by weight of a polyolefin, said hose having an improved balance of flexibility, resistance to stress cracking and resistance to gas permeation rendering it suitable for use in refrigerating systems.

4,880,037

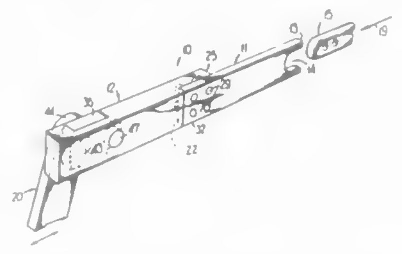
SHUTTLE RETURNER AND IMPROVED BODY THEREFOR

John W. Jenkins, Hampton, Ga., assignor to 501 Bellwether, Inc., Hampton, Ga.

Filed Nov. 30, 1988, Ser. No. 277,797

Int. Cl.⁴ D03D *47/24*

U.S. Cl. 139—439 17 Claims



1. A body for a shuttle returner, comprising:

an elongate anc relatively resilient body having a first end operative to receive a relatively inelastic shuttle receiving

member, and having a second end operative to receive an operating member which reciprocates the body; and

means associated with the resilient body to limit the elastic elongation of the body in response to tensile force imparted at the second end by the operating member in a direction tending to elongate the body, but not substantially limiting the elastic compression of the body in response to compressive force imparted at the first end by the shuttle receiving member.

4,880,038

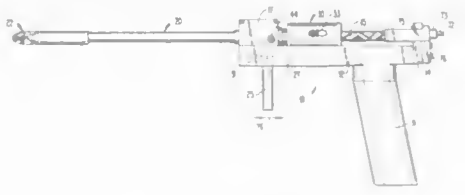
WIRE TWISTING APPARATUS

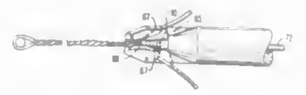
Charles I. Meinershagen, Redding, Calif., assignor to NewTech Products, Inc., Palo Cedro, Calif.

Filed Jan. 21, 1988, Ser. No. 146,464

Int. Cl.⁴ B21F *7/00, 15/04*

U.S. Cl. 140—93.6 5 Claims





1. A wire twisting apparatus capable of one-handed operation, said apparatus comprising:

a frame member having a handle adapted to be grasped by a hand of a user;

a shaft rotatably mounted on said frame member, said shaft having a wire receiving apertured tip portion, said apertured tip portion having an axial bore with a tapered wall region forming a seat, said tip portion having an axially extending open slot intersecting the aperture in the tip portion and extending longitudinally therefrom for a distance along said tip portion and of a depth which intersects the bore in the tip portion for enabling a pair of wire ends to be positioned between said plug means and said seat without requiring insertion through said apertured tip portion;

tapered plug means retractably received in said tip portion in the bore of normal contact with said seat, the tapers of said wall region and said plug means being substantially identical, said wall region and said plug means each having a taper angle lying in the range from about 5° to about 30°;

means mounted on said frame member for enabling retraction of said tapered plug means so that a pair of wire ends can be received between said plug means and said seat via said slot, said retraction enabling means including lever means coupled to said plug means and movably mounted on said frame member adjacent said handle portion so that said plug means can be manually retracted by the same hand grasping the handle, said retraction enabling means further including means for normally biasing said plug member toward said seat;

means mounted on said frame member for enabling rotation of said shaft; and

means for locking a pair of wire ends received between said plug means and said seat, said locking means including a roughened portion of said plug means and a roughened portion of said seat, each roughened portion having a ridged surface with peripherally extending contour lines.

4,880,039

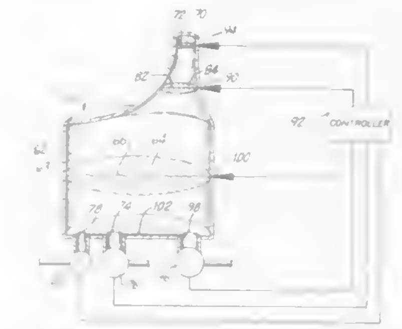
INCREASING THE ACCURACY OF LIQUID VOLUME MEASUREMENTS UTILIZING LIQUID LEVEL SENSING

Vladimir Horak, 394 Taylor Ave., Hackensack, N.J. 07601

Filed May 25, 1989, Ser. No. 356,763

Int. Cl.⁴ B65B *1/36*

U.S. Cl. 141—1 10 Claims



7. In the method for measuring a prescribed volume of liquid by flowing the liquid into a reservoir having a known volume located between a first level and a second level spaced a given distance above the first level, the reservoir further having a first cross-sectional area at the first level and a second cross-sectional area at the second level, and sensing the level of the liquid when the measured volume of liquid fills the known volume in the reservoir and the level of the liquid reaches the second level to determine that the measured volume of liquid is present in the reservoir, the improvement wherein the liquid is flowed into at least one portion of the reservoir lying between the first level and the second level for containing most of the measured volume of liquid, the at least one portion having a further cross-sectional area, and continuing to flow the liquid into the reservoir until the level of the liquid reaches the second level and the second cross-sectional area, the second cross-sectional area being substantially smaller than said further cross-sectional area of said at least one portion of the reservoir lying between the first level and the second level so that any slight deviation of the level of the liquid from the second level results in only a minimal deviation in the measured volume of the liquid from the prescribed volume of liquid.

4,880,040

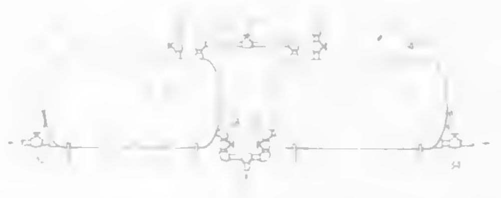
LIQUID PETROLEUM CONFINEMENT SYSTEM

Raymond Pierson, 512 Mail Creek Ct., Fort Collins, Colo. 80525, and William Whiteley, Box 1722, Guymon, Okla. 73942

Filed Sep. 16, 1988, Ser. No. 245,817

Int. Cl.⁴ B67C *3/00;* E21B *43/34*

U.S. Cl. 141—5 1 Claim



1. A method for collecting and maintaining oil containing pressurized components and thereafter distributing oil in equilibrium with atmospheric conditions which comprises:

a. providing a pair of storage tanks, each having an oil inlet below the top of the tank and a valved gas outlet at the top of the tank and a valved line connecting the tops of the two tanks;

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b. passing oil containing pressurized gas through the oil inlet of the first of said tanks until the tank is nearly full of liquid oil and the oil is overlaid with pressurized gas filling the remainder of the tank;
c. opening said valved line to permit flow of gas from said first tank to the empty second tank of said pair of tanks until pressure in the two tanks is equalized and then closing said valved line;
d. ceasing passage of oil into said first tank and directing the oil into said second tank;
e. opening the gas outlet valve of said first tank to equalize tank pressure with atmospheric pressure;
f. withdrawing oil from said first tank until the tank is substantially empty; and
g. repeating steps (b) to (f) starting with the filled second tank.

4,880,041
APPARATUS FOR FLOWING AND FILLING LIQUIFIED INERT GAS

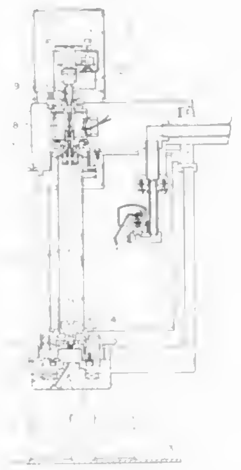
Morio Yamada, and Yoshihiko Kimura, both of Yokohama, Japan, assignors to Tokyo Seikan Kaisha, Ltd., Tokyo, Japan

Filed Apr. 4, 1988, Ser. No. 177,267

Claims priority, application Japan, Apr. 15, 1987, 62-90643; Apr. 23, 1987, 62-98738

Int. Cl.^{4} B65B *31/00*

U.S. Cl. 141—167 2 Claims



1. An apparatus for flowing liquefied gases from a liquefied gas storage tank for filling liquefied gases into cans, on a conveyor system, immediately before seaming of said cans, said apparatus comprising:
- a valve device including a valve opening, formed in a bottom surface of a liquefied gas storage tank, and a needle fitted into said valve opening;
- a valve device actuating solenoid having a plunger connected to an upper portion of said needle, said valve device actuating solenoid moving said needle upward and downward by attracting or releasing said plunger to open and close said valve opening;
- a valve control rod which defines a stroke of said plunger;
- a pulse motor for moving upward and downward said valve control rod to adjust an opening amount of said valve device;
- a valve opening-degree detection means for detecting a position of said valve control rod to detect an opening degree of the valve device;
- a line speed detector for detecting a line speed of said cans on a conveyor system and for generating a line speed signal; and
- a control device for controlling an opening-degree of said valve device in response to said line speed signal from said line speed detector, said control device including
- a central processing unit, and
- high and low speed setting units and high and low valve opening-degree setting units in a paired relation for operating in a high line speed region and a low line speed region, said speed and valve opening-degree setting units inputting to said central processing unit a line speed/valve opening-degree conversion table for determining a valve opening-degree with respect to the line speed in a relationship which varies according to whether the line speed is in said high line speed region or said low line speed region,
- wherein based upon said conversion table input by said speed setting units and said valve opening-degree setting units, an opening amount of said valve device is calculated by said central processing unit from a detected value of said line speed from said line speed detector, and said central processing unit compares a calculated opening amount with a detected value of said valve opening-degree detected by said valve opening-degree detection means, and said central processing unit inputting a drive signal to said pulse motor until said calculated value and said detected value coincide.

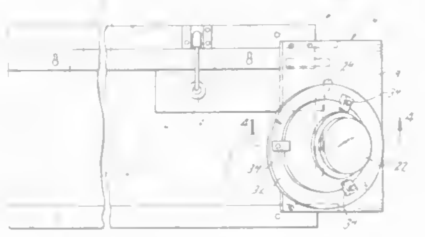
4,880,042
DEVICE FOR CUTTING MOLDING AND METHOD THEREFOR

Harvey W. Schafferkotter, 17200 Finch Path, Farmington, Minn. 55024

Filed Nov. 25, 1988, Ser. No. 276,126

Int. Cl.^{4} B27C *5/10;* **B27M** *3/00*

U.S. Cl. 144—372 6 Claims



6. A method for cutting a segment of molding for angular mating with a second segment of molding, comprising:
- holding a frst segment of molding on a table portion, said first segment of molding having a front face which is exposed when the first segment of molding is installed on a wall and a rear face which faces the wall and is hidden from view when the first segment of molding is installed on a wall; and
- angularly cutting said first segment of molding with a cutting means extending through an opening in a template angularly mounted to said table, said cutting means being angled and said opening being shaped such that by tracing said opening with the cutting means, the first segment of molding may be cut at an angle such that the edge of said front face of said first segment of molding extends beyond said rear face of said first segment of molding and the edge of said front face which extends beyond said rear face corresponds to the outline of a corresponding front face of a second segment of molding to which said first segment is to be mated.

4,880,043
PAIR OF TIRES FOR TWO WHEELED VEHICLE

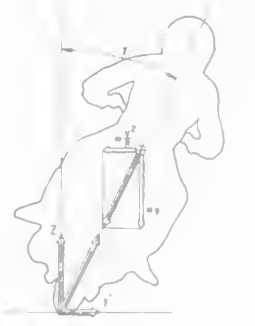
Francois Decima, Clermont-Ferrand, and Alain Rochon, Chateaugay, both of France, assignors to Michelin & Cie (Compagnie Generale des Establissements Michelin), Clermont-Ferrand Cedex, France

Filed Feb. 4, 1988, Ser. No. 152,294

Claims priority, application France, Feb. 23, 1987, 87 02458

Int. Cl.^{4} B60C *9/08, 9/22*

U.S. Cl. 152—526 3 Claims



1. A pair of radial ply tires respectively mounted on the front and rear wheels of a motorcycle, comprising:
- a rear tire including at least one belt having reinforcement threads oriented approximately parallel to an equatorial plane of said tire and positioned in a median zone of said rear tire, said rear tire having a slip angle $\delta 1$ as a given function of a camber angle γ, and
- a front tire having a slip angle $\delta 2$ as a given function of a camber angle γ,
- wherein the magnitude of difference $\delta 2-\delta 1$ increases with an increase in the magnitude of γ.

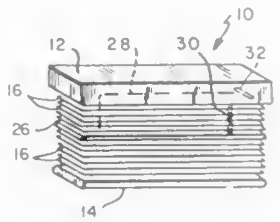
4,880,044
SPACER DEVICES

Ren Judkins, Pittsburgh, Pa., assignor to BW-USA, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 32,623, Apr. 1, 1987, abandoned. This application Jun. 24, 1988, Ser. No. 211,361

Int. Cl.^{4} A47H *5/00*

U.S. Cl. 160—84.1 29 Claims



1. A pleated shade having at least two bars, a piece of pleated material connected between the bars and cord means for controlling the opening and closing of the shade and for controlling the stacking thereof, a device for controlling the spacing between the bars, and thus the extent to which the pleats in the material are extended, comprising:
- spacer means of predetermined length;
- first means operative when the shade is in its fully open position for causing said spacer means to interact with both of said bars to limit the space therebetween; and
- second means operative in conjunction with said cord means when the shade is in its fully closed position for limiting the extent to which said spacer means projects from a side of the shade.

4,880,045
WINDOW SHADE ASSEMBLY

Deborah L. Stahler, 801 Lear, New Lenox, Ill. 60451

Filed Mar. 18, 1988, Ser. No. 169,978

Int. Cl.^{4} E06B *3/94*

U.S. Cl. 160—84.1 28 Claims

19. A window shade assembly, comprising:
- a flexible window shade sized to cover a window and formed to have a plurality of pleats therein, said flexible window shade being formed of a sheet-like material and each of said pleats being defined by a first fold portion and a second fold portion which together form a double fold, said flexible window shade being formed to have said pleats substantially from one end to the other end thereof;
- a pair of guide tracks to be fixedly mounted to a frame of said window in spaced parallel relation, said guide tracks to extend generally perpendicular to the longitudinal direction of said pleats, said guide tracks also to be spaced by a distance sufficient for positioning said pleats therebetween;
- each of said pleats having a projectable fold line between said first and second fold portions forming said double fold thereof, said projectable fold line being movable from a position generally corresponding to a plane defined by said guide tracks when said flexible window shade is closed to cover said window to positions gradually increasing in distance therefrom to a maximum projecting position as said flexible window shade is opened to reveal said window, each of said pleats also being integrally associated by means of a non-projectable fold line with the next adjacent of said pleats;
- stiffening means associated with said projectable fold lines of each of said pleats, said stiffening means being defined by a loop formed in said sheet-like material at each of said projectable fold lines;
- stiffening means associated with said non-projectable fold lines between each of said pleats, said stiffening means being defined by a loop formed in said sheet-like material at each of said non-projectable fold lines;
- stiffening means associated with said ends of said flexible window shade, said stiffening means being defined by a loop formed in said sheet-like material at said ends of said flexible window shade;
- retention means associated with said ends of said flexible window shade, said retention means being adapted to operate in cooperation with said guide tracks in a manner providing a resistance to movement only for said ends of said flexible window shade relative to said guide tracks sufficient to maintain both of said ends of said flexible window shade in any selected position of adjustment relative to said guide tracks, and slide means associated with opposite ends of every one of said non-projectable fold lines;
- said slide means cooperating with said guide tracks for moving said non-projectable fold lines of said flexible window shade, said slide means comprising slide members captured in free-sliding fashion within said guide tracks so as to facilitate free-sliding movement of said flexible window

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shade inwardly of said ends thereof for positioning said flexible window shade in any selected position of adjustment relative to said guide tracks in accordian-like fashion, said slide members maintaining said non-projectable fold lines of said flexible window shade in said plane defined by said guide tracks;

each of said loops in said sheet-like material at each of said ends of said flexible window shade being adapted to receive a dowel-like member, and including a dowel-like member in each of said loops in said sheet-like material at each of said ends of said flexible window shade to further define said stiffening means;

said retention means including a non-rotational slider operatively associated with opposite ends of each of said dowel-like members in each of said loops at said ends of said flexible window shade, said dowel-like members comprising conduit-like members and said non-rotational sliders each being disposed in captured sliding relation within one of said guide tracks, said non-rotational sliders also each being biased by a spring away from the respective one of said conduit-like members toward the corresponding one of said guide tracks;

one of said slide members being secured to each of said opposite ends of said non-projectable fold lines;

whereby said non-rotational sliders can be moved relative to said guide tracks to move said flexible window shade in accordian-like fashion from a closed position covering said window to an open position revealing said window by moving said ends of said flexible window shade against resistance to movement of said retention means relative to said guide tracks so as to be in close proximity at any point therealong.

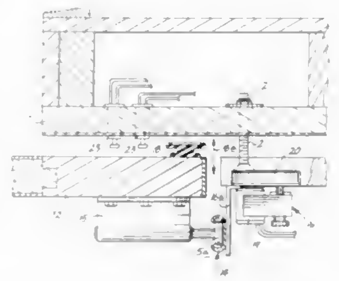
4,880,046
DOOR SEALING APPARATUS

Jerry Gesy, R.R. #1, Lime Springs, Iowa 52155

Filed Sep. 26, 1988, Ser. No. 248,991

Int. Cl.⁴ E05D *15/16*

U.S. Cl. 160—194 1 Claim



1. A door sealing apparatus comprising, in combination,

a reciprocating door vertically reciprocatable and slidably secured to a plurality of "L" shaped tracks, such "L" shaped tracks including a vertical portion and a horizontal portion where in said vertical portion said tracks are positioned proximate a door framework, and

motor means secured to each of said tracks for positioning said tracks relative to said framework, and

receiving means integrally secured to said framework for receiving a rotatable output shaft from said motor means to reposition said tracks relative to said framework, and

wherein said motor means comprise a rotatable motor and said rotatable output shaft is externally threaded, and

wherein said receiving means is internally threaded for receiving said rotatable output shaft for repositioning said door relative said framework, and

wherein said motor means is operably associated with a gear reduction means for increasing torque to said rotatable output shaft wherein said rotatable output shaft is upwardly secured to said gear reduction means, and

wherein at least one limit switch is positioned on said framework relative to said door limiting forward positioning of said door by said motor means, and

wherein said door includes a plurality of elongate seals for engagement with said framework, and

wherein said motor means is secured to said tracks by a bracket member, and

wherein said motor means comprise a plurality of reversible motors secured to each of said tracks, and

wherein said vertical portion of said track is telescoping receivable within a horizontal portion of said track, and each lowermost terminal end of said vertical track portion includes a pin receivable within a housing for guidingly receiving said track within said housing.

4,880,047
LOST FOAM TRANSFER PASSAGE CAVITY CONSTRUCTION

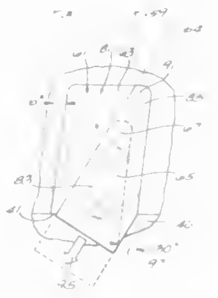
Russell J. VanRens, Milwaukee, Wis., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed Jun. 3, 1988, Ser. No. 202,489

The portion of the term of this patent subsequent to Oct. 10, 2006, has been disclaimed.

Int. Cl.⁴ B22C *7/02*

U.S. Cl. 164—45 6 Claims



5. A method of making a lost foam pattern for an engine block having a cylinder and a helical transfer passage which extends axially of the cylinder and which includes an undercut portion, said method comprising the steps of employing a die member to form a portion of the cylinder and a portion of the helical transfer passage, and employing a core supported by and movable relative to the die member between an extended position forming the undercut portion of the helical transfer passage and a retracted position clear of the undercut portion.

4,880,048
APPARATUS FOR THE MOULDING OF A CYLINDER BLOCK OR OF A CORRESPONDING FOUNDRY PATTERN

Michel Gaulard, Montbeliard, France, assignor to Automobiles Peugeot, Paris and Automobiles Citroen, Neuilly/Seine, both of France

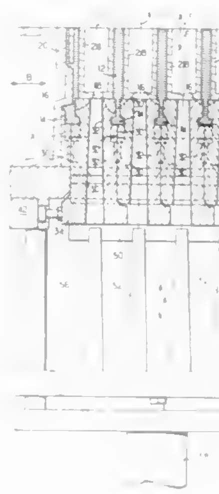
Filed Sep. 8, 1988, Ser. No. 242,167

Claims priority, application France, Sep. 10, 1987, 87 12569

Int. Cl.⁴ B22D *17/26*

U.S. Cl. 164—342 6 Claims

1. Apparatus for moulding a cylinder block, including several aligned cylinders with parallel axes and several bearings for mounting a rotary shaft, the axis of the shaft being perpendicular to the axes of the cylinders, several parallel partitions extending in planes perpendicular relative to the axis of the shaft for carrying the rotary shaft, the partitions having recesses preventing the cylinder block from being lifted in a direction parallel to the axis of the cylinders, wherein the moulding apparatus comprises two series of parallel and alternate moulding plates which extend in planes perpendicular relative to the axis of the shaft, each series of moulding plates being mounted respectively on a support, means for sliding the supports parallel to the axis of the shaft in relation to the cylinder block between a moulding position and a lifting position, mutually confronting moulding faces of two consecutive plates bear against one another in the moulding position, and the mutually confronting moulding faces being moved apart from one another toward the lifting position by the means for sliding of the supports.



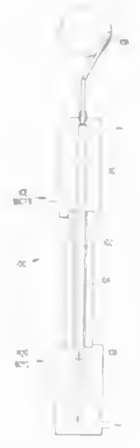
4,880,049
HEAT TRANSFER SYSTEM WITHOUT MASS TRANSFER

Marc J. Jaeger, Gainsville, Fla., assignor to University of Florida, Gainesville, Fla.

Filed May 26, 1988, Ser. No. 199,355

Int. Cl.⁴ F28D *19/00*

U.S. Cl. 165—6 11 Claims



1. A heat-transfer system comprising:

a pair of zones adapted for positioning at respective locations of differing temperature between which it is desired to transfer heat;

at least a first element, one surface of which comprises a material which conducts heat;

at least a second element one end of which communicates with one of said pair of zones and the other end of which communicates with the other of said pair of zones, and, one surface of which comprises a material which conducts heat and is slidably engaged with said heat-conducting surface of said at least first element; and

means for establishing oscillatory movement of said at least second element between said pair of zones such that said heat-conducting heat-conducting surface thereof slidably engages said heat-conducting surface of said at least first element and such that said ends thereof do not communicate with the other of said pair of zones.

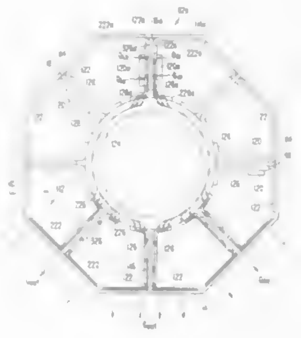
4,880,050
THERMAL MANAGEMENT SYSTEM

Gary D. Nakamura, Seattle, and Jerry D. Stephenson, Kent, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Jun. 20, 1988, Ser. No. 208,440

Int. Cl.⁴ F28D *15/02;* B64G *1/50*

U.S. Cl. 165—41 8 Claims



1. A thermal management system for cooling electronic equipment on spacecraft, comprising:

a plurality of pallets each having a radiator panel and a mounting panel, each of said radiator panels having an interior surface and an exterior surface, each of said mounting panels having a first end and a second end, said first end of said mounting panel being connected to said interior surface of said radiator panel for each of said pallets, said radiator panels of said pallets being connected end to end to enclose an interior space including said second ends of said mounting panels, said mounting panels having electronic equipment mounted thereon; and

cooling means for transferring heat from said mounting panel of one of said pallets to said radiator panel of another of said pallets.

4,880,051
PIPING APPARATUS FOR MELTING SNOW AND ICE

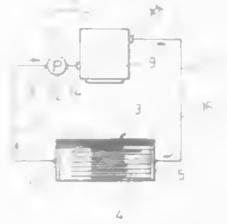
Kazuo Ohashi, Tokyo, Japan, assignor to Kabushiki Kaisha Patine Shokai, Tokyo, Japan

Filed Jul. 7, 1987, Ser. No. 70,771

Claims priority, application Japan, Jul. 14, 1986, 61-166504; Jul. 14, 1986, 61-166505; Oct. 22, 1986, 61-251052

Int. Cl.⁴ F28D *17/00, 19/00*

U.S. Cl. 165—45 19 Claims



1. A piping apparatus for melting snow and ice, comprising:
a large number of elongated heat radiation pipes juxtaposed

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adjacent to and beneath a surface from which snow and ice are to be melted and removed, said pipes being disposed substantially in parallel and substantially equidistantly with respect to one another in the longitudinal direction thereof and each of said heat radiation pipes having two opposite ends which are selectively inlet and outlet ends;

an inlet side header disposed in a direction substantially orthogonal to said elongated heat radiation pipes and being connected to an inlet end of each of said heat radiation pipes;

an outlet side header disposed in a direction substantially orthogonal to said elongated heat radiation pipes and being connected to an outlet end of each of said heat radiation pipes;

said elongated heating pipes and said inlet and outlet side headers forming a generally rectangular unit;

a feed pipe having first and second ends, said first end of which is connected to said inlet side header;

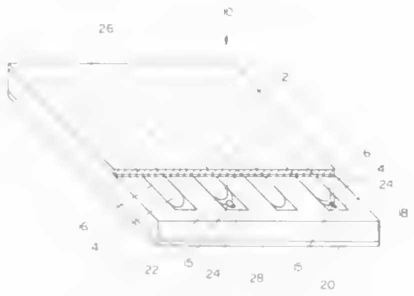
heating medium supply means including a heating medium generator and a pump, said heating medium supply means being connected to said feed pipe only at said second end of said feed pipe for supplying a heating medium to said heat radiation pipes via said feed pipe and inlet side header, and for causing said heating medium to flow through said heat radiation pipes under the influence of said pump; and

tubular heat retaining members storing therein an aqueous solution of sodium phosphate as a heat accumulation material, said tubular heat retaining members being disposed in the proximity of, and substantially in parallel with, at least a number of said heat radiation pipes.

4,880,052
HEAT PIPE COOLING PLATE

George A. Meyer, IV, Conestoga, and Robert F. Coleman, Lancaster, both of Pa., assignors to Thermacore, Inc., Lancaster, Pa.

Filed Feb. 27, 1989, Ser. No. 316,407
Int. Cl.⁴ F28D *15/02*
U.S. Cl. 165—104.14 **6 Claims**



2. The thin walled cooling plate of claim 1 wherein the bonding means are solder sheets.

4,880,053
TWO-PHASE COOLING APPARATUS FOR ELECTRONIC EQUIPMENT AND THE LIKE

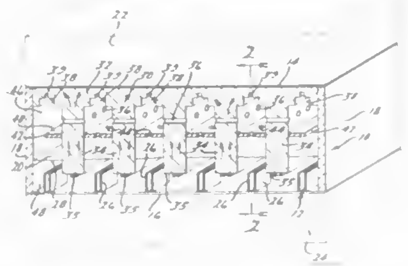
Sheyman: Vladimir, W. Bloomfield, Mich., assignor to The Board of Governors of Wayne State University, Detroit, Mich.

Filed Apr. 24, 1989, Ser. No. 341,903
Int. Cl.⁴ F28D *15/02*
U.S. Cl. 165—104.26 **36 Claims**

15. A two-phase cooling device for transferring heat from an item to be cooled, said cooling device comprising:

a sealed enclosure having a generally hollow interior defined at least in part by first and second thermally conductive walls spaced apart from one another and by side walls interconnecting said first and second thermally conductive walls, said first thermally conductive wall being adapted for interconnection with the item to be cooled in a thermally conductive relationship therewith;

a wick structure disposed within said interior of said enclosure, said hollow interior and extending along at least a portion of said first thermally conductive wall in direct contact therewith for thermal conductivity therebetween, and a second wick portion protruding transversely from said wick portion, and extending through a substantial portion of said hollow interior, said second wick portion having a free end disposed generally adjacent said second thermally conductive wall;



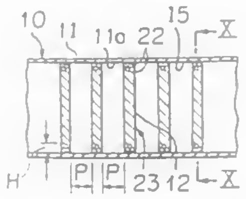
said first wick portion having a generally hollow recess in an opposite side thereof from said first thermally conductive wall, said hollow recess opening into said hollow interior; and

a thermally conductive liquid disposed within said hollow interior at a level above said free end of said second wick portion, said liquid being capable of being transported through said second wick portion and into said first wick portion wherein said liquid is evaporated by heat from the item to be cooled and condensed on the surfaces defined by said hollow recess in first wick portion and on the surface of said liquid.

4,880,054
HEAT EXCHANGER TUBE FOR EVAPORATION OR CONDENSATION

Takayuki Yoshida, Shizuoka; Masao Fujii, Chuo, and Kiyoshi Sakuma, Shizuoka, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 141,509, Jan. 7, 1988, Pat. No. 4,794,983. This application Sep. 7, 1988, Ser. No. 241,477
Claims priority, application Japan, Feb. 2, 1987, 62-22113
Int. Cl.⁴ F28F *13/00*
U.S. Cl. 165—133 **1 Claim**



1. A heat exchanger tube for evaporation or condensation, said heat exchanger tube comprising:

(a) projected parts having cavities in which bubble nuclei form, said projected parts being provided on at least one of the inner wall surface and the outer wall surface of a tubular body, and

(b) plain parts formed on the same surface as the projected parts so that the projected parts and the plain parts are interspersed,

wherein:

(c) the projected parts and the cavities comprise a stranded wire made of a plurality of wires and

(d) the projected parts are provided on the wall surface so that the intervals P between the projected parts and the height H of the projected parts satisfy the following expressions:

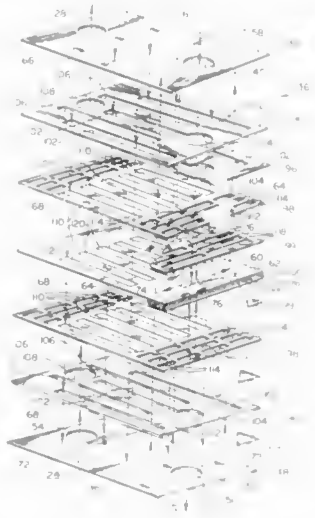
$$P \leqq 4d,\ 10 \leqq P/H \leqq 20$$

wherein d represents the diameter of a bubble nucleus.

4,880,055
IMPINGEMENT PLATE TYPE HEAT EXCHANGER

Richard E. Niggemann, and Dam C. Nguyen, both of Rockford, Ill., assignors to Sundstrand Corporation, Rockford, Ill.

Filed Dec. 7, 1988, Ser. No. 280,956
Int. Cl.⁴ F28F *3/00*
U.S. Cl. 165—167 **21 Claims**



1. An impingement plate type heat exchanger for exchanging heat between at least first and second fluids, comprising:

a stack of generally parallel plates wherein:

at least one plate at an end of the stack defines a first inlet for the first fluid;

at least one plate at an end of the stack defines a first outlet for the first fluid;

at least one plate at an end of the stack defines a second inlet for the second fluid;

at least one plate at an end of the stack defines a second outlet for the second fluid;

a plurality of plates between opposite ends of the stack form impingement orifice plates defining first and second tortious flow paths generally parallel to each other and generally perpendicularly through the plates for the first and second fluids, respectively; and

a plurality of plates between opposite ends of the stack form manifold plates defining flow paths for distributing the first fluid from the first inlet through the first tortious flow path to the first outlet and distributing the second fluid from the second inlet through the second tortious flow path to the second outlet.

4,880,056
HYDRAULICALLY ACTIVATED FIRING HEAD FOR WELL PERFORATING GUNS

John A. Nelson, Spring, and Gregg W. Stout, Montgomery, both of Tex., assignors to Baker Oil Tools, Inc., Orange, Calif.

Division of Ser. No. 94,275, Sep. 8, 1987, Pat. No. 4,817,718. This application Jul. 11, 1988, Ser. No. 217,703
Int. Cl.⁴ E21B *43/04*
U.S. Cl. 166—51 **3 Claims**

1. A cross-over and release mechanism for use in a subterranean well to support other tools from a tubing-carried, retrievable packer settable at any selected location in the well, said packer having a central bore, comprising: a hollow body element sealingly secured to the other tools, said hollow body element defining a central fluid passage communicating at its upper end with said packer bore; said hollow body element also defining at least one radial fluid passage communicating between said central fluid passageway and the well annulus surrounding said body element, whereby the fluid pressure in the well annulus below the set packer is controlled by the fluid pressure in the tubing; a thin-walled tube secured to the upper end of said body element and projecting upwardly through the packer central bore in inwardly spaced relation to the packer bore wall, thereby defining an axially extending bypass fluid passage through the packer; port means connecting the upper end of said bypass fluid passage to the well annulus above the set packer; said hollow body element further defining an axially extending passage connecting said bypass fluid passage to the interior of said other tools; releasable latch means securing said body element to said packer; and means responsive to tubing pressure for releasing said latch means, thereby leaving said cross-over tool and said other tools in the well when the packer is retrieved

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4,880,057
PROCESS FOR REMOVING CARBONATE FROM WELLS

Richard W. Derowitsch, 956 Dixie Beach Blvd., Sanibel, Fla. 33957

Continuation-in-part of Ser. No. 46,587, May 4, 1987, Pat. No. 4,778,006. This application Oct. 17, 1988, Ser. No. 259,016
The portion of the term of this patent subsequent to Oct. 18, 2005, has been disclaimed.
Int. Cl.⁴ E21B *43/27*
U.S. Cl. 166—267 **6 Claims**

1. A method of removing carbonate deposited in a water supply well by inflowing groundwater, comprising the steps of:

treating a supply of water by means of a membrane system for desalinization which places the water in an aggressive

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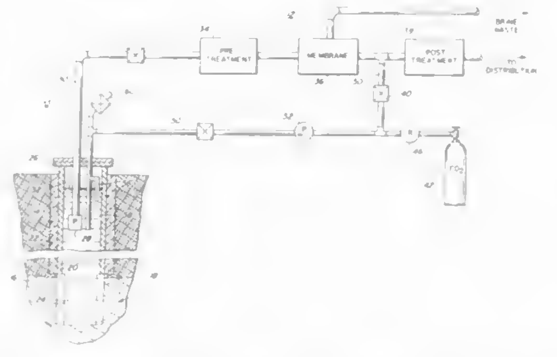
state of chemical inequilibrium and ion imbalance having a keen affinity for carbonate;



pumping a fluid comprising the treated supply of water, without restabilization, into the well to react with the deposited carbonate; and

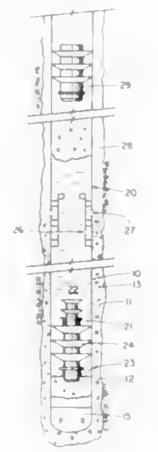
flushing the product of the reaction from the well.

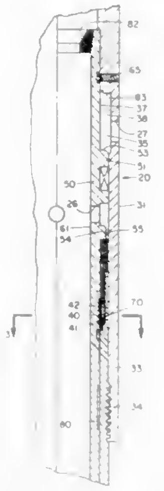
4,880,058
STAGE CEMENTING VALVE

Hiram E. Lindsey, Midland, and Richard W. Adams, Bryan, both of Tex., assignors to Lindsey Completion Systems, Inc., Midland, Tex.

Filed May 16, 1988, Ser. No. 194,132
Int. Cl.⁴ E21B ***33/16, 34/14***

U.S. Cl. 166—289 15 Claims





9. A method for stage cementing a string of pipe in a well bore where the string of pipe includes a stage valve having a tubular valve collar intermediate of its length and has a tubular sleeve valve member slidably received in said stage collar for movement between first and second longitudinal positions relative to said stage collar and where said sleeve valve member has a flange in engagement with an engagement surface on said valve collar in said first longitudinal position and where said sleeve valve member has a piston portion located in an annular chamber between said sleeve valve member and said valve collar and where said sleeve valve member has a sleeve valve port with access to one surface of said piston portion in said annular chamber for placing said one surface in fluid communication with the bore of said sleeve valve member and said valve collar has a valve collar port with access to the other surface of said piston portion in said annular chamber for placing said other surface in fluid communication with the exterior of the valve collar, and said piston portion separates said sleeve valve port from said valve collar port in a said first longitudinal position and permits said ports to be in fluid communication with one another in an said second longitudinal position, the method including the steps of:

positioning the string of pipe and stage collar in a well bore;

introducing a first cement slurry to the bore of the string of pipe where the first cement slurry is followed by a wiper plug and the cement slurry is for cementing a lower annulus between the string of pipe and the well bore from the bottom of the well bore to the stage collar while the ports are separated by said piston portion;

closing off the bore of the string of pipe below the stage collar and applying hydraulic pressure to the fluid in the string of pipe to shift the flange on said sleeve valve member upwardly from said engagement surface by the hydraulic pressure in the stage collar and in the string of pipe to said second longitudinal position and to place said valve collar port in fluid communication with said sleeve valve port;

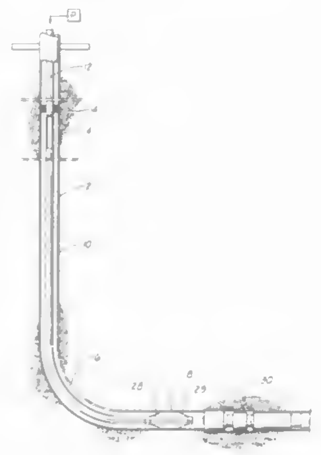
introducing a second cement slurry to the stage collar through said ports for cementing an annulus from the stage collar to the top of the string of pipe.

4,880,059
SLIDING SLEEVE CASING TOOL

John T. Brandell, and Richard L. Giroux, both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Aug. 12, 1988, Ser. No. 231,737
Int. Cl.⁴ E21B ***34/06, 34/14***

U.S. Cl. 166—332 8 Claims



1. A sliding sleeve casing tool installed in a string of casing in a well bore intersecting a plurality of formations of the earth, said sliding sleeve casing tool for use in evaluating the characteristics of a formation surrounding said sliding sleeve casing tool of said plurality of formations, said sliding sleeve casing tool capable of being repeatedly opened and closed any desired number of times to allow fluids to be selectively produced from said formation and, if desired, fluids to flow from said casing into said formation when apertures allowing fluid communication between the exterior and interior of said sliding sleeve casing tool have been created therein, said sliding sleeve casing tool comprising:

an annular housing secured in said string of casing at a desired location for evaluating the characteristics of said formation, the annular housing having a longitudinal axis therethrough;

a sliding sleeve slidable within the annular housing from first desired location to a second desired location therein, the sliding sleeve having a longitudinal axis therethrough substantially parallel to the longitudinal axis of the annular housing and forming an annulus between the annular housing and the exterior of the sliding sleeve;

cup-type seal members retained on the sliding sleeve to slidingly, sealingly engage the interior of the annular housing to prevent fluid flow in either direction longitudinally in the annulus formed between the annular housing and the sliding sleeve;

first releasable retaining means attached to the sliding sleeve to allow the sliding sleeve to be releasably retained at a second desired location in the annular housing;

and

second retaining means extending between the annular housing and the sliding sleeve to allow the sliding sleeve to be initially retained within the annular housing in a first position therein;

whereby when apertures have been formed in the annular housing after the installation of said sliding sleeve casing tool in said string of casing and said string of casing is installed in said well bore to allow fluid communication between the interior of the annular housing and the exterior thereof, the sliding sleeve may be repeatedly moved between the first location and the second location in the annular housing so that when the sliding sleeve is in its first location, the sliding sleeve seals the interior of the annular housing to prevent fluid communication from the exterior of the annular housing to the interior of the sliding sleeve thereby preventing the flow of fluids from the formation into said casing and when the sliding sleeve is in its second desired location, the sliding sleeve allows fluid communication from the exterior of the annular housing to the interior of the sliding sleeve thereby allowing fluids to be selectively produced from said formation and, if desired, fluids to flow from said casing into said formations.

4,880,060
VALVE CONTROL SYSTEM

Kenneth L. Schwendemann, Lewisville, and Timothy J. Noack, Grapevine, both of Tex., assignors to Halliburton Company, Duncan, Okla.

Filed Aug. 31, 1988, Ser. No. 238,741
Int. Cl.⁴ E21B ***7/12, 34/04***

U.S. Cl. 166—336 20 Claims

1. A system for testing an underwater well, said system comprising:

(a) a test pipe string in said underwater well, said string having an upper section and a lower section;
(b) a hydraulically operated retainer valve in said upper section;
(c) a control system housing in said upper section;
(d) control manifold means for operating said control system and said retainer valve, said control manifold means comprising:
  (a) a source of pressure;
  (b) a gas charged accumulator;
  (c) a directional control valve; and
  (d) conduits conducting pressurized fluid from said pressure source to said accumulator and from said accumulator to said shut-off valve;
(e) hydraulic control system means in said housing for controlling said retainer valve, said hydraulic control system means conducting well pressure from said test pipe string to said retainer valve for quickly closing said retainer valve and locking said retainer valve closed, said hydraulic control system means comprising:
  (a) a normally closed pilot valve;
  (b) a flow passage for conducting a pressure pulse from the accumulator to the pilot valve for opening the pilot valve;
  (c) a flow passage for conducting fluid from the inside of the test pipe to said pilot valve; and
  (d) a flow passage for conducting fluid from said pilot valve to said retainer valve for closing said retainer valve and locking said retainer valve closed; and

(f) control conduit means for conducting control fluid between said control manifold and said housing and between said housing and said valve.

4,880,061
TOOL FOR RUNNING STRUCTURES IN A WELL

Arthur G. Ahlstone, Ventura, Calif., assignor to Cameron Iron Works USA, Inc., Houston, Tex.

Division of Ser. No. 3,117, Jan. 14, 1987, Pat. No. 4,736,799. This application Oct. 14, 1987, Ser. No. 108,377
Int. Cl.⁴ E21B ***23/00, 33/043***

U.S. Cl. 166—348 7 Claims

1. A running tool for running a tubing hanger and packoff assembly into a subsea wellhead housing and setting the packoff assembly between the tubing hanger and wellhead housing, comprising:

an upper member having an upper generally tubular cyclindrical body with a reduced diameter portion at its lower end, and a downwardly extending surrounding sleeve disposed on said body around said reduced diameter portion and extending beyond the lower end of said body, there being an annular space between said reduced diameter portion and said surrounding sleeve;

a lower member having a lower generally tubular cylindri-

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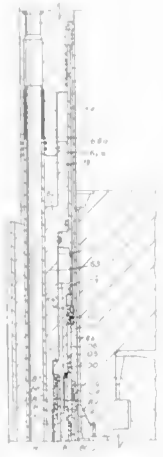
cal body with an upper end portion telescopingly received in said annular space and a lower body portion;

said lower body portion having an upper portion having a large outer diameter surface, said large outer diameter surface being reduced in outer diameter from said upper end portion, said lower body portion having an intermediate portion having an intermediate outer diameter surface positioned below said large outer diameter surface and having a further reduced outer diameter surface, and said lower body portion having a lower third portion having a lower small outer diameter surface positioned below said intermediate outer diameter surface and having a smaller outer diameter than said intermediate outer diameter, said lower member being substantially entirely received in said surrounding sleeve of said upper member;



packoff setting means disposed on said member for moving said upper body and surrounding sleeve downward with respect to said lower body for engaging and setting the packoff assembly;

packoff latching means slidably mounted on said surrounding sleeve, between said surrounding sleeve and said lower body portion, for releasably attaching said surrounding sleeve to the packoff assembly;

a tubular member threadedly engaged with a portion of said lower outer small diameter surface of said lower third portion of said lower body portion of said lower member, and positioned about and in contact with said lower outer small diameter surface, and partially surrounded by slidable tubing hanger latching means, said slidable tubing hanger latching means being slidably mounted on said intermediate outer diameter surface, and being positioned about a portion of said lower third portion, between said lower small outer diameter surface and said packoff latching means, for releasably attaching said lower small outer diameter surface and said tubular member to the tubing hanger;

hydraulic system means connected to said packoff setting means, with said packoff latching means and said tubing hanger latching means being used for actuating the packoff setting means, and for moving the packoff latching means and the tubing hanger latching means into and out of attachment with the packoff assembly and the tubing hanger, respectively.

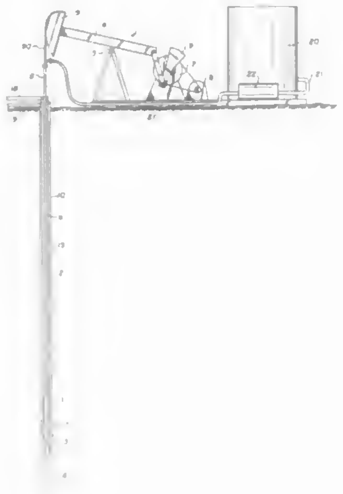
4,880,062
OIL WELL DOWNHOLE LIQUID INJECTION ASSEMBLY

Linden Bland, Calgary, and Clifford J. Anderson, Sherwood Park, both of Canada, assignors to Murphy Oil Company Limited, Calgary, Canada

Filed Jul. 20, 1987, Ser. No. 75,566

Int. Cl.⁴ E21B *43/00, 34/12;* **F04B** *21/00*

U.S. Cl. 166—371 6 Claims



1. A method for reducing gas locking of an oil well downhole reciprocating pump seated in a well, said well being equipped with an outer tubing string and an inner tubular rod string connected with the pump for reciprocating the pump, said pump having a tubular barrel, seated in the tubing string and forming an internal barrel chamber, a plunger assembly comprising a hollow plunger disposed in the barrel chamber and a tubular plunger rod extending into the barrel chamber and being connected with the plunger, said plunger assembly communicating with the barrel chamber and being connected with the rod string to form therewith a reciprocating unit, said rod string being connected at surface with means for injecting liquid thereinto, and a valve assembly connected into and forming part of the reciprocating unit above the plunger rod, said valve assembly being adapted to control liquid flow through the unit into the barrel chamber, and a stop member carried by the tubing string or the pump barrel and positioned to contact the valve assembly when the rod string is at about the bottom of its downstroke,

said method comprising:

injecting liquid into the rod string;

opening the valve assembly, when the rod string is at about the bottom of its downstroke, by bringing said valve assembly, as a result of its movement with the rod string, into contact with the stationary stop member, to thereby initiate liquid flow into the barrel chamber from the rod string; and

closing the valve assembly, as the rod string rises on the upstroke, in response to removing said valve assembly out of contact with the stop member, to thereby terminate liquid flow into the barrel chamber from the rod string;

whereby some substantially incompressible liquid is introduced into the barrel chamber so as to be present there during the upstroke, to thereby reduce gas locking of the pump.

2. An assembly for pumping an oil-producing well having a well bore, comprising:

a tubing string installed in the well;

a downhole pump seated in the tubing string;

a reciprocable tubular rod string, positioned in the tubing string, for actuating the pump, said rod and tubing strings forming a tubing annulus between them;

means, connected with the rod string at ground surface, for reciprocating said rod string;

means, connected with the rod string at ground surface, for injecting liquid into the bore of the rod string;

said pump comprising

a tubular open-bottomed barrel forming an internal chamber,

a hollow plunger positioned in the barrel chamber in slidable sealing engagement with said barrel's inner surface, said plunger closing off the lower end of the chamber,

a travelling valve assembly, carried by the plunger, for controlling and enabling fluid to flow from the well bore through the plunger into the barrel chamber on the down stroke of the rod string, said travelling valve assembly being adapted to close at the start of the upstroke and to open again at the start of the downstroke, and

a tubular plunger rod connected with the plunger to form a plunger assembly, said plunger assembly communicating with the barrel chamber and being connected with the rod string to form a reciprocating unit;

a standing valve assembly, having parts mounted on each of the reciprocating unit and the upper end of the barrel, said assembly being operative to permit fluid to flow from the barrel chamber into the tubing annulus on the upstroke of the rod string;

a valve assembly, being interconnected with and forming part of the reciprocating unit above the plunger rod, said valve assembly being convertible between an open position, in which liquid injected into the rod string bore may pass through the valve assembly into the plunger rod bore and the barrel chamber, and a closed portion, in which liquid in the rod string bore is blocked from moving into the barrel chamber;

a stationary stop member carried by one of the barrel or the tubing string;

said valve assembly including a movable first member arranged to contact the stop member, when the rod string is approaching the bottom of its downstroke, to open the valve assembly in reaction to said contact and the concomitant stopping of the first member's movement, said valve assembly being operative to automatically close when the first member is removed from contact with the stationary stop member by the upward movement of the reciprocating unit on the upstroke;

whereby some liquid may be introduced, through the rod string, valve assembly and plunger rod, into the barrel chamber in conjunction with the bottoming of the stroke, to reduce gas locking of the pump.

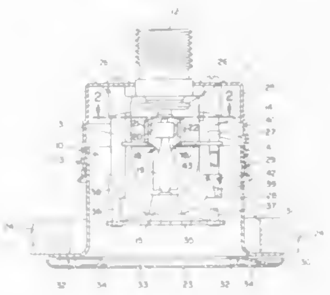
4,880,063
ADJUSTABLE CONCEALED SPRINKLER

Ernest Leininger, Northport, N.Y.; Leonard Blum, Montvale, and Gary W. Ponte, West Orange, both of N.J., assignors to The Reliable Automatic Sprinkler Co., Inc., Mount Vernon, N.Y.

Filed Apr. 13, 1987, Ser. No. 37,469

Int. Cl.⁴ A62C *37/08. 37/14*

U.S. Cl. 169—37 7 Claims



1. A sprinkler for use in a fire extinguishing system comprising frame means having an inlet opening for fire extinguishing liquid and spaced arms extending from the inlet opening to provide a support at a location spaced from the inlet opening, a cap normally covering the inlet opening, thermally responsive strut means extending between the support and the cap and normally retaining the cap in position over the inlet opening, deflector means slidably supported from the frame means by a plurality of pins having heads with tapered surfaces, tapered socket means associated with the frame means to receive the tapered surfaces of the pin heads in close fitting relationship when the deflector is in the extended position, and spring means engaging one of the pin heads and the strut means to normally retain the deflector means in retracted condition while urging the strut means in a direction away from the frame means.

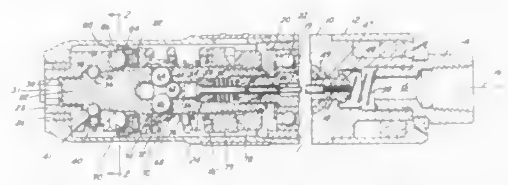
4,880,064
TORQUE SENSING, AUTOMATIC SHUT-OFF AND RESET CLUTCH FOR SCREWDRIVERS, NUTSETTERS AND THE LIKE

Robert Willoughby, Washington, and Phil D. Thorp, Bryan, both of Ohio, assignors to The Aro Corporation, Bryan, Ohio

Filed Nov. 5, 1987, Ser. No. 117,156

Int. Cl.⁴ B25B *23/145*

U.S. Cl. 173—12 6 Claims



1. In a fluid powered tool of the type including a housing with a forward end, and intermediate section and a rear end, a fluid driven motor in the housing with a rotary output shaft defining an axis of rotation, a fluid inlet to the motor, a valve member cooperative with the fluid inlet to control fluid flow to the motor, a bit holder for a tool bit at the forward end of the tool and a clutch mechanism intermediate section and connecting the output shaft with the bit holder, the output shaft, bit holder and clutch mechanism being substantially coaxial, the improvement comprising, in combination:

a torque responsive, fluid flow start, shut-off and reset mechanism incorporated in the clutch mechanism, said torque responsive mechanism including:

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(a) means for support of the bit holder in the housing to permit both rotary and axial movement;
(b) a driving clutch member keyed at one end to the output shaft for simultaneous rotation with the output shaft and attached at its opposite end to the bit holder to permit simultaneous axial movement with the bit holder and independent rotary movement relative to the bit holder;
(c) clutch engaging means for mechanically connecting the driving clutch member to the bit holder for simultaneous rotary movement, said means including at least one biased roller member intermediate the clutch member and the bit holder, said roller member radially spaced from the axis of rotation and axially movable with respect to one of the driving clutch member and bit holder, said roller member biased by roller member biasing means into a receiving pocket of the other of the driving clutch member and bit holder during rotary driving operation of the tool below a torque threshold, said roller member axially translatable from said receiving pocket during driving operation of the tool above said torque threshold whereby the bit holder and driving clutch member rotationally disengage;
(d) an axial counterbore in the driving clutch member extending from the motor output shaft;
(e) a valve control rod in the counterbore having a forward end and mechanically connected at the other end to the valve member;
(f) valve control rod biasing means for axially biasing the valve member and the valve control rod toward a valve member closed position;
(g) driving clutch member biasing means in the axial counterbore of the driving clutch member for biasing the driving clutch member axially toward the forward end relative to the output shaft;
(h) a radial passage in the driving clutch member intersecting the counterbore;
(i) a radially displaceable member in the radial passage cooperative with the forward end of the valve control rod;
(j) an axially displaceable sleeve over the driving clutch member radial passage, said disposable sleeve having first and second radial limiting means both cooperative with the radially displaceable member to control the position of said radially displaceable member in the radial passage to thereby control the axial position of the valve control rod in the counterbore; and
(k) sleeve biasing means for normally biasing the sleeve to a first radial limiting position corresponding to engagement with the first radial limiting means wherein the valve control rod is extended axially toward a valve open position;

whereby to start the motor by opening the valve member the bit holder is axially translated rearwardly against the force of the value control and biasing means and the driving clutch member biasing means as the driving clutch member and bit holder are rotationally engaged, and the sleeve is in the first limiting position to hold the valve control rod in the rearward position and cause the valve member to open;

whereby to control torque the rotatably connected driving clutch member and bit holder are disengaged when the torque threshold is exceeded and the roller member is axially translated rearwardly against the force of the ball members biasing means to simultaneously translate the sleeve to the second limiting position thereby permitting the radially displaceable member to move radially outward in the passage and release the control rod for movement toward the forward end and close the valve member to terminate operation of the motor; and

whereby to reset the mechanism, release of axial force on the bit holder permits the bit holder and shaft to move axially forward in response to drive clutch member biasing means and the sleeve biasing means to effect subsequent radial movement of the radially displaceable member to the first limiting position.

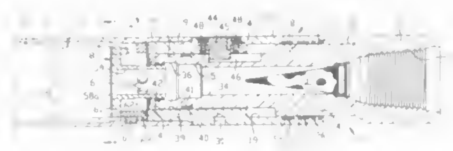
4,880,065
AIR MOTOR OPERATED ROTARY EARTH DRILLING TOOL

William J. McDonald; Michael R. Wasson; Curtis E. Leitko; Gerard T. Pittard, and William C. Maurer, all of Houston, Tex., assignors to Gas Research Institute, Chicago, Ill.

Filed Oct. 14, 1988, Ser. No. 258,175

Int. Cl.^{4} E21B *4/02;* F03B *13/02*

U.S. Cl. 175—71 29 Claims



1. An air motor operated rotary earth drilling tool, for use with a source of high pressure, high volume compressed air, comprising

a circulation control housing, a motor housing, a reduction gear housing, and a bearing housing connected longitudinally in series,

said circulation control housing having an inlet for connection to a source of high pressure, high volume, compressed air, an outlet opening into said motor housing, and an exhaust opening for discharge of compressed air for flushing cuttings and debris from a bore hole,

said motor housing having an inlet connected to receive compressed air from said circulation control housing outlet, a motor chamber, an air motor rotor positioned therein with a rotary shaft extending into said reduction gear housing, and outlet opening for discharge of compressed air from said rotary air motor to said reduction gear housing,

a reduction gear train supported in said reduction gear housing receiving said air motor rotor shaft and having a low speed, high torque output shaft extending into said bearing housing,

said reduction gear housing having an inlet operatively connected to said motor housing outlet, an outlet connected to discharge compressed air to said bearing housing, and a passageway conducting compressed air around said reduction gear train in heat exchange relation therewith,

said bearing housing having an inlet operatively connected to receive compressed air from said reduction gear housing,

bearing means in said bearing housing supporting said reduction gear train output shaft for rotary movement,

a hollow, rotary drill bit sub extending into said bearing housing and supported on said bearing means for rotation by said reduction gear train output shaft,

said hollow, rotary drill bit sub having a passageway open to discharge compressed air from said motor and reduction gear housings to a bore hole in which the drilling tool is operated,

said bearing housing having an opening permitting flow of part of said compressed air through said bearing means to discharge into a bore hole in which the drilling tool is operated, and

valve means in said circulation control housing controlling said exhaust opening on longitudinal movement of said circulation control housing to direct flow of compressed air selectively to said motor housing or to said exhaust opening to split the flow of air through said bearing housing to flow part through the bearing means and part through said hollow, rotary drill bit sub.

4,880,066
ASSEMBLY FOR DIRECTIONAL DRILLING OF BOREHOLES

Abe Stelginga, and Robert N. Worrall, both of Rijswijk, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Jan. 25, 1988, Ser. No. 147,402

Claims priority, application United Kingdom, Apr. 13, 1987, 8708791

Int. Cl.^{4} E21B *4/02, 7/08, 17/10*

U.S. Cl. 175—75 25 Claims

1. A drilling assembly for directional drilling of boreholes in subsurface formations, the assembly comprising

a downhole drilling motor, said motor having an output shaft which is suitable to drive a rotary drill bit and a motor housing which is suitable to be arranged at the lower end of a drill string;

stabilizing means for stabilizing the assembly;

means in the assembly for permanently tilting the central axis of the output shaft with respect to the longitudinal axis of the drill string in the borehole;

characterized in that said stabilizing means include a lowermost stabilizer which is secured to and rotates with said output shaft.

4,880,067
APPARATUS FOR DRILLING A CURVED BOREHOLE

Henk H. Jelsma, Spring, Tex., assignor to Baroid Technology, Inc., Houston, Tex.

Filed Nov. 14, 1989, Ser. No. 156,831

Int. Cl.^{4} E21B *7/06, 17/20*

U.S. Cl. 175—107 8 Claims

1. A drill string for drilling a curved borehole, wherein said drill string has a plurality of cylindrical sections, each of said sections having a longitudinal axis and also having an upper end and a lower end, comprising:

a first of said drill string sections having first and second surfaces on the said lower end of said first section; and

a second of said drill string sections having first and second surfaces on the said upper end of said second section, said first surfaces being parallel to each other and perpendicular to each said longitudinal axis and an angle being formed between said second surfaces.

6. A drilling system for drilling a curved borehole, comprising:

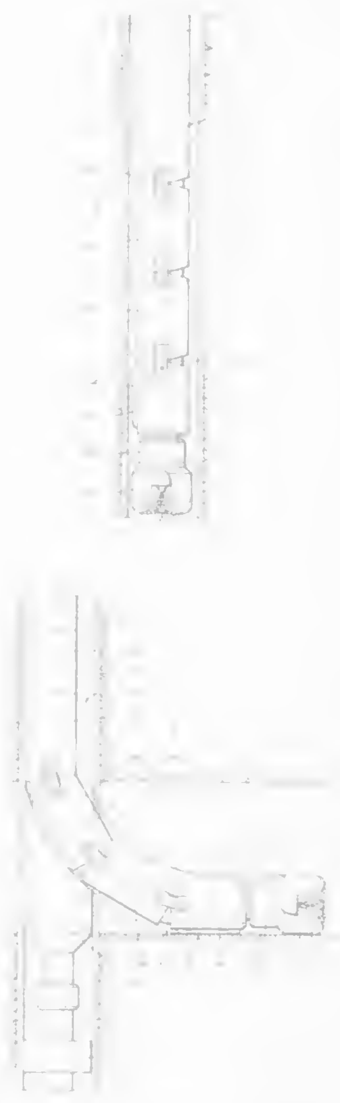
a drill string having a plurality of independent cylindrical sections pivotally connected together;

a PDM motor in said drill string;

a drill bit in said drill string;

a steel-lined neoprene hose for delivering drilling fluid from said motor to said drill bit; and

a flexible drive shaft connected between said motor and said drill bit, said independent sections having the ability to bend only in a single direction while said system is drilling said curved borehole.



4,880,068
ROTARY DRILL BIT LOCKING MECHANISM

Charles L. Bronson, Brownsville, Tex., assignor to Varel Manufacturing Company, Dallas, Tex.

Filed Nov. 21, 1988, Ser. No. 273,554

Int. Cl.^{4} E21B *10/22*

U.S. Cl. 175—369 8 Claims

1. A rotary drill bit locking mechanism comprising:

a cutter cone having a bearing surface,

a support spindle having a bearing surface, said support spindle having a tapered leading thrust surface edge wherein said tapered thrust surface edge aids in the mating of the cutter cone with the spindle,

a first annular groove formed in the bearing surface of said support spindle,

a second annular groove formed in the bearing surface of said cutter cone, wherein said first and second annular

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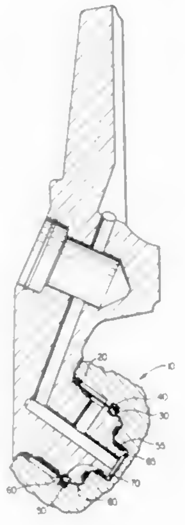
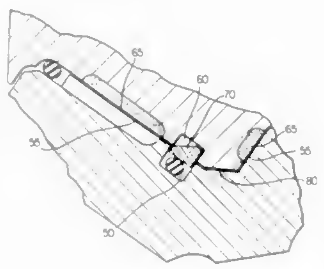
grooves are radially adjacent to each other when said cutter cone is secured on to said support spindle,

a holding ring having a plurality of segments forming a ring-like configuration and assembled to partially extend into said first annular groove and to partially extend into said second annular groove to secure said cutter cone into a rotatable position of said support spindle, and





an O-ring of an elastomeric material positioned in said first annular groove between said support spindle and said holding ring for biasing said segments of said holding ring into the ring-like configuration of said first and second annular grooves.

4,880,069

ELECTRONIC BATHROOM SCALE

Richard S. Bradley, Fairmont, Minn., assignor to Weigh-Tronix, Inc., Fairmont, Minn.

Filed Aug. 30, 1988, Ser. No. 238,249

Int. Cl.⁴ G01G *3/14, 3/08*

U.S. Cl. 177—211 **6 Claims**

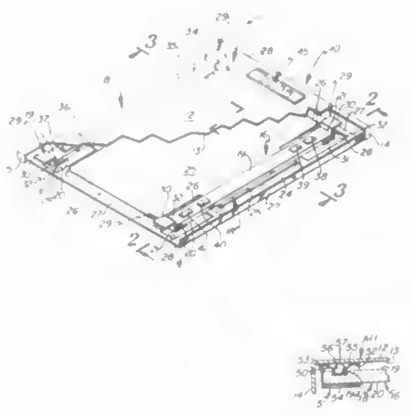
1. A low profile electronic bathroom scale comprising a base plate formed of rigid material,

a generally horizontally disposed load receiving member having upper and lower surfaces and being operable for supporting a person to be weighed,

load sensing means including a pair of elongate substantially straight, laterally spaced apart deformable members, each being rigidly secured adjacent its mid-portion to said base plate, each end portion of each deformable member being spaced from the base and defining a cantilevered beam,

a plurality of similar clip members being of generally Z-shaped configuration and each including a horizontal upper element, a horizontal lower element, and an angularly disposed vertical element interconnecting said horizontal elements, one end of each of said deformable members being positioned upon and rigidly secured to the lower horizontal element of a clip member, the upper horizontal element of each clip member being rigidly secured to said load receiving member whereby a load on the load receiving member will be transferred to the cantilevered beams to cause the latter to deform downwardly, each end of each deformable member having a plurality of strain gauges secured to the upper surface thereof, and

a Wheatstone bridge circuit including said strain gauges operable to produce an output signal caused by deformation of said deformable members, said strain bridges being connected in said bridge circuit, and means for converting the output signal into a perceptive weight read-out.



4,880,070

TRANSMISSION ASSEMBLY FOR SELF-PROPELLED WORKING VEHICLES

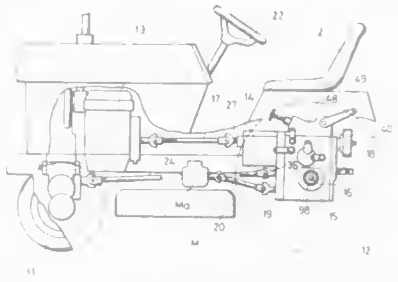
Koji Irikura, Nishinomiya, Japan, assignor to Kanzaki Kokyukoki Mfg. Co., Ltd., Japan

Filed Dec. 13, 1988, Ser. No. 283,629

Claims priority, application Japan, Dec. 29, 1987, 62-332757

Int. Cl.⁴ B60K *17/28;* **F16H** *37/08*

U.S. Cl. 180—53.1 **12 Claims**



1. In a self-propelled working vehicle, wherein axles of left and right rear wheels are supported rotatably by a transmission casing disposed between said left and right rear wheels, said transmission casing including therein a rear-PTO shaft, which extends rearwardly from the transmission casing at a mid level of the casing, and a mid-PTO shaft which extends forwardly from the transmission casing at a low level of the casing, a transmission assembly characterized in:

that there are provided at a front end portion of said transmission casing (15) a first input shaft (28) for transmitting wheel-driving power into the casing and a second input shaft (27) for transmitting PTO shaft-driving power into the casing, said second input shaft being disposed at a level higher than that of said first input shaft and said first input shaft being located aside in a direction across the transmission casing;

that a speed-change shaft (30) is arranged at a front portion within said transmission casing (15) in a fashion such that said change shaft is located aside in a direction across the transmission casing oppositely from said first input shaft (28) at a level substantially equal to the level of the said input shaft, a change speed gearing (31) being disposed between said first input shaft and said change shaft and a differential gearing (32), drivenly connected to said change shaft, being disposed rearwardly of said change speed gearing, left and right output shafts (33) of said differential gearing being drivingly connected respectively to said left and right rear wheel axles (16) through speed-reduction gearings (34) which are disposed at left and right end portions within said transmission casing; and

that a drive shaft (38), co-axial with and coupled to said second input shaft (27), is arranged within said transmission casing (15) such that said drive shaft extends rearwardly from the casing, a hollow clutch shaft (39) having fore and aft ends located respectively within and outside the transmission casing being mounted rotatably on said drive shaft and being connected drivenly to said drive shaft through a PTO-clutch (40) which is disposed at an outside location of the transmission casing, a first intermediate shaft (41) connected drivenly to said clutch shaft through a speed-reduction gearing (43) being disposed at a rear end portion within the transmission casing and below said clutch shaft, said intermediate shaft having thereon a pair of freely rotatable first and second clutch gears (44, 46) and a PTO-selecting clutch (47) disposed between said pair of first and second clutch gears for coupling said clutch gears selectively to said intermediate shaft, said first clutch gear being connected drivingly to said rear-PTO shaft (18) through a first gear train (44, 91, 92, 93) and said second clutch gear being connected drivingly to said mid-PTO shaft (19) through a second gear train (46, 45, 94).

4,880,071

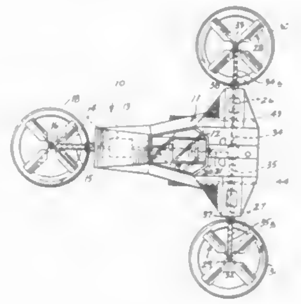
TOY AIR VEHICLE

Stephen E. Tracy, P.O. Box 214, Odin, Ill. 62870

Filed Aug. 10, 1988, Ser. No. 230,516

Int. Cl.⁴ B60V *1/00*

U.S. Cl. 180—117 5 Claims



1. A vehicle for land and water traverse comprising,

an elongate body housing defining a forward end and a rear portion extending orthogonally of a longitudinal axis of said body housing, and

a first impeller formed with a first surrounding venturi shroud secured forwardly of said forward end, and

a second impeller formed outwardly of one side of said rear portion with a second surrounding venturi shroud secured therearound, and

a third impeller formed outwardly of a second end of said rear portion remote from said first impeller with a third shroud surrounding impeller shroud fixedly secured around said third impeller, and

a motor means positioned in said housing for providing power to said first, second, and third impellers, and

drive shaft means to impart rotational drive from said motor means to said first, second, and third impellers, and

first and second rotational joints positioned adjacent respective of said second and third impellers to enable rotation of said second and third impellers and said second and third shrouds relative to said body housing, and

wherein said rotational joints include first and second flanges fixedly secured to first and second cylindrical housings surrounding a portion of said drive shaft means wherein said first and second flanges includes through extending apertures and removable fasteners for rotating a second flange relative to a first flange to enable rotation of an adjoining impeller and surrounding venturi shroud.

4,880,072

METHOD OF AND APPARATUS FOR CHECKING FOUR-WHEEL STEERING CHARACTERISTICS OF FOUR-WHEEL-STEERED VEHICLE

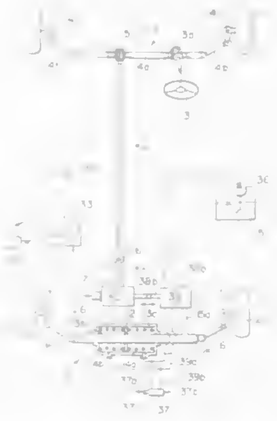
Shunji Sakamoto; Shigeo Okamizu; Yuji Ota, and Hisaaki Katsuki, all of Hiroshima,, Japan, assignors to Mazda Motor Corporation, Japan

Filed Feb. 8, 1988, Ser. No. 153,431

Claims priority, application Japan, Feb. 6, 1987, 62-25792; Feb. 6, 1987, 62-25793; Feb. 6, 1987, 62-25794; Feb. 6, 1987, 62-25795; Feb. 6, 1987, 62-25796; Feb. 6, 1987, 62-25797; Feb. 6, 1987, 62-25798; Feb. 6, 1987, 62-25799; Feb. 6, 1987, 62-25800; Feb. 17, 1987, 62-34002; Feb. 17, 1987, 62-34003; Feb. 17, 1987, 62-34004; Feb. 20, 1987, 62-37357; Feb. 24, 1987, 62-40545; Feb. 5, 1988, 63-25481

Int. Cl.⁴ B62D *6/02;* G01B *5/255*

U.S. Cl. 180—140 60 Claims



1. A method of checking four-wheel steering characteristics of a four-wheeled vehicle provided with a four-wheel steering system in which both the front wheels and the rear wheels are turned in response to operation of the steering wheel according to preset four-wheel steering characteristics, comprising the steps of:

changing the four-wheel steering characteristics according to a factor which can affect running of the vehicle by inputing a simulation signal representing said factor into a controller for determining the rear wheel angle

turning the front wheels, measuring the actual turning angle of at least one of the front wheels and the actual turning angle of at least one of the rear wheels by which the rear wheel is turned in response to the turning of the front wheels and as determined by said controller on the basis of said simulation signal, thereby detecting the actual rela-

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tion between the turning angles of the front and rear wheels, and checking whether the actual four-wheel steering characteristics of the vehicle deviate from the preset four-wheel steering characteristics by comparing the actual relation between the turning angles of the front and rear wheels with the preset four-wheel steering characteristics.

41. An apparatus for checking four-wheel steering characteristics of a four-wheeled vehicle provided with a four-wheel steering system having a front wheel turning mechanism for turning the front wheels in response to operation of the steering wheel, a rear wheel turning mechanism for turning the rear wheels, a front wheel turning angle sensor for detecting the front wheel turning angle, a controller which receives a front wheel turning angle signal from the front wheel turning angle sensor and controls the rear wheel turning mechanism to turn the rear wheels in response to operation of the steering wheel according to preset four-wheel steering characteristics, said apparatus comprising

a simulation signal output means which is adapted to input a simulation front wheel turning angle signal representing a front wheel turning angle into the controller of the four-wheel steering system

a rear wheel turning angle measuring means for measuring the turning angle of at least one of the rear wheels by which the rear wheel is actually turned under the control of the controller when said simulation front wheel turning angle is input into the controller, and

a comparator means which detects the actual relation between the turning angles of the front and rear wheels on the basis of the simulation front wheel turning angle signal and data input from the rear wheel turning angle measuring means, and determines whether the actual four-wheel steering characteristics of the vehicle deviates from the preset four-wheel steering characteristics by referring the actual relation between the turning angles of the front and rear wheels to the preset four-wheel steering characteristics.

4,880,073

FOUR-WHEEL STEERING SYSTEM OF A MOTOR VEHICLE

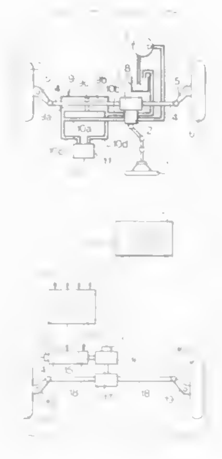
Toshihiro Konno, Tokyo, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 30, 1988, Ser. No. 278,751

Claims priority, application Japan, Dec. 21, 1987, 62-193763[U]

Int. Cl.⁴ B62D *5/04, 6/02*

U.S. Cl. 180—140 2 Claims



1. A steering system for a motor vehicle having a front-wheel steering system including a steering wheel, a hydraulic power cylinder, a piston of which is operatively connected to front wheels, and a control valve responsive to operation of the steering wheel for controlling oil supplied to the power cylinder so as to assist steering effort, the system comprising:

a detector cylinder device having a detector piston with a pair of rods on opposite sides of the piston, a pair of chambers formed on the opposite sides of the detector piston and communicated with chambers on opposite sides of the piston of the power cylinder, and a pair of springs provided in the chambers for urging the detector piston to a neutral position;

a potentiometer operatively connected to one of the rods of the detector piston, for producing an output signal in accordance with displacement of the detector piston; and

rear-wheel steering means responsive to the output signal for steering rear wheels.

4,880,074

STEERING SYSTEM FOR A MOTOR VEHICLE

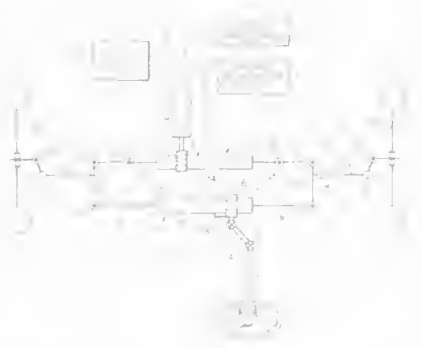
Rempei Matsumoto, Ohta, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 24, 1988, Ser. No. 198,394

Claims priority, application Japan, May 27, 1987, 62-130643

Int. Cl.⁴ B62D *5/04*

U.S. Cl. 180—142 18 Claims



1. A steering system for a motor vehicle comprising:

a first gear device operatively connected to a steering wheel of the motor vehicle;

a first tie rod operatively connected to the first gear device and arranged to be laterally displaced by the first gear device;

a second gear device;

a second tie rod operatively connected to the second gear device and arranged to be laterally displaced by the second gear device;

actuating means for actuating the second gear device;

at least one sensor for sensing at least one driving condition of the motor vehicle for producing an output signal;

control means responsive to said output signal of the sensor for operating the actuating means;

a pair of connecting rods operatively connecting both ends of the first and second tie rods at each end of the connecting rods, respectively; and

a pair of link mechanisms operatively connected at a side of said connecting rods to front wheels of the motor vehicle so as to combine separate displacements of the first and second tie rods to steer the front wheels at a resultant gearing ratio.

4,880,075

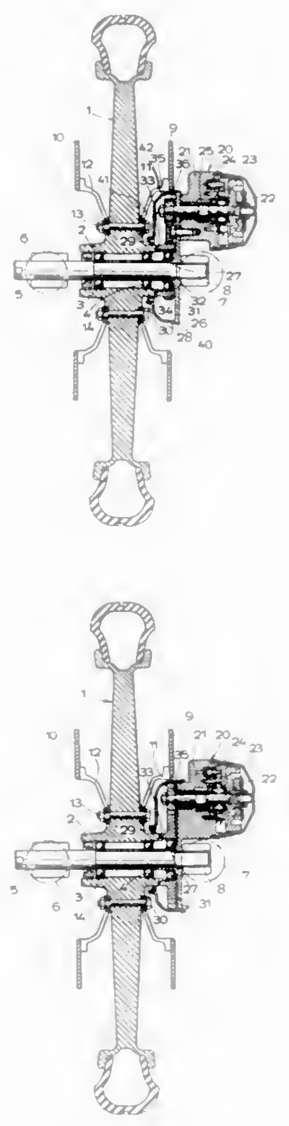
ANTI-LOCK HYDRAULIC MODULATOR UNITS FOR VEHICLES

Robert G. Fuller, Coventry, England, assignor to Lucas Industries Public Limited Company, England

Filed Feb. 16, 1988, Ser. No. 155,893

Int. Cl.⁴ B60T *8/34*

U.S. Cl. 180—219 9 Claims



1. In a motor cycle having a non-rotatable axle having opposite ends, a wheel having a hub, an external surface on said hub, means journalling said hub for rotation on said axle, an assembly comprising a brake pressure modulator unit, means for driving said unit from said wheel, a non-rotatable installation plate for installing said assembly on said axle said installation plate having means for mounting said plate on one of said ends of said axle and having an outer peripheral edge, means for mounting said unit on said plate, a non-rotatable casing secured to said assembly, said casing comprising a single imperforate member encircling said axle and enclosing said drive means, said member comprising a first end portion extending axially inwards from said outer peripheral edge of said plate towards said wheel and having an inner end and an outer end, a second end portion extending radially outwards from said external surface of said hub in a direction spaced from and substantially parallel with said plate, said second portion having an inner edge encircling said external surface of said hub and an outer end, and a third connecting portion contiguous with said first portion and said second portion and integral with said inner end of said first portion and said outer end of said second portion, means connecting said outer end of said first portion to said plate, and a sealing means providing a seal between said inner edge of said second portion and said external surface of said hub.

4,880,076

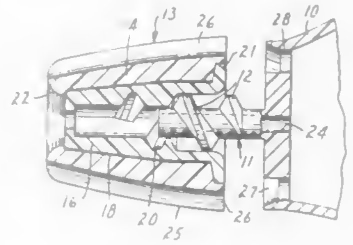
HEARING AID EAR PIECE HAVING DISPOSABLE COMPRESSIBLE POLYMERIC FOAM SLEEVE

Carl S. Ahlberg, Minneapolis; Davis W. Chamberlin; Jerold W. Bushong, both of St. Paul; Robert J. Oliveira, Maplewood, and Vasant V. Kolpe, Mendota Heights, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Dec. 5, 1986, Ser. No. 938,540

Int. Cl.⁴ A61B *7/02;* **H04R** *25/02*

U.S. Cl. 181—130 43 Claims



1. Hearing aid comprising an ear piece including a sound tube, a user-disposable sleeve which is formed with distal and proximal ends, a central longitudinal passage between said distal and proximal ends having a size approximating that of said sound tube wherein the sleeve has an exterior surface, comprises soft polymeric foam that is highly compressible, has slow, substantially complete recovery, and can be compressed to be freely insertable into an external ear canal of the user and to become wedged in the canal when the foam is allowed to recover, and

fastening means for disposably attaching the proximal end of the sleeve to said ear piece with said passage connecting the sound tube to the ear canal of the user, said fastening means providing a Holding Value and a Pullout Value and wherein said Holding Value is at least 1½ times said Pullout Value.

4,880,077

BASE FOR A LOUDSPEAKER ENCLOSURE

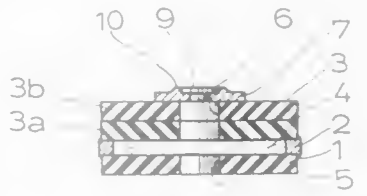
Gisbert Verse, and Michael Schröder, both of Gelsenkirchen, Fed. Rep. of Germany

Filed Oct. 31, 1988, Ser. No. 264,457

Claims priority, application Fed. Rep. of Germany, Mar. 8, 1988, 8803128[U]; Apr. 12, 1988, 8804767[U]; **May 17, 1988, 8806446**[U]

Int. Cl.⁴ F16F *15/00*

U.S. Cl. 181—207 20 Claims



1. Base for a loudspeaker enclosure, comprising a lower base disk formed of a sound-insulating material, at least one spacing

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element attached to said base disk and projecting upward therefrom, and an upper support disk formed of a sound-insulating material that is attached to an opposite side of said spacing element relative to said base disk, wherein an inner hollow space is defined by said disks and by said spacing element, and wherein an area of contact between said disks and said inner spacing element is relatively small in comparison to an area of said disks defining said inner hollow space.

4,880,078
EXHAUST MUFFLER

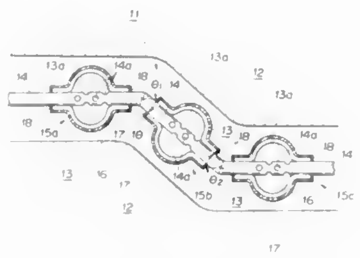
Takeshi Inoue; Hiroshi Funabashi, both of Saitama, and Yukihiro Nakagawa, Aichi, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo and Nakagawa Sangyo Co., Ltd., Aichi, both of, Japan

Filed Jun. 29, 1988, Ser. No. 213,014

Claims priority, application Japan, Jun. 29, 1987, 62-161484; Jun. 29, 1987, 62-161485; Jun. 29, 1987, 62-99865[U]; Apr. 27, 1988, 63-105188

Int. Cl.^{4} F01N *1/10, 7/02, 7/14, 7/18*

U.S. Cl. 181—232 6 Claims



1. An exhaust muffler having a plurality of component units connected in series with each other by a connector pipe, said connector pipe having at least one inlet end for receiving exhaust gases from an internal combustion engine, and at least one outlet end vented to atmosphere;

- each of said component units having a casing defining an internal suppression chamber therein and having an inner layer of a sound-absorbing material which defines said internal suppression chamber, said connector pipe passing through each casing and having upstream and downstream ends projecting out of said casing, the downstream end of the connector pipe of the upstream component of said connector pipe passing through each casing and having eam and downstream ends projecting out of said casing, the nstream end of the connector pipe of the upstream component of said components connected in series being connected to the upstream end of the connector pipe of the following downstream component of said components connected in series, said connected connector pipes holding said casing component units in communication in series with each other;
- said connector pipe having at least one opening which opens into said internal suppression chamber in each of said casing component units;
- said connector pipe of the most upstream one of said casing component units having an upstream portion serving as said at least one inlet pipe; and
- said connector pipe of the most downstream one of said casing component units having a downstream end vented to the atmosphere;
- said connector pipes of said component units jointly serving as a single main exhaust pipe; at least one of said component units being constructed to meet:

$$\sqrt{(S/l \cdot V)} < 500\pi/C$$

where V is a volume of said internal suppression chamber, l and S are an effective pipe length of and cross-sectional area of a flow passage in said connector pipe extending from the internal suppression chamber of said at least one of the component units to one of the internal suppression chamber of the next component unit and the end vented to the atmosphere, and C is speed of sound.

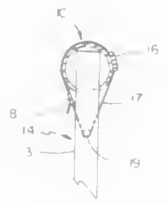
4,880,079
LADDER CAP

Roland P. Leclerc, 735 Ford Dr., Sault Ste. Marie, Mich. 49783

Filed Sep. 1, 1988, Ser. No. 239,227

Int. Cl.^{4} E06C *7/48*

U.S. Cl. 182—107 8 Claims



1. A ladder attachment disposed to be placed horizontally across the top of the ladder rails, or stiles, to provide a uniform outwardly cylindrical contact member for additional support and stability and protection of the surface against which the ladder is inclined, comprising a unitary cylindrical member of a length greater than the distance between the rails of a ladder; said cylindrical member having two horizontally spaced apertures sufficient to receive and gravitationally retain the uppermost ends of the ladder rails.

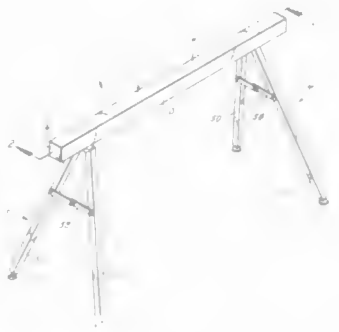
4,880,080
COLLAPSIBLE SAWHORSE

Lester H. Brockman, R.R. 2, Box 279, New Bloomfield, Mo. 65063

Filed Oct. 24, 1988, Ser. No. 261,108

Int. Cl.^{4} B27B *21/00;* **B25H** *1/06*

U.S. Cl. 182—155 15 Claims



1. A collapsible sawhorse comprising: a channel-shaped beam having parallel side walls which lie along a hollow interior; first and second leg assemblies attached to the beam at opposite ends thereof, each leg assembly including a pivot block which pivots relative to the beam about a first axis that is transverse to the beam and a pair of legs which pivot about a second axis relative to the block between a folded position, wherein they are side-by-side and against each other, and an open position, wherein they are spread apart, the second axis being fixed in position with respect to the first axis and oriented crosswise with respect to the first axis, the legs when in their folded position being capable of fitting into the hollow interior of the beam between the parallel side walls, with the folded legs of the first leg assembly overlying the folded legs of the seconded leg assembly; whereby the sawhorse collapses into a highly compact configuration; and means carried by a leg of the first leg assembly for engaging in a side-wall of the beam and thereby preventing the legs assemblies from pivoting about the first axes and swinging out of the hollow interior of the beam.

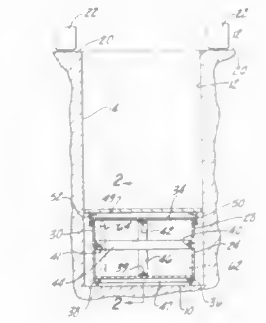
4,880,081
OIL TANK CATWALK ASSEMBLY FOR AUTOMOTIVE SERVICE FACILITY

Stephen R. Congleton, 10179 Colonial Industrial Dr., South Lyon, Mich. 48178

Filed Nov. 16, 1988, Ser. No. 271,862

Int. Cl.^{4} F16C *3/14;* **F16H** *33/00*

U.S. Cl. 184—1.5 21 Claims



1. In association with a motor vehicle servicing pit structure that includes an elongated bottom wall, two upstanding widely spaced end walls defining the length dimension of the pit structure, and two closely spaced upstanding side walls defining the width dimension of the pit structure, the improvement comprising:

- an oil storage tank structure adapted to rest on said pit structure elongated bottom wall; said oil storage tank structure having width and length dimensions less than corresponding dimensions of said pit structure, whereby said oil storage tank structure can be removably installed in said pit structure by lowering said oil storage tank structure into said pit structure; and
- a catwalk overlying said oil storage tank structure to provide a walk-on platform for a mechanic who is to service an overhead vehicle.

4,880,082
METHOD FOR DETERMINING THE POSITION OF AN ELEVATOR CAR AND A PULSE COUNT BASED FLOOR SELECTOR

Matti Kähkipuro; Heimo Mäkinen, and Jouko Perttula, all of Hyvinkää , Finland, assignors to Kone Elevator GbmH, Switzerland

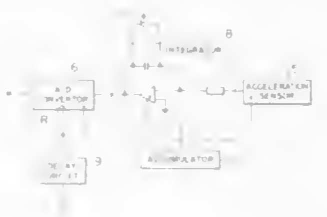
Filed May 26, 1988, Ser. No. 200,124

Claims priority, application Finland, May 27, 1987, 872369

Int. Cl.^{4} B66B *3/02*

U.S. Cl. 187—134 8 Claims

1. A method for determining the position of an elevator car by means of a pulse train, whereby the position of an elevator car is determined on the basis of a pulse count proportional to the elevator's speed, wherein the pulses required for calculating the elevator position for floor selection are obtained from an acceleration sensor placed on the elevator car, the output signal of which is integrated so as to obtain a voltage representing the speed of the elevator car, said voltage being converted into a pulse train whose frequency is dependent on the speed of the elevator car.



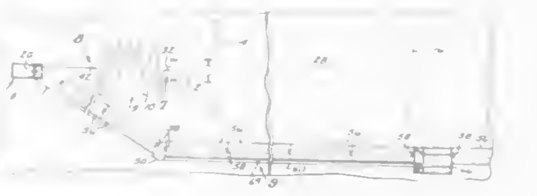
4,880,083
DECELERATION APPARATUS AND METHOD FOR STOPPING A RACING VEHICLE

Marion L. Thompson, deceased, late of San Juan Capistrano, Calif. (by Collene Campbell, executor), assignor to Mickey Thompson Entertainment Group, Anaheim, Calif.

Filed Jul. 7, 1988, Ser. No. 216,108

Int. Cl.^{4} B60T *1/12*

U.S. Cl. 188—2 R 24 Claims



1. Deceleration apparatus for stopping a racing vehicle within a predetermined distance beyond the finish line of a race course, the deceleration apparatus comprising:

- tether means having a free extremity for attachment to a racing vehicle located at a race course start line, the free extremity comprising an elongated flexible free payout portion for free payout on vehicle acceleration, the length of the free payout portion approximating the length of the race course; and
- energy absorption means adapted for location separately of the racing vehicle and coupled to the extremity of the tether means opposite the free extremity for placing the free payout portion in tension when the racing vehicle reaches the finish line, and operative for decelerating and stopping the vehicle within a predetermined distance.

4,880,084
MECHANICAL LINEAR LOCK WITH REDUNDANT LOCKING FEATURE

Akira Tanaka, Encino, and Jimmy C.-M. Lee, Simi Valley, both of Calif., assignors to P. L. Porter Company, Woodland Hills, Calif.

Filed Jul. 5, 1988, Ser. No. 214,166

Int. Cl.^{4} B65H *59/10*

U.S. Cl. 188—67 19 Claims

8. In a fail-safe latch for a linear mechanical lock of the type having a rod axially translatable through a lock housing, a coil spring normally gripping the rod against such axial movement, sleeve means rotatable about said rod for unwinding said coil spring responsive to actuation of lock release means thereby to free the rod for said axial movement, the improvement comprising:

- back-up latch means including a toothed pawl pivoted to said housing for movement towards and away from interlocking engagement with a grooved section of said rod;

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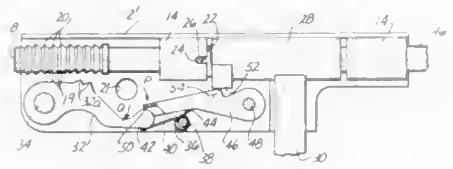
spring means normally urging said latch means towards said interlocking engagement thereby to hold said rod against said axial movement independently of said coil spring; and



cam means on said rotatable sleeve and cam follower means operative for disengaging said backup latch means from said rod upon rotation of said sleeve to a rod releasing position.

4,880,085
BRAKE CAM SHAFT ATTACHMENT APPARATUS

Gordon J. Taylor, 18 Seng Street, Graceville, Queensland, 4075, Australia

Filed Dec. 21, 1987, Ser. No. 135,324

Int. Cl.⁴ F16D *51/00, 65/38;* **B25G** *3/28*

U.S. Cl. 188—79.55 9 Claims

1. A brake cam shaft attachment assembly for attaching a brake cam shaft relative to a slack adjuster, the slack adjuster having an opening therethrough with a spline formed therein, said assembly including the cam shaft having cam elements at one end thereof and a threaded attachment portion at the other end thereof, a spline on said shaft adjacent said attachment portion, a circlip locatable about and to the shaft at a location spaced from the one end, said circlip limiting the extent to which the splined end of the shaft projects into the splined aperture of the slack adjuster, a washer locatable about the other end and a threaded fastening means securable to said attachment portion at the other end whereby, when said shaft is secured relative to the slack adjuster, the shaft is locked fast to the slack adjuster to prevent relative longitudinal movement with the latter located on the shaft and between said circlip and said washer with the washer clamped against a side face of the spline of the slack adjuster by said fastening means.

4,880,086
ADJUSTABLE VIBRATION DAMPER

Heinz Knecht, and Norbert Ackermann, both of Eitorf, Fed. Rep. of Germany, assignors to Boge AG, Eitorf, Fed. Rep. of Germany

Filed Jun. 6, 1988, Ser. No. 202,979

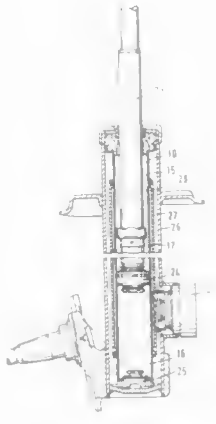
Claims priority, application Fed. Rep. of Germany, Jun. 6, 1987, 3719113

Int. Cl.⁴ B60G *17/08;* **F16F** *9/50, 15/04*

U.S. Cl. 188—299 19 Claims

1. A vibration damper for motor vehicles, said damper comprising a cylinder assembly having an arrangement for varying damping of a piston assembly disposed therein, said piston assembly dividing said cylinder into at least two chambers, each for containing damping fluid, said vibration damper comprising:

- means for throttling said damping fluid when said damping fluid moves from one of said chambers into another;
- said piston assembly having a piston rod and piston;
- said piston rod having first means for attachment of said piston rod at one end thereof;
- said cylinder assembly having second means for attachment at a portion thereon other than said first means for attachment at said piston rod;
- means for bypassing damping fluid between said at least two chambers;
- means for accepting bypassed damping fluid;
- said bypassing means being disposed to bypass said damping fluid from at least one of said damping fluid-containing chambers to said accepting means;
- said bypassing means including damping valve means for regulating flow of said damping fluid in said bypassing means;



said damping valve means comprising:

- a principal valve seat and a first displaceable component for opening and closing against said principal valve seat;
- said first displaceable component having a first portion for being disposed against said valve seat and a second portion opposite said first portion;
- a first, constantly open, bypass orifice being disposed at least in said first portion of said first displaceable component for bypassing pressure buildup at said first portion at least to said second portion of said displaceable component;
- a second bypass orifice being disposed in said first displaceable component for bypassing pressure buildup substantially at said second portion to at least a part of said first portion of said first displaceable component; and
- a second displaceable component for varying flow through said second bypass orifice, said second displaceable component and said first displaceable component being independently displaceable relative to each other.

4,880,087
TELESCOPIC SHOCK ABSORBER CONSTRUCTION

Geoffrey G. Janes, York, England, assignor to Armstrong Patents Co. Limited, England

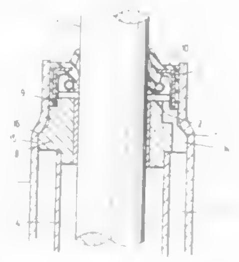
Filed Dec. 9, 1987, Ser. No. 130,744

Claims priority, application United Kingdom, Dec. 11, 1986, 8629682

Int. Cl.⁴ F16F *9/36*

U.S. Cl. 188—322.16 6 Claims

1. A twin-tube shock absorber comprising an outer cylinder, an inner cylinder, a piston rod housed within said inner cylinder, a guide member to locate said piston rod within said inner cylinder and a metal insert seal located inside the top end of said outer cylinder, above said guide member, and slidably embracing said piston rod, wherein said guide member defines a circumferential ledge, and the upper portion of said outer cylinder is reduced in diameter to define a circumferential shoulder which mates with said circumferential ledge, and a reduced diameter, parallel portion of said outer cylinder above said circumferential shoulder which provides an interference fit between its reduced diameter and the outer diameter of said metal insert seal.



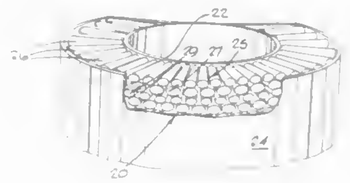
4,880,088
COLLISION PROTECTING SYSTEM FOR TLP STRUCTURES

Joao G. De Oliveira, Stavanger, Norway, assignor to Conoco Inc., Ponca City, Okla.

Filed Nov. 7, 1988, Ser. No. 268,394

Int. Cl.⁴ F16F *7/12;* **B63B** *59/02;* **E02D** *5/60*

U.S. Cl. 188—377 13 Claims



1. An energy-dissipation bumper system for protecting a portion of an outer periphery of a column of a tension leg platform, said bumper system comprising

- a first inner cylindrical shell;
- a second outer cylindrical shell surrounding said first cylindrical shell and being generally coaxial therewith;
- a plurality of non-resilient, crushable, thin-walled tubular members lying between said first and said second cylindrical shells, said tubular members being constructed of tubular steel and having a diameter to wall thickness ratio of between about 30 and about 40, said tubular members having a sufficiently large radial extent to permit substantially all of the energy from an impact with said bumper system to be dissipated by absorption due primarily to collapse of said crushable thin-walled tubular members without damage to said first cylindrical shell.

4,880,089
CONVERTIBLE VALET BAG

Dominique Chombert, 82, rue de la Faisanderie, Paris, France, and Francnise Hubert-Sternback, 9 Place Saint Augustin, 75008 Paris, France

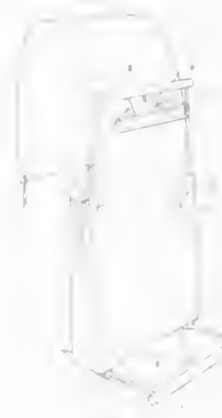
Filed Jun. 14, 1988, Ser. No. 206,545

Claims priority, application European Pat. Off., May 20, 1988, 88401237.8

Int. Cl.⁴ A45C *7/00, 13/04, 13/24*

U.S. Cl. 190—18 R 9 Claims

1. A convertible valet bag, characterized in that it is made from a generally rectangular bag opened at the top and fitted, at said top, with holding means, as well as with a frame comprising a generally horizontal base having on opposite ends a first and second, generally vertical, hollow branch and a first and second, generally vertical, hollow guide sleeve, said frame cooperating with a first and second movable body, wherein the first movable body is a suspension body slidably mounted in the generally vertical branches and movable between a resting position inside the bag and a working position in which it serves as a support on which to hang articles, and wherein the second movable body is a support body slidably mounted in the generally vertical guide sleeves and movable between a resting position inside the bag and a working position in which it allows the bag to rest in a generally upright position.



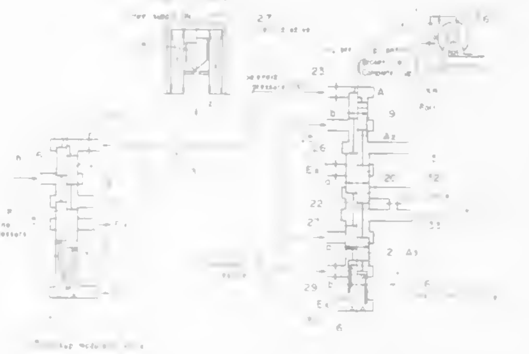
4,880,090
HYDRAULIC CONTROLLING SYSTEM FOR LOCKUP CLUTCHES

Masahiko Ando, Anjo, Japan, assignor to Aisin-Warner Kabushiki Kaisha, Aichi, Japan

Filed Jun. 11, 1987, Ser. No. 60,697

Int. Cl.⁴ F16H *45/02*

U.S. Cl. 192—3.3 13 Claims



1. A hydraulic control system for a lockup clutch comprising:

- an oil pressure supply source;
- regulator means for providing a secondary oil pressure;
- a fluid coupling hydraulically transmitting an engine power to an automatic transmission;
- a lockup clutch disposed in the fluid coupling, the lockup clutch defining an apply chamber and a release chamber;
- a lockup control valve for controlling an amount of engagement of the lockup clutch by a pressure differential between oil pressure in the apply chamber and oil pressure in the release chamber, the lockup control valve having a spool biased by a constant pressure means with first, sec-

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ond, third and fourth oil chambers being formed by the spool;

a solenoid valve disposed in an oil path between the first oil chamber and the oil pressure supply source;

the second oil chamber connecting the release chamber to the secondary oil pressure and an exhaust port;

the third oil chamber connecting the apply chamber to the secondary oil pressure;

the fourth oil chamber being connected to the secondary oil pressure; and

each of the second and fourth oil chambers having a pressure-receiving face, the second chamber pressure-receiving face and the fourth chamber pressure-receiving face having identical surface areas and respectively acting in a direction of the constant pressure means and a direction opposite thereto.

4,880,091

CONTROL CIRCUIT FOR FLUID COUPLING WITH LOCK-UP CLUTCH

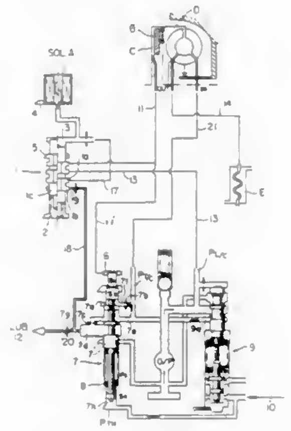
Hiromi Hasegawa, Oobu, and **Toshiaki Ishiguro**, Nagoya, both of Japan, assignors to **Aisin Seiki Kabushiki Kaisha**, Kariya, Japan

Filed Mar. 29, 1988, Ser. No. 174,811

Claims priority, application Japan, Mar. 31, 1987, 62-76404

Int. Cl.⁴ F16H *45/02;* F16D *47/02*

U.S. Cl. 192—3.3 10 Claims



1. A control circuit for a fluid coupling with a lock-up clutch, comprising;

a fluid coupling means having a power chamber into which a working fluid is introduced for performing a transfer action between an input element and an output element via the fluid, a clutch member adapted so as to suitably connect and disconnect the input element and output element, a working chamber formed separately of the power chamber, and a piston member displaced by a pressure difference between the working chamber and the power chamber for selectively engaging and disengaging the clutch member;

a fluid pressure source for supplying the working fluid to the power chamber of said fluid coupling;

lock-up clutch control means for selectively supplying and discharging a fluid to and from the working chamber to control the engagement and disengagement of the clutch member;

control means responsive to supply and discharge of the fluid to and from the working chamber by said lock-up clutch control means for lowering pressure inside the power chamber, which is supplied by said fluid pressure source, to a hydraulic pressure depending upon hydraulic pressure from a throttle valve; and

an oil line for supplying a lubricant pressure line with fluid to be supplied to the working chamber, via a port provided in said lock-up clutch control means.

4,880,092

TRANSMISSION OPERATING APPARATUS FOR AUTOMATIC TRANSMISSION

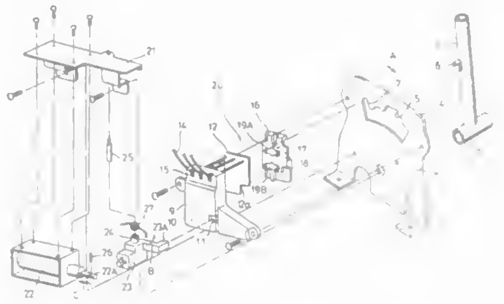
Shozo Kito, Aichi; **Shoichi Harada**, Gifu; **Hajime Imai**, Aichi; **Hisatoshi Ohta**, Aichi; **Masamitsu Suzuki**, Aichi, and **Tadao Muramatsu**, Aichi, all of Japan, assignors to **Kabushiki Kaisha Tokai-Rika-Denki-Seisakusho** and **Toyota Jidosha Kabushiki Kaisha**, both of, Japan

Filed Jan. 13, 1989, Ser. No. 296,994

Claims priority, application Japan, Jan. 14, 1988, 63-3951; Jan. 14, 1988, 63-3952

Int. Cl.⁴ B60K *20/04*

U.S. Cl. 192—4 A 20 Claims



1. A transmission operating apparatus for automatic transmissions comprising:

(a) a shift lever to be moved in a shifting direction by a driver when gear shift is intended;

(b) a detent pin secured to said shift lever substantially perpendicularly to the shifting direction of the same and being able to be moved from a first position to a second position by an operation of a pushbutton performed by the driver;

(c) detent means for preventing movement of said shift lever to another shift position by being engaged with said detent pin when said detent pin is positioned at said first position and at a specific shift position of said shift lever, while said detent means permitting a possibility for said shift lever to move to another shift position when said detent pin is positioned at said second position;

(d) a movable body which moves between said first position and said second position together with said detent pin in such a manner that the same is engaged with this detent pin when said shift lever is positioned at said specific position, this movable body being retained at said second position when said shift lever has been moved from said specific position to another shift position, while the same is engaged with said detent pin when said shift lever returns to said specific position;

(e) detection means for detecting whether said detent pin is positioned at said first position or said second position by detecting the movement of said movable body; and

(f) lock means for, when said movable body is positioned at said first position together with said detent pin, preventing movement of said movable body and detent pin to said second position by being engaged with said movable body, this lock means needs to be released by the driver to conduct a shifting operation of said shift lever to the position other than said specific position.

4,880,093

FREE-WHEEL DEVICE HAVING CLAMPING CAMS

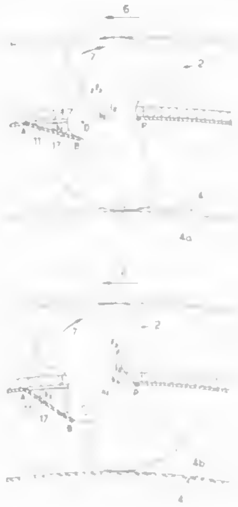
Olivier Message, Bourg-la-Reine, France, assignor to **SKF France**, Clamart, France

Filed Jan. 22, 1988, Ser. No. 146,862

Claims priority, application France, Jan. 29, 1987, 87 01092

Int. Cl.⁴ F16D *41/07*

U.S. Cl. 192—45.1 24 Claims



21. A clamping cam element structure adapted to be mounted between a pair of concentric slideways defining therebetween a cylindrical gap, said cam element being adapted to be tilted in one direction into clamping engagement with both of said slideways and in an opposite direction to tend to be disengaged from said slideways, said cam element comprising an external sliding surface and an internal sliding surface capable of coming into sliding or clamping contact with said respective cylindrical slideways depending upon its inclination, a rearface and a front face, said front face having means defining a convex contact zone;

said convex contact zone being adapted for engaging with a pivoting tongue extending from a line of articulation on a strap spring means of generally cylindrical shape mounted between said slideways and having a plurality of windows adapted for mounting therein a plurality of said cam elements, one edge portion of each said windows engaging said rearface of the cam element mounted in the corresponding window for defining a pivoting edge for said cam element, the position and shape of said convex contact zone being such that the lever arm of a force exerted by said pivoting tongue against said convex contact position relative to said pivoting edge varies in inverse proportion to the value of said force when the inclination of the cam element varies due to variations of said cylindrical gap.

4,880,094

CONTROL SYSTEM FOR A CLUTCH FOR A VEHICLE

Hiroya Ohkumo, Koganei, Japan, assignor to **Fuji Jukogyo Kabushiki Kaisha**, Tokyo, Japan

Filed Jan. 19, 1988, Ser. No. 145,347

Claims priority, application Japan, Jan. 23, 1987, 62-13767

Int. Cl.⁴ B60K *41/28;* F16D *37/02*

U.S. Cl. 192—0.052 4 Claims

1. In a system for controlling a clutch mounted on a motor vehicle, the clutch selectively transmitting power of an engine to a transmission, the system comprising an engine speed sensor producing an engine speed signal dependent on rotational speed of the engine, a driven member speed sensor producing a driven member speed signal dependent on rotational speed of an output member of the clutch, a select position sensor producing a select position signal dependent on a select position of the transmission, a throttle position sensor producing a throttle position signal dependent on opening degree of a throttle valve of the engine, and a vehicle speed sensor producing a vehicle speed signal responsive to output speed of the transmission, the improvement of the system which comprises,

reverse excitation mode deciding means responsive to the engine speed signal and select position signal for producing a reverse excitation signal to supply a small reverse current to the clutch to completely release the clutch,

clutch engagement ration calculating means responsive to the engine speed signal and driven member speed signal for producing an actual engagement ratio signal representative of a lock-up mode, vehicle drive mode and engine drive mode,

clutch current mode deciding means responsive to said actual engagement ratio signal of the clutch engagement ratio calculating means for producing an actual mode signal,

transient mode deciding means responsive to the output signals of the clutch current mode deciding means, driven member speed sensor, select position sensing means, and throttle position sensor, for deciding a transient mode of the clutch,

drive mode deciding means during said transient mode being responsive to a comparative signal representing an engine speed and said driven member speed signal for producing a drive mode signal,

desired clutch engagement ratio providing means responsive to the drive mode signal for producing a desired engagement ratio signal,

engagement state detecting means for comparing the desired engagement ratio signal with the actual engagement ratio signal for producing a current condition signal,

engagement ratio transition detecting means responsive to the actual engagement ratio signal and a last actual engagement ratio signal dependent on the current condition signal, for detecting an inverse transition of the actual engagement ratio signal, and for producing a correct signal,

slip character decision means responsive to the current condition signal and the correct signal for producing a slip condition signal to correct the clutch current, so as to provide an appropriate slip characteristic of the clutch during an increase or decrease of clutch torque, and

said drive mode signal produced from said drive mode deciding means includes

a vehicle drive mode signal when the engine speed signal is larger than the driven member speed signal, and

an engine drive mode signal when the engine speed signal is smaller than the driven member speed signal.

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4,880,095

VISCOUS FLUID COUPLING

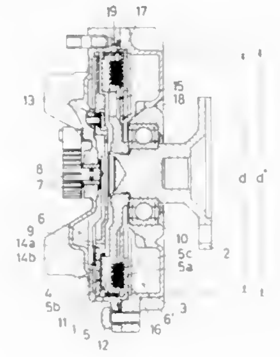
Ryuji Nakamura, Okazaki, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Aichi, Japan

Filed Jan. 19, 1988, Ser. No. 145,049

Claims priority, application Japan, Jan. 23, 1987, 62-13859

Int. Cl.^{4} F16D *35/00*

U.S. Cl. 192—58 B 8 Claims



1. A viscous fluid coupling comprising:

a shaft connected to an engine;

a rotor fitted to the shaft, the rotor being rotatable with the shaft;

an output member comprising a case and a cover which constitute the housing of the viscous fluid coupling and in which the rotor is housed, the case and the cover being coupled together;

fluid coupling means for fluidically coupling said rotor and said output member;

bearing means for rotatably mounting said case to said shaft;

a rear plate fitted in the case at the location where the case and cover are coupled together;

a front plate mounted in the cover to define a first reservoir therebetween and having a hole through which oil can flow;

a front fluid chamber formed by the front plate and the rotor;

a rear fluid chamber formed by the rotor and the rear plate, the rotor and the rear plate cooperating to define said fluid coupling means at a radial position near the location where the case and the cover are coupled together, and

a second reservoir formed by the rear plate and the case and being radially positioned such that at least a part thereof is adjacent a radially outside portion of said rear fluid chamber and radially outside said fluid coupling means.

4,880,096

BILL VALIDATOR

Osamu Kobayashi, Tsurugashima; Hiroshi Hayashi, and Ryoji Yamagishi, both of Sakado, all of Japan, assignors to Kabushiki Kaisha Nippon Coinco, Tokyo, Japan

Filed Mar. 16, 1987, Ser. No. 25,938

Claims priority, application Japan, Mar. 18, 1986, 61-38292; Jul. 14, 1986, 61-10672

Int. Cl.^{4} G07D *7/00*

U.S. Cl. 194—206 7 Claims

4. A bill validator comprising:

a bill insertion slit;

bill conveying means including a conveying passage communicating with said bill insertion slit and conveying a bill inserted from said bill insertion slit along said conveying passage;

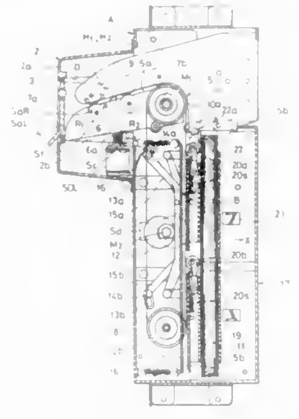
discrimination means for discriminating a true bill from a false one among bills inserted from said bill insertion slit including component elements for discriminating the bill along said conveying passage, said component elements including at least a magnetic sensor which is disposed at the rearmost location of the arrangement of said component elements;

a bill pulling out preventing member provided in a stage prior to said magnetic sensor and projecting into or withdrawing from said conveying passage;

drive means for withdrawing said bill pulling out preventing member from said conveying passage when the bill is inserted and returned;

detecting means for detecting that the rear end of the inserted bill which is being conveyed along said conveying passage has passed by the location of said bill pulling out preventing member;

temporary retention means for temporarily retaining the bill in said conveying passage, at a temporary retention location such that at least the first end of the bill has passed the magnetic sensor and the rear end of the bill has not passed the magnetic sensor, by stopping conveying of the bill in response to an output of said detection means;



reverse feeding means for reversely feeding the bill, which has been temporarily retained by said temporary retention means, from said temporary retention location to said bill insertion slit along said conveying passage in response to a bill return command, such that said reverse feeding of said bill is not blocked at said magnetic sensor location;

a bill accumulating box for accumulating accepted bills; and

accumulation means for accumulating the bill which has been temporarily retained by said temporary retention means in said bill accumulating box in response to a bill collection command.

4,880,097

PARK CARD SYSTEM FOR ELECTRONIC PARKING METER

Gary W. Speas, Little Rock, Ark., assignor to POM Incorporated, Russellville, Ark.

Continuation-in-part of Ser. No. 37,252, Apr. 16, 1987, Pat. No. 4,823,928. This application Mar. 25, 1988, Ser. No. 173,719

Int. Cl.^{4} G07F *7/08, 17/24*

U.S. Cl. 194—239 6 Claims

1. A card system for an electronic parking meter, comprising:

at least one coin;

at least one card having an electrically erasable programmable memory containing data therein;

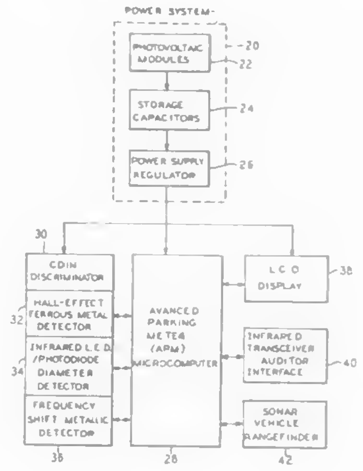
at least one coin slot in said electronic parking meter, said card having at least a portion thereof dimensioned to fit into said coin slot, said coin slot also capable of receiving said coin when deposited in said coin slot;

a card switch in said coin slot activated only by said card and providing a card switch signal;

microprocessor in said electronic parking meter receiving said card switch signal and in response thereto, enabling means for supplying power for said card and exchanging data with said card;

means for interfacing connecting said microprocessor to said card;

said portion of said card having electrical contacts for engagement with electrical contacts of said means for supplying power and said means for interfacing


POWER SYSTEM
PHOTOVOLTAIC MODULES
20
22
STORAGE CAPACITORS
24
POWER SUPPLY REGULATOR
26
30
COIN DISCRIMINATOR
HALL-EFFECT FERROUS METAL DETECTOR
32
INFRARED L.E.D. /PHOTODIODE DIAMETER DETECTOR
34
FREQUENCY SHIFT METALLIC DETECTOR
36
AVANCED PARKING METER (APM) MICROCOMPUTER
28
L C D DISPLAY
38
INFRARED TRANSCEIVER AUDITOR INTERFACE
40
SONAR VEHICLE RANGEFINDER
42

wherein said system further comprises a door switch located adjacent said coin slot and wherein said coin slot also receives said deposited coin which activates only said door switch to change said microprocessor from a standby mode to an operational mode, said card activating said card switch.

4,880,098

RECEPTACLE HANDLING MACHINE

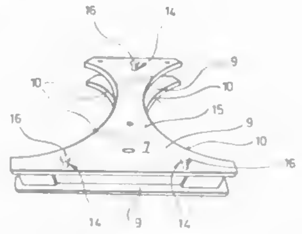
Hermann Kronseder, P.O. Box 1230, 8402 Neutraubling, Fed. Rep. of Germany

Filed Feb. 24, 1988, Ser. No. 161,172

Claims priority, application Fed. Rep. of Germany, Feb. 26, 1987, 8702940; Aug. 12, 1987, 8710999

Int. Cl.^{4} B65G *47/00*

U.S. Cl. 198—346.2 13 Claims



1. A receptacle handling machine for the handling of receptacles which are passed through the machine comprising:

a machine frame (13) including a transverse extent, a longitudinal extent, a top side, a center portion, a preset position, and at least one second insertion and stop element (17, 19) having a second transverse stop means, and a second longitudinal stop means set at predetermined distances from said preset position;

at least one receptacle guiding body (7, 8) adapted to be moved in a direction of insertion (E) to said preset position and clamped on said machine frame or unclamped and removed from said machine frame, said guiding body including a bottom side, at least one first insertion and stop element (14) having a first transverse stop means and a first longitudinal stop means set at said predetermined distances when said guiding body is at said preset position;

wherein one of said insertion and stop elements is provided with a substantially U-shaped insertion portion having undercut edges and the other of said insertion and stop elements comprises a bolt having a collar, said bolt having a diameter adapted to fit in the width of said insertion portion of the associated first or second insertion and stop elements and whose collar is larger than said bolt diameter to fit behind the undercut edges of said insertion portion when said guiding body is in an assembled state on said machine frame;

said guiding body (7, 8), when inserted on said frame, having each of said first transverse and longitudinal stop means in contact with said second transverse and longitudinal stop means to precisely position said guiding body in said preset position; and

a releasable clamping member (21) mounted between said guiding body and said machine frame for clamping and holding said guiding body first transverse and longitudinal stop means against both of said machine frame second transverse and longitudinal stop means to prevent transverse and longitudinal play therebetween.

4,880,099

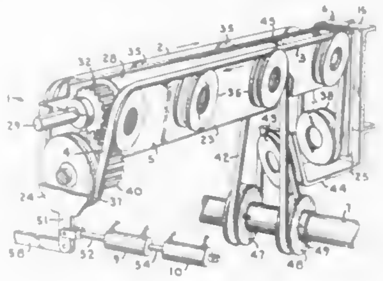
TILTING REVERSIBLE BELT TRANSFER MECHANISM

Hendrik Leemkuil, Pickerington, and Eugene A. Zilber, Columbus, both of Ohio, assignors to Versa Corporation, Mount Sterling, Ohio

Filed Oct. 17, 1988, Ser. No. 259,036

Int. Cl.^{4} B65G *47/46*

U.S. Cl. 198—371 24 Claims



1. A transfer mechanism comprising:

(a) a cradle frame pivotally supported with respect to an article support to pivot about a cradle frame pivot axis;

(b) an article diverter belt-like member supported on said cradle frame;

(c) transfer drive means engaged with said article diverter belt-like member to drive a transfer portion thereof in a transfer direction substantially parallel to said cradle frame pivot axis; and

(d) cradle frame motive means engaged with said cradle frame and operable to pivot said cradle frame about said axis to engage said transfer portion of said diverter belt-like member with an article on said article support to thereby transfer said article from said article support in said transfer direction.

4,880,100

ADJUSTABLE WORKPIECE ROTATING DEVICE

Mark Tweedy, Mars, and Gary McCoy, Evans City, both of Pa., assignors to Carl Strutz & Company, Inc., Mars, Pa.

Continuation of Ser. No. 932,701, Nov. 19, 1986, abandoned. This application May 9, 1988, Ser. No. 192,000

Int. Cl.^{4} B41F *17/20*

U.S. Cl. 198—379 8 Claims

1. An adjustable workpiece rotating assembly for rotating a workpiece having at least two opposite ends at a work station positioned along a conveyor system, including:

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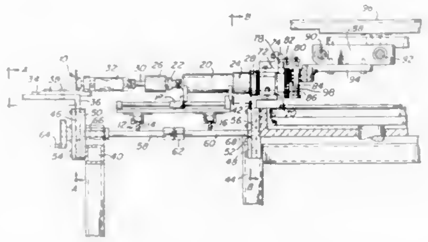
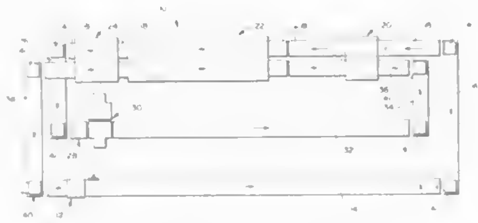
means attached to the conveyor system for positioning the workpiece such that the longitudinal axis thereof extends at a predetermined, desired elevation relative to the work station;
first means for engaging with a first end of a workpiece;
second means for engaging with a second end of a workpiece;
means coupled to at least one of the engaging means for rotating the workpiece about the longitudinal axis thereof after said first and second engaging means, respectively, have engaged with the workpiece;
first support means connected to the first engaging means, said first support means having mounted thereupon a downwardly extending gear rack means;



second support means connected to the second engaging means, said second support means having mounted thereupon a downwardly extending gear rack means;
first spur gear means positioned to allow meshing engagement with the gear rack means of the first support means;
second spur gear means positioned to allow meshing engagement with the gear rack means of the second support means; and
means rotatably supported at a fixed vertical location at the work station for connecting the first and the second spur gear means theretogether such that rotation of the first spur gear means causes a corresponding rotation of the second spur gear means, and to thereby cause vertical translation of the first and second support means, and the first and second engaging means connected thereto, respectively, responsive to such rotation.

4,880,101
PIECE LOCATING SYSTEM FOR PAINTING OR THE LIKE

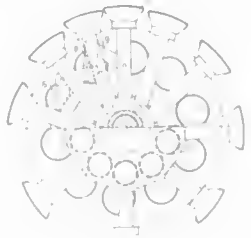
Richard F. Wiggins, Fairfield, Conn., assignor to The Boeing Company, Seattle, Wash.
Filed Sep. 16, 1988, Ser. No. 245,715
Int. Cl.⁴ B65G *47/24*
U.S. Cl. 198—403 38 Claims



1. A method of performing an operation on an object, said method comprising:
a. locating said object on a carrying tray means in a first position with a first orientation and performing a first processing step on said object;
b. locating a first transfer tray means against said object so as to hold said object against said carrying tray means;
c. inverting said carrying tray means and said first transfer tray means so that said object rests on said first transfer tray means;
d. moving said first transfer tray means relative to said carrying tray means;
e. locating a second transfer tray means against said object so as to hold said object against said first transfer tray means;
f. inverting said first and second transfer tray means so that said object rests on said second transfer tray means;
g. moving said second transfer tray means relative to said first transfer tray means;
h. locating said carrying tray means against said object so as to hold said object against said second transfer tray means;
i. inverting said carrying tray means and said second transfer tray means so that said object rests on said carrying tray means in a second inverted position and then performing a second processing step on said object.

4,880,102
DEVICE FOR THE TRANSFER OF ARTICLES FROM A FIRST TO A SECOND CONVEYOR

Leidulf Indrebo, Simlevn. 28, N-3152 Jersoy, Norway
PCT No. PCT/SE88/00019, § 371 Date Nov. 7, 1988, § 102(e) Date Nov. 7, 1988, PCT Pub. No. WO88/05416, PCT Pub. Date Jul. 28, 1988
PCT Filed Jan. 21, 1988, Ser. No. 254,480
Claims priority, application Sweden, Jan. 23, 1987, 8700279
Int. Cl.⁴ B65G *57/00*
U.S. Cl. 198—418.3 4 Claims

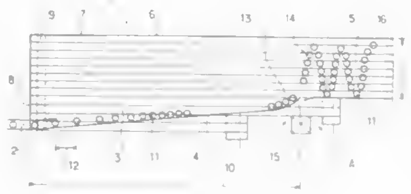


1. A device for transferring articles, preferably absorption bodies (A) intended for diapers or corresponding articles, from a first conveyor (1), on which the articles are advanced with a first given spacing (a) therebetween, to a second conveyor (2), on which the articles are advanced with a second given spacing (b) therebetween, which device (4) includes a plurality of transporting devices (11) which are rotatable about a rotational axis and which during their rotation are intended to collect articles (A) from the first conveyor (1) at a first location (1) along the rotational path of said transporting devices, and to retain said articles until reaching on said path a second location (V) at which the respective articles (A) are deposited onto the second conveyor (2), and which device (4) further includes a mechanism (5–10) by means of which the speed of each article transporting device (11) around said rotational path is varied during each revolution therearound and by means of which there is superimposed on a primary rotational movement of constant speed of the article (A) at least one secondary movement which is co-directional with the primary rotational movement during a given part of said revolution and counter-directional to said primary rotational movement during a further part of said revolution, and in which device (4) each article transporting device (11) is carried by a respective arm (5) whose radially inner end is pivotally mounted to a housing (12) which can be rotated around said rotational axis, and whose radially outer end carries said transporting device (11), characterized in that each of the arms (5) is pivotally journalled between its ends to one end of a respective link (9), and in that the device (4) further includes crank webs (8) each of which is rotationally driven by a respective rotatably journalled drive gear (6) which is in engagement, either directly or

indirectly, with a centrally located gear wheel (10) which is journalled for free rotation relative to the housing (12), and each of which crank webs (8) co-acts with a respective link (9) in a manner to move, during rotation of the housing (12), the other end of respective links in a circular path relative to the rotational axis of the drive gear, so as to cause the arm (5) to oscillate about its pivot point.

4,880,103
PRESSURELESS CONVEYOR FOR BOTTLES OR SIMILAR ITEMS

Marcel Ludwig, La Wantzenau; Robert Schoen, Ostwald, and Othon Elchinger, Roeschwoog, all of France, assignors to Gebo, Reichstett, France
Filed Oct. 2, 1987, Ser. No. 103,706
Claims priority, application France, Oct. 3, 1986, 86 13909
Int. Cl.⁴ B65G *47/26*
U.S. Cl. 198—434 5 Claims

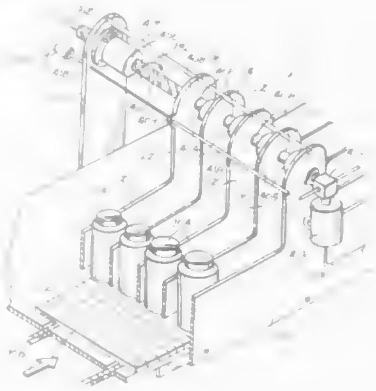


1. A pressureless conveyor for objects comprising a single-channel input conveyor, a slowdown transporter operably connected to said input conveyor, said slowdown transporter being provided with a guide rail, and a juxtaposed multiple-channel output conveyor wherein said guide rail of said slowdown transporter includes a distribution system for transforming straight-line object progression imported by said input conveyor, into a lateral movement combined with progressive movement of said multi-channel output conveyor whereby objects conveyed by said slowdown transporter touch each other before being distributed in a serpentive path over an entire working surface of said output conveyor, said distribution system comprising a curved segment of said guide rail set on said slowdown transporter and a mechanical subsystem for imparting oscillating movement to said curved segment comprising a variable speed motor for rotating a disk about a rotation axis of the disk, a connecting rod having one end rotatably mounted to one of a plurality of fixation points located on said disk concentrically with respect to said rotation axis and another end linked to an extremity of said curved segment whereby frequency and amplitude of a stroke on said curved segment may be varied.

4,880,104
LANE ADJUSTING APPARATUS FOR BOTTLE GUIDES

Neil L. Evans, Fox Lake; Aldo L. Tombolato, DesPlaines; Robert R. Reynolds, Lake Zurich, and Robert J. Meisner, Hinsdale, all of Ill., assignors to Kraft, Inc., Glenview, Ill.
Filed Oct. 5, 1987, Ser. No. 105,100
Int. Cl.⁴ B65G *47/12*
U.S. Cl. 198—445 10 Claims

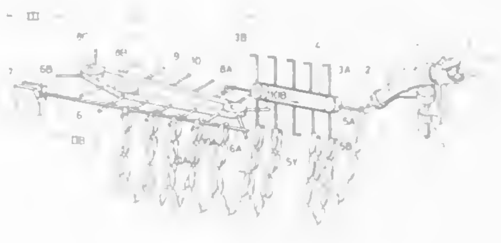
1. Apparatus for controlling the transport of rows of moving articles which is adjustable to accommodate articles of different size, comprising
conveyor means for supporting and conveying articles along a moving pathway,
a plurality of lane guides defining product transport lanes along said moving pathway each having at least one support zone having a passageway, and a rotatable shaft positioned in the passageway of each of said lane guides,
a plurality of stationary, internally threaded telescoping elements irrotatably positioned on the respective lane guides, and a plurality of externally threaded telescoping elements respectively rotatably engaged in each of said internally threaded telescoping elements to form respective telescoping assemblies separating adjacent lane guides, wherein said externally threaded telescoping elements are each irrotationally mounted on said rotatable



shaft and are free to slide rectilinearly along the axis of said shaft so that they may be rotationally driven by said shaft,
and means for rotating said rotatable shaft such that the distance between each of the lane guides may be simultaneously increased or decreased.

4,880,105
METHOD AND APPARATUS FOR DELIVERING SAUSAGES TO A BAR

Minoru Kasai, Kanagawa, and Minoru Nakamura, Tokyo, both **of Japan, assignors to Hitec Co., Ltd., Tokyo, Japan**
Filed Oct. 15, 1986, Ser. No. 919,231
Claims priority, application Japan, Oct. 18, 1985, 60-232953
Int. Cl.⁴ B65G *37/00*
U.S. Cl. 198—465.4 24 Claims



1. In a method of producing a string of linked sausages or the like suspended from a bar in loops, a method of delivering the sausages to the bar, the steps comprising:
(a) at an upstream position from a suspending means forming the sausage string into a series of spiral loops having a leading sausage loop,
(b) suspending the series of spiral loops of sausage including its leading sausage loop from said suspending means,
(c) removably fixing axially a bar such that the entire bar extends downstream of the leading sausage loop on the suspending means with the upstream end of the bar facing said leading sausage loop on said suspending means,
(d) delivering the leading sausage loop on the suspending means onto the upstream end of the bar starting from the leading loop so that the bar supports the loop,
(e) while maintaining the sausage loops spaced apart from one another, continuing to deliver successive loops of the sausage string on the suspending means to the upstream end of the bar end while simultaneously sliding the al-

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ready-delivered loops along the fixed bar down toward its downstream end, and

(f) removing the bar with its suspended string of sausage loops thereon.

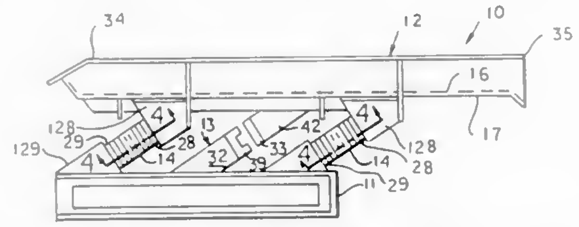
4,880,106
ELECTROMAGNETIC VIBRATORY FEEDER

Thomas H. Falconer, and William H. Benson, both of Erie, Pa., **assignors to Eriez Manufacturing Company, Erie, Pa.**

Filed May 19, 1988, Ser. No. 195,862

Int. Cl.⁴ B65G *27/08*

U.S. Cl. 198—763 10 Claims



1. In combination, a feeder comprising a base, a tray, having a bottom with a planar conveying surface,

said bottom having a longitudinal axis, a loading end, and a discharge end,

driver means connected to said base and to said tray,

at least a first spring and a second spring spaced from one another and supporting said tray on said base,

each said spring comprising at least a first elongated flat plate like leaf and a second elongated flat plate like leaf,

each said leaf having two flat planar sides disposed generally parallel to one another and inclined at an acute angle to said conveying surface,

said elongated leaves each having a longitudinal axis extending laterally of said tray longitudinal axis,

first clamping means rigidly clamping said first leaf of each said spring to said second leaf of each said spring,

second clamping means rigidly clamping said first leaf of each said first spring to said bottom of said tray, at a position spaced from said first clamping means,

third clamping means rigidly clamping said second leaf of each said spring to said base, at a position opposite said first clamping means and spaced from said first clamping means and said second clamping means, whereby said first leaf and said second leaf are adapted to act as cantilever springs supporting said tray on said base for vibration by said driver means, thereby conveying articles supported on said tray surface,

said first clamping means being spaced laterally from said second clamping means and said third clamping means.

4,880,107
TABLE TOP CHAIN LINK WITH RIB

Douglas O. Deal, Durham, N.C., assignor to Rexnord Corporation, Milwaukee, Wis.

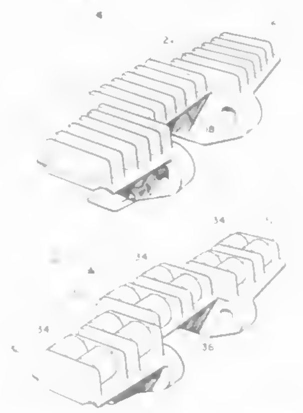
Filed Jul. 31, 1987, Ser. No. 80,753

Int. Cl.⁴ B65G *17/00*

U.S. Cl. 198—779 15 Claims

1. In a link having a greater width than length and used for constructing an endless single-link wide conveyor belt of the type with an upper and lower run and adapted to traverse one or more curves in the pathway along the upper run thereof, which link defines a female portion in the medial portion of the leading edge thereof and a male portion in the medial portion of the trailing edge thereof so that said male portion of a first link may be received in the female portion of a second trailing link and secured together by a pin extending generally parallel to and between the longitudinal axis of each of said links, said pin allowing both relative vertical pivotal movement and relative horizontal pivotal movement between the first and second links;

the improvement wherein said link comprises a plurality of spaced-apart upstanding rib elements on the top surface thereof, said rib elements extending a distance no greater than the distance from the front to the back of said link and defining a plurality of spaces therebetween to accommodate the spaced-apart parallel teeth of a conveyor transfer comb.



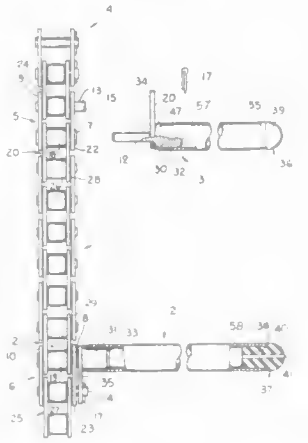
4,880,108
TUBULAR CARRIER PIN

Robert G. Burk, 821 Main St., Holyoke, Mass. 01040

Continuation of Ser. No. 74,048, Jul. 16, 1987, abandoned. This application Mar. 13, 1989, Ser. No. 323,067

Int. Cl.⁴ B65G *17/42*

U.S. Cl. 198—803.12 10 Claims



1. A chain assembly comprising:

a plurality of adjacent roller links joined together by a plurality of pin links, each pin link having a first pin plate rigidly attached to first and second pins for insertion through separate adjacent roller links and each pin link having a second pin plate for securing adjacent roller links onto said pins while allowing movement of said roller links in the plane perpendicular to the pins;

wherein some of the pin links have a hollow first pin, wherein said hollow first pin has a larger diameter than said second pin;

a support means inserted in said hollow first pin for supporting objects and carrying objects along a path parallel to chain assembly movement, the support means comprising a tubular carrier pin having a hollow cylindrical body, a plug pin insertable in one end of the body for insertion into said hollow first pin, a rounded nose at the oposite end of the body; and

wherein the plug pin has a pintle portion and a body portion, wherein the body portion has a larger diameter than the pintle portion and the body portion is received in one end of the cylindrical body, and a pin plate fixedly connected to the plug pin at the junction of the pintle and body portions for securing the plug pin to the chain assembly.

4,880,109
CHAIN HAULED CONVEYOR BELT

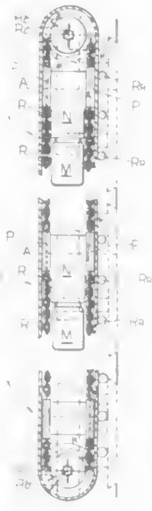
Javier A. Sarasola, Madrid, Spain, assignor to Mackina Westfalia S.A., Madrid, Spain

Filed Nov. 19, 1987, Ser. No. 122,405

Claims priority, application Spain, Nov. 21, 1986, 8603119

Int. Cl.⁴ B65G *23/16*

U.S. Cl. 198—833 7 Claims



1. A chain-hauled conveyor belt apparatus comprising:

a conveyor belt having an upper run and a lower run;

a frame;

rollers positioned on said frame so that the conveyor belt can rest against said rollers;

a chain connected to said belt;

at least one drive unit, connectable to a motor and having reduction gears, said drive unit having rotatable output shafts that are connectable to said reduction gears, said output shafts extend from the drive unit in opposite directions;

pinion gears connected to said output shafts and arranged with said output shafts to form at least two pairs of adjacent sets of pinion gears, one of said at least two pairs are adjacent to said upper run and another of said at least two pairs are adjacent said lower run and each set is rotatable in the opposite direction from the adjacent set and each said set consists of at least two pinion gears;

a CATERPILLAR TRACK rotatably mounted on each set of pinion gears to contact said chain so that the opposite rotation of said adjacent sets of pinion gears moves said upper and lower run; and

at least one cylindrical returning drum movably attached to said apparatus so that the axial positioning of the drum along the drive unit can be varied by a positioning means, said returning drum has an upper surface that engages the belt and a lower central grove that allows the chain to be slackened as it passes around the returning drum wherein the tension in the belt is determined by the position of the returning drum.

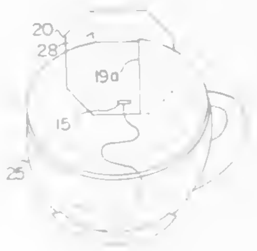
4,880,110
GRASPING MEANS ASSOCIATED WITH RETRIEVAL MEANS FOR INFUSION PACKAGES

Richard S. Walker, 189 Clifton St., Malden, Mass. 02148

Continuation-in-part of Ser. No. 205,167, Jun. 10, 1988. This application Mar. 7, 1989, Ser. No. 320,155

Int. Cl.⁴ B65D *85/00*

U.S. Cl. 206—0.5 5 Claims



1. An infusion package comprising a bag-like member of porous, non-soluble material adapted to receive and contain material to be infused by external liquid; elongated retrieval means having a first end and a second end, said retrieval means being affixed adjacent said first end to said bag-like member; and tag-like grasping means having a top edge, first and second side edges, and a bottom edge, said grasping means being affixed to said second end of said retrieval means adjacent its bottom edge, and including means for forming a hook-like portion adapted to be secured over the rim of the container in which the infusion process is to take place with the point of affixation of said retrieval means to said grasping means located within the volume defined by said container; said means for forming a hook-like portion comprising a shaped slit having a lower portion extending generally upwardly from an open end located in the bottom edge of said grasping means adjacent the point of affixation of said retrieval means to said grasping means to an upper end, and a upper portion extending transversely across said grasping means above said point of affixation of said retrieval means to said grasping means from said upper end of said lower portion of said slit to a closed end; whereby said hook-like portion may be adjusted to fit over rims of varying thickness to resist dislodgement by bending or tearing caused by forces applied to said grasping means by said retrieval means, and whereby the inadvertent loss o the grasping means into said container may be avoided, both without impediment to the normal operation of the infusion package combination.

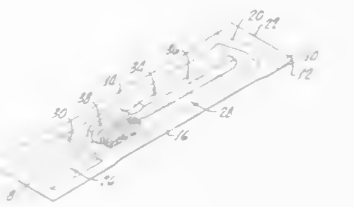
4,880,111
SCRUB BRUSH PACKAGE

James T. Bagwell, Anaheim, and Blair E. Howe, Rancho Santa Margarita, both of Calif., assignors to Cimco, Inc., Costa Mesa, Calif.

Filed Sep. 28, 1988, Ser. No. 250,713

Int. Cl.⁴ B65D *81/24*

U.S. Cl. 206—209.1 23 Claims



1. A method of applying a material to an object having an elongated handle, and thereafter causing said object to trans-

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port said material and apply said material to a region of use, said method comprising the steps of:

juxtaposing first and second thin, flexible, unmolded plastic packaging sheets to one another,

sealing said sheets to one another along their peripheries to form a package having a packaging compartment and having an opening,

inserting an object having an elongated handle into said compartment, in such manner that an end of said object remote from said handle thereof is disposed at an intermediate portion of said compartment, said object incorporating, at a region adjacent said end thereof, a combination material-transporting and material-application means that is distinctly different from said handle, said end of said object not being sharp.

forming a barrier seal between said sheets, by pressing said sheets together, adjacent said object end to divide said compartment into a first chamber and a second chamber, said first chamber containing said object and said handle thereof.

inserting into said second chamber a material to be applied to said combination material-transporting and material-application means,

sealing said opening,

manipulating said object and handle in said package to cause said end to force said sheets apart at said barrier seal and thus rupture said barrier seal and enter said second chamber, said manipulating step being such that said end and at least part of said combination material-transporting and material-application means pass through said ruptured barrier seal and at least partially enter said second chamber.

applying a desired amount of said material to said material-transporting and material-application means while said material and at least part of said combination material-transporting and material-application means are within said second chamber,

completely removing said object from said package, in such manner that said end and said combination material-transporting and material-application means pass through said ruptured barrier seal, in a relative direction that is the reverse of that which was followed during said rupturing, said

thereafter transporting said material-bearing object to a point of application and applying said material to a desired region of use.

4,880,112

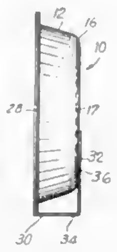
PET FOOD CONTAINER

George R. Conrad, Dunwoody, Ga., assignor to General Electric Company, Mt. Vernon, Ind.

Filed Aug. 4, 1988, Ser. No. 228,073

Int. Cl.⁴ B65D *1/34, 25/20, 85/72*

U.S. Cl. 206—216 7 Claims



1. A container for food, such as pet food and the like, comprising: a tray having a side wall and an integrally formed bottom surface for providing a receptacle for pet food, an open end opposite said bottom surface defined by said side wall, a cover detachably secured to said side wall at the open end so as to confine food within the tray, adhesive means located on said bottom for securing the tray to a surface, means detachably covering said adhesive means, and wherein upon removal of the cover access to the food is provided with said adhesive means allowing securing the tray to a surface.

4,880,113

TROLLEY WITH HANGER RETAINING STRUCTURE WHICH INHIBITS UNINTENDED HANGER WITHDRAWAL

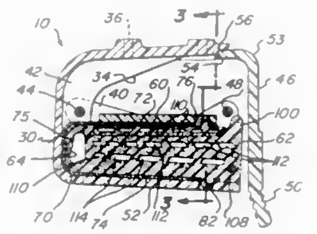
Lawrence R. Mobley, Aurora, Colo., assignor to Samsonite Corporation, Denver, Colo.

Continuation of Ser. No. 917,409, Oct. 10, 1986, Pat. No. 4,798,289, which is a continuation-in-part of Ser. No. 754,617, Jul. 12, 1985, Pat. No. 4,640,414, which is a continuation-in-part of Ser. No. 673,353, Nov. 23, 1984, Pat. No. 4,618,058. This application Aug. 5, 1988, Ser. No. 229,018

The portion of the term of this patent subsequent to Jan. 17, 2006, has been disclaimed.

Int. Cl.⁴ B65D *85/18*

U.S. Cl. 206—287 4 Claims



1. In a trolley for suspending and retaining the hooked ends of clothes hangers in a luggage piece, comprising a substantially rigid frame member which defines an opening extending into the frame member from a front location thereof, a gripping structure, said gripping structure being formed of resilient and flexible material and having an edge extending therealong which contacts the hanger ends, means for operatively connecting the gripping structure to the frame member within the opening in an opposing facing relationship and between which the hooked ends of hangers are inserted and removed from the front location, and an improvement in combination therewith comprising:

means structurally integral with and interior of the edge of the gripping structure for creating a resistance to the removal of the hanger ends from the gripping structure, which resistance is created from the resiliency of the gripping structure and is greater upon movement of the hanger ends toward the front location than upon movement of the hanger ends rearwardly away from the front location.

4,880,114

PACKAGE

Heinrich Korte, Grosswolder Strasse 60, D-2957 Westoverledingen 1, Fed. Rep. of Germany

Filed Jul. 6, 1988, Ser. No. 215,687

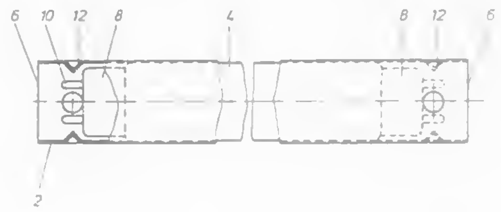
Claims priority, application Fed. Rep. of Germany, Jul. 9, 1987, 8709437[U]

Int. Cl.⁴ B65D *85/42*

U.S. Cl. 206—418 20 Claims

1. A package for an item such as a fluorescent tube and the like and comprising an elongated open ended body portion having a cross sectional configuration for suitably receiving an item therewithin, said body portion including at least a pair of opposed naps adjacent each open end thereof for retaining an item within said body portion, said naps being spaced inwardly from the open end of said body portion to which they are adjacent and extending inwardly of said body portion to protrude therewithin beyond the outer dimension of the item to be received therewithin, said naps adjacent one end of said body

portion being spaced apart from said naps adjacent the other end of said body portion in juxtarelation to respectively protrude inwardly of said body portion adjacent an outer end of the item received therewithin.



4,880,115

MULTIPACK FOR CANS INCORPORATING PLASTICS SECURING BAND

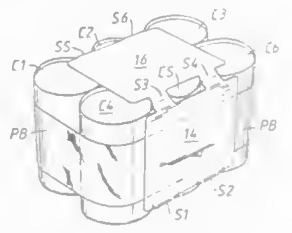
Jean Chaussadas, Deols, France, assignor to The Mead Corporation, Dayton, Ohio

Filed Jul. 11, 1988, Ser. No. 217,181

Claims priority, application United Kingdom, Jul. 10, 1987, 8716355; Jul. 2, 1988, 8815582

Int. Cl.⁴ B65D *65/00, 75/00*

U.S. Cl. 206—427 7 Claims



1. A composite package for a group of containers such as cans having cylindrical side walls and substantially flat top- and bottom ends, said containers being arranged in at least two parallel rows so that the containers are longitudinally and transversely aligned in a generally rectangular formation, the package comprising a band of elastic plastic material encircling the periphery of said group intermediate the top and bottom ends of said containers and being placed under tension when applied, and a stabilizing means for maintaining said group in its generally rectangular formation comprising a paperboard wrapper extending around said group in a direction perpendicular to said band and comprising a top panel, side walls and base panel means joined together along fold lines, characterized in that said wrapper provides spacer elements disposed between adjacent containers in each of said rows and effective to maintain said containers in aligned relationship with each other whereby said band is maintained under tension.

4,880,116

ROBOTIC ACCESSIBLE WAFER SHIPPER ASSEMBLY

Robert D. Kos, Victoria, Minn., assignor to Fluoroware, Inc., Chaska, Minn.

Continuation-in-part of Ser. No. 163,981, Mar. 4, 1988. This application May 20, 1988, Ser. No. 196,734

The portion of the term of this patent subsequent to Apr. 4, 2006, has been disclaimed.

Int. Cl.⁴ B65D *85/48*

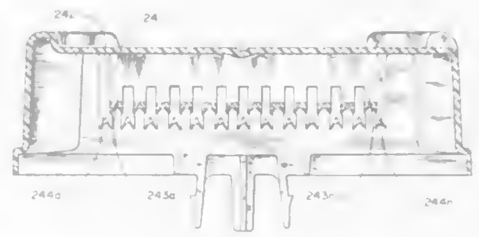
U.S. Cl. 206—454 13 Claims

1. A wafer shipper assembly comprising:

(a) a shipper base including a generally rectangular floor member having walls angled upwardly and slightly outwardly from the floor to a generally rectangular shaped rim, interior vertical corner indentations, an interior vertical bar indentation in an end wall, exterior recesses generally conforming to the corner indentations and the bar indentation extending from the floor to about the mid-height of the base, the walls generally conforming to the shape of the rim from the rim to about the mid-height of the base, thereby forming exteriorly accessible ledges at each corner of the base at about the mid-height of the base and one part of a two part latching arrangement on each of two opposite walls;

(b) a generally rectangular carrier including an exteriorly projecting bay shaped rear face and an open letter-H configured front face securing outer edges of mirror-image side faces, interiorly extending wafer supporting spacers in the side faces for supporting a plurality of wafers in upright parallel spaced apart axial alignment, vertical wings angled outwardly from outer edges of the front and rear faces extending up from about the mid-height of the carrier, registration bars on outer edges of the front face extending down from about the mid-height of the carrier; and

(c) a shipper cover including a generally rectangular top member having a plurality of wafer engaging and supporting members in cooperating alignment with the wafer supporting spacers in the carrier, four walls angled downwardly and slightly outwardly from the top member and a second part of a two part latching arrangement on each of two on opposite walls in cooperating alignment with said one part of a two part latching arrangement on the shipper base;



so that the wafer carrier is received within the shipper base with registration bars cooperating with the bar end indentation to insure one-way alignment of the wafer carrier within the shipper base, and the shipper cover is received by the shipper base containing the wafer carrier with the wafer supporting members in the cover cooperating with the wafer supporting spacers in the carrier to provide upright parallel spaced apart axial alignment of wafers, and with one part of a two part latching arrangement on the cover cooperating with a second part of a two part latching arrangement on the shipper base to provide latching engagement of the shipper cover with the shipper base containing the wafer carrier, thus providing a secure package for transportation and storage of wafers.

4,880,117

DISPLAY CARD ASSEMBLY FOR RING-LIKE ORNAMENTAL ARTICLES

Richard S. Garganese, 40 Celestia Ct., North Kingstown, R.I. 02852

Filed Aug. 22, 1988, Ser. No. 234,956

Int. Cl.⁴ B65D *73/00*

U.S. Cl. 206—487 9 Claims

1. A display card assembly for displaying a ring-like ornamental article comprising first and second substantially flat cards having first and second apertures therein, respectively, and a substantially flat retaining card, said retaining card having a pair of spaced substantially parallel slits therein which extend inwardly from an edge thereof, said slits defining the side edges of an elongated retaining member in said retaining card, said elongated retaining member being dimensioned for receiving said ornamental article thereon, said first card being secured to said second card so that said first and second aper-

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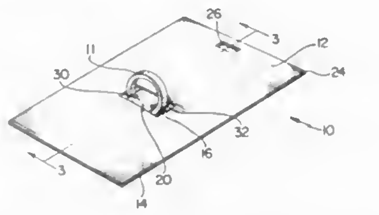
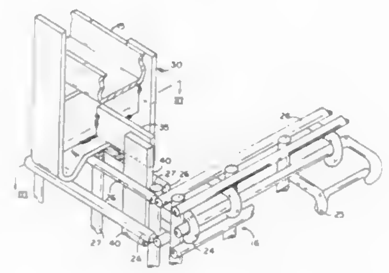
tures are in at least partially aligned relation, said retaining card being received and secured between said first and second cards so that said elongated retaining member passes across the opening defined by the aligned portions of said apertures with the opposite side edges of said elongated retaining member spaced inwardly from the perimeter of said opening, said ornamental article being received on the portion of said retaining member passing across said opening.

5. A display card assembly for displaying a ring-like ornamental article comprising a substantially flat display card having an aperture therein, and a substantially flat retaining card, said retaining card having a pair of spaced substantially parallel slits therein which extend inwardly from an edge thereof, said slits defining the side edges of an elongated retaining member in said retaining card, said elongated retaining member being dimensioned for receiving said ornamental article thereon, said retaining card being secured to said display card so that said elongated retaining member passes across said aperture with the opposite side edges of said elongated retaining member spaced inwardly from the perimeter of said aperture, said ornamental article being received on the portion of said retaining member passing across said aperture.



4,880,118
STABILIZER FOR STACKABLE AND FOLDABLE WIRE CONTAINERS

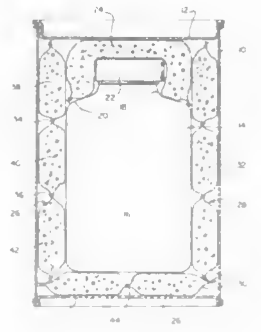
Jay C. Petter, Pentwater, Mich., assignor to Pentwater Wire Products, Inc., Pentwater, Mich.
Filed Jan. 30, 1989, Ser. No. 303,138
Int. Cl.⁴ B65D *21/02, 6/08*
U.S. Cl. 206—513 2 Claims



1. A rectangular shipping container having vertical panels fabricated of rods welded to form a mesh and a bottom panel, said container having a depending support member spaced a short distance from each of its corners, said members being rigidly secured to said container, each of said support members having an upwardly recessed lower surface forming a pocket to seat over and receive the top edge of a like container beneath it, the improvement in said container comprising: a pair of upstanding stops rigidly secured to each of a pair of opposite sides of said container, one at each end of each of said sides; each stop being located in vertical alignment with the space between the end of the panel and the support member depending therefrom of a like container seated said container whereby it will extend upwardly between the support member and the adjacent end of said like container stacked thereon to prevent movement of the container above lengthwise of the sides to which the stops are secured; a second stop rigidly secured to the support members adjacent each of the corners of the container above and extending toward the adjacent corner of the container a distance such that each will overlap the upwardly projecting first stops of the container below to prevent displacement of said container in a direction normal to the plane of the sides on which the container is supported.

4,880,119
CUSHIONED CONTAINER FOR HAZARDOUS MATERIAL

B. Kenneth Simon, 40 Woodhaven Dr., Pittsburgh, Pa. 15228
Continuation of Ser. No. 34,547, Apr. 6, 1987, abandoned. This application Jun. 24, 1988, Ser. No. 210,865
Int. Cl.⁴ B65D *81/14, 85/84*
U.S. Cl. 206—584 11 Claims



1. In combination, a metal container, a bottle for containing a hazardous material disposed within said container, said bottle having a body and a closure cap, a plurality of separate, unattached, removable and repeatably moldable and shapable cushion elements adaptable to conform with bottle surfaces and to accommodate a variety of sizes of bottles and containers, said cushion elements disposed between said bottle and said container, said cushion elements being filled with free flowing particulate solid absorbent material, said cushion elements containing sufficient absorbent material to absorb essentially all of the hazardous material in the bottle, said cushion elements arranged to fit snugly between the bottle and the metal container with said cushion elements filling essentially the entire space between the bottle and the metal container to tightly secure the bottle in a non-movable position.

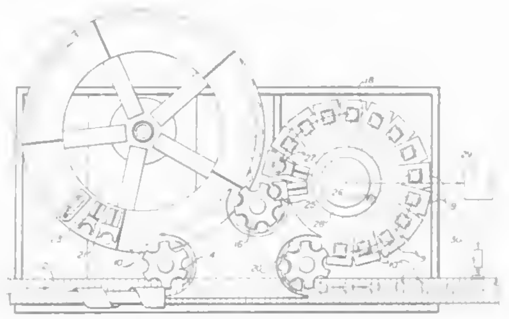
4,880,120
PLASTIC CONTAINER INSPECTION PROCESS

Michael J. Myers, Lawrenceville, Ga., and Warren J. Harwick, Milwaukee, Wis., assignors to The Coca-Cola Company, Atlanta, Ga.
Continuation-in-part of Ser. No. 92,003, Sep. 2, 1987. This application Aug. 8, 1988, Ser. No. 229,839
Int. Cl.⁴ B07C *5/02, 5/34;* **G01N** *33/00*
U.S. Cl. 209—3.1 13 Claims

1. A process for detecting volatile contaminant components of organic contaminants which are present on or absorbed into the walls of plastic containers having a beverage residue including volatile beverage components comprising:

(a) injecting a substantially inert gas into said containers to remove the volatile beverage components and volatile contaminant components,

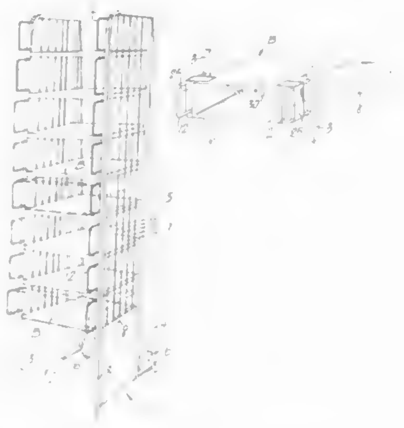
(b) drawing a vapor sample after the release of additional volatile contaminant components by the organic contaminant but before any substantial release of volatile beverage components by the beverage residue, and



(c) analyzing said sample by ionization means to detect the presence of the volatile contaminat components in said container.

4,880,121
METHOD AND APPARATUS FOR THE SORTING OF MATERIAL

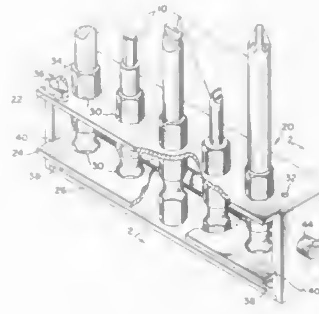
Ronald J. D'Elia, Greenwich, Conn., assignor to Delco Associates, Inc., Greenwich, Conn.
Filed Mar. 30, 1988, Ser. No. 175,166
Int. Cl.⁴ B07C *7/04*
U.S. Cl. 209—702 16 Claims



1. A mail sorting system comprising a rigid rack including two vertical support and a plurality of horizontally extending elements arranged in vertically spaced arrangement, and a plurality of bag members removably supported on said horizontally extending elements for receiving material therein, each bag member including a mouth portion, projecting elements on said rack spaced one above the other for engaging respective bag members to hold the same with their mouth portions open, said projecting elements projecting forwardly from each vertical support in vertically spaced relation such that the projecting elements on the two vertical supports are arranged in horizontal pairs for each engaging a respective bag member, so that the mouth portions of the individual bag members are stretched open and face forwardly one mouth portion above the other on said rack, said horizontally extending elements and said projecting elements maintaining said bag members substantially horizontally one above the other with their mouth portion open.

4,880,122
STORAGE AND DISPLAY APPARATUS FOR POWER BITS

J. Richard Martindell, 9605 Village Green N.E., Albuquerque, N. Mex. 87111
Filed Sep. 23, 1988, Ser. No. 248,536
Int. Cl.⁴ A47F *7/00*
U.S. Cl. 211—70.6 8 Claims



1. An apparatus for discretionarily securing and releasing tools having non-circular shanks and having a groove extending circumferentially about the shank with a flat center portion and a radiused portion on the groove comprising in combination:

- a rack means including
  - an elongated upper shelf with holes aligned in the longitudinal direction,
  - an elongated middle shelf with an identical row of holes so disposed as to be in axial alignment with the holes in the upper shelf,
  - an elongated lower shelf parallel to the upper and middle shelves, the surface of which is uninterrupted,
  - rack ends parallel to each other and perpendicular to the shelves in the longitudinal direction, with a hole in each in axial alignment, one to the other, the axis of which is perpendicular to the rack ends, and
  - a rod means having a D shape in cross section and a diameter approximately twice the radius of the tool shank groove, disposed in the rack end holes such that rotation of the rod is permitted about their co-axes,
  - the structural and functional relationship between the rack means, the rod means assembled therein and the tools is such that the holes in the upper and middle shelves are of a size to accept the tools shanks, holding the tools perpendicular to the shelves, the axial movement of the tools is restrained against further axial movement in the insertion direction by the lower shelf, and in a fixed relationship to the upper and lower shelves, the middle shelf being located to engage the non-circular shank below the groove of the tool when the tool bears against the lower shelf and the upper shelf being located above the groove, the axial location of the rod means, and the rack end holes, relative to the axis of the tool retaining holes in the upper and middle shelves and the tool arresting lower shelf is approximately coaxial with the axis of the lower tool shank radius, with the tool in the arrested position, the chord length of the flat surface of the rod means being such as to allow clearance with the outermost circumferential extremities of the non-circular tool shank when the flat surface of the rod means is rotated to a position parallel to the axis of the tool retaining holes in the upper and middle shelves of the rack means permitting removal and insertion of the tool shank and conversely prohibiting extraction or insertion of the tool shank when the rod means is rotated such that the flat surface of the rod means is at an angle to the tool axis and its circumferential surface is in a position

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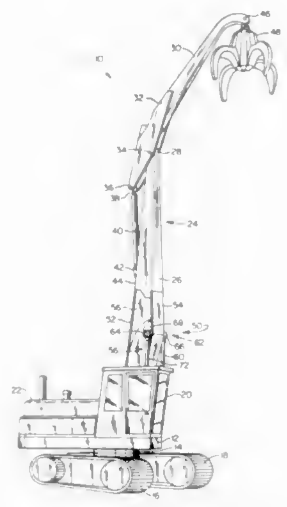
to coincide with the radius portion of the groove in the tool bit shank.

4,880,123
METHOD FOR CONVERTING A DIGGING BOOM TO A LIFTING BOOM

Harold G. Norris, Jr., 7274 Roswell Rd., Sherrodsville, Ohio 44675

Filed May 11, 1988, Ser. No. 192,857
Int. Cl.⁴ B23K *31/02*
U.S. Cl. 212—177 10 Claims



1. A method for converting an angulate form boom component into a lifting boom, said angulate form boom having an angulate transition region with oppositely disposed sides extending between top and bottom sides and having a lift bearing position at said sides located proximate the angulate transition region of said boom component, the method comprising the steps of:

cutting said boom into first and second separate parts along a parting locus extending within said angulate transition region from a first predetermined position at said bottom through said sides, passing adjacent said lift bearing position t a second predetermined position at said top;
separating said first and second parts a select, spaced-apart distance;
aligning the top side of said first part with the top side of said second part substantially t a co-planar relationship minimizing said angulate transition;
providing a top insert extending from a third predetermined position at said first part top side substantially to said second predetermined position;
providing a bottom insert extending from said first predetermined position at said first part bottom side to a fourth predetermined position at said second part bottom side;
providing side inserts having configurations conforming with the openings defined between said bottom and top inserts;
securing said top, bottom and side inserts with said first and second parts to form a lifting boom.

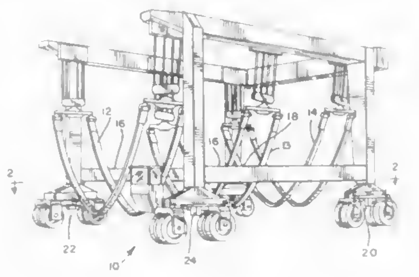
4,880,124
STRADDLE CRANE STEERING SYSTEM

Thomas Feider; Gerald P. Lamer, and Norbert W. Lenius, all of Sturgeon Bay, Wis., assignors to Marine Travelift, Inc., Sturgeon Bay, Wis.

Filed Apr. 22, 1988, Ser. No. 185,192
Int. Cl.⁴ B66C *5/02*
U.S. Cl. 212—218 4 Claims

1. In a straddle-type crane having a frame and four corners, a system for the manual resynchronization or automatic synchronous movement of a plurality of pairs of steerable wheels, said pairs of steerable wheels being pivotal relative to said frame, said system comprising:

(a) a hydraulically-actuated link and tie rod at each corner of said frame to turn all pairs of steerable wheels at each corner of said frame;
(b) a hydraulic cylinder for each of said hydraulically actuated links and tie rods, said hydraulic cylinders being connected to each other in series relationship;
(c) a steering orbitrol which directs hydraulic fluid through said series-connected hydraulic cylinders;

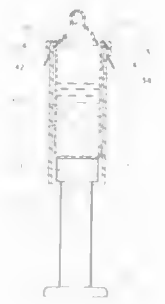


(d) a normally open solenoid valve adjacent to and permitting the flow of hydraulic fluid into each of said hydraulic cylinders;
and (e) a control for selectively closing the solenoid valves adjacent to three of four of said hydraulic cylinders, thereby preventing the flow of hydraulic fluid into said three of four hydraulic cylinders, whereby said orbitrol directs hydraulic fluid through said remaining open solenoid valve and the fourth of said hydraulic cylinders, to thereby effect turning of only the wheels controlled by said fourth hydraulic cylinder.

4,880,125
ANTI-BURP NURSING BOTTLE COMBINATION

Phil E. LeBeau, Rte. 5, Dexter, Mo. 63841

Filed Apr. 21, 1988, Ser. No. 184,429
Int. Cl.⁴ A61J *9/00*
U.S. Cl. 215—11.3 4 Claims



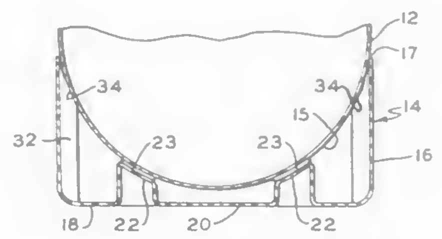
1. An anti-burp nursing bottle combination comprising an open ended bottle shell adapted to retain a disposable collapsible liquid container held in place by a ring encircling the top of said shell, said ring retaining a nipple in place on top of said shell in sealing relationship with said liquid container, said open ended bottle shell being adapted to accept a plunger in the open lower end of said bottle shell in mating relationship therewith, said plunger having a base adapted to retain said combination in an upright position, a crown adapted to fit snugly inside said open lower end of said bottle shell about two inches in diameter and from about one half inch to about one and one half inches thick comprised entirely of a foamed plastic composition, and a trunk located between and connecting said crown and said base having a diameter only slightly less

than the diameter of said crown to provide support therefor, said plunger adapted to be moved upwardly inside said open ended bottle shell against the lower portion of said liquid container to force air trapped within said collapsible disposable liquid container out through the nipple on top of said open ended disposable bottle shell to remove substantially all entrapped air inside said collapsible disposable liquid container prior to use by an infant.

4,880,126
NESTING PREVENTER FOR BOTTLE BASES

Dennis C. Anderson, 6475 Chester Ave., Northfield, Minn. 55057

Filed Mar. 15, 1988, Ser. No. 168,244
Int. Cl.⁴ B65D *23/00, 23/08*
U.S. Cl. 215—100 R 5 Claims

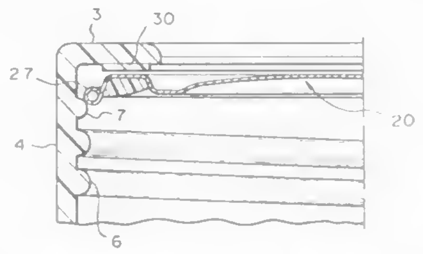


1. A bottle base for a soda pop bottle or the like comprising,
a base formed from plastic resinous material having a cylindrical side wall terminating in an upper open wide mouth defining a rim and an integral bottom wall extending horizontally across the lower aspect of the base,
mounting means within the base for the attachment of a bottom portion of the bottle to the inside of the base and
a plurality of internally projecting stacking preventers extending substantially the full height of the base, terminating at the rim, said stacking preventers projecting centrally from the side wall and being spaced apart from one another in a circle which has the same diameter as the cylindrical side wall and each of said stacking preventers including a downwardly inclined centrally directed upper free edge intersecting with said side wall at an acute angle that comes to a point proximate to the open mouth to define a ramp surface which extends downwardly from the mouth and centrally to engage the bottom of a similar base to prevent it from entering the mouth a sufficient distance to become stacked or nested within the base.

4,880,127
COMPOSITE VESSEL LID

Kouichi Doi, Hiratsuka, Japan, assignor to Japan Crown Cork Co., Ltd., Tokyo, Japan

Filed Mar. 3, 1989, Ser. No. 318,405
Claims priority, application Japan, Mar. 4, 1988, 63-49567
Int. Cl.⁴ B65D *51/16*
U.S. Cl. 215—252 5 Claims

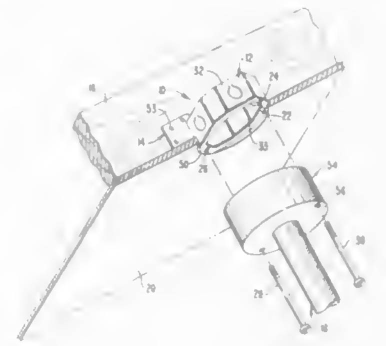


1. A composite vessel lid comprising an outer lid of a plastic material including an annular top panel wall having an opening in the central portion, a cylindrical skirt hanging down from the. peripheral edge of the top panel wall, holding projections formed on the inner circumferential surface of the skirt and a screwed portion formed in the lower portion of the outer lid and adapted to engage with a neck of a vessel, and an inner 10 lid of a thin metal sheet held on the inner side of the outer lid by said holding injections, wherein on the inner side of the top panel wall, fine projections are formed at predetermined intervals at least in a portion to be fitted with the inner lid at the time of sealing of the vessel lid.

4,880,128
FIXTURE BOX FOR CEILING FAN SUPPORT

Robert W. Jorgensen, Niles, Mich., assignor to Hubbell Incorporated, Orange, Conn.

Filed Dec. 16, 1988, Ser. No. 285,819
Int. Cl.⁴ H02G *3/08*
U.S. Cl. 220—3.9 20 Claims



1. A fixture box adapted to mount and support a fixture, the combination comprising:

a top portion;
a side portion having an inner surface and a top edge, said top edge being coupled to said top portion and said side portion extending substantially perpendicular to said top portion; and
a continuous flange coupled to said side portion along the entire periphery of said inner surface of said side portion and projecting inwardly substantially perpendicular to said side portion, said continuous flange having a pair of mounting holes extending therethrough, said pair of mounting holes being adapted to receive a mounting means coupled to the fixture, whereby the fixture is mounted to said continuous flange.

4,880,129
METHOD OF OBTAINING ACCEPTABLE CONFIGURATION OF A PLASTIC CONTAINER AFTER THERMAL FOOD STERILIZATION PROCESS

Robert J. McHenry, St. Charles; Joseph B. Brito, Wildwood; Wilson T. Piatt, Jr., Sugar Grove, all of Ill.; Robert J. Reed, Jackson, Miss.; Krishnaraju Varadarajan, Hoffman Estates, Ill.; Kenneth B. Spencer, Barrington, Ill.; Boh C. Tsai, Rolling Meadows, Ill.; Mark A. Williams, Schaumburg, Ill.; Donald C. Vosti, Crystal Lake, Ill., and James A. Wachtel, Buffalo Grove, Ill., assignors to American National Can Company, Greenwich, Conn.

Continuation of Ser. No. 627,703, Jul. 3, 1984, Pat. No. 4,667,454, which is a continuation-in-part of Ser. No. 455,865, Jan. 5, 1983, Pat. No. 4,642,968. This application Mar. 9, 1987, Ser. No. 23,419
Int. Cl.⁴ B65D *1/16*
U.S. Cl. 220—70 20 Claims

1. A high oxygen barrier thermally sterilizable plastic container for packaging food comprised of a high oxygen barrier layer and one or more structural layer(s) which consist(s)

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essentially of polyolefin(s), which container has been annealed and shrunk at about 250% F. for about 15 minutes or the equivalent, said container thereby having enhanced thermal sterilization characteristics in that, by virtue of its residual shrinkage when the container is filled with food, sealed and thermally sterilized at from about 190° F. to about 270° F. for a few minutes to about several hours, it will shrink about 2% or less during the thermal sterilization.

4,880,130

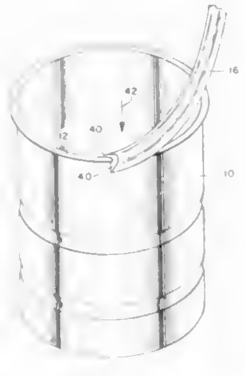
FLEXIBLE, EXTRUDED, PROTECTIVE RIM

Peter J. Blake, P.O. Box 982, Bondsville, Mass. 01009

Filed Jul. 21, 1988, Ser. No. 222,570

Int. Cl.⁴ B65D *25/00*

U.S. Cl. 220—85 K 15 Claims



1. A protective device for the rims of containers that present dangerous or jagged edges to a handler, said device comprising a flexible length of relatively soft material of uniform section,
   said length of material having a relatively smooth upper surface and outer side surfaces, and a downwardly open upwardly extending slot at its lower surface for reception of the dangerous (rim) edge of the container, said slot having outer edges,
   and interior recesses extending laterally from the slot, the outer edges of the slot being closer together than the lateral extent of the (two) recesses, and the recesses being larger than the dangerous edge.

4,880,131

RINGLESS PAINT CONTAINER

Thomas A. Gallagher, Chagrin Falls, Ohio; Paul Knowlton, Tinley Park, and Leon Patarini, Palus Hills, both of Ill., assignors to Van Dorn Company, Cleveland, Ohio

Filed Nov. 13, 1987, Ser. No. 120,471

Int. Cl.⁴ B65D *43/00*

U.S. Cl. 220—83 17 Claims

1. A cylindrical metal container in combination with a removable, resealable lid comprising;

(a) said lid having a generally circular configuration with an annular sealing groove formed adjacent its peripheral edge; said sealing groove defined by continuous longitudinally-extending inner and outer sealing walls with a bight wall therebetween thus forming an inverted, U-shaped groove;

(b) said container having a generally cylindrical, longitudinally-extending side wall, a circular bottom wall at one end of said side wall and a generally circular top opening at the other end of said side wall, said container side wall further defined by a configured rim portion adjacent said top end and a generally constant diameter cylindrical body portion extending from said bottom wall to said rim portion;

(c) said rim portion adapted to receive said lid for closing said top opening and further including (i) said top end of said side wall curled in a bead for sealing engaging said sealing walls of said lid, said outer sealing wall of said lid establishing approximately an annular line contact with said container's bead; (ii) a longitudinally-extending sealing wall segment generally parallel to said container's side wall and positioned radially inwardly therefrom adjacent to and depending from said curled bead and adapted to be in contact over a substantial portion of the length thereof with said lid's inner sealing wall to define a longitudinally-extending, frictional sealing area between said inner sealing wall of said lid and said sealing wall segment, and (iii) a frusto conical wall segment extending from said sealing segment to said container's side wall and having rigidizing means formed therein for principally resisting longitudinal deflection of said rim portion.

4,880,132

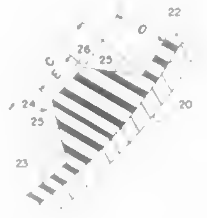
PROCESS FOR PLATING ADHERENT CO-DEPOSIT OF ALUMINUM, ZINC, AND TIN ONTO METALLIC SUBSTRATES, AND APPARATUS

Lester G. Coch, Northport, and Arnold Satow, Bayside, both of N.Y., assignors to McGean-Rohco, Inc., Cleveland, Ohio

Filed Jul. 15, 1988, Ser. No. 219,604

Int. Cl.⁴ B65D *6/10*

U.S. Cl. 220—83 5 Claims



1. A plating barrel comprising:

a cylindrical mid-section with a frustoconical upper end and a concave circular lower end co-axially aligned along a center axis, said plating barrel being rotatable about said center axis, said center axis projecting at a sufficient angle with the horizontal to provide the desired degree of cut or polish for the metal part being plated;

a plurality of parallel spaced baffles aligned along the inner surface of said cylindrical mid-section, said baffles projecting radially inwardly from said inner surface and extending axially along the length of said mid-section, the extent of said inward radial projection of said baffles being from about 1.5% to about 5% of the major inner diameter of said cylindrical mid-section, the chord length of each of the arcs aligned normal to said center axis and formed by the intersection between said baffles and said inner surface of said mid-section being from about 4% to about 15% of the major inner diameter of said mid-section.

4,880,133

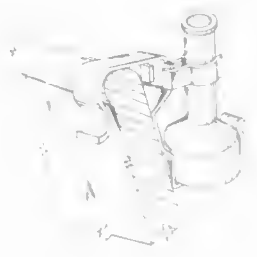
BUD VASE AND ATTACHMENT BRACKET

Dolores M. Cullinane, Box 75401, Northgate Sta., Seattle, Wash. 98125

Filed Jul. 27, 1988, Ser. No. 224,811

Int. Cl.⁴ A01G *5/00*

U.S. Cl. 220—85 H 2 Claims



1. A vase having a bulbous lower portion and a neck portion, said lower portion having a planar bottom, said vase being adapted to be held by a bracket, said bracket being attachable to structure having a top edge and a front surface oriented essentially 15° off of vertical, said bracket being attachable to said top edge and comprising:
   a clamp and
   a vase clip
   said clamp having a surface for supporting said vase by contact with said bottom and being configured so that with said bracket attached to said structure said surface for supporting is horizontal,
   said clamp further having detent means for contacting said lower portion and holding said bottom in contact with said surface for supporting,
   said vase clip being detachably attachable to said clamp and said neck portion, whereby when said bracket is attached to said top edge, said bottom is on said surface for supporting, said detent means is holding said bottom on said surface for supporting and said neck is attached to said clamp by said vase clip, said vase is attached to said structure and oriented vertically.

4,880,134

PROTECTIVE CAP ASSEMBLY

Theodore N. Wood, Jr., R.D. 1, Box 578, Harveys Lake, Pa. 18618

Continuation-in-part of Ser. No. 214,614, Jul. 1, 1988. This application Sep. 20, 1988, Ser. No. 246,637

Int. Cl.⁴ B65D *41/02*

U.S. Cl. 220—85 P 14 Claims

1. A cap assembly for protecting an outwardly extending valved fitting provided with an externally threaded cap ring at the discharge end of a fluid container, the assembly comprising:

(a) an adaptor ring provided with internal threading for threaded engagement with the external threading of the cap ring;

(b) a cap for enclosing and protecting the valved fitting;

(c) latch means carried by the cap for permitting longitudinal detachable engagement of the cap and adaptor ring when the adaptor ring is in threaded engagement with the cap ring; and

(d) the latch means being movable outwardly of the cap to permit the cap to receive the adaptor ring therein, and thereafter movable inwardly towards the cap to secure the cap to the adaptor ring.

4,880,135

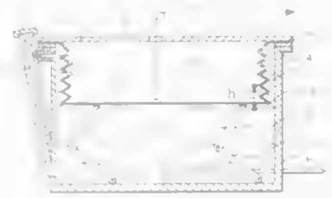
EVAPORATIVE EMISSION CONTROL OF LIQUID STORAGE TANKS USING BELLOW SEALING SYSTEMS

In-Meei Neou, 3444 Murdoch Ct., Palo Alto, Calif. 94306

Filed Jul. 15, 1987, Ser. No. 73,457

Int. Cl.⁴ B65D *25/00*

U.S. Cl. 220—85 VS 6 Claims



2. A liquid storage tank with evaporative emission control including a bellow having an open and a closed end;
   means for securing the open end of the bellow to the top of said tank with the closed end adapted to float on the surface liquid in said storage tank;
   said bellow dividing the interior said tank into an externally vented air space and a closed liquid and vapor space including a space reserve for thermal expansion of the liquid and vapors; and
   articulated baffle plates flexibly attached between the bellow and said tank in the liquid vapor space for damping fluid vibrations and sloshing.

4,880,136

CONTAINER CLOSURE

Nickolaus Englert, 51 Betula Avenue, Vermont, Victoria, 3133, Australia

Filed Nov. 29, 1988, Ser. No. 277,286

Claims priority, application Australia, Nov. 30, 1987, P15657

Int. Cl.⁴ B65D *51/18*

U.S. Cl. 220—253 1 Claim

1. A closure for a can, said closure comprising a substantially flat disc adapted to fit on said can and having an opening therethrough, said disc being rotatable about its central axis to align said opening with an opening in said can such that further rotation causes said disc to cover said can opening; said disc

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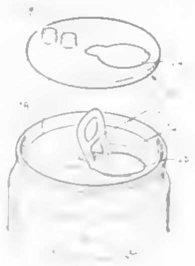
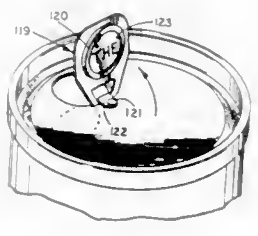
having a depending peripheral rib to assist in locating and retaining said disc in position relative to said can, and two lugs projecting axially upwardly therefrom with the location and spacing of said lugs enabling an outer end of a lift tab of said can to be located and held therebetween.



4,880,137
RECLOSABLE SELF-OPENING CAN END

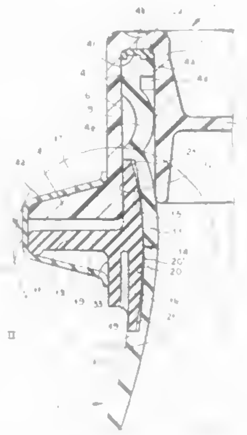
Robert A. Wells, 107 N. Lakeside Dr., Kennesaw, Ga. 30144
Division of Ser. No. 207,141, Jun. 15, 1988. This application Apr. 14, 1989, Ser. No. 339,086
Int. Cl.⁴ B65D *41/32*
U.S. Cl. 220—269 3 Claims



1. Selectably reclosable easy-opening apparatus for a container, cmprising:
- a container wall;
- a selectably openable panel defined in said wall at least in part by a selectably separable region of predetermined weakness formed in the container wall;
- a unitary opening and reclosure member pivotably attached to said wall and having a hinge connection permitting selectable movement of said member on a first path substantially normal to the container wall;
- said pivotable attachment allowing the unitary opening member to undergo movement on a second path substantially parallel to said container wall;
- said opening member having a finger portion overlying at least a portion of said operable panel in position to apply force downwardly against said openable panel in response to movement of the opening member about said hinge connection along said first path, thereby separating said separable region and displacing said panel downwardly relative to said wall, so that an opening is formed on said wall by separation and downward displacement of said panel;
- said unitary opening member having a reclosure portion confronting the container wall at a location displaced from said openable panel while said finger portion overlies at least a portion of said openable panel;
- said reclosure portion having a deep recess region formed on the underside thereof;
- said deep recess region defining a premium message region disposed to conceal the premium message from view before said separable region is separated, the premium message region becoming exposed to view as said opening member is moved on said path to open said container wall; and
- said reclosure portion and said recessed region of said reclosure portion being located on said opening member in relation to said pivotal attachment so as to be selectably registrable with said opening by pivoting said opening member on said second path after said opening is formed;
- so that said container may be first opened by hinging the opening member on said first path, and thereby also exposing said premium message contained within said recessed portion of said underside of said reclosure portion, and thereafter may be reclosed by pivoting said opening member on said second path and urging said reclosure portion into removable engagement with the container wall adjacent said opening therein.

4,880,138
COVER ASSEMBLY FOR A DRUM COMPOSED OF SYNTHETIC RESIN

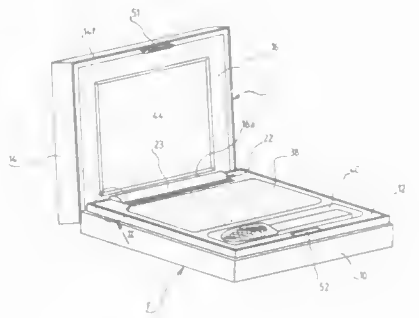
Pierre Pfeiffer, Drulingen; Benoit Cheval, Saverne, and Paul Sigwalt, Drulingen, all of France, assignors to Sotralentz S. A., Drulingen, France
Filed Nov. 4, 1988, Ser. No. 267,414
Claims priority, application Fed. Rep. of Germany, Nov. 7, 1987, 3737884
Int. Cl.⁴ B65D *45/32, 1/48*
U.S. Cl. 220—320 13 Claims



1. A drum, comprising:
- a drum body of thermoplastic synthetic resin material formed at an end of said body integrally with a neck set inwardly of said body and defining a mouth of said barrel, and a transition section between said neck and said body;
- a generally T-section connecting ring secured to said transition section below said mouth, said connecting ring having a pair of flanges forming a crossbar of the T of said T-section abutting said neck and a web projecting outwardly from said crossbar;
- a cover formed with an annular trough defined between inner and outer walls flanking said neck and tightly fitted over said neck and into said mouth, said cover being integrally provided with a cover bottom spanning said end of said body and recessed therein below said mouth, said outer wall being formed at a free end thereof with an outwardly extending shoulder generally parallel to and juxtaposed with said web, said outer wall in a region of said shoulder overlying one of said flanges extending toward said mouth; and
- a tensionable clamping ring of substantially U-section engaging over said web and said shoulder and clamping same upon tensioning of said clamping ring, said U-section being defined by a pair of flanks of said clamping ring, one of said flanks engaging said shoulder in said region and bearing inwardly upon said free end where said free end overlies said one of said flanges upon tensioning of said clamping ring, the other flank of said pair of flanks bearing inwardly upon the other of said flanges upon tensioning of said clamping ring.

4,880,139
CASING WITH INVISIBLE HINGE

Bernard Jumel, and Charles Pileur, both of Neuilly-sur-Seine, France, assignors to Yves Saint Laurent Parfumes, France
Filed Feb. 3, 1988, Ser. No. 151,990
Claims priority, application France, Feb. 4, 1987, 87 01352
Int. Cl.⁴ B65D *43/14*
U.S. Cl. 220—337 12 Claims

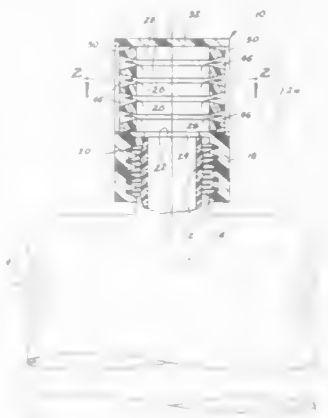


1. Casing, in particular for cosmetics, comprising
- two half-casings linked by a hinge enabling said half-casings to pivot about an axis with respect to each other,
- said hinge including two pivots carried by one of said half-casings and two receptacles on the other half-casing and in which both pivots can swivel,
- the half-casing which includes the two receptacles being constituted by two elements, one outer and one inner element, which can be fitted,
- wherein both receptacles are located in one of the side walls of the inner element and open outwardly to permit the free introduction of the pivots respectively into the two receptacles when the two half-casings are fitted together,
- the outer element when fitted on the inner element completely closing both receptacles at one of its corresponding side walls which maintains the pivots in their respective receptacles, whereby the hinge is rendered invisible from the outside, and
- wherein said inner element includes means for totally covering said hinge from outside, even when said one half-casing is opened, whereby said hinge is rendered invisible from the outside, even when said one half-casing is opened.

4,880,140
FILTER-SEPARATOR POUR-OUT CAP

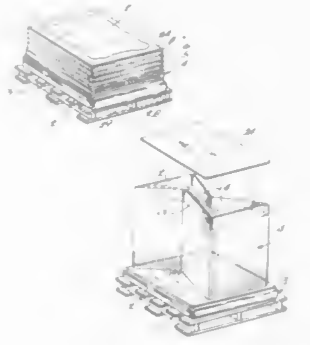
David E. Solomon, 3415 Woodlea, Ann Arbor, Mich. 48103, and William J. Hillegas, 3630 Middleton, Ann Arbor, Mich. 48105
Filed Apr. 26, 1988, Ser. No. 186,507
Int. Cl.⁴ B65D *37/00*
U.S. Cl. 220—371 14 Claims

1. A filter-separator pour-out cap for a container comprising an attachment section for attaching the cap to a container, a filter-separator section, and means for supporting said filter-separator section on a container via said attachment section, said filter-separator section having an upstream face at which flow from the container enters the filter-separator section and a downstream face at which flow exits the filter-separator section, said filter-separator section comprising successive elements that are spaced axially apart from each other and are constructed and arranged to present at the upstream face of the filter-separator section juxtaposed uniformly spaced apart sharp edges that define the entrances of openings that pass through the filter-separator section from the upstream face to the downstream face, the spacing distance between immediately consecutive elements being such that substantially identical spacing distances are provided between juxtaposed edges of immediately consecutive elements at the upstream face and the spacing distance between immediately consecutive elements along said openings from just beyond said juxtaposed edges to the downstream face exceeds the spacing distance that exists between the juxtaposed edges of immediately consecutive elements at the upstream face.



4,880,141
PALLETS SUPPORTED REINFORCED CONTAINER

Hans K. Gossler, 9535 Walnut Dr., and Chester K. Gnynn, 7406 N. Hawthorne La., both of Munster, Ind. 46321
Filed Mar. 10, 1989, Ser. No. 321,679
Int. Cl.⁴ B65D *19/20*
U.S. Cl. 220—464 12 Claims



1. A container assembly comprising, a rigid pallet base, a first floor board fastened to and covering floor of said pallet and end flaps foldable to a vertical position, a second floor board positioned normal to and fastened to and covering said first floor board with end flaps foldable to a vertical position to form continuous side walls with said first end flaps around said floor of said pallet, a tubular member having a rectangular cross-section positioned around said vertically oriented end flaps forming double thickness walls, four interlocked reinforced panels positioned inside the said end flaps forming reinforced side walls, a fluid tight bag received inside said side panels to form a fluid tight chamber in said container, a flat cover received in the top of said container, foldable flaps on

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the top of said tubular member foldable to hold the top in place.

4,880,142

POWDER WEIGHING MIXER AND METHOD THEREOF

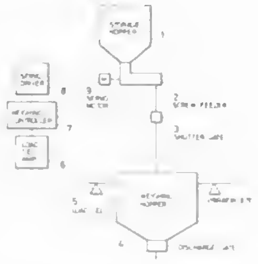
Noboru Higuchi; Keizo Matsui; Chuzo Kobayashi, and Hiroshi Ohnishi, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed May 4, 1988, Ser. No. 188,343

Claims priority, application Japan, May 12, 1987, 62-113429; May 14, 1987, 62-115892; May 14, 1987, 62-115893

Int. Cl.⁴ B67D *5/08*

U.S. Cl. 222—56 6 Claims



3. A powder weighing method, comprising the steps of:

setting a target weight of a powder to be measured;

regulating a flow rate of said powder supplied from a supply container to a receiving container through a flow regulator;

measuring a weight of said powder supplied to said receiving container;

determining a deviation between said measured weight and said target weight;

determining a time variation of said deviation;

performing a fuzzy inference upon said deviation and said time variation to produce a desired flow rate in a next control cycle, wherein membership functions of said deviation and said time variation used in said fuzzy inference are divided into groups having smaller intervals for smaller values of said deviation and said time variations; and

in said next control cycle, again regulating said flow rate in response to said desired flow rate and repeating said measuring step said two determining steps and said performing step.

4,880,143

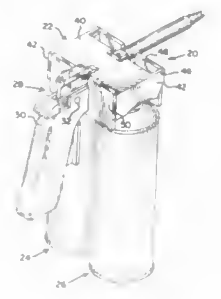
DISPENSER AND COMPONENTS FOR HIGH VISCOSITY FOAM PRODUCTS

Pat L. Murray, Minooka; Robert Braun, New Lenox, and Dawn McNamara, Lockport, all of Ill., assignors to Insta-Foam Products, Joliet, Ill.

Filed Oct. 20, 1988, Ser. No. 260,289

Int. Cl.⁴ B67D *5/52*

U.S. Cl. 222—135 7 Claims



7. A mixing and dispensing gun for aerosol containers comprising, in combination, a container positioning unit, a trigger mechanism and a mixing and dispensing assembly, said container positioning unit comprising, including a center frame portion and opposed carrier plates each having slots formed therein defined by support margins for engagement of a portion of an associated container in a groove between a domed container end portion of and a container valve support assembly, said container positioning unit further including a handle extending outwardly and downwardly from said frame, a trigger mounted for pivotal movement with respect to said handle and including a lower portion adapted to be engaged by the fingers of the user and an upper portion arranged for downward movement when the lower the portion is pulled to the rear, a combination container cover unit and trigger plate mounted for pivotal movement with respect to said positioning unit, said trigger plate having a downwardly directed surface adapted to engage and depress a mixing and dispensing unit positioned therebeneath, said mixing and dispensing assembly including a rigid mixer unit having a main body portion and a pair of removable component inlet elbows, said main body portion including opposed inlet passages and an enlarged diameter outlet passage, a portion of said outlet passage being threaded for reception of an associated discharge nozzle, said main body portion further including positioning and latching plates extending outwardly of said main body and above said inlet passages, each of said elbows including a tubular vertical and a tubular horizontal passage sections and an alignment and latching element having a flat top surface adapted to engage said latching plate, whereby said elbows may be positioned, aligned, inserted and locked within said body.

4,880,144

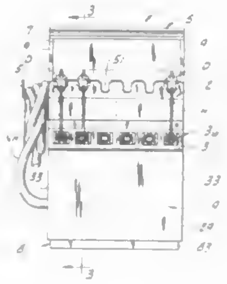
CONSOLE FOR HOLDING AND HOUSING CLEANING AND LUBRICATION EQUIPMENT

Robert F. Shea, Florissant, Mo., assignor to McNeil (Ohio) Corporation, St. Paul, Minn.

Filed Oct. 5, 1988, Ser. No. 253,568

Int. Cl.⁴ B67D *5/64, 5/06*

U.S. Cl. 222—173 12 Claims



1. A console unit for holding and housing a plurality of lubricant dispensers, lubricator holes attached to the dispensers, and one or more vacuum units on rollers, comprising:

a podium-like structure having a front wall, two side walls, a top wall and an open bottom;

a lubricator hose housing attached to the front wall of the podium-like structure, having a front wall- spaced forward from the front wall of the podium-like structure, a top wall with aperture means therein, and side walls;

means for releasably holding said dispensers on the front wall of the podium-like structure above the top wall of the hose housing with the lubricator hoses extending down from the dispensers through said aperture means in the top wall of said hose housing; and

a lower compartment in the podium-like structure housing said one or more vacuum units, said lower compartment being partially defined by the front and side walls of the podium-like structure and the open bottom of the podium-like structure whereby said vacuum unit can be rolled in and out of the compartment along a surface on which the podium-like structure rests.

4,880,145

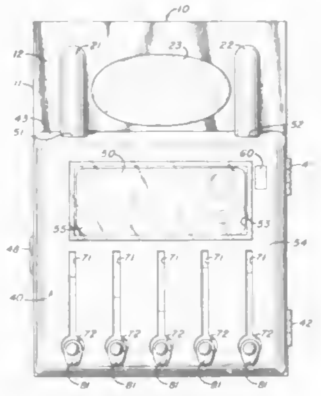
SHOWER ACCESSORY

Richard P. McManus, 1200 Kapuahi St., Makwao, Hi. 96768

Filed Jan. 4, 1988, Ser. No. 140,712

Int. Cl.⁴ B67D *5/06*

U.S. Cl. 222—192 3 Claims



1. A dispensing assembly conformed for use in a shower, comprising:

a substantially rectangular backplate conformed for releasable attachment to the walls of said shower and defined by an upper surface portion;

a rectangular cover defined by a forward wall and a peripheral edge extending thereabout pivotally engaged to said back plate to align over said surface portion thereof;

a radio assembly;

an enclosure formed in said forward wall of said cover conformed for receiving said radio assembly therein;

a water impervious membrane adhesively secured to said cover in alignment over said enclosure and said radio assembly to form an outer covering therefor for shielding said radio assembly from water;

a battery housing secured to said backplate in alignment within said cover upon the pivotal articulation of said cover against said back plate, said battery housing including electrical connecting means to said enclosure;

a plurality of engagement means secured to said cover opposed alignment towards said backplate; and

a corresponding plurality of liquid dispensers each respectively engageable to a corresponding one of said engagement means and each provided with a dispensing spout communicating to the exterior of said cover.

4,880,146

DROP DISPENSER WHICH AUTOMATICALLY STIRS THE CONTENTS OF THE DISPENSER WHEN THE CAP IS REMOVED

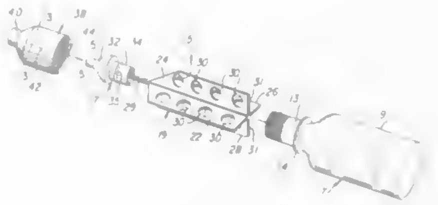
J. S. Hudgins, 321 Harbor Pointe Dr., #14, Mt. Pleasant, S.C. 29464

Filed Jun. 8, 1988, Ser. No. 203,939

Int. Cl.⁴ B67D *5/06*

U.S. Cl. 222—192 14 Claims

1. A drop dispenser comprising (i) a container having an externally threaded portion at its open end; (ii) a nozzle/impeller assembly comprised of a drop nozzle rotatably connected to an impeller mixing means, said impeller mixing means being positioned inside said container and at least a portion of said drop nozzle extending beyond the open end of said container; (iii) an opening through the drop nozzle providing communication between the inside and outside of said container; and (iv) a cap having internal threads for threaded engagement with the external threads of said container, means within the cap receiving and engaging the end of said drop nozzle so that when said cap is unscrewed, the nozzle/impeller assembly is rotated and means for rotatably mounting the nozzle/impeller assembly in the container which prevents the axial removal of the assembly from the container when the cap is unscrewed.



4,880,147

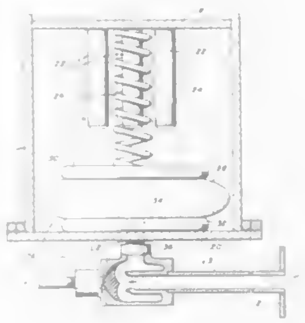
AIR BLAST GENERATOR

Peter J. Tolan, 30 Greenfield Lane, Scituate, Mass. 02066

Filed Mar. 7, 1984, Ser. No. 587,204

Int. Cl.⁴ B65G *53/38*

U.S. Cl. 222—195 10 Claims



1. An air burst generator, comprising means for confining pressurized gas in a container, means for releasing said pressurized gas to a predetermined location, and means for rapidly mechanically reducing the volume of the container when substantially simultaneously with the actuation of said means for releasing the gas, whereby the gas is forced out of the container at a velocity much greater than the velocity with which the gas would leave the container without such volume reduction.

4,880,148

FLUIDIZATION KIT FOR PNEUMATIC DISCHARGE OUTLET

Kenneth D. Schmidt, St. Charles, Mo., assignor to ACF Industries, Incorporated, Earth City, Mo.

Filed Feb. 26, 1988, Ser. No. 161,185

Int. Cl.⁴ B65G *69/06;* **B67D** *5/58*

U.S. Cl. 222—195 6 Claims

1. In a hopper discharge outlet adapted to be attached to the bottom of a hopper car or the like, said outlet including an outlet pan having downwardly and inwardly converging side walls, a control valve in operative association with the lower portion of said side walls, said control valve being in communication with said outlet for the selective discharge of a lading carried in said hopper car, the improvement comprising: a fluidized outlet kit for retro-fit installation on said outlet pan, said outlet pan having an outlet tube at the bottom thereof with said control valve therein, said kit having two air permeable fluidizing membranes attached to said side walls of said outlet pan on opposite sides thereof, a space between each of said

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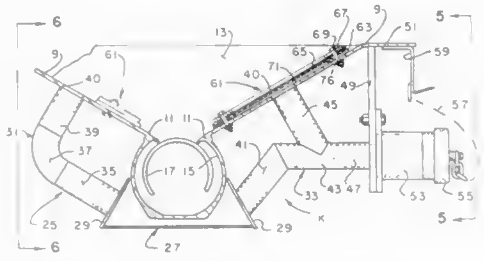
membranes and its respective side wall, said side walls each having an opening therein in communication with said space, a manifold assembly comprising a saddle-shaped central manifold section extending around and beneath said outlet tube, said outlet tube forming a wall of the manifold and said manifold having manifold arm sections extending upwardly from said central manifold section on opposite sides thereof for connection to said side walls so as to supply air under pressure to said space, said saddle-shaped central manifold being in close proximity to said outlet tube thereby to be within AAR clearances.



4,880,149

LIQUID METERING DEVICE

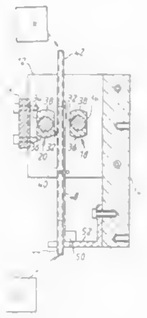
John Scholefield, Kirkintilloch, and Robert Johnston, Stewarton, both of Scotland, assignors to Automated Bacteria Counting Limited, Glasgow, Scotland

Filed Oct. 1, 1987, Ser. No. 115,062

Claims priority, application United Kingdom, Feb. 4, 1986, 8602683

Int. Cl.⁴ B65D *37/00*

U.S. Cl. 222—207 **8 Claims**



1. A liquid metering device comprising:
a resilient conduit,
means for introducing a liquid into said conduit,
means for constricting said conduit, including a first rotatable member having a curved surface and having a flat portion formed on said curved surface, and
a second member, co-operable with said first rotatable member, and disposed relative to said first member and said conduit, such that said conduit may be constricted therebetween, whereby rotation of said first rotatable member causes said conduit to be alternately constricted when said curved surface of said first rotatable member impinges upon said conduit, and released when said flat portion is presented to said conduit, and
means for varying the positions of said conduit relative to said first rotatable member and said second member.

4,880,150

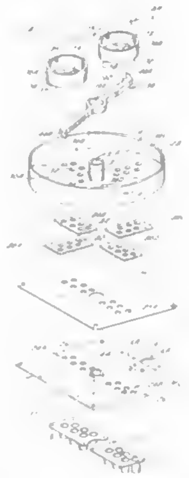
FILLING MACHINE FOR DISPENSING PARTICULATE MATERIAL

James P. Navin, Racine; Ronald A. Shilhavy, Sturtevant, and Gary M. Christensen, Kenosha, all of Wis., assignors to Spee-Dee Packaging Machinery Inc., Sturtevant, Wis.

Filed May 27, 1988, Ser. No. 199,854

Int. Cl.⁴ G01F *11/10*

U.S. Cl. 222—346 **25 Claims**



1. A filling machine for repeatedly dispensing predetermined amounts of flowable particulate material comprising:
a stationary hopper having a spout;
a rotatable upper plate beneath said spout and rotatable about a vertical axis, said upper plate having a receiving hole therethrough which is radially offset from said axis and alignable with said spout;
a stationary bottom plate beneath said upper plate and having a dispensing hole therethrough which is radially offset from said axis and out of registery with said spout and alignable with said receiving hole;
said receiving hole being movable as said upper plate rotates between one position where said receiving hole is aligned with said about but not with said dispensing hole and another position wherein said receiving hole is aligned with said dispensing hole but not with said spout;
said flowable particulate material flowing under the force of gravity from said spout into said receiving hole when said receiving hole is in said one position and said flowable particulate material flowing under the force of gravity from said receiving hole into and through said dispensing hole when said receiving hole is in said another position;
means above said upper plate for directing excess material accumulated on said upper plate into said receiving hole after said receiving hole moves from said another position above said dispensing hole toward said spout but before said receiving hole reaches said one position;
and first means for inhibiting leakage of said material from a space between said spout and said upper plate.

4,880,151

PRESSURIZED SPRAY PAINT CONTAINER

Willard W. Shepherd, 3500 Shepherd St., Los Angeles, Calif. 90022

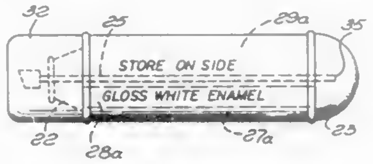
Filed Oct. 31, 1988, Ser. No. 264,830

Int. Cl.⁴ B65D *6/34*

U.S. Cl. 222—394 **1 Claim**

1. A unitary, non-rechargeable, hand held, self-contained pressurized spray paint container having a generally cylindrical configuration about a container axis with a top and a bottom, a spray control nozzle mounted directly on said container at said top of said container and a transport tube positioned

within said container and having inlet and outlet ends, with said outlet end connected to said control nozzle, and with said container charged with a mixture of paint solvent, paint solids, and propellant, which paint solids settle in said paint solvent toward the lowestmost portion of said container under the influence of gravity, with said container having an outwardly bulged bottom so that the container can be operated with one hand for spraying and can be positioned on its side between spraying events and cannot be rested in an upright position on said bottom.



4,880,152

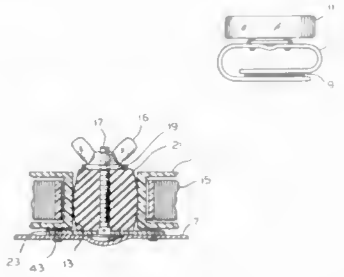
PORTABLE TAPE DISPENSER UNIT

Richard Trankle, 2905 Druid Dr., Plano, Tex. 75075

Filed Jan. 11, 1988, Ser. No. 142,512

Int. Cl.⁴ B65H *75/40*

U.S. Cl. 224—162 **6 Claims**



1. A device for retaining a dispenser of material and attaching it to its user, said dispenser having a cavity and cavity walls therein, comprising:
support means attachable to the user for supporting said dispenser;
a resilient core attached to said support means and extending into said dispenser cavity, said core comprising a cylinder which is deformable toward said cavity walls;
means for deforming said core so that it frictionally engages said dispenser and fixedly joins said dispenser to said support means, said deforming means comprising a threaded bolt running through said core and a threaded nut thereon, whereby tightening of said nut against said core on said threaded bolt causes said core to distend radially from said bolt.

4,880,153

DEVICE FOR USE IN EXPLOSIVE WELDING OF TWO OVERLAPPING TUBULAR OR ANNULAR ELEMENTS

Rune Adolfsson, Boras, Sweden, assignor to SKF Nova AB, Goteborg, Sweden

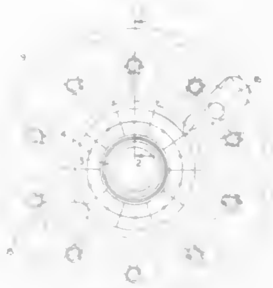
Filed Apr. 22, 1988, Ser. No. 192,328

Claims priority, application Sweden, Apr. 29, 1987, 8701792

Int. Cl.⁴ B23K *27/00*

U.S. Cl. 228—2.5 **5 Claims**

1. A backup device for use in explosive welding of two telescoped cylindrical members by means of an explosive charge located inside one of said members adjacent overlapping portions of said cylindrical members said device comprising:
(a) a relatively stationary housing surrounding said cylindrical members;
(b) block-like support members radially displaceable within said housing;
(c) elements radially displaceable within said housing, resting upon and displaceable with said support members, and engaging said housing which defines radial friction surfaces; and



(d) means for selectively varying frictional forces between said friction surfaces;
whereby, upon explosion said support members and elements are displaced radially outwardly against friction forces provided by interengaging of said frictional surfaces of said housing and elements, whereby the sole means of absorbing said explosion is the frictional forces.

4,880,154

BRAZING

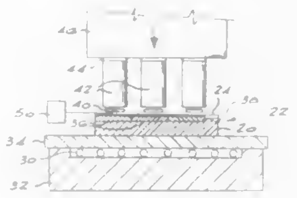
Klaus Tank, 9 Warbleton Avenue, Essexwold, Bedfordview, Transvaal, South Africa

Filed Apr. 1, 1987, Ser. No. 34,218

Claims priority, application South Africa, Apr. 3, 1986, 86/2471

Int. Cl.⁴ B23K *31/04*

U.S. Cl. 228—122 **4 Claims**



1. A method of manufacturing a generally flat cutter wing for a drag bit which has two or more cutter wings disposed generally radially at the leading end of the bit, the wing having a stepped configuration and comprising a plurality of generally flat cutters secured by brazing to a generally flat steel body, each cutter being composed of a PCD layer on a carbide substrate, wherein the brazing takes place either directly between mating surfaces of the carbide substrates and the steel body or between mating surfaces of the carbide substrates, intermediate carbide elements and the steel body, and wherein the method comprises the following steps:
(a) locating the cutters in recesses in the steel body with brazing shims interposed between the mating surfaces which are to be brazed to one another to form a generally flat cutter wing structure;
(b) applying external force to the cutters in a direction transverse to the flat structure to urge the cutters towards the steel body;

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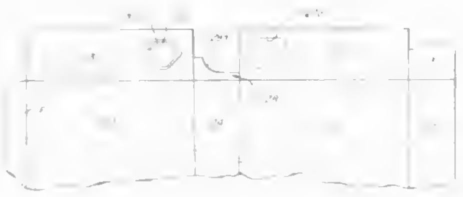
(c) heating the steel body to a uniform temperature across the extent of its mating surface at which brazing is to take place, such heating taking place inductively and by means of an induction coil located adjacent a surface of the steel body which is remote from the mating surface at which brazing is to take place;

(d) continuously monitoring the local temperature of the PCD layer during heating;

(e) controlling the energization of the induction coil so that said local temperature does not exceed the temperature at which the PCD layer suffers temperature degradation; and

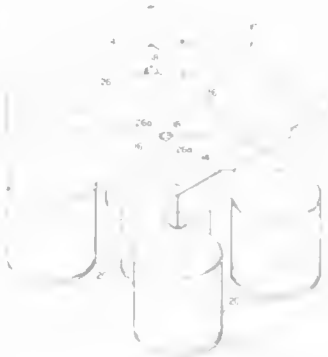
(f) after the brazing shims have melted against the mating surfaces which are to be brazed, de-energizing the induction coil and permitting the flat cutter wing structure to cool slowly to ambient temperature.

4,880,155
COLLAPSIBLE FOLDABLE DISPENSING CARTON
James L. Stone, Grand Rapids, Mich., assignor to Packaging Corporation of America, Evanston, Ill.
Filed Oct. 18, 1988, Ser. No. 259,166
Int. Cl.⁴ B65D *39/04*
U.S. Cl. 229—125.09 4 Claims



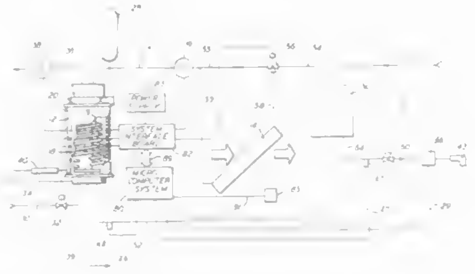
1. A collapsible, folded, dispensing carton comprising a pair of opposed first wall panels; a pair of opposed second wall panels, said pairs being foldably interconnected; a pair of top closure first flaps foldably connected to upper edges of the first wall panels; a pair of top closure second flaps foldably connected to upper edges of the second wall panels, said first and second flaps being in overlapping relation when said carton is in a set up mode whereby one first flap is an outermost flap, the outermost flap being provided with a dispensing opening and one of the other flaps being provided with means whereby the dispensing opening is in communication with the interior of the carton when the latter is in a set up mode; and a fitment of thin material mounted on an exposed surface of the outermost flap and in registry with the dispensing opening, said fitment including a base section affixed to the exposed surface circumjacent the dispensing opening, and a cover section adjustable relative to the base section between open and close positions; said carton, when in a collapsed mode, having a first wall panel and an unfolded first flap connected thereto and a second wall panel and an unfolded second flap connected thereto being in substantially coplanar relation and defining a first plane, and the remaining first and second wall panels and the first and second flaps connected thereto being in substantially coplanar relation and defining a second plane, said planes being disposed in proximate, face to face, substantially parallel relation, the outermost flap being in said first plane and the dispensing opening thereof being opposite a second flap in the second plane, the latter second flap being provided with a cut-out in substantial registry with the said dispensing opening for accommodating a portion of the fitment when the cover section is in the close position and the carton is in the collapsed mode whereby the thickness of the collapsed carton is substantially uniform throughout.

4,880,156
OIL COLLECTION AND DISPOSAL DEVICE
Steven A. Wallet, 14 Finch Run, Avon, Conn. 06001
Filed Jul. 1, 1988, Ser. No. 214,183
Int. Cl.⁴ F16N *31/00*
U.S. Cl. 232—43.1 10 Claims



1. A device for collecting and disposing of used automotive motor oil and the like; said device comprising on oil collection pan having a horizontal and substantially generally flat bottom wall bounded by a marginal generally upright integral side wall defining a broad upwardly exposed opening for freely accepting the downward discharge of used motor oil from the drain opening of an automotive engine or the like, said pan bottom wall having at least three similar discharge openings in horizontally spaced relationship so as to accommodate three plastic motor oil bottles therebeneath in upright attitude and in similarly spaced relationship so as to communicate with and receive oil respectively from said discharge openings through their top openings, the horizontal spacing of said discharge openings and bottles being such that the bottles are capable of serving as legs for the pan and supporting the same horizontally in stable relationship with and beneath the drain plug opening, and a means for detachably securing the bottles in position beneath the pan with their top openings respectively in communication with said pan bottom openings as aforesaid.

4,880,157
CAPACITY CONTROL FOR INTEGRATED FURNACE
Jay L. Boot, Manlius; Chester D. Ripka, East Syracuse, and Ian M. Shapiro, Fayetteville, all of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.
Continuation of Ser. No. 17,302, Feb. 20, 1987, abandoned. This application Jul. 11, 1988, Ser. No. 218,411
Int. Cl.⁴ F22B *35/00*
U.S. Cl. 236—25 R 2 Claims

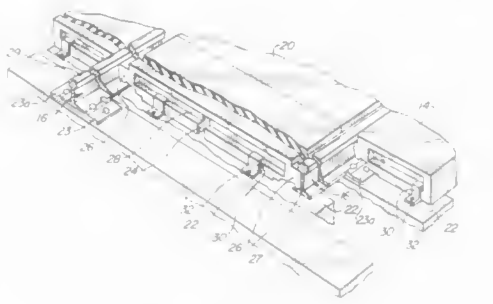


1. A capacity control system for an integrated heating system for space and domestic hot water heating having a burner, a coil for receiving heat from the burner, and a primary fluid loop connected to the coil, the primary fluid loop having a heat exchanger for transferring heat to a space and a tankless tube-

in-tube heat exchanger receiving heat from the primary loop for transferring heat to a secondary fluid loop of a domestic hot water system, the control system comprising:

a burner flame control means for controlling the pulsing of the repeated ignition and combustion termination of the burner wherein the burner includes an infrared burner which allows maximum radiant heat transfer capacity to the coil to be reached quickly, said burner flame control means including a flow switch for detecting absolute fluid flow of the domestic hot water in the secondary fluid loop of the domestic hot water system and providing a first "on" signal to a microprocessor means indicative of the presence of hot water flow in the secondary fluid loop of the domestic hot water system, and a temperature sensor means for detecting the temperature of the fluid at an outlet of the coil receiving heat from the burner and providing a second signal to the microprocessor means indicative of the temperature of the fluid in the primary fluid loop whereby said microprocessor provides an output signal to control the pulsing of said repeated ignition and combustion termination of the burner so that the fluid in the loop, wherein the fluid in the primary loop flows in series through the primary loop coil, the heat exchanger, and the tube-in-tube heat exchanger, is maintained at a desired temperatures.

4,880,158
SURFACE GRADE CROSSING STRUCTURE
Louis V. Cook, c/o Anderson Cook Enterprises, P.O. Box 656, Mundelein, Ill. 60060
Filed Nov. 27, 1987, Ser. No. 125,706
Int. Cl.⁴ E01B *2/00*
U.S. Cl. 238—8 14 Claims

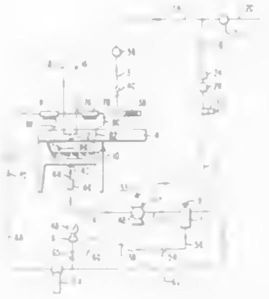


1. A surface grade crossing structure for use with a railway track consisting of a pair of spaced, parallel rails, each rail having a base, a web portion, and a rail head, said rails being secured on a plurality of spaced, elongated ties situated perpendicular to said rails and each having an upwardly facing substantially planar surface, said surface grade structure comprising:

a unitary pad of solid elastomeric material with an upper substantially planar surface and a lower substantially planar surface adapted to facially engage the upwardly facing surface of the ties

with the pad upper surface substantially coplanar with the heads of said rails, said pad further having opposite parallel edges which, with the pad operatively positioned between the spaced rails, are spaced apart a distance greater than the spacing between the rail heads, and a single notch means in the pad for permitting folding of two portions of the pad relative to each other sufficiently without said two portions bending to reduce the effective spacing between the opposite parallel pad edges so that with the one parallel edge adjacent the web portion on one rail the other parallel edge can be lowered beneath the head on the other rail without interference between the other parallel edge and other rail head whereupon the pad can be relaxed to bear the lower pad surface facially against the upwardly facing tie surfaces.

4,880,159
GLUE HEAD FLUSHING SYSTEM
James B. Coffey, Dayton, Ohio, assignor to NCR Corporation, Dayton, Ohio
Filed Oct. 7, 1987, Ser. No. 105,420
Int. Cl.⁴ B05B *17/04, 15/02*
U.S. Cl. 239—1 11 Claims



10. A method of flushing material from adhesive applying heads in a flushing system comprising the steps of:

providing a reservoir;

connecting a supply of solvent to the reservoir in a pressurized condition;

providing a solvent manifold having a quick-disconnect coupling means with internal valves and connecting said solvent manifold to the supply of solvent,

providing an air manifold with a supply of air connected thereto;

connecting the adhesive applying heads to the quick-disconnect coupling means of the solvent manifold for circulating solvent through the heads and for flushing adhesive material from the heads while maintaining said pressurized condition of said flushing system with said internal valves,

pumping solvent by means of controlling the pumping automatically with said supply of air in a path from the reservoir through piping and circulating the solvent through said solvent manifold and through the adhesive applying heads back to the reservoir; and

connecting the applying heads to the air manifold for cleaning the heads of any material or solvent remaining therein after flushing adhesive material from the heads with solvent through the solvent manifold.

4,880,160
TORSIONAL LINK BOOM SUSPENSION FOR REDUCING UNWANTED BOOM MOTION
Jon M. Patterson, Horicon, Wis., and Douglas P. Brown, Bettendorf, Iowa, assignors to Deere & Company, Moline, Ill.
Filed May 24, 1988, Ser. No. 197,941
Int. Cl.⁴ B05B *1/20*
U.S. Cl. 239—167 9 Claims

1. A boom support for a framed vehicle adapted for forward movement over the ground, comprising:

a support frame connected to the vehicle frame;

a boom frame; and

means for supporting the boom frame from the support frame including an upright torsional link having an axis and means connecting one end of the torsional link to the support frame for securing said one end against rotation about the link axis, and means connecting the opposite end of the link to the boom frame, the link yieldingly biasing

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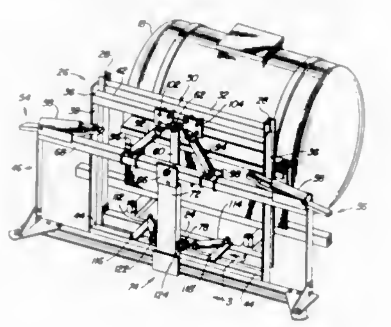
the boom frame to a normal operating position while accommodating rocking movement of the boom frame from the operating position about the link axis for isolating vehicle yaw from the boom frame.



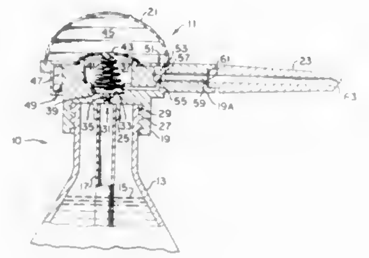
4,880,161
FOAM DISPENSING DEVICE

H. Earl Wright, Decatur, Ill., assignor to Earl Wright Company, Decatur, Ill.

Continuation-in-part of Ser. No. 695,185, Jan. 28, 1985, abandoned. This application Nov. 25, 1986, Ser. No. 934,639

Int. Cl.⁴ B05B *7/04;* **B65D** *37/00*

U.S. Cl. 239—330 1 Claim



1. A foam dispensing device for mixing a foamable liquid with ambient air and dispensing a foam, the device comprising:

(a) a liquid reservoir adapted to contain a quantity of foamable liquid which continuously remains at atmospheric pressure during foam dispension;

(b) a compressible air supplying means adapted to supply air at superatmospheric pressure when compressed and to replenish its air supply when released;

(c) a mixing chamber in which the foamable liquid from the liquid reservoir and the air from the air supplying means can mix to form a foam;

(d) a compressible liquid pumping chamber adjacent to but separated from the air supplying means by a flexible diaphragm which depresses to pressurize the liquid pumping chamber when the air supplying means is compressed and which returns to its original position by the natural resiliency of the diaphragm and without the action of a coiled spring to vacuumize the liquid pumping chamber when the air supplying means is released;

(e) a valved passage between the liquid reservoir and the liquid pumping chamber which closes when the air supplying means is compressed and opens when the air supplying means is released to permit the flow of the foamable liquid from the liquid reservoir at atmospheric pressure to the liquid pumping chamber under vacuum;

(f) a valve passage between the ambient air and the air supplying means which closes when the air supplying means is compressed and opens when the air supplying means is released to permit the flow of ambient air to the air supplying means;

(g) a valved passage from the liquid pumping chamber to the mixing chamber which closes when the air supplying means is released and opens when the air supplying means is compressed to permit the flow of the foamable liquid from the liquid pumping chamber to the mixing chamber;

(h) a restricted passage from the air supplying means to the mixing chamber, the restriction being such that it permits the flow of sufficient air to form a foam with the foamable liquid in the mixing chamber, but which also permits sufficient pressurization of the air supplying means upon compression to depress the flexible diaphragm and thereby pressurize the liquid pumping chamber; and

(i) a means for dispensing the foam from the mixing chamber.

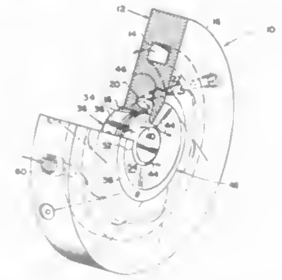
4,880,162
GAS ATOMIZATION NOZZLE FOR METAL POWDER PRODUCTION

Roger A. Howells, Orefield; George H. Stoner, Coopersburg, both of Pa., and Joseph Stockunas, Huntington Beach, Calif., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Jun. 15, 1988, Ser. No. 207,096

Int. Cl.⁴ B05B *7/10*

U.S. Cl. 239—406 5 Claims



1. A nozzle assembly for use in producing particulate metals by a gas atomization process comprising in combination:

a gas nozzle housing having a generally cylindrical shape with an outer wall and an inner wall, said housing including means to direct an atomization from an inlet to a generally circumferential recess disposed in the inner wall of said cylindrical housing;

said means to direct said atomization gas including an annular passage disposed between said inlet and said recess and a plurality of generally tangential flow passages for conducting atomizing gas from said annular passage to said recess, each of said tangential flow passages including means to control the volumetric flow of said gas from said annular passage to said recess; and

a flow direction insert removably disposed within said inner wall of said housing, to in combination with a generally annular shaped flow direction plate removably disposed within said housing and juxtaposed to said flow direction insert and in combination therewith to define means for directing atomization gas to a point of convergence along the center line of said cylindrical housing;

whereby the total volumetric flow of gas through said nozzle can be varied without disassembling the annular flow plate and the flow direction insert.

4,880,163
GAS FEEDING NOZZLE FOR A CHEMICAL VAPOR DEPOSITION APPARATUS

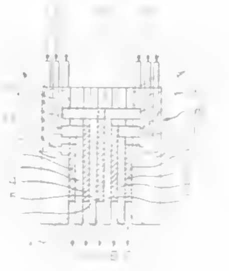
Shigeyoshi Kobayashi, Kawasaki; Susumu Yaba, and Tomoya Takigawa, both of Yokohama, all of Japan, assignors to Asahi Glass Company, Ltd., Tokyo, Japan

Filed Jan. 27, 1988, Ser. No. 149,084

Claims priority, application Japan, Jan. 27, 1987, 62-15062; Feb. 3, 1987, 62-21683; Feb. 10, 1987, 62-27370; Feb. 10, 1987, 62-27371

Int. Cl.⁴ B05B *1/14*

U.S. Cl. 239—422 24 Claims



11. A normal pressure chemical vapor deposition apparatus having a gas feeding nozzle which is constituted by a plurality of plate-like bodies, said plate-like bodies being composed of:

at least one partition plate having at least one gas supplying opening and a groove on one side thereof and elongated in the width direction of the partition plate, and

at least one spacer adjacent to said partition plate; said spacer having a plurality of cut portions in the gas-discharging direction, said partition plate and said spacer being stacked alternately to form at least one slit-like gas discharging aperture, wherein in each said slit-like gas discharging aperture, gas is to flow from said gas supplying opening and through said elongated groove in the partition plate, and next through a plurality of cut portions in the spacer adjacent to said partition plate.

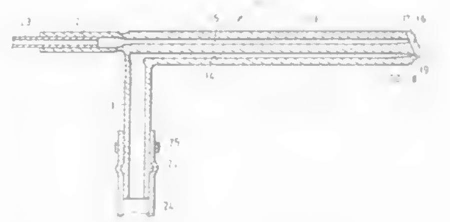
4,880,164
ONE-PIECE HIGH-SOLIDS NEBULIZER

Michael N. A. Noordermeer, 22 Sirrah Street, Geebung, Queensland, 4034, Australia

Filed Jun. 10, 1988, Ser. No. 204,733

Int. Cl.⁴ B05B *7/08*

U.S. Cl. 239—423 4 Claims



1. A glass spectroscopic nebulizer including:

a tubular glass body having a longitudinal axis and formed with a groove across one end,

a gas passage and a parallel liquid passage formed in the body, both parallel to the longitudinal axis of said body and terminating in outlet orifices opening into the groove, said orifices when formed being constricted in diameter, said passages gradually increasing in diameter away from said orifices to assume full diameter, said liquid orifice being above said gas orifice

a gas inlet to the gas passage for connection to a source of gas under pressure, and

a liquid inlet to the liquid passage for connection to a source of liquid under pressure to be nebulized, and wherein

said groove extends obliquely to form an acute angle with the longitudinal axis of said body and with said passages, the depth and angle of the groove being such as to retain the constricted orifice of gas passage while removing the constriction from the other passage, whereby fluid expelled from the non-constricted liquid passage is entrained and nebulized by gas expelled from the constricted orifice.

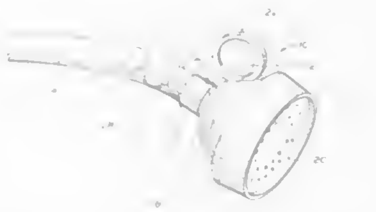
4,880,165
HAND-HELD SPRAY DEVICE

Kevin Fuquay, 11381 Asbury Park, Detroit, Mich. 48227

Filed Mar. 14, 1988, Ser. No. 167,588

Int. Cl.⁴ B05B *9/00*

U.S. Cl. 239—525 1 Claim



1. In combination with a hand-held spray device for use by an operator in an environment such as a beauty salon for directing the flow of effluent water under presure, the device including a hose having an inlet through which the water flows into the device, a housing connected to the hose and an outlet associated with the housing through which the water is dispersed, the improvement which comprises:

a loop located proximate the housing and defining an opening through which a finger of the operator's hand is inserted so that the positioning and orientation of the device can be controlled by digital pressure exerted on the device through the loop; and

a connection which secures the loop to the device whereby the operator controls positioning and orientation of the outlet by inserting the finger through the loop and grasping the device by the hand to control the direction of effluent water flow from the outlet even when the device is wet and slippery and is subjected to surge forces associated with varying water pressure,

wherein the connection is adjustable whereby the loop can be inclined over a relatively small range of angular displacement relative to the hose to facilitate secure engagement of the loop by either a left-handed or a right-handed operator.

4,880,166
VALVE PISTOL FOR A HIGH PRESSURE CLEANING DEVICE

Wolfgang Suttner, Dunlopstrasse 21, 4800 Bielefeld 11, Fed. Rep. of Germany

Filed Jan. 29, 1988, Ser. No. 150,210

Claims priority, application Fed. Rep. of Germany, Jan. 29, 1987, 3702586; Jun. 19, 1987, 3720241

Int. Cl.⁴ B05B *7/02, 1/30, 1/14*

U.S. Cl. 239—526 20 Claims

1. Valve pistol for a high pressure cleaning device with a pistol casing, a valve with a stopper element placed in said pistol casing, a pipe with an obtuse angle bend placed in the pistol casing and having a section used for fluid supply to said valve and a section used for fluid discharge from said valve,

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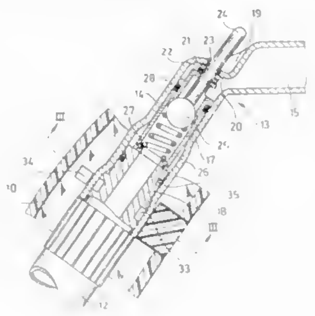
sand a hand lever pivotally supported in said pistol casing and acting on the stopper element of said valve; wherein said pipe, including said pipe sections, is formed of a one piece, continuous angular tube; wherein said valve is disposed within the fluid supply section of said tube; and wherein said fluid supply section within which the valve is disposed is provided with an opening through which an actuation element for the stopper element of the valve passes; wherein said pipe has an area of decreased cross section bordering said valve; wherein the opening through which said actuation element passes is located in said area of decreased cross section and facing said valve; and wherein a part of said actuation element is located in a free space created by the area of decreased cross section.



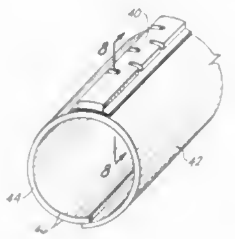
4,880,167
IRRIGATION HOSE WITH LINEAR TURBULENT FLOW EMITTER

John M. Langa, Alpine; Michael J. Boswell, Lakeside, and Kermit R. Littleton, Julian, all of Calif., assignors to James Hardie Irrigation, Inc., Laguna Niguel, Calif.

Continuation-in-part of Ser. No. 100,296, Sep. 23, 1987, abandoned. This application Sep. 13, 1988, Ser. No. 242,706

Int. Cl.⁴ B05B *15/00*

U.S. Cl. 239—542 10 Claims



1. An irrigation hose, comprising:
(a) a substrate forming a hose body;
(b) an extruded linear strip bonded to said substrate longitudinally thereof;
(c) said strip having spaced turbulent-flow channel sections formed in said strip;
(d) each of said channel sections including a plurality of walls extending partially through said channel section alternately from opposite sides of the channel section;
(e) said walls being hollow; and
(f) said strip and substrate having water inlet and outlet openings formed therein at respectively opposite ends of said channel sections.

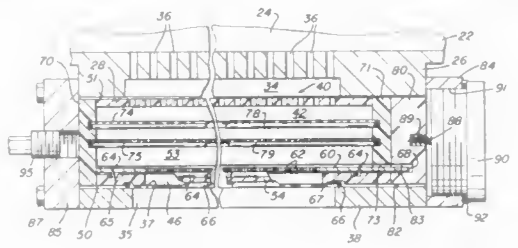
4,880,168
APPARATUS FOR JETTING HIGH VELOCITY LIQUID STREAMS ONTO FIBROUS MATERIALS

Kenneth R. Randall, Jr., Gorham, and Laurent R. Parent, Windham, both of Me., assignors to Honeycomb Systems, Inc., Biddeford, Me.

Filed Jul. 13, 1987, Ser. No. 73,968

Int. Cl.⁴ B05B *1/14*

U.S. Cl. 239—553.5 14 Claims



1. An apparatus for delivering high velocity liquid jets into a fibrous web for jet entanglement purposes comprising:
a manifold having a body defining an elongated internal manifold chamber and an elongated internal cartridge chamber, and flow distribution means providing flow communication between said manifold chamber and an upper portion of said cartridge chamber,
said manifold body having a bottom wall portion having an elongated slot therein providing communication between a lower portion of said cartridge chamber and the exterior of said manifold body,
an elongated cartridge adapted to be received in said cartridge chamber of said manifold body in a position to be supported by said bottom wall portion thereof and to overlie said slot therein,
said cartridge having a body defining an elongated internal chamber and a bottom wall portion adjacent said bottom wall portion of said manifold body and having an elongated slot therein aligned with said slot in said bottom wall portion of said manifold body,
said cartridge having a top wall portion spaced apart above said bottom wall portion thereof and having a plurality of flow ports therein arranged to receive flow from said flow distribution means and deliver said flow into said cartridge chamber,
said cartridge internal chamber being enclosed within said cartridge and located between said top wall and bottom wall portions of said cartridge,
a nozzle strip adapted to be positioned adjacent said bottom wall of said cartridge and having a plurality of orifices therein aligned with said cartridge slot, and
screen means positioned within said cartridge chamber to extend thereacross at at least one location spaced apart between said top wall portion and said bottom wall portion of said cartridge,
said manifold body, said cartridge, said nozzle strip and said screen means being constructed and arranged so that high pressure liquid delivered to said manifold chamber flows through said flow distribution means to the upper portion of said cartridge from which the liquid flows sequentially through said flow ports in said top wall portion of said cartridge into said cartridge chamber, through said screen means, and through said nozzle strip orifices, the liquid being discharged from said nozzle strip orifices in a plurality of high velocity jets passing through said cartridge slot and said manifold body slot,
said cartridge having an end cap having a clearance slot, and said nozzle strip being of a length such that an end portion thereof extends outwardly from said end cap thorough said clearance slot so that it is accessible for removal of the nozzle strip from said cartridge without the disassembly of said cartridge.

4,880,169
PROCESS AND DEVICE FOR MICRONIZING SOLID MATTER IN JET MILLS

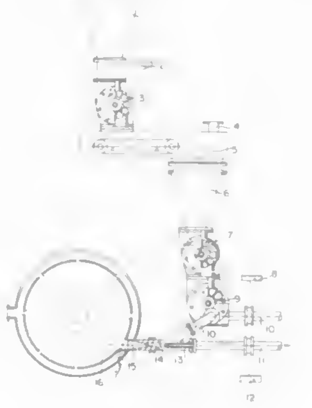
Hans-Günter Zander; Horst Bornefeld, and Bernd-Michael Holle, all of Krefeld, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jan. 15, 1988, Ser. No. 144,350

Claims priority, application Fed. Rep. of Germany, Jan. 30, 1987, 3702787

Int. Cl.⁴ B02C *19/06*

U.S. Cl. 241—5 10 Claims



1. A process for micronizing solid matters in a jet mill comprising introducing the solid matters into a jet mill across an injector and forcibly supplying the solid matters by a pneumatic delivery device to the injector, wherein the forcible introduction of the solid matters is monitored across a pressure measurement at an installation in the jet mill, wherein the pressure measurement occurs in measuring cycles and wherein a blocking of the installation is avoided by a pressure impulse between the measuring cycles.

4,880,170
PROCESS FOR PRODUCING FINE COPPER POWDER WITH ENHANCED SINTERABILITY

Preston B. Kemp, Jr., Troy, N.Y., and Walter A. Johnson, Houghton, Mich., assignors to GTE Products Corporation, Stamford, Conn.

Filed Jan. 3, 1989, Ser. No. 292,791

Int. Cl.⁴ B02C *19/06*

U.S. Cl. 241—5 2 Claims

1. A process for producing copper powder with enhanced sinterability, said process comprising fluid energy milling dendritic copper powder particles having a mean particle size of no greater than about 25 micrometers in diameter to produce a deagglomerated cold-worked powder wherein the particles are essentially equiaxed in shape and are of a mean particle size of no greater than about 7 micrometers in diameter.

4,880,171
APPARATUS FOR THE PRODUCTION OF PULP SUSPENSIONS

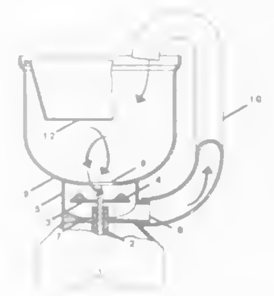
Roderick D. Garrett, P.O. Box 2996, San Rafael, Calif. 94912

Filed Aug. 19, 1988, Ser. No. 233,768

Int. Cl.⁴ B02C *23/36*

U.S. Cl. 241—46.11 4 Claims

1. A pulping and mixing apparatus comprising:
an open vessel having side walls and a bottom wall, with an aperture therein, said aperture of a configuration which controls the transfer of centrifugal hydraulic force,
a chamber adjacent to said aperture having a wall and a floor, said floor being sloped as a volute so as to take advantage of the said centrifugal force, conserved in said chamber, by trajecting it to an outlet port placed in the chamber wall so as to receive the directed hydraulic force,
a tube communicating from said outlet port to said vessel,
a shaft member generally vertically disposed into said chamber through said floor so as to avoid mechanisms in said vessel,
a rotor plate attached to the top of said shaft member having a periphery spaced slightly from the said chamber wall, said rotor plate having a plurality of vanes there on, said chamber containing said rotor plate and vanes,
a means for rotating said shaft member.



4,880,172
ROLLER MILL

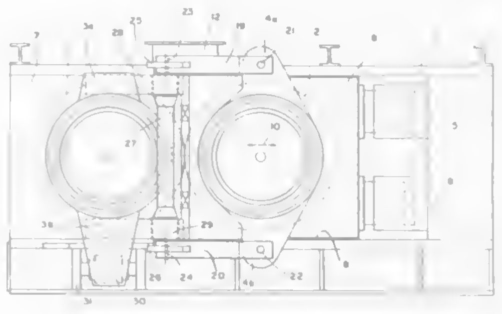
Otto Heinemann, Ennigerloh; Heinz-Dieter Baldus, Ahlen, and Norbert Schröder, Oelde, all of Fed. Rep. of Germany, assignors to Krupp Polysius AG, Fed. Rep. of Germany

Filed Feb. 12, 1988, Ser. No. 155,577

Claims priority, application Fed. Rep. of Germany, Mar. 5, 1987, 3707015

Int. Cl.⁴ B02C *4/02, 4/32*

U.S. Cl. 241—101.2 4 Claims



1. In a roller mill having a frame, a fixed roller mounted on said frame, a floating roller mounted on said frame for movements toward and away from said fixed roller, means for urging said floating roller into engagement with said fixed roller under high contact pressure, drive gearing contained in casings and coupled to the respective rollers for driving said rollers in opposite directions, and means for absorbing torque occuring between said gearing and said frame, the improvement wherein said torque absorbing means comprises first support means directly connecting said casings to one another for taking up contrarotating principal torque, and second support means connecting one of said casings to said frame for taking up differential torque, said first support means having a flexible member for accommodating relative movement between said rollers.

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4,880,173

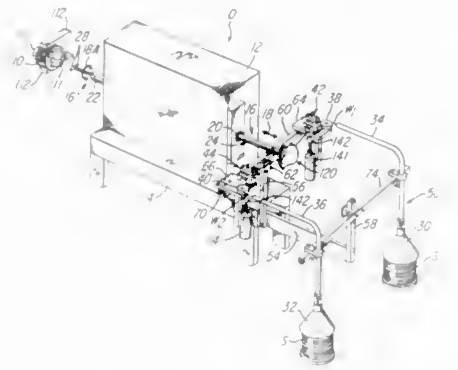
WIRE SUPPLY METHOD AND APPARATUS

Richard N. Lachey, New Carlisle, Ohio, assignor to Globe Products Inc., Dayton, Ohio

Continuation-in-part of Ser. No. 60,040, Jun. 9, 1987, abandoned. This application Apr. 6, 1989, Ser. No. 334,813

Int. Cl.⁴ B65H *59/22;* **H01F** *41/04*

U.S. Cl. 242—1.1 R 36 Claims



1. In a method of winding a stator using a stator winding machine of the type having means at its forward end for supporting an unwound stator core, a winding shuttle having a wire inlet at its rearward end and a wire outlet at its forward end, means for reciprocating said shuttle in forward and reverse directions along a predetermined axis and oscillating said shuttle about said predetermined axis to draw a wire from a source of wire under tension into said wire inlet and out of said wire outlet to wind a coil around surfaces of a stator core surrounding said predetermined axis, the improved method comprising the steps of providing a member having a smooth wire-engaging surface that moves relative to the portion of the wire about to enter said inlet as said shuttle reciprocates so that when said shuttle approaches the end of each of its forward strokes said surface frictionally engages said wire portion to restrain forward movement of said wire relative to said shuttle at the end of each forward stroke of said shuttle and so that said surface is not engaged with said wire during other parts of the reciprocatory movements of said shuttle.

4,880,174

PACKAGE SUPPORT APPARATUS FOR AUTOMATIC WINDER

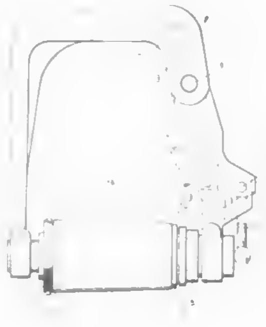
Shuzo Kawamura, Joyo, and Yukio Hirai, Ohtsu, both of Japan, assignors to Murata Kikai Kabushiki Kaisha, Kyoto, Japan

Filed Jul. 8, 1988, Ser. No. 216,846

Claims priority, application Japan, Jul. 10, 1987, 62-172352

Int. Cl.⁴ B65H *49/26, 54/42, 54/553*

U.S. Cl. 242—18 DD 18 Claims



1. In a textile machine for winding yarn about a take-up tube of a package, the textile machine having a brake device for braking the rotation of said take-up tube, a package support device comprising:

a cradle base;

an opening/closing arm supporting the brake device and rockably connected to the cradle base; and

a lock mechanism provided between the opening/closing arm and the cradle base for regulating the rocking movement of the opening/closing arm.

4,880,175

TENSION SETTING AND CONTROLLING METHOD AND APPARATUS IN AN AUTOMATIC WINDER

Tosio Yamauchi, Kyoto; Shoichi Tone, Kyoto, and Yutaka Ueda, Nara, all of Japan, assignors to Murata Kikai Kabushiki Kaisha, Kyoto, Japan

Filed Apr. 11, 1988, Ser. No. 180,370

Claims priority, application Japan, Apr. 14, 1987, 62-091124; Jun. 10, 1987, 62-144339; Jun. 13, 1987, 62-147397; Jul. 10, 1987, 62-173467

Int. Cl.⁴ B65H *54/20, 59/00, 59/10, 59/38*

U.S. Cl. 242—35.5 R 20 Claims

1. A tension control method in an automatic winder having a winding unit for performing a winding operation, the method comprising the steps of:

generating a constant length pulse signal with a constant length pulse generator associated with the automatic winder,

determining the amount of yarn wound on a yarn package on the basis of the constant length pulse signal generated by the constant length pulse generator, and

applying a designated tension corresponding to the determined amount of yarn to a travelling yarn through a variable tenser associated with the winding unit.

4,880,176

YARN END FINDING DEVICE

Isamu Matsui, Kyoto; Hiroshi Uchida, Oumihachiman; Hirao Otojima, Shiga, and Yoshihiro Kino, Nagaokakyo, all of Japan, assignors to Murata Kikai Kabushiki Kaisha, Kyoto, Japan

PCT No. PCT/JP85/00574, § 371 Date Jun. 5, 1987, § 102(e) Date Jun. 5, 1987, PCT Pub. No. WO87/02342, PCT Pub. Date Apr. 23, 1987

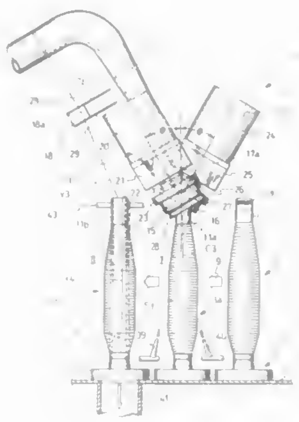
PCT Filed Oct. 15, 1985, Ser. No. 66,419

Int. Cl.⁴ B65H *54/22, 67/08*

U.S. Cl. 242—35.6 E 23 Claims

11. A yarn end releasing device, operable with a drive device, for releasing a yarn end from a layer of yarn wound about the axis of a spinning bobbin, said yarn end releasing device comprising:

at least one rotatable roller rotatable roller rotatably drivable about a roller axis by the drive device, said at least one rotatable roller having an outer peripheral surface abutting said layer of yarn;



wherein said roller axis is provided at an angle with respect to the axis of the spinning bobbin and also with respect to the directions perpendicular to the axis of the spinning bobbin.

4,880,177

YARN WITHDRAWAL APPARATUS

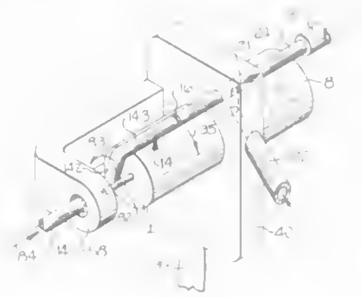
Erich Lenk, Remscheid, and Albert Stitz, Kürten, both of Fed. Rep. of Germany, assignors to Barmag, AG, Remscheid, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 218,089, Jul. 12, 1988, which is a continuation-in-part of Ser. No. 38,334, Apr. 14, 1987, Pat. No. 4,817,880, which is a continuation-in-part of Ser. No. 8,490, Jan. 29, 1987, Pat. No. 4,784,344. This application Nov. 2, 1988, Ser. No. 266,472

Claims priority, application Fed. Rep. of Germany, Nov. 7, 1987, 3737960; Jun. 9, 1988, 3819677

Int. Cl.⁴ B65H *51/20*

U.S. Cl. 242—47.01 16 Claims



1. In a yarn processing apparatus having means for continuously processing and advancing a yarn along a predetermined path of travel, the combination therewith of an auxiliary yarn withdrawal means for continuously withdrawing the advancing yarn from said predetermined path of travel to facilitate yarn threadup and the like, said yarn withdrawal means comprising

a support structure,

yarn advancing means mounted to said support structure and comprising at least one rotatable roll,

drive means mounted to said support structure for rotating said one roll at a predetermined rotational speed,

a yarn delivery tube including a yarn outlet opening,

a yarn suction tube including a yarn inlet opening, said inlet opening being disposed to open along a direction which is parallel to the axial direction of said one roll,

suction means for drawing air into said suction tube through said inlet opening, and

means mounting said yarn delivery tube and said yarn suction tube to said support structure so as to permit relative rotation of said yarn outlet opening and said yarn inlet opening in the circumferential direction about said one roll and between (a) a yarn catching position wherein said yarn outlet opening and said yarn inlet opening are disposed immediately adjacent to each other and aligned along a direction substantially parallel to the axial direction of said one roll, and (b) a drawing-off position, and whereby such relative rotation causes a yarn passing from said yarn delivery tube to said yarn suction tube to be at least partially looped about said one roll.

4,880,178

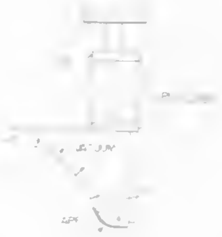
ROLL UNWIND BUTT SPLICER

Stephen L. Goulette, Newark, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Aug. 4, 1988, Ser. No. 228,146

Int. Cl.⁴ B65H *19/14, 19/18;* **B31F** *05/00*

U.S. Cl. 242—58.1 7 Claims



1. An apparatus for the joining together of the tail end of an expiring first web being dispensed from a wound roll which is supported on a first reel with the lead end of a new second web of a wound roll which is supported on a second reel; comprising: means for rotatably supporting said first reel and said second reel; means for attaching an adhesive tape to the lead end of said second web and maintaining said lead end and adherent tape in a standby position; said apparatus including vertical support columns, said means for attaching said adhesive tape to said second tape including a splicing bar having a vacuum selectively applied thereto for retaining said tape in surface contact therewith, said splicing bar being mounted to be vertically displaceable along said columns; a preparation table being pivotably mounted relative to said columns and receiving the lead end of said second web, said splicing bar adhesively contacting said tape with said second web; means for sensing the impending expiration of said first web being unwound from said first reel; means for causing the tape on said second web to adhesively contact said first web proximate the tail end thereof in response to a signal from said means sensing the impending expiration of said first web and to form a connection between said first and second webs; and means for severing the selvage end of said first web immediately upstream of the region of contact of said first web with said adhesive tape so as to produce an abutting joint between said webs; said means for attaching said adhesive tape to the lead end of said second tape preparing the lead end of a further web for subsequent joining to the tail end of said second web upon impending expiration of said second web so as to provide a continual feed of abuttingly joined webs.

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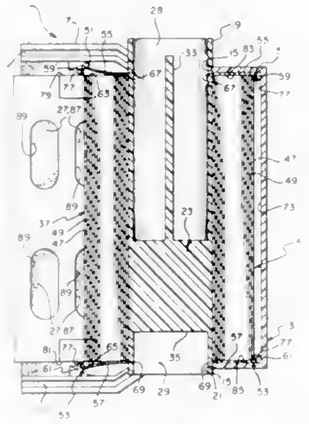
4,880,179
FILM CASSETTE

David E. Beach, Stow, Vt., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 12, 1989, Ser. No. 296,475

Int. Cl.⁴ G03B *17/26*

U.S. Cl. 242—71.1 4 Claims



1. An improved film cassette wherein (a) a filmstrip is coiled about a rotatable film spool and includes a leader portion which extends along a film passage slit opening to the outside of the cassette shell, and (b) a pile-like material consisting of short close flexible fibers is secured to said cassette shell along said film passage slit to prevent ambient light substantially from entering the slit, and wherein the improvement comprises:

said leader portion having at least one hole adapted to receive a sufficient number of said fibers to allow the fibers to releasably engage the leader portion to prevent its casual creep rearward in said film passage slit to the inside of said cassette shell.

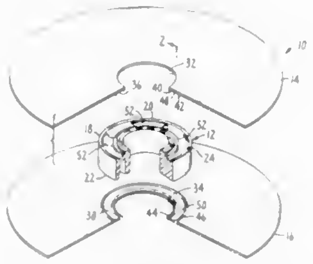
4,880,180
TAPE REEL

Henry Adair, Mission Viejo, Calif., assignor to Memorex Corporation, Irvine, Calif.

Filed Jul. 25, 1988, Ser. No. 223,945

Int. Cl.⁴ B65H *75/18*

U.S. Cl. 242—71.8 11 Claims



1. A reel for magnetic recording tape comprising:

a hub of cylindrical configuration having an outside circumference and parallel end surfaces, an outer circumferential portion of each end surface defining attachment areas;

a pair of parallel spaced apart, disk shaped flanges each having an opening therethrough, an inner circumferential portion of said flange thereof defining a contact surface complementary to the attachment area of said hub, said contact surfaces each having a pair of radially spaced circumferential ridges defining an annular region therebetween, said ridges being in contact with said attachment areas, said ridges being thin relative to the thickness of said flanges defining energy directors allowing ultrasonic welding of said flanges to said hub, the entire circumference of each ridge being welded to said attachment area to encapsulate said annular regions; and

adhesive means within said annular regions to permanently attach said flanges to said hub, said adhesive means being contained within said annular regions to prevent said adhesive means from migrating radially outwardly toward said flanges and tape that may be wound onto said hub between said flanges.

4,880,181
REEL-HUB FOR A TAPE

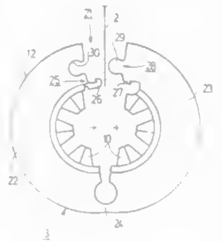
Walter Drahanowsky, Vienna, Australia, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 2, 1988, Ser. No. 202,158

Claims priority, application Austria, Jun. 3, 1987, 1409/87

Int. Cl.⁴ B65H *75/28*

U.S. Cl. 242—74 18 Claims



1. In a reel hub for a tape having an annular hub with an outer circumferential surface for winding a tape thereon and an inner portion defining an opening and having an arrangement of driving elements, said annular hub defining a hub axis transverse to the plane of the hub and having two hub portions separated along a substantially radial direction at a first circumferential hub location and, at a second circumferential hub location substantially diametrically opposite said first circumferential location, said hub being partially separated in a direction extending from said inner portion towards said outer circumferential surface forming an elastically deformable bridge connecting said two hub portions, at said first circumferential location said hub portions having opposing faces comprising tape clamping means for clamping an end portion of a tape therebetween and locking means for locking said two hub portions together in a direction transverse to said hub axis, wherein the improvement comprises:

said hub at the area of said first circumferential location comprising axial aligning means for axially aligning said two hub portions.

4,880,182
CABLE REEL

Stanley Gelfman, 491 High Cliffe La., Tarrytown, N.Y. 10591

Continuation-in-part of Ser. No. 173,288, Mar. 25, 1988, Pat. No. 4,796,830. This application Jan. 6, 1988, Ser. No. 294,184

The portion of the term of this patent subsequent to Jan. 10, 2006, has been disclaimed.

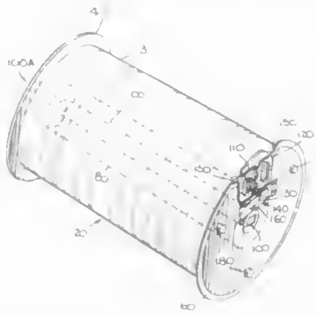
Int. Cl.⁴ B65H *75/12*

U.S. Cl. 242—117 42 Claims

1. A cable reel comprising:

a first cylindrical member about which cable can be wound having a longitudinal axis and a hollow interior;

first and second flanges disposed at opposite ends of said cylindrical member substantially at right angles to the longitudinal axis of said cylindrical member, one of said flanges having an outside surface having at least one opening arranged adjacent the periphery of said one flange through which the cable can be traversed and a second opening in the surface disposed adjacent the center of said one flange and opening into the hollow interior of the cylindrical member, said hollow interior adapted to receive ends of the cable wound on said cylindrical member, at least one end being received through the second opening, and further comprising means disposed on the outside surface for protecting the cable extending between the first opening and the second opening.



4,880,183
TUBE WITH YARN CATCH PLACE

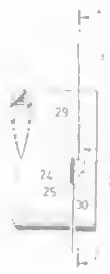
Milan Kubata; Jiri Soukup, and Jiri Trhlik, all of Usti nad Orlici, Czechoslovakia, assignors to Flitex, Liberec, Czechoslovakia

Filed Aug. 31, 1988, Ser. No. 239,088

Claims priority, application Czechoslovakia, Sep. 1, 1987, 6350-87

Int. Cl.⁴ B65H *75/28*

U.S. Cl. 242—125.1 5 Claims



1. An improved tube for winding yarn on open-end spinning machines, provided near at least one of its ends with at least one catch place for yarn, the improvement comprising

the yarn catch place having a catch point oriented in the direction of rotation of the tube and formed as a part of the tube, and

the yarn catch place being radially oriented extended hole having two most distant circumferential points connected by two side wall, said catch point extending from one of said side walls such that a straight line connecting the two most distant circumferential points of said hole passes under the catch point;

the side wall opposite said catch point being provided with slanting lead-in edges at said most distant circumferential points.

4,880,184
YARN PACKAGE SUPPORT FOR CREEL

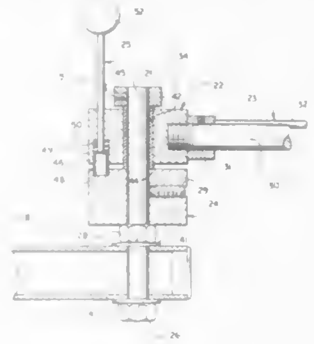
Mitchell A. Crow, 2279 Kerr Rd., NW., Dalston, Ga. 30720

Filed Sep. 19, 1988, Ser. No. 246,401

Int. Cl.⁴ B65H *49/04*

U.S. Cl. 242—130 11 Claims

1. A yarn package support including a generally vertically extending post, a latch block received on said post and selectively fixed with respect to said post, a support block juxtaposed over said latch block and selectively pivotal about said post, said support block defining a central opening for receiving said post therein, and a bearing means within said opening in said support block for journaling said support block on said post, a cone holder carried by said support block and extending generally horizontally therefrom and pivotal therewith, and latch means carried by said support block for selectively latching said support block to said latch block for selectively preventing pivotal motion of said support block with respect to said latch block, said bearing means comprising a sleeve extending beyond said support block towards said latch block so that the weight of said support block is carried by said sleeve, a set screw threadedly engaged with said latch block and selectively engageable with said post, said latch means including a latch member slidably received in an opening in said support block, the lower end of said latch member being receivable within a notch in said latch block for positively latching said support block with respect to said latch block, and a handle for selectively releasing said latch means.



4,880,185
LOW PRESSURE REACTION CONTROL PROPULSION SYSTEM FOR A SPACECRAFT

Steven L. Apfel, Manhattan Beach, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Continuation of Ser. No. 830,306, Feb. 18, 1986. This application Sep. 21, 1988, Ser. No. 248,266

Int. Cl.⁴ B64G *1/40*

U.S. Cl. 244—135 B 26 Claims

1. A satellite propulsion system adapted to supply liquid propellant to a first thruster at a first flow rate and to a second thruster at a second higher flow rate, comprising:

a gas pressure source,

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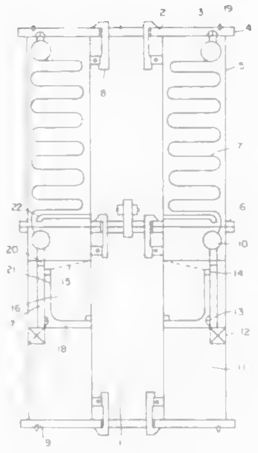
- a propellant tank for holding said propellant,
- a bellows tank,
- a collapsible bellows in said bellows tank which divides said bellow tank into a gas side and a propellant side, the relative volume of said gas side and said propellant side varying as said bellows collapses and expands,
- a first conduit communicating said propellant tank with said propellant side of said bellows tank,
- a first valve means in said first conduit for controlling propellant flow in said first conduit,
- a second conduit communicating said gas pressure source with said gas side of said bellows tank,
- a second valve means in said second conduit,
- a third conduit communicating said first thruster with said propellant side of said bellows tank,
- a third valve means in said third conduit for controlling the flow of propellant to said first thruster,
- a fourth conduit communicating said propellant tank with said second thruster,
- a fourth valve means in said fourth conduit for controlling the flow of propellant to said second thruster,
- a propellant pump in said fourth conduit for pressurizing the propellant flowing to said second thruster,
- a fifth conduit communicating to said gas side of said bellows tank and for venting said gas side of said bellows, and
- a fifth valve means in said fifth conduit wherein, when said propellant side of said bellows is filled with propellant, said gas side of said bellows may be pressurized, thereby pressurizing said propellant which is transmitted to said first thruster when said third valve means is opened, and wherein said propellant side of said bellows may be refilled with propellant by opening said fifth valve means and closing said second valve means, thereby venting said gas side of said bellows tank and enabling said propellant to refill said propellant side of said bellows tank.

4,880,186

PREFABRICATED SPACE STATION

John Mecca, 110 Whittier Dr., San Remo, N.Y. 11754
Continuation-in-part of Ser. No. 804,288, Dec. 5, 1985, abandoned. This application Dec. 24, 1986, Ser. No. 109,726
Int. Cl.⁴ B64G *1/10*
U.S. Cl. 244—159 3 Claims

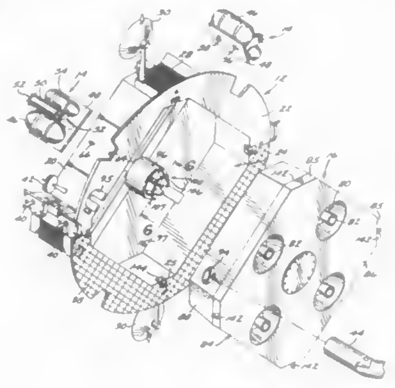


1. A prefabricated space station comprising first and second members connected by a plurality of latches, a cylindrically formed folded flexible double walled body located within said first member and having an exposed annular edge extending into said second member, means within said second member upon actuation for dispensing foam evenly into the annular edge of said flexible body for causing the two walls of said body to spread apart thereby causing said body to expand and permit the deployment of said body fully expanded.

4,880,187

MULTIPURPOSE MODULAR SPACECRAFT

Kenneth H. Rourke, Palos Verdes Estates, and Raymond J. Hart, Villa Park, both of Calif., assignors to TRW Inc., Redondo Beach, Calif.
Continuation of Ser. No. 819,337, Jan. 16, 1986, abandoned, which is a continuation of Ser. No. 609,157, May 10, 1984, abandoned. This application Nov. 17, 1988, Ser. No. 273,630
Int. Cl.⁴ B64G *1/40*
U.S. Cl. 244—172 33 Claims



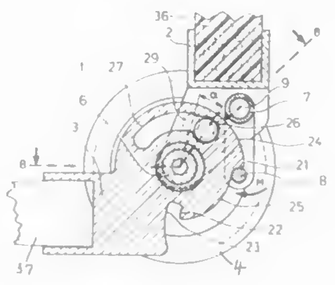
33. A multipurpose modular spacecraft, comprising:
- a short range space vehicle having flight control means for controlling the vehicle during flight in space;
- a plurality of modular propulsion sets removably mounted on the vehicle in a respective plurality of predetermined positions accessible from the exterior of the vehicle to provide propulsion capacity for relatively short-range missions of the vehicle;
- a propulsion module removably mounted on the vehicle to provide propulsion capacity for relatively long-range missions of the vehicle;

wherein the plurality of modular propulsion sets and the propulsion module can be replaced quickly and easily in space to refuel the modular spacecraft without requiring any transfer of propellants or fluids in the space environment.

4,880,188

JOINT FOR UNFOLDING PANELS OF A SOLAR COLLECTOR

Martin Roth, Taufkirchen, and Helmut Kiendl, Munich, both of Fed. Rep. of Germany, assignors to Messerschmitt-Boelkow-Blohm GmbH, Munich, Fed. Rep. of Germany
Filed Feb. 3, 1989, Ser. No. 306,812
Claims priority, application Fed. Rep. of Germany, Feb. 11, 1988, 3804202
Int. Cl.⁴ B64G *1/46*
U.S. Cl. 244—173 12 Claims

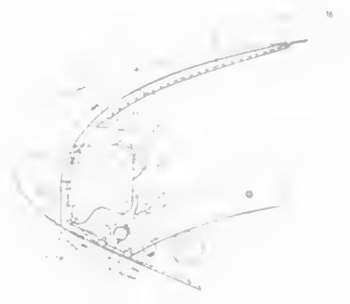


1. A joint for interconnecting in an unfoldable manner panels (36, 37) of a solar collector having at least one outermost panel (36) and at least one inner panel (37), comprising a first joint section (2 rigidly connected to said outermost panel, a second joint section rigidly connected to said inner panel, journal means including a journal shaft (30) for journalling said first and second joint sections to each other for permitting an unfolding movement of the first and second joint sections relative to each other, a cable pulley (4) operatively mounted on said journal shaft, first spring biased locking means (7) and second spring biased locking means (14) mounted in said first joint section (2) for arresting said first and second joint sections, said second joint section (3) having a plurality of stop means (21, 22, 23, 26) arranged for cooperation with the respective locking means mounted in said first joint section (2) for holding said first locking means in a formlocking manner in the fully unfolded state and for blocking said second locking means in the unfolding direction in a partially unfolded state, said second joint section (3) having means (28) for keeping said second locking means (14) in an ineffective position until said outer panel (36) has been tilted into a partially unfolded state, said cable pulley (4) having a stop surface (35) for cooperation with said second locking means when said outer panel is in a partially unfolded state, said cable pulley (4) further having recess means (29) for receiving said second locking means (14) in a formlocking manner during transition from a partially unfolded state into a fully unfolded state and in the fully unfolded state, said cable pulley (4) having such a diameter that the full unfolding of said inner panel through 180° causes said cable pulley (4) to move through angular range (x)that corresponds to an angular tilting movement of said outer panel plus a lead angle (α), whereby panel rebounding is prevented.

4,880,189

DEVICE FOR CLOSING AND OPENING IN THE LEADING EDGE OF A WING

Roger A. Day, Bristol, England, assignor to British Aerospace Public Limited Company, London, England
Filed Sep. 4, 1988, Ser. No. 190,017
Claims priority, application United Kingdom, May 6, 1987, 8710735
Int. Cl.⁴ B64C *3/50*
U.S. Cl. 244—214 3 Claims

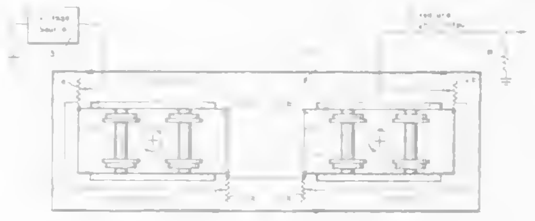


1. A wing leading edge arrangement for aircraft in which a slat is provided forwardly of a fixed leading edge portion and movable between a stowed configuration in which it lies closely adjacent the fixed leading edge portion and a deployed configuration in which it is spaced from the wing to define a slot, said arrangement including:
- slat attachment means for connecting said slat to two or more support tracks slidably mounted with respect to the fixed wing portion to define said movement;
- aperture means in said fixed leading edge portion to accommodate said slat attachment means when said slat is in its stowed configuration;
- aperture closing means pivotally located to said fixed leading edge portion adjacent said aperture and movable between a folded position when the slat is in its stowed configuration and an aperture closing position when said slat is in its deployed configuration;
- and actuating means interconnecting said aperture closing means and said fixed leading edge portion for causing said aperture closing means to move between its stowed and deployed positions;
- said aperture closing means comprising a shutter whose surface area is at least equivalent to the included area of said aperture and configured such that when closed it conforms substantially to the inner surface configuration of said fixed leading edge portion and hinge means transversely connecting said shutter at or adjacent its upper boundary to said fixed leading edge portion such that it is constrained to move from its stowed to deployed positions in a plane generally parallel to the movement of its associated slat supporting track;
- said shutter comprising a first panel portion including first hinge means for hingedly connecting said first panel portion at or adjacent its upper boundary to said fixed leading edge portion and second hinge means positions adjacent its lower boundary for hingedly engaging a second panel portion, said first and second panel portions combining to close off said aperture when the slat is deployed but which are foldable with respect to each other when the slat assumes its stored configuration.

4,880,190

LOCOMOTIVE CURVE TRACKING SYSTEM

Robert J. Austill, Santa Clara, and Joseph M. Lambert, Lincoln, both of Calif., assignors to Southern Pacific Transportation Co., San Francisco, Calif.
Division of Ser. No. 940,599, Dec. 11, 1986, Pat. No. 4,793,577. This application Nov. 18, 1988, Ser. No. 273,345
Int. Cl.⁴ B61L *25/00*
U.S. Cl. 246—107 5 Claims



1. Apparatus for continually producing signals proportional in amplitude to an angle between the longitudinal centerline of a railroad vehicle and the longitudinal centerline of one truck of said vehicle comprised of a linear motion transducer mechanically affixed between one corner of said truck and the nearest side of said vehicle, said linear transducer being oriented perpendicular to said nearest side of said vehicle when the axis of said truck is parallel to the axis of said vehicle, whereby an output signal is produced that is a function of displacement of said truck corner and said side of said vehicle as a measurement of said angle, and including a second linear motion transducer mechanically affixed between a second corner of said truck diagonally opposite said one corner and the nearest side of said vehicle to said second corner, said second transducer being oriented perpendicular to said nearest side thereof when the axis of said truck is parallel to the axis of said vehicle, whereby a second output signal is produced that is a function of displacement of said second corner of said truck and the nearest side of said second corner, and means for electrically connecting said transducers to algebraically add said output signals for increased sensitivity to any pivotal motion of said truck with respect to said vehicle.

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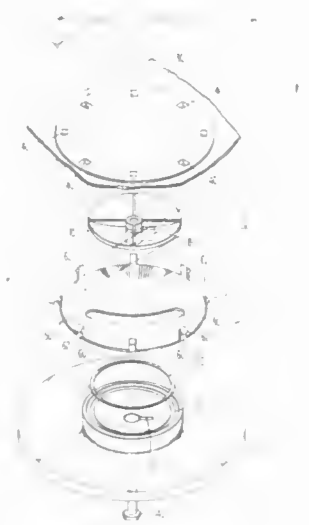
MOUNTING ARRANGEMENT FOR DISPLAY TERMINAL

Ralph J. Lake, Jr., Somerville, N.J., assignor to Unisys Corporation, Blue Bell, Pa.

Continuation of Ser. No. 627,855, Jul. 5, 1984, abandoned. This application Dec. 20, 1985, Ser. No. 814,536

Int. Cl.^{4} A40G *29/00*

U.S. Cl. 248—371 12 Claims



1. A display terminal comprising:

a cabinet having a base, a plurality of apertures in said base; and

means for supporting said cabinet, said support means including a plurality of flexible tabs which are engageable with said plurality of apertures to couple said cabinet to said support means, said support means further including

pedestal means for supporting said display terminal on a planar surface, said pedestal means including a swivel bottom having a first recess therein, said first recess having a surface of curvature defined by a first radius,

a swivel top having a second recess therein, said second recess having a surface of curvature defined by a second radius, said swivel top including said plurality of flexible tabs, a first end of each of said flexible tabs connected to said swivel top, the distal end of each of said flexible tabs projecting upward from said swivel top,

a curved slot provided adjacent the surface of curvature of said second recess, a keyway provided adjacent the surface of curvature of said first recess,

a disk, said disk including a key projecting downward from its lower surface, said disk positioned in contact with said second recess with the key passing through said curved slot and seated in said keyway, and

a bolt passing through said disk, said key, said curved slot and said keyway, a nut engaging the threaded end of said bolt, the head of said bolt having a diameter too large to pass through said keyway.

4,880,192

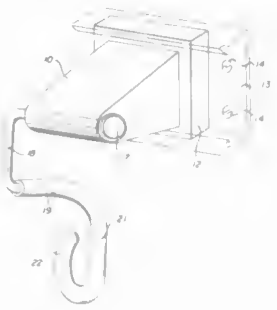
HANDLED TOOL SUSPENSION DEVICE

Hans Vom Brancke, Vlotho; Manfred Vom Braucke, Telgenbrink, and Dieter Westerwelle, Markusstrasse, all of Fed. Rep. of Germany, assignors to Bielefelder Kuchenmaschinen- und Transportgerate-Fabrik Vom Braucke GmbH, Bielefeld, Fed. Rep. of Germany

Filed Feb. 4, 1988, Ser. No. 152,270

Int. Cl.^{4} A46B *17/02*

U.S. Cl. 248—110 8 Claims



1. A device for suspending handled tools such as brooms, spades and rakes, comprising:

hook means; and

mounting means for said hook means,

said mounting means defining a pivot axis for said hook means, said pivot axis extending substantially horizontally, said hook means having:

a front elevation which is substantially S-shaped and having a mounting shaft portion located in said mounting means so as to be pivotable about said horizontal axis,

a linear portion extending substantially at a right angle from said mounting shaft portion in a generally downward direction,

another portion extending from said linear portion,

said another portion being substantially C-shaped, and

a hook portion extending from said another portion, wherein said another portion is curved in three dimensions and has a first leg being in a concaved curvature, an intermediate leg being straight, and a third leg being in a convexed curvature, and wherein said hook portion is directed generally inwardly.

4,880,193

LESS THAN 360 DEGREE LAMP SWIVEL

Jerome Warshawsky, 1322 Everitt Pl., Hewlett Harbor, N.Y. 11557

Continuation of Ser. No. 930,986, Nov. 14, 1986, abandoned, which is a continuation of Ser. No. 735,526, May 20, 1985, abandoned. This application Aug. 5, 1987, Ser. No. 83,012

Int. Cl.^{4} F16L *3/00*

U.S. Cl. 248—122 7 Claims

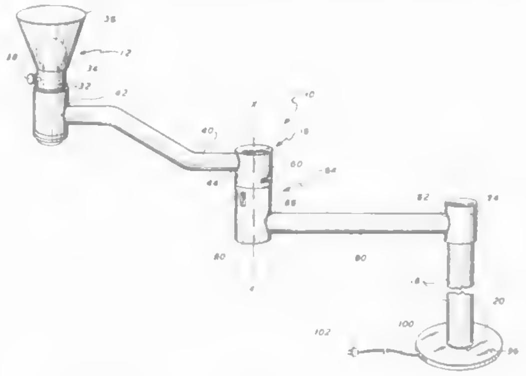
1. A swivel assembly for a lamp comprising:

(a) a first tubular swivel means matable with a second tubular swivel means, said first swivel means and said second swivel means rotatable with respect to each other about a common axis, said first tubular swivel means including,
 (i) a first outer diameter portion,
 (ii) a second outer diameter portion extending from said first outer diameter portion,
 (iii) a third outer diameter portion defining a groove in said second outer diameter portion;

(b) said first outer diameter portion terminating in a first shoulder and stepping down to said second outer diameter portion, said second outer diameter portion being smooth walled and extending from said shoulder to a stop means, said second outer diameter portion interrupted by said third outer diameter defining a groove in said second

diameter portion, said stop means defining a partial arcuate extension of said second outer diameter portion;

(c) said second tubular swivel means including,
 (i) a fourth outer diameter portion, the diameter of which corresponds to the diameter of said first outer diameter portion,
 (ii) a first inner diameter portion adapted to matably receive said second outer diameter portion and said third outer diameter portion and said stop means of said first tubular swivel means, said fourth outer diameter portion terminating in a second shoulder, said first inner diameter portion extending from said second shoulder and under said fourth outer diameter defining a reception cavity in said second tubular swivel means for receiving said second outer diameter portion and said third outer diameter portion and said stop means; and,



(d) swage means located in said fourth outer diameter portion of said second tubular swivel means and positioned circumferentially for repositioning a circumferential portion of said fourth outer diameter portion and said first inner diameter portion to a first variable outer arcuate portion and a first variable inner arcuate portion, said first variable inner arcuate portion extending to a level between said second outer diameter portion and said third outer diameter portion for capturing and retaining said first tubular swivel means in mated condition in said second tubular swivel means and for preventing sliding separation of said first and second swivel means without interfering with the rotational relationship between said first tubular swivel means and said second tubular swivel means.

4,880,194

APPARATUS AND METHOD FOR SUPPORTING ARTICLES

John Geise, 4433 Kill Rd., Delphos, Ohio 45833, and Lynn Niese, 4680 Alabama Ave., Navarre, Ohio 44662

Filed Jul. 21, 1987, Ser. No. 76,203

Int. Cl.^{4} F16M *11/38*

U.S. Cl. 248—166 2 Claims

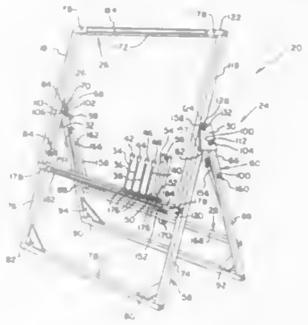
1. A multiposition apparatus for supporting articles such as automotive body parts, panels, doors, appliance parts, and the like for servicing, comprising:

a base member, having a bottom portion and a top portion, adapted to be selectively disposed in one of a storage position and a functional position, said base member including: spacedapart generally vertically disposed frame members including a first frame member and a second frame member each of said first frame member and said second frame member having at least one generally horizontally disposed bottom element and a plurality of generally vertically disposed elements having opposite upper ends and bottom ends, said bottom ends being connected to respective opposite ends of said bottom elements whereby said vertical elements are held in spaced relation by said bottom elements, upper portions of said upper ends of one of said first frame member and said second frame member being angularly offset with respect to said upper ends of the other one of said first frame member and said second frame member whereby said base member is selectively moveable between a storage position and a functional position in that said top portions of said first frame member and said second frame member converge together and limit movement of one of said first frame member and said second frame member away from the other of said first frame member and said second frame member;

plate means secured to said upper ends of one of said first frame member and said second frame member;

means for pivotally connecting said plate means to the upper end of the other of said first frame member and second frame member;

support means mounted on said base member and adapted for selective movement between a substantially horizontal position and a substantially vertical position, said support means comprising a first pivotal member and a second pivotal member whereby one of said first pivotal member and said second pivotal member braces the other of said first pivotal member amd said second pivotal member in said substantially horizontal position;



means for pivotally connecting said plate means to one of said first pivotal member and said second pivotal member whereby said first pivotal member and said second pivotal member is selectively pivotal between said substantially horizontal position and substantially vertical position; and

means for selectively securing said support means in one of said substantially vertical position, and substantially horizontal position, and said securing means comprising a bracket means and a latch means one of said bracket means and said latch means being secured to one of said first frame member and said second frame member and the other of said bracket means and said latch means being secured to the one other of said first frame member and said second frame member, said latch means comprising a first latch member and a second latch member, one of said first latch member and said second latch member being secured to one of said base member and said support means and the other one of said first latch member and said second latch member being secured to the other one of said base member and said support means.

4,880,195

BANNER SUPPORT

Roger M. Lepley, Kalamazoo, Mich., assignor to Kalamazoo Banner Works, Inc., Kalamazoo, Mich.

Filed Dec. 9, 1988, Ser. No. 283,062

Int. Cl.^{4} A47B *96/00*

U.S. Cl. 248—219.4 11 Claims

1. A banner support assembly adapted to be mounted on a supporting member for purposes of engaging and holding taut an elongated banner having sleeve-like openings in the opposite longitudinal ends thereof, said banner support assembly comprising:

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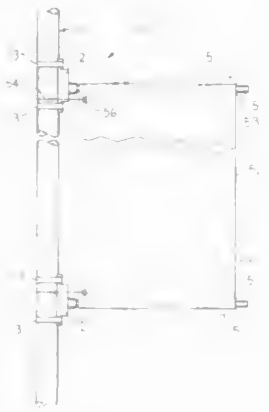
first and second housing members each having an elongated body with an elongated T-shape channel opening outwardly of said body along a front face and at at least one end thereof, said T-shaped channel having an abutment means at the other end of said channel, said first and second housing members being adapted to be mounted a prescribed distance apart on said supporting member and with each longitudinal axis of each T-shaped channel being axially aligned and with said openings in said at least one end facing in the same direction, each of said T-shaped channels being defined by straight inwardly facing walls which are each oriented parallel to said longitudinal axis;

first and second holder members each having a generally T-shaped cross section conformed to said cross sectional shape of said T-shaped channels and being adapted to be received in a respective one of said T-shaped channels through said openings in said at least one end thereof, each of said holder members having at least first and second ends with a selected one thereof adapted to rest against a respective one of said abutment members, said T-shaped cross section of said holder members being defined by outwardly facing surfaces extending parallel to said straight inwardly facing walls of said T-shaped channels;



an elongated, elastically flexible wand fixedly secured to each holder member and having a longitudinal axis thereof oriented to extend at an angle to said longitudinal axis of said T-shaped channel when one of said first and second ends of said holder member abuts said abutment member, each of said wands extending away from a part of a respective one of said T-shaped holder members that extends through said opening in said front face of said housing member, said longitudinal axis of each wand being oriented on a respective holder member to lie within a common plane with each other, said first holder member being received in a T-shaped channel in said first housing member with said first end thereof abutted against an abutment member in said first housing member, said second holder member being received in a T-shaped channel in said second housing member with at least one of said first and second ends thereof abutted against an abutment member in said second housing member, said wands each being adapted to be received into a selected one of the two sleeve-like openings in said banner, the length of said banner being generally equal to a spacing between said wands whereat said wands are joined to said holder members when said holder members both abut said abutment members.

4,880,196

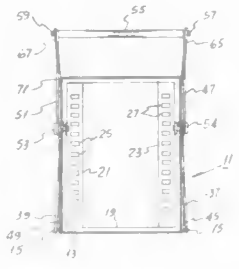
APPARATUS FOR MOUNTING MARINE ELECTRONIC EQUIPMENT

John E. Eichenlaub, 9426 Beverly La., Sanibel Island, Fla. 33957

Filed Jun. 1, 1987, Ser. No. 56,157

Int. Cl.⁴ E04G *3/00*

U.S. Cl. 248—293 11 Claims



1. A support structure for equipment comprising: an open frame; a back pivotally connected at one edge to one edge of said open frame; a pair of articulated links pivotably connected at one end each to said open frame adjacent an edge opposite said one edge of said open frame and on opposite sides of said open frame; a pair of other links pivotably connected to another edge of said back opposite said one edge and releasably connected to an elongate member pivotally connected to and extending between the free ends of said articulate links; a pair of elongate links pivotably connected each at one end to said open frame on opposite sides thereof and at locations adjacent said one edge, the free end of each elongate link being releasably connectable to one of said articulated inks and to said elongate member; and means for connecting said back to another support structure in such a way that said open frame can support said equipment.

4,880,197

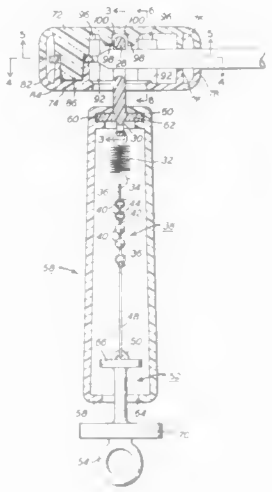
MOUNTING MEANS FOR A TOY MOBILE

Randall Wsyzynski, West Seneca, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.

Continuation of Ser. No. 101,988, Sep. 29, 1987, abandoned. This application Oct. 17, 1988, Ser. No. 259,476

Int. Cl.⁴ F16M *13/00*

U.S. Cl. 248—324 3 Claims



1. A mobile comprising a supporting member, a suspended member and mounting means connecting said suspended member to said supporting member, said mounting means comprising:

- a housing having first and second generally parallel ends having first and second openings therethrough respectively;
- a spring within said housing;
- a string having an end within said housing;
- slip clutch means interposed between said string end and said spring; and
- first and second stems coupled to said spring and said string respectively, and extending through said first and second openings and first and second rims on said first and second stems for engaging the first and second ends of the housing for limiting the elongation of said spring and manually engageable disk on one of said stems for imparting rotational movement to wind up said string to wind up said spring.

4,880,198

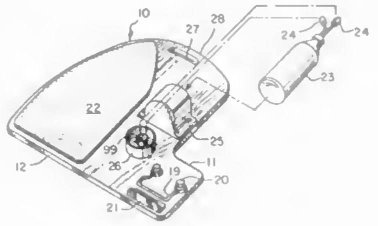
CRANKING BOARD FOR GASOLINE POWERED HAND TOOL

Henry E. Brewer, 3900 Fowler Rd., Springfield, Ohio 45502

Filed Apr. 10, 1987, Ser. No. 36,945

Int. Cl.⁴ F16M *11/00*

U.S. Cl. 248—346 9 Claims



1. A cranking board for a hand tool powered by a gasoline engine having a starter of the pull-cord type comprising:

- an engine support portion for supporting said tool during operation of said starter
- an engine support portion rigidly conected to said engine support portion and substantially co-planar therewith for supporting the knees of a person operating said starter, and
- bracket means mounted on said engine support portion for engaging said tool and resisting rotation thereof during operation of said starter, said cranking board being free of attachment to any supporting structure and being adapted for use at ground level.

4,880,199

POWERED SIX-WAY SEAT ADJUSTOR AND MECHANISMS THEREFOR

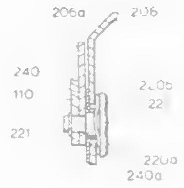
William J. J. Harney, Markham, Canada, assignor to Magna International Inc., Markham, Canada

Filed Jul. 12, 1988, Ser. No. 217,951

Claims priority, application Canada, Jul. 13, 1987, 541927

Int. Cl.⁴ F16M *11/24*

U.S. Cl. 248—396 5 Claims



1. An improved pivot assembly comprising a pivot means upon which a seat adjuster pivots, a bracket means having an elongated slot in which a fastening means for the pivot means is contained, a lining portion affixed to the bracket means the lining portion having flanges extending through the elongated slot laterally away from the lining portion, the flanges having a predetermined curvature, a fastening means passing through the lining portion, bracket means and pivot means, whereby when the fastening means is affixed to the pivot means through the bracket means the flanges of the lining portion are biased against the fastening means, thereby the tolerance of the improved pivot assembly are optimized to allow a minimum of play or chuck amongst the components thereof.

4,880,200

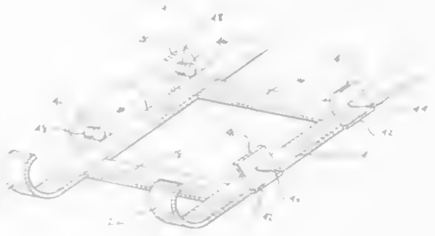
LADDER BRACKET

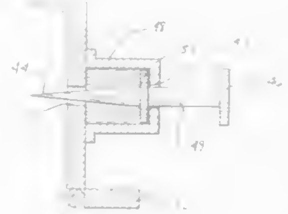
Joel Champagne, and Rejean Champagne, both of 75 Groveland Terr., Newington, Conn. 06111

Filed Dec. 6, 1988, Ser. No. 280,435

Int. Cl.⁴ F16M *13/00*

U.S. Cl. 248—547 1 Claim





1. A ladder bracket for supporting a ladder having a plurality of spaced rungs on an intended work surface, comprising:

- a pair of parallel side rails;
- a pair of spaced transverse struts connecting said parallel side rails;
- first end portions of said side rails being curved into hooks dimensioned for engagement with a ladder rung:
- a plurality of securement tabs on each of said side rails, said tabs disposed in spaced aligned pairs and each connected by a hinge to an outer side edge of one of said side rails; said tabs each mounted for pivotal movement about an axis extending parallel with the longitudinal axis of said side rails;
- each of said securement tabs having:
  - (a) a hollow cylindrical boss;
  - (b) aligned reduced diameter apertures extending through a top face of said boss and through said tab;
  - (c) an elongated fastener having an enlarged head at one end and a pointed tip at an opposite end, said fastener inserted through said aligned apertures and through said cylindrical boss, said enlarged head of said fastener disposed above said boss; and
  - (d) an elongated diameter retaining flange on said fastener and captured within said boss, whereby said securement

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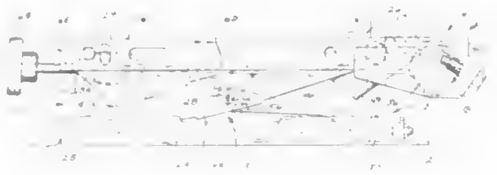
tabs are pivotal to a wide variety of positions to allow securement of said ladder bracket to various differently configured intended work surfaces.

4,880,201
CONSTANT NATURAL FREQUENCY, MECHANICAL SPRING SEAT SUSPENSION

Garth O. Hall, and Harvey N. Tengler, both of New Berlin, Wis., assignors to Bostrom Seating, Inc., Cudahy, Wis.
Filed Dec. 3, 1987, Ser. No. 128,033
Int. Cl.⁴ F16M *13/00*
U.S. Cl. 248—575 **15 Claims**



1. A seat suspension system in which the spring rate (K) of a spring means may be varied in accordance with the applied load (W) so as to render the quantity (K/W) constant and cause the system to exhibit a constant natural frequency with different loads applied to the system, said system comprising:

base means;

frame means suitable for receiving the load applied to the system;

linkage means extending between said base means and frame means for joining said base means and frame means together while permitting relative vertical movement between said base means and frame means, said linkage means comprising two spaced pairs of crossed links;

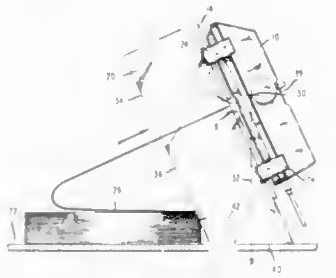
mechanical spring means mounted on one of said base means and frame means;

a lever coupled to said spring means for loading said spring means by arcuate movement of said lever and

fulcrum means slidably mounted on said linkage means and engaging said lever, said fulcrum means being movable with respect to said lever for altering the spring rate (K) of said spring means in accordance with the applied load (W) to maintain the quantity (K/W) constant.

4,880,202
COMPUTER PRINTER STAND

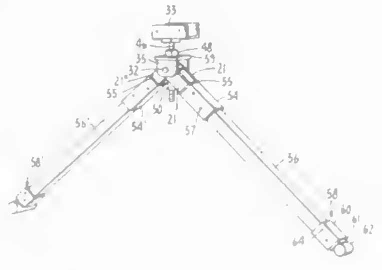
Edward J. Gauss, Lincroft, N.J., assignor to American Telephone and Telegraph Company, New York, N.Y. and AT&T Bell Laboratories, Murray Hill, N.J.
Filed Jul. 25, 1988, Ser. No. 224,050
Int. Cl.⁴ F16M *13/00*
U.S. Cl. 248—676 **1 Claim**



1. A combination comprising a computer printer having a bottom paper feed slot, a printer stand having a paper feed slot in a top surface, means for fixing the computer printer to the top surface of the printer stand, the printer stand having a bottom surface positioned so that the center of gravity of the computer printer and the printer stand is directly over the bottom surface when the computer printer and the printer stand are in a normal position for printer operation, and the printer stand having a rear surface positioned so that the center of gravity of the computer printer and the printer stand is directly over the rear surface when the computer printer and the printer stand are raised up from the front into a position for loading paper into the bottom paper feed slot.

4,880,203
ADJUSTABLE FORM BRACE

Grove R. Holcomb, 1135 Pine Ridge Dr., and Bruce M. Douglas, 4370 Bridle Way, both of Reno, Nev. 89509
Filed Oct. 19, 1988, Ser. No. 260,185
Int. Cl.⁴ B66F *13/00*
U.S. Cl. 249—24 **14 Claims**



1. A cradle assembly adapted to receive a first leg and a second leg to form an adjustable form brace, each of said first and second legs having an upper portion adapted to be attached to the cradle assembly and having a lower portion adapted to be placed against a support beams supporting an elevated concrete form deck, said cradle assembly comprising:

a first leg socket for receiving the first leg and a second leg socket for receiving the second leg, the first and second leg sockets each having a first end and a second end and being attached together said first ends for pivotal movement of the second ends toward and away from each other in a plane, and the second end of said first leg socket being adapted to receive and hold the upper portion of the first leg and the second end of said second leg socket being adapted to receive and hold the upper portion of the second leg;

a supporting means for supporting a shoring member placed beneath the concrete form deck, said supporting means being movably attached to the first ends of the first and second sockets; and,

a height adjusting means for moving the supporting means in said plane away from or towards the first ends of the first and second sockets.

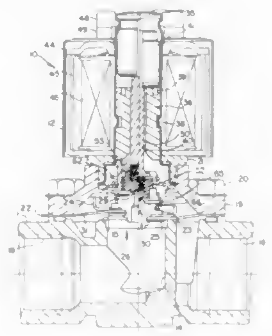
4,880,204
LOAD TRANSMITTING DEVICE

Raymond E. Steele, Warwickshire, Great Britain, assignor to Rapid Metal Developments Ltd., Aldridge, England
Filed Jul. 12, 1988, Ser. No. 218,292
Claims priority, application United Kingdom, Jul. 17, 1987, 8716855; Mar. 23, 1988, 8806911
Int. Cl.⁴ E04G *17/06*
U.S. Cl. 249—219.2 **3 Claims**

1. A load transmitting device for use in transmitting load from a tie rod to a beam used as a support for a concrete casting formwork, said beam having at least one web member with oppositely extending adjacent lateral flanges at one end of the web member, each lateral flange having a free end portion which extends towards an end of the web member opposite said one end, said device comprising a bridging member having a dimension to bridge between and overlie outer surfaces of the adjacent lateral flanges of the beam, and restraint means acting, in use, between said bridging member and a surface of the beam facing generally oppositely to said surfaces overlaid by the bridging member in such a manner as to resist bending of said lateral flanges as a result of bending force applied to the bridging member by a tie rod loading the lateral flanges at a right angle to the longitudinal direction of the beam, the restraint means being shaped so as to provide surfaces which lodge, in use, under the free end portions of the adjacent lateral flanges in order to resist said bending of the flanges, wherein the bridging member is a plate and the restraint means are generally U-shaped members having a base and respective arms at opposite ends of the base, said U-shaped members embrace the plate and the free end portions of said adjacent lateral flanges and wherein the U-shaped members are secured to the bridging member by screw means extending through the base and into the bridging member.

4,880,205
HUNG DIAPHRAGM SOLENOID VALVE

John E. Ellison, Mayfield Heights, Ohio, assignor to Parker Hannifin Corporation, Cleveland, Ohio
Continuation of Ser. No. 68,591, Jun. 30, 1987, Pat. No. 4,783,044. This application Feb. 5, 1988, Ser. No. 252,684
The portion of the term of this patent subsequent to Nov. 8, 2005, has been disclaimed.
Int. Cl.⁴ F16K *31/385*
U.S. Cl. 251—30.02 **10 Claims**



1. A solenoid valve, comprising

a valve body having a main valve seat,

a diaphragm valve supported in said body for movement toward and away from said main valve seat, said diaphragm valve assembly comprising a diaphragm valve, means for limiting valve movement and a pilot valve seat,

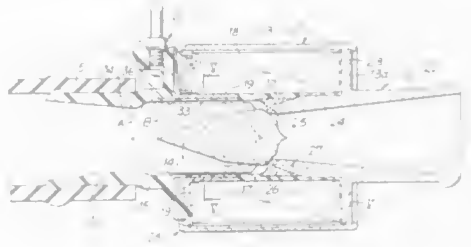
a plunger assembly supported for movement toward and away from said pilot valve seat, said plunger assembly comprising a valve disc engageable with said pilot valve seat for controlling fluid flow therethrough, main spring means engaged between said plunger assembly and said valve body for biasing said plunger assembly away from said valve seat and a plunger for moving said plunger assembly,

an electromagnet mounted on said body for actuating said plunger in response to electrical current, and

a pickup spring joining said plunger assembly and said diaphragm valve assembly for providing bias force upon said diaphragm valve assembly.

4,880,206
MAGNETIC VALVE

Corneliu Lungu, Bühlertal, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany
PCT No. PCT/DE87/00119, § 371 Date Aug. 31, 1988, § 102(e) Date Aug. 31, 1988, PCT Pub. No. WO87/05981, PCT Pub. Date Oct. 8, 1987
PCT Filed Mar. 19, 1987, Ser. No. 272,882
Claims priority, application Fed. Rep. of Germany, Mar. 26, 1986, 3610122
Int. Cl.⁴ F16K *31/06*
U.S. Cl. 251—129.21 **21 Claims**



1. A magnetic valve, particularly a two-way magnetic valve, for controlling flow of fluid medium in a device for heating passenger space in a vehicle having a liquid cooled internal combustion engine, or the like, said magnetic valve comprising an inlet member defining a valve inlet; an outlet member defining a valve outlet; a valve seat located between the valve inlet and the valve outlet; a closing member movable between an open position in which it is spaced from said valve seat, and a closed position in which it sealingly engages said valve seat; and magnet coil means for generating a magnet field for moving said closing member from said open position to said closed position, said magnet coil means including a coil body having an opening therethrough through which the medium flows, and a guide tube for guiding said closing member in its movements, said closing member forming a magnet armature for said magnet coil means, said valve seat having a seat annular surface, said closing member being progressively tapered in a streamlined manner in a flow direction of medium away from said seat annular surface, and said closing member being movable from the closed position thereof to the open position thereof only under action of one of flow forces and pressure forces generated by a medium flow.

4,880,207
INTAKE THROTTLE VALVE RETURN DEVICE OF ENGINE

Osamu Matsumoto; Mamoru Sumida, and Hirokazu Maehara, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
PCT No. PCT/JP88/00227, § 371 Date Oct. 13, 1988, § 102(e) Date Oct. 13, 1988, PCT Pub. No. WO88/06682, PCT Pub. Date Sep. 7, 1988
PCT Filed Mar. 1, 1988, Ser. No. 314,353
Claims priority, application Japan, Mar. 2, 1987, 62-47025; Mar. 2, 1987, 62-47026; Mar. 2, 1987, 62-472027; Mar. 2, 1987, 62-47028; Mar. 2, 1987, 62-47029
Int. Cl.⁴ F16K *1/22*
U.S. Cl. 251—337 **10 Claims**

1. An intake throttle valve return device of engine, comprising: a throttle valve disposed within a barrel of engine; a valve shaft supported in a diametral direction through said barrel, on

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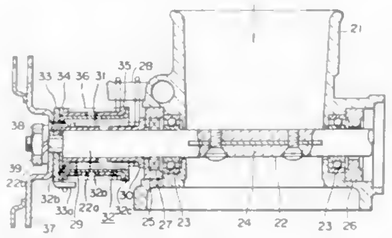
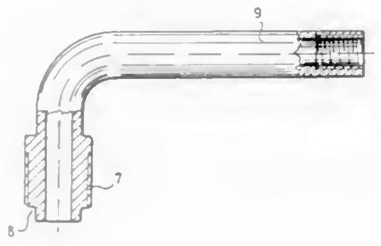
which said throttle valve is secured, with at least one end side thereof extending outwardly as a shaft end portion; an inner torsion coil spring and an outer torsion coil spring which are disposed concentrically with said shaft end portion, and each end being retained by a spring retainer of said barrel; a spring holder having a flange section on the outer periphery of other end of a bottomed cylindrical part, said cylindrical part being positioned between said both torsion coil springs, with a clearance provided between said other end and said barrel where one end of said inner tension coil spring passes to be retained, at said bottom portion, by the end portion of said valve shaft, and said flange section holding said outer torsion coil spring from disengaging in the axial direction; and an engaging member, which is secured at bottom with said spring holder at the end portion of said valve shaft, and retains each other end of said inner torsion coil spring and said outer torsion coil spring.



4,880,208
TWO-PIECE VALVE SYSTEM FOR BODIES TO BE FILLED WITH A GASEOUS MEDIUM, LIQUID, IN PARTICULAR FOR PRODUCTS OF THE RUBBER INDUSTRY

László Palotás, Budapest; Géza László, Nyiregyháza; Lázlo Horvath; Árpádné Baria, both of Budapest; Barnabás Márion, and Ferencné Szarka, both of Nyiregyháza, all of Hungary, assignors to Taurus Gumiipari Vallalat, Budapest, Hungary

Filed Jul. 22, 1988, Ser. No. 222,942
Int. Cl.⁴ F16L *5/00; 33/00*
U.S. Cl. 251—356 6 Claims

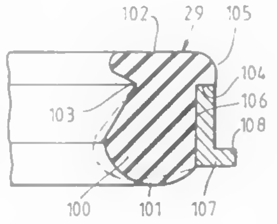


1. A two-part valve system comprising a valve body embedded into a rubber socket and a valve stem connected thereto with a thread, wherein the valve body is embedded in its full height in the rubber socket, on the inner wall of the through-bore of the valve body a connecting thread is formed while the outer wall of the valve stem is also provided with a connecting thread and in the inside of the valve body and on the threaded end of the valve stem seats are formed for receiving an O-ring.

4,880,209
SEALING WASHER FOR TAPS

Bernat, Georg, Narre Warren, Australia, assignor to Dorf Industries Pty. Ltd., Victoria, Australia

Filed Aug. 12, 1988, Ser. No. 231,394
Claims priority, application Australia, Aug. 14, 1987, PI3746
Int. Cl.⁴ F16K *25/00*
U.S. Cl. 251—363 4 Claims

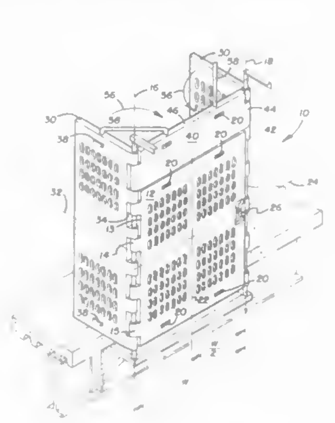


1. A sealing washer, for the end of a tap top assembly of the type including an end housing containing a ceramic disc assembly, and for engagement with a valve seat within a tap body, said sealing washer normally engaging said ceramic disc assembly and comprising a ring of resilient compressible material surrounded by a sleeve of rigid material with a radially outwardly extending flange forming part of said sleeve and positioned whereby, in use, upon excessive compression of said resiliently compressible material said flange will engage the end of said housing containing the ceramic disc assembly to retransmit the excessive compressive forces to said housing rather than said ceramic disc assembly.

4,880,210
REMOVABLE AND STACKABLE HOISTWAY DOOR ASSESMBLY

Fred Cucksey, Belmont, Calif., assignor to Specialty Hoisting Services, Inc., Newark, Calif.

Filed Feb. 8, 1988, Ser. No. 153,228
Int. Cl.⁴ E04H *17/16*
U.S. Cl. 256—26 19 Claims



1. A stackable hoistway door structure, comprising:

a center member having a vertical centerline pivotable about a first or a second axis, the center member having latch means for latching or unlatching the center member and the center member having hinge means and stack means for stacking multiple hoist door assemblies said stack means being symmetrical along the vertical centerline; and

first and second wing members, the first and second wing members having hinge means compatible with the center member hinge means for hinging the wing members on the center member, the wing members being pivotable about the first or the second axis, the wing members being able to pivot such that each wing member contacts the center member at its limit of rotation, the wing members being interchangeable, and each wing member having stack means for stacking multiple hoist door assemblies compatible with the center member stack means.

4,880,211
METHOD AND APPARATUS FOR RELINING A REFRACTORY LINED VESSEL

James D. Head, 207 Highland Dr.; Edward F. Burns, 207 Leeds Dr.; William A. Schleizer, 4 Division Rd., all of Valparaiso, Ind. 46383; C. Douglas White, 2401 Riverview Dr., Chesterton, Ind. 46304, and Dennis L. Gentry, 9216 W. 143rd Pl., Cedar Lake, Ind. 46303

Continuation-in-part of Ser. No. 924,405, Oct. 29, 1986, Pat. No. 4,793,595. This application Dec. 20, 1988, Ser. No. 286,889
Int. Cl.⁴ C21B *13/00, 15/00*
U.S. Cl. 266—44 11 Claims

1. Apparatus for relining the interior surface of a refractory lined vessel comprising,

an elongated supply pipe extending into the interior of said vessel, said supply pipe being movably supported on a sill portion of said vessel,

said supply pipe having an outlet end facing the interior surface of said vessel wall opposite said sill and an inlet end extending outside of said vessel,

said supply pipe having a first rigid portion and a movable portion, said movable portion connected to said elongated supply pipe outlet end,

means pivotally supporting said supply pipe on said sill portion to permit said supply pipe outlet end to pivot horizontally and vertically,

means to supply material to be sprayed to said inlet end of said supply pipe,

means to introduce air under pressure to said inlet end of said supply pipe to propel said material to be sprayed through said supply pipe and impinge on the interior surface of said vessel wall,

means to control the supply of said material to be sprayed,

means to control said flow of air under pressure,

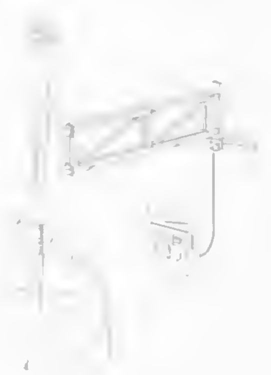
means to maintain the axis of said supply pipe movable portion aligned with the axis of said supply pipe rigid first portion, and

means to pivotally raise and lower said outlet end of said supply pipe relative to the axis of said supply pipe rigid first portion.

4,880,212
DEVICE FOR DETECTING THE LEVEL OF THE SLAG IN A METAL POOL

Hans Hägglund, Örsundsbro; Lars Ericsson, and Rudolf Wiklund, both of Täby, all of Sweden, assignors to Geotronics Metaltech AB, Sweden

Continuation-in-part of Ser. No. 938,881, Dec. 8, 1986, abandoned. This application Jul. 26, 1988, Ser. No. 225,620
Claims priority, application Sweden, Sep. 28, 1987, 8703728
Int. Cl.⁴ C21C *5/28*
U.S. Cl. 266—94 10 Claims



1. A device for detecting the level of a slag interface in a molten metal bath, said device comprising:

a lance,

means coupled to said lance for moving said lance towards said molten bath level,

an antenna provided at a downward end of said lance for coaction with said slag interface when said moving means moves said towards said slag interface,

a sensitive detection circuit connected to said antenna, said antenna during its downward movement being capacitively coupled to said slag layer, said detection circuit being arranged to detect predetermined impedance change(s) at the antenna provided as said antenna is moved towards the interface, said detection circuit comprising:

an oscillator (31) having a frequency which is different from the mains frequency,

a network supplied by the oscillator and having the antenna and its possible antenna supply (32) in one branch and a tap point (A;20;A′) separated from the oscillator supply point and connected to said antenna via an antenna supply cable provided if needed,

said detector being a synchronous detector having a reference-signal input which is connected to the oscillator (31) and a measuring-signal input which is connected to said tap point,

that the synchronous detector (33, 38) provides a D.C. output dependent without mistake on the change quality of the continuously existing signal at said tap point indicating the degree of capacitive coupling change between the antenna and the slag, and

that a threshold circuit (310) is connected to the synchronous detector output for supplying an output signal when the continuously existing signal at said tap point has a predetermined change quality indicating that the antenna is located a given distance from the interface corresponding to a given degree of capacitive coupling between the antenna and the slag.

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4,880,213
GAS SPRING APPARATUS

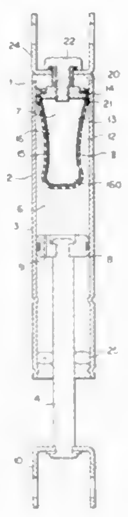
Takeyoshi Shinbori, Yokosuka; Ichiro Takadera, Tokyo, and Kohei Taguchi, Yokohama, all of Japan, assignors to NHK Spring Co., Ltd., Yokohama, Japan

Continuation-in-part of Ser. No. 6,622, Jan. 22, 1987, abandoned. This application Jun. 27, 1988, Ser. No. 212,109

Claims priority, application Japan, Jan. 30, 1986, 61-10974; Jun. 13, 1986, 61-137470

Int. Cl.⁴ F16F *9/04*

U.S. Cl. 267—64.27 20 Claims



1. A gas spring apparatus comprising:

a cylinder assembly including at least one cylinder housing and a rod, said rod being fitted in said cylinder housing and being movable in the axial direction of said cylinder housing, said cylinder assembly further including an oil chamber for containing oil and a gas chamber for containing gas;

damping force generating means disposed inside said cylinder assembly, and being adapted to damp reciprocation of said rod by means of viscous resistance produced when the oil in said cylinder assembly is circulated; and

a flexible bladder in the form of a bag, located between said oil chamber and said gas chamber and extending at least partly into said oil chamber, said gas chamber being defined inside the hollow of said bladder and said oil chamber being defined outside the hollow of said bladder, said bladder dividing said gas chamber from said oil chamber, and said oil in said oil chamber contacting an outer surface portion of said bladder;

said bladder including a flexible elastomer body made of an oil impervious elastomer having a thickness of from about 0.1 mm to about 5 mm so as provide a gas-barrier characteristic to substantially prevent passage of said gas therethrough, and a gas-barrier film made of a non-elastomeric material impermeable to said gas forming an inner surface of said bladder that is directly exposed to said gas chamber, said non-elastomeric gas-barrier film having a gas-barrier characteristic which is better than that of said elastomeric body, said gas barrier characteristic of said gas-barrier film being not more than about 1×10^{-11} cc·cm/(cm^2·sec·cmHg), said elastomer body covering the outer surface of said gas-barrier film to protect said gas-barrier film, and said elastomer body being thicker than said gas-barrier film, said oil contacting said outer surface portion of said bladder contacting said elastomeric body to prevent said elastomer body from drying out and to provide lubrication if said elastomer body contacts a wall of said cylinder assembly.

4,880,214
CUSHIONING AND PROTECTING MEMBERS

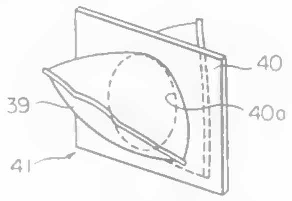
Emiko Sukai, Chigasaki, Japan, assignor to Kabushiki Kaisha Toshiba, Kanagawa, Japan

Filed Mar. 20, 1987, Ser. No. 28,402

Claims priority, application Japan, Mar. 29, 1986, 61-46437[U]; Aug. 29, 1986, 61-203136

Int. Cl.⁴ F16M *1/00;* **F16F** *1/36;* **B65D** *85/30;* **F16L** *41/00*

U.S. Cl. 267—136 3 Claims



1. A cushioning and protecting device to be disposed between a case and an article to be contained in the case, comprising:

a substantially planar supporting plate having opposed first and second surfaces and including a plurality of spaced-apart holes extending therethrough;

a plurality of cushions insertable in said spaced-apart holes, said cushions protruding from said first and second surfaces when said cushions are inserted in said supporting plate, each of said cushions comprising a tubular film having a first seam and a second seam, said second seam being spaced longitudinally from said first seam and being substantially perpendicular to said first seam; and

said supporting plate being insertable between the article and the case, said cushions engaging said article and said case when said supporting plate is inserted between the article and the case.

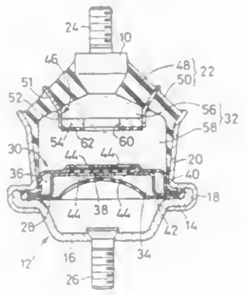
4,880,215
FLUID-FILLED ELASTIC MOUNTING STRUCTURE

Motohiro Katayama, Kasugai, and Tatsuya Suzuki, Komaki, both of Japan, assignors to Tokai Rubber Industries, Ltd., Japan

Filed Aug. 5, 1988, Ser. No. 228,676

Int. Cl.⁴ F16F *13/00;* **B60K** *5/12*

U.S. Cl. 267—140.1 9 Claims



1. A fluid-filled elastic mount for flexible coupling of two members, comprising:

first support means and second support means which are disposed opposite to each other in a load-receiving direction in which a vibrational load is applied to the elastic mount;

an elastic body interposed between said first and second support means, for elastic connection of said first and second support means, said elastic body including a truncated cone portion having a shape similar to a truncated cone;

a closure member secured to said second support means and

cooperating with at least said elastic body to define a fluid chamber filled with a non-compressible fluid, said closure member including a flexible portion;

first partition means for driving said fluid chamber into a pressure chamber formed on the side of said first support means, and an equilibrium chamber formed on the side of said second support means;

means for defining a first restricted passage for restricted fluid communication between said pressure-receiving chamber and said equilibrium chamber; and

second partition means comprising a hollow member including a first portion embedded in an intermediate portion of said truncated-cone portion of said elastic body which is intermediate said first and second support means, said truncated-cone portion being separated by said first portion of said hollow member into a small-diameter part secured to said first support means and a large-diameter part secured to said second support means, said hollow member further including a second portion positioned within said pressure-receiving chamber, said second partition means further comprising a plate-like member which is secured to said second portion of said hollow member such that said hollow member and said plate-like member divide said pressure-receiving chamber into a first section formed on the side of said first support means, and a second section formed on the side of said first partition means, said plate-like member having a second restricted passage formed therethrough for restricted fluid communication between said first and second sections of said pressure-receiving chamber.

4,880,216
TWO-CHAMBER ENGINE BEARING WHICH HAS HYDRAULIC DAMPING

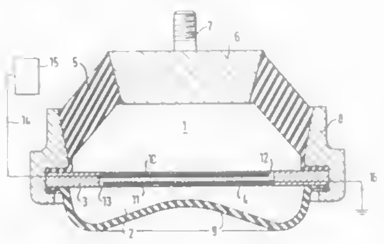
Volker Härtel, Germering; Dieter Theisen, Lohhof, and Günter Oppermann, Leverkusen, all of Fed. Rep. of Germany, assignors to Metzeler Kautschuk GmbH, Munich, Fed. Rep. of Germany

Filed Oct. 11, 1984, Ser. No. 659,714

Claims priority, application Fed. Rep. of Germany, Oct. 11, 1983, 3336965

Int. Cl.⁴ F16F *13/00;* **B60K** *5/12*

U.S. Cl. 267—140.1 4 Claims



1. Two-chamber engine bearing with hydraulic damping, comprising rubber-electric peripheral walls, a rigid intermediate plate defining upper and lower chambers along with said peripheral walls, said intermediate plate mechanically separating said chambers from each other, two mutually parallel flat plate electrodes disposed in said intermediate plate, said plate electrodes having a given width and being spaced apart from each other by a given distance defining a line therebetween with a given cross section and two ends, said line having two slot-shaped passages formed therein each connecting a respective one of said ends of said line with a respective one of said chambers, a hydraulic electroviscous liquid filling and interconnecting said chambers through said line, and a voltage source connected to said plate electrodes for generating an electric field controlling the viscosity of said liquid.

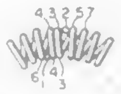
4,880,217
ANNULAR SPRING DESIGN

Joseph Navarro, Sr., 300 E. Baltimore Pike, Clifton Heights, Pa. 19018, and Joseph Navarro, Jr., Vineland, N.J., assignors to Joseph Navarro, Sr., Clifton Heights, Pa.

Filed Jul. 25, 1988, Ser. No. 223,544

Int. Cl.⁴ F16F *1/04*

U.S. Cl. 267—167 17 Claims



1. An annular spring formed from a straight spring, comprising:

(a) an intertwining region where an end coil from a first end of the straight spring is intertwined with a coil near a second end of the straight spring, with each said end coil aligning with the annular spring's inside and outside diameter;

(b) at least one spot weld joining said end coil from first end of said spring to coil near the second end;

so that the tension in each said end coil pulls against the tension in the opposite end coil.

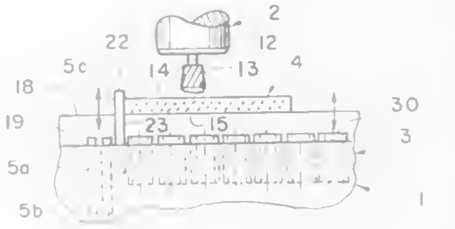
4,880,218
PROGRAMMABLE BED FOR MACHINE TOOLS AND THE LIKE

David G. Greene, Arden, N.C., assignor to Steelcase Inc., Grand Rapids, Mich.

Filed Dec. 3, 1987, Ser. No. 128,493

Int. Cl.⁴ B25B *11/00*

U.S. Cl. 269—21 18 Claims



1. A programmable bed for machine tools and the like, comprising:

a platen having a work surface adapted to support a variety of differently sized workpieces thereon adjacent an associated machine tool;

means for selectively retaining each of the different sized workpieces on the work surface of said platen at a preselected position to coordinate with the associated machine tool;

a plurality of retractable stops mounted in said platen; each of said stops having a retracted position wherein said stop is disposed wholly below the work surface of said platen to permit the workpieces to move freely thereover, and an extended position wherein at least a portion of said stop is disposed above the work surface of said platen to abut an associated one of the workpieces, and thereby locate the same at the preselected position on the work surface of said platen;

means for selectively and individually shifting said stops between the extended and retracted positions in response

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to identification of one of the differently sized workpieces to be machined, whereby the differently sized workpieces can each be automatically indexed at their preselected position on the work surface of said platen to facilitate machining.

4,880,219

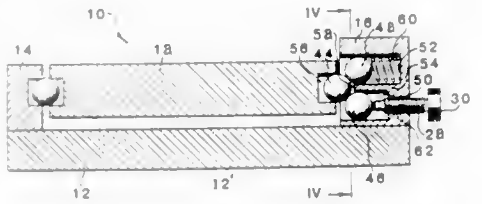
TILTING APPARATUS

Robert Nemirovsky, 1117 Hyman Ave., Bay Shore, N.Y. 11706, assignor to Robert Nemirovsky, Bay Shore, N.Y. and Joseph Deutsch, Commack, N.Y.

Filed Apr. 27, 1988, Ser. No. 186,889

Int. Cl.⁴ B23Q *3/18*

U.S. Cl. 269—60 15 Claims



1. A tilting apparatus comprising:
a. a base;
b. a platform movably attached to the base;
c. a first element disposed in said platform and having a first curved surface; and
d. a second element disposed in said base and having a second curved surface in contact with said first curved surface, said first and second curved surface cooperating to tilt said platform with respect to said base when a force is applied to one of said first and second elements;
e. wherein said base includes force application means for applying said force to said second element; and
f. wherein said force tilts said platform in a first direction, said apparatus further comprising a third element for applying a counteracting force on one of said first and second elements for tilting said platform in a second direction.

4,880,220

DEVICE FOR HOLDING AN OBJECT IN A SPATIAL POSITION

René Büchler, Sonnental, Switzerland, assignor to Buchler B-SET AG., Flawil, Switzerland

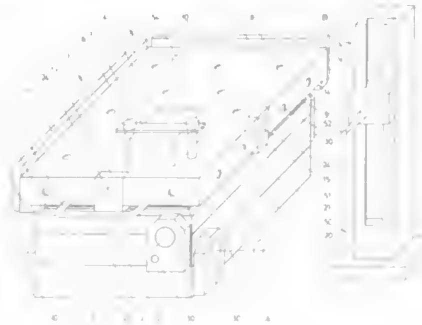
Continuation of Ser. No. 709,259, Mar. 7, 1985, abandoned. This application Dec. 12, 1986, Ser. No. 942,012

Claims priority, application Switzerland, Mar. 9, 1984, 1185/84

Int. Cl.⁴ B23Q *1/04*

U.S. Cl. 269—71 8 Claims

1. An apparatus for setting an object in a desired position in a horizontal plane, comprising:
(A) a base having a surface in the horizontal plane;
(B) a first member pivotably connected to the base so that the first member can be pivoted between either a position parallel to the surface of the base or a position perpendicular to the surface of the base about an axis A;
(C) a pallet coupled to the first member, the pallet being capable of bearing an object thereon and being pivotable with the first member between either the position parallel to the surface of the base or the position perpendicular to the surface of the base;
(D) a measuring column which is placed adjacent to the base and which has a measuring probe located at a predetermined vertical distance above a surface upon which the base and the column are placed;
wherein the desired position of the object along a directional perpendicular to the axis A is set by pivoting the first member to the position perpendicular to the surface of the base and positioning the object with respect to the measuring probe; and
(E) a second member which is pivotably connected to the first member about an axis B so that the second member can be pivoted between a position parallel to the surface of the base and a position perpendicular thereto, wherein the axis A is at right angles to the axis B, and the pallet is slidably attached to the second member and pivotable with said second member between the position parallel to the surface of the base and the position perpendicular to the surface of the base, and wherein the desired position of the object along a direction perpendicular to the axis B is set by pivoting the second member to the position perpendicular to the surface of the base and positioning the object with respect to the measuring probe;
wherein the pallet is provided with a cylindrical pin mounted thereon, the circumferential surface of which is used as a reference surface for the measuring probe.



4,880,221

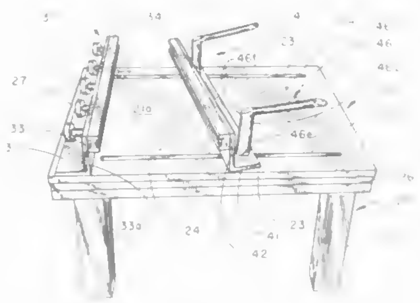
TABLE FOR HOLDING WORK PIECES FOR DRILLING, CUTTING AND THE LIKE

David M. Richards, 205 Washington, Ida Grove, Iowa 51445

Filed Apr. 24, 1987, Ser. No. 42,047

Int. Cl.⁴ B25B *1/02*

U.S. Cl. 269—139 7 Claims



1. A work piece holding table, comprising:
a table top having planar, parallel top and bottom surfaces and two parallel, longitudinally oriented slots;
ground support means for holding said table top at work height;
an elongated torque jaw, L-shaped in cross-section having a generally vertical leg and a generally horizontal leg and affixed to said table to at a right angle to the slots therein;
an elongated sliding jaw L-shaped in cross-section, having a generally vertical leg and a generally horizontal leg, said sliding jaw extending transversely across both of said slots in said table top and having two holes in its horizontal leg positioned for alignment with said slots; and
two coacting releasable fasteners operatively associated with said two holes and two slots for adjustably affixing said sliding jaw to said table top; and
one of the two holes in said sliding jaw being elongated in a direction for rotational movement of said sliding jaw upon release of said coacting fasteners whereby said sliding jaw can be affixed to said table top at an acute angle to said torque jaw,
a pair of elongated jaw means, one of said jaw means being mounted on the vertical leg of said sliding jaw at a position to face said torque jaw, means for mounting the other of said jaw means on the vertical leg of said torque jaw at a position to face said sliding jaw and with freedom of movement toward and away from the vertical leg of said torque jaw,
the vertical leg of said torque jaw including a plurality of threaded holes aligned with said other jaw means and a plurality of torque knobs, each including a threaded shank threadably received in a respective one of said threaded holes and a hand-turning means affixed to one end of said shank being engageable with said other of said jaw means for urging said other jaw means toward said sliding jaw in response to rotation of said torque knob in one direction thereby to apply clamping pressure to a work piece supported between said pair of jaw means.

4,880,222

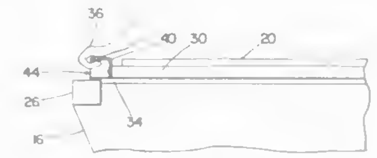
PATIENT SUPPORT FOR RADIATION IMAGING

Kenneth J. Dragmen, Sr., South Euclid, Ohio, assignor to Picker International, Inc., Cleveland, Ohio

Division of Ser. No. 850,021, Apr. 10, 1986, Pat. No. 4,715,591. This application Oct. 19, 1987, Ser. No. 109,417

Int. Cl.⁴ A61G *13/00*

U.S. Cl. 269—322 3 Claims



1. A table assembly for use in creating radiographic images of patients under examination comprising:
a. a table base;
b. a table top having a substantially planar patient examining surface and a longitudinal dimension;
c. means for mounting the table top to the table base for movement along a path substantially parallel to the longitudinal dimensions of said table top and maintaining a clearance space between said table top and said table base; and
d. a guard structure mounted to at least one end of the table top for preventing placement of patient fingers around the table top end and into the clearance space, said guard structure comprising a flexible plate extending outward from the table top end at an angle obtuse to the patient examining surface and defining an edge above the clearance space for grasping by the patient.

4,880,223

SORTER HAVING A MECHANISM FOR DRIVING BINS STEPWISE

Hideo Yamazaki, Tokyo, and Kazunori Kubota, Yokohama, both of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

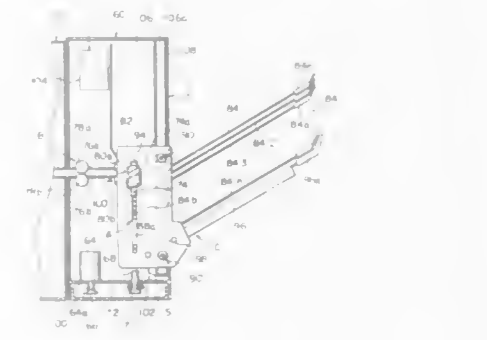
Continuation of Ser. No. 55,348, May 29, 1987, abandoned. This application Dec. 20, 1988, Ser. No. 287,554

Claims priority, application Japan, May 31, 1986, 61-126720

Int. Cl.⁴ B65H *39/10*

U.S. Cl. 271—293 6 Claims

1. A sorter having a helical cam bin driving mechanism for moving a plurality of bins, which are arranged in multiple steps stacked one upon another sequentially and intermittently to a sheet delivery position to deliver sheets to each of said respective bins, said sorter comprising:
a bin group made up of said bins, each of said bins being provided with pins which protrude sideways from both sides of a base end of a bottom plate of said pin and aligned so as to be engaged by said helical cam;
bin support frame members for supporting the bins such that said bins are movable individually to the sheet delivery position, said bin support frame members being provided with pin guides in which the pins of said bins are slidably received wherein said bin support frame members includes a pair of side plates which face each other, the pin guides having elongate slots each being formed through a respective one of said side plates, each of said elongate slots having an abutment at an upper end thereof for engagement with the pins and wherein said plates having means fixedly attached thereto so as to fix each side plate to each other at the top and bottom thereof such that said bins are disposed therebetween; and
a drive means for driving said helical cam of said bin driving mechanism including an AC reversible motor, and a motor stop control circuit for, while said AC reversible motor is deenergized, rectifying an AC power source to apply braking current to said motor over a predetermined period of time.



4,880,224

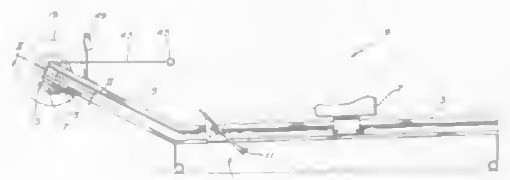
ROWING MACHINE

Werner Jonas, 1142 Ave. Des Erables, Apt. #1, Quebec, Quebec, Canada G1R 2N2, and Nathanial B. Findlay, 1045 Belvedere Ave., Apt. #226, Quebec, Quebec, Canada G1N 4L4

Filed Oct. 19, 1988, Ser. No. 259,737

Int. Cl.⁴ A63B *69/06*

U.S. Cl. 272—72 3 Claims



1. A stationary rowing machine exercising device, comprising:
a frame member;
seat means mounted on said frame member and movable therealong;
feet rest means connected to said frame member;
a shaft mounted across said frame at one end thereof;

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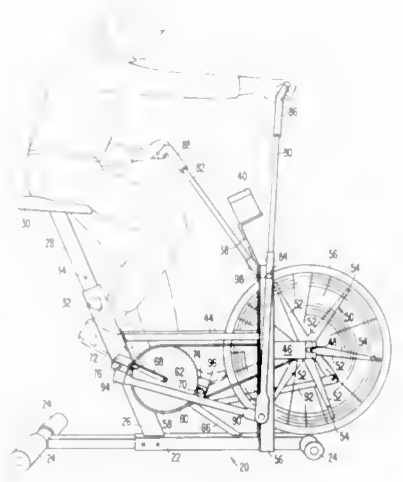
a flywheel mounted on said shaft;
means for rotatably driving said flywheel mounted on said shaft;
said means for rotatably driving comprising:
- (i) a planetary gear system comprising:
  - (a) a rotatable carrier;
  - (b) pinion gears mounted in said carrier or on said carrier;
  - (c) a stationary ring gear;
  - (d) a central gear;
  - said pinion gears meshing with said central gear and said stationary ring gear;
- (ii) said central gear being mounted on said shaft for rotation therewith;
- (iii) spool means mounted on said carrier for rotation therewith;
- (iv) cable means wound around said spool means for providing rotary motion to said spool means when said cable means is pulled by an exerciser during a rowing stroke;

whereby, said rotary motion of said spool is transferred to said flywheel, through said planetary gear system and said shaft, in a speed increasing mode.

4,880,225
DUAL ACTION CYCLE EXERCISER

James F. Lucas, Auburn, and Bruce F. Coody, Opelika, both of **Ala., assignors to Diversified Products Corporation, Opelika, Ala.**

Filed Jul. 28, 1988, Ser. No. 225,176
Int. Cl.⁴ A63B *21/00*
U.S. Cl. 272—73 3 Claims

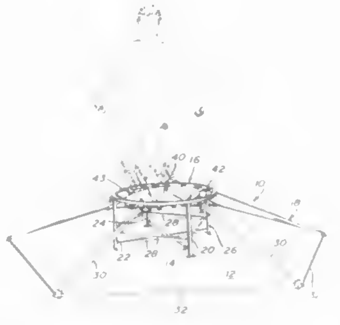


1. A cycle exerciser comprising:
a frame;
a transverse drive shaft journalled on said frame;
a pair of cranks respectively secured 180 degrees out of phase to opposite ends of said drive shaft so as to rotate therewith;
a foot pedal attached to the outboard side of each of said cranks and rotatable thereon about a transverse pedal axis;
a pair of oscillating handlebar levers pivotally mounted on said frame intermediate their ends ahead of said drive shaft for fore and aft movement on opposite sides of said frame;
a handle at the upper end of each of said handlebar levers;
a seat mounted on said frame above and aft of said drive shaft to position a user within reach of said foot pedals and said handles;
a pair of connecting rods at opposite sides of said frame, each connecting rod pivoted at its forward end to the lower end of the respective handlebar lever, and having at its rear end a rigidly attached upwardly projecting portion which is pivoted to the respective crank about the respective pedal axis, whereby rotation of said pedals and oscillation of said handlebar levers are synchronized and said connecting rods are located below said pedals throughout their revolution about said drive shaft; and
energy absorbing means on said frame operatively connected to said drive shaft for resisting rotation of said drive shaft caused by the user's rotation of said pedals and/or oscillation of said handlebar levers.

4,880,226
SKIING SIMULATOR

Peter Krantz, 217 Demers, Montreal, Quebec, Canada H2T 1K6

Filed Feb. 21, 1989, Ser. No. 312,192
Int. Cl.⁴ A63B *5/00, 69/18*
U.S. Cl. 272—97 7 Claims



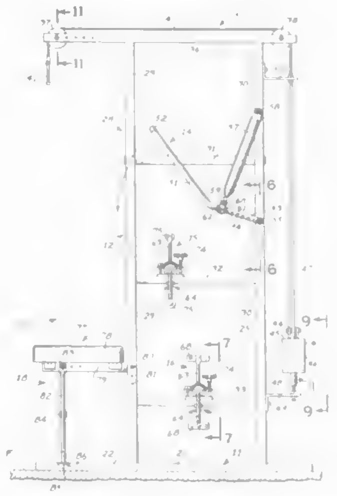
1. A skiing simulator comprising a platform, the platform including a peripheral frame and defining an opening, a subplatform provided within the opening and suspension means mounting the sub-platform to the peripheral frame for relative universal directional tilting movement therewith, the suspension means including tension means extending between the peripheral frame and the sub-platform and normally maintaining the sub-platform in the plane of the platform, the simulator being characterized in that the sub-platform defines a pair of openings having parallel longitudinal axes and a pair of boot receiving harnesses, one in each opening, means for mounting a ski boot in alignment with the longitudinal axis of each respective opening and rotatably about the respective longitudinal axis, such that a person standing on the subplatform with a foot in each respective boot harness can simulate the body movement of a skier during downhill skiing.

4,880,227
VARIABLE EXERCISER

Wendell L. Sowell, 4414 Brush Hill Rd., Nashville, Tenn. 37216

Filed Dec. 12, 1988, Ser. No. 283,088
Int. Cl.⁴ A63B *21/06*
U.S. Cl. 272—118 11 Claims

1. An exercise apparatus comprising:
- (a) a base frame adapted to be supported upon a floor and having front and rear portions,
- (b) an upright support frame projecting upward from said base frame,
- (c) a seat station in front of said upright support frame,
- (d) pulley means mounted on the upper portion of said upright support frame,
- (e) a cable supported for movement over said pulley means and having front and rear ends on opposite sides of said pulley means,
- (f) a cable handle on the front end of said cable above said seat station,
- (g) detachable weight means mounted on said rear end of said cable,
- (h) an exercise lever having front and rear end portions, and means pivotally mounting said rear end portion on said upright support frame to permit vertical swinging movement of said front end portion above said seat station,
- (i) resistive means connecting said exercise lever to said upright support frame to resist said swinging movement of said exercise lever,
- (j) a first crank member having at least one first rotary crank arm and a crank handle on said first crank arm,
- (k) first mounting means mounting said first crank member on said upright support frame above said seat station for longitudinal adjustable movement front-to-rear of said upright support frame,

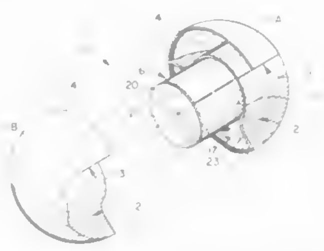


- (l) a second crank member having at least one second rotary crank arm and a pedal mounted on said second crank arm for rotating said second crank arm,
- (m) second mounting means mounting said second crank member on said upright frame member behind and below said seat station and below said first mounting means for adjustable movement of said second crank member in a front-to-rear direction,
- (n) said cable handle, said front end portion of said exercise lever, and said crank handle being spaced from said seat station within reach of a hand of the person seated in said seat station, and said pedal being spaced from said seat station within the reach of a foot of the person seated in said seat station.

4,880,228
EXERCISE DEVICES

Scott Caruthers, Glen Burnie, Md., assignor to Dar Products Corporation, Baltimore, Md.

Division of Ser. No. 94,794, Sep. 14, 1987, Pat. No. 4,813,669. This application Oct. 14, 1988, Ser. No. 257,526
Int. Cl.⁴ A63B *11/00*
U.S. Cl. 272—122 6 Claims



1. A method for forming an exercise device intended for strengthening a user's targeted muscle, comprising the steps of forming a pair of substantially hemispherical, relatively thin-walled housing portions, at least one of said housing portions having a cut-away portion, each of said housing portions further having an edge including an, arcuate rib, and each housing portions forming a concave inner walled portion; forming a cylinder having a pair of opposed ends, at least one of which is open; disposing the desired weight into the cylinder; inserting each opposed end into a respective concave inner walled portion, wherein each opposed end of the cylinder is received and supported; joining the arcuate ribs of each edge to one another, whereby a substantially spherical housing having a diametral axis and a cut-away portion is formed, and thereby the housing further has an opening formed therein substantially tangentially of the housing and communicating with the cut-away portion thereof.

4,880,229
WEIGHT PLATE FOR EXERCISE DEVICE

Robert Broussard, Playa del Rey, Calif., assignor to Progressive Health & Fitness, Los Angeles, Calif.

Continuation-in-part of Ser. No. 830,955, Feb. 19, 1986, Pat. No. 4,756,526. This application Mar. 31, 1988, Ser. No. 175,911
The portion of the term of this patent subsequent to Jul. 12, 2005, has been disclaimed.
Int. Cl.⁴ A63B *13/00*
U.S. Cl. 272—123 12 Claims

1. For use with an exercise apparatus of the type comprising
- (a) a pair of longitudinally separated weight plates for providing a movable weight-training mass and 5 having respective centers for gravity;
- (b) a generally cylindrical lifting bar extending generally longitudinally between the weight plates and mounted thereto at first respective locations on the plates offset from said respective centers of gravity;
- (c) means for permitting rotation of the weight plates about the lifting bar as the apparatus is moved by a user; and
- (d) a leverage bar extending generally longitudinally between the pair of weight plates and mounted thereto for rotation therewith at respective second locations on the weight plate means different from the respective first locations, the leverage bar being positioned to rotate with the weight plates about the lifting bar so as to contact the outer forearm of the user during the exercise movement,

a weight plate having front and back faces, the faces being generally symmetrical about respective first axes of symmetry and being asymmetrical about respective second axes, the first and second axes associated with each face being relatively orthogonal, the points of intersection of the two sets of first and second axes being co-linear with the plate's center of gravity, the plate including
first mounting means for mounting the weight plate to a lifting bar, said first mounting means being located with respect to at least one face at a first position on said first axis and offset from the from the intersection of the face's first and second axes,

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- a first discontinuous surface feature associated with one of the front and back faces, and
- a second discontinuous surface feature associated with the other of the front and back faces, the first and second surface features being respectively interengagable with corresponding second and first features of adjacent weight plates on the apparatus to cause the plates to move in general unison about the lifting bar.

4,880,230

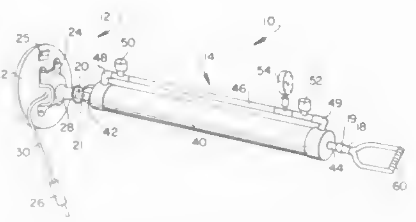
PNEUMATIC EXERCISE DEVICE

Gerry Cook, 1708 Park View Pl., Bozeman, Mont. 59715

Filed Jun. 28, 1988, Ser. No. 212,429

Int. Cl.^{4} A63B *21/00*

U.S. Cl. 272—130 5 Claims



1. A portable, stand-alone, pneumatic exercise device comprising:
- a closed double-acting pneumatic cylinder having first and second ends, the cylinder enclosing a moveable piston element;
- a first and second operating chambers positioned within the cylinder on opposite sides of the piston element;
- a suction cup for mounting the exercise device to a surface external to the exercise device;
- a pivotal connection means for pivotally connecting the suction cup and the pneumatic cylinder;
- a shaft connected to the piston and extending through a sealed end wall on the second end of the double-acting pneumatic cylinder;
- a pneumatic line located outside the double-acting pneumatic cylinder and interconnecting the first chamber and the second chamber to allow air to flow between the first and second chambers;
- a first valve means for adjusting the rate of flow in the pneumatic line in one direction;
- a second valve means for selectably adjusting the rate of flow in the pneumatic line in the opposite direction;
- a gauge means located between the two valve means to indicate pressure in the line; and
- a quick coupling fitting connected to the end of the shaft opposite the piston;
- an exerciser engaging means for connecting to the quick coupling fitting to enable a user to push and pull the piston as well as move the second end of the cylinder pivotally with respect to the suction cup whereby a user can exercise selected muscle groups.

4,880,231

ACTION TOY GAME APPARATUS

Toshio Kobayashi, Chiba, Japan, assignor to Asahi Corporation, Tokyo, Japan

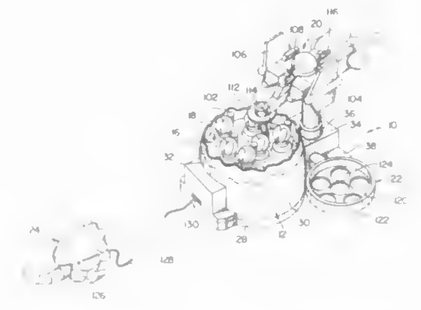
Filed Nov. 18, 1988, Ser. No. 273,223

Claims priority, application Japan, Nov. 19, 1987, 62-176690[U]

Int. Cl.^{4} A63F *9/06*

U.S. Cl. 273—1 GD 3 Claims

1. An action toy-game apparatus comprising a base, a timer on said base actuable for a set period of time, rotatable platform means on said base operatively connected to said timer for rotation during said set period of time, a plurality of game elements receivable in upright positions on said platform means for rotation therewith during said set period of time, retrieving means for individually retrieving said game elements from said platform mean, one of either said retrieving means or each of said game elements comprising magnet means, the other one of either said retrieving means or each of said game elements comprising magnetically responsive means, said retrieving means being operative for individually magnetically retrieving said game elements from said platform means during rotation of said platform means, means for upsetting any game elements remaining on said platform means and positioned in the upright positions upon the expiration of said set period of time, and a tethered character figure which is operatively connected to said timer so that it is drawn toward said base during said set period of time and positioned at a location which is closely adjacent said base upon the expiration of said set period of time.



4,880,232

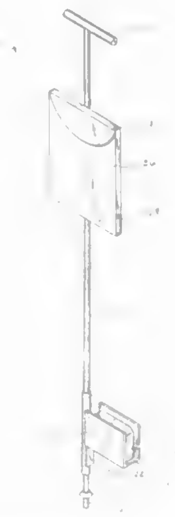
FLAG PIN GOLF BALL DISTANCE MEASURING DEVICE

James P. Lang, 11 Cedar Ct., Mobile Manor, Richmond, Ind. 47374

Filed Jul. 8, 1988, Ser. No. 216,401

Int. Cl.^{4} A63B *57/00*

U.S. Cl. 273—32 B 4 Claims



1. A flag pin golf ball distance measuring device for measuring the distance of a golf ball from a hole on a putting green, comprising:
- an elongated cylindrical pin;
- a lower end of said pin dimensioned for insertion into and registry with a standard golf hole cup;
- a hollow sleeve received for longitudinal sliding movement around said pin;
- a right angle bracket having a first leg extending parallel with a longitudinal axis of said sleeve and secured thereto;
- a second leg of said bracket extending perpendicular to the longitudinal axis of said sleeve;
- a pair of spaced parallel side walls extending perpendicularly upwardly from opposed side edges of said second leg;
- a spring roller type tape measured removably received on said second leg, between said parallel side walls; and
- a free end of a measuring tape of said tape measure secured to said sleeve.

4,880,233

GAME BALL

Chul-Ho Song, Seoul, D.P.R. of Korea, assignor to Seoul Nassau Corporation, Seoul, Rep. of Korea

Continuation of Ser. No. 9,266, Jan. 30, 1987, abandoned. This application Oct. 3, 1988, Ser. No. 253,081

Claims priority, application D.P.R. of Korea, Nov. 15, 1986, 86-9646

Int. Cl.^{4} B29C *27/08;* A63B *37/12*

U.S. Cl. 273—60 R 13 Claims

1. A substitute baseball for safely teaching young and inexperienced players the skills developed by playing with an otherwise hard and heavy regulation baseball, the substitute baseball comprising:
- (a) a cover replicating the appearance, texture, and surface features of a regulation baseball, thereby producing in said substitute baseball the feel and aerodynamic behavior of a regulation baseball, said cover comprising:
  - (i) first and second pieces of thin material cut in the pattern of the pieces of the cover of a regulation baseball, said first and second pieces having a texture on the outer surface thereof that resembles leather and being provided at the edges thereof with a plurality of perforations in a continuous sequence parallel said edges; and
  - (ii) raised herringbone stitching threaded between said perforations on said first piece and said perforations on said second piece, thereby securing the edges of said first piece to said edges of said second piece in a single continuous raised ridge of stitching disposed in the pattern of the stitching of the cover of a standard baseball, said ridge of stitching presenting an elevated gripping feature on the surface of said cover and contributing to aerodynamic behavior in said substitute baseball that replicates the aerodynamic behavior of a regulation baseball; and
- (b) a flexible, hollow spherical core formed of a homogeneous synthetic rubber material and enclosed within said cover, the outer diameter of said core and the thickness of the walls thereof being such that said core with said cover thereon has a weight of 2.50 to 3.50 ounces and a circumference in the range of 9.00 to 9.25 inches, whereby the substitute baseball due to the increased flexibility of the walls thereof and the lightness thereof compared with that of a regulation baseball affords an enhanced margin of safety to young and inexperienced players.

4,880,234

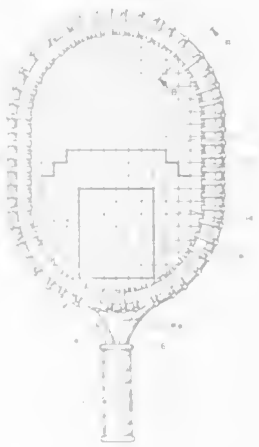
TRAINING RACKET FOR PROPELLING BASEBALLS AND SOFTBALLS

William F. Salisbury, 264 East 700 South, Springville, Utah 84663

Continuation of Ser. No. 579,343, Feb. 13, 1984, abandoned. This application Jul. 18, 1988, Ser. No. 220,464

Int. Cl.^{4} A63B *51/04, 51/14*

U.S. Cl. 273—73 L 19 Claims



1. A racket for propelling baseballs and softballs comprising an open frame having an elongate handle attached to and extending outwardly from an end of said frame, a detachable net having a flexible perimeter smaller than the perimeter of the open frame; a plurality of self-holding, individually adjustable stretch strips spaced about the frame and interconnecting the perimeter of the net with the frame to thereby hold the net tautly within the frame, each of said stretch strips being an elongate strip of resilient material having an opening near one end and each of said strips being looped about the perimeter of the net with ends extending to the outside of said frame with the end of the strip opposite the end with the opening passed through the opening and with the strips positioned such that the ends of the strips are held between the frame and intermediate portions of the strips to thereby hold the strips in looped formation.

4,880,235

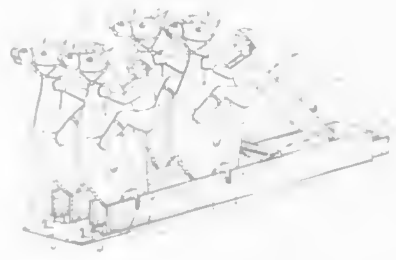
SIMULATED ANIMAL RACING TRACK APPARATUS

William H. Groenewold, 1435 Shawnee, BourBonnais, Ill. 60914

Filed Oct. 24, 1988, Ser. No. 261,160

Int. Cl.^{4} A63F *9/14*

U.S. Cl. 273—86 R 4 Claims



1. A simulated animal race track apparatus comprising:
- a track; having upstanding walls and a reset bar slideably disposed on top of one of the upstanding walls wherein the

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reset bar is provided with a first plurality of spaced projections which extend in the direction of the other of the upstanding walls; and, wherein the reset bar is operatively engaged to the said one of the upstanding walls;

a first plurality of animal-shaped members spaced apart in a first line sequentially from one end of said track to the other end thereof;

a second plurality of animal-shaped members spaced apart in a second line sequentially from one end of said track to the other end thereof;

means for independently, pivotally attaching each of said first animal-shaped members along a horizontal axis, each of said first animal-shaped members being mounted for pivotal movement about a different horizontal axis wherein each of said horizontal axes is equally spaced from each other adjacent horizontal axis;

means for independently, pivotally attaching each of said second animal-shaped members along a horizontal axis, each of said second animal-shaped members being mounted for pivotal movement about a different horizontal axis wherein each of said horizontal axes associated with said second animal-shaped members is equally spaced from each other adjacent horizontal axis associated with said second animal-shaped members;

means for holding each animal-shaped member in an over-center generally upright position;

means for permitting each of said animal-shaped member to pivot to a tipped position into contact with the animal-shaped member directly in front of it for causing the sequential pivoting of each animal-shaped member from said upright to said tipped position thereof; and,

means attached to one end of said track for simultaneously starting a first pair of said animal-shaped members to move from the upright to said tipped position; wherein said first plurality of spaced projections are adapted to engage opposed pairs of animal-shaped members operatively disposed on said track.

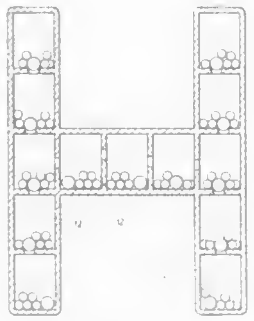
4,880,236
GAME DEVICE

Sheng-Lee Hwang, No. 84, 6F-3, Sec. 3, San-Min Rd., Taichung City, Taiwan

Filed May 11, 1988, Ser. No. 192,614

Int. Cl.^{4} A63B *67/14*

U.S. Cl. 273—113 1 Claim



1. A game device comprising:

(a) a transparent housing having a substantially H-shaped configuration;

(b) a plurality of spaced partition plates dividing the interior of the housing into a plurality of compartments arranged in a configuration having two spaced rows and a transverse row interconnecting the spaced rows, each of the partition plates having a through-hole therein to provide communication between two adjacent compartments;

(c) a first game piece freely moveable and confined within each of the compartments, each first game piece being capable of blocking the through-hole of the partition plate;

(d) a plurality of second game pieces freely moveable under gravity from one compartment to another compartment through the through-hole; and

(e) wherein the game device is played by holding the housing and moving, tilting or shaking the housing so as to selectively move a desired number of the second game pieces from at least one compartment into a lower compartment through the through-hole, and controlling the movement of the housing to prevent the first game piece from blocking the through-hole while the second game piece falls therethrough.

4,880,237
TOKENLESS SLOT MACHINE SYSTEM

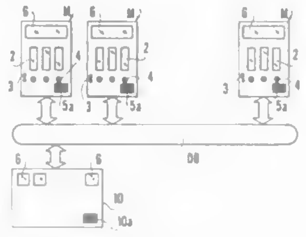
Ryutaro Kishishita, 109 Yamatecho, Naka-ku, Yokohama, Kanagawa, Japan

Filed Dec. 29, 1987, Ser. No. 139,313

Claims priority, application Japan, Nov. 30, 1987, 62-302125

Int. Cl.^{4} A63F *9/22;* A63B *67/00;* G06F *15/28*

U.S. Cl. 273—138 A 5 Claims



1. A slot machine system comprising:

a game data processing unit which is provided with:

an input unit having a keyboard for inserting input data, said input data including a user's identification code and number of game media available for wagering,

a storage unit in which said input data is readably stored,

an operation unit for performing arithmetic processing of said input data,

a printer for printing said input data and an incorrect version of said input data on opposing sides of a card, said printer being able to provide the card to a user, and

a first display for displaying said input data and the results of said arithmetic processing; and a slot machine body which is provided with:

a pattern display mechanism comprising three or more second displays on which patterns are displayed,

a start means for changing said patterns,

a stop means for stopping the changing of said patterns,

a win decision unit for deciding whether a pattern line of said stopped pattern display mechanism wins a game and for supplying the output to said data processing unit,

a write unit for recording said input data and the results of said arithmetic processing performed in said game data processing unit, and

a data entry unit having a keyboard for receiving entered data including a user's identification code and a number of game media to be wagered by the identified user, said number of game media to be wagered not being predetermined by said system, whereby said fame can be started when the identification code in said input data corresponds to the identification code in said entered data and the number of game media to be wagered is no more than the game media available for wagering.

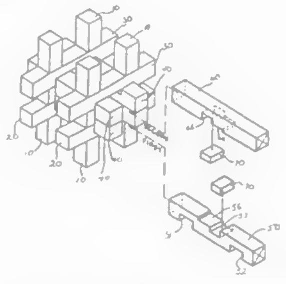
4,880,238
LOCKING PUZZLE

Louis G. Deronin, P.O. Box 545, Gibbons, Alberta, Canada T0A 1N0

Filed Jun. 15, 1988, Ser. No. 206,717

Int. Cl.^{4} A63F *9/12*

U.S. Cl. 273—160 5 Claims



1. A puzzle comprising an arrangement of elongate blocks each being square and equal in cross section and having the same length, said blocks being provided with suitably located rabbets so as to permit interlocking thereof into an assembled puzzle, two of said blocks being adapted to receive a pair of locking members such that in a first orientation of said assembled puzzle said two blocks and said locking members retain said puzzle in an assembled, locked position and in a second rotated orientation said locking members allows said two blocks to unlock thereby permitting disassembly of said puzzle.

4,880,239
GOLF TRAINING APPARATUS

Michel R. Leneven, 20 avenue de la République, Presles, France

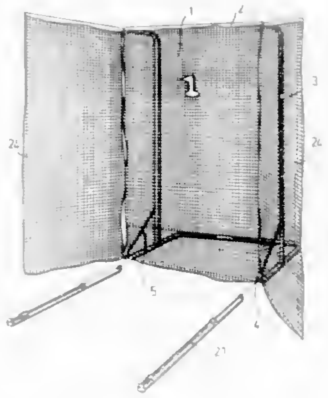
PCT No. PCT/FR87/00003, § 371 Date Aug. 31, 1987, § 102(e) Date Aug. 31, 1987, PCT Pub. No. WO87/04082, PCT Pub. Date Jul. 16, 1987

PCT Filed Jan. 6, 1987, Ser. No. 101,180

Claims priority, application France, Jan. 6, 1986, 86 00150

Int. Cl.^{4} A63B *69/36*

U.S. Cl. 273—181 F 18 Claims



11. A sports training apparatus for ball hitting games and comprising:

a frame which includes a base as well as at least one upright,

a net depending from the upright and having at least one lower net corner, the lower net corner connected to a weight organized to ride along an inclined member spanning between the base and a higher point on the upright, whereby displacement of the weight measures impact of the ball into the net.

4,880,240
PUTTING PRACTICE DEVICE

John F. Lewis, P.O. Box 363, Quebec, Canada J0P 1J0

Filed Sep. 22, 1988, Ser. No. 247,766

Claims priority, application Canada, Sep. 25, 1987, 547815

Int. Cl.^{4} A63B *69/36*

U.S. Cl. 273—188 R 19 Claims

1. Apparatus for assisting a golfer while putting, said apparatus comprising in combination:

a golf putter having a grip with a flat surface above the rear end of the putter head, said flat surface being aligned at right angles to the face of said putter head; and

a guide means including means for attaching same to the waist of said golfer, said guide means providing a guiding surface cooperable with the flat surface of said putter grip for directing the putting stroke in a predetermined plane.

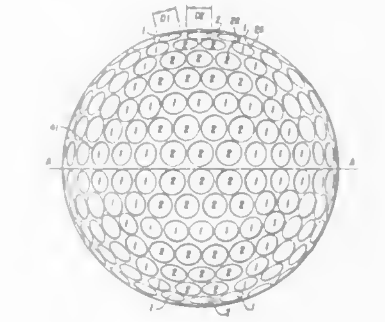
4,880,241
GOLF BALL

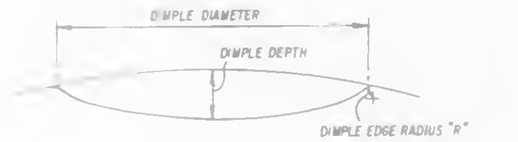
Terrence Melvin, Somers, Conn., and R. Dennis Nesbitt, Westfield, Mass., assignors to Spalding & Evenflo Companies, Inc., Tampa, Fla.

Filed Apr. 22, 1988, Ser. No. 184,910

Int. Cl.^{4} A63B *37/12*

U.S. Cl. 273—232 8 Claims





1. A golf ball having two poles and an equator and having a preselected number of diplomas arranged in a geometrical lattice configuration, said configuration comprising

a first plurality of dimples having a predetermined diameter, D1, lying along the lattice lines of said configuration, said diameter, D1, being between 0.150 and 0.160 inch;

a second plurality of dimples lying within said geometrical

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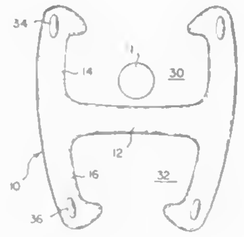
lattice, substantially all of said second plurality of dimples having a predetermined diameter, D2 between 0.160 and 0.170 inch; and

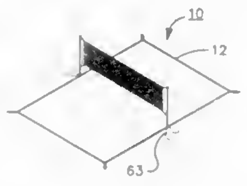
the edge radius, R, of said first and second plurality of dimples being between 0.090 and 0.110 inch.

4,880,242
GAME APPARATUS AND METHOD OF PLAYING A GAME USING THE SAME
Ordie S. White, **3922 41st St., New Brighton, Pa. 15066**
Filed Feb. 26, 1988, Ser. No. 160,731
Int. Cl.⁴ A63B *67/06, 65/00*
U.S. Cl. 273—336 20 Claims



1. A game projectile comprising:
a. a central bar member;
b. two first legs connected to and extending generally perpendicularly from the ends of said central bar member such that the distance between the ends of said first legs remote from said central bar member comprises a first opening;
c. two second legs connected to and extending generally perpendicularly from the ends of said central bar member in a direction generally away from said first legs, such that the distance between the ends of said second legs remote from said central bar member comprises a second opening which is smaller than said first opening; and
d. said first legs being inwardly curved toward one another to form said first opening and said second legs being inwardly curved toward one another to form said second opening.

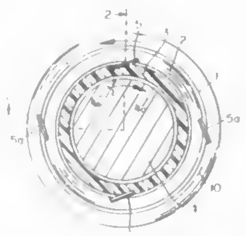
4,880,243
PORTABLE PLAYING COURT DEMARCATION APPARATUS AND METHOD FOR FABRICATION THEREOF
Walter B. Raub, **2111 Union Way, Lakewood, Colo. 80215**
Filed Jan. 31, 1989, Ser. No. 304,565
Int. Cl.⁴ A63B *71/02*
U.S. Cl. 273—411 22 Claims



1. A portable playing court demarcation apparatus for marking a boundary of a rectangular court for playing a game, the court having back boundaries of a length equal to a court width and side boundaries of a length equal to a court length defining a court perimeter, the apparatus comprising:

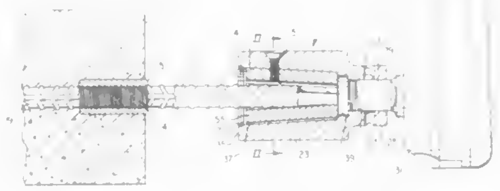
a continuous, endless flexible outer boundary demarcation element of a length greater than a distance about the perimeter of the court to be marked, said demarcation element including four loop segments, each loop segment forming a loop of predetermined circumference, the element crossing itself at a corner point at the base of each loop at generally a right angle such that the longitudinal distance along said demarcation element between consecutive loop segments is alternately equal to the court length and the court width.

4,880,244
MOUNTING FOR A SEALING RING
Christian Greune, **Fuerstenfeldbruck, Fed. Rep. of Germany, assignor to MTU Motoren-und Turbinen-Union Muenchen GmbH, Munich, Fed. Rep. of Germany**
Continuation of Ser. No. 107,246, Oct. 9, 1987, abandoned. This application Jan. 19, 1989, Ser. No. 300,731
Claims priority, application Fed. Rep. of Germany, Oct. 24, 1986, 3636165
Int. Cl.⁴ F16J *15/44, 15/54*
U.S. Cl. 277—174 10 Claims



1. A sealing device for sealing a gap between a rotating shaft and an inner wall of a bore in a shaft support member (10) through which the shaft passes, comprising an endless sealing ring (3), a carrier ring (2) for supporting said endless sealing ring (3) in said bore, first rigid movement permitting means operatively inserted between said endless sealing ring and said carrier ring at two approximately diametrically opposite first locations for movably securing said endless sealing ring (3) to said carrier ring (2) at said two first locations, and second rigid movement permitting means operatively inserted between said carrier ring (2) and said shaft support member (10) also at two approximately diametrically opposite second locations for movably securing said carrier ring in said shaft support member (10) at said two second locations, said first and second rigid movement permitting means being angularly spaced from each other by about 90°, said carrier ring supporting said endless sealing ring exclusively through said first rigid movement permitting means.

4,880,245
CHUCK FOR CONCRETE SLAB DOWELS
Bob Autrey, **Azle, Tex., assignor to Carbonic Systems of America, Inc., Tolar, Tex.**
Filed Apr. 29, 1988, Ser. No. 188,281
Int. Cl.⁴ B23B *31/00*
U.S. Cl. 279—1 R 14 Claims



1. A chuck for use in rotating a member, comprising in combination:

a housing having a polygonal socket on one end for receiving a polygonal drive head of a wrench to rotate the housing with the wrench;

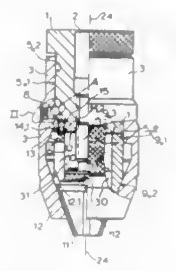
the housing having a bore extending from an opposite end toward the socket;

a plurality of retainers releasably mounted in the bore in a circular array, each retainer having edges on opposite sides that are spaced apart from the edges of the adjacent retainers to define a receptacle between each of the retainers;

a plurality of blades, each releasably inserted into one of the receptacles, each blade having an inner edge that defines with the edges of the other blades a conical space that converges toward the socket for gripping the member; and

securing means for securing the blades in the receptacles.

4,880,246
SELF-TIGHTENING DRILL CHUCK
Günter H. Rohm, **Heinrich-Röhm-Strasse 50, D-9727 Sontheim, Fed. Rep. of Germany**
Filed Nov. 21, 1988, Ser. No. 274,384
Claims priority, application Fed. Rep. of Germany, Nov. 19, 1987, 3739165
Int. Cl.⁴ B23B *31/12*
U.S. Cl. 279—1 K 6 Claims



1. A self-tightening drill chuck comprising:

a chuck body adapted to be mounted on a drill spindle for rotation about an axis and formed with substantially cylindrical front and a rear outer surfaces both centered on the axis and axially offset from each other and with an outwardly open groove between the front and rear surfaces;

a tightening sleeve surrounding the body and formed with substantially cylindrical front and rear inner surfaces both centered on the axis and riding on the front and rear surfaces of the body and with an inwardly open groove between the front and rear inner surfaces and forming with the groove of the body an annular generally circular-section passage, the sleeve also being unitarily formed with a rearwardly flared substantially frustoconical seat also centered on the axis;

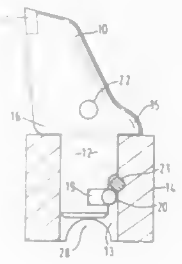
rollers riding in the grooves and supporting the sleeve on the body so as to permit relative rotation of the body and sleeve about the axis while preventing relative axial displacement;

a jaw guide in the sleeve formed with a plurality of axially forwardly open and angularly spaced slots;

respective jaws axially and radially displaceable in the slots and on the seat; and

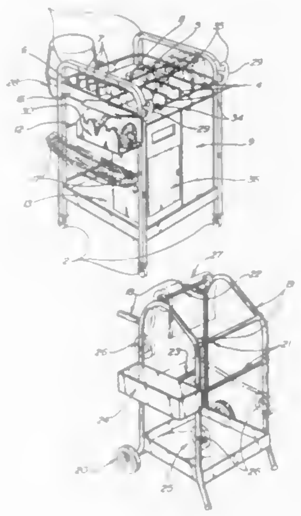
spring means braced axially between the guide and the chuck body for urging the guide axially forward and pressing the jaws axially forward against the seat.

4,880,247
CUTTING TOOLS
Frederick J. Herridge, **Buckinghamshire, England, assignor to Anderson Strathclyde PLC, High Wyconbe, England**
Filed Jun. 6, 1988, Ser. No. 202,300
Claims priority, application United Kingdom, Jun. 6, 1987, 8713298
Int. Cl.⁴ E21C *25/46*
U.S. Cl. 279—79 12 Claims



1. A combination of a cutting tool and a holder defining a socket for receiving a shank of the cutting tool, wherein the shank includes a slot extending transversely to its longitudinal axis, an elongate locking bar mounted in the slot and projecting therefrom, and resilient means biassing the bar into its projecting position and wherein the holder includes an elongate abutment member releasably connected thereto and co-operable with the locking bar to retain the shank within the socket.

4,880,248
MANUALLY PROPELLED AUTOMOTIVE PAINTING TOOL CART
Mark Elmer, **1067 W. Parkwood, Flint, Mich. 48507**
Filed May 3, 1988, Ser. No. 189,659
Int. Cl.⁴ B62B *3/02*
U.S. Cl. 280—47.35 3 Claims



1. A manually propelled automotive painting tool cart comprising:
(a) a main unit comprising:
  (1) a pair of utilitarian, tubular, essentially inverted U-shaped support frames,
  (2) wheels attached to said frame unit,
  (3) a top tray unit attached essentially horizontally near the top of maid inverted U-shaped frame,
  (4) at least one partition located within said top tray unit

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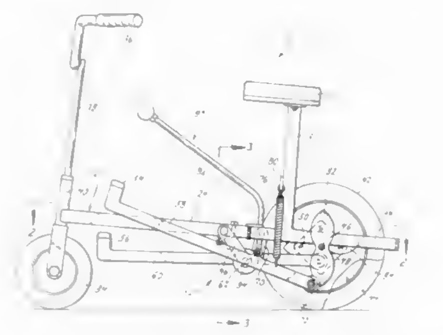
which provides compartments for the storage of tools and supplies,
  (5) at least one shelf unit located below the top tray unit providing horizontal storage shelves and vertical storage shelves,
  (6) at least one tool storage bar attached to said U-shaped frame,
  (7) at least one lower tray unit attached essentially horizontally to said main unit,
  (8) at least one exterior storage element attached to said main unit for storing tools exterior of the volume defined by said U-shaped support frames;
(b) at least one auxiliary unit comprising;
  (1) a pair of utilitarian, tubular, essentially inverted U-shaped support frames,
  (2) at least one dispenser for rolled paper attached to said U-shaped frames,
  (3) at least one large tray unit attached substantially horizontally to said U-shaped frames,
  (4) wheels attached to the bottom of said auxiliary unit,
  (5) at least one substantially horizontal bar attached to said U-shaped frames providing means for storage and support,
  (6) at least one small tray unit attached substantially horizontally to said U-shaped frames, and
  (7) at least one tape dispenser wheel unit attached to said auxiliary unit, and
(c) a connection means whereby said main unit is removably attached to said at least one auxiliary unit allowing the combination of said main unit and said at least one auxiliary unit to function as a single unit.

4,880,249
PEDAL OPERATED VEHICLE WITH CAM AND CAM FOLLOWER DRIVE ASSEMBLY

Frank Gray, 6508 River Farm Dr., St. Louis, Mo. 63129, and LeRoy Stienbarger, Pressott Rd., P.O. Box 454, Licking, Mo. 65542

Filed Jun. 27, 1988, Ser. No. 211,762
Int. Cl.⁴ B62M *1/04*
U.S. Cl. 280—253 **10 Claims**

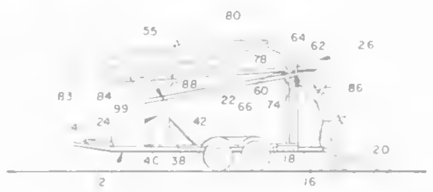


7. In a self-propelled vehicle, the vehicle having a frame, a seat secured to the frame for supporting a rider, and a plurality of wheels supporting the frame, the improvement comprising a drive mechanism including a pair of pedals, each of said pedals having an associated cam follower connected thereto, a drive axle, a pair of cams, at least one of said wheels and said cams being mounted to the drive axle, means to urge the cams and cam followers together, and said pedals having means to propel the vehicle by creating relative movement between the cams and cam followers.

4,880,250
ATTACHMENT KIT FOR MOBILE FLATBED FOR CARRYING TWO VEHICLES

Timothy J. Cravens, and James A. Cravens, both of 8056 Bellhaven Ave., Pasadena, Md. 21122

Continuation-in-part of Ser. No. 108,001, Oct. 14, 1987, abandoned. This application Aug. 30, 1988, Ser. No. 238,262
Int. Cl.⁴ B60P *3/08, 3/10*
U.S. Cl. 280—414.1 **35 Claims**

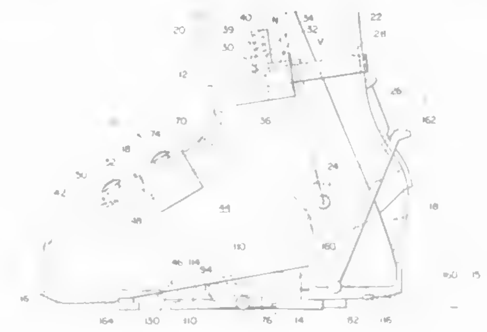


1. A kit for attaching to a moblie flatbed suitable for transporting a first vehicle, said kit enabling the mobile flatbed to transport a second vehicle thereon, said kit comprising:
a tiltable ramp suitable for supporting the second vehicle thereon,
first means, for supporting said tiltable ramp. said first ramp supporting means supporting one portion of said tiltable ramp in an elevated position with respect to the mobile flatbed, said first support means including means for connecting the mobile flatbed thereto, said first support means including a fulcrum serving to divide said tiltable ramp into a short lever arm portion and a long lever arm portion,
means for preventing the second vehicle, located on said tiltable ramp from being dislocated from said tiltable ramp,
second means for supporting said tiltable ramp, said second ramp support means supporting the long lever a portion of said tiltalbe ramp in an elevated poisition, and
means for adjusting the center of gravity of the second vehicle and said tiltable ramp with respect to said fulcrum whereby said tiltable ramp is readily tilted manually.

4,880,251
SKI BOOT AND SAFETY BINDING

Elmer B. Wulf, 1907 Jasmine, Denton, Tex. 76205, and Mark E. Wulf, 24447 Boulevard DeJohn, Plainfield, Ill. 60544

Filed Jul. 27, 1988, Ser. No. 224,887
Int. Cl.⁴ A63C *9/08*
U.S. Cl. 280—613 **40 Claims**



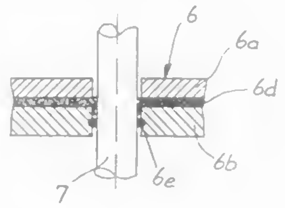
1. In combination, a ski boot and a binding for releasably attaching the ski boot to a ski, comprising
a. first connecting means secured to the ski beneath the boot,
b. second connecting means secured to the boot, said second connecting means spanning said first connecting means with portions in a fore-and-aft relationship generally along

the length of the ski, the fore portion being located beneath the boot and at least part of said aft portion being located beneath the boot,
c. means for releasably coupling said first and second connecting means so that said first and second connecting means may be separated in the forward, backward, or lateral directions, or a combination thereof, under predetermined load conditions, said coupling means including
  i. a major plunger means and a minor plunger means aligned with one another in the same direction and generally parallel to the longitudinal axis of the ski, one of said plunger means being located in said first connecting means and the other of said plunger means being located in said second connecting means,
  ii. first and second spaced and aligned socket means, each being engaged by one of said plunger means, one of said socket means being located in said first connecting means and the other of said socket means being located in said second connecting means,
  iii. each of said plunger means including means adjustably urging said plunger means into engagement with its respective engaged socket means, and
d. means for temporarily withdrawing one of said plunger means from its engaged socket means to permit separation of said first and second connecting means without load thereon.

4,880,252
SKI SAFETY BINDING

Gerhard Nowak, Biedermannsdorf; Klaus Kruschik, Gumpoldskirchen; Hans P. Morbitzer, Vienna; Rudolf Theuer, Trumau, and Alfred Winter, Vienna, all of Austria, assignors to TMC Corporation, Baar, Switzerland

PCT No. PCT/EP87/00443, § 371 Date May 2, 1988, § 102(e) Date May 2, 1988, PCT Pub. No. WO88/01191, PCT Pub. Date Feb. 25, 1988
PCT Filed Aug. 12, 1987, Ser. No. 199,046
Claims priority, application Austria, Aug. 14, 1986, 2199/86
Int. Cl.⁴ A63C *9/081, 9/088*
U.S. Cl. 280—618 **10 Claims**

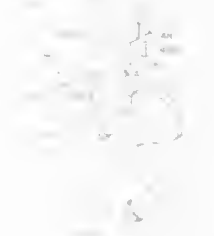


1. A ski binding for a ski with an electronic analyzer connected to force pickups emitting electrical signals, a power supply, for instance a battery, and an electro-mechanical release member including at least one stop means for releasably engaging a control member for controlling a locking mechanism for restraining a heel piece, comprising:
a closed housing having a wall and supporting the electro-mechanical release member, the control member including a shaft passing through said wall of said closed housing and said shaft being insulated from outside weather conditions by a seal means.

4,880,253
DRIVING FORCE TRANSMITTING STRUCTURE FOR AUTOMATIC SEAT BELT APPARATUS

Yuji Nishimura, Aichi, Japan, assignor to Kabushiki Kaisha Tokai-Rika-Denki-Seisakusho, Aichi, Japan

Filed Jan. 12, 1988, Ser. No. 143,038
Claims priority, application Japan, Jan. 13, 1987, 62-003336[U]
Int. Cl.⁴ B60R *21/10*
U.S. Cl. 280—804 **15 Claims**

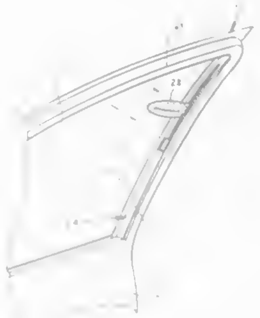


1. A driving-force transmitting structure for an automatic seat belt apparatus comprising:
a sliding member being movable by a driving force of a driving means in a direction of movement and having a groove extending from a neck portion in said direction of movement; and
a slider having a fitting portion for mating with said groove and a pair of opposed surfaces for facing end surfaces of said sliding member which face in the direction of movement of said sliding member, and being connected to a webbing for restraining an occupant and applying said webbing around said occupant by movement in response to movement of said sliding member, said driving-force transmitting structure being adapted for transmitting said driving force to said slider through said sliding member, wherein side surfaces of said sliding member are opposed to side surfaces of said slider to positively locate said sliding member along said side surfaces of said slider.

4,880,254
ADJUSTABLE GUIDE FOR A VEHICLE SAFETY BELT

Olaf Müller, Rüsselsheim, Fed. Rep. of Germany, assignor to R. Schmidt GmbH, Lennestadt, Fed. Rep. of Germany

Filed Dec. 1, 1988, Ser. No. 278,753
Int. Cl.⁴ B60R *21/10*
U.S. Cl. 280—808 **18 Claims**



1. A safety-belt guide assembly for an automotive vehicle, comprising:
a rectangular cross-section tube formed as a rear upright frame member of an automotive vehicle side window and having a first side turned in a direction of travel of the

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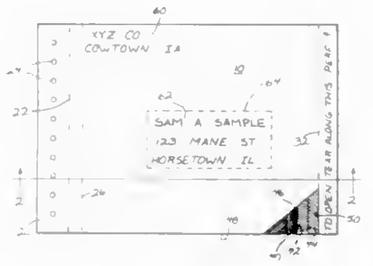
vehicle and a second side opposite said first side, said first side being formed with an upright slit;
a slide received in said tube and provided with and arm projecting outwardly through said slit and formed with a passage externally of said tube through which a safety belt is guided, said slide being movable up and down in said tube; and
mating formations on said second side of said tube and on said slide mutually engageable at a plurality of heights of said slide in said tube for securing said slide against movement at a selected one of said heights and by a tilt of said slide corresponding to a downward movement of said arm, said mating formations being mutually disengageable upon an opposite tilting movement of said slide to enable said slide to be shifted to another of said heights.

4,880,255
MULTIPLE PLY BUSINESS FORM

George F. Zehner, Jr., Crystal Lake, Ill., assignor to Uarco Incorporated, Barrington, Ill.
Filed Dec. 27, 1988, Ser. No. 289,699
Int. Cl.⁴ B41L *1/20*
U.S. Cl. 282—11.5 A **11 Claims**

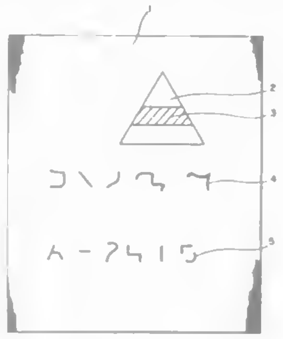


1. A business form comprising:
a plurality of superimposed plies, including an upper ply, a bottom ply and a plurality of intermediate plies;
first means at one longitudinal edge of said plies securing all of the plies together;
a first line of weakening in at least some of said plies just inwardly of said first means and extending generally parallel to said one longitudinal edge whereby individual ones of said some plies may be separated from the remainder of said plies;
said upper and bottom plies having substantially equal widths;
second means at the longitudinal edges of said upper and bottom plies remote from said one longitudinal edge securing said upper and bottom plies together;
a second line of weakening in at least one of said upper and bottom plies adjacent and generally parallel to said remote longitudinal edge and just inwardly of said second means;
said intermediate plies having different widths and not greater than the distance between said one longitudinal edge of said upper and bottom plies and said second line of weakening; and
a cut-out in one of said upper and bottom plies inwardly of said second line of weakening for exposing the ends of said intermediate plies nearest said second line of weakening.

4,880,256
TEXTILE LABEL

Juan Ferre-Blanquez, Guifre 572-576, 08912 Barcelona, Spain
Division of Ser. No. 100,932, Sep. 25, 1987, abandoned. This application Mar. 14, 1989, Ser. No. 325,063
Claims priority, application Spain, Nov. 12, 1986, 86-01308
Int. Cl.⁴ B42D *15/00, 9/00;* **G09C** *1/00*
U.S. Cl. 283—92 **4 Claims**

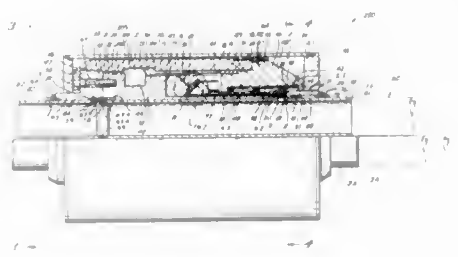
1. A textile label for identifying textile goods or garments having incorporated therein a stitched logotype consisting of words, numbers, geometrical shapes, or symbolic figures, said logotype consisting of at least one phosphorescent thread,



whereby the source and nature of the goods or garments may be authenticated.

4,880,257
PRESSURE COMPENSATION MULTI TUBULAR SAFETY JOINT

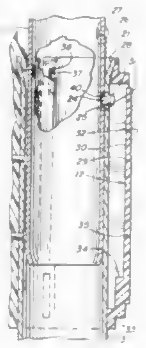
Marvin L. Holbert, Jr., Houston, Tex., assignor to Max Bassett, Houston, Tex.
Filed Mar. 23, 1983, Ser. No. 478,054
Int. Cl.⁴ F16L *35/00*
U.S. Cl. 285—2 **14 Claims**



1. A coupling for releasably joining together in sealed relationship a first, second, third and fourth segments of a tubular system having a flowing fluid under pressure flowing therethrough and having force applied thereto, comprising:
a first tubular member connected to the first segment;
a second tubular member connected to the second segment;
a third tubular member connected to the third segment, said third member juxtaposed to said first member;
a fourth tubular member connected to the fourth segment, said fourth tubular member juxtaposed to said second member;
seal means for sealing the juxtaposition of said tubular members;
holding means for holding said first tubular member and said third tubular member in abutment and for holding said second tubular member and said fourth tubular member in abutment;
said holding means including weak link means for decoupling said first member from said third member and said second member from said fourth member upon the application of a pre-determined axial force on one of the members through one of the segments below the elastic limit of any of the segments;
said holding means includes compensating means for compensating said weak link means for deviations of the force from axial hydraulic load acting on said seal means, wherein there is further included lock-out means for preloading compressive force on said holding means for maintaining said tubular members in sealing juxtaposition.

4,880,258
VACUUM CLEANER WAND RELEASE STRUCTURE

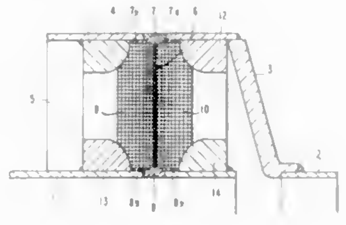
Ennis L. Tillman, and James R. Caldwell, both of Danville, Ky., assignors to Whirlpool Corporation, Benton Harbor, Mich.
Filed Mar. 7, 1988, Ser. No. 164,810
Int. Cl.⁴ F16L *37/24*
U.S. Cl. 285—7 **20 Claims**



1. In a vacuum cleaner structure having first and second telescopically connectible flow passage elements, the improvement comprising:
cooperating releasable locking means on said flow passage elements to lock said elements in telescopic relationship including a resiliently biased lock element mounted to one of said flow passage elements including a manually depressible portion having a preselected small fingertip engagement area; and
force transfer means mounted to the other of said elements and having a movable portion overlying said manually depressible portion of said locking means, said movable portion having an area substantially greater than said preselected fingertip engagement area of the locking element and defining means for transferring actuating force from a user's fingertip to said locking element for releasing said locking means.

4,880,259
HIGH-TEMPERATURE-RESISTANT TYPE COUPLING

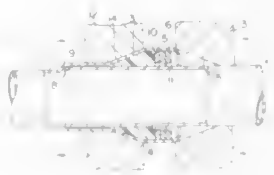
Franz Dörge, Keltern; Udo Erlenmayer, Pforzheim; Bernd Faber, Lörrach; Winfried Herty, and Günter Munz, both of Pforzheim, all of Fed. Rep. of Germany, assignors to Fabrik Pforzheim, Pforzheim, Fed. Rep. of Germany
Filed May 27, 1988, Ser. No. 199,380
Claims priority, application Fed. Rep. of Germany, Jun. 13, 1987, 3719840
Int. Cl.⁴ F16L *55/04*
U.S. Cl. 285—137.1 **22 Claims**



1. A connection arrangement to connect two pipes, particularly for conveying hot fluids, especially exhaust gases from an internal combustion engine, said connection arrangement permitting relative movement of the two pipes with respect to each other in axial and angular direction, while maintaining a sealed connection and preventing escape of fluid to ambient space, and resisting movement with respect to torsional relative movement of the two pipes, comprising
means for defining a ring space (5, 24) surrounding the end portions of the pipes;
at least one sealing and support cushion or pillow (9, 10; 16, 17; 31, 32; 33, 34; 50, 51; 67, 68; 81, 82) located in the ring chamber or space, the material of said sealing and support cushions or pillows having damped springy characteristics and being temperature and corrosion-resistant;
a sealing membrane (6, 15, 24, 26, 41, 47, 54, 64, 77) positioned adjacent the sealing and support cushion or pillow and extending over the entire radial region of said ring chamber or space,
and wherein, in accordance with the invention,
the sealing membrane (6, 15, 24, 26, 41, 47, 54, 64, 77) is welded along an inner and outer circumference thereof with adjacent walls (1, 4; 20, 23; 48, 49; 62, 63; 74, 75, 76) of said means for defining the ring chamber.

4,880,260
METHOD OF JOINING PIPES

Taiji Gotoh; Hidetoshi Yamamoto, and Kiyoshi Yamada, all of Kuwana, Japan, assignors to Mie Hooro Co., Ltd., Kuwana, Japan
Filed Dec. 31, 1987, Ser. No. 140,170
Int. Cl.⁴ F16L *13/14*
U.S. Cl. 285—382.2 **6 Claims**



1. A method of joining a pair of thin walled pipes comprising the steps of:
forming one of the pipes with an enlarged diameter section near one end thereof, with a radially outwardly flared section widening from said enlarged diameter section towards said end of said one pipe;
placing an elastic gasket and a C-shaped rigid ring in said flared section;
inserting the other pipe inside said one pipe to extend into said enlarged section; and
deforming, only in the area of said flared section by the action of a pressure means applied to the exterior of said one pipe in the region of pipe overlap, the free end of said one pipe plastically inwardly towards the inserted pipe, thereby compressing the gasket into sealing engagement with the two pipes and compressing the C-shaped ring as said one pipe end is deformed into the inserted pipe so that the ring, while engaged by an inner wall of said one pipe, wedges into the outer wall of said inserted pipe.

4,880,261
REMOTE LATCH MECHANISM

Robert H. Bisbing, Springfield, Pa., assignor to Southco, Inc., Concordville, Pa.
Filed Jan. 28, 1988, Ser. No. 149,571
Int. Cl.⁴ E05C *9/08*
U.S. Cl. 292—7 **38 Claims**

1. A remote latching mechanism comprising:
(a) a longitudinal connecting member rotatably movable about a longitudinal axis thereof;

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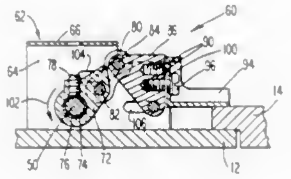
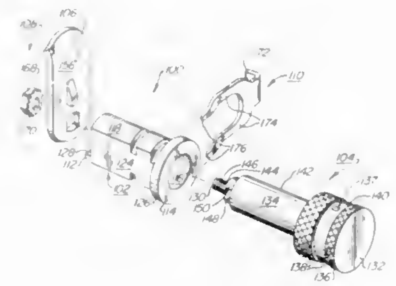
- (b) actuator means for rotating said connecting member about its longitudinal axis;
- (c) a latch assembly operably connected to said connecting member for movement between latched and unlatched conditions in response to rotational movement of said connecting member;
- (d) wherein said actuator means comprises a handle disposed within a handle cup for pivotal movement relative thereto, said connecting member being fixedly mounted to said handle, whereby said connecting member is rotated about i's longitudinal axis in response to pivotal movement of said handle;



- (e) wherein said handle is journalled within said handle cup by a bushing means; and wherein said connecting member is disposed within said bushing means and is connected to said handle.

4,880,262
DOOR LATCH

Frank A. Mugnolo, 10616 Newbury, Westchester, Ill. 60153; Anthony Mugnolo, and Joseph A. Calabrese, both of Westchester, Ill., assignors to Frank A. Mugnolo, Westchester, Ill.
Filed Mar. 2, 1987, Ser. No. 20,567
Int. Cl.^{4} E05C *3/04*
U.S. Cl. 292—202 2 Claims



1. A latch for securing a pivoting door, which door defines a door orifice including at least one orifice flat, to a door frame in the door closed position comprising:

a latch bushing which has the general shape of a hollow flanged cylinder having a bushing longitudinal inner end, a bushing longitudinal outer end, a bushing interior surface, and a bushing exterior surface, said bushing including a flange adjacent the bushing outer end which has a cross-sectional area which extends beyond the cross-sectional area of the door orifice, the bushing exterior surface extending longitudinally towards the bushing inner end which is generally cylindrical but includes at least one longitudinally extending planar surface adapted to bear against the door orifice flat, the exterior surface further defining a first longitudinally transverse groove longitudinally disposed towards the bushing inner end from the flange and a stop flat extending longitudinally to the bushing inner end, and the bushing interior surface extending longitudinally between the bushing inner end and the bushing outer end having a journal defined by a smooth cylindrical wall;

an operator which has the general shape of a stepped cylinder having an operator longitudinal inner end, an operator longitudinal outer end, and an operator exterior surface partially received within said bushing, said operator including a handle adjacent the operator longitudinal outer end which has a cross-sectional area which extends beyond the cross-section area of the interior surface at the axial outer end of said bushing, the handle including a manipulatable portion adapted to be grasped by fingers, said operator further including an attachment at the operator inner end and a bearing disposed between the handle and the attachment, the attachment having a connector portion at the operator inner end and at least one latch flat disposed between the connector portion and the bearing, the bearing having a smooth cylindrical surface, and the attachment having a cross-sectional area which is less than the minimum cross-sectional area of the interior surface of said bushing and the bearing diameter being slightly less than the diameter of the journal of said bushing to allow relative rotation between the bearing and the journal;

a striker, received on said operator, which is a generally elongate and flat body having a proximate end, a distal end, and an outer surface facing the operator longitudinal outer end, said striker defining near the proximal end an attachment orifice having at least one striker flat which is conformal with the latch flat of the attachment of said operator upon which said striker is disposed for preventing relative rotation between said operator and said striker, a stop, formed from material displaced from the body of said striker, adjacent the attachment orifice protruding from the striker outer surface towards the operator longitudinal outer end adapted to interfere with the stop flat of said bushing and limit the relative rotation between the journal portion of said bushing and the bearing of said operator, said stop being elongate and extending adjacent the axis of said striker towards the distal end for a predetermined distance between the attachment orifice and one-half the width of said bushing, the distal end of said striker extending far enough from the attachment orifice to be brought to bear against the door frame;

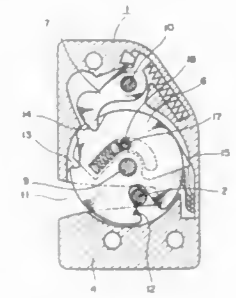
connector means adapted to interlock with the connector portion of said operator to secure said striker to said operator and bring the outer surface of said operator against the inner end of said bushing; and

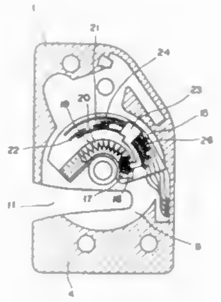
securement means adapted to be partially received within the axially transverse groove of said bushing to restrain movement of said bushing in a direction towards the outer end of said bushing.

4,880,263
SWITCHING APPARATUS FOR VEHICLE LOCKING DEVICE

Shinjiro Yamada, Utsunomiya, Japan, assignor to Mitsni Kinzoku Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 11, 1988, Ser. No. 230,969
Int. Cl.^{4} E05C *3/24*
U.S. Cl. 292—216 1 Claim

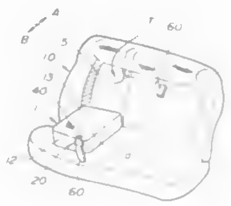
1. A switching apparatus for a vehicle locking device in which a recess portion 8 for receiving a latch 6 and a ratchet 7 for preventing the reversing of said latch is formed in a base plate 4 made of a synthetic resin so that said latch 6 and said ratchet 7 are mounted in said recess portion 8, comprising a recess portion 25 for receiving a cartridge 15 which is provided at the back of said recess portion 8, said cartridge 15 being provided with a half-latching fixed contact 21, a fully-latching fixed contact 22 and an open-state fixed contact 26 which each have the form of a circular arc with a latch shaft 9 at the center of the arc, an arc-shaped inner groove 20, a return spring 19 for reversing said latch which is received in said arc-shaped inner groove 20, and a movable contact 23 which is brought into contact with each of said fixed contacts and which has a boss 17 engaging with one end of said return spring 19 in said arc-shaped inner groove 20, said latch 6 being received in said recess 8 after said cartridge 15 has been received in said recess 25 so that a projection 18 projecting from said latch 6 is engaged with said boss 17 of said movable contact 23 of said cartridge 15.





4,880,264
LATCH DEVICE FOR INCLINABLE BACK REST CUSHION MOUNTED IN SEATBACK

Hiroshi Yamazaki; Toshiyuki Hara, both of Yokohama; Yuji Tanaka, and Takayuki Mouri, both of Ayase, all of Japan, assignors to Ikeda Bussan Co., Ltd., Ayase and Ohi Seisakusho Co., Ltd., Yokohama, both of, Japan
Filed Apr. 1, 1988, Ser. No. 176,506
Claims priority, application Japan, Apr. 3, 1987, 62-51262[U]
Int. Cl.^{4} B60N *1/10*
U.S. Cl. 292—226 19 Claims



1. In a seatback having a back rest cushion inclinable in relation to a tunnel in the seatback,

a latch device for latching said back rest cushion to said seatback when said back rest cushion is snugly received in said tunnel, which comprises:

a striker secured to said seatback;

a first base member fixed to said back rest cushion to move therewith;

a latch member pivotally connected to said first base member and latchingly engageable with said striker when said back rest cushion is received in said tunnel;

a pull strap fixed to said latch member for pivoting said latch member in a direction to release said latch member from said striker when pulled in a given direction;

a lock member movably mounted to said first base member, said lock member being movable to a position to obstruct the pivoting of said latch member in the striker releasing direction;

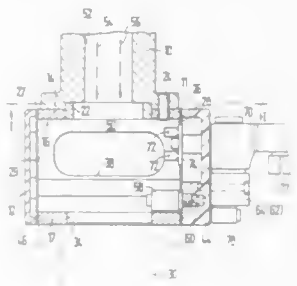
a lock member actuating member movably mounted to said first base member, said actuating member moving said lock member away from the travelling path of said latch member when pushed by said striker;

a lock cancelling member movably mounted to said first base member for moving said latch member in the striker releasing direction when moved in a given direction by a given distance; and

means for manually moving both said lock member and said lock cancelling member from a back side of said back rest cushion.

4,880,265
ROBOT ARM WITH AN ASSEMBLY FLANGE FOR TOOLS

Peter Drexel, Steinenbronn; Hans Erne, Waiblingen; Gerhard Gosdowski, Bietigheim-Bissingen; Karl Gross, Schorndorf; Ulrich Kirsten, Gerlingen, and Ernst Leisner, Ditzingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany
PCT No. PCT/DE87/00007, § 371 Date Sep. 30, 1987, § 102(e) Date Sep. 30, 1987, PCT Pub. No. WO87/04653, PCT Pub. Date Aug. 13, 1987
PCT Filed Jan. 10, 1987, Ser. No. 116,563
Claims priority, application Fed. Rep. of Germany, Jan. 31, 1986, 3602901; Apr. 25, 1986, 3613980
Int. Cl.^{4} B25J *17/02*
U.S. Cl. 294—86.4 13 Claims



1. A robot arm comprising, a robot arm unit; and an assembly flange provided with means for centering and fastening of tools, said assembly flange being formed as a wall of a housing member fastened to said robot arm unit, said housing member having an interior space in which line portions for power supply and control on said robot arm unit can pass, said housing member having a plurality of sides and being provided on said sides with openings; a plurality of cover plates arranged to cover said openings, at least one of said cover plates being provided with internal connections for the line portions, and also being provided with means for manually connecting said internal connections with elements arranged outside said housing member, said at least one cover plate is provided with a joint pressure medium connection for a plurality of pressure medium line portions, said at least one cover plate being also provided with pressure medium valves located outside of said at least one cover plate, said at least one cover plate also hav-

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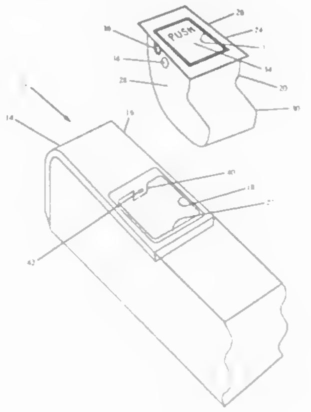
ing a distributor duct through which said pressure medium valves are connected with at least one of said internal connections.

4,880,266
VEHICLE ASH TRAY

John N. Hoffman, 10450 Laramie Ave., Chatsworth, Calif. 91311, and Bruce J. Greenbaum, 177 S. Westgate Ave., Los Angeles, Calif. 90049
Filed Jul. 5, 1988, Ser. No. 215,350
Int. Cl.⁴ B60N *3/12*
U.S. Cl. 296—37.9 7 Claims

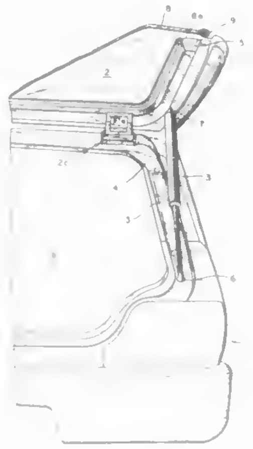


1. A vehicle ash tray comprising:
a receptacle portion for receiving ashes and the like,
a cover member secured to the upper end of said receptacle member and having an edge projecting beyond the side wall of said receptacle to suspend said receptacle within the opening of a vehicle seat escutcheon, and
an insert member clamped between said cover member and the upper edge of said receptacle having a pair of legs projecting outwardly and downwardly outside of said receptacle and engageable with said escutcheon when said ash tray is inserted into the opening of said escutcheon to resiliently retain said ash tray in the desired position, (Said) said insert member (is) being generally Ushaped, having a crosspiece and having said legs pprojecting outwardly and downwardly from the upper edge of said crosspiece.

4,880,267
BACK DOOR STRUCTURE FOR A MOTOR VEHICLE

Takeji Ohya, Hiroshima, Japan, assignor to Mazda Motor Corporation, Hiroshima, Japan
Filed Sep. 16, 1987, Ser. No. 97,095
Claims priority, application Japan, Sep. 17, 1986, 61-218628; Sep. 17, 1986, 61-218629
Int. Cl.⁴ B62D *25/10*
U.S. Cl. 296—56 19 Claims

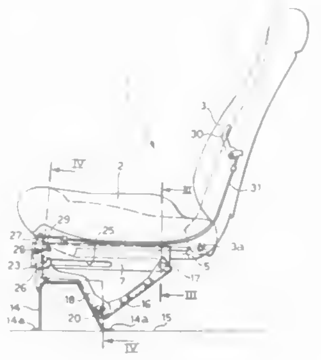
1. A back door structure for a motor vehicle comprising:
a vehicle body having a rear pillar defining a back door opening of a trapezium configuration;
a back door hingedly mounted on an upper part of said vehicle body for movement between an open and a closed position;
said back door being of trapezium configuration with its lower portion wider than its upper portion and adapted in the closed position to cover and secure said back door opening;
a stay damper pivotally connected with said back door at one end and pivotally connected with a rear pillar of the vehicle body at its other end to bias said back door to a raised open position and being disposed between said rear pillar and said back door in the closed position of said back door;
said stay damper moving outwardly in accordance with the movement toward the open position of the back door;
said back door including a back door window glass, a frame member having a closed cross-section disposed along the inner surface of a side peripheral edge of the back window glass, an outer edge of the fame member being substantially disposed inside the outer edge of the back window glass, and a concealment member connected with said frame member and extending outwardly around the rear corners of the vehicle body to conceal both said stay damper and said rear pillar and to constitute a portion of the outer surface of said vehicle body;



said concealment member having a free end extending toward a side surface of said rear pillar and co-acting with a grill member to conceal said pillar.

4,880,268
FRONT SEAT FOR A MOTOR VEHICLE HAVING ONLY TWO SIDE DOORS

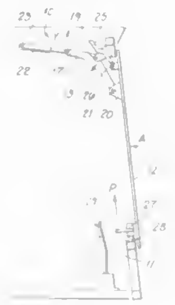
Silvio Brambilla, Turino, Italy, assignor to Sicam Societa' Italiana Cuscini A Molle S.p.A., Turino, Italy
Filed Apr. 28, 1988, Ser. No. 187,201
Claims priority, application Italy, Apr. 28, 1987, 53272/87[U]; Nov. 4, 1987, 67938; Nov. 4, 1987, 67939; Apr. 1, 1988, 67294
Int. Cl.⁴ B60N *1/02*
U.S. Cl. 296—65.1 25 Claims



1. A front seat for a motor vehicle with only two side doors, comprising a frame (4) and means for connecting the frame (4) to the floor (15) of the motor vehicle which enables the seat to be moved between a normal operative position and an inoperative forward position in which access to the rear seats of the motor-vehicle is facilitated, the connecting means comprising at least one pin-slot coupling (23, 25) operatively interposed between the seat frame (4) and the motor-vehicle floor (15) and further including guide means (5, 9) allowing the adjustment of the operative position of the seat longitudinally of the motor-vehicle,
characterised in that the seat further includes an auxiliary support structure (7) which supports the seat frame (4), in that said guide means allowing the adjustment of the operative position of the seat longitudinally of the motor-vehicle are operatively interposed between the seat frame (4) and the auxiliary support structure (7) and in that the pin-slot coupling (23, 25) is operatively interposed between the auxiliary support structure (7) and the motor-vehicle floor (15).

4,880,269
VEHICLE CAB WINDOWS

Svend Jensen, Randers, Denmark; David S. Paul, Windgather, and Michael Appleyard, Chorley, both of England, assignors to Massey-Ferguson Services N.V., Curacao, Netherlands Antilles
Filed Jul. 5, 1988, Ser. No. 215,120
Claims priority, application United Kingdom, Jul. 7, 1987, 8715976
Int. Cl.⁴ B62D *33/06*
U.S. Cl. 296—190 9 Claims

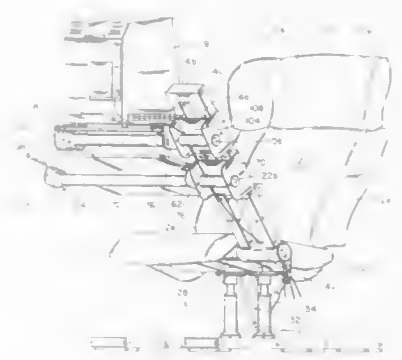


1. A vehicle cab having a window aperture closed by a pivotable glazing panel, the window aperture being of vertically tapering form such that the width of the lower regions of the aperture is less than higher regions of the aperture and the glazing panel is of similar vertically tapering form, and glazing panel mounting means which allows the glazing panel to be moved from a generally upright closed position to a generally horizontal open position by raising said panel in a vertical sense so that the lower narrower portion of the panel is in alignment with a portion of the aperture wider than itself and then pivoting the lower narrower portion of the glazing panel about a first generally horizontal axis through the wider portion of the aperture into its generally horizontal open position.

4,880,270
WORK STATION SYSTEM

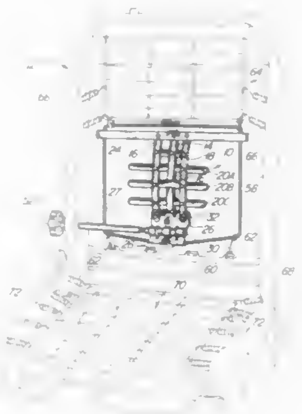
Lloyd G. B. Cooper, 3825 Redmont Rd., Birmingham, Ala. 35213
Continuation-in-part of Ser. No. 934,970, Nov. 25, 1986, Pat. No. 4,779,922. This application Oct. 24, 1988, Ser. No. 261,525
Int. Cl.⁴ A47C *7/62*
U.S. Cl. 297—188 23 Claims

1. A work station comprising:
a chair for supporting a human operator in a seated position, said chair having means for supporting the thigh portion of a human and means for contacting a back portion of a human, said chair being rockable about a first horizontal axis;
a carriage;
a support surface upon which a first device is supportable, said device-supporting surface being attached to said carriage; and,
carriage attaching means for attaching said carriage to said chair, said carriage attaching means including a position setting means for pivoting said carriage about a second horizontal axis whereby said carriage pivots toward or away from said back portion of said chair, and whereby once said carriage is positioned towards said back portion of said chair, the spatial distance between an operator seated in said chair and said device supporting surface remains essentially constant in a relationship determined by said position setting means as said chair is rocked about said first horizontal axis.



4,880,271
ADJUSTABLE LUMBAR SUPPORT

Lee K. Graves, Bloomfield, Mich., assignor to Wickes Manufacturing Company, Southfield, Mich.
Continuation of Ser. No. 137,905, Dec. 28, 1987, abandoned. This application Dec. 23, 1988, Ser. No. 289,539
Int. Cl.⁴ A47C *7/46*
U.S. Cl. 257—284 3 Claims



1. An adjustable lumbar-support for a vehicle seat comprising a top support member, a bottom support member, a vertically-extending convex flexible band secured to both support members and having a resilience opposing increasing convexity, means for adjusting the distance between the supports to vary the convexity of the flexible band, and spring means interconnecting the supports to bias the flexible band toward increasing convexity in opposition to the resilience of the flexible band, characterized by the adjusting means including a second flexible band affixed to one of the support members and movably mounted on the other support member.

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4,880,272

SEAT FURNITURE

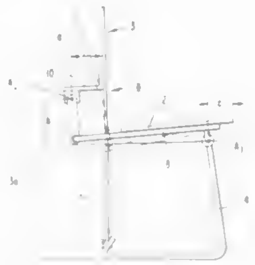
Egon Bräuning, Weil am Rhein, Fed. Rep. of Germany, assignor to Protoned B.V., Amsterdam, Netherlands

Filed Jun. 3, 1988, Ser. No. 202,222

Claims priority, application Switzerland, Jun. 9, 1987, 2161/87

Int. Cl.⁴ A47C *3/00*

U.S. Cl. 297—296 9 Claims



1. Seat furniture, comprising a stand having a forward section, a rearward section and a first pivot axis located on said forward section at a first elevation; a seat having a front end and a back end; a backrest having an upper end, a lower end fixedly attached to said rearward section of said stand, a front side facing toward said seat, a back side facing away from said seat, and an elastically resilient portion extending from said lower end of said backrest to a point on said backrest located at a second elevation which is higher than said first elevation, said backrest being arranged in a rest position in which said backrest is oriented substantially vertically and said backrest being deflectable out of its said rest position in response to a force exerted against said front face of said backrest by an individual sitting on said seat; connecting means movably mounted on said forward section of said stand for connecting said seat to said backrest in such a manner that said back end of said seat pivots downwardly in response to the deflection of said upper end of said backrest away from said forward section of said stand, said connecting means including an angular linkage extending between said first pivot axis and a second pivot axis positioned adjacent to said back face of said backrest at a third elevation which is higher than said first elevation but no higher than said second elevation, whereby said elastically resilient portion of said backrest is located below said second pivot axis, said linkage including a first end which supports said front end of said seat and which is pivotable about said first pivot axis and a second end which is pivotable about said second pivot axis; and supporting means fixedly attached to said back face of said backrest for supporting said second end of said linkage, said supporting means including said second pivot axis, whereby said second end of said linkage is pivotally connected to said supporting means in such a manner that said second end of said linkage pivots about said second pivot axis as said first end of said linkage pivots about said first pivot axis to thereby permit the synchronous movement of said backrest and said seat.

4,880,273

RECLINING CHAIR HAVING SUSPENDED SEATING

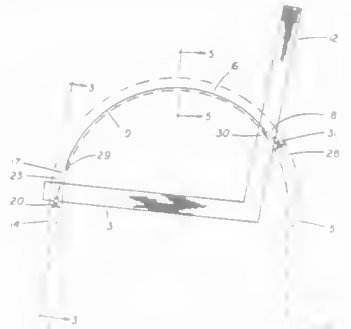
Isidoro N. Markus, 65-36 99th St. (1E), Rego Park, N.Y. 11374

Continuation-in-part of Ser. No. 217,823, Jul. 12, 1988, Pat. No. 4,819,986. This application Jan. 23, 1989, Ser. No. 300,576

Int. Cl.⁴ A47C *1/02*

U.S. Cl. 297—325 7 Claims

1. A reclining chair comprising:
a frame having on opposite sides substantially vertical members connected to each other;
a seating disposed within said frame and comprising a seat board and a back board; and,
means for supporting said seating including (1) a flexible strap member connected at its ends to said seating and (2)



a fixed raceway disposed between said vertical members, said flexible strap sliding over said raceway.

4,880,274

POWER RECLINING DEVICE OF SEAT

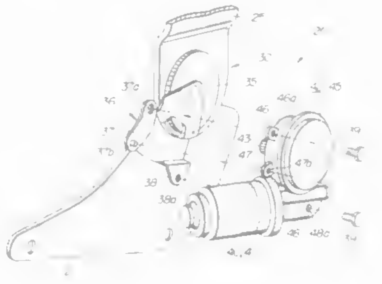
Kenji Ichikawa, Kanagawa, Japan, assignor to Ikeda Bussan Co., Ltd., Ayase, Japan

Filed Jun. 2, 1988, Ser. No. 202,010

Claims priority, application Japan, Jul. 31, 1987, 62-117858[U]

Int. Cl.⁴ A47C *1/025*

U.S. Cl. 297—362 5 Claims



1. In a seat having a seat cushion and a seatback which is pivotal relative to said seat cushion,
a power reclining device comprising:
a base plate secured to said seat cushion;
a pivoting arm secured to said seatback, said pivoting arm being pivotally connected to said base plate;
a reduction gear mechanism arranged between said base plate and said pivoting arm, said reduction gear mechanism pivoting said pivoting arm at a reduced speed when actuated;
an electric motor unit for actuating said reduction gear mechanism when electrically energized;
connecting means for detachably connecting said electric motor unit to a given portion of said base plate; and
positioning means for positioning said electric motor unit with respect to said given portion of said base plate before connecting said electric motor unit to said base plate,
wherein said positioning means comprises a mounting plate which is formed with two threaded openings and a positioning pin, and three separate portions formed on said electric motor unit and having respective openings which are mated with said two threaded openings and said positioning pin respectively upon proper mounting of said electric motor unit to said base plate.

4,880,275

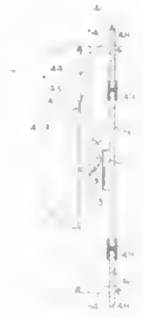
COMBINATION HEADREST AND WALL WITH SLIDING WINDOW

Michael A. Lanteri, 39 Wayhill Rd., W., Waterford, Conn. 06385

Continuation-in-part of Ser. No. 928,823, Nov. 10, 1986, abandoned. This application Nov. 6, 1987, Ser. No. 120,715

Int. Cl.⁴ A47C *1/10*

U.S. Cl. 297—391 2 Claims



1. The combination of a headrest assembly means and a cab including a rear wall having therein a sliding window assembly of a predetermined vertical dimension and projecting a predetermined horizontal dimension forwardly of said wall, said headrest assembly including first and second support bars each having an upper end and a lower end and a longitudinal dimension greater than said predetermined vertical dimension, and first, second, third and fourth spacer means, each secured to and projecting forwardly of said wall and of a length greater than said predetermined horizontal dimension, said firs', second, third and fourth spacer means secured to said upper end of said first support bar, said lower end of said first support bar, said upper end of said second support bar and said lower end of said second support bar, respectively, thus to allow unobstructed sliding movement of said window assembly.

4,880,276

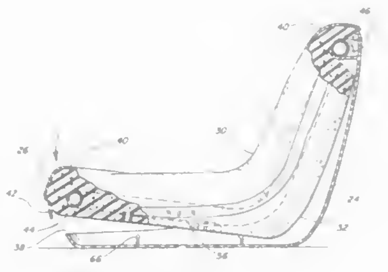
SEAT ASSEMBLY

John S. Shovar, Davenport, Iowa, assignor to Sears Manufacturing Company, Davenport, Iowa

Continuation-in-part of Ser. No. 152,108, Dec. 20, 1988, Pat. No. 4,792,189. This application Dec. 19, 1988, Ser. No. 286,470

Int. Cl.⁴ A47C *7/02*

U.S. Cl. 297—452 5 Claims



1. A neat assembly, comprising:
a foam cushion assembly including a foam cushion and a generally rigid internal framework molded integrally within said cushion, said cushion having front, back and side portions and a lip extending around said side portion, said framework being located within said cushion in sufficient proximity to said side portion and said lip to substantially maintain predetermined manufacturing tolerance of said side portion and said cushion lip;
a rigid shell attachable to the back portion of said cushion, said shell having a peripheral edge configured to substantially uniformly mate with said cushion lip;
a cover overlying the front portion of said cushion and having a free peripheral section extending between said cushion lip and said shell edge; and
means to attach said shell to said foam cushion, including means to fasten said shell to said internal framework.

4,880,277

ON-VEHICLE AUXILIARY SEAT FOR INFANT

Takehiko Takahashi; Hideo Saito; Takashi Watanabe, and Tomihiro Kaneko, all of Tokyo, Japan, assignors to Combi Co., Ltd., Tokyo, Japan

Filed Oct. 3, 1988, Ser. No. 252,305

Claims priority, application Japan, Oct. 2, 1987, 62-151467[U]; Oct. 2, 1987, 62-151468[U]; Oct. 23, 1987, 62-162040[U]; Oct. 30, 1987, 62-166370[U]

Int. Cl.⁴ B60R *21/00*

U.S. Cl. 297—467 15 Claims

1. An infant auxiliary seat in a vehicle comprising:
an auxiliary seat body having a seat floor and a seat back;
a pair of infant-arresting belts extending through said seat back, and having first ends attached to a retracting/-projecting mechanism and second ends attached directly to said floor of said auxiliary seat body; and
a belt-stop mechanism pivotably attached to a central portion of a front surface of said seat floor so as to be capable of being erected and prostrated, said pair of infant-arresting belts being provided to be freely fastened to said belt-stop mechanism at respective longitudinally middle portions of said infant-arresting belts.

4,880,278

CUTTING TOOL FOR A MINING MACHINE

Peter N. Tomlinson, 315 Enford Road, Mondeor, Transvaal, South Africa

Filed Dec. 18, 1987, Ser. No. 134,925

Claims priority, application South Africa, Dec. 19, 1986, 86/9564

Int. Cl.⁴ E21C *35/18;* E21B *10/46*

U.S. Cl. 299—79 4 Claims

1. A cutting tool for a mining machine, comprising a holding

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lug for connecting the tool to the mining machine, and including a first end portion defining a top frusto-conical tapered surface having an upper edge within which is located a socket; and a tool component including:

- (a) a cemented carbide stud including a bottom portion, a top frusto-conical portion having a top recess, and a central portion spacing the top portion from the bottom portion,
- (b) the bottom portion and the whole of the central portion being secured within the socket to connect the tool component to the holding lug,
- (c) the top frusto-conical portion lying wholly and entirely within a space bounded by an imaginary upward continuation of the top frusto-conical tapered surface of the holding lug, continuing upwardly from the upper edge of the first end portion of the holding lug, and
- (d) a composite abrasive compact or abrasive compact secured within the top recess, extending outward therefrom and forming an abrasive compact surface, the periphery of which provides a cutting edge.

4,880,279

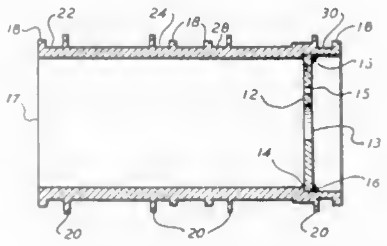
MODEL AUTOMOBILE RIM CONSTRUCTION

Fred Flesche, 204 Barnes Rd., Washingtonville, N.Y. 10992

Filed Nov. 25, 1987, Ser. No. 125,198

Int. Cl.⁴ B60B *11/04*

U.S. Cl. 301—36 R 6 Claims



1. A dual wheel for supporting two tires in parallel relationship, comprising:

a unitary integral cylindrical rim body having at least four pairs of flanges, each flange extending radially outwardly from the exterior of said rim body in parallel relationship, each said flange pair defining therebetween a space for receiving the bead of a tire, whereby at least two tires can be mounted in parallel thereon; said body being open at one end, and having near the other end a transverse web; and means secured to said web for enabling said web to be secured to an end of a vehicle axle.

4,880,280

MOTORCYCLE WHEEL HUB AND FLANGE ASSEMBLY

Ignatius J. Panzica, and Herbert W. Hoeptner, both of Morgan Hill, Calif., assignors to Custom Chrome, Inc., Morgan Hill, Calif.

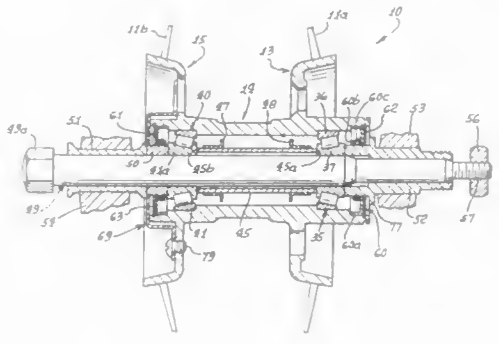
Filed Jun. 27, 1988, Ser. No. 211,917

Int. Cl.⁴ B06B *27/02*

U.S. Cl. 301—105 B 9 Claims

1. In a hub and flange unit for a spoked motorcycle wheel, associated wit a motorcycle frame having forks, the combination comprising

- (a) an axle and a tubular hub defining an axis and axiallyn receiving the axle,
- (b) two flanges rigidly mounted on the hub, said flanges having inner annular portions extending generally radially, and outer annular portions that extend angularly axially and radially, said outer portions defining holes spaces about said axis to receive spokes,
- (c) the hub having opposite end portions and defining a bore between said end portions, first counterbores at said respective end portions, and second counterbores at said respective end portions, each first counterbore located between the bore and a second counterbore,
- (d) a bearing assembly located in each first counterbore, each said assembly including an annular outer race fittingly received axially by its respective first counterbore, an annular inner race spaced radially inwardly of the outer race, and rollers retained between said races,
- (e) a first tubular spacer located within said bore and having opposite ends respectively engageable with the inner races to position said inner races in axially spaces apart relation,
- (f) the tubular spacer and said inner races received on said axle and mounted thereon, there being other annular spacers that are received on the axle and that urge the inner races toward the first tubular spacer, and the axle projecting endwise externally of the hub to carry said forks defined by the motorcycle frame,
- (g) annular seal means removably received in said second counterbores, and retainer means removably mounted on the hub for retaining said seal means in position in said second counterbores,
- (h) whereby said bearing assemblies are easily endwise removable from the hub after removal from the hub of said axle, said other annular spacers, said retainer means, and said seal means, for replacement thereof.



4,880,281

WHEEL BEARING

Boy Merkelbach, Utrecht, Netherlands, assignor to SKF Industrial Trading & Development Co. B.V., Nieuwegein, Netherlands

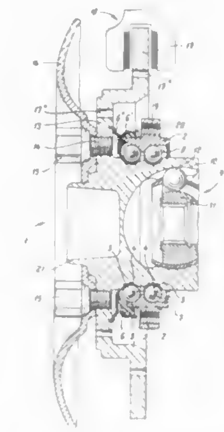
Continuation of Ser. No. 866,475, May 23, 1986, abandoned, which is a continuation of Ser. No. 664,168, Oct. 24, 1986, Pat. No. 4,621,700. This application Aug. 4, 1988, Ser. No. 230,240

Claims priority, application Netherlands, Dec. 8, 1983, 8304240

Int. Cl.⁴ F16C *33/58, 33/64*

U.S. Cl. 301—124 R 2 Claims

1. A wheel bearing device with a built-in homokinetic coupling having an outer ring, including a generally annular inner part having inside running surfaces, an outer race having outside running surfaces and two rows of rolling elements located between said outside running surfaces and said inside running surfaces, whereby the outer race is equipped with a radially extending flange for the attachment of the bearing, and the annular inner part is equipped with a radially extending flange to which the hub of a wheel can be attached, and whereby the inner part forms at the same time one unit with said outer ring of the homokinetic coupling characterized by the fact that the flange (13,13′) of the inner part (1,1′) is extended with a brake element (17,17″) which forms the part to be braked of a braking mechanism (18,18′) and said inner part having an axial stub (21,21′) directed away from the homokinetic coupling (9,9′) and extending beyond the attachment flange (13,13′) to define a guide means for the hub (16,16′) of the wheel, so that the inner part (1,1′) of the bearing, the carrier flange (13,13′) for the wheel, the brake element (17,17′) and the outer ring (10,10′) of the homokinetic coupling (9,9′) and the axial stub (21,21′) forms one homogeneous unit manufactured from a material unsuitable for bearing use, the inner raceway surfaces being formed by coating said surface with a high grade material which is then hardened by induction hardening.



4,880,282

BRAKING SYSTEM WITH APPARATUS FOR CONTROLLING PRESSURE TO BE ACCUMULATED IN ACCUMULATOR FOR BRAKING MOTOR VEHICLE

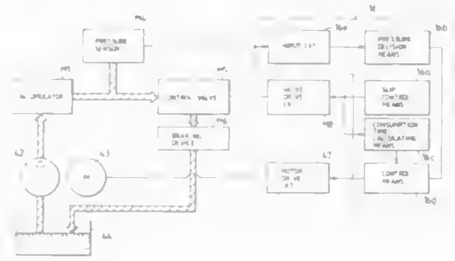
Nobuhiko Makino, Kariya; Kimio Tamura, Anjo; Hiroharu Mlyazaki, Toyota; Tomohiko Hosoda, Nagoya, and Fumio Nakagawa, Susono, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Continuation of Ser. No. 238,234, Aug. 30, 1988, abandoned. This application Apr. 12, 1989, Ser. No. 344,480

Claims priority, application Japan, Aug. 30, 1987, 62-217719; Jun. 2, 1988, 63-135984

Int. Cl.⁴ B60T *8/32, 8/44*

U.S. Cl. 303—116 15 Claims



1. A braking system for use in a motor vehicle, comprising:

- accumulator means coupled to motor-driven pump means for accumulating a hydraulic pressure which is supplied to a braking device to brake a wheel of said motor vehicle;
- control valve means provided between said accumulator means and said braking device for regulating the hydraulic pressure to be applied from said accumulator to said braking device; and
- control means for controlling said control valve means so as to regulate the hydraulic pressure to said braking device, said control means controlling said motor-driven pump means on the basis of the control time of said control valve means.

4,880,283

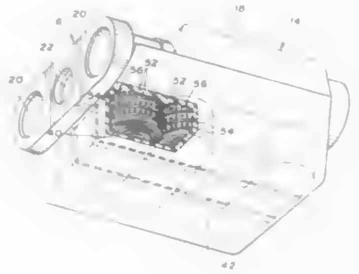
COMPOSITE TREAD FOR TRACK-LAYING VEHICLES

Russell C. Savage; Gary P. Zeller, and Martin D. Skirha, all of Anderson, Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Jan. 11, 1988, Ser. No. 141,965

Int. Cl.⁴ B62D *55/20*

U.S. Cl. 305—35 R 7 Claims



5. A composite tread member having a wear surface for use in a track for a track-laying vehicle comprising a metal support member embedded in an abrasion resistant fiber reinforced polymeric material,

said reinforcing fibers being arranged in bundles and oriented lengthwise in an about perpendicular relationship to said wear surface of said tread member.

4,880,284

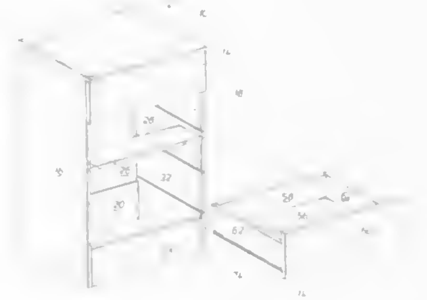
CHEST OF DRAWERS AND METHOD OF ASSEMBLY

James E. Dickson, and Dario Vasquez, Jr., both of Pearland, Tex., assignors to Wholesale Furniture Distributors, Inc., Houston, Tex.

Filed Jan. 9, 1989, Ser. No. 294,354

Int. Cl.⁴ A47B *43/00*

U.S. Cl. 312—263 10 Claims



1. A method for manually assemblying a plurality of drawers from a plurality of flat panels with the assembled drawers adapted to be received in sliding supporting relation within a plurality of vertically spaced pairs of opposed horizontal grooves in spaced parallel vertical sides of a frame for a chest of drawers;

said method comprising the following assembly steps for each of said drawers:

- providing a flat bottom panel;
- providing vertically extending front and back panels with a horizontal groove to form a pair of opposed horizontal grooves;
- mounting said flat bottom panel within said opposed horizontal grooves of said vertically extending front and rear panels with side marginal portions of said bottom panel extending laterally outwardly beyond the ends of said rear panel to form projecting side supporting flanges; and
- connecting a pair of vertical side panels to said front and back panels at mating interlocking joints adjacent the ends

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of said front and back panels with the lower edges of said side panels supported on the upper surface of said bottom panel inwardly of said projecting side supporting flanges whereby said drawer may be positioned within a frame for a chest of drawers and wholly supported in sliding relation on said projecting flanges received within a pair of said opposed horizontal grooves of said frame

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4,880,285
COLLAPSIBLE SUPPORTING DEVICE FOR SUPPORTING A VERTICALLY ADJUSTABLE LIFTING PLATFORM IN A DISPLAY CONTAINER, AND DISPLAY CONTAINER PROVIDED WITH SUCH A DEVICE

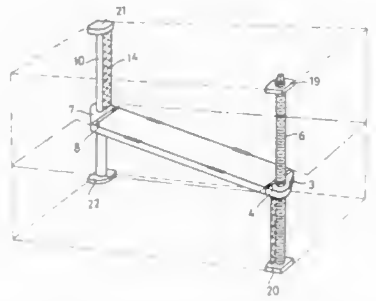
Gerardus C. Brinkers, Duinvoetlaan 20, 2243 CL Wassenaar, Netherlands

Filed Jun. 12, 1987, Ser. No. 62,507

Claims priority, application Netherlands, Jun. 12, 1986, 8601528; Sep. 11, 1986, 8602296; Dec. 23, 1986, 8603281

Int. Cl.^{4} A47B *51/00*

U.S. Cl. 312—312 13 Claims



1. A supporting device for supporting a vertically adjustable lifting platform in a container for the transportation, temporary storage and display and presentation of products such as packed foods, the lifting platform being adapted for carrying the products, said supporting device comprising:

a supporting bar for directly supporting a vertically adjustable lifting platform in a container, said lifting platform being adapted for carrying products thereon;

a lifting device cooperating with said supporting bar for effecting vertical displacement of said supporting bar when said support device is in said container;

a hinge means connecting said supporting bar to said lifting device such that said supporting bar and lifting device are foldable against one another; and

said supporting device forming a separate, foldable unit that fits inside a casing formed by the container.

4,880,286
MAKING A HOLOGRAPHIC OPTICAL ELEMENT USING A COMPUTER-GENERATED-HOLOGRAM

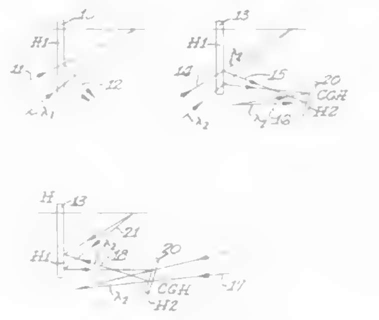
Charles C. Ih, Newark, Del., assignor to University of Delaware, Newark, Del.

Filed Oct. 19, 1987, Ser. No. 110,128

Int. Cl.^{4} G03H *1/08;* **G02B** *1/20*

U.S. Cl. 350—1.1 1 Claim

1. A method of producing a high resolution infrared hologram with the aid of a digital computer comprising defining mathematically a final infrared hologram by specifying mathematically a first object beam and a first reference beam at a fist wavelength, determining a computer generated hologram (CGH) by calculating a reconstructed wavefront from said mathematically defined IR hologram at a second wavelength by computer calculation using the Welford equation, interfering mathematically said reconstructed wavefront with a second reference beam to determine said CGH by computer calculations at said second wavelength, physically implementing the determined CGH, and then reconstructing by a reconstruction beam at the second wavelength and conjugate to the second reference beam, creating a distorted wavefront, and making the said final IR hologram by mixing said reconstruction wavefront with a beam conjugate to said first reference beam at said second wavelength.



4,880,287
COMPLEX CONJUGATE HOLOGRAM DISPLAY

Gaylord E. Moss, Marina del Rey, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Jan. 6, 1987, Ser. No. 792

Int. Cl.^{4} G03H *1/22;* **G02B** *27/14*

U.S. Cl. 350—3.85 9 Claims

5. A hologram made according to the steps of:

making a first hologram of an object at a distance L from an observer recording the virtual image of the object;

making a second hologram by illuminating the first hologram with its conjugate reference beam and reflecting the light from said first hologram off a warped combiner means and onto a second hologram plate; and

illuminating the second hologram plate with a reference beam passed through said warped combiner means.

4,880,288
INTEGRATED OPTICAL WAVEGUIDE, METHOD FOR ITS MANUFACTURE, AND ITS USE IN AN ELECTRO-OPTICAL MODULATOR

Sylvie Vatoux, St Remy Les Chevreuses; Michel Papuchon, Massy, and Hervé Lefevre, Paris, all of France, assignors to Thomson-CSF, Paris, France

Filed May 3, 1988, Ser. No. 189,705

Claims priority, application France, May 4, 1987, 87 06247

Int. Cl.^{4} G02B *6/10;* **H01L** *21/265*

U.S. Cl. 350—96.12 11 Claims

1. A lateral confinement integrated optical waveguide comprising:

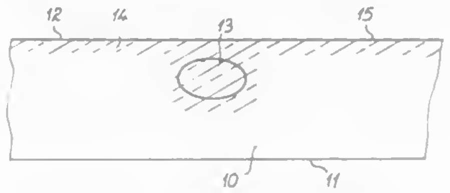
a lithium niobate substrate with at least one central zone, a dopant material formed as a strip for doping said substrate with an appropriate dopant having a refractive index greater than that of the substrate and such that said strip extends along the surface of the crystal according to the desired configuration,

a film of dopant material placed such that it flanks said central zone by lateral zones so that these lateral zones are doped with the same dopant as the desired configuration but in smaller concentrations, such that a guided wave can be propagated in the central zone.

5. A method for manufacturing a waveguide comprising:

the steps of forming a lithium niobate substrate, with at least one central zone;

doping with an appropriate dopant having a reflective index greater than that of the substrate, on said substrate, and wherein said dopant extends along the surface of the crystal according to a desired configuration and wherein a central zone is obtained by diffusion of a strip of dopant deposited on the surface of the substrate and wherein lateral zones are obtained by diffusing a film of dopant with a smaller thickness than that of the strip and in a smaller concentration, such that guided waves are propagated in said central zone.



4,880,289
TWO-WAY OPTICAL TRANSMISSION SYSTEM

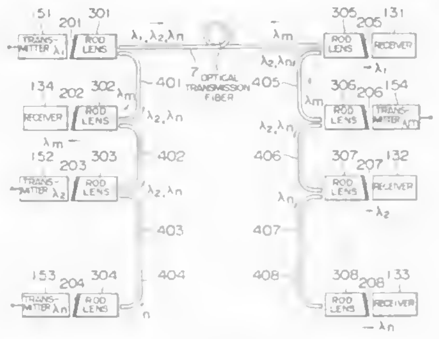
Katsuyuki Imoto, Sayama; Akihiko Takase, Koganei; Atsushi Takai, Kodaira; Satoshi Aoki, Chigasaki; Tsutomu Yoshiya, Yokohama, and Shoji Yamada, Kamakura, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 17, 1984, Ser. No. 682,311

Claims priority, application Japan, Dec. 16, 1983, 58-236159; Mar. 23, 1984, 59-54233; Mar. 29, 1984, 59-61865; Mar. 30, 1984, 59-60675

Int. Cl.^{4} G02B *6/32*

U.S. Cl. 350—96.18 20 Claims



20. A two-way optical transmission system in which a plurality of light signals of wavelengths differing one from another are transmitted through a single optical fiber from one end thereof to the other end and from said other end to said one end, comprising:

n (where n represents a natural number) first combined units each comprising optical transmitter means for outputting a light signal of wavelength λ_i (i=1, 2, . . . or n), a dielectric thin-film filter for transmitting therethrough the light signal of the wavelength λ_i and reflecting the light signals of the other wavelengths and a rod lens for introducing the light signal transmitted through or reflected by said dielectric thin-film filter into an optical fiber;

m (where m is a natural number) second combined units each comprising optical transmitter means for outputting a light signal of wavelength λ_j (j=1, 2, . . . or m), a dielectric thin-film filter for transmitting therethrough the light signal of the wavelength λ_j and reflecting light signals of the other wavelengths and a rod lens for introducing the light signal transmitted through or reflected by said dielectric thin-film filter into an optical fiber;

n third combined units each comprising a rod lens for fetching the light signal of the wavelength λ_i from the optical fiber, a dielectric thin-film filter for transmitting therethrough the light signal of the wavelength λ_i and reflecting the light signals of the other wavelengths and optical receiver means for receiving the light signal of the wavelength λ_i transmitted through said dielectric thin-film filter;

m fourth combined units each comprising a rod lens for fetching the light signal of the wavelength λ_j from the optical fiber, a dielectric thin-film filter for transmitting therethrough the light signal of the wavelength λ_j and reflecting the light signals of the other wavelengths, and an optical receiver means for receiving the light signal of the wavelength λ_j transmitted through said dielectric thin-film filter;

wherein said n first combined units and said m fourth combined units are disposed on the side of the one end of said single optical fiber,one end of a given one of said rod lenses of said first and fourth combined units facing one end of said single optical fiber, and the rod lenses of said first and said fourth combined units are connected in cascade through optical fibers;

said m second combined units and said n third combined units being disposed on the side of the other end of said single optical fiber, one end of a given one of said second and third combined units facing the one end of said single optical fiber, and the rod lenses of said second and third combined units being connected in cascade through optical fibers;

wherein each of said transmitter means has a light emission element and a spherical lens, each of said dielectric thin-film filters is provided with an angle at an end face of the corresponding rod lens which is located on the entrance side of light emitted by the light emission element, the length of each of said rod lenses is about n/4 pitch (where n=1, 3, 5, . . .), and each of said transmitter means and the corresponding filter and rod lens are integrally assembled in a single receptacle to thereby constitute an optical module.

4,880,290
OPTO-ELECTRONIC DEVICE AND METHOD FOR PRODUCING THE DEVICE

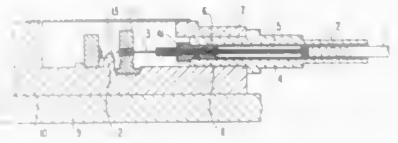
Tetsuo Kumazawa, Ibaraki; Makoto Shimaoka, Ushiku; Kazuyuki Fukoda, Ibaraki, and Eiichi Adachi, Mitaka, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 21, 1987, Ser. No. 99,072

Claims priority, application Japan, Sep. 19, 1986, 61-219526

Int. Cl.^{4} G02B *6/42*

U.S. Cl. 350—96.20 27 Claims



1. An opto-electronic device comprising:

a package containing at least one optical component therein;

an optical fiber jacket guide penetrating and fixed to a wall of the package for enabling an optical fiber to pass into or out of the package;

an optical fiber core extending through the optical fiber jacket guide and positioned within the package so that an end thereof is optically coupled with the at least one optical component within the package;

a coating material coated on at least a portion of the optical

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fiber core extending through the optical fiber jacket guide, the coating material within at least a portion of the optical fiber jacket guide having means for relieving strain of the coating material, the strain relieving means including a grooved peripheral surface of the coating material; and

means filling the region between the coating material and the optical fiber jacket guide within the optical fiber jacket guide for effecting bonding thereof;

whereby the grooved peripheral surface of the coating material within the optical fiber jacket guide substantially prevents contraction of the coating material in response to heat and cooling temperature cyclic variations and displacement of the optical fiber core within the package so as to maintain proper optical coupling of the end of the optical fiber core with the at least one optical component.

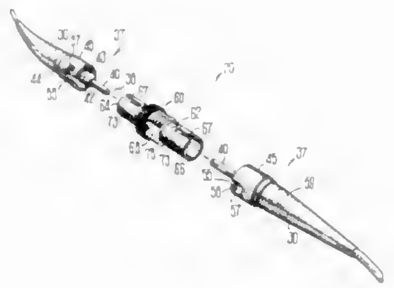
4,880,291
OPTICAL FIBER CONNECTOR AND METHODS OF MAKING

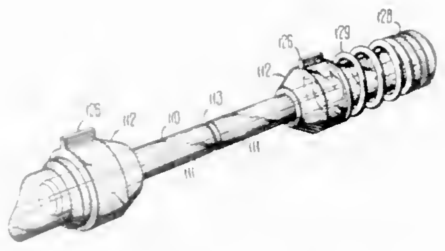
James A. Aberson, Jr., Atlanta; George F. DeVeau, Stone Mountain, and Kenneth M. Yasinski, Ellenwood, all of Ga., assignors to American Telephone & Telegraph Company, AT&T Bell Laboratories, Murray Hill, N.J.

Filed Feb. 4, 1988, Ser. No. 152,279

Int. Cl.⁴ G02B *6/38*

U.S. Cl. 350—96.21 **23 Claims**





1. An optical fiber connector, which comprises:

first and second plugs, each plug having an outer surface and a passageway therethrough for receiving an end portion of an optical fiber and each said passageway having a cross section transverse to a longitudinal axis of the plug which is significantly larger than that of the optical fiber to be received therein, each of said plugs comprising a segment of tubular stock with the segments of the tubular stock for said first and second plugs having been contiguous portions of the tubular stock and such that contiguous end faces of the two segments which have become said first and second plugs become adjacent free end faces of said first and second plugs;

a first optical fiber having an end portion which is received in the passageway of said first plug and a second optical fiber having an end portion which is received in the passageway of said second plug, each of said fiber end portions being disposed in an associated passageway of an associated plug intentionally in the same orientation with respect to the associated passageway of the associated plug; and

alignment means for maintaining the outer surface of said first plug aligned with the outer surface of said second plug and for causing the first and second plugs to have the same orientation with respect to each other as existed prior to separation from the tubular stock.

4,880,292
TRANSMISSION VIEWING SCREEN OF IMAGE PROJECTOR APPARATUS

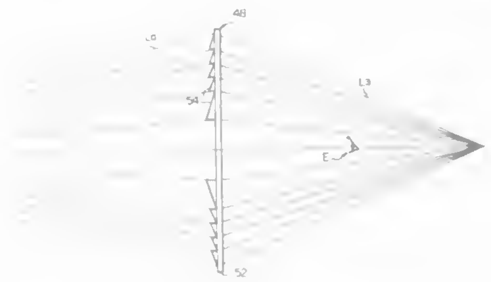
Hitoshi Kageyama; Toshikazu Suzuki; Keijiro Sakamoto; Tetsuo Kyogoku, and Masayuki Nino, all of Osaka, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Jul. 22, 1988, Ser. No. 222,797

Claims priority, application Japan, Jul. 24, 1987, 62-186105; Jul. 31, 1987, 62-193376

Int. Cl.⁴ G03B *21/60*

U.S. Cl. 350—128 **51 Claims**



1. A light-transmission viewing screen for displaying an optical image from a beam of light projected thereon along a predetermined path of light provided rearwardly of the screen, the viewing screen having a virtual center axis extending toward a viewer's viewing position, said light-transission viewing screen comprising

(a) a transparent or translucent transmission screen plate through which to transmit said beam of light, and

(b) a transmission grating located on at least a portion of one of said surfaces of the transmission screen plate for diffracting the beam of light toward a location substantially aligned with the virtual center axis of the viewing screen.

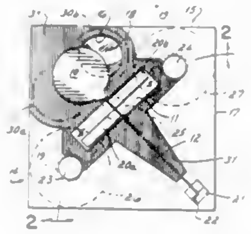
4,880,293
OPTIC FIBER SHUTTER APPARATUS

B. David Gilliland, III, Memphis, Tenn., assignor to DRD, Ltd., Memphis, Tenn.

Continuation of Ser. No. 694,289, Jan. 24, 1985, Pat. No. 4,778,254, and a continuation-in-part of Ser. No. 545,658, Oct. 26, 1983, abandoned. This application Apr. 26, 1988, Ser. No. 186,188

Int. Cl.⁴ G02B *26/02;* **G03B** *27/72*

U.S. Cl. 350—269 **12 Claims**



1. A shutter apparatus, comprising:

a shutter blade movable between two spaced apart end positions,

a movable member carrying the shutter blade between the end positions for selectively covering a light aperture,

permanent magnetic material carried by the movable member, and

an electromagnetic system having means for attracting and repelling the permanent magnetic material for movement of the shutter blade between the two end positions, the electromagnetic system being comprised of an E-shaped ferromagnetic pole piece, the outer poles of the pole piece forming cores having an electrically conductive winding thereon and thereby forming the first and second electromagnets which are spaced from and respectively on opposite sides of the permanent magnetic material, a portion of the core of each electromagnet so formed extending into the path of the permanent magnetic material and defining a respective end stop, the middle pole being equidistant from the two end poles and having its free end spaced from the plane of the path of movement of the permanent magnetic material, the selective operation of the electomagnetic system causing the permanent magnetic material to move and engage and come to rest in a stable position against one or the other of two spaced apart stops which determine the two end positions of the shutter blade, or causing the permanent magnetic material to maintain a third stable position between the two end stops, whereby the shutter blade has three stable positions corresponding to full, partial and no shuttering of the aperture.

4,880,294
CONTINUOUSLY VARIABLE MICRODIAPHRAGM

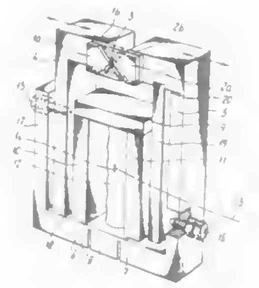
Godefridus J. Brakenhoff, Amsterdam, Netherlands, assignor to Stitchting Voor De Techische Wetenschappen, GA Utrecht, Netherlands

Filed Feb. 24, 1988, Ser. No. 159,696

Claims priority, application Netherlands, Feb. 27, 1987, 8700496

Int. Cl.⁴ G02B *26/02, 26/00, 9/42*

U.S. Cl. 350—269 **13 Claims**



1. A microdiaphragm having an adjustable aperture between 0.5 and 1,000 μm comprising:

a pair of separate diaphragm strips, each of said diaphragm strips comprising two plates, each of which has a slanting end edge, said plates being fastened to each other so that their end edges lie behind each other and always forming a V-shaped recess, said recesses forming a lozenge-shaped opening,

transmission legs, each of said diphragm strips being fixed to or forming part of one of said legs, and

means, coupled to said transmission legs, for shifting said transmissions legs symetrically relative to one another.

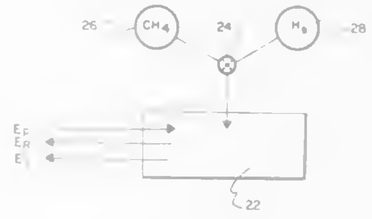
4,880,295
OPTICAL DEVICE ENHANCEMENT METHOD AND APPARATUS BY CONTROL OF STIMULATED BRILLOUIN SCATTERING GAIN

David A. Rockwell; Metin S. Mangir, both of Santa Monica; Jeffrey O. White, Malibu, and Dennis C. Jones, Westchester, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Oct. 21, 1987, Ser. No. 111,941

Int. Cl.⁴ G02F *1/00*

U.S. Cl. 350—354 **30 Claims**



11. A method of establishing a gain medium for a stimulated Raman scattering (SRS) optical device which operates upon an input variable intensity optical beam to produce an output optical beam whose wavelength is shifted with respect to the wavelength of the input beam, said SRS being subject to dominance by stimulated Brillouin scattering (SBS), comprising:

selecting a first intensity level for said input variable intensity optical beam;

selecting a gain medium whose initial SBS gain coefficient is sufficiently low to avoid SBS dominance of SRS in said gain medium at said intensity level;

increasing the intensity level to at least a second intensity level at which said initial SBS gain coefficient is not sufficiently low to avoid SBS dominance over SRS, and

modifying said gain medium responsively to the increase in the intensity level, to establish SRS dominance over SBS at said second level.

4,880,296
OPTO-OPTICAL BEAN DEFLECTOR, MODULATOR, AND SHAPER

L. Samuel Ditman, Jr., Westminster, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 4, 1987, Ser. No. 57,994

Int. Cl.⁴ G02F *1/01*

U.S. Cl. 350—354 **11 Claims**

1. An optical beam deflector comprising:

a bulk optical material having aniosotropic light transmissive characteristics,

a tunable laser,

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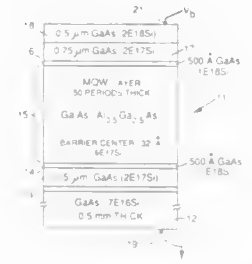
- beam splitting means for splitting the light beam outputted from the laser into two or more beams, and
- means for focusing each of the split light beams into the bulk optical material, each of the split light beams being focused in a predetermined relationship to each of the other split light beams so as to form a Raman-Nath diffraction grating within the optical material for deflecting a beam of light incident to the grating.

4,880,297

QUANTUM WELL OPTICAL ELECTRIC FIELD BIASED NONLINEAR METHOD AND APPARATUS

Martin M. Fejer, Menlo Park, and Robert L. Byer, Stanford, both of Calif., assignors to Board of Trustees of Leland Stanford, Jr. University, Stanford, Calif.
Filed Oct. 15, 1987, Ser. No. 109,054
Int. Cl.⁴ G02F *1/015*
U.S. Cl. 350—355 **11 Claims**



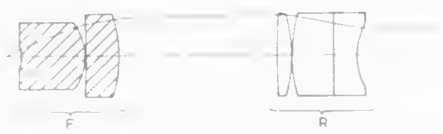
1. In a method for producing second order, three-wave radiation interaction, the steps of:

- providing a quantum well material which is substantially optically transparent to said radiation and includes free carriers within the same;
- applying an electric field to said quantum well material to produce a quadratic nonlinear optical susceptibility whose sign depends on the direction of the applied electric field; and
- introducing radiation for said second order interaction into that portion of said quantum well material having said quadratic nonlinear optical susceptibility.
- means for introducing optical wave energy into said one portion for optical interaction with said quantum well material; and
- means for producing a quadratic nonlinear optical susceptibility in said one portion of said quantum well material for said optical wave energy by applying an electric bias field across said one portion of said material, the sign of said susceptibility depending on the direction of the applied electric bias field.

4,880,298

MICROSCOPE OBJECTIVE

Katsuhiro Takada, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan
Continuation-in-part of Ser. No. 893,172, Aug. 5, 1986, abandoned. This application Jan. 20, 1988, Ser. No. 146,044
Claims priority, application Japan, Aug. 7, 1985, 60-173870
Int. Cl.⁴ G02B *21/02*
U.S. Cl. 350—414 **50 Claims**



1. A microscope objective lens system comprising a plurality of lens elements or components which are arranged along a common optical axis, at least one of said lens elements or components being a graded refractive index lens, whose refractive index varies with the radial distance from said optical axis, and said graded refractive index lens being located on the object side of a point of intersection of an off-axial principal ray and said optical axis,

wherein the refractive index distribution of said graded refractive index lens is expressed by the formula shown below, and said graded refractive index lens satisfies condition (1) shown below:

$$n = n_0 + n_1r^2 + n_2r^4 + n_3r^6 + \ldots$$

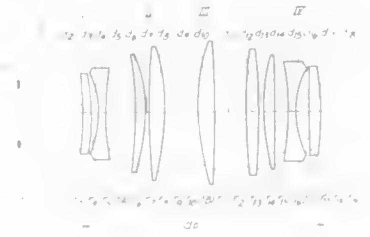
$$|n_1| > 7 \times 10^{-4}/f^2 \qquad (1)$$

n_0 represents the refractive index on the optical axis, r represents the radial distance from the optical axis, n_1, n_2, n_3, . . . respectively represent the 2nd-, 4th-, 6th-, . . . order coefficients, and f represents the focal length of said objective lens system.

4,880,299

TELECENTRIC Fθ LENS SYSTEM FOR LASER COM

Akiyoshi Hamada, Toyokawa, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan
Continuation of Ser. No. 43,645, Apr. 28, 1987, abandoned. This application Jul. 7, 1988, Ser. No. 216,509
Claims priority, application Japan, Apr. 28, 1986, 61-99065; Apr. 28, 1986, 61-99066
Int. Cl.⁴ G02B *13/22, 9/62, 9/64*
U.S. Cl. 350—415 **33 Claims**



1. A telecentric fθ lens system for use in a laser COM comprising, from the object to image side:

- a first lens unit including a negative lens component;
- a second lens unit consisting of a positive lens component;
- a third lens unit including a positive lens component; and
- a fourth lens unit including three lens components, of which two lens components are a negative and a positive lens component aligned in order from the object side and the final lens component from the object side is positive, wherein said lens components are respectively spaced from each other on an optical axis.

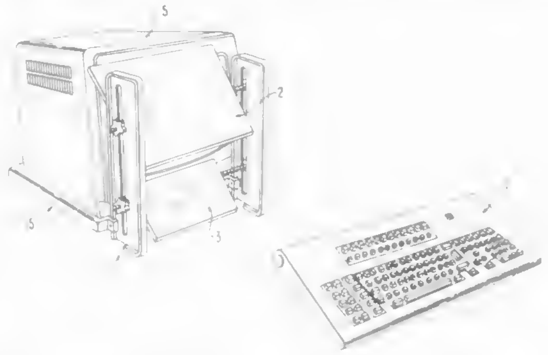
4,880,300

VISION SAVER FOR COMPUTER MONITOR

Leonard E. Payner, 707 Washington Ave., and Jimmy L. Keener, 701 Washington Ave., both of Elyria, Ohio 44035
Filed May 6, 1988, Ser. No. 191,079
Int. Cl.⁴ G02B *27/02*
U.S. Cl. 350—618 **14 Claims**

1. A vision saver for use with a computer monitor comprising first and second reflecting surfaces and support means for supporting said first and second reflecting surfaces in spaced relation in front of the computer monitor such that said first reflecting surface faces the screen of said monitor and the second reflecting surface, and said second reflecting surface faces said first reflecting surface and outwardly from the screen of said monitor whereby a person can visually observe the screen of the computer monitor by viewing the second

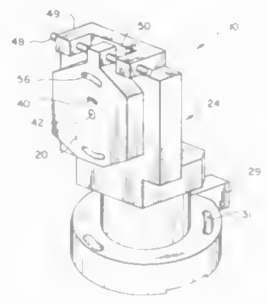
reflecting surface, wherein said support means is free standing and includes a platform for supporting the computer monitor, and wherein said support means includes means for adjusting the positions of said first and second reflecting surfaces with respect to said support means.



4,880,301

MOUNT FOR AN OPTICAL ELEMENT

Miroslay K. Gross, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed May 9, 1988, Ser. No. 191,524
Int. Cl.⁴ G02B *7/18*
U.S. Cl. 350—636 **11 Claims**



1. A mount for use with an optical element which is adapted to receive an input beam and to project an output beam therefrom, said mount being adjustable to position said output beam along a first line in the form of an arc and along a second line which forms an angle with said first line, said mount comprising:

- an optical element having an optical surface thereon;
- a holder for supporting said element along a first axis such that the optical surface of the element extends transverse to the axis and forms a very small angle with a plane which is perpendicular to the axis;
- a base for supporting said holder for rotation about said axis, said base including means operative against said holder for rotating said holder to effect a fine angular adjustment of said beam along said first line; and
- means for supporting said holder for rotation about a second axis generally perpendicular to said first axis, said supporting means including adjusting means to effect adjustment of said beam along said second line.

4,880,302

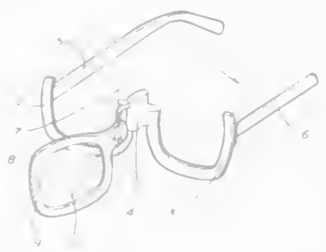
EYE GLASSES FOR APPLYING MAKEUP

Michel Meillet, Centre Commercial Le Plateau, La Duchere Lyon 9 eme-Rhone, France
Filed Apr. 19, 1988, Ser. No. 185,130
Int. Cl.⁴ G02C *9/02, 7/08*
U.S. Cl. 351—59 **2 Claims**

1. In a pair of makeup eyeglasses the improvement comprising:

a frame having a front and a pair of arms;
the front comprising:

- a pair of vision frames; each vision frame being defined by only a lower part having a curved profile, such that each vision frame is entirely laterally outside and below the visual range of an associated eye of a user;
- a transverse horizontal bridge disposed on a nose of a user connecting the pair of vision frames, the bridge having a vertical axis;



- a bracket secured to the bridge along the vertical axis;
- a frame horizontally rotatably mounted to the bracket such that the frame can be rotated about a vertical axis, away from the face of a user to abut against either of the one of the pair of vision frames; and
- a lens disposed within the horizontally rotatable frame, the bracket, horizontally rotatable frame and lens defining an eyepiece.

4,880,303

OVERHEAD PROJECTOR

Peter-Hein Grunwald, Schlattstrasse 215, FL 9491 Ruggell, Fed. Rep. of Germany
Filed Feb. 12, 1988, Ser. No. 155,202
Claims priority, application Fed. Rep. of Germany, Feb. 16, 1987, 3704762; Apr. 16, 1987, 3712999
Int. Cl.⁴ G03B *21/20, 21/132*
U.S. Cl. 353—122 **15 Claims**

1. An overhead projector comprising a housing having at its upper side a Fresnel lens and a writing plate overlying said Fresnel lens;

- a support arm extending up from a rear side of said housing,
- a projection head comprising an objective and a deflection mirror mounted on said support arm in a position above said housing,
- a light source comprising a lamp, reflector and condenser lens disposed in said housing in position to direct light up through said Fresnel lens and writing plate to said projection head,
- liquid crystal display means in a frame hingedly mounted on said housing by hinge means at said rear side of said hous-

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ing for swinging between a lower position overlying said writing plate for projection of an image defined by said liquid crystal display means and a raised position in which said liquid crystal display means is in an upright position adjacent said support arm and is thereby out of a light path between said writing plate and said projection head for projection of an image on said writing plate,

fastening means for releasably securing said liquid crystal display means in said raised position,

means in said housing for controlling said liquid crystal display means and

flexible means for electrically connecting said liquid crystal display means with said controlling means.

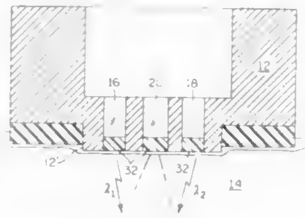
4,880,304
OPTICAL SENSOR FOR PULSE OXIMETER

Jonathan P. Jaeb; Dennis W. Gilstad, and Ronald L. Branstetter, all of San Antonio, Tex., assignors to Nippon Colin Co., Ltd., Komaki, Japan

Filed Apr. 1, 1987, Ser. No. 33,406

Int. Cl.⁴ G01N *33/49;* **A61B** *5/00*

U.S. Cl. 356—41 5 Claims



1. An optical sensor, comprising:

a housing, said housing having a general flat lower surface with a central protrusion extending a predetermined distance from said lower surface, said protrusion adapted to provide an optical couple between said sensor and the surface of a patient's tissue;

a first source of light at a first wavelength for which the absorption coefficients of hemoglobin and oxyhemoglobin are approximately equal and a second source of light at a second wavelength for which said absorption coefficients differ from one another, said first and second sources of light mounted in said central protrusion extending from said lower surface;

light detecting means mounted in said protrusion of said housing to detect light at said first and second wavelengths after contact with arterial blood; and

light absorbing means on said lower surface of said housing surrounding said central protrusion for preventing the transmission of ambient light between the lower surface of said housing and said tissue.

4,880,305
LASER DIRECTION OF ARRIVAL DETECTOR

James W. A. Salt, Kanata, Canada, assignor to Her Majesty The Queen as Represented by the Minister of National Defence of Her Majesty's Canadian Government, Ottawa, Canada

Continuation of Ser. No. 770,751, Aug. 29, 1985, abandoned. This application Mar. 2, 1989, Ser. No. 320,848

Claims priority, application Canada, Dec. 3, 1984, 461127

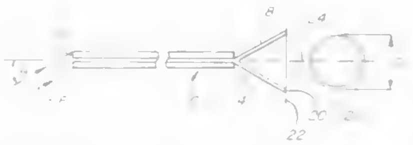
Int. Cl.⁴ G01C *1/00;* **H01J** *5/16*

U.S. Cl. 356—141 14 Claims

1. A detector for use in determining the orientation of a laser beam arriving at the detector, comprising:

a fibre optic bundle having a longitudinal axis with a polished input end disposed at a known orientation, and an output end; and

sensor means adjacent the output end of the bundle for measuring a diameter of a light output from the bundle at a predetermined plane perpendicular to the longitudinal axis, which diameter varies as a function of the angle of the incidence of the laser beam on the input end.



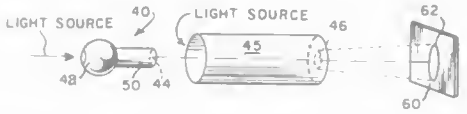
4,880,306
METHOD OF CHECKING COLLINEARITY

Bernard J. Murphy, Mountain Lakes, N.J., assignor to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed Nov. 30, 1988, Ser. No. 278,193

Int. Cl.⁴ G01B *11/27*

U.S. Cl. 356—153 7 Claims



1. In a device having two, axially-spaced, albeit substantially collinearly aligned, conduits of diverse inside diameters, a method of checking collinearity of said conduits, comprising the steps of:

directing light through a first one of the conduits which has the greatest inside diameter;

interposing a planar surface transverse to, and downstream of, the first conduit, to display the light directed therethrough as a circular image on the planar surface;

directing light through a second one of the conduits to create an emerging light beam therefrom; and

displaying the beam on the planar surface to ascertain whether its impingement is centered relative to the circular image, or offset relative to the center of the image.

4,880,307
METHOD OF DETECTING THE POSITION OF AN OBJECT

Motonori Endo, and Hiroshi Minakami, both of Yokohama, Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Jul. 5, 1988, Ser. No. 215,098

Claims priority, application Japan, Jul. 6, 1987, 62-167065

Int. Cl.⁴ G01B *11/14*

U.S. Cl. 356—375 5 Claims

1. In a method of detecting- the position of a movable object, the steps comprising:

producing a laser beam;

reflecting the laser beam off said object to produce a reflected beam;

monitoring the reflected beam using a photo responsive sensor;

converting the received reflected beam into a signal indicative of the image produced in said sensor, said signal having a wave form;

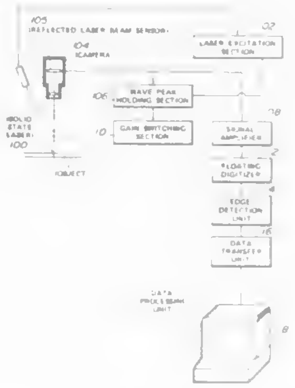
detecting the magnitude of a selected parameter of said wave form;

comparing the magnitude with the maximum permissible value;

reducing the power of the laser beam in the event that the magnitude is greater than said maximum permissible value;

determining, in the event that the magnitude is lower than said maximum permissible limit, if the laser beam power is maximized;

increasing the power of the laser beam in the event that the power thereof is not maximized; and



increasing the degree of amplification of said signal in the event that the power of the laser is maximized.

4,880,308
ALIGNING APPARATUS

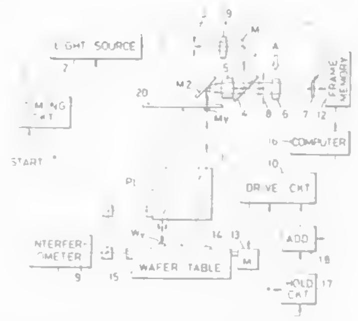
Hiroshi Shirasu, Yokohama, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Apr. 1, 1988, Ser. No. 176,760

Claims priority, application Japan, Apr. 8, 1987, 62-86636

Int. Cl.⁴ G01B *11/00*

U.S. Cl. 356—401 17 Claims



1. An apparatus for aligning a first substrate with a second substrate, comprising:

means for relative movement of said first and second substrates for said alignment;

first alignment mark means composed of a pair of mutually different grating marks formed in predetermined positions of said first substrate;

second alignment mark means composed of grating marks formed in predetermined positions of said second substrate to be optically superposed with said pair of grating marks, wherein said grating marks of said second alignment mark means are formed in such a manner that two moiré fringe patterns formed by said optical superposition move in mutually opposite directions during a relative movement of said first and second substrates by said relative movement means;

illumination means containing a pulse light source for instantaneously illuminating said first and second alignment mark means;

means for measuring the relative position of said first and second substrates in synchronization with instantaneous illumination by said illumination means;

image sensor means of charge accumulation type;

an alignment optical system for forming said two moiré fringe patterns on said image sensor means;

determination means for detecting the phase difference of said two moiré fringe patterns from the charge distribution accumulated in said image sensor means corresponding to said moiré fringe patterns and determining a positional deviation between said first and second substrates from detected phase difference in the moiré fringe patterns and from the relative position measured by said position measuring means; and

means for driving said relative movement means according to said positional deviation determined by said determination means.

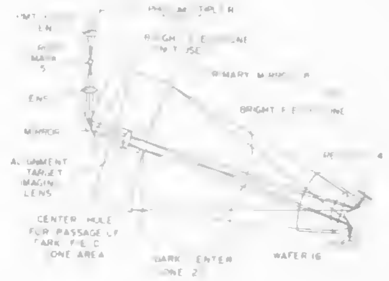
4,880,309
DARK FIELD TARGET DESIGN SYSTEM FOR ALIGNMENT OF SEMICONDUCTOR WAFERS

Mark S. Wanta, N. Richland Hills, Tex., assignor to General Signal Corporation, Stamford, Conn.

Filed Apr. 14, 1987, Ser. No. 38,359

Int. Cl.⁴ G03B *27/42*

U.S. Cl. 356—401 4 Claims



1. A dark field wafer alignment system comprising

means for exposing a plurality of erticle images in a step and repeat manner onto a semiconductor wafer, and

means for aligning each reticle image to targets in the wafer scribe area wherein said means for aligning include alignment marks having a generally cross-shaped configuration of arms wherein each arm o said configuration is in the shape of a series of separate zigged shaped target structures so as to provide a sufficient edge length and surface area to reflect more light from the center of the target rather than the sides thereof.

4,880,310
OPTICAL DEVICE FOR ALIGNMENT IN A PROJECTION EXPOSURE APPARATUS

Kenji Nishi, Kawasaki, Japan, assignor to Nikon Corporation, Tokyo, Japan

Continuation of Ser. No. 76,740, Jul. 23, 1987, abandoned. This application Dec. 20, 1988, Ser. No. 287,559

Claims priority, application Japan, Jul. 28, 1986, 61-175702; Dec. 5, 1986, 61-288929

Int. Cl.⁴ G03B *27/52*

U.S. Cl. 356—401 17 Claims

1. A device for aligning an object provided with first alignment mark means and a substrate provided with second alignment mark means, comprising:

means for disposing said object and said substrate on first and second planes, respectively;

an imaging optical system provided between said first and second planes so that said first and second planes are substantially conjugate with each other with respect to said imaging optical system under a first wavelength;

means for radiating an energy beam having a second wavelength differing from said first wavelength;

optical means, provided between said radiating means and

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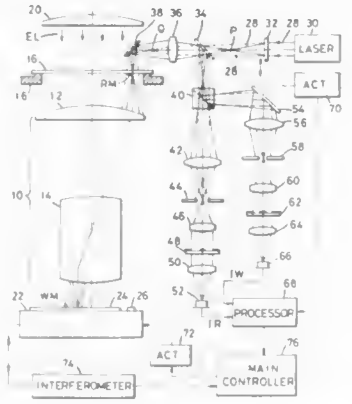
said first plane, for condensing a first beam part separated from said energy beam onto said first plane to form a beam spot on said first alignment mark means and condensing a second beam part separated from said energy beam onto said second plane in cooperation with said imaging optical



system to form a beam spot on said second alignment mark means; and

means for detecting the relative position of said object and said substrate on the basis of optical information from said first and second alignment mark means.

4,880,311
APPARATUS FOR SUPPLYING UNCLOGGING GAS TO FLUIDIZED BED APPARATUS

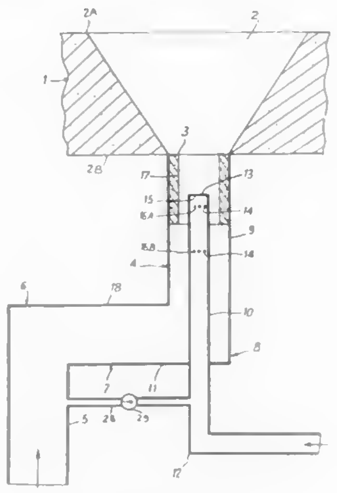
Arnaud Delebarre, Lille, and Paul W. Witwicki, Bethune, both of France, assignors to Charbonnages DeFrance, Paris, France

Filed Oct. 21, 1986, Ser. No. 921,254

Claims priority, application France, Oct. 21, 1985, 85 15580

Int. Cl.⁴ B01F *13/02*

U.S. Cl. 366—101 **7 Claims**



1. A fluidized bed apparatus comprising:

a grid having an upper face for supporting particles to be fluidized and having at least one concavity defined therein, each said concavity having a lower inlet so that each said concavity defines a blow opening of the grid,

a fluidization gas supply tube connected to each said lower inlet of each said at least one concavity, respectively, each said gas supply tube being open towards said particles to be fluidized so that at least some of the said particle fall thereinto and including limiting means for stopping the fall of particles through said tube, and

an unclogging apparatus for each said gas supply tube including an injection tube coming from a source of unclogging fluid, passing through the wall of said gas supply tube and disposed inside said supply tube, said injection tube having at least one lateral orifice located between said upper face of the grid and the limiting means, the upper end of said injection tube being closed, said gas supply tube limiting the unclogging effect of said unclogging apparatus at a useful lower limit.

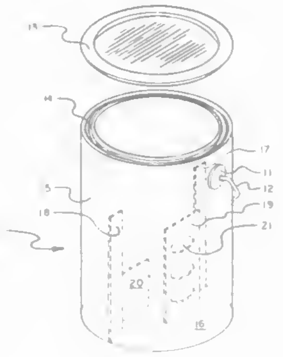
4,880,312
MIXING APPARATUS

John T. Carlson, 811 Ashland Ave., St. Paul, Minn. 55104

Filed Mar. 24, 1988, Ser. No. 173,249

Int. Cl.⁴ B01F *9/12, 13/00*

U.S. Cl. 366—130 **5 Claims**



1. A conveniently carryable integral plastic molded mixing apparatus for mixing paint, stain and like liquids typically subject to separation and settlement of their various components, comprising

a cylindrical container, consisting of a bottom and a side having inner and outer surfaces and a handle for lifting and carrying the container

a plurality of perimeter baffles molded into the container and extending upwardly from said bottom and inwardly from said inner surface,

first and second inner baffles molded into the container and extending upwardly from said bottom and offset from the perimeter baffles, each other and the center of said bottom and oriented in a generally spaced parallel relation to said perimeter baffles, and

said perimeter baffles extending upwardly approximately two-thirds and said first inner baffle extending upwardly approximately one-half the heighth of said inner surface to obstruct the free flow of liquid in said container when said container is manually rotated by the handle and to permit clean pouring of the liquid from the container without messy dripping out of the container from the baffles.

4,880,313
METHOD AND NOZZLE FOR MIXING MEDIUMS OF DIFFERENT VISCOSITY

Heinz Loquenz, Graz, and Slegfried Meissl, Stallhofen, both of Austria, assignors to Waagner-Biro Aktiengesellschaft, Austria

Filed Nov. 24, 1987, Ser. No. 124,889

Claims priority, application Austria, Nov. 26, 1986, A 3156/86

Int. Cl.⁴ S14E *44/10*

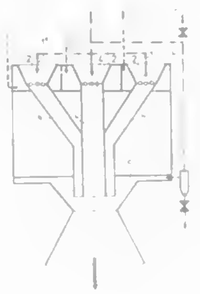
U.S. Cl. 366—336 **16 Claims**

1. Method of mixing media of two different viscosities, which comprises

splitting a liquid medium which is a cellulose suspension into at least two liquid partial streams,

passing a first one of said liquid partial streams into an injector having an inlet region and an outlet region, at the inlet region of the injector,

passing a stream of gaseous medium into the injector in the region of the inlet, whereby said first liquid partial stream mixes with said gaseous medium as the first liquid partial stream flows toward the outlet region,



introducing at least one remaining liquid partial stream into the flow at the outlet region, whereby the introduced liquid partial stream is mixed with said flow of first liquid partial and gaseous streams to form a combined stream, and

decelerating the flow of the combined stream, whereby the gaseous stream becomes intimately admixed with the liquid stream without formation of bubbles or low viscosity streaks, and cellulose contained in the cellulose suspension is effectively bleached by the gaseous medium.

4,880,314
PYROMETRIC MEASUREMENT PROCEDURE AND MULTI-CHANNEL PYROMETER

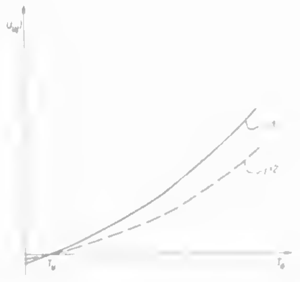
Ulrich Kienitz, Dresden, German Democratic Rep., assignor to VEB Messgeraetewerk "Erich Weinert" Magdeburg, Betrieb des Kombinates VEB EAW Berlin-Treptow, Magdeburg, German Democratic Rep.

Filed Jun. 17, 1986, Ser. No. 875,125

Claims priority, application German Democratic Rep., Jul. 30, 1985, 279119

Int. Cl.⁴ G01J *5/56, 5/52*

U.S. Cl. 374—129 **3 Claims**



1. A pyrometric measuring method for determining the temperature T_o of surfaces with different emissivities ϵ_{ij} at $j=1$ to n effective wavelengths by the measurement of the spectral signal voltages U_j in $j=1$ to n spectral channels at a known ambient temperature T_u and by means of a functional relationship between the signal voltage difference $U_{oj}-U_{uj}$ and the object temperature of a black-body radiator, said relationship being measured in a calibration process, comprising measuring at a known surface temperature T_o the respective signal voltages U_{ij} in the $j=1$ to n spectral channels for $i=1$ to m user-specific surface materials i differing in emissivity, wherein n and m are integers and, using the functional relationship between the difference $U_{oj}-U_{uj}$ and the object temperature that is calibrated on a black-body radiator, determining the associated signal voltage differences $U_{oj}-U_{uj}$ and calculating the respective emissivities ϵ_{ij} for the user-specific $i=1$ to m surface materials according to the equation

$$\epsilon_{ij} = \frac{U_{ij}}{U_{oj} - U_{uj}}$$

and storing them, measuring, in a measurement step on the unknown surface material i and at an unknown surface temperature T_o, the spectral signal voltage U_j in the $j=1$ to n spectral channels, determining for each spectral signal voltage U_j obtained in the measurement step, the signal voltage differences $U_{oij}-U_{uj}$ at the calibrated surface materials i according to the equation

$$U_{oij} - U_{uj} = U_j/\epsilon_{ij}$$

using the stored emissivity ϵ_{ij}, determining with the help of the functional relationship between the surface temperature T_o and the difference $U_{oj}-U_{uj}$ in the respective spectral channel j as calibrated at the black-body radiator, the associated object temperatures T_{oij} for each material i, using the previously determined differences $U_{oij}-U_{uj}$ for the differences $U_{oj}-U_{uj}$ obtained at the black-body radiator, and determining the scatter of the object temperatures T_{oij} for each material i in the $j=1$ to n spectral channels, the average value of the n object temperatures T_{oij}, which have the least scatter for a material i, corresponding to the true object temperature T_o.

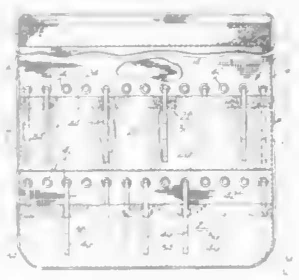
4,880,315
ROLL-UP CARRYING BAG WITH ADJUSTABLE COMPARTMENTS

Marilee G. Berry, and Dickey J. Berry, both of 5787 Via Barcelona, La Verne, Calif. 91750

Filed Nov. 14, 1988, Ser. No. 270,642

Int. Cl.⁴ A45C *13/02;* **B65D** *30/22*

U.S. Cl. 383—39 **7 Claims**



1. A configurable carrying bag comprising:

a main panel formed by a flexible material;

at least one elongated pocket-forming panel made from a flexible material, overlying and extending across a portion of the main panel;

means permanently fastening the pocket-forming panel to the main panel, so as to form an elongated main pocket between the overlying panels, with an elongated opening to the interior of the main pocket extending across a top portion of the pocket-forming panel;

a row of fastening means affixed adjacent to and mutually spaced apart along the opening of the main pocket; and

a plurality of pin means, each adapted for releasable attachment to the individual fastening means, and each selectably movable from its fastened condiion, between an unused position and an in-use position to releasably secure the pocket-forming panel to the main panel to thereby form separate, reconfigurable dividers at intervals along the main pocket for configuring the main pocket into

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smaller, individual pockets of selective width, between the dividers, the pin means each being movable from its in-use position to said unused position for use in constantly reconfiguring the arrangement of smaller pockets;

the main panel having a flexible flap portion extending away from the pocket-forming panel to provide a cover for articles contained in the reconfigurable pockets.

4,880,316

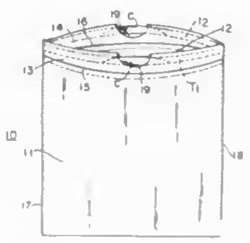
MULTIPLE LAYER HAND-GRIP REINFORCEMENT FOR THERMOPLASTIC DRAW TAPE HANDLES FOR THERMOPLASTIC BAGS

Kirk E. Belmont, Fairport; Edward M. Bullard, East Rochester; Daniel J. DiBiasi, Pittsford; Edward W. Forman, Jr., and David E. McIntyre, both of Palmyra, all of N.Y., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Jun. 3, 1988, Ser. No. 201,798

Int. Cl.⁴ B65D *33/02, 33/10, 33/28*

U.S. Cl. 383—75 13 Claims



1. A thermoplastic draw tape bag for carrying trash and the like having a multiple layer hand-grip reinforcement for the draw tape handle comprising:

two thermoplastic panels forming an open top, closed bottom bag, the panels being joined along the sides of the bag;

a hem on each of said panels folded over adjacent the top, the bottom and ends of each hem being sealed to the adjacent panel, each of the hems having a cut out opening intermediate the ends of the hems; and

a thermoplastic draw tape handle disposed in each hem secured to the ends of said hem and each draw tape comprising a center section and two side sections, the side sections each comprising a single layer of tape being secured to the ends of the hem and the center section being in alignment with said cut out opening and comprising a folded over multiple layer tape area, the multiple layer tape area having a length adequate to provide a hand-grip reinforcement for the tape so that when the center section is gripped and pulled through the cut out opening in the hems to draw closed the open top of the bag, the multiple layer hand-grip reinforcement minimizes the discomfort caused by roping at the center section while the bag is under load.

4,880,317

ANGULAR CONTACT LINEAR SLIDE BEARING

Hiroshi Teramachi, 2-34-8, Higashi-Tamagawa, Setagaya-Ku, Tokyo, Japan

Filed Mar. 18, 1988, Ser. No. 170,276

Claims priority, application Japan, Mar. 20, 1987, 62-63666; Mar. 20, 1987, 62-63667

The portion of the term of this patent subsequent to May 23, 2006, has been disclaimed.

Int. Cl.⁴ F16C *29/06*

U.S. Cl. 384—45 10 Claims

1. An angular contact linear slide bearing comprising:

a bearing block including a pair of ball rolling surfaces formed adjacent to each other and positioned such that respective load lanes through said ball rolling surfaces diverge from each other, and unloaded ball passages each formed in opposing relationship with the corresponding one of said ball rolling surfaces;

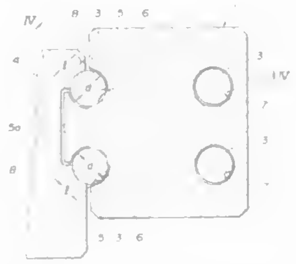
end caps mounted to respective ones of the opposite end surfaces of said bearing block for providing communication between the opposite ends of each of said ball rolling surfaces and the opposite ends of the corresponding one of said unloaded ball passages to thereby form a pair of endless tracks;

a multiplicity of balls which roll along each of said endless tracks; and

a track rail having a pair of ball rolling grooves along which said balls roll in a loaded state while they are rolling on said ball rolling surfaces of said bearing block;

said bearing block further including:

a separation portion; and



a pair of leaded ball grooves separated by said separation portion and provided with openings which are positioned such that said load lines diverge from each other, said ball rolling surfaces form in said loaded ball grooves, with each ball rolling surface having a first longitudinal side and a second longitudinal side, an up load ball groove formed in each loaded ball groove adjacent said first longitudinal side of the respective ball rolling surface, and a down load ball groove formed in each loaded ball groove adjacent said second longitudinal side of the respective ball rolling surface, each up and down load ball groove being recessed with respect to the respective ball rolling surface, the up and down load ball grooves of each loaded ball groove defining said opening of the respective loaded ball groove, with said opening having an opening width smaller than at least the diameter of each of said balls.

4,880,318

SLIDABLE VIBRATION-ISOLATING RUBBER MEMBER

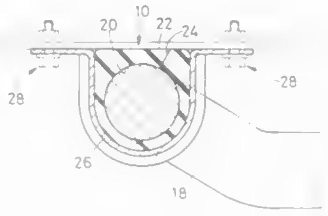
Akihiro Shibahara, Komaki; Takehiko Taguchi, Kasugai; Akira Uehara, Inuyama; Koji Shinohara, Kasugai, and Hiroshi Kawaguchi, Komaki, all of Japan, assignors to Tokai Rubber Industries, Ltd., Aichi, Japan

Filed Jan. 15, 1988, Ser. No. 144,070

Claims priority, application Japan, Jan. 21, 1987, 62-11957; Jan. 23, 1987, 62-14611; Feb. 20, 1987, 62-38674

Int. Cl.⁴ F16C *33/22*

U.S. Cl. 384—125 15 Claims



1. A slidable vibration-isolating rubber bushing interposed between two members in a suspension system of a motor vehicle such that the rubber bushing is slidable relative to at least one of said two members, said rubber bushing being formed from a rubber composition which comprises 100 parts by weight of a rubber material consisting of at least one material selected from the group consisting of natural rubber, butadiene rubber, isoprene rubber, styrenebutadiene rubber, chloroprene rubber, acrylonitrile-butadiene rubber, ethylene-propylene rubber nd isobutylene-isoprene rubber, and 2–20 parts by weight of a silicone oil having a kinematic viscosity of 10–300 centistokes at 25°C.

4,880,319

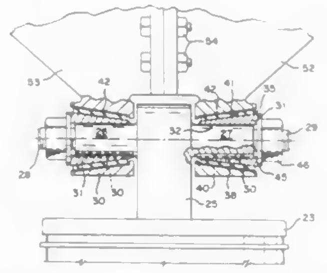
BEARING ASSEMBLY

John A. Haggerty, Norton, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed May 5, 1986, Ser. No. 859,677

Int. Cl.⁴ F16C *33/22*

U.S. Cl. 384—215 7 Claims



1. A bearing assembly for a vehicle wheel comprising a stationary wheel support bracket, a shaft extending laterally from said bracket, a sleeve mounted on and secured to said shaft, the outer surface of said sleeve tapers inwardly towards said bracket, an annular elastomeric ring bonded to said tapering outer surface of said sleeve, an elongated arm with a hub portion thereon, said hub portion having a central bore that is frusto-conical in shape, said central bore of said hub frictional contacting said annular ring, and means for securing said tapering sleeve with said annular ring on said shaft wherein the surface of said central bore has a layer of anti-friction material bonded thereto for frictional engagement by said elastomeric ring.

4,880,320

FLUID FILM JOURNAL BEARINGS

Derrick J. Haines, Hatfield, and Harry Marsh, Durham City, both of England, assignors to British Aerospace plc, London, England

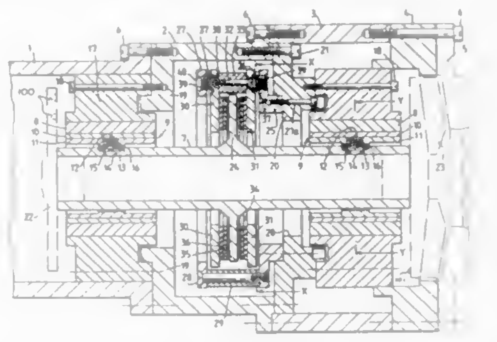
Filed Mar. 10, 1988, Ser. No. 166,372

Claims priority, application United Kingdom, Mar. 10, 1987, 8705644; PCT Int'l Appl., Jun. 10, 1987, PCT/GB87/00403

Int. Cl.⁴ F16C *27/02*

U.S. Cl. 384—215 5 Claims

1. An assembly of a support bearing member, and a rotary system including a rotor and a rotary bearing member, the support and rotary bearing members constituting a fluid-film journal bearing for radially locating the rotor and the rotary bearing member being mounted to rotate with the rotor but with circumferentially spaced adjustable means for creating resiliently controlled radial play relative to the rotor so that there is a tendency, if rotor whirl sets in, for the relative radial positions of the rotor and rotary bearing member and hence also the dynamic balance of the rotary system to alter, the assembly being such that said tendency results in the generating of force components which act upon said system to inhibit growth of said rotor whirl.



4,880,321

PRINTING APPARATUS FOR AUTOMATICALLY CONDUCTING A CARRIAGE RETURN

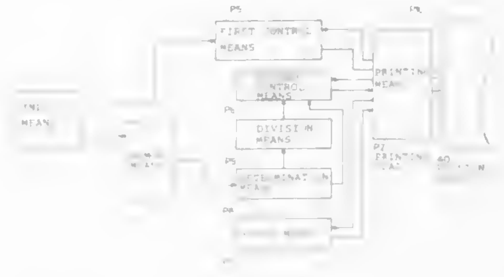
Ryoichi Sasaki, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Japan

Filed Nov. 17, 1987, Ser. No. 122,917

Claims priority, application Japan, Nov. 20, 1986, 61-277312

Int. Cl.⁴ B41J *5/30*

U.S. Cl. 400—64 5 Claims



1. A printing apparatus for printing characters on a printing sheet by a printing head, which comprises:

input means for inputting character data and punctuation data,

memory means for sequentially storing the character data and punctuation data,

printing means for printing characters along a printing line, by the printing head, corresponding to the character data and punctuation data,

first control means for controlling the printing means to print each character corresponding to the character data when the printing head is located between a left margin and a predetermined position of the printing line,

pause means for controlling the printing means to pause when the printing head comes to a predetermined region lying between said predetermined position and a right margin and after said pause means is activated, said memory means sequentially stores said inputted character and punctuation data as a set of characters,

determination means for determining if said stored set of characters, corresponding to a series of character data punctuated by said punctuation data, can be printed within the predetermined region,

division means for dividing said set of characters into two parts according to a predetermined rule when said determination means determines said set of characters can not be printed within said predetermined region, and

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second control means for controlling said printing means to print said set of characters within said predetermined region when the determination means determines said set of characters can be printed within said predetermined region, otherwise for controlling the printing means to print a former part of said set of characters, divided by the division means, in said predetermined region, and to print a latter part of said set of characters in the head of a next printing line.

4,880,322

METHOD FOR REBOUND DAMPING OF PRINT HAMMER MAGNETS IN TYPEWRITERS OR SIMILAR OFFICE MACHINES

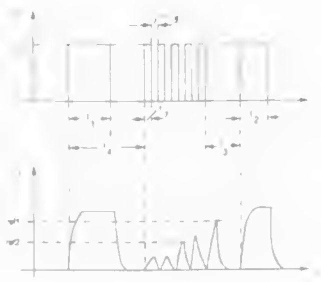
Christian Jensen, Nuremberg, and Gunther Schmidt, Schnaittenbach, both of Fed. Rep. of Germany, assignors to TA Triumph-Adler Aktiengesellschaft, Nuremberg, Fed. Rep. of Germany

Filed May 5, 1988, Ser. No. 195,783

Claims priority, application Fed. Rep. of Germany, Nov. 20, 1987, 3739295

Int. Cl.^{4} B41J *9/42*

U.S. Cl. 400—167 2 Claims



1. A method of damping the rebound of printing-hammer magnets in a typewriter, the typewriter comprising a programmable control unit, consisting of at least one microprocessor and memory means, wherein the impression of a type is effected by acting on the printing-hammer magnet with a predetermined first potential gradient over a predetermined first time and the damping of the rebound effect by a braking pulse with a predetermined second potential gradient over a predetermined second time, by means of the control unit, said control unit performing the steps of applying measuring pulses having a predetermined voltage, pulse width and pulse spacing to the winding of the printing hammer magnet during the impression of a character after the first time has elapsed;

measuring the current flowing through the winding of the printing hammer magnet during each of said measuring pulses by means of a current measuring circuit and comparing it with a reference value;

presetting a third time when the reference value is reached; and

after the third time has elapsed, applying the predetermined second potential gradient to the winding of the printing-hammer magnet during the predetermined second time.

4,880,323

HIGH-SYMBOL DENSITY PRINTER CARTRIDGE HAVING A FLEXIBLE EXIT ARM, GEAR SHIELD AND SUPPORT SPACERS

Charles E. Milliser; John M. Karalevicz, and Harry C. Quick, all of Waynesboro, Va., assignors to Genicom Corporation, Waynesboro, Va.

Continuation-in-part of Ser. No. 81,245, Aug. 4, 1987, abandoned. This application Apr. 19, 1988, Ser. No. 183,083

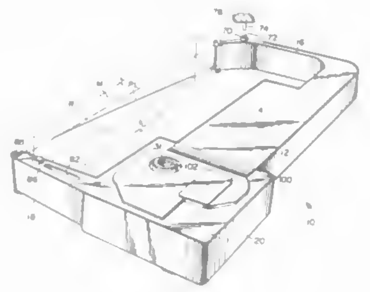
Int. Cl.^{4} B41J *32/02*

U.S. Cl. 400—196.1 28 Claims

1. A printer cartridge for carrying a print ribbon for disposition in a print position between a printhead and a print recording medium, comprising:

a housing defining a storage chamber for the ribbon;

means including ribbon exit and entrance arms spaced one from the other and projecting from said housing for routing the ribbon from the storage chamber along said exit arm into the print position located in the span between said arms and from the print position along said entrance arm to the storage chamber;



means for moving the ribbon into said storage chamber thereby displacing the ribbon from the exit arm through the print position and along the entrance arm;

one of said arms comprising a ribbon guide proximate its end remote from said cartridge for guiding ribbon from said span to said entrance arm, means for minimizing adverse loading on said ribbon during high density printing comprising dimensioning said one arm to flex along the direction of ribbon movement in said span during such high density printing while maintaining said guide perpendicular to said ribbon movement.

4,880,324

TRANSFER METHOD FOR HEAT-SENSITIVE TRANSFER RECORDING

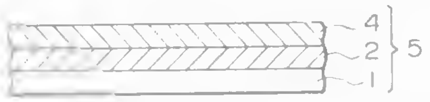
Hiroshi Sato, Hiratsuka; Kazumi Tanaka, Yokohama; Naoki Kushida, Yokohama; Masato Katayama, Yokohama; Yasuyuki Tamura, Yokohama; Tetsuo Hasegawa, Tokyo; Hisao Yaegashi, Yokohama; Shuzo Kaneko, Tokyo; Koichi Tohma, Kawasaki, and Takayuki Suzuki, Saitama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 16, 1986, Ser. No. 819,497

Claims priority, application Japan, Jun. 24, 1985, 60-136179; Jun. 24, 1985, 60-136180

Int. Cl.^{4} B41M *5/26*

U.S. Cl. 400—241 18 Claims



1. A heat-sensitive transfer recording method, comprising:

providing a heat-sensitive transfer medium comprising a support and at least two heat-transferrable ink layers including a first ink layer and a second ink layer disposed in the order named on the support,

superposing the transfer medium on a recording medium to contact the recording medium,

heating the transfer medium in a pattern corresponding to information to be recorded, wherein the adhesion strength between the first ink layer and the support (F_1) and the adhesion strength between the two ink layers (F_2) are such that $F_1 > F_2$ before and $F_1 < F_2$ after a predetermined time after heating, whereby the number of ink layers transferred from the transfer medium onto the recording medium depends on the length of time after heating until the transfer medium is separated from the recording medium, and

separating the transfer medium from the recording medium after a predetermined length of time such that a transferred ink pattern of a prescribed number of ink layers is left on the recording medium, whereby the second ink layer is selectively transferred to the recording medium in a shorter time until separation, and both the first and second ink layers are transferred to the recording medium in a longer time until separation.

4,880,325

INK RIBBON CASSETTE INCLUDING MEANS FOR IDENTIFYING THE TYPE OF INK RIBBON CONTAINED THEREIN AND CONTAINING AN INK RIBBON HAVING END INDICATION MEANS

Hiroyuki Ueda, Kawasaki; Yasuaki Yamada, Matsudo; Toshiaki Ozawa, Chiba; Hiroharu Nakajima, Kodaira, and Hiroatsu Kondo, Zushi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

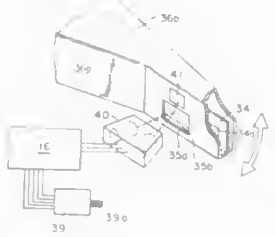
Continuation-in-part of Ser. No. 778,266, Sep. 20, 1985, abandoned, which is a division of Ser. No. 664,945, Oct. 26, 1984, abandoned, which is a continuation of Ser. No. 314,441, Oct. 23, 1981, abandoned, and a continuation-in-part of Ser. No. 778,294, Sep. 20, 1985, Pat. No. 4,655,624, which is a continuation of Ser. No. 661,271, Oct. 16, 1984, abandoned, which is a continuation of Ser. No. 541,067, Oct. 12, 1983, abandoned, which is a continuation of Ser. No. 462,006, Jan. 28, 1983, Pat. No. 4,494,886, which is a continuation of Ser. No. 242,348, Mar. 10, 1981, abandoned. This application Jan. 6, 1987, Ser. No. 4,271

Claims priority, application Japan, Mar. 17, 1980, 55-33590; Oct. 31, 1980, 55-152103; Oct. 31, 1980, 55-152104; Oct. 31, 1980, 55-152105; Oct. 31, 1980, 55-152106; Nov. 17, 1980, 55-160692; Nov. 17, 1980, 55-160693; Nov. 17, 1980, 55-160694; Nov. 25, 1980, 55-164527; Nov. 25, 1980, 55-164530; Nov. 28, 1980, 55-166635

The portion of the term of this patent subsequent to Jan. 22, 2002, has been disclaimed.

Int. Cl.^{4} B41J *35/36*

U.S. Cl. 400—249 17 Claims



1. An ink ribbon cassette, comprising:

a cassette body being mountable on a printer for rocking during operation between a first position and a second position;

first and second substantially coextensive spaced ink ribbon guide arms projecting from said body, each having a projecting free end;

an ink ribbon mounted in said body for advancement during printing and having a portion extending between the free ends of said guide arms so as to be available for printing;

ribbon-end indicating means formed at the end of the ink ribbon for indicating the approach of the end of the ink ribbon;

means for rendering said ribbon-end indicating means visible to a photo detector that is located on the printer entirely outside the periphery of said cassette, said cassette undergoing pivotable movement relative to the photo detector as said cassette rocks between the first and second positions, said rendering means having a light transparent part in a wall of said first ink ribbon guide arm; and

ribbon-type indicating means formed on the wall of said first ribbon guide arm for indicating to the photo detector which of several types of ink ribbon is in said cassette body, wherein the light transparent part and said ribbon-type indicating means are arranged along the wall of said first ribbon guide arm and are located relative to each other such that said ribbon-end indicating means can be detected by the photo detector when said cassette body is in the first position and said ribbon-type indicating means can be detected by the same photo detector when said cassette body is in the second position.

4,880,326

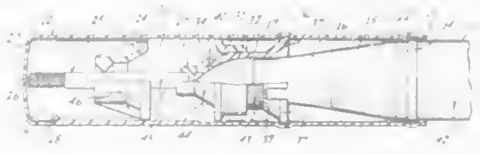
LIPSTICK DISPENSER

James R. Spivey, Irvine, and William J. Dee, Chino, both of Calif., assignors to Spiveco, Inc., Anaheim, Calif.

Filed May 24, 1988, Ser. No. 198,390

Int. Cl.^{4} A45D *40/00, 40/06*

U.S. Cl. 401—123 21 Claims



1. A lipstick dispenser, comprising:

an applicator member and a cover member that can be separated for use and rejoined for storage;

the applicator member having an applicator tip to be used for lipstick application purposes;

the cover member having a hollow interior that extends along a cover member axis to an open end of the cover member, which open end is dimensioned and arranged to receive the applicator tip;

the cover member containing a supply of lipstick and an extrusion mechanism for extruding an amount of the lipstick toward the open end; and

the extrusion mechanism including means for enabling a user to operate the extrusion mechanism by moving the applicator member relative to the over member while the applicator tip is within the open end.

4,880,327

GRAVITY LOCK BOOKSTAND AND BINDER

Ronaldo M. Sanabria, Chicago, Ill., assignor to Richard F. Sanabria, Chicagn, Ill., a part interest

Filed Sep. 16, 1988, Ser. No. 245,285

Int. Cl.^{4} B42F *13/00, 5/00;* B42D *3/00*

U.S. Cl. 402—73 13 Claims

1. I claim a collapsible display stand from an elongated flat structure comprising five panels of relatively stiff sheet like material sequentially hinged in manufacture, said elongated structure being foldable into a compact display stand with the first panel sandwiched in substantial planar tangency within the second and fifth panels, the second and third panels serving as the top cover, the fourth panel acting as the spine or backbone and the fifth panel becoming the rear or bottom cover of the closed display stand, from which collapsed state it can be readily erected by lifting the second panel pivoted on its commmon hinge with the third panel, allowing the first panel which becomes a support panel to rest perpendicularly on the fifth panel which becomes the display stand's base panel, the second panel leaning rearwardly becomes a back-rest panel for the display material, said second panel forming a tilted approximate right angle with the attached downwardly sloping third panel which becomes an inclined shelf panel, supported in elevation through its common hinge by the upright fourth panel or backbone panel serving now as the display stand's front support panel, means for maintaining rigidly this approximate quadrature relationship between second and third panels,

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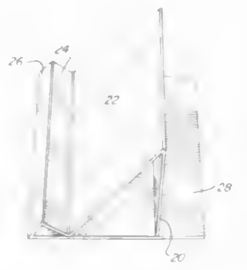
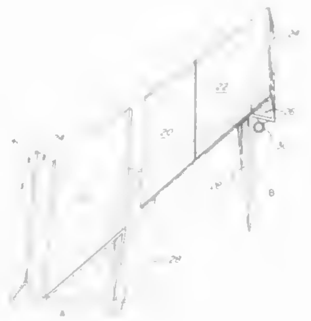
thus forming a secure well on which the bottom of the display material can rest preventing forward and upward slippage, as the vertical component of the displayed material's weight pulls



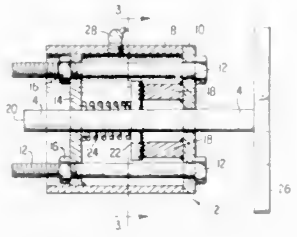


said first panel in secure gravity lock when placed on a flat level surface, this gravity lock force disappearing with the removal of the load, allowing easy collapse and folding of the display stand.

4,880,328

DRIVE ENGAGEMENT APPARATUS

Michael R. Feddick, W. 5655 Pine Ave., Medford, Wis. 54451
Filed Nov. 15, 1988, Ser. No. 271,276
Int. Cl.⁴ B60B *27/00*
U.S. Cl. 403—1 8 Claims



1. Apparatus for attachment to a powered hub assembly of a vehicle for selectively engaging or disengaging a rotatable and axially shiftable power shaft of said vehicle, comprising:

a body provided with a bore therethrough and means for mounting said body on the hub assembly;

a plunger reciprocally mounted in said bore for operable coupling to an outer end of said axially shiftable power shaft for axially moving said power shaft;

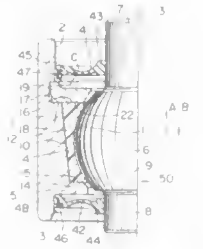
spring means for outwardly biasing said plunger; and

locking bar means within said body extending transversely from said plunger for engaging shoulder means for restraining said plunger when said plunger and said power shaft are in a first position and for disengaging said shoulder means when said plunger and power shaft are in a second position.

4,880,329

JOINT

Motohiro Sakai, Komaki, Japan, assignor to Tokai TRW & Co., Ltd., Kasugai, Japan
Filed Jun. 22, 1988, Ser. No. 209,872
Claims priority, application Japan, Jun. 30, 1987, 62-161202
Int. Cl.⁴ F16C *11/00*
U.S. Cl. 403—134 4 Claims



1. A joint comprising:

a cylindrical socket which is opened at at least one end thereof and has an annular groove in an inner circumferential wall thereof at said one open end side;

an inner joint portion having a ball-shaped portion and at least one shaft portion integral with said ball-shaped portion;

a bearing portion fitted in said socket portion and having a recess which has a configuration complementary to an outer configuration of said inner joint portion, said recess rockably and slidably supports said ball portion of said inner joint portion, said bearing portion being supported at an end of said socket opposite to the open end of said socket by a flange portion which projects radially inward from the end of said socket opposite to said open end;

a support member disposed in the annular groove so as to cooperate with said flange portion to support said bearing portion in the axial direction, said support member comprising a plug having a tabular portion which contacts end surfaces of said bearing portion at said open end and a cylindrical portion axially extending from an outer periphery of said tubular portion towards said one open end, said cylindrical portion having an upper expanded end, formed by caulking said cylindrical portion once said plug is disposed in said annular groove, that abuts a side wall of said annular groove so as to hold said plug in said annular groove and a lower end spaced from said side wall so as to allow the residue caulking material to accumulate; and

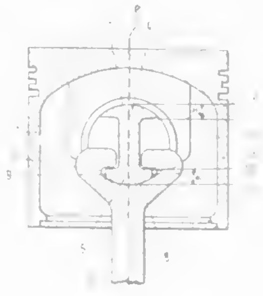
a boot portion disposed between said shaft portion of said inner joint portion and said socket so as to prevent foreign matter from coming into a gap between the sliding contact surfaces of said bearing portion and said ball-shaped portion.

4,880,330

PISTON PIN

Siegfried Mielke, Neckarsulm, Fed. Rep. of Germany, assignor to Kolbenschmidt Aktiengesellschaft, Neckarsulm, Fed. Rep. of Germany
Filed Oct. 27, 1987, Ser. No. 114,274
Claims priority, application Fed. Rep. of Germany, Oct. 30, 1986, 3636913
Int. Cl.⁴ F16C *11/06*
U.S. Cl. 403—152 17 Claims

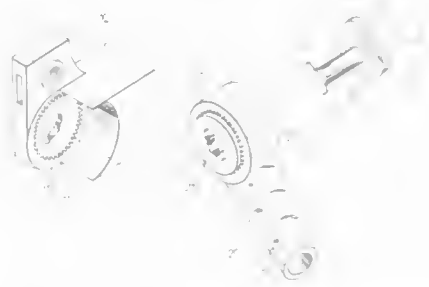
1. In a piston pin for pistons of reciprocating piston machines, in particular internal combustion machines, wherein the pin is I-shaped in cross-section and has flanges which are connected by a web and support the piston at piston pin bosses and have outside surfaces which have the contour of an arc of a circle having the same radius, the improvement wherein the width of one flange which is nearer to a connecting rod is smaller by 5 to 35% than the width of the other flange that is nearer to the piston head and wherein the outside surface of the flange having a smaller width merges toward both sides with edges into surfaces which are parallel to the plane in which a load is applied.



4,880,331

RELEASABLE SWIVEL LOCK ASSEMBLY FOR A CANOPY SUPPORT OF A STROLLER

Hong-Fu Zun, No. 59, Alley 85, Lane 673, Chung Chen Road, Yi-Chia Village, Jen Te Hsiang, Tainan Hsien, Taiwan
Filed Apr. 25, 1988, Ser. No. 185,908
Int. Cl.⁴ F16B *1/00*
U.S. Cl. 403—24 8 Claims



2. A swivel lock assembly for a canopy support of a stroller, said assembly comprising:

a frame portion having a first bore therethrough, a first engagement means, and an outer surface;

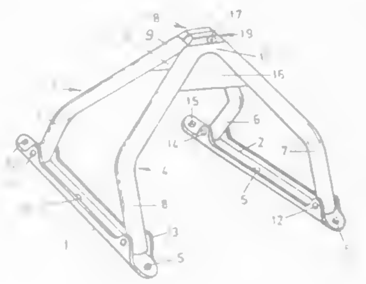
a canopy support portion having a second bore therethrough, a tubular supporting portion and a second engagement means; and

a pivot, said pivot having an abutment extrusion radially projecting from one end of said pivot for abutting against said outer surface, and a resilient press extrusion extending from the other end of said pivot so that when said pivot is inserted through said second bore and said first bore, said press extrusion resiliently presses said second engagement means against said first engagement means thereby preventing relative movement between said canopy portion and said frame portion.

4,880,332

COLLAPSIBLE BARRIER FOR VEHICULAR TRAFFIC

Paul S. Batchelor, 42 Ashmore Street, Erskinville, New South Wales, 2043, Australia
PCT No. PCT/AU87/00272, § 371 Date Apr. 14, 1988, § 102(e) Date Apr. 14, 1988, PCT Pub. No. WO88/01320, PCT Pub. Date Feb. 25, 1988
PCT Filed Aug. 18, 1987, Ser. No. 235,682
Claims priority, application Australia, Aug. 18, 1986, PH7474
Int. Cl.⁴ E01F *13/00*
U.S. Cl. 404—6 3 Claims

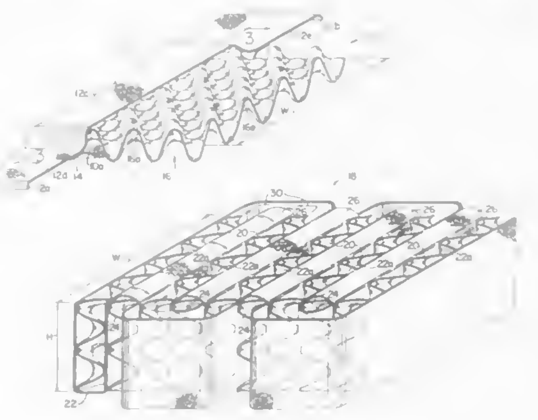


1. A collapsible barrier comprising two inverted generally Vee shaped members with the free ends of the legs of the members pivotally connected to base means with the axes of pivoting of the respective members parallel thereby enabling the members to be raised into an operative vehicle obstructing condition with the apexes of the Vee members in close physical relationship and elevated above the base means and to be lowered to an inoperative position to allow vehicles to pass over the members, and releasable lock means to secure the members together in the operative condition.

4,880,333

SUBTERRANEAN FLUID FILTERING AND DRAINAGE SYSTEM

Joseph Glasser, 15 Westwood Rd., Storrs, Conn. 06263, and Ursula E. Laak, 149 Brown Rd., Storrs, Conn. 06268
Filed Jul. 22, 1988, Ser. No. 223,207
Int. Cl.⁴ E02B *11/00*
U.S. Cl. 405—43 15 Claims



1. A subterranean drainage system for fluid filtration, said system comprising fluid conduit means oriented generally horizontally to provide an elongated subterranean cavity for receiving fluid to be filtered, said fluid conduit means including at least one layer of filter fabric provided around at least a portion of said elongated cavity and having laterally outwardly extending marginal edge portions, said fluid conduit means providing communication between said cavity and the region below said marginal edge portions, fluid filtering means

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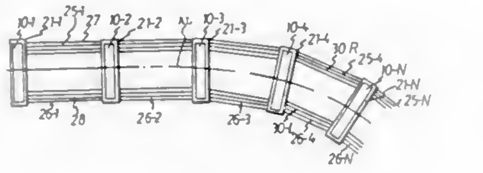
below said inlet conduit means and including a plurality of fluid impervious core sheets, said sheets oriented parallel to one another and having non-planar opposed faces arranged in spaced relation to one another to form a generally rectangular elongated stack of width (W) and height (H), fluid pervious filter fabric wrapped in serpentine fashion around said non-planar faces of said core sheets to provide at least one layer of fabric of width (W) and height (H) adjacent said non-planar faces of said core sheets.

4,880,334
TUNNEL CONSTRUCTION APPARATUS AND METHOD
Glosue Miotti, Lugano, Switzerland, assignor to Finic, B.V., Rotterdam, Netherlands
Filed Apr. 11, 1988, Ser. No. 180,461
Int. Cl.⁴ E01G *4/02;* **E21D** *10/04*
U.S. Cl. 405—149 6 Claims



1. A method of constructing a underground tunnel along a given path, precasting in molds above ground at least a pair of frame elements, each frame element comprising a cross brace and a pair of vertical side column members, sidewall keyway means formed in said vertical side column members, precasting in molds above ground at least a pair of wall panel elements having lateral ends for adapted to enter said keyway means in respective ones of said vertical side column of said elements,

excavating, under the presence of a slurry, at least a pair of slots in the earth, said at least a pair of slots extending laterally transverse to the longitudinal direction of said tunnel along said given path,

inserting one each of said frame elements into each said rectangular slots in the earth,

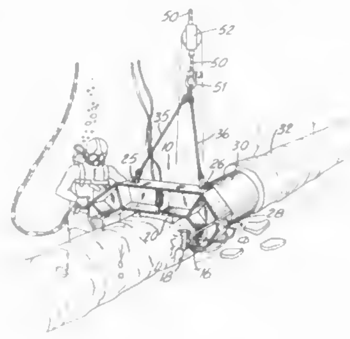
excavating a pair of sidewall slots between the lateral ends of said pair of rectangular laterally extending slots,

inserting one each of said wall panels in said side slots and with the respective lateral ends in keyway engagement with said keyway means formed in said elements, and

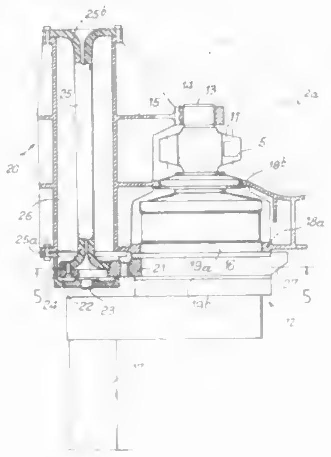
forming a concrete floor and roof for said tunnel between said wall elements and said frame elements.

4,880,335
METHOD AND APPARATUS FOR REMOVING CONCRETE COATING FROM PIPE
Charles M. Lee, Virginia Beach, Va., assignor to Arabian American Oil Company, Dhahran, Saudi Arabia
Filed Aug. 21, 1987, Ser. No. 87,867
Int. Cl.⁴ F16L *1/00*
U.S. Cl. 405—158 28 Claims

1. Apparatus for the removal of a concentric cementitious coating form a coated pipeline comprising a generally C-shaped rigid frame member defining an intermediate central section and opposing end sections, an inwardly facing stationary rigid support member affixed to the intermediate central section and adapted to contact the outer surface of the coated pipeline, drive means affixed to each opposing end section, a plurality of opposed, inwardly facing crusher blades adapted to penetrate the cementitious coating, each of the crusher blades adapted to move in response to movement of the drive means, and means for providing a controlled driving force from a remote source to the drive means.



4,880,336
SUSPENSION DEVICE FOR THE SUPPORT LEGS OF A JACK-UP OIL PLATFORM
Pierre-Armand Thomas, Puteaux, and Raphael Grundman, St. Arnould, both of France, assignors to Technip Geoproduction, Paris and Engrenages et Reducteurs Citroen-Messian-Durand, Velizy Villacoublay, both of, France
Filed Nov. 27, 1987, Ser. No. 125,981
Claims priority, application France, Nov. 26, 1986, 86 16504
Int. Cl.⁴ E02D *21/00*
U.S. Cl. 405—198 16 Claims



1. In a jack-up oil platform having a hull, and legs mounted to said hull for supporting the hull on the sea floor, said legs and said hull movable relative to one another, a suspension device connected between said hull and said legs for moving said legs and said hull relative to one another, said device comprising:

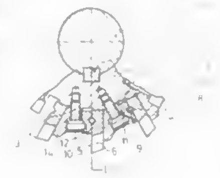
a driving mechanism including respective racks extending along at least a portion of each of said legs, at least one output pinion meshing with each of said racks, an electric motor operatively connected to each said output pinion for rotating each said output pinion, and a respective speed reducer connected to and coupling each said electric motor and a respective said output pinion;

a structural support supporting said driving mechanism on said hull, said structural support including at least one bearing pivotally supporting each said speed reducer so as to allow said speed reducer to pivot relative to said structural support when shock is imparted thereto through the output pinion connected thereto; and

energy absorbing means connected to each said speed reducer for absorbing shock imparted to said driving mechanism through each said output pinion thereof,

said energy absorbing means comprising respective support means associated with each said speed reducer and having an axis about which the support means is torsionally elastically yieldable, and connecting means connected between each said support means and the speed reducer associated therewith for transmitting pivotal movement of said speed reducer into torsion about said axis of said support means, each said support means secured in the device so as to elastically deflect about the axis thereof when said pivotal movement is transmitted thereto by said connecting means.

4,880,337
MACHINE CUTTER
Antonio Tua Espallargas, Barcelona, Spain, assignor to Fabricacion De Herramientas Y. Utensilios, S.A., Spain
Filed Sep. 11, 1987, Ser. No. 96,395
Claims priority, application Spain, Jul. 23, 1986, 8600514
Int. Cl.⁴ B23C *5/20*
U.S. Cl. 407—40 3 Claims



1. A machine cutter having a cylindrical supporting head, a plurality of slots provided in a lateral surface of the head, a plurality of cutting blades disposed in the slots, and means for retaining and securing the cutting blades in the slots, the retaining means comprising:

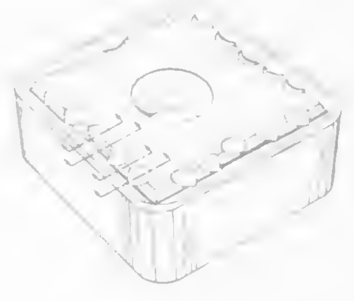
a plurality of elements, housed within the slots, adjacent to the cutting blades, each element having a longitudinal V-shaped groove, each blade having a complimentary V-shaped groove, such that when the blade is adjacent the element, the grooves form a passage, each element further having a sloped surface on a face opposite to a blade engaging face;

a screw, disposable in a bore in the body, adjacent to the element, the screw having a complimentary tapered surface for engaging the sloped element surface; and,

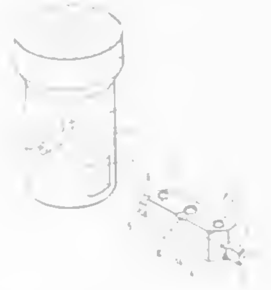
a longitudinal rod removably disposed in the passage provided by the mating of the complimentary V-shaped grooves, wherein the securing of the screw to the head locks the element against the cutter blade, with the element and the rod securing the blade in the head.

4,880,338
CUTTING INSERT
Daniel R. Stashko, Holly, Mich., assignor to GTE Valenite Corporation, Troy, Mich.
Filed Dec. 7, 1988, Ser. No. 281,437
Int. Cl.⁴ B23B *27/22*
U.S. Cl. 407—114 11 Claims

1. A cutting insert comprising a polygonal body having substantially parallel upper and lower surfaces including a raised seating surface having a plurality of upper surface edges, and a lower surface having a plurality of lower surface edges, a plurality of peripheral side surfaces each of which extends upwardly relative to said lower surface from one of said lower surface edges to one of a plurality of first face surfaces at one of plurality of first juncture lines each of which forms a respective cutting edge, each first face surface of said plurality of first face surfaces being lower than said raised seating surface, each of said peripheral side surfaces extending towards adjacent peripheral side surfaces to form one of a plurality of respective corners, a plurality of first inner surfaces each of which extends inwardly and downwardly from one face surface of said plurality of first face surfaces at one of a plurality of second juncture lines, each first inner surface of said plurality of first inner surfaces extending at a first angle measured relative to the plane of an adjacent face surface, said first angle forming a positive rake angle, a plurality of second inner surface each of which extends outwardly and downwardly from one of said plurality of upper surface edges at one of a plurality of third juncture lines, each first inner surface of said plurality of first inner surfaces meeting an adjacent second inner surface of said plurality of second inner surfaces at one of a plurality of fourth juncture lines, each second inner surface of said plurality of second inner surfaces extending at a second angle measured relative to the plane of said raised seating surface, and a plurality of depressions extending into said upper surface, a surface area of each depression of said plurality of depressions only intersecting a respective first inner surface of said plurality of first inner surfaces, a respective second inner surface of said plurality of second inner surfaces, and said raised seating surface.



4,880,339
DRILL BAR WITH A CUTTER INSERT
Ulrich Döge, Düsseldorf-Hellerhof, Fed. Rep. of Germany, assignor to Koyemann Werkzeuge GmbH, Erkrath, Fed. Rep. of Germany
Filed Aug. 23, 1984, Ser. No. 644,122
Claims priority, application Fed. Rep. of Germany, Mar. 15, 1984, 8407867[U]
Int. Cl.⁴ B23B *29/02*
U.S. Cl. 408—161 4 Claims



1. In a drill bar having a transverse slot and comprising a cutter insert in said slot and including a housing formed with a first elongated recess, two diametrically oppositely positioned cutters inserted in said elongated recess and having inner ends and outer ends provided with main cutting edges and extended outwardly from aid housing, and clamping bolts securing said

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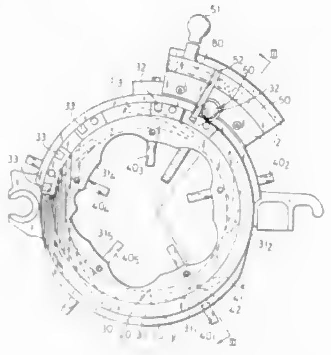
cutters in said housing, said housing being formed with a central bore and a notch positioned midway of said elongated recess; and a centering pin adjustable along an axis thereof and limiting a floating motion of the cutter insert in a radial direction in said transverse slot, said pin having a tapered end engaged in said notch, said cutter insert further including an adjustment bolt received in said central bore and having a tapered tip having tapered edges, the improvement comprising that said cutters are each formed of a one-piece and made of high strength material, each of said cutters having an additional cutting edge (**16**, **16**′) formed at the inner end of each cutter, positioned within said first elongated recess, said housing being provided with an additional elongated recess formed between a portion of the housing into which said adjustment bolt is inserted and said first elongated recess, said additional recess being wider than said first elongated recess; and two sliding blocks positioned in said additional recess, said sliding blocks each having an inner end and outer end and being formed with a first adjusting inclined wall (**29**, **29**′) at the inner end, said tapered edges of said tip abutting against the respective said first inclined walls of said sliding blocks when said adjustment bolt is applied into said central bore to adjust said cutters relative to each other in said first elongated recess, each of said sliding blocks being provided with a stop extending into said first recess and cooperating with the respective inner end of the respective cutter, each of said cutters being formed at the outer end with an additional adjusting inclined wall (19, 19′) whereby each cutter can be turned by 180° to be positioned in said recess so that said additional cutting edge will be extended outwardly from said housing whereas said additional adjusting inclined wall will abut against a respective stop.

4,880,340
SCREW CUTTER DIE HEAD

Naohiro Taki, Kohnan, and Yasuhiro Ozawa, Kasugai, both of Japan, assignors to **Asada Kabushiki Kaisha, Aichi, Japan**
Filed Jul. 21, 1988, Ser. No. 222,691
Claims priority, application Japan, Jul. 22, 1987, 62-112304
Int. Cl.⁴ B23G *5/12*
U.S. Cl. 408—176 2 Claims



1. A screw cutter die head from with a center opening for an elongated cylindrical work, comprising:

an annular body portion having a plurality of radial grooves;

a ring member angularly movable relatively thereto and formed with a corresponding number of arcuate cam ridges on the side surface faced to said body portion, each of said arcuate cam ridges being helically arranged and slanted with respect to a circle passing through the center of a circumference thereof;

a corresponding number of chasers respectively having a plurality of cam recesses formed therealong and spaced apart by a predetermined distance corresponding to an inclination of the respective cam ridges so as to engage with each of said cam ridges, said chasers being held in said grooves so as to be radially movable between a screw cutting position and a retracted position in unison when said ring member is angularly moved,

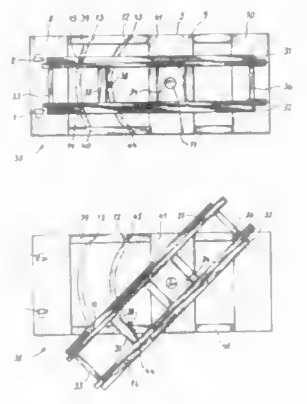
each two adjacent cam ridges being spaced apart along said circumference of said circle by a distance in which a respective chaser is freed from either of said adjacent ridges;

said die head further comprising a plurality of balls, provided in said ring member and urged so as to protrude therefrom, said balls engaging respective first notches formed on respective ones of said chasers in response to said chasers being freed from a respective cam ridge so as to prevent said chasers from escaping said radial grooves and retain the chasers at the point where they are just free of the cam ridges;

such that in response to rotation of said ring member in a first direction, the cam ridges engage cam recesses of associated chasers encountered in rotation in said first direction, and, in response to rotation of said ring member in a second, opposite direction, the cam ridges engage cam recesses of associated chasers encountered in rotation in said second direction.

4,880,341
SWIVEL PLATFORM FOR A RAIL VEHICLE

Aart A. Van Den Pol, Nijkerk, Netherlands, assignor to De Ark B.V., Nijkerk, Netherlands
Filed Apr. 20, 1988, Ser. No. 183,918
Claims priority, application Netherlands, Jan. 25, 1988, 8800161
Int. Cl.⁴ B65P *1/00*
U.S. Cl. 410—1 3 Claims



1. A swivel platform for a rail vehicle, intended for loading a container from a road vehicle onto the rail vehicle and vice versa, comprising:

a bottom frame which must be fixed to the rail vehicle and a top frame which can swing relative to the bottom frame, via an asymmetrically positioned swing mechanism coupled to both frames, between a neutral position in which the longitudinal axis of the top frame runs approximately parallel to the longitudinal axis of the rail vehicle and a swung-out position in which the longitudinal axis of the top frame forms an angle of about 45 degrees with the longitudinal axis of the rail vehicle, said top frame being provided with two parallel container guide elements which are connected to each other by means of transverse elements, at least one of which is connected to a swing mechanism, while another is provided with a rolling means which is positioned centrally between the container guide elements and during the swing movement runs over a supporting movement path and in the swung-out position almost reaches a side edge of the rail vehicle, each of the parallel container guide elements also being provided with a rolling means which during the swing movement runs over a supporting movement path, and in which the

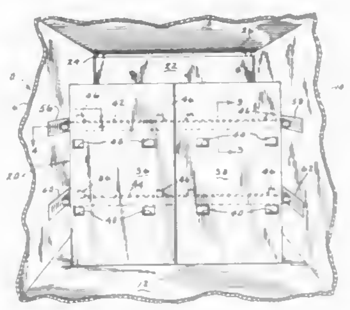
rolling means of the container guide elements, viewed in the transverse direction of the top frame, are placed opposite each other and, viewed in the lengthwise direction of the top frame, are placed in such a way that front rolling means of the two in the direction of swinging passes the side edge of the rail vehicle, and a rear rolling means almost reaches the said side edge;

provision is made for at least one locking element by means of which the top frame can be locked in the neutral position relative to the bottom frame; and,

the locking element is provided with a locking pin with bevelled front face, and which can move in a tubular holder fixed on the bottom frame between a position in which a front end of the pin blocks a movement of the top frame and a position in which the top frame can pass this front end, the pin being pretensioned in the holder in such a way that, because of the bevelled front face, the part of the top frame mating with the pin is capable of pushing the pin out of the path of the top frame during the inward swing movement of the top frame.

4,880,342
MOVABLE BULKHEAD

Joseph A. Pradovic, LaCrosse, Wis., assignor to Millis Transfer, Inc., Black River Falls, Wis.
Filed Jun. 16, 1988, Ser. No. 207,397
Int. Cl.⁴ B06P *7/14*
U.S. Cl. 410—121 14 Claims



1. A cargo compartment for a vehicle, comprising:

a bottom wall;

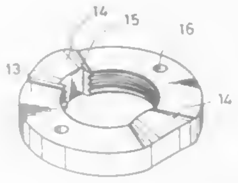
a pair of spaced side walls extending upwardly from spaced sides of said bottom wall;

an upstanding bulkhead wall extending between said side walls, said bulkhead wall including a stationary panel and at least one movable panel which is movable between a first position wherein said movable panel is substantially coplanar with said stationary panel to define a maximum cargo volume within said cargo compartment, and a second position spaced from said bulkhead wall to define a cargo volume less than said maximum cargo volume; and

bracing means for bracing said movable bulkhead panel against movement when said movable panel is in its second position, said bracing means extending between and connectable to said spaced side walls of said compartment for bracing said movable bulkhead panel against movement, said bracing means being adapted for storage behind said movable panel when said movable panel is in its first position and said bracing means is not in use.

4,880,343
LOCK NUT HAVING LOCK MEMBER OF SHAPE MEMORY RECOVERY ALLOY

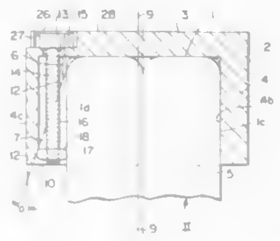
Hisao Matsumoto, Amagasaki, Japan, assignor to Matsumoto Kokan Co., Ltd., Amagasaki, Japan
Filed Sep. 30, 1987, Ser. No. 103,006
Int. Cl.⁴ F16B *39/12, 39/34*
U.S. Cl. 411—222 3 Claims



1. A lock nut comprising a lock member prepared from an alloy having a shape memory for returning to and retaining said lock member in a locking shape when said lock member is heated to a temperature above ambient temperature, said lock member being formed in said locking shape at ambient temperature and being distorted at said ambient temperature into a shape larger than said locking shape for positioning said locking member at said ambient temperature in locking position before heat is applied to return and retain said locking member in said locking shape.

4,880,344
DEVICE FOR PREVENTING LOOSENING OF A MEMBER

Max Henry, 17, rue Rabé , 8923 Pontigny, and David Callendrier, Rue des Pêcheurs, 7446 Marnaz, both of France
Filed Jul. 19, 1988, Ser. No. 221,046
Claims priority, application France, Jul. 22, 1987, 8710380
Int. Cl.⁴ F16B *19/00, 33/00, 37/14*
U.S. Cl. 411—374 12 Claims



1. In a device for preventing loosening of a prismatic member, comprising a cap adapted to cover the head of the prismatic member, said cap comprising a tranverse bottom and a cylindrical skirt in one piece with the bottom and means for locking the prismatic member received within said cap, by two opposite edges of one of its lateral faces in abutment against the inner face of the skirt, by tightening with the aid of tightening means cooperating with gripping means in the form of a spanner, of a predetermined shape and arrangement, in order to prevent any possibility of axial withdrawal of the cap, the means for locking the prismatic member in the cap are constituted in combination by a ramp inclined with respect to the longitudinal axis of the cap, placed inside the skirt, a shim placed between the ramp and the lateral face of the prismatic member sliding both the ramp and on the lateral face of the prismatic member, and means for longitudinally displacing the shim in contact with the ramp and the lateral face in order to exert a transverse force for locking the prismatic member, wherein the cylindrical skirt comprises, in its inner face, a radial notch whose cross-section is generally rectangular in form, elongated in parallel to the longitudinal axis, opening out

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in the transverse plane of the orifice of the cap, the notch being truncated along an inclined plane with respect to the axis of the cap and constituting the ramp which converges towards the axis, moving closer thereto on the cap bottom side and moving away therefrom on the orifice side.

4,880,345
LOAD HOISTING ASSEMBLY PARTICULARLY FOR BOATS

Serge Beaupre, 45 d'Orléans, Ville Lorraine, Quebec, Canada J6Z 2S6

Filed Nov. 25, 1988, Ser. No. 276,399

Int. Cl.⁴ B63B *27/18*

U.S. Cl. 414—137.9 8 Claims

1. An assembly for hoisting and storing an outboard motor on an upper and on a lower horizontal rail of a boat railing, said rails being spaced apart a predetermined distance; within said assembly comprises:

an elongated post having, at the upper end thereof, an outwardly turned hoisting jib provided, at the free end thereof, with a hoisting device;

a sleeve in which the post is telescopically mounted on said post and means for fixing said post to said sleeve selectively at one of a plurality locations along said post;

a flat member for supporting and storing an outboard motor and a flat stabilizing member each of said members including a pair of flat elements formed to define, when flatly applied against one another and clamped together, a through passage of a size suitable for mating with and be clamped over said horizontal rails, respectively;

means for so clamping said members on said rails;

an upright extension projecting from said supporting and storing member above said passage for supporting and storing an outboard motor;

a first connection arm solid at one end with said supporting and storing member and means for fixing said first arm at any selective location along said sleeve;

a second connection arm solid at the ends thereof respectively with said stabilizing member and means for fixing said second arm to said sleeve;

whereby, in use, at least one of said first and second arms may be moved along said sleeve relative to each other to suit said predetermined distance.

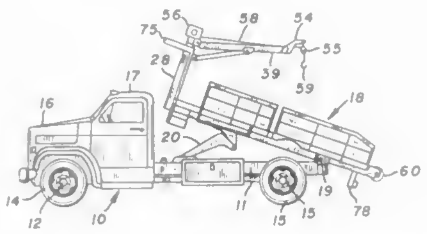
4,880,346
SELF-LOADING TRUCK AND TILT BED THEREFOR

Duane J. Brassette, P.O. Box 1202, Lake Charles, La. 70602

Filed Oct. 16, 1987, Ser. No. 109,268

Int. Cl.⁴ B60P *1/34*

U.S. Cl. 414—486 21 Claims



1. A tilt bed for mounting on a truck equipped with lift means, said bed comprising:

(A) a frame adapted for pivotal attachment adjacent its rearward end to the rearward end of the truck frame and for pivotal attachment adjacent its forward end to the lift means of the truck;

(B) decking over said frame;

(C) a transverse front bulkhead frame extending vertically upward from the forward end of said frame;

(D) elevated hoist means supported on said bed adjacent to the forward end thereof for lifting movement therewith, said hoist means including:

  (1) a vertical standard rotatably supported in said front bulkhead frame for rotation about a vertical axis,

  (2) an elongated boom extending rearwardly from the top of said vertical standard and connected thereto for rotation therewith, said boom being elevated above the deck of said flat bed,

  (3) winch means mounted on said standard for rotation therewith,

  (4) power means for rotating said boom, and

  (5) separate power means for actuating said winch,

(E) transverse roller means journaled for rotation adjacent the rearward edge of said bed; and

(F) control means for independently operating said lift means, boom rotation means and winch means.

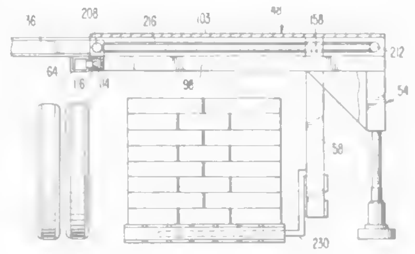
4,880,347
LOAD-CARRYING ATTACHMENT FOR MOTOR VEHICLES

Jose O. Lombard, Miami, Fla., assignor to Luis A. Gigueroa, Coral Gables, Fla.

Filed Mar. 22, 1988, Ser. No. 171,892

Int. Cl.⁴ B60P *1/64*

U.S. Cl. 414—542 18 Claims



1. A load-carrying attachment for a cargo carrying vehicle to unload cargo from or load cargo onto said vehicle when said attachment is attached to said vehicle, said attachment comprising:

a pair of spaced horizontal support beam assemblies having first and second ends, said beam assemblies being connected, said first ends of said support beam assemblies being attachable to said vehicle;

first and second leg members, said first leg member being attached to one of said support beam assemblies, said second leg member being attached to the other of said support beam assemblies;

a mast slidably attached to said beam assemblies such that said mast is movable along said beam assemblies, said mast being positioned between said beam assemblies, said mast also being rotatably attached to said beam assemblies;

a carriage slidably attached to said mast such that said carriage can slide parallel to the longitudinal axis of said mast;

first means removably attachable to said carriage for engaging a load; and

receiving means attached to said vehicle for receiving said first ends of said support beam assemblies, said receiving means extending along the sides and back of said vehicle such that said attachment may be moved around the sides and back of said vehicle;

wherein said attachment is capable of unloading cargo from or loading cargo onto said vehicle when said horizontal support beam assemblies are attached to said vehicle.

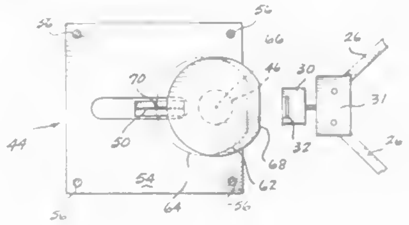
4,880,348
WAFER CENTRATION DEVICE

Gregory G. Baker, and Edward F. Boyle, both of Gig Harbor, Wash., assignors to Roboptek, Inc., Gig Harbor, Wash.

Filed May 15, 1987, Ser. No. 50,951

Int. Cl.⁴ B65G *47/24*

U.S. Cl. 414—783 6 Claims



1. Apparatus for centering a wafer-like object relative to a reference point, comprising:

(a) a rotatably driven support on which the wafer-like object is positioned, a diametrical extent of the rotatably driven support being substantially less than that of the wafer-like object so that a perimeter of the wafer-like object extends beyond that of the rotatably driven support, a rotational axis of the rotatably driven support being coincident with the reference point, the rotatably driven support including an angular position sensor for producing a signal indicative of the angular position of the rotatably driven support about its rotational axis;

(b) an array of light sensors disposed adjacent the rotatably driven support, each light sensor being operative to produce a signal corresponding to the intensity of light incident on it;

(c) a light source illuminating the wafer-like object and the array of light sensors and disposed so that the perimeter of the wafer-like object is intermediate the light source and the array of light sensors and casts a shadow on said array of light sensors;

(d) a manipulator adapted to lift the wafer-like object from the rotatably driven support and to reposition it thereon; and

(e) control means connected to the array of light sensors, the angular position sensor, the rotatably driven support, and the manipulator, and responsive to the signals produced by the angular position sensor and the array of light sensors, for:

  (i) causing the rotatably driven support to rotate, so that substantially the entire perimeter of the wafer-like object passes between the light source and the array of light sensors;

  (ii) in response to the signals produced by the light sensors in the array and by the angular position sensor, determining the angular position of the rotatably driven support where the perimeter of the wafer-like object is at one of a maximum and a minimum displacement relative to the reference point;

  (iii) determining a distance proportional to said one of the maximum and the minimum displacement, that the wafer-like object should be moved to bring a center of the wafer-like object into coincidence with the reference point; and

  (iv) causing the manipulator to lift the wafer-like object and to move it along said distance prior to returning it to the rotatably driven support.

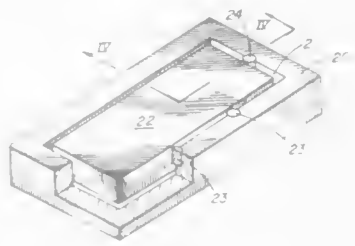
4,880,349
METHOD FOR LOCATING AND SUPPORTING CERAMIC SUBSTRATES

Daniel A. Woodward, West Palm Beach, Fla., assignor to Northern Telecom Limited, Montreal, Canada

Division of Ser. No. 945,567, Dec. 23, 1986, Pat. No. 4,784,377. This application May 23, 1988, Ser. No. 197,574

Int. Cl.⁴ B65G *47/00*

U.S. Cl. 414—786 5 Claims



1. A method for locating and supporting a substrate, comprising the steps of:

(a) placing a substrate on a top surface of an intermediate plate movably supported on a support member;

(b) applying a vacuum to said top surface of said intermediate plate;

(c) applying a pressure to a support surface of said support member to provide an air bearing for supporting said intermediate plate;

(d) moving said intermediate plate towards a locating means fixedly mounted on said support member;

(e) contacting said substrate with said locating means; and

(f) applying a vacuum to said support surface of said support member when said substrate is located to hold said intermediate plate.

4,880,350
METHOD AND APPARATUS FOR HANDLING STACKS OF SHEETS

Walter J. Stobb, Pittstown, N.J., assignor to Stobb, Inc., Clinton, N.J.

Filed Sep. 6, 1988, Ser. No. 240,671

Int. Cl.⁴ B65H *31/30*

U.S. Cl. 414—790.2 9 Claims

1. In a sheet stacker wherein sheets are formed into a stack relationship having a stack top and with the sheet edges disposed along an inclined plane and on and in contact with an inclined support extending along said inclined plane and with the sheets stacked on a stack carrier which engages one end of

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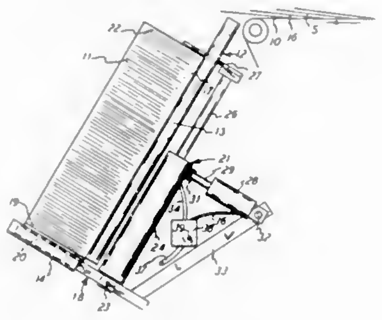
the stack while the stack is being formed and which moves the stack downwardly along the inclined direction of said inclined support, the improvement comprising a clamp assembly attached to said carrier for movement both relative to and with said carrier, said clamp assembly including a movable portion extending across and being movable along said inclined plane for engaging said top of said stack and being in contact with said stack top at the intersection of said top and the inclined plane of said edges, displacement means for moving said assembly relative to said carrier to thereby position said movable portion for engaging said stack opposite end, and said clamp assembly including a force applicator for pressing said movable portion against said stack opposite end and thereby clamp said stack relative to said carrier for the movement of said stack downwardly along said inclined support and thereby prevent said sheet edges from turning upward.



4,880,351

VARIABLE CAPACITY TURBINE

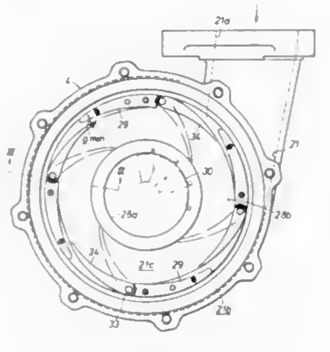
Kazuo Inoue; Osamu Kubota; Shunji Yano; Fusao Tateishi; Etsuo Noda; Koji Yamaguchi, and Tsuneo Endo, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 27, 1987, Ser. No. 54,499

Claims priority, application Japan, May 30, 1986, 61-124996; May 30, 1986, 61-124997; May 30, 1986, 61-124998

Int. Cl.^{4} F01D *17/16*

U.S. Cl. 415—164 17 Claims



1. A radial in-flow turbine comprising a turbine wheel, a turbine scroll passage defined in a turbine casing around the turbine wheel for introduction of gas to the turbine wheel, and an axial central passage defined in the turbine casing for ejection of gas from the turbine wheel. wherein:

a plurality of variable nozzles, having an axial width, are arranged concentrically with respect to the turbine wheel and inside of the turbine casing and outside of an annular throat section defined inside the turbine casing concentric to the turbine wheel and having a locally minimum axial width less than said nozzle axial width, said variable nozzles are defined by fixed vanes and moveable vanes.

4,880,352

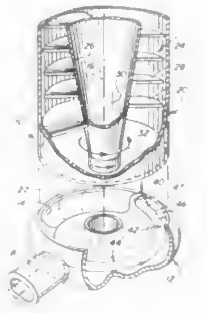
CENTRIFUGAL LIQUID PUMP

Jerome K. Aarestad, Rockford, Ill., assignor to Sundstrand Corporation, Rockford, Ill.

Filed Nov. 23, 1987, Ser. No. 124,071

Int. Cl.^{4} F04D *29/44*

U.S. Cl. 415—182.1 22 Claims



1. A centrifugal liquid pump, comprising:

a housing section including an intake cavity defined by an annulus about a rotational axis of the pump;

an impeller section in communication with and coaxially of the intake cavity of the housing section;

impeller means in the impeller section rotatable about said axis; and

ramp means defined by wall means in the annulus of the housing section about said axis including an axial slope component such that liquid rotating in the intake cavity will be given an axial component of motion toward the impeller section and a radial slope component such that liquid rotating in the intake cavity will be given a radially inward component of motion toward the pump axis in response to centrifugal movement about the annulus.

4,880,353

DEVICE FOR CONVERTING THE ENERGY OF A FLOWABLE MEDIUM INTO A TORQUE

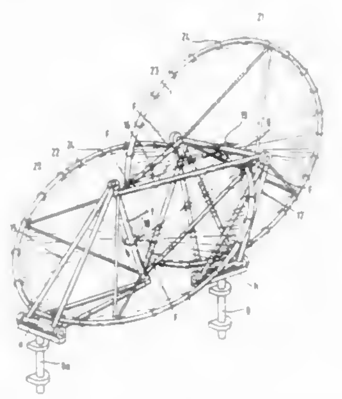
Hermann Dettwiler, Hauptstrasse 45, Ziefen, Switzerland CH-4417

Filed Mar. 16, 1988, Ser. No. 168,655

Claims priority, application Switzerland, Mar. 17, 1987, 999/87

Int. Cl.^{4} B63H *1/30*

U.S. Cl. 416—83 18 Claims



1. A device for converting the energy of a flowable medium into a torque, or vice versa, comprising a pair of linkages supported by a common mounting means for mounting said linkages such that one of said linkages is positioned on one side of a first imaginary plane which contains said mounting means and the other of said linkages is positioned on an opposite side of said first plane so as to form a mirror image of said one linkage, said mounting means including a first rotatable axle which is perpendicular to said first plane and which extends from said one side thereof to said opposite side thereof and a second rotatable axle which is perpendicular to said first plane and which extends from said one side thereof to said opposite side thereof, said second axle being parallel to said first axle and spaced a predetermined distance therefrom, said one linkage including a first link member pivotally connected to said first axle by a first pivot pin attached to said first axle so as to be conjointly rotatable therewith, whereby said first link member is pivotable about said first pivot pin in response to the rotation of said first axle, a second link member pivotally connected to said second axle by a second pivot pin attached to said second axle so as to be conjointly rotatable therewith, whereby said second link member is pivotable about said second pivot pin in response to the rotation of said second axle, and a third link member pivotally connected to said first link member by a third pivot pin and to said second link member by a fourth pivot pin such that when said first link member extends from said first axle in a direction which is perpendicular to said first plane said first, second and third link members all lie in a second imaginary plane which is perpendicular to said first plane and such that when said first, second and third link members all like in said second plane said first pivot pin is parallel to said first and second planes, said second pivot pin is parallel to said first plane and perpendicular to said second plane, said third pivot pin is parallel to said first plane and perpendicular to said second plane, and said fourth pivot pin is arranged at an inclined angle relative to said first plane and is parallel to said second plane, and said other linkage including a fourth link member pivotally connected to said first axle by a fifth pivot pin attached to said first axle so as to be conjointly rotatable therewith, whereby said fourth link member is pivotable about said fifth pivot pin in response to the rotation of said first axle, a fifth link member pivotally connected to said second axle by a sixth pivot pin attached to said second axle so as to be conjointly rotatable therewith, whereby said fifth link member is pivotable about said sixth pivot pin in response to the rotation of said second axle, and a sixth link member pivotally connected to said fourth link member by a third pivot pin and to said fifth link member by an eighth pivot pin such that when said fourth link member extends from said first axle in a direction which is perpendicular to said first plane said fourth, fifth and sixth link members all lie in said second plane and such that when said fourth, fifth and sixth link members all lie in said second plane said fifth pivot pin is parallel to said first and second planes, said sixth pivot pin is parallel to said first plane and perpendicular to said second plane, said seventh pivot pin is parallel to said first plane and perpendicular to said second plane, and said eighth pivot pin is arranged at an inclined angle relative to said first plane and is parallel to said second plane; a first set of driving elements attached to said one linkage; and a second set of driving elements attached to said other linkage.

4,880,354

WARMING STRUCTURE OF GAS TURBINE ROTOR

Mitsuo Teranishi; Haruo Urushidani; Hajime Toriya, and Shoji Ebine, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo and Hitachi Power Engineering Co., Ltd., Hitachi, both of, Japan

Filed Nov. 18, 1988, Ser. No. 272,910

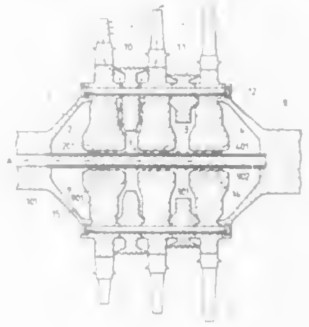
Claims priority, application Japan, Nov. 25, 1987, 62-295302

Int. Cl.^{4} F01D *5/08*

U.S. Cl. 416—95 9 Claims

1. In a gas turbine rotor having a structure wherein air extracted from an air compressor at a stage of from intermediate to final stages thereof is introduced into a turbine blade of the rotor through a cooling passage formed inside the rotor, said rotor having a warming structure comprising:

a tubular member, having a plurality of through holes arranged in an elongated side wall thereof and inserted in central holes formed in rotor disks so as to form a space between said central holes of said rotor disks and said tubular member, said plurality of through holes being formed so as to face the inner peripheral walls of said central holes of said rotor disks;



a compressor air supply passage provided to supply the extracted compressor air to said tubular member; and

an air flow passages for introducing the extracted compressor gas, having been injected to said inner peripheral walls of said rotor disks through said plurality of through holes of said tubular member, to said turbine blade.

4,880,355

BLADE WITH CURVED END FOR A ROTARY AIRFOIL OF AN AIRCRAFT

Alain E. Vuillet, Bouc Belair; Jean J. Philippe, Versailles, and Andrë Desopper, Garches, all of France, assignors to Aerospatiale Societe Nationale Industrielle, Paris and Office National D'Etudes et de Recherches Aerospatiales, Chatillon, both of, France

Filed Jun. 24, 1988, Ser. No. 211,420

Claims priority, application France, Jun. 29, 1987, 87 09150

Int. Cl.^{4} B64C *27/46*

U.S. Cl. 416—228 10 Claims

1. Blade for the rotating airfoil of an aircraft having an attachment for fixing to a hub, a current part having a leading edge and a trailing edge and whose profile has a chord of constant or evolutive length C, and a tip whose span is less than 10 percent of the total span of the blade, which extends from said current part outwardly and whose leading edge extends from the leading edge of said current part rearwardly in a sweep, said tip being in addition downwardly slanted, wherein said downward slant of said blade tip extends over the entire length of this tip and is continuous from the connection

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from the current blade part as far as the end edge of said tip so that said tip follows a curvature such that its extrados is convex and its intrados is concave, the downward curvature of said blade tip being at least approximately of parabolic trend, the extensionin said tip of a reference line of the current part merging with the controlled pitch variation axis of said blade, has a substantially parabolic trend, referred to a system of orthogonal axes Ox, Oy and Oz, whose origin O is situated at the connection of the reference line of said current blade part and of the reference line of said blade end, the axis Ox being aligned with the reference line of said current part and being oriented outwardly of the blade, whereas the axis Oy merges with the chord of the connection profile between said current part and said end and is oriented from the leading edge to the trailing edge and the axis Oz is oriented upwardly, namely from the intrados to the extrados of the blade, wherein said reference line of said blade tip is contained in a plane xOY passing through the axis Ox and whose plot OY in the plane yOz forms an angle γ with the axis Oy and, in the plane xOY, the equation of said reference line of said blade tip is a parabolic trend function in which the coefficient of the highest degree term depends on the angle γ.

4,880,356
METHOD OF CONTROLLING WOBBLE PLATE TYPE COMPRESSOR

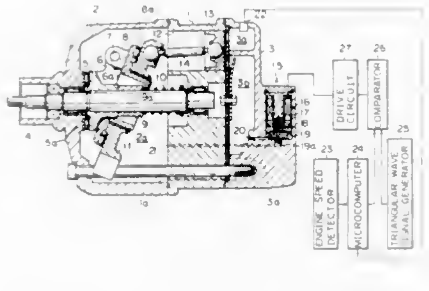
Shinichi Suzuki; Soukichi Hibino; Takahiro Hamaoka, and Masaki Ohta, all of Kariya, Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Aichi, Japan

Filed Aug. 9, 1988, Ser. No. 230,332

Claims priority, application Japan, Aug. 10, 1987, 62-200532

Int. Cl.⁴ F04B *1/26;* B60H *1/32;* F25B *1/02*

U.S. Cl. 417—53 **5 Claims**



1. A method of controlling the operation of a variable displacement wobble plate type compressor provided with:

a cylinder block having formed therein, a plurality of cylinder bores to receive therein compressor pistons;

a housing means arranged on axially opposite ends of the cylinder block for defining therein a suction chamber for a low pressure refrigerant gas to be compressed, a discharge chamber for a compressed high pressure refrigerant gas, and a crankcase chamber for receiving a pressure responsive displacement varying means including a drive shaft connectable to a rotative drive source means, a drive plate mounted around the drive shaft and capable of rotating with the drive shaft and varying an inclination angle thereof with respect to a plane vertical to the axis of the drive shaft and a wobble plate non-rotatably supported by the drive plate, the wobble plate inclining with the drive plate in response to a pressure difference between the crankcase chamber and the suction chamber, and connected to the compressor pistons via piston rods to cause a reciprocating motion of the compressor pistons with variable stroke to thereby vary the displacement of the compressor;

a solenoid-operated control valve means arranged in a pressure control passageway means extending from the discharge chamber to the crankcase chamber for changing an extent of fluid communication between the crankcase and discharge chambers; and

a control means for electrically controlling the operation of the solenoid-operated control valve, comprising the steps of:

(a) generating a command signal for a rapid reduction in displacement of the compressor by said control means in response to a demand for a reduction of the displacement of the compressor;

(b) responding to the command signal, supplying the solenoid-operated control valve with an electrical energizing signal having a predetermined intensity greater than the intensity required to maintain a predetermined reduced displacement of the compressor to increase the extent of fluid communication between the crankcase and discharge chamber during a predetermined initial part of a time period in which the demand for a reduction of the displacement of the compressor is required; and

(c) reducing the electrical energizing signal supplied to the solenoid-operated control valve to the intensity required to maintain the predetermined reduced displacement of the compressor for the remaining part of the time period in which demand for the reduction of the displacement of the compressor continues.

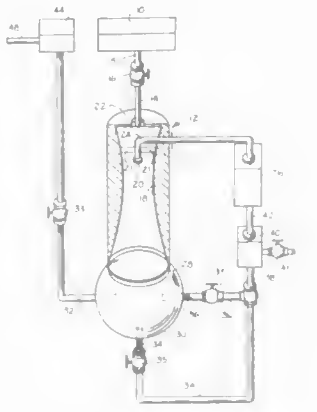
4,880,357
METHOD AND APPARATUS FOR PRODUCING HIGH VACUUM

Terrence L. Mathers, 7301 Plum St., New Orleans, La. 70118

Filed Jun. 27, 1988, Ser. No. 211,884

Int. Cl.⁴ F04B *23/14*

U.S. Cl. 417—77 **18 Claims**



12. A method for obtaining sub-atmospheric pressures comprising:

a. connecting a venturi tube to a space in which a sub-atmospheric pressure is desired, said venturi tube having a first end and a second end for reducing pressure in said space, said first end of said venturi tube being connected to said space,

b. spraying fluids from a nozzle located in said first end of said venturi tube through the second end of said venturi tube,

c. collecting said fluids in a collection chamber means connected to said second end of said venturi chamber for receiving fluids sprayed from said nozzle, said collection chamber means having at least two outlet means, said outlet means spaced apart a distance sufficient to locate one of said outlet means at the bottom of said collection chamber means when said collection chamber means is rotated,

d. pumping said fluids exiting from said second end of said venturi tube to said nozzle to be sprayed through said nozzle.

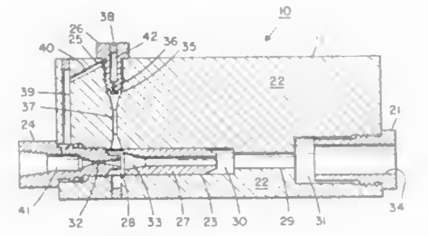
4,880,358
ULTRA-HIGH VACUUM FORCE, LOW AIR CONSUMPTION PUMPS

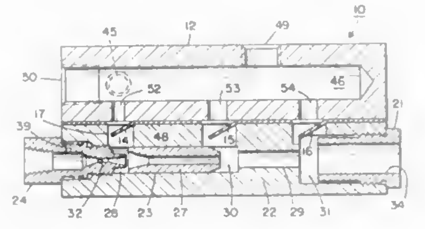
Clifford S. Lasto, Woodbridge, Conn., assignor to Air-Vac Engineering Company, Inc., Milford, Conn.

Filed Jun. 20, 1988, Ser. No. 209,288

Int. Cl.⁴ F04F *5/00*

U.S. Cl. 417—174 **4 Claims**





1. A multi stage ejector assembly comprising a solid elongate housing, a longitudinal cylindrical bore through said housing comprising a first venturi pump having a first converging-diverging venturi inlet nozzle opening through a first vacuum chamber in said cylindrical bore into the converging entrance of a first exit passage which opens through a second vacuum chamber into a second exit passage communicating with an outlet end of the cylindrical bore, first and second transverse bores inwardly from a side of the housing and each opening into said cylindrical bore at said first vacuum chamber, and a third transverse bore inwardly from a side of the housing and opening into said cylindrical bore at said second vacuum chamber, said first transverse bore comprising a second venturi pump having a second venturi inlet nozzle having an air flow consumption which is from about 5 to 15 times smaller than the air flow consumption of said first venturi inlet nozzle, said second venturi inlet nozzle opening through a maximum vacuum chamber into a converging-diverging venturi exit passage which opens into said cylindrical bore at the first vacuum chamber of the first venturi pump adjacent said converging entrance of the first exit passage, a fourth transverse bore inwardly from a side of the housing and opening into the vacuum chamber of said second venturi pump, air-inlet means communicating with the venturi inlet nozzles of both said first and second venturi pumps, a vacuum manifold connected to said housing and having a vacuum chamber communicating with each of said second, third and fourth transverse bores and having a vacuum flow inlet designed to be connected to a container to be evacuated, and independent vacuum-sensitive valve means supported between said vacuum manifold and each of said second and third transverse bores to sequentially close communication between the first and second vacuum chambers of the longitudinal bore and the chamber of the manifold when the vacuum force within the manifold increases to a value greater than the vacuum force within said first and second vacuum chambers, the chamber of the manifold being open to the fourth transverse fore and to the vacuum chamber of the second venturi pump at all times in order to develop a high vacuum force in the manifold chamber, and the chamber of the manifold being open to the second and third transverse bores only when the vacuum force within the manifold chamber is low, to provide a high vacuum flow through the manifold chamber until the vacuum force therewithin increases.

4,880,359
SUMMATION POWER OUTPUT REGULATING SYSTEM FOR AT LEAST TWO HYDROSTATIC TRANSMISSIONS

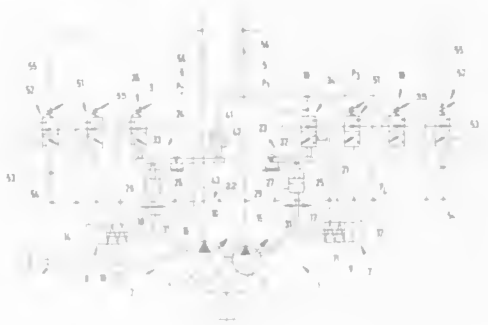
Hermann Hoffmeister, Nersingen; Klaus Puvogel, Ulm, and Reinhold Schniederjan, Neu-Ulm, all of Fed. Rep. of Germany, assignors to Hydromatik GmbH, Elchingen, Fed. Rep. of Germany

Filed Oct. 30, 1987, Ser. No. 115,762

Claims priority, application Fed. Rep. of Germany, Nov. 14, 1986, 3638889

Int. Cl.⁴ F04B *49/08*

U.S. Cl. 417—216 **3 Claims**



1. A summation power output regulating system for hydrostatic machines of at least two hydrostatic transmissions, driven by a common drive, with a hydraulic control device, having a control piston, for each of the first and the second machines, wherein the second machine is provided with a hydraulic power output regulator which regulates the pressure acting on the control device in dependence upon the power output from the second machine, and wherein a control pressure depending on the working pressure of the first machine is transmitted by a hydraulic actuator to said power output regulator, characterized in that the first machine is provided with a first power output measuring valve which determines the power output of the first machine and controls the control pressure (P_3) in dependence upon the power output of the first machine, wherein said first power output measuring valve includes a piston slide and is operatively connected with a piston acted on by the operating pressure (P_1, P_2) of the associated machine, which is arranged in the associated control piston so that it can move transversely of and be adjusted with the control piston, wherein, arranged between the piston slide of said measuring valve and said piston, a lever arm is mounted to pivot about a fixed axis extending transversely of the axis of the associated control piston and transversely of the valve slide of said measuring valve (34).

4,880,360
VARIABLE DISPLACEMENT COMPRESSOR WITH BIASED INCLINED MEMBER

Kiyoshi Terauchi, Gunma, and Masaharu Hiraga, Saitama, both of Japan, assignors to Sanden Corporation, Gunma, Japan

Filed May 18, 1988, Ser. No. 195,159

Claims priority, application Japan, May 19, 1987, 62-73666[U]

Int. Cl.⁴ F04B *1/26*

U.S. Cl. 417—222 **11 Claims**

1. In a refrigerant compressor including a compressor housing having a central portion, a front end plate at one end and a rear end plate at its other end, said housing having a cylinder block provided with a plurality of cylinders and a crank chamber within said cylinder block, a piston slidably fitted within each of said cylinders and reciprocated by a drive mechanism

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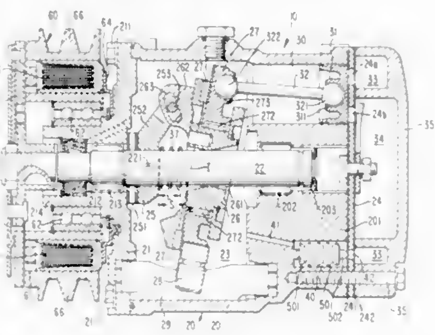
including a drive shaft rotatably supported in said housing, an input drive rotor coupled to said drive shaft and rotatable therewith, and coupling means for drivingly coupling said rotor to said pistons such that the rotary motion of said rotor is converted into reciprocating motion of said pistons, said coupling means including an inclined member having an inclined surface disposed at an incline angle relative to said drive shaft, said incline angle of said inclined member being adjustable between a maximum angle and a minimum angle in response to pressure changes in said crank chamber to vary the stroke length of said pistons and the capacity of the compressor, said rear end plate having a suction chamber and a discharge chamber, pressure control means for controlling pressure of said crank chamber, the improvement comprising:

elastic means for applying a force urging said inclined surface of said inclined member toward a decreased incline angle, said elastic means applying said force to said inclined member only when said inclined surface is positioned at an incline angle between its maximum incline angle and a predetermined incline angle, said predetermined incline angle being greater than said minimum incline angle whereby said elastic means apply no force to decrease the incline angle of said inclined surface when said inclined surface is positioned at an incline angle less than said predetermined incline angle.



4,880,361

MULTI-PISTON SWASH PLATE TYPE COMPRESSOR WITH ARRANGEMENT FOR INTERNAL SEALING AND FOR UNIFORM DISTRIBUTION OF REFRIGERANT TO CYLINDER BORES

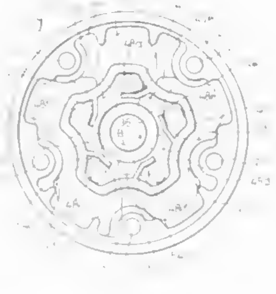
Hayato Ikeda; Kazuhiro Ohta, and Hisato Kawamura, all of Kariya, Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Aichi, Japan

Filed May 12, 1988, Ser. No. 193,367

Claims priority, application Japan, May 13, 1987, 62-114451

Int. Cl.⁴ F04B *1/16, 1/00*

U.S. Cl. 417—269 2 Claims



1. A multi-piston swash plate type compressor for an air-conditioning system used in a vehicle such as an automobile, which comprises:

a pair of axially combined front and rear cylinder blocks forming therein a plurality of cylinder bores and a swash plate chamber;

a pair of front and rear housings arranged at the axial end faces of said combined cylinder blocks, each housing having therein an inner suction chamber for a refrigerant prior to compression and an outer discharge chamber for a refrigerant after compression;

an annular partition wall arranged in each of said front and rear housings for isolating said inner suction chamber from said outer discharge chamber;

valve plates interposed between said front and rear housings and the axial end faces of said combined cylinder blocks, respectively;

a plurality of tightening screw bolts for axially and hermetically assembling said front and rear housing, said valve plates and said combined cylinder blocks as an integrated unit;

a drive shaft extending axially through said swash plate chamber of said combined cylinder blocks;

a swash plate mounted on said drive shaft within said swash plate chamber;

a plurality of pistons engaged with said swash plate so as to be reciprocated in said cylinder bores;

a plurality of inlet passageways extending through said combined cylinder blocks and said valve plates for communication between said swash plate chamber and the suction chambers of said front and rear housings; and

internal sealing and guiding means arranged in each of said front and rear housings for providing a hermetic seal between the axial end faces of said combined cylinder blocks and said valve plates, respectively, and for providing a substantially uniform distribution of refrigerant from said suction chamber to said cylinder bores,

said internal sealing and guiding means including a plurality of rib members which are individually provided in each of said front and rear housings for rigidly holding said valve plates against a high pressure of said refrigerant after compression within the cylinder bores of said combined cylinder blocks,

wherein all of said rib members are integrally extended from the inner side wall portion of said annular partition wall so that they guide the refrigerant flows toward the corresponding cylinder bores, respectively, and wherein said rib members are arranged to guide refrigerant flows entering said suction chamber through said inlet passageways to carry out said uniform distribution of refrigerant, thereby reinforcing a hermetic seal between the axial end faces of said combined cylinder blocks and said valve plates, respectively, while sufficiently lubricating all of said cylinder bores with a lubricating oil included in the uniformly distributed refrigerant.

4,880,362

ROTOR WITH STABILIZING MAGNETS

Karsten A. Laing; Oliver P. Laing, both of 2111 Illion St., San Diego, Calif. 92110, and Nikolaus J. Laing, 1253 La Jolla Rancho Rd., La Jolla, Calif. 92037

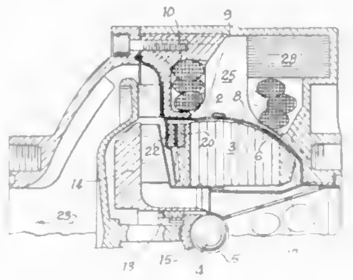
Filed May 24, 1988, Ser. No. 198,004

Int. Cl.⁴ F04B *17/02*

U.S. Cl. 417—365 7 Claims

1. A pump-motor-unit with a dry and a wet compartment separated by a magnetically permeable spherical wall (8), the dry compartment comprising a magnetic device (**25,28**) which produces a rotating magnetic field causing rotation of a spherical armature (3,33) rotatably and tiltably supported in its center, mounted in the wet compartment, that armature forming a rotary unit with an impeller (**14,34,44**) which contains a bearing cap (15) forming together with a stationary convex spherical counterpart (5) a spherical step bearing which supports the rotary unit (**3–14, 33–34**) radially and in the axial direction towards the stationary couterpart (5) of the cap (15), said stationary counterpart (5) being supported by the casing on a stationary structure (7), the rotary unit (**3–14,33–34**) being

pushed during operation by the axially directed vector of the magnetic forces generated by said magnetic device (**25,28**) toward said magnetic device (**25,28**) counteracting movement of the rotary unit (**3–14,33–34**) in the direction (**23,35**) away from the magnetic device (**25,28**), said rotary unit (**3–14,33–34**) comprising a concentric annular permanent magnet (**10,20,30**) forming an unobstructed gap (*6a*) with a stationary annular permanent magnet (**12,22,32**) mounted inside the wet compartment, both magnets being magnetized perpendicular to the surface of said gap and both magnets facing the gap with their sides of the same polarity thereby generating thrust to stabilize the rotary unit (**3–14,33,34**) and to prevent axial movement.



4,880,363

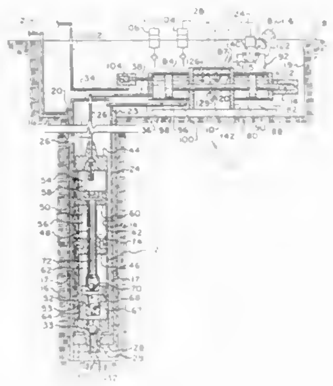
WELL PUMP SYSTEM

John H. Holland, Norman, Okla., assignor to John and Martin Holland and Associates, Norman, Okla.

Division of Ser. No. 906,260, Sep. 11, 1986, Pat. No. 4,778,355, which is a continuation-in-part of Ser. No. 615,300, May 30, 1984, Pat. No. 4,611,974. This application Jun. 6, 1988, Ser. No. 202,413

Int. Cl.⁴ F04B *47/04*

U.S. Cl. 417—390 5 Claims



1. Power transfer apparatus for causing vertical reciprocation of piston means in a downhole well pump operatively disposed in a wellbore, said well pump having a driving fluid chamber therein adapted to receive a quantity of driving fluid to responsively cause said piston means to lift, and to discharge the received driving fluid during downward movement of said piston means, said apparatus comprising:

a driving fluid housing having first and second opposite ends;

a drive piston disposed in said housing and dividing the interior thereof into a first chamber disposed between said drive piston and said first end of said housing, and a second chamber disposed between said drive piston and said second end of said housing;

a driving fluid pipe having a first end in fluid communication with said first chamber, and a second end adapted for connection to said well pump in fluid communication with said driving fluid chamber of said well pump,

said first chamber and said driving fluid pipe, when operatively connected to said driving fluid chamber of said well pump, being adapted to be filled with a first driving fluid;

a driving fluid pump having an inlet adapted to receive a second driving fluid from a source thereof, and an outlet adapted to discharge the received second driving fluid, and

means for alternately:

(1) causing said driving fluid pump to draw second driving fluid from said source thereof and discharge second driving fluid into said second chamber to force said drive piston toward said first housing end to thereby force first driving fluid out of said first chamber and into said driving fluid pipe to force first driving fluid from within said driving fluid pipe into said driving fluid chamber of said well pump to cause said piston means in said well pump to rise, and

(2) permitting said piston means in said well pump to fall to thereby force first driving fluid from said driving fluid chamber into said driving fluid pipe, and from within said driving fluid pipe into said first chamber, in a manner moving said drive piston toward said second housing end and responsively forcing second driving fluid outwardly from said second chamber and inwardly through said inlet of driving fluid pump to assist in driving the same during downward movement of said piston means in said well pump.

4,880,364

PORTABLE ELECTRIC BLOWER

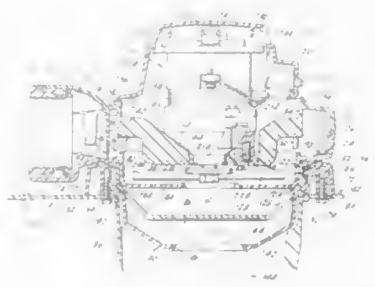
Robert C. Berfield, Jersey Shore; Ronald F. Meland, Muncy, and Craig A. Seasholtz, Avis, all of Pa., assignors to Shop-Vac Corporation, Williamsport, Pa.

Continuation of Ser. No. 64,768, Jun. 19, 1987, Pat. No. 4,797,072. This application Aug. 25, 1988, Ser. No. 237,686

The portion of the term of this patent subsequent to Jan. 2, 2006, has been disclaimed.

Int. Cl.⁴ F04B *17/00*

U.S. Cl. 417—423.1 5 Claims



1. An air blower, comprising:

an external housing, an air inlet into the housing, an air outlet from the housing, a motor in the housing and a fan in the housing driven by the motor for drawing air into the housing inlet and for blowing air out the housing outlet;

a motor support located in the housing for supporting the motor and shaped and disposed in the housing for providing air separation between the motor and the fan;

the housing including a chamber around the fan and at the side of the motor support, and the chamber communicating with the outlet from the blower;

further comproises the inlet to the housing including an inlet opening through which air is drawn into the housing and the fan being disposed near the inlet opening;

a cup shaped intake shield sealingly attached to the housing and extending past the inlet to the housing, where the intake shield extends past the inlet opening, the intake

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shield being spaced from the housing and from the housing inlet;

air passes means through the intake shield for enabling air to be drawn past the intake shield and into the housing inlet;

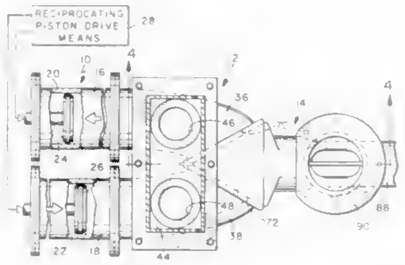
a support for the housing and the cup shaped intake shield , the support comprising a surface having an openning in it and the opening being defined by a periphery around the opening in the surface, the intake shield being disposed over the opening in the surface and partially extending into the opening, and a cup shaped adapter disposed in the opening in the surface, covering the periphery of the opening in the surface and supported to the surface, and the adapter also receiving in it the intake shield and being spaced from the air passage means of the intake shield; a generally air sealing connection between the adapter and the surface at the periphery of the opening, on the one hand, and between the adapter and the intake shield, on the other hand, and the intake shield being further sealed to the housing;

an inlet opening through the adapter communicating with the space between the adapter and the intake shield for defining an air pathway from the adapter to the intake shield.

4,880,365

CEMENT PUMP WITH REMOVABLE DISCHARGE CHAMBER CARTRIDGE

Richard D. Austin, 18414 Buckthorne Rd., Devore, Calif. 92407
Filed Feb. 4, 1988, Ser. No. 152,042
Int. Cl.^{4} F04B *15/02, 21/02*
U.S. Cl. 417—531 4 Claims



1. A double acting concrete pump, comprising:

first and second pump cylinders with a respective piston slidable back and forth in each of the cylinders, the cylinders having outlets at one end for receiving and discharging fluid to be pumped;

drive means operatively connected to the pistons for simultaneously driving them in opposite directions to reciprocate back and forth in their respective cylinders;

a connecting manifold for selectively connecting the outlet of each cylinder to a supply of fluid to be pumped, the manifold having first and second pumping chambers in flow communication with the first and second cylinder outlets, respectively, each pump chamber having an inlet for connection to a supply of fluid to be pumped and a discharge outlet for flow of pumped material out of the chamber;

the connecting manifold having a generally wedge-shaped indent at its outer end, having opposite side walls forming a V-shape and upper and lower walls, the respective pump chamber outlets being located in opposite side faces of said indent;

a discharge manifold of corresponding wedge shape to said indent for connecting each of the pump chamber outlets to a delivery outlet, the discharge manifold having a discharge chamber, and a pair of inlets for alternately connecting the discharge outlet of each pump chamber to the discharge chamber while isolating the other pump chamber in response to pumping action of the respective pistons, the discharge manifold being formed as a unit separable from the remainder of the pump; said discharge chamber inlets being located in respective opposite side faces of said wedge-shaped discharge manifold and being positioned for alignment with the respective pump chamber outlets when the discharge manifold is secured in the indent;

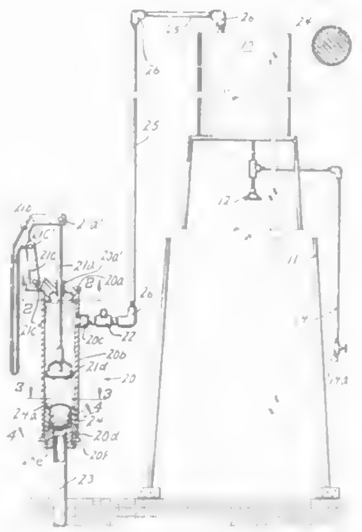
and releasable securing means for releasably securing the discharge manifold unit to the connecting manifold with the pump chamber outlets in communication with the discharge chamber;

the connecting manifold indent comprising means for mating engagement with said discharge manifold with said respective pump chamber outlets aligned with the respective discharge chamber inlets.

4,880,366

PLASTIC HAND LIFT PRESSURE PUMP

Larry A. Stinson, R. 4, P.O. Box 571, Mount Vernon, Ind. 47620
Filed Sep. 6, 1988, Ser. No. 240,675
Int. Cl.^{4} F04B *19/22*
U.S. Cl. 417—555.1 1 Claim



1. A pressure pump comprising a hollow body portion having open ends and including a built-in check valve received in a bushing at one end thereof and means limiting movement of said built-in check valve, a plug member overlying said body portion and disposed within the other end thereof, a plunger rod extending through said plug member, a handle pivotally secured to an end of said plunger rod, and linkage means interconnecting said handle and said plug member, where said hollow body portion including said built-in check valve, said bushing and said limiting means, said plug member, said plunger rod, said handle and said linkage means are fabricated from thermoplastic material, and where said built-in check valve includes a mineral filled ball also fabricated from thermoplastic material.

4,880,367

RIGID SUPPORT STRUCTURE FOR SINGLE SCREW COMPRESSORS

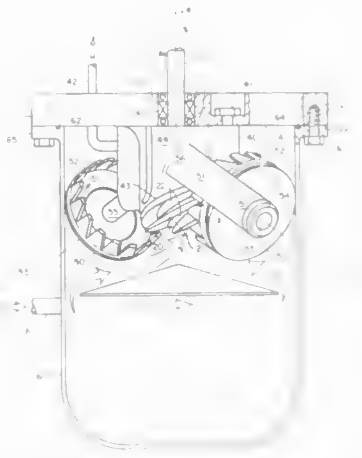
Thomas W. Bein, 1283 Swan Dr., Annapolis, Md. 21401
Continuation-in-part of Ser. No. 834,991, Feb. 28, 1986, abandoned. This application Jun. 9, 1988, Ser. No. 204,323
Int. Cl.^{4} F04C *18/20*
U.S. Cl. 418—107 32 Claims

1. A single screw compressor for varying the pressure of a gas, comprising:

a mainrotor formed with a plurality of threads:

a central structure having a central bore, said central bore cooperating with said mainrotor forming at least one compression chamber;

a gaterotor shaft having an inward end and an outward end, said inward fend attached to said central structure;



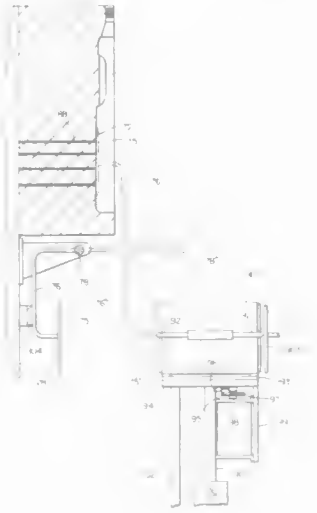
a gaterotor having teeth in meshing relation with said mainrotor threads, said gaterotor rotationally mounted on said gaterotor shaft; and,

an elongate support arm attached at an inward end to said central structure and at an outward end to said gaterotor shaft.

4,880,368

IN-MOLD LABEL TRANSFER APPARATUS

Siegfried C. Hasl, 80 Liberty Corner, Warren, N.J. 07060, and Charles J. Lisnet, Westport, Conn., assignors to Siegfried C. Hasl, Warren, N.J.
Filed Oct. 24, 1983, Ser. No. 544,986
Int. Cl.^{4} B29B *11/06;* **B65C** *9/14*
U.S. Cl. 425—116 17 Claims



1. An in-mold label transferring apparatus for placing labels onto a mold surface on at least one of two relatively movable mold halves of a molding machine, comprising:

a magazine means for storing a stack of pre-cut labels with the front label of the stack accessible to be removed therefrom;

a label applicator head;

a rod, said head being mounted on said rod;

a plate on which said one o the movable mold halves is mounted;

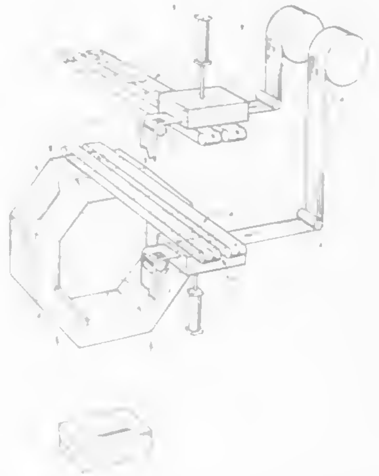
a shaft having a longitudinal axis, said rod being connected to said shaft for movement about the said longitudinal axis of the shaft and with said head spaced from said shaft, said shaft being mounted to said plate to move with said plate and for rotational movement about the longitudinal axis of said shaft between a first position to place said head against the mold surface for delivery of a label to the mold surface and a second position to place said head and said rod completely outside of the space between the facing mold halves for receiving a label; and

a power means for rotating said shaft to move said rod and said head between the first and second positions.

4,880,369

APPARATUS FOR APPLYING LABELS TO BLOW MOLDED ARTICLES

Ronald S. Kaminski, Bowling Green, Ohio, assignor to Owens-Illinois Plastic Products Inc., Toledo, Ohio
Division of Ser. No. 64,643, Jun. 22, 1987, Pat. No. 4,853,169. This application Apr. 4, 1989, Ser. No. 332,928
Int. Cl.^{4} B29C *49/24, 49/36, 49/42*
U.S. Cl. 425—116 2 Claims



1. An apparatus for making hollow plastic articles wherein a label is positioned in each of a plurality of spaced partible molds in a predetermined array, preforms are positioned in each set of partible molds and the molds are closed and the preforms are blown outwardly to the confines of the molds to apply the label to the resultant hollow plastic article, said apparatus including means for delivering the labels to the molds comprising:

means for providing labels in a web of a roll of labels;

an endless vacuum conveyor;

a die cutting station;

means for moving the web of the roll of labels past said die cutting station;

a die cutting mechanism for successively die cutting the labels from the web of the roll of labels at said die cutting station;

means for moving said die cutting mechanism at a right angle to said web to cut said labels and means for continuing said movement of said die cutting mechanism to simultaneously directly deliver said labels to said endless vacuum conveyor; means for indexing a remaining portion of the web which has a label die cut therefrom past the die cutting station after the label has been die cut and delivered directly to said endless vacuum conveyor;

means for indexing said endless vacuum conveyor after each successive die cut to provide an array of labels on said

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conveyor which corresponds in spacing to the spacing of the array of molds;

means for engaging the array of labels on said conveyor and removing them from said conveyor; and,

means for depositing the array of labels in one section of the array of molds.

4,880,370

EXTRUSION DIE FOR MULTILAYER FOILS OR PLATES OF THERMOPLASTIC SYNTHETIC RESIN

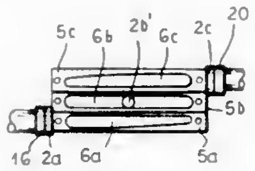
Klemens Krumm, Neunkirchen-Seelscheid, Fed. Rep. of Germany, assignor to Relfenhauser GHBH & Co., Maschinenfabrik, Troisdorf, Fed. Rep. of Germany

Filed Oct. 14, 1988, Ser. No. 258,282

Claims priority, application Fed. Rep. of Germany, Oct. 15, 1987, 3734883

Int. Cl.⁴ B29C *47/06*

U.S. Cl. 425—133.5 **10 Claims**



1. An extrusion die for the extrusion of a multilayer extrusion of thermoplastic synthetic resin, comprising:

a plurality of die plates in stacked relationship, each of said die plates being formed with an inlet at one edge of the respective die plate, an elongated outlet along another edge of the die plate, and a flow-spreading channel communicating between said inlet and said outlet and widening in the direction of said outlet, said outlets of said die plates all lying along a common side of a stack formed by the plates;

means forming an elongated extrusion orifice for issuing a relatively wide and thin extrusion connected to said common side of said stack and receiving thermoplastic synthetic resin from said outlets whereby the thermoplastic synthetic resin from said outlets forms layers in said extrusion; and

respective means at each of said inlets for connecting a respective extruder to the respective die plate for feeding a respective thermoplastic therethrough to the respective outlet, said stack including two die plates having fittings disposed symmetrically to opposite sides of a median plane through said stack perpendicular to said extrusion and said channels of said two die plates defined by walls extending mirror symmetrically and parabolically from the respective inlet to the respective outlet.

4,880,371

APPARATUS OF MACHINING DOUGHY MATERIAL

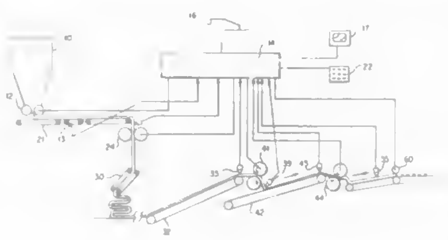
Louis A. Spinelli, Patterson, and Jeffrey M. Jenniges, Pompton Lakes, both of N.J., assignors to Nabisco Brands, Inc., Parsippany, N.J.

Division of Ser. No. 948,380, Dec. 31, 1986, which is a continuation-in-part of Ser. No. 839,448, Mar. 10, 1986, abandoned, which is a continuation of Ser. No. 670,833, Nov. 13, 1984, abandoned. This application Mar. 10, 1989, Ser. No. 321,987

Int. Cl.⁴ B29C *47/92;* A21C *3/02*

U.S. Cl. 425—135 **5 Claims**

1. In an apparatus for machining dough including a device for extruding a sheet of dough, at least one pair of opposed powered rollers arranged to receive and size the sheet of dough and an apparatus arranged downstream of the at least one pair of opposed powered rollers for separating the sheet of dough into products for baking, the improvement which comprises: a system controller including a plurality of sensing device coupled to preselected areas of the apparatus for machining dough to sense dough characteristics at each of the preselected areas and a plurality of control signal outputs, each of the outputs being coupled to a respective one of the device for extruding dough, the at least one pair of opposed powered rollers and the apparatus for separating the sheet of dough, and



the controller further including a calculator operating to calculate control signals for selective output on the plurality of control signal outputs; the control signals all being calculated by the calculator as an integrated function of all of the sensed dough characteristics sensed by the plurality of sensing devices to provide an integrated control of the apparatus for machining dough for a constant mass dough flow throughout the apparatus.

4,880,372

MATERIAL AUTOMATIC FEEDING SYSTEM FOR INJECTION MOLDING MACHINES

Yutaka Kelda, Tokyo, Japan, assignor to Sumitomo Heavy Industries, Ltd., Tokyo, Japan

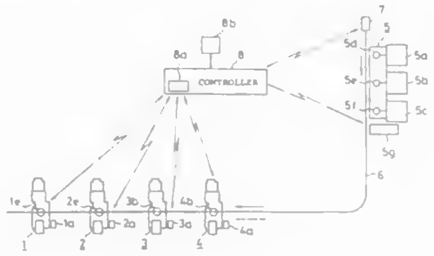
PCT No. PCT/JP87/00465, § 371 Date Mar. 4, 1988, § 102(e) Date Mar. 4, 1988, PCT Pub. No. WO88/00118, PCT Pub. Date Jan. 14, 1988

PCT Filed Jul. 3, 1987, Ser. No. 183,750

Claims priority, application Japan, Jul. 4, 1986, 61-156303

Int. Cl.⁴ B29C *45/17*

U.S. Cl. 425—145 **14 Claims**



1. An injection molding system comprising:

a plurality of injection molding machines;

a resin storage unit for storing resin which is to be injected into said injection molding machines;

a container that is selectively and mechanically detachable from said resin storage unit for containing said resin fed from said resin storage unit, said container being positioned adjacent to said resin storage unit when the container is located at a rest zone in which the container is at rest;

a transportation track extending between said rest zone and said plurality of injection molding machines;

a carrier associated with said transportation track for holding said container and for conveying said container along said transportation track between said rest zone and said plurality of injection molding machines; and

control means electrically coupled to said container and said carrier for controlling said container and said carrier to selectively detach said container from said resin storage unit and to convey said carrier along said transportation track with said container held by said carrier.

4,880,373

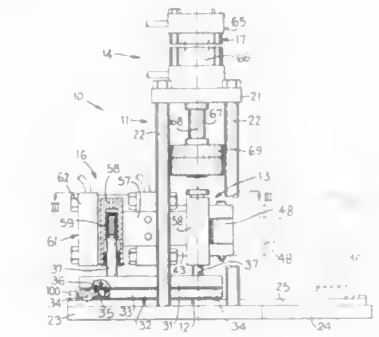
TABLET PRESS

Stephen Balog, Kalamazoo, and Everett N. Hiestand, Galesburg, both of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed Apr. 28, 1988, Ser. No. 187,569

Int. Cl.⁴ B29B *11/12*

U.S. Cl. 425—149 **16 Claims**



1. In a press for forming a blocklike compact from powder, said press including a removable die which is vertically split into two halves which define therebetween a die opening which extends vertically through the die, removable upper and lower punches projecting into opposite ends of the die opening for defining a die cavity therebetween for creating the compact, a first fluid pressure cylinder means coacting with the die for applying a substantially horizontally directed force thereto tending to maintain the opposed die halves in closed engagement with one another, and a second fluid pressure cylinder means for applying a vertically directed compression force against one of said punches to effect compaction of the powder within the die cavity to create the blocklike compact, the improvement comprising:

a frame;

carriage means movably supported on said frame for horizontal displacement between first and second positions which are significantly horizontally displaced from one another;

die carrier means mounted on said carriage means and movable therewith between said first and second positions, said die carrier means including opposed side supports for confining the die therebetween, and a rear support for abutting contact with one side of said die, said die carrier means also including a front support which is movable relative to said side supports between open and closed positions for providing access to the region defined between said side supports, said front support when in the closed position cooperating with a front side of the die for confining the die between the front and rear supports and between the opposed side supports;

said first cylinder means having a housing which is stationarily fixed relative to said side supports and having a linearly extendable piston rod which projects substantially horizontally between said side supports for abutting contact with a rear side of said die;

said second cylinder means having a housing which is fixed relative to said frame and a piston rod which is linearly movable along a generally vertical axis which is fixed relative to said frame for applying a vertical compression force against said one punch;

said die when mounted on said die carrier means being disposed with the die opening substantially vertically aligned with the vertical axis of said second cylinder means when the carrier means is in said first position, said die being horizontally displaced from said vertical axis when said carriage means is in said second position;

said carriage means including a carriage member which removably mounts said other punch thereon, and spring-urged rollers carried by said carriage member for rolling engagement with said frame to permit movement between said first and second positions, whereby application of force by said second cylinder means to the compact formed by said die is transmitted vertically from said carriage means directly to said frame due to retraction of the rollers relative to the carriage member so that a part of the carriage member directly vertically abuts a part of the frame to permit direct vertical force transfer therebetween; and

resilient support means connected between said carriage means and said die carrier means for permitting vertical floating movement of said die carrier means and said first cylinder means relative to said carriage means.

4,880,374

FILTER EXCHANGE DEVICE FOR AN EXTRUSION MOLDING MACHINE

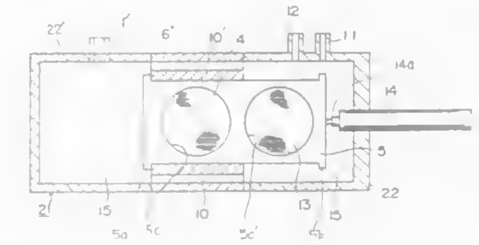
Ken Hamamura; Sei Kawahara, and Mitsuhiro Goto, all of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed May 20, 1988, Ser. No. 196,406

Claims priority, application Japan, May 20, 1987, 62-121353

Int. Cl.⁴ B29F *3/06*

U.S. Cl. 425—185 **16 Claims**



1. A filter exchange device of an extrusion molding machine for exchanging a first filter provided in an extrusion passage for molten resin, comprising:

a spare filter;

a first filter casing airtightly enclosing said spare filter in a region outside said resin passage and having first port means for exhausting air out of the filter casing and filling the interior of the filter casing with a gas inert to the molten resin.

4,880,375

APPARATUS FOR STRETCHING A PLASTIC RAW MATERIAL

Torahiko Hayashi, Tochigi, Japan, assignor to Rheon Automatic Machinery Co., Ltd., Japan

Continuation-in-part of Ser. No. 928,633, Nov. 5, 1986, abandoned, which is a continuation of Ser. No. 752,992, Jul. 8, 1985, abandoned. This application Jul. 1, 1988, Ser. No. 214,882

Claims priority, application Japan, Jul. 7, 1984, 59-141084

Int. Cl.⁴ A21C *3/02*

U.S. Cl. 425—335 **3 Claims**

1. An apparatus for stretching a plastic raw material, comprising:

at least two conveyors arranged in series having respective conveying portions thereof forming a conveying path for plastic raw material fed onto said conveyors;

driving means for driving each of said conveyors at selected speeds and in forward and reverse directions, said driving

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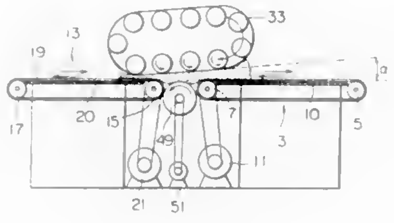
means driving said conveyors in the same direction for each of said forward and reverse directions and such that a conveyor downstream is driven at a faster speed than a conveyor upstream in each of the respective directions, in order to provide a stretching action to the plastic raw material on said conveying path;

a roller mechanism positioned above and extending over said at least two conveyors comprising a plurality of rollers which are freely axially rotatable and movable along an endless roller path, wherein the peripheries of said rollers on said endless roller path form a closed loop having a straight lower portion which is spaced at an adjustable spacing above said conveying path of said conveyors;

reversing means for alternately reversing said driving means for driving said conveyors first in the forward direction, with the downstream conveyor driven at a faster speed than the upstream conveyor, such that plastic raw material on said conveying path is passed in the forward direction in stretching contact with said straight lower portion of said rollers on said endless roller path, and then for driving said conveyors in the reverse direction, with the downstream conveyor in the reverse direction driven faster than the upstream conveyor, to pass the plastic raw material in stretching contact with said rollers in said reverse direction; and



adjusting means for adjusting the spacing of said straight lower portion of said rollers above said conveying path with each successive pass of the plastic raw material in the forward and reverse directions; and

wherein said adjusting means further includes means for adjusting an angle of inclination of said straight lower portion of said rollers relative to said conveying path in each direction as the raw plastic material is fed on said conveying path in successive passes.

4,880,376

METHOD AND APPARATUS FOR MONITORING AND CALIBRATING DAMPER POSITION

James I. Bartels, Hudson, Wis.; Paul B. Patton, Rockford, Minn.; Kenneth B. Kidder, Coon Rapids, Minn., and Alfred J. Gaskell, Hopkins, Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Jan. 27, 1989, Ser. No. 303,360

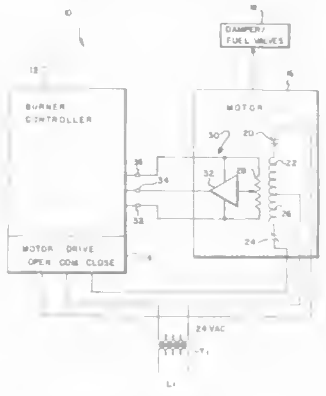
Int. Cl.⁴ F23N *3/00*

U.S. Cl. 431—12 **30 Claims**

1. A method for monitoring damper position of damper means which control flow of combustion air or fuel in a heating system where the damper means is movable between first and second end positions in response to movement of a motor shaft where the motor shaft moves in response to a movement request signal, the method comprising:

receiving a shaft position signal provided by continuous position detector means and having a value representative of position of the motor shaft;

stopping the motor shaft when the damper means reaches an end position; and



determining whether the value of the shaft position signal is within a predetermined tolerance when the damper means reaches the first and second end position.

4,880,377

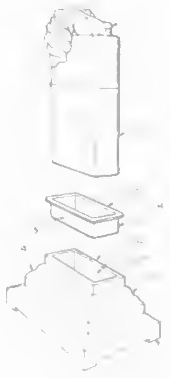
CIGARETTE LIGHTER WITH CHARM MOUNTED THEREON

William Ficho, Lincolnwood, Ill., assignor to Vasilia, Ltd., Chicago, Ill.

Continuation of Ser. No. 472,647, Mar. 11, 1983, abandoned, which is a continuation-in-part of Ser. No. 373,881, May 3, 1982, abandoned. This application Nov. 1, 1984, Ser. No. 666,145

Int. Cl.⁴ F23Q *2/32*

U.S. Cl. 431—126 **4 Claims**



1. A personal accessory to be carried about on the person of the user, said accessory comprising a plain and unadorned generally rectangular box, said box being divided into a bottom section and a flip top section, said flip top section having two stable positions, said flip top being hinged to one side of said box, the upper surface of said flip top being a simple and unadorned panel having edges defining a predetermined perimeter; a cigarette lighter including at least a flint wheel and a wick completely enclosed within the box when the flip top is in a first of said two positions with said box closed, the lighter and box being shaped and proportioned so that a user normally holds the bottom section of the box in his fist with his fingers curled around it with the flip top of the lighter extending above the fist, the second of said two positions being an open position, the flip top being completely visible above the fist in both said opened and closed positions with the flint wheel accessible to the thumb on said fist while holding said box, sculptured charm means mounted on the outside of said unadorned top panel of said box to stand above said fist and be visible when said top is in either of said two stable positions closed over said bottom or

flipped to an open position, said charm being approximately aligned with and in front of the flame of said lighter insofar as the onlooker is concerned when the lighter is in use; an underside of said charm forming a somewhat cup shaped concave pocket having an unbroken surface which is closed on one side, said closed side of said pocket being fitted to follow, surround, and rest on said top panel, and to drape down and around at least part of the perimeter defined by one end and the adjacent edges of the upper surface of said flip top; said closed side of said pocket nesting against the one end of the top panel and extending over a side of the flip top of said lighter box downwardly far enough on at least one side of said lighter to give a vertical mechanical stability for attaching the charm to the flip top without interfering with the movement of the flip top between the two positions, and means for integrally attaching the closed side of said pocket on said charm to said top panel and to said one end at least one side of said flip top at a location where said pocket nests on and hugs said top.

4,880,378

COMBUSTION PLANT WITH A DEVICE FOR REDUCING NITROGEN OXIDES IN FLUE GASES

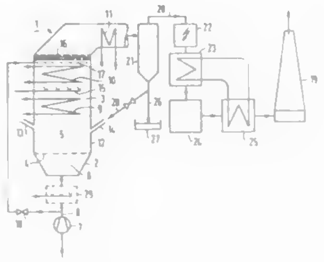
Erich Hums, Erlangen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Mnnich, Fed. Rep. of Germany

Filed Sep. 24, 1987, Ser. No. 100,748

Claims priority, application Fed. Rep. of Germany, Sep. 30, 1986, 3633285

Int. Cl.⁴ F23D *19/00*

U.S. Cl. 431—170 **16 Claims**



1. A combustion plant having a device for reducing nitrogen oxides in flue gases, comprising a combustion chamber, an injection device disposed in said combustion chamber for injecting a gaseous reducing agent in the form of at least one of the gases ammonia, carbon monoxide and hydrogen, and a catalyst arrangement disposed downstream of the injection device in flow direction of the flue gases, and being formed with a catalyst in said combustion chamber being heated to at most 1,300° C. and being formed of a metal alloy containing elements of the iron group subjectible to a flue gas temperature in excess of 600° C.

4,880,379

METHOD FOR TRANSFORMING A ROTARY KILN INTENDED IN PARTICULAR FOR THE MANUFACTURE OF CEMENT, KILN OBTAINED BY THIS METHOD AND BURNING LINE EQUIPPED WITH THIS KILN

Michel Champonnois, Houilles, France, assignor to CLE, Courbevoie, France

Filed Sep. 27, 1988, Ser. No. 249,952

Claims priority, application France, Sep. 30, 1987, 87 13529

Int. Cl.⁴ F27D *1/16, 15/02;* F27B *15/00*

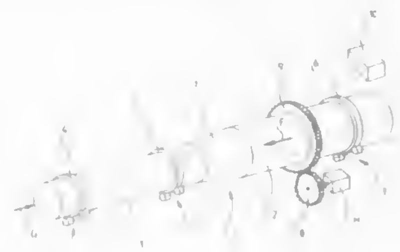
U.S. Cl. 432—3 **1 Claim**

1. A method for transforming a rotary kiln intended for said manufacture of any material such as cement and including a rotatable tube, rolling bearings, carrying a load, for supporting said tube at its central part and at its ends and a planetary cooler provided at one of said ends of said tube, this method comprising the steps of:

suppressing said cooler at said one end of said tube, and said tube portion which is associated therewith, to markedly increase said load carried by said bearing located at said central part of said tube;

cutting said tube substantially at said central part thereof to provide two tube portions having the same diameter;

replacing one of said tube portions by at least one tube section having a smaller diameter than that of said other tube portion which is retained;



connecting said tube section of smaller diameter to said other tube portion of larger diameter through a conical member and mounting said bearing at the central part of the tube onto said tube section, whereby said load carried by said bearing is reduced to a value which is lower than said increased load and substantially identical to the initial value of said load carried by the bearing at said central part of said initial kiln tube equipped with said cooler and used for carrying out said transformation.

4,880,380

ORTHODONTURE APPLIANCE WHICH MAY BE MANUALLY INSTALLED AND REMOVED BY THE PATIENT

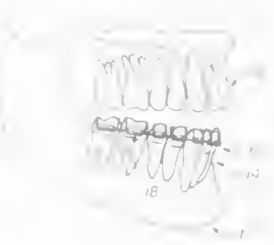
Martin G. Martz, Park Central Office Building, Suite 301, 215 South Monarch St., Aspen, Colo. 81611

Filed Oct. 13, 1987, Ser. No. 108,427

The portion of the term of this patent subsequent to Dec. 27, 2005, has been disclaimed.

Int. Cl.⁴ A61C *3/00*

U.S. Cl. 433—11 **44 Claims**



1. An appliance for orthodonture characterized in that at least most of said appliance may be installed and removed by the patient as required, said appliance comprising:

(a) a plurality of individual clasps for respectively gripping onto individual upper or lower teeth of the patient, each of said clasps being configured such that they can be individually manually placed in gripping positions onto and manually disengaged from said teeth by the patient wherein, each of said clasps including at least one generally U-shaped spring tempered element movable between a biased contracted state and a manually forced expanded state whereby to clamp to an associated tooth;

(b) first and second continuous lengths of wire; and

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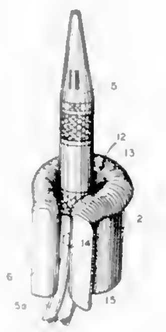
(c) means for disengageably connecting each of said wires at predetermined points along its length to each of said clasps such that when the clasps are in gripping positions on their respective teeth, said wires extend from tooth to tooth along the facial and/or lingual sides of the teeth, respectively, and exert forces on the teeth to move the latter from malocclusion positions to desired, more ideal positions.

4,880,381

BARRIERS FOR DENTAL AND MEDICAL HANDPIECE HANGERS

Dick H. Nieusma, Jr., 13658 Hanford Ct., Warren, Mich. 48093
Filed Jul. 14, 1988, Ser. No. 218,973
Int. Cl.⁴ A61C *1/02*
U.S. Cl. 433—28 19 Claims

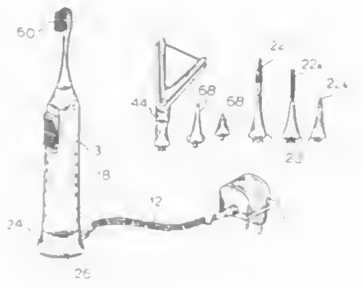


1. A device for covering a dental or medical handpiece hanger for the purpose of preventing the contamination of such hanger such hanger having an opening to receive said instrument and inner and outer surfaces normally contacted by and for supporting said instrument comprising a shell constructed of a thin, deformable material molded to a shape to be received in the said opening of said hanger and to cover said inner support surfaces and at least portions of said outer surface, said deformable material having substantially no memory whereby when said shell is inserted in said hanger, it can be deformed and adapted to the said inner and outer surfaces so as to stay in place during removal and replacement of a handpiece.

4,880,382

INTEGRATED ORAL HYGIENE SYSTEM

Michel A. Moret, Geneve, and Pierre J. Jousson, Montchoisy, both of Switzerland, assignors to Les Produits Associes, LPA SA, Switzerland
Filed Dec. 3, 1986, Ser. No. 937,566
Int. Cl.⁴ A61C *3/03*
U.S. Cl. 433—118 3 Claims



1. An integrated oral hygiene system for facilitating a complete oral hygiene program comprising in combination:

a handle having a top end and a bottom end, a motor housed in said handle, and having a shaft having a longitudinal axis protruding therefrom, said shaft having a longitudinal axis and being rotationally oscillated about said longitudinal axis responsive to said motor;

a plurality of accessories interchangeably mountable on said shaft and adapted to be used interchangeably and frequently;

said accessories comprising:

a toothbrush having bristles and a holder adapted to fit on the shaft;

a dental floss holder having one end adapted to fit on said shaft and another end divided into a pair of forks;

said forks having extremities bent along different axes having floss stretched therebetween;

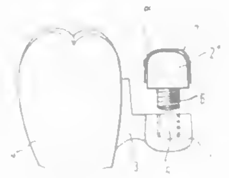
an interproximal brush, rotationally symmetric about said longitudinal axis, having a holder removably mounted on said shaft; and

a gum stimulator, rotationally symmetric about said longitudinal axis, mountable upon said shaft.

4,880,383

MAGNETIC FASTENING SYSTEM FOR DENTAL PROSTHESIS

René Weber, Schmitten, Switzerland, assignor to I.D.R. B.V., Boerhaaveplein, Netherlands
Filed Nov. 20, 1987, Ser. No. 123,606
Int. Cl.⁴ A61C *13/235*
U.S. Cl. 433—189 11 Claims



1. A dental prosthesis system for use in a mouth of a patient comprising:

a support element retained in the patient's mouth, said support element comprising a top portion and a bottom portion, said top portion and said bottom portion each having a substantially curved surface, said top portion comprised at least in part of a magnetic material;

means for attaching said support element to a side face of at least one dental element already present in the patient's mouth; said attaching means being connected to said bottom portion and comprising a support arm on at least one side of said bottom portion;

a fastening element secured to a prosthesis, said fastening element comprising a cover plate of magnetically receptive material having a shape suitable for partially embracing the top portion of said support element; and

wherein said support element is detachably connected to said fastening element by magnetic forces when the top portion is encased in said fastening element.

4,880,384

BRAILLE TEACHING APPARATUS

Kevin C. Murphy, 97 Forrest St., Plaistow, N.H. 03865-1810
Filed Feb. 3, 1989, Ser. No. 305,774
Int. Cl.⁴ G09B *21/00*
U.S. Cl. 434—113 7 Claims

1. A Braille teaching apparatus comprising:

a plurality of Braille blocks containing from one to six raised dots in a pattern indicative of a Braille alphanumeric character,

a rigid board means,

said rigid board means having a top edge and a bottom edge,

wherein said Braille blocks being placed in a specific alignment with respect to said top edge of said rigid board means allowing for comprehension of the symbolic meaning of said Braille blocks so placed,

wherein said Braille blocks being placed on said rigid board means in close proximity to one another forming phonetic and mathematical sentences,

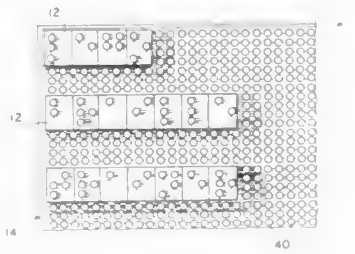
wherein said Braille blocks comprise a body having the shape of a rectangular parallelopiped,

said body comprising four sides, and a top,

said top having a bottom surface and a top surface,

said sides and said top attaching to one another such that each of said sides being perpendicular to the next and perpendicular to said top,

said bottom surface of said top having at least one cylindrical member extending therefrom to the bottom edge of said Braille block allowing for attachment of said Braille block to said rigid board means,



said top surface of said top of said Braille blocks having said raised dots disposed thereon,

said rigid board means having a top surface and a bottom surface,

said top surface of said rigid board means being covered by a plurality of protrusions in a regular rectilinear pattern allowing for fixed acceptance of said Braille blocks thereupon with said cylindrical members tightly disposed between said protrusions,

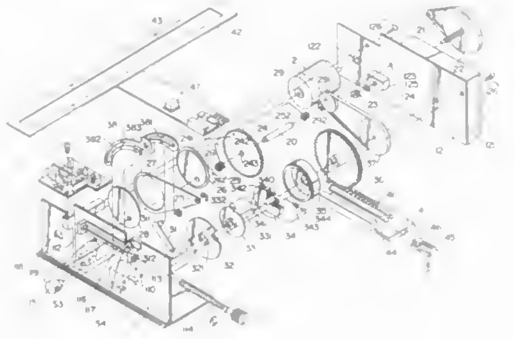
said rigid board means holding said Braille blocks preventing inadvertent removal by any sudden action of an individual, and

the combination of said Braille blocks and said rigid board means being usable as an instructor of individuals having disabilities in addition to blindness.

4,880,385

FULLY AUTOMATIC SPEED-READING TRAINER

Yi-Chao Huang, 16, Chia-Shui 1st Tsun, Chia Yi, Taiwan
Filed Dec. 11, 1987, Ser. No. 131,736
Int. Cl.⁴ G09B *17/02, 17/04*
U.S. Cl. 434—181 35 Claims



1. A fully automatic speed-reading trainer which comprises:

(a) a housing having at least two opposed frames, a first left-hand frame, and a second, right-hand frame;

(b) a control circuit assembly mounted on said first frame;

(c) a plurality of magnetic switches mounted on said first frame;

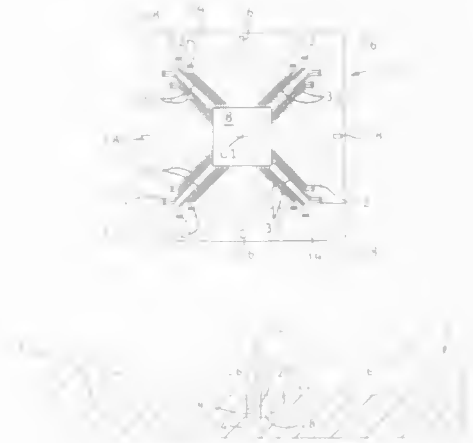
(d) a battery compartment positioned within said second frame; and

(e) a driving assembly, an advancement assembly, and an advancement adjustment assembly, wherein said driving assembly comprises means for rotating said advancement assembly to drive a viewing window attached to the housing in a generally linear fashion, said driving assembly further comprising an electric motor, a first, driving gear rotatably driven by said electric motor and a second, larger gear mounted on a first axle and adapted to be driven by said driving gear, wherein an eccentric cam and a first pulley are attached to said axle on opposite sides of said larger gear, each of said eccentric cam and said pulley comprising an axle tube adapted to fit over respective ends of said axle, said trainer further comprising first and second coiled springs mounted over respective ones of said axle tubes, each of said coiled springs having a free end adapted to be inserted into respective holes located on a flat surface of said larger gear, wherein when said larger gear is rotatably driven in either a clockwise or a counterclockwise direction, one of said eccentric cam and pulley will be rotatably driven by the tightening action of one of said springs.

4,880,386

SOCKETING A SEMICONDUCTOR DEVICE

Dimitry G. Grabbe, Middletown, and Iosif Korsunsky, Harrisburg, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.
Filed Nov. 18, 1988, Ser. No. 273,398
Int. Cl.⁴ H01R *9/09, 23/72*
U.S. Cl. 439—68 18 Claims



1. An electrical connector assembly comprising in combination;

a semiconductor device bonded to leads attached to a segment of film having a peripheral margin and a center point within the margin, the leads being electrically connected to contact pads distributed about said center point, said margin having formed therein a plurality of pairs of slots, each of which is elongate in the direction of said center point, the slots of each pair being located on substantially diametrically opposite sides of said center point;

a protective insulating carrier providing a first seat for said film segment and from which upstands a plurality of posts each engaged in a respective one of said elongate slots

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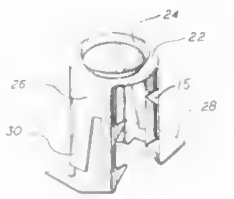
each with substantial clearance in the longitudinal direction thereof but closely fitting the slot in the transverse direction thereof; and

an insulating socket mated with said carrier and providing a second seat for said film segment, there being formed in said second seat, a plurllity of pockets each snugly receiving a respective one of said posts, a plurality of electrical contact elements provided on said second seat, each engaging a respective one of said contact pads on said film, for connecting the semiconductor device to an external circuit.

4,880,387
CONNECTOR FOR FLEXIBLE ELECTRICAL CONDUIT

Allan Stikeleather, Canton, and Geoffrey Blake, Boston, both of Mass., assignors to IBC Corporation, South Easton, Mass.
Filed Oct. 3, 1988, Ser. No. 251,798
Int. Cl.⁴ H01R *4/66*
U.S. Cl. 439—98 2 Claims



1. A one-piece, flexible conduit connector for connecting an electrical conduit having a helically grooved outer metal sheath and electrical wires within said sheath, to an electrical junction box having an opening formed in a wall thereof, said connector including:

a circular face portion having a round opening formed therethrough;

an anti-short flange surrounding said opening and projecting a predetermined distance outward from a front surface of said face portion and tapered away from said opening, said front side of said face portion facing into said junction box;

a pair of flexible arms depending from and flaring away from a rear surface of said face portion, said arms being opposite to each other around the circumference of said face portion and arcuately shaped to conform to said conduit;

a plurality of barbs formed on said flexible arms and positioned to engage said helical groove over a plurality of turns of said groove when said electrical conduit is screwed into said connector, said barbs having pointed ends engaging the surface of said grooves so as to place said metal sheath and junction box in good electrical contact with each other and to prevent said conduit from being either pulled from or backthreaded out of said connector;

a flange extending outwardly from an end of each flexible arm at angle to said flexible arm so as to abut against the outer surface of said junction box wall and limit the insertion of said connector in said junction box wall opening; and

a retaining member normally projecting out from each flexible arm, each retaining member being deflectable inwardly to allow said connector to be inserted into said junction box wall opening and springing outwardly to its normal position once said connector has been inserted in said junction box wall, thereby clamping said connector and conduit in place.

4,880,388
ELECTRICAL CONNECTOR ASSEMBLY WITH LEAD FRAME

Robert E. Beamenderfer, Palmyra; William B. Long, Camp Hill, and John R. Shuey, Mechanicsburg, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.
Filed Jul. 12, 1988, Ser. No. 217,745
Int. Cl.⁴ H01R *9/07*
U.S. Cl. 439—108 16 Claims

1. In an electrical connector for connection to corresponding signal wires and corresponding ground wires of at least one electrical cable, the connector comprising: an insulative housing block, conductive signal contacts mounted to the housing block and having corresponding wire connecting portions adapted for connection to the corresponding signal wires, and a conductive ground bus having wire connecting portions adapted for connection to the corresponding ground wires, the improvement comprising:

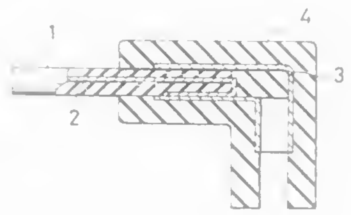
the signal contacts and the ground bus are joined together and are mounted on the housing block prior to selected ones of the signal contacts being detached from the ground bus,

means for detaching the signal contacts individually from the ground bus while the signal contacts and the ground bus remain mounted to the housing block, whereby the selected ones of the signal contacts are constructed for being detached from the ground bus, and at least one of the signal contacts remains joined to the ground bus, and

the ground wires of said at least one electrical cable are connected to the wire connecting portions of the ground bus, and the signal wires of said at least one electrical cable are connected to the wire connecting portions of the signal contacts.

4,880,389
IGNITION PLUG CONNECTOR AND MANUFACTURING METHOD

Shigehiko Mochizuki, Susono; Masahiro Kanda, and Yoshinori Serizawa, both of Gotenba, all of Japan, assignors to Yazaki Corporation, Tokyo, Japan
Filed Aug. 22, 1984, Ser. No. 643,236
Claims priority, application Japan, Aug. 23, 1983, 58-152419
Int. Cl.⁴ H01R *13/573*
U.S. Cl. 439—125 6 Claims

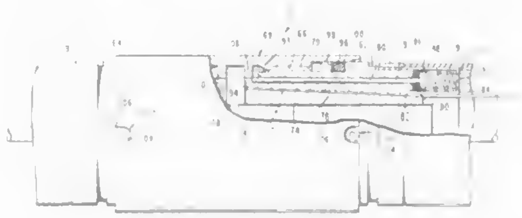


1. An ignition plug connector comprising a metallic terminal

having at one end thereof a plug receiving section for insertion of an ignition plug, at the other end thereof a cord connecting section for receiving one end portion of a high tension cord and crimped after the end portion is inserted, and, having a cut-out in the center section between said plug receiving portion and said high tension cord connecting section, a thin covering layer of silicone resin primer covering at least said end portion of said high tension cord; and a rubber cap which is formed through molding an addition reaction type silicone rubber having a viscosity from 10 to 50,000 poise to generally cover said metallic terminal and said end portion of said high tension cord; wherein said plug receiving section of said metallic terminal and said rubber cap portion axially adjacent to said plug receiving section form a hole for the ignition plug; the exposed conducting member extending from said end portion of said high tension cord contacts the inner surface of said metallic terminal; and a wall section is integrally formed with said rubber cap through said cut-out between said plug receiving section and said cord connecting portion to completely contact said exposed conducting member of the end portion of said cord and thereby eliminate air gaps in the vicinity of said exposed conducting member.

4,880,390
PRESSURE COMPENSATED INTERMODULE TOWED ARRAY CONNECTOR

Walter H. Brackmann, Jr., Apple Valley; Cornelius A. Van Gelder, Fullerton, and Roman A. Halushka, Santa Monica, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.
Continuation of Ser. No. 83,910, Aug. 6, 1987, abandoned, which is a continuation of Ser. No. 682,571, Dec. 14, 1984, abandoned, which is a continuation of Ser. No. 30,810, Apr. 17, 1979, abandoned. This application Oct. 25, 1988, Ser. No. 262,456
Int. Cl.⁴ H01R *13/523*
U.S. Cl. 439—204 20 Claims



1. A pressure compensated underwater intermodule coupling mechanism comprising:

a pair of connectors adapted to be coupled at their mating faces;

insulative fluid filled hoses and electromagnetic signal carrying conductors therein respectively coupled to and terminated by said connectors, and subject to being squeezed by underwater pressure exerted on said hoses;

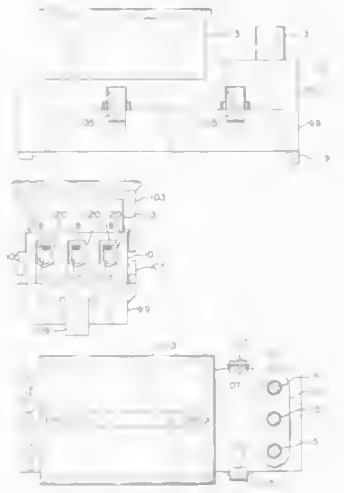
a fluid path incorporating a normally closed valve in at least one of said connectors and extending between its fluid filled hose and its connector mating face and including a movable element, sealing means and at least one groove;

an outer shell enclosing said movable element with said sealing means carried by one of said shell and said movable element and sandwiched therebetween, and said one groove being in the other of said shell and said movable element adjacent said sealing means;

a valve-opening member at said mating face of said other connector contactable with said movable element of said valve when said connectors are joined, to cause said sealing means to be positioned at said groove and to permit the underwater pressure to squeeze said hoses to force the fluid to flow through said groove and around said sealing means from at least one of said hoses to said mating faces to equalize the underwater pressure exerted on and in the joint between said connectors.

4,880,391
APPARATUS FOR CONNECTING MULTIPLE WINDINGS

Jerome P. Hurtgen, Fort Wayne, Ind., assignor to General Electric Company, Fort Wayne, Ind.
Filed Jun. 30, 1988, Ser. No. 213,720
Int. Cl.⁴ H01R *29/00*
U.S. Cl. 439—221 6 Claims



1. A dynamoelectric machine adapted for energization from a power source comprising:

a housing including a stationary assembly having a plurality of winding means for excitation upon the energization of the dynamoelectric machine and disposed in a predetermined relationship with each other, each winding means having a plurality of lead wires connectable to each other and to the power source in at least two different configurations;

a terminal box assembly mounted to said housing exteriorly thereof and having a mounting table disposed within the terminal box assembly;

a plurality of termination means for connection to said lead wires respectively;

a terminal block having a plurality of predeterminately oriented aperture means for respectively receiving said termination means;

a plug device for coupling with said terminal block in at least two different orientations to effect interconnection of the winding means in the at least two different configurations;

a base member releasably connected to said terminal block and seated in engagement on said mounting table within said terminal box assembly, said base member for releasably maintaining said base member against displacement from the seating engagement thereof with said mounting table; and

means associated with said terminal block for connecting at least some of the said termination means to the power source thereby to effect energization of the dynamoelectric machine and the excitation of said winding means in a preselected one of the two different configurations.

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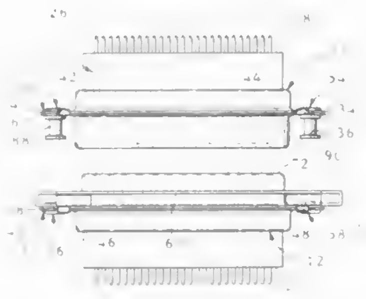
4,880,392
SLIDELATCH SECURING POST

Stephen B. Schieferly, B-11 326 Lopax Rd., Harrisburg, Pa. 17112
Continuation of Ser. No. 134,673, Dec. 18, 1987, abandoned. This application Feb. 24, 1989, Ser. No. 315,178
Int. Cl.⁴ H01R *4/50*
U.S. Cl. 439—347 6 Claims

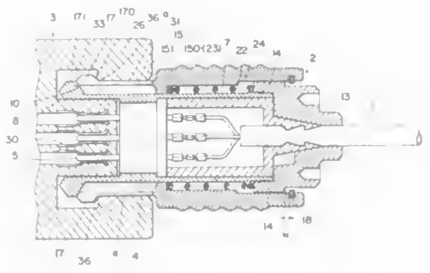


1. An electrical connector assembly comprising:
- a dielectric housing having contact receiving passages therein, said contact receiving passages having contacts secured therein;
- flange means extending from said housing, said flange means having a pair of spaced apertures therein;
- a latching member proximate the flange means, said latching member having an aperture to receive said housing and a pair of slots, at least coextensive with the spaced apertures in said flange means;
  - a securing post received in at least one of said coextensive apertures and slots, said securing post having
- a first shoulder spaced from and facing said flange means, said first shoulder engaging the latching member proximate said slots;
  - a second shoulder facing said flange means, said second shoulder engaging said flange means so as to position said first shoulder a predetermined distance from said flange means; and
  - shank means having a free end extending into said at least one coextensive aperture and slot, the free end of said shank means rolled to secure said securing post to said flange means between said second shoulder and the rolled free end while slidingly securing said latching member to said housing between said first shoulder and said flange, whereby the latching member is slidingly secured to the electrical connector assembly.

4,880,393
CONNECTOR WITH LOCKING MECHANISM

Eirou Moji, Mitaka, Japan, assignor to Moji & Co., Ltd., Tokyo, Japan
Filed Oct. 25, 1988, Ser. No. 262,009
Claims priority, application Japan, Aug. 5, 1988, 63-195838
Int. Cl.⁴ H01R *13/627*
U.S. Cl. 439—352 1 Claim

1. A connector with a locking mechanism comprising:
- a plug body made of an insulator and holding contacts;
- a cylindrical member secured to an outer periphery of said plug body;
- a slidable cover provided for forward and rearward movement on an outer periphery of said cylindrical member;
- a locking member provided for forward and rearward movement between said slidable cover and said cylindrical member;
- a spring provided between said locking member and said cylindrical member for forwardly biasing said locking member;
- said locking member being provided with an interlocking portion interlocked to said slidable cover such that it is moved rearwardly against the spring force of said spring with a rearward movement of said slidable cover, said locking member having an end capable of being elastically displaced in the radial direction of said plug body, said end of said locking member being provided with a locking portion having a rear engagement surface and a front contact surface;
- an inclined member located at a position forwardly of and near said contact surface of said locking portion and fixed in a position with respect to said plug body; and
- a socket having a contacts electrically connected to said contacts of said plug body, said socket being provided with an annular groove, into which a front portion of said cylindrical member, said inclined member and said locking portion are capable of advancing while being elastically deformed, the outer or inner periphery of said annular groove being provided with a locking recess, into which said engagement surface of said locking portion is advanced;

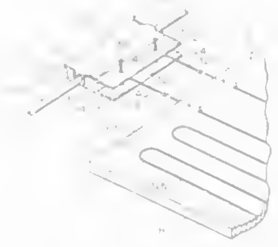


- said plug body being provided on an outer periphery thereof with a first engagement portion;
- said slidable cover being provided adjacent to its rear end with a second engagement portion for engaging with the first engagement portion of said plug body to prevent forward detachment of said slidable cover;
- said slidable cover and said locking member being provided with respective interlocking portions interlocked to each other with a rearward movement of said slidable cover, said
- wherein said interlocking portions are arranged such that a fixed gap is formed between to two in a state in which the contact surface of said locking portion provided on the front end of said locking member engages with said inclined member provided on the side of said plug body.

4,880,394
HEATING PANEL ASSEMBLY

Cuthbert J. Kilbride, Fredricton, Canada, assignor to Canray Incorporated, Oromocto, Canada
Filed Dec. 22, 1988, Ser. No. 288,452
Claims priority, application Canada, Feb. 11, 1988, 558674
Int. Cl.⁴ H01R *4/24*
U.S. Cl. 439—404 25 Claims

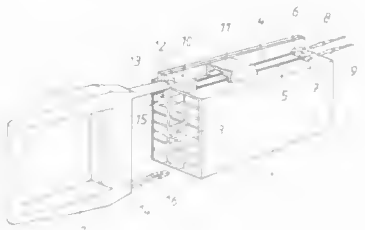
1. An electrical connector for an electrical heating panel comprising:
- an electrically insulative housing,
- panel engaging means extending outwardly from said housing,
- entry and exit ports in said housing for passage of a multiple conductor power line therethrough,
- retaining and piercing means in said housing to electrically isolate individual insulated conductors of the power line in a path between said entry and exit ports, and including electrically conductive piercing members adapted to pierce the insulation of the isolated conductors to effect electrical contact between respective piercing members and respective conductors, said piercing members being electrically isolated from each other, and



- inlet means in said housing for passage of leads from a heating panel for electrical connection with the piercing members.

4,880,395
CONTACT ON TEST SWITCH

Rolf Eriksson; Gudmar Hammarlund, both of Västerås, and Lars-Erik Sundqvist, Örebro, all of Sweden, assignors to Asea Brown Boveri AB, Västerås, Sweden
Filed Dec. 9, 1988, Ser. No. 282,273
Claims priority, application Sweden, Dec. 15, 1987, 8705000
Int. Cl.⁴ H01R *31/08, 13/00, 25/00*
U.S. Cl. 439—507 5 Claims



1. A device for achieving a contact function in a protective relay test system, said system comprising a test switch with compartments for different contact units and a test-plug handle with contact pins for activating the function of the contact units and adapted for insertion into the test switch, wherein each of the upper and/or lower side of the test switch is provided with two uninsulated, parallel contact pins/slide bars extending from the front edge of the test switch to its rear edge and each being provided at its rear edge with connection parts for transition to a common conductor, the contact pins/slide bars and the connection parts being mounted in a guide structure having an inner guide profile adapted for guiding resilient tongues arranged on the test-plug handle, each of said tongues, on that side facing the contact pins, being provided with a contact washer, and wherein contact pins, guides, tongues and contact washers cooperate in such a way that, once the test-plug handle has been inserted into the test switch, contact is made between the two contact pins/slide bars on the upper and/or lower side(s) of the test switch.

4,880,396
COAXIAL CONNECTOR

Dominic T. Lipari, Reynoldsburg, Ohio, assignor to American Telephone and Telegraph Company, AT&T Bell Laboratories, Murray Hill, N.J.
Filed Jun. 16, 1988, Ser. No. 207,674
Int. Cl.⁴ H01R *17/04*
U.S. Cl. 439—578 8 Claims

1. A coaxial connector comprising a central connector element; and an essentially cylindrical spring member surrounding at least a portion of said central connector element, said member having an essentially circular opening at one end adapted to receive therein a coaxial plug having a signal and ground conductor such that the signal conductor makes electrical contact to the central connector element and the ground conductor makes electrical contact to the spring element, said member including a plurality of slots in a portion of its surface removed from said opening, said slots extending in a direction essentially parallel to the axis of the member, the slotted portion providing a sufficient spring force to hold the ground conductor in place and maintain electrical contact thereto in the absence of any additional elements concentric with said spring member

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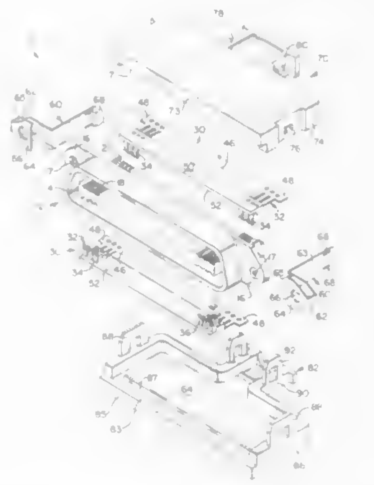
4,880,397
FILTERED CABLE HARNESS CONNECTOR ASSEMBLY

Andrew J. Dawson, Jr.; John C. Farrar, both of Harrisburg; Douglas J. Pirc, Mechanicsburg, and Atalee S. Taylor, Palmyra, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.
Filed Nov. 29, 1988, Ser. No. 277,106
Int. Cl.⁴ H01R *13/66*
U.S. Cl. 439—620 15 Claims



1. A filtered cable harness connector assembly, the assembly including a multiterminal connector having at least one row of terminals therein, at least one planar array of conductors terminated to respective ones of the terminals and extending rearwardly from the connector in a given lateral spacing, the assembly further comprising:
- a filter subassembly associated with each said at least one array of conductors and each assembly having a plurality of contact members, a plurality of filter members, means housing said contact members and said filter members, and bus means;
- said plurality of contact members having first and second contact portions, said first contact portions extending from a conductor proximate surface of said housing means and being appropriately spaced and adapted to become electrically connected with respective ones of said conductors of said at least one array;
- said housing means including a plurality of filter receiving apertures along a selected face thereof, said second

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contact portions being exposed along respective bottom surfaces of respective said apertures;

third contact portions paired with said second contact portions and spaced therefrom, said third contact portions being exposed along respective said aperture bottom surfaces;

said plurality of filter members disposed in respective said apertures and electrically joined to respective pairs of said second and third contact portions;

said bus means extending from and commoning said third contact portions and having at least one ground engageable portion exposed by said housing means;

each said filter subassembly being securable within said cable harness connector assembly along each said array of conductors rearwardly of said connector with said first contact portions electrically connectable with respective said conductors; and

means covering said connector, said at least one array of conductors and said at least one said filter assembly such that said at least one ground engageable bus portion is exposed to be engaged by grounding means.

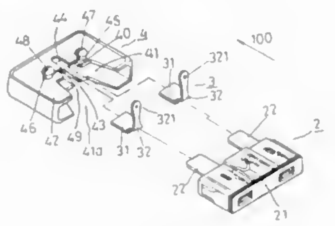
4,880,398
FUSE HOLDER FOR HOLDING A FLAT-TYPE FUSE BLOCK

Fu-Cheng Hsueh, No. 1045, Jen-Ai Tsun,, Jen-Te Hsiang, Tainan Hslen, Taiwan

Filed Aug. 17, 1988, Ser. No. 233,136

Int. Cl.⁴ H01R *33/95*

U.S. Cl. 439—622 5 Claims



1. A fuse holder for holding a flat-type fuse block having a flat body which has two broader sides separated by a series of narrower sides, a pair of male terminals, vertically and outwardly protruding via one said narrower side of the flat body from the inside thereof, and a fuse disposed inside said flat body and connected between the pair of male terminals, comprising:

a housing adapted to receive said fuse block and said pair of male terminals therein, said housing being hollow and flat with two broader sides separated by a series of narrower sides, one said narrower side of said housing being open to enable said fuse block to be inserted thereinto, one said broader side of the housing having an elongated slot with two ends substantially parallel to the opened side of said housing and a notch communicating between said slot and said open side of said housing;

only one pair of female terminals disposed within said housing and adapted to mate with said pair of male terminals, each said female terminal having a clip portion for clamping one of said male terminals and a connector portion extending at an approximate right angle from said clip portion and passing through said slot of said housing, said connector portions having been inserted into said slot via said notch, said clip portion being positioned substantially parallel to the two broader sides of the housing.

4,880,399
SOCKET

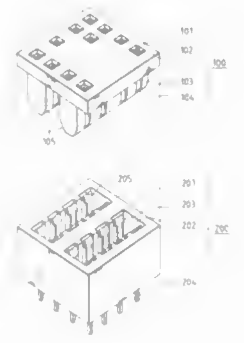
Yoshiaki Ichimura, Tokyo; Shinichi Ishizuka, Tachikawa; Mitsuo Komoto, and Shoji Umesato, both of Tokyo, all of Japan, assignors to Japan Aviation Electronics Industry, Limited and NEC Corporation, both of Tokyo, Japan

Filed Jan. 25, 1989, Ser. No. 301,098

Claims priority, application Japan, Feb. 3, 1988, 63-13388

Int. Cl.⁴ H01R *13/352*

U.S. Cl. 439—689 7 Claims



1. A socket comprising:

(A) a cover including a flat insulating member having a plurality of arrays of holes made therethrough for insertion of pins of a member to be connected to the socket, at least one insulating protrusion protrusively provided on the underside of the flat insulating member, with its side wall surfaces lying along the arrays of pin insertion holes, and guide grooves cut in the side wall surfaces of the insulating protrusion for guiding the pins inserted through the pin insertion holes; and

(B) a socket body including an insulating housing having at least one recess made therein for receiving the insulating protrusion of the cover, a plurality of contact pieces held on side walls of the recess for making contact with the pins guided by the guide grooves, and terminals electrically conducting to the contact pieces and led out of the insulating housing on the side opposite from the cover,

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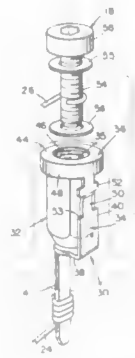
4,880,400
WIRE-WRAP CONNECTOR

Richard C. Baubles, Maplewood, N.J., assignor to Jacobson Mfg. Co., Inc., Kenilworth, N.J.

Filed Feb. 24, 1988, Ser. No. 159,930

Int. Cl.⁴ H01R *4/34*

U.S. Cl. 439—722 31 Claims



1. A connector embedded in an electrically-insulating material for receiving a first conductor in a wrapped relationship thereto and a second conductor and electrically connecting the conductors, comprising:

a first, electrically-conducting piece having a post extending from the insulating material configured to receive the first conductor wrapped thereto, and a contact portion having a contact face extending transversely to the post and a flange extending transversely to the contact face, the flange being embedded in the insulating material with the contact face of the contact portion being exposed at the surface of the insulating material, and

a second piece not unitary with the first piece including structure embedded in the electrically-insulating material and received in the flange of the first piece, and including connecting structure for connecting the second conductor to the connector and electrically connecting the second conductor to the contact face of the first piece, whereby an electrical path is established from the first conductor to the second conductor through the first, electrically-conducting piece.

4,880,401
ELECTRIC FEMALE CONNECTOR PIECE

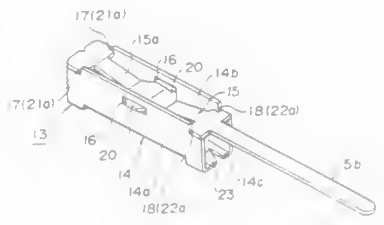
Koichi Shima, Takatsuki, and Motoyuki Tomizu, Yokobayashi, both of Japan, assignors to Omron Tateisi Electronics Company, Kyoto, Japan

Filed Sep. 27, 1988, Ser. No. 250,264

Claims priority, application Japan, Oct. 13, 1987, 62-156592[U]

Int. Cl.⁴ H01R *13/187*

U.S. Cl. 439—746 4 Claims



1. An electric female connector piece for receiving a pin-shaped male connector piece therein for achieving an electric connection therewith, comprising:

a connector piece main body having a C-shaped cross section by being provided with a pair of mutually opposing, elongated strips which are joined together at their long sides by a connecting strip;

a contact piece consisting of an elongated strip which is adapted to be disposed between said mutually opposing strips defining a cavity of a substantially rectangular cross section;

a fitting hole provided in a middle part of each of said mutually opposing strips for receiving a fitting projection provided in each lateral long edge of said contact piece;

a first engagement portion provided in each of said mutually opposing strips at its lengthwise end for engagement with a corresponding part of said contact piece;

a second engagement portion provided in each of said mutually opposing strips at its other lengthwise end for engagement with another corresponding part of said contact piece; and

a spring tab bent from the said connecting strip for elastically urging said male connector piece against said contact piece.

4,880,402
METHOD AND APPARATUS FOR PREVENTING THE ATTACHMENT OF FOREIGN BODIES TO CONTROLLABLE PITCH PROPELLER LINKAGES OF WATERCRAFT

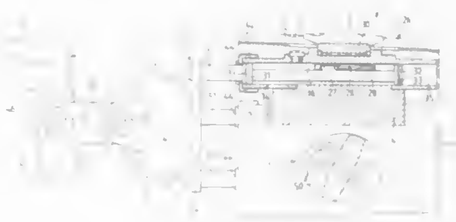
Peter Müller, Widmerstrasse 27, Zürich, Switzerland

Filed Aug. 18, 1987, Ser. No. 86,921

Claims priority, application Switzerland, Aug. 22, 1986, 3374/86

Int. Cl.⁴ B63H *3/08*

U.S. Cl. 440—50 5 Claims



1. Apparatus for use in a watercraft having a rotatable propeller drive shaft connected to a driving engine and comprising:

a coupling slidably disposed along the shaft, the coupling including a rotatable first section secured to the shaft and a non-rotatable second section spaced from the shaft and having bearing means in which the first section is rotatably disposed;

a variable pitch propeller having a hub secured to the shaft, a plurality of bearing housings secured to the hub, and a like plurality of propeller blades, each blade having a base, each base being rotatably disposed in the corresponding bearing housing;

a like plurality of connecting rods, each connecting rod having two opposite ends and being slidably disposed in the corresponding bearing housing, each connecting rod having a position of protection at which it is disposed completely in the corresponding bearing housing wherein it cannot be attacked by foreign bodies;

a like plurality of first coupling means, each first coupling means being disposed in the corresponding bearing housing to couple one end of the corresponding rod to the base of the corresponding blade;

a like plurality of second coupling means provided on said connecting rods and each coupling another end of the corresponding connecting rod to the first section of the coupling whereby movement of the second section of said coupling back and forth along the shaft appropriately adjusts the pitch of the blades, said second section being positioned to place all connecting rods in the position of protection when the engine is in an inoperative or an operative position and being so positioned, when the engine is started, as to place all connecting rods in a position at which the blades are in neutral position.

5. In a method incorporating apparatus for use in a watercraft having a rotatable propeller drive shaft connected to a driving engine wherein a coupling is slidably disposed along the shaft, the coupling having a rotatable first section secured to the shaft and a non-rotatable second section spaced from the shaft with bearing means in which the first section is rotatably disposed, and a variable pitch propeller having a hub secured to the shaft and provided with a plurality of bearing housings secured to the hub, the propeller having a like plurality of propeller blades, each blade having a base, each base being rotatably disposed in the corresponding bearing housing and wherein each of like plurality of connecting rods has two opposite ends and is slidably disposed in the corresponding bearing housing, and wherein each of a like plurality of first coupling means is disposed in the corresponding bearing housing to couple one end of the corresponding rod to the base of

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the corresponding blade and each of a like plurality of second coupling means couples another end of the corresponding connecting rod to the first section of the coupling whereby movement of the second section back and forth along the shaft appropriately adjusts the pitch of the blades, the method comprising the steps of:

(a) positioning the second section to place all connecting rods in fully concealed position within the corresponding bearing housings to prevent the connecting rods from attack from foreign bodies when the engine is in inoperative or operative position; and

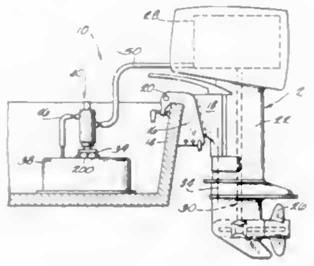
(b) when the engine is started, placing all connecting rods in a position at which the blades are in neutral position.

4,880,403
ANTI-SIPHON FUEL VALVE ASSEMBLY FOR MARINE INSTALLATIONS

Dennis J. Friedle, Lake Villa; Richard P. Kolb, Prairie View, and Kenneth M. McLeod, Lake Villa, all of Ill., assignors to Outboard Marine Corporation, Waukegan, Ill.

Filed Sep. 29, 1987, Ser. No. 108,396
Int. Cl.⁴ B63H *21/26;* **B60R** *25/04*

U.S. Cl. 440—88 21 Claims



21. A valve apparatus comprising a valve including an inlet and an outlet, set valve being locatable between a first state and a second state for respectively permitting and preventing fluid from said inlet to said outlet, solenoid means for changing the state of said valve, a valve switch actuatable between an open state and a closed state, and means responsive to the location of said valve in one of said first and second states for opening said valve switch and responsive to the location of said valve in the other of said first and second states for closing said valve switch.

4,880,404
PUPPET HAVING SLIDING FACE PANELS DEFINING A MOUTH OPENING

Leslie B. Derby, 111, Mechanicsville, Va., assignor to Prescott Durrell & Company, Richmond, Va.

Filed Aug. 5, 1988, Ser. No. 228,513
Int. Cl.⁴ A63H *3/14, 23/00, 33/00*

U.S. Cl. 446—329 8 Claims

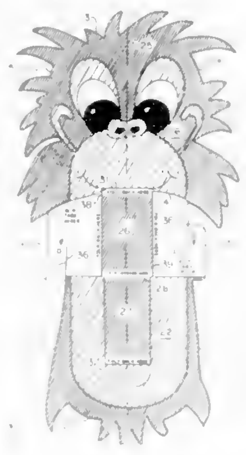
1. A puppet comprised of a single piece of substantially rigid sheet stock cut and folded so as to have:

(a) upper and lower flat face panels which in combination represent a familiar subject, each panel having upper, lower and side extremities, and front and rear surfaces, said panels having a common vertical axis, and adapted to slide in abutment upon each other in substantially coplanar relationship,

(b) a V-shaped hinge comprised of upper and lower arm panels emergent from an apex fold line and extending to distal extremities which join by way of second and third fold lines with said upper and lower face panels, respectively, said apex fold line being disposed rearwardly of said rear surfaces, parallel thereto and perpendicular to said vertical axis,

(c) finger engaging means associated with said upper arm panel, and

(d) an upwardly opening elongated slotted aperture disposed within said lower face panel in centered relationship to said vertical axis, and having a straight lower extremity which constitutes said third fold line, whereby



(e) said face panels can be manipulated to cause the upper face panel to slidably occlude portions of said slotted aperture, thereby presenting the illusion of a movable mouth.

4,880,405
UNIVERSAL JOINT OF THE CARDAN TYPE

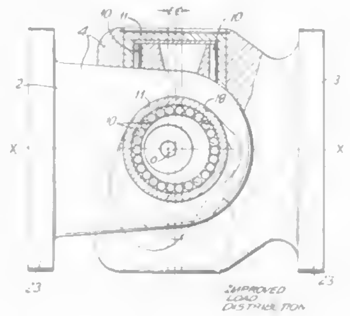
Eberhard Ende, Essen, Fed. Rep. of Germany, assignor to Gelenkwellenbau GmbH, Essen, Fed. Rep. of Germany

Filed Dec. 9, 1987, Ser. No. 130,306

Claims priority, application Fed. Rep. of Germany, Dec. 9, 1986, 3641956

Int. Cl.⁴ F15D *3/41*

U.S. Cl. 464—14 7 Claims



1. A universal joint comprising:

first and second joint yokes (2, 3) each having a connecting end (23) with a pair of yoke arms (4), a bore (18) in each yoke arm, the bores of each joint yoke lying on a different common axis and the axes of the bores of both joint yokes lying in a common plane, said connecting ends being located on opposite sides of said common plane; and

a trunnion cross (5) having four trunnions (6, 7, 8, 9) each mounted for rotation in a different one of the bores of said joint yokes for pivotally connecting said joint yokes together, said connected together joint yokes having an in-line position with a common rotation axis (x-x);

each trunnion having a radially outer end face with a recess (14) therein extending radially inwardly toward the center of said cross, the recesses of the trunnions for one joint yoke being in axial alignment with each other; and

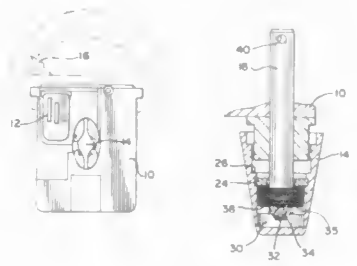
the recesses of the trunnions for each joint yoke being offset along said rotation axis from said common plane toward the connecting end of the joint yoke in which the trunnions are connected.

4,880,406
METER HANDLE MECHANISM

John W. Van Horn, and Clyde Johnson, both of Harrison, Ark., assignors to Duncan Industries Parking Control Systems Corp., Addison, Ill.

Filed May 31, 1988, Ser. No. 199,449
Int. Cl.⁴ F16D *7/04*

U.S. Cl. 464—38 3 Claims



1. A parking meter apparatus wherein time is purchased upon deposit of a token for achieving setting of a clock mechanism, a rotatable handle defining a hollow interior, a drive shaft connected between the clock mechanism and handle, and a clutch means positioned within said hollow interior for permitting selective driving of said shaft by said handle, said clutch means including releasable means engaging both said shaft and said handle, said releasable means comprising a pin, and a groove formed in said hollow interior for receiving said pin, a cap positioned within said handle, said cap defining a central opening for receiving said shaft, and said cap defining said groove for receiving said pin, said pin being connected to said drive shaft for rotation therewith, and spring means positioned within said hollow interior applying force to said pin, said spring means engaging said pin for pressing said pin into said groove, and said spring means comprising a stack of washers positioned around said shaft with at least one of said washers comprising a curved spring washer, application of excessive turning force to said handle resulting in disengagement of said pin from said groove permitting rotation of said handle relative to said shaft in opposition to the force applied by said spring means, said pin being relocated within said groove after removal of said excessive force and prior to further setting of said clock mechanism.

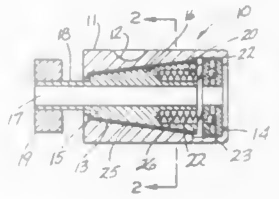
4,880,407
CONE CLUTCH

Philip H. Carton-Bacon, New Haven, Conn., assignor to Custom Products Corporation, New Haven, Conn.

Filed Feb. 16, 1988, Ser. No. 156,245
Int. Cl.⁴ F16D *7/02*

U.S. Cl. 464—43 9 Claims

1. A cone clutch comprising a housing member defining an internal frustro-conical continuous surface and having openings at either end thereof, an internal member having a mating frustro-conical continuous exterior surface received within said housing member, said housing member and said internal member being relatively rotatable, a layer of friction material disposed between said frustro-conical surfaces and being unbonded to either surface, and means biasing said internal member into engagement with said frustro-conical surface of said housing member, an extension portion on said internal member extending without said housing member, said internal member having a central passage longitudinally therethrough, said extension portion having a passage therethrough aligned with said passage in said internal member, and closure means in said housing member at the larger diameter end of said frustro-conical internal surface, said biasing means acting between said interior member and said end closure means, said closure means having a passage therethrough axially aligned with said passage in said internal member and said extension portion whereby a through passage is defined through said clutch, said mating continuous frustro-conical surfaces providing the only journaling between said housing member and said internal member.

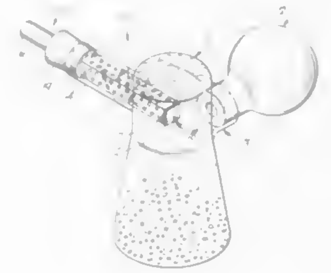


4,880,408
MEDICAL IRRIGATION DEVICE

David M. Cumes, 4147 Marina Dr., Santa Barbara, Calif. 93110, and Terence C. Honikman, 927 N. Kellogg Ave., Santa Barbara, Calif. 93111

Filed May 2, 1988, Ser. No. 189,220
Int. Cl.⁴ A61M *5/18*

U.S. Cl. 604—36 10 Claims



1. A medical irrigation device comprising a reservoir, a double-acting manually operable pump means, the reservoir having an inlet/outlet through which fluid may be displaced outwardly and inwardly by action of the pump means, a hollow member extending through the inlet/outlet the hollow elongate member having an open first end, positioned externally of the reservoir, adapted for connection to a resectoscope, and an open second end positioned within the reservoir, said second end being provided with a one-way valve means which allows fluid to pass into the reservoir, the hollow elongate member including a plurality of pores in the walls of portion of the hollow elongate member, said portion positioned within the reservoir and wherein said pores have a cross-sectional area substantially than the cross-sectional area of the second end of the hollow elongate member.

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FEEDING DEVICE

Bengt Winblad, Inst. f. Seriatrik, Karolimbe, S-14186 Huddinge, and Astrid Norberg, Inst. f. Omvardnadsforskning, Universitet, S-90187 Umea, both of Sweden

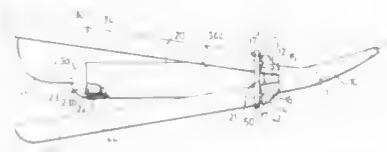
PCT No. PCT/SE87/00165, § 371 Date Feb. 22, 1988, § 102(e) Date Feb. 22, 1988, PCT Pub. No. WO87/06458, PCT Pub. Date Nov. 5, 1987

PCT Filed Mar. 31, 1987, Ser. No. 138,905

Claims priority, application Sweden, Apr. 21, 1986, 8601830

Int. Cl.⁴ A61M *31/00*

U.S. Cl. 604—73 **9 Claims**



1. A device for feeding a dosage of nutrient into the mouth of a person, said device comprising

(a) a flexible tubular container (**20**) for receiving a said dosage;

(b) a spoon-like feeding head (**10**) connected to said container and having an internal longitudinal feeding channel (**11**) extending entirely therethrough;

(c) first and second handle pieces (**30, 40**) disposed on opposite sides of said container, said handle pieces being spaced apart in rest position, but being pivotable toward each other about respective pivot axes located between said container and said feeding head, so as to compress said container to force said dosage through said feeding channel into said mouth;

(d) each of said first and second handle pieces being provided with an internal, longitudinally extending rigid body tapered toward a front end thereof, for squeezing said tubular container when said handle pieces are pivoted towards each other.

4,880,410
DISPOSABLE SYRINGE

Rene T. M. Rossmark, Amsterdam, Netherlands, assignor to NV Medicopharma, Zaandam, Netherlands

Filed Apr. 20, 1988, Ser. No. 183,852

Claims priority, application Netherlands, Apr. 21, 1987, 8700947

Int. Cl.⁴ A61M *5/00*

U.S. Cl. 604—110 **8 Claims**

1. A disposable syringe for medicinal or similar purposes, comprising a cylinder, an injection needle, a piston and a piston rod, and in which the piston may be moved out from a starting position within the syringe cylinder only once to suck a dose of injection liquid, and may thereafter be returned into the cylinder for carrying out an injection, whereas at the end of the injection stroke, the piston will enter into a position which makes it impossible to carry out another effective suction stroke, the syringe further comprising lost-motion connections means coupling the piston and the piston rod, said connection means being initially positioned so that the piston and the piston rod, as seen in the moving out direction are directly coupled; and locking means provided in an end portion of the cylinder turned away from the injection needle, said locking means being adapted to lock said piston and said piston rod in the direct coupling position along the initial portion of the injection stroke length corresponding to the length of said end portion of said cylinder such that, upon initiating of the injection stroke, a certain lost motion of the piston rod relative to said piston will take place only after a region of said cylinder comprising said locking means has been passed through.

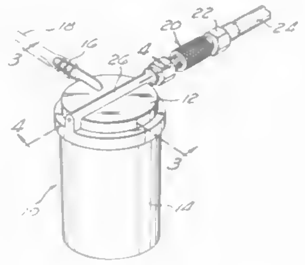
4,880,411
DISPOSABLE ASPIRATOR

Thomas F. Fangrow, Jr., Corona, and Sam C. Lim, Santa Ana, both of Calif., assignors to Life Support Products, Inc., Irvine, Calif.

Filed Apr. 1, 1988, Ser. No. 176,795

Int. Cl.⁴ A61M *37/00*

U.S. Cl. 604—149 **5 Claims**



1. A disposable aspirator, comprising:

a plastic container having an open upper end;

a generally flat cover which mates with the open end of said container to close the container;

a gas flow tube formed unitary with said cover and extending diametrically across said cover in the general plane of the cover, said tube having a gas inlet end formed unitary with an enlarged connector that extends radially beyond the periphery of said cover, said tube further having an outlet end opposite from said inlet end and terminating substantially flush with the exterior of said cover;

a venturi positioned within said tube coaxial with said tube and having a restrictor section of reduced interior diameter, said venturi restrictor section being positioned much closer to said tube outlet than to said tube inlet;

said tube having a venturi opening formed therein extending from said restrictor section and opening into said container to form a flow path so that, when high velocity fluid flows through said tube and restrictor section, a vacuum is formed within said container; and

a fluid suction conduit formed unitary with said cover, said conduit forming a flow path between the interior of the container and the exterior of the container, whereby the vacuum within the container may be applied to a fluid outside of the container to draw the fluid into the container, said conduit including a fluid inlet portion having its axis generally in the plane of said cover, said conduit inlet portion having an inlet end which extends radially beyond the periphery of the cover and is adapted to be connected to tubing for aspirating fluids into the container, said conduit further including an outlet portion which extends downwardly towards the interior of the container, said outlet portion including an upper end which joins with said inlet portion and a lower outlet end which opens into the container, said conduit outlet portion being positioned between and spaced from the upper end of the container and said gas flow tube.

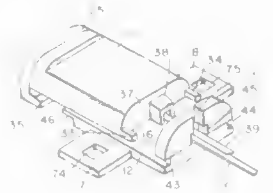
4,880,412
TUBE INSERTION APPARATUS

Sol Weiss, 17227 Quesan Pl., Encino, Calif. 91316

Filed Feb. 9, 1988, Ser. No. 153,934

Int. Cl.⁴ A61M *5/00*

U.S. Cl. 604—165 **18 Claims**



1. A device for inserting tubes of varying sizes into the body of a patient comprising:

at least a first upper needle half housing portion having a first elongated needle half arcuate in cross-section with a rear end secured to said upper needle half housing portion;

at least a second lower needle half housing portion having a second elongated needle half arcuate in cross-section with a rear end secured to said lower needle half housing portion, said lower needle half housing portion being flattened in the bottom for abutment against the skin of the patient;

removable securement means associated with both needle half housing portions for removably securing the same together so that the mating needle halves meet at mating surfaces and form a cylindrical elongated needle receiving member extending from the secured portions, and said needle half housing portions also meeting at mating surfaces, said first elongated needle half including a first straight portion secured to said upper needle half housing portion at a point remote from the mating surfaces of said upper and lower needle half housing portions and extending generally parallel to the central axis thereof along an elongated axis spaced from the mating surfaces of said upper needle half housing portions, said first needle half also having a second angled portion integral with said first portion extending away from said first portion and beyond said upper needle half housing portion, said second elongated needle half including a first straight portion secured to said lower needle half housing portion at a point remote from the mating surface of said lower needle half housing portion and extending generally parallel to the central axis thereof along an elongated axis spaced from the mating surface of said lower needle half housing portion, said second needle half also having a second angled portion integral with said first portion of said second needle half extending from said first portion of said second needle half and beyond said lower needle half housing portions, each of said first and second angled portions extending toward each other, whereby the mating needle halves extending out of the upper and lower housing portions move to a mating position with their rear ends fixed in firm position in said respective upper and lower housing portions, and a keying slot formed by the securement of said needle half housing portions opposite the end thereof from which said needle halves extend for receiving the luer adaptor of a stylet therein.

4,880,413
SHARP INSTRUMENT PROTECTION MEANS

Kenneth A. Giuffre, and Michele A. Giuffre, both of 201 Sagamore La., Franklin Lakes, N.J. 07417

Filed Feb. 4, 1988, Ser. No. 152,167

Int. Cl.⁴ A61M *5/32*

U.S. Cl. 604—192 **3 Claims**

1. A disposable protective cover for an injection syringe, for receiving said syringe and preventing injury to the user after use thereof, comprising a housing member with circular symmetry about a longitudinal axis and having a first open axial end and a second closed axial end, said housing member having a hollow cavity extending from said open axial end, said cavity having a guiding portion adjacent said open end in the form of a continously curved funnel opening, said funnel opening having interior walls being continously curved to be almost perpendicular to said axis at said open end and substantially paralled to the axis beginning at a point closer to the closed axial end of the funnel than to the open end of the funnel said cavity having a cylindrically shaped syringe retaining portion extending from said point to said closed end of said housing, the wall of said syringe retaining portion being radially thickened inwardly at least at said point to thereby form an interior step and configured throughout its length to grip and retain an inserted syringe.

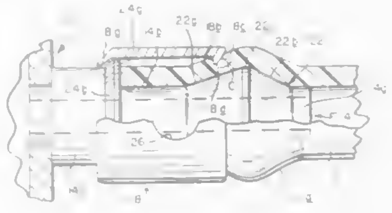
4,880,414
CATHETER ATTACHMENT SYSTEM

Gary R. Whipple, South Attleboro, Mass., assignor to Pharmacia Nu Tech, Walpole, Mass.

Filed Dec. 31, 1987, Ser. No. 140,026

Int. Cl.⁴ A61M *25/00*

U.S. Cl. 604—283 **16 Claims**



1. Connection apparatus comprising

A. a relatively rigid elongated stem, said stem having a free end, an opposite end and means defining an enlargement on the exterior surface of the stem at a selected location between said ends;

B. a flexible elastic tube having a lumen for elastically receiving a lengthwise segment of said stem including said enlargement thereof, said enlargement having a maximum diameter appreciably larger than that of the lumen so that when said stem segment is received in the lumen, said tube is stretched conformingly around said stem enlargement; and

C. tubular retainer means slidably received on said stem between said tube opposite end and said enlargement, said retainer means including radially inwardly extending rigid

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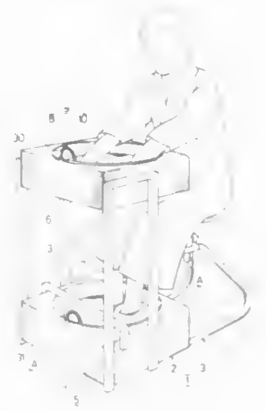
flange means at or near a distal end of said retainer means that faces said enlargement, said flange means having a fixed diameter that is less than the maximum diameter of said stem segment plus twice the wall thickness of said tube when engaged elastically on said stem segment so that when said stem segment is received in the tube lumen and said retainer means are slid toward the free end of said stem, said flange means compressively engage the elastically stretched wall of said tube at a contact surface that encircles a segment of said enlargement.

4,880,415
WARM BATH FOR HANDS AND FEET

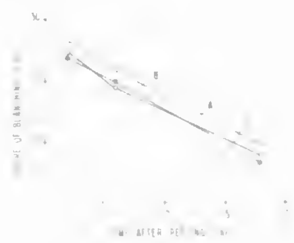
Hideaki Urakami, 6-18, Hibarigaoka 1-chome, Takarazuka-shi, Hyogo 665, Japan
PCT No. PCT/JP86/00230, § 371 Date Dec. 22, 1987, § 102(e) Date Dec. 22, 1987, PCT Pub. No. WO87/06454, PCT Pub. Date Nov. 5, 1987
PCT Filed May 2, 1986, Ser. No. 160,604
Int. Cl.⁴ A61F *7/00*
U.S. Cl. 604—291 **9 Claims**



1. A warm bath for simultaneously soaking and warming the hands and feet in a bathing agent consisting mainly of wax, the combination comprising an upper container overlying a lower container with each containing said bathing agent, connecting means connecting said upper container to said lower container, said upper and lower container each having a bottom wall and a peripheral side wall which is generally upright, said bottom wall and peripheral side wall of each container each comprising a base structure and an inner layer on said base structure, said inner layer being made of a corrosion-resistant material, abutting means on at least one of said containers for facilitating removal of wax from a person's body part, said at least one container having a top opening, said abutting means comprising a bar member mounted on said base structure and extending over said top opening of said container, said bar member having an L-shaped configuration including a first horizontal leg and a downward depending vertical leg, said vertical leg having a terminating end operable to remove said wax from a person's body parts, said base structure having a bottom outer surface juxtaposed to said bottom wall and a side outer surface juxtaposed to said side wall, first electric heater means on said bottom outer surface, second electric heater means on said side outer surface, a temperature sensor means for detecting the temperature of said bathing agent in each of said containers, and temperature control means operably connected between said temperature sensor means and said first and second electric heater means for controlling the temperature of said bathing agent in each of said containers, whereby the entire volume of the bathing agent in each of said upper and lower containers is uniformly heated by said first and second electric heater means and the temperature of the bathing agent in said upper and lower containers is maintained substantially even at all locations in the respective container by said first and second electric heater means.

4,880,416
DERMAL BANDAGE AND DERMAL PREPARATION

Tetsuo Horiuchi, and Yuichi Inoue, both of Osaka, Japan, assignors to Nitto Electric Industrial Co., Ltd., Osaka, Japan
Continuation of Ser. No. 929,115, Nov. 10, 1986, abandoned. This application Oct. 31, 1988, Ser. No. 266,318
Claims priority, application Japan, Nov. 8, 1985, 60-251734; Sep. 9, 1986, 61-212970
Int. Cl.⁴ A61F *13/02*
U.S. Cl. 604—307 **24 Claims**



1. A dermal bandage comprising a film-like adhesive material comprising:

(a) vinyl acetate polymer and

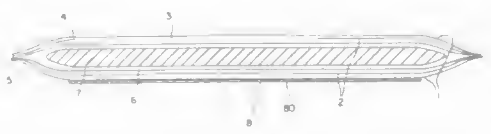
(b) at least one of polycarboxylic acid and polycarboxylic acid anhydride; wherein if a polycarboxylic acid is used, then said film-like adhesive material comprises 20% by weight or more of a —COOH group, and if a polycarboxylic acid

anhydride is used, then said film-like adhesive material comprises 16% by weight ormore of a —CO—O—CO— group; and wherein a ratio of the polycarboxylic acid and/or polycarboxylic acid anhydride to the vinyl acetate polymer is in such a range that a value defined by formula:

$$\frac{\begin{array}{c}\text{Weight of —COOH}\\ \text{in Film-like}\\ \text{Adhesive Material}\end{array} + \frac{5}{4}\begin{array}{c}\text{Weight of —CO—O—CO—}\\ \text{in Film-like}\\ \text{Adhesive Material}\end{array}}{\begin{array}{c}\text{(Weight of Polycarboxylic Acid + Weight of}\\ \text{Vinyl Acetate Polymer) in Film-like Adhesive Material}\end{array}} \times 100$$

4,880,417
DEODORIZING AND SOUND MUFFLING ANAL PAD

Alexander A. Yabrov, Princeton, and Michael Roitberg, Highland Park, both of N.J., assignors to Biological Resistance, Inc., Princeton, N.J.
Filed Oct. 16, 1987, Ser. No. 109,152
Int. Cl.⁴ A61F *5/44*
U.S. Cl. 604—355 **7 Claims**



1. An anal pad comprising:

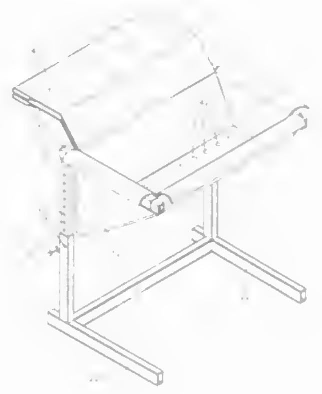
an outer shell having an interior surface;

a semi-rigid inner shell enclosed within said outer shell and fully lining an interior surface of said outer shell along a first side of said outer shell adapted to be adjacent to a user's undergarment and partially lining an interior surface of a second side of said outer shell opposite said first side and adapted to be adjacent to the user's anus so as to form a central slot in said outer shell; and

an absorbing layer located within said semi-rigid inner shell and filling the interior space of said anal pad and supporting said semi-rigid linings in spaced apart relationship to form a sound reflecting chamber, said absorbing layer trapping fecal matter and absorbing the odor of gas expulsed from the anus by flatus, and trapping the sound of flatus.

4,880,418
OBSTETRIC SAFETY DEVICE

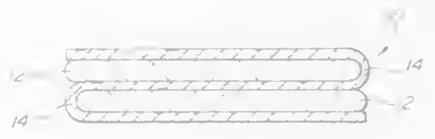
Charles V. Tramont, 929 Mennonite Rd., Mantua, Ohio 44255
Continuation-in-part of Ser. No. 30,168, Mar. 25, 1987, abandoned, which is a continuation of Ser. No. 795,513, Nov. 6, 1985, abandoned. This application Feb. 26, 1988, Ser. No. 160,815
Int. Cl.⁴ A61B *17/42*
U.S. Cl. 604—356 **11 Claims**



1. In an environment designed for facilitating a practitioner's assisting a pregnant woman in the delivery of her child, which environment comprises a first support means that supports the woman at a convenient and stable elevation above the floor, which first support means may be a delivery table or birthing bed, birthing chair, birthing stool, for examples; the improvement being an apparatus comprising a substantially planar safety net with openings through the thickness thereof in combination with a flexible baglike hygienic disposal receptacle having an opening wherein said net and said receptacle are releasably supported by means of and in combination with a second support means so the net is in a substantially horizontal orientation within the opening of said disposal receptacle, said disposal receptacle being capable of collecting and holding the wastes incident to the birthing process.

4,880,419
ABSORBENT ARTICLE WITH INTERNAL WICKING MEANS

Irving S. Ness, Palmetto Dunes, S.C., assignor to Chicopee, New Brunswick, N.J.
Continuation of Ser. No. 152,208, Feb. 3, 1988, Pat. No. 4,842,594, which is a continuation of Ser. No. 889,448, Jul. 23, 1986, abandoned, which is a continuation of Ser. No. 721,832, Apr. 10, 1985, which is a continuation-in-part of Ser. No. 525,850, Aug. 24, 1983, abandoned. This application Dec. 14, 1988, Ser. No. 284,049
Int. Cl.⁴ A61F *13/16*
U.S. Cl. 604—368 **13 Claims**



1. An absorbent article comprising at least two discrete superabsorbent containing layers and a continuous wicking means extending about and between the superabsorbent containing layers.

4,880,420
MULTIPLE STRAND ELASTIC MEANS

Vincent Pomparelli, Parlin, N.J., assignor to McNeil-PPC, Inc., Milltown, N.J.
Filed Aug. 17, 1984, Ser. No. 641,665
The portion of the term of this patent subsequent to Feb. 14, 2004, has been disclaimed.
Int. Cl.⁴ A61F *13/16*
U.S. Cl. 604—385.1 **3 Claims**

1. In a disposable diaper having elastic leg portions, said diaper comprising a liquid impermeable backing sheet, a liquid permeable facing sheet and an absorbent core disposed between said facing sheet and said backing sheet, the improvement comprising said elastic leg portions being formed by a multiplicity of substantially parallel unconnected strands of stretched elastic adhered between the facing sheet and the backing sheet by at least one continuous sinusoidal adhesive line, said adhesive line extending beyond at least one elastic strand on each side of said strand as well as across said strand and said adhesive line adhering not only at least one elastic strand but also adhering said facing layer to said backing layer.

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DISPOSABLE ABSORBENT ARTICLE SUCH AS A DIAPER OR AN INCONTINENCE PROTECTOR

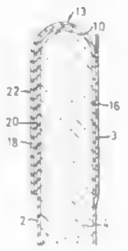
Urban Widlund, Mölnlycke, Sweden, assignor to Molnlycke AB, Goteborg, Sweden

Filed Nov. 23, 1987, Ser. No. 123,949

Claims priority, application Sweden, Nov. 26, 1986, 8605069

Int. Cl.⁴ A01F *13/16*

U.S. Cl. 604—385.2 4 Claims



1. A disposable absorbent article such as a diaper or an incontinence protector, having pressure-adhesive tape tabs for securing the article in a pant-like manner around the user's waist, the article being elongated and having opposite ends and longitudinal sides extending between said opposite ends, the article comprising an absorption body, a liquid impermeable outer layer on one side of the absorption body and a liquid permeable inner layer on the other side of the absorption body, said layers being united at least along said longitudinal sides, said pressure-adhesive tape tabs being disposed at one end of the article and being adapted to contact the other end of the article when securing the article about the user'waist, on the same side of the article as said liquid impermeable outer layer, and a strip of liquid permeable material extending transversely of the length of the article at least at said other end of the article, said strip having a portion secured between the absorption body and the liquid permeable inner layer and a portion which extends over a transverse edge of the absorption body at said other end and is directly secured to the liquid impermeable outer layer on the side of the liquid impermeable outer layer opposite the absorbent body, whereby the article has a reinforced attachment area where the liquid impermeable outer layer and said strip overlap and are directly secured together, for receiving the tape tabs, and a liquid impermeable lining around at least part of the waist opening of the article.

4,880,422

REFASTENABLE DIAPER SHEET

Robert K. McBride, Jasonville, Ind., assignor to Tredegar Industries, Inc., Richmond, Va.

Filed Jul. 5, 1988, Ser. No. 215,418

Int. Cl.⁴ A41B *13/02*

U.S. Cl. 604—389 20 Claims

1. A refastenable disposable diaper comprising a facing sheet, a backsheet, an absorbent panel positioned between said facing sheet and said backsheet and an adhesive tab fastener means having a first end fixedly attached to said backsheet and a second end refastenably attachable to said backsheet, said backsheet being characterized by comprising a resin blend consisting essentially of polypropylene and a polyethylene selected from the group consisting of LDPE, LLDPE, LMPDE or a mixture of any two of the foregoing in which from 3 to 30 weight percent of the resin blend is polypropylene, and by (ii) having a transverse direction tensile strength value at 10 percent elongation of at least 515 grams and a 120° tab adhesion value of at least 380 grams, whereby said second end of said tab fastener is non-destructably detachable from said backsheet.

4,880,423

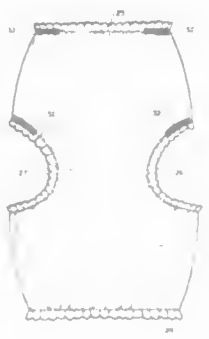
DISPOSABLE UNDERPANTS

Lyel A. Green, 5650 S. 2580 West, Roy, Utah 84067

Filed Mar. 2, 1988, Ser. No. 163,251

Int. Cl.⁴ A41B *13/02*

U.S. Cl. 604—391 1 Claim



1. A disposable underpants comprising

a sheet of composite materials including a waterproof layer and at least one absorbent layer cut to an hourglass shape having a front portion with a front edge, a back portion with a back edge, a crotch portion between the front and back portions and leg openings at opposite sides thereof extending between side edges of the front portion and side edges of the back portion;

strips of elastic sewn to the sheet along the front and back edges and along the leg openings;

strips of hooked material sewn to and overlying ends of the elastic strips adjacent the leg openings at the front portion and to and overlying ends of the leastic at the front edge of the absorbent layer face of the sheet of compsite materials; and

strips of napped material sewn through the sheet of composite material to and overlying opposite ends of the elastic means at the leg openings and to and overlying ends of the elastic strip at the back edge.

4,880,424

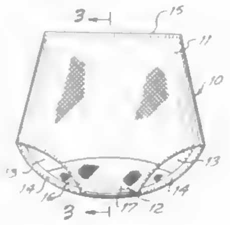
PROTECTIVE UNDERGARMENT FOR THE RETENTION OF BODY FLUIDS

Leonard J. Rautenberg, Sands Point, N.Y., assignor to Darlington Fabrics Corporation, New York, N.Y.

Filed Feb. 4, 1988, Ser. No. 152,182

Int. Cl.⁴ A61F *13/16*

U.S. Cl. 604—396 5 Claims



1. A re-usable garment to be worn on the lower part of the body for the retention of body fluids, comprising:

a body portion of a breathable, elastic, fiber-containing material and a crotch portion; said body portion having a waist opening and said body portion and crotch portion forming leg openings, said crotch portion being sewn to said body portion; and

said crotch portion being liquid-proof, breathable and elastic for the retention of body fluids and including a laminated fabric having a liquid-proof, breathable, elastic thermoplastic film inner layer and a breathable, stretch, fiber-containing material outer layer having substantial elastic qualities, said film of said film layer being a polymer film having a thickness less than 1.0 mil and having elastic qualities comparable to said stretch material; and an adhesive bonding said film layer to said layer of stretch material, said adhesive being present in substantially discontinuous segments; the material of said body portion and the material of said crotch portion outer layer being substantially similar so as to provide a uniform outer appearance of the garment similar to that of a conventional undergarment.

4,880,425

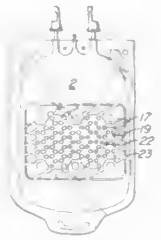
BLOOD BAG HAVING LABEL PROVIDING ENHANCED GAS TRANSMISSIBILITY

Bruce W. Kuhlemann, Hayward; Agilio E. Macabasco, and Renato R. Salumbides, both of San Dimas, all of Calif., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Filed Jun. 8, 1984, Ser. No. 618,716

Int. Cl.⁴ A61J *1/00*

U.S. Cl. 604—404 7 Claims



1. A blood or blood component container, the container demonstating gas transmissibility, and having affixed directly thereto a label, the label having an outwardly facing surface adapted to provide useful printed information and an inwardly facing surface, the inwardly facing surface having both raised and depressed portions, the raised portions comprising less than about 50% of the total inner surface area of the label and the depressed portions being interconnected and in communication with the periphery of the label to facilitate gas transmission between the interior of the container and the atmosphere surrounding the bag.

4,880,426

HAPTIC TO OPTIC ATTACHMENT FOR A SOFT IOL

Albert C. Ting, Laguna Niguel; Timothy R. Willis, El Toro; F. Richard Christ, Orange; Steven R. Bacich, Irvine; Dean K. Pettit, Irvine; Stanley L. Van Gent, Irvine, and Jeffrey C. Day, Mission Viejo, all of Calif., assignors to Allergan, Inc., Irvine, Calif.

Division of Ser. No. 96,745, Sep. 15, 1987, Pat. No. 4,790,846, which is a continuation of Ser. No. 806,376, Dec. 9, 1985, abandoned. This application Aug. 4, 1988, Ser. No. 228,709

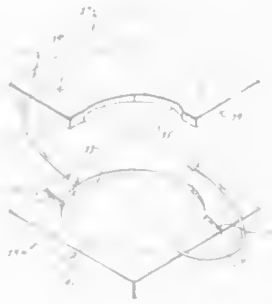
Int. Cl.⁴ A61F *2/16;* **B29D** *11/00*

U.S. Cl. 623—6 12 Claims

1. An intraocular lens comprising:

at least one fixation member having a proximal end portion, said proximal end portion including a filament and a bulbous configuration coupled to the filament and adapted to form a mechanical interlock; and

an optic cast about said bulbous configuration and the proximal end portion to form a mechanical interlock between said bulbous configuration and the optic and to attach the fixation member to the optic.



4,880,427

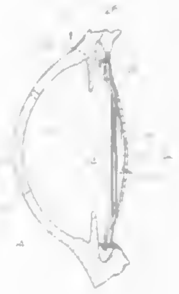
FLEXIBLE POSTERIOR CHAMBER LENS

Aziz Y. Anis, 9540 Firethorne La., Lincoln, Nebr. 68520

Continuation of Ser. No. 624,232, Jun. 25, 1984, abandoned. This application May 17, 1988, Ser. No. 201,388

Int. Cl.⁴ A61F *2/16*

U.S. Cl. 623—6 7 Claims



1. A flexible posterior chamber lens, for implantation within an eye, comprising:

a disc-shaped lens body having a front face, a convex rear face, and an outer peripheral edge;

flexible holding means secured to and extending around substantially the entire peripheral edge of said lens body and having an outer end disposed forwardly of said convex rear face in a plane perpendicular to the optical axis of said lens body so that said holding means will engage substantially the entire capsular equator when the lens is implanted to reduce cellular migration into and the opacification of the posterior capsule;

said lens body and flexible holding means being made of PMMA;

said holding means and said lens body are of one-piece construction;

said holding means including only one post member radially extending from the lens body and at least one fixation means;

said fixation means being entirely separated from said lens body by said one support post member.

4,880,428

MATTED (DELUSTERED) ARTIFICIAL HAIR

Shiro Yamada, No. 2-7-1-606, Mita, Minato-ku, Japan

Filed Apr. 19, 1988, Ser. No. 183,224

Int. Cl.⁴ A61F *2/10*

U.S. Cl. 623—15 6 Claims

1. An artificial hair having a delustered surface closely simi-

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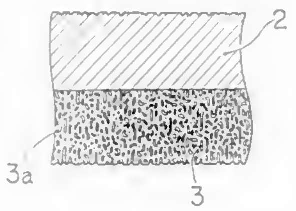
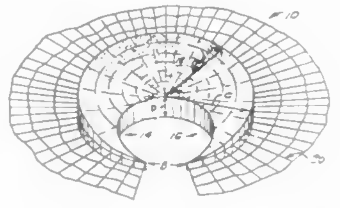
lar in gloss to that of human hair, comprising a melt-spun synthetic resin monofilament having a generally circular cross-section and an exterior surface having a large number of scrubbed flaws of irregular size and shape extending generally circumferentially about said monofilament, said scrubbed flaws extending transverse to the length of said monofilament, the surface of said monofilament being substantially devoid of scrubbed flaws extending in the longitudinal direction of said monofilament.



4,880,429
PROSTHETIC MENISCUS

Kevin R. Stone, 133 Retiro Way, San Francisco, Calif. 94123
Filed Jui. 20, 1987, Ser. No. 75,352
Int. Cl.⁴ A61F *2/30*
U.S. Cl. 623—18 12 Claims



1. A prosthetic meniscus comprising a porous dry volume matrix of Type I collagen fibers interspersed with glycosaminoglycan molecules, wherein said matrix has a substantially wedge shape including a wide central region between two narrow distal tip regions, wherein said collagen fibers are present at a concentration of about 65%-98% by dry weight, wherein said glycosaminoglycan molecules are present at a concentration of about 1%-25% by dry weight, and wherein at least a portion of said molecules provide glycosaminoglycan crosslinks between said collagen fibers, said crosslinks being dispersed substantially nonuniformly throughout said matrix, and said crosslinks having relatively high density at said tip regions and relatively low density at said central region, and wherein said matrix has a pore size substantially in the range 10-50 microns, whereby said matrix establishes an at least partially bioresorbable scaffold adapted for ingrowth of meniscal fibrochondrocytes.

4,880,430
MIXTURES OF AN ACYLATED POLYAMINE AND AN ALCOHOL-ETHER USEFUL FOR TEXTILE FINISHING

Eckart Schleusener, Reinach, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland
Filed Mar. 31, 1988, Ser. No. 175,566
Claims priority, application Fed. Rep. of Germany, Apr. 4, 1987, 3711440
Int. Cl.⁴ D06M *13/40, 15/61*
U.S. Cl. 8—188 50 Claims

1. A water-dilutable mixture of

(a) an acylated polyamine derivative selected from the group consisting of:
  1. a polyamine acylated by introduction of at least one radical of a C_{12-24}-fatty acid and oxyalkylated,
  2. an alkylated derivative of 1.,
  3. a quaternated derivative of 1. or 2.,
  4. a protonated derivative of 1., 2. or 3.,

or a mixture thereof and

(b) an alcohol-ether of the average formula

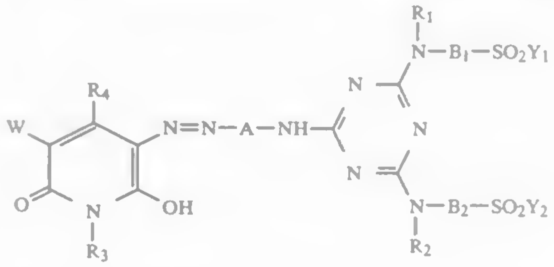
$$R—O—CH_2—CH_2—O)_nH \qquad (I),$$

wherein R is C_{1-4}-alkyl
and n is a number from 3 to 12.

4,880,431
ARYL MONOAZO PYRIDONE YELLOW COMPOUND HAVING TWO VINYLSULFONE TYPE FIBER REACTIVE GROUPS BONDED TO A TRIAZINE RING FOR DYEING CELLULOSE OR POLYAMIDE

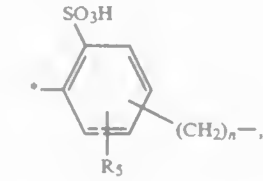
Kazufumi Yokogawa, Minoo; Naoki Harada, Suita, and Takashi Omura, Ashiya, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japa
Filed Dec. 8, 1987, Ser. No. 130,293
Claims priority, application Japan, Dec. 24, 1986, 61-310455
Int. Cl.⁴ C09B *62/51;* **D06P** *1/38*
U.S. Cl. 8—549 10 Claims

1. A compound represented by the following formula (I),



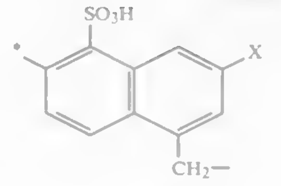
(I)

wherein R_1 and R_2 independently of one another are each hydrogen or unsubstituted or substituted alkyl, R_3 is hydrogen or alkyl, R_4 is alkyl or carboxy, A is a divalent group represented by the following formula (II) or (III) in each free acid form,



(II)

-continued



(IIII)

in which R_5 is hydrogen, methyl, methoxy, ethoxy, sulfo or carboxy, X is hydrogen or sulfo, n is 0 or 1, and the asterisked linkage bonds to the azo group, B_1 and B_2 independently of one another are each phenylene unsubstituted or substituted once or twice by methyl, methoxy, ethyl, ethoxy, chloro, bromo, sulfo or carboxy, or naphthylene unsubstituted or substituted by sulfo, W is hydrogen, carbamoyl, sulfoalkyl, cyano, sulfo, chloro or bromo, and Y_1 and Y_2 independently of one another are each $—CH{=}CH_2$ or $—CH_2CH_2Z$ in which Z is a group splittable by the action of an alkali.

4,880,432
PROCESS FOR PREPARING COLORED PARTICLES AND LIQUID DEVELOPER COMPOSITIONS THEREOF

Luke S. Egan, Kingston; Mitcheli A. Winnik, and Francoise M. Winnik, both of Toronto, all of Canada, assignors to Xerox Corporation, Stamford, Conn.
Filed Jan. 11, 1988, Ser. No. 143,790
Int. Cl.⁴ C09B *69/10*
U.S. Cl. 8—647 30 Claims

1. A process for preparing particles colored with a dye which comprises: (a) forming, by a free radical dispersion polymerization process in a nonaqueous solution, polymeric particles with an average diameter of from about 0.1 to about 20 microns and comprising macroscopic polymeric core particles having attached thereto stabilizing copolymers with at least one functional group capable of undergoing a chemical reaction with a dye; (b) adding a dye to said polymeric particles; and (c) effecting a chemical reaction between said dye and said stabilizing copolymers, thereby resulting in said dye becoming covalently bonded to the stabilizing copolymer portions of said polymeric particles.

4,880,433
PROCESS FOR AFTERTREATING CELLULOSIC MATERIALS PRINTED WITH REACTIVE DYES

Wolfgang Sütterlin, Lörrach-Haagen, Fed. Rep. of Germany, and Raymond Défago, Riehen, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.
Filed Jan. 27, 1987, Ser. No. 7,835
Claims priority, application Switzerland, Jan. 29, 1986, 327/86
Int. Cl.⁴ D06M *1/00*
U.S. Cl. 8—182 10 Claims

1. A process for aftertreating cellulose or cellulosic materials printed with reactive dyes, which comprises using an aqueous aftertreatment liquor that contains at least one cationic assistant in an amount effective to improve wetfastness properties of the dyed material, and 0.1 to 3 g/l of at least one member selected from the group consisting of an amphoteric fluorescent whitening agent and a cationic fluorescent whitening agent.

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4,880,434

METHOD OF OBTAINING DYED AND FINISHED CELLULOSE FIBER MATERIALS USING REACTIVE METALLIZED FORMAZAN DYE WITH NO COLOR CHANGE

Naoki Harada, Sulta; Tetsuya Miyamoto, Takatsuki; Kunihiko Imada, Sakai, and Takashi Omura, Kobe, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

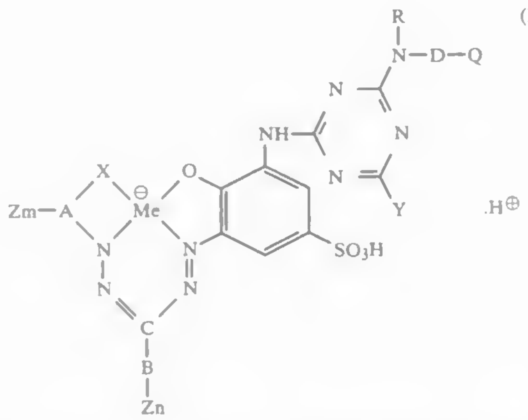
Filed Jul. 12, 1988, Ser. No. 217,631

Claims priority, application Japan, Jul. 23, 1987, 62-185283; Jul. 30, 1987, 62-191943

Int. Cl.⁴ D06P *3/66, 5/06, 1/38*

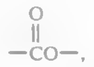
U.S. Cl. 8—549 **8 Claims**

1. A method for producing dyed and finished products of cellulose fiber materials, which comprises dyeing cellulose fiber materials with a dye represented by the following formula (I) in the free acid form,



(I)

wherein A is a substituted or unsubstituted phenylene or naphthylene group, B is a straight or branched alkyl or alkenyl group or a phenyl, naphthyl or heterocyclic group, the alkyl, alkenyl, phenyl, naphthyl and heterocyclic groups being substituted or unsubstituted, Me is an ion of a metal having an atomic number of from 27 to 29, X is —O— or



$$-\overset{\overset{\large O}{\|}}{C}O-,$$

Y is a substituted or unsubstituted lower alkoxy or phenoxy group or $—NR_1R_2$ in which R_1 and R_2 independently of one another are each a hydrogen atom or a substituted or unsubstituted lower alkyl, phenyl, naphthyl or benzyl group, Z is a water-solubility-imparting group, m and n are each 0 or an integer of 1 to 3, provided that the sum of m and n is 1 to 3, D is a substituted or unsubstituted phenylene or naphthylene group, Q is $—SO_2CH{=}CH_2$ or $—SO_2CH_2CH_2L$ in which L is a group splittable by the action of an alkali, and R is a hydrogen atom or a substituted or unsubstituted lower alkyl group, and then finishing the dyed fiber materials with a fixing agent or/and a finishing agent capable of bonding with cellulose through a bridge formation.

4,880,435

ALKALINE STORAGE CELL AND MANUFACTURING METHOD THEREFOR

Tsukasa Itou; Ryuji Kawase, both of Sumoto; Yuji Morioka, Hyogo, and Masao Ichiba, Sumoto, all of Japan, assignors to Sanyo Electric Co., Ltd., Moriguchi, Japan

Filed May 19, 1988, Ser. No. 195,755

Claims priority, application Japan, May 20, 1987, 62-123312; Nov. 27, 1987, 62-300516; Dec. 16, 1987, 62-319310; Dec. 17, 1987, 62-320224; Jan. 11, 1988, 63-3345

Int. Cl.⁴ H01M *4/26*

U.S. Cl. 29—623.5 **6 Claims**

1. A method of manufacturing a rechargeable alkaline storage cell comprising:

a first step of forming a cadmium electrode by coating a conductive support with an active material in paste form, the active material in paste form having been obtained by kneading active material powder including cadmium oxide as a main component thereof and an aqueous solution of an oxyacid salt which suppresses hydration of the cadmium oxide into cadmium hydroxide,

a second step of converting substantially all of the cadmium oxide to cadmium hydroxide by immersing said cadmium electrode in an aqueous alkaline solution of hydration, and

a third step of forming a spiral wound electrode by winding said cadmium electrode subjected to hydration and a positive electrode with a separator therebetween and incorporating said spiral wound electrode into a cell can.

4,880,436

METHOD FOR CONTROLLING VISCOSITY OF ORGANIC LIQUID AND COMPOSITIONS

Kissho Kitano, Ohi, Japan; Ilan Duvdevani, Leonia, and Donald N. Schulz, Annandale, both of N.J., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

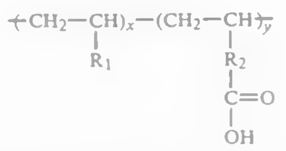
Continuation-in-part of Ser. No. 806,416, Dec. 9, 1985, Pat. No. 4,715,865, which is a continuation-in-part of Ser. No. 625,974, Jun. 29, 1984, abandoned, which is a continuation-in-part of Ser. No. 565,106, Dec. 23, 1983, abandoned. This application Nov. 20, 1987, Ser. No. 123,393

The portion of the term of this patent subsequent to Dec. 29, 2004, has been disclaimed.

Int. Cl.⁴ C10L *7/00*

U.S. Cl. 44—7.3 **3 Claims**

1. A method of viscosifying an organic liquid from about 10 to about 10,000 cps for polymer concentrations of less than about 10.0 wt.% which method comprises adding a sufficient quantity of a hydrolyzed ester containing copolymer of an alpha-olefin and a vinyl alkylenecarboxylic acid copolymerized in the presence of a Ziegler-Natta catalyst having an acid content of from about 0.01 to 10 mole percent and a molecular weight of about 100,000 to about 10,000,000 wherein said copolymer of said alpha-olefin and said vinyl alkyl-enecarboxylic acid has the formula:



$$\text{+}CH_2-\underset{\underset{R_1}{|}}{CH})_x-(CH_2-\underset{\underset{\underset{\underset{\underset{OH}{|}}{C=O}}{|}}{\underset{R_2}{|}}}{CH}\text{+}_y$$

wherein R_1 is an alkyl group having 6 carbon atoms, R_2 is an alkylene group having 3 to 16 carbon atoms, x is about 95.0 to about 99.95 mole % and y is about 0.05 to about 5.0 mole %.

4,880,437

FUEL COMPOSITIONS CONTAINING MALEIC DERIVATIVES OF 2,5-DIMERCAPTO-1,3,4-THIADIAZOLE

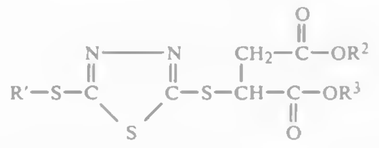
Thomas J. Karol, Norwalk, Conn., assignor to R. T. Vanderbilt Company, Inc., Norwalk, Conn.

Filed Mar. 21, 1988, Ser. No. 171,089

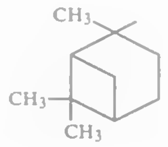
Int. Cl.⁴ C10L *1/10*

U.S. Cl. 44—57 **5 Claims**

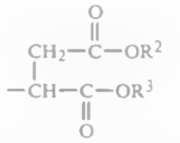
1. A diesel fuel composition characterized by improved wear properties and comprising a major portion of middle distillates boiling in the range of about 163° to 400° C. and a minor wear improving amount of a reaction product of a maleic compound and 2,5-dimercapto-1,3,4-thiadiazole selected from the group of compounds having the structural formula



wherein R' represents hydrogen, pinene residue of the formula



and maleic acid residue of the formula



$$\begin{array}{l} \quad\;\; \overset{\displaystyle O}{\|} \\ \;\; CH_2-C-OR^2 \\ \;\;\; | \\ -CH-C-OR^3 \\ \qquad\;\; \| \\ \qquad\;\; O \end{array}$$

and R^2 and R^3 represent $C_{1\text{-}22}$ alkyl and $C_{5\text{-}7}$ cycloalkyl groups and either R^2 or R^3 may be hydrogen; neutralization salts of said compounds and mixtures thereof.

4,880,438

DIP TUBE WITH JACKET

Alfred L. Den Bleyker, Houston, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Apr. 10, 1989, Ser. No. 311,266

Int. Cl.⁴ C10J *3/48, 3/84*

U.S. Cl. 48—69 **4 Claims**

1. In a gasification reactor for combusting a carbonaceous fuel to produce a hot effluent stream comprised primarily of a usable gas, said reactor including:

an elongated shell,

means forming a refractory lined combustion chamber in said shell,

burner in said shell communicated with a pressurized source of a carbonaceous fuel mixture, to discharge a flow of the fuel mixture into the combustion chamber,

means forming a quench chamber in said shell including a liquid bath beneath said combustion chamber,

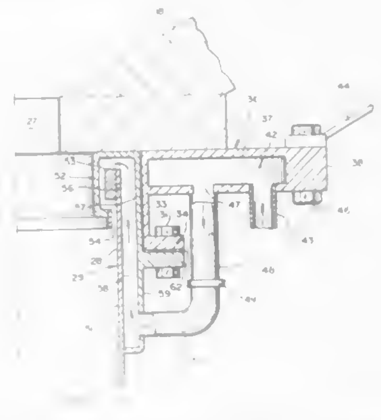
means forming a constricted throat communicating the combustion chamber with said quench chamber for conducting said produced hot effluent stream,

a quench ring in said quench chamber having means forming an annular coolant chamber communicated with a pressurized water source,

a dip tube assembly depending from said quench ring and including:

a toroidal body having an annular channel and at least one discharge port from said channel,

a cylindrical dip tube depending from said toroidal body having an inner surface which defines a guide passage for the hot effluent leaving the combustion chamber and having an outer surface,



a panel spaced from said dip tube and depending therefrom to define an intermediate jacket communicated with the annular coolant chamber and with said annular channel, respectively,

said at least one discharge port being directed into said dip tube guide passage.

4,880,439

HIGH TEMPERATURE DESULFURIZATION OF SYNTHESIS GAS

Mitri S. Najjar, Hopewell Junction, N.Y., and Allen M. Robin, Anaheim, Calif., assignors to Texaco Inc., White Plains, N.Y.

Filed May 5, 1988, Ser. No. 190,707

Int. Cl.⁴ C10J *3/46*

U.S. Cl. 48—197 R **22 Claims**

1. A continuous process for the production of desulfurized synthesis gas, fuel gas, or reducing gas comprising:

(1) reacting sulfur-containing heavy liquid hydrocarbonaceous fuel and/or sulfur-containing solid carbonaceous fuel by partial oxidation with a free-oxygen containing gas and in the presence of a temperature moderator in the free-flow refractory lined reaction zone of a gas generator at an autogenous temperature in the range of about 1900° F and above the ash-fusion temperature of the slag formed in the reaction zone, and a pressure in the range of about 2 to 250 atmospheres to produce a hot stream of synthesis gas, reducing gas, or fuel gas comprising H_2, CO, CO_2, H_2S, COS and at least one gaseous material selected from the group consisting of H_2O, N_2, CH_4, NH_3, Ar, and containing entrained material comprising particulate carbon, and molten slag;

(2) passing the hot gas stream from (1) through an unobstructed central passage of a radiant cooler, thereby cooling the process gas stream to a temperature in the range of about 1800° F. to 1200° F. while solidifying the molten slag;

(3) contacting the sulfur-containing gases in the process gas stream in said radiant cooler with a calcium-containing material after substantially all of the said molten slag has solidified, wherein said calcium-containing material is introduced into the cooled process gas stream at one or more locations within said radiant cooler, the weight ratio of calcium-containing material to sulfur is in the range of about 0.8 to 5.0 to 1.0; and the partial pressure of oxygen in the radiant cooler is in the range of less than about $1.7\times10^{31\ 15}$ atmospheres at a temperature of about 1800°

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F. and less than about $5.3 \times 10^{31\ 23}$ atmospheres at a temperature of about 1200° F.;

(4) reacting in said radiant cooler said calcium-containing material with sulfur-containing constituents in said gas stream to produce particulate matter comprising calcium sulfide; and

(5) discharging from said radiant cooler a partially cooled process stream of synthesis gas, reducing gas, or fuel gas containing entrained calcium sulfide particulate matter, particulate carbon, and slag; and in comparison with a gas stream produced without the introduction of said calcium-containing additive in (3), said cooled process gas stream contains a reduced amount of sulfur-containing gases.

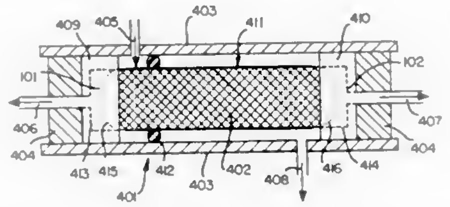
4,880,440
HOLLOW FIBER MULTIMEMBRANE CELLS AND PERMEATORS

Jerry Perrin, Charlestown, Mass., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Sep. 12, 1988, Ser. No. 242,604

Int. Cl.⁴ B01D *53/22*

U.S. Cl. 55—16 9 Claims



4. A unified multimembrane permeation cell comprising a multi permeable membrane unit comprised of at least two different hollow fiber permeable membranes wound in essentially intimate contact with each other and having a central body portion and stub ends, said central body portion comprising essentially said different hollow fiber permeable membranes in alternating contact with each other, and said stub ends each comprising essentially one of said hollow fiber permeable membranes.

7. A process for simultaneously recovering at least two different permeate streams from a multicomponent feed stream, wherein one or more permeate stream is enriched in at least one component of said feed stream and simultaneously recovering an unpermeated raffinate stream diminished in concentrations of the materials comprising the permeate streams, which comprises bringing said multi component feed stream into contact with a unified multimembrane permeation cell claimed in claim **4** and recovering said permeate and raffinate streams.

4,880,441
ASYMMETRIC GAS SEPARATION MEMBRANES HAVING GRADED DENSITY SKINS

Robert E. Kesting, Elsenfeld, Fed. Rep. of Germany; Alfred K. Fritzsche, Manchester; Milton K. Murphy, Clayton, both of Mo.; Alan C. Handerman, Matthews, N.C.; Clint A. Cruse, St. John, Mo., and Raymond F. Malon, Edmundson, Mo., assignors to Permea, Inc., St. Louis, Mo.

Continuation of Ser. No. 66,752, Jul. 6, 1987, abandoned, which is a continuation-in-part of Ser. No. 896,990, Aug. 25, 1986, abandoned. This application Jan. 12, 1989, Ser. No. 296,843

Int. Cl.⁴ B01D *53/22*

U.S. Cl. 55—16 32 Claims

1. A process for the separation of at least one gas of a gaseous mixture from at least one other gas in said gaseous mixture by selective permeation and providing a permeated product containing at least one permeating gas comprising:

a. contacting the gaseous mixture with a first surface of a multicomponent gas separation membrane having a graded density skin and essentially macrovoid-free morphology comprised of glassy, hydrophobic polymers, the graded density skin membrane having increased free volume as evidenced by the membrane first heat T_g which is greater than the T_g of a bulk sample of the glassy hydrophobic polymers, the graded density skin membrane formed from a dope having a g value of no greater than 2, the polymers of the membrane having a separation factor for the at least one gas of a gaseous mixture over that of one or more remaining gases of the gaseous mixture which when combined with a coating in occluding contact with the graded density skin membrane provides a multicomponent gas separation membrane which exhibits a selective permeability characterized by at least a 50 percent increase for the at least one gas of the gaseous mixture while maintaining an essentially constant or improved separation factor for the at least one gas of the gaseous mixture when compared to asymmetric membranes having uniform skins comprised of the same polymers and coated with the same coating materials, the determined separation factor of the multicomponent gas separation membrane being greater than the determined separation factor of the graded density skin asymmetric separation membrane and greater than the determined intrinsic separation factor of the material of the coating and the polymers comprising the graded density skin membrane exhibit a determined intrinsic separation factor greater than the determined intrinsic separation factor of the materials of the coating with respect to the at least one gas of the gaseous mixture;

b. maintaining the opposite surface of the multicomponent membrane at a lower chemical potential for said at least one permeating gas than the chemical potential at the first surface;

c. permeating said at least one permeating gas into and through the multicomponent membrane; and

d. removing from the vicinity of the opposite surface a permeated product having a different proportion of said at least one gas relative to said gaseous mixture.

8. A multicomponent gas separation membrane exhibiting significantly enhanced gas separation permeability while maintaining essentially constant or improved selectivity comprising:

an asymmetric gas separation membrane having a graded density skin and essentially macrovoid-free morphology comprised of glassy, hydrophobic polymers, the graded density skin membrane having increased free volume as evidenced by the membrane first heat T_g which is greater than the T_g of a bulk sample of the glassy, hydrophobic polymers, the graded density skin membrane formed from a dope having a g value of no greater than 2, the polymers of the graded density skin membrane having a separation factor for one gas of a gaseous mixture, which when combined with a coating in occluding contact with the graded density skin membrane provides a multicomponent gas separation membrane which exhibits a selective permeability characterized by at least a 50 percent increase for the one gas of the gaseous mixture while maintaining an essentially constant or improved separation factor for the one gas of the gaseous mixture when compared to asymmetric membranes having uniform skins comprised of the same polymers and coated with the same coating materials; the determined separation factor of the multicomponent gas separation membrane being greater than the determined separation factor of the graded density skin asymmetric separation membrane and greater than the determined intrinsic separation factor of the material of the coating and the polymers comprising the graded density skin membrane exhibit a determined intrinsic separation factor greater than the determined intrinsic separation factor of the materials of the coating with respect to at least one pair of gases in the mixture.

4,880,442
POLYIMIDE GAS SEPARATION MEMBRANES

Richard A. Hayes, Hockessin, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

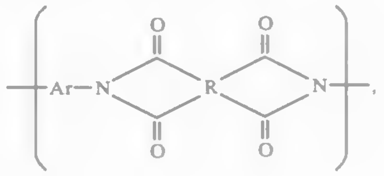
Filed Dec. 22, 1987, Ser. No. 136,846

The portion of the term of this patent subsequent to Jan. 5, 2005, has been disclaimed.

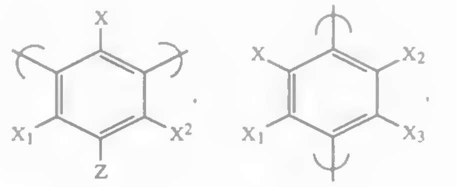
Int. Cl.⁴ B01D *53/22*

U.S. Cl. 55—16 8 Claims

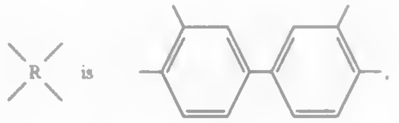
1. A process for separating one or more gases from a mixture of two or more gases comprising bringing said mixture of two or more gases under pressure into contact with one side of an aromatic gas separation membrane consisting essentially of repeating linear units of the formula:

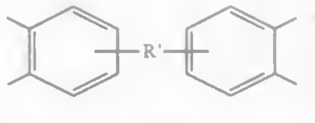


where —Ar— is

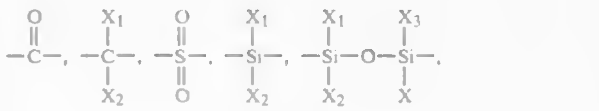


or mixtures thereof,

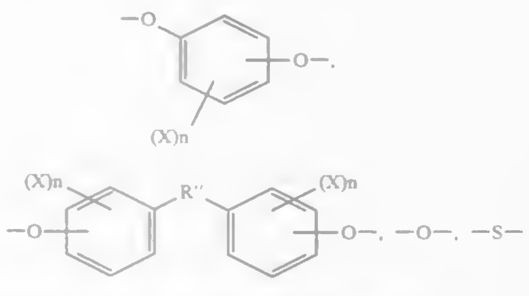




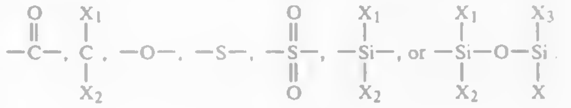
or mixtures thereof, where —X, —X_1, —X_2, and —X_3 are independently primary or secondary alkyl groups having 1 to 6 carbon atoms, —Z is —H, —X, —X_1, —X_2, or —X_3 and R' is



$$-\overset{O}{\overset{\|}{C}}-,\ -\overset{X_1}{\underset{X_2}{C}}-,\ -\overset{O}{\underset{O}{S}}-,\ -\overset{X_1}{\underset{X_2}{Si}}-,\ -\overset{X_1}{\underset{X_2}{Si}}-O-\overset{X_3}{\underset{X}{Si}}-,$$



or alkylene groups of 1 to 3 carbon atoms, and —R″— is



$$-\overset{O}{\overset{\|}{C}}-,\ \overset{X_1}{\underset{X_2}{C}},\ -O-,\ -S-,\ -\overset{O}{\underset{O}{S}}-,\ -\overset{X_1}{\underset{X_2}{Si}}-,\text{ or }-\overset{X_1}{\underset{X_2}{Si}}-O-\overset{X_3}{\underset{X}{Si}}.$$

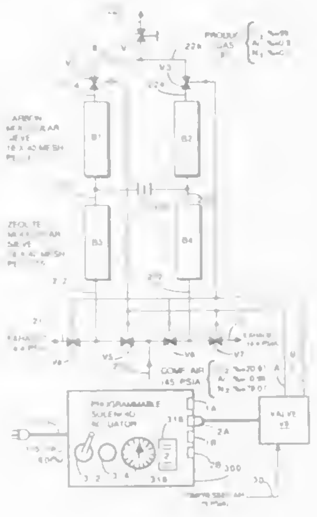
4,880,443
MOLECULAR SIEVE OXYGEN CONCENTRATOR WITH SECONDARY OXYGEN PURIFIER

George W. Miller, and Clarence F. Theis, both of San Antonio, Tex., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Dec. 22, 1988, Ser. No. 288,315

Int. Cl.⁴ B01D *53/04*

U.S. Cl. 55—26 9 Claims



1. A process for producing oxygen with a low proportion of argon from a feed gas which is compressed air, using first and second beds containing 16X40 mesh carbon molecular sieve, and third and fourth beds containing 16X40 mesh zeolite molecular sieve, operating by alternately cycling said beds through steps of adsorption and desorption, each cycle having first and second half cycles, comprising:

in each first half-cycle of operation passing said feed gas under pressure through the third and first beds in series to pressurize the beds and provide a flow of product gas at an outlet port to preferentially absorb nitrogen in the third bed and argon in the first bed and concentrate oxygen,

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while simultaneously the second and fourth beds are depressurized and the nitrogen and argon absorbed during the previous cycle are desorbed and exhausted;

and in each second half-cycle of operation passing said feed gas under pressure through the fourth and second beds in series to pressurize the beds and provide a flow of product gas at the outlet port to preferentially adsorb nitrogen in the fourth bed and argon in the second bed and concentrate oxygen, while simultaneously the first and third beds are depressurized and the nitrogen and argon adsorbed during the previous cycle are desorbed and exhausted;

whereby by repeating these steps of adsorption and desorption, a continuous stream of oxygen is produced having a purity substantially greater than that of the feed gas (up to 99.1%).

4,880,444

METHOD OF IMPROVING PERFORMANCE OF GAS-LIQUID SEPARATORS

J. George Savins, Dallas, Tex.; Scott G. Hugenberger, San Diego, Calif., and Peggy M. Wilson, Dallas, Tex., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 31, 1985, Ser. No. 815,098

Int. Cl.⁴ B01D *17/02, 19/04*

U.S. Cl. 55—36 **18 Claims**

1. A method of enhancing the separation, in a gas-liquid separator means, of a liquid from a mixture comprising a gas and at least one liquid comprising injecting into the mixture at least one additive imparting viscoelastic properties to the liquid, the amount of the additive being effective to cause the mixture to have a Screen Factor of about 3.0 to about 65.0.

4,880,445

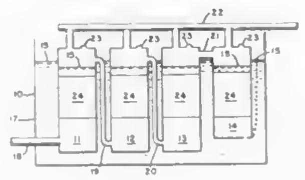
MULTIPLE STAGE GAS ABSORBER

Barnaby J. Watten, 1105 Rustic Ridge Rd., Auburn, Ala. 36830

Filed Jan. 20, 1988, Ser. No. 146,264

Int. Cl.⁴ B01D *47/00*

U.S. Cl. 55—68 **17 Claims**



17. A method for absorbing oxygen into water comprising the steps of introducing relatively pure oxygen and relatively pure water into a first compartment; absorbing about 30% of the oxygen into the water; moving the effluent gaseous products of said first absorption to a second compartment; introducing relatively pure water into the second compartment; absorbing about 20% of the original relatively pure oxygen into the water; moving the effluent gaseous products of the second absorption to a third compartment; introducing relatively pure water into the third compartment; absorbing about 10% of the oxygen into the water; moving the effluent gaseous products of the third absorption to a fourth compartment; introducing relatively pure water into the fourth compartment; absorbing about 10% of the oxygen into the water; and recovering the water having the absorbed oxygen.

4,880,446

PROCESS FOR HEATING UP MOIST GASES CONTAINING HYDROGEN HALIDES

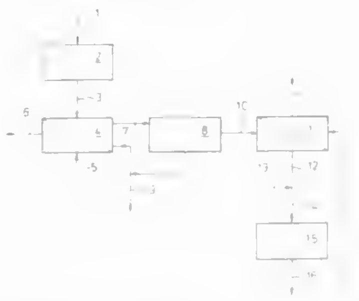
Wolfgang Dietz; Rudolf Gerken; Günter Lailach, and Peter Clasen, all of Krefeld, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jun. 6, 1988, Ser. No. 202,861

Claims priority, application Fed. Rep. of Germany, Jun. 26, 1987, 3721056

Int. Cl.⁴ B01D *53/14*

U.S. Cl. 55—71 **10 Claims**



1. A process for heating up moist gases containing hydrogen halides comprising removing the hydrogen halides from the gases by partial condensation of the water vapor, separating out the condensate and heating up the resultant gases by indirect or recuperative heat exchangers, wherein 5 to 50% of the water vapor is condensed.

4,880,447

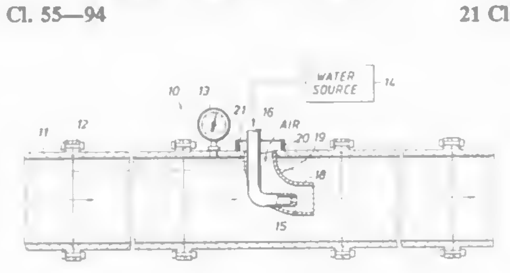
METHOD AND APPARATUS FOR STEAM FLOW VENTING INCORPORATING AIR EDUCTING MEANS

Christopher J. Bloch, Kingwood, Tex., assignor to Naylor Industrial Services, Inc., Pasadena, Tex.

Filed Nov. 22, 1988, Ser. No. 275,229

Int. Cl.⁴ B01D *19/00, 47/06*

U.S. Cl. 55—94 **21 Claims**



1. A method of venting a high velocity steam flow wherein the steam flow has sufficient velocity to develop a sonic wave causing steam flow backpressure and creating noise with venting, the method comprising the steps of:

(a) venting a steam flow at a velocity in the range of at least about 35% to a maximum velocity less than sonic velocity through a vent;

(b) spraying a cooling and decelerating fluid into the steam flow upstream of the vent; and

(c) adjusting the rate at which cooling and decelerating fluid sprayed into the steam flow wherein the fluid rate is increased to increase cooling and deceleration while not increasing the fluid such that cooled steam forms droplets collecting upstream of the vent.

4,880,448

DOUBLE FILTER INSERT FOR AN AIR CLEANING APPARATUS

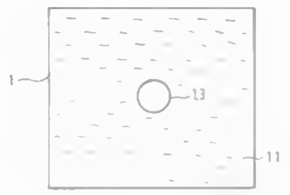
Fernand Scherrer, Isone, Switzerland, assignor to Periso SA Elektro-Industrie, Isone, Switzerland

Filed Mar. 20, 1989, Ser. No. 326,046

Claims priority, application Switzerland, Oct. 25, 1988, 3960/88

Int. Cl.⁴ B03C *3/30*

U.S. Cl. 55—103 **4 Claims**



1. A double filter insert for an air cleaning apparatus having an ionizer, consisting of a pre-filter of polyester in sheet form for retaining coarse dust particles and of a electrostatic filter of nonwoven fabric, also in sheet form, for removing also finest-grain dust particles from the air circulating through the air cleaning apparatus, the filter insert having at least one inspection opening which, for making visible the degree of contamination of the electrostatic filter, is provided in the fabric of the overlying pre-filter, the electrostatic filter in the new condition being of a distinctly brighter color than the pre-filter.

4,880,449

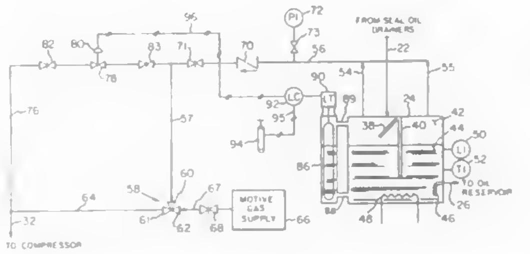
COMPRESSOR SEAL OIL DEGASSING TANK VENT GAS RECOVERY BY METHOD OF LEVEL CONTROL

Mark R. Babyak, North Huntingdon, Pa., assignor to Elliott Turbomachinery Co., Inc., Jeannette, Pa.

Filed Nov. 9, 1988, Ser. No. 269,012

Int. Cl.⁴ B01D *19/00*

U.S. Cl. 55—170 **20 Claims**



1. An apparatus for separating a gas, such as a compressor gas, from a liquid, such as a seal oil, comprising

(a) a degassing tank for receiving a mixture of gas and liquid, permitting the gas to separate from the mixture and rise to the top of the tank and permitting the liquid to separate from the mixture and settle to the bottom of the tank;

(b) a vacuum regulator for withdrawing the separated gas from the degassing tank;

(c) means for detecting the level of liquid in the degassing tank; and

(d) control means responsive to the level detecting means for controlling the vacuum regulator and reducing the gas flow therefrom as the fluid level in the degassing tank increases.

4,880,450

CYCLONE SEPARATOR HAVING WATER-STEAM COOLED WALLS

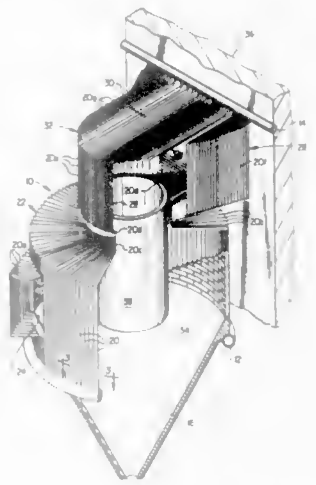
Byram J. Magol, Covent Station; John D. Fay, Randolph, and Michael Garkawe, Madison, all of N.J., assignors to Foster Wheeler Energy Corporation, Clinton, N.J.

Continuation-in-part of Ser. No. 69,930, Jul. 6, 1987, Pat. No. 4,746,337. This application Feb. 29, 1988, Ser. No. 161,632

The portion of the term of this patent subsequent to May 24, 2005, has been disclaimed.

Int. Cl.⁴ B01D *45/12*

U.S. Cl. 55—269 **6 Claims**



1. A cyclone separator comprising an inner cylinder, an outer cylinder extending around said inner cylinder in a coaxial relationship to define an annular chamber between the two cylinders, said outer cylinder comprising a plurality of tubes extending vertically and circumferentially in a parallel relationship for at least a portion of their lengths, a first ring header connected to the upper ends of said tubes and a second ring header connected to the lower ends of said tubes for circulating a cooling fluid through said outer cylinder, means for directing gases containing solid particles through said annular chamber for separating the solid particles form said gases by centrifugal forces, the separated gases exiting through said inner cylinder and the separated solids falling to the bottom of said outer cylinder for disposal or recycle, the upper end portions of said tubes being bent radially inwardly towards said inner cylinder and radially outwardly to form a roof for said annular chamber, and means for passing water or steam or a steam and water mixture through said ring headers and said tubes to cool said outer cylinder.

4,880,451

GAS/LIQUID CONTACTING APPARATUS

Gerrit Konijn, Amsterdam, Netherlands, assignor to Shell Oil Company, Houston, Tex.

Filed Feb. 10, 1989, Ser. No. 308,488

Claims priority, application United Kingdom, Mar. 3, 1988, 8805115

Int. Cl.⁴ B01D *45/16*

U.S. Cl. 55—237 **10 Claims**

1. Gas/liquid contacting apparatus comprising an upright housing provided with a gas inlet, a liquid outlet, a liquid inlet and a gas outlet arranged above the gas inlet, and a horizontal tray arranged between the gas inlet and the liquid inlet and provided with a cyclonic separator extending from below the horizontal tray to above the horizontal tray, which cyclonic separator comprises a vertical swirl tube internally provided with swirl imparting means, a coaxial gas outlet tube disposed near the upper part of the vertical swirl tube, an outer tube disposed around the swirl tube so as to define an annular space

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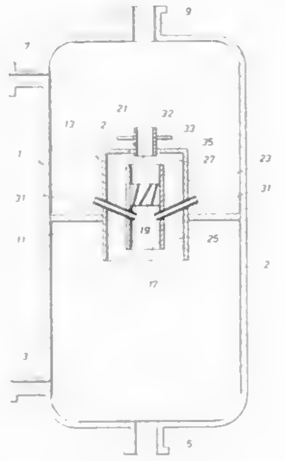
between the swirl tube and the outer tube opening below the tray, a passage communicating between the interior of the swirl tube above the swirl imparting means and the annular space, and at least one conduit extending from the exterior of the cyclonic separator above the tray to the interior of the swirl tube below the swirl imparting means, wherein the coaxial gas outlet tube is provided externally with an annular deflector, and wherein the outer tube is provided at its upper end with a gas outlet debouching below the annular deflector and with an annular cover of which the inner edge is located around the gas outlet tube below the annular deflector.



4,880,452
METHOD FOR PRODUCING GLASS PREFORM FOR OPTICAL FIBER CONTAINING FLUORINE IN CLADDING

Hiroo Kanamori; Gotaro Tanaka; Michihisa Kyoto; Naoki Yoshioka, and Futoshi Mizutani, all of Yokohama, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 47,564, May 11, 1987, abandoned, which is a continuation of Ser. No. 739,668, May 31, 1985, abandoned. This application Dec. 22, 1988, Ser. No. 289,444

Claims priority, application Japan, Jun. 4, 1984, 59-113197

Int. Cl.⁴ C03B *37/018, 37/027*

U.S. Cl. 65—3.12 **2 Claims**

1. A method for producing a glass preform for a single mode optical fiber having a cladding containing fluorine, and a core, comprising the steps of:

heating and partially fusing a porous glass rod of pure quartz to such extent that said porous glass rod is not made transparent;

heating said partially fused glass rod in an atmosphere containing fluorine to provide the addition of fluorine only to the outer portion of said porous glass rod so that the inner portion of said porous glass rod remains free of fluorine as pure quartz and to result in said porous rod becoming a substantially transparent fused glass rod;

drawing said fused glass rod, having an inner portion free of fluorine, to a certain diameter;

forming a porous glass layer of pure quartz surrounding the outer surface of said fused glass rod; and

heating said fused glass rod and said porous glass layer in an atmosphere containing fluorine to provide the addition of fluorine to said porous glass layer in an amount equal to the amount of fluorine added to said outer portion of said porous glass rod, and to result in said porous glass layer becoming substantially transparent, whereby a step index optical fiber preform is provided having a uniform amount of fluorine throughout its cladding and having a core free of fluorine.

4,880,453
METHOD FOR MAKING GLASS ARTICLES WITH DEFECT-FREE SURFACES AND SOLUBLE GLASSES THEREFOR

Frank Coppola, Big Flats; William H. Dumbaugh, Jr., Painted Post, and William P. Ryszytiwskyj, Corning, all of N.Y., assignors to Corning Incorporated, Corning, N.Y.

Filed Dec. 19, 1988, Ser. No. 286,642

Int. Cl.⁴ C03C *19/00*

U.S. Cl. 65—23 **10 Claims**

1. A method for preparing a soda lime glass article having at least one surface which is essentially defect free and is at least equivalent in smoothness to a polished surface which comprises the steps of:

(a) bringing into contact with each other a body of a soda lime glass and a body of a glass consisting essentially, expressed in terms of weight percent on the oxide basis, of 0.75–7.5% Li_2O and/or 18–27% PbO, the total Li_2O+PbO not exceeding 32%, 35–50% BaO, 0–5% Al_2O_3, 30–50% B_2O_3, and 5–10% SiO_2, said glass having a softening point between 575°–650° C., a coefficient of thermal expansion compatible with that of soda lime glass, and being at least 100 times more soluble in a particular solvent than soda lime glass, said contact being at a temperature wherein at least said more soluble glass is in fluid form to produce a laminate having an interface between said glass bodies which is essentially defect free;

(b) cooling said laminate; and then

(c) contacting said laminate with an acid solution to dissolve away said more soluble glass whereby said surface of said soda lime glass from which said more soluble glass has been removed is rendered essentially defect free and is at least equivalent in smoothness to a polished surface.

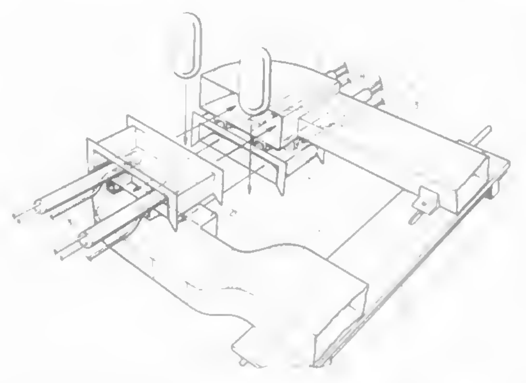
4,880,454
SYSTEM AND METHOD FOR APPLYING LUBRICANT TO CHARGES OF MOLTEN GLASS

Joseph A. Beningo, DuBois, Pa., assignor to O-I Brockway Glass, Inc., Toledo, Ohio

Filed Feb. 2, 1989, Ser. No. 305,058

Int. Cl.⁴ C03B *40/02*

U.S. Cl. 65—24 4 Claims



1. Apparatus for applying powdered graphite (lubricant) to glass gobs in free fall from a feeder, comprising first and second lubricant spray devices, said spray devices being mounted to a common support member with said devices extending horizontally outward, in parallel, from one side of said support member, said devices being in facing relationship and spaced apart an amount sufficient to permit the passage of a gob of glass therebetween when in operative position, a pair of exhaust headers associated with said spray devices, and mounting means for said support member for moving said support member into and out of position where the spray devices are directed to opposite sides of the free fall path of the gobs without crossing the free fall path of the gobs.

3. In the method of applying powdered mold lubricant to molten glass gobs in free fall from a feeder, wherein flame spray burners with entrained powdered lubricant are positioned to impinge their flames on opposite sides of the gobs, the improvement comprising evacuating the area on the opposite sides of each gob from the burner flame impingement to thereby collect and exhaust any combustion products or powdered lubricant that does not adhere to the gobs.

4,880,455
METHOD FOR THE MANUFACTURE OF SLOW-RELEASE FERTILIZERS

Itzhak Blank, Haifa, Israel, assignor to Haifa Chemicals Limited, Haifa, Israel

Filed Feb. 26, 1988, Ser. No. 160,633

Claims priority, application Israel, Mar. 24, 1987, 81975

Int. Cl.⁴ C05C *9/00, 11/00;* C05G *5/00;* C05B *7/00*

U.S. Cl. 71—28 **14 Claims**

1. A method for the manufacture of physically prepared slow-release fertilizers wherein fertilizer particles are coated by at least one layer of a substantially water-insoluble polymer possessing a three-dimensional structure, resulting from the crosslinking at a temperature in the range of 160° C. to 180° C. of a prepolymerized crosslinked unsaturated oil having between 12 to 20 carbon atoms and an iodine value of at least 120, the extent of crosslinking being above 5% gel, wherein catalysts and crosslinking agents are added during the crosslinking polymerization.

4,880,456
CYCLOHEXENONE DERIVATIVES, THEIR PREPARATION AND THEIR USE FOR CONTROLLING UNDESIRABLE PLANT GROWTH

Dieter Kolassa, Ludwigshafen; Michael Keil, Freinsheim; Ulrich Schirmer, Heidelberg; Hans Theobald, Limburgerhof; Rainer Becker, Bad Duerkheim; Bruno Wuerzer, Otterstadt, and Norbert Meyer, Ladenburg, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

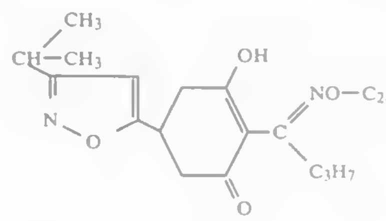
Filed Mar. 16, 1987, Ser. No. 26,378

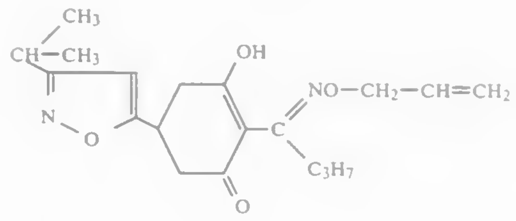
Claims priority, application Fed. Rep. of Germany, Mar. 19, 1986, 3609181

Int. Cl.⁴ C07D *261/08;* A01N *43/80*

U.S. Cl. 71—88 7 Claims

1. A compound selected from the group consisting of





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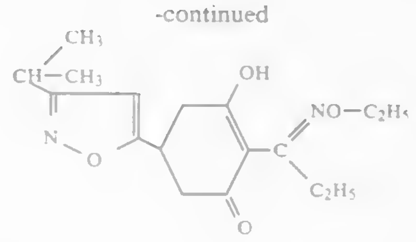
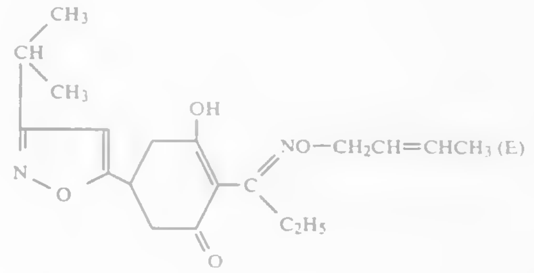
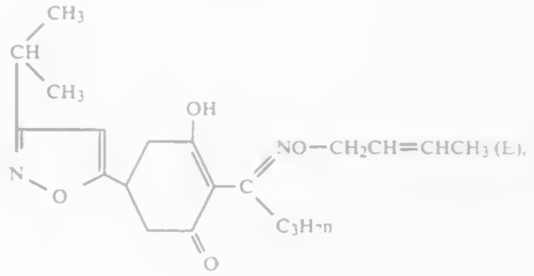
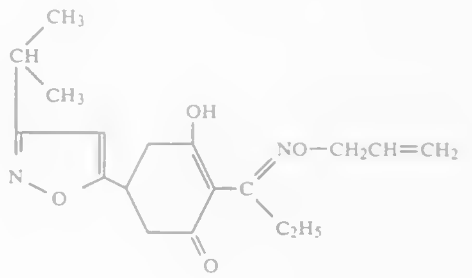






and



4,880,457
ETHERS ON ESTERS OF 1-TRIAZOLE-2-SUBSTITUTED ETHANOLS

Keith P. Parry; Paul A. Worthington, both of Maidenhead, and William G. Rathmell, Wokingham, all of United Kingdom, assignors to Imperial Chemical Industries PLC, London, United Kingdom

Continuation of Ser. No. 907,180, Sep. 16, 1986, abandoned, which is a continuation of Ser. No. 593,271, Mar. 26, 1984, abandoned, which is a continuation of Ser. No. 293,338, Aug. 17, 1981, abandoned, which is a continuation-in-part of Ser. No. 183,410, Sep. 3, 1980, Pat. No. 4,551,469, which is a continuation-in-part of Ser. No. 124,253, Feb. 25, 1980, Pat. No. 4,654,332. This application Mar. 16, 1988, Ser. No. 170,645

Claims priority, application United Kingdom, Mar. 7, 1979, 7908003; Sep. 21, 1979, 7932819; Feb. 15, 1980, 8005141; Aug. 18, 1980, 8026884

Int. Cl.⁴ A01N *43/653;* C07D *249/08*

U.S. Cl. 71—92 12 Claims

1. A compound of formula (1)

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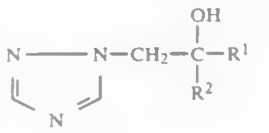


wherein R^1 is C_1–C_6 alkyl, halophenyl, cyclobutyl, cyclopropyl or cyclopentyl and R^2 is halophenyl or halophenyl substituted by C_1–C_6 alkyl or C_1–C_5 alkoxy, in the form of an ether which is a $C_{1\text{-}6}$ alkyl ether, a $C_{3\text{-}4}$ alkenyl ether or a benzyl ether wherein the benzyl is unsubstituted or substituted with chlorine, or in the form of an ester which is an alkanoyl, alkenoyl or alkynoyl, each of 1 to 4 carbons, or benzoyl or halo- or nitro-substituted benzoyl ester thereof.

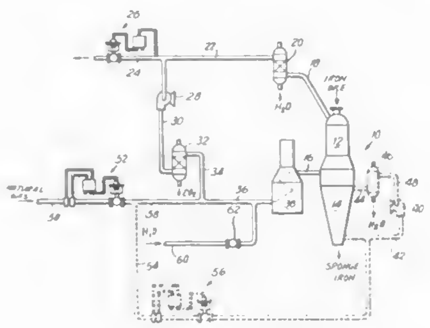
4,880,458
START-UP METHOD FOR A DIRECT REDUCTION PROCESS WITHOUT AN EXTERNAL REFORMER

Enrique R. Martinez-Vera, Monterrey, and Jorge O. Becerra-Novoa, Rinconada Colonial de Apodaca, both of Mexico, assignors to Hylsa, S.A. de C.V., Monterrey, Mexico

Continuation-in-part of Ser. No. 54,420, May 26, 1987, abandoned, which is a continuation of Ser. No. 752,974, Jul. 8, 1985, Pat. No. 4,668,284, which is a continuation of Ser. No. 494,629, May 16, 1983, Pat. No. 4,528,030. This application May 9, 1988, Ser. No. 191,702

Int. Cl.⁴ C21B *13/02*

U.S. Cl. 75—35 20 Claims



1. A method of start-up of an iron ore reduction moving-bed process, without the use of an external reformer or other external source of H_2 and/or CO, of the type wherein under steady-state conditions a stream of reducing gas comprising hydrogen and carbon monoxide is circulated in a loop comprising within a reactor a reducing zone containing particles of iron ore which are reduced to sponge iron therein, a gas heater, a water removal unit and a carbon dioxide removal unit, and wherein the reducing gas is produced within said reactor by reformation with water of source gas in the form of natural gas or of other hydrocarbons which are gaseous at reforming temperatures, which method comprises:

(a) introducing an at least partial charge of iron ore into said reactor which is essentially devoid of sponge iron and adding additional ore as needed,

(b) introducing source gas into said loop as needed so as to establish and maintain a predetermined operating range of pressure, while also heating the source gas to cracking temperatures in the range of 400° to 500° C., during which a small amount of reducing gas is produced to form a nascent process gas stream circulating in said loop,

(c) thereafter injecting water into said loop for feeding into said reducing zone and in an amount to give a molar water to carbon ratio effective to inhibit carbon deposition before an adverse level of soot can accumulate, while further heating the process gas stream up to a higher temperatures, and initiating removal of carbon dioxide from said process gas circulating in said loop,

(d) interrupting the injection of water after the temperature has risen sufficiently to favor reduction of the iron ore present in the reducing zone by H_2 and CO and after at least an effective threshold amount of H_2 is accumulated in the process gas so as to be available to initiate, in the absence of the H_2O injection, an accumulation of H_2 and CO to a volume effective ultimately to attain steady-state levels, while also further heating the process gas stream as needed up to normal operative reducing temperatures in the range of 800° to 1,000° C. and,

(e) re-initiating the injection of water after sufficient H_2 and CO have accumulated to make up at least a major portion of the process gas, while also adjusting all process feeds including iron ore for steady-state operation.

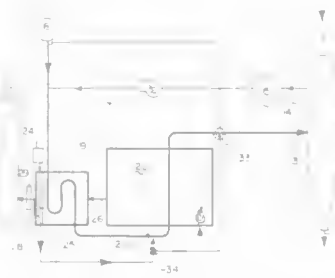
4,880,459
METHOD OF AND APPARATUS FOR REDUCING IRON OXIDE TO METALLIC IRON

Thomas J. Coyne, Jr., Clover, S.C., assignor to T.C., Inc., Clover, S.C.

Filed Jun. 27, 1988, Ser. No. 211,817

Int. Cl.⁴ C21B *13/02*

U.S. Cl. 75—35 10 Claims



1. A method for the direct reduction of iron oxide to metallic iron comprising: contacting iron oxide material in a furnace with a reducing gas consisting primarily of carbon monoxide and hydrogen; reacting the gas with the iron oxide to form substantially reduced metallic iron and a spent reducing gas consisting substantially of carbon monoxide, H_2O, and small quantities of unreacted reducing gas components; withdrawing the reacted gas from the furnace; cooling and cleaning the withdrawn reacted gas; mixing the cooled clean reacted gas with a gaseous hydrocarbon fuel; heating the gas mixture; reforming the gas mixture to a high percentage of reductants, carbon monoxide, and hydrogen; monitoring the hydrogen to carbon monoxide ratio of the reformed reducing gas and generating a signal thereby; adding steam to the heated reducing gas prior to reforming in response to said signal; and introducing the reformed reducing gas to the direct reduction shaft furnace.

4,880,460
POWDER METALLURGY HIGH SPEED TOOL STEEL ARTICLE AND METHOD OF MANUFACTURE

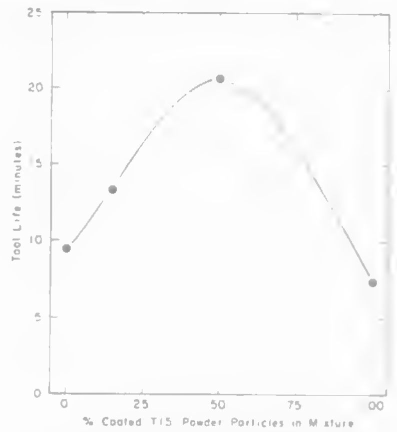
Edward J. Dulis, Pittsburgh, Pa.; Carl J. Dorsch, North Chili, N.Y., and William Stasko, West Homestead, Pa., assignors to Crucible Materials Corporation, Pittsburgh, Pa.

Division of Ser. No. 832,734, Feb. 25, 1986. This application Mar. 4, 1988, Ser. No. 164,018

Int. Cl.⁴ C22C *29/02*

U.S. Cl. 75—236 5 Claims

1. A powder-metallurgy produced high-speed tool steel article comprising a mixture of coated prealloyed high speed tool steel particles coated with a hard, wear resistant material and uncoated prealloyed high speed tool steel particles compacted to essentially full density with said hard, wear-resistant material being at boundaries of said coated particles and contained in a continuous matrix of said high speed tool steel.



4,880,461
SUPER HARD HIGH-SPEED TOOL STEEL

Norimasa Uchida, Yonago, Japan, assignor to Hitachi Metals, Ltd., Tokyo, Japan

Continuation of Ser. No. 897,402, Aug. 18, 1986, abandoned. This application Dec. 21, 1987, Ser. No. 139,161

Claims priority, application Japan, Aug. 18, 1985, 60-181555; Aug. 18, 1985, 60-181556; Aug. 18, 1985, 60-181557

Int. Cl.⁴ C22C *29/04*

U.S. Cl. 75—238 7 Claims

1. A high-speed tool steel capable of high hardness and toughness, formed by preparing an atomized matrix powder of a high-speed tool steel having a composition which satisfies the condition of $0 \leqq C - Ceq \leqq 0.6$ (where $Ceq = 0.06\ Cr + 0.033\ W + 0.063\ Mo + 0.2\ V$) within the range of $1.7 \leqq C \leqq 4.1\%$, said composition containing 3 to 10% Cr, 1 to 20% W, 1 to 15% Mo (where $18 \leqq W + 2\ Mo \leqq 40$) 1 to 15% V, not greater than 15% Co, not greater than 2% Si, not greater than 1% Mn, and the balance of said matrix being substantially Fe and inevitable impurities; uniformly mixing 88 to 98% of said matrix powder and 2 to 12%, based upon the total, of a powder of one or more hard substances selected from the group consisting of nitrides, carbides and carbonitrides mixture.

4,880,462
RAPIDLY DISSOLVING ADDITIVE FOR MOLTEN METAL METHOD OF MAKING AND METHOD OF USING

Hartmut Meyer-Grünow, Garching/Alz, Fed. Rep. of Germany, assignor to SKW Trostberg Aktiengesellschaft, Trostberg, Fed. Rep. of Germany

PCT No. PCT/EP87/00387, § 371 Date Mar. 9, 1988, § 102(e) Date Mar. 9, 1988, PCT Pub. No. WO88/00620, PCT Pub. Date Jan. 28, 1988

PCT Filed Jul. 16, 1987, Ser. No. 194,950

Claims priority, application Fed. Rep. of Germany, Jul. 16, 1987, 3624005

Int. Cl.⁴ C22C *1/05*

U.S. Cl. 75—253 22 Claims

1. Rapidly dissolving additive for molten metal consisting of from 2 to 50% by weight of a component A selected from the group consisting of an alkali metal aluminium tetrafluoride and an alkali metal aluminium tetrafluoridecontaining salt mixture, and 50 to 89% by weight of a component B which consists of at least one alloying metal, the alloying metal being different from the base metal to be alloyed, the components A and B being intimately mixed.

4,880,463
FLUORINE-FREE MOLD POWDERS

Elie E. Saad, Silver Springs, Md., assignor to Mobay Corporation, Pittsburgh, Pa.

Filed Feb. 6, 1989, Ser. No. 307,666

Int. Cl.⁴ C21B *5/04*

U.S. Cl. 75—257 7 Claims

1. A particulate slagging composition comprising glass network formers and fluxing agents therefor and characterized in the absence of fluorine therefrom said composition comprising in percent by weight:

Li_2O	0.5–9
Na_2O	29–38
CaO	0–25
B_2O_3	5–10
SiO_2	38–50

4,880,464
ELECTROLESS GOLD PLATING SOLUTION

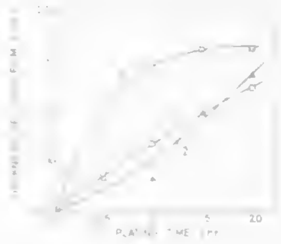
Jiro Ushio, Yokohama; Osamu Miyazawa, Yokosuka; Hitoshi Yokono, Fujisawa, and Akira Tomizawa, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 918,498, Oct. 14, 1986, abandoned. This application Jan. 14, 1988, Ser. No. 143,959

Claims priority, application Japan, Oct. 14, 1985, 60-226738; Apr. 18, 1986, 61-88269

Int. Cl.⁴ C09D *5/10*

U.S. Cl. 106—1.05 17 Claims



1. A reducing electroless gold plating solution comprising water, a thiosulfato gold(I) complex, the content of the thiosulfato gold (I) complex being from 0.001 to 0.2 mol/l, a thiosulfate complexing agent capable of being bonded to gold ion in the solution to form a complex, the content of the thiosulfate complexing agent being from 0.001 to 0.5 mol/l, thiourea, the content of the thiourea being 0.001 to 1.0 mol/l, a pH regulator and a stabilizer.

4,880,465
OPAQUE INK COMPOSITION CONTAINING HOLLOW MICROSPHERES FOR USE IN INK JET PRINTING

Adrian Loria, Wilmette, and Josephine Aguilar, Elk Grove Village, both of Ill., assignors to Videojet Systems International, Inc., Elk Grove Village, Ill.

Filed Mar. 9, 1987, Ser. No. 23,196

Int. Cl.⁴ C09D *11/02;* C08J *9/32*

U.S. Cl. 106—20 13 Claims

1. A nonpigmented ink suitable for use in ink jet printing comprising:

(a) from about 2 to about 20 percent by weight of a resin component;

(b) from about 5 to about 25 percent by weight of hollow microspheres; and

(c) the remainder being a suitable carrier vehicle comprised of water, ammonium hydroxide, and a volatile solvent; all percentages being based upon the total weight of the ink; the hollow microspheres having permeable walls comprised of a synthetic polymeric material, a central void

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region filled with water, capable of diffusing through the walls of said microspheres, an inside diameter from about 0.1 to about 0.5 micron and an outside diameter from about 0.4 to about 1 micron; the resin component, the hollow microspheres and the carrier vehicle being chemically nonreactive with each other; and the specific gravity of the ink being about equal to or greater than the specific gravity of the microspheres wherein, the ink has a viscosity at 25 degrees C. from about 3 to about 10 centipoises, an electrical resistivity from about 100 to about 3500 ohm-cm, and a sonic velocity from about 1300 to about 1700 meters/second.

4,880,466

INK FORMULATION FOR MONITORING STERILIZATION PROCESSES

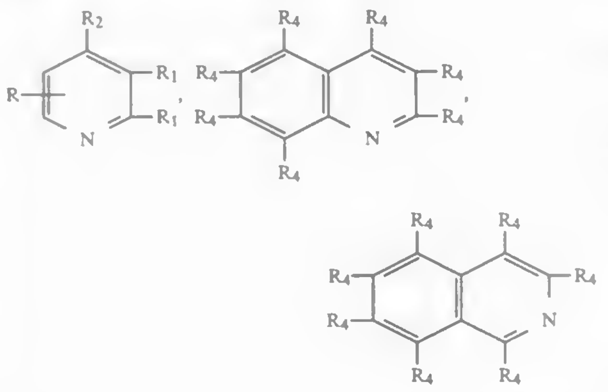
Andrew A. Zwarun, Roslyn Heights, and Gail L. Price, Ridge, both of N.Y., assignors to Edward Weck Incorporated, Princeton, N.J.

Continuation of Ser. No. 945,402, Dec. 22, 1986, abandoned. This application Jun. 9, 1988, Ser. No. 206,948

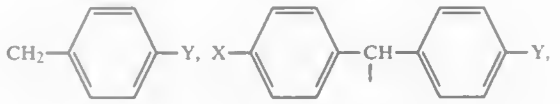
Int. Cl.⁴ C09D *11/00*

U.S. Cl. 106—21 **8 Claims**

1. In an ink formulation for monitoring a steam sterilization process, said formulation comprising an active compound selected from the group consisting of

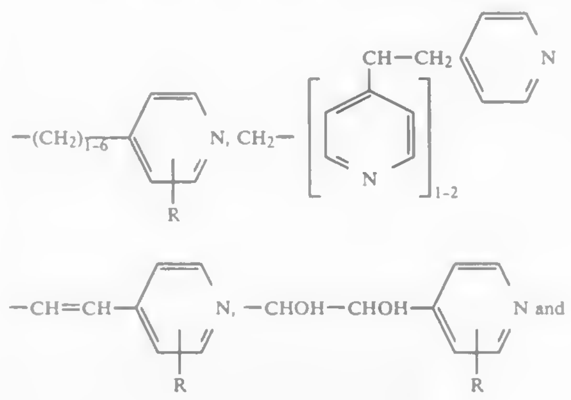


and salts thereof, wherein R_1 and R_2 are independently selected from the group consisting of hydrogen,



$-CH_2OH$, $-CH_2-CH_2-OH$, $-CH_2-CH_2-SO_3H$,

$-CH=CH_2$, $-CH=N-OH$, $-C\equiv N$,



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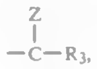


$$-\overset{Z}{\underset{}{\overset{|}{C}}}-R_3,$$

with the proviso that at least one, but not more than two of R_1 and R_2 are hydrogen; R is hydrogen, halogen or alkyl; X is hydrogen, $-N=O$, $-NO_2$, $-OH$, $-SH$, $-CH=N-OH$, alkyl or halogen; Y is hydrogen, $-N=O$, $-OH$, $-SH$, $-CH=N-OH$, alkyl or halogen, Z is oxygen or sulfur; R_3 is $-OH$, $-NH_2$, $-NH-NH_2$ or alkoxy; at least one of the R_4 groups is $-OH$, $-SH$ or $-CH=N-OH$, and the other R_4 groups are hydrogen;

the improvement wherein said ink further comprises a nitrocellulose solution and a solvent.

4,880,467

CEMENTITIOUS DOUGH OR PASTE COMPRISING AT LEAST ONE HYDRAULIC ELEMENT AND AT LEAST ONE POLYMER LATEX

Eric A. Rirsch, Billingshurst, and Howard A. Barker, Horsham, both of United Kingdom, assignors to Redland Technology Limited, Surrey, United Kingdom

Filed Oct. 1, 1987, Ser. No. 102,960

Claims priority, application United Kingdom, Oct. 3, 1986, 8623745

Int. Cl.⁴ C34B *24/28*

U.S. Cl. 106—85 **19 Claims**

1. An uncured cementitious dough or paste, which is substantially free of particulate components having a diameter greater than 100 microns said paste comprising in admixture:

(a) at least one hydraulic cement;

(b) at least one polymer latex, the polymer being present in an amount of 1 to 20 parts by weight per 100 parts of the cement;

(c) total water in an amount from 8 to 20 parts by weight of water per 100 parts by weight cement; wherein said polymer latex is a member selected from

the group consisting of natural rubber latex and a latex of a synthetic hydrophobic polymer.

4,880,468

WASTE SOLIDIFICATION COMPOSITION AND METHODS

David A. Bowlin, Cortland, and Michael J. Seyman, Warren, both of Ohio, assignors to Halliburton Services, Duncan, Okla.

Filed Sep. 29, 1988, Ser. No. 250,872

Int. Cl.⁴ C04B *7/02*

U.S. Cl. 106—98 **5 Claims**

1. A method of solidifying an agglomeration of solid and liquid waste materials resulting from drilling operations comprising:

admixing a waste solidification composition with said agglomeration in an amount of about 100 pounds per 10 to 20 cubic feet of agglomeration, said waste solidification composition consisting essentially of: hydraulic cement present in an amount of from about 60 to 98% by weight of said composition; fly ash present in an amount of rom about 1 to to about 20% by weight of said composition; and fumed silica material present in an amount of form about 1 to about 20% by weight of said composition; and

allowing said admixture of said waste solidification composition and said agglomeration to harden.

4,880,469

PROCESS FOR THE PREPARATION OF A SHAPEABLE SOLUTION OF CELLULOSE IN THE PRESENCE OF A TERTIARY AMINE OXIDE AND AN ADDITIVE

Henri D. Chanzy, La Tronche, and Michel Paillet, Grenoble, both of France, assignors to Institut Textile de France, Boulogne Billancourt Cedex and Centre de Recherche Scientifique, Paris, both of, France

Filed Jun. 27, 1988, Ser. No. 211,575

Claims priority, application France, Jul. 1, 1987, 87 09583

Int. Cl.⁴ C08L *1/00;* D01F *9/00*

U.S. Cl. 106—203 **5 Claims**

1. Process for the preparation of a cellulose solution destined to be extruded or spun, of the type in which is used as solvent for the cellulose a tertiary amine oxide characterized in that ammonium chloride or calcium chloride is added to the mixture of the tertiary amine oxide and cellulose.

4,880,470

AQUEOUS ADDITIVE SYSTEMS, METHODS AND POLYMERIC PARTICLES

Kenneth W. Hyche, and William C. Gose, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 827,042, Feb. 7, 1986, which is a continuation-in-part of Ser. No. 701,888, Feb. 15, 1985, abandoned. This application Sep. 16, 1987, Ser. No. 97,026

Int. Cl.⁴ C08L *91/06*

U.S. Cl. 106—271 **6 Claims**

1. Method of preparing aqueous emulsions which include an emulsifiable wax, a first additive components which has a melting point of 100° C. or less and a second additive component which has a melting point greater than 100° C., said method comprising

(1) mixing, by weight, about 40 to about 65 percent water, about 12 to about 20 percent of said first additive component, about 4 to about 12 percent of said second additive component, about 5 to about 20 percent of an emuldifiable wax, about 0.2 to about 1.0 percent of a base, and about 2 to about 10 percent of a surfactant;

(2) while agitating the mixture, raise temperature of mixture sufficient to melt all solids;

(3) subsequently adding more water at a temperature of at least 85° C. in an amount to yield at least 25% solids;

(4) then reheating the mixture to a temperature sufficient to maintain the solids in a molten state;

(5) maintaining the heated mixture at said temperature and under pressure sufficient to prevent boiling for a period of time to ensure homogeneity;

(6) cooling said emulsion to ambient temperature.

4,880,471

METHOD FOR DETACKIFICATION OF PAINT SPRAY OPERATION WASTES

Herbert J. Kaiser, St. Louis, Mo., assignor to Calgon Corporation, Pittsburgh, Pa.

Division of Ser. No. 77,524, Jul. 24, 1987, Pat. No. 4,759,855. This application Jun. 22, 1988, Ser. No. 209,727

Int. Cl.⁴ C09D *1/00;* B08B *7/00*

U.S. Cl. 106—286.6 **1 Claim**

1. A paint detackifying composition which consists essentially of: 0.1 to 25%, by weight, a zinc salt, 1 to 20%, by weight, ammonium hydroxide, 1 to 10%, by weight, ammonium chloride, and the balance water.

4,880,472

ORGANIC PIGMENTS COATED WITH METAL OXIDES

Philippe Bugnon, Essert; Arnold Grubenmann, Marly; Bernhard Medinger, Giffers, all of Switzerland, and Jean Schaeflé, Mulhouse, France, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

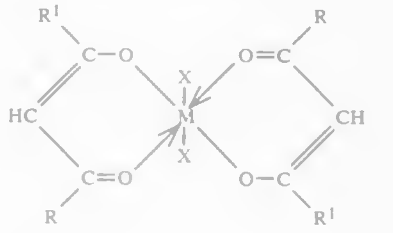
Filed Jun. 6, 1988, Ser. No. 202,865

Claims priority, application Switzerland, Jun. 16, 1987, 2256/87

Int. Cl.⁴ C08K *5/00*

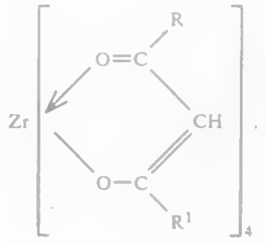
U.S. Cl. 106—493 **16 Claims**

1. A composition containing an organic pigment coated with metal oxides, wherein the pigment particles are provided with a tenacious, dense, highly crosslinked coating of silica and/or alumina which is fixed by polycondensation of a silicate and/or aluminate with the free hydroxyl groups of a layer that densely coats the surface of the pigment particles and which consists substantially of partially hydrolysed compounds of elements of group 4A or 4B of the Periodic Table selected from the group consisting of chelates of formula



(I)

or



(II)

wherein R is methyl, ethyl, methoxy or ethoxy, R^1 is methyl or ethyl and X is halogen or C_1–C_4alkoxy, and M is Ti or Sn, and of esters of formula

$$Q(OR^2)_4 \qquad \text{(III)},$$

wherein Q is an element of group 4A or 4B of the Periodic Table and R^2 is C_1–C_4alkyl.

4,880,473

PROCESS FOR THE PRODUCTION OF FERMENTABLE SUGARS FROM BIOMASS

Donald S. Scott, and Jan Piskorz, both of Waterloo, Canada, assignors to Canadian Patents & Development Ltd., Ottawa, Canada

Filed Apr. 1, 1988, Ser. No. 176,681

Int. Cl.⁴ C13K *1/04*

U.S. Cl. 127—37 **8 Claims**

1. A process for the production of fermentable sugars from cellulose-containing biomass, the process comprising the steps of:

(a) treating the biomass with a dilute acid capable of dissolving hemicellulose wherein the time and temperature of the treatment and the acid strength are selected so as to obtain a liquid phase containing most of the biomass hemicellulose and a solid phase containing most of the biomass cellulose.

(b) separating the cellulose-containing solid phase from the liquid base,

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(c) subjecting the resulting solid phase to rapid pyrolysis at atmospheric pressure and at a temperature in the range 400° C.–600° C. so as to obtain a crude product containing sugars and anhydrosugars, in a reactor where the residence time of pyrolytic vapors is less than about 2 seconds,
(d) adjusting the water content of the crude product to form an aqueous phase containing fermentable carbohydrates and a water-insoluble phase, and
(e) separating the aqueous phase from the water-insoluble phase.

4,880,474
METHOD AND APPARATUS FOR OPERATING VACUUM CLEANER

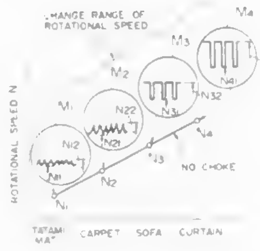
Haruo Koharagi, Ibaraki; Kazuo Tahara, Hitachi; Tsunehiro Endo, Hitachiota; Kunio Miyashita, Hitachi; Yoshitaro Ishii, Hitachi; Fumio Jyoraku, Hitachi; Syuji Watanabe, Ibaraki; Hisanori Toyoshima, Hitachi; Kohichi Saito, Kitaibaraki; Wakichiro Hishi, Nagareyama, and Koujirou Yamashita, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 8, 1987, Ser. No. 105,598

Claims priority, application Japan, Oct. 8, 1986, 61-237938; Oct. 8, 1986, 61-237942; Oct. 8, 1986, 61-237943; Mar. 6, 1987, 62-50073; Mar. 23, 1987, 62-65608; Mar. 25, 1987, 62-69072; Apr. 3, 1987, 62-80950; Apr. 3, 1987, 62-80951

Int. Cl.^{4} B08B *7/00, 7/04*

U.S. Cl. 134—21 9 Claims



1. A method of operating a vacuum cleaner having a filter to collect dusts and a variable speed fan motor to give a suction force to a cleaner, comprising the steps of:

sequentially detecting a rotational speed of said fan motor at predetermined intervals during the cleaning;
presuming a cleaning surface or an object to be cleaned from a fluctuation mode based on a change in said detected rotational speed within a predetermined sampling time; and
automatically adjusting an input of the fan motor to set the rotational speed to a speed suitable for said presumed cleaning surface or object to be cleaned whereby the rotational speed of the motor can be automatically operated in the optimum condition in accordance with the cleaning surface or object being cleaned.

4,880,475
METHOD FOR MAKING STABLE OPTICALLY TRANSMISSIVE CONDUCTORS, INCLUDING ELECTRODES FOR ELECTROLUMINESCENT DEVICES

Joseph Lindmayer, Rockville, Md., assignor to Quantex Corporation, Rockville, Md.

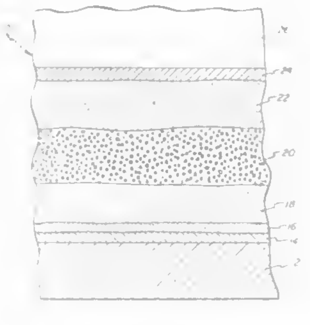
Division of Ser. No. 813,929, Dec. 27, 1985, Pat. No. 4,748,375. This application Mar. 14, 1988, Ser. No. 167,348

Int. Cl.^{4} B05D *5/06*

U.S. Cl. 427—69 8 Claims

1. A method of making an optically transmissive electrode structure for an electroluminescent device, said method comprising:

providing an optically transmissive substrate having an optically transmissive electrically conductive layer of indium tin oxide formed thereon; and
electrically stabilizing the indium tin oxide layer by:



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coating the indium tin oxide layer with a metal selected from a group consisting of palladium and nickel in a layer less than 100 angstroms in thickness; and
oxidizing the metal layer.

4,880,476
PROCESS FOR THE PHOSPHATE CHEMICAL CONVERSION TREATMENT OF A STEEL MATERIAL

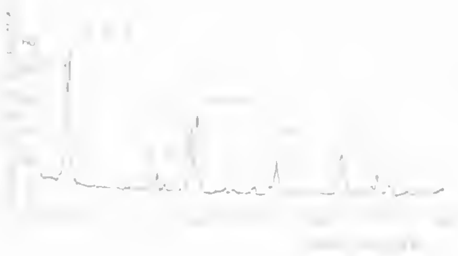
Shigeki Matsuda, Okazaki; Kazuhiko Mori, Hiratsuka; Wataru Gotou, Kariya, and Takahiro Ohnuki, Nagoya, all of Japan, assignors to Nippondenso Co., Ltd. and Nihon Parkerizing Co., Ltd., both of Tokyo, Japan

Filed Dec. 9, 1987, Ser. No. 130,495

Claims priority, application Japan, Dec. 9, 1986, 61-291574; Nov. 30, 1987, 62-300150

Int. Cl.^{4} C23C *22/12*

U.S. Cl. 148—253 13 Claims



1. A process of phosphate conversion treatment for a steel material comprising bringing a steel material into contact with a phosphate chemical conversion treatment liquid containing mixed anions consisting of phosphate ions and at least one other type of active anions, at least one type of metal ions capable of forming a chemical conversion coating layer, and an oxidizing agent, to provide a phosphate chemical conversion coating layer on the surfaces of the steel material, wherein the temperature of the phosphate chemical conversion treatment liquid is controlled to a level of 40° C. or less without external heating of the liquid, and the composition of the phosphate chemical conversion treatment liquid is controlled in a manner such that the ratio)P/An) of a weight (P) of the phosphate ions to a total weight (An) of the mixed anions therein is ½ or less, the pH thereof is in the range of from 0.5 to 4.5 and the oxidation-reduction potential (hydrogen standard electrode potential) of at least 300 mV wherein, the process as claimed in claim **12**, wherein, in the control of the ratio P/An, the pH and the oxidation-reduction potential of the phosphate chemical conversion treatment liquid respectively to a predetermined level.

(A) when the pH of the treatment liquid becomes higher than a predetermined maximum level, a principal feed including the chemical conversion coating layer-forming metal ions and the active anions is added to the treatment liquid, and when the pH of the treatment liquid becomes lower than a predetermined minimum level, an aqueous alkali solution is added to the treatment liquid;
(B) when the ORP of the treatment liquid becomes higher than a predetermined maximum level, an aqueous solution containing Fe^{2+} ions is added to the treatment liquid, and when the ORP of the treatment liquid becomes lower than a predetermined minimum level, an aqueous solution containing an oxidizing agent is added to the treatment liquid, and
(C) when the electroconductivity (EC) of the treatment liquid becomes lower than a predetermined minimum value, the above-mentioned principal feed is added to the treatment liquid, and when the EC of the treatment liquid becomes higher than a predetermined maximum level, the principal feed is not added to the treatment liquid even if the value of the pH is higher than the predetermined maximum level.

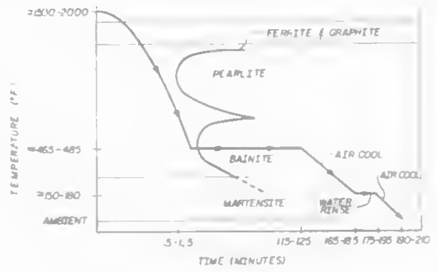
4,880,477
PROCESS OF MAKING AN AUSTEMPERED DUCTILE IRON ARTICLE

William J. Hayes, Shelby; Harry A. Matrone, North Muskegon, and Philip D. Johnson, Whitehall, all of Mich., assignors to Textron, Inc., Providence, R.I.

Filed Jun. 14, 1988, Ser. No. 207,187

Int. Cl.^{4} C21D *9/00*

U.S. Cl. 148—141 23 Claims



1. A process of making an austempered ductile iron article having selected portions thereof hardened and other portions unhardened, comprising:

casting an article from a cast iron composition including, by weight, 3.40% to 3.90% carbon, 1.90% to 2.70% silicon, up to 1.40% manganese, up to 1.5% molybdenum, up to 0.08% phosphorus, up to 2.0% copper and a balance of iron; and
austenitizing the selected portions only of the article in non-austempered condition at a first temperature in a range of 1420° F and 2100° F for a period of one second to 100 seconds;
quenching the article to a second temperature of 450° F to 850° F within 180 seconds;
tempering the article at said second temperature for a period of 10 minutes to 240 minutes; and
cooling the article to ambient temperature,
whereby a layer of austempered ductile iron is formed at the selected portions of the article.

4,880,478
PROTECTIVE COATING FOR STEEL SURFACES AND METHOD OF APPLICATION

Dario A. Emeric, Alexandria; Christopher E. Miller, Burke; Bryan Westich, Woodbridge, and Lisa R. Whiting, Centerville, all of Va., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 22, 1988, Ser. No. 288,357

Int. Cl.^{4} C23C *22/13*

U.S. Cl. 148—248 5 Claims

1. A method for converting corroded steel surfaces to adherent substrates suitable for accepting organic coatings comprising the steps of:

(a) applying a first high-intensity water spray to the surface;
(b) draining excess water from the surface;
(c) applying thereon a first coat of a composition comprising the following ingredients, with their respective volume or weight percentage ranges:

an aliphatic alcohol	2–20% v/v
phosphoric acid	5–15% v/v
an alkali nitrate	0.3–3% w/v
tannic acid	0.1–2% w/v
zinc nitrate	0.3–3% w/v
surface active agent	0.1–1% w/v and
water, softened	balance

wherein % v/v denotes volume percent, e.g. ml per 100 ml of solution, and % w/v denotes weight percent, e.g. grams per 100 ml of solution,
(d) allowing the surface to dry at least 12 hours but not more than 24 hours,
(e) applying a second high-intensity water spray to the surface to remove any unreacted ingredients of said composition,
(f) draining excess water from the surface;
(g) applying thereon a second coat of said composition
(h) allowing the surface to dry at least 12 hours but not more than 24 hours,
(i) rinsing the surface with aqueous alkali bicarbonate solution for sufficient time to remove any unreacted ingredients of said composition,
(j) rinsing the surface with flowing water for sufficient time to completely remove any alkali bicarbonate solution, and
(k) allowing it to dry for at least one hour but not more than 12 hours, thereby forming a adherent substrate for better adhesion of paint.

4,880,479
COLD DRAWN FREE-MACHINING RESULFURIZED AND REPHOSPHORIZED STEEL BARS HAVING CONTROLLED MECHANICAL PROPERTIES AND CONTROLLED MACHINABILITY

Stephen P. Birman, Mayfield Heights; Richard B. Smith, Elyria, and Richard L. Thompson, Amherst, all of Ohio, assignors to Stanadyne, Inc., Windsor, Conn.

Continuation-in-part of Ser. No. 872,544, Jun. 10, 1986, abandoned. This application Jun. 9, 1988, Ser. No. 204,308

Int. Cl.^{4} C22C *38/60, 38/12*

U.S. Cl. 148—320 13 Claims

1. A cold drawn resulfurized and rephosphorized free-machining steel bar formed by cold drawing a hot rolled steel bar having the composition, consisting essentially of, by weight:

C up to 0.08%
Mn 0.6% to 1.4%
Si up to 0.1%
P 0.03% to 0.09%
S 0.25% to 0.50%
Cb 0.02% to 0.10%
the sum of Ni, Cr, Mo, and Cu up to 0.15%, and
balance iron.

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4,880,480

HIGH STRENGTH HOT ROLLED STEEL SHEET FOR WHEEL RIMS

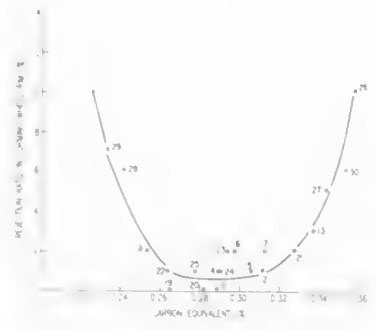
Ichiro Kokubo, Hyogo; Kazuhiko Kourida; Shunichi Hashimoto, both of Kobe; Kazuhiro Mimura, Hyogo, and Zenichi Shibata, Kobe, all of Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Continuation of Ser. No. 822,485, Jan. 24, 1986, abandoned. This application Aug. 17, 1987, Ser. No. 87,967

Claims priority, application Japan, Jan. 24, 1985, 60-11198; May 13, 1985, 60-101790; May 13, 1985, 60-101789

Int. Cl.⁴ C22C *38/14*

U.S. Cl. 148—320 **3 Claims**



1. A high strength hot rolled steel sheet for wheel rims, consisting of, by weight, from 0.05–0.15% of C, from 0.05–0.5% of Si, from 1.0–1.6% of Mn, from 0.01–0.05% of Al, from 0.005–0.025% of Ti and from 15–60 ppm of N, with the content of P limited to 0.030% or below and the content of S limited to 0.010% or below, the balance being iron and unavoidable impurities, and wherein

the carbon equivalent $Ceq=C+Si/24+Mn/6$ is in the range of from 0.25–0.34%.

4,880,481

PUNCH AND COUNTER PUNCH PLATES

Werner J. Jerlich; Alfred Kügler, both of Mürzzuschlag; Hans Kaiserfeld, Krieglach; Anton Schulhofer, Langenwang, and Werner Zechner, Kapfenberg, all of Austria, assignors to Böhler Ges.m.b.H., Kapfenberg, Austria

Continuation-in-part of Ser. No. 861,419, May 9, 1986, abandoned. This application Mar. 11, 1988, Ser. No. 167,018

Claims priority, application Austria, May 21, 1985, 1529/85

The portion of the term of this patent subsequent to Jan. 14, 2003, has been disclaimed.

Int. Cl.⁴ C22C *38/20, 38/40*

U.S. Cl. 148—325 **6 Claims**

1. A punch and counter punch plate fabricated from a chromium containing alloy essential consisting of, each in percent by weight:

carbon	in a maximum of	0.05
silicon	in a maximum of	1.0
manganese	in a maximum of	1.5
chromium	in the range of	11 to 17.5
molybdenum	in a maximum of	1.5
nickel	in the range of	3 to 10
copper	in the range of	1.5 to 4.5
niobium	in the range of	0 to 0.45
titanium	in the range of	0 to 1.5
nitrogen	in a maximum of	0.1,

the remainder being iron and impurities resulting from manufacturing conditions;

said chromium containing alloy having a hardness amounting to at least 45 HRC and at most 54 HRC; and

said chromium containing alloy having a minimum initial stress value of 950 N/mm^2 for initiation of stress corrosion cracking in a humid atmosphere.

4,880,482

HIGHLY CORROSION-RESISTANT AMORPHOUS ALLOY

Koji Hashimoto, 2-25-5 Shogen, Sendai, Miyagi; Kimikado Miura, Ichihara; Katsuhiko Asami, and Asahi Kawashima, both of Sendai, all of Japan, assignors to Mitsui Engineering & Shipbuilding Co., Ltd., Tokyo and Koji Hashimoto, Sendai, both of, Japan

Filed Apr. 19, 1988, Ser. No. 183,553

Claims priority, application Japan, Apr. 28, 1987, 62-105300

Int. Cl.⁴ C22C *30/02*

U.S. Cl. 148—403 **3 Claims**

3. A highly corrosion-resistant amorphous alloy consisting of 15 to 85 at% in the total of at least one element selected from the group consisting of Ti and Zr and at least 1 at% of the sum of Ta and Nb, and the balance being substantially Cu.

4,880,483

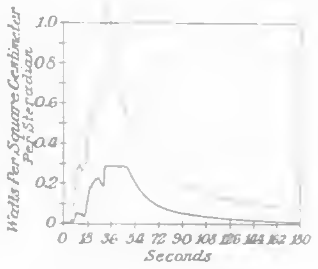
PYROPHORIC COMPOSITION

Alfonso L. Baldi, Wynnewood, Pa., assignor to Alloy Surfaces Company, Inc., Wilmington, Del.

Continuation-in-part of Ser. No. 862,712, May 13, 1986, Ser. No. 857,939, Apr. 30, 1986, Ser. No. 849,533, Apr. 8, 1986, Ser. No. 830,767, Feb. 19, 1986, Pat. No. 4,799,979, Ser. No. 685,910, Dec. 27, 1984, Ser. No. 643,781, Jul. 17, 1984, Pat. No. 4,820,362, Ser. No. 559,334, Dec. 8, 1983, abandoned, Ser. No. 507,174, Jun. 23, 1983, Pat. No. 4,694,036, Ser. No. 479,211, Mar. 28, 1983, and Ser. No. 281,405, Jul. 8, 1981, Pat. No. 4,708,913. This application Sep. 11, 1987, Ser. No. 96,368

Int. Cl.⁴ C06G *45/32*

U.S. Cl. 149—6 **16 Claims**



1. A thermite-type mixture of powdered oxide oxidizer and powdered metal reducer that interact when ignited to generate very large quantities of heat, the mixture being in thermal contact with a truly pyrophoric material which when exposed to air, pyrophorically reacts with oxygen and generates sufficient heat for a sufficiently long time to ignite the thermite-type mixture, the combination being housed out of contact with oxygen.

4,880,484

METHOD FOR MANUFACTURING AND MARKING CABLE

Manfred Obermeier, Eckental, and Erhard Herrmann, Heroldsberg, both of Fed. Rep. of Germany, assignors to Kabelmetal Electro GmbH, Hanover, Fed. Rep. of Germany

Filed Nov. 18, 1988, Ser. No. 272,905

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1987, 3743470

Int. Cl.⁴ H01B *13/00, 7/36*

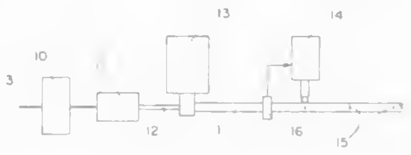
U.S. Cl. 156—51 **11 Claims**

1. Method of manufacturing and marking a cable comprising a core including a plurality of parallel extending electric conductors and/or light wave conductors, comprising the steps of:

drawing a plurality of conductors in a longitudinal direction through a means for affixing a plurality of magnetizable inserts along the length of said conductors, each of said inserts being positioned in association with one of a plurality of particular locations included along said conductors and separated by interposed longitudinal distances;

drawing said plurality of conductors through a means for applying a protective jacket of insulating material about said conductors and said magnetizable inserts to form a cable; and

drawing said cable through a means for placing markings along the outside of said protective jacket, said marking means including a sensing means that provides control signals as each of said magnetizable inserts moves through said sensing means.



4,880,485

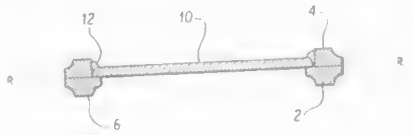
METHOD OF MAKING ORNAMENTAL CASTINGS CONTAINING STAINED GLASS

Thomas H. Lewis, and Suzan K. Lewis, both of 1477 Mullins Station, Memphis, Tenn. 38134

Filed Jul. 27, 1988, Ser. No. 224,737

Int. Cl.⁴ E06B *3/54*

U.S. Cl. 156—108 **2 Claims**



1. A method of manufacturing ornamental castings containing stained glass with a pattern plate having drag and cope sides:

- A. whereby a double face matchplate is made having a parting line and half of the pattern is on the drag side and half on the cope side;
- B. whereby the apertures of the drag side are sufficiently larger than the corresponding apertures of the cope side such that when the casting is poured, a recess is formed around the entire perimeter of the apertures;
- C. whereby the recess apertures are one or more;
- D. whereby the castings are made of iron, aluminum or other moldable material.
- E. whereby the recessed areas are designed to accept inserts;
- F. where the inserts are stained glass or other material which allows light to pass.

4,880,486

METHOD FOR MOUNTING ELECTRONIC PARTS

Yukio Maeda, Hirakata, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Sep. 11, 1987, Ser. No. 95,183

Claims priority, application Japan, Sep. 12, 1986, 61-216607; Sep. 12, 1986, 61-216608

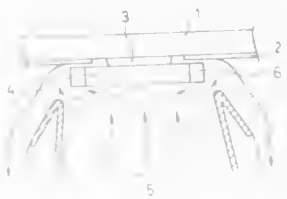
Int. Cl.⁴ B32B *31/26, 31/28*

U.S. Cl. 156—273.5 **18 Claims**

1. A method for mounting electronic parts having electrodes, to conductive lands of a printed circuit substrate, at selected positions on said substrate, comprising:

(a) applying to selected positions of a printed circuit substrate having conductive lands, an adhesive which is constituted by a mixture of at least two components one of which renders the adhesive photopolymerizable and the other of which renders the adhesive thermally polymerizable;

(b) irradiating said adhesive on said substrate with ultraviolet radiation and thereby causing said adhesive to gelate and to become a pressure-sensitive adhesive;



(c) loading a plurality of electronic parts having electrodes, onto said pressure-sensitive adhesive at said selected positions, thereby adhering said electronic parts to said substrate at said selected positions, with said electrodes of said electronic parts juxtaposed with said conductive lands of said substrate; and

(d) soldering respective ones of said electrodes to respective ones of said conductive lands.

4,880,487

HOT MELT ADHESIVES CONTAINING POLY(P-HYDROXYSTYRENE) HOMOPOLYMERS AND COPOLYMERS AND BONDING METHODS EMPLOYING SAME

Michael T. Sheehan, and Bakulesh N. Shah, both of Corpus Christi, Tex., assignors to Hoechst Celanese Corporation, Somerville, N.J.

Filed Jun. 24, 1988, Ser. No. 210,897

Int. Cl.⁴ C09J *5/00*

U.S. Cl. 156—327 **35 Claims**

12. A method of adhering a polyamide article to a surface which comprises providing a hot melt adhesive composition which comprises.

(a) from about 60% to about 98% based on the weight of the composition of a thermoplastic resin selected from the group consisting of an ethylene-vinyl ester copolymer and a polyamide polymer; and

(b) from about 2% to about 40% based on the weight of the composition of a compound selected from the group consisting of poly(p-hydroxystyrene) and copolymers of poly(p-hydroxystyrene) with a C_1 to C_4 alkyl acrylate; heating said composition to a temperature of at least its softening temperature but below its decomposition temperature; and disposing the heated composition between said article and said surface; contacting said article and said surface together with said composition therebetween; and thereafter cooling said composition.

4,880,488

FILM PEELING METHOD AND APPARATUS

Takao Matsuo, Hyogo; Fumio Hamamura, Kanagawa, and Shigeo Sumi, Saitama, all of Japan, assignors to Somar Corporation, Tokyo, Japan

Continuation of Ser. No. 898,162, Aug. 18, 1986, abandoned. This application Oct. 14, 1988, Ser. No. 258,045

Claims priority, application Japan, Aug. 16, 1985, 60-180842; Aug. 16, 1985, 60-180843; Aug. 16, 1985, 60-180844; Dec. 13, 1985, 60-280796

Int. Cl.⁴ B32B *31/18*

U.S. Cl. 156—344 **17 Claims**

1. A film peeling apparatus for peeling a film substrate;

a film raising means for raising a film from a substrate;

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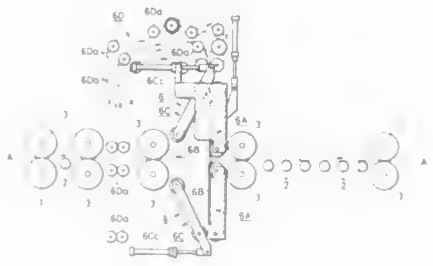
a film peeling guide member arranged substantially perpendicular to said substrate, to set the direction of peeling of said film thus raised to predetermined angle; and



film peeling and conveying means for peeling and conveying said film thus raised by said film raising means, wherein at the beginning of peeling said film, said substrate is conveyed at a speed greater than the speed at which said film is conveyed.

4,880,489

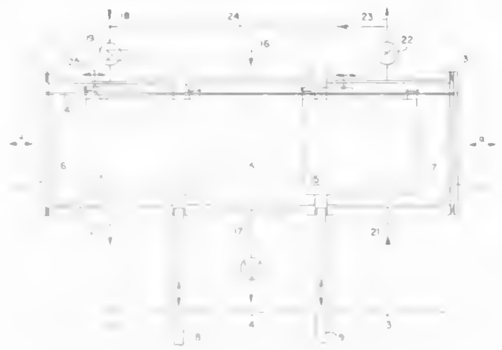
APPARATUS FOR PLASMA ETCHING CIRCUIT BOARDS OR THE LIKE

Richard Ehrenfeldner, Leoben, and Dieter Wagner, Linz, both of Austria, assignors to Voest-Alpine Aktiengesellschaft, Linz, Austria

Filed Aug. 26, 1986, Ser. No. 900,446

Int. Cl.^{4} C23F *1/02*

U.S. Cl. 156—345 7 Claims



4. A circuit board plasma etching apparatus comprising:

a preheating chamber for heating a circuit board which is to be etched by a plasma, said chamber being generally tubular and having a predetermined preheating chamber internal diameter between a preheating entry end and a preheating exit end;

a preheating door selectively closing the preheating entry end at least when a circuit board is being heated;

a plasma reaction chamber for plasma etching the circuit board generally axially aligned horizontally with, and receiving heted circuit boards from, said preheating chamber, for etching a received circuit board by a plasma, said chamber being generally tubular and having a predetermined reaction chamber internal diameter approximately equal to the preheating chamber internal diameter between a reaction entry end and a reaction exit end;

preheating sealing means selectively providing a gas-tight seal of the reaction entry end at least when a circuit board is being etched, said preheating sealing means comprising a preheating slide movable transverse of the axis of said reaction chamber selectively to open the reaction entry end when said reaction chamber is receiving the heated circuit boards and to provide a gas-tight seal of said reaction chamber when a circuit board is being etched;

cooling sealing means selectively providing a gas-tight seal of the reaction exit end at least when a circuit board is being etched, said cooling sealing means comprising a cooling slide movable transverse of the axis of said reaction chamber selectively to open the reaction exit end when etched circuit boards are being discharged and to provide a gas-tight seal of said reaction chamber when a circuit board is being etched;

a cooling chamber for cooling the circuit board generally axially aligned with, and receiving etched circuit boards from, said reaction chamber, for cooling etched circuit boards, said chamber being generally tubular and having a predetermined cooling chamber internal diameter approximately equal to the reaction chamber internal diameter between a cooling entry end and a cooling exit end;

a cooling door selectively closing the cooling exit end at least when a circuit board is being cooled;

a preheating gas inlet for furnishing heated gas to said preheating chamber and means for supplying preheated gas to said inlet;

a preheating gas outlet for exhausting gas from said preheating chamber;

a cooling gas inlet for furnishing cool gas to said cooling chamber and means for supplying cooling gas to said inlet;

a cooling gas outlet for exhausting gas from said cooling chamber;

a bypass conduit operatively connected to said cooling chamber and said preheating chamber for furnishing gas exhausted from said cooling chamber to said preheating chamber;

a plurality of circuit board cages for receiving the circuit boards; and

a guide rail extending axially through said reaction chamber and into said preheating chamber and said cooling chamber for guiding said circuit board cages between chambers and supporting said circuit board cages within the chambers, said guide rail being selectively separable into a preheating segment contained within said preheating chamber, a reaction segment contained within said reaction chamber and extending generally axially between said preheating slide and said cooling slide, and a cooling segment contained within said cooling chamber, all provide when said preheating slide and said cooling slide are providing gas-tight seals to the ends of said reaction chamber; said preheating segment being brought into near contingent relation with said reaction segment when one of said circuit board cages is transferred between said preheating chamber and said reaction chamber, and said cooling segment being brought into near contingent relation with said reaction segment when one of said circuit board cages is transferred between said reaction chamber and said cooling chamber.

4,880,490

ADHESIVE BACKED ELEMENT APPLICATOR

B. Stuart MacIntyre, 478 Jean St., Oakland, Calif. 94610

Filed Oct. 13, 1987, Ser. No. 107,669

Int. Cl.^{4} B44C *1/00, 7/04, 7/09*

U.S. Cl. 156—541 10 Claims

1. Apparatus movable relative to an object and engageable with the surface of said object, said apparatus adapted to serially remove adhesive backed elements from a web and apply an element to said surface responsive to said engagement, said apparatus comprising, in combination:

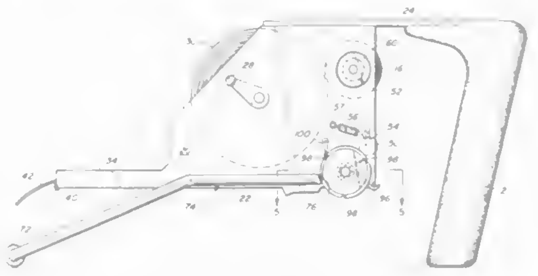
web supply means;

stripper means adapted to strip said adhesive backed elements from said web;

transport means for transporting said web and delivering said adhesive backed elements seriatim from said web supply means to said stripper means, said transport means including a rotatable drive shaft engageable with said web, said drive shaft including spaced projections disposed about the periphery thereof, said projections adapted to be positioned in perforations formed in said web, and a rotatable take-up spindle for receiving said web after engagement of said web by said drive shaft and for winding up said received web;

actuator means in operative association with said transport means and including a member displaceable from a first position to a second position by said object surface during engagement between said apparatus and surface and during movement of said apparatus relative to said object; and

transmission means interconnecting said actuator means and said transport means, said transmission means being responsive to movement of said actuator means member from said first position to said second position to cause said transport means to transport said web and deliver an adhesive backed element to said stripper means whereby said stripped element may be applied to said surface by said apparatus during continued movement of said apparatus relative to said object, said actuator means member being adapted to be brought into engagement with an adhesive backed element applied to said surface to press said adhesive backed element against said surface during continued movement of said apparatus relative to said object, said transmission means interconnecting said actuator means member, said drive shaft and said take-up spindle, said transmission means being responsive to displacement of said actuator means member from said first position to said second position to rotate both said drive shaft and said take-up spindle.



4,880,491

GUIDED ROOFING MATERIALS REMOVAL APPARATUS

James L. Jacobs, 2031 A. Denais, Duson, La. 70529, and Larry D. Rogers, 915 S. College, Apt. 50, Lafayette, La. 70503

Filed Aug. 1, 1988, Ser. No. 227,070

Int. Cl.^{4} B32B *31/18*

U.S. Cl. 156—584 18 Claims

1. A roofing material scraper apparatus and guide system, comprising:

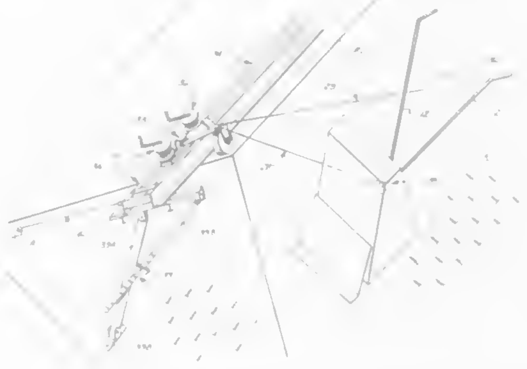
(a) track means for defining a path along a roof ridge line and generally parallel thereto and adapted to be attached at the ridge line of the roof;

(b) a wheeled machine frame that can traverse the roof along travel path lines generally parallel to and spaced from the track means;

(c) stripping means carried by the frame for removing roofing materials such as shingles, felt and/or nails as the frame traverses the roof along the travel path lines;

(d) a movable carriage positioned for travel upon the track;

(e) adjustable support means forming a connection between the carriage and the wheeled machine frame for defining an adjustable support that can vary the distance between the carriage and the wheeled machine frame during movement of the machine frame so that an operator can remove roofing material from the roof while securing the machine frame and operator on the roof.



4,880,492

ORGANOMETALLIC COMPOUNDS

Dietrich Erdmann, Mühltal; Max E. Van Ghemen; Ludwig Pohl, both of Darmstadt; Herbert Schumann, Berlin; Uwe Hartmann, Berlin; Wilfried Wassermann, Berlin; Meino Heyen, and Holger Jürgensen, both of Aachen, all of Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft Mit Beschränkter Haftung, Darmstadt, Fed. Rep. of Germany

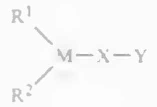
Filed Sep. 15, 1987, Ser. No. 96,583

Claims priority, application Fed. Rep. of Germany, Sep. 16, 1986, 3631469

Int. Cl.^{4} C30B *25/00, 29/40, 29/42;* C23C *16/00*

U.S. Cl. 156—610 10 Claims

1. In a process for gas-phase deposition of a metal layer on a substrate, the improvement wherein a source of metal for the deposition process is an organometallic compound of the formula I



$$\begin{matrix} R^1 \\ & \diagdown \\ & & M-X-Y \\ & \diagup \\ R^2 \end{matrix} \qquad I$$

wherein

M is Al, In or Ga,

X is —$(CHR^5)_n$— wherein n=2, 3, 4 or 5, -2-C_6H_4—$(CH_2)_m$—, —$(CH_2)_m$-2-C_6H_4—, -2-C_6H_{10}—$(CH_2)_m$—, or —$(CH_2)_m$-2-C_6H_{10}— where m=1 or 2;

R^5 is H or alkyl containing 1–4 carbon atoms;

Y is —NR^3R^4 or a 5- or 6-membered heterocyclic ring where the heteroatoms are N atoms; and

R^1, R^2, R^3 and R^4 are each independently H, straight-chain or branched alkyl containing 1–8 carbon atoms, partially or completely fluorinated straight-chain or branched alkyl containing 1–8 carbon atoms, cycloalkyl, alkenyl or cycloalkenyl containing in each case 3–8 carbon atoms, or unsubstituted phenyl or substituted phenyl.

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4,880,493

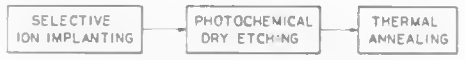
ELECTRONIC-CARRIER-CONTROLLED PHOTOCHEMICAL ETCHING PROCESS IN SEMICONDUCTOR DEVICE FABRICATION

Carol I. H. Ashby, Edgewood; David R. Myers, and Frederick L. Vook, both of Albuquerque, all of N. Mex., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jun. 16, 1988, Ser. No. 207,487

Int. Cl.⁴ H01L *21/306;* B44C *1/22*

U.S. Cl. 156—628 14 Claims



1. An electronic-carrier-controlled photochemical etching process for carrying out patterning and selective removing of material in semiconductor device fabrication, said photochemical etching process comprising the steps of:

(a) selective ion implanting for defining a damaged region in the semiconductor material in a desired pattern;

(b) photochemical dry etching the semiconductor material for removing material from non-damaged regions thereof; and

(c) thermal annealing non-removed semiconductor material.

4,880,494

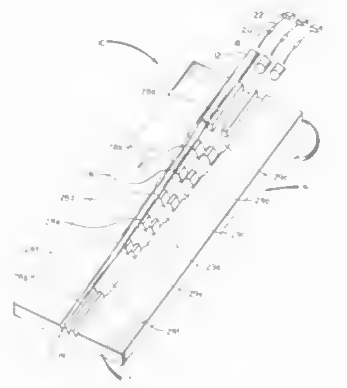
METHOD OF MAKING A FIBER OPTIC ARRAY

Joseph Y. Kaukeinen, Rochester, and Eileen M. Tyo, Livonia, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 7, 1988, Ser. No. 254,758

Int. Cl.⁴ H01L *21/306;* B44C *1/22;* C03C *15/00, 25/06*

U.S. Cl. 156—633 8 Claims



1. A method of making a fiber optic array, said method comprising the steps of:

forming a plurality of sets of grooves in a substrate, each set of grooves being separated by an area on said substrate;

inserting the jackets of optical fibers in one set of grooves and fixing the jackets therein;

inserting exposed cladding of said fibers in the remaining sets of grooves and fixing the fibers in said remaining sets of grooves.

4,880,495

REGENERATION OF COPPER ETCH BATH

Kestutis F. Petraitis, Cleveland, and Walter W. Baldauf, Jr., Eastlake, both of Ohio, assignors to The Harshaw Chemical Company, Edison, N.J.

Filed Apr. 13, 1987, Ser. No. 37,477

Int. Cl.⁴ C09K *13/06;* C23F *1/00*

U.S. Cl. 156—642 7 Claims

1. In a method of removing copper sulfate from a copper etch bath operated at a temperature of between about 75° F. (23° C.) and 140° F. (60° C.) and composed of hydrogen peroxide and sulfuric acid comprising cooling the etch bath to crystallize out the copper sulfate, the improvement comprising including in the etch bath from between about 0.02% and about 0.2% of a crystallization control agent selected from the group consisting of gum arabic and a low molecular weight glycol having the formula $HOCH_2(CH_2)_XCH_2OH$ wherein X is an integer having a value between 0 and 1.

4,880,496

METHOD AND DEVICE FOR SUBMICRON PRECISION PATTERN GENERATION

Isaiah Nebenzahl, 14 Beruria Street, and Aaron Lewis, 18 Neve Shaanan Street, both of Jerusalem, Israel

Filed Jun. 28, 1988, Ser. No. 212,532

Claims priority, application Israel, Jun. 30, 1987, 83038

Int. Cl.⁴ B44C *1/22;* C03C *15/00, 25/06*

U.S. Cl. 156—643 15 Claims

10. A method for creating a predetermined pattern on a given substrate, comprising holding the substrate in a manner shielded from vibrations, applying the required energy or chemical material via a tube having a tip of very small predetermined internal dimension, which is metal-coated, moving such tube in a manner as to approach the substrate in a predetermined manner to a desired distance, applying said energy or chemical material via said tip of the tube, thus creating by suitable movement the desired pattern.

4,880,497

PREPARATION OF WATER-SOLUBLE COPOLYMERS CONTAINING VINYLAMINE UNITS, AND THEIR USE AS WET STRENGTH AGENTS AND DRY STRENGTH AGENTS FOR PAPER

Sigberg Pfohl, Speyer; Michael Kroener, Mannheim; Heinrich Hartmann, Limburgerhof, and Walter Denzinger, Speyer, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Division of Ser. No. 907,222, Sep. 15, 1986, Pat. No. 4,774,288. This application Apr. 29, 1988, Ser. No. 187,929

Claims priority, application Fed. Rep. of Germany, Sep. 26, 1985, 3534273

Int. Cl.⁴ D21H *1/38*

U.S. Cl. 162—135 8 Claims

1. A process for making paper which has high dry strength and wet strength, comprising applying a hydrolyzed copolymer to a paper sheet, wherein said hydrolyzed copolymer is prepared by a process, comprising:

(i) copolymerizing (a) N-vinylformamide in an amount of from 95 to 10 mole % with (b) an ethylenically unsaturated monomer selected from the group consisting of vinyl acetate, vinyl propionate, the C_1–C_4-alkyl vinyl ethers, N-vinylpyrrolidone, and the esters, nitriles, and amides of acrylic acid and methacrylic acid in an amount of from 5 to 90 mole % to give a copolymer with formyl groups; and

(ii) hydrolyzing from 30 to 100 mole % of said formyl groups of said copolymer to form a hydrolyzed copolymer with amino groups;

wherein said hydrolyzed copolymer is applied to said paper sheet in an amount of from 0.1 to 5% by weight, based on dry fiber.

4,880,498

DRY STRENGTH RESIN OF AMINO/ALDEHYDE ACID COLLOID WITH ACRYLAMIDE POLYMER, PROCESS FOR THE PRODUCTION THEREOF AND PAPER PRODUCED THEREFROM

Sewell T. Moore, and William Brevard, both of Stamford, Conn., assignors to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 892,654, Aug. 4, 1986, Pat. No. 4,845,148. This application Jan. 13, 1989, Ser. No. 296,560

Int. Cl.⁴ D21H *3/38*

U.S. Cl. 162—164.6 10 Claims

1. A method of producing dry strength in paper which comprises applying to the fibers thereof from about 0.15% to about 5.0%, by weight, based on the weight of the fibers, of an aqueous solution of a copolymer produced by a method which comprises forming an incomplete acid colloid by reacting 1 mole of an acid-soluble, partially condensed, thermosetting, amino-aldehyde resin, in aqueous solution, with from about 0.35 to about 1.5 mole of an acid for from about 15 seconds to about 45 minutes and at a temperature ranging from about 50° C. to about 100° C., reacting (1) a water-soluble or water-dispersible, non-anionic acrylamide polymer with (2) said incompletely formed acid colloid for from about 15 to about 45 minutes at a temperature ranging from about 40° C. to about 100° C., the ratio of (1):(2) ranging from about 4:1 to 1:4, by weight, respectively, and at a total solids content of not more than about 20%, by weight, based on the total weight of the reaction media, to thereby form an aqueous solution of a copolymer of said (1) and (2) formation of said acid colloid continuing in the presence of said added acrylamide polymer during said polymer addition.

4,880,499

METHOD FOR MEASUREMENT OF THE PERMEABILITY TO WATER

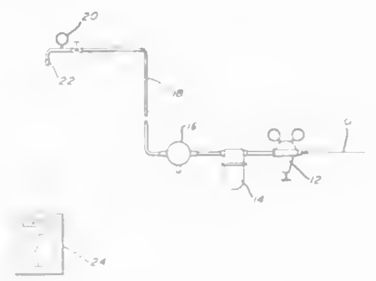
Ivan I. Pikulik, Pointe Claire, Canada, assignor to Pulp and Paper Research Institute of Canada, Pointe Claire, Canada

Filed May 13, 1987, Ser. No. 49,250

Claims priority, application Canada, May 20, 1986, 509566

Int. Cl.⁴ D21F *1/32*

U.S. Cl. 162—198 4 Claims



1. A method for the measuring of the water permeability of a pervious sheet material in a paper making machine while said machine is running, wherein the measuring being of the water flow at a specified pressure through a specified nozzle into the sheet material which comprises the steps of:

placing said nozzle against and substantially normal to a single surface of said sheet material while said sheet material is running through said machine,

forcing a flow of water into said running sheet material and through said nozzle at a specified pressure of between 2 kPa and 1,000 kPa,

and measuring the water permeability of said sheet material by measuring the rate of flow of the water through said nozzle and into said sheet material while said sheet material is running through said machine.

4,880,500

STATIONARY CERAMIC COUCH DEVICE WITH WATER SPRAY CLEANING NOZZLES

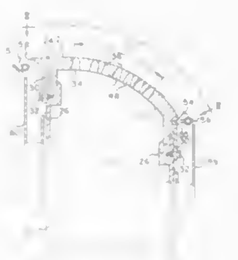
Gerald E. Eldridge, and Gary A. Visseau, both of Thunder Bay, Canada, assignors to Eldridge, Visseau Incorporated, Thunder Bay, Canada

Continuation of Ser. No. 60,158, Jun. 10, 1987, abandoned. This application Aug. 24, 1988, Ser. No. 236,304

Claims priority, application Canada, Jun. 19, 1986, 511990

Int. Cl.⁴ D21F *1/52, 1/34*

U.S. Cl. 162—279 6 Claims



1. In the paper forming section of a papermaking machine having a first end, a second end, a porous belt on which a fibrous web is formed at said first end and removing means for removing said fibrous web from said paper forming section at said second end; a couch roll replacement device for dewatering said fibrous web and for changing the direction of travel of said porous belt and said fibrous web, said couch replacement device being located in said paper forming section adjacent to and upstream of said removing means and comprising:

a solid abrasion resistant ceramic element having a continuously convex upper surface in contact with the underside of said porous belt, said convex upper surface thereby changing the direction of travel of said porous belt and said fibrous web, the ceramic element further comprising a lower surface and a plurality of elongated slotted apertures, some of said plurality of elongated slotted apertures terminating directly adjacent the side edges of the ceramic element, said elongated slotted apertures connecting said upper surface with said lower surface;

water spraying means associated with each elongated slotted aperture of said plurality of elongated slotted apertures for spraying water into each of said elongated slotted aperture for dislodging fines collected therein:

said water spray means comprising a plurality of nozzles wherein at least one nozzle is associated with each of said elongated slotted apertures, a header located near an edge of said ceramic element and a plurality of holes in said ceramic element for communicating said header with said plurality of nozzles.

vacuum box means having a single vacuum chamber connected to said ceramic element for providing a uniform high vacuum which acts through all of said plurality of elongated slotted apertures and through said porous belt on said fibrous web to extract water therefrom; and

sealing deckle means located along each side of the ceramic element, said deckle means cooperating with said elongated slotted apertures which terminate directly adjacent the side edges of said ceramic element so as to seal off any portion of said elongated slotted apertures not directly under said fibrous web so as to maintain said uniform high

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vacuum within the ceramic element and vacuum box combination so that said high vacuum is applied uniformly through all of said plurality of said elongated slotted apertures to said fibrous web.

4,880,501
PRESS COVER FOR A PRESS FOR DEWATERING WEB MATERIAL

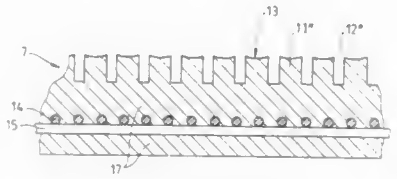
Christian Schiel, Heidenheim, Fed. Rep. of Germany, assignor to J.M. Voith GmbH, Fed. Rep. of Germany

Filed Aug. 10, 1988, Ser. No. 230,568

Claims priority, application Fed. Rep. of Germany, Aug. 19, 1987, 3727563

Int. Cl.^{4} B30B *9/20*

U.S. Cl. 162—358 15 Claims



1. An elastically deformable press cover for a press for dewatering a web material, the press cover having:

an outside for facing toward the web material, the outside of the cover having ridges defined on it, the ridges being spaced apart by grooves defined in the cover, and the grooves being defined by and between the ridges and facing the outside of the press cover;

the ridges having top ends toward the outside of the cover and having top lands at their top ends; and each ridge top land having opposite edges and being concavely shaped between the opposite edges thereof.

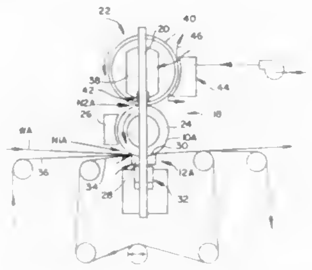
4,880,502
PRESS DRYING APPARATUS WITH DEFLECTION CONTROL AND BLOW BOX COOLING

Gregory L. Wedel, Beloit, Wis., assignor to Beloit Corporation, Beloit, Wis.

Filed Aug. 11, 1987, Ser. No. 84,655

Int. Cl.^{4} D21F *3/02*

U.S. Cl. 162—359 9 Claims



1. A press drying apparatus for removing excess water from a formed web by the simultaneous application to the web of elevated temperature and pressure for a prolonged period of time, said apparatus comprising:

a frame;

a roll rotatably supported by said frame;

induction heating means for heating said roll;

a pressing shoe connected to said frame, said pressing shoe cooperating with said roll for defining therebetween a first extended nip for the passage therethrough of the web;

a blanket extending through said first nip, said blanket sliding over, and relative to, said shoe such that the web is pressed between said blanket and said roll, the web being in physical contact with said roll;

a single felt extending through said first nip such that said felt is disposed between said blanket and the web; and

a deflection controlling means connected to said frame, said controlling means cooperating with said roll for defining therebetween a second nip, said second nip being disposed diametrically opposite to said first nip such that when the web extends through said first nip and said roll is heated by said heating means, deflection of said heated roll towards said second nip is compensated for by said deflection controlling means and a blow box means disposed in close proximity to said deflection controlling means for blowing a curtain of cooling air against said deflection controlling means to remove heat transmitted to said deflection controlling means through said second nip.

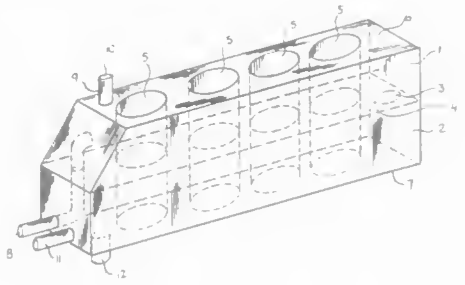
4,880,503
HYDRAULIC RESERVOIR

Joseph Molitorisz, P.O. Box 748, Ames, Iowa 50010

Filed Mar. 3, 1989, Ser. No. 318,763

Int. Cl.^{4} F24H *3/00;* **F01P** *11/08;* **F16N** *39/02, 7/08*

U.S. Cl. 165—47 1 Claim



1. A reservoir for hydraulic fluids in hydraulic systems, said reservoir having a plurality of separate chambers on top of each other, the said chambers being connected to each other by open ports through which the hydraulic fluid is allowed to flow between the said plurality of chambers, the said reservoir having a plurality of substantially vertical thin walled tubings installed between its upper and the lower boundary surfaces, the said thin walled tubings passing through the said plurality of chambers, the said thin walled tubings having both the upper and the lower ends open for free movement of the air through the confinements of the said thin walled tubings, the said thin walled tubings transferring the heat from the hydraulic fluid to the air column within the confinements of the said tubings causing the upward movement of the warm air through the confinements of each of the said plurality of thin walled tubings, the rate of transfer of the heat from the hydraulic fluid to the air column within the confinements of the said thin walled tubings being determined by the temperature differential between the hydraulic fluid and the surrounding atmosphere, thereby providing a self-regulated heat dissipation means from the said reservoir to the surrounding atmosphere, without power driven mechanical components.

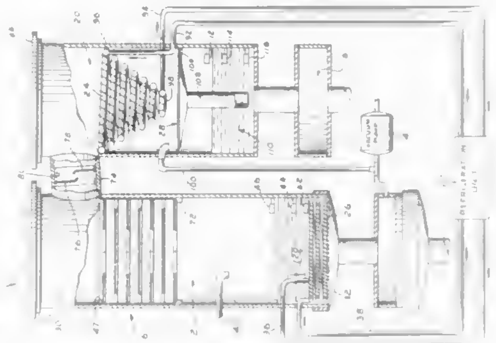
4,880,504
VACUMM DISTILLATION SYSTEM WITH SPIRALLED COLD COIL

John V. Cellini, 274 Belmont Ave.; Mario F. Ronghi, 672 Amostown Rd., and James G. Geren, 46 Irving St., all of West Springfield, Mass. 01089

Division of Ser. No. 18,336, Feb. 24, 1987, Pat. No. 4,770,748. This application Aug. 4, 1988, Ser. No. 228,031

Int. Cl.^{4} B01D *3/10, 5/00*

U.S. Cl. 202—185.6 2 Claims



1. A liquid purification system comprising:

a. a vertical separation chamber in which contaminated liquid can be introduced for boiling and evaporation;

b. a vertical product chamber connected in fluid communication with the separation chamber, whereby the distillate vapor can flow from the separation chamber to the product chamber;

c. a hot coil connected to a heat source, wherein the hot coil is located inside the separation chamber, to boil the contaminated liquid;

d. a cold coil connected to a cold source, wherein the cold coil is located inside the product chamber to condense the vapor, said cold coil being spiraled to resemble an upside-down beehive, wherein each coil loop is smaller than the inner diameter of the loop above it to prevent condensate from dripping off an upper loop onto a loop below it and hindering that lower loop's ability to condensate; and

e. an inlet pipe that attaches the spiraled cold coil to the cold source, wherein the inlet pipe is attached to a top loop of the coil and has a vertical extension inside the product chamber to assist in cooling that chamber.

4,880,505
SEPARATION OF M-DIISOPROPYLBENZENE FROM P-DIISOPROPYLBENZENE BY AZEOTROPIC DISTILLATION WITH ESTERS

Lloyd Berg, 1314 South Third Ave., Bozeman, Mont. 59715, assignor to Lloyd Berg, Bozeman, Mont.

Filed Nov. 23, 1988, Ser. No. 275,589

Int. Cl.^{4} B01D *3/38;* **C07C** *7/06*

U.S. Cl. 203—60 9 Claims

1. A method for recovering m-diisopropylbenzene from a mixture of m-diisopropylbenzene and p-diisopropylbenzene which comprises distilling a mixture of m-diisopropylbenzene and p-diisopropylbenzene in a rectification column in the presence of an azeotrope forming agent, recovering the m-diisopropylbenzene and the azeotrope forming agent as overhead product, obtaining the p-diisopropylbenzene from the stillpot, wherein said azeotrope forming agent is an ester which forms a minimum boiling azeotrope with m-diisopropylbenzene, said azeotrope having a volatility relative to p-diisopropylbenzene in the range of 1.20 to 1.29.

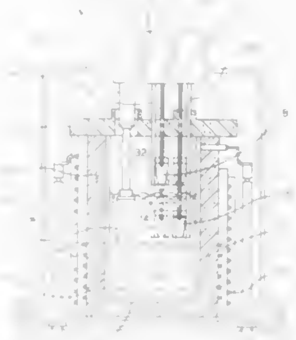
4,880,506
ELECTROREFINING PROCESS AND APPARATUS FOR RECOVERY OF URANIUM AND A MIXTURE OF URANIUM AND PLUTONIUM FROM SPENT FUELS

John P. Ackerman, Downers Grove, and William E. Miller, Naperville, both of Ill., assignors to The United States of America as represented by the Department of Energy, Washington, D.C.

Filed Nov. 5, 1987, Ser. No. 117,880

Int. Cl.^{4} C25C *3/34*

U.S. Cl. 204—1.5 18 Claims



1. A process for refining spent nuclear fuel containing uranium and plutonium, comprising the steps of:

providing an electrolytic cell having a lower molten cadmium pool containing spent nuclear fuel, an intermediate molten electrolytc pool containing mixed metal chloride salts floating on said lower molten cadmium pool, an anode basket containing spent nuclear fuel, a first and second cathode, said first cathode composed of a solid alloy or molten cadmium and said second cathode composed of molten cadmium, and electrical power means connected to said molten cadmium pool, said anode basket and said cathodes for providing electrical power to the cell,

dissolving additional amounts of uranium and plutonium from said anode basket in said molten cadmium pool,

electrolytically depositing substantially pure uranium on said first cathode, and

subsequently electrolytically depositing a mixture of uranium and plutonium on said second molten cadmium cathode.

4,880,507
TIN, LEAD OR TIN/LEAD ALLOY ELECTROLYTES FOR HIGH SPEED ELECTROPLATING

Michael P. Toben, Smithtown; Neil D. Brown, Merrick; David J. Esterl, Valley Stream, and Robert A. Schetty, Miller Place, all of N.Y., assignors to LeaRonal, Inc., Freeport, N.Y.

Continuation-in-part of Ser. No. 130,759, Dec. 10, 1987, abandoned. This applicatiun Dec. 9, 1988, Ser. No. 282,851

Int. Cl.^{4} C25D *3/32, 3/36, 3/56, 3/60*

U.S. Cl. 204—44.4 31 Claims

1. An electrolyte for depositing tin, lead or tin/lead alloys upon a substrate by high speed electroplating, which comprises:

a basis solution of an alkyl or alkylol sulfonic acid; and at least one of a solution soluble tin compound or a solution soluble lead compound; and

a surfactant of an alkylene oxide condensation compound of an aliphatic hydrocarbon having less than six carbon

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atoms and at least one hydroxy group, or solution soluble derivatives thereof.

4,880,508
WATER-SOLUBLE CONDUCTIVE POLYMERS

Mahmoud Aldissi, Sante Fe, N. Mex., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Division of Ser. No. 155,450, Feb. 12, 1988. This application Apr. 3, 1989, Ser. No. 331,776

Int. Cl.^{4} C25C *11/00;* **H01B** *1/06*

U.S. Cl. 204—59 R — 11 Claims

1. A method of making an electrically conductive self-doped polymer having a monomer repeat unit comprised of a thiophene or pyrrole ring, where the monomer-to-monomer bonds of said polymer are located between the carbon atoms adjacent to the sulfur or nitrogen atom, where an alkyl group comprised of from 1 to about 20 carbon atoms is linked to the carbon atom in the number three position of the ring of the monomer repeat unit, where a surfactant molecule is linked to the carbon atom located at the end of the alkyl group, said surfactant molecule being comprised of a sulfonate group or a sulfate group or a carboxylate group, said surfactant molecule further comprising a hydrogen or alkali metal atom linked to said group, where the alkali metal is chosen from a class consisting of lithium, sodium, potassium, rubidium, and cesium, said method comprising:

a. mixing said monomer repeat unit with a compatible solvent;
b. placing spaced-apart compatible conductive electrodes in the resultant mixture of step a;
c. applying a voltage across said electrodes; and
d. recovering an electrically conductive polymer.

4,880,509
ELECTROLYTIC FINISHING METHOD AND APPARATUS

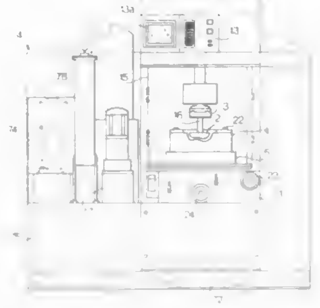
Youhei Kuwahara, Fukuroi; Teruo Asaoka, Kakegawa; Shogo Yoshioka, Iwata, and Haruki Sugiyama, Hamamatsu, all of Japan, assignors to Shizuoka Seiki Co., Ltd., Fukuroi, Japan

Filed Oct. 28, 1988, Ser. No. 264,103

Claims priority, application Japan, Oct. 30, 1987, 62-276920; Jan. 23, 1988, 63-12993

Int. Cl.^{4} B23H *3/02, 7/14*

U.S. Cl. 204—129.2 — 3 Claims



1. A method for finishing a work including securing the work in an electrolyte tank, positioning an electrode to form a predetermined gap between the electrode and the surface of the work, supplying electrolyte to the electrolyte tank so as to submerge the electrode and the work, applying electric energy in the form of a pulse to the electrode, supplying clean electrolyte to the tank and draining the electrolyte including residual products, the method comprising:

setting an area of the work to be finished;

setting the electric energy in such a manner that the electric energy per unit area is reduced with increase of the area.

4,880,510
METHOD FOR REMOVING DYE STUFFS FROM WASTEWATER

Kevin D. Uhrich, Amherst, N.Y., assignor to Andco Environmental Processes, Inc., Amherst, N.Y.

Continuation of Ser. No. 156,438, Feb. 16, 1988, abandoned, which is a continuation of Ser. No. 63,533, Jun. 18, 1987, abandoned. This application Jan. 5, 1989, Ser. No. 293,594

Int. Cl.^{4} C02F *1/46*

U.S. Cl. 204—131 — 7 Claims

1. A method for electrochemically removing from an ionizing medium contaminants including color impurities and heavy metal ions which are capable of forming an insoluble iron compound or complex comprising the steps of: providing an electrochemical cell comprising a pair of outer electrodes elements which are, respectively, an anode and a cathode positioned in a parallel spaced apart relationship and a plurality of additional electrode elements disposed between said outer electrode elements in a closely spaced relationship therewith, aid additional elements being substantially equidistantly spaced one from another and disposed parallel to said outer electrodes; providing one of said additional electrode elements in neighboring relation to each of said outer electrode elements of sufficient size so as to extend beyond said outer electrode element so as to shield said outer electrode element from flux field effects causing excessive current density; passing an electric current through the ionizing medium containing the contaminants to be removed between said anode, which has a surface or a portion of a surface thereof of iron, iron alloy or insoluble iron compound, and said cathode so as to produce anodically an insoluble iron compound, species or complex in said ionizing medium while cathodically reacting said contaminant ion with the ionizing medium to generate an insoluble hydroxide thereof and whereby an insoluble iron compound or complex with the contaminants is produced, and removing said insoluble iron compound or complex with the contaminants from the ionizing medium.

4,880,511
PROCESS AND APPARATUS FOR RECOVERY OF PRECIOUS METAL COMPOUND

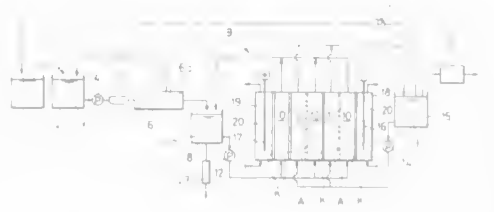
Noriyuki Sugita, Kanagawa, Japan, assignor to Electroplating eogineers of Japan, Limited, Tokyo, Japan

Filed May 16, 1987, Ser. No. 50,831

Claims priority, application Japan, May 16, 1986, 61-110865; Jul. 10, 1986, 61-160760

Int. Cl.^{4} C02F *1/46, 1/44;* **B01D** *13/02, 13/00*

U.S. Cl. 204—151 — 12 Claims



1. A process for recovering a precious metal compound, comprising separating a precious metal compound contained in a process liquid by a reverse osmosis membrane, concentrating said separated precious metal compound by electrodialysis employing anion-exchange and cationexchange membranes, and recovering said precious metal compound in a concentrated liquid obtained by said electrodialysis, wherein said process liquid is a concentrated cyanide solution containing a large amount of free cyanide, said concentrated cyanide solution having been pretreated in a cyanide treating tank comprising an anode chamber and a cathode chamber separated from each other by a cation-exchange membrane so that said concentrated cyanide solution placed in said anode chamber does not make direct contact with said cathode, thereby causing oxidative decomposition of said free cyanide on said anode.

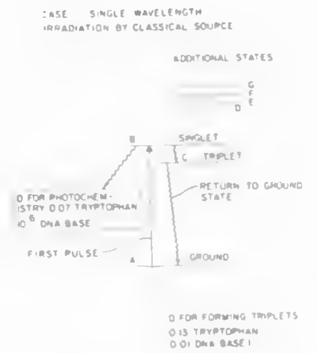
4,880,512
PULSED LIGHT SELECTIVE PHOTOLYSIS PROCESS FOR TREATMENT OF BIOLOGICAL MEDIA AND PRODUCTS MADE THEREBY

Paul A. Cornelius; Robin M. Hochstrasser; Neville R. Kallenbach; Harvey Rubin, all of Philadelphia, Pa., and George J. Todaro, Seattle, Wash., assignora to Kollmorgen Corporation, Simsbury, Conn.

Continuation of Ser. No. 148,113, Jan. 27, 1988, abandoned, which is a continuation of Ser. No. 45,766, Apr. 27, 1987, abandoned, which is a continuation of Ser. No. 690,451, Jan. 14, 1985, abandoned, and a continuation-in-part of Ser. No. 580,848, Feb. 16, 1984, abandoned. This application Oct. 14, 1988, Ser. No. 259,508

Int. Cl.^{4} B01J *19/08*

U.S. Cl. 204—157.61 — 55 Claims



1. Process for treating a biological medium to photolyze nucleic acids in preference to proteins present therein, which comprises irradiating said medium with pulsed light of wavelength and flux selected so that (1) the nucleic acids in their ground state absorb radiation and thereby rise to an excited state or states, (2) the nucleic acids in their excited states absorb radiation and thereby rise to higher energy states and undergo photolysis to the extent that nucleic acid activity is reduced by at least 90%, and (3) the proteins in their ground or their excited states do not absorb sufficient radiation to undergo substantial photolysis.

4,880,513
METHOD AND APPARATUS FOR GENERATING ACID AND BASE REGENERANTS AND THE USE THEREOF TO REGENERATE ION-EXCHANGE RESINS

Thomas A. Davis, Annandale, and Donald J. Butterworth, Stirling, both of N.J., assignors to The Graver Company, Union, N.J.

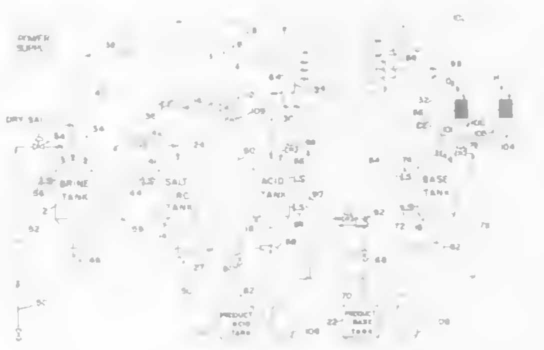
Filed Jun. 20, 1986, Ser. No. 876,911

Int. Cl.^{4} B61D *15/06, 13/02;* **C02F** *13/42*

U.S. Cl. 204—182.4 — 73 Claims

1. A method for generating an acid solution and a base solution by electrodialysis of a salt solution, comprising:

(a) continuously circulating a mineral-containing salt solution through an electrodialysis stack means to produce a partially demineralized salt solution, an acid solution and a base solution;
(b) directing the acid solution to an acid receiving tank;
(c) directing the base solution to a base receiving tank;
(d) directing the partially demineralized salt solution from the electrodialysis stack means back through the electrodialysis stack means as the circulating mineral-containing salt solution;
(e) monitoring the salt concentration of the circulating mineral-containing salt solution;
(f) directing a portion of the circulating mineral-containing salt solution through a salt tank containing a saturated salt solution when the salt concentration of the circulating mineral-containing salt solution drops below a predetermined level; and
(g) directing the solution from the salt tank into the circulating mineral-containing salt solution to increase the salt concentration thereof.



4,880,514
METHOD OF MAKING A THIN FILM MAGNETIC DISK

John C. Scott, Saratoga; Eric K. Li, Palo Alto; Hudson A. Washburn, Santa Clara, and Nal T. Viswanathan, San Jose, all of Calif., assignors to Akshic Memories Corporation, Santa Clara, Calif.

Division of Ser. No. 730,778, May 3, 1985, abandoned. This application Aug. 10, 1987, Ser. No. 85,300

Int. Cl.^{4} C23C *14/34*

U.S. Cl. 204—192.2 — 10 Claims

1. A method of constructing a thin-film disk recording device comprising:

heating a substrate to a temperature in the range of 190° C. to 350° C.;
sputtering chromium onto said substrate during a first time interval to form a chromium layer on said substrate;
sputtering a magnetic layer comprising cobalt and nickel onto said chromium layer during a second time interval;
heating said substrate and chromium layer thereon during the time between said first time interval and said second time interval in a vacuum greater than or equal to 5×10^{-7} Torr, to a temperature in the range of 190° C. to 350° C., said time between said first and second time intervals being less than 5 minutes; and
depositing a protective layer over said magnetic layer.

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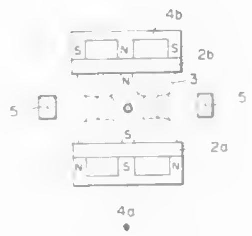
4,880,515
SURFACE TREATMENT METHOD
Masato Yoshikawa, Kodaira; Yukihiro Kusano, Tokorozawa; Kazuo Naito, Kawasaki; Toshio Honda, Akigawa, and Tomonobu Hata, Kanazawa, all of Japan, assignors to Bridgestone Corporation, Tokyo, Japan
Filed Jun. 1, 1988, Ser. No. 201,034
Claims priority, application Japan, Jun. 3, 1987, 62-139446
Int. Cl.⁴ C23C *14/34*
U.S. Cl. 204—192.12 9 Claims



1. A method for treating the surface of a substrate by magnetron sputtering, comprising the steps of:

placing at least two targets and the substrate to be surface-treated in a sputtering apparatus,

driving atoms out of the target, and

depositing the atoms on the substrate to form a film thereon,

wherein the substrate is placed between the pair of targets which are located in an opposed, spaced-apart relationship whereby atoms driven out of both the targets are deposited on the substrate to form a film thereon, and

at least one magnet is disposed behind each of the pair of targets such that one polarity pole of one magnet faces the opposite polarity pole of the other magnet, the opposed magnets produce lines of magnetic force in a space therebetween, and at least one solenoid coil is disposed outside the magnetic line space and opposed with respect to the substrate, and direct current is supplied to the solenoid coil to form poles which are repulsive to the poles of the opposed magnets behind the targets whereby the component of the lines of magnetic force which extends parallel to the targets is increased to form a dense plasma region above the surfaces of the targets and the targets are eroded and consumed in a dish shape in cross section.

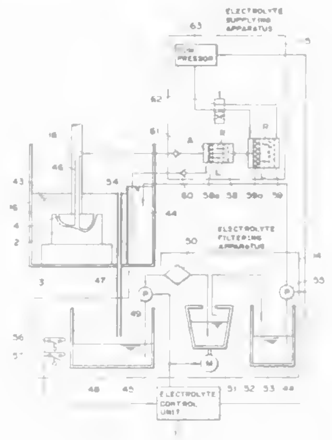
4,880,516
ELECTRO-CHEMICAL MACHINE
Youhei Kuwabara; Teruo Asaoka, and Yasuhiro Iwasaki, all of Shizuoka, Japan, assignors to Shizuoka Seiki Co., Ltd., Shizuoka, Japan
Filed Jun. 13, 1988, Ser. No. 206,482
Claims priority, application Japan, Jun. 23, 1987, 62-156188; Jul. 7, 1987, 62-168947; Oct. 28, 1987, 62-272843
Int. Cl.⁴ B23H *3/10, 7/26, 9/12, 7/36*
U.S. Cl. 204—224 M 9 Claims

1. An electro-chemical apparatus, comprising pulse supply means for supplying pulses to a spaced workpiece and electrode arranged in an electrolyte in a working tank so that respective surfaces thereon which conform to each other in shape are facing each other, said pulses effecting finishing of said surface on said workpiece, and eliminating means for eliminating electrolytic products produced in a gap between said workpiece and said electrode,

wherein said eliminating means includes electrolyte filtering means for withdrawing from said working tank and for filtering electrolyte containing electrolytic products;

wherein said eliminating means includes electrolyte supplying means for selectively supplying electrolyte filtered by said electrolyte filtering means to said gap; and

wherein said pulse supply means includes power supply means for supplying at least one pulse to said workpiece and electrode during a first period of time when the flow of electrolyte from said electrolyte supplying means into said gap is stopped, said electrolyte supplying means thereafter supplying filtered electrolyte to said gap during a second period of time when said pulse supply means has halted pulse generation.


ELECTROLYTE SUPPLYING APPARATUS
ELECTROLYTE FILTERING APPARATUS
ELECTROLYTE CONTROL UNIT
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58a
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58b
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CATALYTIC POLYMER ELECTRODE FOR CATHODIC PROTECTION AND CATHODIC PROTECTION SYSTEM COMPRISING SAME
John E. Bennett, Painesville; Donald S. Novak, Chardon, and Thomas A. Mitchell, Mentor, all of Ohio, assignors to ELTECH Systems Corporation, Boca Raton, Fla.
Continuation of Ser. No. 772,443, Sep. 6, 1985, abandoned, which is a continuation-in-part of Ser. No. 656,634, Oct. 1, 1984, abandoned. This application Jun. 2, 1987, Ser. No. 57,592
Int. Cl.⁴ G23F *13/00*
U.S. Cl. 204—196 4 Claims

1. A cathodic protection system for pre-existing steel-reinforced concrete structures comprising a groove formed in the concrete, a catalytic polymer cable anode for impressed-current cathodic protection positioned in said groove and having a catalyst for operation of the anode at a reduced oxygen potential whereby the polymer of said cable anode is substantially protected from oxidation, a backfill material filling said anode-containing groove and an impressed current power source connected to said cable anode, said cable anode having a metallic core embedded in a non-catalytic, elongated current conducting polymer body forming the anode base, having fixed to the surface of said polymer body from about 10 to about 500 grams of catalytic particles per square meter of polymer body, said catalytic particles comprising mainly a valve metal of the group consisting of titanium, tantalum, niobium, zirconium and alloys and mixtures thereof, said valve metal particles containing catalyst in an amount from 0.1% to 5 0% by weight of valve metal, said catalyst being of precious metal or precious metal oxide selected from the group consisting of ruthenium, palladium, rhodium, iridium, platinum and mixtures thereof, in the metallic state or as an oxide.

4,880,518
DISK CARRIER
Minoru Akagawa; Satoshi Naoi, both of Fremont, and Heijiro Fukumoto, San Francisco, all of Calif., assignors to Intelmatec Corporation, Fremont, Calif.
Filed Mar. 27, 1989, Ser. No. 329,363
Int. Cl.⁴ C23C *14/34;* **B05C** *11/14*
U.S. Cl. 204—298 9 Claims

1. A disk carrier for supporting a disk at a precisely specifiable position with both surfaces of said disk exposed substantially entirely for processing, said disk carrier comprising

a carrier plate,

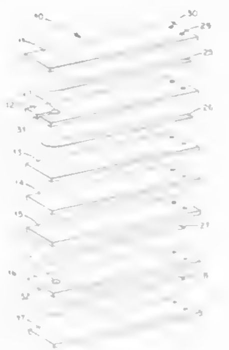
at least one generally circular throughhole formed through said disk plate, said throughhole having an inner wall and a diameter slightly less than the diameter of said disk,

a recessed area formed partially around said throughhole, said recessed area abutting at least one half of the circumference of said circular throughhole, and

a groove with width substantially equal to the thickness of said disk formed on a distal part of said inner wall of said circular throughhole not abutting said recessed area,

said recessed area having a bottom surface and a boundary wall with at least two mutually adjacent straight sections which form together with said bottom surface a corner serving as a reference position, whereby the three-dimensional coordinates of said corner can be determined by a touch sensor with a pointed contact part.

4,880,519
GAS SENSOR ELEMENT
Da Y. Wang, Lexington; Daniel T. Kennedy, Burlington, both of Mass., and Burton W. MacAllister, Jr., Hudson, N.H., assignors to GTE Laboratories Incorporated, Waltham, Mass.
Filed May 24, 1988, Ser. No. 198,029
Int. Cl.⁴ G01N *27/46*
U.S. Cl. 204—425 11 Claims



1. A gas sensor element comprising

a body of solid electrolyte material exhibiting ion conduction in the presence of a gas to be detected;

a first chamber within said body;

passage between said first chamber and the exterior of the body for a gas to be analyzed;

a second chamber within said body spaced from said first chamber with material of said body intervening between said first and second chambers;

passage between said second chamber and the exterior of the body for said gas to be analyzed;

a first set of two electrodes, a tab portion of each facing each other across said first chamber; and

a second set of two electrodes, a tab portion of each facing each other across said second chamber;

so that a voltage applied between said first set of electrodes and said second set of electrodes causes said gas to be detected entering one of said chambers by way of the associated one of said passages to ionize and ions to flow through the solid electrolyte material of the body intervening between the two chambers to the other of said chambers.

4,880,520
HYDROCARBON CONVERSION PROCESS USING TITANIUM-ALUMINUM-PHOSPHORUS-SILICON-OXIDE MOLECULAR SIEVES AS CATALYST
Brent M. T. Lok, New City; Bonita K. Marcus, Rye, and Edith M. Flanigen, White Plains, all of N.Y., assignors to UOP, Des Plaines, Ill.
Division of Ser. No. 49,274, May 13, 1987, Pat. No. 4,801,309, which is a division of Ser. No. 600,179, Apr. 13, 1984, Pat. No. 4,684,617. This application Oct. 21, 1988, Ser. No. 260,689
The portion of the term of this patent subsequent to May 3, 2005, has been disclaimed.
Int. Cl.⁴ C10G *11/04, 47/04*
U.S. Cl. 208—46 18 Claims

1. A process for converting a hydrocarbon which comprises contacting said hydrocarbon under hydrocarbon converting conditions with a molecular sieve having a three-dimensional crystalline microporous framework structures of TiO_2, AlO_2, PO_2 and SiO_2 tetrahedral units having an intracrystalline pore system and having an empirical chemical composition on an anhydrous basis expressed by the formula:

$$mR:(Ti_wAl_xP_ySi_z)O_2$$

wherein "R" represents at least one organic templating agent present in the intracrystalline pore system; "m" represents the molar amount of "R" present per mole of $(Ti_wAl_xP_ySi_z)O_2$ and has a value of zero (0) to about 0.3; and "w", "x", "y" and "z" represent the mole fractions of titanium, aluminum, phosphorus and silicon, respectively, present as tetrahedral oxides, said mole fractions being such that they are within the pentagonal compositional area defined by points A, B, C, D and E of FIG. 1.

4,880,521
PROCESS FOR THE CRACKING OF FEEDSTOCKS CONTAINING HIGH LEVELS OF NITROGEN
Julius Scherzer, Anaheim, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.
Continuation-in-part of Ser. No. 47,852, May 7, 1987, Pat. No. 4,810,369. This application Feb. 17, 1989, Ser. No. 312,625
The portion of the term of this patent subsequent to Mar. 7, 2006, has been disclaimed.
Int. Cl.⁴ C10G *11/05*
U.S. Cl. 208—120 29 Claims

1. A process for the catalytic cracking of a hydrocarbon feedstock containing greater than about 0.25 weight percent total nitrogen, calculated as the element, which comprises contacting said feedstock with a cracking catalyst under cracking conditions in the substantial absence of added molecular hydrogen in a cracking zone to convert components of said feedstock into lower molecular weight constituents, wherein said cracking catalyst comprises greater than about 25 weight percent of a Y zeolite dispersed in a matrix comprising a clay and a synthetic silica-alumina component.

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PROCESS FOR HYDROTREATING HYDROCARBON FEEDS

Richard A. Kemp, Stafford, Tex., assignor to Shell Oil Company, Houston, Tex.

Division of Ser. No. 100,662, Sep. 24, 1987, Pat. No. 4,810,684. This application Oct. 12, 1988, Ser. No. 256,424

Int. Cl.⁴ C10G *45/08*

U.S. Cl. 208—216 PP 110 Claims

1. A process for hydrotreating hydrocarbon feeds by contacting said feeds at a temperature in the range of from about 300° F. to about 900° F. and a pressure in the range of from about 200 psig to about 3500 psig with a hydrotreating catalyst having a surface area of at least about 300 m^2/g, at least about 20% of the pore volume in pores having diameters greater than about 350 Å and at least about 20% of the pore volume in pores having diameters less than about 70 Å, wherein said catalyst is prepared by a process which comprises:

(a) titrating an aqueous solution of one or more aluminum salt(s) with a titrating agent in the presence of a phosphorus-containing compound in an amount of from about 0.06 to about 0.30 moles of phosphorus per mole of aluminum, thereby forming a precipitate,
(b) aging the precipitate at a temperature ranging from about 20° C. to about 90° C. for at least about 15 minutes at a pH ranging from about 8.0 to about 12.0,
(c) washing the precipitate,
(d) mixing the precipitate with salts of an element selected from the group consisting of nickel, cobalt, and mixtures thereof, and salts of a heavy metal selected from the group consisting of molybdenum, tungsten, and mixtures thereof, at a pH in the range between about 4.0 and about 9.0 and a temperature in the range between about 25° C. and about 100° C. until adsorption of the salts onto the precipitate is sufficient to yield a final catalyst having from about 1% w to about 5% w cobalt and/or nickel and from about 8% w to about 32% w heavy metal,
(e) partially drying the product of step (d) to reduce loss on ignition to between about 55% and about 65%,
(f) passing the product of step (e) through a mixing means,
(g) extruding the product of step (f), and
(h) drying and calcining the product of step (g) at a temperature ranging from about 300° C. to about 900° C.

4,880,523

PROCESS FOR HYDROTREATING HYDROCARBON FEEDS

Richard A. Kemp, Stafford, Tex., assignor to Shell Oil Company, Houston, Tex.

Division of Ser. No. 100,663, Sep. 24, 1987, Pat. No. 4,810,686. This application Oct. 12, 1988, Ser. No. 256,426

Int. Cl.⁴ C10G *45/08*

U.S. Cl. 208—216 PP 88 Claims

1. A process for hydrotreating hydrocarbon feeds by contacting said feeds at a temperature in the range of from about 300° F. to about 900° F. and a pressure in the range of from about 200 psig to about 3500 psig with a hydrotreating catalyst having a surface area of at least about 300 m^2/g, at least about 20% of a pore volume in pores having diameters greater than about 350 Å at at least about 20% of the pore volume in pores having diameters less than about 70 Å, wherein said catalyst is prepared by a process which comprises:

(a) titrating an aqueous solution of one or more aluminum salt(s) with a titrating agent for at least about 20 minutes, thereby forming a precipitate,
(b) aging the precipitate at a temperature ranging from about 20° C. to about 90° C. for at least about 15 minutes at a pH ranging from about 8.0 to about 12.0,
(c) washing the precipitate,
(d) mixing the precipitate with salts of an element selected from the group consisting of nickel, cobalt, and mixtures thereof, and salts of a heavy metal selected from the group consisting of molybdenum, tungsten, and mixtures thereof, and a phosphorus-containing compound in an amount of from about 0.2 to about 1.5 moles of phosphorus per mole of heavy metal at a pH in the range between about 4.0 and about 9.0 and a temperature in the range between about 25° C. and about 100° C. until adsorption of the salts onto the precipitate sufficient to yield a final catalyst having from about 1%w to about 5%w cobalt and/or nickel and from about 8%w to about 32%w heavy metal,
(e) homogenizing the product of step (d),
(f) extruding the product of step (e), and
(g) drying and calcining the product of step (f) at a temperature ranging from about 300° C. to about 900° C.

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PROCESS FOR HYDROTREATING HYDROCARBON FEEDS

Richard A. Kemp, Stafford, Tex., assignor to Shell Oil Company, Houston, Tex.

Division of Ser. No. 123,510, Nov. 20, 1987, Pat. No. 4,820,679. This application Dec. 19, 1988, Ser. No. 288,498

Int. Cl.⁴ C10G *45/08*

U.S. Cl. 208—216 PP 36 Claims

1. A process for hydrotreating hydrocarbon feeds by contacting said feeds at a temperature in the range of from about 300° F. to about 900° F. and a pressure in the range of from about 200 psig to about 3500 psig with a catalyst having a surface area of at least about 300 m^2/g and at least about 70% of the pore volume in pores having diameters less than about 70 Å, wherein said catalyst is prepared by a process which comprises:

(a) titrating an aqueous solution of one or more aluminum salt(s) with a titrating agent, thereby forming a precipitate,
(b) aging the precipitate at a temperature ranging from about 20° C. to about 90° C. for at least about 15 minutes at a pH ranging from about 8.0 to about 12.0,
(c) washing the precipitate,
(d) mixing the precipitate with salts of nickel and salts of a heavy metal selected from the group consisting of molybdenum, tungsten, and mixtures thereof, at a pH in the range between about 4.0 and about 10.0 and a temperature in the range between about 25° C. and about 100° C. until adsorption of the metal salts onto the precipitate is sufficient to yield a final catalyst having from about 1%w to about 6%w nickel and from about 8%w to about 40%w heavy metal,
(e) extruding the product of step (d), and
(f) drying and calcining the product of step (e) at a temperature ranging from about 300° C. to about 900° C.

4,880,525

PROCESS FOR HYDROTREATING HYDROCARBON FEEDS

Richard A. Kemp, Stafford, Tex., assignor to Shell Oil Company, Houston, Tex.

Division of Ser. No. 100,661, Sep. 24, 1987, Pat. No. 4,810,687. This application Oct. 12, 1988, Ser. No. 256,442

Int. Cl.⁴ C10G *45/08*

U.S. Cl. 208—216 PP 88 Claims

1. A process for hydrotreating hydrocarbon feeds by contacting said feeds at a temperature in the range of from about 300° F. to about 900° F. and a pressure in the range of from about 200 psig to about 3500 psig with a hydrotreating catalyst having a surface area of at least about 300 m^2/g, at least about 20% of the pore volume in pores having diameters greater than about 350 Å and at least about 20% of the pore volume in pores having diameters less than about 70 Å, wherein said catalyst is prepared by a process which comprises:

(a) titrating an aqueous solution of one or more aluminum salt(s) with a titrating agent, thereby forming a precipitate,
(b) aging the precipitate at a temperature ranging from about 20° C. to about 90° C. for at least about 15 minutes at a pH ranging from about 8.0 to about 12.0,
(c) washing the precipitate,
(d) mixing the precipitate with salts of an element selected from the group consisting of nickel, cobalt, and mixtures thereof, and salts of a heavy metal selected from the group consisting of molybdenum, tungsten, and mixtures thereof, and a phosphorus-containing compound in an amount of from about 0.2 to about 1.5 moles of phosphorus per mole of heavy metal at a pH in the range between about 4.0 and about 9.0 and a temperature in the range between about 25° C. and about 100° C. until adsorption of the salts onto the precipitate is sufficient to yield a final catalyst having from about 1% w to about 5% w cobalt and/or nickel and from about 8% w to about 32% w heavy metal,
(e) partially drying the product of step (d) to reduce loss on ignition to between about 55% and about 65%,
(f) extruding the product of step (e), and
(g) drying and calcining the product of step (f) at a temperature ranging from about 300° C. to about 900° C.

4,880,526

HYDROTREATING CATALYSTS PREPARED FROM HYDROGELS

Richard A. Kemp, Stafford, Tex., assignor to Shell Oil Company, Houston, Tex.

Division of Ser. No. 100,659, Sep. 24, 1987, Pat. No. 4,820,680. This application Oct. 12, 1988, Ser. No. 256,425

Int. Cl.⁴ C10G *45/04*

U.S. Cl. 208—217 57 Claims

1. A process for hydrotreating hydrocarbon feeds by contacting said feeds with a hydrotreating catalyst which has a surface area of at least about 300 m^2/g, at least about 20% of the pore volume in pores having diameters greater than about 350Å and at least about 20% of the pore volume in pores having diameters less than about 70 Å, wherein said catalst is prepared by a process which comprises:

(a) titrating an aqueous solution of one or more aluminum salt(s) with a titrating agent, thereby forming a precipitate,
(b) aging the precipitate at a temperature ranging from about 20° C. to about 90° C. for at least about 15 minutes at a pH ranging from about 8.0 to about 12.0,
(c) washing the precipitate,
(d) mixing the precipitate with salts of an element selected from the group consisting of nickel, cobalt, and mixtures thereof, and salts of a heavy metal selected from the group consisting of molybdenum, tungsten, and mixtures thereof, at a pH in the range between about 4.0 and about 9.0 and a temperature in the range between about 25° C. and about 100° C. until adsorption of the salts onto the precipitate is sufficient to yield a final catalyst having from about 1%w to about 5%w cobalt and/or nickel and from about 8%w to about 32%w heavy metal,
(e) partially drying the product of step (d) to reduce loss on ignition to between about 55% and about 65%,
(f) extruding the product of step (e), and
(g) drying and calcining the product of step (f) at a temperature ranging from about 300° C. to about 900° C.

4,880,527

PROCESS FOR REMOVING RESIDUAL MERCURY FROM LIQUID HYDROCARBONS WITH AQUEOUS POLYSULFIDE SOLUTIONS

Costandi A. Audeh, Princeton, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Oct. 15, 1987, Ser. No. 108,598

Int. Cl.⁴ C10G *17/04*

U.S. Cl. 208—251 R 7 Claims

1. A process for treating a liquid hydrocarbon containing mercury comprising:

(a) contacting said liquid hydrocarbon with an aqueous solution of an alkali polysulfide; and
(b) separating a liquid hydrocarbon phase containing a substantially reduced concentration of mercury.

4,880,528

METHOD AND APPARATUS FOR HYDROCARBON RECOVERY FROM TAR SANDS

James D. Westhoff, and Arnold E. Harak, both of Laramie, Wyo., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed May 4, 1988, Ser. No. 188,324

Int. Cl.⁴ C10G *1/02*

U.S. Cl. 208—409 9 Claims

1. A method for utilizing tar sands having a broad range of bitumen content comprising:

rapidly pyrolizing the tar sands in a retort having a cyclone chamber by maintaining the tar sands circulating around the chamber in a fluidized state with hot gases, removing gases from the retort, and removing spent tar sands from the retort;
cooling the gases removed from the retort to remove oil therefrom;
burning the spent tar sands in a burner to generate combustion gases and to heat the spent tar sands to a high temperature sufficient to maintain the ash as granular;
heating at least part of the cooled gases removed from the retort by heat exchange with the combustion gases from the burner, feeding the heated gases removed from the retort back to the retort along with fresh tar sands; and
removing the granular ash from the burner and cooling it.

4,880,529

SEPARATION OF POLYMETALLIC SULPHIDES BY FROTH FLOTATION

Srdjan Bulatovic, and Robert S. Salter, both of Peterborough, Canada, assignors to Falconbridge Limited, Toronto, Canada

Filed May 11, 1988, Ser. No. 192,567

Int. Cl.⁴ B03D *1/02*

U.S. Cl. 209—167 18 Claims

1. A froth flotation process for the enhanced separation of copper bearing sulphides from polymetallic sulphidic minerals

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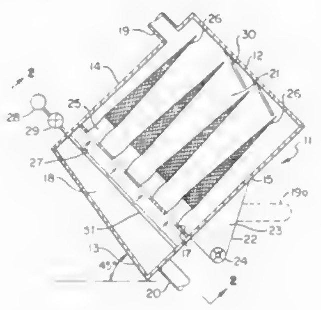
containing copper sulphide and at least one member of the group consisting of: zinc sulphide, sphalerite, nickel sulphide, pentlandite, copper-lead-zinc sulphides and iron sulphides, comprising the steps of:

(a) preparing a froth flotation reagent by first dissolving in water a mixture of quebracho and one member of the group consisting of: dextrin and guar gum, thereafter, adding to the solution so obtained, a water-soluble salt of a lignin sulphonate and so obtaining a second solution, and lastly adding for dissolution to said second solution at least one member of the group consisting of: alkali metal cyanide, alkaline earth metal cyanide, water-soluble metal sulphate, and a water soluble sulphite containing a tetravalent sulphur atom, so yielding, as the reaction product, a froth flotation reagent solution containing said ingredients added in three successive dissolution steps;

(b) adding said froth flotation reagent solution to an aqueous slurry comprising ground polymetallic sulphicid minerals containing copper sulphide and at least one member of the group consisting of: zinc sulphide, sphalerite, nickel sulphide, pentlandite, copper-lead-zinc sulphides and iron sulphides, and conditioning agents, in an amount sufficient to float the copper sulphides; and

(c) subjecting said aqueous slurry to froth flotation to yield a copper sulphide bearing froth and a tailing containing polymetallic sulphidic materials depleted in copper sulphides.

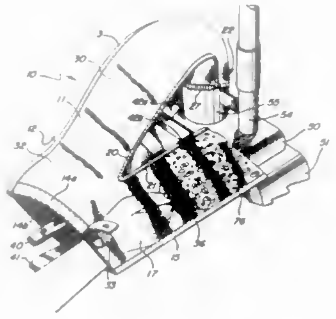
4,880,530
SELF-CLEANING SCREENING DEVICE
Robert E. Frey, 2 Highland Ave., Chatham, N.J. 07928
Continuation-in-part of Ser. No. 129,230, Dec. 7, 1987, abandoned. This application Jul. 5, 1988, Ser. No. 214,765
Int. Cl.⁴ B07B *1/55*
U.S. Cl. 209—380 **18 Claims**



1. An apparatus for continuously separating a mixture of fine and coarse particles comprising:

(a) a hollow housing having a tubesheet located therein tilted downwardly at an acute angle from the horizontal, said tubesheet separating said housing into a lower fines outlet chamber and an upper pre-screen chamber;
(b) a plurality of Venturi tubes mounted on said tubesheet;
(c) a plurality of screen elements mounted on said Venturi tubes;
(d) means located in said fines outlet chamber for introducing a pulse of a compressed gas through said Venturi tubes to the screens;
(e) an inlet for introducing air and said mixture of fine and coarse particles to said pre-screen chamber mounted in said housing;
(f) an outlet for coarse particles mounted on said housing and communicating with said pre-screen chamber; and
(g) an outlet for fine particles mounted in said housing and communicating with said fines outlet chamber.

4,880,531
POOL VACUUM FILTER BAG
Scott L. Blake, Anaheim; Millie A. Carthew, Westminster, and Christopher G. Collins, Garden Grove, all of Calif., assignors to Christopher G. Collins, Garden Grove, Calif.
Filed Mar. 2, 1988, Ser. No. 163,329
Int. Cl.⁴ B01D *35/16*
U.S. Cl. 210—169 **17 Claims**



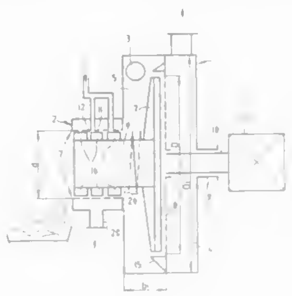
1. For use in filtering the discharge flow of a submersible pool vacuum having a vacuum unit for drawing pool water and debris from the submerged pool surfaces, a discharge port for discharging a flow of pool water and vacuumed debris, and a water supply hose; a pool vacuum filter bag comprising:

an upper chamber formed of a mesh material and defining a separable top seam and closed side seams;
an enlogated flow chamber formed of a mesh material and having a first opening coupled to said upper chamber, a mouth portion coupleable to said discharge port, and an elongated flow passage therebetween, said flow chamber operative to receive said flow of pool water and debris and couple it to said upper chamber;
an elongated closed-end debris chamber formed of a mesh material separable from said flow chamber and coupled to said upper chamber and extending downwardly therefrom;
chamber attachment means for releaseably attaching said debris chamber to said flow chamber; and
flow directing means within said upper chamber for directing said flow of pool water and debris laterally within said upper chamber,
said debris chamber being constructed to be turned inside-out and to be drawn outwardly through said separable top seam of said upper chamber when separated while said mouth portion remains coupled to said discharge port.

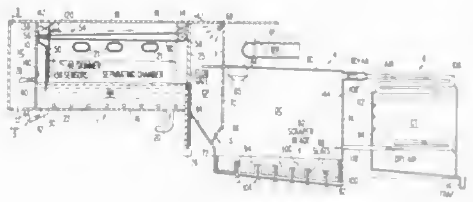
4,880,532
SORTING APPARATUS FOR FIBER SUSPENSIONS
Albrecht Meinecke, and Walter Musselmann, both of Heidenheim, Fed. Rep. of Germany, assignors to J. M. Voith GmbH, Heidenheim, Fed. Rep. of Germany
Filed Feb. 17, 1987, Ser. No. 15,214
Claims priority, application Fed. Rep. of Germany, Feb. 18, 1986, 3605078
Int. Cl.⁴ D21D *5/06*
U.S. Cl. 209—268 **28 Claims**

1. A final stage sorter of a sorting apparatus for sorting a heavily contaminated rejects fraction from waste paper fiber suspension, said final stage sorter comprising:

a substantially rotationally symmetric casing having a first rotationally symmetric casing section and a second rotationally symmetric casing section communicating with one another, said second casing section having an open end opposite said first casing section, the diameter of said first casing section being larger than the diameter of said second casing section, said first and second casing sections having a common axis of rotational symmetry;
a flat strainer mounted in said first casing section substantially perpendicular to said axis, said flat strainer together with said first casing section defining a first accepts space and a churning space within said first casing section, said first casing section having inlet means for communicating said fiber suspension to the churning space;
a strainer basket mounted concentrically within said second casing section, said strainer basket together with said second casing section defining a sorting space and a second accepts space, the sorting space of said second casing section being adjacent to and in communication with the churning space of said first casing section; and
a rotor mounted in said casing and rotatable about said axis, said rotor including an impeller disposed in said first casing section and rotatable in said churning space in proximity to said flat strainer, said rotor including a cylindrical component having circumferentially disposed sorting elements disposed in said second casing section and rotatable in proximity to said strainer basket.



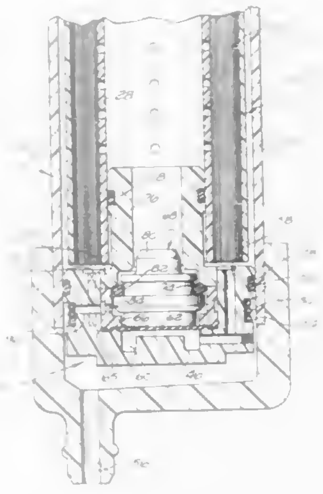
4,880,533
APPARATUS AND SYSTEM FOR TREATING WASTE WATER AND SLUDGE
John Hondulas, Rte. 4, Box 505, Gatlinburg, Tenn. 37738
Filed Jun. 9, 1988, Ser. No. 204,533
Int. Cl.⁴ B01D *17/035;* **C02F** *1/40*
U.S. Cl. 210—104 44 Claims



1. An apparatus for treating waste water including oil and grease, comprising:

a separating tank defining a separating chamber for receiving a quantity of waste water; and
a flow gate positioned at a side of said separating chamber, said flow gate being movably disposed so that it can be lowered for separating a floating component of the waste water from the remaining water relatively free of the floating component by removal of the floating component from said separating chamber,
and a drying means forming a drying chamber operatively connected to said separating chamber.

4,880,534
REVERSE OSMOSIS WATER PURIFICATION SYSTEM WITH IMPROVED PRESSURE RELIEF VALVE
Bruce D. Burrows, 25581 Via Paladar, Valencia, Calif. 91355
Filed Sep. 26, 1988, Ser. No. 249,518
Int. Cl.⁴ B01D *13/00*
U.S. Cl. 210—130 **12 Claims**



1. A reverse osmosis water purification system, comprising:
a reverse osmosis module for receiving a feed water supply and for producing therefrom a supply of relatively purified water and a supply of relatively impure reject water;
a storage reservoir having a pure water chamber for receiving and storing purified water, said storage reservoir including means for pressurizing the purified water therein to a pressure level directly proportional to the quantity of purified water within said reservoir;
means for coupling the purified water from said reverse osmosis module to said storage reservoir;
faucet valve means coupled to said storage reservoir for dispensing purified water from said storage reservoir;
drain means for coupling the reject water from said reverse osmosis module to a drain, said drain means including a restrictor for flow of the object water with substantial pressure drop from said reverse osmosis module to the drain; and
a pressure relief valve for limiting the pressure of the purified water within said storage reservoir to a predetermined proportion of the pressure of the reject water generally at an upstream end of said restrictor, said pressure relief valve including a valve body defining a relief port, and a valve head with first and second differential surface areas exposed respectively to the pressure of the reject water generally at the upstream end of said restrictor and to the pressure of the purified water, said valve head being movable in response to the pressures applied to said differential surface areas between closed and open positions respectively closing and opening said relief port, said relief port when opened permitting bleed flow of purified water to the drain to limit the pressure of the purified water;
said relief valve including means carried by said valve body to isolate said valve head from direct contact with reject water.

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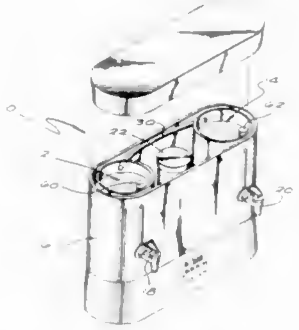
4,880,535
WATER SUPPLY STATION WITH MULTIPLE WATER STORAGE RESERVOIRS

Bruce D. Burrows, 25581 Via Paladar, Valencia, Calif. 91355
Filed Feb. 21, 1989, Ser. No. 312,760
Int. Cl.^{4} B01D *36/00*
U.S. Cl. 210—181 15 Claims



1. A water supply station, comprising:

a first reservoir for receiving water from a feed water supply;

a second reservoir;

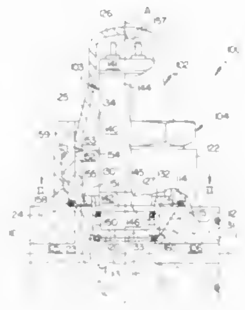
an overflow conduit coupled between said first and second reservoirs such that water within said first reservoir spills through said overflow conduit when said first reservoir reaches a substantially filled condition to flow into and fill said second reservoir;

dispensing valve means for separately dispensing water from said first and second reservoirs; and

temperature control means for maintaining water within said first and second reservoirs at different temperature levels, said temperature control means including a cooler assembly associated with one of said first and second reservoirs for reducing the temperature of the water therein.

4,880,536
FILTER ASSEMBLY OF A MANIFOLD, MOUNTING RING AND FILTER HOUSING

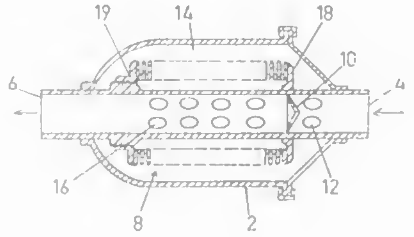
Garry R. Haraveth, Cortland; Robert J. Catterfeld, Homer, both of N.Y., and Benjamin Trasen, Littleton, Colo., assignors to Pall Corporation, Glen Cove, N.Y.
Filed May 15, 1987, Ser. No. 50,013
Int. Cl.^{4} B01D *27/08*
U.S. Cl. 210—232 20 Claims



1. A filter assembly comprising a manifold including first and second ports; a filter housing including a side wall and an end wall having first and second spaced openings and a cylindrical protrusion containing a bore; a hollow, generally cylindrical filter element disposed within the filter housing spaced from the side wall and including an end cap which has an opening communicating with the interior of the hollow filter element and is disposed in the bore of the filter housing, the first opening of the filter housing communicating with the space between the side wall and the filter element and the second opening of the filter housing communicating with the opening in the end cap; and a mounting ring operatively associated with the filter housing and the manifold for detachably mounting the filter housing to the manifold with the first and second ports of the manifold respectively communicating with the first and second openings of the filter housing.

4,880,537
MULTIPLE DISC TYPE FILTER AND DISC CONSTRUCTION USEFUL THEREIN

Mordeki Drori, 89 Zahal Street, Kiron, Israel
Continuation of Ser. No. 850,146, Apr. 10, 1986, Pat. No. 4,744,901. This application Mar. 14, 1988, Ser. No. 167,999
Claims priority, application Israel, Apr. 10, 1985, 74873
The portion of the term of this patent subsequent to May 17, 2005, has been disclaimed.
Int. Cl.^{4} B01D *25/02*
U.S. Cl. 210—323.1 17 Claims



1. A filter including a housing having an inlet connectable to an upstream pipe, and an outlet connectable to a downstream pipe; and a stack of discs disposed within said housing for separating solid particles from a fluid flowing between said discs from the upstream side of said stack to the downstream side thereof; characterized in that said stack includes:

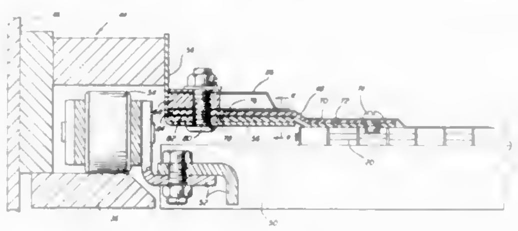
a plurality of cooperating filter elements defining a plurality of paired co-operating filter surfaces, including a first surface defining a large surface area and a second surface contacting only a portion of said large surface area of said first surface and leaving a portion of the large surface area on the upstream side of the stack not contacted thereby, at least one of said first and second surfaces being formed with grooves at the areas at which said first and second surfaces contact, thereby to form means enabling use of the filter in high pressure or corrosive environments including:

(a) compartments on the upstream side of the stack for accumulation of solid particles; and

(b) edge filtering passageways extending along the grooves in contact with said second surface, which passageways define the minimum size of particles separated by the filter and extend from said compartments to the downstream side of the stack, and wherein said second surface is formed with serrated edge surfaces defining said compartments on the upstream side of the stack, thereby increasing the length along which edge filtering passageways are defined.

4,880,538
EDGE SEAL FOR LIQUID FILTRATION APPARATUS

Lyle B. Barcomb, North Syracuse, and Lawrence El-Hindi, Fabius, both of N.Y., assignors to Filter Tech Inc., Manlius, N.Y.
Filed Aug. 15, 1988, Ser. No. 231,963
Int. Cl.^{4} B01D *33/12*
U.S. Cl. 210—401 16 Claims



1. In a liquid filtration apparatus having a tank for receiving liquid carrying solid contaminants and having parallel side walls, a continuous conveyor having an upper reach carrying a liquid-permeable media having lateral edges, said upper reach being positioned within and movable through the liquid in said tank, and a chamber below said tank and communicating therewith through an opening to receive filtered liquid passing through said media and said opening, edge seal means providing an essentially fluid-tight seal along each lateral edge of said upper reach to prevent leakage of unfiltered liquid from said tank through said opening and into said chamber, said edge seal means comprising:

(a) a pair of substantially flat, superposed, upper and lower strips of fluid-impervious material fixedly attached to the interior of said tank on both sides thereof and extending inwardly, substantially parallel to and spaced from one another, said strips each having first and second terminal ends positioned above the level of liquid in said tank adjacent the positions at which said upper reach enters and exits, respectively, said liquid;

(b) a rigid seal support fixedly attached to the interior of said tank on both sides thereof and extending inwardly with an upper surface parallel to and underlying said lower strip;

(c) a layer of fluid-impervious material affixed to each lateral edge of said conveyor about the entire periphery of said conveyor for movement therewith;

(d) the outermost portions of each lateral edge of said media being positioned between opposing surfaces of said upper and lower strips on both sides of said tank for sliding movement between said first and second terminal ends thereof; and

(e) the outermost portions of the lateral edges of said layer affixed to each of said conveyor lateral edges being positioned between opposing surfaces of said lower strip and said seal support on both sides of said tank for sliding movement between said first and second ends thereof.

4,880,539
FILTER FOR FILTERING SOLIDS OUT OF A LIQUID HAVING A DOCTOR BLADE WIPING MEANS

John E. Crawford, Glens Falls, and Keith Crofut, Fortedward, both of N.Y., assignors to Cellier Corporation, South Natick, Mass.
Filed Oct. 16, 1987, Ser. No. 109,431
Int. Cl.^{4} B01D *33/36, 35/16, 35/28;* **B07B** *1/52*
U.S. Cl. 210—408 17 Claims

1. A filter for filtering solids out of a liquid comprising:

a housing for receiving a liquid;

a cylindrical filter member having a filter surface positioned in said housing for screening oversized solids from a liquid passing through the filter surface which are deposited on the filter surface;

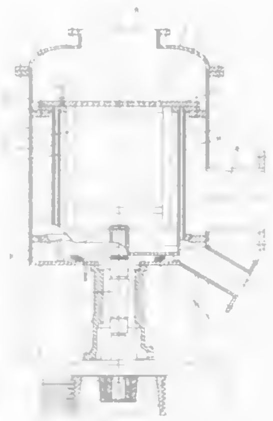
doctor blade means engaging the filter surface and accumulating solids deposited on said surface through the relative rotation therebetween;

said doctor blade means including a blade member biased into engagement with said filter surface at an acute angle relative to the direction of movement as between the filter member and the blade means; and

blade wiping means including a portion spaced at a distance from the filter surface and disposed in the path of travel of said blade member for cleaning the accumulated solids from members at least once each time the blade member travels the circumference of the filter member.

4,880,540
PULP SCREENING APPARATUS

Frey Frejborg, Glens Falls, N.Y., assignor to A. Ahlstrom Corporation, Noormarkku, Finland
Continuation-in-part of Ser. No. 738,743, May 29, 1985, Pat. No. 4,676,903, which is a continuation-in-part of Ser. No. 472,742, Mar. 7, 1983, Pat. No. 4,529,520. This application Jun. 11, 1987, Ser. No. 61,594
Claims priority, application Finland, Jan. 26, 1983, 830256
Int. Cl.^{4} B01D *29/38;* **B07B** *1/20*
U.S. Cl. 210—413 27 Claims



1. A pulp screening apparatus comprising a housing having an inlet for allowing fibrous stock to be introduced into the interior thereof, a first outlet for allowing the accept screened stock to be removed therefrom, a second outlet for the reject, a screen cylinder having a contour surface with grooves within said housing, a rotor moving in the vicinity of said screen at a predetermined speed and forming together with said screen an annular screening chamber, said rotor being located in the inlet side of the screen and wherein at least the surface facing the screen is at least partially contoured with grooves and is provided with a plurality of openings or perforations along at least a portion of the length of said screening chamber to allow fibrous stock to be introduced into said screening chamber and prevent the undesired debris of the stock from entering said chamber.

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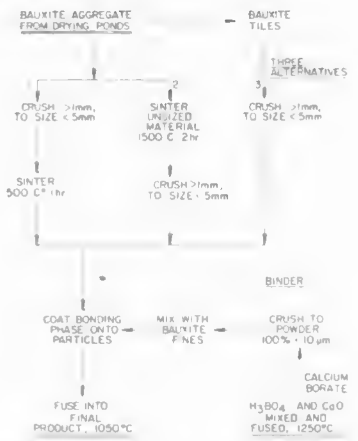
4,880,541
HOT FILTER MEDIA

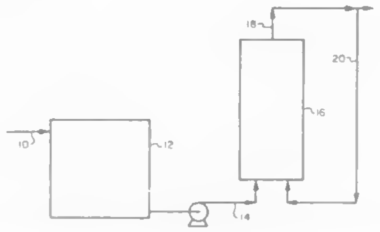
Paul J. Chiron, Victoria; Kevin D. Watson, South Australia, and Raymond W. Shaw, Victoria, all of Australia, assignors to Comalco Aluminum Limited, Melbourne, Australia
Filed Mar. 24, 1988, Ser. No. 172,441
Claims priority, application Australia, Apr. 3, 1987, PI1243
Int. Cl.⁴ B01D *39/14;* **B05D** *5/00*
U.S. Cl. 210—496 19 Claims


BAUXITE AGGREGATE FROM DRYING PONDS
BAUXITE TILES
THREE ALTERNATIVES
2
3
CRUSH >1mm, TO SIZE < 5mm
SINTER UNSIZED MATERIAL 1500 C 2hr
CRUSH >1mm, TO SIZE < 5mm
SINTER 500 C° 1hr
CRUSH >1mm, TO SIZE < 5mm
BINDER
COAT BONDING PHASE ONTO PARTICLES
MIX WITH BAUXITE FINES
CRUSH TO POWDER 100% < 10 μm
CALCIUM BORATE
FUSE INTO FINAL PRODUCT, 1050°C
H₃BO₄ AND CaO MIXED AND FUSED, 1250°C

1. A filter medium suitable for removing entrained solids from fluids at high temperatures characterized in that said medium comprises sintered ultrafine bauxite particles having an average size between 0.1 microns and 1.0 millimeter.

4,880,542
BIOFILTER FOR THE TREATMENT OF SOUR WATER

Kerry L. Sublette, Tulsa, Okla., assignor to Combustion Engineering, Inc., Windsor, Conn.
Filed May 13, 1988, Ser. No. 193,712
Int. Cl.⁴ C02F *3/34*
U.S. Cl. 210—611 5 Claims

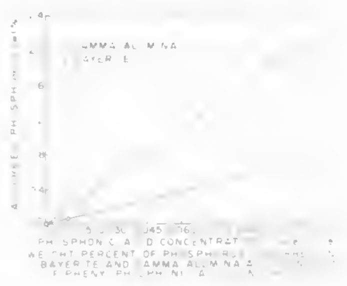


1. A process for oxidizing the inorganic sulfide in a water stream to form the corresponding sulfate comprising the steps of:

(a) providing a sulfide tolerant strain of *T. denitrificans* tolerant of levels of sulfide in excess of 1000 μM;
(b) immobilizing said strain together with calcium carbonate on or within a carrier;
(c) providing nutrient for said strain within said water stream including iron ions which precipitate when contacted with sulfides; and
(d) contacting said water containing said sulfides and nutrient with said immobilized strain and calcium carbonate in a packed or fluidized bed reactor whereby said strain oxidizes said sulfide to sulfate and whereby said strain derives iron nutrient from said precipitated iron.

4,880,543
SUPERCRITICAL FLUID CHROMATOGRAPHY PACKING MATERIAL CONTAINING ALUMINA

Robinson P. Khosah, Point Breeze; John W. Novak, New Kensington; Douglas G. Weaver, Monroeville; Karen R. Fraser-Milla, Wilkinsburg, and Richard R. Burr, Leechburg, all of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.
Continuation of Ser. No. 090,880, Aug. 31, 1987, Pat. No. 4,816,159. This application Jul. 1, 1988, Ser. No. 214,309
The portion of the term of this patent subsequent to Mar. 28, 2006, has been disclaimed.
Int. Cl.⁴ B01D *15/08*
U.S. Cl. 210—635 10 Claims



1. A method of separating squalene from shark liver oil under supercritical fluid conditions, the method comprising the steps of:

(a) providing a bed containing alumina particles;
(b) introducing shark liver oil to the bed;
(c) adding CO_2 to said bed under supercritical fluid conditions;
(d) removing CO_2 and squalene from the bed; and
(e) separating the squalene from the CO_2 by returning the CO_2 to nonsupercritical conditions.

4,880,544
CRYSTAL GROWTH PROCESS FOR PREPARING INORGANIC DYNAMIC MEMBRANES

Joseph P. Barone, Westford, Mass., assignor to Millipore Corporation, Bedford, Mass.
Division of Ser. No. 926,927, Nov. 3, 1986, Pat. No. 4,808,311. This application Nov. 10, 1988, Ser. No. 269,509
Int. Cl.⁴ B01D *13/00*
U.S. Cl. 210—639 2 Claims

1. The process for forming a composite membrane comprising a porous inorganic substrate and an integral particle porous film directly bound only to one surface of said substrate, said particle porous film being bonded together by crystal growth to form an integral film which comprises depositing a film of said inorganic particles said one surface of said inorganic porous substrate and passing a solution supersaturated with a composition comprising the composition of said inorganic particles through said film thereby to effect crystal growth on said particles until a bonded porous of said particles is formed.

4,880,545
ULTRA-FILTRATION MEMBRANES AND A METHOD FOR THE SEPARATION OF SUGARS USING THE SAME

A. Xavier Swamikannu, Des Plaines, Ill., assignor to UOP, Des Plaines, Ill.
Filed Nov. 18, 1988, Ser. No. 272,971
Int. Cl.⁴ B01D *13/00, 13/04*
U.S. Cl. 210—654 22 Claims

1. An ultra-filtration membrane comprising structure for achieving a delicate balance between selectivity and water reflux in the separation of preselected water soluble components consisting essentially of a porous support backing material having composited thereon an interfacial polymerized condensation product of the reaction between a polymeric amine produced from the reaction between a polyepihalohydrin and a primary amine containing a substituent selected from the group consisting of hydroxy, alkoxy and carboxyl radicals and a compound selected from the group consisting of aromatic polycarboxylic acid chlorides, alicyclic polycarboxylic acid chlorides, aliphatic polycarboxylic acid chlorides, aromatic polycarboxylic acid anhydrides and aromatic diisocyanates.

4,880,546
RECOVERY OF TRANSITION METALS FROM AQUEOUS SOLUTIONS

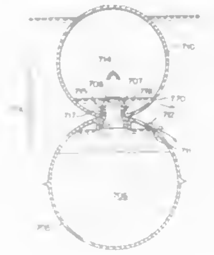
Brian L. Goodall, Akron, Ohio, and Paulus A. M. Grotenhuis, Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.
Filed Dec. 16, 1988, Ser. No. 285,464
Claims priority, application United Kingdom, Dec. 17, 1987, 8729446
Int. Cl.⁴ B01D *17/00*
U.S. Cl. 210—699 14 Claims

1. A process comprising recovering a transition metal from an aqueous solution containing a complex of said transition metal with a cyclic phosphite having a bridgehead phosphorus atom linked to three oxygen atoms at least two of which form together with the bridgehead phosphorus atom part of a ring, said cyclic phosphite having a hydroxymethyl group linked to a ring carbon atom, by:

(a) hydrolyzing the cyclic phosphite in said complex, thereby forming a reaction mixture,
(b) contacting the reaction mixture obtained in step (a) with a compound forming a water-stable complex with said transition metal which is sufficiently water-stable to preclude the need to distill off water in order to achieve substantially complete recovery of said transition metal.
(c) contacting the reaction mixture obtained in step (b) with an organic extraction agent for said water-stable complex, thereby forming an organic extract phase containing at least a portion of said transition metal, and an aqueous raffinate phase, and
(d) separating said organic extract phase containing at least a portion of said transition metal from said aqueous raffinate phase.

4,880,547
METHODS FOR WATER TREATMENT

Kenji Etani, 26 Clinton Dr. #112, Hollis, N.H. 03049
Continuation-in-part of Ser. No. 93,186, Sep. 4, 1987, Pat. No. 4,775,485, which is a division of Ser. No. 488,597, Apr. 22, 1983, Pat. No. 4,692,314, which is a continuation-in-part of Ser. No. 40,302, May 18, 1979, abandoned, which is a continuation-in-part of Ser. No. 934,425, Aug. 17, 1978, abandoned, which is a continuation of Ser. No. 717,514, Aug. 25, 1976, abandoned, which is a continuation-in-part of Ser. No. 591,536, Jun. 30, 1975, abandoned. This application Mar. 16, 1988, Ser. No. 169,230
The portion of the term of this patent subsequent to May 28, 2002, has been disclaimed.
Int. Cl.⁴ C02F *1/56, 1/76*
U.S. Cl. 210—728 9 Claims



1. A process for feeding water-treatment chemicals into a water system comprising the steps of:

providing a feeder in the form of a substantially spherical shell of waterproof plastic of substantially neutral buoyancy having an upper hemisphere with a filler port and closure therefore, and a number less than 26 of feed holes greater than five-thousandths of an inch (0.005") in diameter and less than three square millimeters in cross section;
containing a dose of water-treatment chemicals and having a number and size of said holes selected to provide a desired rate of feeding of said chemical;
placing said feeder so as to be free to move about and roll within an intermediate velocity chamber of said water-treatment system which also includes a body of water and means to cause a flow of water of said body through said system; and
subjecting said feeder to said flow thereby to extract said chemicals at a substantially uniform rate into said water, wherein said dose consists essentially of a charge of a first water-soluble treatment chemical which is introduced through said port into the top of said feeder in a dehydrated granular form, said first chemical being capable of taking up and forming a weak chemical bond with a substantial amount of water, and a second treatment chemical which is supplied in aqueous solution, added to said first chemical in said feeder to create with said first chemical, a substantially homogeneous mass adherent to the bottom of said feeder, and
whereby in the absence of said flow, said feeder is urged by said mass to repose with said number of holes upward, thereby substantially to stop the feeding of said chemicals.

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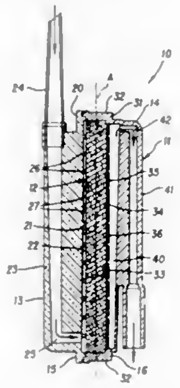
4,880,548
DEVICE AND METHOD FOR SEPARATING LEUCOCYTES FROM PLATELET CONCENTRATE

David B. Pall, Roslyn Estates, and Thomas C. Gsell, Glen Cove, both of N.Y., assignors to Pall Corporation, Glen Cove, N.Y.

Continuation-in-part of Ser. No. 156,894, Feb. 17, 1988, abandoned. This application Apr. 25, 1988, Ser. No. 185,993

Int. Cl.⁴ B01D *39/04*

U.S. Cl. 210—767 94 Claims



1. A device for the depletion of the leucocyte content of a platelet concentrate comprising a porous, fibrous medium having a CWST of at least about 90 dynes/cm.

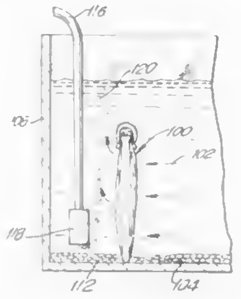
4,880,549
METHOD OF FILTERING IN AN AQUARIUM TANK WITH A FILTER ENVELOPE

Allan H. Willinger, Oakland, and Klaus Woltmann, Demarest, both of N.J., assignors to Willinger Brothers, Inc., Oakland, N.J.

Division of Ser. No. 871,106, Jun. 5, 1986, Pat. No. 4,783,298. This application Aug. 17, 1988, Ser. No. 233,246

Int. Cl.⁴ B01D *37/00*

U.S. Cl. 210—805 2 Claims



1. A method of filtering an aquarium tank, comprising placing a filter envelope of non-woven foraminous filter material with soft pliable edges diagonally across a corner of an aquarium tank having water therein; extending an air line tubing into the tank water and behind the filter envelope, and pumping air into the air line tubing, whereby an aquarium water passes through the filter envelope to a space behind the envelope to be filtered by the envelope and also retains the envelope in place.

4,880,550
PREPARATION OF HIGH BASE CALCIUM SULFONATES

Mack W. Hunt, Naperville, Ill., assignor to Amoco Corporation, Chicago, Ill.

Filed Aug. 26, 1988, Ser. No. 237,146

Int. Cl.⁴ C10M *135/10, 125/22*

U.S. Cl. 252—33 5 Claims

1. A method for preparing a carbonate overbased calcium sulfonate which utilizes a single-stage carbonation, wherein the resulting overbased product has a metal ratio of at least about 10 and a TBN in the range of about 250 to 400, which method comprises: forming a first mixture consisting essentially of a lower molecular weight alkanol, an alkyl or alkaryl-substituted sulfonic acid or sulfonate compound, a diluent, and a solvent; (2) adding a calcium compound to said first mixture to form a second mixture in which the amount of added calcium is at least about 10 times the amount necessary to form a neutral calcium sulfonate; (3) heating the second mixture to its reflux temperature; (4) subjecting the second mixture to a single carbonation at said reflux temperature to form a carbonated product while simultaneously and continuously removing an overhead comprising water produced during the carbonation reaction; (5) after carbonation is stopped, heating the carbonated product to an elevated temperature sufficient to remove the alkanol; and (6) removing solids and solvent from the carbonated product to obtain the final overbased product.

4,880,551
ANTIOXIDANT SYNERGISTS FOR LUBRICATING COMPOSITIONS

Lester A. Doe, Newtown, Conn., assignor to R. T. Vanderbilt Company, Inc., Norwalk, Conn.

Continuation-in-part of Ser. No. 204,487, Jun. 6, 1988, abandoned. This application Apr. 3, 1989, Ser. No. 333,874

Int. Cl.⁴ C10M *105/72, 105/22*

U.S. Cl. 252—47.5 2 Claims

1. A lubricating composition comprising a major portion of a mineral oil or synthetic lubricating oil, fluid or grease and 0.01 to 5.0 percent by weight of an antioxidant composition consisting of

(a) 1-[di(4-octylphenyl)aminomethyl]tolutriazole and

(b) at least one antioxidant selected from the group consisting of methylenebis(di-n-butyldithiocarbamate), 2,6-di-t-butyl-4-sec-butylphenol, 2,6-di-t-butyl-4-methylphenol and butylated phenol mixture, wherein the weight ratio of component (a) to component (b) ranges from about 1:4 to 4:1.

4,880,552
WATER-SOLUBLE ADDITIVES HAVING EXTREME PRESSURE EFFECT FOR AQUEOUS FUNCTIONAL FLUIDS, FUNCTIONAL FLUIDS AND CONCENTRATED AQUEOUS COMPOSITIONS CONTAINING THE ADDITIVES

Patrice Guesnet, Pau, France; Tetsuchi Kawamura, Tokyo, Japan; Gérard Savin, Serre-Castet, France; Sabine Poncet, Pau, France, and Charles Castera, Sainte-Suzanne, France, assignors to Societe Nationale Elf Aquitaine (Production), France

Filed Apr. 21, 1988, Ser. No. 184,425

Claims priority, application France, Apr. 24, 1987, 87 05778

Int. Cl.⁴ C10M *135/26*

U.S. Cl. 252—34 22 Claims

1. In a method of machining metals in the presence of an aqueous functional fluid containing an extreme pressure additive comprising incorporating a water-soluble salt into synthetic or semisynthetic fluid wherein the improvement is a water-soluble salt of 3-mercaptopropionic acid disulphide.

4,880,553
METHYLENE LINKED AROMATIC POUR POINT DEPRESSANT

Joseph L. Kostusyk, Euclid, and Syed Q. A. Rizvi, Painesville, both of Ohio, assignors to The Lubrizol Corporation, Wickliffe, Ohio

Continuation of Ser. No. 814,692, Dec. 30, 1985, Pat. No. 4,753,745. This application Apr. 5, 1988, Ser. No. 178,048

The portion of the term of this patent subsequent to Jun. 28, 2005, has been disclaimed.

Int. Cl.⁴ C10M *131/06, 147/02*

U.S. Cl. 252—58 5 Claims

1. A composition comprising compounds having molecular weights ranging from at least as low as 271 to at least as high as 300,000 the compounds have the general structural formula (I):

$$Ar(R)\text{—}[Ar'\text{—}(R')\ ]Ar'' \qquad (I)$$

wherein the Ar, Ar' and Ar'' are independently an aromatic moiety containing 1 to 3 aromatic rings and the composition includes compounds wherein aromatic moieties are present with 0 substituents, 1 substituent, 2 substituents and 3 substituents, (R) and (R') are independently an alkylene group containing about 1 to 100 carbon atoms with the proviso that some compounds are present in the composition wherein at least one of (R) or (R') is CH_2, and n is 0 to about 1000, the substituents being selected from the group consisting of substituents derived from olefins and substitients derived from chlorinated hydrocarbons.

4,880,554
THERMOPLASTIC BLEND OF POLYCARBONATE, POLYMETHYLMETHACRYLATE AND AES

Thomas H. Newman; David E. Hcnton, and Silvia A. Evans, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Aug. 22, 1988, Ser. No. 234,713

Int. Cl.⁴ C08L *69/00*

U.S. Cl. 525—67 7 Claims

1. The thermoplastic blend comprising:

from about 40% to about 80% polycarbonate;

from about 5% to about 40% of rubber-modified polymethylmethacrylate; and

from about 15% to about 50% of the olefin-diene rubber-modified styrene-acrylonitrile resin.

4,880,555
ENZYME HYDROLYZED MALTODEXTRIN CONTAINING FINISHER/PRESERVER/CLEANER COMPOSITION FOR LITHOGRAPHIC PRINTING PLATES

John E. Walls, Hampton, and Major S. Dhillon, Belle Mead, both of N.J., assignors to Hoechst Celanese Corporation, Somerville, N.J.

Filed Sep. 15, 1988, Ser. No. 244,924

Int. Cl.⁴ B41F *35/00;* **C11D** *3/22, 3/30, 3/44*

U.S. Cl. 252—143 20 Claims

1. A composition for finishing, preserving and cleaning lithographic printing plates consisting essentially of a stable emulsion of:

(a) from about 0.1% to about 7.0% by weight of the composition of a polyol selected from the group consisting of ethylene glycol, propylene glycol, sorbitol and glycerin having a molecular weight in the range of from about 50 to about 2,000; and

(b) from about 1.0% to about 12.0% by weight of the composition of a maltodextrin obtained by the enzyme hydrolysis of corn or potato starch, said maltodextrin having a viscosity of from about 6,000 to about 9,000 cps when measured as a 25% solution in deionized water at 22° C.; and

(c) from about 0.1% to about 3.0% by weight of the composition of a mixture of a C_{18} to C_{30} alcohol and an aminated, aliphatic C_8 to C_{24} alcohol sulfate wherein the ratio of alcohol to sulfate ranges from about 1:1 to about 5:1; and

(d) from about 5.0% to about 20.0% by weight of the composition of a composition of hydrocarbons having a boiling point in the range of from about 175° F. to about 500° F., and a flash point of above about 100° F., said composition of hydrocarbons containing less than about 10% aromatic components; and

(e) from about 0.1% to about 3.0% by weight of the composition of a substituted phenoxypoly(oxyethylene)ethanol wherein the substitution is H, isooctyl, nonyl, decy or dodecyl, having a hydrophile/lipophile balance of from about 8 to about 15; and

(f) from about 0.05% to about 1.0% by weight of the composition of a mono-, di- or tri-ethanolamine; and

(g) sufficient water to formulate an effective finishing, preserving and cleaning composition for lithographic printing plates; and

(h) a sufficient amount of an organic or inorganic acid to impart a pH to the composition of from about 2.5 to about 6.5.

4,880,556
AQUEOUS ALKALI METAL HALOGENITE COMPOSITIONS CONTAINING A COLORANT

Richard S. Hutchings, Cincinnati, Ohio, assignor to The Drackett Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 54,347, May 26, 1987, abandoned. This application Sep. 2, 1988, Ser. No. 243,105

Int. Cl.⁴ C11D *7/06, 7/12*

U.S. Cl. 252—156 26 Claims

1. An aqueous, alkaline cleaning composition having a pH of about 9 or above comprising on a weight basis from about 0.01 to about 5% of an alkali metal halogenite; from about 0.01 to about 3% of a colorant normally chemically incompatible with said halogenite in aqueous media, and a stabilizer selected from the group consisting of alkali metal carbonate and borate salts and mixtures thereof, said stabilizer being present in the composition in an amount effective to stabilize the composition as evidenced by a substantial absence of chlorine dioxide in the composition.

4,880,557
SPRAY LUSTERING-CLEANSING AGENT

Sosaburo Obara, Tokyo; Atsushi Ikeda, Fujisawa; Seigo Shinohara, Chigasaki, and Tetsuo Kijima, Fujisawa, all of Japan, assignors to Taibo Industries Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 33,352, Apr. 2, 1987, abandoned. This application Apr. 11, 1988, Ser. No. 180,182

Claims priority, application Japan, Aug. 21, 1986, 61-194038

Int. Cl.⁴ C11D *7/22*

U.S. Cl. 252—174.15 3 Claims

1. Spray lustering-cleansing agent, prepared by charging a spray can with an emulsified basic material in combination with a propellant and a foam regulating agent, said bsic material substantially comprising 5.0 to 60.0 wt. % of a silicone oil emulsified with water using an emulsifier, 0.1 to 10.0 wt. % of an emulsifier, a water-soluble organic base which is at least one member selected from the group consisting of sodium benzoate, sodium citrate, sodium malate, ammonium benzoate, triethanol amine and diethanol amine and which adjusts the pH value of the spray lustering-cleansing agent to within a range of 8.0 to 11.0 and which enables the foam of said lustering-cleansing agent to exhibit improved adhesiveness to a tire, and water.

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4,880,558

LIQUID CLEANING PREPARATION FOR HARD SURFACES

Frantisek Jost, Duesseldorf, and Klaus-Dieter Wisotzki, Erkrath, both of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

Filed Jun. 20, 1988, Ser. No. 209,154

Claims priority, application Fed. Rep. of Germany, Jun. 19, 1987, 3720262

Int. Cl.⁴ C11D *3/37*

U.S. Cl. 252—174.23 29 Claims

1. An aqueous cleaning composition comprising:

(a) from about 0.5 to about 40% by weight of at least one surfactant;

(b) from about 0.01 to about 1% by weight of a mixture of

(i) at least one polyacrylamide, and

(ii) at least one polyethoxylated monofunctional or polyfunctional alkanol; and

(c) from 0 to about 6% by weight of at least one builder:

wherein the at least one polyacrylamide component (b)(i) is a homopolymer or copolymer or acrylamide having a molecular weight of from about 300,000 to about 15,000,000; component (b)(ii) is at least one adduct of 30 to 150 moles of ethylene oxide with a terminal alkanol containing from 12 to 22 carbon atoms; the weight ratio of component b)i) to component (b)(ii) is from about 1 : 3 to about 3 : 1; and the composition when diluted to from about 2 to about 20 g/l in water has a pH in the range of from 7.0 to about 10.5; and wherein when the at least one polyacrylamide component (b)(i) is a copolymer of acrylamide, one or more monomers other than acryalmide is present in a molar quantity of up to about 50 mole % thereof and which monomers selected from the group consisting of acrylic acid, methacrylic acid, C_1-C_4 alkyl esters of the foregoing, methacrylamide, ethylene, propylene, isobutylene, vinyl acetate, and styrene.

4,880,559

CERIC ACID DECONTAMINATION OF NUCLEAR REACTORS

Alexander P. Murray, Murrysville Boro; Clifton G. Slater, Wilkinsburg, and Robert W. White, New Kensington, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation of Ser. No. 930,196, Nov. 13, 1986, abandoned, which is a division of Ser. No. 802,132, Nov. 26, 1985, Pat. No. 4,657,596, which is a continuation-in-part of Ser. No. 615,018, May 29, 1984, abandoned. This application Jun. 15, 1988, Ser. No. 208,825

Int. Cl.⁴ G21F *9/00;* **C23G** *1/02*

U.S. Cl. 252—186.21 3 Claims

1. A composition consisting of

(A) water;

(B) about 0.5 to about 3% by weight of a ceric acid selected from the group consisting of tetrasulfato ceric acid, hexasulfamato ceric acid, hexaperchlorato ceric acid, and mixtures thereof; and

(C) and about 1 to about 5% by weight of an inorganic acid, where said inorganic acid is sulfuric acid when said ceric acid is tetrasulfato ceric acid, sulfamic acid when said ceric acid is hexasulfamato ceric acid, perchloric acid when said ceric acid is hexaperchlorato ceric acid, and a corresponding mixture selected from the group consisting of sulfuric acid, sulfamic acid, and perchloric acid when said ceric acid is a mixture selected from the group consisting of tetrasulfato ceric acid, hexasulfamato ceric acid, and hexaperchlorato ceric acid.

4,880,560

LACTIC ACID DERIVATIVE, LIQUID CRYSTAL COMPOSITION CONTAINING SAME AND LIQUID CRYSTAL DEVICE

Kazuo Yoshinaga, Machida; Kazuharu Katagiri, Tama, and Kenji Shinjo, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

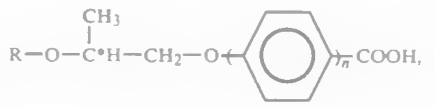
Division of Ser. No. 922,308, Oct. 23, 1986, Pat. No. 4,812,259. This application Jan. 3, 1989, Ser. No. 292,953

Claims priority, application Japan, Nov. 1, 1985, 60-245709; Dec. 13, 1985, 60-280403

Int. Cl.⁴ C07C *65/21, 65/24;* **C09K** *19/52, 19/12*

U.S. Cl. 252—299.01 21 Claims

1. An optically active lactic acid derivative represented by the formula (Ia):



(Ia)

wherein

R is a linear alkyl group having 1–16 carbon atoms,

n is 1 or 2, and

C* is an asymmetric carbon atom.

4,880,561

OPTICALLY ACTIVE COMPOUND AND LIQUID CRYSTALLINE COMPOSITION

Tatsuru Tabohashi; Takao Sakurai; Ryoichi Higuchi; Naoko Mikami; Eri Yamamoto, and Koji Takeuchi, all of Kawasaki, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

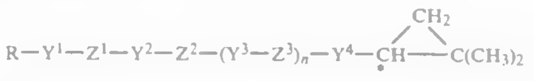
Filed Apr. 16, 1987, Ser. No. 38,897

Claims priority, application Japan, Apr. 21, 1986, 61-091859; Sep. 24, 1986, 61-225713

Int. Cl.⁴ C09K *19/34, 19/30;* **C07C** *69/76, 69/74*

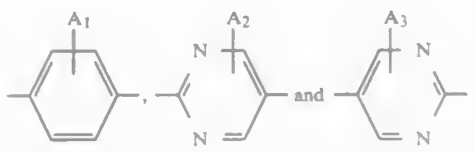
U.S. Cl. 252—299.61 9 Claims

7. A liquid crystal composition, comprising at least two components, at least one of which is an optically active cyclopropane compound having the formula (I):



(I)

wherein R represents a linear or branched alkyl group of 4–18 carbon atoms or a cyclopropyl group; n is 0, Y^4 is —OCO— or —CO_2CH_2—; Y^1 represents a direct bond, —O—, —CO_2— or —OCO—; Y^2 represents —CO_2—, —OCO—, O a direct bond or —CH_2O—; and Z^1 and Z^2 are each selected from the group consisting of:



wherein at least two of said Z^1 and Z^2 groups are the same or different, with the proviso that, not more than one of Z^1 and Z^2 are a pyrimidine ring at the same time and R is a cyclopropyl group only when Y^1 is —CO_2; A^1, A^2 and A^3 each represent a fluorine atom, a bromine atom, a chlorine atom, a cyano group or a hydrogen atom and the

$$\underset{\bullet}{C}$$

indicates an asymmetric carbon atoms.

4,880,562

LIQUID CRYSTAL COMPOUND

Kisei Kitano; Manabu Uchida; Makoto Ushioda, and Toshiharu Suzuki, all of Kanagawa, Japan, assignors to Chisso Corporation, Ohsaka, Japan

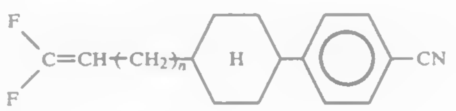
Filed Feb. 17, 1989, Ser. No. 312,053

Claims priority, application Japan, Feb. 26, 1988, 63-43385

Int. Cl.⁴ G02F *1/13;* **C09K** *19/30;* **C07C** *121/70*

U.S. Cl. 252—299.63 4 Claims

1. A compound expressed by the formula



(I)

wherein n represents an integer of 0 to 20.

4,880,563

COMPOSITION FOR PERSONAL CARE PRODUCT COMPRISING ALKOXYLATED FATTY ALCOHOL AND POLYSILOXANE

Gerd Dahms, Velbert, Fed. Rep. of Germany, assignor to Deutsche ICI GmbH, Frankfurt, Fed. Rep. of Germany

Filed Jul. 29, 1986, Ser. No. 890,337

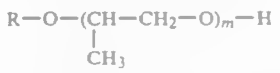
Claims priority, application United Kingdom, Aug. 1, 1985, 8519426

Int. Cl.⁴ A61K *9/10;* **B01F** *17/42, 17/54*

U.S. Cl. 252—312 5 Claims

1. An emollient composition consisting of:

(A) 5–95% by weight of an alkoxylated polyether of the formula:



$$R-O-(\underset{\displaystyle CH_3}{\underset{|}{C}}H-CH_2-O)_m-H$$

where

R is a C_6 to C_{22} hydrocarbyl group, saturated or unsaturated and may be substituted; and

m is 2 to 50; and

(B) 95–5% by weight of tetra(dimethylcyclosiloxane) or penta(dimentylcyclosiloxane) or mixtures thereof.

2. Oil in water or water in oil emulsion containing from 2 to 30% by weight of an emollient composition which is included in the oil phase and consists essentially of

(A) 5–95% by weight, relative to the weight of the emollient composition, of an alkoxylated polyether of the formula: where

R is a C_6 to C_{22} hydrocarbyl group, saturated or unsaturated and may be substituted; and

m is 2 to 50; and

(B) 95–5% by weight, relative to the weight of the emollient composition, of tetra(dimethylcyclosiloxane) or penta(-dimethylcyclosiloxane) or mixtures thereof.

4,880,564

ANTIFOAMS FOR AQUEOUS SYSTEMS AND THEIR USE

Heinz Abel, Reinach; Christian Guth, Birsfelden, and Hans-Ulrich Berendt, Allschwil, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Sep. 21, 1987, Ser. No. 99,034

Claims priority, application Switzerland, Sep. 29, 1986, 3889/86

Int. Cl.⁴ B01D *17/00*

U.S. Cl. 252—321 12 Claims

1. An antifoam for aqueous systems, whichcomprises

(1) 0.5 to 5% by weight of an alkaline earth metal salt of a C_{10}–C_{24}-fatty acid,

(2) 25 to 45% by weight of a di-C_2–C_{12}-alkyl ester of an unsaturated dicarboxylic acid,

(3) 25 to 45% by weight of a mineral oil having a flashpoint above 100° C., a pour-point of −3° to −60° C. and an aniline point of 70° to 110° C.,

(4) 5 to 15% by weight of a non-ionic emulsifier,

(5) 5 to 15% by weight of an anionic emulsifier and

(6) 0.5 to 3% by weight of an alkylenediamide of the formula R_3—NH—R_4—NH—R_3 wherein R_3 is an alkanoyl radical having 14 to 22 C atoms and R_4 is an alkylene radical having 2 to 6 C atoms.

4,880,565

FLUORINE CONTAINING VISCOELASTIC SURFACTANTS

Gene D. Rose; Arthur S. Teot, both of Midland, Mich., and Keith G. Seymour, Maryville, Mo., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 528,314, Aug. 31, 1983, Pat. No. 4,770,814. This application Apr. 12, 1985, Ser. No. 722,484

Int. Cl.⁴ B01F *17/18, 17/26;* **B01J** *13/00*

U.S. Cl. 252—355 8 Claims

1. An aqueous composition which comprises:

(a) surfactant ions each consisting of a fluoroaliphatic, hydrophobic moiety chemically bonded to a cationic, hydrophilic moiety;

(b) organic counterions that associate with the surfactant ions in the aqueous composition thereby forming a viscoelastic surfactant; and

(c) water.

4,880,566

SILICATE-AND MAGNESIUM-FREE STABILIZER MIXTURES

Bernd D. Baehr, Neuss; Ulrich Rall, Langenfeld; Hildegard van Delden, Hilden, and Wolfgang Lillotte, Monchen-Gladbach, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

Continuation of Ser. No. 945,921, Dec. 23, 1986, abandoned. This application Dec. 22, 1988, Ser. No. 290,881

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1985, 3545909

Int. Cl.⁴ C09K *15/32, 3/100;* **C23F** *11/00;* **C01B** *15/01*

U.S. Cl. 252—389.22 7 Claims

1. An aqueous bath comprising 35% by weight hydrogen peroxide solution containing a silicate-free and magnesium-free stabilizer mixture therefor, said stabilizer mixture consisting essentially of:

(A) from about 5 to about 30% by weight of polyhydroxy carboxylic acid and/or hydroxy carboxylic acid, and their alkali metal and/or ammonium salts;

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(B) from about 1 to about 5% by weight of polyacrylic acid, and said acid in partially neutralized form; and
(C) from about 2 to about 20% by weight of polyamine-polyphosphonic acid and/or amine-polyphosphonic acid, and their alkali metal and/or ammonium salts; with the proviso that the ratio by weight of components A:B:C is 1 to 6:0.2 to 1:0.4 to 4.

4,880,567
THICK FILM COPPER CONDUCTOR INKS

Ashok N. Prabhu, E. Windsor Township, Mercer Country; Kenneth W. Hang, W. Windsor Township, Mercer County, and Edward J. Conlon, Princeton Township, Mercer County, all of N.J., assignors to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 87,556, Aug. 20, 1987, Pat. No. 4,816,615.
This application Dec. 9, 1988, Ser. No. 281,605
Int. Cl.⁴ H01B *1/06*

U.S. Cl. 252—512 6 Claims

1. A copper conductor ink comprising, on a weight basis:
(a) from about 65 to about 85 percent of copper powder;
(b) from about 2 to about 10 percent of a devitrifying glass frit selected from the group consisting of a zinc-calcium-aluminum-silicate glass frit, a zinc-magnesium-barium-aluminum-silicate glass frit and mixtures thereof;
(c) from about 1 to about 8 percent of an adhesion promoting oxide selected from the group consisting of bismuth oxide, cadmium oxide, cuprous oxide, thallium oxide, lead oxide and mixtures thereof; and
(d) from about 5 to about 25 percent of a suitable organic vehicle.

4,880,568
METHOD AND COMPOSITION FOR THE REMOVAL OF AMMONIUM SALT AND METAL COMPOUND DEPOSITS

Charles M. Staley, Houston, and Verle E. Cornish, Missouri City, both of Tex., assignors to Aqua Process, Inc., Houston, Tex.

Division of Ser. No. 87,497, Aug. 19, 1987, Pat. No. 4,793,865.
This application Aug. 11, 1988, Ser. No. 231,519
Int. Cl.⁴ C11D *3/26*

U.S. Cl. 252—548 7 Claims

1. A composition for treating a refinery or a hydrocarbon processing unit to effect the removal of ammonium salt and metal compound deposits, comprising:
an oxygen-containing amine suitable for reacting with the ammonium salt deposit to form an amine salt; and
an oxygenated hydrocarbon compound suitable for reacting with the metal compound deposits to form a chelate, the oxygenated hydrocarbon compound having at least two oxygens, one of which is part of a keto group in the hydrocarbon compound.

4,880,569
CONCENTRATED LIQUID DETERGENT COMPOSITION CONTAINING ANIONIC SURFACTANTS HAVING NON-TERMINAL SULFONATE GROUPS

Francis J. Leng, and Christine A. Leng, both of Merseyside, England, assignors to Lever Brothers Company, New York, N.Y.

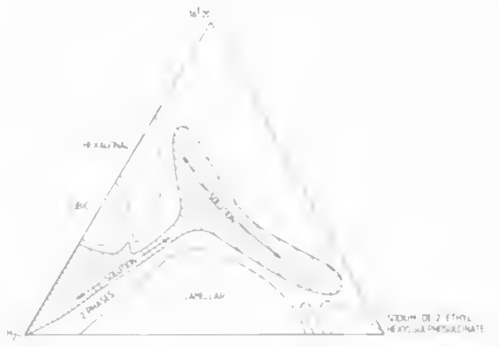
Continuation of Ser. No. 875,430, Jun. 17, 1986, abandoned.
This application Jan. 5, 1988, Ser. No. 142,291
Claims priority, application United Kingdom, Jun. 21, 1985, 8515721; Oct. 4, 1985, 8524602
Int. Cl.⁴ C11D *1/14, 1/72*

U.S. Cl. 252—550 15 Claims

1. An isotropic liquid detergent composition comprising
(i) at least 40 wt% and less than 92 wt% of a mixture of surfactants, at least 50 wt% of the surfactants present comprising:
(a) a polyalkoxy nonionic surfactant,
the nonionic surfactant having a hydrophile-lipophile balance of at least 14.5, said nonionic surfactant being

$$CH_3(CH_2)_{n-1}(CH_2CH_2O)_mOH$$

wherein n ranges from 2 to 24 and m is an integer which will achieve said hydrophile-lipophile balance; and
(b) an anionic surfactant having a non-terminal ionic head group with two or more hydrocarbon chains extending from the head group, each chain being no more than 10 carbon atoms in length and the chains having a total length of at least 8 carbon atoms, said ionic surfactant selected from the group consisting of dialkyl sulphosuccinate, secondary alkyl sulfate, dialkyl phosphate, and alkylbenzene sulfonate, said sulfonate having a benzene ring attached to a secondary alkyl carbon atom,
wherein the ratio of (a) to (b) lies within the range of from 1:9 to 9:1, and
(ii) at most 60 wt% and more than 8 wt% water, said liquid detergent composition being free of additional hydrotropes.



4,880,570
ELECTROCONDUCTIVE ADHESIVE

James A. Sanborn, Satellite Beach, and Bobby J. Boan, Indian Harbour Beach, both of Fla., assignors to Harris Corporation, Melbourne, Fla.

Continuation-in-part of Ser. No. 846,537, Mar. 31, 1986, abandoned. This application Nov. 2, 1988, Ser. No. 267,752
Int. Cl.⁴ H01B *1/06*

U.S. Cl. 252—512 5 Claims

1. An electroconductive adhesive consisting essentially of:
(a) an epoxy resin from the modified epoxy family consisting of a mixture of a polygylcidylaminophenyl compound and a polygylcidylether of polyformaldehyde novolac compound;
(b) a catalyst consisting of a combination of one member being an aliphatic amide amine and one member being an aliphatic polyamine;
(c) a mixture of differently shaped conductive particles having a substantially uniform concentration and a random distribution of shapes throughout said adhesive so as to minimize the steric interference and provide conductivity in substantially all directions;
the percent by weight of (a), (b), and (c) being between 10% and 17%, between 4% and 10%, and between 63% and 73%, respectively.

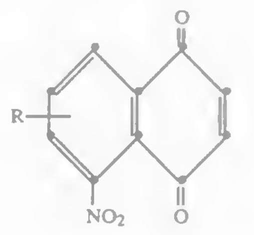
4,880,571
PROCESS FOR THE PREPARATION OF 5-NITRO-1,4-NAPHTHOQUINONE

Christos Comninellis, Mex; Robert U. Osterwalder, Basel; Eric Plattner, Seltisberg, and Gottfried Seifert, Magden, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Oct. 22, 1986, Ser. No. 921,918
Claims priority, application Switzerland, Oct. 24, 1985, 4580/85
Int. Cl.⁴ C07C *50/12;* **C07L** *50/00*

U.S. Cl. 552—297 10 Claims

1. A process for the preparation of 5-nitro-1,4-naphthoquinones of formula



wherein R is hydrogen, a C_1–C_4 alkyl radical or a C_1–C_4 alkoxy radical, by oxidation of 1-nitronaphthalene or a suitably substituted 1-nitronaphthalene, which process comprises carrying out the reaction with manganese(III) sulfate as oxidising agent.

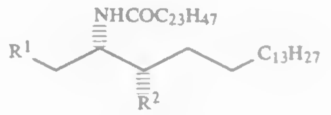
4,880,572
UN-NATURAL CERAMIDE RELATED COMPOUNDS AND PREPARATION THEREOF

Shuji Fujita, Tachikawa; Shoji Yoshimura, Iruma; Masayoshi Ito, Kunitachi; Yoshiyasu Shitori, Tokyo, and Tomoya Ogawa, Musashino, all of Japan, assignors to MECT Corporation, Japan

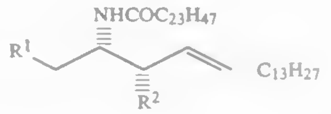
Filed May 26, 1988, Ser. No. 199,107
Claims priority, application Japan, May 28, 1987, 61-132696
Int. Cl.⁴ C09F *5/00*

U.S. Cl. 260—404 17 Claims

1. An unnatural ceramide related compound represented by the formulas (I) or (II):



(I)



(II)

wherein R^1 and R^2 are independently hydroxyl group, acetoxy group or 1-ethoxyethyloxy group.

4,880,573
PROCESS FOR ELIMINATING CHOLESTEROL CONTAINED IN A FATTY SUBSTANCE OF ANIMAL ORIGIN AND THE FATTY SUBSTANCE WITH REDUCED CHOLESTEROL OBTAINED

Jean Courregelongue, and Jean-Pierre Maffrand, both of Portet/Garonne, France, assignors to Monserbio, Annecy, France

Filed Jul. 15, 1987, Ser. No. 73,458
Claims priority, application France, Jul. 24, 1986, 86 10982
Int. Cl.⁴ C09F *5/10;* **A23C** *12/02*

U.S. Cl. 260—420 13 Claims

1. Process for eliminating cholesterol contained in a fatty substance of animal origin used in human diet of the group consisting of butter, suet and lard, which process comprises putting the liquefied fatty substance into contact with a cyclodextrin, continuing this contact under stirring for 30 minutes to 10 hours at a temperature between the fusion temperature of the fatty substance and 80° C., in such a way as to allow the formation of complexes between the cholesterol and the cyclodextrin, and separating the said complexes by entrainment in water and separation of the aqueous phase.

4,880,574
METHOD FOR REFINING GLYCERIDE OILS USING PARTIALLY DRIED AMORPHOUS SILICA HYDROGELS

William A. Welsh, Fulton, Md., assignor to W. R. Grace & Co.-Conn., New York, N.Y.

Continuation-in-part of Ser. No. 679,348, Dec. 7, 1984, Pat. No. 4,629,588, and a continuation-in-part of Ser. No. 823,217, Jan. 28, 1986, Pat. No. 4,734,226. This application Nov. 24, 1986, Ser. No. 934,058
Int. Cl.⁴ C09F *5/10*

U.S. Cl. 260—428 14 Claims

1. A process for the removal of trace contaminants, which are phospholipids and associated metal ions, from glyceride oils by adsorbing said trace contaminants onto amorphous silica, comprising:
(a) selecting a glyceride oil with a phosphorous content in excess of about 1.0 ppm,
(b) selecting an adsorbent comprising a partially dried amorphous silica hydrogel having a moisture content of at least about 25 weight percent and an average pore diameter of less than 60 Angstroms,
(c) contacting the glyceride oil of step (a) and the adsorbent of step (b),
(d) allowing said trace contaminants to be adsorbed onto said adsorbent, and
(e) separating the resulting phospholipid- and metal ion-depleted glyceride oil from the adsorbent.

4,880,575
OLEFINIC DIPHOSPHONIC ACIDS, A PROCESS FOR THEIR PRODUCTION, THEIR USE AS THRESHOLDERS AND COMPLEXING COMPOSITIONS CONTAINING THEM

Helmut Blum, Duesseldorf, and Siglinde Hemmann, Meerbusch, both of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

Filed Jul. 22, 1988, Ser. No. 223,473
Claims priority, application Fed. Rep. of Germany, Jul. 25, 1987, 3724653
Int. Cl.⁴ C07F *9/38*

U.S. Cl. 562—21 9 Claims

6. A process for the preparation of $3\text{-}R^1\text{-}3$-oxoprop-1-ene-

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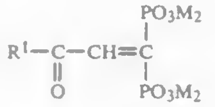
1,1-diphosphonic acids corresponding to the following general formula


(II)

$$R^1-\underset{\underset{O}{\|}}{C}-CH=\overset{\overset{PO_3M_2}{|}}{\underset{\underset{PO_3M_2}{|}}{C}}$$

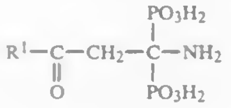
wherein R^1 represents

a tertiary alkyl group having the formula $-(R^2)C(R^3)(R^4)$, where R^2 and R^3 independently of one another represent a C_1–C_3 alkyl group, and R^4 represents a C_1–C_{10} alkyl group, or

an unsubstituted or methyl or ethyl substituted cycloalkyl group, or

an aryl or heteroaryl group which is unsubstituted or substituted by halogen, C_1–C_5 alkoxy, di-C_1–C_5-alkylamino, or C_1–C_5 alkyl; and the M groups are H, or alkali metal or ammonium cations, comprising the steps of

(a) reacting a 3-R^1-oxo-1-aminopropane-1,1-diphosphonic acid of the formula


(IV)

$$R^1-\underset{\underset{O}{\|}}{C}-CH_2-\overset{\overset{PO_3H_2}{|}}{\underset{\underset{PO_3H_2}{|}}{C}}-NH_2$$

in which R^1 is as defined above, with aqueous or alcoholic alkali metal hydroxide solution, wherein the molar ratio of alkali metal hydroxide to starting material is in the range of from about 5:1 to about 20:1, at a temperature in the range of from about 80° to about 150° C., to form a reaction mixture,

(b) adding water to the reaction mixture to form a clear aqueous solution,

(c) adding to the clear aqueous solution an alcohol infinitely miscible in water to precipitate therefrom the compound of formula III in which the M groups are alkali metal cations,

(d) treating the compound of formula III in which the M groups are alkali metal cations with an acidic reagent to convert the M groups to hydrogen, and, where the M groups in the compound of formula III are to be other than hydrogen,

(e) treating the compound of formula 111 in which the M groups are hydrogen with a basic reagent of the formula M^+OH^- in which M^+ is an alkali metal or ammonium cation $R^5R^6R^7R^8N^+$, wherein R^5, R^6, R^7 and R^8 independently of one another are hydrogen or a branched or unbranched C_1–C_{12} alkyl radical.

4,880,576

ACID HALIDES, A PROCESS FOR THEIR PREPARATION

Heinz U. Blank, Odanthal; Norbert Langenfeld, Cologne, and Wolfgang Heydkamp, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Division of Ser. No. 553,277, Nov. 17, 1983, abandoned, which is a continuation of Ser. No. 313,397, Oct. 20, 1981, abandoned.

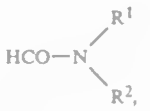
This application Sep. 17, 1986, Ser. No. 908,460

Claims priority, application Fed. Rep. of Germany, Oct. 23, 1980, 3039999

Int. Cl.⁴ C07C *51/60, 143/70*

U.S. Cl. 562—828 12 Claims

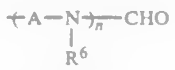
1. In a process for preparing an organic acid chloride from the corresponding acid or a salt thereof by contacting said acid or salt thereof with an inorganic acid halide, the improvement which comprises carrying out the process in the presence of an N-alkylated formamide of the formula



wherein

R^1 is alkyl with 1 to 4 carbon atoms,

R^2 is alkyl with at least 9 carbon atoms or the group



$$\text{-}(A-\underset{\underset{R^6}{|}}{N})_n\text{-}CHO$$

wherein

A is straight-chain or branched alkanediyl,

R^6 is lower alkyl and

n is an integer from 2 to 6, wherein said inorganic acid halide has the formula $XHal_2$, wherein Hal is chlorine and X is selected from the group consisting of CO, SO and SO_2 and wherein the organic acid chloride is selected from the group consisting of chloro acetic acid chloride, dichloro acetic acid chloride, benzoic acid chloride, o-chloro benzoic acid chloride, m-chloro benzoic acid chloride, p-chloro benzoic acid chloride, o-methoxy benzoic acid chloride, terephthalic acid dichloride, isoterephthalic acid dichloride, benzene sulfonic acid chloride, o-toluene sulfonic acid chloride, m-toluene sulfonic acid chloride, p-toluene sulfonic acid chloride, o-chlorobenzene sulfonic acid chloride, m-chlorobenzene sulfonic acid chloride, p-chlorobenzene sulfonic acid chloride, alpha-naphthalene sulfonic acid chloride and beta-naphthalene sulfonic acid chloride.

4,880,577

PROCESS FOR PRODUCING SELF-RESTORING OVER-CURRENT PROTECTIVE DEVICE BY GRAFTING METHOD

Kumakazu Okita, Chiba; Toshiaki Abe, Tokyo, and Masaru Kiriyama, Kanagawa, all of Japan, assignors to Daito Communication Apparatus Co., Ltd., Tokyo, Japan

Filed Jul. 19, 1988, Ser. No. 221,333

Claims priority, application Japan, Jul. 24, 1987, 62-184997

Int. Cl.⁴ B29C *35/08*

U.S. Cl. 264—22 5 Claims

1. A process for producing a self-restoring overcurrent protective device by the grafting method characterized by comprising the steps of adding a suitable amount of organic peroxide as a reaction catalyst to a mixture consisting of colloidal graphite, at least one kind of carbon black selected from among acetylene black, Ketjen black and furnace black having a high structure, and one or more kinds of crystalline polymer substances, heating the mixture at a temperature higher than the thermal decomposition temperature of the organic peroxide so as to have a high viscosity, forcibly milling the mixture, whereby the organic peroxide is reacted with the polymer substance to give unpaired electrons to the polymer substance

to thereby form polymer radicals, grafting the formed polymer radicals onto said graphite and carbon black to form a milled mass wherein the grafting products having such a structure that said polymer substance is combined with said graphite and carbon black are homogeneously dispersed in the form of primary particles in said polymer substance, molding the milled mass having a thermoplasticity into a predetermined shape, and thermally decomposing said organic peroxide not involved in the formation of said polymer radicals to add a cross-linking structure between said grafting products and polymer substance.

4,880,578

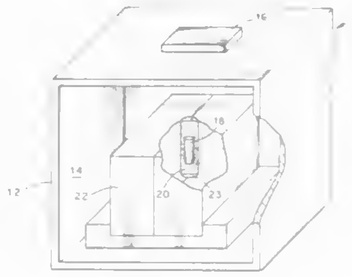
METHOD FOR HEAT TREATING AND SINTERING METAL OXIDES WITH MICROWAVE RADIATION

Cressie E. Holcombe, Farragut; Norman L. Dykes, Oak Ridge, and Thomas T. Meek, Knoxville, all of Tenn., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Aug. 8, 1988, Ser. No. 229,892

Int. Cl.⁴ C04B *35/64*

U.S. Cl. 264—26 10 Claims



1. A method for sintering together particulates of oxide material with microwave radiation comprising the steps of enclosing a compact of the particulates in housing means formed of zirconia, hafnia or a combination thereof and characterized by coupling with microwave radiation at temperatures lower than the microwave radiation coupling temperature of the particulates forming the compact, subjecting the housing means to microwave radiation for heating the housing means and the compact enclosed therein by heat transference from the housing means to raise the compact to a temperature at least adequate to initiate coupling of the particulate material forming the compact with microwave radiation and for providing thermal insulation about the compact for retaining within the housing means heat given off by the compact during the coupling thereof with microwave radiation, and subjecting the housing means and the compact enclosed therein to the microwave radiation for a sufficient duration to heat said compact to a temperature adequate for the sintering the particulates forming the compact.

4,880,579

METHOD FOR CLOSING OPENINGS OF THROUGH-HOLES IN A PIPE WALL

Masahiro Murata, Youkaichi, and Kaoru Takahashi, Ohtsu, both of Japan, assignors to Sekisui Kagaku Kogyo Kabushiki Kaisha, Osaku, Japan

Continuation of Ser. No. 910,473, Sep. 23, 1986, abandoned. This application Feb. 18, 1988, Ser. No. 159,436

Int. Cl.⁴ B29C *57/00, 57/04*

U.S. Cl. 264—26 5 Claims

1. A method for closing the opening of each of the through-holes formed in the pipe-wall of a resin pipe and which extend parallel to the axis of said pipe, are partitioned from each other by hole-partition walls and are open at one end, said pipe-wall including an inner wall portion and an outer wall portion, aid method comprising the steps of:

heating and softening one end portion of said pipe,

pressing said end portion in the direction parallel to said axis in a first mold in such a manner that said end portion is positioned between inner and outer molds of said first mold and that the tip of said end portion extends from said first mold toward a second mold, by a certain length said first mold including inner and outer molds disposed coaxially with said resin pipe for holding the inner and outer walls of the pipe therebetween and said second mold being connected to a high frequency current source, and said

length of said tip area of said pipe being slightly greater than the depth of a cavity of said second mold into which said tip of said pipe enters,

diametrically enlarging a portion of said inner mold and said pipe,

clamping said pipe walls by the outer mold of said first mold, and

heating aid end portion by applying a high frequency current to said second mold and forcing said second mold into contact with the end portion of said pipe while the high frequency current is being applied to said second mold so as to melt said hole-partition walls, thereby closing each of said open ends of said through-holes.

4,880,580

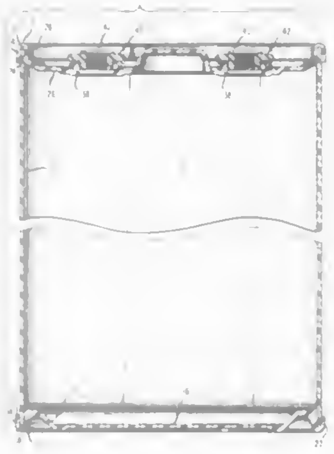
REUSABLE PLASTIC DRUM CONTAINER ASSEMBLY AND PROCESS FOR REFITTING SUCH PLASTIC DRUM CONTAINER ASSEMBLY

Robert B. Bowers, Park Ridge, and Mark Chookazian, Paramus, both of N.J., assignors to Ashland Oil, Inc., Russell, Ky.

Filed Dec. 3, 1987, Ser. No. 128,030

Int. Cl.⁴ B29C *35/12*

U.S. Cl. 264—26 14 Claims



1. In a process for assembling a plastic drum container assembly including a drum shell and top and bottom closure members affixed to said drum shell, the steps comprising:

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(a) positioning a fitting-receiving member and a thermoplastic electromagnetic material about a neck member formed on said top closure member, said neck member comprised of a cylindrically-shaped portion extending upwardly from said top closure member and formed with an indentation portion in a surface thereof, said fitting-receiving member formed with a circularly-shaped channel for positioning said neck member therein, said thermoplastic electromagnetic material being disposed within said channel of said fitting-receiving member;

(b) establishing a electromagnetic field about said thermoplastic electromagnetic material for a time sufficient to melt said thermoplastic electromagnetic material; and

(c) placing a downward force on said fitting-receiving member to cause said neck member of said top closure member to extend into said channel of said fitting-receiving member including molten thermoplastic electromagnetic material thereby to mount said fitting-receiving member to said top closure member.

8. A process for refurbishing a plastic drum container assembly including a drum shell and top and bottom closure members affixed to said drum shell and wherein said top closure member includes a fitting-receiving member including a fitting orifice affixed to a neck member formed on said top closure member by a thermoplastic electromagnetic material, the steps comprising:

(a) inserting a retraction member into said fitting orifice of said fitting-receiving member to engage said fitting-receiving member;

(b) establishing an electromagnetic field about said fitting-receiving member affixed to said neck member for a time sufficient to melt said thermoplastic electromagnetic material;

(c) withdrawing said retraction member including said fitting-receiving member from said neck member of said top closure member;

(d) refurbishing said drum shell;

(e) positioning a new fitting-receiving member including a thermoplastic electromagnetic material about said neck member of said top closure member;

(f) establishing an electromagnetic field about said fitting-receiving member affixed to said neck member for a time sufficient to melt said thermoplastic electromagnetic material; and

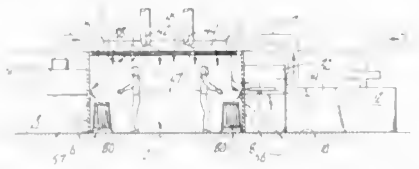
(g) placing a downward force on said fitting-receiving member to cause said neck member of said top closure member to extend into said channel of said fitting-receiving member including molten thermoplastic electromagnetic material thereby to mount said fitting-receiving member to said top closure member.

4,880,581

MEANS AND METHOD FOR ASEPTIC PARTICLE-FREE PRODUCTION OF ARTICLES

Frank R. Dastoli, Arlington; Bernard Z. Senkowski, Fort Worth; Dieter W. Wagener, Fort Worth; George H. Bogdanffy, Fort Worth, and Gaurang R. Vio, Arlington, all of Tex., assignors to Alcon Laboratories, Inc., Fort Worth, Tex.

Filed Dec. 24, 1986, Ser. No. 946,342
Int. Cl.⁴ B29C *33/10, 49/46, 49/62;* **F24F** *7/10*
U.S. Cl. 264—39 23 Claims



1. A method of aseptic, particle-free production of interiors and exteriors of articles, to avoid the need for chemical or irradiation treatment of the articles, and to provide aseptic articles which are prepared for further processing, comprising the steps of:

creating an aseptic environment within a clean room;

shrouding at least a portion of an article producing means of a production machine to substantially segregate the portion of the article producing means from the clean room but retaining some communication with the clean room;

substantially isolating the portion of the article producing means which is shrouded from any external environment and from the clean room;

sterilizing the interior of the clean room, the portion of the article producing means within the shroud, the interior of the shroud, and any surfaces of the shroud inside and communicating with the clean room;

filtering and sterilizing any air enclosed by the clean room and the shroud; and

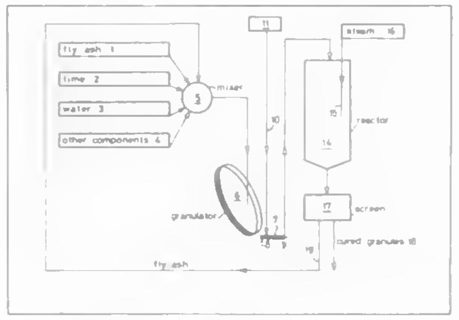
imparting a flow of filtered, sterilized air through the clean room and into the shroud, over and around the articles being produced on the portion of the article producing means within the shroud, and out of the shroud, so that the articles produced will be aseptic interiorally and exteriorally and ready for further processing.

4,880,582

HARDENING GRANULATED MATERIAL AT ELEVATED TEMPERATURES

Jacobs J. Spanjer, Nunspeet, and Pieter D. Rademaker, Haarlem, both of Netherlands, assignors to Aardelite Holding B. V., Netherlands

Filed Jul. 22, 1987, Ser. No. 76,313
Int. Cl.⁴ B29B *9/16*
U.S. Cl. 264—82 9 Claims



1. A process of manufacturing hardened granules produced by mixing at least fly ash obtained from combustion of a material selected from the group consisting of a coal product and lignite, a binder and water, forming granules of said mixture, hardening said granules in an embedding material at a temperature between 85° and 212° F. by applying heat and separating the hardened granules from the embedding material, comprising the step of feeding fine grained embedding material and granules to be cured into a hardening reactor and

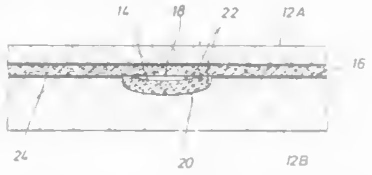
embedding the granules in said hardening reactor in said fine grained embedding material with a water absorption capacity of at least 10% and being free from a compound generating heat by contacting water and supplying heat to the mixture of granules and embedding material in said hardening reactor by introducing steam into the mixture of granules and embedding material as present in the hardening reactor to raise and maintain the temperature at a value between 85° and 212° F., the ratio between the quantity of embedding material and granules being between 0.2 and 1, said steam introduced into said hardening reactor condensing on said embedding material, wherein the pH of the moist embedding material is above 4, and the heat generated said condensation being transferred to the granules by conduction, thus reducing the hardening time for curing the granules to a certain strength.

4,880,583

METHOD FOR REDUCTION OF MOLD CYCLE TIME

Paul I. Douglas, Woodlands, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed May 23, 1988, Ser. No. 197,738
Int. Cl.⁴ B29C *45/56, 33/42, 33/56*
U.S. Cl. 264—130 6 Claims



1. A method for reducing the fabrication time of a molded article of manufacture wherein a portion of said molded article is formed by a hardenable liquid, said method including the steps of:

providing a mold having two mold section surfaces with at least one of said surfaces having one hardenable liquid injection port defined therethrough, at least one of said mold section surfaces having at least one channel with an associated channel surface and channel opening defined relative to said mold surface,

providing a heat-recoverable member, said member previously having been deformed under heat and/or pressure from an expanded first configuration to a compressed second configuration, said member when subjected to a suitable temperature of recovery capable of recovering to or towards its expanded first configuration,

locating said heat recoverable member within a portion of said channel,

flowing said hardenable liquid into said mold,

heating said heat recoverable member at least to said suitable temperature of recovery, thereby expanding said heat recoverable member to said first configuration within said channel,

retaining said hardenable liquid in said mold for a sufficient period for said liquid to harden sufficiently to dimensionally stabilize said article of manufacture, and

removing said article of manufacture from said mold.

4,880,584

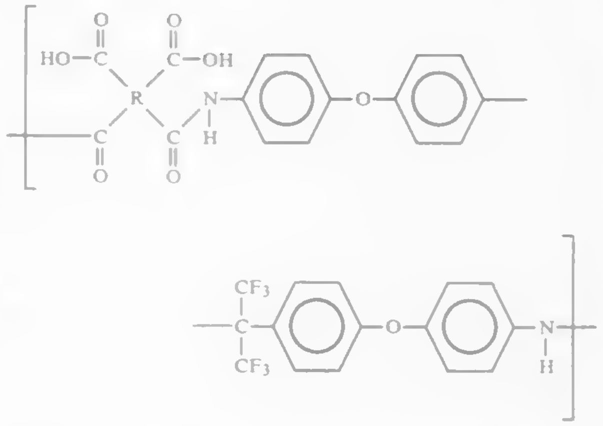
FIBER REINFORCED THERMOPLASTIC RESIN MATRIX COMPOSITES

Robert J. Jones, Torrance, and Glenn E. C. Chang, Redondo Beach, both of Calif., assignors to TRW, Inc., Redondo Beach, Calif.

Division of Ser. No. 855,939, Apr. 25, 1986. This application Jul. 25, 1988, Ser. No. 223,613
Int. Cl.⁴ B29C *43/20*
U.S. Cl. 264—135 6 Claims

1. A process of forming a fiber-reinforced composite which comprises

(a) forming a prepreg thermoplastic lay-up made of a stack of plies composed of a (i) thermoplastic polyimide resin prepared from the imidization of a polyamic acid of the formula



where R is an organic group of 5 to 22 carbon atoms which may be an aliphatic radical, including alicyclic, or an aromatic radical having one or more benzene or fused polynuclear rings and (ii) continuous reinforcing fibers, the composite having from 10 to 50 parts by weight of said resin and from 90 to 50 parts by weight of said fibers;

(b) compression molding said thermoplastic polyimide lay-up by applying thereto progressively increased pressure and temperature in stages;

(c) cooling said compression molded thermoplastic polyimide lay-up while under pressure;

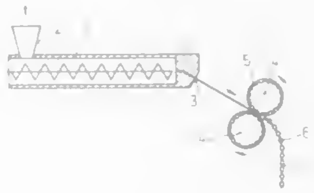
(d) heating the lay-up resulting from step (c) while unrestrained in air at a temperature of at least 700° F.

4,880,585

CONTINUOUS METHOD OF TABLETING

Roger G. Klimesch, Alsbach/Haehnlein; Gerhard Bleckmann, Lampertheim; Karl-Peter Farwerck, Worms; Hans-Helmut Goertz, Freinsheim, and Lothar Schlemmer, Maxdorf, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Continuation of Ser. No. 34,939, Apr. 6, 1987, abandoned, which is a continuation-in-part of Ser. No. 923,870, Oct. 28, 1986, abandoned. This application Dec. 22, 1988, Ser. No. 289,407
Claims priority, application Fed. Rep. of Germany, Apr. 11, 1986, 3612211
Int. Cl.⁴ A61K *9/20;* B29C *43/02, 47/00*
U.S. Cl. 264—141 3 Claims



1. A continuous method for producing separate tablets of an extrudable pharmaceutical mixture which comprises:

mixing a pharmaceutically active compound and an N-vinylpyrrolid-2-one (NVP) polymer containing 30 to 100% by weight NVP in an extruder to form a melt, said polymer having a K value of from 10 to 100, said mixture having a glass transition point of less than 180° C.;

extruding the melt and pressing the still deformable extrudate between the surfaces of two rollers driven in opposite directions, the surfaces of said rollers having opposed depressions, whereby, separate tablets having the shape of the opposed depressions are formed.

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4,880,586

METHOD FOR THE TREATMENT OF ANIMAL EXCREMENTS AND SEWAGE SLUDGES

Wolfgang Baader, Bundesallee 50, 3300 Braunschweig, Fed. Rep. of Germany

Continuation of Ser. No. 346,608, Feb. 8, 1982, abandoned, which is a continuation of Ser. No. 875,088, Feb. 3, 1978, abandoned. This application Sep. 16, 1983, Ser. No. 533,152

Claims priority, application Fed. Rep. of Germanv, Feb. 8, 1977, 2705098

Int. Cl.⁴ C05F *3/06*

U.S. Cl. 264—141 4 Claims

1. A method of biologically treating natural waste material to form substantially odorless and germ-free solid briquettes of treated waste material, wherein the natural waste material has a relatively high moisture content and includes a natural organic waste substance, said method comprising the steps of:

(a) adjusting the moisture content of said natural waste material to a maximum of 60%;
(b) forming said waste material which has been adjusted for moisture content into briquettes having volumes predominantly in the range of 30 cm^3 to 50 cm^3;
(c) loosely positioning said briquettes in heaps permeable by air without artifical circulation; and
(d) leaving said briquettes exposed to said air without artifical circulation thereof to effect a spontaneously starting, exothermic, biological ripening of said mixture wherein the heat of said ripening produces natural circulation of air through said heaps in order to supply oxygen to said briquettes in quantities sufficient to achieve a self-sustaining oxygen-fed ripening reaction, whereby said briquettes are naturally converted into substantially odorless and germ-free briquettes of treated waste material.

4,880,587

PROCESS FOR PRODUCTION OF AN INJECTED MOLDED PART

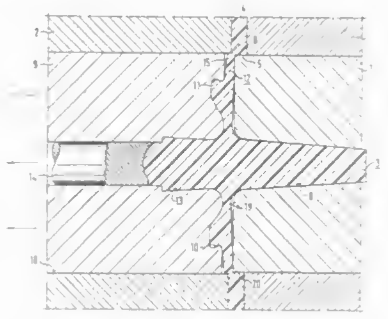
Martin Fichlseder, Ottenberg, and Ingo Preuss, Munich, both of Fed. Rep. of Germany, assignors to Krauss-Maffei A.G., Munich, Fed. Rep. of Germany

Division of Ser. No. 889,249, Jul. 25, 1986, Pat. No. 4,738,613. This application Jan. 13, 1988, Ser. No. 143,183

Claims priority, application Fed. Rep. of Germany, Jul. 25, 1985, 3526632

Int. Cl.⁴ B29C *45/44*

U.S. Cl. 264—154 6 Claims



1. A method for producing apertured injection molded parts utilizing an injection molding tool having a center busing arranged within a stationary half partially defined a mold cavity and an axially aligned sleeve arranged within a displaceable half partially defining said mold cavity comprising the steps of:

closing the injection molding tool so that the center bushing and the sleeve define a sprue cavity integral to said mold cavity defined by said stationary half and said displaceable half, said sprue cavity is offset along an axis and integral with said mold cavity;
injecting material into said mold cavity through a sprue funnel defined by said bushing and said sprue cavity;
separating a sprue internally formed with a molded part and joined to said molded part at an aperture partially defined by an extension of said bushing past said stationary half by axial retraction of said sleeve.

4,880,588

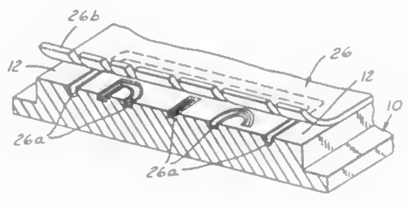
METHOD FOR PRODUCING A MOLDED ARTICLE HAVING COLORED FEATURES

Alfred F. Brault, South Berwick, Me., and John D. Gray, New Durbam, N.H., assignors to Davidson Textron Inc., Dover, N.H.

Continuation-In-part of Ser. No. 74,354, Jul. 16, 1987, abandoned. This application Aug. 15, 1988, Ser. No. 232,624

Int. Cl.⁴ B28B *7/14;* **B29C** *39/12, 41/08, 41/18*

U.S. Cl. 264—163 9 Claims



1. In a process for forming a decorative feature in situ in a base layer of a plastic shell made from thermoplastic material cast against a heated tool having a mold surface thereon the improvement comprising:

forming a recessed surface on the mold surface corresponding to the desired decorative feature;
providing a sharp breakline between the recessed surface and the mold surface;
heating the mold surface;
depositing a first layer of thermoplastic material on the mold surface and the recessed surface therein to provide a covering thereon and melting the covering into the recessed surface while simultaneously forming a thin membrane on the mold surface;
cooling the covering including the thin membrane and lifting the thin membrane from the mold surface while separating the thin membrane from the material retained in the recessed surface which corresponds to the desired decorative feature, at the sharp breakline;
reheating the tool to partially remelt the material retained in the recessed surface;
depositing a base layer of thermoplastic material across the surface of the mold and bonding it to the partially remelted material retained in the recessed surface;
cooling and stripping the bonded thermoplastic material from the mold surface so as to form the shell with the decorative feature defined by the material which was retained in the recessed surface and which was then formed in situ in the base layer of thermoplastic material.

4,880,589

PROCESS OF MAKING A NON-ORIENTED, SURFACE-ROUGHENED FILM OR SHEET

Hiromi Shigemoto, Iwakuni; Shunji Abe, Tokyo, and Akio Yamamoto, Iwakuni, all of Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Division of Ser. No. 892,043, Aug. 1, 1986, Pat. No. 4,777,201. This application Jun. 21, 1988, Ser. No. 219,757

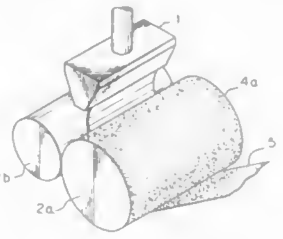
Claims priority, application Japan, Aug. 2, 1985, 60-170875

Int. Cl.⁴ B29C *43/20, 59/04;* **B32B** *31/22*

U.S. Cl. 264—216 5 Claims

1. A process for production of an essentially non-oriented surface-roughened film or sheet comprising a crystalline homopolymer or crystalline copolymer of 4-methyl-1-pentene having a surface roughness of 0.5 to 10 micrometers, said process comprising the following steps:

(1) preparing a molten composition comprising a homopolymer or copolymer of 4-methyl-1-pentene wherein the polymer comprises at least 85 molar percent of the 4-methyl-1-pentene unit;
(2) extruding the molten composition to form a film or sheet; and
(3) placing the film or sheet in contact with a roll having a roughened surface or passing the film or sheet through a pair of rollers, at least one of which rollers has a roughened surface wherein the surface roughness of the roughened roller is 0.5 to 10 micrometers, at a pressure and a temperature such that the roughness of the surface of the roll is replicated on the surface of the film or sheet.



4,880,590

PROCESS FOR PRODUCING ROLLERS EQUIPPED WITH A RUBBER LAYER

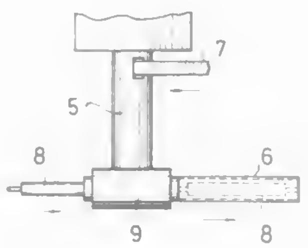
Akira Furuya, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 28, 1987, Ser. No. 55,059

Claims priority, application Japan, Jun. 4, 1986, 61-128003

Int. Cl.⁴ B29C *47/02*

U.S. Cl. 264—275 7 Claims



1. A process for producing a roller equipped with a rubber layer, comprising the steps of:

coating the circumferential wall of a core metal with a rubber material in a coating apparatus,
inserting the core metal coated with the rubber material into a cylindrical mold connected to the coating apparatus,
removing the mold containing the core metal coated with the rubber material from the coating apparatus, and
then subjecting the mold to a heating treatment.

4,880,591

METHOD FOR MANUFACTURING SPEAKER VIBRATION MEMBER

Fumiaki Baba, Amagasaki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

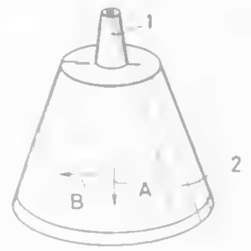
Filed Apr. 5, 1988, Ser. No. 178,009

Int. Cl.⁴ B29C *35/00*

U.S. Cl. 264—327 7 Claims

1. A method for manufacturing a speaker vibration member in a molding process, said method comprising:

a first step of preparing a mixture of materials for forming said speaker member, said mixture of materials containing no less than 10% by weight of liquid crystal polymer and 3 to 40% by weight of fiber or flake filler,
a second step of melting the mixture of liquid crystal polymer and fiber or flake filler materials,
a third step of introducing the mixture into a mold, said mold being maintained at a lower temperature than a solidified temperature of said mixture of materials, and



a fourth step of cooling and solidifying the melted mixture materials as the mixture flows in said mold which is adjusted at said lower temperature than the solidification temperature of the materials so that orientation of the mixture materials in the center layers of said molded speaker vibration member is increased for increasing the elasticity coefficient of said vibration member by increasing the shear flow rate and decreasing the mold temperature.

4,880,592

MANUFACTURE OF POLYMERIC PRODUCTS

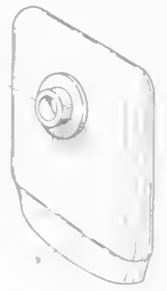
Francesco Martini, Milan; Luigi Perazzo, Cuneo, and Paolo Vietto, Milan, all of Italy, assignors to W. R. Grace & Co.-Conn., Duncan, S.C.

Filed Dec. 8, 1986, Ser. No. 939,375

Claims priority, application United Kingdom, Dec. 9, 1985, 8530324; Dec. 9, 1985, 8530325; Dec. 9, 1985, 8530326; Dec. 9, 1985, 8530327; Dec. 9, 1985, 8530328; Dec. 9, 1985, 8530329

Int. Cl.⁴ B29C *47/06*

U.S. Cl. 264—514 4 Claims



1. A method of making a sheet material comprising melt extruding a laminated tube of a tubular layer of HB polymer composition in molten form and a tubular layer of molten thermoplastic that is substantially non-tacky on solidification, and stretching and solidifying the extruded laminate, wherein the HB polymer is a biodegradable polymer formed of recurring units of which 50 to 100% molar are units of formula 1

$$—OC_nH_{2n}CO—$$

where n is 3, 4 or 5 and the HB polymer composition comprises 50 to 100% of the HB polymer and 0 to 50% diluent additive, the layer of HB polymer composition is to a thickness of 5 to 200 um and the layer of HB polymer composition has moisture vapor transmission of 30 to 200 g/25 um.m^2.day at 38° C. and

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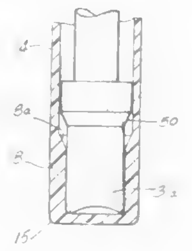
has an oxygen transmission value of 10 to 200 cc/25 um.m^{2}.day.bar at 23° C.

4,880,593
METHOD FOR PREPARING BLOW MOLDED PLASTIC CONTAINER

Herbert Strassheimer, Windermere, Fla., assignor to Plasticon Patents, S.A., Geneva, Switzerland
Filed Jan. 11, 1988, Ser. No. 142,004
Int. Cl.⁴ B29C *49/12*
U.S. Cl. 264—532 5 Claims



1. A method of preparing a blow molded plastic container having a neck portion defining an opening, a tubular body portion depending therefrom and an integral bottom structure depending from the tubular body portion, said method comprising:

providing a plastic preform for forming the blow molded plastic container said preform having a neck portion defining an opening, a tubular body portion depending therefrom and an integral bottom structure depending from the tubular body portion, said integral bottom structure having a closed bottom end;

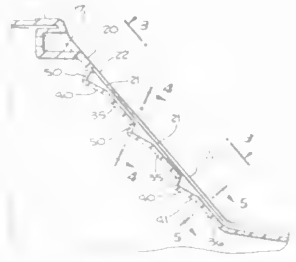
providing a stretch rod having an enlarged base portion; placing the preform inside a blow mold and inserting the stretch rod inside the preform such that a bottom of the stretch rod contacts an inside surface of said closed bottom end of said preform and stretching said preform with said rod and blowing said preform into the configuration of said mold;

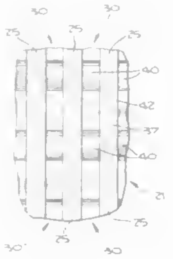
wherein the enlarged base portion of said rod is adapted to effect stretching of said integral bottom structure and preliminarily stretches said integral bottom structure and said tubular body portion simultaneous in different amounts to obtain in said integral bottom structure continuous variations of thickness having thick parts thereof which are thicker than an average wall thickness of said tubular body portion of said blow molded plastic container; said enlarged base portion of said rod stretches said integral bottom structure of said preform by means of a controlled stroke in an amount less than the amount of stretching of the tubular body portion of said preform to obtain bi-axial orientation in said container upon blowing of said preform, said bi-axial orientation being achieved in a region extending well beyond a central region of the bottom of said blow molded container; said preform having an inside and an outside wall face, and the body portion of said preform adjacent said bottom structure has a thickened inside wall face with an abutment at its transition to the tubular body portion;

said method further including the step of contacting a corresponding portion of the stretch rod with said abutment after said preliminary stretching of said tubular body portion and said integral botttom structure to thereby keep the stretch rod from further stretching the integral bottom structure while continuing to stretch the tubular body portion of said preform.

4,880,594
VENTILATED, NO-DRIP, HOUSING FOR ELECTRICAL APPARATUS

Cheun-Yuan Fu, Cerritos, Calif., assignor to Tatung Company of America, Long Beach, Calif.
Filed Jun. 20, 1988, Ser. No. 208,589
Int. Cl.⁴ H04N *5/64;* F24F *13/08*
U.S. Cl. 361—383 5 Claims



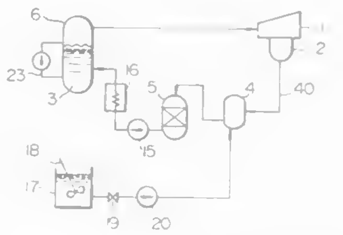


4. A housing for an electrical apparatus, which is an integrally formed plastic member having a sloping wall with a plurality of sloping-trough depressed areas formed therein, the upper extremity of each said sloping-trough depressed area being deepened so as to have a discontinuity relative to the adjacent wall portion, thereby forming an opening for the escape of warm air from inside the housing, and the wall sloping in one direction relative to the vertical while the open face of each discontinuity-formed opening slopes in the opposite direction so that liquid falling upon the sloping wall tends not to enter the openings but instead to flow downward along and off the exterior surface of the housing.

4,880,595
PROCESS AND APPARATUS FOR CLEANING NUCLEAR REACTOR COOLING WATER

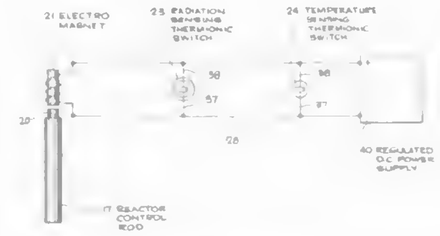
Masami Matsuda, Hitachi; Kiyomi Funabashi, Katsuta; Takashi Nishi, Hitachi; Itaru Komori, Katsuta; Tsutomu Baba, Katsuta; Hideo Yusa, Katsuta; Shunsuke Uchida, Hitachi; Tetsuro Adachi, Katsuta; Katsumi Ohsumi, Hitachi, and Tomohiro Sato, Ibaraki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Continuation of Ser. No. 883,524, Jul. 8, 1986, abandoned. This application Jan. 27, 1989, Ser. No. 303,055
Claims priority, application Japan, Jul. 10, 1985, 150251
Int. Cl.⁴ G21C *19/42;* C02F *1/42;* C21F *9/08*
U.S. Cl. 376—313 4 Claims

1. A process for cleaning nuclear reactor cooling water, which comprises contacting nuclear reactor cooling water with an ion exchange resin mixture of (a) 50 to 90% by weight of a cation exchange carboxylic acid-based resin having an average particle size of 30 to 60 μm, and (b) 10 to 50% by weight of anion exchange resin, said mixture being reinforced with 10 to 40% by weight of reinforcing fibers on a dry basis of total weight of said resins and said fibers, thereby trapping cruds or cations in the cooling water; wherein the cation exchange carboxylic acid-based resin is a straight chain type ion exchange resin whose ion-exchange groups are bonded to other elements than carbon atoms constituting a benzene ring.



4,880,596
THERMIONIC SWITCHED SELF-ACTUATING REACTOR SHUTDOWN SYSTEM

Donald M. Barrus; Charles D. Shires, both of San Jose, and William A. Brummond, Livermore, all of Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.
Continuation of Ser. No. 270,682, Jun. 4, 1981, abandoned. This application Nov. 13, 1987, Ser. No. 120,710
Int. Cl.⁴ G21C *7/12*
U.S. Cl. 376—336 22 Claims


21 ELECTRO MAGNET
23 RADIATION SENSING THERMIONIC SWITCH
24 TEMPERATURE SENSING THERMIONIC SWITCH
56
57
56
57
20
28
40 REGULATED DC POWER SUPPLY
17 REACTOR CONTROL ROD

1. In a reactor control assembly utilizing electromagnetic means for retaining a control element in ready position for insertion into a reactor core containing a plurality of fuel assemblies having coolant flowing therethrough, the improvement comprising:

first means responsive to temperature of reactor coolant passing through said fuel assemblies for releasing said control element, said first means including a quantity of thermionic material which changes from a high electrical resistance to a low electrical resistance upon an increase in reactor coolant temperature above a selected temperature;

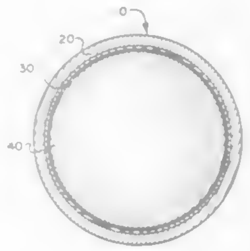
second means responsive to reactor neutron flux for releasing said control element, said second means including a quantity of material which is heated by neutron flux and a quantity of thermionic material that changes from a high electrical resistance to a low electrical resistance upon an increase in temperature above a selected temperature, said thermionic material being heated by the heating of said first-mentioned material by neutron flux; and

an electrical circuit interconnecting a power source with said electromagnetic means, said first and second means being connected to said electrical circuit so as to be electrically in paralllel with said electromagnetic means;

whereby under normal operating conditions electrical current flows from said power source to said electromagnetic means, and activation of either of said first means or said second means causes electrical current flowing to said electromagnetic means to be short-circuited resulting in release of said control element from said electromagnetic means for insertion of said control element into said reactor core.

4,880,597
ALLOY COATED FUEL CLADDING

William J. Bryan, Granby, and Nathan Fuhrman, Plainville, both of Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.
Continuation-in-part of Ser. No. 81,969, Aug. 5, 1987, Pat. No. 4,824,634. This application Jun. 24, 1988, Ser. No. 213,567
Int. Cl.⁴ G21C *3/00*
U.S. Cl. 376—419 4 Claims

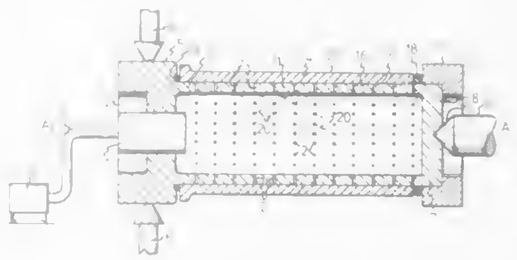


1. In a fuel element for use in a nuclear reactor which includes a fissionable material contained within a zirconium-alloy cladding tube, the improvement which comprises:

a coating on the inside of the zirconium-alloy cladding tube, said coating including a nickel-thallium-boron burnable poison compound.

4,880,598
METHOD FOR MANUFACTURING A TUBULAR COMPACT

Flemming Hansen Kaad, and Ola Pettersson, both of Höganäs, Sweden, assignors to Cips KB, Höganäs, Sweden
Filed Dec. 15, 1988, Ser. No. 284,562
Claims priority, application Sweden, Dec. 18, 1987, 8705053
Int. Cl.⁴ G22F *7/00*
U.S. Cl. 419—1 11 Claims



1. A method of handling a tubular compact formed by compacting a powder into a tubular shape, comprising the steps of fitting a circumferential surface of the compact to a complementary abutment surface with a slight clearance space therebetween, and evacuating said clearance space such that the compact bridges said space and is drawn into firm retention against said abutment surface.

4,880,599
METHOD OF MAKING A FERRITE COMPOSITE CONTAINING SILVER METALLIZATION

Richard J. Charles, Schenectady, and Achuta R. Gaddipati, Scotia, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.
Filed Mar. 25, 1988, Ser. No. 172,834
Int. Cl.⁴ B22F *7/00*
U.S. Cl. 419—6 14 Claims

1. A process for producing a solid composite comprised of a ferrite matrix containing a continuous silver metallization with

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only its end portions exposed to the ambient, said ferrite matrix having an electrical resistivity greater than 500 ohm-centimeters at a temperature ranging from about 20° C. to about 100° C., which comprises:
- (a) providing a ferrite powder;
- (b) admixing said ferrite powder with an organic binding material;
- (c) forming the resulting mixture into tape;
- (d) providing a silver metallization-forming material;
- (e) forming a layered structure of at least two of said tapes containing said silver metallization-forming material therewithin in a pattern with two end portions, said metallization-forming material being present in an amount sufficient to produce said silver metallization;
- (f) laminating the layered structure and forming a laminated structure wherein only said end portions of said pattern are exposed;
- (g) firing said laminated structure to thermally decompose its organic component at an elevated temperature below about 600° C. leaving no significant deleterious residue, said firing being carried out in an atmosphere or vacuum which has no significant deleterious effect on said composite;
- (h) sintering the resulting structure at a temperature ranging from about 1000° C. to about 1400° C. in an oxygen-containing atmosphere to produce a sintered product having the composition of said composite; and
- (i) cooling said sintered product to produce said composite, said sintering and cooling being carried out in an atmosphere which has no significant deleterious effect on said composite, said ferrite powder having a composition which forms said ferrite matrix in said process.

4,880,600
METHOD OF MAKING AND USING A TITANIUM DIBORIDE COMPRISING BODY

David Moskowitz, Southfield, and Charles W. Phillips, Ann Arbor, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Continuation of Ser. No. 515,028, May 27, 1983, abandoned. This application Nov. 20, 1987, Ser. No. 124,383

Int. Cl.^{4} B22F *1/00*

U.S. Cl. 419—12 6 Claims

1. Method of making a high strength, high density titanium diboride comprising body, useful when shaped as a cutting tool, by the steps comprising:
- (a) compacting a powder mixture milled to an absolute maximum particle size of 5 microns or less, said mixture consisting of 5–10% by weight of a binder selected from the group consisting of cobalt, nickel and iron, and the remainder being essentially titanium diboride, except for up to 1.0% oxygen and up to 2% graphite, said mixture being formed into a body of less than required density; and
- (b) sintering said compact by heating to a temperature of at least 1500° sufficient to densify said compact to at least 97% of full theoretical density, to form a heat fused product exhibiting a hardness of at least 90 Rockwell A and a transverse rupture strength of at least 100,000 psi.

4,880,601
HYDROGEN PEROXIDE DISINFECTING SYSTEM FOR CONTACT LENSES

Guy Andermann, Strasbourg; Joseph Spittler, Kayersberg; Patricia Zilliox, Strasbourg, and Dominique Mergel, Sigolsbelm, all of France, assignors to Laboratoires, P.O.S., Kayserberg, France

Filed Sep. 27, 1985, Ser. No. 781,286

Int. Cl.^{4} A61L *2/16*

U.S. Cl. 422—28 6 Claims

1. A method of disinfecting a contact lens, comprising:

soaking the lens in an aqueous sterilizing solution containing an amount of hydrogen peroxide effective to sterilize the lens and a hydrogen peroxide stabilizing agent, said stabilizing agent consisting essentially of sodium stannate at a concentration of about 10 to 100 parts per million, thereby sterilizing the lens; and

contacting the sterilized lens with an aqueous neutralizing solution containing an amount of sodium thiosulfate effective to neutralize substantially all of the hydrogen peroxide present in and on the lens following treatment with the disinfecting solution and an amount of a tin complexing agent effective to sequester substantially all of the tin introduced into the neutralizing solution by the sterilized lens, said neutralizing solution having a pH of about 7.

4,880,602
METHOD AND DEVICE FOR DISINFECTING BIOLOGICAL FLUIDS AND CONTAINER FOR SAME

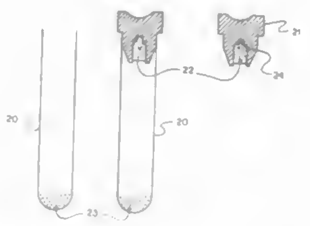
Hablb Al-Sioufi, P.O. Box 654, Brookline, Mass. 02146

Continuation-in-part of Ser. No. 780,668, Sep. 29, 1989, Pat. No. 4,675,159. This application Jun. 5, 1987, Ser. No. 58,553

The portion of the term of this patent subsequent to Jun. 23, 2004, has been disclaimed.

Int. Cl.^{4} A61L *2/18*

U.S. Cl. 422—28 22 Claims



1. A biological fluid disinfecting device comprising an evacuated receptacle for holding a specimen of biological fluid for clinical evaluation which is closed at one of its ends by an elastomeric stopper adapted to be penetrated by means for introducing said specimen therein, said receptacle also containing prior to introduction of said specimen about 0.001 to 5.0 weight percent based on the total fluid of a disinfectant for viral infection present in the specimen which disinfectant is one or more compounds or mixtures thereof selected from the group consisting of glutaraldehyde, formaldehyde, chlorohexidine, phenols and guaternary ammonium compounds.

21. A method for destroying viral contamination in specimens of biological fluids which comprises providing an evacuated container for said fluids having predisposed therein about 0.001 to 5.0 weight percent of a disinfectant for said viral contamination selected from the group consisting of glutaraldehyde, formaldehyde, chlorhexidine, phenols and quaternary ammonium compounds or mixtures thereof, said disinfectant being buffered substantially at the time said biological fluid is introduced therein to a pH of about 7.2 to 8.5.

4,880,603
DEVICE FOR ACHIEVING A UNIFORM DISTRIBUTION OF THE GAS FLOWING RADIALLY THROUGH A CATALYST BED

Friedrich Förster, Dortmund, Fed. Rep. of Germany, assignor to UHDE GmbH, Fed. Rep. of Germany

Continuation of Ser. No. 718,487, Apr. 1, 1985, abandoned. This application Feb. 8, 1988, Ser. No. 154,524

Claims priority, application Fed. Rep. of Germany, Apr. 10, 1984, 3413421

Int. Cl.^{4} B01J *8/02, 8/04*

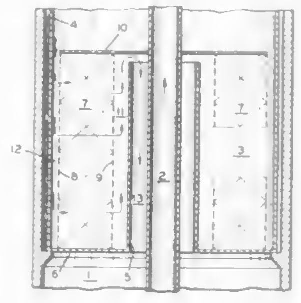
U.S. Cl. 422—218 8 Claims

1. A device for achieving a uniform distribution of the gas flowing radially through a catalyst bed in a reactor for catalytic reactions comprising:

an annular catalyst basket having gas-permeable inner and outer cylindrical walls each having a plurality of predetermined diameter, uniformly distributed apertures formed therein, and a gastight cover;

an annular vessel having gastight inner and outer cylindrical walls, and a gastight bottom, said basket being positioned in said vessel between said inner and outer walls of said vessel, said vessel outer wall and said basket outer wall forming a first annular space, said vessel inner wall and said basket inner wall forming a second annular space; and

means for providing influent fresh gas in a first axial direction to said first annular space and means for receiving effluent reaction gas in a second opposite axial direction from said second annular space and wherein the cross-sectional area of said second annular space for the effluent reaction gas is equal to or larger than the cross-sectional area of said first annular space.



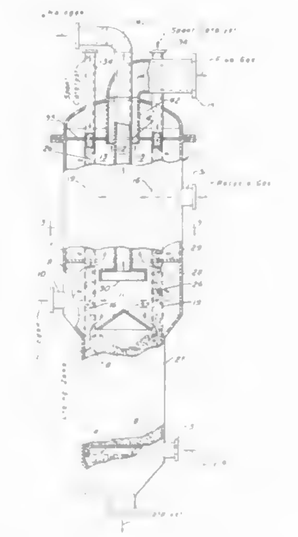
4,880,604
APPARATUS FOR COKE BURNING IN REGENERATION OF HYDROCARBON CONVERSION CATALYST

William J. Koves, Hoffman Estates, Ill., assignor to UOP, Des Plaines, Ill.

Filed Nov. 4, 1987, Ser. No. 116,932

Int. Cl.^{4} B01J *8/12, 23/90*

U.S. Cl. 422—220 7 Claims



1. Apparatus for regenerating spent catalyst particles by the removal of coke in a burn zone, said apparatus comprising:
- (a) a vessel;
- (b) first and second vertically-extended catalyst screens disposed within said vessel and spaced apart by a uniform horizontal distance over the length of said screens to define a burn zone and confine catalyst particles in a vertically-elongated bed of catalyst particles that occupies said burn zone;
- (c) means for adding catalyst particles to the top of said vertically-elongated bed and withdrawing catalyst particles from the bottom of said vertically-elongated bed to provide an at least intermittent downward gravity flow of catalyst particles through said vertically-extended bed,
- (d) means for passing recycle gas into and collecting flue gas from said vertically-elongated bed in a direction transverse to the flow of catalyst particles and varying the gas flow rate over the vertical length of said vertically-elongated bed, said means for passing, collecting and varying including a recycle gas distribution space, defined in part by at least one of said vessel and said first screen, for distributing recycle gas over the surface of said first screen and a vertically-extended flue gas collection space, defined in part by at least one of said vessel and said second screen, for collecting flue gas from the surface of said second screen; and
- (e) a plurality of gas flow apertures in at least one of said first and second screens, said apertures providing at least a part of said means for varying the gas flow rate and said apertures having a maximum open area at the top of said vertically-extended bed and a minimum open area at the bottom of said vertically-extended bed, so that the maximum gas flow rate is at the top of the bed and the minimum gas flow rate is at the bottom of the bed.

4,880,605
GAS DISPERSION SHROUD FOR HIGH TEMPERATURE PROCESSING OF POWDERS

Nelson E. Kopatz, Sayre, Pa.; Philip E. Stermer, Waverly, N.J., and Lori S. Pruyne, Sayre, Pa., assignors to GTE Products Corporation, Stamford, Conn.

Filed Feb. 29, 1988, Ser. No. 161,923

Int. Cl.^{4} F27B *17/00*

U.S. Cl. 422—232 2 Claims

1. An apparatus for reacting a powder with a reacting gas, said apparatus comprising a shroud consisting essentially of a first section having a peripheral cylindrical wall with an inner surface and an outer surface, said inner surface defining a cavity which serves as a reaction chamber in which said powder and said reacting gas react, said first section being detatchably mounted at its top end to the exit nozzle of a high temperature source, said first section having one or more powder inlet openings extending through the thickness of said peripheral wall from said outer surface to said inner surface, thereby connecting the outside with said reaction chamber through which said powder enters said reaction chamber, said powder inlet openings being positioned sufficiently close to said exit nozzle to allow said powder to melt and to react with said reacting gas in the molten state, and a second section forming a cylindrical jacket skirting the lower part of said first section at a point below said powder inelt openings, said jacket having an outer peripheral wall, an inner wall which is one and the same with said peripheral wall of said first section, and top and bottom ring plates which form the top and bottom walls re-

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spectively of said second section, said walls of said second section defining a plenum, said second section having one or more outer openings through the thickness of said outer peripheral wall of said jacket which connect the outside with said plenum through which said reacting gas enters from an outside source to said plenum, said second section having two or more inner openings through the thickness of said inner wall of said second section, which connect said plenum with said reaction chamber through which said reacting gas enters said reaction chamber from said plenum to react with said powder in said reaction chamber, said inner openings being directed downward into said reaction chamber and tangential to said inner surface of said shroud, with the resulting reaction product exiting said shroud through the bottom end of said reaction chamber.

4,880,606

METHOD AND APPARATUS FOR DESULFURIZATION OF SULFUR OR HYDROGEN SULFIDE-CONTAINING GASES

Lothar Görlich, Dissen a.T.W., Fed. Rep. of Germany, assignor to UTB Umwelttechnik Buchs AG, Buchs, Switzerland

Continuation-in-part of Ser. No. 188,742, Apr. 28, 1988. This application Jul. 21, 1988, Ser. No. 222,263

Claims priority, application Switzerland, Oct. 11, 1985, 4394/85

The portion of the term of this patent subsequent to Oct. 17, 2006, has been disclaimed.

Int. Cl.⁴ C01B *17/05*

U.S. Cl. 423—220 **20 Claims**

1. Method of desulfurization of gas contaminated with sulfur comprising the steps of

providing a reservoir (**27**; **31**, **33**) of washing or scrubbing liquid;

feeding said contaminated gas through an absorber (**11**) while simultaneously circulating a portion of said washing liquid at a first flow rate in a first loop comprising a scrubbing loop including a recirculating stream from said reservoir (**27**, **31**) through said absorber (**11**) and back into said reservoir, thereby forming contaminated liquid including , sulfur compounds;

circulating a portion of said contaminated washing liquid from said reservoir at a second flow rate in a second loop comprising regenerating loop including a recirculating stream from the reservoir (**27**; **33**) to a regenerator (**59**) and back to the reservoir,

wherein said second flow rate exceeds said first flow rate,

thereby oxidizing said sulfur compounds to form elemental sulfur, removing said elemental sulfur from said liquid, and thereafter circulating said liquid back into said reservoir, and wherein said oxidizing includes aerating the contaminated washing liquid in the regenerator with an oxygen-containing gas.

4,880,607

RECOVERING MINERAL VALUES FROM ORES

Robert L. Horton, Chagrin Falls, Ohio, and George V. Lakey, Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Dec. 20, 1982, Ser. No. 451,300

Int. Cl.⁴ C22B *60/02;* C01G *43/01*

U.S. Cl. 423—20 **18 Claims**

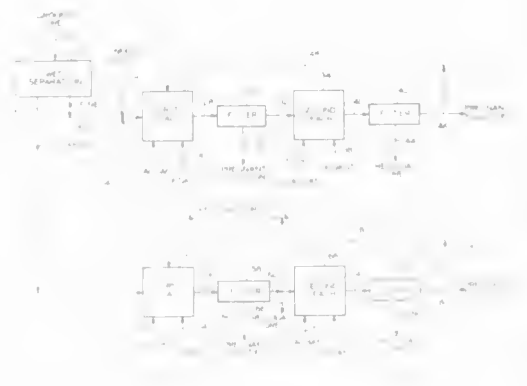
1. A method for recovering uranium values from ground uranium-containing ore, comprising:

(a) separating said ore into coarse and fines fractions;

(b) adding to said fines fraction a diluent solid material, selected from the group consisting of (1) inert solids, (2) a barren part of said coarse fraction produced by leaching said coarse fraction to recover uranium therefrom to its economic or practical limit, and (3) a barren part of said coarse fraction produced by roasting said coarse fraction to recover uranium therefrom to its economic or practical limit, said diluent material having a particle size roughly equivalent to the particle size of said coarse fraction;

(c) contacting the mixture of said fines fraction and said diluent solid material with a first leachant selected from the group consisting of (1) an aqueous alkaline solution containing an oxidant and (2) an aqueous acidic solution containing an oxidant, adapted to solvate a significant amount of said uranium values, in at least one mixed fines/diluent solid leaching step; and

(d) separating a pregnant leach solution, containing the thus solvated uranium values, from residual solids.



4,880,608

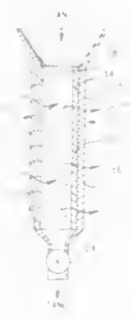
CONTACTOR/FILTER IMPROVEMENTS

David Stelman, West Hills, Calif., assignor to The United State of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jun. 30, 1988, Ser. No. 213,798

Int. Cl.⁴ B01J *8/00*

U.S. Cl. 423—244 **23 Claims**



14. A method of removing fine particulates from a gas stream, wherein said particulates range in size from approximately 1 to 10 microns, said method comprising:

passing a fine particulate-containing gas stream through a body of granular material of a median particle size of about 0.2 to 5 millimeters in diameter to a substantially gas-permeable microporous filter element;

isolating the body of granular material from an upstream surface of said microporous filter element with a particulate entrapment structure;

collecting the particulates with said entrapment structure so as to form a dust cake, which dust cake is disposed on an upstream surface of said entrapment structure and within said entrapment structure, below said upstream surface, including the step of providing said particulate entrapment structure with a plurality of spaced apertures ranging in size from approximately 1 to 10 microns;

scouring the upstream face of said entrapment structure to remove the dust cake therefrom, without removing said dust cake disposed within said entrapment structure, below said upstream surface, by moving said body of granular material across the upstream face of said entrapment structure, thereby maintaining the gas stream pressure drop across the body of granular material, said entrapment structure and said microporous filter element within a desired range while concurrently removing particulate contaminants from the gas stream; and

withdrawing a substantially particulate-free gas stream from the downstream face of said microporous filter element.

4,880,609

CHELATE CATALYST SYSTEM FOR H_2S REMOVAL FROM A GAS STREAM

Ali R. Naraghi, Missouri City, Tex., assignor to Champion Chemicals, Inc., Houston, Tex.

Filed Nov. 23, 1988, Ser. No. 276,107

Int. Cl.⁴ C01B *17/16, 3/20*

U.S. Cl. 423—226 **19 Claims**

1. A method for removing H_2S from a natural gas flow having H_2S mixed therein, the method comprising:

(a) delivering the natural gas flow into an upstanding vessel with an aqueous solution therein for contact with an effective amount of sodium nitrite for oxidation of the H_2S wherein the solution includes a transition metal chelate therein for catalyzing the oxidation of H_2S wherein the solution pH is in the range of about 7.0 to about 11.0;

(b) recovering natural gas after bubbling through the aqueous solution to remove the natural gas substantially free of H_2S;

(c) accumulating in loose precipitate form elemental sulfur in the solution and periodically removing the accumulated elemental sulfur precipitate therefrom; and

(d) periodically recharging the solution with additional sodium nitrite as the nitrite is consumed during oxidation of H_2S to sulfur and the sodium nitrite; catalyst ratio is 10:1 or more.

4,880,610

IN SITU CALCIUM PHOSPHATE MINERALS—METHOD AND COMPOSITION

Brent R. Constantz, Woodside, Calif., assignor to Norian Corporation, Mountain View, Calif.

Filed Apr. 20, 1988, Ser. No. 183,770

Int. Cl.⁴ C01F *11/00*

U.S. Cl. 423—305 **12 Claims**

1. A method for making calcium phosphate minerals comprising:

combining phosphoric acid substantially free of uncombined water, a calcium source, neutralizing anions including at least one of carbonate, phosphate and hydroxide in an amount sufficient to substantially neutralise said phosphoric acid and water in an amount to provide a kneadable mixture at a physiologically acceptable temperature;

agitating the mixture to produce a substantially uniform mixture; and

allowing the mixture to set and become annealed to a hard workable structure.

4,880,611

CRYSTALLINE COMPOSITION

Roland von Ballmoos, Hopewell; Cynthia T-W. Chu, Princeton Junction; Michael E. Landis, Woodbury, all of N.J., and Eric G. Derouane, Namur, Belgium, assignors to Mobil Oil Corp., New York, N.Y.

Continuation-in-part of Ser. No. 117,858, Nov. 6, 1987, abandoned, which is a continuation of Ser. No. 878,754, Jun. 26, 1986, which is a continuation-in-part of Ser. No. 642,925, Aug. 21, 1984, abandoned, which is a continuation-in-part of Ser. No. 562,673, Dec. 19, 1983, abandoned, and Ser. No. 615,391, May 25, 1984, abandoned, said Ser. No. 878,754, is a continuation-in-part of Ser. No. 685,186, Dec. 21, 1984, Pat. No. 4,623,527, which is a continuation-in-part of Ser. No. 562,909, Dec. 19, 1983, abandoned. This application Dec. 21, 1987, Ser. No. 136,083

The portion of the term of this patent subsequent to Jun. 16, 2004, has been disclaimed.

Int. Cl.⁴ C01B *15/16*

U.S. Cl. 423—306 **15 Claims**

9. A composition of matter comprising crystals having a framework topology after heating at 110° C. or higher giving an X-ray diffraction pattern with interplanar d-spacings at 16.4±0.2 Angstroms, 8.2±0.1 Angstroms and 4.74±0.05 Angstroms, and without a significant interplanar d-spacing at 13.6–13.3 Angstroms, having been synthesized by the method comprising:

(1) providing a reaction mixture comprising sources of X oxide, Y oxide and Z oxide, wherein X represents one or more elements of +3 valence selected from the group consisting of aluminum, iron, chromium, vanadium, molybdenum, arsenic, antimony, manganese, gallium and boron; Y represents one or more elements of +5 valence selected from the group consisting of phosphorus, arsenic, antimony and vanadium; and Z represents one or more elements of +4 valence selected from the group consisting of silicon, germanium and titanium, one of said oxide sources being unstable in water, an organic directing agent D, inorganic cations M and anions N, and a substantially water-immiscible organic solvent for said oxide source unstable in the water, the components of said reaction mixture having the following relationship:

$$(D)_a:(M_2O)_b:(X_2O_3)_c:(ZO_2)_d:(Y_2O_5)_e:(\text{Solvent})_f:(N)_g:(H_2O)_h$$

where a, b, c, d, e, f, g, and h are numbers satisfying the following relationships:

$a/(c+d+e)$ is less than 4,
$b/(c+d+e)$ is less than 2,
$d/(c+e)$ is less than 2,
$f/(c+d+e)$ is from 0.1 to 15,
$g/(c+d+e)$ is less than 2, and
$h/(c+d+e)$ is from 3 to 150,

wherein upon initial provision of said reaction mixture said oxide source unstable in the water is dispersed or dissolved in the water-immiscible organic solvent;

(2) heating said reaction mixture at a rate of from 5° C. to 200° C. per hour to a temperature of from 80° C. to 300°;

(3) agitating said reaction mixture in a manner sufficient to intimately admix the water-immiscible organic solvent and the water with each other, thereby progressively hydrolyzing the oxide source unstable in water;

(4) maintaining said agitated reaction mixture at a tempera-

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ture of from 80° C. to 300° C. and a pH of from 2 to 9 until crystals of said composition of matter are formed; and
(5) recovering from said reaction mixture said composition of matter.

4,880,612

HEXAAMMINEALUMINUM IODIDE MONOAMMONIATE AND PROCESS FOR ITS PREPARATION

Dieter Peters, Hürth, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Sep. 2, 1988, Ser. No. 240,147

Claims priority, application Fed. Rep. of Germany, Sep. 18, 1987, 3731454

Int. Cl.⁴ C01B *21/00*

U.S. Cl. 423—413 13 Claims

1. A crystalline compound of the formula

$$[Al(NH_3)_6]I_3(NH_3)_x$$

wherein x is about 1.

4. A process for the preparation of hexaammineacluminum iodide monoammoniate by reacting aluminum, an iodine compound and ammonia, which comprises reacting the reactants without the addition of mercury at between room temperature and 600° C. under ammonia pressures of 8 to 2,000 bar in liquid ammonia and removing any excess ammonia after the end of the reaction at a temperature of 10° to 60° C. by vaporization under atmospheric pressure.

4,880,613

LIGHT EMITTING ELEMENT COMPRISING DIAMOND AND METHOD FOR PRODUCING THE SAME

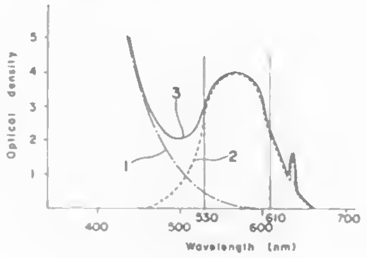
Shyuichi Satoh, and Kazuwo Tsuji, both of Itami, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Jan. 12, 1988, Ser. No. 143,114

Claims priority, application Japan, Jan. 12, 1987, 62-5730; Jul. 15, 1987, 62-176825; Oct. 29, 1987, 62-274494

Int. Cl.⁴ B01J *3/08*

U.S. Cl. 423—446 13 Claims



7. The method according to claim 6, wherein the diamond is irradiated by an electron beam of 2 to 4 MeV for a dosage of 1×10^{17} to 1×10^{18} electrons/cm^2.

4,880,614

CERAMIC THERMAL BARRIER COATING WITH ALUMINA INTERLAYER

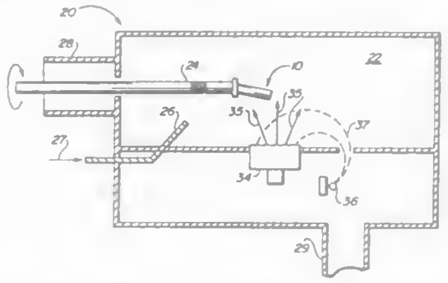
Thomas E. Strangman, Phoenix, and Patricia A. Solfest, Chandler, both of Ariz., assignors to Allied-Signal Inc., Phoenix, Ariz.

Filed Nov. 3, 1988, Ser. No. 266,972

Int. Cl.⁴ C23C *11/00, 13/00*

U.S. Cl. 428—623 9 Claims

1. An article of manufacture suitable for use in a gas turbine engine comprising:
a superalloy substrate,
a metallic bond coating on the substrate,
an insulative ceramic coating on the metallic bond coating, and



an interlayer between the bond coating and the ceramic coating which consists essentially of high purity alpha alumina.

4,880,615

STABILIZED RADIOPHARMACEUTICAL COMPOSITIONS

F. Peter Charleson, Kirkland, Canada, assignor to Merck & Co., Inc., Rahway, N.J.

Filed Nov. 25, 1988, Ser. No. 276,253

Int. Cl.⁴ A61K *49/02;* C09K *15/22, 15/06*

U.S. Cl. 424—1.1 5 Claims

1. A stablized radiopharmaceutial composition comprising a molecule containing a radioactive iodine atom and a stabilizer selected from the group consisting of ascorbic acid, nicotinamide and its corresponding amides, or a mixture of ascorbic acid and nicotinamide and its amides, in a sufficient amount to stabilize against radiolytic decomposition.

4,880,616

STABLE STANNOUS CHLORIDE COMPOSITION FOR LABELING WITH RADIOACTIVE TECHNETIUM

Makoto Azuma; Jun Takahashi, both of Hyogo; Hirohiko Yamanchi, Osaka, and Nobuo Ueda, Hyogo, all of Japan, assignors to Nihon Medi-Physics Co., Ltd, Hyogo, Japan

Continuation of Ser. No. 791,474, Oct. 25, 1985, abandoned. This application Dec. 17, 1987, Ser. No. 135,527

Claims priority, application Japan, Oct. 26, 1984, 59-226395

Int. Cl.⁴ A61K *49/02*

U.S. Cl. 424—1.1 2 Claims

1. A process for preparing a technetium 99m-labeled radioactive diagnostic agent consisting essentially of the steps of:
(a) preparing a solution of stannous chloride in a concentration of not less than 1.0 mol/liter by dissolving stannous chloride alone in water,
(b) charging solution prepared in step (a) to a container in an amount of not more than 500 microliters,
(c) lyophilizing to provide stannous chloride in a dry solid state in said container,
(d) adding water to said container to dissolve the stannous chloride therein and admixing ^{99m}Tc in the pertechnetate form to form ^{99m}Tc-labeled tin colloid.

4,880,617

LATTICE-ENTRAPPED COMPOSITION

Eric S. Abrutyn, Middletown, N.Y., assignor to Dow Corning Corporation, Midland, Mich.

Continuation-in-part of Ser. No. 882,609, Jul. 7, 1986, abandoned, which is a continuation-in-part of Ser. No. 683,603, Dec. 12, 1984, Pat. No. 4,724,240, which is a continuation-in-part of Ser. No. 246,663, Mar. 23, 1981, abandoned. This application Oct. 6, 1986, Ser. No. 915,749

The portion of the term of this patent subsequent to Feb. 9, 2005, has been disclaimed.

Int. Cl.⁴ A61K *7/035, 7/42, 9/42*

U.S. Cl. 424—501 13 Claims

1. A solid, lattice-entrapped powder composition comprising:
from about 5% to about 95% by weight of a cross-linked syneresis-free hydrophobic polymer lattice;
from about 95% to about 5% by weight of a powdered functional material;
wherein said functional material and the monomers of said cross-linked copolymer being polymerized in situ;
said functional material being dispersed uniformly throughout and entrapped within said polymer lattice.

4,880,618

USE OF PARTIALLY ACETYLATED POLYVINYL ALCOHOL AS A FOAMING AGENT IN COMPOSITIONS IN THE FORM OF AEROSOLS

Jean F. Grollier, Paris; Claude Dubief, Le Chesnay, and Jean Mondet, Drancy, all of France, assignors to L'Oreal, Paris, France

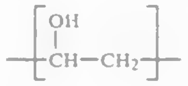
Continuation of Ser. No. 50,026, May 15, 1987, abandoned. This application Aug. 23, 1988, Ser. No. 235,775

Claims priority, application Luxembourg, May 16, 1986, 86430

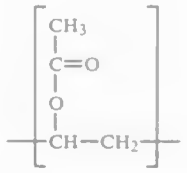
Int. Cl.⁴ A61K *7/11;* C09K *3/30*

U.S. Cl. 424—43 31 Claims

1. An aqueous cosmetic composition for the treatment of the hair or the skin, in the form of a foam from an aerosol device in which it is packaged under pressure, in the presence of a propellant agent, comprising, in a cosmetically acceptable aqueous medium containing one or more cosmetic products for the cosmetic treatment of the hair or the skin, at least one partially acetylated polyvinyl alcohol containing at least units of formulae (I) and (II)



$$-\!\!\left[\underset{\substack{|\\OH}}{CH}-CH_2\right]\!\!- \qquad (I)$$



$$-\!\!\left[\underset{\substack{|\\O\\|\\C=O\\|\\CH_3}}{CH}-CH_2\right]\!\!- \qquad (II)$$

in which the units of formula (II) are present in proportions of greater than or equal to 3 mol % with respect to the totality of units in the polymer, this polymer possessing a viscosity at a concentration of 4% in water at 20 degrees C. of between 0.005 and 0.065 Pa.s.

4,880,619

ANTICALCULUS ORAL COMPOSITION

Abdul Gaffar, Somerset, N.J., assignor to Colgate-Palmolive Company, Piscataway, N.J.

Division of Ser. No. 710,876, Mar. 11, 1985, Pat. No. 4,590,064. This application May 2, 1986, Ser. No. 859,272

The portion of the term of this patent subsequent to May 20, 2003, has been disclaimed.

Int. Cl.⁴ A61K *7/16, 7/22, 7/24, 7/18*

U.S. Cl. 424—52 20 Claims

1. An oral composition comprising an orally acceptable vehicle having a pH of about 4.5 to about 9 and containing in an effective amount, in the range of about 0.01% to about 10% by weight, as an anticalculus agent phosphonoformic acid or an orally acceptable salt thereof, and
an effective anticaries amount, in the range of about 0.01% to about 3.0% by weight, of a fluoride providing anticaries compound.

4,880,620

PERFLUORINATED SURFACE-ACTIVE OLIGOMERS, PROCESS FOR THEIR PREPARATION AND COMPOSITIONS CONTAINING THESE OLIGOMERS

Guy Vanlerberghe, Claye-Souilly, and Henri Sebag, Paris, both of France, assignors to L'Oreal, Paris, France

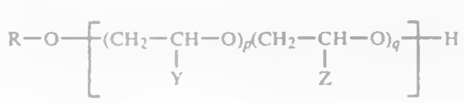
Division of Ser. No. 832,766, Feb. 26, 1986, Pat. No. 4,778,675, which is a division of Ser. No. 473,639, Mar. 9, 1983, Pat. No. 4,584,196, which is a division of Ser. No. 156,398, Jun. 4, 1980, Pat. No. 4,399,077. This application Aug. 2, 1988, Ser. No. 227,120

Claims priority, application France, Jun. 7, 1979, 79 14639

Int. Cl.⁴ A61K *7/075, 7/08;* C07C *43/11*

U.S. Cl. 424—70 7 Claims

4. A shampoo, conditioning rinse or conditioning lotion composition for the hair comprising in an aqeous or aqueous alcoholic vehicle a perfluorinated surface-active oligomer in an amount effective to impart an oleofugic effect to said hair, said perfluorinated surface-active agent having the formula



$$R-O-\!\!\left[(CH_2-\underset{\substack{|\\Y}}{CH}-O)_p(CH_2-\underset{\substack{|\\Z}}{CH}-O)_q\right]\!\!-H$$

wherein
R is $H(CH_2)_m$—, $F(CF_2)_n$—CH_2—, $F(CF_2)_n$—CH_2—CH_2— or $H(CF_2)_n$—CH_2— wherein m and n represent an integer ranging from 1 to 16, or a group of the formula $A(CF_2)_n$—$(CH_2)_m$— wherein A represents hydrogen or fluorine, m represents an integer ranging from 1 to 16 and n represents zero or an integer ranging from 1 to 16, with the proviso that if n is zero, A represents hydrogen and if n represents an integer from 1 to 16, m represents 1, 2 or 3,
Y represents C_xF_{2x+1}, C_xF_{2x+1} CH_2—, C_xF_{2x+1} CH_2—O—CH_2—, C_xF_{2x+1} CH_2—CH_2—O—CH_2— or HC_xF_{2x} CH_2—O—CH_2—, wherein x represents an integer from 6 to 10,
Z represents —CH_2OH, and
p and q, each independently, represent an integer or decimal number ranging from 0.5 to 30.

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4,880,621

COSMETIC COMPOSITION FOR THE TREATMENT OF THE HAIR AND SKIN COMPRISING A POWDER OF FLOWERS OR FLOWER TOPS AND A COHESION AGENT

Jean-Francois Grollier, Paris; Josiane Allec, Pierrefitte; Chantal Fourcadier, Paris; Georges Rosenbaum, Asnieres, and Patrick Darmenton, Villejuif, all of France, assignors to Societe Anonyme dite: l'Oreal, Paris, France

Division of Ser. No. 832,338, Feb. 24, 1986, Pat. No. 4,746,510, which is a division of Ser. No. 603,737, Apr. 25, 1984, Pat. No. 4,581,230, which is a division of Ser. No. 352,105, Feb. 25, 1982, Pat. No. 4,459,285. This application Feb. 4, 1988, Ser. No. 152,376

Claims priority, application Luxembourg, Feb. 27, 1981, 83173

Int. Cl.^{4} A61K *7/06, 7/07, 7/48, 9/10*

U.S. Cl. 424—74 12 Claims

1. A cosmetic composition for application to the hair or skin comprising, in an aqueous medium, particles of pulverized flowers or flower tops having a granulometry lower than 125 microns and a cohesion agent present in an amount effective to maintain the homogeneity of said composition, said cohesion agent being a thickening agent, or an emulsion selected from a water-in-oil or an oil-in-water emulsion, said particles resulting from the pulverization of flowers or flower tops selected from the group consisting of crocus, cyclamen, dahlia, field larkspur (*Delphinium consolida*), edelweiss, geranium, wall flower, swordlily, gypsophila, live ever, garden balsam, orrice, hyacinthe, jasmine, lavatera, water lily, gilower, orchid, snowdrops, petunia, phlox, garden peony, sweet pea, polygonum, pyrethrym, primrose, French rose, clover, tulip and violet said thickening agent being selected from the group consisting of gum arabic, karoya gum, gum tragacanth, guar gum, carob bean gum, tara gum, pectines, alginates, carraghenates, agar-agar, furcellaria, starches, the water soluble portions of mucilagenous plants selected from the group consisting of mullein, wild chamomile, fenugreek, marsh mallow, mallow, flax, limes, psyllium, plantain, borage, star thistle, alder buckthron, common comfrey, asparagus, senna and lichen, methyl cellulose, hydroxymethyl cellulose, hydroxyethyl cellulose, hydroxypropyl cellulose, hydroxypropylmethyl cellulose, sodium polyacrylate, polyvinyl alcohol and carboxylic polymer derivatives of acrylic acid, said particles being present in an amount of at least 5 percent by weight based on the total weight of said composition and said cohesion agent being present in an amount of 0.1 to 20 weight percent of said composition.

4,880,622

WATER-SOLUBLE PHOSPHAZENE POLYMERS HAVING PHARMACOLOGICAL APPLICATIONS

Harry R. Allcock, State College, Pa.; Paul E. Austin, Williamstown, W. Va., and Sukky Kwon, University Park, Pa., assignors to Research Corporation Technologies, Inc., Tucson, Ariz.

Filed May 20, 1986, Ser. No. 865,504

Int. Cl.^{4} A61K *31/74;* A01N *25/26*

U.S. Cl. 424—78 6 Claims

1. A controlled release article of manufacture comprising a member selected from the group consisting of pharmaceuticals, pesticides, herbicides, plant growth regulators, and fertilizers in a physical admixture with a matrix of a polymer of the formula:

$$[NPR(R_2)]n$$

wherein (a) R is selected from the group consisting of lower alkoxy ethers or polyethers, imines, polyimines, sulfides, polysulfides, esters and polyesters, and (b) n is from about 10 to about 20,000.

4,880,623

PROCESS FOR THE PREPARATION OF SOLID NIFEDIPINE FORMULATIONS OF HIGH BIOAVAILABILITY AND WITH SUSTAINED EFFECT, AND FORMULATIONS THUS OBTAINED

Rossi Piergiorgio, Milan, and Calanchi Massimo, Monza, both of Italy, assignors to Eurand Italia S.p.A., Milan, Italy

Filed Oct. 14, 1986, Ser. No. 918,382

Claims priority, application Italy, Oct. 15, 1985, 22494 A/85

Int. Cl.^{4} A61K *9/20, 9/22, 31/74*

U.S. Cl. 424—78 13 Claims

1. A solid pharmaceutical formulation consisting essentially of nifedipine as active principle, PEG, and inert excipient, characterized in that a starting solid micronized inert excipient which is soluble in the gastrointestinal juices is provided either per se or homogeneously admixed with micronized active principle, and in that polyethylene glygol of high molecular weight between about 2000 and 6000 is precipitated thereon in the case of an admixture of the starting micronized inert excipient plus micronized active principle, or in that polyethylene glycol of high molecular weight between about 2000 and 6000 together with micronized active principle is co-precipitated on the starting micronized inert excipient per se, the product being in the form of very fine particles having an extremely high total specific surface.

4,880,624

VOLATILE ATTRACTANTS FOR DIABROTICA SPECIES

Robert L. Metcalf, and Richard L. Lampman, both of Urbana, Ill., assignors to The Board of Trustees of the University of Illinois, Urbana, Ill.

Filed Mar. 18, 1988, Ser. No. 170,159

Int. Cl.^{4} A01N *25/00*

U.S. Cl. 424—84 18 Claims

1. In a method for attracting Diabrotica species, selected from the group consisting of:

northern corn root worm,
southern corn root worm,
western corn root worm, and
D. cristata, the improvement comprising the step of employing an effective amount of an admixture of essentially equivalent amounts of a first compound, selected from the group consisting of trimethoxybenzene and quaiacol, admixed with one or more of a second compound, selected from the group consisting of indole, phenylacetaldehyde, cinnamaldehyde and cinnamonitrile.

4,880,625

USE OF N,N-DIETHYL-M-TOLUAMIDE AND/OR THE ETHYL ESTER OF 2-METHYL-3-PENTENOIC ACID AS INSECT ATTRACTANTS

Richard A. Wilson, Westfield, N.J.; Jerry F. Butler, Gainesville, Fla.; Donald Withycombe, Lincroft, N.J.; Braja D. Mookherjee, Holmdel, N.J.; Ira Katz, Long Branch, N.J., and Kenneth R. Schrankel, Tinton Falls, N.J., assignors to International Flavors & Fragrances, New York, N.Y. and University of Florida, Gainesville, Fla.

Continuation of Ser. No. 26,979, Mar. 17, 1987, abandoned. This application Jun. 30, 1988, Ser. No. 213,683

The portion of the term of this patent subsequent to Feb. 28, 2006, has been disclaimed.

Int. Cl.^{4} A01N *37/02, 37/18, 25/00*

U.S. Cl. 424—84 5 Claims

1. A method of attracting Musca domestica L.(Diptera:Muscidae) to an insect trap comprising the step of exposing the environment surrounding said trap to an insect attractant-containing polymer which consists of a mixture of a polymer and from about 1% up to about 45% by weight of said polymer of a composition of matter selected from the group consisting of:

(i) N,N-diethyl-m-toluamide;
(ii) the mixture of N,N-diethyl-m-toluamide and the ethyl ester of 2-methyl-3-pentenoic acid;

(iii) a mixture of N,N-diethyl-m-toluamide and dimethyl disulfide; and
(iv) a mixture of N,N-diethyl-m-toluamide, the ethyl ester of 2-methyl-3-pentenoic acid and dimethyl disulfide

said polymer being compatible with said composition of matter.

4,880,626

IMMUNOTHERAPEUTIC METHODS AND COMPOSITIONS FOR THE TREATMENT OF DISEASES OF VIRAL ORIGIN, INCLUDING ACQUIRED IMMUNE DEFICIENCY SYNDROME

John McMichael, Westfall & Larry Hill Rd., R.D. 1, Delanson, N.Y. 12053

Continuation-in-part of Ser. No. 692,822, Jan. 18, 1985, Pat. No. 4,692,332. This application Aug. 17, 1987, Ser. No. 86,372

Int. Cl.^{4} A61K *39/00, 45/05, 39/40*

U.S. Cl. 424—88 10 Claims

1. A method for alleviating symptoms of acquired immune deficiency syndrome in a patient afflicted with acquired immune deficiency syndrome or acquired immune deficiency syndrome related complex comprising the steps of:

administering to the afflicted patient a member selected from the group consisting of characteristic substances of diseased cells of the acquired immune deficiency syndrome and effective fragments and effective derivatives thereof in a pharmaceutically effective amount which is less than the lowest amount necessary to provoke a humoral immune response in combination with the member, as exemplified by the presence of a positive wheal upon subcutaneous administration; and

co-administering an immune enhancer in a pharmaceutically effective amount which is less than the lowest amount of the substance necessary to induce a humoral immune response in combination with the member, as exemplified by the presence of a positive wheal upon subcutaneous administration.

4,880,627

SKIN THERAPEUTIC MIXTURE CONTAINING EUPATORIUM EXTRACT AND FORMULATIONS

Theodore Trenzeluk, Manville, N.J., assignor to Tecma Laboratories, Manville, N.J.

Continuation-in-part of Ser. No. 795,882, Nov. 7, 1985, Pat. No. 4,713,242. This application Jun. 23, 1986, Ser. No. 877,132

The portion of the term of this patent subsequent to Dec. 15, 2004, has been disclaimed.

Int. Cl.^{4} A61K *33/30, 35/78*

U.S. Cl. 424—640 9 Claims

1. A mixture for alleviating the skin conditions of acne, psoriasis, burns, pimples, blackheads, and open sores, said mixture comprising:

a. the aqueous extract from the leaves of the Eupatorium plant, said aqueous extract being prepared as follows: said leaves are dried under moderate light, under warm temperature, and with frequent tossing; then said dried leaves are ground to a very small particle size; and then said ground leaves are extracted with water; said aqueous extract being about 3% to about 30% by weight of said mixture;
b. a preservative being sulfathiazole, wherein said preservative is about 3.7% by weight of said mixture;
c. an inert pigment being zinc oxide, said inert pigment being about 14.2% by weight of said mixture; and
d. an oil soluble base being petrolatum, said oil soluble base being about 74.4% weight of said mixture.

4,880,628

SUSTAINED RELEASE COMPOSITION

William M. Allen, Reading; Bernard F. Sansom, Newbury; Alan D. Wilson, Lipbook; Havard J. Prosser, Royston, and David M. Groffman, Harrow, all of England, assignors to National Research Development Corporation, England

Continuation of Ser. No. 707,958, Mar. 4, 1985, Pat. No. 4,661,339, which is a continuation of Ser. No. 513,774, Jul. 14, 1983, abandoned. This application Feb. 20, 1987, Ser. No. 17,272

Claims priority, application United Kingdom, Jul. 20, 1982, 8220969; May 31, 1983, 8314888

The portion of the term of this patent subsequent to Apr. 28, 2004, has been disclaimed.

Int. Cl.^{4} A61K *33/18*

U.S. Cl. 424—605 14 Claims

1. A sustained release formed composition, which comprises a source of at least one trace chemical element selected from the group consisting of selenium, cobalt and iodine incorporated into a phosphate cement and sustainedly releasable therefrom on contact with an aqueous medium.

4,880,629

DIALYTIC SOLUTION FOR PERITONEAL DIALYSIS

Takeshi Okamoto, Kawagoe; Mitsuo Iwata, Sagamihara, and Hiroaki Takahashi, Tokyo, all of Japan, assignors to Terumo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 24, 1986, Ser. No. 855,343

Claims priority, application Japan, Apr. 25, 1985, 60-87621

Int. Cl.^{4} A61K *31/14, 31/17*

U.S. Cl. 424—678 5 Claims

1 A dialytic solution for peritoneal dialysis, said dialytic solution comprising 0.5 to 40 g/liter of glycerol, 0.005 to 78 g/liter of glucose, 0.005 to 78 g/liter of fructose as osmotic pressure regulating agents for regulating the osmotic pressure to a level necessary for the removal of the water.

4,880,630

SKIN CARE COMPOSITIONS HAVING KERATOLYTIC AND ANTIINFLAMMATORY ACTIVITY

Tibor Novák, Lakitelek, Hungary, assignor to Innofinance Altalanos Innovacios Penzintezet, Budapest, Hungary

PCT No. PCT/HU85/00076, § 371 Date Aug. 7, 1987, § 102(e) Date Aug. 7, 1987, PCT Pub. No. WO87/03803, PCT Pub. Date Jul. 2, 1987

PCT Filed Dec. 20, 1985, Ser. No. 105,229

Int. Cl.^{4} A61K *35/78*

U.S. Cl. 424—195.1 8 Claims

1. A skin care composition in the form of a cream, body lotion, topical gel, or body powder having keratolytic and antiinflammatory activity comprising a cosmetically effective amount of an extract of the leaf, green stalk, or flower of *Lycium halimifolium* as active ingredient together with a cosmetically acceptable topical vehicle or diluent.

4,880,631

CONTROLLED POROSITY OSMOTIC PUMP

John L. Haslam, and Gerald S. Rork, both of Lawrence, Kans., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Sep. 24, 1987, Ser. No. 100,665

Int. Cl.^{4} A61K *31/55*

U.S. Cl. 424—424 20 Claims

1. An osmotic pump, for the controlled release of diltiazem L-malate to an environment of use, said pump comprising:

(A) a core which comprises a therapeutically effective amount of diltiazem L-malate and between 80 and 150 percent by weight of sodium bitartrate surrounded by
(B) a rate controlling water insoluble wall, having a fluid permeability of 6.96×10^{-18} to 6.96×10^{-14} cm^3 sec/g and a reflection coefficient of less than 0.5, prepared from:

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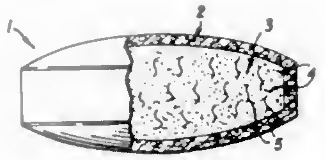
(i) a polymer permeable to water but impermeable to solute and



(ii) 0.1 to 60% by weight, based on the total weight of (i) and (ii), of at least one pH insensitive pore forming additive dispersed throughout said wall.

4,880,632
PREVENTION OF FESCUE TOXICOSIS

Luke B. Lipham; John A. Stuedemann, and Frederick N. Thompson, Jr., all of Athens, Ga., assignors to The United States of America, Washington, D.C. and University of Georgia Research Roundation, Inc., Athens, Ga.

Filed Sep. 8, 1987, Ser. No. 93,951

Int. Cl.⁴ A61K *9/26, 31/165*

U.S. Cl. 424—425 8 Claims

1. A method for treatment or prevention of fescue toxicosis comprising:

administering a composition wherein the active agent consists of a dopamine antagonist at a pharmaceutically effective dosage to an animal, wherein said dopamine antagonist is selected from the group of D_2 specific antagonists having minimal neurological and psychological adverse effects in grazing animals.

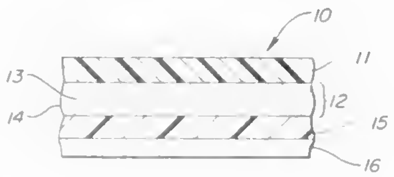
4,880,633
TRANSDERMAL DRUG DELIVERY SYSTEM

Alice E. Loper, Lederach, Pa., and Anup K. Majumdar, Eatontown, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 838,852, Mar. 12, 1986, Pat. No. 4,797,284. This application Jul. 7, 1988, Ser. No. 216,059

Int. Cl.⁴ A61F *13/00*

U.S. Cl. 424—449 13 Claims



1. A transdermal drug delivery system for administering drug over an extended period comprising

(a) a backing layer substantially impermeable to the drug and forming the top or outer surface of a bandage employing the delivery system,

(b) a reservoir layer comprising drug in a completely dissolved form in a continuous matrix or carrier,

(c) a membrane layer comprising a structure exhibiting some rate controlling property,

wherein a substantially constant release rate is achieved over a substantial part of the wear period by the combined action of the reservoir layer and the membrane layer wherein:

$$\frac{h/KD_m}{x_{max}/D_r} \geqq \frac{(1-\beta\alpha)}{\beta\alpha} \text{ and} \qquad (1)$$

-continued

$$\frac{(x_{max})^2}{(TD_r)} \geqq \frac{\beta\alpha}{(2\alpha-\beta\alpha-\beta\alpha^2)}\left[(1-\alpha)+\left\{\frac{(1-\alpha)(2+2\alpha-3\beta\alpha-\beta\alpha^2)}{2-\beta\alpha}\right\}^{1/2}\right] \qquad (2)$$

are satisfied simultaneously, and wherein

h is membrane thickness

K is partition coefficient between membrane and reservoir

D_m is diffusion coefficient of drug in membrane

x_{max} is reservoir thickness

D_r is diffusion coefficient of drug in reservoir

T is the desired wear time of the bandage,

α is a design parameter ranging from but not including 0 to and including 0.67, and representing the fractional drop in the theoretical flux from time zero to the end of the wear period T and

β is a design parameter ranging from but not including 0 to and including 1, which allows adjustments to shape of release profile, initial concentration, C_o, fraction of total drug depleted from the reservoir, h and x_{max}; and

$=$ signifies equal to or greater than.

4,880,634
LIPID NANO-PELLETS AS EXCIPIENT SYSTEM FOR PERORALLY ADMINISTERED DRUGS

Peter Speiser, Zurich, Switzerland, assignor to Dr. Rentschler Arzneimittel GmbH & Co., Laupheim, Fed. Rep. of Germany

Continuation of Ser. No. 740,771, Jun. 30, 1985, abandoned. This application Jun. 26, 1987, Ser. No. 66,459

Claims priority, application Fed. Rep. of Germany, Jun. 8, 1984, 3421468

Int. Cl.⁴ A61K *37/22, 9/50, 47/00*

U.S. Cl. 424—450 28 Claims

1. An excipient system containing a pharmacologically effective substance for peroral administration characterized in that the excipient system comprises lipid nano-pellets having a particle size of from about 50 to 1000 nm in the form of an aqueous, colloidal suspension, the lipid particles being present in the suspension in a concentration of from about 1 to 20% by weight, said lipid particles consisting of a mixture of at least one lipid and at least one surfactant in a ratio of from about 1:0.1 to 1:2.2, respectively, said particles consisting of from about 5 to 70% by weight of at least one lipid, from about 0.01 to 70% by weight of at least one surfactant, and from about 0.05 to 25% by weight of a pharmacologically effective substance.

4,880,635
DEHYDRATED LIPOSOMES

Andrew S. Janoff, Yardley, Pa.; Pieter R. Cullis; Marcel B. Bally, both of Vancouver, Canada; Michael W. Fountain, Griggstown; Richard S. Ginsberg, Monroe, both of N.J.; Michael J. Hope; Thomas D. Madden, both of Vancouver, Canada; Hugh P. Schieren, Yardley, Pa., and Regina L. Jablonski, Trenton, N.J., assignors to The Liposome Company, Inc., Princeton, N.J.

Continuation-in-part of Ser. No. 638,809, Aug. 8, 1984, abandoned, and a continuation-in-part of Ser. No. 749,161, Jun. 26, 1985, abandoned. This application Jul. 26, 1985, Ser. No. 759,419

Int. Cl.⁴ A61K *37/22*

U.S. Cl. 424—450 9 Claims

1. A dehydrated liposome preparation comprising liposomes having a bilayer membrane and one or more protective sugars, wherein the protective sugars are present at both the inside and outside surfaces of the liposome membrane so that the liposomes have retained a substantial portion of their internal contents during dehydration and retain a substantial portion of their contents upon subsequent rehydration.

4,880,636
FILM COATED TABLET OF RANITIDINE HCL

Robert M. Franz, 8712 Mariner Dr., Raleigh, N.C. 27615

Filed May 13, 1988. Ser. No. 194,427

Int. Cl.⁴ A61K *9/36*

U.S. Cl. 424—480 6 Claims

1. A ranitidine HCl tablet coated with a polymeric film comprising; hydroxypropyl methylcellulose (HPMC), 5% to 25% (based on the weight of said HPMC) triacetin and optionally 5% to 65% (based on the weight of said HPMC) colorant or opacifying agent.

4,880,637
COMPOSITIONS OF CATECHOLIC BUTANES WITH ZINC

Russell T. Jordan, Fort Collins, Colo., assignor to Chemex Pharmaceuticals, Inc., Denver, Colo.

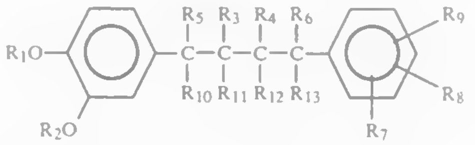
Continuation-in-part of Ser. No. 699,923, Feb. 11, 1985, abandoned, which is a continuation-in-part of Ser. No. 578,501, Apr. 9, 1984, abandoned, which is a continuation-in-part of Ser. No. 465,631, Feb. 10, 1983, abandoned, which is a continuation-in-part of Ser. No. 365,781, Apr. 5, 1982, abandoned, which is a continuation-in-part of Ser. No. 49,886, Jun. 19, 1979, abandoned. This application Oct. 28, 1986, Ser. No. 924,620

The portion of the term of this patent subsequent to Sep. 27, 2005, has been disclaimed.

Int. Cl.⁴ A61K *33/30, 31/08, 31/02*

U.S. Cl. 424—641 25 Claims

1. A pharmaceutical composition comprising at least 1 catecholic butane of the formula:



wherein R_1 and R_2 are independently H, lower alkyl, or lower acyl;

R_3, R_4, R_5, R_6, R_{10}, R_{11}, R_{12} and R_{13} are independently H or lower alkyl;

R_7, R_8 and R_9 are independently H, hydroxy, lower alkoxy or lower acyloxy; and

ionic zinc.

4,880,638
BIOCIDAL COMPOSITION AND METHOD FOR DISINFECTING ARTICLES

Gordon, Gilbert, Oxford, Ohio, assignor to Bioxy International, Ltd., Fort Worth, Tex.

Filed Aug. 23, 1988, Ser. No. 235,378

Int. Cl.⁴ A01N *39/00, 59/00, 59/08, 59/14*

U.S. Cl. 424—662 15 Claims

1. A biocidal composition comprising water, a source of chlorite ions, a source of chloride ions and a source of chlorate ions where the mol ratio of chlorite ions to chlorate ions is in the range from about 2:1 to about 1000:1, the mol ratio of chlorite ions to chloride ions is from about 0.1:1 to about 1000:1 and the mol ratio of chloride ions to chlorate ions is in the range from about 0.1:1 to about 1000:1; the chlorite ion source present in amounts of from about 40 grams to about 0.04 miligrams per thousand grams of water; and the composition including a pH adjusting material in an amount sufficient to adjust the pH of the mixture to above 7.0.

4,880,639
TASTE OF HENS' EGGS

Georg Lauermann, Bad Segeberg, and Clemens Thobe, Horst in Holstein, both of Fed. Rep. of Germany, assignors to Henkel Kommandigesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

Filed Aug. 18, 1988, Ser. No. 233,701

Claims priority, application Fed. Rep. of Germany, Aug. 20, 1987, 3727735

Int. Cl.⁴ A23K *1/00*

U.S. Cl. 426—2 5 Claims

1. A method for improving the flavor of hens' eggs comprising feeding the hens a mixed feed containing from about 10 to about 6,000 ppm of at least one essential oil.

4,880,640
FLAVORING WITH SCHIFF BASE REACTION PRODUCTS OF ALKYL ANTHRANILATES

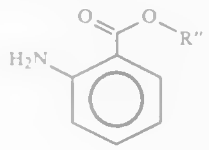
Braja D. Mookherjee, Holmdel; Robert W. Trenkle, Point Pleasant, both of N.J.; Nicholas Calderone, Lanrel Hollow, N.Y., and Keith P. Sands, Marlboro, N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Continuation-in-part of Ser. No. 171,778, Sep. 12, 1988, Pat. No. 4,806,363. This application Oct. 21, 1988, Ser. No. 260,578

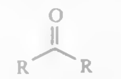
Int. Cl.⁴ A23L *1/226, 1/235*

U.S. Cl. 426—3 5 Claims

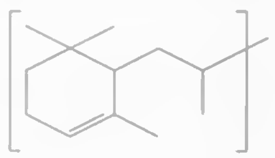
1. A process for augmenting or enhancing the aroma or taste of a foodstuff or chewing gum comprising the step of intimately admixing with said foodstuff or chewing gum from about 0.1 ppm up to about 100 ppm of a schiff base reaction product produced according to the process of reacting an alkyl anthranilate having the structure:



wherein R'' represent methyl or ethyl with a carbonyl-containing compound having the structure:



wherein R' represents hydrogen or methyl and R is:



4,880,641
PINEAPPLE KETONE CARBONATE DERIVATIVES

Brian Byrne, Belleville, N.J., and Louise M. L. Lawter, Goshen, N.Y., assignors to Hercules Incorporated, Wilmington, Del.

Division of Ser. No. 120,760, Nov. 9, 1987, Pat. No. 4,758,680, which is a continuation of Ser. No. 627,311, Jul. 2, 1984, abandoned. This application May 6, 1988, Ser. No. 192,058

Int. Cl.⁴ A23L *1/235*

U.S. Cl. 426—3 2 Claims

1. A foodstuff composition comprising: a foodstuff and a flavor effective amount of a compound of the general formula,

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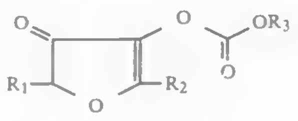


wherein R_1 and R_2 independently are —H, $-CH_3$ or $—CH_2CH_3$, and R_3 is alkyl of from 1 to 10 carbons are aryl of from 6 to 10 carbons.

4,880,642

METHOD OF MAKING CHEWING BONES FOR PETS

Jos Berends, M. de Klerkstraat 27, 1333 PL Almere Buiten, Netherlands

Filed Nov. 30, 1987, Ser. No. 126,968
Int. Cl.⁴ A23K *1/10, 1/18*

U.S. Cl. 426—5 **7 Claims**

1. A method of making chewing bones for pets comprising:

cooking a batch of tendons of cattle, cows, bulls, oxen, horses and ponies in an aqueous solution for a period of approximately five hours at a temperature higher than 90° C.;

removing substantially all meat and fat from said tendons;

heating said batch of tendons to approximately 240° C. in a period of approximately 1.5 hours;

lowering said temperature from approximately 240° C. to approximately 190° C.;

maintaining said temperature of approximately 190° C. for approximately 1.5 hours to obtain a substantially 90% hardened batch of tendons; and then

baking the remaining unhardened tendons of said batch for an additional period until substantially all of the tendons of said batch are hardened.

4,880,643

BEER AND OTHER BEVERAGES AND THEIR MANUFACTURE

Charles W. Bamforth, Staffordshire, and Roy Cope, West Midlands, both of England, assignors to Bass Public Limited Company, Burton-on-Trent, United Kingdom

Continuation-in-part of Ser. No. 644,912, Aug. 27, 1984, abandoned. This application Aug. 4, 1987, Ser. No. 81,570

Claims priority, application United Kingdom, Sep. 3, 1983, 8323686; Apr. 18, 1984, 8410142

Int. Cl.⁴ C12C *5/02*

U.S. Cl. 426—16 **7 Claims**

1. A method of improving the head of an beverage made by the fermentation of hopped malt wort without creating objectionable haze therein by steps comprising:

forming a proteinaceous additive separately from the beverage by hydrolyzing albumen so that the molecular chains of at least some of the protein molecules in the albumen are shortened, and

subsequently adding an effective amount of the hydrolyzed albumen to said beverage.

4,880,644

PROCESS FOR PRODUCING IMITATION MARZIPAN

Hidenobu Matsunami; Takahiro Tsuruda; Naoki Hitosugi, and Yoshinori Hirukawa, all of Sennan, Japan, assignors to Fuji Oil Company, Limited, Osaka, Japan

Filed Sep. 30, 1988, Ser. No. 251,443

Claims priority, application Japan, Sep. 30, 1987, 62-248617; Dec. 16, 1987, 62-319841; May 25, 1988, 63-129306

Int. Cl.⁴ A23G *3/00*

U.S. Cl. 426—46 **3 Claims**

1. A process for producing an imitation marzipan which comprises:

(a) soaking dehulled, degerminated and cracked soy beans in hot water at a temperature of at least 95° C. until the bean flavor of soy beans has been removed,

(b) cooling the soy beans with cold water at 10° to 20° C. for 1 to 2 minutes,

(c) dehydrating the soy beans to such a degree that water absorption of the soy beans becomes 40 to 90 parts by weight per 100 parts by weight of cracked soy beans before the treatment with hot water,

(d) adding to the soy beans sugar in a weight ratio of soy beans : sugar of 1:2 to 3:1 and a fat ingredient in an amount of 4 to 20% by weight based on the total weight of the imitation marzipan to obtain a mixture,

(e) mixing and grinding the mixture,

(f) subjecting the ground mixture to heat treatment at 70° to 90° C. for 30 to 50 minutes and then

(g) cooling.

4,880,645

COATING CEREAL WITH FRUIT JUICE

Thomas L. Carpenter, Shamong, N.J.; William Fisher, Elkorn, Nebr., and Thomas A. Smith, Battle Creek, Mich., assignors to General Foods Corp., White Plains, N.Y.

Filed Sep. 14, 1987, Ser. No. 97,221
Int. Cl.⁴ A23L *1/64;* **A23P** *1/08*

U.S. Cl. 426—89 **25 Claims**

1. A sweetened, dry comestible consisting essentially of a dry comestible, said dry comestible having a coating comprising a combination of a sweetening syrup having from 9% to 85% by weight reducing sugars and a pectin solution and wherein the ratio of sweetening syrup to pectin ranges from 20:1 to 25:1 and preferably 22:1, said combination is coated on to the comestible in amounts sufficient to impart a sweetness level and flavor profile similar to a sucrose-coated comestible wherein said sweetened, dry comestible does not stick or clump together with other sweetened, dry comestible.

4,880,646

ENCAPSULATED CORN KERNELS AND METHOD OF FORMING THE SAME

Chel W. Lew, and Darren E. Barlow, both of San Antonio, Tex., assignors to Southwest Research Institute, San Antonio, Tex.

Filed Nov. 29, 1988, Ser. No. 277,296
Int. Cl.⁴ H23L *1/36*

U.S. Cl. 426—93 **10 Claims**

1. Encapsulated corn kernels consisting essentially of kernels of corn suitable for popping coated over at least a portion of the outer surface thereof with an edible oleaginous substance or edible wax and thereover with an outer shell of an edible polymer.

4,880,647

PROCESS FOR MILD HEAT TREATMENT OF CONCENTRATED FLUIDS FROM MEMBRANES

Stratos E. Hatzidimitriu, San Jose, Calif., and W. Reginald Hall, Winnetka, Ill., assignors to FMC Corporation, Chicago, Ili.

Filed Mar. 10, 1989, Ser. No. 321,944
Int. Cl.⁴ A23L *2/30;* **B01D** *13/02*

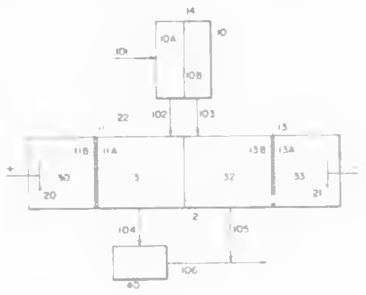
U.S. Cl. 426—239 **2 Claims**

1. A process for reducing the concentration of microbial cells in a flowable fluid comprising the steps of:

a. contacting the flowable fluid with at least one membrane which is permeable to the fluid portion of the flowable fluid and impermeable to microbial cells or enzymes thereby separating the flowable fluid into a fluid permeate free from microbial cells and enzymes and a flowable retentate containing microbial cells and enzymes,

b. introducing fluid permeate and flowable retentate into adjacent compartments of an electrolytic cell containing a cathode in a cathode compartment and an anode in an anode compartment, said adjacent compartments being separated from each other by a cation permeable membrane and being separated from the cathode compartment and the anode compartment by bipolar membranes aligned such that the anolyte permeable surfaces of each are proximal to the anode, the fluid permeate being introduced into the more electronegative compartment, the flowable retentate being introduced into the more electropositive compartment,

c. urgng an electric current to flow through said cell thereby reducing the pH of said flowable retentate and increasing the pH of the fluid permeate,



d. withdrawing flowable retentate having a reduced pH from the more electropositive compartment and maintaining said flowable retentate at a sufficient temperature and for a sufficient time to reduce the concentration of viable microbial cells and enzymes therein,

e. withdrawing fluid permeate from the more electronegative compartment and combining said fluid permeate with flowable retentate from step (d) to reconstitute the flowable fluid with a reduced concentration of viable microbial cells and enzymes.

4,880,648

PROCESS FOR MANUFACTURING STORABLE FRUIT PREPARATIONS CONTAINING WHOLE FRUITS

Hans Stamer, Kurt-Schumacher-Strasse 53, D-2120 Lüneburg, Fed. Rep. of Germany

PCT No. PCT/EP87/00555, § 371 Date Jul. 28, 1988, § 102(e) Date Jul. 28, 1988, PCT Pub. No. WO88/02218, PCT Pub. Date Apr. 7, 1988

PCT Filed Sep. 29, 1987, Ser. No. 220,220

Claims priority, application Fed. Rep. of Germany, Oct. 4, 1986, 3633820; Jul. 22, 1987, 3724214

Int. Cl.⁴ A23L *3/16*

U.S. Cl. 426—241 **24 Claims**

1. Process for the production of storable fruit preparations containing whole fruits without the addition of preservatives, wherein whole fruit is mixed with crystalline sugar or a concentrated sugar solution to form a first mixture of fruit and juice, the process comprising the steps of:

(a) gently agitating the first mixture until the dry mass of the fruit amounts to about 35 to 65% by weight,

(b) gently separating the fruit from the juice,

(c) adjusting the density of at least a portion of the juice to a density effective to substantially uniformly suspend the separated fruit in the juice,

(d) combining the density adjusted juice and the separated fruit to form a second mixture in which the fruit is substantially uniformly suspended in the juice,

(e) uniformly heating the second mixture by use of micro-wave energy in a micro-wave heating zone, and

(f) cooling the second mixture to form a sterilized fruit preparation containing whole fruit.

4,880,649

PROCESS FOR FLAVOURING AN EDIBLE COMPOSITION

Günter Holzner, Grand-Lancy; Peter Kittner, Thonex, and Anthony Blake, Grand-Lancy, all of Switzerland, assignors to Firmenich S.A., Geneva, Switzerland

Filed Mar. 15, 1988, Ser. No. 167,749

Claims priority, application Switzerland, Mar. 26, 1987, 1153/87

Int. Cl.⁴ A23F *3/40*

U.S. Cl. 426—302 **4 Claims**

1. A process for flavouring a composition chosen from among products for infusion or decoction selected from the group consisting of tea, camomile, verbena and mint in the form of leaves, powders or particles, said process comprising the steps of:

directly spraying said composition with an emulsion comprising:

5 to 30% of a solid film-building vehicle selected from the group consisting of polyvinyl acetate, polyvinyl alcohol, dextrins, natural or modified starch, natural or modified proteins, vegetable gums, pectins, xanthanes, carboxymethyl cellulose, methyl cellulose, hydroxyethyl cellulose and lipoheterosaccharides;

0.1 to 20% of an emulsifying agent selected from the group consisting of fatty-acid mono- or diglycerides, esters derived from a combination of fatty acids with sorbitol or a saccharide or alkoxylated derivatives thereof, or an ester of tartaric, citric, ascorbic or lactic acid; and

0.5 to 20% of an active volatile flavouring substance which is non-miscible with water with the remainder of the emulsion being water; and

subsequently drying the emulsion-sprayed composition such that the flavouring substance is in direct contact with the leaves, powders or particles of the composition and is retained in the form of droplets coated with a protective water soluble layer consisting of said film-building vehicle.

4,880,650

METHOD FOR STABILIZATION TREATMENT OF BEER WITH HYDRATED SILICA GEL

Katsutoshi Okamura, Nagoya; Yasuo Esaki, Kasugai; Koichi Matsuzawa, Fujimi, and Katsuhiko Asano, Takasaki, all of Japan, assignors to Fuji-Davison Chemical, Ltd., Kasugai and Kirin Brewery Company Limited, Tokyo, both of, Japan

Filed Jan. 15, 1988, Ser. No. 144,168

Claims priority, application Japan, Mar. 5, 1986, 61-47847

Int. Cl.⁴ C12H *1/02*

U.S. Cl. 426—330.4 **2 Claims**

1. A method for treating beer, comprising:

adding a hydrated silica gel of a xerogel structure which has a specific surface area of 530–720 m^2/g, a pore volume of 0.9–1.5 ml/g, a mean pore diameter of 50–120 Å, a water content of 7–25% by weight and a pH, which as a 5% aqueous suspension, is 6.0–8.0 to beer in a post fermention and aging step so that said silica adsorbs and removes colloidal components which cause haze in beer; and

separating silica gel from said beer.

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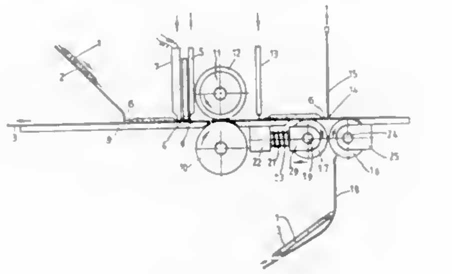
METHOD OF AND APPARATUS FOR PRODUCING INFUSIBLE BAG HOLDERS

Hugh P. Christie, 50 Bevington Rd., Glenunga 5064, Australia
PCT No. PCT/AU87/00134, § 371 Date Jan. 14, 1988, § 102(e) Date Jan. 14, 1988, PCT Pub. No. WO87/06913, PCT Pub. Date Nov. 19, 1987
PCT Filed May 12, 1987, Ser. No. 171,000
Claims priority, application Australia, May 15, 1986, PH05919
Int. Cl.^{4} B65B *29/04*
U.S. Cl. 426—394 13 Claims

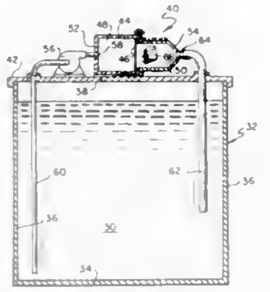


1. A method of attaching a cover to an infusible bag, the method comprising the steps of: providing a cover strip; feeding a water-permeable bag containing an infusible substance onto the cover strip, the bag having opposed sides and a marginal edge; creasing the cover strip to form a fold line; directly attaching the bag along the marginal edge thereof to the cover strip adjacent to but at one side of the fold line of the cover strip such that the entire bag lies to one side of the fold line; and then folding the cover strip to at least substantially cover both sides of the bag.

4,880,652

METHOD OF FILTERING EDIBLE LIQUIDS

Robert Regutti, Bridgeview, Ill., assignor to GyCor International Ltd., Bridgeview, Ill.
Filed Dec. 4, 1987, Ser. No. 128,735
Int. Cl.^{4} A23L *1/01, 1/015;* **A23D** *5/04*
U.S. Cl. 426—417 10 Claims

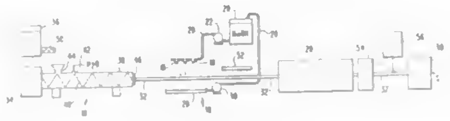


1. The method of removing unwanted constituents from a body of edible liquid comprising the steps of immersing a closed packet containing a mass of granulated filtering material comprising hydrated synthetic amorphous silica in a body of edible liquid, the filtering material being adapted to adsorb the unwanted constituents, the closed packet having a wall of material pervious to the edible liquid and substantially impervious to the filtering material, thereafter maintaining the packet in the body of edible liquid for a period of time, whereby the unwanted constituents of the body of edible liquid are adsorbed in the mass of filtering material within the packet, and thereafter removing the closed packet with its contents from the body of edible liquid.

4,880,653

CONTINUOUS PRODUCTION OF PRETZELS

Lewis C. Keller, North Richland Hills, and Cecil A. Bowles, Lewisville, both of Tex., assignors to Frito-Lay, Inc., Dallas, Tex.
Continuation-in-part of Ser. No. 898,226, Aug. 20, 1986, Pat. No. 4,759,939. This application Jul. 25, 1988, Ser. No. 223,358
The portion of the term of this patent subsequent to Jul. 26, 2005, has been disclaimed.
Int. Cl.^{4} A23P *1/12*
U.S. Cl. 426—549 14 Claims



1. A method of continuous production of a pretzel which comprises: introducing to the feed zone of an extruder an essentially dry mixture comprising 70 to about 85% flour, 9 to about 15% of at least one of corn syrup and corn syrup solids, and 0.5 to about 1.5% salt; injecting water into the mixture in the extruder barrel to raise its moisture content to between 19% and 25%; mixing the ingredients in the extruder barrel while maintaining the temperature of the mixture below about 140° F.; extruding the mixture through a die to form a continuous ribbon of extrudate; exposing the extrudate ribbon to a caustic solution; and transporting the ribbon through an oven where it is baked to a final moisture content of between about 1.0% and 3.0%.

4,880,654

PROCESS FOR PREPARING SIMULATED MEAT

Minoru Okada, 4-31-16 Mejiro, Toshimaku, Tokyo, Japan
Continuation of Ser. No. 944,187, Dec. 22, 1986, abandoned. This application Jul. 14, 1988, Ser. No. 219,887
Int. Cl.^{4} A23L *1/317, 1/325;* **A23P** *1/10*
U.S. Cl. 426—574 8 Claims

1. A process for preparing edible fibrous particles simulating the torn flakes of meat comprising the steps of:

(a) preparing an aqueous solution of soluble alginate and a substance selected from the group consisting of protein and starch and mixtures thereof said aqueous solution comprising 0.5 to 5 weight percent of soluble alginate, and 1 to 20 weight percent of at least one of starch and protein, said soluble alginate selected from the group consisting of sodium alginate, potassium alginate and ammonium alginate,

(b) mixing, kneading and beating said aqueous solution together with a subsequently added aqueous gelling solution, at room temperature thereby to form fibrous particles, and further mixing said particles then,

(c) separating the fibrous particles from the resulting solution and removing excess water therefrom by compression, and

(d) cooking the fibrous particles at between 70° and 100° C. for between 20 to 60 minutes to heat set same,

(e) said particles having the shape of an entangled mass of torn threads each being between 10 to 50 mm in length and 1 to 5 mm in diameter,

(f) said aqueous solution of soluble alginate and at least one of protein and starch, and said aqueous gelling solution, being employed in volume ratio to each other of about 1:05 to 1:2.

4,880,655

CHOCOLATE SYRUP AND METHOD OF MAKING SAME

Douglas Dow, 1080 Iroquois, Detroit, Mich. 48214, and Patricia J. Flanagan, 18917 Highlite Dr., S., Mt. Clemens, Mich. 48043
Filed Jul. 29, 1985, Ser. No. 760,162
Int. Cl.^{4} A23L *1/08*
U.S. Cl. 426—593 15 Claims

1. Chocolate syrup having the following composition (in weight percent);
top grade honey 66–87;
high-fat processed powdered cocoa 9–11;
water 4–25.

4,880,656

PROCESS FOR THE DEAROMATIZING AND REAROMATIZING TEA

Erwin Schütz, Trostberg, and Heinz-Rüdiger Vollbrecht, Stein/-Traun, both of Fed. Rep. of Germany, assignors to SKW Trostberg Aktiengesellschaft, Trostberg, Fed. Rep. of Germany
Continuation of Ser. No. 126,416, Nov. 30, 1987, abandoned. This application Mar. 6, 1989, Ser. No. 319,931
Claims priority, application Fed. Rep. of Germany, Nov. 29, 1986, 3640967
Int. Cl.^{4} A23F *3/42*
U.S. Cl. 426—386 15 Claims

1. A process for the dearomatising and subsequent re-aromatising of black or green tea comprising

(a) removing the volatile aroma components from moist tea with a moist inert gas with a relative moisture content of 80–95% at a temperature of from 60° to 95° C. by means of carrier gas distillation, wherein at temperatures above 80° C. a contact zone with copper surfaces is used,

(b) selectively removing the water from the moist, inert gas stream containing the volatile aroma components and

(c) subsequently passing the volatile aroma components through dry tea allowing the dry tea to be aromatised with the dry inert gas stream.

4,880,657

SHORTENING COMPOSITIONS CONTAINING POLYOL POLYESTERS

Timothy B. Guffey, West Chester; Susan S. Abe, Mason, both of Ohio; Sherry R. Talkington, Florence, Ky., and Marko D. Mijac, Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio
Continuation-in-part of Ser. No. 47,367, May 6, 1987, abandoned. This application Apr. 12, 1988, Ser. No. 175,004
Int. Cl.^{4} A23D *5/00*
U.S. Cl. 426—601 17 Claims

1. A shortening composition comprising:

(a) from about 10% to about 80% by weight intermediate melting polyol fatty acid polyesters having at least 4 fatty acid ester groups, wherein the polyols are selected from the group consisting of sugars and sugar alcohols containing 4 to 8 hydroxyl groups and mixtures thereof and wherein each fatty acid group has from about 8 to about 22 carbon atoms; and wherein the polyol polyesters have: (i) a non-Newtonian plastic rheology at 100° F. (37.8° C.) and has a viscosity of not less than about 15 poise at 100° F. (37.8° C.) after 10 minutes of steady shear at 10 sec.$^{-1}$, (ii) a liquid/solid stability of not less than 90 percent at 100° F. (37.8° C.), and (iii) an iodine value between 25 and 55;

(b) from about 20% to about 88% by weight soft oil comprising from about 0% to about 50% liquid polyol fatty acid polyesters having an iodine value between 60 and 130 and from about 20% to about 88% liquid triglycerides having an iodine value between 70 and 130;

(c) from about 2% to about 20% by weight hardstock fat comprising from about 0% to about 10% hardstock polyol fatty acid esters and from about 2% to about 20% hardstock triglycerides;

(d) from about 0% to about 50% by weight intermediate melting triglycerides; and

(e) from about 0% to about 15% by weight other shortening ingredients;

(f) wherein the shortening has a Solid Fat Content (SFC) such that the overall slope of the SFC curve between 50° F. (10° C.) and 105° F. (41° C.) is between 0.00 and −0.40; and

(g) wherein the shortening has a penetration between about 120 mm/10 and about 400 mm/10 at 70° F. (21° C.).

4,880,658

OBTAINING A FAT FRACTION WITH AZEOTROPIC SOLVENTS

Francis E. Luddy, Hatboro, Pa., and Sergio Longhi, Parma, Italy, assignors to Nestec S.A., Vevey, Switzerland
Division of Ser. No. 83,861, Aug. 5, 1987, Pat. No. 4,839,191, which is a continuation of Ser. No. 812,274, Dec. 23, 1985, abandoned, which is a division of Ser. No. 517,508, Jul. 26, 1983, Pat. No. 4,601,857. This application Feb. 27, 1989, Ser. No. 316,477
The portion of the term of this patent subsequent to Jul. 22, 2003, has been disclaimed.
Int. Cl.^{4} A23D *5/00;* **C11B** *3/00*
U.S. Cl. 426—607 13 Claims

1. A process for preparing a fat fraction comprising:

(a) dissolving a fat in a binary azeotropic solvent mixture wherein the volume of solvent is from 1.5 ml to 8.0 ml per gram of fat;

(b) cooling the solution from step (a) to 16° C. to 22° C. to form a precipitate;

(c) separating the precipitate and solvent phase of step (b);

(d) washing the precipitate from step (c) with fresh solvent mixture which has been cooled to about 2° C. below the solvent temperature utilized in step (b) using a volume of at least about 8% of the volume of solvent utilized in step (b); and

(e) separating the washed precipitate and solvent phase of step (d) for obtaining a solid fat fraction.

4,880,659

PROCESSING TOFU OR DOUGH FOR PROCESSED TOFU TO RESULT IN MEAT-LIKE TEXTURE

Yoshinobu Akiyama, Hidakamachi; Sakashi Yoshihashi, Higashikurume, and Iwao Sakauchi, Higashimurayama, all of Japan, assignors to Kyodo Milk Industry Co., Ltd., Tokyo, Japan
Continuation-in-part of Ser. No. 878,319, Jun. 25, 1986, abandoned. This application Jun. 6, 1988, Ser. No. 202,680
Claims priority, application Japan, Jul. 6, 1985, 60-147656
Int. Cl.^{4} A23J *3/00;* **A23L** *1/20*
U.S. Cl. 426—656 2 Claims

1. A method for producing an edible food possessing a meat-like texture, which comprises: dehydrating tofu or dough for processed tofu selected from the group consisting of deep fried tofu, roasted tofu and deep fried tofu mixed with chopped vegetables to a water content of 60–70.1%; cooking the dehydrate in a twin screw extruder at 120°–180° C. with a residence of 80–160 seconds in the extruder; and extruding the cooked dehydrate from the extruder.

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METHOD FOR PRIMING HARD TISSUE

Steven M. Aasen, Lakeland, and Joel D. Oxman, St. Louis Park, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Aug. 28, 1987, Ser. No. 91,051

Int. Cl.⁴ A61C *5/04;* A61K *6/08;* A01N *1/02;* C09K *3/00*

U.S. Cl. 427—2 32 Claims

1. A method for adhering to or coating hard tissue, comprising the steps of:
   (a) applying to said tissue a single phase aqueous primer solution comprising water, and effective amounts of a water-soluble film former and a salt of an acid, the amount of said water being sufficient so that said primer forms a homogeneous liquid when shaken briefly at room temperature, and
   (b) hardening said film former.

4,880,661

METHOD OF MANUFACTURING A THIN-FILM ELECTROLUMINESCENT DISPLAY ELEMENT

Yoshihiro Endo, Nara; Masashi Kawaguchi, Shiki; Hiroshi Kishishita, Nara, and Hisashi Uede, Wakayama, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 35,224, Apr. 6, 1987, abandoned, which is a continuation of Ser. No. 772,371, Sep. 9, 1985, abandoned. This application Sep. 15, 1988, Ser. No. 246,890

Claims priority, application Japan, Sep. 17, 1984, 59-195237

Int. Cl.⁴ B05D *3/06, 5/12;* C23C *14/00*

U.S. Cl. 427—38 3 Claims

1. A method of manufacturing a thin-film EL element comprising the steps of

forming a first electrode,
forming a first dielectric layer by sputtering,
forming a luminescent layer,
forming a second dielectric layer by plasma chemical vapor deposition, and
forming a second electrode.

4,880,662

METHOD AND APPARATUS FOR PROCESSING UV-HARDENABLE REACTION RESIN COMPOUNDS

Reiner Habrich, Kirchheim, and Heiner Bayer, Olching, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Feb. 2, 1988, Ser. No. 151,431

Claims priority, application Fed. Rep. of Germany, Feb. 2, 1987, 3702999

Int. Cl.⁴ B05D *3/06;* B28B *1/14*

U.S. Cl. 427—54.1 6 Claims

1. A method for coating substrates and casting molds with a resin composition comprising a UV-hardenable reaction resin compound and a photoinitiator, comprising the steps of:

irradiating the UV-hardenable reaction resin composition in an applicator;
adding at least one additive selected from the group consisting of flexibility agents, parting agents, adhesion promoters, anti-aging agents, dyes and pigments; and
feeding the irradiated resin composition with the at least one additive immediately to a substrate or casting mold.

4,880,663

METHOD FOR APPLYING A MOISTUREPROOF INSULATIVE COATING TO PRINTED CIRCUIT BOARDS USING TRIANGULAR OR DOVETAIL SHAPED LIQUID FILMS EMITTED FROM A FLAT-PATTERN NOZZLE

Takaji Shimada, Kawaguchi, Japan, assignor to Nordson Corporation, Westlake, Ohio

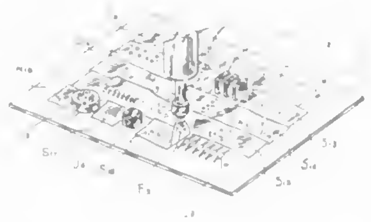
Continuation-in-part of Ser. No. 941,365, Dec. 15, 1986, Pat. No. 4,753,819. This application Jun. 13, 1988, Ser. No. 206,199

Claims priority, application Japan, Dec. 27, 1985, 60-294768

The portion of the term of this patent subsequent to Jun. 28, 2005, has been disclaimed.

Int. Cl.⁴ B05D *5/12*

U.S. Cl. 427—96 7 Claims



1. A mask-free method of applying insulative coating to selected areas of a circuit board without applying insulative coating to regions to be left uncoated, comprising the steps of:

supplying insulative liquid coating material to a flat-pattern nozzle means at a supply pressure to produce a liquid film emission from the nozzle means in a flat pattern having a generally triangular shape with a lower horizontal base edge and an upper apex, which has a maximum width W at its lower base edge below which discrete liquid droplets of coating begin to form, and which decreases in width to an approximately zero width at a distance L above said lower base edge, said triangular shaped liquid film being substantially free of atomized particles of coating,
positioning the nozzle means and circuit board at a specified distance apart relative to each other to position the circuit board in the path of the flat triangular shape liquid film pattern,
producing relative movement between the nozzle means and circuit board in a direction generally transverse to the plane of the flat pattern, and
controlling the liquid coating supply during relative movement between the nozzle means and circuit board to (a) supply liquid to the nozzle means when the flat pattern is directed toward the selected areas to be coated to impinge a flat liquid film thereon and thereby coat the areas to be coated, and (b) interrupt the supply of liquid to the nozzle means when the flat pattern is directed toward the regions to be left uncoated to terminate emission of the flat liquid film and prevent deposit thereof on the regions to be left uncoated

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4,880,664

METHOD OF DEPOSITING TEXTURED TIN OXIDE

James G. O'Dowd, Levittown; Anthony W. Catalano, Furlong; Charles M. Fortmann, Langhorne, and Ora J. Lee, Bristol, all of Pa., assignors to Solarex Corporation, Rockville, Md.

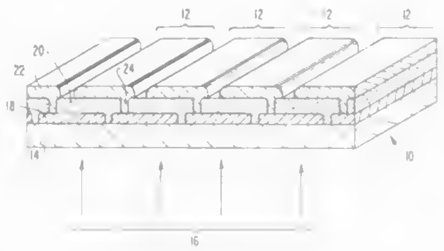
Filed Aug. 31, 1987, Ser. No. 90,851

Int. Cl.⁴ B05D *5/12;* C23C *16/40*

U.S. Cl. 427—109 31 Claims

1. A method of forming a textured layer of transparent conductive oxide on a vitreous substrate, comprising the steps of:

depositing a first film of tin oxide on said substrate by chemical vapor deposition from a first reactant mixture comprising tin chloride, water, and alcohol while holding said substrate at a preselected reaction temperature; and



depositing a second film of tin oxide on said first tin oxide film by chemical vapor deposition from a second reactant mixture free of alcohol and comprising tin chloride and water while holding said substrate at said preselected reaction temperature.

4,880,665

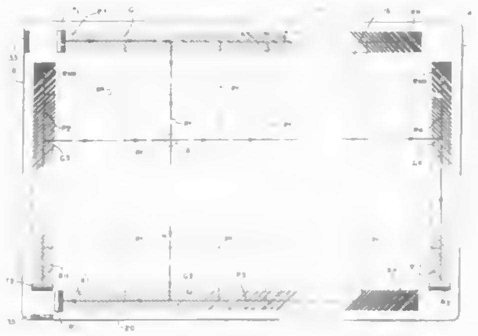
TOUCH CONTROL ARRANGEMENT FOR GRAPHICS DISPLAY APPARATUS HAVING SAW REFLECTORS OF FRIT COMPOSITION

Robert Adler, Northfield; Mark Fogelson, Wilmette, both of Ill., and Sam Kaplan, Deerfield Beach, Fla., assignors to Zenith Electronics Corporation, Glenview, Ill.

Division of Ser. No. 4,740, Jan. 20, 1987, which is a continuation-in-part of Ser. No. 698,306, Feb. 5, 1985, Pat. No. 4,700,176. This application Jun. 8, 1988, Ser. No. 203,857

Int. Cl.⁴ B05D *5/12*

U.S. Cl. 427—126.3 7 Claims



1. A method of manufacturing touch panel apparatus having a substrate with a surface capable of propagating surface acoustic waves; comprising the steps of:

applying to said substrate surface at least one SAWreflecting element formed of a frit composition and thereafter heating said first composition to devitrify it and bond said element to said substrate surface.

4,880,666

METHOD OF MANUFACTURING MAGNETIC RECORDING MEDIUM

Takeo Ito; Hajime Takeuchi, both of Yokohama; Minoru Hashimoto, Kawasaki; Toshio Fukaya, Yokohama, and Masumi Koishi, Sagamihara, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 660,371, Oct. 12, 1984, abandoned. This application Dec. 17, 1987, Ser. No. 136,436

Claims priority, application Japan, Dec. 27, 1983, 58-249866

Int. Cl.⁴ H01F *10/02*

U.S. Cl. 427—128 5 Claims

1. A method of manufacturing a magnetic recording medium, comprising the steps of:

mechanically pulverizing and mixing an essentially dry composition containing a magnetic powder consisting of hexagonal ferrite and a solid resin with a dispersion mixer to prepare an essentially dry mixed powder;
transferring said essentially dry mixed powder to a dispersing apparatus to dissolve and disperse said essentially dry mixed powder in a solvent, thereby preparing a magnetic paint; and
applying the magnetic paint on a base to form a magnetic recording layer.

4,880,667

PHOTOCHROMIC PLASTIC ARTICLE AND METHOD FOR PREPARING SAME

Cletus N. Welch, Clinton, Ohio, assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 779,750, Sep. 24, 1985, abandoned, which is a continuation-in-part of Ser. No. 717,618, Mar. 29, 1985, abandoned. This application Oct. 15, 1987, Ser. No. 110,636

Int. Cl.⁴ B05D *5/00, 5/06;* D06D *5/00*

U.S. Cl. 427—160 31 Claims

1. A method for imparting a photochromic response to a synthetic plastic surface, which comprises:
   (a) applying a substantially mottle-free, substantially homogeneous film of polymeric resin having a spiro(indoline) photochromic material dissolved therein onto said surface, said film having a substantially uniform thickness across the portion of the surface to which it is applied and being substantially dry as soon as it is applied, said polymeric resin being a solvent for the photochromic material and remaining solid at the incorporation temperatures of step (b),
   (b) heating the film-bearing plastic surface at temperatures near to but below the melting temperature of the photochromic material for a time sufficient to incorporate a photochromic amount of the photochromic material into the subsurface of the synthetic plastic surface, and
   (c) thereafter removing the photochromic-lean film from said surface.

4,880,668

MIRROR PROTECTIVE COMPOSITION COMPRISING 2-MERCAPTOTHIAZOLINE

Deborah E. Hayes, Verona; Alan B. Weissberg, Pittsburgh; Charles B. Friedlander, Glenshaw, and Edward T. Ryan, Harwick, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Nov. 14, 1989, Ser. No. 845,168

Int. Cl.⁴ B05D *5/06*

U.S. Cl. 427—162 3 Claims

1. In an improved process for preparing a protective coating for a mirror comprising applying a protective composition to the mirror having a surface layer of silver, copper, nickel or a mixture thereof, the improvement comprising using the protective coating comprising a reaction product of:
   (a) 2-mercaptothiazoline, and
   (b) a resinous material or a precursor thereof.

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METHOD OF PRODUCING A FLAT GASKET

Karsten Dorn, Elchingen; Peter Grosch, Finningen, and Ingo Kremer, Senden, all of Fed. Rep. of Germany, assignors to Reinz-Dichtungs GmbH, Neu-Ulm/Donau, Fed. Rep. of Germany

Filed Jul. 22, 1988, Ser. No. 223,511

Claims priority, application Fed. Rep. of Germany, Jul. 24, 1987, 3724515

Int. Cl.⁴ B05D *5/00, 1/32*

U.S. Cl. 427—210 **15 Claims**

1. A method for producing a flat gasket comprising the steps of:

fabricating a core for the gasket; and

applying an overlay to both sides of the core using screen printing, the overlay having a mesh structure of bars and openings and consisting of an incompressible material.

4,880,670

CHEMICAL VAPOR DEPOSITION OF GROUP IB METALS

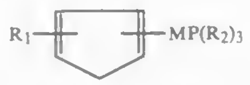
Ahmet Erbil, Atlanta, Ga., assignor to Georgia Tech Research Corporation, Atlanta, Ga.

Filed Jun. 22, 1988, Ser. No. 210,022

Int. Cl.⁴ B05D *3/02;* **C23C** *16/00*

U.S. Cl. 427—226 **16 Claims**

1. A process for depositing a metallic coating on a heated substrate by thermal decomposition of an organometallic compound, said process comprising contacting a vapor of one or more organometallic compounds of the formula (I)



where M is a group IB metal and R_1 and R_2 are each lower alkyl or alkenyl radicals containing from 1 to 6 carbon atoms, with said heated substrate, said substrate being at a temperature above the decomposition temperature of said organometallic compound.

4,880,671

METHOD AND APPARATUS FOR COATING RUNNING WEBS

Hans-Peter Sollinger; Albrecht Meinecke; Hans Weiss, all of Heidenheim, and Rudolf Beisswanger, Steinheim, all of Fed. Rep. of Germany, assignors to J. M. Voith GmbH, Heidenheim, Fed. Rep. of Germany

Continuation of Ser. No. 797,234, Nov. 13, 1985, abandoned. This application Apr. 7, 1987, Ser. No. 35,450

Claims priority, application Fed. Rep. of Germany, Nov. 17, 1984, 3442079; Dec. 21, 1984, 3446757

Int. Cl.⁴ B05D *3/12;* **B05C** *3/12*

U.S. Cl. 427—356 **8 Claims**

7. A process for applying a coating substance to a moving paper web by chamber means receiving said coating substance and an applicator space defined generally at said paper web by a throttling means and a doctor blade, said coating substance being received by conduit means from said chamber means in order to discharge said coating substance into said applicator space at the side of said applicator space where said paper web first enters said applicator space for coating said paper web as said paper web travels from said throttle means toward said doctor blade, wherein the quantity of said coating substance discharged into said applicator space is in excess of that required to coat said traveling paper web, draining by drain means a major portion of said excess of coating substance from said applicator space, wherein throttling at the side of said applicator space where said paper web first enters said applicator space by said throttle means situated in close juxtaposition to said paper web as to define a throttling path between said throttle means and said paper web to sufficiently restrict the flow therethrough to a minor portion of said excess of coating substance to a volume rate of flow which at a maximum is one-third of the volume rate of flow of said major portion flowing through said drain means whereby such of said minor portion of said excess coating substance as flows through and exits said throttling path exits in the form of a film abruptly separating from said paper web and flowing downwardly along said throttle means.

4,880,672

METHOD AND APPARATUS FOR BLADECOATING OF A MOVING WEB

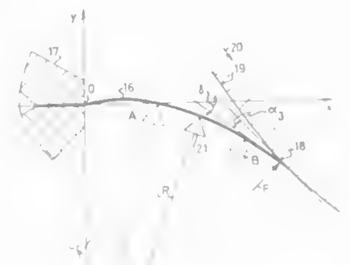
Tore Ericksson, Klässbol, Sweden, assignor to Inventing S.A., Lausanne, Switzerland

Continuation of Ser. No. 873,529, Jun. 12, 1986, abandoned. This application Aug. 15, 1988, Ser. No. 232,540

Claims priority, application Sweden, Jun. 12, 1985, 8502927

Int. Cl.⁴ B05D *3/12;* **B05C** *11/02*

U.S. Cl. 427—356 **13 Claims**



1. A method of varying the application amount of coating agent applied by bladecoating of a moving web, preferably a paper web, by control of engagement pressure of a coating blade against the web, the web supported by a rotating support roller, said blade clamped into a blade holder along one longitudinal edge, an opposite longitudinal edge of said blade being in engagement with the web and being in a substantially arcuate shape with predetermined angle defined between a tip of the blade and the web so as to define an area of engagement, comprising, displacing a control pressure acting on a major surface of the blade in a transverse direction of the blade towards and away from the web and controlling the size of the control pressure to the blade position to provide a predetermined blade engagement pressure against the web by said displacing of the control pressure and to substantially constantly maintain the angle between the web and the blade tip.

4,880,673

ACRYLATE BINDER AND ITS USE FOR DRESSING LEATHER

Leo Tork, Leverkusen; Hans-Günter Vogt, Dormagen, both of Fed. Rep. of Germany, and Ferdinand Heins, Kapellen, Belgium, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 25,998, Mar. 16, 1987, abandoned. This application Sep. 2, 1988, Ser. No. 240,138

Claims priority, application Fed. Rep. of Germany, Mar. 27, 1986, 3610576

Int. Cl.⁴ B32B *27/36, 9/02;* **B05D** *1/36*

U.S. Cl. 427—412 **5 Claims**

1. A process for dressing soft leather using acrylate binders for the primer and for the finish, comprising using

(I) an acrylate binder comprising (a) 56 to 98% by weight of a C_2–C_8-alkyl acrylate, (b) 2 to 4% by weight (meth)acrylic acid, (c) 0 to 25% by weight acrylonitrile, (d) 0 to 40% by weight methyl methacrylate and (e) 0 to 5% by weight of one or more other comonomers containing no acidic, basic or crosslinking groups, having a film hardness of 25° to 40° Shore A, for the primer and

(II) an aqueous dispersion containing an acrylate binder comprising (a) 38 to 80% by weight of a C_2–C_8-acrylate, (b) 2 to 4% by weight of (meth)acrylic acid, (c) 10 to 20% by weight of acrylonitrile, (d) 0 to 40% by weight methyl methacrylate and (e) 0 to 5% by weight of one or more other monomers containing acidic, basic of crosslinking groups, having a film hardness of 75° to 99° Shore A, for the finish,

where the binders are obtained by copolymerizing the monomers in the presence of 0.02 to 0.5% by weight of an organic peroxo compound and 1.0 to 5.0% by weight of an anionic emulsifier, the percentages relating to the sum of (a) to (e).

4,880,674

SYNTHETIC RESIN MOLDING FOR AUTOMOTIVE VEHICLES

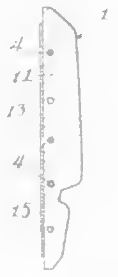
Shoji Shimizu, Tokyo, Japan, assignor to Katayama Kogyo Co., Ltd., Okayama and Shoei Jushi Co., Ltd., Tokyo, both of, Japan

Filed Oct. 4, 1988, Ser. No. 253,124

Claims priority, application Japan, Oct. 19, 1987, 62-158700[U]; Dec. 4, 1987, 62-184440[U]

Int. Cl.⁴ B60R *13/04*

U.S. Cl. 428—31 **16 Claims**



1. A generally elongated synthetic resin molding having a predetermiend length that is mounted on the body, window frame or bumper of an automotive vehicle, said synthetic resin molding comprising:

(a) a body of molding formed by extruding a synthetic resin, and

(b) a plurality of core yarns of glass fiber embedded

within said molding, wherein said glass fiber yarns embedded within said molding are disposed in parallel relation to each other along the longitudinal direction of said molding.

4,880,675

HOT-FILLABLE PLASTIC CONTAINERS

Rajendra K. Mehta, Hampton, N.J., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Apr. 25, 1988, Ser. No. 185,715

Int. Cl.⁴ B65D *23/00;* **B29C** *71/00;* **B32B** *27/00*

U.S. Cl. 428—35.7 **20 Claims**

1. A coextruded container having both improved thermal resistance and improved flavor and aroma barrier properties comprising: a polyethylene inner layer having a thickness in the range of 0.5–10.0 mil which forms the interior surface of the container, and a polypropylene outer layer which forms the exterior surface of the container, said polypropylene layer having a thickness such that the ratio of polypropylene to polyethylene thickness is at least 2:1, and wherein said polyethylene layer which forms the interior surface of the container has been treated with a reactive source of fluorine.

4,880,676

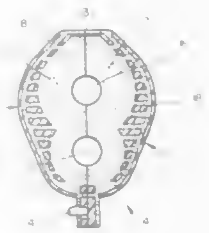
CABLE SEALING APPARATUS

Luis Puigcerver, Fuquay-Varina, N.C.; Gerald Shimirak, Danville, Calif., and Jorgen Berth, Kvistgaard, Denmark, assignors to Raychem Corporation, Menlo Park, Calif.

Filed Apr. 5, 1988, Ser. No. 177,718

Int. Cl.⁴ H02G *15/08*

U.S. Cl. 428—35.7 **24 Claims**



1. A cable sealing apparatus, comprising a first end seal that can be positioned around a first cable and that can support a cable splice case housing, the first end seal comprising:

(a) a gel having a cone penetration value as measured according to ASTM D217-68 at 21° C. of 50–200 (10^{-1} mm) and an ultimate elongation as measured according to ASTM D638-80 at 21° C. of at least 50%, the gel having a first aperture through which the first cable can pass, which aperture has a substantially annular internal rib, said rib makes an angle which is less than perpendicular with respect to a longitudinal axis at a base of said rib; and

(b) means forming a convoluted outer surface of the first end seal, the convolution extending circumferentially around the end seal.

4,880,677

MATTED GLASS

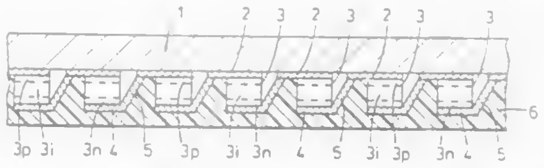
André Hecq, Nalinnes, and Jean-Francois Thomas, Ottignies, both of Belgium, assignors to Glaverbel, Brussels, Belgium

Filed Apr. 6, 1987, Ser. No. 35,267

Claims priority, application United Kingdom, Apr. 8, 1986, 8606495

Int. Cl.⁴ C03C *15/00*

U.S. Cl. 428—38 **13 Claims**



1. Light transmitting glass having at least one surface area which is matted by surface pits, comprising;

an etched surface area having a population of merging or contiguous surface pits of polyhedral form, which population of merging or contiguous surface pits have a small area so that a disk having a diameter of 10 μm cannot be placed thereon without overlapping at least two pits and so that at least 30% of visible light normally incident on said surface is diffusely transmitted through said surface and said surface having a total luminous transmittance of normally incident visible light of not less than TT-10, where TT is the total luminous transmittance through the same surface prior to etching expressed as a percentage of the total incident visible light.

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4,880,678

DRY TRANSFER SHEET

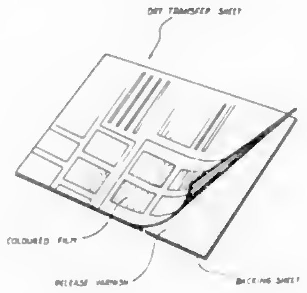
Italo Goffi, Alba, Italy, assignor to Miroglio Tessile S.p.A., Cuneo, Italy

Filed Jan. 20, 1988, Ser. No. 208,432

Claims priority, application Italy, Jan. 19, 1987, 53445/87[U]

Int. Cl.⁴ A61F *13/02*

U.S. Cl. 428—40 **2 Claims**



1. A dry transfer sheet comprising a coloured film adhering to a backing sheet with the interposition of a layer of release varnish, characterized in that the coloured film includes from 30 to 50% by weight after curing of pigment, from 15 to 35% of acrylic polymer, from 1 to 4% of cycloaliphatic epoxy resin, from 15 to 35% of vinyl copolymer, from 1 to 4% of polyethylene wax, and in that the layer of release varnish includes from 40 to 80% of the acrylic polymer, from 15 to 40% of vinyl copolymer and from 5 to 20% of polypropylene wax.

4,880,679

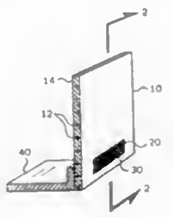
EMI SHIELDED PLASTIC COMPOSITES

Benedict R. Bonazza, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Mar. 25, 1988, Ser. No. 173,230

Int. Cl.⁴ B29C *65/00;* **B32B** *31/00*

U.S. Cl. 428—57 **20 Claims**



1. An article comprising a first subpart characterized by electrically conductive fibers embedded in a continuous plastic matrix and a second subpart characterized by electrically conductive fibers embedded in a continuous plastic matrix, said subparts being joined together along a fusion line, and an electrically conductive insert embedded in said first subpart and said second subpart along the fusion line which contacts the electrically conductive fibers in the first subpart and the second subpart and establishes continuity between the electrically conductive fibers in the first subpart and the electrically conductive fibers in the second subpart.

4,880,680

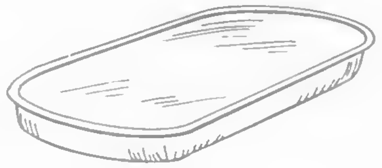
ARTICLE OF MANUFACTURE AND METHOD FOR ENCASING SAME

David R. Kistner, Troy, Mich., assignor to Sota Technology, Inc., Troy, Mich.

Filed May 23, 1988, Ser. No. 197,595

Int. Cl.⁴ B32B *1/06*

U.S. Cl. 428—74 **2 Claims**



1. An article of manufacture comprising:

a first sheet of flexible plastic material, and a second sheet of flexible plastic material;

a porous body comprising a fiberglass mat having good sound deadening and insulation properties, and a first side, and a second side, spaced from the first side, and a continuous side edge between and bordering said first and second sides;

the porous body being encapsulated between the first sheet of flexible plastic material and the second sheet of flexible plastic material; being at least partially embedded across the entire surface of both of said

said sheets of plastic material being at least sides of the porous body; and

the first sheet of plastic material being heat-sealed to the second sheet of plastic material adjacent the side edge of the porous body to form a continuous heat-sealed seam around the body;

whereby the article retains at least a portion of the sound-deadening and insulation properties of the porous body.

4,880,681

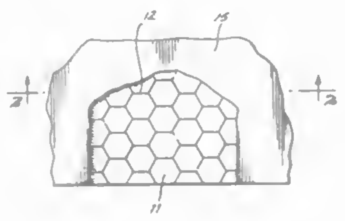
LOW HEAT OUTPUT COMPOSITE

James O. Price, Auburn; Albert J. Stewart, Maple Valley, and Sally A. Hasselbrack, Seattle, all of Wash., assignors to Heath Tecna Aerospace, Co., Kent, Wash.

Filed Feb. 26, 1988, Ser. No. 160,528

Int. Cl.⁴ B32B *3/12*

U.S. Cl. 428—116 **21 Claims**



1. A low heat output composite comprising:

(a) reinforcing fibers distributed throughout a resin matrix, said resin matrix comprising;

(b) a major amount of phenolic-based resin; and

(c) a minor amount of phosphorus-containing polymer, said minor amount effective to cause the low heat output composite to exhibit a total heat release of less than about 65 kilowatt-minute/m^2 when subjected to combustion conditions including a radiant heat source.

4,880,682

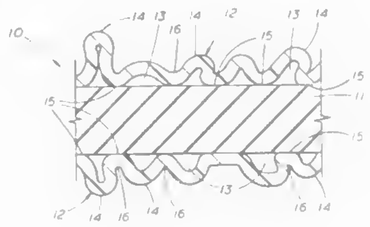
LOW GLOSS FILM AND PROCESS OF MANUFACTURE (FP 1323)

Donald R. Hazelton, Chatham, N.J.; Douglas J. Laurent, Houston, Tex.; Lawrence K. Locke, Seabrook, Tex., and William J. Hodgson, Jr., Baytown, Tex., assignors to Exxon Chemical Patents Inc., Linden, N.J.

Filed Mar. 22, 1988, Ser. No. 171,730

Int. Cl.⁴ B32B *27/14*

U.S. Cl. 428—152 **17 Claims**



1. A multilayer coextruded film which comprises

(a) a core layer of an elastomeric material; and

(b) at least one skin layer of a thermoplastic material, said skin layer being secured to said core layer at spaced apart contact areas and having a microundulating surface in the machine direction or transverse direction such that the film has a gloss of less than 20 as determined by ASTM D1003-67.

4,880,683

HOT-TACKIFYING ADHESIVE TAPE

Robert H. Stow, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 89,678, Aug. 26, 1987, abandoned, which is a continuation-in-part of Ser. No. 445,864, Dec. 6, 1982, abandoned, which is a continuation-in-part of Ser. No. 334,820, Dec. 28, 1981, abandoned. This application May 11, 1988, Ser. No. 192,486

Int. Cl.⁴ B32B *3/12, 7/10, 15/08;* **C09J** *7/02*

U.S. Cl. 428—200 **21 Claims**

1. Heat-activatable substantially non-thermosettable, substantially non-crosslinkable adhesive tape that can be wound upon itself in roll form for convenience in storage and use and comprises a heat-resistant flexible backing and an adhesive layer which is nontacky or poorly tacky at 20° C., said adhesive layer comprises an acrylic polymer of acrylic ester monomer and is free of a reactive hot-melt resin, wherein the improvement comprises:

(1) said acrylic ester monomer provides at least 50 mol percent of the acrylic polymer of said adhesive layer,

(2) said acrylic polymer has a Tg or a weightaveraged Tg of from −10° C. to 80° C., and

(3) said adhesive layer has a Shear value of at least 25 minutes at 65° C., said adhesive layer adheres well to a clean substrate upon contact when heated to a temperature about 50° C. above the Tg or weight-averaged Tg of said acrylic polymer.

2. Heat-activatable adhesive tape as defined in claim 1 wherein said adhesive layer comprises an acrylic copolymer of monomers, up to 50 mol % of which is at least one copolymerizable polar monomer selected from acrylic acid, methacrylic acid, itaconic acid, maleic acid, maleic anhydride, amides of said acids, acrylonitrile, methacrylonitrile, and N-vinyl-2-pyrrolidone.

11. Heat-activatable adhesive tape as defined in claims 1 or 2 wherein said backing is an electrically-conductive metal foil, the adhesive layer is in contact with one face of the metal foil, and there is a low-adhesion backside coating on the other face of the metal foil.

4,880,684

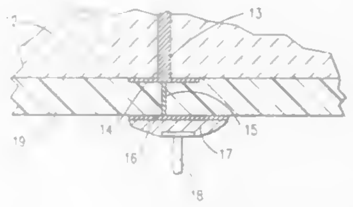
SEALING AND STRESS RELIEF LAYERS AND USE THEREOF

David W. Boss, Beacon; Timothy W. Carr, Hopewell Junction; Derry J. Dubetsky, Wappingers Falls; George M. Greenstein, Hopewell Junction; Warren D. Grobman, Carmel; Carl P. Hayunga, Poughkeepsie; Amanda H. Kumar, Hopewell Junction, all of N.Y.; Walter F. Lange, Longmont, Colo.; Robert H. Massey; Paul H. Palmateer, both of Wappingers Falls, N.Y.; John A. Romano, Hopewell Junction, N.Y., and Da-Yuan Shih, Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 11, 1988, Ser. No. 167,290

Int Cl.⁴ B32B *3/00, 7/00;* **B44C** *1/22;* **B29C** *37/00*

U.S. Cl. 428—209 **60 Claims**



1. A structure for electrically interconnecting a substrate having conductive vias therein and associated articles comprising:

at least one first conductive bonding pad disposed on the surface of said substrate in alignment with said conductive vias;

at least one layer of polymeric material disposed on the surface of said substrate covering said first bonding pads;

at least one second conductive bonding pad deposited on said at least one polymeric layer; and

at least one conductive medium disposed in said polymeric material contacting said first and said second bonding pads.

4,880,685

PROCESS FOR SEPARATING AND/OR REACTING PARTICLES

Michael Hirth, Unterentfelden, and Norbert Wiegart, Baden, both of Switzerland, assignors to BBC Brown Boveri AG, Baden, Switzerland

Filed Dec. 3, 1987, Ser. No. 128,271

Claims priority, application Switzerland, Dec. 10, 1986, 4917/86

Int. Cl.⁴ B01D *47/00;* **B01J** *8/00;* **C10H** *23/00*

U.S. Cl. 423—210 **7 Claims**

1. A process for treating particles which comprises at least a heavy metal vaporizable at a first temperature, at least an organic pollutant which can be converted into gaseous and solid compounds at a second temperature and at least dust, which process comprises:

mixing the particles and a gaseous carrier medium into a mixture before their joint entry into a heating device at controlled rates to provide a fluidized blend;

heating the fluidized blend in a fluidized bed of the heating device to the higher of the first and second temperatures thus vaporizing the heavy metal and converting the organic pollutant;

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retaining the dust in the form of particles in the mixture;

immediately after the mixture has left the heating device, before cooling of the mixture can take place, collecting a majority of the dust and solid compounds from the mixture; and

then passing the remaining part of the mixture forward for mixing with the gaseous carrier medium so that the remaining part of the mixture is recycled through the process.

4,880,686

THERMAL TRANSFER MATERIAL

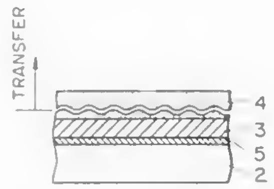
Hisao Yaegashi, Yokohama; Tetsuo Hasegawa, Tokyo; Naoki Kushida, Yokohama; Koichi Tohma, Kawasaki, and Takayuki Suzuki, Saitma, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 13, 1987, Ser. No. 106,819

Claims priority, application Japan, Oct. 17, 1986, 61-246605

Int. Cl.^{4} B41M *5/26*

U.S. Cl. 428—212 7 Claims



1. A thermal transfer material, comprising: a support and at least a first adhesive layer, a first ink layer and a second ink layer disposed in the order named on the support, wherein the adhesion strength (F_1) between the support and the first ink layer and the adhesion strength (F_2) between the first and second ink layers satisfy the relationships $F_1 > F_2$ at a higher temperature and $F_1 < F_2$ at a lower temperature; said first ink layer comprising a binder and a pigment, said binder having a glass transition temperature (tg) of 0° C. or below, said pigment constituting 25 to 85 wt. % of the first ink layer and said first adhesive layer comprising a particulate wax component and an adhesive component wherein said particulate wax component constitutes a larger proportion by weight of the first adhesive layer than the adhesive component; said particulate wax component having a softening temperature of 60°–150° C. and comprising at least one wax selected from the group consisting of whale wax, beeswax, lanolin, carnauba wax, candelilla wax, montan wax, ceresin wax, paraffin wax, microcrystalline wax, ester wax, low-molecualr weight polyethylene or oxidized polyethylene, Fischer-Tropsch wax, lauric acid, myristic acid, palmitic acid, stearic acid, behenic acid, stearyl alcohol, behenyl alcohol, fatty acid ester of sucrose, fatty acid dester of sorbitane, and oleic amide.

4,880,687

MAGNETIC RECORDING MEDIUM

Kenji Yokoyama; Masatoshi Nakayama; Toru Shimozawa; Kunihiro Ueda, and Fumio Maruta, all of Nagano, Japan, assignors to TDK Corporation, Tokyo, Japan

Filed May 6, 1987, Ser. No. 46,317

Claims priority, application Japan, May 9, 1986, 61-106148; May 9, 1986, 61-106149; May 9, 1986, 61-106150; May 9, 1986, 61-106151; May 9, 1986, 61-106152

The portion of the term of this patent subsequent to Mar. 28, 2006, has been disclaimed.

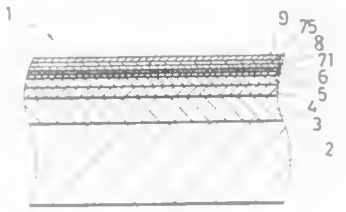
Int. Cl.^{4} G11B *5/64*

U.S. Cl. 428—141 10 Claims

1. A magnetic recording medium comprising a nonmagnetic rigid substrate having opposed major surfaces,

a metal thin film magnetic layer disposed on one major surface of the substrate, and

a topcoat layer on the magnetic layer, said topcoat layer comprising a plasma-polymerized film containing carbon, fluorine, wherein the carbon content ranges from 30 to 80 atom %, the hydrogen-to fluorine atom ratio ranges from 0.1.0 to 1.0:1.0, and the average fluorine-to-carbon atom ratio (F/C) in the region of said film that extends from the surface remote from the substrate to ⅓rd of its thickness is at least 1.5 times that in the region of the film that extends from the surface adjacent to the substrate to ⅓rd of its thickness, said plasma-polymerized film being prepared by activating a gaseous reactant into a plasma to generate active species thereof while feeding the reactant into a plasma zone with W/F.M set to 10^7 to 10^{15} joule/kg, wherein W is an input power applied for plasma generation, F is the flow rate of the gas reactant, and M is the molecular weight of the gas reactant, whereby the polymerized film has a thickness of 3 to 800 Å and a contact angle with water in the range of from 100° to 130°.



4,880,688

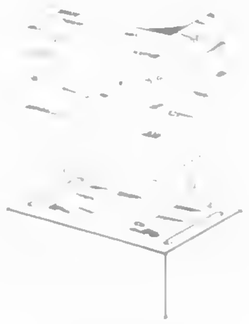
BREATHER MATERIALS FOR HIGH PRESSURE MOLDING

Robert V. Kromrey, Campbell, Calif., assignor to United Technologies Corporation, Hartford, Conn.

Division of Ser. No. 138,739, Dec. 28, 1987. This application Dec. 23, 1988, Ser. No. 289,111

Int. Cl.^{4} B32B *5/16*

U.S. Cl. 428—141 8 Claims



1. A breather layer particularly adapted for acting as a fluid path to remove fluids from articles during molding comprising:

at least two flexible layers of beads said beads dimentionally stable at pressures up to about 20.7 MPa; and

a layer of breather fabric about 0.2 mm to about 0.6 mm disposed thereon.

4,880,689

DAMAGE RESISTANT DECORATIVE LAMINATE

John J. Park; Paul W. White, both of Loveland, and Calvin Richardson, Cincinnati, all of Ohio, assignors to Formica Corporation, Wayne, N.J.

Filed Oct. 18, 1985, Ser. No. 788,772

Int. Cl.^{4} D06N *7/04*

U.S. Cl. 428—143 23 Claims

1. A decorative laminate having improved resistance against marring, abrasion, staining, dusting and crocking, said laminate comprising a substrate and a decorative sheet in superposed relation, said decorative sheet having at least on the exposed surface thereof a layer consisting essentially of a thermoset resin chosen from the group consisting of melamine formaldehyde, modified melamine formaldehyde, and polyester, substantially fully hydrolyzed polyvinyl alcohol, fumed amorphous silica, and particulate abrasive material having a hardness higher than that of silica, the proportions of said thermoset resin, polyvinyl alcohol, fumed amorphous silica and particulate abrasive being such that said exposed surface exhibits mar resistance of less than 4% gloss change by the herein described test, and abrasion resistance greater than 3,000 cycles (NEMA Wear) by the NEMA test LD 3-3.01.

4,880,690

PERFUME PATCH

Michael Szycher, Lynnfield, and Jonathan L. Rolfe, North Easton, both of Mass., assignors to Thermedics, Inc., Woburn, Mass.

Continuation of Ser. No. 95,055, Sep. 9, 1987, abandoned, which is a continuation-in-part of Ser. No. 932,696, Nov. 19, 1986, abandoned, which is a continuation-in-part of Ser. No. 768,623, Aug. 23, 1985, Pat. No. 4,638,043, which is a continuation-in-part of Ser. No. 726,809, Apr. 25, 1985, abandoned, which is a continuation-in-part of Ser. No. 670,810, Nov. 13, 1984, Pat. No. 4,614,787. This application Sep. 9, 1988, Ser. No. 243,152

The portion of the term of this patent subsequent to Sep. 30, 2003, has been disclaimed.

Int. Cl.^{4} D03D *3/00;* **B32B** *7/02;* **D04B** *1/02;* **A01N** *25/26*

U.S. Cl. 428—224 27 Claims

1. A perfume patch comprising a fragrance-emitting member comprising a polyurethane consisting essentially of

(1) a diisocyanate;

(2) a glycol having a molecular weight between the range of 500–5000 molecular weight units;

(3) an acrylyl chain terminator having a molecular weight between the range of 40 and 200 molecular weight units; and

(4) a photoinitiator into which a perfume is dispersed; and

(5) a barrier layer adhered to the fragrance-emitting member.

4,880,691

FINE DENIER FIBERS OF OLEFIN POLYMERS

Lawrence H. Sawyer, and George W. Knight, both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 672,009, Nov. 16, 1984, which is a continuation-in-part of Ser. No. 581,480, Feb. 17, 1989, abandoned. This application Jun. 10, 1987, Ser. No. 60,717

The portion of the term of this patent subsequent to May 16, 2006, has been disclaimed.

Int. Cl.^{4} C08F *210/16;* **D03D** *15/00;* **D04H** *3/16*

U.S. Cl. 428—225 30 Claims

1. Fine denier fibers comprised of melt-spun, melt-drawn linear low density copolymers of ethylene with at least one alpha-olefin of C_3 to C_{12}.

4,880,692

MAGNETIC RECORDING MEDIUM

Katsumi Ryoke; Masatoshi Takahashi; Akihiro Hashimoto; Tsutomu Okita, and Kazuko Hanai, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 21, 1988, Ser. No. 171,360

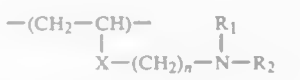
Claims priority, application Japan, Mar. 19, 1987, 62-62711

The portion of the term of this patent subsequent to Nov. 14, 2006, has been disclaimed.

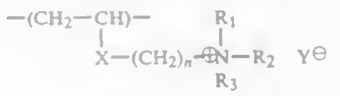
Int. Cl.^{4} G11B *5/70*

U.S. Cl. 428—323 10 Claims

1. A magnetic recording medium comprising a support having provided on one surface thereof a magnetic recording layer containing ferromagnetic particles dispersed in a binder and on the other surface thereof a backing layer, wherein said binder comprises a vinyl chloride/vinyl acetate copolymer resin containing at least one group represented by formula (I) or (II):



$$-(\mathrm{CH_2}-\underset{\displaystyle \mathrm{X}-(\mathrm{CH_2})_n-\overset{\displaystyle \mathrm{R_1}}{\overset{|}{\mathrm{N}}}-\mathrm{R_2}}{\underset{|}{\mathrm{CH}}})- \qquad (I)$$



$$-(\mathrm{CH_2}-\underset{\displaystyle \mathrm{X}-(\mathrm{CH_2})_n-\overset{\oplus}{\underset{\underset{\displaystyle \mathrm{R_3}}{|}}{\overset{\overset{\displaystyle \mathrm{R_1}}{|}}{\mathrm{N}}}}-\mathrm{R_2} \quad \mathrm{Y}^{\ominus}}{\underset{|}{\mathrm{CH}}})- \qquad (II)$$

wherein X represents a —COO— group, a —CONH— group, or a $—C_6H_4—$ group; n represents an integer of from 1 to 10; R_1, R_2, and R_3 each represents a hydrogen atom, an alkyl group having from 1 to 10 carbon atoms, or an alkyl derivative having from 1 to 10 carbon atoms, or R_1, R_2 and R_3 may be combined to each other to form a heterocyclic ring; and $Y^{\ominus}$ represents a halogen atom, $ClO_4^{\ominus}$, or $HgI_3^{\ominus}$; or $Y^{\ominus}$ is bound to R_2, R_2 represents an alkylene group having from 1 to 10 carbon atoms, and $Y^{\ominus}$ represents a $—COO^{\ominus}$ group, an $—SO_3^{\ominus}$ group, or an $—OSO_3^{\ominus}$ group; and wherein said copolymer resin contains from 60 to 95 wt % of a vinyl chloride unit and greater than 0 wt % of a vinyl acetate unit based on the total amount of said polymer resin; and wherein the amine content of said copolymer resin is from 0.01 to 5 wt % in terms of the nitrogen content based on the total amount of said copolymer resin; and wherein said copolymer resin has a degree of polymerization of from 100 to 700.

4,880,693

MAGNETIC RECORDING MEDIUM

Katsumi Ryoke; Masatoshi Takahashi; Akihiro Hashimoto; Tsutomu Okita, and Takashi Yoneyama, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 21, 1988, Ser. No. 170,225

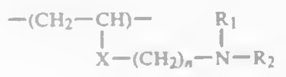
Claims priority, application Japan, Mar. 19, 1987, 62-62712

The portion of the term of this patent subsequent to Nov. 14, 2006, has been disclaimed.

Int. Cl.^{4} G11B *5/64*

U.S. Cl. 428—323 10 Claims

1. A magnetic recording medium comprising a support having provided on one surface thereof a magnetic recording layer and on the other surface thereof a backing layer containing non-magnetic particles dispersed in a binder, wherein said binder comprises a vinyl chloride/vinyl acetate copolymer resin containing at least one group represented by formula (I) or (II):



$$-(\mathrm{CH_2}-\underset{\displaystyle \mathrm{X}-(\mathrm{CH_2})_n-\overset{\displaystyle \mathrm{R_1}}{\overset{|}{\mathrm{N}}}-\mathrm{R_2}}{\underset{|}{\mathrm{CH}}})- \qquad (I)$$

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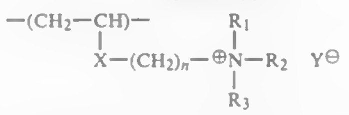


$$-(CH_2-CH)-\ \ \text{with}\ \ X-(CH_2)_n-{}^{\oplus}N(R_1)(R_2)(R_3)\quad Y^{\ominus}$$

(II)

wherein X represents a —COO— group, a —CONH— group, or a —C_6H_4—group; n represents an integer of from 1 to 10; R_1, R_2, and R_3 each represents a hydrogen atom, an alkyl group having from 1 to 10 carbon atoms, or an alkyl derivative having from 1 to 10 carbon atoms, or R_1, R_2 and R_3 may be combined to each other to form a heterocyclic ring; and Y^{β} represents a halogen atom, $ClO_4^{\ominus}$, or $HgI_3^{\ominus}$; or $Y^{\ominus}$ is bound to R_2, R_2 represents an alkylene group having from 1 to 10 carbon atoms, and $Y^{\ominus}$ represents a —$COO^{\ominus}$ group, an —$SO_3^{\ominus}$ group, or an —$OSO_3^{\ominus}$ group; and wherein said copolymer resin contains from 60 to 95 wt % of a vinyl chloride unit and greater than 0 wt % of a vinyl acetate unit based on the total amount of said polymer r®sin; and wherein the amine content of said copolymer resin is from 0.01 to 4 wt % in terms of the nitrogen content based on the total amount of said copolymer resin; and wherein said copolymer resin has a degree of polymerization of from 100 to 700.

4,880,694

MAGNETO-OPTICAL RECORDING MATERIAL

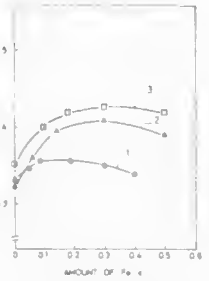
Shinji Takayama, Mitaka; Toshio Niihara, Hachioji; Katsuhiro Kaneko, Sayama, and Yutaka Sugita, Tokorozawa, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 753,857, Jul. 11, 1985, abandoned. This application Jan. 19, 1988, Ser. No. 145,409

Claims priority, application Japan, Jul. 11, 1984, 59-142319

Int. Cl.⁴ G11B *7/24*

U.S. Cl. 428—336 20 Claims



1. A magneto-optical recording medium comprising a magneto-optical recording material disposed on a substrate as a thin film, said magneto-optical recording material having a composition indicated by $(Co_{1-a}M_a)_{100-y}R_y$ where M denotes a Fe and at least one element selected from the group consisting of Ni, Ag, and B; R denotes a single element selected from the group consisting of Tb, Gd, Dy and Ho; the value "a" satisfies $0 < a \leqq 0.5$, while the value of "y" satisfies $14 \leqq y \leqq 36$ in terms of atomic percent; said magneto-optical recording material being amorphous and being capable of magneto-optically recording based upon magnetic compensation temperature.

4,880,695

MOISTURE-RESISTANT, COATED THERMOPLASTIC FILM HAVING ENHANCED ADHESION TO INKS AND METALLIC LAYERS

David Rudd, Naples, N.C., and R. Scott Caines, Greenville, S.C., assignors to Hoechst Celanese Corporation, Somerville, N.J.

Filed Nov. 3, 1987, Ser. No. 116,106

Iot. Cl.⁴ B32B *7/04, 27/06, 27/36, 31/06*

U.S. Cl. 428—341 18 Claims

1. A moisture-resistant, coated thermoplastic film comprising:

(i) an oriented thermoplastic film; and

(ii) a moisture-resistant coating on at least one side of said film, said coating having been applied to said film by sequentially coating said film with at least two aqueous solutions, one of which contains a precursor A and the other solution containing precursor B, such that A and B react to form at least one alkaline earth salt of a fatty acid having 10 to 18 carbon atoms upon said film which is less water-soluble than either A or B.

4,880,696

FLEXIBLE PACKAGING MATERIAL CONTAINING AN ANTIOXIDANT

Apostol Yanidis, Berkeley, Calif., assignor to James River II, Inc., Oakland, Calif.

Filed Jun. 27, 1988, Ser. No. 211,942

Int. Cl.⁴ B32B *7/00*

U.S. Cl. 428—349 13 Claims

9. In a flexible packaging material comprising a substrate extrusion coated with a polymer composition comprising an outer heatseal layer and an inner polymer layer, the improvement wherein the inner polymer layer contains a butylated phenolic antioxidant.

4,880,697

BARRIER FILM

Janice D. Caldwell, Henrico County, and Walter H. Knox, III, Rockingham County, both of Va., assignors to Reynolds Metals Company, Richmond, Va.

Filed Jun. 21, 1988, Ser. No. 209,435

Int. Cl.⁴ B29D *22/00*

U.S. Cl. 428—35.4 21 Claims

1. A laminated plastics resin film comprising a pair of adhesively bonded coextrusions, the first of said coextrusions being biaxially oriented and having the form A—B or A—B—C and the second of said coextrusions having the form D—E—F—E—G, wherein:

Layer A is an ethylene-propylene copolymer;
Layer B is a polypropylene homopolymer;
Layer C is an ethylene-propylene copolymer;
Layer D is an propylene-ethylene random copolymer;
Layer E is a chemically modified polyolefin-polypropylene resin;
Layer F is an ethylene-vinyl alcohol copolymer; and
Layer G is a propylene-ethylene random copolymer;

and wherein said coextrusions are bonded to one another at their B or C and D layers with a thermoset adhesive.

4,880,698

COATED FLAT GLASS

Jean-Francois Thomas, Ottignies; Robert Terneu, Thiméon; Albert Van Cauter, Charleroi, and Robert Van Laethem, Loverval-Gerpinnes, all of Belgium, assignors to Glaverbel, Brussels, Belgium

Filed Nov. 14, 1986, Ser. No. 930,758

Claims priority, application United Kingdom, Dec. 20, 1985, 8531423; Dec. 20, 1985, 8531424; Dec. 20, 1985, 8531425

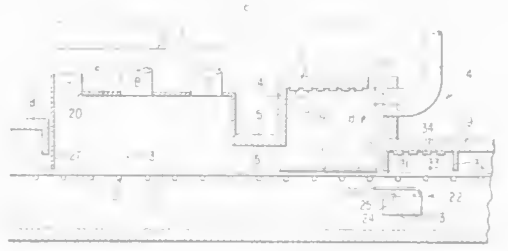
Int. Cl.⁴ B32B *17/06;* **B05D** *5/06*

U.S. Cl. 428—333 20 Claims

1. Flat glass bearing a tin oxide coating layer comprising generally perpendicularly oriented crystals, characterised in

that such tin oxide layer is at least 200 nm thick and in that the expected grain area of a representative sample of the tin oxide coating crystals measured in units of $10^{-4}\ \mu m^2$ is numerically equal to a value of at least 0.4 times the layer thickness measured in nanometers.

10. Flat glass bearing a tin oxide coating layer comprising generally perpendicularly oriented crystals, characterized in that such tin oxide layer is at least 200 nm thick and in that the expected grain area of a representative sample of the tin oxide coating crystals measured in units of $10^{-4}\ \mu m^2$ is numerically equal to a value of at least 0.4 times the layer thickness measured in nanometers, wherein said tin oxide layer is formed on said flat glass by a layer deposited pyrolization process which includes the steps of: spraying a coating precursor material in the form of droplets into a chamber through which hot glass passes; evaporating at least a part of the precursor material before that material contacts the glass; and causing a current of gas loaded with precursor material vapor to flow along the glass and in contact therewith.



4,880,699

ULTRATHIN POLYIMIDE POLYMER FILMS AND THEIR PREPARATION

Rachel S. Kohn, Springfield, N.J., assignor to Hoechst Celanese Corporation, Somerville, N.J.

Continuation of Ser. No. 267,712, Nov. 4, 1988, abandoned, which is a continuation of Ser. No. 149,829, Jan. 29, 1988, abandoned, which is a division of Ser. No. 917,731, Oct. 10, 1988, Pat. No. 4,746,474. This application Apr. 17, 1989, Ser. No. 339,903

Int. Cl.⁴ B29C *41/12*

U.S. Cl. 428—333 13 Claims

1. A pinhole-free, polyimide polymer film having a thickness of about 400 angstroms or less.

4,880,700

NOVEL ORIENTED POLYESTER FILM COMFOSITES

Dominique Charmot, Paris, and Pierre Grosjean, Sainte-Foy Les Lyon, both of France, assignors to Rhone-Poulenc Films, Courbevoie, France

Filed Aug. 12, 1987, Ser. No. 84,219

Claims priority, application France, Aug. 12, 1986, 86 11788

Int. Cl.⁴ B32B *27/08, 27/10, 27/36*

U.S. Cl. 428—337 25 Claims

1. A shaped article comprising an oriented linear polyester film having, on at least one of the face surfaces thereof, an adhesive primer coating which comprises a layer of a modified polymer produced by aqueous phase radical polymerization of at least one acrylic monomer in the presence of an effective amount of a water-dispersible polyester of at least one aromatic dicarboxylic acid and at least one aliphatic diol, and containing a plurality of sulfonyloxy groups of the general formula:

$$(-SO_3-)_nM \qquad (I)$$

in which M is a hydrogen atom, an alkali or alkaline earth metal, or an ammonium or quaternary ammonium residue, and n is equal to 1 or 2.

2. The shaped article as defined by claim 1, said polyester base film comprising a polyethylene terephthalate film having a thickness of 5 to 300 micrometers.

4,880,701

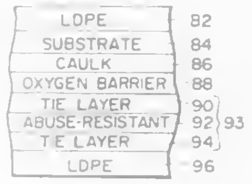
OXYGEN IMPERMEABLE LEAK FREE CONTAINER

Charles E. Gibbons; Gerald A. Marano; James M. Kittrell; Allan A. Whillock; Robert L. Lanham, all of Mobile, and Donald Evans, South Mobile, all of Ala., assignors to International Paper Company, Purchase, N.Y.

Filed May 9, 1988, Ser. No. 191,989

Int. Cl.⁴ B6! .s *15/22;* **B32B** *27/00*

U.S. Cl. 428—34.2 24 Claims



1. An oxygen barrier laminate structure for producing an oxygen impermeable leak free container comprising:

(a) a mechanically stable structural substrate having an inner and an outer surface;

(b) an outer layer of a heat-sealable low density polyethylene polymer coated on said outer surface of said mechanically stable structural substrate;

(c) an inner layer of a first caulking polymer resin coated on said inner surface of said mechanically stable structural substrate;

(d) an inner oxygen barrier material layer coated on the inner surface of said inner layer of said caulking polymer resin;

(e) an inner sandwich layer of: a first adhesive tie layer, an abuse resistant polymer, and a second adhesive tie layer, coated in the sequence listed on the inner surface of said inner layer of said oxygen barrier material; and

(f) a product contact layer of a low density polyethylene polymer extrusion coated on the inner surface of said inner sandwich layer, which is heat-sealable with the outer layer of low density polyethylene polymer on conventional equipment at temperatures ranging from 250° F. to 500° F. and wherein said caulking polymer resin is selected from the group consisting of zinc salts of ethylene methacrylic acid copolymers, sodium salts of ethylene methacrylic acid copolymers, ethylene acrylic acid copolymers, ethylene methacrylic acid copolymers, ethylene vinyl acetate copolymers, and ethylene methacrylate copolymers.

4,880,702

THREE LAYER COMPOSITION FOR STABLIZING A DENTURE

Morio Homan, Sakai; Nizo Sugie, Hachiouji; Masakiyo Yoshimura, Kawachinagano, and Yoshikazu Shirakawa, Yamatokooriyama, all of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

Filed Dec. 22, 1987, Ser. No. 136,633

Claims priority, application Japan, Dec. 26, 1986, 61-311088

Int. Cl.⁴ C09J *7/00;* **A61C** *13/23;* **A61K** *6/00*

U.S. Cl. 428—354 10 Claims

1. A composition for stabilizing a denture in the form of the thin strip consisting of three layers, piled up one over another, which composition consists essentially of:

(a) two outside layers which consist essentially of a polymer in an amount sufficient to adhere each of said outside layers to gums and a denture base after contact with water or saliva, said polymer being selected from the group consisting of polyethylene oxide having an average mo-

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lecular weight of about 200,000 to 10,000,000, sodium carboxymethyl cellulose and polyvinyl alcohol and mixtures of these polymers, provided that if sodium carboxymethyl cellulose is used, its content should be less than 20% by weight of the total weight of the present composition; and

(b) an inside layer which consists essentially of microcrystalline wax in an amount sufficient to impart a self-supporting ability and to retard swelling and dissolution of said inside layer and a polymer in an amount sufficient to adhere said inside layer to gums and a denture base, after contact with water or saliva when said outside layers have been dissolved, said polymer being selected from the group consisting of polyethylene oxide having an average molecular weight of about 2,000,000 to 10,000,000, sodium carboxymethyl cellulose and polyvinyl alcohol and mixtures of these polymers;
  (i) said outside layers having a thickness of about 0.03 to 0.2 mm and said inside layer having a thickness of about 0.2 to 0.8 mm;
  (ii) said film strip having a thickness of about 0.3 to 1.0 mm and width of about 3 to 10 mm;
  (iii) the swelling ability and solubility of said outside layers being higher than those of said inside layer;
  (iv) the swelled outside layers having an ability to adhere to gums and a denture base;
  (v) said inside layer having a self-supporting ability and a shape-retaining ability for said outside layers; and
  (vi) said inside layer having an ability to adhere to the gums and the denture base after said outside layers have dissolved.

4,880,703

ACICULAR ELECTROCONDUCTIVE TITANIUM OXIDE AND PROCESS FOR PRODUCING SAME

Masashi Sakamoto; Haruo Okuda; Hideo Takahashi, and Eiji Yamada, all of Yokkaichi, Japan, assignors to Ishihara Sangyo Kaisha, Ltd., Osaka, Japan

Filed Nov. 9, 1987, Ser. No. 118,037

Claims priority, application Japan, Nov. 11, 1986, 61-268084

Int. Cl.⁴ D02G *3/00*

U.S. Cl. 428—378 **1 Claim**

1. An electroconductive titanium oxide which comprises an acicular titanium oxide having a length of 1 to 10 μm and an aspect ratio of 3 or higher, and containing up to 1% by weight of a phosphorus compound as P_2O_5 and up to 0.2% by weight of a compound of a metal having a valence of 3 or less as an oxide of the metal, said acicular titanium oxide having on the surface thereof an electroconductive layer comprising tin oxide in an amount of 1 to 50% by weight of the substrate as SnO_2, and antimony oxide in an amount of 5 to 30% by weight of the tin oxide as Sb_2O_3.

4,880,704

ORGANIC REINFORCING FIBERS WITH BUNDLE SEPARATION DURING FIBER CUTTING AND STORAGE

Colleen W. Cordova, and David S. Cordova, both of Midlothian, Va., assignors to Allied-Signal Inc., Morris Township, Morris County, N.J.

Filed Mar. 28, 1988, Ser. No. 174,044

Int. Cl.⁴ D02G *3/00*

U.S. Cl. 428—395 **14 Claims**

1. A high tenacity reinforcing fiber having improved partitioning properties selected from the group consisting of polyester, aliphatic polyamide, and combinations thereof, for reinforcing plastic composites, said fiber being coated to enhance stiffness of the fiber for cutting with

(a) 3 to 12 weight percent, based on weight of fiber of carboxyl-terminated, oil-free alkyd resin which is the reaction product of at least one aliphatic glycol containing 2 to 12 carbons with a combination of aromatic di- or trifunctional carboxylic acids and, optionally, an unsaturated aliphatic carboxylic acid, said resin having a degree of esterification below the gel point of the resin., and

(b) 0.5 to 2 weight percent vinyl chloride copolymer having a glass transition temperature of greater than about 60° C.

4,880,705

SILOXY KETENES AND PRODUCTS PREPARED THEREFROM

Bradford B. Wright, North St. Paul, Minn., assignor to Minnesota Mining & Manufacturing Company, St. Paul, Minn.

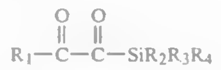
Division of Ser. No. 101,589, Sep. 28, 1987, Pat. No. 4,812,214. This application Dec. 22, 1988, Ser. No. 289,987

Int. Cl.⁴ B32B *9/04*

U.S. Cl. 428—447 **11 Claims**

1. The siloxy-containing products produced by the method comprising the steps of:

(a) subjecting a silyl diketone to photolysis under temperature conditions of from −20° to 50° C. effective for generating a siloxy ketene intermediate therefrom, said silyl diketone having the formula



$$R_1-\overset{\overset{\large O}{\|}}{C}-\overset{\overset{\large O}{\|}}{C}-SiR_2R_3R_4$$

wherein Si is silicon, R_1 and R_4 are hydrocarbon groups containing from 1 to 18 carbons, and R_2 and R_3 are hydrocarbon groups containing from 1 to 6 carbons, said photolysis being carried out by irradiating said silyl diketone with light of a wavelength from 200 to 800 nm; and thereafter,

(b) contacting the generated siloxy ketene intermediate with a ketene-reactive compound under temperature conditions of from about −20° to 50° C. effective for reaction therewith, said compound being selected from the group consisting of (i) a diene polymer containing a plurality of unsaturated carbon bonds, (ii) an alkylene or cycloalkylene compound containing at least one unsaturated linkage; and (iii) an aldehyde containing one or more aldehyde groups.

4,880,706

BIAXIALLY ORIENTED MULTILAYER BARRIER FILMS

Gonzalo E. Mazuera, Farmington, and John R. Wagner, Jr., Rochester, both of N.Y., assignors to Mobil Oil Corp., New York, N.Y.

Filed Oct. 5, 1987, Ser. No. 105,073

Int. Cl.⁴ B32B *27/08;* **B29F** *3/06*

U.S. Cl. 428—516 **9 Claims**

1. A multilayer coextruded film which has been biaxially oriented from greater than 4:1 to about 7:1 in the machine direction and from greater than 7:1 to about 10:1 in the transverse direction, comprising:

(1) at least one (C) layer of an ethylene vinyl alcohol copolymer, and

(2) at least two (A) layers of polyethylene,

polypropylene, poly (alpha-methylpentene), or copolymers of ethylene and higher olefins on opposite sides of sides (C) layer.

4,880,707

STICK OF COMPOSITE MATERIALS AND PROCESS FOR PREPARATION THEREOF

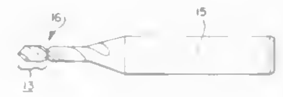
Yuichiro Kohno, and Akio Hara, both of Itami, Japan, assignors to Sumitomo Electric Industries Ltd., Osaka, Japan

Continuation of Ser. No. 110,022, Oct. 15, 1987, abandoned, which is a continuation of Ser. No. 743,387, Jun. 11, 1985, abandoned. This application Aug. 10, 1988, Ser. No. 231,644

Claims priority, application Japan, Jun. 12, 1984, 59-120218; Jun. 12, 1984, 59-120219; Aug. 2, 1984, 59-163095; Mar. 13, 1985, 60-49559

Int. Cl.⁴ C22C *29/16*

U.S. Cl. 428—565 **21 Claims**



1. A stick of composite materials comprising a hot-pressed super-hard head member and a supporting member, said head member containing higher than 50 vol % of a diamond powder and/or a high pressure boron nitride powder, and said supporting member being bonded at one of its ends with said hot-pressed super-hard head member, said stick of composite materials being characterized in that:

said hot pressed super-hard head member and said supporting member are bonded together during the hot press process of said hot-pressed super-hard head member;

the stick is of an elongated form having a sectional diameter or an equivalent sectional diameter not larger than 3 mm. the length of the hot-pressed super-hard head member is 0.3 to 2.0 mm in the axial direction of the stick; and

the supporting member is more than five times longer in its axial direction than the hot-pressed super-hard head member, the supporting member further having an axial length of at least 10 mm. after said stick is hot-pressed.

4,880,708

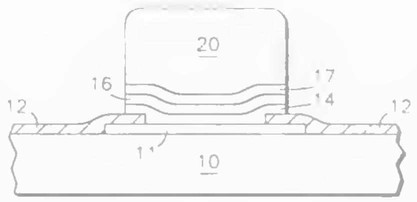
METALLIZATION SCHEME PROVIDING ADHESION AND BARRIER PROPERTIES

Ravinder K. Sharma, Mesa; Harry J. Geyer, Phoenix, and Douglas G. Mitchell, Tempe, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 5, 1988, Ser. No. 215,108

Int. Cl.⁴ H01L *21/48, 21/28, 21/308*

U.S. Cl. 428—620 **12 Claims**



1. A structure providing adhesion and barrier properties to a semiconductor substrate having a surface and a first conductor layer disposed on at least a portion of the surface of the semiconductor substrate, comprising:

a passivation layer disposed on the surface of the substrate and the first conductor layer, and having at least one opening to the first conductor layer;

a second conductor layer made of titanium-tungsten-nitride disposed on the first conductor layer through the opening of the passivation layer, and disposed on at least a portion of the passivation layer;

a third conductor layer made of titanium-tungsten disposed on the second conductor layer, and;

a fourth conductor layer made of a conductive metal disposed on the third conductor layer.

4,880,709

WELDED ALUMINUM ALLOY COMPOSITE

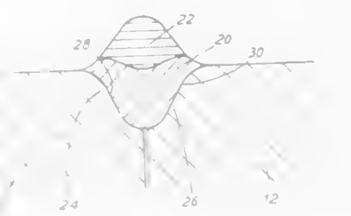
Nigel J. H. Holroyd, Brackley; Warren Hepples, and Geoffrey M. Scamans, both of Oxon, all of England, assignors to Alcan International Limited, Montreal, Canada

Filed Sep. 24, 1987, Ser. No. 100,585

Claims priority, application United Kingdom, Sep. 26, 1986, 8623160

Int. Cl.⁴ B32B *15/20*

U.S. Cl. 428—654 **5 Claims**



1. A welded structure of two Al alloy components joined together by means of a a weld bead of a filler metal, a white zone being present in a region of a first component adjacent a first component/weld bead boundary, wherein the filler metal of the weld bead comprises an Al alloy containing at least one of Ga, In or Sn in an amount such that the potential of the weld bead is more negative than that of the metal in the white zone, the filler metal being derived from an alloy wire containing from 0.01 to 0.5% of a metal selected from the class consisting of Ga, In and Sn.

4,880,710

ATMOSPHERIC OXYGEN ELEMENT WITH REGENERATING MANGANESE CHLORIDE SOLUTION AS ELECTROLYTE

Bruno Siller, Burgundstrasse 5, D-7090 Ellwangen, Fed. Rep. of Germany

Filed Jun. 27, 1988, Ser. No. 212,182

Claims priority, application Fed. Rep. of Germany, Jun. 25, 1987, 3720962

Int. Cl.⁴ H01M *12/06*

U.S. Cl. 429—13 **5 Claims**

1. A process for generating $MnCl_2$ in the electrolyte of the cathode of an atmospheric oxygen element having an aqueous $MnCl_2$ electrolyte and a Zn electrode, comprising the steps of:

(a) precipitating a manganese (II) salt solution by adding one equivalent of hydroxide for every equivalent of Mn^{++} in the presence of oxygen, whereby water insoluble Mn_2O_3 is produced;

(b) adding said water insoluble Mn_2O_3 to the electrolyte of the cathode;

(c) producing current through said element whereby $ZnCl_2$ is produced in said electrolyte; and

(d) reacting said $ZnCl_2$ with the Mn_2O_3 added in (b), whereby $ZnMnO_3$ and $MnCl_2$ are produced and whereby the desire $MnCl_2$ is generated.

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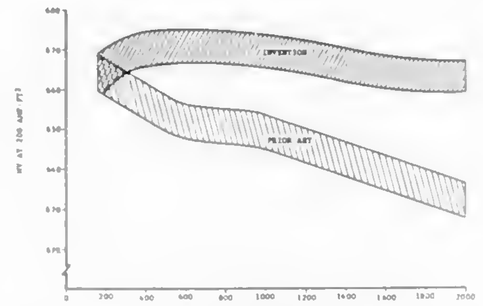
4,880,711
TERNARY FUEL CELL CATALYST CONTAINING PLATINUM AND GALLIUM

Francis J. Luczak, Glastonbury, and Douglas A. Landsman, Hartford, both of Conn., assignors to International Fuel Cells Corporation, South Windsor, Conn.

Division of Ser. No. 121,009, Nov. 16, 1987, Pat. No. 4,806,515. This application Oct. 19, 1988, Ser. No. 259,669

Int. Cl.⁴ H01M *4/92*

U.S. Cl. 429—40 **5 Claims**



1. Method of enhancing the electrochemical conversions of fuel and oxygen to water and electricity in a fuel cell, which includes at least one cathode and at least one anode which comprises:

contacting the reactants with a catalyst, at said at least one cathode, consisting essentially of at least 50 atomic % platinum, gallium and at least one material selected from the group consisting of chromium, cobalt, nickel and mixtures thereof.

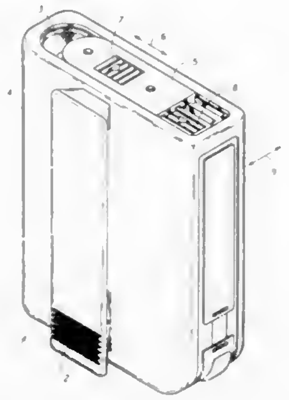
4,880,712
BATTERY HOUSING

Richard J. Gordecki, Ocean Ridge, Fla., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 8, 1988, Ser. No. 320,434

Int. Cl.⁴ H01M *2/10*

U.S. Cl. 429—97 **8 Claims**



1. A battery housing for a battery-powered electrical product having an opening for inserting and removing the battery into and from the housing, wherein the housing comprises a cover slidably movable between a first position where it closes off the opening and a second position where it leaves the opening accessible, and locking means slidably movable transversely to the cover movement between a first position where it locks the cover in its first position and a second position where it allows the cover to move to its second position.

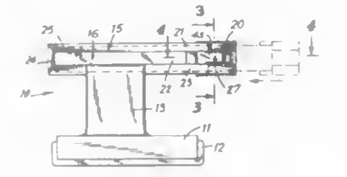
4,880,713
RELEASABLE BATTERY PACK CAP AND HOLDER

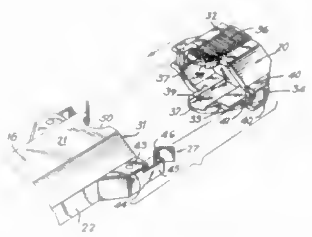
Morris M. Levine, Scarsdale, N.Y., assignor to International Consumer Brands, Inc., Trumbull, Conn.

Filed Nov. 5, 1987, Ser. No. 117,701

Int. Cl.⁴ H01M *2/10, 6/42;* H01R *11/00*

U.S. Cl. 429—100 **12 Claims**





1. A releasable battery pack holder for a battery operated power tool comprising in combination, housing means including a chamber for receiving a battery pack, separate cap means having a cavity formed therein for receiving at least a portion of said battery pack therein, said cavity being configured to snugly but releasably secure a battery pack therein so that the battery pack can be removed from said chamber by gripping said cap means and pulling the battery therefrom without the battery becoming released from the cap, and means for releasably mounting said cap to said housing when the battery pack is in said chamber.

4,880,714
METHOD FOR PREPARING NON-AQUEOUS ELECTROLYTES

William L. Bowden, Nashua, N.H., assignor to Duracell Inc., Bethel, Conn.

Filed Feb. 27, 1989, Ser. No. 316,355

Int. Cl.⁴ H01M *6/14*

U.S. Cl. 429—197 **17 Claims**

1. A method for preparing an improved electrolyte containing $LiPF_6$ for use in an electrochemical cell comprising dissolving a salt, having a cation comprising an adduct of a proton and a Lewis base, and an anion comprising PF_6^-, in a solvent comprising an ether capable of forming an isolatable complex with $LiPF_6$; adding a lithium base to the solution whereby $LiPF_6$ and the complex of $LiPF_6$ and ether are formed simultaneously; and isolating the $LiPF_6$-ether complex.

4,880,715
IMAGING SYSTEM

Man C. Tam, Mississauga, Canada; Robert W. Gundlach, Victor, N.Y., and Arnold L. Pundsack, Georgetown, Canada, assignors to Xerox Corporation, Stamford, Conn.

Filed Jan. 4, 1988, Ser. No. 140,860

Int. Cl.⁴ G03G *13/22*

U.S. Cl. 430—41 **18 Claims**

1. A migration imaging member comprising a substrate, an intermediate layer selected from the group consisting of an adhesive layer, a charge transport spacing layer and a combination of said adhesive layer and said charge transport spacing layer, and an electrically insulating softenable layer having an imaging surface overlying said intermediate layer, said charge transport spacing layer comprising charge transport molecules, said electrically insulating softenable layer comprising charge transport molecules and a fracturable layer of closely spaced electrically photosensitive migration marking particles located substantially at or near said imaging surface of said electrically insulating layer, said charge transport molecules being capable of increasing charge injection from said electrically photosensitive migration marking material to said electrically insulating layer, being capable of transporting charge to said substrate and being dissolved or molecularly dispersed in said electrically insulating softenable layer and in said charge transport spacing layer;

wherein the imaging member is capable of forming an image thereon comprising (A) a fracturable layer of closely spaced migration marking particles in an imagewise pattern located substantially at or near the imaging surface of the softenable layer; and (B) agglomerated and coalesced migration marking particles located substantially within the softenable layer in a pattern adjacent to and complimentary with the imagewise pattern of closely spaced migration marking particles.

4,880,716
ELECTROPHOTOGRAPHIC LITHOGRAPHIC PRINTING PLATE PRECURSOR HAVING RESIN OUTER LAYER

Eiichi Kato, and Kazuo Ishii, both of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

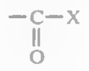
Filed Feb. 10, 1988, Ser. No. 154,547

Claims priority, application Japan, Feb. 12, 1987, 62-28345; Sep. 11, 1987, 62-226694

Int. Cl.⁴ G03G *5/14, 13/26*

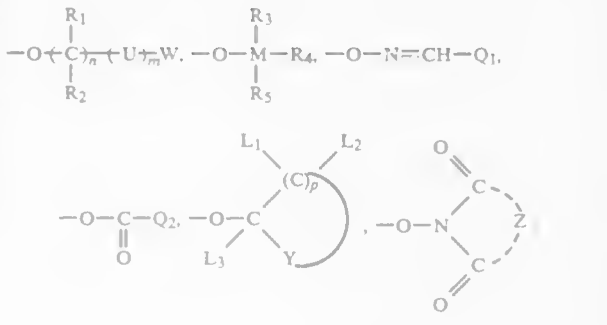
U.S. Cl. 430—49 **16 Claims**

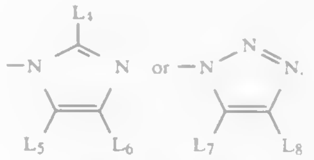
1. An electrophotographic lithographic printing plate precursor comprising a conductive support having provided thereon at least one photoconductive layer and further provided thereon an outermost surface layer, in which said surface layer contains at least one resin having at least one functional group capable of forming a carboxyl group upon decomposition which is represented by formula (I):



$$-\underset{\substack{\|\\ O}}{C}-X \qquad (I)$$

wherein X represents





wherein R_1 and R_2, which may be the same or different, each represents a hydrogen atom or an aliphatic group; U represents an aromatic ring; W represents a hydrogen atom, a halogen atom, a trihalomethyl group, an alkyl group, —CN, $—NO_2$, $—SO_2R_6$, $—COOR_7$ or $—O—R_8$, wherein R_6, R_7, and R_8 each represents a hydrocarbon group; n and m each represents 0, 1 or 2; R_3, R_4, and R_5, which may be the same or different, each represents a hydrocarbon group or $—O—R_9$, wherein R_9 represents a hydrocarbon group; M represents Si, Sn or Ti; Q_1 and Q_2 each represents a hydrocarbon group; Y represents an oxygen atom or a sulfur atom; L_1, L_2, and L_3, which may be the same or different, each represents a hydrogen atom or an aliphatic group; p represents 3 or 4; Z represents an organic residue forming a cyclic imide group; and L_4, L_5, L_6, L_7, and L_8, which may be the same or different, each represents a hydrogen atom or an aliphatic group; or L_5 and L_6, or L_7 and L_8 are connected to each other, respectively, to form a condensed ring.

4,880,717
PHOTOSENSITIVE BODY FOR ELECTROPHOTOGRAPHY WITH PROTECTIVE AND INTERMEDIATE LAYERS

Seizo Kitagawa, and Mitsuru Narita, both of Matumoto, Japan, assignors to Fuji Electric Co., Ltd., Japan

Continuation-in-part of Ser. No. 192,470, May 10, 1988. This application Nov. 14, 1988, Ser. No. 271,004

Claims priority, application Japan, Jun. 6, 1987, 62-144546; Nov. 16, 1987, 62-288713

Int. Cl.⁴ G03G *5/14*

U.S. Cl. 430—58 **16 Claims**

1. A photosensitive body for electrophotography, comprising in sequence:

a conductive substrate;
a charge transfer layer comprising selenium;
a chargeable layer comprising selenium;
an intermediate layer; and
a surface protective layer,

wherein the surface protective layer has a coefficient of thermal expansion, different than that of the chargeable layer, and the coefficient of thermal expansion of the intermediate layer changes on a gradient across the section of the intermediate layer from a value substantially equal to that of the chargeable layer at an edge of the intermediate layer adjacent the chargeable layer, to a value substantially equal to that of the surface protective layer at an edge of the intermediate layer adjacent the surface protective layer.

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4,880,718
ELECTROPHOTOGRAPHIC RECORDING ELEMENT WITH ISOINDOLENINE DERIVATIVES

Reinhold J. Leyrer, Ludwigshafen, and Peter Neumann, Mannheim, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

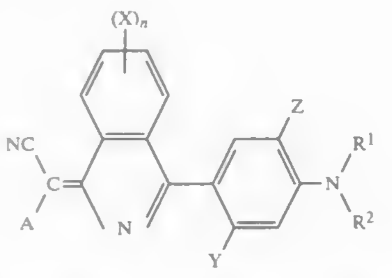
Filed Nov. 22, 1988, Ser. No. 274,969

Claims priority, application Fed. Rep. of Germany, Nov. 28, 1987, 3740420

Int. Cl.⁴ G03G *5/06, 5/14*

U.S. Cl. 430—58 **22 Claims**

1. An electrophotographic recording element comprising
(A) an electrically conducting base and
(B) at least one layer consisting essentially of
(b_1) at least one binder,
(b_2) at least one sensitizer which on exposure of layer
(B) generates charge carriers and which is selected from the group of the isoindolenine dyes of the general structure I



where the index and the variables are defined as follows:

A is cyano, carbo-C_1–C_4-alkoxy, carbamoyl, N–C_1–C_4-alkylcarbamoyl, N–C_1–C_4-alkylcarbamoyl where the alkyl is substituted by C_1–C_4-alkoxy, N-phenylcarbamoyl, N-phenylcarbamoyl where the phenyl is substituted by C_1–C_4-alkyl or C_1 C_4-alkoxy, or is acetyl, benzoyl, 4-nitrophenyl or 4-cyanophenyl,

X is hydrogen, chlorine, C_1–C4-alkyl or C_1–C_4-alkoxy, it being possible when n =2 for the substituents to be identical or different,

n is 1 or 2,

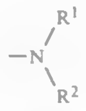
R^1 is hydrogen, methyl, ethyl or 2-hydroxyethyl and

R^2 is phenyl, C_1–C_4-alkyl–or C_1–C_4-alkoxysubstituted phenyl or cyclohexyl, or

R^1 is hydrogen and

R^2 is C_1–C_4-alkyl, or

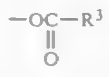
R^1 and R^2 are each C_1–C_6-alkyl, C_1–C_4-alkyl which is substituted by chlorine, cyano, hydroxyl, C_1–C_4-alkoxy, phenoxy, C_2–C_5-alkanoyloxy, C_2–C_5alkanoyloxy which is substituted by C_1–C_4-alkoxy or phenoxy, or carbo-C_1–C4-alkoxy, or are each allyl or phenyl-C_1–C4-alkyl, or the group



is a saturated or unsaturated heterocyclic five-membered ring, a saturated or unsaturated heterocyclic six-membered ring, a saturated or unsaturated heterocyclic five- or six-membered ring which each additionally contains an oxygen atom or a further nitrogen atom,

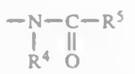
Y is hydrogen, hydroxyl, methyl or ethyl,

Y is



$$-\underset{\underset{O}{\|}}{OC}-R^3$$

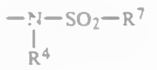
where R^3 is linear or branched C_1–C_{12}-alkyl, phenyl or C_1–C_4-alkyl–or C_1–C_4-alkoxy-substituted phenyl,



$$-\underset{\underset{R^4}{|}}{N}-\underset{\underset{O}{\|}}{C}-R^5$$

where R^4 is hydrogen or C_1–C4-alkyl and R^5 has the following meanings: hydrogen, linear or branched C_1–C_{12}-alkyl, trifluoromethyl, chloromethyl, C_1–C_4-alkoxymethyl, phenoxymethyl, phenoxymethyl with one of the following substituent$ in the phenoxy group: chlorine, methoxy, nitro or C_1–C_4-alkyl, phenoxymethyl with two substituents selected from the group consisting of chlorine, methoxy, nitro and C_1–C_4-alkyl in the phenoxy group, phenylthiomethyl, phenylthiomethyl where the phenyl is substituted by C_1–C_4-alkyl, benzyl, phenylethyl, C_3-C7-cycloalkyl, phenyl, C_1-C_{12}-alkyl-, C_1–C_{12}-alkoxy–or nitro-substituted phenyl, H_5C_6—CH═CH—, or —CH_2—PO$(OR^6)_2$, where R^6 is C_1–C_4-alkyl, or

Y is

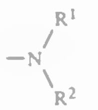


$$-\underset{\underset{R^4}{|}}{N}-SO_2-R^7$$

where R^4 is as defined above and R^7 is C_1–C_{12}-alkyl, phenyl or C_1–C_{12}-alkylphenyl, or

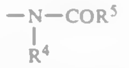
Y is N–C1–C_4-alkylamino when R^1 and R^2 are each C_1–C_4-alkyl, or

Y is N,N–di-C_1–C4–alkylamino, N-pyrrolidinyl, N-piperidinyl or N-morpholinyl, when



has the same meaning, and

Z is hydrogen or if R^1 and R^2 are each C_1–C_4alkyl or allyl and Y is



$$-\underset{\underset{R^4}{|}}{N}-COR^5$$

also methoxy or ethoxy, and

(b_3) at least one photoconductor which transports the generated charge carriers.

8. The electrophotographic recording element as claimed in claim 1, wherein layer (B) is a double layer consisting of an isoindolenine dye I-containing sensitizer layer (b_2) and a layer containing a binder (b_1) and photoconductor (b_3).

4,880,719
TWO COMPONENT ELECTROPHOTOGRAPHIC DEVELOPER

Toshiaki Murofushi; Hiroshi Nakazawa; Koichi Oyamada; Shigeo Aonuma; Yoshimi Amagai, and Yasuhiro Ohya, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Jun. 29, 1988, Ser. No. 212,983

Claims priority, application Japan, Jul. 3, 1987, 62-165167

Int. Cl.⁴ G03G *9/10, 9/14*

U.S. Cl. 430—106.6 **8 Claims**

1. An electrophotographic two-component system developer comprising a positive charging toner comprising a colorant in a binder resin, hydrophilic alumina particles externally added onto the surface of the toner, and a negative charging carrier comprising a magnetic powder dispersed in a binder resin, wherein said hydrophilic alumina particles are adhered

onto the surface of said positive charging toner and the negative charging carrier has a volume average particle diameter of from 30 to 80 μm.

4,880,720
LIQUID DEVELOPER COMPOSITIONS

Stephan Drappel, Toronto; Raymond W. Wong, Mississauga, and Melvin D. Croucher, Oakville, all of Canada, assignors to Xerox Corporation. Stamford, Conn.

Filed May 23, 1988, Ser. No. 197,132

Int. Cl.⁴ G03G *9/12*

U.S. Cl. 430—115 **37 Claims**

1. An electrophotographic liquid developer composition comprising a liquid medium, first toner particles charged to one polarity and comprising a resin and a first pigment, second toner particles charged to a polarity opposite to that of the first toner particles and comprising a resin and a second pigment different in color from the first pigment, and a charge director, wherein the first toner particles and the second toner particles are contained within the liquid medium.

4,880,721
LIGHT-SENSITIVE DUAL-WALLED MICROCAPSULE CONTAINING POLYMERIZABLE COMPOUND AND SILVER HALIDE, AND LIGHT-SENSITIVE MATERIAL EMPLOYING THE SAME

Shunichi Ishikawa, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 27, 1988, Ser. No. 186,988

Claims priority, application Japan, Apr. 28, 1987, 62-105099

Int. Cl.⁴ G03C *1/72, 7/00*

U.S. Cl. 430—138 **16 Claims**

1. A light-sensitive microcapsule containing an ethylenically unsaturated polymerizable compound which is enclosed with an inner shell of a polyurea resin or a polyurethane resin which is surrounded by an outer shell of an amino-aldehyde resin, wherein the inner shell contains silver halide grains.

4,880,722
DIAZOQUINONE SENSITIZED POLYAMIC ACID BASED PHOTORESIST COMPOSITIONS HAVING REDUCED DISSOLUTION RATES IN ALKALINE DEVELOPERS

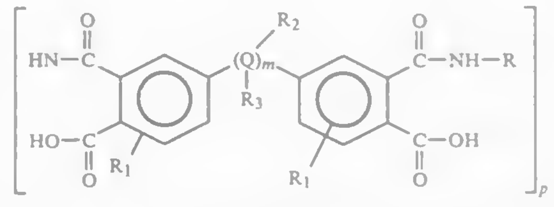
Wayne M. Moreau, Wappingers Falls, and Kaolin N. Chiong, Pleasantville, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 804,869, Dec. 5, 1985, abandoned. This application Oct. 8, 1987, Ser. No. 107,505

Int. Cl.⁴ G03C *1/60*

U.S. Cl. 430—192 **10 Claims**

1. A composition comprising a mixture of a polyamic acid material of reduced acidity comprising a polyamic acid having the general formula



wherein Q is C or C=O, R is a divalent aromatic or aliphatic radical having no active hydrogen, R_1 is a hydrogen or an alkyl group containing 1 to 3 carbon atoms, and R_2 and R_3 are independently selected from H, CH_3, C_nH_{2n+1} where n is a positive integer, and CF_3, m is an integer from 0 to 1 and p is a positive integer, which is reacted or blended to form (a) a polyamic acid material having a level of acidity which is reduced by from about 10 to about 40 percent of the original polyamic acid and (b) a diazoquinone photosensitizer, each of (a) and (b) being present in sufficient quantity to form a photoresist composition which after radiation exposure and development in alkaline solution, produces a resist image of fine line resolution.

4,880,723
PHOTOGRAPHIC SILVER HALIDE PHOTOSENSITIVE MATERIAL

Hiroyuki Hirai, and Yoshiharu Yabuki, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Feb. 13, 1987, Ser. No. 14,736

Claims priority, application Japan, Feb. 13, 1986, 61-29570

The portion of the term of this patent subsequent to Apr. 26, 2005, has been disclaimed.

Int. Cl.⁴ G03C *1/50*

U.S. Cl. 430—218 **6 Claims**

1. A process for forming an image, comprising subjecting a silver halide photosensitive material, which comprises a substantially water-insoluble basic metal compound and a water-soluble salt of the same metal ion as said basic metal compound, and said basic metal is a transition metal or an alkaline earth metal, to imagewise exposure and then to a development treatment,
wherein the developing treatment is carried out in the presence of water and a compound capable of water-mediated complexing reaction with the metal of said substantially water-insoluble basic metal compound.

4,880,724
METHOD FOR MANUFACTURE OF LITHOGRAPHIC PRINTING PLATE WITH DISPOSABLE DEVELOPER WITH SURFACTANT

Tadao Toyama; Hisao Ohba, and Kenji Kunichika, all of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 23, 1987, Ser. No. 136,952

Claims priority, application Japan, Dec. 23, 1986, 61-307056

Int. Cl.⁴ G03F *7/08*

U.S. Cl. 430—302 **13 Claims**

1. A method of preparing a litbographic printing plate utilizing a disposable development system which comprises the steps of, in order,
(a) imagewise exposing to an actinic light a photosensitive lithographic printing plate precursor comprising a support having a light-sensitive layer containing an o-quinone diazide compound and a alkali-soluble resin;
(b) supplying to the imagewise exposed surface of the precursor a predetermined amount of a developer comprising an alkaline aqueous solution containing from about 0.5 to about 10% by weight of an alkali metal silicate and a surfactant in an amount sufficient to have a surface tension of the developer of 50 dyne/cm or less at 25° C. and a pH of a least 10.5 to 25° C.;
(c) maintaining an amount of the developed supplied in step (b) on the precursor for a predetermined period of time to develop the light-sensitive layer;
(d) removing the developer on the precursor from the surface thereof and
(e) disposing of the developer such that the developer is not circulated for repeated use.

4,880,725

COLOR IMAGE FORMING PROCESS UTILIZING SUBSTANTIALLY WATER-INSOLUBLE BASIC METAL COMPOUNDS AND COMPLEXING COMPOUNDS

Hiroyuki Hirai, and Haruhiko Iwano, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 225,576, Jul. 28, 1988, abandoned, which is a continuation of Ser. No. 21,884, Mar. 4, 1987, abandoned. This application Dec. 27, 1988, Ser. No. 291,311

Claims priority, application Japan, Mar. 4, 1986, 61-46635; Nov. 27, 1986, 61-282260

Int. Cl.⁴ G03C *1/00, 5/42, 5/26*

U.S. Cl. 430—373 6 Claims

1. A process for forming a color image, comprising subjecting an imagewise exposed color photosensitive material comprising at least a silver halide and a coupler to intensified development in the presence of a reducing agent and at least one intensifier, characterized in that

said silver halide color photosensitive material contains a substantially water-insoluble basic metal compound therein, and

a processing solution containing the intensifier further contains a complexing compound capable of complexing reaction with the metal ion of said substantially water-insoluble basic metal compound to release a base, wherein said complexing compound is selected from aromatic heterocyclic compounds having at least one —COOM group and containing a pyridine or quinoline ring, wherein M is selected from the class consisting of an alkali metal, a guanidine, an amidine and quaternary ammonium.

4,880,726

METHOD OF FORMING A COLOR IMAGE

Keisuke Shiba; Seiji Ichijima; Kei Sakanoue, and Seiichi Taguchi, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Nov. 14, 1988, Ser. No. 270,712

Claims priority, application Japan, Nov. 12, 1987, 62-285998; May 11, 1988, 63-112608

Int. Cl.⁴ G03C *7/16, 7/30, 7/32*

U.S. Cl. 430—376 19 Claims

1. A method of forming a color image wherein a color print original is printed on a printing color photographic material and the thus printed material is then subjected to color development to give a color print, which is characterized in that a band stop filter having a half width of the spectral transmittance curve of said filter in a wavelength range outside the region of the maximum spectral sensitivity wavelength (λmax)±20 nm of at least one light-sensitive layer of the printing color photographic material is provided between the light source to be used in said printing step and the light-sensitive layer of said printing color photographic material, and in that a compound of a general formula (I):

$$(C_p).X \qquad (I)$$

wherein C_p represents a coupler residue capable of coupling with the oxidation product of a color developing agent to form a substantially colorless compound or a coupler residue which is coupled during a color development step to form a compound capable of being dissolved or diffused out of the layer of the photographic material; and X represents a group which is in the coupling position of the coupler and which may react with the oxidation product of a developing agent or which may react therewith to be released from the coupler, is incorporated into the light-sensitive layer of the said printing color photographic material or a taking color photographic material from which the said color print original is obtained, or into the interlayer existing between the light-sensitive layers of the said material.

4,880,727

DIRECT POSITIVE PHOTOGRAPHIC MATERIAL

Noriyuki Inoue, and Tatsuo Heki, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Sep. 28, 1987, Ser. No. 101,693

Claims priority, application Japan, Sep. 26, 1986, 61-226292; Sep. 26, 1986, 61-226295

Int. Cl.⁴ G03C *7/16*

U.S. Cl. 430—378 2 Claims

1. A method of forming a direct positive photographic material comprising (a) imagewise exposing to light a light-sensitive material comprising a support having provided thereon at least one internal latent image type silver halide emulsion layer which has not been previously fogged and a color image forming coupler, (b) developing the exposed material with a surface color developing solution containing an aromatic primary amine color developing agent in the presence of a nucleating agent and without exposure to light fogging, and (c) subjecting the material to bleach and fixation, wherein said light-sensitive material further comprises at least two layers containing colloidal silver and said developing solution has a pH of from 9.5 to 11.2.

4,880,728

PROCESSING METHOD FOR SILVER HALIDE COLOR PHOTOSENSITIVE MATERIALS UTILIZING THE OVERFLOW FROM THE COLOR DEVELOPER

Takatoshi Ishikawa, and Junya Nakajima, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-Ashigara, Japan

Filed Mar. 26, 1987, Ser. No. 30,352

Claims priority, application Japan, Mar. 31, 1986, 61-73595

Int. Cl.⁴ G03C *7/30, 7/42, 5/24*

U.S. Cl. 430—380 **11 Claims**

1. A processing method for a silver halide color photosensitive material comprising continuously treating a silver halide color photosensitive material using a multi-step processing method including (i) a step of developing the material with a color developer which is substantially free of benzyl alcohol, and (ii) at least one additional processing step subsequent to the developing step, wherein at least a part of an overflow solution of the color developer is added to the processing solution of at least one of the subsequent processing steps, and wherein the overflow solution is added in an amount of 0.1 to 30 times the volume of color developer carried over by the photosensitive material.

4,880,729

METHOD FOR FORMING DIRECT POSITIVE IMAGE COMPRISING DEVELOPING WITH A COMBINATION OF A NUCLEATING AGENT AND A HYDRAZINE DERIVATIVE

Tatsuo Heki; Noriyuki Inoue, and Shigeo Hirano, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

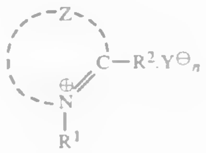
Filed Sep. 1, 1987, Ser. No. 91,913

Claims priority, application Japan, Sep. 1, 1986, 61-205460

Int. Cl.⁴ G03C *5/24, 1/48*

U.S. Cl. 430—410 21 Claims

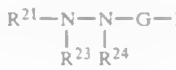
1. A method for forming a direct positive color image comprising the steps of (a) imagewise exposing a light-sensitive material comprising a support having thereon at least one photographic emulsion layer containing a nonprefogged silver halide capable of forming an internal latent image and (b) developing the exposed material in the presence of an aromatic primary amine color developing agent and a nucleating agent comprising a combination of at least one quaternary heterocyclic compound represented by formula (N-I) and at least one hydrazine compound represented by formula (N-IIa) or (N-IIb), wherein said developing step (b) is performed using a developing solution having a pH of up to about 11.2, wherein formula (N-I) is:



(N-I)

wherein Z represents a substituted or unsubstituted non-metallic group necessary for forming a quinolinium ring; R^1 represents a substituted or unsubstituted aliphatic group; R^2 represents a hydrogen atom, a substituted or unsubstituted aliphatic group, or a substituted or unsubstituted aromatic group; provided that (a) at least one of Z, R^1 and R^2 contains an alkynyl group, an acyl group, a hydrazine group or a hydrazone group, or (b) R^1 and R^2 are linked to form a 6-membered dihydropyridinium group; Y represents a counter ion necessary for charge balance; and n represents 0 or 1;

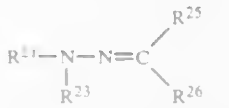
formula (N-IIa) is:



$$\underset{\displaystyle R^{23}}{\overset{}{R^{21}—N}}—\underset{\displaystyle R^{24}}{N}—G—R^{22} \qquad (N\text{-}IIa)$$

wherein R^{21} represent a substituted or unsubstituted aliphatic group, a substituted or unsubstituted aromatic group or a substituted or unsubstituted heterocyclic group; R^{22} represents a hydrogen atom, a substituted or unsubstituted alkyl group, a substituted or unsubstituted aralkyl group, a substituted or unsubstituted aryl group, a substituted or unsubstituted alkoxy group, a substituted or unsubstituted aryloxy group or a substituted or unsubstituted amino group; G represents a substituted or unsubstituted carbonyl group, a substituted or unsubstituted sulfonyl group, a substituted or unsubstituted sulfoxy group, a substituted or unsubstituted phosphoryl group, or a substituted or unsubstituted iminomethylene group; at least one of R^{23} and R^{24}, which may be the same or different, represents a hydrogen atom, a substituted or unsubstituted alkylsulfonyl group, a substituted or unsubstituted arylsulfonyl group or an acyl group; provided that G, R^{23} and R^{24} may form a hydrazone together with the hydrazine nitrogen atom;

and formula (N-IIb) is:



(N-IIb)

wherein R^{21} and R^{23} are as defined for the compounds of formula (N-IIa) and R^{25} and R^{26} are the same as R^{22} defined for the compounds of formula (N-IIa).

4,880,730

SILVER HALIDE LIGHT-SENSITIVE MATERIAL

Kozo Sato, and Yoshisada Nakamura, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 6, 1988, Ser. No. 280,412

Claims priority, application Japan, Dec. 7, 1987, 62-309344

Int. Cl.⁴ G03C *1/84*

U.S. Cl. 430—520 10 Claims

1. A silver halide photographic light-sensitive material comprising a support having thereon at least one colored layer, and said layer can be decolored or lightened upon photographic processing of said photographic light-sensitive material,

wherein said colored layer is formed by a process comprising the step of:

color developing at least one colorless or light-colored leuco-dyestuff utilizing at least one metal salt of an organic acid.

4,880,731

PROCESS AND REAGENT FOR THE DETERMINATION OF A REACTION PARTNER OF AN IMMUNOLOGICAL REACTION

Klaus P. Kaspar, Asuncion, Paraguay, assignor to Boehringer Mannheim GmbH, Mannheim, Fed. Rep. of Germany

Filed Mar. 16, 1987, Ser. No. 25,876

Claims priority, application Fed. Rep. of Germany, Mar. 19, 1986, 3609217

Int. Cl.⁴ G01N *33/543, 33/547, 33/535*

U.S. Cl. 435—7 9 Claims

1. In an immunoassay for the determination of an immunological reaction partner comprising:

contacting a sample suspected of containing said immunological reaction partner with (1) a labeled receptor R_1 specific to said immunological reaction partner and with (2) at least one unlabeled receptor R_2 bonded to a solid phase through substance R_3, said receptor R_2 also being specific to said immunological reaction partner;

the improvement comprising carrying out a determination of the blank value by replacing R_2 by another unlabeled receptor R_2', which does not react with the said immunological reaction partner whereby the determined blank value is used to correct for any non-specific binding.

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4,880,732

PROCESS FOR THE RAPID DETERMINATION OF SPERM CELL COUNT AND/OR LIVING SPERM COUNT

István Resli; Tibor Takács; Sándor Damjanovich; Rezso Gáspár; Lajos Tróc; János Szöllosi, and János Matkó, all of Debrecen, Hungary, assignors to Ionofinance Altalanos Innovacios Penzintezet, Budapest, Hungary

Filed Feb. 8, 1988, Ser. No. 153,599

Int. Cl.⁴ C12Q *1/02*

U.S. Cl. 435—29 3 Claims

1. A process for the rapid determination of the total cell concentration of a sperm sample, the living cell concentration of a sperm sample or both comprising:

(a) dissolving the fluorescent dyestuff propidium iodine in a buffer solution to form a dyestuff solution and measuring the fluorescent intensity, F_0;

(b) prediluting a sperm sample with buffer solution and adding the prediluted sperm sample to the dyestuff solution formed in step (a) and measuring the fluorescent intensity, F_1;

(c) adding a cytoplasm membrane-permeabilizing agent to the solution formed in step (b) and measuring the fluorescent intensity, F_3;

(d) adding to a propidium iodine dyestuff solution, as formed in step (a), an amount of buffer solution equal to the amount of prediluted sperm sample added in step (b) and a cytoplasm membrane-permeabilizing agent and measuring the fluorescent intensity, F_4;

(e) measuring the fluorescent intensity, F_5, of a pure buffer solution;

(f) adding the prediluted sperm sample to the pure buffer of step (e) and measuring the fluorescent intensity F_4

and thereafter

(1) calculating the total cell concentration from the equation:

$$\text{cell concentration} = \alpha \times \frac{(F_2 - F_3) - (F_5 - F_4)}{F_0}\ \text{million/mm}^3$$

wherein α is the multiplication product from the slope of the calibration curve with the predilution ratio; and

(2) calculating the ratio of living cells to total cell concentration from the equation:

$$\text{living cell \%} = 100 - \frac{(F_1 - F_0) - (F_5 - F_4)}{(F_2 - F_3) - (F_5 - F_4)} \times 100.$$

4,880,733

LIGHT-SENSITIVE SILVER HALIDE PHOTOGRAPHIC MATERIAL

Yutaka Kaneko, Hino, Japan, assignor to Konica Corporation, Tokyo, Japan

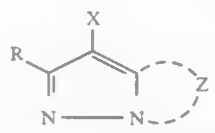
Filed Dec. 24, 1987, Ser. No. 138,711

Claims priority, application Japan, Dec. 25, 1986, 61-315772; Dec. 26, 1986, 61-314575; Dec. 26, 1986, 61-314576; Dec. 26, 1986, 61-314577; Dec. 27, 1986, 61-314141

Int. Cl.⁴ G03C *7/38*

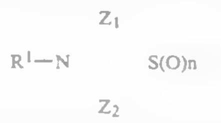
U.S. Cl. 430—551 5 Claims

1. A silver halide photographic light-sensitive material which comprises a magenta dye-forming coupler represented by formula [M-I] and a compound represented by formula [A];



[M-I]

wherein Z represents a group of non-metal atoms necessary to complete a nitrogen-containing heterocycle which may have a substituent, X represents a hydrogen atom or a group capable of being split-off upon reaction with the oxidation product of a color developing agent and R represents a hydrogen atom or a substituent;



$$R^1{-}N\overset{Z_1}{\underset{Z_2}{\quad}}S(O)n$$

[A]

wherein R^1 represents an aryl group or heterocyclic group, Z_1 and Z_2 independently represent an alkylene group having 1 to 3 carbon atoms provided that the total number of carbon atoms within the alkylene groups represented by Z_1 and Z_2 is 3 to 6, and n is 1 or 2.

4,880,734

EUKARYOTIC REGULATABLE TRANSCRIPTION

Rae L. Burke, San Francisco; Steven Rosenberg, Oakland; Jeffrey R. Shuster, Walnut Creek; Patricia Tekamp-Olson; Pablo D. T. Valenzuela, both of San Francisco, and Philip J. Barr, Orinda, all of Calif., assignors to Chiron Corporation, Emeryville, Calif.

Continuation-in-part of Ser. No. 760,197, Jul. 29, 1985, which is a continuation-in-part of Ser. No. 468,589, Feb. 22, 1983, abandoned, and Ser. No. 609,540, May 11, 1984, abandoned.

This application May 29, 1986, Ser. No. 868,639

The portion of the term of this patent subsequent to Oct. 24, 2006, has been disclaimed.

Int. Cl.⁴ C12P *21/00, 21/02;* **C12N** *5/00, 15/00*

U.S. Cl. 435—68 21 Claims

1. A DNA construct comprising in order of transcription a first transcriptional regulatory region obtained from one of the yeast genes ADR3, GAL4, or the regulatory region of PHO5, which provides for inducible transcriptional regulation; a second transcriptional initiation region from the yeast GAPDH

gene of FIG. 2; a structural gene coding for other than the wild-type gene of said transcriptional initiation region; and a terminator region.

4,880,735

PROCESS FOR PRODUCING ANTIBIOTIC A47934

Jeffrey T. Fayerman; Michael D. Jones; Karl H. Michel, all of Indianapolis; Raymond C. Yao, and Milton J. Zmijewski, both of Carmel, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Sep. 24, 1986, Ser. No. 911,180

Int. Cl.⁴ C12P *21/04, 17/18;* **C12R** *1/465*

U.S. Cl. 435—71 3 Claims

1. A biologically purified culture of the microorganism *Streptomyces toyocaensis* NRRL 18112.

2. In the process for producing antibiotic A47934, the improvement which comprises cultivating a microorganism recited in claim 1 in the culture medium containing assimilable sources of carbon and nitrogen under submerged aerobic fermentation conditions until antibiotic A47934 is produced.

4,880,736

PRODUCTION OF URIDINE

Yutaka Tsunemi; Satoru Asahi, both of Suita, and Muneharu Doi, Takarazuka, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Oct. 18, 1985, Ser. No. 788,812

Claims priority, application Japan, Oct. 26, 1984, 59-226515

Int. Cl.⁴ C12P *19/38;* **C12R** *1/07*

U.S. Cl. 435—87 8 Claims

1. A method of producing uridine, which comprises cultivating in a culture medium a uridine-producing mircroorganism, which is a mutant selected from the group consisting of *Bacillus subtilis* ST-58 (IFO 14387, FERM BP-855), *Bacillus subtilis* STA-17 (IFO 14388, FERM-BP-856), *Bacillus subtilis* SA-85 (IFO 14389, FERM BP-860), *Bacillus licheniformis* LA-2 (IFO 4391, FERM BP-857) and *Bacillus pumilus* PT-42 (IFO 14390, FERM BP-858) which is deficient in uridine nucleoside phosphorylase activity and is resistant to a pyrimidine analogueue, to thereby cause formation and accumulation of uridine in the resultant culture broth, and recovering the uridine from the culture broth.

4,880,737

PROCESS FOR THE PREPARATION OF L-ALPHA-AMINO ACID AND D-ALPHA-AMINO ACID AMIDE

Pieter L. Kerkhoffs, Geleen, and Wilhelmus H. J. Boesten, Sittard, both of Netherlands, assignors to Stamicarbon B.V., Netherlands

Filed Oct. 28, 1985, Ser. No. 792,006

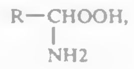
Claims priority, application Netherlands, Nov. 15, 1984, 8403487

Int. Cl.⁴ C12P *13/04, 13/08, 13/22;* **C12N** *9/78*

U.S. Cl. 435—106 5 Claims

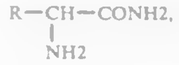
1. Process for the preparation of L-α-amino acid and D-α-amino acid amide from DL-α-amino-acid amide by contacting the DL-α-amino acid amide in an aqueous solution with an α-amino acyl amidase containing preparation obtained from a culture of *Pseudomonas putida* ATCC 12633 in the presence of traces of bivalent metal ions as activator, wherein the aqueous solution also contains a potassium salt selected from the group consisting of potassium sulphate and potassium chloride.

5. Process for the preparation of L-α-amino acid having the formula



$$R{-}\underset{\displaystyle NH2}{\underset{|}{C}}HOOH,$$

where R represents an unsubstituted or substituted alkyl or aryl group, and a D-α-amino acid amide having the formula



$$R{-}\underset{\displaystyle NH2}{\underset{|}{CH}}{-}CONH2,$$

where R signifies the same as above wherein:

(a)an aldehyde having the formula RCHO, where R signifies the same as above, is converted into a DL-α-amino nitrile in an aqueous ammonia solution with potassium cyanide and ammonium sulfate,

(b) a ketone and potassium hydroxide are subsequently added to the above solution containing the DL-α-amino nitrile to form DL-α-acid amide and,

(c) an α-amino acyl amidase containing preparation, obtained from a culture of *Pseudomonas putida* ATCC 12633, is added along with traces of bivalent metal ions to the solution containing the DL-α-amino acid amide.

4,880,738

PRODUCTION OF AMINO ACIDS USING COUPLED ENZYME SYSTEMS

J. David Rozzell, Cambridge, Mass., assignor to Genetics Institute, Inc., Cambridge, Mass.

Filed Jun. 13, 1986, Ser. No. 873,920

Int. Cl.⁴ C12P *13/04, 13/22*

U.S. Cl. 435—106 10 Claims

1. A biocatalytic method for producing a desired amino acid which comprises contacting a 2-ketoacid corresponding to the desired amino acid with lactic acid, aspartic acid and ammonia, or salts thereof, in the presence of:

(a) one or more transaminase enzymes capable of catalyzing the conversion of the 2-ketoacid and L-aspartic to the desired amino acid and oxaloacetic acid;

(b) a malate-lactate transhydrogenase enzyme capable of catalyzing the conversion of lactic acid and oxaloacetic acid to pyruvic acid and malic acid;

(c) a fumarase enzyme capable of catalyzing the conversion of malic acid to fumaric acid; and

(d) an aspartate-ammonia lyase enzyme capable of catalyzing the conversion of fumaric acid and ammonia to aspartic acid;

said contacting being under suitable conditions permitting the production of the desired amino acid.

4,880,739

METHOD OF CULTIVATION OF PSEUDOMONAS BACTERIA

Hideaki Yamada, 19-1, Matsugasaki-Kinomoto-Cho, Sakyo-Ku, Kyoto-Shi; Kanehiko Enomoto, Yokohama, and Ichiro Watanabe, Yokosuka, all of Japan, assignors to Hideaki Yamada, Kyoto and Nitto Kagaku Kogyo Kabushiki Kaisha, Tokyo, both of, Japan

Continuation of Ser. No. 551,949, Nov. 15, 1983, abandoned.

This application Oct. 2, 1987, Ser. No. 104,566

Claims priority, application Japan, Nov. 16, 1982, 57-199750

Int. Cl.⁴ C12P *13/02;* **C12N** *1/20;* **C12K** *1/38*

U.S. Cl. 435—129 11 Claims

1. In a method of cultivating Pseudomonas bacteria having nitrile hydratase activity by reproducing and proliferating said bacteria in a culture medium and then using said nitrile hydratase to hydrate a nitrile to an amide, the improvement wherein at least one compound selected from the group consisting of propionitrile, isobutyronitrile, propionamide and isobutyramide is added continuously or incrementally, but not in one batch at one time, to the culture medium during the reproduction and proliferation of cells of the Pseudomonas bacteria in an amount effective to increase the nitrile hydratase activity per unit of culture fluid of the culture medium.

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4,880,740

MICROBIAL REDUCTION OF IRON ORE

Michael R. Hoffmann; Robert G. Arnold, and Gregory Stephanopoulos, all of Pasadena, Calif., assignors to California Institute of Technology, Pasadena, Calif.

Continuation-in-part of Ser. No. 626,911, Jul. 2, 1984, abandoned. This application Oct. 17, 1984, Ser. No. 661,629

Int. Cl.⁴ C12P *3/00*

U.S. Cl. 435—168 33 Claims

1. A process for forming and separating an iron-containing precipitate from iron ore by treatment with microorganisms comprising:

(a) forming iron ore particles which contain ferric iron;

(b) forming an aqueous mixture which comprises (i) said iron ore particles thusly formed in step (a), (ii) an effective amount of microorganisms operable for reducing said ferric iron of said iron ore particles to ferrous iron, (iii) an effective amount of a substrate operable for producing at least a major part of the energy required by said mixture to reduce at least a major part of said ferric iron of said iron ore particles to ferrous iron, said substrate being a waste product;

(c) maintaining said aqueous mixture for a predetermined period of time under conditions of temperature and pressure and under an atmospheric environment, operable for reducing at least a major part of said ferric iron of said iron ore particles to ferrous iron which is soluble in the aqueous phase of said aqueous mixture by the microbial activity of said microorganisms;

(d) separating an aqueous phase containing said soluble ferrous iron from said aqueous mixture; and

(e) forming and separating an iron-containing precipitate from said separated aqueous phase.

4,880,741

PROCESS FOR TRANSFORMATION OF *YARROWIA LIPOLYTICA*

Lance S. Davidow, Groton, and John R. DeZeeuw, Stonington, both of Conn., assignors to Pfizer Inc., New York, N.Y.

Continuation-in-part of Ser. No. 539,591, Oct. 6, 1983, abandoned. This application Jul. 25, 1984, Ser. No. 634,505

Int. Cl.⁴ C12N *15/00, 1/16, 1/20;* **C12P** *19/34*

U.S. Cl. 435—172.3 87 Claims

1. A process for integrative transformation of *Yarrowia lipolytica* which comprises introducing DNA into said *Y. lipolytica*, said DNA comprising a region of homology to chromosomal DNA of said *Y. lipolytica* sufficient to result in integrative transformation thereof and containing a detectable marker.

4,880,742

PROSTAGLANDIN BIOSYNTHESIS INHIBITORS

Osamu Hayaishi; Ryuji Ueno, both of Kyoto, and Sachiko Kuno, Ibaraki, all of Japan, assignors to Research Development Corporation of Japan, Tokyo and Ueno Seiyaku Kabushikikaisha, Osaka, both of, Japan

Filed Feb. 3, 1987, Ser. No. 10,519

Claims priority, application Japan, Feb. 14, 1986, 61-31248

Int. Cl.⁴ C12N *7/00;* **A61K** *31/19*

U.S. Cl. 435—238 1 Claim

1. A method of inhibiting proliferation of AIDS-virus producer human T-cells which comprises providing in the presence of such cells Diclofenac or a pharmaceutically acceptable salt thereof in amount cytocidally effective in response to said producer human T-cells but ineffective in respect to normal human T-cells.

4,880,743

BACTERIAL COMPOSITION FOR INHIBITING PSYCHROTROPHIC BACTERIA IN CREAM OR MILK BASED PRODUCTS

Mark A. Matrozza, Sarasota; Marianne F. Leverone, Bradenton, and Donald P. Boudreaux, Sarasota, all of Fla., assignors to Microlife Technics, Inc., Sarasota, Fla.

Division of Ser. No. 103,883, Oct. 2, 1987, Pat. No. 4,790,994. This application Jul. 27, 1988, Ser. No. 224,718

Int. Cl.⁴ C12N *1/22, 1/20*

U.S. Cl. 435—252.4 9 Claims

1. A bacterial composition which comprises cells of:

(a) a lactic acid producing bacterium which generates a diacetyl flavor at refrigeration temperatures in a milk or cream based product without fermentation; and

(b) a Pediococcus which generates antimicrobial metabolites in the milk or cream based product at the refrigeration temperatures without fermentation, wherein the ratio of lactic acid producing bacteria to Pediococcus is between about 1 and 10 and 10 to 1 by cell count and wherein the product can be inoculated with an effective amount of the composition to inhibit the growth of psychrotrophic bacteria without a significant increase in the cell count at the refrigeration temperatures.

4,880,744

METHOD OF CULTURING PROTOPLASTS

Tatsuhito Fujimura, Tokyo, and Motoi Sakurai, Kanagawa, Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Filed May 21, 1986, Ser. No. 865,423

Claims priority, application Japan, May 21, 1985, 60-106886

Int. Cl.⁴ C12N *5/02*

U.S. Cl. 435—240.46 22 Claims

1. A method of culturing protoplasts comprising: culturing protoplasts of rice at a cell density sufficient to allow growth of said protoplasts in a liquid medium having a pH effective for culturing said protoplasts which is 3.5 to 5.2 and on a hydrophilic support on which said liquid medium can spread uniformly.

4,880,745

PSEUDOMONAS GLADIOLI AND A PROCESS FOR BIOLOGICALLY CONTROLLING FUSARIUM DISEASES USING *PSEUDOMONAS GLADIOLI* PV. GLADIOLI

Toshio Kijima, Tochigi; Tokuya Tezuka, Utsunomiya; Yoji Doi, Tokyo; Shuiichi Yamashita, Tokyo; Shigetoh Namba, Tokyo, and Tsutomu Arie, Hino, all of Japan, assignors to Tochigi Prefecture, Tochigi Prefecture, Japan

Filed Feb. 9, 1987, Ser. No. 12,649

Claims priority, application Japan, Aug. 9, 1986, 61-187575

Int. Cl.⁴ C12R *1/38;* **A01N** *63/00;* **A61K** *37/00*

U.S. Cl. 435—253.3 2 Claims

1. A biologically pure culture of the microorganism *Pseudomonas gladioli* for biologically controlling plant disease caused by *Fusarium oxysporum*, having the identifying characteristics of Bikohken-kin No.8805, said culture having antifungal activity and also being capable of growing in a bulb and/or roots of at least a plant selected from the group consisting of Welsh onion, sorgo, oats and maize.

2. A process for biologically controlling plant disease caused by *Fusarium oxysporum* using *Pseudomonas gladioli* pv. gladioli, which comprises

a step of inoculating *Pseudomonas gladioli* M-2196 into a bulb and/or roots of at least a plant selected from the group consisting of Welsh onion, sorgo, oats and maize;

a step of planting the inoculated plants together within the radius of rhizosphere of a plant to be protected for further multiplication of *Pseudomonas gladioli* M-2196; and

a step of controlling soil borne plant disease by means of antifungal activity against *Fusarium oxysporum.*

4,880,746

STREPTOMYCETES PLASMID PSG5, A PROCESS FOR OBTAINING IT, AND ITS USE

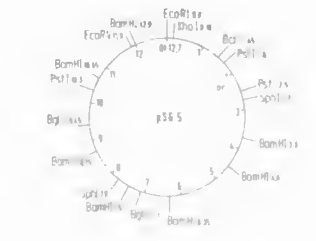
Wolfgang Wohlleben; Agnes Schulte, and Alfred Pühler, all of Bielefeld, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 717,804, Mar. 29, 1985, abandoned. This application Oct. 14, 1987, Ser. No. 110,105

Claims priority, application Fed. Rep. of Germany, Mar. 31, 1984, 3412093; Mar. 31, 1984, 3412092

Int. Cl.⁴ C12N *1/20, 15/00;* **C12P** *21/00;* **C12R** *1/465*

U.S. Cl. 435—253.5 3 Claims



1. The plasmid pSG5 having a molecular length of about 12.7 kb, which is obtainable from a culture of *Streptomyces ghanaensis* DSM 2932.

4,880,747

FUSARIUM SPOROTRICHIOIDES MUTANT STRAIN CAPABLE OF PRODUCING BOTH DIDEACETYLCALONECTRIN AND DEACETYLCALONECTRIN

Marian N. Beremand, and Patricia J. Black, both of Peoria, Ill., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Mar. 28, 1988, Ser. No. 173,910

Int. Cl.⁴ C12N *1/14, 1/77;* **C12P** *5/00, 1/02*

U.S. Cl. 435—254 1 Claim

1. A *Fusarium sporotrichioides* mutant strain having the identifying characteristics of ARS Culture Collection Accession No. 18339; said strain being capable of producing dideacetylcalonectrin and deacetylcalonectrin in amounts greater than 100 μm/L.

4,880,748

METHOD FOR CONTROL OF VISBREAKER SEVERITY

Lawrence J. Altman; Byung C. Choi, both of Cherry Hill, and Grant C. Karsner, Voorhees Township, Camden County, all of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Jul. 22, 1988, Ser. No. 222,858

Int. Cl.⁴ G01N *33/26*

U.S. Cl. 436—60 6 Claims

1. A method for rapidly determining the absence of incompatible sediment in a blended heavy fuel oil prepared by mixing a visbroken oil with sufficient cutter stock to impart to said blended fuel oil a specified viscosity, which method comprises:

preparing a sample blend containing a higher proportion of said visbroken oil than said blended heavy fuel oil:

measuring at a selected wavelength in the range of 1200 to 3000 nm the total light absorbed by said blended heavy fuel oil and by said sample blend;

and confirming the substantial absence of said incompatible sediment in said blended heavy fuel oil if the total light absorbed by said sample blend is more that absorbed by than said blended heavy fuel oil.

4,880,749

ANALYTICAL ELEMENT AND ITS USE IN A WHOLE BLOOD HEMOGLOBIN ASSAY

Brent A. Burdick; Tai-Wing Wu, both of Rochester; David A. Hilborn, Henrietta, and Richard W. Spayd, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 5, 1984, Ser. No. 617,453

Int. Cl.⁴ G01N *21/78, 33/72*

U.S. Cl. 436—66 15 Claims

1. A multizone element for the determination of hemoglobin in whole blood, said element comprising, in order and in fluid contact, a registration zone comprising particulate barium sulfate distributed in a blush polymer, and a spreading zone having a void volume of from about 25 to about 80 percent and an average pore size of at least about 5 microns,

said spreading zone comprising a particulate structure comprising a plurality of particles non-swellable in and impermeable to whole blood, said particles having a particles size of from about 1 to about 200 microns and being bonded on surface areas of adjacent particles where said adjacent particles are in closest proximity to form a coherent, three-dimensional lattice which is non-swellable in whole blood,

said element also containing an interactive composition capable of converting substantially all forms of hemoglobin into a detectable species,

said interactive composition consisting essentially of either an ionic surfactant present at a coverage of from about 5 to about 12 g/m^2, or the combination of a hemoglobin oxidizing agent and thiocyanate.

11. A method for the determination of hemoglobin in whole blood, said method comprising the steps of:

(A) physically contacting a sample of whole blood and a multizone element, said element comprising, in order and in fluid contact, a registration zone comprising particulate barium sulfate distributed in a blush polymer, and a spreading zone having a void volume of from about 25 to about 80 percent and an average pore size of at least about 5 microns,

said spreading zone comprising a particulate structure comprising a plurality of particles non-swellable in and impermeable to whole blood, said particles having a particle size of from about 1 to about 200 microns and being bonded on surface areas of adjacent particles where said adjacent particles are in closest proximity to form a coherent, three dimensional lattice whch is non-swellable in whole blood,

said element also containing an interactive composition capable of converting substantially all forms of hemoglobin into a detectable species,

said interactive composition consisting essentially of an ionic surfactant present at a coverage of from about 5 to about 12 g/m^2, or the combination of a hemoglobin oxidizing agent and thiocyanate; and

(B) quantitatively detecting said detectable species.

4,880,750

INDIVIDUAL-SPECIFIC ANTIBODY IDENTIFICATION METHODS

Ann-Michele Francoeur, San Diego, Calif., assignor to Miragen, Inc., San Diego, Calif.

Filed Jul. 9, 1987, Ser. No. 71,707

Int. Cl.⁴ G01N *33/548, 33/561, 33/566, 33/577*

U.S. Cl. 436—501 30 Claims

1. A method for identifying animals, comprising the steps of:

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isolating an effective amount of individual-specific antibodies from said animals;
preparing a panel of multiple antigens separated in n dimensions on a solid surface, where n is one or two;
forming a pattern of immune complexes of said antibodies and said antigens by contacting an effective amount of said antibodies to said panel of antigens for a time sufficient for said antibodies to bind to said antigens;
revealing said pattern of immune complexes by contacting said immune complexes with an effective amount of detector antibody-binding molecules; and
comparing the revealed pattern of immune complexes with a known pattern of immune complexes for the individual animal to be identified.

4,880,751
IMMUNOGLOBULIN ADSORPTION

William D. Georghegan, Houston, Tex., assignor to Board of Regents, The University of Texas System, Austin, Tex.

Filed Oct. 31, 1986, Ser. No. 926,080

Int. Cl.⁴ G01N *33/53, 33/543, 33/563, 33/544*

U.S. Cl. 436—518 **25 Claims**

1. A method for preparing an adsorption surface by adsorbing thereon selected IgG molecules, the method comprising the steps of:
(a) selecting an adsorption surface having a net positive or negative charge;
(b) choosing an IgG species having an F(c) portion with a net pI that is basic with respect to its F(ab) portion in the case of a negatively charged surface, or an F(c) portion with a net pI that is acidic with respect to its F(ab) portion in the case of a positively charged surface;
(c) fractionating IgG moieties of the chosen IgG species to select for a population of IgG molecules having a pI range of less than or equal to approximately 2 pI units and further wherein the net pI of the selected population is acidic, in the case of negatively charged surface, or basic, in the case of a positively charged surface; and
(d) adsorbing the selected IgG population to the selected adsorption surface.

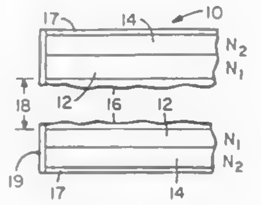
4,880,752
DIELECTRIC WAVEGUIDE SENSORS AND THEIR USE IN IMMUNOASSAYS

Donald B. Keck, Big Flats, and Walter F. Love, Horseheads, both of N.Y., assignors to Ciba Corning Diagnostics Corp., Medfield, Mass.

Continuation of Ser. No. 85,423, Aug. 13, 1987, abandoned, which is a continuation of Ser. No. 773,074, Sep. 6, 1985, abandoned, which is a continuation-in-part of Ser. No. 652,714, Sep. 21, 1984, abandooed. This application Feb. 24, 1989, Ser. No. 298,524

Int. Cl.⁴ G01N *21/64, 33/535*

U.S. Cl. 435—7 **22 Claims**



1. A dielectric waveguide for use in fluorescence assays of an analyte in a fluid, comprising:
(a) a core having an index of refraction (N_1) and an opening in the core;
(b) a cladding about the core having an index of refraction (N_2) which is less than N_1; and
(c) a reactant coating about the opening of the core which comprises an analyte-binder, wherein the core is transmissive to radiation which can excite fluorescence of a fluorescent tag and transmissive to fluorescent radiation from the fluorescent tag.

4,880,753
METHOD OF FABRICATING A POLYSILICON THIN FILM TRANSISTOR

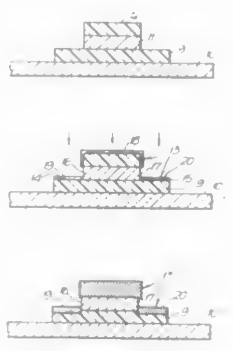
Douglas B. Meakin, Liverpool, and Piero Migliorato, London, both of England, assignors to The General Electric Company, p.l.c., England

Filed Feb. 16, 1989, Ser. No. 311,219

Claims priority, application United Kingdom, Feb. 19, 1988, 8803924

Int. Cl.⁴ H01L *21/265*

U.S. Cl. 437—41 **5 Claims**



1. A process for manufacturing a thin film transistor, including the steps of forming a first polysilicon layer on a substrate; forming a silicon dioxide layer on a region of said first polysilicon layer leaving exposed regions of said first polysilicon layer; forming a second polysilicon layer on said silicon dioxide layer and aligned therewith; and depositing on said second polysilicon layer and on said exposed regions of said first polysilicon layer, regions of a selectively-grown electrically-conductive film, which film will not grow on the edges of said silicon dioxide layer but will grow on said exposed polysilicon, said selectively-grown regions acting as source and drain regions and gate electrode of the thin film transistor.

4,880,754
METHOD FOR PROVIDING ENGINEERING CHANGES TO LSI PLAS

Anthony Correale, Lake Katrine, N.Y., assignor to International Business Machines Corp., Armonk, N.Y.

Filed Jul. 6, 1987, Ser. No. 69,915

Int. Cl.⁴ H01L *21/20, 21/00*

U.S. Cl. 437—51 **4 Claims**

1. A method for fabricating and subsequently changing a Large Scale Integrated (LSI) circuit chip that incorporates an electronic circuit including a Programmed Logic Array (PLA) comprising the steps of:
(a) providing a set of masks including masks for contact and

metallization, designed to realize said electronic circuit in said LSI chip;
(b) providing, in said set of masks an area with a first set of images for defining the PLA and a second set of images being disposed adjacent to the first set of images with said second set of images being logically and physically isolated from said first set of images and including images for at least one additional product term, input line, or output line, and devices
(c) fabricating said chip from said set of masks;

(d) as desired to effect changes to said chip, changing the images in said masks for contacts and subsequent fabrication steps only to connect one or more of other input or output lines of said PLA to one or more of said additional input or output lines, as the case may be, or connect said additional product term to one or more input lines and one or more output lines, to realize the addition or subtraction of the devices comprising array personalization to effect said desired circuit changes; and
(e) fabricating said chip with said changed set of masks.

4,880,755
SIALON CUTTING TOOL COMPOSITION

Pankaj K. Mehrotra, Greensburgh, Pa., assignor to Kennametal Inc., Latrobe, Pa.

Continuation of Ser. No. 51,964, May 19, 1987, abandnned. This application Apr. 3, 1989, Ser. No. 333,716

Int. Cl.⁴ C04B *35/58*

U.S. Cl. 501—96 **52 Claims**

34. A sialon ceramic material comprising a ceramic core containing beta-prime-sialon phase, and an intergranular phase and, said sialon ceramic material having a beta-prime-sialon alloyed surface layer phase comprising an alloy of the beta prime sialon phase in said ceramic core with a substantially increased aluminum and oxygen content compared to the beta-prime-sialon in said ceramic core.

4,880,756
SILICON NITRIDE SINTERED PRODUCT

Kazuhiro Urashima; Masakazu Watanabe; Yo Tajima, and Kenji Nakanishi, all of Aichi, Japan, assignors to NGK Spark Plug Co., Ltd., Aichi, Japan

Filed Aug. 31, 1988, Ser. No. 238,429

Claims priority, application Japan, Sep. 2, 1987, 62-219961; Apr. 15, 1988, 63-94354

Int. Cl.⁴ C04B *35/58*

U.S. Cl. 501—97 **2 Claims**

1. A silicon nitride sintered product consisting essentially of, in % by weight:
1 to 10% Mg, calculated as MgO;
1 to 10% Zr, calculated as ZrO_2;
0.1 to 2.0% of at least one of Al, calculated as Al_2O_3, Li, calculated as Li_2O, and Na, calculated as Na_2O; and
the remainder being Si_3N_4 and unavoidable impurities.

4,880,757
CHEMICAL PREPARATION OF ZIRCONIUM-ALUMINUM-MAGNESIUM OXIDE COMPOSITES

Walter W. Henslee, Lake Jackson, and Thomas S. Witkowski, Galveston, both of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jan. 24, 1986, Ser. No. 822,074

Int. Cl.⁴ C04B *35/48;* **C01F** *7/02*

U.S. Cl. 501—104 **13 Claims**

1. A sinterable precursor powder convertible to zirconia-spinel ceramic composites comprised of spinel forming metal compounds intimately admixed with a zirconium compound, said powder consisting of an intimate admixture derived from intimately admixing in a liquid medium
(1) at least one decomposable salt of a metal or metals which form spinel crystal structures on calcination,
(2) a zirconium compound selected from the group consisting of
  (a) a salt capable of being converted upon heating to zirconium oxide, or
  (b) a fine zirconium oxide powder which admixture is co-precipitated, and the solids recovered, said metal or metals being present in mole ratios to form the spinel structure with or without an additional amount of one of the spinel forming metals to form a segregated metal oxide phase when converted and said metal/metals and said zirconium compound being present in an amount greater than 0 but less than 100% of the total weight of the composition.

4,880,758
PREPARATION OF ABO_3 COMPOUNDS FROM MIXED METAL AROMATIC COORDINATION COMPLEXES

Robert H. Heistand, II, East Walpole, and Lawrence G. Duquette, Maynard, both of Mass., assignors to The Dow Chemical Company, Midland, Mich.

Filed Aug. 24, 1987, Ser. No. 88,460

Int. Cl.⁴ C01F *17/00;* **C01G** *23/00, 25/00, 27/00*

U.S. Cl. 423—21.1 **27 Claims**

1. A method of producing an ABO_3 powder wherein A represents a first metal ion and B represents a second metal ion, comprising:
(a) preparing a mixed metal coordination complex $[A.Q_m]$ $[B(L)_n(Ar)_o]$ wherein Q represents a solvate, m represents the number of moles of Q, L represents oxygen or —OR wherein R can be hydrogen, saturated or unsaturated acyclic or cyclic alkyl, aryl or alkaryl, n is a number representing the moles of L, Ar represents a residue of a disubstituted aromatic compound and o represents the number of moles of Ar in the coordination complex wherein o is greater than zero; and
(b) decomposing the mixed metal coordination complex $[A.Q_m]$ $[B(L)_n(Ar)_o]$ to produce an ABO_3 powder.

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4,880,759
BALL CLAY SLURRY

William Kohut, Springville, Tenn., assignor to H. C. Spinks Clay Company Inc., Paris, Tenn.

Continuation-in-part of Ser. No. 99,917, Sep. 22, 1987, Pat. No. 4,812,427, which is a continuation-in-part of Ser. No. 895,815, Aug. 12, 1986, abandoned. This application Dec. 16, 1988, Ser. No. 285,640

The portion of the term of this patent subsequent to Mar. 14, 2006, has been disclaimed.

Int. Cl.⁴ C04B *33/28*

U.S. Cl. 501—148 **20 Claims**

1. A ball clay/water slurry, wherein:

(a) said slurry is comprised of from about 58 to about 68 percent (by total weight of slurry) of ball clay (dry basis) and from about 42 to about 32 percent (by total weight of slurry) of water;

(b) said slurry has an initial Brookfield 100 rpm viscosity of from about 100 to about 600 centipoise;

(c) from about 30 to about 45 percent (by weight of dry ball clay) of the particles in said ball clay slurry are smaller than 0.5 microns, from about 53 to about 60 percent of the ball clay slurry particles are smaller than 2 microns, and from about 70 to about 85 percent of the ball clay slurry particles are smaller than 5 microns;

(d) said slurry has a specific surface area of from about 16 to about 21 square meters per gram;

(e) said slurry, when freshly made, has a five-minute gel viscosity at 0.5 revolutions per minute of from about 1,000 to about 10,000 centipoise;

(f) said slurry, when freshly made, has a ten-minute gel viscosity of from about 2,200 to about 12,000 centipoise;

(g) said slurry, when freshly made, has a twenty-minute gel viscosity of from about 3,500 to about 14,000 centipoise;

(h) the difference between the twenty-minute gel viscosity of the slurry and its ten-minute gel viscosity is less than about 3,000 centipoise;

(i) the difference between the twenty-minute gel viscosity of the slurry and its five minute gel viscosity is less than about 4,000 centipoise;

(j) the twenty-minute gel viscosity of a three-day old sample of said slurry is no more than 50 percent greater than the twenty-minute gel viscosity of the freshly-made slurry and is from about 3,500 to about 14,000 centipoise;

(k) said slurry contains from about 0.001 to about 1.0 percent of organic polyelectrolyte (weight of active ingredient, by weight of dry ball clay) wherein said organic polyelectrolyte has a molecular weight of from about 1,400 to about 6,000;

(l) said slurry contains from about 50 to about 650 parts per million (by weight of dry ball clay) of soluble sulfate ion;

(m) said slurry has a settling index of at least about 0.9;

(n) said slurry has a flow index of from about 20 to about 30 seconds;

(o) said slurry has a casting rate of from about 30 to about 60 grams after one hour;

(p) said slurry has a transmission of at least about 60 percent;

(q) said slurry has a dry modulus of from about 550 to about 700 pounds per square inch;

(r) said slurry contains from about 50 to about 65 percent (by weight of dry ball clay) of silica and from about 20 to about 35 percent of alumina;

(s) the silica/alumina weight ratio in said slurry is from about 2.0 to about 3.0; and

(t) said slurry is comprised of from about 3 to about 20 percent (by weight of dry clay in the slurry) of mica, from about 6 to about 18 percent (by weight of dry clay in the slurry) of at least one montmorillonite mineral, from about 25 to about 70 percent (by weight of dry clay in the slurry) of at least one kaolinite mineral, and from about 7 to about 40 percent (by weight of dry clay in the slurry) of quartz.

4,880,760
DEWAXING CATALYSTS EMPLOYING NON-ZEOLITIC MOLECULAR SIEVES

Regis J. Pellet, Croton-on-Hudson; Jule A. Rabo, Armonk; Gary N. Long, Putnam Valley; Frank P. Gortsema, Pleasantville, and Albert R. Springer, Yonkers, all of N.Y., assignors to UOP, Des Plaines, Ill.

Division of Ser. No. 682,942, Dec. 18, 1984, abandoned. This application Aug. 17, 1987, Ser. No. 85,844

Int. Cl.⁴ B01J *29/06, 27/18*

U.S. Cl. 502—67 **26 Claims**

1. A dewaxing catalyst comprising at least one NZ—MS selected from the group consisting of SAPO, ELAPSO, MeAPO, FeAPO, TiAPO and ELAPO molecular sieves characterized in its calcined form by an adsorption of isobutane of at least 2 percent by weight at a pressure of 500 torr and a temperature of 20° C., and at least one metal selected from the group consisting of nickel, cobalt, tungsten, molybdenum, platinum, palladium, chromium, iridium, rhodium, ruthenium and titanium.

3. The catalyst of claim 1 wherein said catalyst contains at least one zeolitic aluminosilicate selected from the group consisting of zeolite Y, ultra-stable zeolite Y, zeolite X, zeolite beta, zeolite KZ-20, faujasite, LZ-210, LZ-10, ZSM-type zeolites and mixtures thereof.

4. The catalyst of claim 3 wherein said catalyst contains from 1 to 99 percent by weight of at least one inorganic oxide matrix component.

4,880,761
CRYSTALLINE MICROPOROUS METAL SULFIDE COMPOSITIONS

Robert L. Bedard, Fishkill; Lawrence D. Vail, Tappan; Stephen T. Wilson, Shrub Oak, and Edith M. Flanigen, White Plains, all of N.Y., assignors to UOP, Des Plaines, Ill.

Filed Dec. 6, 1988, Ser. No. 280,757

Int. Cl.⁴ B01J *27/04;* **C01B** *17/20*

U.S. Cl. 502—215 **42 Claims**

1. A crystalline composition having a three-dimensional microporous framework structure of MA_2 units, where A is sulfur or selenium having an intracrystalline pore system and having the empirical formula expressed in molar ratios: $xR:MA_{2\pm0.2}:zH_2O$ where R represents at least one organic templating agent present in the intracrystalline pore system, x has a value greater than 0 to about 1.0, and z has a value of about 0 to about 4.0 and M is germanium, tin, or a combination thereof.

4,880,762
COLORING PHTHALIDE COMPOUNDS, METHOD OF PRODUCING THE COMPOUNDS AND RECORDING MATERIALS USING ANY OF THE COMPOUNDS AS COLORING COMPONENT

Kiyotaka Iiyama, Mishima, and Kunio Hayakawa, Gotemba, both of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

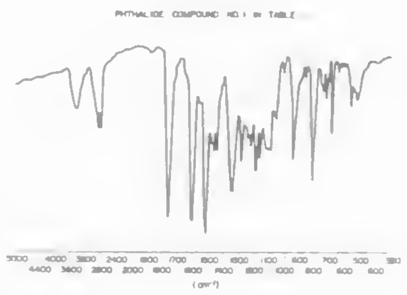
Filed Nov. 20, 1987, Ser. No. 123,350

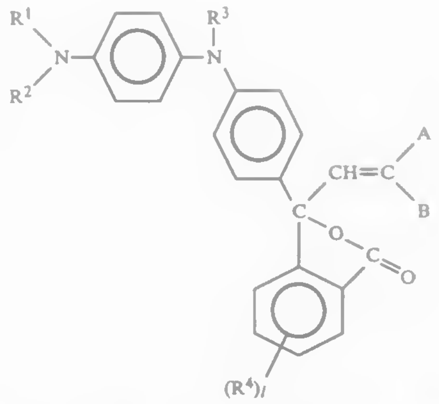
Claims priority, application Japan, Nov. 21, 1986, 61-278368

Int. Cl.⁴ B41M *5/16, 5/18, 5/22*

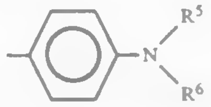
U.S. Cl. 503—220 **6 Claims**

1. A recording material, comprising a substrate and a coloring component thereon comprising a phthalide compound having the formula:





wherein R^1 and R^2 each represent a straight chain or a branched alkly group having 1 to 6 carbon atoms, a cycloalkyl group, or a benzyl group, or R^1 and R^2 in combination form a ring; R^3 represents an alkyl group having 1 to 4 carbon atoms; R^4 represents a dialkylamino group having 1 to 6 carbon atoms, a cyclic amino group or halogen; l is an integer of 0 to 4; A represents a group of the formula:



wherein R^5 and R^6 each represent a straight chain or a branched alkyl group having 1 to 8 carbon atoms, cycloalkyl group, or a benzyl group, or R^5 and R^6 in combination form a ring; and B is the same as A or represents a phenyl group which is unsubstituted or is substituted.

4,880,763
CATALYST FOR PRODUCTION OF HYDROCARBONS

Sigrid Eri, Trondheim, Norway; James G. Goodwin, Jr.; George Marcelin, both of Pittsburgh, Pa., and Trygve Riis, Oslo, Norway, assignors to Den norske stats oljeselskap a.s., Norway

Continuation-in-part of Ser. No. 113,095, Oct. 23, 1987, Pat. No. 4,801,573. This application Oct. 18, 1988, Ser. No. 259,232

Int. Cl.⁴ B01J *21/04, 23/04, 23/36*

U.S. Cl. 502—302 **15 Claims**

1. A catalyst for converting synthesis gas to hydrocarbons comprising amounts of cobalt catalytically active in a Fischer-Tropsch synthesis, relatively lesser amounts of rhenium than the cobalt content and relatively lesser amounts of an alkali metal than the cobalt content of the catalyst, composited on an alumina support, wherein the alkali metal is selected from the group consisting of elements from Group 1A of the periodic table.

4,880,764
DEHYDROGENATION CATALYST AND PROCESS

Tamotsu Imai, Mt. Prospect, and Hayim Abrevaya, Wilmette, both of Ill., assignors to UOP, Des Plaines, Ill.

Continuation-in-part of Ser. No. 221,977, Jul. 20, 1988, Pat. No. 4,827,072, which is a division of Ser. No. 131,882, Dec. 11, 1987, Pat. No. 4,786,625, which is a continuation-in-part of Ser. No. 18,541, Feb. 25, 1987, Pat. No. 4,716,143, which is a continuation-in-part of Ser. No. 871,356, Jun. 6, 1986, abandoned. This application Dec. 23, 1988, Ser. No. 289,137

The portion of the term of this patent subsequent to Nov. 22, 2005, has been disclaimed.

Int. Cl.⁴ B01J *21/04, 23/58, 23/62*

U.S. Cl. 502—326 **11 Claims**

1. A catalytic composite comprising platinum, a first catalytic modifier component selected from Group IA and IIA elements of the Periodic Table of the Elements or mixtures thereof, a second catalytic modifier component selected from the group iridium, osmium, or mixtures thereof, and a third catalytic modifier component selected from one or more elements of Group IVA of the Periodic Table of the Elements, all on a refractory oxide support having a nominal diameter (d) of from 50 to 10000 microns, the catalytic composite characterized in that the second catalytic modifier component is surface-impregnated upon the catalytic composite such that the average concentration of the surface-impregnated second catalytic modifier component on the outside 0.2 d micron layer of the catalyst is at least 2 times the average concentration of the second catalytic modifier component in the 0.4 d micron diameter center core of the catalyst, and wherein the first modifier metal component is uniformly impregnated through the refractory oxide support.

4,880,765
PROCESS FOR PRODUCING CARBON MOLECULAR SIEVES

Karl Knoblauch, Essen; Ferdinand Tarnow, Duisburg, and Heinrich Heimbach, Essen, all of Fed. Rep. of Germany, assignors to Bergwerksverband GmbH, Essen, Fed. Rep. of Germany

PCT No. PCT/EP87/00268, § 371 Date Nov. 3, 1988, § 102(e) Date Nov. 3, 1988, PCT Pub. No. WO87/07249, PCT Pub. Date Dec. 3, 1987

PCT Filed May 22, 1987, Ser. No. 272,694

Claims priority, application Fed. Rep. of Germany, May 31, 1986, 3618426

Int. Cl.⁴ C01B *31/10, 31/08;* **B01J** *20/20*

U.S. Cl. 502—432 **2 Claims**

1. Process for producing carbon molecular sieves for the separation of oxygen and nitrogen, wherein a carbonization product with a content of up to 5% by volume of volatile components is treated with carbon-splitting hydrocarbons which react in the carbon structure of the carbonization product with narrowing the already existing pores, *characterized in*

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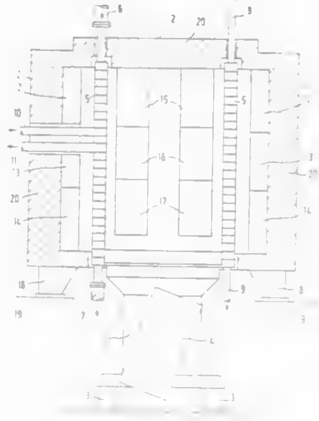
that the carbonization product is passed through a vibrating oven at 800° C. to 900° C. for 5 to 30 minutes, whereinto a stream of inert gas with a steam concentration of 20 to 95% by volume has been fed in counterflow to produce a slightly activated product and this slightly activated product is again passed through the vibrating oven, at 750° C. to 850° C., whereinto a stream of inert gas with a benzene vapor concentration of 5 to 12% by volume has been fed in counterflow to produce a carbon molecular sieve having narrower pores than said carbonization product.



4,880,766

RECORD MATERIAL

Robert E. Miller; Steven L. Vervacke; Timothy J. Bahowick, and Kenneth D. Glanz, all of Appleton, Wis., assignors to Appleton Papers Inc., Appleton, Wis.

Filed Mar. 23, 1988, Ser. No. 171,983

Int. Cl.^{4} B41M *5/16, 5/18, 5/22*

U.S. Cl. 503—212 27 Claims

1. A record member comprising a substrate and a color developer material comprising a homogeneous mixture of:
(a) a color developer containing at least about 3.4 weight percent phenolic group,
(b) divalent zinc, and
(c) an aromatic carboxylate component, wherein the aromatic carboxylic acid or mixture of acids corresponding to said aromatic carboxylate component possesses an octanol/water partition coefficient of about 2.9 or greater and said color developer material possesses a color-forming efficiency of about 95 or greater and a solvent resistance greater than about 30 percent.

4,880,767

RECORDING MATERIAL

Shigetoshi Hiraishi, Tokyo; Mitsuru Fuchigami; Masahiro Miyauchi, both of Takasago, and Kazuo Kabashima, Yokohama, all of Japan, assignors to Mitsubishi Paper Mills, Tokyo and Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, both of, Japan

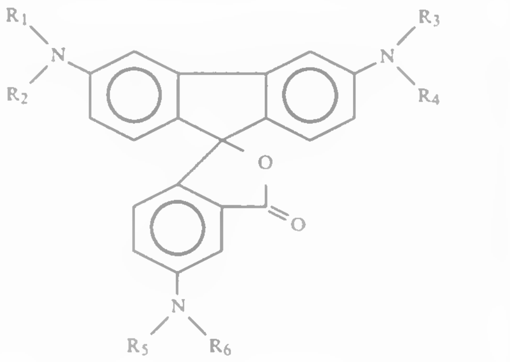
Filed Nov. 18, 1987, Ser. No. 122,191

Claims priority, application Japan, Nov. 18, 1986, 61-273009

Int. Cl.^{4} B41M *5/16, 5/18, 5/22*

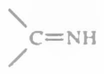
U.S. Cl. 503—217 9 Claims

1. A recording material which comprises a color forming layer containing a color forming system comprising
(A) (a) a colorless or light-colored dye precursor represented by the formula:



(I)

wherein R_1 through R_6 are independently a lower alkyl group,
(b) a color developer which can form a color by reacting with the dye precursor and is a sulfur-containing phenolic derivative, and
(B) (c) an isocyanate compound having aromaticity, and
(d) an imino compound having at least one



$>C=NH$

group, said color forming layer being carried on a support.

4,880,768

SUBLIMATION TYPE THERMOSENSITIVE IMAGE TRANSFER RECORDING MEDIUM

Hidehiro Mochizuki, Shizuoka; Masanaga Imamura, Fujinomiya; Akira Suzuki, Mishima; Masaru Shimada, Shizuoka, and Hiroyuki Uemura, Numazu, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Sep. 7, 1988, Ser. No. 241,409

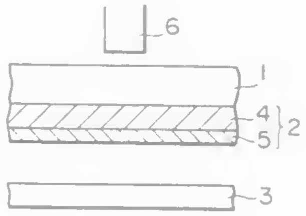
Claims priority, application Japan, Sep. 7, 1987, 62-224268; Nov. 6, 1987, 62-280434; Mar. 15, 1988, 63-062866; Apr. 15, 1988, 63-091290

Int. Cl.^{4} B41M *5/035, 5/26*

U.S. Cl. 503—227 26 Claims

1. A sublimation type thermosensitive image transfer recording medium comprising:
a support;
a dye supplying layer formed on said support, comprising a sublimable dye and at least one binder agent in which said sublimable dye is dissolved or dispersed; and
an image transfer facilitating layer formed on said dye supplying layer, comprising said sublimable dye and at least one organic binder agent in which said sublimable dye is dissolved or dispersed, said dye supplying layer and said image transfer facilitating layer being constructed in such a manner that (1) the concentration of said sublimable dye in said dye supplying layer is made greater than that of

said sublimable dye in said image transfer facilitating layer or (2) the diffusion coefficient of said sublimable dye in said dye supplying layer is greater than that of said sublimable dye in said image transfer facilitating layer.



4,880,769

TRANSFER OF CATINIC DYES IN THEIR DEPROTONATED, ELECTRICALLY NEUTRAL FORM

Johannes P. Dix, Neuhofen; Karl-Heinz Etzbach; Udo Mayer, both of Frankenthal, and Ruediger Sens, Mannheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

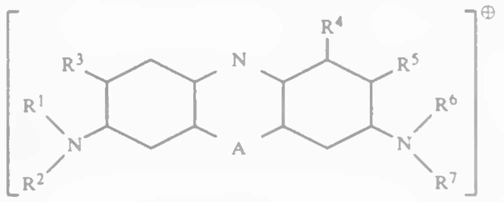
Filed Dec. 18, 1987, Ser. No. 134,979

Claims priority, application Fed. Rep. of Germany, Dec. 24, 1986, 3644369

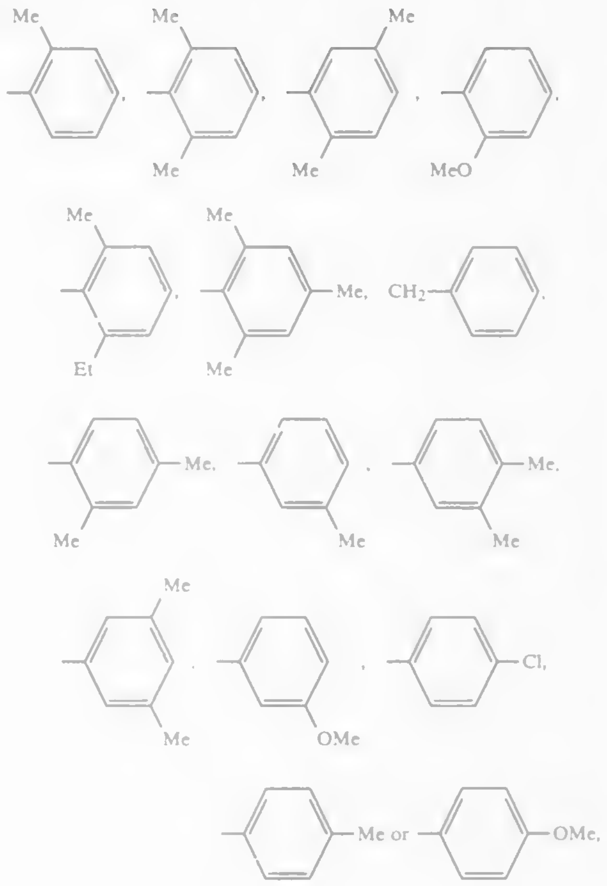
Int. Cl.^{4} B41M *5/035, 5/26*

U.S. Cl. 503—227 4 Claims

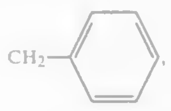
1. A process for transferring a dye from a substrate to an acceptor by sublimation or vaporization of the dye using a thermal printing head which comprises using a substrate on which there is situated a cationic dye and a binder, said cationic dye having a cyanine chromaphore and one or more N-H groups which are part of the cyanine chromaphore, in its electrically neutral form as the result of deprotonation at the N-H group, and transferring said deprotonated dye to a coated paper, said cationic dye having a cation of the formula



where
R^1 and R^2 are hydrogen, methyl or ethyl,
R^3 and R^5 are hydrogen, methyl or methoxy,
R^4 is hydrogen,
R^6 is hydrogen, methyl, ethyl



R^7 is hydrogen, methyl, ethyl or



and
A is oxygen.

4,880,770

METALORGANIC DEPOSITION PROCESS FOR PREPARING SUPERCONDUCTING OXIDE FILMS

Jose M. Mir, Webster; John A. Agostinelli, Rochester; David L. Peterson, Penfield; Gustavo R. Paz-Pujalt, Rochester; Brian J. Higberg, Pittsford, and Gopalan Rajeswaran, Fairport, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 4, 1987, Ser. No. 46,593

Int. Cl.^{4} B05D *3/02*

U.S. Cl. 505—1 46 Claims

9. A process of preparing an article comprised of a substrate and a crystalline electrically conductive rare earth alkaline earth copper oxide coating on the substrate exhibiting a T_c in excess of 30° K. comprising
choosing the substrate from the class consisting of strontium titanate, magnesia, and alumina,
applying to the substrate a coating of a solution consisting essentially of a volatilizable film forming solvent, metal-ligand compounds of each of rare earth and alkaline earth containing at least one thermally volatilizable organic ligand, and at least one copper-ligand compound containing a thermally volatilizable carboxylate ligand,
removing the solvent and organic ligands from the substrate

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by heating in the presence of oxygen to form a coating of less than 1 μm in thickness, and
forming a crystalline conductive metal oxide coating on the substrate by heating to a temperature in the range of from 900° to 1100° C. followed by contact with air or an oxygen enriched atmosphere during cooling.

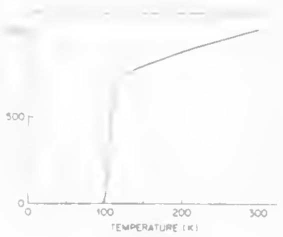
4,880,771
BISMUTH-LEAD-STRONTIUM-CALCIUM-CUPRATE SUPERCONDUCTORS

Robert J. Cava, Bridgewater, and Steven A. Sunshine, Berkeley Heights, both of N.J., assignors to American Telephone and Telegraph Company, AT&T Bell Laboratories, Murray Hill, N.J.

Continuation-in-part of Ser. No. 155,330, Feb. 12, 1988. This application Feb. 26, 1988, Ser. No. 160,799

Int. Cl.⁴ C01F *11/02;* **C01G** *21/02, 29/00;* **H01L** *39/12*

U.S. Cl. 505—1 2 Claims



1. A superconductive element comprising an effective amount of material nominally of perovskite structure and of nominal composition $X_{2+x}M_{3-x}Cu_2O_{8\pm\delta}$, where X is Bi and Pb, M is Sr and Ca, x is equal to or greater than 0 and less than about 0.3, δ is greater than about 0 and less than about 0.5, the Pb/Bi ratio is between about 0.2 and about 0.5, the Sr/Ca ratio is between about 0.5 and about 2, and the element manifesting a transition temperature $T_c(R=o)$ of at least 77 K.

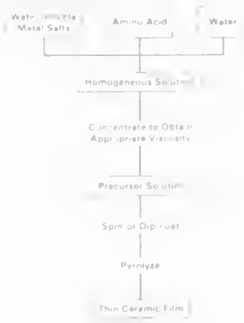
4,880,772
PREPARATION OF THIN CERAMIC FILMS VIA AN AQUEOUS SOLUTION ROUTE

Larry R. Pederson, Kennewick; Lawrence A. Chick, and Gregory J. Exarhos, both of Richland, all of Wash., assignors to Battelle Memorial Institute, Richland, Wash.

Filed Jun. 9, 1988, Ser. No. 204,643

Int. Cl.⁴ B05D *3/02, 5/06, 5/12;* **C23C** *18/02*

U.S. Cl. 505—1 7 Claims



1. A method of forming oxide ceramic films, which comprises use of an aqueous solution of soluble metal salts and a low molecular weight amino acid, coating said solution onto a substrate, and pyrolyzing said film.

4,880,773
SUPERCONDUCTING MATERIAL AND A METHOD FOR PREPARING THE SAME

Hideo Itozaki; Saburo Tanaka; Nobuhiko Fujita; Shuji Yazu, and Tetsuji Jodai, all of Hyogo, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Jul. 25, 1988, Ser. No. 223,634

Claims priority, application Japan, Jul. 25, 1987, 62-185739; Jul. 26, 1987, 62-185710

Int. Cl.⁴ C01F *11/02, 17/00;* **C01G** *3/02;* **H01L** *39/12*

U.S. Cl. 505—1 1 Claim

1. A superconducting material comprising a compound oxide represented by the formula:

$$(Ba, Ca)_x(\alpha, Dy)_{1-x}Tl_yCu_{1-y}O_{3-z}$$

where the atomic ratio of Ca to Ba is selected to be about 10%,
α represents Y or La,
the atomic ratio of Dy to α is selected to be about 30%,
x, y and z are numbers wherein x is selected to be about 0.66, y is selected to be about 0.11, and z is selected to be in the range 0≦z≦1, and
the expression (Ba, Ca) and (α, Dy) mean that the respective elements position predetermined sites in a crystal in a predetermined proportion.

4,880,774
SUSTAINED RELEASE AROMATIC

Isao Joukou; Ayako Sekikawa; Hideo Sugi, and Kenji Tahara, all of Kanagawa, Japan, assignors to Kurita Water Industries, Ltd., Tokyo, Japan

Filed Apr. 8, 1988, Ser. No. 179,085

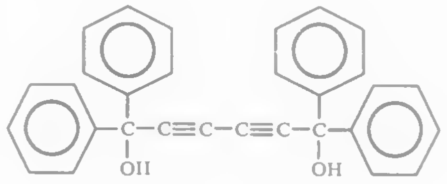
Claims priority, application Japan, Apr. 14, 1987, 62-91771; Feb. 24, 1988, 63-41289

Int. Cl.⁴ A61K *7/46*

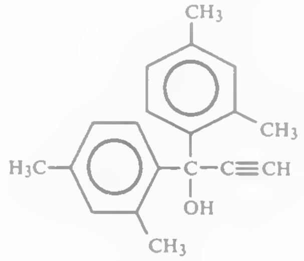
U.S. Cl. 512—2 2 Claims

1. A sustained release aromatic comprising a clathrate compound composed of a perfume and a polyphenyl compound, said polyphenyl compound being at least one compound selected from the group consisting of the compounds of formulas (I) to (VIII):

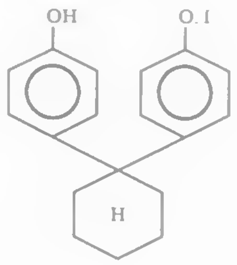
(I)



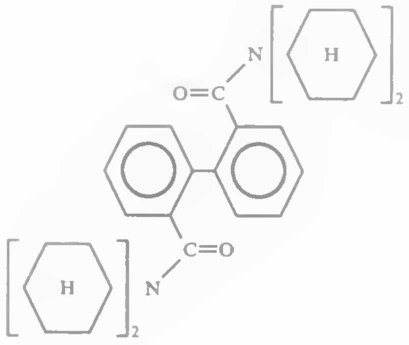
(II)



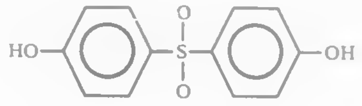
(III)



(IV)



(V)



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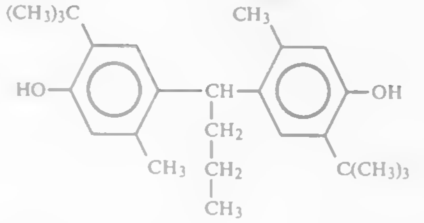
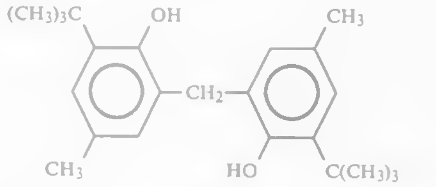
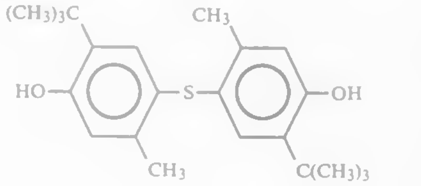
(VI)



(VII)



(VIII)



4,880,775
POLY-ALKYLATED BENZODIOXIN MUSK COMPOSITIONS

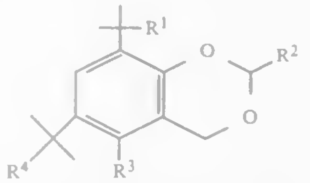
Philip A. Christenson, Midland Park; Brian Drake, Clifton, and Paul J. Riker, Lodi, all of N.J., assignors to BASF K&F Corporation, Parsippany, N.J.

Filed Feb. 1, 1987, Ser. No. 305,373

Int. Cl.⁴ A01K *7/46*

U.S. Cl. 512—12 18 Claims

1. The compounds having the structure



wherein R^1 to R^4 are hydrogen or lower alkyl (C_1 to C_5).

8. A fragrance composition comprising an organoleptically effective amount of a compound of claim 1 and at least one other organoleptic agent.

4,880,776
PLASMIN A-CHAIN UROKINASE B-CHAIN HYBRID PROTEIN

Jeffery H. Robinson, and Ian Dodd, both of Epsom, England, assignors to Beecham Group p.l.c., United Kingdom

Continuation-in-part of Ser. No. 41,710, Apr. 23, 1987, abandoned, and a continuation-in-part of Ser. No. 684,593, Dec. 21, 1984, Pat. No. 4,752,581. This application Mar. 25, 1988, Ser. No. 173,430

Claims priority, application United Kingdom, Dec. 24, 1983, 8334498; Apr. 23, 1986, 8609948

Int. Cl.⁴ C12N *9/68, 9/72;* **A61K** *37/54, 37/547*

U.S. Cl. 514—2 9 Claims

1. A hybrid protein which comprises plasmin A-chain linked to urokinase B-chain, the catalytic site of which is blocked by a removable blocking group.

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4,880,777

SYNTHETIC PEPTIDES HAVING GROWTH HORMONE RELEASING ACTIVITY

Frank A. Momany, Concord, Mass., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 1, 1987, Ser. No. 91,919

Int. Cl.^{4} A61K *37/43;* C07K *7/10*

U.S. Cl. 514—12 12 Claims

1. A polypeptide selected from the group consisting of:

Compound 1

Tyr—Ala—Asp—Ala—Ile—Phe—Thr—Asn—Cys—Tyr—Arg—

Lys—Val—Leu—Cys—Gln—Leu—Ser—Ala—Arg—Lys—Leu—

Leu—Gln—Asp—Ile—Nle—Ser—Arg—NH_2 (free dithiol),

and organic or inorganic addition salts thereof; and

Compound 2

Tyr—Ala—Asp—Ala—Ile—Phe—Thr—Asn—Cys—Tyr—Arg—

Lys—Val—Leu—Cys—Gln—Leu—Ser—Ala—Arg—Lys—Leu—

Leu—Gln—Asp—Ile—Nle—Ser—Arg—NH_2 (cyclic disulfide),

4,880,778

COMBINATIONS HAVING SYNERGISTIC GROWTH HORMONE RELEASING ACTIVITY AND METHODS FOR USE THEREOF

Cyril Y. Bowers, New Orleans, La.; Frank A. Momany, Concord, Mass.; Ching H. Chang; Wayne Cody, both of Kingsport, Tenn.; John C. Hubbs, Gray, and Charles H. Foster, Kingsport, both of Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 861,968, May 12, 1986, abandoned. This application Apr. 10, 1987, Ser. No. 37,275

Int. Cl.^{4} H61K *37/43*

U.S. Cl. 514—12 32 Claims

1. A composition effective to cause the release and elevation of the level of growth hormone in the blood of an animal, the composition comprising an effective amount of polypeptides selected from at least two different groups of Group 1 polypeptides, Group 2 polypeptides or Group 3 polypeptides. In a ratio such that such composition is effective to cause the synergistic release and elevation of growth hormone in the blood of such animal;

wherein Group 1 polypeptides are selected from any of the mutually occurring growth hormone releasing hormones and functional equivalents thereof, wherein said polypeptides act at the growth hormone releasing hormone receptor of mammals and other vertebrates, and crustaceans;

Group 2 polypeptides are selected from any of the polypeptides having the structure:
Ala-His-DTrp-Ala-Trp-DPhe-Lys-Gly-Tyr-NH_2;
Ala-His-(formyl)DTrp-Ala-Trp-DPhe-Lys-NH_2 (DTrp is formylated at the indole nitrogen);
Ala-His-DTrp-Ser-Trp-DPhe-Lys-NH_2;
Cys-Ala-His-DTrp-Ala-Trp-DPhe-Lys-Cys-NH_2 (cyclic disulfide);
Cys-Ala-His-DTrp-Ala-Trp-DPhe-Lys-Cys-NH_2 (free dithiol);
DOPA-Ala-His-DTrp-Ala-Trp-DPhe-Lys-NH_2;
His-DTrp-Ala-Trp-DPhe-Lys-NH_2;
His-DTrp-Ala-Trp-DPhe-Lys-Ala-Tyr-NH_2;
Lys-Ala-His-DTrp-Ala-Trp-DPhe-Lys-NH_2;
Lys-His-DTrp-Ala-Trp-DPhe-Asp-NH_2;
Phe-Ala-His-DTrp-Ala-Trp-DPhe-Lys-NH_2;
Tyr-Ala-Gly-Thr-Ala-His-DTrp-Ala-Trp-DPhe-Lys-NH_2;
Tyr-Ala-His-DTrp-Ala-Trp-DPhe-Lys-NH_2;
Tyr-DAla-Phe-Gly-Ala-His-DTrp-Ala-Trp-DPhe-Lys-NH_2;
Tyr-DAla-Gly-Phe-Ala-His-DTrp-Ala-Trp-DPhe-Lys-NH_2;
Ala-His-XTrp*-Ala-Trp-DPhe-Lys-NH_2 (*XTrp is selected from the group consisting of all N-monomethylated Trp isomers, i.e., (N^{α}Me)Trp, (N^{α}Me)DTrp, (indole NMe)Trp and (indole NMe)DTrp);
Z-His-DTrp-Ala-Trp-DPhe-Lys-NH_2;

wherein Z is selected from the group consisting of all naturally occurring L-amino acids, Met(O), DOPA and Abu; and organic or inorganic addition salts of any of said polypeptides of Group 2; and

Group 3 polypeptides are selected from any of the polypeptides having the structure:
Tyr-DArg-Phe-NH_2;
Tyr-DAla-Phe-NH_2;
Tyr-DArg(NO_2)-Phe-NH_2;
Tyr-DMet(O)-Phe-NH_2;
Tyr-DAla-Phe-Gly-NH_2;
Tyr-DArg-Phe-Gly-NH_2;
Tyr-DThr-Phe-Gly-NH_2;
Phe-DArg-Phe-Gly-NH_2;
Tyr-DArg-Phe-Sar;
Tyr-DAla-Gly-Phe-NH_2;
Tyr-DArg-Gly-Trp-NH_2;
Tyr-DArg(NO_2)-Phe-Gly-NH_2;
Tyr-DMet(O)-Phe-Gly-NH_2;
(NMe)Tyr-DArg-Phe-Sar-NH_2;
Tyr-DArg-Phe-Gly-ol;
Tyr-DArg-Gly-(NMe)Phe-NH_2;
Try-DArg-Phe-Sar-ol
Tyr-DAla-Phe-Sar-ol
Tyr-DAla-Phe-Gly-Tyr-NH_2;
Gly-Tyr-DArg-Phe-Gly-NH_2;
Tyr-DThr-Gly-Phe-Thz-NH_2;
Gly-Tyr-DAla-Phe-Gly-NH_2;
Tyr-DAla-Phe-Gly-ol;
Tyr-DAla-Gly-(NMe)Phe-Gly-ol;
Tyr-DArg-Phe-Sar-NH_2;
Tyr-DAla-Phe-Sar-NH_2;
Tyr-DAla-Phe-Sar;
Tyr-DAla-Gly-(NMe)Phe-NH_2;
Sar-Tyr-DArg-Phe-Sar-NH_2;
Tyr-DCys-Phe-Gly-DCys-NH_2 (cyclic disulfide);
Tyr-DCys-Phe-Gly-DCys-NH_2 (free dithiol);
Tyr-DCys-Gly-Phe-DCys-NH_2 (cyclic disulfide);
Tyr-DCys-Gly-Phe-DCys-NH_2 (free dithiol);
Tyr-DAla-Phe-Gly-Tyr-Pro-Ser-NH_2;
Tyr-DAla-Phe-Sar-Tyr-Pro-Ser-NH_2;
Tyr-DAla-Phe-Sar-Phe-Pro-Ser-NH_2;
Tyr-DAla-Phe-Gly-Tyr-Hyp-Ser-NH_2;
Tyr-DAla-Phe-Sar-Tyr-Hyp-Ser-NH_2;
Tyr-DAla-Phe-Sar-Phe-Hyp-Ser-NH_2;
Tyr-DArg-Phe-Gly-Tyr-Hyp-Ser-NH_2;
Tyr-DArg-Phe-Sar-Tyr-Pro-Ser-NH_2;
Tyr-DArg-Phe-Sar-Tyr-Hyp-Ser-NH_2;
Tyr-DArg-Phe-Gly-Tyr-Pro-Ser-NH_2; and organic or inorganic addition salts of any of said polypeptides of Group 3.

4,880,779

METHOD OF PREVENTION OR TREATMENT OF AIDS BY INHIBITION OF HUMAN IMMUNODEFICIENCY VIRUS

William R. Gallaher, New Orleans, La., assignor to Research Corporation Technologies, Inc., Tucson, Ariz.

Filed Jul. 31, 1987, Ser. No. 80,529

Int. Cl.^{4} A61K *37/02, 39/21*

U.S. Cl. 514—15 13 Claims

1. A method for inhibition of a retrovirus which comprises administering to a host a composition comprising an inhibitory effective amount of a peptide of 3 to about 11 amino acids containing the amino acid sequence Phe-X-Gly, wherein X is any amino acid.

4,880,780

SELECTED DIFLUORO DERIVATIVES

Diane A. Trainor, Glen Mills, Pa., and Mark M. Stein, Wilmington, Del., assignors to ICI Americas Inc., Wilmington, Del.

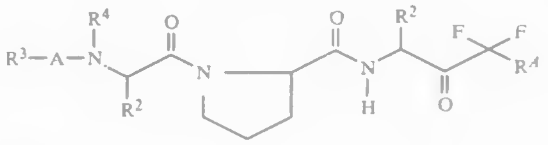
Continuation-in-part of Ser. No. 872,106, Jun. 6, 1986, abandoned. This application Jun. 4, 1987, Ser. No. 58,079

Claims priority, application United Kingdom, Jun. 7, 1985, 8514436; Jun. 7, 1985, 8514438; Jun. 7, 1985, 8514440

Int. Cl.^{4} A61K *37/43;* C07K *5/08*

U.S. Cl. 514—18 9 Claims

1. A compound of formula Ic:



Ic

wherein
R^1 is an alkyl group containing from 1 to 5 carbons;
R^2 is an alkyl group containing from 1 to 10 carbons;
R^3 is an aryl group containing 6, 10 or 12 carbons substituted by acylsulfonamido containing an aryl of 6, 10 or 12 carbons which may be further substituted by a member selected from fluoro, chloro, bromo, iodo and nitro;
R^4 is selected from the group consisting of hydrogen and methyl;
A is selected from the group consisting of —CO—, —NH-CO—, —OCO—, and —(SO_2)—;
R^A is a group of formula II:

$$—CO—X—R^B \qquad \text{II}$$

wherein X is NR^C, R^C is hydrogen or CH_3; and
R^B is selected from the group consisting of (6 or 10C)aryl(1–6C)alkyl, and pharmaceutically acceptable salts thereof.

4,880,781

RENIN INHIBITORY PEPTIDES CONTAINING AN N-ALKYL-HISTIDINE MOIETY

Jackson B. Hester, Jr., Galesburg; Suvit Thaisrivongs, Portage; Tomi K. Sawyer; Ruth E. TenBrink, both of Kalamazoo, all of Mich.; Hossain H. Saneii, Louisville, Ky.; Heinrich J. Schostarez, and Donald T. Pals, both of Portage, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

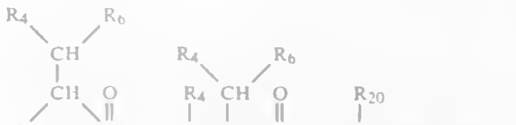
Continuation-in-part of Ser. No. 753,198, Jul. 9, 1985, abandoned, which is a continuation-in-part of Ser. No. 693,320, Jan. 22, 1985, abandoned, which is a continuation-in-part of Ser. No. 663,028, Oct. 19, 1984, abandoned, which is a continuation-in-part of Ser. No. 663,024, Oct. 19, 1984, abandoned, which is a continuation-in-part of Ser. No. 663,027, Oct. 19, 1984, abandoned, which is a continuation-in-part of Ser. No. 663,023, Oct. 19, 1984, abandoned, which is a continuation-in-part of Ser. No. 663,026, Oct. 19, 1984, abandoned, which is a continuation-in-part of Ser. No. 663,093, Oct. 19, 1984, abandoned, which is a continuation-in-part of Ser. No. 638,027, Aug. 6, 1984, abandoned, which is a continuation-in-part of Ser. No. 638,041, Aug. 6, 1984, abandoned, which is a continuation-in-part of Ser. No. 638,025, Aug. 6, 1984, abandoned, which is a continuation-in-part of Ser. No. 38,023, Aug. 6, 1984, abandoned, which is a continuation-in-part of Ser. No. 638,024, Aug. 6, 1984, abandoned, which is a continuation-in-part of Ser. No. 638,026, Aug. 6, 1984, abandoned. This application Jan. 20, 1988, Ser. No. 147,073

Int. Cl.^{4} A61K *37/43;* C07K *7/06, 5/08, 5/10, 5/06*

U.S. Cl. 514—18 29 Claims

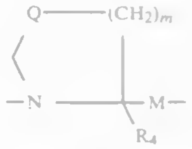
1. A renin inhibitory peptide of the formula $X\text{–}A_6\text{–}B_7\text{–}C_8\text{–}D_9\text{–}E_{10}\text{–}F_{11}\text{–}G_{12}\text{–}H_{13}\text{–}I_{14}\text{–}Z$,

wherein X is
(a) hydrogen, (b) C_1-C_5alkyl (c) $R_5—O—CH_2—C(O)—$, (d) $R_5—CH_2—O—C(O)—$, (e) $R_5—O—C(O)—$, (f) $R_5—(CH_2)_n—C(O)—$, (g) $R_4N(R_4)—(CH_2)_n—C(O)$, (h) $R_5—SO_2—(CH_2)_q—C(O)—$, or (i) $R_5—SO_2—(CH_2)_q—O—C(O)—$; wherein A_6 is absent or a divalent moiety of the formula XL_1, XL_2, or XL_{2a}



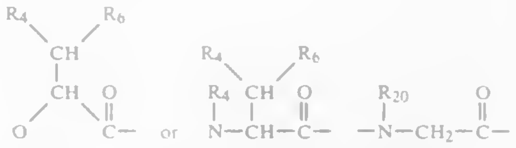
XL_1, XL_2, XL_{2a}

wherein B_7 is absent or a divalent moiety of the formula XL_b



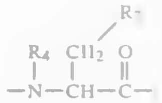
XL_b

wherein C_8 is absent or a divalent moiety of the formula XL_1, XL_2 or XL_{2a},



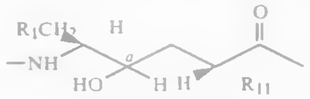
XL_1, XL_2, XL_{2a}

wherein D_9 is a divalent moiety of the formula XL_3,

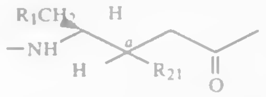


XL_3

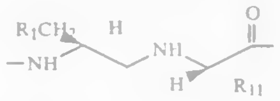
wherein E_{10}–F_{11} is a divalent moiety of the formula XL_6, XL_{6a}, XL_{6b}, XL_{6c}, XL_{6d}, or XL_{6e},



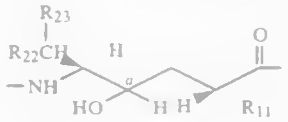
XL_6



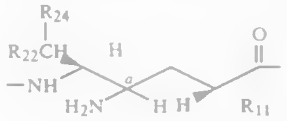
XL_{6a}



XL_{6b}



XL_{6c}



XL_{6d}

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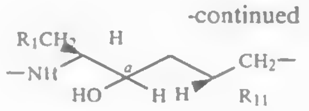
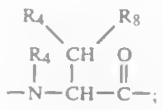


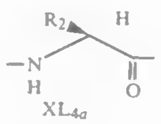
XL_{6e}

wherein * indicates an asymmetric center which is either in the R or S configuration;

wherein G_{12} is absent or a divalent moiety of the formula XL_4 or XL_{4a}

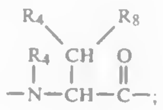


XL_4



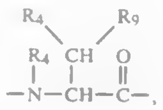
XL_{4a}

wherein H_{13} is absent or a divalent moiety of the formula XL_4



XL_4

wherein I_{14} is absent or a divalent moiety of the formula XL_5



XL_5

wherein Z is
 (a) —O—R_{10}, (b) —N(R_4)R_{14}, or (c) C_4–C_8cyclic amino;
wherein R is
 (a) isopropyl, (b) isobutyl, (c) phenylmethyl, or
 (d) C_3-C_7cycloalkyl;
wherein R_1 is
 (a) hydrogen,
 (b) C_1–C_5alkyl,
 (c) aryl,
 (d) C_3-C_7cycloalkyl,
 (e) —Het, (f) C_1–C_3alkoxy, or (g) C_1–C_3alkylthio;
wherein R_2 is
 (a) hydrogen, or (b) —CH(R_3)R_4;
wherein R_3 is
 (a) hydrogen, (b) hydroxy, (c) C_1–C_5alkyl, (d) C_3–C_7cycloalkyl, (e) aryl, (f) —Het, (g) C_1–C_3alkoxy, or (h) C_1–C_3alkylthio;
wherein R_4 at each occurrence is the same or different and is
 (a) hydrogen, or (b) C_1–C_5alkyl; wherein R_4 in D_9 is C_1–C_5 alkyl; wherein R_5 is (a) C_1–C_6alkyl, (b) C_3–C_7cycloalkyl, (c) aryl, (d) —Het, or (e) 5-oxo-2-pyrrolidinyl;
wherein R_6 is
 (a) hydrogen, (b) C_1–C_5alkyl, (c) —$(CH_2)_p$—aryl, (d) —$(CH_2)_p$—Het, (e) C_3-C_7cycloalkyl, or (f) 1- or 2-adamantyl;
wherein R_7 is (a) hydrogen, (b) C_1–C_5alkyl, (c) hydroxy, (d) amino C_1–C_4alkyl—,
 (e) guanidinyl C_1–C_3alkyl-,
 (f) aryl, (g) —Het, (h) methylthio, (i) C_3–C_7cycloalkyl, or (j) amino;
wherein R_7 in D_9 is 1H-imidazol-4-yl;
wherein R_8 is
 (a) hydrogen, (b) C_1–C_5alkyl, (c) hydroxy, (d) aryl, (e) —Het, (f) guanidinyl C_1–C_3alkyl-, or (g) C_3–C_7cycloalkyl;
wherein R_9 is
 (a) hydrogen, (b) hydroxy, (c) amino C_1–C_4alkyl-, or (d) guanidinyl C_1–C_3alkyl-;
wherein R_{10} is
 (a) hydrogen, (b) C_1–C_5alkyl, (c) —$(CH_2)_nR_{16}$, (d) —$(CH_2)_nR_{17}$, (e) C_3-C_7cycloalkyl, (f) a pharmaceutically acceptable cation, (g) —(CHR_{25})—CH_2—R_{15}, or (h) —CH_2—(CHR_{12})—R_{15};
wherein R_{11} is —R or —R_2;
wherein R_{12} is —$(CH_2)_n$—R_{13};
wherein R_{13} is
 (a) aryl, (b) amino, (c) mono-, di or tri-C_1–C_3alkylamino, (d) —Het, (e) C_1–C_5alkyl (f) C_3-C_7cycloalkyl, (g) C_1–C_5alkenyl, (h) C_3–C_7cycloalkenyl, (i) hydroxy, (j) C_1–C_3alkoxy, (k) C_1–C_3alkanoyloxy, (l) mercapto, (m) C_1–C_3alkylthio, (n) —COOH, (o) —CO—O—C_1–C_6alkyl, (p) —CO—O—CH_2—(C_1–C_3alkyl)—N(C_1–C_3alkyl)$_2$, (q) —CO—$NR_{22}R_{26}$; (r) C_4–C_7cyclic amino, (s) C_4–C_7cycloalkylamino, (t) guanidyl, (u) cyano, (v) N-cyanoguanidyl, (w) cyanoamino, (x) (hydroxy C_2–C_4alkyl)amino, or (y) di-(hydroxyC_2–C_4alkyl)amino;
wherein R_{14} is
 (a) hydrogen, (b) C_1–C_{10}alkyl, (c) —$(CH_2)_n$—R_{18}, (d) —$(CH_2)_n$—R_{19}, (e) —(CHR_{25})—CH_2—R_{15}, (f) —CH_2—(CHR_{12})—R_{15}, (g) (hydroxy C_1–C_8alkyl), or (h) (C_1–C_3alkoxy)C_1–C_8alkyl;
wherein R_{15} is
 (a) hydroxy, (b) C_3–C_7cycloalkyl, (c) aryl, (d) amino, (e) mono-, di-, or tri- C_1–C_3alkylamino, (f) mono- or di-[hydroxy C_2-C_4alkyl]amino, (g) —Het, (h) C_1–C_3alkoxy-, (i) C_1–C_3alkanoyloxy-, (j) mercapto, (k) C_1–C_3alkylthio-, (l) C_1–C_5alkyl, (m) C_4–C_7cyclic amino, (n) C_4–C_7cycloalkylamino, (o) C_1–C_5alkenyloxy, (p) C_3–C_7cycloalkenyl;
wherein R_{16} is
 (a) aryl, (b) amino, (c) mono- or di- C_1–C_3alkylamino, (d) hydroxy, (e) C_3–C_7cycloalkyl, (f) C_4–C_7cyclic amino, or (g) C_1–C_3alkanoyloxy;
wherein R_{17} is
 (a) —Het, (b) C_1–C_5alkenyl, (c) C_3–C_7cycloalkenyl, (d) C_1–C_3alkoxy, (e) mercapto, (f) C_1–C_3alkylthio, (g) —COOH, (h) —CO—O—C_1-C_6alkyl, (i) —CO—O—CH_2—(C_1–C_3alkyl)—N(C_1–C_3alkyl)$_2$, (j) —CO—$NR_{22}R_{26}$, (k) tri-C_1–C_3alkylamino, (l) guanidyl, (m) cyano, (n) N-cyanoguanidyl, (o) (hydroxy C_2–C_4alkyl)amino, (p) di-(hydroxy C_2–C_4alkyl)amino, or (q) cyanoamino; wherein R_{18} is (a) amino, (b) mono-, or di- C_1–C_3alkylamino, (c) C_4–C_7cyclic amino, or (d) C_4–C_7cycloalkylamino;
wherein R_{19} is
 (a) aryl, (b) —Het, (c) tri-C_1–C_3alkylamino, (d) C_3–C_7cycloalkyl, (e) C_1–C_5alkenyl, (f) C_3–C_7cycloalkenyl, (g) hydroxy,
 (h) C_1–C_3alkoxy, (i) C_1–C_3alkanoyloxy, (j) mercapto, (k) C_1–C_3alkylthio, (l) —COOH, (m) —CO—O—C_1–C_6alkyl, (n) —CO—O—CH_2—(C_1–C_3alkyl)—N(C_1–C_3alkyl)$_2$, (o) —CO—$NR_{22}R_{26}$, (p) guanidyl, (q) cyano, (r) N-cyanoguanidyl, (s) cyanoamino, (t) (hydroxy C_2–C_4alkyl)amino, (u) di-(hydroxy C_2–C_4alkyl)amino; or (v) —SO_3H; wherein R_{20} is (a) hydrogen, (b) C_1–C_5alkyl, or (c) aryl-C_1–C_5alkyl;
wherein R_{21} is
 (a) —NH_2, or (b) —OH;
wherein R_{22} is
 (a) hydrogen, or (b) C_1–C_3alkyl;
wherein R_{23} is
 (a) —$(CH_2)_n$—OH, (b) —$(CH_2)_n$—NH_2, (c) aryl, or (d) C_1–C_3alkyl;
wherein R_{24} is
 (a) —R_1, (b) —$(CH_2)_n$—OH, or (c) —$(CH_2)_n$—NH_2;
wherein R_{25} is —$(CH_2)_n$—R_{13};
wherein R_{26} is
 (a) hydrogen, (b) C_1–C_3alkyl, or (c) phenyl-C_1–C_3alkyl;
wherein m is one or two;
wherein for each occurrence n is independently an integer of zero to five, inclusive;
wherein p is zero to 2 inclusive;

wherein q is 1 to 5, inclusive;
wherein Q is
 (a) —CH_2—, (b) —CH(OH)—, (c) —O—, or (d) —S—; and
wherein M is
 (a) —CO—, or (b) —CH_2—;
wherein aryl is phenyl or naphthyl substituted by zero to 3 of the following:
 (a) C_1–C_3alkyl, (b) hydroxy, (c) C_1–C_3alkoxy, (d) halo, (e) amino, (f) mono- or di-C_1–C_3alkylamino, (g) —CHO, (h) —COOH, (i) $COOR_{26}$, (j) $COHR_{26}$, (k) nitro, (l) mercapto, (m) C_1–C_3alkylthio, (n) C_1–C_3alkylsulfinyl, (o) C_1–C_3alkylsulfonyl, (p) C_1–C_3alkylsulfonyl—N(R_4)— (q) SO_3H, (r) SO_2NH_2, (s) —CN, or
 (t) —CN_2NH_2;
wherein —Het is a 5- or 6-membered saturated or unsaturated ring containing from one to three heteroatoms selected from the group consisting of nitrogen, oxygen, and sulfur; and including any bicyclic group in which any of the above heterocyclic rings is fused to a benzene ring, which heterocyclic moiety is substituted with zero to 3 of the following:
 (i) C_1–C_6alkyl,
 (ii) hydroxy,
 (iii) trifluoromethyl,
 (iv) C_1–C_4alkoxy,
 (v) halo,
 (vi) aryl,
 (vii) aryl C_1–C_4alkyl-,
 (viii) amino, and
 (ix) mono- or di-C_1–C_4alkylamino; with the overall provisos that
(1) E_{10}–F_{11} is XL_{6a}, XL_{6b}, XL_{6c}, XL_{6d}, or XL_{6e} only when at least one of the following occurs:
 (i) A_6 is present and
  (A) A_6 is XL_1 or
  (B) A_6 is XL_2 wherein R_6 is Het which is N^{in}-formyl-Trp,
 (ii) B_7 is present and R_4 of B_7 is other than hydrogen,
 (iii) C_8 is present and is XL_1,
 (iv) D_9 is N_α-methyl-histidine,
 (v) B_7 and C_8 both are present and B_7 is XL_b wherein M is —CH_2— and C_8 is XL_1; or
 (vi) X is R_5—SO_2—$(CH_2)_q$—C(O)— or R_5—SO_2—C$(CH_2)_q$—OC(O)—;
(2) $E_{10}F_{11}$ is XL_{6e} only when G_{12}, H_{13} and I_{14} are absent;
(3) $B_7C_8D_9$ is Pro-Phe-His, $E_{10}F_{11}$ is XL_6, R_1 is isopropyl, or isobutyl; and R_{11} is isopropyl, isobutyl, or benzyl, only when one of the following occurs:
 (a) only 1 of G_{12},H_{13}, and I_{14} is present; (b) G_{12} is other than D or L val or D or L Ile; (c) H_{13} is other than D or L Tyr, D or L Phe, or D or L His; or (d) A_6 is FTrp or XL_1;
(4) R_{16} or R_{17} is an amino-containing substituent, hydroxy, mercapto, or —Het bonded through the hetero atom only when n for that substituent is an integer from two to five, inclusive;
(5) R_{18} or R_{19} is hydroxy, mercapto, or amino, or a mono-substituted nitrogen containing group bonded through the nitrogen only when n is not one;
(6) A_6, B_7, C_8, H_{13} and I_{14} are all absent, D_9 and G_{12} are both present, and —NR_4—of D_9 is —NH— and Z is —OR_{10} and R_{10} is hydrogen, C_1–C_5alkyl, or —$(CH_2)_m$—R_{16} or Z is —N(R_4)R_{14} and R_{14} is hydrogen, C_1–C_{10}alkyl or —$(CH_2)_n$—R_{18}, or Z is C_4–C_8cyclic amino, only when R_5—$(CH_2)_n$— is other than C_1–C_8alkyl, C_5–C_7cycloalkyl or aryl;
(7) A_6, B_7, C_8, D_9, H_{13}, I_{14} are all absent and G_{12} is present only when Z is —OR_{10} and R_{10} is —$(CH_2)_n$—R_{17}, —(CHR_{25})—CH_2R_{15} or —CH_2— (CHR_{12})—R_{15} or when Z is —N(R_4)R_{14} and R_{14} is —$(CH_2)_n$—R_{19}, —(CHR_{25})—CH_2R_{15}, or —CH_2—(CHR_{12})—R_{15};
(8) R_{12} is —$(CH_2)_n$—R_{13} and n is zero and both R_{13} and R_{15} are oxygen-, nitrogen-, or sulfur-containing substituents bonded through the hetero atom, only when the hetero atom is not also bonded to hydrogen;
(9) when R_{12} is —$(CH_2)_n$—R_{13} and n is zero, then R_{13} and R_{15} cannot both be —COOH;
(10) R_{25} is —$(CH_2)_n$—R_{13} and n is zero only when R_{13} is other than a primary or secondary nitrogen-containing group hydroxy or mercapto group or when R_4 of —N(R_4)R_{14} is other than hydrogen;
(11) Z is C_4–C_8cyclic amino, only when at least one of G_{12}, H_{13}, and I_{14} is present;
(12) R_{17} or R_{19} is —Het, only when —Het is other than cyclic amino;
(13) R_{17} or R_{19} is —COOH only when n for that moiety is other than zero; and
(14) at least one of A_6, B_7, C_8, D_9, G_{12}, H_{13} or I_{14} must be present;
or a carboxy-, amino-, or other reactive group-protected form
or a pharmaceutically acceptable acid addition salt thereof.

4,880,782

METHOD OF TREATING VIRAL INFECTIONS IN HUMANS AND COMPOSITIONS THEREFOR

Fritz Eckstein; Gerhard Hunsmann, and Heinz Hartmann, all of Göttingen, Fed. Rep. of Germany, assignors to Max-Planck-Gesellschaft zur Foederung der Wissenschaften e.V. and Dentsches Primatenzentrum GmbH, both of Goettingen, Fed. Rep. of Germany

Filed Apr. 22, 1987, Ser. No. 41,147

Claims priority, application Fed. Rep. of Germany, Nov. 21, 1986, 3639780; Mar. 18, 1987, 3708849

Int. Cl.^{4} A61K *31/70;* C07H *19/07*

U.S. Cl. 514—45 **12 Claims**

1. Composition useful in treating an infection of human immunodeficiency virus comprising an anti human immunodeficiency virus effective amount of 3′-azido-2′,3′-dideoxyinosine.

4,880,783

USE OF ADENOSINE, HYPOXANTHINE AND RIBOSE-CONTAINING SOLUTION FOR IMPROVED PROTECTION OF THE HEART DURING SURGERY

Robert M. Mentzer, Jr.; Stephen W. Ely; Robert D. Lasley, and Robert M. Berne, all of Charlottesville, Va., assignors to University of Virginia Alumnia Patents Foundation, Charlottesville, Va.

Continuation of Ser. No. 915,557, Oct. 6, 1986, abandoned. This application Sep. 29, 1988, Ser. No. 252,027

Int. Cl.^{4} A61K *31/70*

U.S. Cl. 514—46 **16 Claims**

1. A heart perfusate for reducing ischemic damage to a heart isolated from a normal blood supply comprising a cardioplegic solution having at least one purine nucleoside additive.

12. An improved method for enhancing ability of a myocardium to tolerate ischemia comprising perfusing a preischemic heart with a cardioplegic solution containing at least one purine nucleoside during either cardiovascular surgery or harvesting for cardiac transplantation, wherein the cardioplegic solution reduces the rate of ATP degradation during ischemia.

4,880,784

ANTIVIRAL METHODS UTILIZING RIBOFURANOSYLTHIAZOLO[4,5-D]PYRIMDINE DERIVATIVES

Roland K. Robins, Irvine, and Howard B. Cottam, Fallbrook, both of Calif., assignors to Brigham Young University, Provo, Utah

Filed Dec. 21, 1987, Ser. No. 136,020

Int. Cl.^{4} A61K *31/665, 31/67*

U.S. Cl. 514—48 **17 Claims**

10. A method of treating rhabdovirus, picornavirus, coronavirus, togavirus, bunyavirus, flavivirus, herpesvirus and cytomegalovirus in an afflicted host, said method consisting of:

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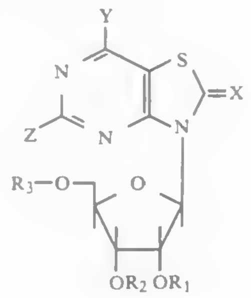
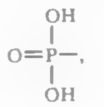
administering to said host a therapeutic effective amount of a compound of the structure:

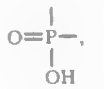


wherein R_1 and R_2 individually are H or C_1–C_{18} acyl and R_3 is H, C_1–C_{18} acyl or



$$O=\overset{\overset{OH}{|}}{\underset{\underset{OH}{|}}{P}}-,$$

or R_1 is H and together R_2 and R_3 are



$$O=\overset{|}{\underset{\underset{OH}{|}}{P}}-,$$

and X is =O or =S, Y is —OH, —SH, and Z is H, $—NH_2$, or a pharmaceutically acceptable salt thereof.

4,880,785
TOPICAL PROCESS FOR TREATING HERPES INFECTIONS USING 5-ISOPROPYL-2′-β-DEOXYURIDINE AS THE ACTIVE AGENT

Anna Szabolcs née Borbás; László Ötvös; János Sági; Helga Tudös née Feuer; Attila Szemzö ; Zsuzsa Veres; István Szinai; Miklós Vajda, all of Budapest; István Csernus, Debrecen; Katalin Marossy, Debrecen; Sándor Jancsó , Debrecen; Éva Medgyesi née Lukács, Debrecen, and György Bacsa, Debrecen, all of Hungary, assignors to MTA Kozponti Kemiai Kutato Intezete and BIOGAL Gyogyszergyar, Debrecen, Hungary

Filed Jun. 10, 1988, Ser. No. 204,724
Claims priority, application Hungary, Aug. 7, 1987, 3596/87
Int. Cl.⁴ A61K *31/70;* C07H *19/073*

U.S. Cl. 514—50 1 Claim

1. The process for treating a herpes infection by the topical application of a pharmaceutical composition comprising 0.02–5% by mass of 5-isopropyl-2′-B-deoxyuridine admixed with carriers, diluents and/or other additives conventionally used in the production of pharmaceutical compositions for external uses.

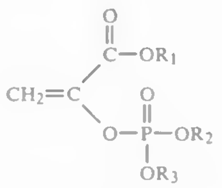
4,880,786
ADDITIVE SOLUTION FOR BLOOD PRESERVATION AND ACTIVATION

Shigeru Sasakawa, and Masayuki Shiba, both of Tokyo, Japan, assignors to Ube Industries, Ltd., Ube; Showa Denko K.K. and The Japanese Red Cross Society, both of Tokyo, all of, Japan

Filed Jan. 11, 1988, Ser. No. 142,786
Claims priority, application Japan, Jan. 14, 1987, 62-5080
Int. Cl.⁴ A01N *1/02;* A61K *35/14*

U.S. Cl. 514—53 11 Claims

1. An additive solution for blood preservation and activation, comprising a phosphoenolpyruvic acid represented by the following formula (I):



(I)

wherein R_1 represents a hydrogen atom or an alkyl group having 1 to 12 carbon atoms, R_2 and R_3 represent a hydrogen atom, an alkali metal or an alkyl group having 1 to 12 carbon atoms, respectively,

an L-ascorbic acid-phosphate or its pharmaceutically acceptable salt, a saccharide, adenine and a pharmaceutically acceptable organic buffer.

4,880,787
CRACKING CATALYST

Robert G. Bundens, Mullica Hill, and Joseph A. Herbst, Turnersville, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation of Ser. No. 916,258, Oct. 7, 1986, abandoned, which is a continuation-in-part of Ser. No. 897,000, Aug. 15, 1986, abandoned. This application Jan. 6, 1988, Ser. No. 140,872
Int. Cl.⁴ B01J *29/08, 29/10*

U.S. Cl. 502—65 36 Claims

1. A catalyst composition comprising 1 to 60 weight percent framework dealuminated Y zeolite, based on the total weight of the composition;

40 to 99 weight percent of a matrix, based on the total weight of said composition;

0.01 to 15 weight percent alumina incorporated into said catalyst composition via ion exchange based on the total weight of said composition;

0.01 to 10 weight percent rare earth, expressed as the oxides of same, based on the total weight of said composition, dispersed, exchanged, impregnated or deposited in a composite of said zeolite and said matrix.

4,880,788
METHOD FOR PREVENTING AND TREATING THROMBOSIS

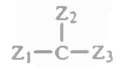
Joel L. Moake; Martin D. Phillips; Larry V. McIntire, and Jesse D. Hellums, all of Houston, Tex., assignors to Baylor College of Medicine, Houston, Tex.

Filed Oct. 30, 1987, Ser. No. 115,236
Int. Cl.⁴ C07C *105/00, 107/00*

U.S. Cl. 514—150 13 Claims

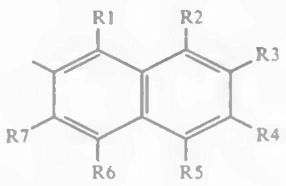
1. A method for treating a condition in an individual comprising administering a compound in an amount effective to prevent aggregation of blood platelets to an individual in need of said treatment wherein said condition is selected from the group consisting of arterial thrombosis and venous thromboembolism and wherein said compound is selected from the group having the formulas.

$X_1—N=N—Y_1—Q—Y_2—N=N—X_2$and

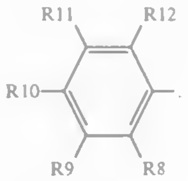


$$Z_1-\overset{\overset{Z_2}{|}}{C}-Z_3$$

and salts thereof
wherein
X_1 and X_2 are



Y_1 and Y_2 are



Z_1, Z_2 and Z_3 are benzyl groups substituted in one or more positions with hydrogen groups, carboxyl groups or hydroxyl groups,

Q is a bond between the adjacent aryl or substituted aryl groups or a ureylene group or an alkylene or substituted alkylene group, and

R_1–R_7 is selected from the group consisting of hydrogen, a hydroxyl group, an amino group, a sulfate group, a phosphate group, a nitrate group, a nitrite group, a carboxyl group, an ester group, an ether group, an alkyl group, and salts of the aforementioned acidic substituents; and

R_8–R_{12} is selected from the group consisting of hydrogen, a lower alkyl group, an alkyl ether group and a lower alkanoyl oxy group, and salts thereof.

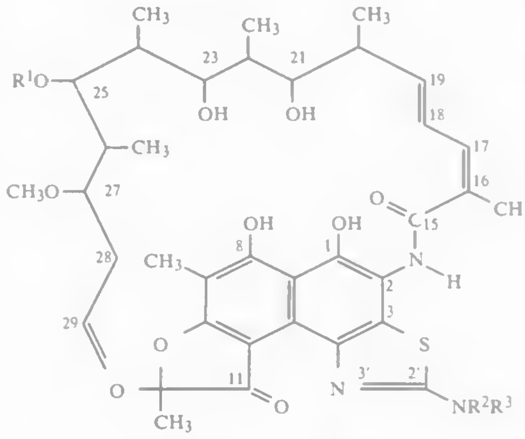
4,880,789
2′-SUBSTITUTED-4-DEOXY-THIAZOLO(5,4-C)-RIFAMYCIN SV DERIVATIVES

Bruno Cavalleri, Milan; Marco Turconi, Voghera, and Giovanni Tamborini, Pogliano Milanese, all of Italy, assignors to Gruppo Lepetit S.P.A., Gerenzano, Italy

Continuation of Ser. No. 945,704, Dec. 23, 1986, abandoned. This application Aug. 24, 1988, Ser. No. 238,985
Claims priority, application United Kingdom, Dec. 30, 1985, 8531887
Int. Cl.⁴ C07D *513/08;* A61K *31/425*

U.S. Cl. 514—183 19 Claims

1. A compound of the formula:



wherein R^1 represents hydrogen or acetyl, R^2 and R^3 each independently represent (C_1-C_4)alkyl or R^2 and R^3 taken together with the adjacent nitrogen atom represent a 4–7 membered saturated heterocyclic ring which may contain a further hetero group selected from oxygen, sulfur and $—N—R^4$, wherein said heterocyclic ring is selected from the group consisting of azetidinyl, pyrrolidinyl, piperidinyl, piperazinyl, oxazolinidinyl, pyrazolindinyl, thiazolidinyl, morpholinyl, imidazolidinyl and the further ring nitrogen atom when present bears a substituent R^4, wherein said R^4 is selected from the group consisting of hydrogen, (C_1–C_4)alkyl, hydroxy (C_2-C-$_4$)alkyl, (C_2–C_4)alkanoyl, (C_1–C_4)alkoxycarbonyl, phenyl optionally substituted with 1 to 3 substituents selected from halogeno, hydroxy, (C_1–C_4)alkyl and (C_1–C_4)alkoxy; phenyl (C_1-C_4)alkyl wherein the phenyl ring may be optionally substituted with 1 to 3 substituents selected from halogeno, hydroxy, (C_1-C_4)alkyl, and (C_1–C_4)alkoxy; phenyl (C_1–C_4)alkoxycarbonyl wherein the phenyl ring may be optionally substituted from 1 to 3 substituents selected from halogeno, hydroxy, (C_1-C_4)alkyl and (C_1–C_4)alkoxy, and the pharmaceutically acceptable acid addition salts thereof.

8. A antibacterial composition which comprises a compound of claim 1 present in a quantity sufficient to exhibit antibacterial activity in admixture with a pharmaceutically acceptable carrier.

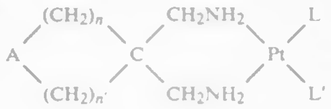
4,880,790
(GEM-HETEROCYCLODIMETHANAMINE-N,N′)PLATINUM COMPLEXES

Ralph G. Child, Pearl River; Panayota Bitha, Pomona; Joseph J. Hlavka, Tuxedo, and Yang-I Lin, Nanuet, all of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

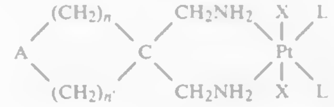
Filed Jan. 31, 1986, Ser. No. 824,404
Int. Cl.⁴ A61K *31/35;* C07D *309/04*

U.S. Cl. 514—184 19 Claims

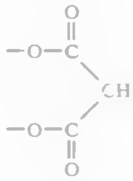
1. A compound selected from those of the formulae:

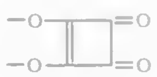


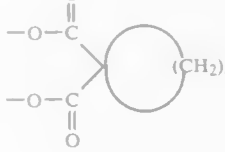
and



where A is O, n and n′ are the same and are 2,; L and L′ are selected from the group consisting of halide, nitrate, sulfate, and a monobasic carboxylate selected from the group consisting of acetate, hydroxy acetate and propionate; or L and L′ may be a diabsic carboxylate selected from the group consisting of







where m = 2-5,

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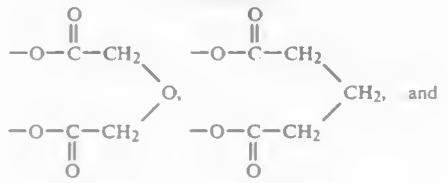
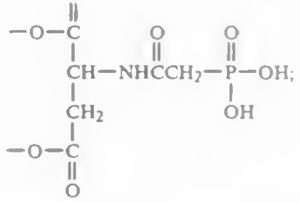
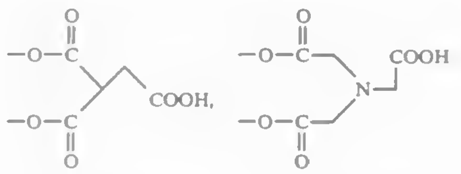
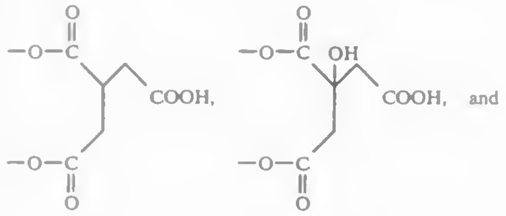
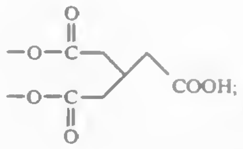




or L and L' taken together may be a tribasic carboxylate seleced from the group consisting of







or L or L' taken together is ascorbic acid and X is selected from the group consisting of halogen and hydroxy.

18. A method of treating melanocarcinomas, lung carcinomas and mammary tumors in warm-blooded animals which comprises administering an effective, oncolytic amount of a compound of claim 1.

4,880,791

COMBINATION PRODUCT COMPOSED OF XANTHINE DERIVATIVES AND O-ACETYLSALICYLIC ACID OR ITS PHARMACOLOGICALLY TOLERATED SALTS, AND ITS USE

Klaus U. Weithmann, Hofheim am Taunus, and Dirk Seiffge, Münzenberg, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Continuation of Ser. No. 756,673, Jul. 19, 1985, abandoned. This application Jul. 14, 1988, Ser. No. 219,809

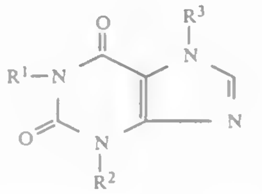
Claims priority, application Fed. Rep. of Germany, Jul. 21, 1984, 34269614; Mar. 7, 1985, 35080973

Int. Cl.^{4} A61K *31/62, 31/52, 9/22*

U.S. Cl. 514—161 **20 Claims**

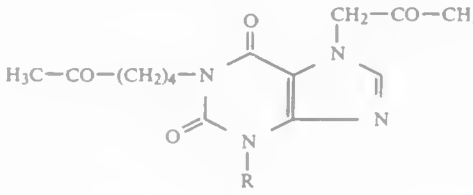
1. A pharmaceutical combination preparation for the treatment of diseases which are caused or characterized by impaired blood ingredients, particularly thrombocytes, erythrocytes or leucocytes, containing an essential ingredients:

(A) a xanthine derivative of the formula I



(I)

in which one of the groups R^1 and R^3 is a straight-chain alkyl, a $(\omega-1)$-oxoalkyl or a $(\omega-1)$-hydroxyalkyl group having 3 to 8 carbon atoms and the two other groups R^2 and R^3, or R^1 and R^2 respectively, are straight-chain or branched alkyl groups having 1 to 8 carbon atoms in the position of R^1 and R^3 and 1 to 4 carbon atoms in the position of R^2, the sum of the carbon atoms of these two alkyl substituents being at most 10, or a xanthine derivative of the formula II



(II)

in which R is an alkyl group of 1 to 4 carbon atoms, or of a prodrug of an oxoalkyl xanthine of the formula I or II or of a hydroxyalkyl xanthine of the formula I, or a metabolite of any xanthine derivative of the formula I or II, and

(B) O-acetylsalicyclic acid or a pharmacologically tolerable salt thereof, each being coated, micro-encapsulated or formulated for delayed release such that component (A) is released to the body from 10 minutes to 4 hour prior to component B,

(C) together with or without a pharmaceutical carrier.

4,880,792

MOLDING INSTALLATION USING DIE

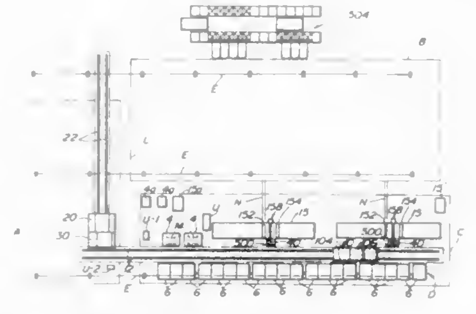
Kenichiro Yoshioka, and Hironori Hisamitsu, both of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hioshima, Japan

Filed Nov. 5, 1987, Ser. No. 117,224

Claims priority, application Japan, Nov. 6, 1986, 61-262717; Nov. 6, 1986, 61-262719; Nov. 6, 1986, 61-262721; Nov. 6, 1986, 61-262722; Nov. 20, 1986, 61-278416; Nov. 20, 1986, 61-179288[U]; Dec. 24, 1986, 61-306213

Int. Cl.^{4} B29C *45/03*

U.S. Cl. 425—190 **19 Claims**



1. A molding installation using a die, comprising:

a molding apparatus for effecting the molding with the die;

a stocker having means for storing the die;

a die carriage positionable to transfer the die between the carriage and the molding apparatus and between the carriage and the stocker, said carriage having a table for supporting the die and being movable on a path interposed between the molding apparatus and the stocker, said path being located a distance farther from the molding apparatus than from the stocker;

a first die replacing means mounted on the molding apparatus for transferring the die to and from the carriage, and

a second die replacing means mounted on the carriage for transferring the die to and from the stocker.

4,880,793

COMBINATION OF THIENAMYCIN-TYPE ANTIBIOTICS WITH DIPEPTIDASE INHIBITORS

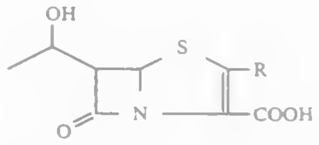
Helmut Kropp, Kenilworth, and Frederick M. Kahan, Scotch Plains, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation of Ser. No. 394,311, Jul. 7, 1982, abandoned, which is a continuation-in-part of Ser. No. 340,152, Jan. 18, 1982, abandoned, which is a continuation-in-part of Ser. No. 291,711, Aug. 10, 1981, Pat. No. 4,539,208, which is a continuation-in-part of Ser. No. 187,929, Sep. 17, 1980, abandoned, which is a continuation-in-part of Ser. No. 050,232, Jun. 22, 1979, abandoned, which is a continuation-in-part of Ser. No. 927,213, Jul. 24, 1978, abandoned. This application Mar. 14, 1986, Ser. No. 840,532

Int. Cl.^{4} A61K *31/24, 31/43, 31/195*

U.S. Cl. 514—192 32 Claims

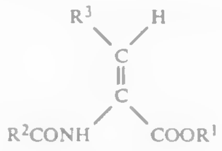
1. An antibacterial composition comprising a combination of a penem having the following structure:



wherein

R is substituted or unsubstituted alkyl having 1 to 6 carbon atoms or —SR' wherein R' is substituted or unsubstituted:

phenyl or phenyl alkyl having 7–12 carbon atoms, heterocyclyl or heterocyclylalkyl wherein alkyl has 1–3 carbon atoms and the heterocyclic moiety has 1–4 hetero atoms selected from O, N, or S; and the easily removable or pharmaceutically acceptable salt or ester derivatives thereof; and a dipeptidase (E.C.3.4.13.11) inhibitor compound of the following formula:



wherein R^2 and R^3 are hydrocarbon radicals in the range respectively of 3–10 and 1–15 carbon atoms; in these R^2 or R^3 hydrocarbon chains 1–6 hydrogens may be replaced by halogens or a nonterminal methylene may be replaced by oxygen or sulfur, including oxidized forms of the latter; additionally, a terminal hydrogen in R^3 can also be replaced by hydroxyl or thiol, which may be acylated or carbamoylated; or the hydrogen can be replaced by amino, which may be derivatized as in an acylamino, ureido, amidino, guanidino, or alkyl or substituted amino group, including guaternary nitrogen groupings; or, there may be replacement by carboxylic, phosphonic or sulfonic acid groups or esters or amides thereof, or cyano; or combinations thereof, such as a terminal amino acid grouping; and R^1 is hydrogen or lower alkyl (C_{1-6}) or dialkylaminoalkyl, or a pharmaceutically acceptable cation, and the weight ratio of the penem to the dipeptidase inhibitor being within the range of about 1:3 to about 30:1

4,880,794

PHARMACEUTICAL COMPOSITION AND METHOD FOR THE TREATMENT OF COLITIS ULCEROSA AND CROHN'S DISEASE BY ORAL ADMINISTRATION

Soren Halskov, Granvaenget 3, 3200 Helsinge, Denmark

Continuation of Ser. No. 689,852, Jan. 8, 1985, abandoned, which is a division of Ser. No. 555,533, Nov. 28, 1983, Pat. No. 4,496,553, which is a continuation of Ser. No. 270,517, May 29, 1981, abandoned. This application Jun. 8, 1987, Ser. No. 59,196

Claims priority, application Denmark, Mar. 20, 1980, 1202/80

Int. Cl.^{4} A61K *31/615*

U.S. Cl. 514—166 4 Claims

1. A method for the treatment of ulcerative colitis or Crohn's disease comprising orally administering an effective amount of a composition consisting essentially of a pharmaceutically acceptable salt of free 5-aminosalicylic acid in admixture with a pharmaceutically acceptable carrier which will control the release of said effective amount of said salt of 5-aminosalicylic acid to be administered according to the actual site of said ulcerative colitis or Crohn's disease in an individual patient.

4,880,795

CEPHALOSPORINS

Rolf Angerbauer; Michael Boberg; Karl G. Metzger, all of Wuppertal, and Hans-Joachim Zeiler, Velbert, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Division of Ser. No. 730,985, May 6, 1985, Pat. No. 4,686,216. This application Mar. 3, 1987, Ser. No. 21,293

Int. Cl.^{4} A61K *31/545;* **C07D** *501/46*

U.S. Cl. 514—202 5 Claims

1. A cephalosporin which is selected from the group consisting of

7β-[(Z)-2-(2-Aminothiazol-4-yl)-2-methoxyiminoacetamido]-3-(1-ethyl-1-piperidinium)methyl-3-cephem-4-carboxylate

and

7β[(Z)-2-(2-Aminothiazol-4-yl)-2-methoxyiminoacetamido]-3-(4-ethyl-4-morpholinium)methyl-3-cephem-4-carboxylate or a pharmaceutically acceptable salt thereof.

4,880,796

ANTIMICROBIAL PREPARATION

Yoshiya Yamahira, Ibaraki; Yoshiko Okuzawa, Nishinomiya; Keiji Fujioka; Shigeji Sato, both of Ibaraki, and Reimei Ishikawa, Sakado, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka and Yamanouchi Pharmaceutical Co., Ltd., Tokyo, both of, Japan

Continuation of Ser. No. 732,809, May 10, 1985, abandoned, which is a continuation of Ser. No. 525,258, Aug. 22, 1983, abandoned, which is a continuation of Ser. No. 305,710, Sep. 25, 1981, abandoned. This application Apr. 9, 1987, Ser. No. 36,201

Claims priority, application Japan, Oct. 1, 1980, 55-137939

Int. Cl.^{4} A61K *31/545*

U.S. Cl. 514—206 6 Claims

1. A solid preparation for injection use which comprises an antimicrobially effective amount of compound A which is D-7-[α-(4-hydroxy-6-methylnicotinamido)-4-hydroxyphenylacetamido]-3-(1-methyltetrazol-5-yl)thiomethyl-Δ^3-cephem-4-sodium carboxylate and from 50 to 200 mg. per 1 gm. potency unit of D-7-[α-(4-hydroxy-6-methylnicotinamido)-4-hydroxyphenylacetamido]-3-(1-methyltetrazol-5-yl)thiomethyl-Δ^3-cephem-4-sodium carboxylate of a stabilizer selected from the group consisting of benzoic acid and sodium benzoate, and a suitable amount of a pharmaceutically acceptable pH-adjustable compound in an amount sufficient to adjust pH of an injectable aqueous solution to a range of 6 to 9 when said solid preparation is reconstituted as an

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injectable aqueous solution prior to the injection, formed by the steps of:
(a) forming an aqueous solution of compound A, said stabilizer and said pH-adjustable compound; and
(b) freeze-drying the aqueous solution to form said solid preparation.

4,880,797
CEPHALOSPORIN DERIVATIVES AND ANTIBACTERIAL AGENTS

Susumu Nakagawa; Ryuji Mitomo, and Ryosuke Ushijima, all of Okazaki, Japan, assignors to Banyu Pharmaceutical Co., Ltd., Tokyo, Japan

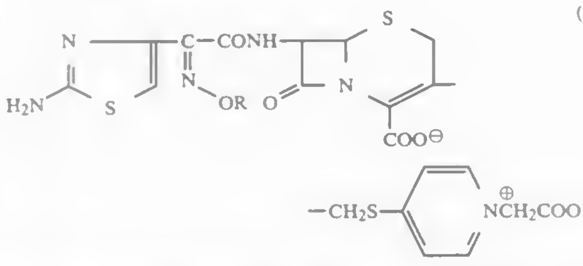
Filed Mar. 20, 1987, Ser. No. 28,576

Claims priority, application Japan, Mar. 20, 1986, 61-60500

Int. Cl.^{4} C07C *501/36;* **A61K** *31/545*

U.S. Cl. 514—206 **8 Claims**

I. A compound having the formula:



(I)

wherein R is a benzyl group which may be substituted by at least one substituent selected from the group consisting of an alkyl group having from 1 to 4 carbon atoms, a hydroxyl group, an alkoxy group having 1 to 4 carbon atoms, an acetoxy group, a carboxyl group, a substituted phenyl group and a halogen atom; or a pharmaceutically acceptable salt, physiologically hydrolyzable ester or solvate thereof.

4,880,798
CEPHALOSPORIN DERIVATIVES

Kazuo Kato, Mishima; Kimihiro Murakami; Hidenori Mochizuki, both of Gotenba, and Ei Mochida, Toshima, all of Japan, assignors to Mochida Pharmaceutical Co., Ltd., Tokyo, Japan

Filed Nov. 20, 1987, Ser. No. 123,526

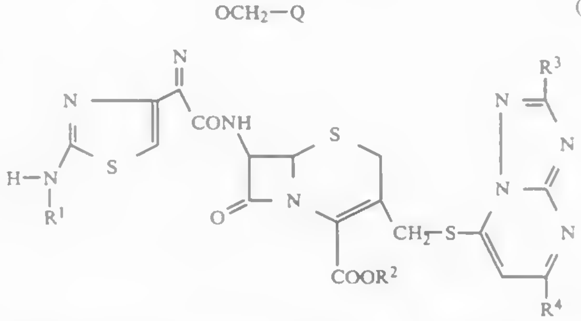
Claims priority, application Japan, Nov. 25, 1986, 61-280020; Nov. 25, 1986, 61-280021; Jan. 26, 1987, 62-015459; Jan. 26, 1987, 62-015460; Jan. 26, 1987, 62-015461

The portion of the term of this patent subsequent to Sep. 12, 2006, has been disclaimed.

Int. Cl.^{4} C07D *501/36;* **A61K** *31/545*

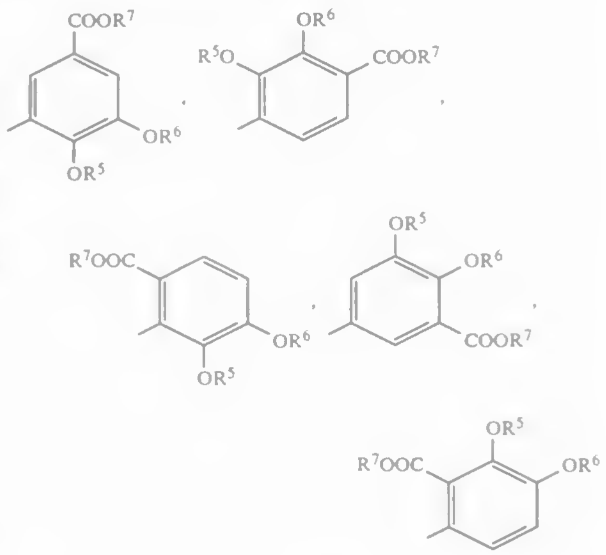
U.S. Cl. 514—206 **15 Claims**

1. A cephalosporin compound of the formula (I):



(I)

and non-toxic salts, non-toxic solvates and non-toxic salts of solvates thereof; wherein R^1 represents a hydrogen atom or an amino-protecting group, R^2 represents a hydrogen atom or a carboxy-protecting group, R^3 represents a hydrogen atom, a hydroxy group, an amino group, a sulfo group, a carboxy group or a protected carboxy group, R^4 represents a hydrogen atom, a methyl group, a carboxy group, a protected carboxy group, a carboxymethyl group or a protected carboxymethyl group, Q represents a group:



wherein R^5 and R^6 are same or different and represent hydrogen atom, hydroxy-protecting group or together a vicinal diol protecting group, and R^7 represents a hydrogen atom or carboxy-protecting group, and the bond shown with a wavy line represents a bond of anti-form or syn-form.

4,880,799
HETEROCYCLIC COMPOUNDS AND THEIR PREPARATION AND USE

Frank Wätjen, and Mogens Engelstoft, both of Vaerloese, Denmark, assignors to A/S Ferrosan, Soeborg, Denmark

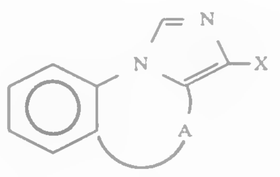
Division of Ser. No. 912,777, Sep. 26, 1986. This application Feb. 2, 1989, Ser. No. 305,970

Claims priority, application Denmark, Oct. 17, 1985, 4768/85

Int. Cl.^{4} C07D *513/04, 498/04;* **A61K** *31/55*

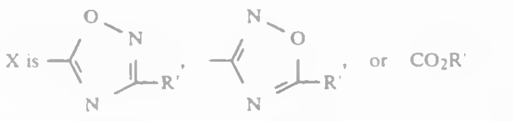
U.S. Cl. 514—211 **12 Claims**

1. Heterocyclic compounds having the formula I



I

wherein



wherein R' is $C_{1\text{-}6}$-alkyl, $C_{3\text{-}7}$-cycloalkyl, or $C_{1\text{-}3}$-alkoxymethyl, and
—A— is —$(CH_2)_n$—Y—$(CH_2)_m$—, wherein n and m are 1 and —Y— is —O— or —S—.

4,880,800
AMINOCYCLOPENTYL ETHERS AND PHARMACEUTICAL FORMULATION

Christopher J. Wallis, Royton; Harry Finch, Hitchin, and Peter Hallett, Royston, all of England, assignors to Glaxo Group Limited, London, England

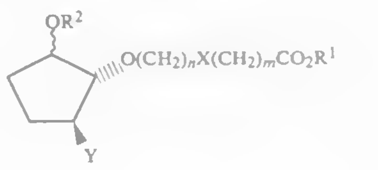
Continuation of Ser. No. 735,181, May 17, 1985, abandoned. This application Sep. 15, 1987, Ser. No. 96,755

Claims priority, application United Kingdom, May 18, 1984, 8412774; Sep. 12, 1984, 8423083

Int. Cl.^{4} A61K *31/557;* **C07D** *267/10, 223/02, 211/22*

U.S. Cl. 514—211 **11 Claims**

1. Compounds of the formula (1)



(1)

wherein:
R^1 is a hydrogen atom or a methyl group;
X is cis or trans —CH═CH— or —CH_2CH_2—, m is 2, 3 or 4 and n is 1; or X is trans —CH═CH—, m is zero and n is 3;
Y is a saturated heterocyclic amino group attached to the cyclopentane ring via the nitrogen atom, said group being selected from the group consisting of pyrrolidine, piperidine, morpholine, piperazine, thiomorpholine, 1,1-dioxothiomorpholine, homomorpholine and hexamethyleneimino; piperazine substituted at the second nitrogen atom by a methyl, ethyl, butyl, hexyl, benzyl or phenethyl group; and any of said groups substituted on a ring carbon atom by one or more $C_{1\text{-}4}$ alkyl groups;
R^2 is (i) straight or branched $C_{1\text{-}5}$ alkyl substituted by (a) phenyl optionally substituted by $C_{1\text{-}6}$ alkyl, $C_{5\text{-}7}$ cycloalkyl, phenyl alkyl having a $C_{1\text{-}3}$ alkyl portion, thienyl, phenyl (optionally substituted by $C_{1\text{-}4}$ alkyl, $C_{1\text{-}4}$ alkoxy or phenyl, (b) thionyl optionally substituted by $C_{5\text{-}7}$ cycloalkyl or phenyl (optionally substituted by $C_{1\text{-}3}$ alkyl, $C_{1\text{-}3}$ alkoxy or halogen), or (c) naphthyl (optionally substituted by $C_{1\text{-}4}$ alkyl or $C_{1\text{-}4}$ alkyl or $C_{1\text{-}4}$ alkoxy) or (ii) cinnamyl;
and the physiologically acceptable salts and solvents thereof.

9. A pharmaceutical composition comprising a bronchodilating effective amount of a compound as claimed in claim 1 and a pharmaceutically acceptable carrier.

10. A pharmaceutical composition comprising a vasodilating effective amount of a compound as claimed in claim 1 and a pharmaceutically acceptable carrier.

11. A pharmaceutical composition comprising a blood platelet aggregation inhibiting amount of a compound as claimed in claim 1 and a pharmaceutically acceptable carrier.

4,880,801
HETEROCYCLIC AMINO COMPOUNDS

John Kitchin, Eastcote; Peter C. Cherry, South Harrow; Adrian J. Pipe; Andrew J. Crame, both of Greenford, and Alan D. Borthwick, London, all of England, assignors to Glaxo Group Limited, London, England

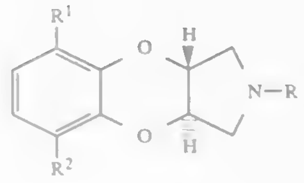
Continuation of Ser. No. 930,891, Nov. 17, 1986, abandoned, which is a continuation of Ser. No. 726,604, Apr. 24, 1985, abandoned. This application May 26, 1988, Ser. No. 198,971

Claims priority, application United Kingdom, Apr. 24, 1984, 8410456; Feb. 15, 1985, 8503975

Int. Cl.^{4} A61K *31/55, 31/40;* **C07D** *209/56*

U.S. Cl. 514—215 **15 Claims**

1. A compound of formula (I):



wherein
R is a hydrogen atom or a group selected from $C_{1\text{-}6}$ alkyl unsubstituted or substituted by $C_{3\text{-}7}$ cycloalkyl, $C_{3\text{-}6}$ alkenyl, $C_{3\text{-}6}$ alkynyl, $C_{3\text{-}7}$ cycloalkyl, phenalkyl in which the alkyl moiety contains 1–5 carbon atoms, and —CHO; R^1 is a group selected from halogen, $C_{1\text{-}4}$ alkyl, or hydroxyl; and
R^2 is a hydrogen atom or a substituent as defined above for R^1;
and the physiologically acceptable salts thereof.

10. An alpha$_2$-adrenoreceptor antagonist composition comprising a pharmaceutically effective amount of an alpha$_2$-adrenoreceptor antagonist compound selected from the group consisting of compounds of formula (I), claim 1, physiologically acceptable salts thereof and their mixtures, together with a physiologically acceptable carrier or excipient.

4,880,802
SUBSTITUTED BASIC 2-AMINOTETRALIN USEFUL AS CARDIOTONIC AGENTS

Rudolf Schohe, Wuppertal; Thomas Glaser, Rössrath; Jörg Traber, Lohmar, all of Fed. Rep. of Germany, and George S. Allen, Nashville, Tenn., assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

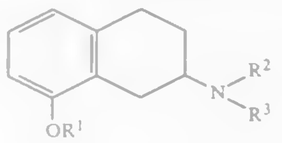
Filed Dec. 8, 1987, Ser. No. 130,373

Claims priority, application Fed. Rep. of Germany, Dec. 10, 1986, 3642192; Jun. 1, 1987, 3718317

Int. Cl.^{4} C07D *279/02;* **A61K** *31/54*

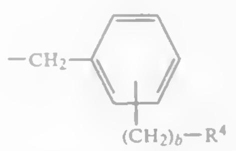
U.S. Cl. 514—222.2 **10 Claims**

1. A substituted basic 2-aminotetralin of the formula



(I)

in which
R^1 represents hydrogen or alkyl,
R^2 represents hydrogen, alkyl or acyl, and
R^3 represents a group of the formula —$(CH_2)_a$—R^4, —CH-$_2$—CH═CH—$(CH_2)_b$—R^4 or —CH_2—C≡C—(CH$_2$.)$_b$—R^4,



wherein
a denotes a number from 1 to 10, and
b denotes a number 0, 1, 2, 3 or 4, and
R^4 denotes

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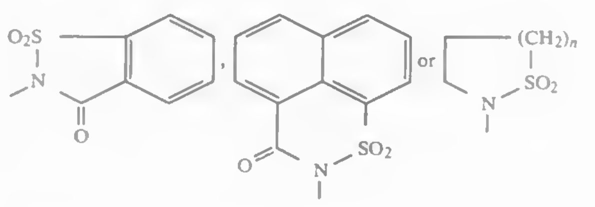


wherein

n denotes a number 1 or 2, or its salt.

9. A method of treating a patient suffering from a disorder of the central nervous system, the cardiovascular system or the intestinal tract comprising administering to such patient an amount effective therefor of a compound or salt according to claim 1.

4,880,803

METHOD OF INDUCING IMMUNOSTIMULATING ACTIVITY

Francoise Delevallee, Fontenay Sous Bois; Roger Deraedt, Pavillons Sous Bois, and Josette Benzoni, Livry Gargan, all of France, assignors to Roussel Uclaf, Paris, France

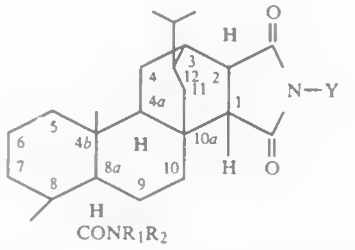
Continuation of Ser. No. 898,241, Aug. 8, 1986, abandoned. This application Oct. 1, 1987, Ser. No. 103,919

Claims priority, application France, Aug. 22, 1985, 85 12619

Int. Cl.⁴ A61K *31/535, 31/50, 31/495, 31/40*

U.S. Cl. 514—232.8 **5 Claims**

1. A method of inducing immunostimulating activity in warm-blooded animals in need of said activity comprising administering to warm-blooded animals in need of immunostimulating activity an effective immunostimulating amount of a maleo-pimaric acid compound of the formula



I

"wherein R_1 and R_2 together with the nitrogen atom form a group selected from the group consisting of morpholino, piperazin-1-yl, pyrrolididno, 4-alkylpiperazin-1-yl of 1 to 5 alkyl carbon atoms and 4-hydroxyalkyl-piperazin-1-yl of 1 to 5 alkyl carbon atoms and Y is selected from the group consisting of hydrogen, amino and B-hydroxythyl".

4,880,804

ANGIOTENSIN II RECEPTOR BLOCKING BENZIMIDAZOLES

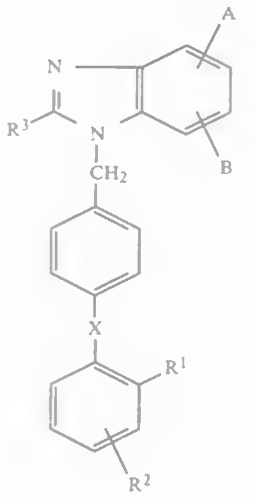
David J. Carini, Wilmington; John Jonas V. Duncia, Newark, both of Del., and Sung-Eun Yoo, Daejeon, Rep. of Korea, assignors to E. I. Du Pont De Nemours and Company, Wilmington, Del.

Filed Jan. 7, 1988, Ser. No. 142,053

Int. Cl.⁴ A61K *31/535;* **C07D** *233/56*

U.S. Cl. 514—234.5 **13 Claims**

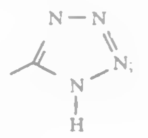
12. Method of treating hypertension in a warm-blooded animal comprising administering to the animal in an amount effective to lower the animal's blood pressure a compound of the formula:



(1)

where

R^1 is $—CO_2H$, $—NHSO_2CF_3$,

or 

R^2 is H, halogen, NO_2, methoxy, or alkyl of 1 to 4 carbon atoms;

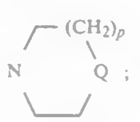
R^3 is alkyl of 1 to 6 carbon atoms, alkenyl or alkynyl of 3 to 6 carbon atoms each of which may be unsubstituted or substituted with a halogen atom, $—OR^4$ or up to two $—CO_2R^4$; with the proviso that when R^3 is methyl it must be substituted with $—OR^4$ or $—CO_2R^4$;

R^4 is H, or alkyl of 1–4 carbon atoms;

R^5 is H, alkyl of 1 to 5 carbon atoms, cycloalkyl of 3 to 6 carbon atoms, $(CH_2)_mC_6H_5$, OR^6, or NR^7R^8;

R^6 is H, alkyl of 1 to 5 carbon atoms, cycloalkyl of 3 to 6 carbon atoms or phenyl;

R^7 and R^8 independently are H, alkyl of 1 to 4 carbon atoms, phenyl, benzyl or taken together with nitrogen form a ring of the formula

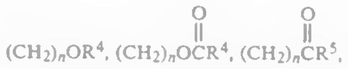


Q is NR^9, O, or CH_2;

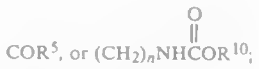
R^9 is H, alkyl of 1 to 4 carbon atoms, or phenyl;

R^{10} is alkyl of 1 to 6 carbon atoms;

A is H, alkyl of 1 to 10 carbon atoms, C_rF_{2r+1} where r = 1–6, C_6F_5, halogen, alkoxy of 1 to 6 carbon atoms;



$(CH_2)_nOR^4$, $(CH_2)_nO\overset{\overset{O}{\|}}{C}R^4$, $(CH_2)_n\overset{\overset{O}{\|}}{C}R^5$,



$\overset{\overset{O}{\|}}{C}OR^5$, or $(CH_2)_nNH\overset{\overset{O}{\|}}{C}OR^{10}$;

B is H, alkyl of 1 to 10 carbon atoms, C_rF_{2r+1} where r = 1–6, C_6F_5, halogen or alkoxy of 1 to 6 carbon atoms;

X is a carbon-carbon single bond, —CO—, —O—, —NH-CO—, or $—OCH_2—$;

n is 1 to 6;

m is 0 to 3;

p is 0 or 1;

or a pharmaceutically acceptable salt thereof;

provided that:

(1) when R^3 is methyl it must be substituted with $—OR^4$ or $—CO_2R^4$;

(2) when R^3 is $—CH{=}CH—CO_2Et$, then X is not —NHCO;

(3) when R^3 is CH_2OH, $CH{=}CHCO_2H$ or $CH_2CH_2CO_2H$ and A and B are hydrogen, then X cannot be a carbon-carbon single bond;

(4) when R^1 is $—CO_2H$, R^3 is butyl, and X is a carbon-carbon single bond, then A is not 5-Cl;

(5) when R^1 is $—CO_2H$, R^3 is CH_2OCH_3 and X is a carbon-carbon single bond, then A is not $5\text{-}CH_2OH$.

4,880,805

USE OF ALKYLENEDIAMINE DERIVATIVES FOR THE TREATMENT OF BLOOD FLOW DISTURBANCES AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Erwin Böhm, Ladenburg; Jens-Peter Hölck, Mannheim; Wolfgang Kampe, Heddesheim; Herbert Leinert, Heppenheim; Bernd Müller-Beckmann, Grünstadt, and Klaus Strein, Mannheim, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Fed. Rep. of Germany

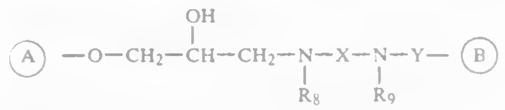
Division of Ser. No. 6.275, Jan. 20, 1987, Pat. No. 4,780,474, which is a continuation-in-part of Ser. No. 759,909, Jul. 29, 1985, abandoned. This application Jul. 21, 1988, Ser. No. 222,215

Claims priority, application Fed. Rep. of Germany, Aug. 2, 1984, 3428525

Int. Cl.⁴ A61K *31/535, 31/415, 31/505, 31/40*

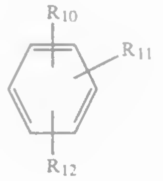
U.S. Cl. 514—237.5 **11 Claims**

1. Method for treating a blood flow disturbance characterized by reduced deformability of erythrocytes comprising administering to a subject with such a blood flow disturbance, in an amount effective to increase the deformability of erythrocytes in the blood an alkylenediamine of the formula:

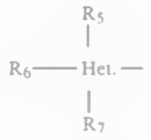


$$Ⓐ—O—CH_2—\overset{\overset{OH}{|}}{CH}—CH_2—\underset{\underset{R_8}{|}}{N}—X—\underset{\underset{R_9}{|}}{N}—Y—Ⓑ$$

wherein Ⓐ is a phenyl radical of the formula



wherein R_{10}, R_{11} and R_{12}, are individually selected from the group consisting of hydrogen, halogen, lower alkyl of 1 to 6 carbon atoms, lower alkoxy of 1 to 6 carbon atoms, lower alkylthio of 1 to 6 carbon atoms, nitro, amino and lower acylamine of 1 to 6 carbon atoms or R_{10} and R_{11} can together represent a saturated or unsaturated trimethylene chain or an alkylenedioxy group of 1 to 6 carbon atoms and B is a mono-, di- or tricyclic heteroaromatic or hydroheteroaromatic of the formula:



$$R_6—\underset{\underset{R_7}{|}}{\overset{\overset{R_5}{|}}{\text{Het.}}}—$$

wherein

R_5, R_6 and R_7, are individually selected from the group consisting of hydrogen, lower alkyl of 1 to 6 carbon atoms, benzyl, lower alkanoyl of 1 to 6 carbon atoms, cyano, hydroxymethyl, lower alkoxycarbonyl wherein the alkoxy contains 1 to 6 carbon atoms, carbamoyl and divalent oxygen or sulphur, R_8 is hydrogen or lower alkyl of 1 to 6 carbon atoms, and R_9 is hydrogen or lower alkyl of 1 to 6 carbon atoms,

X is straight-chained or branched alkylene chain containing up to 6 carbon atoms,

Y is a valency bond or a C=O group and their pharmacologically acceptable salts.

4,880,806

1-CYCLOPROPYL-6-FLUORO-7-PIPERAZINYL-1,4-DIHYDRO-4-OXO-QUINOLINE-3-CARBOXYLIC ACID DERIVATIVES

Hiraki Ueda; Hisashi Miyamoto; Shinji Aki, all of Tokushima, and Tatsuya Otsuka, all of Tokushima, Japan, assignors to Otsuka Pharmaceutical Company, Limited, Tokyo, Japan

Continuation-in-part of Ser. No. 17,247, Feb. 20, 1987, abandoned. This application Jul. 23, 1987, Ser. No. 76,890

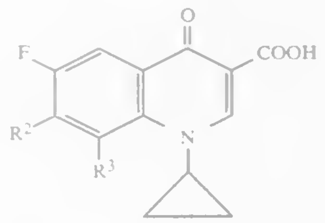
Claims priority, application Japan, Feb. 25, 1986, 61-40921; May 8, 1986, 61-105655; May 22, 1986, 61-118568; Jul. 23, 1986, 61-173370; Aug. 19, 1986, 61-193838; Sep. 30, 1986, 61-233837; Oct. 15, 1986, 61-246050; Dec. 18, 1986, 61-303515; Feb. 19, 1987, 62-37000

The portion of the term of this patent subsequent to Oct. 17, 2006, has been disclaimed.

Int. Cl.⁴ A61K *31/495;* **C07D** *405/14, 403/04*

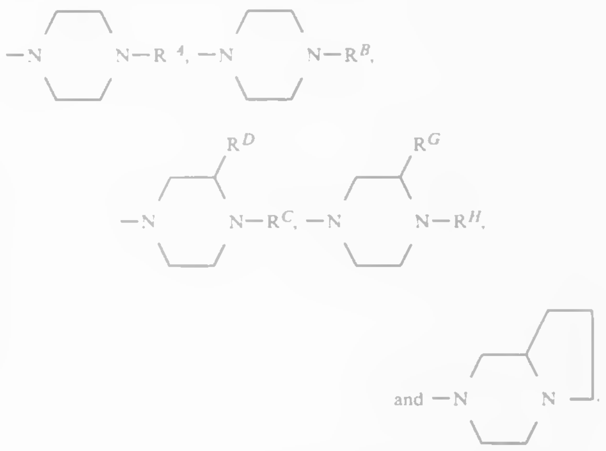
U.S. Cl. 514—249 **46 Claims**

1 A compound of the formula:



[1]

wherein R^2 is a heterocyclic group selected from the group consisting of the following groups:



in which R^A is hydrogen, a C_1–C_6 alkyl or a phenyl(C_1–C_6)-alkyl, R^B is a 2-oxo-1,3-dioxolenemethyl substituted by a C_1–C_6 alkyl, or a C_3–C_8 cycloalkyl, R^C is hydrogen, a C_1–C_6 alkyl, a C_1–C_6 alkoxycarbonyl, or a phenyl(C_1–C_6)alkyl, R^D is hydrogen or a C_1–C_6 alkyl, R^G is a C_1–C_6 alkyl, and R^H is a C_1–C_6 alkyl, a phenyl(C_1–C_6)alkyl, or a C_1–C_6 alkanoyl, and R^3 is a C_1–C_6 alkyl when R^2 is a group of the formula:

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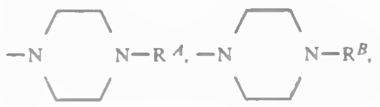
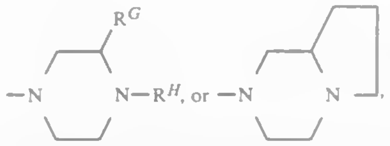
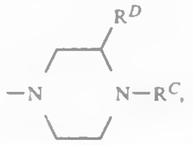




or R^3 is a C_1–C_6 alkyl having 1 to 3 substituents selected from the group consisting of hydroxy and C_1–C_6 alkoxy when R^2 is a group of the formula:



or a pharmaceutically acceptable salt thereof.

25. A method for the treatment of infectious diseases, which comprises administering an effective amount of the compound as set forth in claim 1 to a subject suffering from the infectious diseases.

4,880,807

NICOTINOYLPIPERAZINES USEFUL FOR TREATMENT OF CONVULSIONS

Bernard Danree, Poissy; Michelle Faulques, Courbevoie; Jean-Yves Lacolle, La Celle-Saint-Cloud, and Jean-Pierre Riffaud, Versailles, all of France, assignors to Institut De Recherches Chimiques et Biologiques Appliquees (I.R.C.E.B.A.), Vicq, France

Filed Dec. 7, 1988, Ser. No. 281,248

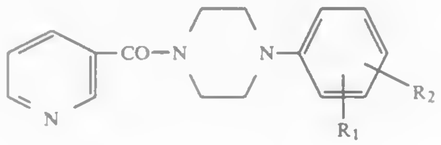
Claims priority, application France, Dec. 16, 1987, 8717563

Int. Cl.⁴ A61K *31/505, 31/44;* **C07D** *401/12*

U.S. Cl. 514—252 **16 Claims**

1. A compound belonging to the family of the nicotinoylpiperazines, which is selected from the group consisting of:

(i) 4-aryl-1-nicotinoylpiperazines of the formula



(I)

in which R_1 and R_2, which can be identical or different, each represent the hydrogen atom, a halogen atom or a CF_3, C_1–C_4-alkyl, C_1–C_4-alkoxy or C_2–C_4-acyl group; and

(ii) a non-toxic addition salt thereof.

4,880,808

N-ARYL-PIPERAZINEALKANAMIDES USEFUL FOR IMPROVING SLEEP

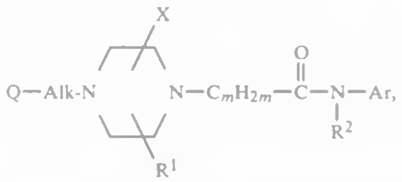
Georges H. P. Van Daele, Kongostraat; Freddy F. Vlaeminck, Veldstraat, and Marc G. C. Verdonck, Waterloopstraat, all of Belgium, assignors to Janssen Pharmaceutica N.V., Beerse, Belgium

Continuation-in-part of Ser. No. 34,129, Apr. 1, 1987, abandoned. This application Mar. 9, 1988, Ser. No. 165,965

Int. Cl.⁴ A61K *31/495, 31/44, 31/47, 31/40;* **C07D** *295/10, 295/12, 403/12, 403/14*

U.S. Cl. 514—255 **28 Claims**

1. A method of improving sleep in warm-blooded animals suffering from sleep disorders, which method comprises the administration of an amount effective in improving sleep of a compound of the following formula (I):



(I)

a stereochemically isomeric form or a pharmaceutically acceptable acid addition salt thereof, wherein:

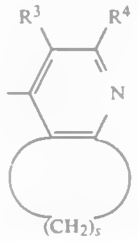
R^1 is hydrogen or C_{1-6}alkyl;

X is C_{1-6}alkyl, hydroxyC_{1-6}alkyl, C_{1-6}alkyloxyC_{1-6}alkyl, aminocarbonyl, mono- and di(C_{1-6}alkyl)aminocarbonyl, carboxyl, C_{1-6}alkyloxycarbonyl, (aminocarbonyl)C_{1-6}alkyl, C_{1-6}alkyl, carboxylC_{1-6}alkyl, (C_{1-6}alkyloxycarbonyl)C_{1-6}alkyl or (hydroxyC_{1-6}alkyl)aminocarbonyl;

m is the integer 1 or 2;

R^2 is hydrogen or C_{1-6}alkyl;

Ar is phenyl, optionally substituted with up to 3 substituents each independently selected from the group consisting of hydroxy, C_{1-6}alkyl, C_{1-6}alkyloxy, halo, trifluoromethyl, C_{1-6}alkylcarbonyl, mono- and di(C_{1-6}alkyl)aminocarbonyl, aminocarbonyl, C_{1-6}alkylcarbonyl, nitro, cyano, amino, aminomethyl, mono- and di(C_{1-6}alkyl)amino, (C_{1-6}alkylcarbonyl)amino, (aminocarbonyl)amino and phenylmethoxy; pyridinyl, optionally substituted with up to three substituents independently selected from halo and C_{1-6}alkyl; pyrazolyl, optionally substituted with up to three substituents independently selected from halo and C_{1-6}alkyl; or a radical of the following formula (a):



(a)

wherein R^3 and R^4 are each independently selected from the group consisting of halo, C_{1-6}alkyl, hydroxy and C_{1-6}alkyloxy and s is the integer 3, 4 or 5;

Alk is a C_{1-6}alkanediyl radical or a C_{3-6}alkenediyl radical, said C_{1-6}alkanediyl radical being optionally substituted with a hydroxy or a C_{1-6}alkyl radical; and

Q is aryl, aryloxy, diarylmethoxy, 2,2-diarylethenyl, diarylmethylcarbonyl, arylcarbonyl, mono- and diarylaminocarbonyl, diarylmethyl or arylamino, the amino moiety in said arylamino being optionally substituted with aryl, an arylcarbonyl, a C_{1-6}alkylcarbonyl, an arylsulfonyl or a C_{1-6}alkylsulfonyl radical; wherein aryl is phenyl, substituted phenyl, naphthalenyl, thienyl or pyridinyl, said substituted phenyl having from 1 to 2 substituents, each independently selected from the group consisting of halo and C_{1-6}alkyloxy,

said pyridinyl, pyrazolyl and thienyl being attached through a ring carbon thereof.

4,880,809

1,4-DISUBSTITUTED PIPERAZINES (OR HOMOPIPERAZINES) AS PLATELET-ACTIVATING FACTOR ANTAGONISTS

Hirosada Sugihara; Katsumi Itoh, both of Osaka, and Kohei Nishikawa, Kyoto, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

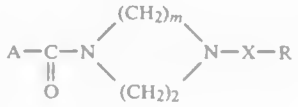
Filed Mar. 14, 1988, Ser. No. 167,961

Claims priority, application Japan, Mar. 24, 1987, 62-69804

Int. Cl.⁴ A61K *31/495, 31/55;* **C07D** *295/10, 243/08*

U.S. Cl. 514—255 **25 Claims**

1. A compound of the formula (I):



where A is a group selected from the class consisting of pentalenyl, indenyl, indanyl, naphthyl, dihydronaphthyl tetrahydronaphthyl, hexahydronaphthyl, azulenyl, heptalenyl, biphenylenyl, indacenyl, acenaphythylenyl, acenaphthenyl, phenalenyl, phenanthryl, dihydrophenanthryl, tetrahydrophenanthryl, hexahydrophenanthryl, anthryl, dihydroanthryl, tetrahydroanthryl, hexahydroanthryl, octahydroanthryl, fluorenyl, dihydrofluorenyl, tetrahydrofluorenyl, benzocycloheptenyl, tetrahydrobenzocycloheptenyl, dibenzocycloheptenyl, naphthocycloheptenyl, dihydronaphthocycloheptenyl, benzocyclooctenyl, dihydrobenzocyclooctenyl, tetrahydrobenzocyclooctenyl, hexahydrobenzocyclooctenyl and octahydrobenzocyclooctenyl, which may be substituted by one or two groups selected from the class consisting of a lower alkyl group, a halo lower alkyl group, a hydroxy lower alkyl group, a C_{2-5} alkanoyloxy lower alkyl group, a benzoyloxy lower alkyl group, a lower alkoxy-lower alkyl group, a lower alkoxy group, a halo lower alkoxy group, a lower alkoxy carbonyl-lower alkoxy group, a lower alkenyloxy group, a phenyl lower alkyloxy group, a lower alkoxy-lower alkoxy group, a lower alkoxycarbonyl group, carboxyl group, carbamoyl group, an N,N-di-lower alkylcarbamoyl group, an N-lower alkyl carbamoyl group, a halo group, a cyano group, a nitro group, a hydroxy group, an C_{2-5} alkanoyloxy group, a benzoyloxy group, an amino group, a lower alkylsulfonylamino group, a C_{2-5} alkanoylamino, a benzoylamino group, a lower alkoxycarbonylamino group, C_{2-5} alkanoyl group, a benzoyl group, a mercapto, a lower alkylthio group, a lower alkylsulfinyl group, a lower alkylsulfonyl group and oxo group, R is a phenyl group substituted with one to five lower alkoxy groups; X is a methylene group, carbonyl group or thiocarbonyl group; and m is 2 or 3, or a pharmaceutically acceptable salt thereof.

25. A method for inhibiting activities of platelet activating factor in a mammal, which comprises administering to said mammal an amount effective to inhibit activities of platelet activating factor of a compound of claim 1 or a pharmaceutically acceptable salt thereof.

4,880,810

QUINAZOLINEDIONES AND PYRIDOPYRIMIDINEDIONES

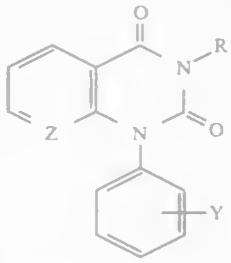
John A. Lowe, III, Stonington, Conn., assignor to Pfizer Inc., New York, N.Y.

Division of Ser. No. 76,976, Jul. 23, 1987, Pat. No. 4,797,403, which is a continuation-in-part of Ser. No. 86/01718, Aug. 2, 1986. This application Jan. 3, 1989, Ser. No. 273,305

Int. Cl.⁴ C07D *471/04;* **A61K** *31/505*

U.S. Cl. 514—258 **7 Claims**

1. A compound of the formula



or a pharmaceutically aacceptable acid addition salt thereof, wherein

R_1 is hydrogen, alkyl of 1 to 3 carbon atoms, cyclopentyllmethyl, cyclohexylmethyl, norbornylmethyl, bicyclooctylmethyl, or benzyl, the phenyl of the benzyl optionally being substituted by halogen, trifluoromethyl, nitro, carboxy, or CO_2M wherein M is a pharmaceutically acceptable cation;

Y is carboxy, carboalkoxy wherein the alkoxy has 1 to 6 carbon atoms, carbobenzyloxy, carbamoyl N-alkylcarbamoyl wherein the alkyl has 1 to 6 carbon atoms, or CO_2M wherein M is as defined above, and

Z is N.

4,880,811

USE OF C-5 MONO-SUBSTITUTED BARBITURATES TO TREAT DISORDERS OF URIC ACID METABOLISM

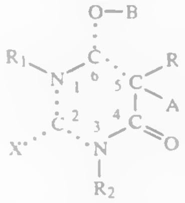
Raymond P. Warrell, Jr., New York, N.Y., assignor to Memorial Hospital for Cancer and Allied Diseases, New York, N.Y.

Filed Jun. 24, 1987, Ser. No. 66,616

Int. Cl.⁴ A61K *31/515*

U.S. Cl. 514—270 **26 Claims**

1. A method for decreasing an abnormally high bodily content of uric acid in a subject in need thereof which comprises administrating to the subject an effective content-decreasing amount of a compound having the structure:



wherein:

X is an oxygen, sulfur or hydrogen atom;

R is an alkyl, a cycloalkyl, a phenyl, a phenylalkyl, a a hydroxyphenyl, an amino, a hydroxyl, an aryl comprising an aromatic ring or cyclo moiety bound to an alkyl, N-phenylcarboximido, N-methyl-carboximido, N-ethyl-carboximido, N-propyl-carboximido, N-isopropyl-carboximido, N-butyl-carboximido, N-terbutyl-carboximido, N-pentyl-carboximido, N-isopentyl-carboximido, N-cyclohexenyl-carboximido, N-cyclopentenyl-carboximido, N-methylbutyl-carboximido, N-cycloheptenyl-carboximido, N-(2-bromoallyl)-carboximido, N-(n-hexyl)-

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carboximido, N-(1-methyl-2-pentynyl)-carboximido or N-(1-methyl-1-butenyl)-carboximido;

R_1 may be present or absent and if present is a hydrogen atom or a methyl group;

R_2 may be present or absent and if present is a hydrogen atom or a methyl group;

either A or B is present and the other is absent and if present is a hydrogen atom; and

the dotted lines (. . .) represent bonds which may be double or single bonds;

and wherein:

the dotted line (. . .) between C-6 and O is a double bond if A is present and a single bond if B is present;

the dotted line (. . .) between C-6 and C-5 is a double bond if B is present and a single bond if A is present;

the dotted line (. . .) between C-2 and X is a double bond and both R_1 and R_2 are present if X is an oxygen or sulfur atom;

the dotted line (. . .) between C-2 and X is a single bond and either R_1 or R_2 is present and the other is absent if X is a hydrogen atom;

the dotted line (. . .) between N-1 and C-2 is a single bond if R_1 is present and a double bond if R_1 is absent; and

the dotted line (. . .) between N-3 and C-2 is a single bond if R_2 is present and a double bond if R_2 is absent.

4,880,812
PYRIMIDINE COMPOUNDS

James L. Kelley, Raleigh, N.C., assignor to Burroughs Wellcome Co., Research Triangle Park, N.C.

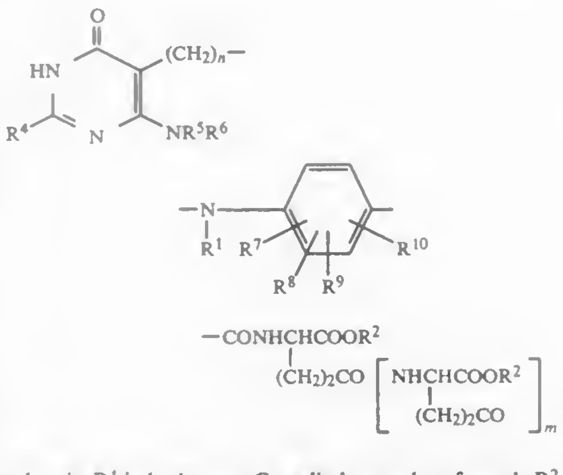
Filed Oct. 16, 1987, Ser. No. 109,225

Claims priority, application United Kingdom, Oct. 18, 1986, 8625019

Int. Cl.^{4} A61K *31/505;* **C07D** *239/49, 239/36*

U.S. Cl. 514—272 **13 Claims**

1. A compound of formula (I):



(I)

wherein R^1 is hydrogen, C_{1-4} alkyl, acetyl or formyl; R^2 and R^3 are the same or different and are hydrogen or C_{1-4} alkyl; R^4 is $NR^{11}R^{12}$; R^{11}, R^{12}, R^5 and R^6 are the same or different and are hydrogen, C_{1-4} alkyl or C_{1-12} acyl; R^7, R^8, R^9 and R^{10} are the same or different and are hydrogen, halo, C_{1-4} haloalkyl, C_{1-4} alkyl and C_{1-4} alkoxy; and n is 2, 3, 4 or 5; m is 0 or an integer from 1 to 6; or a salt thereof.

8. A pharmaceutical formulation, which comprises a compound according to claim 1, or a pharmaceutically acceptable salt thereof, and a pharmaceutically acceptable carrier therefor.

4,880,813
METHOD OF TREATMENT FOR ALLERGIC RHINITIS

Phillip Frost, Miami Beach, Fla., assignor to Baker Cummins Pharmaceuticals, Inc., Miami, Fla.

Filed Jul. 22, 1988, Ser. No. 223,081

Int. Cl.^{4} A61K *31/44*

U.S. Cl. 514—282 **14 Claims**

1. A method of treating a patient suffering from allergic rhinitis comprising the topical administration to the nasal passages of the patient of a pharmaceutically acceptable liquid solution containing from about 0.5 to about 10.0% by weight of nalmefene or a pharmaceutically acceptable salt thereof.

4,880,814
7-CYCLOALKYL NAPHTHYRIDINES

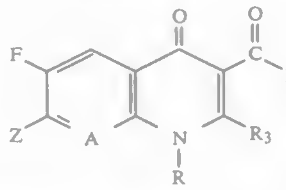
Daniel T. Chu, Vernon Hills; Terry J. Rosen, Deerfield, and Curt S. Cooper, Lake Bluff, all of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Filed Nov. 13, 1987, Ser. No. 119,885

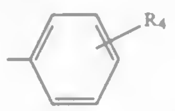
Int. Cl.^{4} C07D *471/04;* **A61K** *31/44*

U.S. Cl. 514—300 **7 Claims**

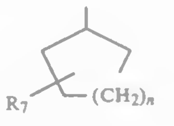
1. A compound having the formula:



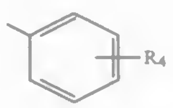
wherein R_1 is a hydroxy, a C_1 to C_6 alkoxy, benzoxy, or a C_1 to C_6 alkylcarbonyloxymethoxy group; R_3 is hydrogen; A is nitrogen; R is (1) a C_1 to C_4 alkyl, (2) lower cycloalkyl (3) C_1 to C_4 alkylamino, (4) halo-substituted C_1 to C_4 alkyl, or (5) a phenyl group of the formula:



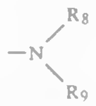
wherein R_4 is one, two or three substituents independently selected from hydrogen, halogen, C_1 to C_4 alkyl, methyldenedioxy, and a group of the formula OR_5, wherein R_5 is hydrogen or C_1 to C_5 alkyl; and Z is a carbocyclic group of the formula:



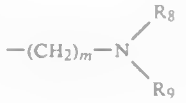
where n is 1 or 2, and R_7 is one or more of (1) hydrogen, (2) halogen, (3) loweralkyl, (4) oxo, (5) cyano, (6) C_1 to C_3 alkanoylamino, (7) carboxyl, (8) nitro, (9) halo-substituted C_1 to C_4 alkyl, (10) phenyl, (11) a substituted phenyl of the formula:



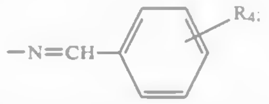
(12) an amine having the formula:



(13) an aminoalkyl group having the formula:



wherein, m is 1 to 4, R_8 and R_9 are independently selected from hydrogen, C_1 to C_4 alkyl, C_1 to C_4 alkylamino, hydroxy substituted C_1 to C_4 alkyl, and amino; or (14) an amine of the formula:



or a pharmaceutically acceptable salt thereof; with the proviso that when R_1 is hydroxy, C_1 to C_6 alkoxy or benzoxy and R is C_1 to C_4 alkyl, or halo-substituted C_1 to C_4 alkyl, then Z is other than cyclopentyl, cyclopentyl substituted by loweralkyl, cyclohexyl or cyclohexyl substituted by loweralkyl.

4,880,815
IMIDAZOPYRIDYL-ALKYLTHIO-PYRIDINES AND ANTI-PEPTIC ULCER COMPOSITIONS CONTAINING THE SAME

Minoru Uchida, Komatsushima; Seiji Morita, Tokushima; Masatoshi Chibiro, Naruto, and Kazuyuki Nakagawa, Tokushima, all of Japan, assignors to Otsuka Pharmaceutical Co., Ltd., Tokyo, Japan

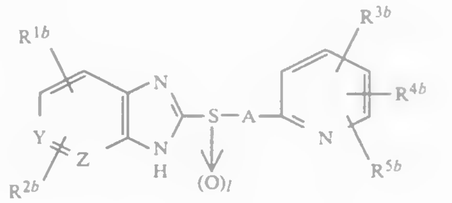
Division of Ser. No. 62,429, Jun. 16, 1987, Pat. No. 4,738,970, which is a continuation of Ser. No. 809,881, Dec. 17, 1985, abandoned. This application Oct. 16, 1987, Ser. No. 109,207

Claims priority, application Japan, Dec. 18, 1984, 59-26706; Dec. 21, 1984, 59-271433; Jul. 2, 1985, 60-145654; Jul. 12, 1985, 60-154708; Nov. 11, 1985, 60-252489

Int. Cl.^{4} A61K *31/435;* **C07D** *471/04*

U.S. Cl. 514—303 **13 Claims**

1. Imidazopyridine compounds and salts thereof represented by the formula



wherein any one of Z and Y is a group of the formula —CH= and the other one is a nitrogen atom —N= R^{1b} and R^{2b} are the same or different from each other, and are each a hydrogen atom, C_1–C_6 alkoxy-carbonyl group, a halogen atom, C_1–C_6 alkyl group, an amino group or a hydroxy group; R^{3b}, R^{4b} and R^{5b} are the same or different from each other, and are each a hydrogen atom, C_1–C_6 alkoxy group or C_1–C_6 alkyl group; A is C_1–C_6 alkylene group; l is 0 to 1; provided that when Y is a group of the formula —CH=, Z is a nitrogen atom —N=, and l is 0, then R^{3b}, R^{4b} and R^{5b} should not all be hydrogen atoms.

4,880,816
BRAIN-SPECIFIC DELIVERY OF DOPAMINE UTILIZING DIHYDROPYRIDINE/PYRIDINIUM SALT-TYPE REDOX CARRIERS

Bodor, Nicholas S., Gainesville, Fla., assignor to University of Florida, Gainesville, Fla.

Division of Ser. No. 733,463, May 13, 1985, Pat. No. 4,727,079, which is a continuation-in-part of Ser. No. 665,940, Oct. 29, 1984, Ser. No. 516,382, Jul. 22, 1983, Pat. No. 4,540,564, and Ser. No. 461,543, Jan. 27, 1983, which is a continuation-in-part of Ser. No. 379,316, May 18, 1982, Pat. No. 4,479,932, said Ser. No. 665,940, and Ser. No. 516,382, each is a continuation-in-part of Ser. No. 475,493, Mar. 15, 1983, Pat. No. 4,622,218, Ser. No. 461,543, , and Ser. No. 379,316, , said Ser. No. 665,940, is a continuation-in-part of Ser. No. 516,382,. This application Nov. 4, 1987, Ser. No. 116,583

Claims priority, application Canada, May 16, 1983, 428192

The portion of the term of this patent subsequent to Sep. 10, 2002, has been disclaimed.

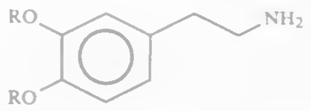
Int. Cl.^{4} C07D *213/56, 215/54;* **A61K** *31/44, 31/47*

U.S. Cl. 514—307 **21 Claims**

1. A compound having the formula

$$[D—DHC] \qquad (1).$$

or a non-toxic pharmaceutically acceptable salt thereof, wherein [D] is a dopamine having the structural formula



in which each R is independently hydrogen or a hydrolytically or metabolically cleavable hydroxyl protective group, and [DHC] is the reduced, biooxidizable, blood-brain barrier penetrating, lipoidal form of a dihydropyridine$\rightleftharpoons$pyridinium salt redox carrier.

18. A method for site-specifically/sustainedly eliciting a dopaminergic response in the brain, comprising administering to an animal in need of such treatment a quantity of a compound as defined by claim 1 sufficient to elicit a pharmacologically effective dopaminergic response in the brain.

4,880,817
O-FUNCTIONALIZED DERIVATIVES OF SUBSTITUTED ISOQUINOLIN-3-OLS HAVING CARDIOTONIC AND/OR PHOSPHODIESTERASE FRACTION III INHIBITING PROPERTIES AND/OR RENAL VASODILATING PROPERTIES

Ramesh M. Kanojia, Somerville; O. William Lever, Jr., Skillman, and Jeffery B. Press, Rocky Hill, all of N.J., assignors to Ortho Pharmaceutical Corporation, Raritan, N.J.

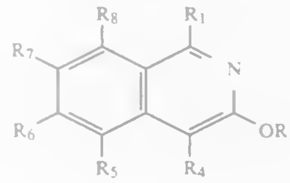
Filed Jun. 9, 1987, Ser. No. 59,699

The portion of the term of this patent subsequent to Dec. 22, 2005, has been disclaimed.

Int. Cl.^{4} A61K *31/47;* **C07D** *217/24*

U.S. Cl. 514—309 **15 Claims**

1. A compound of the formula:



wherein R_1 is selected from the group consisting of hydrogen, lower alkyl, and halogen-substituted radicals thereof; R_3 is selected from the group consisting of lower alkyl,

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amino lower alkyl, lower alkylamino lower alkyl, lower dialkylamino lower alkyl, cycloalkyl having 3-7 carbon atoms, alkenyl having 3-5 carbon atoms, alkynyl having 2-5 carbon atoms, and an acyl or sulfonyl radical of the formula $Y(O)_nR$ wherein Y is a carbon atom or a sulfur atom and n is an integer having a value of 1 when Y is carbon and having a value of 2 when Y is sulfur, and R is hydrogen (except when Y is sulfur), lower alkyl, amino lower alkyl, lower alkylamino lower alkyl, lower dialkylamino lower alkyl, cycloalkyl having 3-7 carbon atoms, phenyl C_{1-4}-alkyl, naphthyl C_{1-4}-alkyl, phenyl, substituted phenyl wherein the substituent is methoxy or chloro, naphthyl, lower alkenyl having 3-5 carbon atoms, lower alkynyl having 2-5 carbon atoms, an amino radical of formula NR'R" wherein R' and R" are independently selected from hydrogen, lower alkyl, amino lower alkyl, lower alkylamino lower alkyl, lower dialkylamino lower alkyl, cycloalkyl having 3-7 carbon atoms, phenyl C_{1-4} alkyl, naphthyl C_{1-4} alkyl, phenyl, naphthyl, alkenyl having 3-5 carbon atoms and alkynyl having 2-5 carbon atoms, or R' and R" together with the nitrogen are a heterocyclic ring selected from morpholino, pyrrolidino, piperazino, piperidino, and azepino, or a substituted piperazino ring wherein the substituent is lower alkyl, lower alkoxy carbonyl, phenyl or substituted phenyl wherein the substituent is lower alkoxy, lower alkyl, nitro or halo, or a radical of formula OR''' wherein R''' may be lower alkyl, amino lower alkyl, lower alkylamino lower alkyl and lower dialkylamino lower alkyl, cycloalkyl having 3-7 carbon atoms, phenyl C_{1-4} alkyl, naphthyl C_{1-4} alkyl, phenyl, naphthyl, alkenyl having 3-5 carbon atoms or alkynyl having 2-5 carbon atoms; and

R_4 is selected from the group consisting of nitro, nitroso, an amino radical of the formula NR'R" wherein R' and R" are as defined above, $N(COR')_2$ wherein R' is as defined above, COR' or COOR' wherein R' is as defined above, CONR'R" wherein R' and R" independently are as defined above, $-(CH_2)_x-Z$ wherein x is an integer from 1 to 8, and Z is cyano, OR', OCOR', COOR', or CONR'R" wherein R' and R" independently are as defined above, $N(CONHR')_2$ wherein R' is as defined above, $NHCO(Q)(R')_p$ wherein Q is oxygen or $N(H)_m$ and R' is as defined above, with the proviso that when Q is oxygen, R' is other than hydrogen and p is 1, and that when Q is $N(H)_m$, m and p independently may be zero, 1, or 2 provided that the sum of m and p is 2;

R_5, R_6, R_7, and R_8 may be independently selected from the group consisting of hydrogen, halogen, hydroxy, acyloxy, carbamyloxy, lower alkylcarbamyloxy and lower alkoxy; and R_5 and R_6, R_6 and R_7 or R_8 when taken together may form a methylenedioxy ring.

9. A pharmaceutical composition comprising an effective amount of a compound according to claim 1 as the active ingredient dispersed in a pharmaceutically acceptable carrier.

4,880,818

1-ACYL-4-[1-(4-QUINOLINYL)-HYDRAZIN-2-YLIDENE]-PIPERIDINES AND THEIR USE AS HYPOTENSIVE AGENTS

Karl Schönafinger, Alzenau, Fed. Rep. of Germany, and Helen Hu Ong, Whippany, N.J., assignors to Hoechst-Roussel Pharmaceuticals, Inc., Somerville, N.J.

Division of Ser. No. 12,715, Feb. 5, 1987, Pat. No. 4,771,052. This application Jul. 12, 1988, Ser. No. 218,749

Int. Cl.⁴ A61K *31/47;* **C07D** *401/12*

U.S. Cl. 514—313 6 Claims

1. A compound of the formula

where X and Y are each independently hydrogen, loweralkyl, loweralkoxy, hydroxy, halogen, trifluoromethyl or nitro; R_1 is hydrogen or loweralkyl; R_2' is hydrogen or loweralkyl; and R_4 is hydrogen, loweralkyl or aryl, the term aryl signifying a phenyl group optionally substituted with 1, 2 or 3 substituents each of which being independently hydroxy, nitro, loweralkyl, loweralkoxy, halogen or trifluoromethyl, with the proviso that the aryl does not include trinitrophenyl, triiodophenyl or trihydroxyphenyl, or a pharmaceutically acceptable acid addition salt thereof.

4,880,819

4-AMINOPYRIDINE DERIVATIVES FOR IMPROVING IMPAIRED BRAIN FUNCTION

Kunihiro Ninomiya; Ken-Ichi Saito, both of Machida; Shuji Morita; Akihiro Tobe, both of Yokohama, and Issei Nitta, Machida, all of Japan, assignors to Mitsubishi Kasei Corporation, Tokyo, Japan

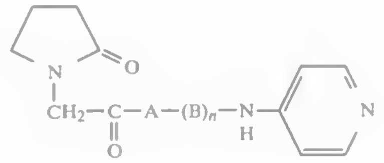
Filed Sep. 9, 1988, Ser. No. 242,333

Claims priority, application Japan, Sep. 17, 1987, 62-233350

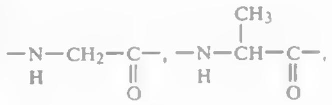
Int. Cl.⁴ A61K *31/445, 31/44;* **C07D** *401/14, 401/12*

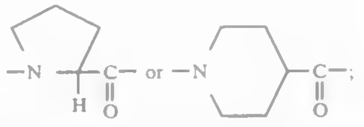
U.S. Cl. 514—316 2 Claims

2. A pharmaceutical composition useful as an agent for improving impaired brain function comprising as the effective ingredient a 4-aminopyridine derivative represented by the formula (I):


(1)

wherein A and B independently represent


$$-\underset{\mathrm{H}}{\mathrm{N}}-\mathrm{CH_2}-\underset{\underset{\mathrm{O}}{\|}}{\mathrm{C}}-,\quad -\underset{\mathrm{H}}{\mathrm{N}}-\overset{\overset{\mathrm{CH_3}}{|}}{\mathrm{CH}}-\underset{\underset{\mathrm{O}}{\|}}{\mathrm{C}}-,$$



and n is an integer of 0 or 1; or its pharmaceutically acceptable acid addition salt and a pharmaceutically acceptable carrier therefor.

4,880,820

GUANINE DERIVATIVES

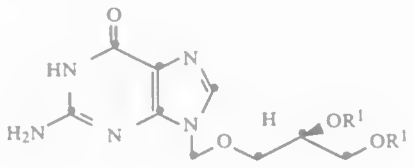
Wallace T. Ashton; Laura F. Canning, both of Clark, N.J.; Arthur K. Field, North Wales, Pa., and Richard L. Tolman, Warren, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation of Ser. No. 616,910, Jun. 6, 1984, abandoned, which is a continuation-in-part of Ser. No. 507,328, Jun. 24, 1983, abandoned. This application Feb. 8, 1988, Ser. No. 150,478

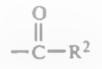
Int. Cl.⁴ C07D *473/18;* **A61K** *31/52*

U.S. Cl. 514—322 12 Claims

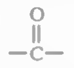
1. A compound of formula:


1

wherein each R^1 is independently H or


$$-\overset{\overset{\mathrm{O}}{\|}}{\mathrm{C}}-\mathrm{R}^2$$

where each R^2 is independently alkyl of 1 to 20 carbon atoms which may be straight chain or branched, saturated or mono- or polyunsaturated, and may contain one or more hydroxy, amino, or carboxyl groups, phenyl, phenyl substituted with halogen, phenyl substituted with alkyl of 1 to 4 carbon atoms, phenyl substituted with alkyl of 1 to 4 carbon atoms, pyridyl, piperidyl, furyl, imidazolyl, tetrahydrofuryl, thienyl, phenylalkyl wherein the alkyl moiety has 1 to 4 carbon atoms, alkoxyalkyl wherein both the alkoxy and alkyl moieties contain 1 to 4 carbon atoms, or phenoxy substituted with alkyl having 1 to 4 carbon atoms, or the two R^1 groups together are


$$-\overset{\overset{\mathrm{O}}{\|}}{\mathrm{C}}-$$

4,880,821

α-NITROALKYLNITROBENZENESULFONAMIDES

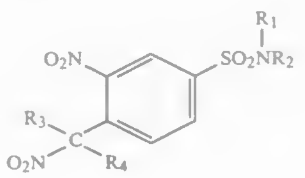
Walfred S. Saari, Lansdale, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Aug. 17, 1988, Ser. No. 233,316

Int. Cl.⁴ A61K *31/445, 31/18;* **C07D** *211/06;* **C07C** *143/80*

U.S. Cl. 514—331 9 Claims

1. A compound of the formula:



wherein:

r_1 and r_2 are defined as follows:

R_1 is hydrogen, an alkyl group, or an alkyl group having one or more hydroxy groups;

R_2 is an alkyl group having one or more hydroxy groups, or an amino group in which the amino function is substituted with hydrogen or one or two individual alkyl groups same or different, or two alkyl groups which together form a cyclic amine;

R_3 is hydrogen or an alkyl group; and

R_4 is hydrogen or an alkyl group.

4,880,822

N-(PYRIDINYL)-1H-INDOL-1-AMINES

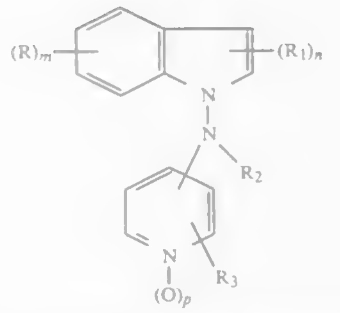
Richard C. Effland, and Joseph T. Klein, both of Bridgewater, N.J., assignors to Hoechst-Roussel Pharmaceuticals, Inc., Somerville, N.J.

Continuation-in-part of Ser. No. 42,079, Apr. 24, 1987, abandoned. This application Apr. 4, 1988, Ser. No. 171,102

Int. Cl.⁴ C07D *401/02*

U.S. Cl. 514—339 54 Claims

1. A compound having the formula



where m is 1 or 2; n is 1 or 2: p is 0 or 1; each R is independently hydrogen, halogen, loweralkyl, loweralkoxy, hydroxy, nitro, amino, loweralkylamino, cyano, loweralkoxycarbonyl, or loweralkylthio; each R_1 is independently hydrogen, loweralkyl, loweralkenyl, formyl, loweralkylcarbonyl, arylloweralkylcarbonyl, arylcarbonyl, halogen, arylloweralkenyl, arylloweralkyl, loweralkoxycarbonylloweralkenyl, loweralkoxycarbonylloweralkyl, cyano, $-CH(OH)R_4$, $-C(OH)R_4R_5$ or $-CH_2OR_5$, R_4 being hydrogen, loweralkyl, arylloweralkyl or aryl and R_5 being loweralkyl, arylloweralkyl or aryl; R_2 is independently hydrogen, loweralkyl, loweralkenyl, loweralkynyl, loweralkoxycarbonylloweralkyl, loweralkylaminocarbonylloweralkyl, aminocarbonylloweralkyl, arylloweralkyl, loweralkoxycarbonyl, arylloweralkoxycarbonyl, aryloxycarbonyl, loweralkylaminocarbonyl, arylloweralkylaminocarbonyl, arylaminocarbonyl, alkanoyl, arylloweralkanoyl, aroyl, alkenoyl or alkynoyl; and R_3 is hydrogen, nitro, amino, halogen, loweralkanoylamino, arylloweralkanoylamino, aroylamino, alkylamino, arylloweralkylamino or loweralkyl; the term aryl in each occurrence signifying a phenyl group having 0, 1, 2 or 3 substituents each of which being independently loweralkyl, loweralkoxy, halogen, CF_3, NO_2 or CN: the term loweralkenyl in each occurrence signifying a loweralkenyl group having 2 to 6 carbon atoms; the term loweralkynyl in each occurrence signifying a loweralkynyl group having 2 to 6 carbon atoms; the term alkyl in each occurrence signifying an alkyl group of 1 to 20 carbon atoms; the term alkenyl in each occurrence signifying an alkenyl group having 2 to 20 carbon atoms; and the term alkynyl in each occurrence signifying an alkynyl group having 2 to 20 carbon atoms; or a pharmaceutically acceptable acid addition salt thereof.

4,880,823

INJECTION OF NICARDINPINE HYDROCHLORIDE AND PROCESS FOR THE PRODUCTION THEREOF

Katayasu Ogawa, Saitama; Go Ohtani; Shoji Yokota, both of Tokyo, and Masayoshi Aruga, Saitama, all of Japan, assignors to Yamanouchi Pharmaceutical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 140,901, Dec. 23, 1987, abandoned, which is a continuation of Ser. No. 925,462, Oct. 30, 1986, abandoned, which is a continuation of Ser. No. 735,558, May 15, 1985, abandoned. This application Apr. 12, 1989, Ser. No. 338,402

Claims priority, application Japan, May 22, 1984, 59-102991

Int. Cl.⁴ A61K *31/44*

U.S. Cl. 514—356 7 Claims

1. A stable, injectable composition of nicardipine hydrochloride in ampoule form comprising an aqueous nicardipine hydrochloride solution containing 0.04 to 0.6 W/V% nicardipine hydrochloride and 2 to 7 W/V% of a polyhydric alcohol and wherein the pH of said solution is from 2.5 to 5, and the percentage of nicardipine hydrochloride remaining in said solution after a 12 week storage period at 60° C. is between 69.24 percent and 74.39 percent.

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4,880,824
PHENYL AND BENZOYL SUBSTITUTED IMIDAZO-FUSED HETEROCYCLIC CALCIUM CHANNEL BLOCKERS

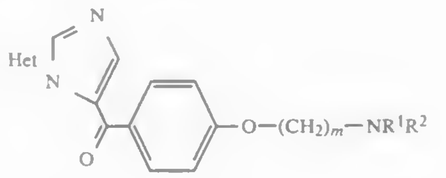
Jeffery B. Press, Rocky Hill, and Maud Urbanski, Belle Mead, both of N.J., assignors to Ortho Pharmaceutical Corporation, Raritan, N.J.

Filed Sep. 21, 1987, Ser. No. 99,417

Int. Cl.^{4} A61K *31/425;* **C07D** *513/04, 487/04*

U.S. Cl. 514—368 19 Claims

1. An imidazo-fused heterocyclic compound of the following formula (II):



(II)

wherein

R^1 and R^2 are independently alkyl of 1 to 5 carbons;

m is an integer from 2 to 5; and

Het represents the atoms necessary to form an imidazo[2,1-b]thiazole ring system,

and the pharmaceutically acceptable acid-addition salts thereof.

5. An anti-hypertensive or anti-anginal pharmaceutical composition which comprises a pharmaceutically effective amount of a heterocyclic compound of claim **1** in combination with a pharmaceutically-acceptable diluent or carrier.

4,880,825
MITOMYCIN DERIVATIVES

Masaji Kasai, Kanagawa; Yutaka Kanda, Tokyo; Motomichi Kono, Tokyo; Yutaka Saito, Tokyo; Makoto Morimoto, and Tadashi Ashizawa, both of Shizuoka, all of Japan, assignors to Kyowa Hakko Kogyo Kabushiki Kaisha, Tokyo, Japan

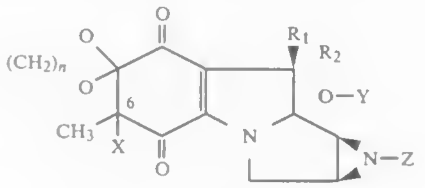
Filed Mar. 25, 1988, Ser. No. 173,219

Claims priority, application Japan, Mar. 25, 1987, 62-71115

Int. Cl.^{4} C07D *487/14;* **A61L** *31/40*

U.S. Cl. 514—409 7 Claims

1. Mitomycin compounds represented by the Formula



(I)

wherein one of R_1 and R_2 represents carbamoyloxymethyl and the other represents hydrogen or R_1 and R_2 are bonded together to form methylene;

X is hydrogen or halogen;

Y is hydrogen or methyl;

Z is hydrogen, methyl or acyl of the Formula RCO where R is selected from the group consisting of hydrogen, lower alkyl or 1 to 3 carbon atoms, phenyl, p-nitrophenyl and naphthyl; and

n is an integer of 2 or 3.

4,880,826
MELATONIN ANTAGONIST

Nava Zisapel, 23 Kissufim St., and Mosbe Laudon, 14 Anderson St., both of Tel Aviv, Israel

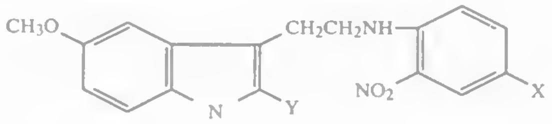
Filed Jun. 25, 1987, Ser. No. 66,351

Claims priority, application Israel, Jun. 27, 1986, 79264

Int. Cl.^{4} A61K *31/405*

U.S. Cl. 514—415 5 Claims

1. A pharmaceutical or veterinary composition including a physiologically acceptable carrier and containing as active ingredient a physiologically effective dosage of 5-methoxytryptamine of the formula:



wherein

X is $—NO_2$ or $—N_3$, and

Y is —H or —I.

4,880,827
PYRROLIDINE DERIVATIVES HAVING INHIBITORY ACTION FOR PROLINE SPECIFIC ENDOPEPIDASE

Katsumi Tamoto; Renzo Obuchi, both of Toyonaka, and Keiichi Ono, Sakai, all of Japan, assignors to Sumitomo Pharmaceuticals Company, Ltd., Osaka, Japan

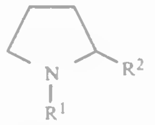
Filed Mar. 13, 1987, Ser. No. 25,664

Claims priority, application Japan, Mar. 18, 1986, 61-61693; Mar. 20, 1986, 61-63505

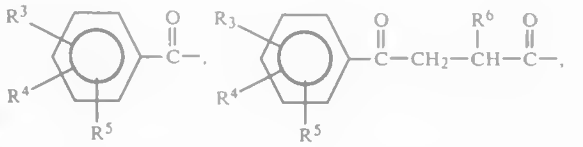
Int. Cl.^{4} C07D *207/08, 207/09;* **A61K** *31/40*

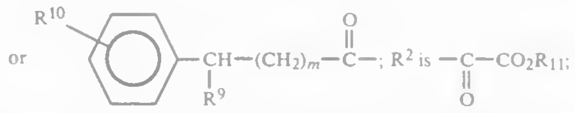
U.S. Cl. 514—423 8 Claims

1. A compound of the formula:



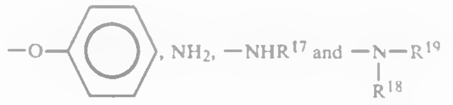
wherein R^1 is



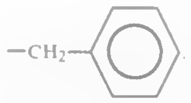


or ...; R^2 is $-\overset{\overset{\displaystyle O}{\|}}{C}-CO_2R_{11}$;

R^3, R^4 and R^5 are each independently hydrogen, hydroxy, halogen, C_{1-4} alkyl, C_{1-4} alkoxy, phenyl unsubstituted or substituted with at least one substituent selected from the group of consisting of halogen, C_{1-4} alkyl and C_{1-4} alkoxy,



wherein R^{17} is C_{1-4} alkyl; R^{18} and R^{19} are each independently C_{1-4} alkyl; R^6 is hydrogen or C_{1-4} alkyl; R^9 is hydrogen, C_{1-4} alkyl or phenyl; R^{10} is hydrogen, C_{1-4} alkyl, C_{1-4} alkoxy or halogen; m is an integer of 0 to 3 and R^{11} is hydrogen, C_{1-4} alkyl, phenyl or



7. A method of treating a patient suffering from dementia comprising administering at least one dose to said patient of the compound according to claim 1, at a daily dosage of between 1 mg and 1000 mg/kg of body weight.

4,880,828
2-(TETRAHYDRO-2-THIENYL)PHENYL ESTERS OF PHOSPHOROTHIOIC ACID

Anupama Mishra, Guelph, Canada, and Richard C. Moore, Wallingford, Conn., assignors to Uniroyal Chemical, Inc., Middlebury, Conn. and Uniroyal Chemical Ltd./Ltee, Don Mills, Canada

Filed Jan. 29, 1988, Ser. No. 149,774

Int. Cl.^{4} A61K *31/38;* **C07D** *333/46*

U.S. Cl. 514—438 13 Claims

1. A compound having the structural formula where

R is C_1–C_6 alkyl;

R^1 to R^4 are the same or different and are hydrogen, halogen, nitro, C_1–C_8 alkyl, C_1–C_2 haloalkyl, C_5–C_6 cycloalkyl, C_1–C_3 aralkyl, phenyl, C_1–C_6 alkoxy, C_1–C_6 alkylthio, C_1–C_6 alkylsulfinyl, C_1–C_6 alkylsulfonyl, C_1–C_3 alkoxy substituted phenyl, phenoxy, phenylthio, phenylsulfonyl, phenylsulfinyl, tetrahydro-2-thienyl, dioxytetrahydro-2-thienyl, C_2–C_5 alkoxycarbonyl or $N(R^5,R^6)$;

R^5 and R^6 are the same or different and are hydrogen or C_1–C_2 alkyl;

X and Y are the same or different and are oxygen or sulfur; and

n is 0, 1 or 2.

9. A method of controlling insects comprising applying an insecticidally effective amount of the compound of claim 1 to the locus to be protected.

4,880,829
SUBSTITUTED DIPEPTIDE AMIDES #3

Donald W. Hansen, Jr., Chicago; Barnett S. Pitzele; Michael Clare, both of Skokie, and Robert W. Hamilton, Wilmette, all of Ill., assignors to G. D. Searle and Company, Chicago, Ill.

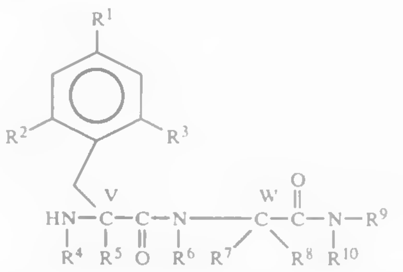
Division of Ser. No. 882,794, Jul. 14, 1986, Pat. No. 4,822,775, which is a continuation-in-part of Ser. No. 829,266, Feb. 14, 1986, abandoned, which is a continuation-in-part of Ser. No. 765,882, Aug. 14, 1985, abandoned. This application Jan. 20, 1988, Ser. No. 146,006

The portion of the term of this patent subsequent to Jul. 19, 2005, has been disclaimed.

Int. Cl.^{4} A61K *31/38;* **C07D** *333/22*

U.S. Cl. 514—445 8 Claims

1. A compound of the formula:



or a pharmaceutically acceptable acid addition salt thereof:

wherein R^1 is hydrogen, lower alkyl, hydroxy, lower alkoxy, $—OCO_2$-lower alkyl, $O(CH_2)_m$-phenyl with the phenyl optionally substituted by a member of the group comprising halogen, $—NO_2$, —CN, $—NH_2$, or lower alkyl;

wherein m is an integer from 1 to 4;

wherein R^2 and R^3 represent lower alkyl, halogen or lower alkoxy, or either one of R^2 or R^3 is hydrogen and the other is lower alkyl, halogen or lower alkoxy;

wherein R^4, R^5, R^6, R^7, R^8 and R^9 may be the same or different and represent hydrogen or lower alkyl;

wherein R^{10} is selected from the group consisting of

$$-(ALK)X$$

wherein ALK represents alkylene, thioalkylene, or oxyalkylene having 1 to 5 carbon atoms; alkenylene or alkynylene having 2 to 4 carbon atoms; and

wherein X represents 2-thienyl or 3-thienyl with the proviso that X may represent 3-thienyl only when ALK is not alkylene:

wherein V represents an asymmetric carbon atom that may be racemic or have the D or L configuration; and

wherein W represents an asymmetric carbon atom when R^7 and R^8 are not the same which may be racemic or have the D or L configuration.

4,880,830
SLOW RELEASE FORMULATION

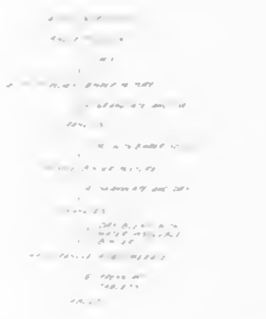
Alan Rhodes, Ely, United Kingdom, assignor to Ethical Pharmaceuticals Limited, United Kingdom

Filed Feb. 9, 1987, Ser. No. 12,026

Claims priority, application United Kingdom, Feb. 13, 1986, 8603523

Int. Cl.^{4} A61K *9/16, 9/26*

U.S. Cl. 424—470 20 Claims



1. A slow release formulation to be administered to humans or animals, comprising (1) granules which comprise particles comprising an active ingredient and a primary matrix of water soluble/dispersible slow release material in which are dispersed said particles comprising the active ingredient, and (2) a secondary matrix of a water soluble/dispersible slow release material in which said granules are dispersed.

4,880,831
FUNGICIDAL CARBANILATES

Don R. Baker, Orinda; Keith H. Brownell, Cupertino, and Charles Kezerian, Orinda, all of Calif., assignors to Stauffer Chemical Company, Westport, Conn.

Continuation of Ser. No. 607, Jan. 5, 1987, Pat. No. 4,797,416. This application Aug. 1, 1988, Ser. No. 227,037

Int. Cl.^{4} C07C *155/02;* **A01N** *47/10*

U.S. Cl. 514—485 4 Claims

1. The method of controlling fungi comprising applying to the area where control is desired, a fungicidally effective amount of a compound having the formula

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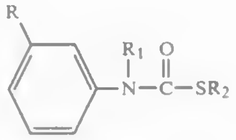


wherein R is methoxy or allyloxy; R_1 is hydrogen; and R_2 is C_1-C_6 alkyl.

4,880,832

LIPOSOLUBLE PLATINUM (II) COMPLEX AND PREPARATION THEREOF

Mitsuaki Maeda, Tokyo, and Takuma Sasaki, Kanazawa, both of Japan, assignors to Sumitomo Pharmaceuticals Company, Ltd., Osaka, Japan

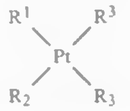
Filed Feb. 18, 1988, Ser. No. 156,961

Claims priority, application Japan, Mar. 6, 1987, 62-51237

Int. Cl.⁴ A61K *31/28*

U.S. Cl. 514—492 **16 Claims**

1. A platinum 11) complex represented by the formula (1):



(I)

wherein R^1 and R^2 each stands for a ligand ammine which may have an organic substituent or may be bonded to each other through a bivalent organic group and both of the R_3 groups are the same and individually represent a residue of a bile acid selected from the group consisting of cholic acid, deoxycholic acid, lithocholic acid, chenodeoxycholic acid, ursodeoxycholic acid and hydeoxycholic acid.

4,880,833

SYNERGISTIC PHARMACEUTICAL COMPOSITIONS, THEIR PRODUCTION AND USE

József Knoll, Budapest, Hungary; Walter Birkmayer, Vienna, d12, 1986, Ser. No. 908,865

Claims priority, application Hungary, Dec. 20, 1983, 4343/83

Int. Cl.⁴ A61K *31/195, 31/16, 31/135*

U.S. Cl. 514—565 **8 Claims**

1. A synergistic pharmaceutical composition for the treatment of depression which comprises a therapeutically effective amount of a combination of:

25 to 50 parts by weight of 1-phenylalanine; and

1 part by weight of (−)-deprenyl, or the hydrochloride acid addition salt thereof; and a pharmaceutically acceptable inert, nontoxic carrier.

4,880,834

METHOD FOR ADMINISTERING ETHANOLAMINE DERIVATIVES TO LIVESTOCK

Jonathan R. Arch, Banstead, England, assignor to Beecham Group p.l.c., England

PCT No. PCT/GB86/00114, § 371 Date Oct. 30, 1986, § 102(e) Date Oct. 30, 1986, PCT Pub. No. WO86/05075, PCT Pub. Date Sep. 12, 1986

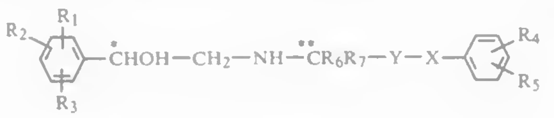
PCT Filed Mar. 3, 1986, Ser. No. 937,030

Claims priority, application United Kingdom, Mar. 1, 1985, 8505284; Aug. 22, 1985, 8521068

Int. Cl.⁴ A61K *31/195, 31/235, 31/195, 31/16*

U.S. Cl. 514—567 **6 Claims**

1. A method for treating livestock to decrease birth mortality rate and increase post-natal survival rate, which method comprises the administration to the livestock of an effective, non-toxic amount of a compound of formula (I).



(I)

or a pharmaceutically acceptable salt thereof wherein R^1 is a hydrogen, fluorine or chlorine atom or a hydroxyl, hydroxymethyl, methyl, methoxyl, amino, formamido, acetamido, methylsulphonylamido, nitro, benzyloxy, methylsulphonylmethyl, ureido, trifluoromethyl or p-methoxybenzylamino group; R^2 is a hydrogen, fluorine or chlorine atom or a hydroxyl group; R^3 is a hydrogen or chlorine atom or a hydroxyl group; R^4 is a carboxylic acid group or a salt, ester or amide thereof; R^5 is a hydrogen, chlorine or fluorine atom or a methyl, methoxyl or hydroxyl group or a carboxylic acid group or a salt, ester or amide thereof; R^6 is a hydrogen atom or a methyl, ethyl or propyl group; R^7 is a hydrogen atom or a methyl, ethyl or propyl group; X is an oxygen atom or a bond; and Y is an alkylene group of up to 6 carbon atoms or a bond; which compounds show anti-obesity and/or anti-hyperglycaemic activity or, where appropriate, a veterinarily acceptable salt, ester or amide thereof.

4,880,835

ORAL LIQUID PHARMACEUTICAL COMPOSITIONS OF SULINDAC

Moo K. Park, Rockville, Md., assignor to Formulations Development Labs, Inc., Wilmington, N.C.

Filed Nov. 3, 1988, Ser. No. 266,660

Int. Cl.⁴ A61K *31/19*

U.S. Cl. 514—570 **8 Claims**

1. A one phase liquid composition for oral administration comprising:

(a) An anti-inflammatory but non-toxic quantity of calcium sulindac selected from the range of 0.5–7% w/v;

(b) a pharmaceutically acceptable quantity of a glycol which is propylene glycol or a polyethylene glycol selected from the range of 15–50% v/v;

(c) a quantity of ethanol selected from the range of 0–20% v/v; and

(d) a pharmaceutically acceptable quantity of a polyol which is glycerin or sorbitol selected from the range of 30–80% v/v.

4,880,836

ANTIVIRAL AMPHIPHILICS

Danek Elbaum, Box 450, Awosting Rd., Pine Bush, N.Y. 12566

Filed Mar. 11, 1988, Ser. No. 166,890

Int. Cl.⁴ A61R *31/17*

U.S. Cl. 514—588 **15 Claims**

1. A method for treating viral infections in a warm-blooded animal having a viral infection which comprises administering to said warm-blooded animal an antivirally effective amount of a monosubstituted lower alkyl urea.

4,880,837

N-BENZOYL-N'-(2,3-DICHLORO-4-PHENOXY)-PHENYLUREAS

Wolfgang Seppelt, Bobenheim-Roxheim; Peter Hofmeister, Neustadt, and Christoph Kuenast, Otterstadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

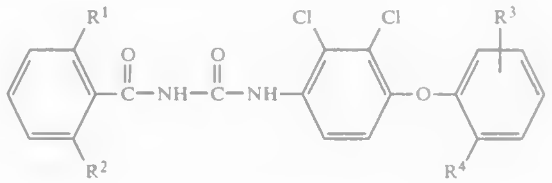
Filed Sep. 19, 1988, Ser. No. 246,268

Claims priority, application Fed. Rep. of Germany, Sep. 19, 1987, 3731561

Int. Cl.⁴ A01N *47/28, 25/00;* **C07C** *127/22*

U.S. Cl. 514—594 **4 Claims**

1. N-Benzoyl-N'-(2,3-dichloro-4-phenoxy)-phenylureas of the general formula I



(I)

where R^1 is halogen, R^2 is hydrogen or halogen, R^3 is halogen or C_1–C_4-haloalkoxy, and R^4 is hydrogen or halogen.

4,880,838

PESTICIDAL 1-(4-PHENOXYPHENYL)-5-BENZOYL UREA COMPOUNDS AND PROCESS FOR PREPARATION

David T. Chou, Raleigh, and Paul A. Cain, Cary, both of N.C., assignors to Rhone-Poulenc, Amstelveen, Netherlands

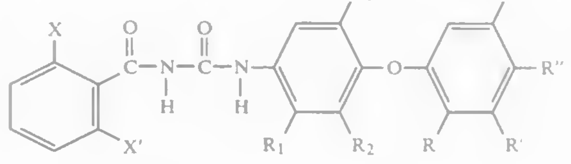
Continuation of Ser. No. 717,784, Mar. 29, 1985, abandoned, which is a continuation-in-part of Ser. No. 495,331, May 20, 1983, abandoned, which is a continuation-in-part of Ser. No. 393,553, Jun. 30, 1982, abandoned. This application Mar. 7, 1988, Ser. No. 168,619

The portion of the term of this patent subsequent to Oct. 10, 2006, has been disclaimed.

Int. Cl.⁴ C07C *127/22;* **A01N** *47/34*

U.S. Cl. 514—594 **64 Claims**

1. A compound of the formula:



wherein:

X represents halogen;

X' represents hydrogen or halogen;

R_1, R_2 and R_3 are independently methyl, chlorine or bromine;

R represents methyl, chlorine, fluorine or bromine; and

R', R'' and R''' are independently hydrogen, methyl, chlorine, fluorine or bromine, provided that at least one of R', R'', and R''' is other than hydrogen.

4,880,839

ACYANILIDE DERIVATIVES

Howard Tucker, Macclesfield, United Kingdom, assignor to Imperial Chemical Industries PLC, London, England

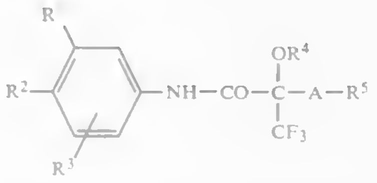
Filed Jun. 16, 1987, Ser. No. 62,691

Claims priority, application United Kingdom, Jul. 18, 1986, 8617652

Int. Cl.⁴ A61K *31/65*

U.S. Cl. 514—613 **6 Claims**

1. An acylanilide of the formula:



wherein R^1 is carbamoyl, nitro, fluoro, chloro, bromo, iodo or hydrogen, or alkyl, alkoxy, alkanoyl, alkylthio, alkylsulphinyl, alkylsulphonyl, perfluoroalkyl, perfluoroalkylthio, perfluoroalkylsulphinyl or perfluoroalkylsulphonyl each of up to 4 carbon atoms, or phenylthio, phenylsulphinyl or phenylsulphonyl; wherein R^2 is carbamoyl, nitro, fluoro, chloro, bromo or iodo, or alkanoyl, alkylthio, alkylsulphinyl, alkylsulphonyl, perfluoroalkyl, perfluoroalkylthio, perfluoroalkylsulphinyl or perfluoroalkylsulphonyl each of up to 4 carbon atoms, or phenylthio, phenylsulphinyl or phenylsulphonyl; wherein R^3 is hydrogen or halogen; wherein R^4 is hydrogen; wherein A is branched-chain alkylene of up to 6 carbon atoms; and wherein R^5 is phenyl which is unsubstituted or which bears one, two or three substituents selected from halogen, nitro, hydroxy, carboxy, carbamoyl and alkyl, alkoxy, alkanoyl, alkylthio, alkylsulphinyl, alkylsulphonyl, perfluoroalkyl, perfluoroalkylthio, perfluoroalkylsulphinyl, perfluoroalkylsulphonyl, alkoxycarbonyl and N-alkylcarbamoyl each of up to 4 carbon atoms, and phenyl, phenylthio, phenylsulphinyl and phenylsulphonyl; or R^5 is naphthyl.

4,880,840

ARYLETHANOLHYDROXYLAMINES AND THEIR USE FOR PROMOTING YIELD

Hans Lindel, Leverkusen; Axel Ingendoh, Odenthal; Friedrich Berschauer, Wuppertal; Anno de Jong, and Martin Scheer, both of Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

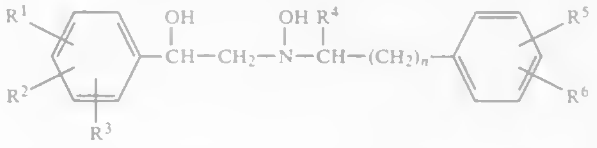
Filed Jun. 30, 1987, Ser. No. 68,398

Claims priority, application Fed. Rep. of Germany, Jul. 16, 1986, 3623940

Int. Cl.⁴ A61K *31/135;* **C07C** *83/04*

U.S. Cl. 514—645 **13 Claims**

1. An arylethanolhydroxylamine of the formula



in which

R^1 represents halogen, CN, NO_2, hydroxyl or optionally substituted alkyl, alkoxy or alkylthio, or furthermore represents alkoxycarbonyl or the radical $—NR^7R^8$,

R^2 represents hydrogen, halogen, CN, hydroxyl or optionally substituted alkoxy, it being possible for the radicals R^1 and R^2, together with the adjacent C atoms, to form an optionally substituted dioxolanyl or dioxanyl ring,

R^3 represents hydrogen or halogen,

R^4 represents hydrogen or alkyl,

R^5 represents hydrogen, optionally substituted alkyl or alkoxy, hydroxyl or halogen,

R^6 represents acyl, acyloxy or alkoxy, which is optionally substituted,

R^7 represents hydrogen or alkyl,

R^8 represents hydrogen, alkyl, formyl (—CHO), acyl or optionally substituted aryl or aralkyl and

n represents 0, 1 or 2, or a physiologically acceptable salt thereof.

12. A method of promoting the yield of animals which com-

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prises administering to such animals a yield promoting effective amount of a compound or salt according to claim 1.

4,880,841

PROCESS OF PRODUCING PHENETHYLAMINE DERIVATIVES

Kazuo Imai; Kunihiro Niigata; Takashi Fujikura, all of Saitama; Shinichi Hashimoto, Matsudo; Toichi Takenaka, Tokyo, and Kazuo Honda, Saitama, all of Japan, assignors to Yamanouchi Pharmaceutical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 208,804, Jun. 17, 1988, abandoned, which is a continuation of Ser. No. 82,382, Aug. 6, 1987, abandoned, which is a continuation of Ser. No. 894,464, Jul. 31, 1986, abandoned, which is a continuation of Ser. No. 690,398, Jan. 9, 1985, abandoned, which is a continuation of Ser. No. 517,734, Jul. 28, 1983, abandoned, which is a continuation of Ser. No. 285,782, Jul. 22, 1981, abandoned. This application Feb. 3, 1989, Ser. No. 307,200

Claims priority, application Japan, Jul. 29, 1980, 55-104175; Jun. 15, 1981, 56-92010

Int. Cl.^{4} A61K *31/135*

U.S. Cl. 514—654 5 Claims

5. A method of producing an antihypertensive action based solely upon an alpha-adrenergic action by administering a therapeutically effective amount of 4-{2-[2-(2-ethoxyphenoxy)ethylamino]-2-methylenthyl}-2-(methylsulfonyl)anisole or its hydrochloric acid salt.

4,880,842

MULTI-STAGE OPACIFYING POLYMER PARTICLES CONTAINING NON-POLYMERIC ACID ABSORBED THEREIN

Alexander Kowalski, Plymouth Meeting, and Martin Vogel, Jenkintown, both of Pa., assignors to Rohm & Haas Company

Filed May 20, 1988, Ser. No. 197,063

Int. Cl.^{4} C08J *9/28;* C08F *265/04*

U.S. Cl. 521—64 13 Claims

1. A process for preparing opacifying polymer particles containing one or more void space(s) within said particles comprising:

(A) sequentially emulsion polymerizing polymer particles comprising two or more polymer stages wherein
  (1) each of said polymer stages is emulsion-polymerized from a monomer system comprising one or more ethylenically-unsaturated monomer(s) containing one or more —HC=C< group(s);
  (2) the final polymer stage of said particles has a glass transition temperature of about 50° C. or greater;
  (3) at least one essentially low-acid, earlier polymer stage, other than said final polymer stage (2), is prepared from a monomer system which contains less than about 5% by weight of monomers containing carboxylic acid functionality;
  (4) each polymer stage is different from any adjacent polymer stage by either about a one percent difference by weight in the amount of any ethylenically unsaturated monomer used therein or by a difference in number average molecular weight between said stage and said adjacent stage of at least about a factor of 2; and
  (5) the polymer stages of said particles having a Tg of about 50° C. or greater comprises at least about 60% by weight of said particles;
(B) contacting said polymer particles with a non-polymeric alipharic or aromatic carboxylic acid(s) having 6 to 12 carbon atoms containing at least one carboxylic acid group before, during or after polymerization of said final polymer stage (2) to pemit said acid-containing compound to be absorbed into said low-acid polymer stage (3); and
(C) swelling the resulting multi-stage polymer particles containing said absorbed acid-containing compound with water, an optical plasticizing solvent, at or above the glass transition temperature of the neat polymer or glass transition temperature of the optionally plasticized polymer of said final polymer stage (2) by contacting said particles with base at a pH sufficient to swell said polymer particles, so as to produce particles which, when dried, contain one or more void space(s) within said particles.

4,880,843

COMPOSITION AND PROCESS FOR MAKING POROUS ARTICLES FROM ULTRA HIGH MOLECULAR WEIGHT POLYETHYLENE

Harvey L. Stein, Seabrook, Tex., assignor to Hoechst Celanese Corporation, Somerville, N.J.

Filed Mar. 28, 1988, Ser. No. 173,988

Int. Cl.^{4} C08K *5/01;* C08L *23/06*

U.S. Cl. 521—98 6 Claims

1 A molding powder composition comprising a uniform heterogeneous mixture of particles of polyethylene having a molecular weight within the range of about 1×10^6 to about 6×10^6 as determined by the intrinsic viscosity of a 0.5 weight percent solution in decahydronaphthalene at 135° C., and particles of polyethylene wax having a molecular weight within the range of about 1,000 to about 20,000, the particle size distribution of said particles of polyethylene polymer being within the range of at least about 95% by weight smaller than 0.5 millimeters and not greater than about 15% by weight smaller than 0.063 millimeters.

4,880,844

FLAME LAMINATABLE POLYETHER URETHANE FOAM

Gerald Fesman, Teaneck, N.J., assignor to Akzo America Inc., New York, N.Y.

Filed May 27, 1988, Ser. No. 199,499

Int. Cl.^{4} C08G *18/65*

U.S. Cl. 521—107 14 Claims

1. In a urethane foam-forming composition comprising a polyether polyol, organoisocyanate, blowing agent and at least one organophosphorus compound selected from the group consisting of an organophosphite, an organophosphonate, an alkylphosphate and an alkoxyalkylphosphate in an amount effective to impart heat laminatable properties to the resulting foam formed therefrom, wherein the improvement comprises the additional presence of a polyalkylene glycol having a hydroxy number of below about 560 to improve the heat laminatable properties of the resulting foam.

4,880,845

AMINO/ORTHO CARBOXYLIC ACID ESTER CATALYST SYSTEM FOR ISOCYANATE TRIMERIZATION

Christopher T. Moss, Dublin; Timothy A. Tufts, Powell, both of Ohio, and Robert S. Bock, Hazelwood, Mo., assignors to Ashland Oil, Inc., Ashland, Ky.

Filed Nov. 30, 1988, Ser. No. 277,873

Int. Cl.^{4} C08G *18/14*

U.S. Cl. 521—114 17 Claims

1. A method for curing a curable composition which comprises:

(a) formulating a lquid curable composition comprising an isocyanate-functional compound; and
(b) admixing said liquid curable composition with a catalyst system comprising an amino catalyst and an orthocarboxylic acid ester.

4,880,846

THERMOSET MOLDING COMPOSITIONS CATALYZED BY 1,4-BENZOQUINONE SALTS OF 1,8-DIAZA-BICYCLO(5.4.0)UNDEC-7-ENE

Timothy A. Tufts, Powell, Ohio; Robert S. Bock, Hazelwood, Mo., and Christopher T. Moss, Dublin, Ohio, assignors to Ashland Oil, Inc., Ashland, Ky.

Filed Nov. 30, 1988, Ser. No. 277,884

Int. Cl.^{4} C08G *18/20*

U.S. Cl. 521—129 10 Claims

1. In a process for the catalyzed reaction of a reaction mixture comprising an isocyanate and an active hydrogen compound, the improvement which comprises conducting said reaction in the presence of a catalyst comprising the salt of 1,8-diazo-bicyclo(5.4.0)undec-7-ene and 1,4-benzoquinone.

4,880,847

THERMOPLASTIC POLYURETHANE ENDOWED WITH IMPROVED CHARACTERISTICS OF RESISTANCE TO HEAT DISTORTION

Lioo Credali, Casalecchio Di Reno; Carlo Mulas, Mogliano Veneto; Ermanno Benetti, Mirano, and Gianflavio Lunardon, Padua, all of Italy, assignors to Ausimont S.p.A., Milan, Italy

Filed Jul. 21, 1987, Ser. No. 75,965

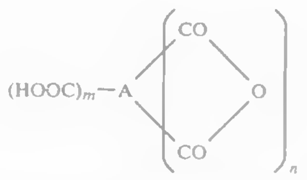
Claims priority, application Italy, Jul. 23, 1986, 21208 A/86

Int. Cl.^{4} C09B *29/22;* C08G *18/28*

U.S. Cl. 521—157 13 Claims

1. A process for the manufacture of a thermoplastic polyurethane showing an improved heat distortion resistance, consisting essentially of the following steps:

(a) reaction of an organic polyisocyanate, at 50°-250° C. and until the CO_2 release comes to an end, with at least one aromatic anhydride, optionally bearing carboxylic substitutive groups, and having the formula:



(I)

where A represents a substituted or unsubstituted aromatic radical containing from 6 to 20 carbon atoms, m is 0 or an integer from 1 to 3, and n is an integer equal to 1 or 2;
(b) addition to the above mixture, at 50° -150° C., of at least one polyol, reactive with said polyisocyanate and having a molecular weight higher than 400;
(c) addition of a chain extender having a molecular weight lower than 400; and
(d) pouring the homogenized mixture into a mold, where it is aged at a temperature higher than 150° C.

4,880,848

FOAM, COMPOSITION AND METHOD OF PRODUCTION, CONTAINING POLYURETHANE, POLYISOCYANURATE AND POLYUREA GROUPS

Ragui Ghali, 3400-14th Avenue, Markham, Ontario, Canada (L3R 2L6)

Filed Nov. 13, 1987, Ser. No. 119,923

Claims priority, application Canada, Nov. 14, 1986, 523060

Int. Cl.^{4} C08G *18/00, 18/14;* C08J *9/00*

U.S. Cl. 521—174 15 Claims

1. In a process for preparing a semi-flexible, light-weight fire-retardant foam having a density in the range of 0.5 to 0.9 pounds per cubic foot by the reaction of polyether polyol and an organic polyisocyanate in the presence of water or disubstituted amine, a surfactant and a blowing agent, the improvement comprising adding to the foaming reactants an effective amount of catalysts for inhibiting polyurethane and polyurea formation while enhancing polyisocyanurate formation until completion of said polyisocyanurate formation to produce a ternary foam in which the reactant groups are present in the percentage of 10 to 35 per cent polyurethane, 30 to 35 per cent polyisocyanurate and to 20 to 45 per cent polyurea

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4,880,849

UV COATINGS CONTAINING CHLORINATED POLYOLEFINS, METHOD OF CURING, AND COATED SUBSTRATES THEREFROM

James E. Poole, Gibsonia, and Marvis E. Hartman, Pittsburgh, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Mar. 14, 1988, Ser. No. 168,069

Int. Cl.^{4} C08C *19/28;* C08F *2/48*

U.S. Cl. 522—10 5 Claims

1. A coating composition which crosslinks upon exposure to ultraviolet radiation comprising:

(A) from 1 to 5 percent of a saturated, chlorinated polymeric material selected from the group consisting of (1) a chlorinated polyolefin containing about 5 to 75 percent by weight of chlorine and having a number average molecular weight of about 5,000–50,000, (2) a chlorinated polyolefin containing carboxylic anhydride groups and about 5 to 25 percent by weight of chlorine and having a number average molecular weight of about 5,000–50,000, and (3) a mixture thereof;
(B) from 20 to 80 percent of a radiation sensitive monomer having at least two addition polymerizable unsaturated bonds;
(C) from 0.1 to 5.0 percent of a photopolymerization initiator; and
(D) from 80 to 20 percent of an acrylic addition polymer having at least one amino group and having a number average molecular weight of about 8,000–70,000, said addition polymer being derived from a mixture of copolymerizable ethylenically unsaturated monomers containing a monomeric ethylenically unsaturated amine;

wherein said percentages of (A), (B), (C) and (D) are by weight based on nonvolatile components of said coating composition

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4,880,850

ENHANCING COLOR STABILITY TO STERILIZING RADIATION OF POLYMER COMPOSITIONS

Linda H. Nelson, Evansville, Ind.; Roger W. Avakian, Brasschaat, Belgium, and Arnold Factor, Scotia, N.Y., assignors to General Electric Company, Pittsfield, Mass.

Continuation of Ser. No. 110,159, Oct. 16, 1987, abandoned, which is a division of Ser. No. 769,103, Aug. 26, 1985, abandoned, which is a continuation-in-part of Ser. No. 579,103, Feb. 10, 1984, abandoned. This application Feb. 7, 1989, Ser. No. 309,050

Int. Cl.^{4} C08J *3/28;* C08K *5/04;* C08L *69/00*

U.S. Cl. 522—79 35 Claims

1. A composition exposed to sterilizing radiation comprising an aromatic carbonate polymer in admixture with an amount of an alcohol stabilizing compound sufficient to inhibit yellowing of the composition upon said exposure, said alcohol being present in said composition in an amount of at most about 0.2 weight parts per 100 weight parts of said aromatic carbonate polymers.

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4,880,851
AROMATIC COMPOSITION AND METHOD FOR THE PRODUCTION OF THE SAME

Tohru Yamamoto, c/o Nakato Laboratory, Inc., 6, Ohshinohara, Yasu-cho, Yasu-gun, Shiga-ken, Japan

Filed Feb. 26, 1988, Ser. No. 160,802

Claims priority, application Japan, Feb. 26, 1987, 62-43718; Feb. 27, 1987, 62-45462; Apr. 2, 1987, 62-82279

Int. Cl.⁴ B01D *13/02*

U.S. Cl. 523—102 5 Claims

1. A method for the production of a composition having perfume substances encapsulated or clathrated in a matrix of polymer produced from alkoxides of metal, silicon or phosphorus, which method comprises the steps of:

adding an acid catalyst for sol-gel methods to an aqueous mixture of alkoxides of metal, silicon, or phosphorus, and perfume substances so as to cause the hydrolysis of said alkoxides; and

adding a base catalyst for sol-gel methods to the reaction mixture so as to cause the polycondensation of the hydrolysate to form a polymer, thereby said perfume substances being encapsulated or clathrated in the matrix of said polymer, wherein said base catalyst is selected from the group consisting of N,N-dimethylbenzylamine, tributylamine, tri-n-propylamine, tripentylamine, tripropargylamine, N,N,N-trimethylethylenediamine, and tri-n-hexylamine.

4,880,852
DEODORIZING POLYOLEFIN RESIN COMPOSITIONS AND FORMED DEODORIZING ARTICLES CONTAINING A MIXTURE OF A ZINC COMPOUND AND A SULFATE OF ALUMINUM

Akira Hoshino, Koshigaya; Mikio Saji, Kasukabe, and Isamu Yamaguchi, Souka, all of Japan, assignors to Dainichiseika Color & Chemicals Mfg. Co., Ltd., Tokyo, Japan

Division of Ser. No. 928,377, Nov. 10, 1986. This application Apr. 25, 1988, Ser. No. 185,409

Claims priority, application Japan, Apr. 7, 1986, 61-078181; Apr. 7, 1986, 61-078182; Apr. 7, 1986, 61-078183; May 13, 1986, 61-107543

Int. Cl.⁴ C08K *322, 9/12;* **C11B** *9/00;* **A61K** *7/00*

U.S. Cl. 523—102 6 Claims

1. A resin composition, comprising:

99.9–50 parts by weight of a thermoplastic polyolefin resin and 0.1–50 parts by weight of a combination of a zinc compound and a sulfate of aluminum, which combination functions as a deodorizing ingredient.

4,880,853
ENHANCING COLOR STABILITY TO STERILIZING RADIATION OF POLYMER COMPOSITIONS

Linda H. Nelson, Evansville, Ind.; Roger W. Avakian, Brasschaat, Belgium, and Arnold Factor, Scotia, N.Y., assignors to General Electric Company, Pittsfield, Mass.

Division of Ser. No. 769,277, Aug. 26, 1985, abandoned, and a continuation-in-part of Ser. No. 579,103, Feb. 10, 1984, abandoned. This application Dec. 22, 1987, Ser. No. 136,607

Int. Cl.⁴ C08K *5/07*

U.S. Cl. 523—136 7 Claims

1. A composition comprising an aromatic carbonate polymer in admixture with an amount of 2,4 pentanedione effective to inhibit yellowing upon exposure to sterilizing radiation.

4,880,854
ENHANCING COLOR STABILITY TO STERILIZING RADIATION OF POLYMER COMPOSITIONS

Roger W. Avakian, Brasschaat, Belgium, assignor to General Electric Company, Pittsfield, Mass.

Division of Ser. No. 769,277, Aug. 26, 1985, abandoned, which is a continuation-in-part of Ser. No. 579,103, Feb. 10, 1984, abandoned. This application Dec. 22, 1987, Ser. No. 136,608

Int. Cl.⁴ C08K *5/34, 5/13*

U.S. Cl. 523—136 8 Claims

1. An medical article sufficiently radiated to achieve sterilization, said article comprising an extruded admixture of (a) an aromatic carbonate polymer and (b) an effective amount of a stabilizing compound to inhibit yellowing upon sterilizing radiation exposure, where said compound is tetrakis(methylene(3,5-di-t-butyl-4-hydroxy-hydrocinnamate)methane.

4,880,855
ENHANCING COLOR STABILITY TO STERILIZING RADIATION OF POLYMER COMPOSITIONS

Linda H. Nelson, Evansville, Ind.; Roger W. Avakian, Brasschaat, Belgium, and Arnold Factor, Scotia, N.Y., assignors to General Electric Company, Pittsfield, Mass.

Division of Ser. No. 769,277, Aug. 26, 1985, abandoned, which is a continuation-in-part of Ser. No. 579,103, Feb. 10, 1984, abandoned. This application Dec. 22, 1987, Ser. No. 136,609

Int. Cl.⁴ C08R *5/41*

U.S. Cl. 523—136 9 Claims

1. A composition comprising an aromatic carbonate polymer in admixture with an effective amount of a stabilizing sulfone (—SO_2) compound effective to inhibit yellowing upon exposure to sterilizing radiation, wherein said stabilizing sulfone compound has the general formula $R^5—SO_2—R^6$. R^5 and R^6 are the same or different, and R^5 and R^6 are selected from the group consisting of alkyl and aryl.

4,880,856
ENHANCING COLOR STABILITY OF STERILIZING RADIATION OF POLYMER COMPOSITIONS

Roger W. Avakian, Dalton, Mass., assignor to General Electric Company, Pittsfield, Mass.

Filed Dec. 22, 1987, Ser. No. 136,602

Int. Cl.⁴ C08K *5/34*

U.S. Cl. 123—136 14 Claims

1. A composition comprising an aromatic carbonate polymer in admixture with an effective amount of thiol stabilizing compound effective to inhibit yellowing upon exposure to sterilizing radiation, wherein said thiol stabilizing compound is 2.5-dimercapto-1,3,4-thiadiazole.

4,880,857
CARBON BLACK-GRAFT POLYMER, METHOD FOR PRODUCTION THEREOF, AND USE THEREOF

Yoshikuni Mori, Settsu; Mitsuo Kushino, Minoo; Hayato Ikeda, Settsu; Nobuaki Urashima, Takatsuki; Masuji Izubayashi, Nishinomiya; Shigeru Tanimori, Hirakata; Yoshihiro Arita, Takatsuki; Kiyoshi Kawamura, Mishima; Kenji Minami, Suita, and Yoshinori Sano, Kobe, all of Japan, assignors to Nippon Shokubai Kagaku Kogyo Co., Ltd., Osaka, Japan

Filed Dec. 16, 1987, Ser. No. 134,319

Claims priority, application Japan, Dec. 17, 1986, 61-298985; Apr. 24, 1987, 62-99648; May 21, 1987, 62-122476; May 29, 1987, 62-131272; Jul. 8, 1987, 62-168868; Aug. 25, 1987, 62-209303; Sep. 3, 1987, 62-219097; Sep. 22, 1987, 62-236212; Sep. 22, 1987, 62-236214; Sep. 25, 1987, 62-238621

Int. Cl.⁴ C08K *3/04;* **C08F** *292/00*

U.S. Cl. 523—205 10 Claims

1. A carbon black-graft polymer, produced by causing a polymer possessing within the molecular unit thereof at least one reactive group selected from an epoxy group, to react with the carbon black, wherein said polymer possesses one to two

reactive groups on the average and a number average molecular weight in the range of 2,000 to 100,000.

4,880,858
WATER ABSORBING POLYMERS

David Farrar, Bradford; Peter Flesher, Bingley; Malcolm Skinner; John Clarke, both of Bradford; David Marshall, North Mirfield, and Malcolm Hawe, Huddersfield, all of United Kingdom, assignors to Allied Colloids Limited, Bradford, England

Continuation-in-part of Ser. No. 835,602, Mar. 3, 1986, Pat. No. 4,690,971. This application Aug. 31, 1987, Ser. No. 91,551

Claims priority, application United Kingdom, Mar. 5, 1985, 8505632; Dec. 13, 1985, 8530784; Jan. 30, 1987, 8702052; Jul. 20, 1987, 8717093; Aug. 13, 1987, 8719215; Aug. 13, 1987, 8719216

The portion of the term of this patent subsequent to Sep. 1, 2004, has been disclaimed.

Int. Cl.⁴ C08J *0/00*

U.S. Cl. 524—60 17 Claims

1. A process comprising mixing a sticky mass of coal fines and water with polymer particles that are non-film forming and non-sticky when wet by the water in the sticky mass and that are a water absorbing polymer, and thereby forming a crumbly mixture of substantially dry coal fines and substantially non-sticky swollen polymer particles, wherein said water absorbing polymer is swellable but insoluble in water, said water absorbing polymer formed from a water soluble monoethylenically unsaturated monomer or monomer blend in the presence of a crosslinking agent.

4,880,859
LIGHT-STABILIZED STAR POLYMER MICROPARTICLES

Mario Slongo, Tafers; Jean Rody, Riehen; Franciszek Sitek, Therwil, all of Switzerland, and Andreas Valet, Eimeldingen, Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jun. 3, 1988, Ser. No. 202,741

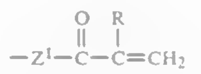
Claims priority, application Switzerland, Jun. 4, 1987, 2114/87

Int. Cl.⁴ C08K *5/34, 5/13*

U.S. Cl. 524—91 29 Claims

1. Light-stabilized star polymer microparticles containing

(a) a polymer core of 1–100% by weight of one or more monomers which contain at least 2 groups of the formula



$$-Z^1-\overset{\overset{O}{\|}}{C}-\overset{\overset{R}{|}}{C}=CH_2 \qquad (1)$$

and 0–99% by weight of one or more monomers which contain one group of the formula (1), and

(b) at least 5 arms, fixed to the polymer core, of polymer chains consisting of one or more monomers which contain a group of the formula (1), R in the formula (1) being H, CH_3, CH_3CH_2, CN or COOR', Z^1 being O or NR' and R' being C_1–C_4alkyl, at least 50% of the microparticles having at least 5 up to 2,000,000 such arms, these arms consisting of one or more groups of different polymer types, and

(α) the polymer chains of one of the said groups of arms having molecular weights which are the same as or different from those of the other groups, and being derived from the same monomers as the polymer chains of the other groups of arms, or from monomers differing from these,

(β) the polymer chains of each group of arms having an arm polydispersity of 1.0 to 2.0, this polydispersity being defined by the weight average divided by the number average of the polymer chains in the group, and

(γ) the star polymer microparticles themselves, which contain a core and arms consisting of one or more groups, having a polydispersity of 1.0 to 2.0, this polydispersity being defined by the weight average divided by the number average of the microparticles, which polymer microparticles contain 0.1 to 30% by weight, relative to the monomer employed, of one or more light stabilizers, at least a part of the polymerization of the monomers being carried out in the presence of the light stabilizer.

4,880,860
POLYESTER MOLDING COMPOSITION, PROCESS FOR ITS PREPARATION AND ITS USE

Erich Blöcker, Hofheim am Taunus, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 49,117, May 13, 1987, abandoned. This application Aug. 25, 1988, Ser. No. 237,669

Claims priority, application Fed. Rep. of Germany, May 15, 1986, 3616431

Int. Cl.⁴ C08K *5/34*

U.S. Cl. 524—94 17 Claims

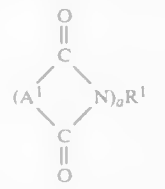
1. A polyester molding composition, comprising substantially

(A) a polyester of a reduced specific viscosity (measured at 25° C. in a 1% solution in dichloroacetic acid) of at least 0.3 dl/g,

(B) a nucleating agent in the form of an alkali metal compound

(C) a low-molecular organic compound as a crystallization accelerator in the presence or absence of

(D) reinforcing agents or other additives, wherein (C) is an organic imide compound which comprises one or more aromatic nuclei and is of the formula



(1)

in which A^1 is a substituted or unsubstituted divalent aromatic radical, R^1 is a branched or unbranched, unsubstituted or substituted aliphatic radical of valency a, having at least 5 carbon atoms and containing at least one —C(=O)—NH— group, and a is 1 or 2, which component (C) has a melting point below 200° C. and is present in a quantity sufficient to reduce the crystallization temperature of the molding composition by at least 4° C as compared with that without (C).

4,880,861
COATING COMPOSITION

Shoichi Matsumura; Toshiro Nanbu, and Hisao Furukawa, all of Kobe, Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 124,237, Nov. 23, 1987, Pat. No. 4,826.904. This application Mar. 8, 1989, Ser. No. 320,646

Claims priority, application Japan, Nov. 25, 1986, 61-280469

Int. Cl.⁴ C08K *5/11*

U.S. Cl. 524—314 1 Claim

1. A coating composition comprising:

(a) 100 parts by weight of a hydrolyzable silyl group-containing vinyl polymer having on the main polymer chain end or a side chain thereof at least one silyl group containing a silicon atoms to which a hydrolyzable group is linked, per one polymer molecule, the main chain of said hydrolyzable silyl group-containing vinyl polymer consisting essentially of a polyester resin having a polymerizable unsaturated group; and

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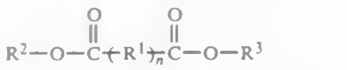
(b) 0.5 to 100 parts by weight of a dialkyl ester of a dibasic acid having the formula (1)



$$R^2-O-\overset{\overset{O}{\|}}{C}\left(R^1\right)_n\overset{\overset{O}{\|}}{C}-O-R^3 \qquad (1)$$

wherein R^1, is a bivalent group having 1 to 10 carbon atoms selected from the group consisting of alkylene, arylene and aralkylene, R^2 and R^3 are the same or different and each is an alkyl having 1 to 4 carbon atoms, and n is an integer of 1 to 10.

4,880,862

FLAME RETARDANT ABS RESIN COMPOSITION

Enrico J. Termine; Nicolai A. Faystritsky, both of Lafayette, and Denois M. Borden, West Lafayette, all of Ind., assignors to Great Lakes Chemical Corporation, West Lafayette, Ind.

Filed Jun. 30, 1988, Ser. No. 213,538

Int. Cl.⁴ C08K *5/06*

U.S. Cl. 524—373 5 Claims

1. A non-blooming flame retardant acrylonitrile-butadiene-styrene resin composition comprising:

a normally flammable acrylonitrile -butadienestyrene resin;

as a flame retardant agent, an effective amount of halogenated unsymmetricalhigher alkyl bisphenoxy alkane to render the composition flamc retardant;

and

a flame retardant enhancing agent wherein the halogenated unsymmetrical higher alkyl bisphenoxy alkane is a compound of the structure: wherein X is bromine or chlorine; R_1 is straight or branched alkyl from C_1 to C_{12}; z is an integer from 2 to 5; n is 0, 1, or 2; R_2 is straight or branched alkyl selected from the groups consisting of sec-butyl (sec C_4H_9), pentyl (C_5H_{11}), hexyl (C_6H_{13}), hpetyl (C_7H_{15}), octyl (C_8H_{17}), nonyl (C_9H_{19}), decyl ($C_{10}H_{21}$), undecyl ($C_{11}H_{23}$) and dodecyl ($C_{12}H_{25}$); y is 0, 1, or 2; R_3 is straight or branched alkylene from C_1 to C_{12}; and such that if n is 1, R_1 is not R_2.

4,880,863

POLYMER BLEND

Robert G. Lutz, Santa Rosa, Calif., and Edgar J. Smutny, Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Jun. 27, 1988, Ser. No. 211,626

Int. Cl.⁴ C08L *71/02;* **C08K** *5/06*

U.S. Cl. 524—377 8 Claims

1. A composition comprising a non-miscible blend of, as a major component, a linear alternating polymer of carbon monoxide and at least one ethylenically unsaturated hydrocarbon and, as a minor component, a hydroxyl-terminated poly(alkylene oxide) polymer, wherein

(a) the linear alternating polymer consists essentially of recurring units represented by the formula

$$[CO-(CH_2-CH_2)]_x[CO-(G)]_y$$

wherein G is the moiety of an ethylenically unsaturated hydrocarbon of 3 to 20 carbon atoms inclusive polymerized through the ethylenic unsaturation and the ratio of y:x is no more than about 0.5, and

(b) the hydroxyl-terminated poly(alkylene oxide) polymer is represented by the formula

$$H-O(R-O)_nH$$

wherein R is alkylene of from 2 to 6 carbon atoms inclusive and n is a number from about 4 to about 500.

4,880,864

THERMOPLASTIC POLYCARBONATES AND BLENDS WITH ENHANCED FLAME RETARDANT PROPERTIES

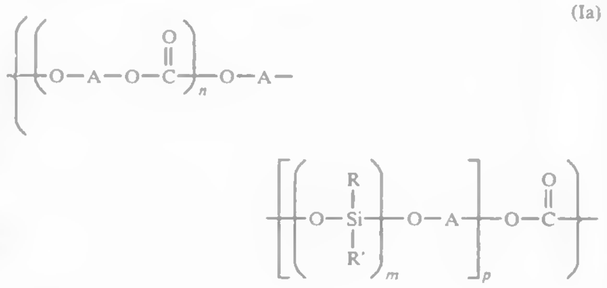
Winfried G. Paul; Ronald L. Price, and Sivaram Krishnan, all of Pittsburgh, Pa., assignors to Mobay Corporation, Pittsburgh, Pa.

Filed Dec. 29, 1987, Ser. No. 138,982

Int. Cl.⁴ C08K *3/38*

U.S. Cl. 524—404 10 Claims

1. A thermoplastic molding composition consisting essentially of (1) a polydiorganosiloxane-polycarbonate block copolymer conforming structurally to



$$\left\{\left(O-A-O-\overset{\overset{O}{\|}}{C}\right)_n-O-A-\left[\left(O-\underset{\underset{R'}{|}}{\overset{\overset{R}{|}}{Si}}\right)_m-O-A\right]_p-O-\overset{\overset{O}{\|}}{C}\right\} \qquad (Ia)$$

wherein

p is an integer of from 1 to about 10,
n is an integer of from 1 to about 1000,
m is an integer of from 1 to about 500,
A is a derivative of an aromatic dihydroxy compound,
R and R′ independently denote a C_1–C_{20} alkyl radical or a C_6–C_{14} aryl radical,

which copolymer is characterized in that its relative viscosity measured on a solution of 0.5 g in 100 ml ofdichloromethane at 25° C. is at least 1.15 and (ii) a positive amount of up to 2% by weight of a salt formed between an alkali metal or alkaline earth metal and an inorganic acid which contains a complex ion.

4,880,865

MICA AND GLASS REINFORCED POLYKETONE POLYMERS

Eric R. George, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Aug. 31, 1988, Ser. No. 238,386

Int. Cl.⁴ C08L *75/00*

U.S. Cl. 524—449 12 Claims

1. A polymeric composition comprising a major amount of a linear alernating polymer of carbon monoxide and at least one ethylenically unsaturated hydrocarbon and minor amounts, relative to the polymer, of glass fiber reinforcement and mica.

4,880,866

THERMOPLASTIC POLYESTER COMPOSITIONS CONTAINING CERTAIN LOW MOLECULAR WEIGHT DIEPOXIDE RESINS AND HAVING IMPROVED IMPACT BEHAVIOR

Donal McNally, Chatham; H. Leslie LaNieve, Warren, and Jerome L. Costanzo, Bridgewater, all of N.J., assignors to Hoechst Celanese, Somerville, N.J.

Continuation of Ser. No. 853,282, Apr. 17, 1986, abandoned, which is a continuation-in-part of Ser. No. 788,157, Oct. 16, 1985, abandoned, which is a continuation of Ser. No. 666,684, Oct. 31, 1984, abandoned. This application Jun. 17, 1987, Ser. No. 63,731

Int. Cl.⁴ C08L *67/02, 69/00*

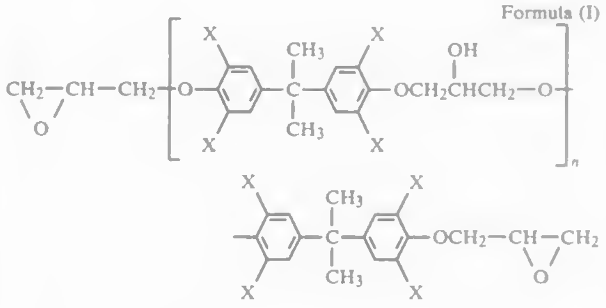
U.S. Cl. 524—504 10 Claims

1. Thermoplastic polyester composition having improved impact strength comprising a blend of:

(a) at least about 60 weight percent polybutylene terepthalate having an intrinsic viscosity between about 0.4 and about 1.3 dl/g as determined in orthochlorophenol at 25° C.

(b) between about 0.1 and about 8 weight % based on poly (C_2–C_4 alkylene terepthalate) of a diepoxide resin having a molecular weight between about 350 and about 2,100 and consisting essentially of at least one condensation product of bisphenol A or brominated bisphenol A and epihalohydrin and represented by the general formula (I):

Formula (I)



wherein X is bromine or hydrogen and n is an average number above zero and less than about 2.3;

(c) a catalytic amount of at least one catalyst selected from the group consisting of alkyl triphenyl phosphonium halides and alkenyl triphenyl phosphonium halides; and

(d) between about 5 and about 30 weight % based on poly (C_2–C_4 alkylene terephthalate) of a butadiene-based multiphase composite polymer having an elastomeric core of a polybutadiene or polybutadiene/styrene and a thermoplastic shell of polymethylmethacrylate.

4,880,867

AQUEOUS COATING COMPOSITIONS, A PROCESS FOR THEIR PREPARATION AND METHOD OF USING THE SAME

Armin Gobel, Wuppertal; Knut Graff, Hattingen; Hans-Ulrich Meier, Essen, and Hans-Peter Patzschke, Wuppertal, all of Fed. Rep. of Germany, assignors to 501 Herberts Gesellschaft mit Beschrankter, Wuppertal, Fed. Rep. of Germany

Filed Aug. 18, 1987, Ser. No. 86,905

Claims priority, application Fed. Rep. of Germany, Aug. 19, 1986, 3628125

Int. Cl.⁴ C08L *75/00*

U.S. Cl. 524—507 5 Claims

1. An aqueous coating composition of a non-yellowing film forming material based on water dilutable polymeric binders comprising of a mixture of

(A) 90 to 40% by weight of a poly(meth)acrylate resin which contains hydroxyl groups, wherein said resin (A) has:
  (a) a number average molecular weight (Mn) of from 10,000 to 500,000,
  (b) a glass transition temperature of from −50° to +150° C.,
  (c) an acid number of from 0 to 80 (mg KOH per g of solid resin),
  (d) a hydroxyl number of from 60 to 250 (mg KOH per g of solid resin) and
  (e) A viscosity of from 5 to 100 Pa.s (determined on a 50% solution in butoxyethanol at 25° C.), and
(B) 10 to 60% by weight of an anionic polyurethane resin dispersion, having an acid number of from 5 to 50 wherein: the quantitative percentage proportions of (A) and (B) are based on their solids content of which the sum amounts to 100%, and
(C) pigments.

4,880,868

EXTENDED SHELF LIFE WATER-ABSORBING COMPOSITION WHICH FACILITATES FIBER FORMATION

Bi Le-Khac, West Chester, Pa., assignor to Arco Chemical Technology, Inc., Wilmington, Del.

Division of Ser. No. 915,455, Oct. 6, 1986, Pat. No. 4,731,067. This application Dec. 17, 1987, Ser. No. 136,810

Int. Cl.⁴ C08F *8/14, 22/06, 22/04, 20/06*

U.S. Cl. 524—549 31 Claims

1. A stable, heat curable aqueous composition comprising:

(a) a copolymer containing from about 25 to about 75 mole percent of about 20 to about 80 percent neutralized carboxylic acid substituted ethylenic units and from about 75 to about 25 mole percent recurring units of at least one copolymerizable comonomer; and

(b) at least one unreacted compound containing at least two hydroxyl groups, wherein the resulting aqueous composition is uncured and stable at room temperature.

4,880,869

β-AMINO-β-PROPIOLACTAM DERIVATIVE AND MOISTURE CURABLE POLYURETHANE COMPOSITION THEREOF

Masaaki Aoki, Zushi; Mayumi Tani, Yokohama; Masayuki Kamiyama, Yokohama, and Kiyotsugu Asai, Yokohama, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

PCT No. PCT/JP88/00040, § 371 Date Sep. 14, 1988, § 102(e) Date Sep. 14, 1988, PCT Pub. No. WO88/05431, PCT Pub. Date Jul. 28, 1988

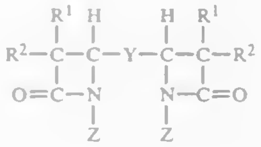
PCT Filed Jan. 21, 1988, Ser. No. 251,376

Claims priority, application Japan, Jan. 22, 1987, 62-11233; Mar. 13, 1987, 62-56936; Nov. 9, 1987, 62-281088; Dec. 23, 1987, 62-323822

Int. Cl.⁴ C08L *75/04*

U.S. Cl. 524—773 26 Claims

1. A β-amino-β-propiolactam derivative having the formula (I) :



(I)

wherein R^1 is a monovalent radical selected from the group consisting of a hydrogen atom, alkyl radical having 1–8 carbon atoms and cycloalkyl radical; R^2 is a monovalent radical selected from the group consisting of an alkyl radical having 1–12 carbon atoms and cycloalkyl radical; Y is a divalent radical obtained by eliminating a hydrogen atom respectively from each secondary amino group in an aliphatic or alicyclic di-secondary-amine having 1–22 carbon atoms; and Z is a monovalent radical obtained by eliminating an isocyanato radical from an aliphatic or aromatic monoisocyanate.

4,880,870

POLYMER GRANULATE, A PROCESS FOR ITS PREPARATION, AND ITS USE

Wolfgang Zimmermann, and Albrecht Harréus, both of Kelkheim, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Continuation of Ser. No. 534,943, Sep. 21, 1983, abandoned. This application Jul. 30, 1985, Ser. No. 762,746

Claims priority, application Fed. Rep. of Germany, Sep. 23, 1982, 3235189

Int. Cl.⁴ B32B *5/16, 27/06, 27/08;* **C08J** *3/06*

U.S. Cl. 524—31 27 Claims

1. A polymer granulate which is useful for preparing adhesives or coatings and whose particles consist of a core compo-

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nent and a coating component in a weight ratio of 50 to 98:50 to 2, wherein the core component is a water-soluble granular polyvinylalcohol, the coating component is more finely granular than the core component and is a member selected from the group consisting of boric acid, starch, a cellulose derivative, kaolin, silicon carbide and polyvinylalcohol, and the particles have diameters from 0.6 to 6 mm.

18. A process for preparing a polymer granulate, whose particles consist of from 50 to 98 per cent by weight of a core component and from 50 to 2 per cent by weight of a coating component, by mixing a granular polymer with a pulverulent substance at a temperature of from 15° to 30° C., which comprises coating granular water-soluble polyvinyl alcohol having particle diameters from 0.4 to 5 mm with a pulverulent substance having particle diameters from 0.01 to 1 mm in the presence of water in an amount of 10 to 20% by weight (based on the amount of water-soluble polyvinyl alcohol), the pulverulent substance being a member selected from the group consisting of boric acid, starch, a cellulose derivative, kaolin, silicon carbide and polyvinyl alcohol.

26. In a method which comprises preparing an adhesive or a coating from a polymer, the improvement wherein the polymer is a polymer granulate as claimed in claim 1.

4,880,871

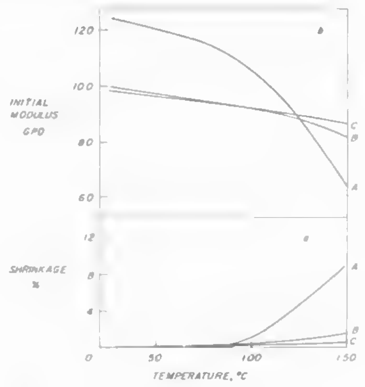
FIBER FOR REINFORCING PLASTIC COMPOSITES AND REINFORCED PLASTIC COMPOSITES THEREFROM

David S. Cordova; David R. Coffin, both of Richmond; Stanley D. Lazarus, Petersburg, all of Va., and Steven A. Young, Cary, N.C., assignors to Allied-Signal Inc., Morris Township, Morris County, N.J.

Division of Ser. No. 631,978, Jul. 18, 1984, Pat. No. 4,857,405. This application Dec. 21, 1987, Ser. No. 136,080

Int. Cl.⁴ C08G *63/76;* C08F *8/00*

U.S. Cl. 525—43 9 Claims



1. A fiber reinforced plastic composite comprising: (a) a resin matrix; and (b) a high tenacity reinforcing fiber selected from the group consisting of polyester, aliphatic polyamide, and combinations thereof, and coated with a composition comprising an aqueous solution of carboxyl-terminated, oil-free alkyd resin which is the reaction product of at least one aliphatic glycol containing 2 to 12 carbons with a combination of aromatic di- or trifunctional carboxylic acids and, optionally, an unsaturated aliphatic carboxylic acid, said resin having a degree of esterification below the gel point of the resin, to enhance stiffness of the fiber for cutting; wherein the aliphatic glycol is selected from the group consisting of ethylene glycol, diethylene glycol, triethylene glycol, propylene glycol, tetraethylene glycol, butane diol, butene diol, butyne diol, and combinations thereof; and wherein the aromatic carboxylic acid is selected from the group consisting of orthophthalic acid, orthophthalic anhydride, isophthalic acid, terephthalic acid, trimellitic acid, trimellitic anhydride, 2,6-naphthalene dicarboxylic acid, phenylindane dicarboxylic acid, trimesi acid, 4,4′-diphenyldicarboxylic acid, 2,6-pyridine dicarboxylic acid, p-hydroxymethyl benzoic acid, 5-tert-butyl isophthalic acid, bimesitylene-4,4′-dicarboxylic acid, and combinations thereof.

4,880,872

HEAT RESISTANT HIGH MODULUS REACTION INJECTION MOLDING (RIM) POLYMERS, BLENDS USED IN THE PRODUCTION THEREOF AND A PROCESS FOR PRODUCING THE SAME

Arthur K. Thomas, Woodbury, N.J., assignor to ICI Americas Inc., Wilmington, Del.

Filed Apr. 3, 1986, Ser. No. 847,490

Int. Cl.⁴ C08L *67/06*

U.S. Cl. 525—43 5 Claims

1. A blend which comprises:

(a) at least 5% by weight of an ethylenically unsaturated component containing at least one ethylenically unsaturated monomer and at least one ethylenically unsaturated polymer;

(b) 30–75% by weight of a polyoxyalkylene polyamine of molecular weight between 190 to 3,000 wherein said polyamine is selected from the group consisting of:

  (1) a diamine of the general formula $H_2NCH_2—CXH(OCH_2CHX)_yNH_2$ where X is H or an alkyl group having 1–18 carbon atoms and where y is a number from about 2 to about 16;

  (2) a triamine of polyalkoxylated trimethylol propane of the general formula: $CH_3CH_2C[CH_2—CHX)_zNH_2]_3$ where X is H or an alkyl group having 1–8 carbon atoms and z is between 1 and 11, and

  (3) $R[OCH_2CHX)_nOCHYCHZ\ NHA]_m$ where R is the nucleus of an oxyalkylation-susceptible aliphatic polyhydric alcohol containing 2–20 carbon atoms and 2–8 hydroxyl groups, A is hydrogen or a cyano-lower-alkyl radical having 1 or 2 carbon atoms optionally substituted with an alkyl group containing 1 to 8 carbon atoms between the nitrogen and cyano radical provided at least one A is a cyano-lower-alkyl radical, Z is an alkyl group containing 1–18 carbon atoms, X and Y are hydrogen or Z, n has an average value of 0–50 and m is 2–8, R is saturated and consists of carbon and hydrogen

(c) 5–40% by weight of a diamine chain extender selected from the group consisting of (i) C_1–C_{18} aliphatic diamines, (ii) C_6–C_{16} cycloaliphatic diamines, and (iii) an aromatic diamine having at least one lower alkyl substituent in the ortho position to each amine group.

4,880,873

ADHESIVE FOR CHLORINE-CONTAINING POLYMERS AND AROMATIC GROUP-CONTAINING POLYMERS

Toshihiro Sagane, Yamaguchi, Japan, assignor to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Continuation of Ser. No. 784,250, Oct. 4, 1985, abandoned. This application Mar. 17, 1988, Ser. No. 170,628

Claims priority, application Japan, Oct. 5, 1984, 59-207975

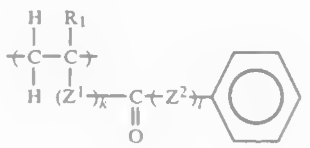
Int. Cl.⁴ C08L *23/26, 23/28, 23/36;* C08F *8/00*

U.S. Cl. 525—61 2 Claims

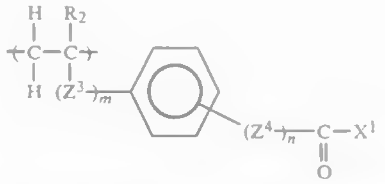
1. An adhesive for joining together two polymers to form a laminated structure comprising (A) a first layer of polymer selected from the group consisting of a chlorine-containing polymer and an aromatic polymer, (B) a second layer selected from the group consisting of a chlorine-containing polymer, an aromatic polymer and a polyolefin with (C) an adhesive layer therebetween, said adhesive comprising a modified olefin polymer composed of

(a) a recurring monomer unit selected from the group consisting of ethylene and propylene, and

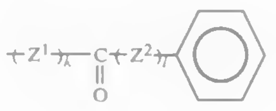
(b) a recurring monomer unit represented by following formula:



or



wherein R_1 and R_2 stand for a hydrogen atom or an alkyl group having up to 4 carbon atoms, each of k, l, m and n is 0 or 1, Z^1, Z^2, Z^3 and Z^4 stand for an oxygen atom or a divalent group comprising at least two elements selected from carbon, hydrogen, nitrogen and oxygen, X^1 stands for a monovalent group comprising at least two elements selected from carbon, hydrogen, nitrogen and oxygen or a blend of said modified olefin polymer with a polyolefin, wherein



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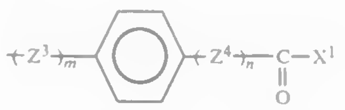
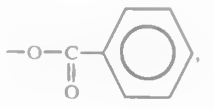
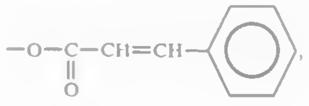
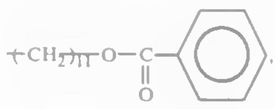
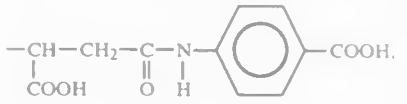


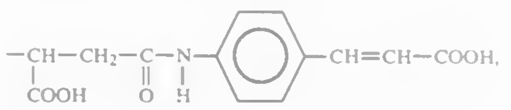
in said recurring monomer unit (b) is selected from the group consisting of











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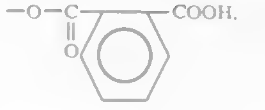

and is present at a concentration of 59 to 267 millimoles per 100 g of the polymer, and said polymer having an intrinsic viscosity (η) measured at 135° C. in decalin as a solvent of 0.7 to 4 dl/g.

4,880,874

RESIN OF POLYCARBONATE AND GRAFT COPOLYMER OF UNSATURATED EPOXY MONOMER AND ETHYLENE-α-OLEFIN BASE RUBBER

Mikio Hirai; Tokuo Tatsuda, and Tomio Yoshida, all of Niihama, Japan, assignors to Sumitomo Naugatuck Co., Ltd., Osaka, Japan

PCT No. PCT/JP88/00074, § 371 Date Sep. 7, 1988, § 102(e) Date Sep. 7, 1988, PCT Pub. No. WO88/05800, PCT Pub. Date Aug. 11, 1988

PCT Filed Jan. 29, 1988, Ser. No. 246,817

Claims priority, application Japan, Jan. 29, 1987, 62-20037

Int. Cl.⁴ C08L *69/00*

U.S. Cl. 525—67 2 Claims

1. A resin composition comprising

(A) 10 to 99% by weight of a polycarbonate resin and

(B) 90 to 1% by weight of a resin which comprises

  (b-1) 100 to 10% by weight of a copolymer which is obtainable by polymerizing 1 to 800 parts by weight of an unsaturated epoxy monomer and 0 to 2,000 parts by weight of other copolymerizable monomer in the presence of 100 parts by weight of an ethylene-α-olefin base rubber, and

  (b-2) 0 to 90% by weight of a copolymer which is obtainable by polymerizing at least one monomer selected from the group consisting of aromatic vinyl compounds, cyanated vinyl compounds and alkyl unsaturated carboxylates.

4,880,875

THERMOPLASTIC MOLDING MATERIAL BASED ON POLYCARBONATE, ASA AND VINYLAROMATICS/AN-CONTAINING COPOLYMERS

Georg Wassmuth; Karl Ruppmich; Erhard Seiler, all of Ludwigshafen; Hermann Gausepohl, Mutterstadt, and Klaus Benker, Neustadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Apr. 28, 1987, Ser. No. 43,493

Claims priority, application Fed. Rep. of Germany, May 9, 1986, 3615607

Int. Cl.⁴ C08L *69/00*

U.S. Cl. 525—67 6 Claims

1. A thermoplastic molding composition consisting essentially of the following components:

A from 45 to 70% by weight of one or more polycarbonates,

B from 15 to 30% by weight of one or more graft copolymers,

C from 15 to 30% by weight of one or more thermoplastic copolymers containing one or more vinylaromatic monomers of 8 to 12 carbon atoms and acrylonitrile,

wherein component B is composed of

B_1 a first, coarsely divided graft copolymer which has an average particle size of from 200 to 700 nm (d_{50} value of cumulative molecular weight distribution) in a proportion of from 30 to 70% by weight, based on B, and

B2 a second, finely divided graft copolymer which has an average particle size of from 50 to 180 nm (d_{50} value of cumulative molecular weight distribution) in a proportion of from 70 to 30% by weight, based on B, wherein said first, coarsely divided graft copolymer B_1 is formed from

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- (b_1) one or more elastomers (rubbers) which account for from 40 to 80% by weight, based on (B_1), and are polymerized from a monomer mixture of
- (b_1a_1) from 70 to 99.9% by weight, based on (b_1), of one or more alkyl acrylates where alkyl is of 1 to 8 carbon atoms
- (b_1a_2) from 0 to 30% by weight, based on (b_1), of one or more further copolymerizable monoethylenically unsaturated monomers and
- (b_1a_3) from 0.1 to 5% by weight, based on (b_1), of a copolymerizable polyfunctional crosslinking monomer, and
- (b_2) a graft sheath on this elastomer, accounting for from 20 to 60% by weight, based on (B_1), and being based on
- (b_2a_1) from 50 to 90% by weight, based on (b_2), of one or more monoethylenically unsaturated aromatic hydrocarbons of up to 12 carbon atoms and
- (b_2a_2) from 10 to 50% by weight of one or more ethylenically unsaturated monomers copolymerizable therewith,

wherein said second, finely divided graft copolymer B_2 is formed from

- (b_1) one or more elastomers (rubbers) which account for from 40 to 80% by weight, based on (B_2), and are polymerized from a monomer mixture of
- (b_1a_1) from 70 to 99.9% by weight, based on (b_1), of one or more alkyl acrylates where alkyl is of 1 to 8 carbon atoms
- (b_1a_2) from 0 to 30% by weight, based on (b_1), of one or more further copolymerizable monoethylenically unsaturated monomers and
- (b_1a_3) from 0.1 to 5% by weight, based on (b_1), of a copolymerizable polyfunctional crosslinking monomer, and
- (b_2) a graft sheath on this elastomer, accounting for from 20 to 60% by weight, based on (B_2), and being based on
- (b_2a_1) from 50 to 90% by weight, based on (b_2), of one or more monoethylenically unsaturated aromatic hydrocarbons of up to 12 carbon atoms and
- (b_2a_2) from 10 to 50% by weight of one or more ethylenically unsaturated monomers copolymerizable therewith.

4,880,876

THERMOPLASTIC POLYESTER MOLDING MATERIALS HAVING LOW-TEMPERATURE IMPACT STRENGTH

Hans-Henning Hub, Worms; Georg N. Simon, Limburgerhof; Gerhard Heinz, Weisenheim; Walter Ziegler, Edingen-Neckarhausen, and Juergen Sadlowski, Muenster-Hiltrup, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Continuation of Ser. No. 94,023, Sep. 3, 1987, abandoned, which is a continuation of Ser. No. 875,573, Jun. 18, 1986, abandoned. This application May 2, 1988, Ser. No. 188,763

Claims priority, application Fed. Rep. of Germany, Jun. 20, 1985, 3521957

Int. Cl.^{4} C08L *69/00*

U.S. Cl. 525—67 7 Claims

1. A thermoplastic polyester molding material which has low-temperature impact strength and essentially contains:

- (A) from 20 to 79 parts by weight of one or more aliphatic polyesters of an aromatic dicarboxylic acid having a relative viscosity of from 1.2 to 1.8,
- (B) from 20 to 79 parts by weight of one or more aromatic polycarbonates having a relative viscosity of from 1.2 to 1.5,
- (C) from 1 to 40 parts by weight of an elastomer blend consisting of I4
  - 1. from 5 to 95% by weight of an ethylene copolymer composed of
    - (a) from 40 to 99% by weight of ethylene and
    - (b) from 1 to 60% by weight of one or more comonomers having a radical selected from the group consisting of carboxyl groups and derivatives of carboxyl groups and mixtures thereof, and
  - 2. from 5 to 95% by weight of an elastomeric graft polymer which is prepared by emulsion polymerization and composed of
    - (a) from 70 to 95% by weight of a substantially crosslinked grafting base not less than 80% by weight of which consists of butadiene having a glass transition temperature T_g below $-20°$ C. and
    - (b) from 5 to 30% by weight of a graft shell consisting of one or more polymers having a glass transition temperature T_g higher than 20° C., the amounts of components (A) to (C) summing to 100 parts by weight, and the amounts of components (1a) and (1b) and (2a) and (b) each summing to 100% by weight, wherein, in the graft rubber, not less than 80% of the particles have a diameter of from 0.05 to 0.2 μm.

4,880,877

METHOD FOR PRODUCING RUBBER MODIFIED THERMOPLASTIC RESINS

Teruhiko Sugimori, Otake; Noriyuki Tajiri, Toyohashi; Fumio Suzuki, Otake; Hideaki Habara, Otake; Yutaro Fukuda, Otake, and Haruki Sato, Otake, all of Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

Filed Dec. 24, 1986, Ser. No. 946,058

Claims priority, application Japan, Dec. 25, 1985, 60-295369; Dec. 26, 1985, 60-293952; Jul. 17, 1986, 61-166571; Jul. 28, 1986, 61-175508

Int. Cl.^{4} C08L *51/04*

U.S. Cl. 525—84 2 Claims

1. A method for producing a rubber modified thermoplastic resin comprising graft rubber polymer (1) produced by emulsion graft polymerization of a vinyl monomer on a rubber latex, thermoplastic resin (2) and thermoplastic resin (3) which comprises carrying out successively the following steps:

- (I) a step of mixing the following (A), (B), (C):
  - (A) a latex of graft rubber polymer (1),
  - (B) an organic agent which is capable of dissolving thermoplastic resin (2) added in step (II') and has a solubility in water of 5% by weight or less at a temperature at which (A), (B), (C) and thermoplastic resin (2) are mixed, the amount of the organic agent being 10–600% by weight of the sum of the graft rubber polymer (1), and thermoplastic resin (2),
  - (C) a water soluble agent capable of coagulating the latex (A), amount of this agent being 10% by weight or less of graft rubber polymer (1).
- (II) a step of separating and removing an aqueous phase from a two-phase mixture obtained in the mixing step (I),
- (II') a step of mixing thermoplastic resin (2) with the mixture obtained in step (II) from which the aqueous phase has been removed.
- (III) a step of mixing the mixture obtained in step (II') with a part of thermoplastic resin (3),
- (IV) a step of removing, by a thermal means, the whole or a part of the organic agent (B) and remaining water from the mixture obtained at step (III),
- (V) a step of mixing the remainder of the thermoplastic resin (3) and
- (VI) a step of removing the remainder of the organic agent (B) from the mixture obtained at step (V) when a part of the organic agent (B) has been removed at step (IV).

4,880,878

BLOCK COPOLYMER BLENDS WITH IMPROVED OIL ABSORPTION RESISTANCE

Glenn R. Himes, Houston, and Andrea Sanders, Katy, both of Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Dec. 29, 1987, Ser. No. 138,780

Int. Cl.^{4} C08L *53/02*

U.S. Cl. 525—89 6 Claims

1. A thermoplastic blend, comprising:

- (a) about 80 to about 20 parts by weight of an elastomeric block copolymer having the general configuration A-B-A, wherein:
  - (i) each A block is a polymerized monoalkenyl aromatic hydrocarbon block having an average molecular weight of about 4000 to about 115,000;
  - (ii) the A blocks, in combination, comprise about 5 to about 35w% of the elastomeric block copolymer; and
  - (iii) each B block is a non-hydrogenated butadiene hydrocarbon block consisting of 8 to 55 mole percent condensed butadiene units in the 1,2 configuration, or a hydrogenated butadiene hydrocarbon block consisting of 35 to 55 mole percent condensed butadiene units in the 1,2 configuration, and said B block has an average molecular weight of between about 20,000 and about 450,000; and
- (b) about 20 to about 80 parts by weight of a block copolymer having the general configuration A-B-A wherein:
  - (i) each A block is a polymerized monoalkenyl aromatic hydrocarbon block having an average molecular weight of about 4000 to about 115,000;
  - (ii) said A blocks, in combination, comprise about 5 to about 35 w % of the block copolymer;
  - (iii) each B block is a polymerized butadiene hydrocarbon block consisting of about 18 to 34 mole percent condensed butadiene units in the 1,2 configuration, and said B block has an average molecular weight of between about 20,000 and about 450,000; and
  - (iv) the B blocks are hydrogenated to an unsaturation that is less than about 5% of the original unsaturation.

4,880,879

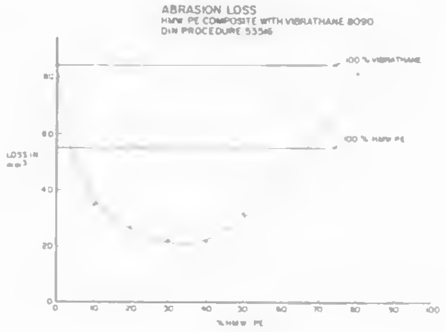
ABRASION RESISTANT COMPOSITE MATERIAL AND PROCESS FOR MAKING THE SAME

Bernard D. Bauman, Coopersburg, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Feb. 18, 1988, Ser. No. 157,679

Int. Cl.^{4} C08F *8/00*

U.S. Cl. 525—130 7 Claims



1. A composite material which can be easily molded into end products and which exhibits high abrasion resistance, comprising: a polyurethane material which has a surface tension of at least 40 dyne/cm at 20° C., into which has been dispersed high molecular weight polyethylene particles which have been surface treated to have a surface tension of at least 40 dyne/cm at 20° C., said particles comprising from 4 to 66 wt% of the composite material.

4,880,880

ADHESIVE TAPES INCLUDING SAME

Samuel J. Chen, Lexington, Mass., assignor to The Kendall Company, Boston, Mass.

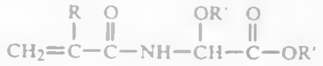
Division of Ser. No. 30,756, Mar. 25, 1987. This application Aug. 25, 1988, Ser. No. 236,426

Int. Cl.^{4} C08F *18/22*

U.S. Cl. 525—163 11 Claims

1. An adhesive composition adapted for meeting Underwriters Laboratories specifications for metal foil adhesive tapes for use with rigid fiberglass air ducts, said composition comprising a copolymer of:

- (1) an activated ester-containing vinyl monomer of the formula:



$$CH_2=\overset{\overset{R}{|}}{C}-\overset{\overset{O}{\|}}{C}-NH-\overset{\overset{OR'}{|}}{CH}-\overset{\overset{O}{\|}}{C}-OR'$$

wherein R is hydrogen or methyl; and R' is alkyl having one to six carbon atoms, or 2-hydroxyalkyl having having two to six carbon atoms;

- (2) at least one ethylenically unsaturated carboxylic acid containing 3–5 carbon atoms;
- (3) at least one acrylic or methacrylic acid ester of a non-tertiary alcohol having 1–14 carbon atoms and;
- (4) at least one vinyl ester of a saturated carboxylic acid;

said polymer being crosslinked with a crosslinking agent reactive with the carboxylic acid moiety through its reactive hydrogen atom.

4,880,881

SIZING AGENTS FOR CARBON FIBERS

Hiroshi Minami, Aichi, Japan, assignor to Takemoto Yushi Kabushiki Kaisha, Aichi, Japan

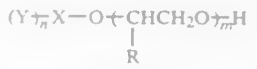
Filed May 19, 1988, Ser. No. 195,944

Claims priority, application Japan, Jun. 16, 1987, 61-149515

Int. Cl.^{4} C08L *63/02;* C08K *3/04*

U.S. Cl. 525—438 8 Claims

1. A sizing agent for carbon fibers containing Component A, Component B and Component C as important constituents, Component A being an epoxy compound, Component B being a copolymer having within a molecule one oxyalkylene derivative of a polycyclic phenol segment and one or two monoester or polyester segments, said oxyalkylene derivative of a polycyclic phenol segment and monoester or polyester segments being connected through an ester linkage, said monoester or polyester segment of said Component B being obtained by alternately ring-opening addition reaction of organic dicarboxylic anhydride and 1,2-epoxide to oxyalkylene derivative of a polycyclic phenol in the presence of a catalyst, and Component C being oxyalkylene derivative of substituted phenol shown by the general formula



$$(Y)_n X-O(\underset{\underset{R}{|}}{C}HCH_2O)_m H$$

wherein Y is alkyl group, phenyl-methyl group or phenylethyl group with 1–12 carbon atoms, X is benzene residue, diphenyl residue or cumylbenzene residue, R is hydrogen atom or methyl group, n is an integer in the range of 1–5 and m is an integer in the range of 4–100.

4,880,882

CURABLE RESIN COMPOSITION CONTAINING A MICROPARTICULATE SILICONE RUBBER

Yoshitsugu Morita; Noriyasu Yokoyama, and Keiji Yoshida, all of Chiba, Japan, assignors to Toray Silicone Company, Ltd., Tokyo, Japan

Filed Aug. 19, 1988, Ser. No. 234,242

Claims priority, application Japan, Aug. 21, 1987, 62-207583

Int. Cl.^{4} C08F *20/00*

U.S. Cl. 525—446 3 Claims

1. A curable resin composition comprising

- (I) 100 parts by weight of a curable resin and
- (II) 0.1 to 100 weight parts of spherical microparticulate silicone rubber obtained by curing an emulsified composition comprising
  - (A) 100 parts by weight of an organopolysiloxane having at least two silicon-bonded vinyl or allyl groups in each molecule,
  - (B) from 0.3 to 100 parts by weight of an organohydrogen-

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polysiloxane having at least two silicon-bonded hydrogen atoms in each molecule, and

(C) from 0.1 to 50 parts by weight of an organic compound containing at least one epoxide group and at least one aliphatically unsaturated hydrocarbon group per molecule,

(D) an amount of a platinum-containing catalyst sufficient to promote curing of said organopolysiloxane,

where the continuous phase of said emulsion is water or a mixture of water and a surfactant, said emulsion is maintained at a temperature of from 0° to 25° C. prior to curing said composition, and said composition is cured by dispersing said emulsion into a liquid of gaseous medium maintained at a temperature above that of said emulsion.

4,880,883

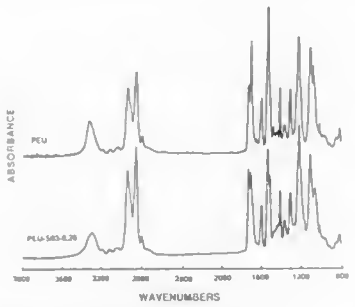
BIOCOMPATIBLE POLYURETHANES MODIFIED WITH LOWER ALKYL SULFONATE AND LOWER ALKYL CARBOXYLATE

Timothy G. Grasel, and Stuart L. Cooper, both of Madison, Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed Jun. 3, 1987, Ser. No. 57,546

Int. Cl.⁴ C08F *283/04;* **C08G** *18/28, 18/70*

U.S. Cl. 525—454 25 Claims



1. A biocompatible, substantially solid polyurethane composition comprising a polyether-polyurethane copolymer based on a mole ratio of about 1.5/0.5/1.0 to about 10/9/1 of (a) an organic diisocyanate, (b) a C_2–C_{14} alkyl or aryl diol or diamine or hydroxy-functional amine and (c) a polyol having a number average molecular weight from about 500 to about 3000, respectively, the copolymer being modified wherein about 5 to about 25 percent of the urethane hydrogen atoms of the copolymer are replaced with a combination of lower alkyl (C_1–C_6) sulfonate groups and lower alkyl (C_1–C_6) carboxylate groups.

18. A method for the production of a modified and substantially solid polyether-polyurethane copolymer composition which is biocompatible and which provides improved physical and mechanical properties, said method comprising the steps of:

(a) providing a polyether-polyurethane copolymer based on a 3/2/1 mole ratio of an organic diisocyanate, a C_2-C_{14} alkyl or aryl diol or diamine and a polyol;

(b) modifying the copolymer by replacing up to about 25 percent of the urethane hydrogen atoms thereof with a combination of propyl sulfonate groups and propyl carboxylate groups in the presence of a solvent; and

(c) removing the solvent by drying the modified copolymer.

4,880,884

POLY(ARYL ETHER)-POLY(ARYL CARBONATE) BLOCK COPOLYMERS AND THEIR PREPARATION

Michael J. Mullins; Steven P. Crain; Edmund P. Woo, and Daniel J. Murray, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Apr. 27, 1988, Ser. No. 186,997

Int. Cl.⁴ C08L *69/00*

U.S. Cl. 525—469 12 Claims

1. A block copolymer comprising:

poly(aryl ether) polymer segments and poly(aryl carbonate) polymer segments wherein at least some of the poly(aryl ether) segments are joined to the poly(aryl carbonate) segments through an ether oxygen atom, and wherein the aromatic radicals of the poly(aryl ether) segments include electron-withdrawing groups located in a position ortho or para to their respective linking groups linking one unit of the polymer chain to an adjacent unit.

4,880,885

POLYMERIZATION REACTOR PROVIDED WITH COATING THAT SUPPRESSES POLYMER DEPOSIT FORMATION

Willi Kleine, Burghausen; Werner Frey, Bergisch-Gladbach, and Albrecht Däweritz, Bad Aibling, all of Fed. Rep. of Germany, assignors to Wacker-Chemie GmbH, Fed. Rep. of Germany

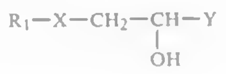
Continuation of Ser. No. 829,396, Feb. 13, 1986, abandoned, which is a division of Ser. No. 700,627, Feb. 12, 1985, Pat. No. 4,661,569. This application Apr. 15, 1988, Ser. No. 182,170

Claims priority, application Fed. Rep. of Germany, Feb. 15, 1984, 3405436

Int. Cl.⁴ C08G *59/06*

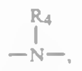
U.S. Cl. 526—62 2 Claims

1. A polymerization reactor provided with a coating on the inner wall of the reactor and other equipment whose surfaces come into contact with the constituents of the reaction mixture that at least suppresses polymer formation, the coating being comprised of at least one compound of the formula



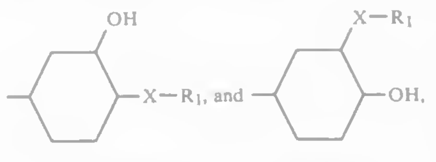
$$R_1-X-CH_2-\underset{\displaystyle OH}{\underset{|}{CH}}-Y$$

wherein X is selected from the group consisting of —O—, —S—, and

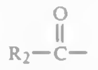


$$\overset{\displaystyle R_4}{\overset{|}{-N-}},$$

Y is selected from the group consisting of —CH_2OR_6

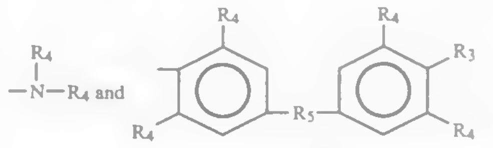


R₁ is selected from the group consisting of R_2—,

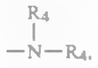


$$R_2-\overset{\displaystyle O}{\overset{\|}{C}}-$$

and R_2—SO_2—, R_2 is selected from the group consisting of phenyl optionally substituted with at least one R_3 and naphthyl optionally substituted with at least one R_3 or a heterocycle optionally substituted with at least one R_3 and derived by substitution of nitrogen, sulfur and/or oxygen atoms for at least one carbon of benzene, cyclopentadiene, indene, naphthylene or their partially or completely hydrogenated analogs, an alkyl of 1 to 8 carbon atoms containing at least one R_3,

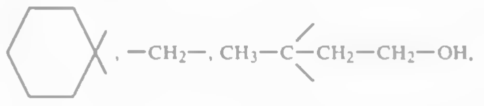


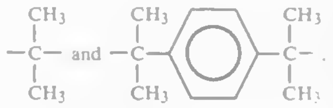
R_3 is selected from the group consisting of —OH, —SH,



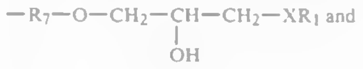
$$\overset{\displaystyle R_4}{\overset{|}{-N-R_4}},$$

—COOH and —SO_3H, the R_4's being independently selected from the group consisting of hydrogen and alkyl of 1 to 4 carbon atoms, R_5 is selected from the group consisting of

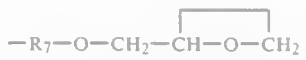




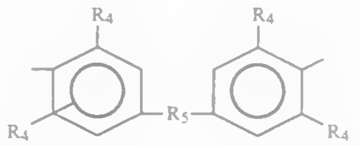
R_6 is selected from the group consisting of



$$-R_7-O-CH_2-\underset{\displaystyle OH}{\underset{|}{CH}}-CH_2-XR_1 \text{ and}$$



and R_7 is selected from the group consisting of alkylene of 1 to 8 carbon atoms optionally substituted with at least one alkyl of 1 to 4 carbon atoms, phenylene having at least one R_3 and/or R_4, naphthylene having at least one R_3 and/or R_4 and



4,880,886

PROCESS FOR PRODUCTION OF HIGHLY WATER-ABSORBENT RESIN

Susumu Kondo, Kyoto; Tetsuo Moriya, Takatsuki, and Hiroshi Aoyama, Hirakata, all of Japan, assignors to Nippon Gohsei Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Jun. 27, 1988, Ser. No. 212,375

Claims priority, application Japan, Jul. 16, 1987, 62-177769

Int. Cl.⁴ C08F *2/32*

U.S. Cl. 526—80 5 Claims

1. In a process for producing a highly waterabsorbent resin comprising subjecting a mixture of (meth)acrylic acid with a water-soluble salt thereof as a monomer to reversed phase suspension polymerization in a hydrophobic solvent in the presence of a dispersing agent, the improvement wherein at least a portion of said monomer is fed sequentially with the progress of the polymerization reaction and at least a portion of said dispersing agent is fed sequentially with the progress of polymerization, and

wherein the polymerization reaction is conducted under the following parameter settings:

Mi/Ma = 0/100 to 20/80
Di/Da = 0/100 to 40/60
D/M = 1/100 to 6/100
Di/S = 0/100 to 0.03/100

wherein M represents the total charge of monomer, Mi represents the initial charge of the monomer, Ma represents the additional charge of the monomer, D represents the total charge of the dispersing agent, Di represents the initial charge of the dispersing agent, Da represents the additional charge of the dispersing agent, and S represents the charge of the hydrophobic medium, all proportions being by weight.

4,880,887

METHOD FOR CURING DENTAL RESINS

Akira Hasegawa, Inuyama, Japan, assignor to G-C Toshi Kogyo Corporation, Kasugai, Japan

Filed Mar. 3, 1988, Ser. No. 163,791

Claims priority, application Japan, Mar. 6, 1987, 62-50295

Int. Cl.⁴ C08L *33/04, 33/10*

U.S. Cl. 526—141 6 Claims

1. A method for curing a polymerizable dental compound, wherein the dental compound comprises a polymerizable material having at leas one ethylenically unsaturated double bond, comprising:

polymerizing said dental compound in the presence of

(1) N-cyclohexyl-5-ethylpyrimidinetrione in an amount of 0.1 to 10 parts by weight with respect to said dental compound,

(2) at least one organometallic compound selected from the group consisting of acetylacetone copper, copper acetate, copper oleate, acetylacetone manganese, manganese naphthenate, manganese octylate, acetylacetone cobalt (III), cobalt naphthenate, acetylacetone lithium, lithium acetate, cetylacetone zinc, zinc naphthenate, acetylacetone nickel, nickel acetate, acetylacetone aluminum, acetylacetone calcium, cetylacetone chromium (III), acetylacetone iron (III), sodium naphtheate and rare earth octoate in an amount of 0.001 to 0.2 parts by weight with respect to said dental compound and

(3) an organohalogen compound in an amount of 0.1 to 5 parts by weight with respect to said dental compound.

4,880,888

PROCESS FOR PRODUCING A WATER-ABSORBENT RESIN

Shigeji Obayashi, Akashi; Morio Nakamura, Kakogawa; Takushi Yamamoto, Himeji; Hitoshi Tanaka, Himeji, and Yuji Sakamoto, Himeji, all of Japan, assignors to Seitetsu Kagaku Co., Ltd., Japan

Filed Jan. 5, 1987, Ser. No. 238

Claims priority, application Japan, Jan. 25, 1986, 61-14307

Int. Cl.⁴ C08F *2/00*

U.S. Cl. 526—209 13 Claims

1. A process for producing a water-absorbent resin wherein an aqueous solution containing an α,β-unsaturated carboxylic acid and an alkali metal salt thereof in a total amount of 25% by weight or more is subjected to polymerization with a radical polymerization initiator in a petroleum-based hydrocarbon solvent in the presence or absence of a crosslinking agent, characterized by using, as a surfactant, a polyglycerine—fatty acid ester having an HLB of 2 to 16 and represented by the general formula

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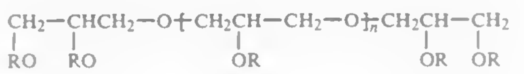


$$\underset{RO}{CH_2}-\underset{RO}{CH}CH_2-O\!\left[CH_2\underset{OR}{CH}-CH_2-O\right]_n\!CH_2\underset{OR}{CH}-\underset{OR}{CH_2}$$

(wherein R is an acyl group or hydrogen atom and n is an integer of 0 to 8).

4,880,889

HYDROXYLIC ACRYLATE COPOLYMER PROCESS FOR ITS PREPARATION, AND COATING AGENT BASED ON THE ACRYLATE

Werner Jung, Uhrwerkerstrasse 65, 4715 Ascheberg; Christoph Klesse, Eschkopfstrasse 4, 6703 Limburghof, and Axel Sievers, Tulpenweg 55-57, 4400 Münster, all of Fed. Rep. of Germany

Continuation of Ser. No. 813,276, Dec. 4, 1985, abandoned. This application Dec. 8, 1987, Ser. No. 134,576

Claims priority, application Fed. Rep. of Germany, Apr. 4, 1985, 3412534

Int. Cl.⁴ C05F *236/20*

U.S. Cl. 526—323 **20 Claims**

1. A hydroxylic acrylate copolymer comprising a precrosslinked, ungelled reaction product of
   about 10 to about 60 percent of a hydroxyalkyl acrylate or methacrylate monomer (a^1) having from 2 to 14 carbons in the hydroxyalkyl group;
   about 5 to about 20 percent of an unconjugated diolefinic monomer (a^2), the olefinic groups being at the two termini of the monomer;
   about 15 to about 82% of a monoolefinic monomer (a^3) selected from the group consisting of styrene, vinyl toluene, acrylic acid, methacrylic acid and the alkyl, alkoxyethyl or aryloxyethyl ester of acrylic acid, methacrylic acid, maleic acid or fumaric acid;
   wherein all percentages are by weight relative to the weight of the copolymer and said copolymer is dissolvable in a saturated organic ester solvent, produces a viscosity of about 0.4 to about 10 dPas when dissolved in an alkyl acetate solvent at a solids content of about 50 percent by weight, and exhibits no microgel content in solution.

4,880,890

ONE-CAN THERMOSETTING RESIN COMPOSITIONS AND PRECOATED METAL

Shigeaki Miyabayashi, Kobe; Yoshikatsu Matsuura, Minoo; Hiroshi Kanai, Kimitsu, and Joji Oka, Tokyo, all of Japan, assignors to Takeda Chemical Industries Ltd., Osaka and Nippon Steel Corporation, Tokyo, both of, Japan

Filed May 31, 1988, Ser. No. 200,377

Claims priority, application Japan, May 29, 1987, 62-137155

The portion of the term of this patent subsequent to Feb. 16, 2005, has been disclaimed.

Int. Cl.⁴ C08G *18/80*

U.S. Cl. 528—45 **11 Claims**

1. A one-can thermosetting resin composition comprising (A) a blocked product of hexamethylene diisocyanate or bis(isocyanatomethyl)cyclohexane, or a blocked product of an adduct of hexamethylene diisocyanate or bis(isocyanatomethyl)cyclohexane and (B) a polyester polyol having at least three functional groups.

4,880,891

ONE-CAN THERMOSETTING RESIN COMPOSITIONS AND PRECOATED METAL

Shigeaki Miyabayashi, Kobe; Yoshikatsu Matsuura, Minoo; Hiroshi Kanai, Kimitsu, and Joji Oka, Tokyo, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka and Nippon Steel Corporation, Tokyo, both of, Japan

Filed May 31, 1988, Ser. No. 200,378

Claims priority, application Japan, May 29, 1987, 62-137156

The portion of the term of this patent subsequent to Feb. 16, 2005, has been disclaimed.

Int. Cl.⁴ C08G *18/80*

U.S. Cl. 528—45 10 Claims

1. A one-can thermosetting resin composition comprising
(1) a polyester polyol obtained by allowing an aliphatic dicarboxylic acid to react with an aliphatic glycol and a polyol having at least three functional groups and (2) a blocked product of $\alpha,\alpha,\alpha'\alpha'$-tetra methyl-xylylene diisocyanate or 4, 4′-methylene bis(cyclohexyl isocyanate) or a blocked product of an NCO-terminated prepolymer obtained by allowing $\alpha,\alpha,\alpha'\alpha'$-tetramethyl-xylylene diisocyanate and/or 4,4′-methylene bis(cyclohexylisocyanate) to react with an active hydrogen compound.

4,880,892

COMPOSITION COMPRISING AN EPOXY RESIN, A PHENOL AND AN ADVANCEMENT CATALYST

Wataru Urano, Kawanishi, and Yasuaki Sugano, Takarazuka, both of Japan, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Aug. 22, 1988, Ser. No. 234,779

Claims priority, application Japan, Aug. 31, 1987, 62-216991

Int. Cl.⁴ C08G *59/68, 59/62*

U.S. Cl. 528—89 **21 Claims**

1. A composition which comprises
(a) an epoxy resin having on average more than one epoxy group per molecule,
(b) a mononuclear or polynuclear phenol having at least two phenolic hydroxyl groups per molecule and
(c) a small, but effective catalytic amount of a catalyst which is a combination of
  (c1) a phosphonium halide or alkylene phosphorone and
  (c2) a nitrogen heterocycle selected from the group consisting of
substituted or unsubstituted imidazoles, benzimidazoles, imidazolines, dihydropyrimidines, tetrahydropyrimidines, dihydroquinazolines, their salts and mixtures thereof.

4,880,893

NOVEL THERMOSETTING COMPOSITIONS AND MOLDING METHOD

Phillip A. Waitkus, Sheboygan, Wis., assignor to Plastics Engineering Company, Sheboygan, Wis.

Filed Dec. 28, 1988, Ser. No. 290,785

Int. Cl.⁴ C08G *8/04, 14/02*

U.S. Cl. 528—129 10 Claims

1. A thermosetting resin composition useful in liquid injection molding processes comprises a high solids content phenolic resin and an effective amount of a polyglycol to improve clarity and to prevent voids in the cured product.

4,880,894

QUATERNARY AMMONIUM SALTS USED AS PHASE TRANSFER CATALYST

Carlos Sunkel; Miguel Fay de Casa Juana; Fernando Dorrego; Basilio Pando; Julio Alvarez-Builla; Juan J. Vaquero; Carlos Galera, and María L. Vazquez, all of Madrid, Spain, assignors to Alter, S.A., Madrid, Spain

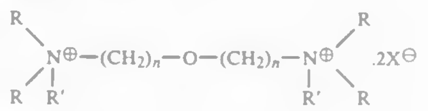
Continuation of Ser. No. 116,398, Nov. 3, 1987, abandoned. This application Sep. 26, 1988, Ser. No. 251,032

Claims priority, application United Kingdom, Nov. 5, 1986, 8626438

Int. Cl.⁴ C07D *277/60*

U.S. Cl. 548—152 **7 Claims**

1. A method for catalyzing heterogenous ionic reactions where the reaction reagents are in different phases and have different polarity comprising introducing quaternary ammonium salts of formula (I)



(I)

$$\overset{R}{\underset{R\ \ R'}{N^{\oplus}}}-(CH_2)_n-O-(CH_2)_n-\overset{R}{\underset{R'\ \ R}{N^{\oplus}}}\quad .2X^{\ominus}$$

wherein;
   R is a saturated or unsaturated, linear or branched alkyl radical of C_1 to C_8
   R is a saturated or unsaturated, linear or branched alkyl radical of C_1 to C_12, or a benzyl radical
   n is a number equal to 2 or 3
   X^- is a halogenide anion, such as C_1^-, Br^-, I^-, into said reactions to catalyse said reactions.

4,880,895

POLYIMIDE FILM-FORMING POLYAMIDE ACID SOLUTION

Kazumi Higashi, and Yuzuru Noda, both of Osaka, Japan, assignors to Nitto Electric Industrial Co., Ltd., Osaka, Japan

Filed Mar. 31, 1987, Ser. No. 32,643

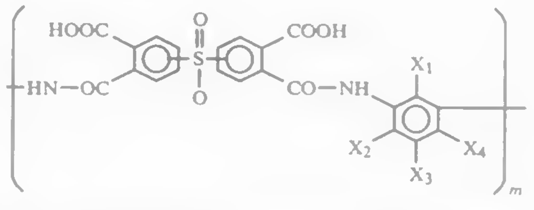
Claims priority, application Japan, Mar. 31, 1986, 61-76083

The portion of the term of this patent subsequent to Oct. 17, 2006, has been disclaimed.

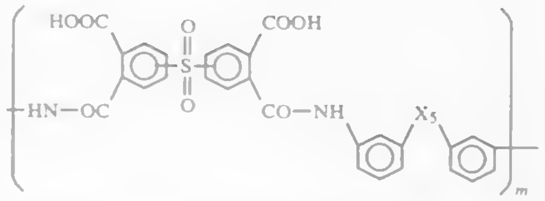
Int. Cl.⁴ C08G *8/02*

U.S. Cl. 528—173 **10 Claims**

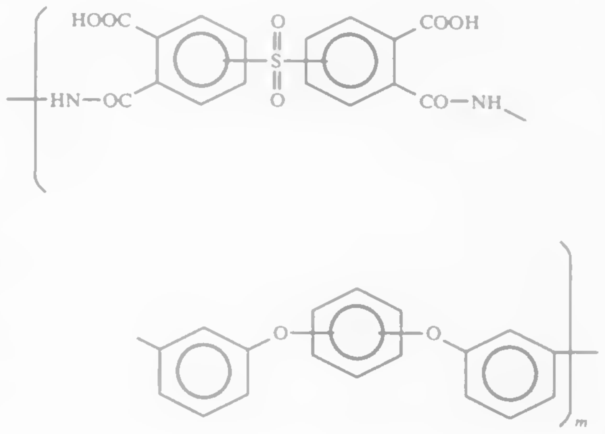
1. A polyamide acid solution comprising a polyamide acid comprising as main components at least one recurring unit selected from the group consisting of a recurring unit represented by formula (I)



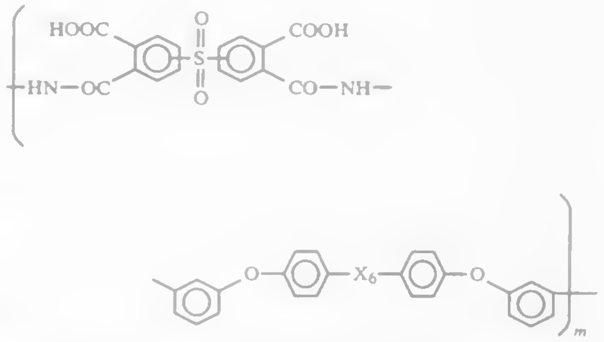
wherein X_1, X_2, X_3 and X_4, which may be the same or different, each represents H, CH_3, C_2H_5, NO_2, F, COOH or Cl; and m represents a positive integer; a recurring unit represented by formula (II)



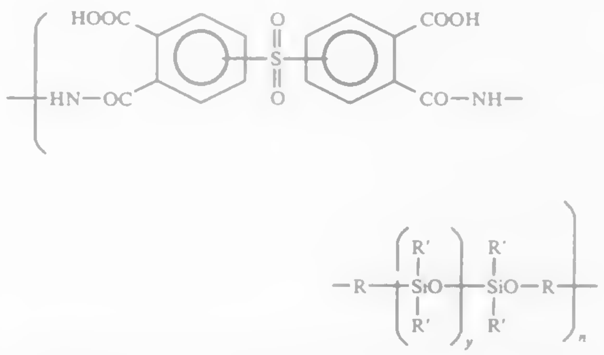
wherein X_5 represents O, SO_2, CH_2, S or CO; and m is the same as defined above; a recurring unit represented by formula (III)



wherein m is the same as defined above; and a recurring unit represented by formula (IV)



wherein X_6 represents SO_2, $C(CH_3)_2$ or $C(CF_3)_2$; and m is the same as defined above, and a recurring unit represented by formula (V)



wherein R represents a divalent hydrocarbon group; R′ repre-

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sents a monovalent hydrocarbon group; y represents an integer of from 1 to 4; and n represents a positive integer selected so that $n/(m+n)$ ranges from 0.01 to 0.05, dissolved in an organic solvent comprising as a main component an amide type polar solvent having a boiling point of 170° C. or less.

4,880,896

POLYCARBONATE FOR DISC SUBSTRATE HAVING LOW BISPHENOL CONTENT

Kazunari Otsubo; Motonobu Ezoe; Hideo Ago, and Koji Yamamoto, all of Ichihara, Japan, assignors to Idemitsu Petrochemical Co., Ltd., Tokyo, Japan

Filed May 9, 1988, Ser. No. 191,604

Claims priority, application Japan, May 30, 1987, 62-133524; Jun. 18, 1987, 62-150101; Jun. 30, 1987, 62-161325; Nov. 12, 1987, 62-284232

Int. Cl.⁴ C08G *63/62*

U.S. Cl. 528—196 6 Claims

1. Polycarbonate for use in production of a disc substrate, having a low molecular weight polymer content of not more than 3% by weight, an unreacted bisphenol content of not more than 20 ppm, and a methylene chloride content of not more than 20 ppm.

4,880,897

PROCESS FOR PREPARING AROMATIC POLYCARBONATES

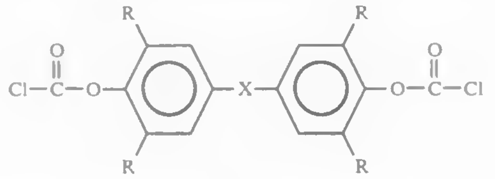
Thoi Ho, and Che-I Kao, both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Aug. 24, 1988, Ser. No. 235,580

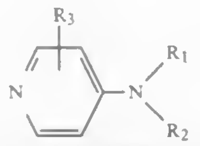
Int. Cl.⁴ C08G *63/62*

U.S. Cl. 528—199 5 Claims

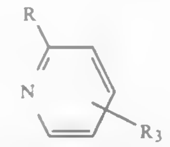
1. A process for the preparation of high molecular weight polycarbonates, comprising contacting under interfacial polycarbonate-forming conditions, a substituted aromatic bischloroformate corresponding to the general formula:



wherein X is a divalent C_1-C_{15} hydrocarbon radical, a single bond, —O—, —S—, —S—S—, —SO—, —SO_2— or 13 CO—, and each R is independently a halogen or C_1-C_4 alkyl radical, with an alkali metal hydroxide, in the presence of an activated pyridine selected from the group including 4-aminopyridines of the general formula:



wherein R_1 and R_2 are each independently monovalent alkyl radicals, alkyl radical bridges to form cycloalkylene groups, or polymer chains, and R_3 is independently hydrogen or a monovalent alkyl radical, or 2-substituted pyridines of the general formula:



wherein R is a monovalent alkyl radical, a cyloalkyl radical, or a polymer chain, and R_3 is as previously defined, in an amount effective to catalyz the formation of a polycarbonate.

4,880,898

WATER-SOLUBLE POLYCONDENSATES BASED ON FATTY ACIDS, DIALKANOLAMINE AND MALEIC ANHYDRIDE, A PROCESS FOR THEIR PRODUCTION, HYDRAULIC COMPOSITIONS CONTAINING THEM AND THEIR USE

Bernd Wahle, Kaarst; Hermann Anzinger; Horst Ziche, both of Duesseldorf, and Erhard Schinski, Erkrath, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

Filed Dec. 20, 1988, Ser. No. 287,354

Claims priority, application Fed. Rep. of Germany, Dec. 21, 1987, 3743413

Int. Cl.⁴ C08G *63/02*

U.S. Cl. 528—272 19 Claims

1. A water-soluble polycondensate based on a C_8-C_{22} fatty acid, a dialkanolamine or alkoxylated derivative thereof and maleic anhydride, obtained by condensation of

(a) a dialkanolamide corresponding to formula I

$$R—CO—N(C_kH_{2k}—OH)_2 \qquad (I)$$

in which R—CO— is the residue of a C_8—C_{22} fatty acid and k is the number 2 or 3, or a dialkanolaminopolyglycolate corresponding to formula II

$$R—CO—(O—C_mH_{2m})_n—N(C_kH_{2k}—OH)_2 \qquad (II)$$

in which R—CO— and k are as defined above, m is the number 2 or 3 and n is a number of 1 to 10, or a dialkanolammonium alkyl polyglycolate corresponding to formula III

$$R—CO—(O—C_mH_{2m})_n—N^+C_kH_{2k}\text{-}OH)_2R^1\ X \qquad (III)$$

in which

R—CO—, k, m and n are as defined above,

R^1 is a C_1-C_4 alkyl group and

X^- is the residue of an alkylating agent,

with maleic anhydride in a molar ratio of from 1:0.5 to 1:2, to form a condensation product having an acid value of up to about 20, and

(b) reaction of substantially all the olefinic double bonds of the condensation product in the α-position to carboxyl groups with a sulfite.

4,880,899

CYCLIC POLYPHENYLENE ETHER-POLYCARBONATE OLIGOMERS

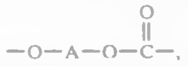
Thomas L. Guggenheim, Scotia, N.Y., and Joseph W. Guiles, Ft. Collins, Colo., assignors to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 26,517, Mar. 17, 1987, Pat. No. 4,789,725. This application Mar. 7, 1988, Ser. No. 164,935

Int. Cl.⁴ C08G *63/62*

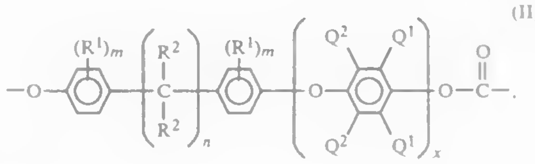
U.S. Cl. 528—370 13 Claims

1. A composition comprising cyclic oligomers containing at least one moiety of the formula



$$—O—A—O—\overset{\overset{\large O}{\|}}{C}—, \qquad (I)$$

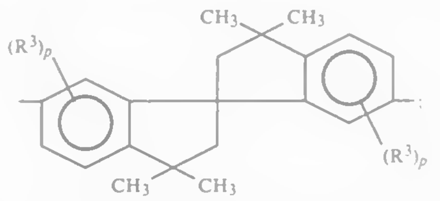
in combination with at least one moiety of the formula



(II)

wherein:

A is a divalent spirobiindane radical of the formula



(III)

each Q^1 is independently halogen, primary or secondary lower alkyl, phenyl or hydrocarbonoxy;

each Q^2 is independently hydrogen, halogen, primary or secondary lower alkyl, phenyl or hydrocarbonoxy;

each R^1 is independently $C_{1\text{-}8}$ primary or secondary alkyl, phenyl or halo;

each R^2 is independently hydrogen, methyl, ethyl or phenyl;

each R^3 is independently $C_{1\text{-}4}$ primary or secondary alkyl or halo;

m is from 0 to 4;

n is 0 or 1;

p is from 0 to 3; and

x is from 1 to about 5.

4,880,900

CARBON MONOXIDE/OLEFIN POLYMERIZATION PROCESS WITH BIS (DIARYL PHOSPHINO) 2-SILAPROPANE CONTAINING CATALYST

Johannes A. van Doorn; Johannes J. M. Snel; Nicolaas Meijboom, and Richard L. Wife, all of Amsterdmn, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Jul. 22, 1988, Ser. No. 222,993

Claims priority, application Netherlands, Jul. 23, 1987, 8701741

Int. Cl.⁴ C08G *67/02*

U.S. Cl. 528—392 13 Claims

1. In the process of producing linear alternating polymers of carbon monoxide and at least one ethylenically unsaturated hydrocarbon, by contacting the carbon monoxide and unsaturated hydrocarbon under polymerization conditions in the presence of a catalyst composition formed from a palladium salt, the anion of a non-hydrohalogenic acid having a pKa below about 6, and a phosphine ligand, the improvement wherein the phosphine ligand comprises a 1,3-bis(phosphino)-2-silapropane wherein the 2-silapropane moiety is substituted with two hydrocarbyl substituents at the silicon atom.

4,880,901

ARYLENE SULFIDE TERPOLYMERS AND PROCESSES FOR MAKING THEM

James W. Cleary, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Continuation of Ser. No. 786,901, Oct. 11, 1985, abandoned, which is a continuation of Ser. No. 404,683, Aug. 3, 1982, abandoned. This application May 30, 1986, Ser. No. 870,652

Int. Cl.⁴ C08G *75/14*

U.S. Cl. 528—388 17 Claims

1. A process comprising the steps:

(a) contacting components consisting of at least one alkali metal sulfide, at least one p-dihalo unsubstituted benzene, at least one polyhalo aromatic compound having more than two halogen substituents per molecule, about 15 to aabout 20 mole percent of at least one p-dihalo alkyl substituted benzene, and at least one N-alkyl lactam, under polymerization conditions for a time effective to produce an amorphous arylene sulfide polymer; and

(b) recovering said amorphous arylene sulfide polymer, wherein said amorphous arylene sulfide polymer has essentially no melting point (T_m) and essentially no crystallization temperature (T_c).

4,880,902

COPOLYMERIZATION OF CARBON MONOXIDE AND OLEFIN WITH DIPHOSPHINE HAVING HETEROCYCLIC SUBSTITUENTS AS CATALYST

Johannes A. van Doorn; Richard L. Wife, and Petrus H. M. Budzelaar, all of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

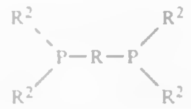
Filed Aug. 19, 1988, Ser. No. 233,793

Claims priority, application Netherlands, Aug. 27, 1987, 8702003

Int. Cl.⁴ C08G *67/02*

U.S. Cl. 528—392 10 Claims

1. An improved process for preparing polymers, wherein carbon monoxide is polymerized with olefinically unsaturated compounds in the presence of a palladium catalyst composition comprising a palladium compound, anions of an acid having a pKa less that about 6, and a diphosphine ligand, the improvement wherein the diphosphine ligand is of the general formula



wherein each R^2 is independently a similar or different carbocyclic hydrocarbon group, or a similar or different heterocyclic substituent selected from 2-pyridyl, 2-furyl or 2-thienyl groups, which substituent is bound to the phosphorus atom by one of the carbon atoms in the ring of the substituent, at least one R^2 being the heterocyclic substituent, and wherein R represents a bivalent bridging group containing at least one carbon atom in the bridge.

4,880,903

POLYKETONE FROM CARBON MONOXIDE AND MIXTURE OF OLEFINS

Johannes A. M. Van Broekhoven; Eit Drent; Ebel Klei, all of Amsterdam, Netherlands, and Kenzie Nozaki, El Cerrito, Calif., assignors to Shell Oil Company, Houston, Tex.

Division of Ser. No. 190,607, May 5, 1988, which is a continuation of Ser. No. 901,917, Aug. 28, 1986, abandoned. This application Aug. 5, 1988, Ser. No. 228,429

Claims priority, application Netherlands, Aug. 29, 1985, 8502372

Int. Cl.⁴ C08G *67/02*

U.S. Cl. 528—392 14 Claims

1. A linear polymer consisting essentially of an average of n units with the formula —CO—(C_2H_4)— and an average of m units with the general formula —CO—(C_xH_y)— wherein the units are randomly distributed in the polymer, the quotient m/n is between about 0.33 and about 0.007, x is greater than 2 and less than 20, y is 2x, and the polymer has a melting point between about 150° C. and 245° C.

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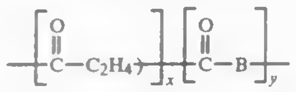
POLYKETONE-BASED STRUCTURAL ADHESIVE

Peter A. Kinneberg, Houston, Tex.; Thomas A. Armer, Westboro, Mass.; Adriaan W. van Breen, Amsterdam, Netherlands; Roger E. C. Barton, Amsterdam, Netherlands, and Ebel Klei, Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Dec. 4, 1987, Ser. No. 128,952
Int. Cl.⁴ C08G *67/02*

U.S. Cl. 528—392 **5 Claims**

1. A structural adhesive consisting essentially of a linear alternating polymer of carbon monoxide and at least one ethylenically unsaturated hydrocarbon, said polymer consisting essentially of recurring units represented by the formula



$$-\left[\overset{\displaystyle O}{\overset{\|}{C}}-C_2H_4\right]_x\left[\overset{\displaystyle O}{\overset{\|}{C}}-B\right]_y-$$

wherein B is the moiety of an ethylenically unsaturated α-olefin of at least 3 carbon atoms polymerized through the ethylenic unsaturation, and the ratio of y:x is no more than about 0.5.

4,880,905

PROCESS FOR PRODUCING ORGANOPHOSPHAZENE POLYMERS WITH CHLOROPHOSPHAZENE

Shinichiro Ueyama; Yasuhiro Yoshikawa, and Tetsuhiko Okamoto, all of Tokyo, Japan, assignors to Nippon Soda Co., Ltd., Tokyo, Japan

Filed Nov. 14, 1988, Ser. No. 270,008
Claims priority, application Japan, Nov. 19, 1987, 62-290712
Int. Cl.⁴ C08G *73/00, 25/00*

U.S. Cl. 528—399 **7 Claims**

1. A process for producing an organophosphazene polymer represented by the formula (I)

$$—[N{=}P(OR)_2]n \qquad (I)$$

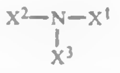
wherein R is the same or different group selected from the group consisting of alkyl, alkenyl, alkinyl and aryl group or said group having a substituent and n is an integer of 20 or more, which comprises reacting a chlorophosphazene polymer represented by the formula (II)

$$—[N{=}PClx(OR)_y]_n \qquad (II)$$

wherein n is an integer of 20 or more, x+y=2 and R is the same as defined above, with at least one kind of hydroxy compound represented by the formula (III)

$$HO—R \qquad (III)$$

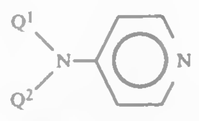
wherein R is the same as defined above, in the presence of a tertiary amine represented by the formula (IV) as an acid acceptor



$$X^2—\underset{\displaystyle X^3}{\underset{|}{N}}—X^1$$

(IV)

wherein X^1 represents alkyl, cycloalkyl or aralkyl, X^2 and X^3 represent identical or different lower alkyl or constitute pyrrolidine, piperidine or morpholine ring together with the nitrogen atom, and in the presence of a pyridine derivative represented by the formula (V) as a catalyst



(V)

wherein Q^1 and Q^2 represent identical or different lower alkyl groups or constitute a pyrrolidine, piperidine or morpholine ring together with the nitrogen atom to substitute substantially all the chlorine atoms with the —OR groups.

4,880,906

FIBER FINISHING AGENTS AND COMPOSITIONS CONTAINING THEM

Eberhard Esselborn, Essen, and Jürgen Fock, Duesseldorf, both of Fed. Rep. of Germany, assignors to Th. Goldschmidt AG, Essen, Fed. Rep. of Germany

Filed Jul. 15, 1988, Ser. No. 219,715
Claims priority, application Fed. Rep. of Germany, Jul. 15, 1987, 3723349
Int. Cl.⁴ C08G *59/02*

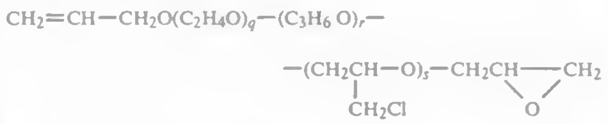
U.S. Cl. 528—403 **13 Claims**

1. A finishing agent for finishing fibers or fiber products comprising a mixture of the following components:

(a) 34 to 99% by weight of a polymer of the general formula wherein R^1 is a z-hydric aliphatic alcohol with z=2 to 9, m=20 to 75, n=0 to 10, p=0 to 3;

(b) 0 to 55% by weight of a copolymer, obtained by copolymerization of

(b_1) one mole of a macromonomer of the general formula



$$CH_2{=}CH-CH_2O(C_2H_4O)_q-(C_3H_6O)_r-\;-(\underset{\displaystyle CH_2Cl}{\underset{|}{CH_2CH}}-O)_s-CH_2\underset{\diagdown O \diagup}{CH-CH_2}$$

wherein q=5 to 75, r=0 to 10, s=0 to 3, with

(b_2) 2 to 12 moles of a vinyl ester of the general formula $CH_2{=}CHOCOR^2$, in which R^2 is alkyl with 1 to 4 carbon atoms,

(b_3) 1 to 6 moles of N-vinylpyrrolidone, and

(b_4) 0 to 6 moles of an acrylate or methacrylate ester of the general formula $CH_3{=}CR^3—COOR^4$, wherein R^3=H or CH_3, R^4 is alkyl with 1 to 4 carbon atoms, with the proviso that the quotient of the average molecular weight of the monomer (b_1) and the number of moles of the monomers (b_2), (b_3) and (b_4) is 20 to 500;

(c) 1 to 35% by weight of a compound, which is reactive with respect to oxiran groups and causes a cross linking reaction

the sum of the components (a), (b) and (c) yielding 100% by weight.

4,880,907

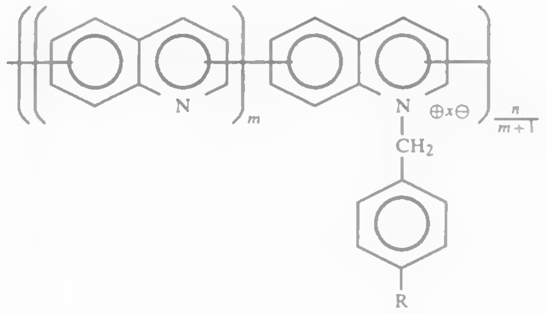
QUATERNARY SALTS OF QUINOLINE OLIGOMER AS METAL SURFACE PROTECTIVE MATERIALS (C-2212)

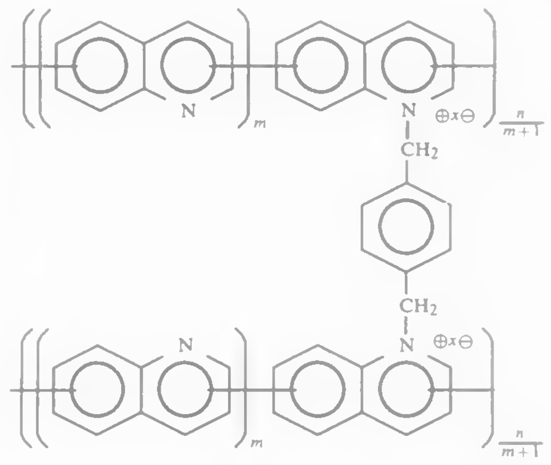
Long Y. Chiang, Somerset, N.J., assignor to Exxon Research and Engineering Company, Florham Park, N.J.

Continuation-in-part of Ser. No. 887,364, Jul. 17, 1986, Pat. No. 4,727,185. This application Feb. 12, 1988, Ser. No. 155,225
Int. Cl.⁴ C08G *73/06*

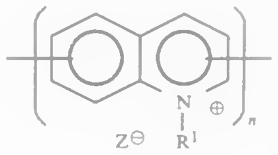
U.S. Cl. 528—423 **14 Claims**

1. A composition of matter comprising a quaternized derivative of a quinoline oligomer, said derivative selected from compositions having the formula:





or



wherein n and m are integers, with n being greater than 2 and up to about 200 and m being equal to or greater than 1, R is H or an alkyl group having from 1 to about 20 carbon atoms, R^1 is an alkyl group having 1 to about 20 carbon atoms, X^- is a chloride, bromide or iodide and Z^- is an anion selected from BF_4^-, SO_4=, ClO_4^-, PF_6^- or HSO_4^-

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4,880,908

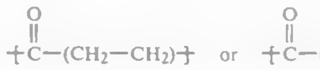
POLYMER BLEND OF CARBON MONOXIDE/OLEFIN COPOLYMER AND POLYCARBONATE

Robert G. Lutz, Santa Rosa, Calif., and William P. Gergen, Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Apr. 11, 1988, Ser. No. 179,682
Int. Cl.⁴ C08L *69/00*

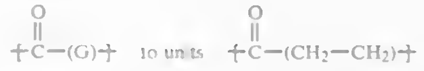
U.S. Cl. 525—468 **16 Claims**

1. A polymeric composition comprising a blend of a linear alternating polymer having recurring units



$$+\overset{\displaystyle O}{\overset{\|}{C}}-(CH_2-CH_2)+ \quad \text{or} \quad +\overset{\displaystyle O}{\overset{\|}{C}}-(G)+$$

wherein G is the moiety of an ethylenically unsaturated hydrocarbon of at least three carbon atoms and the ratio of units



$$+\overset{\displaystyle O}{\overset{\|}{C}}-(G)+ \quad \text{to units} \quad +\overset{\displaystyle O}{\overset{\|}{C}}-(CH_2-CH_2)+$$

is no more than about 0.5 with a polycarbonate.

4,880,909

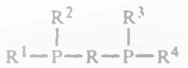
REMOVAL OF CATALYST RESIDUES FROM CARBON MONOXIDE/OLEFIN POLYMERS WITH OXIDANT/PHOSPHINE TREATMENT

Johannes A. M. Van Broekhoven, and Michael J. Doyle, both of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Division of Ser. No. 935,429, Nov. 26, 1986, Pat. No. 4,786,716. This application Sep. 6, 1988, Ser. No. 240,338
Claims priority, application Netherlands, Nov. 26, 1985, 8503258
Int. Cl.⁴ C08G *67/02*

U.S. Cl. 528—487 **12 Claims**

1. A process for reducing catalyst residues from a palladium compound catalyst-containing polymer of carbon monoxide and ethylene with or without at least one other olefinically unsaturated hydrocarbon having the general formula $CHR_1{=}CHR_2$, where R_1 is a hydrocarbon group and R_2 is selected from the group consisting of hydrogen and a hydrocarbon group, and where R_1 and R_2 together contain fewer than 18 carbon atoms, and regenerating a palladium compound catalyst for the preparation of said polymers, which process comprises contacting the polymer in an organic liquid with an effective amount for reducing catalyst residues of a phosphine having the general formula



$$R^1-\overset{\displaystyle R^2}{\overset{|}{P}}-R-\overset{\displaystyle R^3}{\overset{|}{P}}-R^4$$

wherein R^1, R^2, R^3 and R^4 represent hydrocarbon groups or such groups containing polar or non-polar substituents and R represents a bivalent organic bridging group containing at least two carbon atoms in the bridge, recovering a palladium compound-containing organic liquid, contacting said organic liquid with an oxidant selected from the group consisting of peroxides, hydroperoxides and oxygen, and recycling the thus contacted organic liquid to a process for preparing a polymer of carbon monoxide and ethylene with or without at least one olefinically unsaturated hydrocarbon.

4,880,910

TERMINAL METHIONYL BOVINE GROWTH HORMONE AND ITS USE

Herman A. de Boer, Pacifica; Herbert L. Heyncrer, Burlingame, and Peter H. Seeburg, San Francisco, all of Calif., assignors to Genentech, Inc., South San Francisco, Calif.

Division of Ser. No. 303,687, Sep. 18, 1981, abandoned. This application Jun. 8, 1984, Ser. No. 618,616
Int. Cl.⁴ C07K *7/10*

U.S. Cl. 530—350 **2 Claims**

1. An N-terminal methionyl-BGH wherein the proximal twenty five amino acids of bovine growth hormone has the following sequence:

Met-Phe-Pro-Ala-Met-Ser-Leu-Ser-Gly-Leu-Phe-Ala-Asn-Ala-Val-Leu-Arg-Ala-Gln-His-Leu-His-Gln-Leu-Ala.

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4,880,911
FUSED POLYPEPTIDES AND METHODS FOR THEIR DETECTION

Stephen J. Brewer, High Wycombe, and Helmut M. Sassenfeld, Benson, both of England, assignors to G. D. Searle & Co., Chicago, Ill.

Continuation-in-part of Ser. No. 471,917, Mar. 3, 1983, Pat. No. 4,532,207. This application May 9, 1985, Ser. No. 732,106

Int. Cl.⁴ C07K *15/26, 15/00*

U.S. Cl. 530—351 3 Claims

1. A fused-polypeptide comprising urogastrone covalently bonded at its carboxy-terminus to a second polypeptide comprising (arginine)$_n$ wherein n is 2 to 30.

3. A fused-polypeptide comprising human gamma interferon covalently bonded at its carboxy terminus to a second polypeptide comprising

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4,880,912
DISPERSION AND NEUTRALIZATION OF ACID CASEIN

Oscar H. Callison, Pickerington, Ohio, assignor to Abbott Laboratories, Abbott Park, Ill.

Filed Apr. 24, 1987, Ser. No. 42,394

Int. Cl.⁴ C07G *7/00*

U.S. Cl. 530—361 15 Claims

1. A process for preparing caseinate from an acid casein comprising:

(a) providing an aqueous medium having a pH of between 7 and 8, and heating and maintaining said aqueous medium at a temperature of about 115° to about 170° F.;

(b) providing a solubilizing agent selected from the group consisting of alkali and alkaline metal citrates and mixtures thereof;

(c) adding said solubilizing agent to said aqueous medium and maintaining the temperature thereof in the range of about 115° to about 170° F.;

(d) agitating the aqueous medium containing said solubilizing agent, adding acid casein to said agitated medium and permitting the acid casein to age from about 10 to about 120 seconds;

(e) adding a neutralizing agent to said aged acid casein aqueous medium and neutralizing said aged acid casein aqueous medium for about 2 to about 30 minutes; and

(f) recovering the desired liquid or powdered caseinate.

4,880,913
PROCESS FOR THE PREPARATION OF AN IMMUNOGLOBULIN WHICH CAN BE ADMINISTERED INTRAVENOUSLY AND IS STABLE IN LIQUID FORM

Walter Doleschel; Walter N. Doleschel, and Werner Conrad, all of Vienna, Austria, assignors to Schwab & Co. Ges.m.b.H., Vienna, Austria

Filed Dec. 2, 1987, Ser. No. 127,914

Claims priority, application Fed. Rep. of Germany, Dec. 2, 1986, 3641115

Int. Cl.⁴ A61K *39/395;* **C07K** *15/06, 15/14*

U.S. Cl. 530—387 8 Claims

1. A process for the preparation of a chemically unmodified, functionally and structurally intact immunoglobulin which has not been enzymatically treated, has no side effects, contains all IgG subclasses, is essentially free of IgA, is stable on storage in liquid form and can be administered intravenously, and which has a monomer content of above 97% and a content of trimers and higher polymers of below 1%, by subjecting a starting fraction having an IgG content between 30 and 100% to purification and concentration by the steps dialysis, adsorption and precipitation, which comprises

(a) dialysis of an aqueous solution of the starting fraction to remove low molecular weight constitutents, lowering the ionic strength at a pH of 6.0–9.0 by diluting the mixture with demineralized water and setting up a sodium chloride concentration of 1 mmol/l in order to remove euglobulins, removal of impurities from the supernatant from the euglobulin precipitation by adsorption once or twice on an anion exchanger in an amount of 5–50 mg/g protein at a pH of 6.0 to 9.0,

(b) stabilization of the solution by acid treatment at pH 2.5–4.2, heating at 40–60° C. and pH 3.0–8.0 for 15 to 20 minutes, returning the pH to 7.0–9.0, and removal of the insoluble fractions by centrifugation,

(c) removal of IgA and other impurities which are still present by treatment once or twice with an anion exchanger in an amount of 5–50 mg/g protein at pH 6.0–9.0,

(d) precipitation of labile and aggregated IgG molecules by addition of polyethylene glycol having a mean molecular weight of 200–1,000 to a final concentration of 10–25% (w/w) and removal thereof by centrifugation, removal of the precipitant, by dialysis or ultrafiltration, adjustment of the solution to the desired protein concentration, and sterilization thereof by filtration.

4,880,914
ASSAY FOR QUALITATIVELY AND/OR QUANTITATIVELY MEASURING HLH OR HCG IN BODY FLUIDS AND REAGENTS THEREFOR

Brij B. Saxena, Englewood, and Premlla Rathnam, Englewood Cliffs, botb of N.J., assignors to Cornell Research Foundation, Inc.

Division of Ser. No. 440,477, Nov. 9, 1982, Pat. No. 4,560,649, which is a continuation-in-part of Ser. No. 311,736, Oct. 15, 1981, abandoned. This application Sep. 23, 1985, Ser. No. 778,933

Int. Cl.⁴ C07K *3/02, 3/14, 3/20, 3/28*

U.S. Cl. 530—395 33 Claims

I. A method for purifying a naturally-occuring gonadotropin receptor material containing the common receptor for hLH and hCG which comprises:

A. Homogenizing a receptor source material in an aqueous medium to disperse the receptor in a liquid aqueous fraction;

B. Separating and concentrating the liquid fraction;

C. Fractionating the concentrate to separate at least one of inactive protein and lipid from the receptor;

D. Re-dispersing the receptor in aqueous medium and extracting the aqueous medium with an organic solvent in which lipids are soluble to remove additional lipid from the aqueous phase;

E. Separating the aqueous phase from the remainder of the product of step D;

F. Separating hLH and hCG specific binding fraction of the receptor from adenyl cyclase and 5'-nucleotidase activity fractions of the receptor;

G. Subjecting the hLH and hCG specific binding fraction of the receptor to vertical zone electrophoresis to separate said fraction from other remaining protein fractions and

H. Recovering the resultant purified receptor.

4,880,915
METHOD FOR PURIFYING A PHYSIOLOGICALLY ACTIVE SUBSTANCE PRODUCED BY RECOMBINANT DNA TECHNIQUE

Junichi Kajihara; Takao Kiyota, and Hirosbi Hayashi, all of Fuji, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Nov. 19, 1985, Ser. No. 799,509

Claims priority, application Japan, Nov. 22, 1984, 59-246184

Int. Cl.⁴ C12P *21/00, 21/02;* **C07K** *13/00*

U.S. Cl. 530—413 4 Claims

1. A method for purifying a human TNF which comprises:

applying an aqueous solution containing human TNF to a column packed with a dye-bonded crosslinked agarose gel comprised of a crosslinked agarose gel support and a dye ligand covalently bonded thereto, said dye being a member selected from the group consisting of Cibacron Blue F3GA (color index name: reactive blue 2), Procion Red HE3B (color index name: reactive red 120), and Green A, whereby said human TNF is retained by said gel;

eluting said column with an eluent to release said human TNF from said gel; and

recovering a column fraction comprised of purified human TNF.

4,880,916
CATIONIC AZO DYES CONTAINING 2(P-AMINOPHENYL)OXAZOLO [4,5-B]PYRIDINES AND SIMILAR COMPOUNDS AS DIAZO COMPONENTS

Jean-Marie Adam, Rosenau, France, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

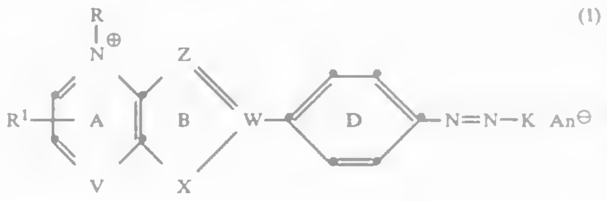
Filed Mar. 24, 1988, Ser. No. 172,684

Claims priority, application Switzerland, Mar. 27, 1987, 1170/87

Int. Cl.⁴ C09B *44/00, 44/02, 44/06, 44/08*

U.S. Cl. 534—606 15 Claims

1. An azo dye of the formula



(1)

or tautomeric forms thereof, in which: Z is N, S or CH, X is O, S, NR^2 or N, V is N or CH, W is N or C, K is a coupling component selected from the group consisting of acylacetarylamides, phenols, pyridones, quinolines, pyrazoles, indoles, diphenylamines, aminopyridines, pyrimidines, pyrimidones, naphthols, naphthylamines, aminothioazoles, thiophenes and hydroxypyridines, R is C_1–C_6alkyl or C_2–C_6alkenyl, these groups being unsubstituted or substituted by OH, C_1–C_4alkoxy or C_1–C_4hydroxyalkoxy, R^1 is hydrogen, C_1–C_6alkyl, C_1–C_4alkoxy, halogen, nitro, —CN, NHR^2, —MH—C_2–C_6alkanoyl or —NH—benzoyl, each of which is unsubstituted or substituted by 1 to 3 C_1–C_4alkyl, chlorine or methoxy groups, phenoxy or phenoxy substituted by C_1–C_4alkyl, C_1–C_4alkoxy, halogen or nitro, —$COOR^2$, —$CONHR^2$ or unsubstituted phenyl or phenyl substituted by C_1–C_4alkyl, C_1–C_4alkoxy, halogen or nitro, R^2 being hydrogen, unsubstituted C_1–C_6alkyl or C_1–C_6alkyl substituted by OH, C_1–C_4alkoxy or C_1–C_4hydroxyalkoxy, unsubstituted phenyl, or phenyl substituted by C_1–C_4alkyl, C_1–C_4alkoxy, halogen or nitro, D is a 1,4-phenylene radical which is unsubstituted or substituted by C_1–C_4alkyl, C_1–C_4alkoxy, halogen, nitro or cyano, $An^{\ominus}$ is an anion and the ring A being not further substituted or this ring carrying a fused benzene ring which is unsubstituted or substituted by R^1.

4,880,917
PROCESS FOR HYDROLYZING 2,6-DIDEOXY-2,6-IMINOHEPTONONITRILE DERIVATIVES USING TRIFLUOROACETIC ACID AND DINITROGEN TETROXIDE

Peter B. Anzeveno, Zionsville; John K. Daniel; Laura J. Creemer, both of Indianapolis, all of Ind., and Paul S. Liu, Cincinnati, Ohio, assignors to Merrell Dow Pharmaceuticals Inc., Cincinnati, Ohio

Filed Jul. 1, 1988, Ser. No. 214,229

Int. Cl.⁴ C07H *15/00, 17/00, 17/02*

U.S. Cl. 536—17.4 5 Claims

1. A process for converting an electron deficient carbonitrile to a carboxylic acid, said electron deficient carbonitrile being an amide of a 2,6-dideoxy-2,6-iminoheptononitrile wherein the amide is derived from a strong acid, which comprises treating the carbonitrile with trifluoroacetic acid followed by oxidative hydrolysis with dinitrogen tetroxide.

4,880,918
ARREST AND KILLING OF TUMOR CELLS BY ADENOSINE 5-DIPHOSPHATE AND ADENOSINE-5-TRIPHOSPHATE

Eliezer Rapaport, 1 Soldiers Field Park, Apt. 313, Boston, Mass. 02163

Filed Jul. 13, 1982, Ser. No. 397,897

Int. Cl.⁴ C07H *19/16;* **A61K** *31/70*

U.S. Cl. 536—27 32 Claims

1. A process for selectively entering and arresting the growth of tumor cells in a host while substantially not affecting normal cells thereof comprising the step of exposing said tumor cells to low doses of at least one of adenosine 5'-diphosphate and adenosine 5'-triphosphate, in a pharmaceutical preparation, said low doses being in an amount sufficient to inhibit DNA synthesis in said tumor cells while said normal cells are substantially unaffected.

4,880,919
PROCESS FOR SEPARATING ARABINOSE FROM A MIXTURE OF ALDOSES

Santi Kulprathipanja, Des Plaines, Ill., assignor to UOP, Des Plaines, Ill.

Filed Dec. 31, 1986, Ser. No. 948,384

Int. Cl.⁴ C07H *1/06;* **C13K** *1/00*

U.S. Cl. 536—127 7 Claims

1. A process for separating arabinose rom an aqueous feed mixture containing arabinose and at least one other monosaccharide, selected from the group consisting of aldopentoses and aldohexoses, which comprises contacting at adsorption conditions said mixture with an adsorbent comprising a nuclearly sulfonated cationic exchange resin having a crosslinked vinylaromatic resin matrix exchanged with $Ca^{++}$and NH_4^+ ions, selectively adsorbing said arabinose to the substantial exclusion of the other monosaccharides, removing the nonadsorbed portion of the feed mixture from contact with the adsorbent, and hereafter recovering high purity arabinose by desorption at desorption conditions.

4,880,920
PROCESS FOR SEPARATING KETOSES FROM ALKALINE-OR PYRIDINE-CATALYZED ISOMERIZATION PRODUCTS

Chin-Hsing Chang, Des Plaines, Ill., assignor to UOP, Des Plaines, Ill.

Continuation-in-part of Ser. No. 811,588, Dec. 20, 1985, Pat. No. 4,692,415. This application Sep. 4, 1987, Ser. No. 93,332

The portion of the term of this patent subsequent to Sep. 8, 2004, has been disclaimed.

Int. Cl.⁴ C07H *1/00*

U.S. Cl. 536—127 7 Claims

1. A process for recovering psicose having a purity of 20–99% (wt.) from a feed mixture comprising fructose and psicose and at least on ®other monosaccharide selected from the group consisting of glucose and mannose which comprises contacting at adsorption conditions said feed mixture with a adsorbent comprising a type Y zeolite having calcium cations at exchangeable sites, selectivley adsorbing said psicose preferentiallhy to said fructose and to the substantial exclusion of the other components, recovering an extract mixture comprising enriched psicose and fructose and then contacting said extract mixture with an adsorbent comprising a type Y zeolite having calcium cations at exchangeable sites, selectively adsorbing said psicose and recovering highly purified psicose by desorption at desorption conditions.

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4,880,921
BRAIN-SPECIFIC DRUG DELIVERY

Nicholas S. Bodor, Gainesville, Fla., assignor to University of Florida, Gainesville, Fla.

Division of Ser. No. 665,940, Oct. 29, 1984, Pat. No. 4,824,850, which is a continuation-in-part of Ser. No. 379,316, May 18, 1982, Pat. No. 4,479,932, and a continuation-in-part of Ser. No. 461,543, Jan. 27, 1983, abandoned, and a continuation-in-part of Ser. No. 475,493, Mar. 15, 1983, Pat. No. 4,622,218, and a continuation-in-part of Ser. No. 516,382, Jul. 22, 1983, Pat. No. 4,540,564. This application Jul. 20, 1987, Ser. No. 75,830

Claims priority, application Japan, Jun. 14, 1982, 57-101940; Canada, May 16, 1983, 428192; Ireland, May 17, 1983, 1149/83; South Africa, May 17, 1983, 83/3521; Spain, May 17, 1983, 522489; Italy, May 18, 1983, 48327 A/83

The portion of the term of this patent subsequent to Sep. 10, 2002, has been disclaimed.

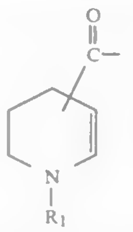
Int. Cl.⁴ C07J *43/00*

U.S. Cl. 540—110 **54 Claims**

1. A compound of the formula

$$D{-}DHC]_n \qquad (1a)$$

or a non-toxic pharmaceutically acceptable salt thereof, wherein D is the residue of an antiinflammatory steroid having at least one reactive hydroxyl functional group, one such hydroxyl group being a 21-hydroxy substituent, said residue being characterized by the absence of a hydrogen atom from at least one of said reactive hydroxyl functional groups in said drug; n is a positive integer equal to the number of said functional groups from which a hydrogen atom is absent; and [DHC] is a radical of the formula



wherein the dotted line indicates the presence of a double bond in either the 4 or 5 position of the dihydropyridine ring; R_1 is C_1–C_7 alkyl, C_1–C_7 haloalkyl or C_7–C_{10} aralkyl; and the carbonyl grouping is attached at the 2, 3 or 4 position of the dihydropyridine ring.

4,880,922
CARBAPENEMS WITH QUATERNIZED HETEROTHIOALKYLTHIO SUBSTITUTION AT POSITION 2

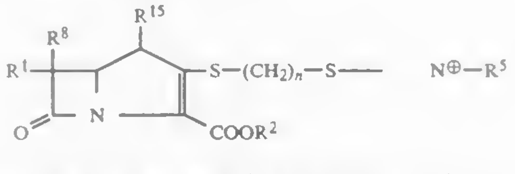
Pierre Dextraze, Quebec, Canada, assignor to Bristol-Myers Company, New York, N.Y.

Filed Nov. 22, 1985, Ser. No. 800,867

Int. Cl.⁴ C07D *487/04;* A01K *31/40*

U.S. Cl. 540—350 **5 Claims**

1. A compound of the formula



wherein R^8 is hydrogen and R^1 is hydroxyethyl; R^5 is C_1–C_6 alkyl; R^{15} is hydrogen or methyl; n is an integer of 1, 2 or 3; R^2 is hydrogen, an anionic charge or a conventional readily removable carboxyl protecting group, provided that when R^2 is hydrogen or a protecting group, there is also present a counter ion; and

$$N^{\oplus}—$$

represents an aromatic 5- or 6-membered N-containing heterocyclic ring containing 0–3 additional hetero atoms selected from 0, S or N, said aromatic ring being optionally substituted at available ring carbon or nitrogen atoms by C_1–C_4 alkyl substituents, and said ring being attached to S through a ring carbon atom and having a ring nitrogen which is quaterized by the group R^5; or a pharmaceutical acceptable salt thereof.

4,880,923
MACROCYCLIC POLYAMINE AND POLYCYCLIC POLYAMINE MULTIFUNCTIONAL LUBRICATING OIL ADDITIVES

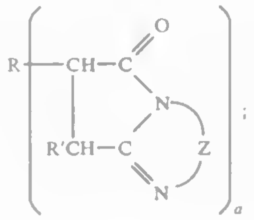
Stanley J. Brois, Westfield, and Antonio Gutierrez, Mercerville, both of N.J., assignors to Exxon Research & Engineering Company, Florham Park, N.J.

Division of Ser. No. 550,977, Nov. 16, 1983, Pat. No. 4,637,886, which is a continuation-in-part of Ser. No. 453,143, Dec. 27, 1982, abandoned, which is a continuation-in-part of Ser. No. 415,980, Sep. 8, 1982, abandoned, which is a division of Ser. No. 243,781, Mar. 16, 1981, abandoned, Continuation of Ser. No. 67,546, Aug. 17, 1979, abandoned, which is a continuation-in-part of Ser. No. 817,217, Jul. 20, 1977, Pat. No. 4,174,322, which is a continuation-in-part of Ser. No. 806,326, Jun. 13, 1977, Pat. No. 4,167,514, which is a division of Ser. No. 726,206, Sep. 24, 1976, Pat. No. 4,062,786. This application Sep. 2, 1986, Ser. No. 902,779

Int. Cl.⁴ C07D *487/04*

U.S. Cl. 540—471 **7 Claims**

1. Macrocyclic polyamine compound being a member of the group of compounds and mixtures thereof represented by the formulas:



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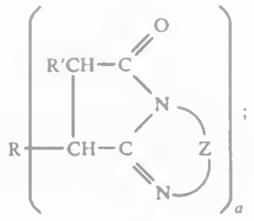

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and

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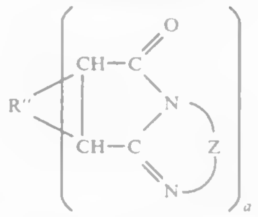


where R′ is hydrogen or lower C_1–C_{12} alkyl; R is a hydrocarbon substituent having 2 to 15,000 carbon atoms; R″ is a hydrocarbon substituent of 4 to 15,000 carbon atoms; Z is $—CH_2CH_2CH_2—$, $—(CH_2CH_2CH_2NH)_nCH_2CH_2CH_2—$ where n is 1–6, or $(CH_2CH_2CH_2NH)_mCH_2(CH_2)_p(NHCH_2CH_2CH_2)_{m'}—$ where m and m′ are each at least 1 and m+m′ is 2–5, p is 1–4; and a is 1–20.

4,880,924
NOVEL COMPOUNDS AND USE THEREOF IN SELECTIVE CYCLIZATION PROCESS

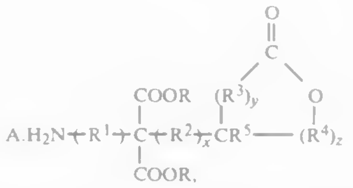
James V. Peck, Costa Mesa, and Gevork Minaskanian, Irvine, both of Calif., assignors to Nelson Research & Development Co., Irvine, Calif.

Filed Apr. 3, 1986, Ser. No. 847,639

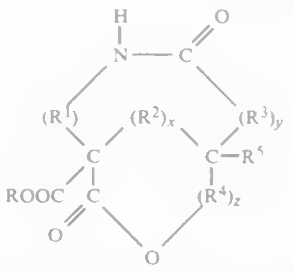
Int. Cl.⁴ C07D *491/06*

U.S. Cl. 540—520 **14 Claims**

1. A process for converting a first compound, represented by the general formula:



selectively, into a second compound represented by the general formula



wherein R is an alkyl radical having from one to eight carbon atoms; R^1 is a divalent hydrocarbyl or heteroatom-substituted hydrocarbyl radical providing at least two carbon atoms between the nitrogen atom and the 1-carbon atom; R^2, R^3 and R^4 are divalent hydrocarbyl or heteroatom-substituted hydrocarbyl radicals; R^5 is hydrogen or a hydrocarbyl or heteroatom-substituted hydrocarbyl radical; A is an acid having a pKa of 0 or more; x is 0; y and z are 0 or 1, provided at least one of y and z is not 0, and said heteroatoms are selected from the group consisting of nitrogen, oxygen, sulfur, phosphorus and halogen atoms, which comprises cyclizing said first compound in the absence of a base.

4,880,925
INTERMEDIATES FOR THE PRODUCTION OF TETRAHYDROPHTHALIMIDES

Eiki Nagano, Nishinomiya; Toru Haga, Takarazuka; Ryo Sato, and Kouichi Morita, both of Toyonaka, all of Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

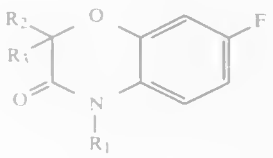
Division of Ser. No. 914,496, Oct. 2, 1986, Pat. No. 4,772,605, which is a division of Ser. No. 756,251, Jul. 18, 1985, Pat. No. 4,640,707. This application Sep. 20, 1988, Ser. No. 246,783

Claims priority, application Japan, Jul. 23, 1984, 59-152721; Aug. 3, 1984, 59-164020; Sep. 20, 1984, 59-198245

Int. Cl.⁴ C07D *265/36*

U.S. Cl. 544—105 **3 Claims**

1. A compound of the formula:



wherein R_1 is a hydrogen atom, and R_2 and R_3 are, the same or different, each a hydrogen atom, a halogen atom, a C_1–C_3 alkyl group or a phenyl group.

4,880,926
OPTICAL RESOLUTION OF BENZOXAZINES

Toshihiro Fujiwara; Hideaki Tsurumi, and Yukio Sato, all of Tokyo, Japan, assignors to Daiichi Seiyaku Co., Ltd., Tokyo, Japan

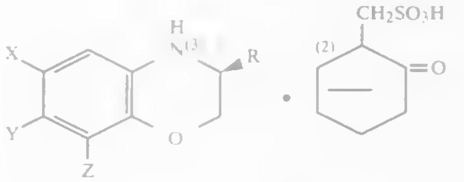
Filed Aug. 3, 1988, Ser. No. 227,925

Claims priority, application Japan, Aug. 3, 1987, 62-194017; Aug. 3, 1987, 62-194018

Int. Cl.⁴ C07D *265/36*

U.S. Cl. 544—105 **4 Claims**

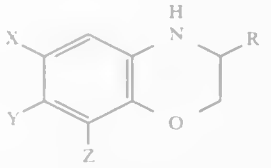
1. A salt of an (S)-3-alkyl-benzoxazine derivative with (R)-(−)-camphor-10-sulfonic acid which has the general formula (V)′



(V)

wherein X, Y and Z, which may be the same or different, each represents a hydrogen atom or a halogen atom and R represents a lower alkyl group having 1 to 6 carbon atoms.

3. A process for producing an optically active benzoxazine compound which comprises subjecting a (±)-3-alkyl-3,4-dihydro-2H-[1,4]benzoxazine derivative of the general formula (II)



(II)

wherein X, Y and Z, which may be the same or different, each represents a hydrogen atom or a halogen atom and R represents a lower alkyl group having 1 to 6 carbon atoms, to optical resolution using an optically active form of camphor-10-sulfonic acid as an optical resolution reagent.

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4,880,927
METHOD FOR PREPARING A CYCLIC ISOCYANURIC ESTER HAVING ORGANOSILICON GROUPS

Toshio Takago, Annaka, and Yasushi Yamamotu, Takasaki, both of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Dec. 3, 1987, Ser. No. 129,939

Claims priority, application Japan, Dec. 3, 1986, 61-288235

Int. Cl.⁴ C07D *251/34*

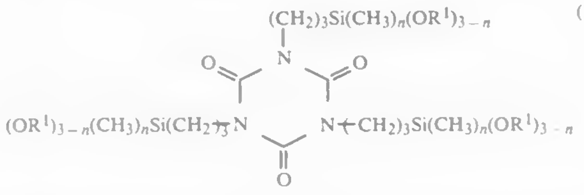
U.S. Cl. 544—193 15 Claims

1. A method for preparing an organosilicon group-containing cyclic isocyanuric ester, the method comprising:

thermally treating or heating an isocyanic ester of the following formula (1) at a temperature sufficient for cyclization reaction of the isocyanic ester

$$(R^1O)_{3-n}(CH_3)_nSi(CH_2)_3NCO \qquad (1)$$

in which R^1 represents an alkyl group having from 1 to 4 carbon atoms, and n is 0 or 1, for cyclization reaction in the presence of a basic catalyst of the formula, MOR^2, in which R^2 represents a hydrogen atom or an alkyl group having from 1 to 5 carbon atoms and M represents an alkali metal to obtain an organosilicon group-bearing cyclic isocyanuric ester of the following formula (2)



(2)

in which R^1 and n have, respectively, the same meanings as defined above.

4,880,928
PROCESS FOR THE PREPARATION OF 3-((4-BROMO-2-FLUOROPHENYL)METHYL)-3,4-DIHYDRO-4-OXO-1-PHTHALAZINE-ACETIC ACID

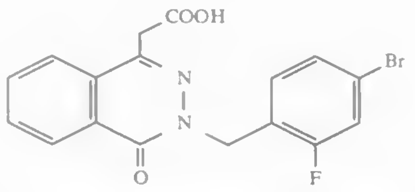
Richard F. Shuman, Westfield, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 135,885, Dec. 21, 1987, abandoned. This application May 23, 1988, Ser. No. 197,481

Int. Cl.⁴ C07D *237/32*

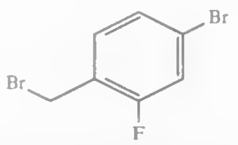
U.S. Cl. 544—237 22 Claims

1. A process for the preparation of a compound of the formula



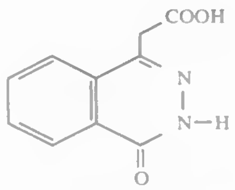
III

which comprises reacting a compound of the formula



II

with a compound of the formula



I

in a protic polar solvent, an aprotic polar solvent, or a mixture of a protic polar solvent and an aprotic polar solvent in the presence of a tetraalkyl or phenyl substituted tertraalkyl ammonium hydroxide.

4,880,929
PROCESS FOR PREPARING A 2-ALKYL-1,4,5,6-TETRAHYDROPYRIMIDINE

Antonius J. J. M. Teunissen, Geleen; Willem Klop, Limbricht, and Hubertus J. A. V. Delahaye, Voerendaal, all of Netherlands, assignors to Stamicarbon B.V., Geleen, Netherlands

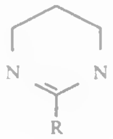
Filed Sep. 16, 1987, Ser. No. 97,657

Claims priority, application Netherlands, Dec. 12, 1986, 8603168

Int. Cl.⁴ C07D *239/26, 239/36*

U.S. Cl. 544—242 13 Claims

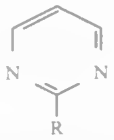
1. Process for preparing a 2-alkyl-1,4,5,6-tetrahydropyrimidine with the formula



where R represents a straight or branched chain with 1–8 C-atoms or a phenyl group from 1,3-diaminopropane and an alkanecarboxylic acid, in which the alkyl group of such an acid is the same as the R group described above, wherein the starting materials are reacted in the gas phase in the presence of a metal oxide catalyst having an oxidizing or dehydrating effect and wherein said metal oxide catalyst includes a metal or metals selected from the group consisting of the elements of groups 3, 4 and 5 of the periodic system, at a temperature of between 250° and 450° C. and from the reaction mixture thus obtained the 2-alkyl-1,4,5,6-tetrahydropyrimidine is recovered.

2. Process according to claim **1**, wherein the chosen alkanecarboxylic acid is pivalic acid or acetic acid.

11. Process for preparing a 2-alkylpyrimidine with the formula



where R represents a straight or branched chain with 1–8 C-atoms or a phenyl group from 1,3-diaminopropane and an alkanecarboxylic acid, in which the alkyl group of such an acid is the same as the R group described above, wherein in the first step the starting materials are reacted in a gas phase in the presence of a metal oxide catalyst having an oxidizing or dehydrating effect and wherein said metal oxide catalyst includes a metal or metals selected from the group consisting of the elements of groups 3, 4 and 5 of the periodic system, at a temperature of between 250° and 450° C. and subsequently, in a second step, the reaction mixture obtained is dehydrogenated in the gas phase in the presence of a dehydrogenating catalyst including an element of group 8 at a temperature of between

250° and 400° C. and finally, from the reaction mixture obtained in the second step, the 2-alkylpyrimidine is recovered.

4,880,930
PSYCHOTROPIC ACYCLIC AMIDE DERIVATIVES

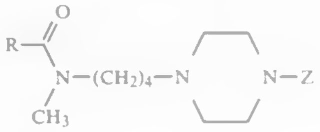
James S. New, 168 Bradley Corners, Madison, Conn. 06483

Filed Nov. 30, 1987, Ser. No. 126,819

Int. Cl.⁴ C07D *403/04, 413/04, 417/04*

U.S. Cl. 544—295 26 Claims

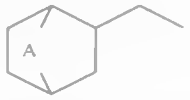
1. A compound of Formula I or a pharmaceutically acceptable acid addition salt thereof



1

wherein

R is selected from C_{4-8} alkyl, alkenyl and cycloalkylmethyl, and C_{8-9} bicyclo hydrocarbon moieties of structure



in which A is methylene or ethylene and the full line accompanying the dotted line is a single or double covalent bond; and

Z is a heterocyclic ring system selected from pyrimidin-2-yl, 1,2-benzisothiazol-3-yl, thieno[3,2-c]pyridin-4-yl and furo[3,2-c]pyridin-4-yl.

4,880,931
ACRYLOXY-CONTAINING COMPOUNDS

George E. Abboud, Ajax, Canada; Christopher H. Such, Mount Eliza, Australia; Susan M. Horley, Loudwater, and Julian A. Waters, Goring-On-Thames, both of England, assignors to Imperial Chemical Industries PLC, London, England

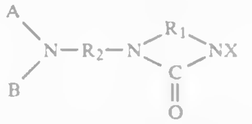
Continuation of Ser. No. 815,313, Jan. 2, 1986, Pat. No. 4,783,539, which is a continuation of Ser. No. 436,355, Oct. 25, 1982, abandoned. This application Jul. 13, 1988, Ser. No. 218,278

Claims priority, application United Kingdom, Oct. 23, 1981, 8132086; Apr. 30, 1982, 8212639

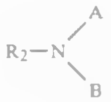
Int. Cl.⁴ C07D *233/36, 239/10*

U.S. Cl. 544—316 7 Claims

1. A polymerisable monomer of the structure



wherein R_1 and R_2 are the same or different alkylene groups containing 2 or 3 carbon atoms, A is an alkyl group containing 2 to 18 carbon atoms substituted with at least one hydroxyl or cyano group, B is an acryloxyalkyl wherein the alkyl group contains 2 to 18 carbon atoms and is unsubstituted or substituted with a hydroxyl group and X is hydrogen, $C_{1\ to}$ 18 alkyl or



and wherein A and B are each linked to the nitrogen through a carbon atom.

4,880,932
SUBSTITUTED GUANIDINE DERIVATIVES

Koichi Moriya, Hachioji; Theodor Pfister, Monheim; Hans-Jochem Riebel, Wuppertal; Ludwig Eue, Leverkusen; Robert R. Schmidt, Bergisch-Gladbach, Fed. Rep. of Germany, and Klaus Lürrsen, Bergisch-Gladbach, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

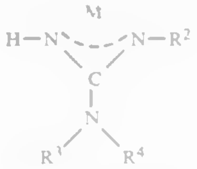
Continuation-in-part of Ser. No. 853,822, Apr. 18, 1986, Pat. No. 4,721,785, which is a division of Ser. No. 578,345, Feb. 9, 1984, Pat. No. 4,602,938. This application Apr. 29, 1987, Ser. No. 44,083

Claims priority, application Fed. Rep. of Germany, Mar. 4, 1983, 3307679; Sep. 23, 1983, 3334455

Int. Cl.⁴ C07D *239/34, 239/42, 239/52, 239/48*

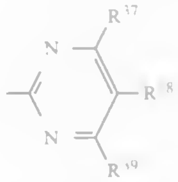
U.S. Cl. 544—320 5 Claims

1. A guanidine derivative of the formula



in which

R^2 represents the radical



wherein

R^{37} represents hydrogen, fluorine, chlorine, bromine, C_1-C_4-alkyl (which is optionally substituted by fluorine and/or chlorine) or C_1-C_4-alkoxy (which is optionally substituted by fluorine and/or chlorine),

R^{38} represents hydrogen, fluorine, chlorine, bromine, C_1-C_4-alkyl (which is optionally substituted by fluorine and/or chlorine), cyano, formyl, C_1-C_4-alkyl-carbonyl or C_1-C_4-alkoxy-carbonyl, and

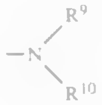
R^{39} represents C_1-C_4-alkoxy (which is optionally substituted by fluorine and/or chlorine), amino, C_1-C_4-alkylamino or di-(C_1-C_4-alkyl)-amino;

R^3 represents hydrogen or C_1-C_4-alkyl; and

R^4 represents the radical —O—R^8,

R^8 represents C_1-C_6-alkyl (which is optionally substituted by fluorine, chlorine, C_1-C_4-alkoxy, C_1-C_4-alkylthio, C_1-C_4-alkylsulphinyl or C_1-C_4-alkylsulphonyl), C_3-C_6-alkenyl, C_3-C_6-alkinyl, C_3-C_6-cycloalkyl, benzyl (which is optionally substituted by fluorine, chlorine or methyl) or phenyl (which is optionally substituted by fluorine, chlorine, bromine, nitro, cyano, C_1-C_4-alkyl, trifluoromethyl, C_1-C_4-alkoxy, trifluoromethoxy, C_1-C_4-alkylthio or trifluoromethylthio); or

R^4 represents the radical



wherein

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R^9 represents hydrogen or C_1–C_4-alkyl and

R^{10} represents C_1–C_4-alkyl (which is optionally substituted by fluorine, chlorine, bromine, cyano, C_1–C_4-alkoxy or C_1–C_4-alkoxy-carbonyl), C_3–C_6-alkenyl, C_3–C_6-alkinyl, C_3–C_6-cycloalkyl (which is optionally interrupted by a —SO_2 bridge), benzyl or phenylethyl (which are optionally substituted by fluorine, chlorine or methyl), phenyl (which is optionally substituted by fluorine, chlorine, bromine, nitro, cyano, C_1–C_4-alkyl, trifluoromethyl, C_1–C_4-alkoxy, trifluoromethoxy, C_1–C_4-alkylthio or trifluoromethylthio), pyrimidyl, C_1–C_4-alkyl-carbonyl, benzoyl, C_1–C_4-alkoxy-carbonyl, C_1–C_4-alkyl-sulphonyl or phenylsulphonyl (which is optionally substituted by fluorine, chlorine, bromine or methyl).

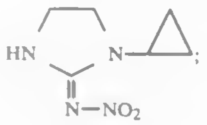
4,880,933

NITRO- OR CYANO-DERIVATIVES OF 2-IMINO-IMIDAZOLINES AND 2-IMINO-TETRAHYDROPYRIMIDINES

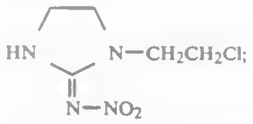
Kozo Shiokawa, Kawasaki; Shinichi Tsuboi, Hino; Koichi Moriya, Tokyo, and Katsuhiko Shibuya, Hachioji, all of Japan, assignors to Nihon Tokushu Noyaku Seizo K.K., Tokyo, Japan

Filed Dec. 8, 1987, Ser. No. 130,376
Claims priority, application Japan, Dec. 19, 1986, 61-301333
Int. Cl.⁴ C07D *233/52, 239/18, 401/06, 417/04, 407/06*
U.S. Cl. 544—332 2 Claims

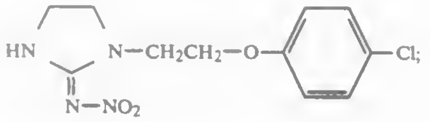
1. A compound selected from the group consisting of 1-cyclopropyl-2-nitroiminoimidazolidine of the formula:



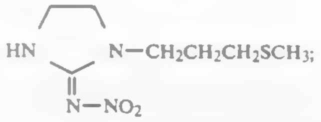
1-(2-chloroethyl)-2-nitroiminoimidazolidine of the formula:



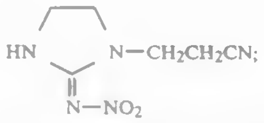
1-[2-(4-chlorophenoxy)ethyl]-2-nitroiminoimidazolidine of the formula:



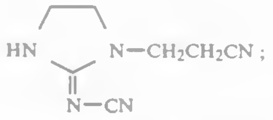
1-(3-methylthiopropyl)-2-nitroiminoimidazolidine of the formula:



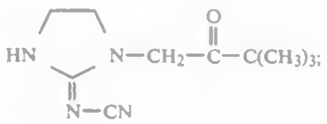
1-(2-cyanoethyl)-2-nitroiminoimidazolidine of the formula:



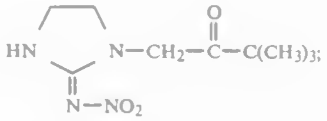
1-(3-cyanopropyl)-2-cyanoiminoimidazolidine of the formula:



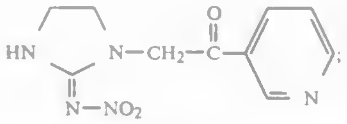
1-(3,3-dimethyl-2-butanon-1-yl)-2-cyanoiminoimidazolidine of the formula:



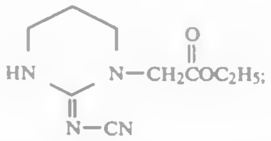
1-(3,3-dimethyl-2-butanon-1-yl)-2-nitroiminoimidazolidine of the formula:



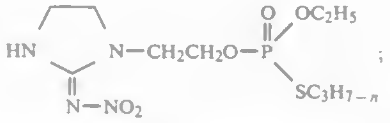
2-nitroimino-1-(3-pyridylcarbonylmethyl)imidazolidine of the formula:



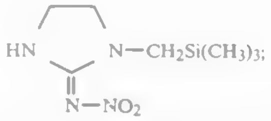
2-cyanoimino-1-ethoxycarbonylmethyltetrahydropyrimidine of the formula:



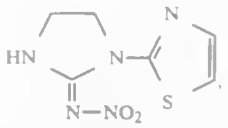
1-[2-(O-ethyl-S-propylthiophosphonoxy)ethyl]-2-nitroiminoimidazolidine of the formula:



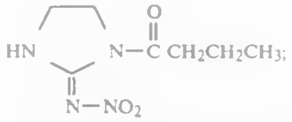
2-nitroimino-1-trimethylsilylmethylimidazolidine of the formula:



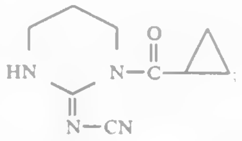
2-nitroimino-1-(2-thiazolyl)imidazolidine of the formula:



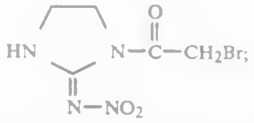
2-nitroimino-1-propylcarbonylimidazolidine of the formula:



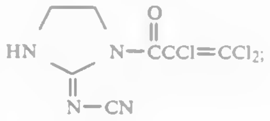
2-cyanoimino-1-cyclopropylcarbonyltetrahydropyrimidine of the formula:



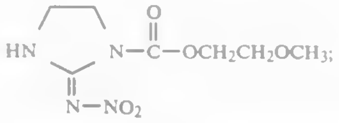
1-bromoacetyl-2-nitroiminoimidazolidine of the formula:



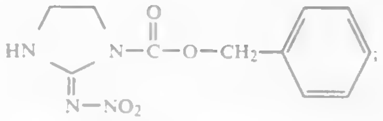
2-cyanoimino-1-trichloroacryloylimidazolidine of the formula:



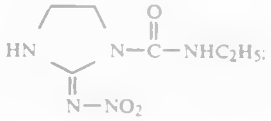
1-(2-methoxyethoxycarbonyl)-2-nitroiminoimidazolidine of the formula:



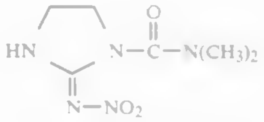
1-benzyloxycarbonyl-2-nitroiminoimidazolidine of the formula:



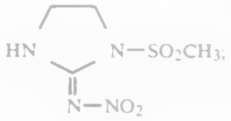
1-ethylaminocarbonyl-2-nitroiminoimidazolidine of the formula:



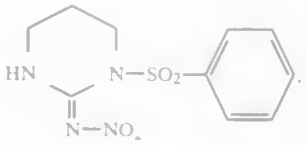
1-dimethylaminocarbonyl-2-nitroiminoimidazolidine of the formula:



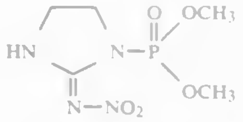
1-methylsulfonyl-2-nitroiminoimidazolidine of the formula



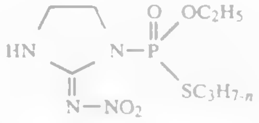
2-nitroimino-1-phenylsulfonyltetrahydropyrimidine of the formula:



1-(O,O-dimethylphosphono)-2-nitroiminoimidazolidine of the formula:



1-(O-ethyl-S-propylthiophosphono)-2-nitroiminoimidazolidine of the formula:



1-(2,4-dichlorobenzoyl)-2-nitroiminoimidazolidine of the formula:

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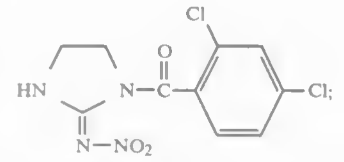
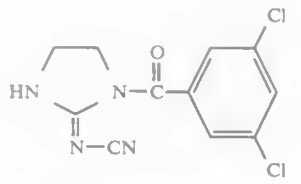
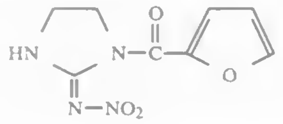


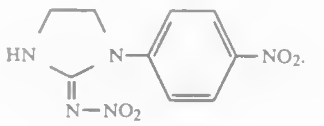
1-(3,5-dichlorobenzoyl)-2-cyanoiminoimidazolidine of the formula:



1-(2-furoyl)-2-nitroiminoimidazolidine of the formula:



2. 1-(4-Nitrophenyl)-2-nitroiminoimidazolidine of the formula



4,880,934

PREPARATION OF HYDROXYALKYLPIPERAZINONES BY REACTING A 2,3-DIHYDROXY-1,4-DIOXANE WITH A HYDROALKYLDIAMINE

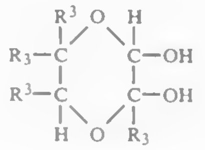
Duane S. Treybig, and John M. Motes, both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 85,428, Aug. 13, 1987, Pat. No. 4,814,443. This application Dec. 5, 1988, Ser. No. 279,906

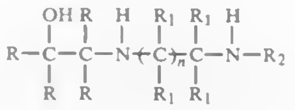
Int. Cl.⁴ C07D *241/08*

U.S. Cl. 544—384 16 Claims

1. A process for preparing 4-(2-hydroxyalkyl)-2-piperazinones and their substituted derivatives which comprises: (1) reacting a compound having the formula



wherein R_3 is hydrogen or an alkyl group having from 1–4 carbon atoms, with (2) an N-hydroxyalkylalkylenediamine having the formula



wherein R is hydrogen or an alkyl group of 1 or 2 carbon atoms, R_1 is hydrogen, an alkyl group of 1 to 6 carbon atoms, an aryl or an aralkyl group having from 6 to 12 carbon atoms, R_2 is hydrogen, an alkyl or hydroxyalkyl group of 1–6 carbon atoms, an aryl or an aralkyl group having from 6 to 12 carbon atoms and n is 1 or 2.

4,880,935

HETEROBIFUNCTIONAL LINKING AGENTS DERIVED FROM N-SUCCINIMIDO-DITHIO-ALPHA METHYL-METHYLENE-BENZOATES

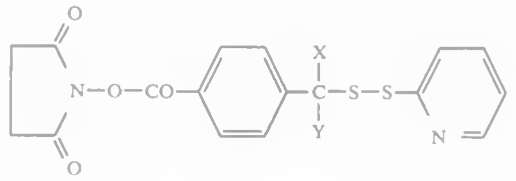
Philip E. Thorpe, London, England, assignor to ICRF (Patents) Limited, London, England

Continuation of Ser. No. 884,641, Jul. 11, 1986, abandoned. This application Aug. 27, 1987, Ser. No. 90,386

Int. Cl.⁴ C07D *207/46, 207/48, 401/12*

U.S. Cl. 546—281 4 Claims

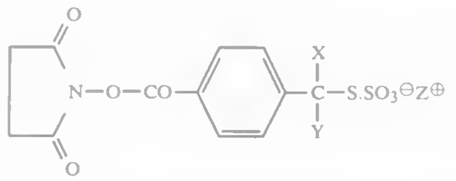
1. A compound of the formula:



(V)

wherein X is a C_1–C_4 alkyl group and Y is H or a C_1–C_4 alkyl group and $Z^{\oplus}$ is a pharmaceutically acceptable cation.

3. A compound of the formula:



(VI)

wherein X is a C_1–C_4 alkyl group and Y is H or a C_1–C_4 alkyl group and $Z^{\oplus}$ is a pharmaceutically acceptable cation.

4,880,936

OPTICALLY ACTIVE PYRIDINES USEFUL IN LIQUID CRYSTAL FORM FOR ELECTRICAL DISPLAY DEVICES

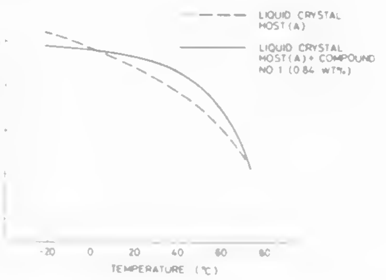
Makoto Sasaki, Saitama; Kiyohumi Takeuchi, and Haruyoshi Takatsu, both of Tokyo, all of Japan, assignors to Dainippon Ink and Chemicals, Inc., Tokyo, Japan

Filed Mar. 25, 1988, Ser. No. 172,923

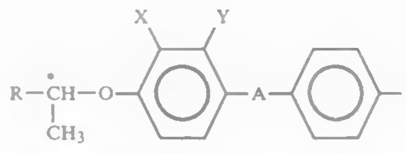
Claims priority, application Japan, Mar. 26, 1987, 62-70174

Int. Cl.⁴ C07D *213/30*

U.S. Cl. 546—339 19 Claims

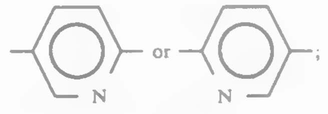


1. An optically active compound represented by formula (I):



(I)

wherein R represents a straight chain alkyl group having from 2 to 12 carbon atoms; R′ represents a straight chain alkyl or alkoxy group having from 1 to 20 carbon atoms; represents an asymmetric carbon atom; A represents



and X and Y each represents a hydrogen atom or a fluorine atom, provided that X and Y do not simultaneously represent a fluorine atom.

4,880,937

METHOD OF PRODUCING ALCOHOL COMPOUNDS

Hajime Matsushita, Yokohama; Makoto Shibagaki, Kawasaki, and Kyoko Takahashi, Tokyo, all of Japan, assignors to Japan Tobacco, Inc., Tokyo, Japan

Filed Feb. 18, 1988, Ser. No. 157,246

Claims priority, application Japan, Mar. 3, 1987, 62-46706

Int. Cl.⁴ C07D *213/30;* **C07C** *31/135, 33/00, 29/136*

U.S. Cl. 546—344 28 Claims

1. A method of producing an alcohol compound, comprising, allowing a carboxylic acid compound selected from the group consisting of C_2–C_{18} unsubstituted chain carboxylic acid, 2-methyl-pentanoic, pivaric, acrylic, oleic, cyclohexane carboxylic acid benzoic acid or their ethyl ester, nicotinic acid, isonicotinic acid or their methyl ester thereof to come into contact with a reducing agent consisting of an alcohol selected from the group consisting of alkanols having 2 to 6 carbon atoms and benzyl alcohol, in the presence of a solid catalyst consisting of a hydrous oxide selected from the group consisting of hydrous zirconium oxide, hydrous titanium oxide and hydrous tin oxide, thereby reducing said carboxylic compound to its corresponding alcohol compound.

4,880,938

AMINO ACID ANALOGS

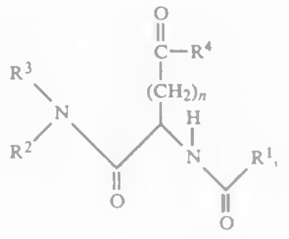
Roger M. Freidinger, Hatfield, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Jun. 16, 1986, Ser. No. 874,928

Int. Cl.⁴ C07D *209/18*

U.S. Cl. 548—492 6 Claims

1. A compound of the formula:



(I)

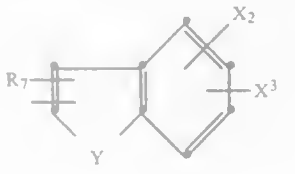
wherein:

R^1 is $(CH_2)_m$—R^5 or X^1—$(CH_2)_m$—R^6;

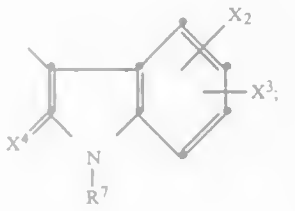
R^2 and R^3 are independently selected from H; C_1–C_8-straight- or branched-chain-alkyl; C_3–C_8-cycloalkyl; with the proviso that R^2 and R^3 cannot both be H concurrently;

R^4 is OH; C_1–C_4-straight- or branched-chain-alkoxy; C_3–C_6-cycloalkoxy; OCH_2-phenyl; amino-mono- or di-C_1–C_4-straight- or branched-chain-alkyl; amino-mono- or di-C_3–C_6-cycloalkyl; or NH—CH_2-phenyl;

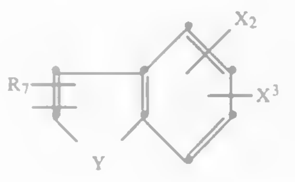
R^5 is



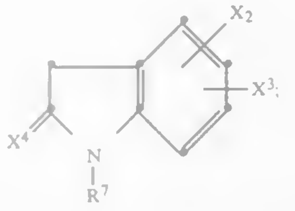
or



R^6 is



or



R^7 is H; C_1–C_4-straight- or branched-chain-alkyl;

X^1 is O or NH;

X^2 and X^3 are independently H; OH; NO_2; halo; C_1–C_4-straight- or branched-chain-alkyl; C_1–C_4-straight- or branched-chain-alkylthio; or C_1–C_4-straight- or branched-chain-akoxy;

X^4 is O or HH;

Y is NR^7;

n is 1-to-3;

m is 0-to-4; and

halo is F, Cl, Br, or 1;

or pharmaceutically-acceptable salts of these compounds.

4,880,939

2,5,6,7-TETRANOR-18,18,19,19-TETRADEHYDRO-4,8-INTER-M-PHENYLENE PGI_2 DERIVATIVES

Kiyotaka Ohno, Fujisawa; Toshiya Takahashi, Kamakura, and Shintaro Nishio, Ebina, all of Japan, assignors to Toray Industries, Japan

Filed Dec. 4, 1987, Ser. No. 128,878

Claims priority, application Japan, Dec. 11, 1986, 61-295367

Int. Cl.⁴ C07D *307/77, 307/93*

U.S. Cl. 549—458 1 Claim

1. A 2,5,6,7-tetranor-18,18,19,19-tetradehydro-4,8-inter-m-phenylene PGI_2 derivative represented by the formula:

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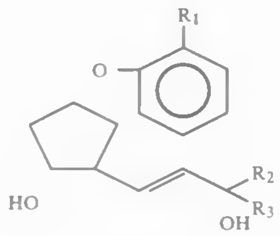


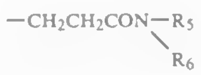
wherein:

R_1 is

(i) $-CH_2CH_2COOR_4$,

(ii) $-CH_2CH_2CH_2OH$, or

(iii)



$-CH_2CH_2CON(R_5)-R_6$

in which R_4 is hydrogen, or a pharmacologically acceptable cation or ester residue, and R_5 and R_6 may be same or different and are independently selected from the class consisting of hydrogen, normal alkyl groups having 1 to 12 carbon atoms, branched alkyl groups having 3 to 12 carbon atoms, cycloalkyl groups having 3 to 12 carbon atoms, cycloalkylalkylene groups having 4 to 13 carbon atoms, and phenyl;

R_2 is hydrogen, methyl, ethyl or propyl; and

R_3 is $-C_tH_{2t}-C\equiv C-R_7$

in which C_tH_{2t} represents a normal or branched alkylene group, t is an integer having a value of 1 to 6, and R_7 is a normal alkyl group having 1 to 6 carbon atoms.

4,880,940

4-ALKOXY-3-PYRROLIN-2-ON-1-YL ACETIC ACID ALKYL ESTERS

Thomas Muel; Leander Tenud, both of Visp; Laurent Duc, Sion, and John McGarrity, Visp, all of Switzerland, assignors to Lonza Ltd., Gampel/Valais, Switzerland

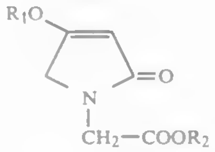
Continuation of Ser. No. 907,012, Sep. 15, 1986, abandoned. This application Jul. 22, 1988, Ser. No. 147,275

Claims priority, application Switzerland, Sep. 24, 1985, 4119/85; May 14, 1986, 1958/86; Jun. 19, 1986, 2486/86

Int. Cl.⁴ C07D *207/38*

U.S. Cl. 548—544 3 Claims

1. 4-Alkoxy-3-pyrrolin-2-on-1-yl acetic acid-(C_1–C_4)-alkyl ester of the formula:



wherein R_1 is a (C_1–C_2)-alkyl and R_2 is a (C_1–C_4)-alkyl or benzyl.

3. The composition comprising 4-methoxy-3pyrrolin-2-on-1-yl acetic acid methyl ester in carbon tetrachloride.

4,880,941

TRITTUM LABELLED COMPOUND, ITS PREPARATION AND ITS USE IN THE DETERMINATION OF THE AFFINITY OF RETINOIDS FOR THEIR CELLULAR RECEPTOR

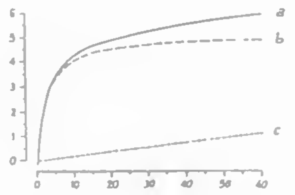
Braham Shroot, Antibes; Oliver Watts, Cagnes sur Mer; Joseph Gazith, Biot, and Marie-Thérèse Cavey, Valbonne, all of France, assignors to Centre International de Recherches Dermatologique (CIRD), Valbonne, France

Filed Aug. 28, 1987, Ser. No. 90,324

Claims priority, application France, Aug. 29, 1986, 86 12237

Int. Cl.⁴ C07D *333/54*

U.S. Cl. 549—57 4 Claims



1. Tritium labelled 2-(5,6,7,8-tetrahydro-5,5,8,8-tetramethyl-2-naphthyl)-6-benzo [b] thiophene carboxylic acid.

4,880,942

PREPARATION OF CYCLIC CARBONATES

Yoshihisa Kiso, Iwakuni; Yuuichi Matsunaga, Kuga, and Masao Imagawa, Ohtake, all of Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Filed Jul. 21, 1988, Ser. No. 222,414

Claims priority, application Japan, Jul. 22, 1987, 62-180984

Int. Cl.⁴ C07D *317/12, 323/04*

U.S. Cl. 549—228 6 Claims

1. A process for preparing a cyclic carbonate, comprising the steps of:

reacting at least one diol selected from the group consisting of 1,3-diols and 1,2-diols with a dialkylcarbonate in the presence of a basic catalyst under approximately atmospheric pressure or under pressure,

subjecting the reaction mixture to heat aging under vacuum in the presence of a basic catalyst, and

isolating the resulting cyclic carbonate from the mixture.

ELECTRICAL

4,880,943

BOUND FLAT WIRING HARNESS, BENT FLAT WIRING HARNESS, AND METHODS OF PRODUCING EACH

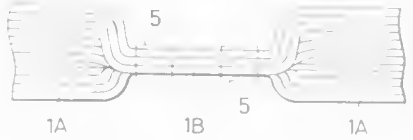
Katsutoshi Kuzuno; Hiroshi Watanabe, and Shigeo Ishizuka, all of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan

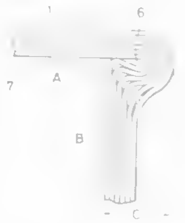
Filed Mar. 22, 1989, Ser. No. 327,253

Claims priority, application Japan, Apr. 18, 1988, 63-51001[U]; Apr. 18, 1988, 63-51002[U]

Int. Cl.⁴ H01B *7/00;* H02G *1/00*

U.S. Cl. 174—72 A 12 Claims





1. A method of binding a flat wiring harness, comprising the steps of:

(a) arranging a plurality of covered wires in parallel relationship in the same plane and bonding them in an easily separable manner thereby forming a flat wiring harness;

(b) separating said covered wires by a predetermined, identical number between adjacent covered wires over a predetermined length thereby dividing them into a plurality of small bundles;

(c) separating both end portions of all of the covered wires in each of said small bundles between the adjacent covered wires; and

(d) laying said plurality of small bundles one on top of the other and binding them up together in an easily separable manner.

9. A flat wiring harness, comprising both wide end portions of a plurality of covered wires bonded in the same plane in an easily separable manner, and an intermediate bound portion located between said wide end portions and consisting of small bundles each including a predetermined number of covered wires, said individual covered wires having slits formed therebetween in both end portion of said intermediate bound portion, said intermediate bound portion being bound up together in such a manner that it can be separated easily into the small bundles.

10. A method of bending a flat wiring harness comprising the steps of:

(a) arranging a plurality of covered wires in parallel relationship in the same plane and bonding them in an easily separable manner thereby forming a flat wiring harness;

(b) forming a slit between adjacent covered wires in the portions of said flat wiring harness to be bent later; and

(c) bending the flat wiring harness formed with said slits so as to locate the slackening portion of each of the covered wires resulting from the difference in arc length between the inner and outer peripheries thereof at its bend outside the bend.

12. A flat wiring harness, comprising both end portions of a plurality of covered wires bonded in the same plane in an easily separable manner, and bends of said covered wires located between said both end portions and bent in said plane, the slackening portion of each of the covered wires resulting from the difference in arc length between the inner and outer peripheries thereof at its bend being located outside the bend.

4,880,944

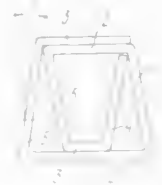
BAR FOR INDUCTION DEVICES

Viktor L. Kanaljuk; Anatoly M. Surakov; Vasily M. Chornogotsky, and Lazar N. Shifrin, all of Zaporozhie, U.S.S.R., assignors to Nauchno-Issledovatelsky, Proektno-Konstruktorsky I Tekhnologichesky Institut Transformatorostroeniya, Zaporozhie, U.S.S.R.

Filed Feb. 3, 1988, Ser. No. 151,822

Int. Cl.⁴ H01B *17/56;* H01F *27/08;* B32B *1/08*

U.S. Cl. 174—138 E 2 Claims



2. An insulation bar for oil barrier insulation of induction devices, formed from a strip of electric insulating material rolled up into a hollow trapezoidal prism, an inner longitudinal edge of said strip abutting an inner corner of the hollow trapezoidal prism formed by sides thereof, with the strip being rolled up repeatedly, said hollow trapezoidal prism is encompassed by a successive hollow trapezoidal prism which adjoins the encompassed hollow trapezoidal prism along parallel sides, the smaller side of the encompassed trapezoidal prism adjoining the larger side of the encompassing trapezoidal prism.

4,880,945

ELECTRIC SWITCH FOR CONTROLLING CHANGE-OF-DIRECTION INDICATORS ON A MOTOR VEHICLE

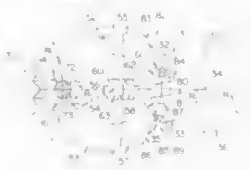
Christian Gauthier, Paris, France, assignor to Jaeger, Levallois Perret, France

Filed May 6, 1988, Ser. No. 191,267

Claims priority, application France, May 7, 1987, 87 06496

Int. Cl.⁴ H01H *3/18*

U.S. Cl. 200—61.54 16 Claims



1. An electric switch cooperating with a steering wheel shaft provided with a control cam for controlling change of direction indicators of a motor vehicle, including:

a support casing;

a control lever pivotally mounted on said support casing about a first pivot axis;

a reversing plate pivotally mounted on said support about a second axis which is parallel to said first pivot axis, said reversing plate facing said control cam provided on the steering wheel shaft and being able to move relative to the second axis away from the control cam;

drive structures provided on said reversing plate for cooperating with the lever so that the reversing plate is pivoted about said second axis into a working position, in response

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to the control lever itself being pivoted about said first axis into a working position;

said reversing plate including slopes so that the slopes interfere with the rotary path of the control cam when the reversing plate is in the working position;

a spring resiliently urging said reversing plate towards the steering wheel shaft;

an indexing notched surface provided on said support casing, and

an indexing stud provided on said lever, said stud being resiliently urged against said notched surface.

4,880,946

HIGH-OR MEDIUM-TENSION COMPRESSED-GAS CIRCUIT BREAKER TAKING CIRCUIT-BREAKING ENERGY FROM THE ARC

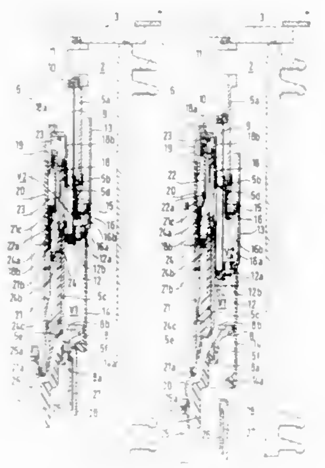
Edmond Thuries, Pusignan; Denis Dufournet, Bron, and Michel Perret, Bourgoin-Jallieu, all of France, assignors to Societe Anonyme dite: Alsthom, Paris, France

Filed Jul. 21, 1988, Ser. No. 222,641

Claims priority, application France, Aug. 3, 1987, 87 10988

Int. Cl.⁴ H01H *33/88*

U.S. Cl. 200—148 A 6 Claims



1. A high- or medium-tension compressed gas circuit breaker taking circuit-breaking energy from the arc, the circuit breaker being of the type comprising:

a fixed assembly including main contacts and arc contacts;

a moving assembly including main contacts and arc contacts;

a blast volume including a piston which moves on contact separation and urges compressed gas through a blast nozzle which opens over the zone where a main arc forms when the arc contacts separate, and

a set of auxiliary contacts in series with the arc contacts for creating an auxiliary arc in the volume situated behind the piston,

the circuit breaker further including means for allowing the auxiliary contacts to separate only when the pressure in the blast zone reaches a predetermined threshold.

4,880,947

VACUUM INTERRUPTER WITH SIMPLIFIED ENCLOSURE AND METHOD OF ASSEMBLY

Maurice G. Fey, Pittsburgh; William J. Lange; Carl B. Freidhoff, both of Murrysville, and Paul G. Slade, Pittsburgh, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 29, 1988, Ser. No. 212,850

Int. Cl.⁴ H01H *33/66*

U.S. Cl. 200—144 B 20 Claims

1. A vacuum interrupter comprising:

a vacuum enclosure;

a pair of contacts, including at least one movable contact, enclosed by said vacuum enclosure and having respective electrical terminals connected thereto and communicating through said vacuum enclosure;

said vacuum enclosure comprising a plurality of enclosure elements with one or more seals therebetween of a cured polymeric material.

4,880,948

CONTACTOR DEVICE FOR CIRCUIT BREAKER

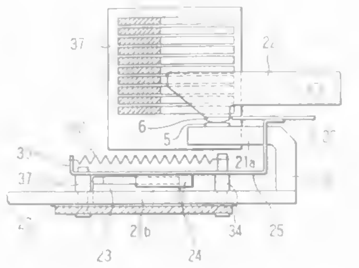
Kiyoshi Kandatsu; Makoto Yamazaki, and Hiroshi Kinota, all of Kanagawa, Japan, assignors to Fuji Electric Co., Ltd., Kanagawa, Japan

Filed Oct. 27, 1988, Ser. No. 263,204

Claims priority, application Japan, Nov. 9, 1987, 62-282806; Dec. 17, 1987, 62-319533

Int. Cl.⁴ H01H *9/32, 71/16, 33/06*

U.S. Cl. 200—151 10 Claims



1. A contactor device for a circuit breaker having a pair of external terminals, comprising:

a stationary conductor having a central axis and a surface and a stationary contact mounted on said surface, constituting an electricity path extending from one of the external terminals to said stationary contact;

a movable conductor including a movable contact movable to detachably touch said stationary contact, and constituting an electricity path extending from said movable contact to another of the external terminals;

a stationary ferromagnetic core; fixedly mounted on said stationary conductor with opposing pole portions spaced from each other in a direction transverse the central axis;

an insulative member, coaxially mounted on the stationary conductor, movable between a normal position and an overcurrent position relative the stationary contact, having a portion disposed to substantially cover said stationary contact at times when the insulative member is in the overcurrent position, and spaced away from said stationary contact at times when the insulative member is in the normal position; and

a movable ferromagnetic core fixedly mounted on and movable with the insulative member disposed in a first location spaced from the opposing pole portions at times when the insulative member is in the normal position and a second location adjacent the opposing pole portions at times when the insulative member is in the overcurrent position;

wherein a magnetic flux in said stationary core attracts said movable core to said second location at times when an overcurrent flows in said stationary conductor thereby moving said insulative member to said overcurrent position.

4,880,949

SWITCH DRIVE FOR A ROTARY SWITCH

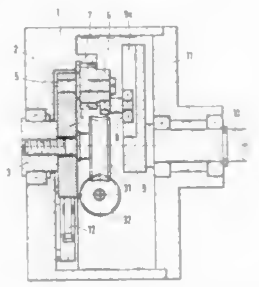
Georg Spinner, Feldkirchen-Westerham; Franz-Xaver Pitschi, Rottach-Egern, and Horst Linnerbauer, Bruckmühl, all of Fed. Rep. of Germany, assignors to Spinner GmbH, Elektrotechnische Fabrik, Munich, Fed. Rep. of Germany

Filed Mar. 24, 1988, Ser. No. 173,168

Claims priority, application Fed. Rep. of Germany, Mar. 27, 1987, 3710149

Int. Cl.⁴ H01H *3/42*

U.S. Cl. 200—501 8 Claims



1. A switch drive for a rotary switch; comprising:

a casing provided with an internal toothing;

an input shaft supported in said casing;

a lever fixedly connected to said input shaft and supporting a pinion meshing with said internal toothing for transmitting rotation of said input shaft to said pinion;

a switch drive shaft;

transferring means for transmitting movement of said pinion onto said switch drive shaft, wherein said lever is movable between two end positions and is provided with at least one cam; and

contact means directly actuated by said cam in each of said end positions.

4,880,950

CONTROL SWITCH

Steven R. Carson, Upper Saddle River, N.J.; Raymond T. Griffin, and Scott A. Spear, both of San Antonio, Tex., assignors to Lightolier, Inc., Secaucus, N.J.

Filed Feb. 23, 1988, Ser. No. 160,358

Int. Cl.⁴ H01H *15/00;* H01C *10/44*

U.S. Cl. 200—547 9 Claims

9. A control switch comprising:

a frame;

a printed circuit board;

a variable resistor having a sliding contact means, said variable resistor being mounted on said printed circuit board,

a slide arrangement placed within said frame, said slide arrangement comprising:

- a slide base;
- a slide topper; and
- means for slidably connecting said slide topper to a front side of said slide base whereby said slide topper essentially rides flat against said slide base, said connecting means being totally concealed when viewed from said front side of said slide base, said connecting means further coupling said slide topper to said variable resistor so that said connecting means moves said sliding contact means on said variable resistor;

a button member for on-off control of an electrical load, said button member placed within said frame, adjacent to said slide arrangement;

a light source attached to said printed circuit board;

an electrical contact switch mounted on said printed circuit board;

circuit means connecting said electrical contact switch to said variable resistor whereby said electrical contact switch changes operative states between enabling and disabling said variable resistor; and

means coupling said button member to said electrical contact switch mounted on said printed circuit board, said coupling means further transmitting light from said light source to said button member, whereby said button member may be located in the dark.

4,880,951

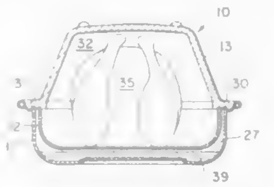
FOOD PREPARATION KIT FOR USE IN COOKING FOOD IN MICROWAVE OVEN OR IN THERMAL OVEN

Melvin L. Levinson, Colonia, N.J., assignor to General Housewares Corporation, Stamford, Conn.

Filed Jun. 3, 1988, Ser. No. 201,606

Int. Cl.⁴ H05B *9/06*

U.S. Cl. 219—10.55 E 35 Claims



35. A cooking kit for use in a microwave oven and for use in a thermal oven and on a thermal range, comprising:

(a) an imperforate metal pot having a first base surface, upwardly extending first said walls and a rim at the top of said first side walls; a ceramic coating covering the inner surface of said imperforate metal pot;

(b) a food supporting metal element having a second base surface; a plurality of perforations in the said second base surface, said perforations being of such size as to permit the flow of gas and liquids through the perforations but to preclude or substantially minimize passage of microwaves through the perforations;

(c) a cover having a microwave-transmissive region and being engageable with the said rim of said imperforate metal pot;

said food-supporting metal element being of such size to fit within said imperforate metal pot; support means for supporting the said second base surface above the said first base surface; whereby the second base surface and the said first base surface define a shielded space substantially entirely surrounded by metal and perforated metal from which microwave energy is substantially excluded;

a vapor-confining food cooking chamber below said cover and above the said second base surface.

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4,880,952

HEAT COOKING OVEN HAVING FLAT HEATER UNITS ON THE OUTSIDE OF THE WALLS THEREOF

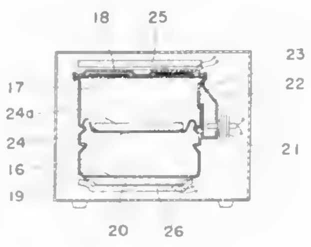
Kazumi Hirai, Nabari; Mitsuo Akiyoshi, Nara; Yoshio Mitsumoto, Kashihara, and Ichiroh Hori, Yamatokoriyama, all of Japan, assignors to Matsushita Electrical Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 251,951, Sep. 29, 1988, abandoned, which is a continuation of Ser. No. 71,528, Jul. 8, 1987, abandoned, which is a continuation of Ser. No. 853,219, Apr. 17, 1986, abandoned. This application Mar. 24, 1989, Ser. No. 328,772

Claims priority, application Japan, Apr. 17, 1985, 60-81666; Apr. 30, 1985, 60-93046; May 14, 1985, 60-101852

Int. Cl.⁴ H05B *6/64*

U.S. Cl. 219—10.55 B 2 Claims



1. A heat cooking apparatus comprising:

a heating chamber for accommodating food material to be heated therein and having a front opening and metal walls defining all but one of the remainder of the walls of said heating chamber, said metal walls each having an outwardly turned flange along the edge thereof at the location of said one wall of the chamber;

a heater carrying wall constituting said one wall of said chamber and having the peripheral edge engaged with the flanges of the said metal walls, said heater carrying wall being of metal and having a layer of black non-metallic self-cleaning material which has a high heat emissivity of at least 0.5 coated thereon on the surface thereof facing the interior of said heating chamber;

a flat heater unit on the side of said heater carrying wall facing away from the interior of said heating chamber, said heater unit having a plurality of thin sheets of an electric insulator material having good heat resistance at the temperatures necessary for cooking food within said heating chamber, one of said sheets being positioned on the side of said heater unit toward said heater carrying wall and a resistance heater constituted by at least one heating wire on the side of said one sheet away from said heater carrying wall, the heating wire being mounted between said thin sheets for giving the heater unit a flat shape;

a retainer plate over the thin sheet remote from said heater carrying wall and having flanges overlying the edge of said heater carrying wall which is against the flanges of said metal walls;

fastening means fastening said flanges on said metal walls, the edge of said heater carrying wall and said flanges on said retainer plate together for mounting said heater carrying wall on said metal walls to complete said heating chamber and for holding said retainer plate firmly against said flat heater unit to hold said flat heater unit against said heater carrying wall; and

means for supplying microwave radiation into said heating chamber.

4,880,953

METHOD OF RECHARGING A HEAT PACK BY MICROWAVE ENERGY

Charles F. Manker, Chicago, Ill., assignor to Prism Technologies, Inc., Chicago, Ill.

Filed Dec. 23, 1988, Ser. No. 289,559

Int. Cl.⁴ H05B *6/64*

U.S. Cl. 219—10.55 M 3 Claims

1. In the method of recharging a flexible plastic pouch heat pack characterized by a sealed flexible plastic pouch which contains a supercoolable aqueous salt solution in its substantially crystallized solid form and a free-floating metallic activator for initiating crystallization, said pouch having no internal welds between opposing sides of said pouch which define confined spaces that are capable of significantly impeding movement of said activator or the movement of solution within the pouch when the solution is in at least partially liquid form thereby impeding the transfer of heat within the liquid and melting solid during recharging, the step of contacting said pack with a source of microwave energy sufficient to raise the temperature of said solution to the point at which it changes from a substantially solid phase to a liquid phase.

4,880,954

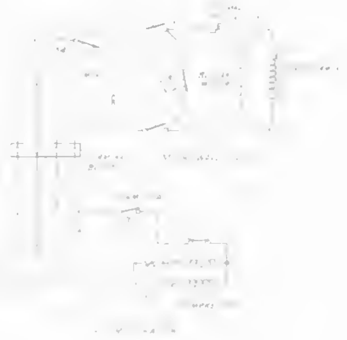
COMBINED REFRIGERATOR AND MICROWAVE OVEN WITH TIMED OVERLOAD PROTECTION

Robert P. Bennett, 49 Francis Wyman Rd., Burlington, Mass. 01803, and Kunimitsu Ozaki, 721 Mikan Dr., Richmond, Ind. 47374

Filed Jun. 3, 1988, Ser. No. 201,903

Int. Cl.⁴ H05B *6/68*

U.S. Cl. 219—10.55 M 3 Claims



1. In a method of operating a compressor of a refrigerator and a magnetron of a microwave oven, said refrigerator and microwave oven being combined in a single cabinet, the improvement comprising the steps of:

providing said microwave oven with manually settable means for timing supply of operating power to said magnetron for different, selectable periods of time;

setting said timing means according to each desired period of operation of said magnetron;

starting and operating said timing means according to said setting; and

preventing operation of said refrigerator compressor by and during said operating of said timing means.

4,880,955

BAKING OVEN HAVING A LIGHTING DEVICE WITH A LOW VOLTAGE AND/OR HALOGEN BULB

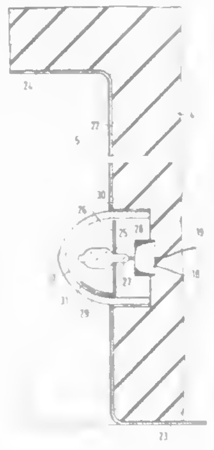
Karl Nitzinger, Traunreut; Josef Gerl, Palling; Herbert Steiner, Traunstein, and Helmut Hess, Traunreut, all of Fed. Rep. of Germany, assignors to Bosch-Siemens Hausgeräte GmbH, Munich, Fed. Rep. of Germany

Filed Dec. 18, 1987, Ser. No. 134,930

Claims priority, application Fed. Rep. of Germany, Dec. 18, 1986, 3643371

Int. Cl.⁴ H05B *6/64; F21V 33/00*

U.S. Cl. 219—10.55 R 21 Claims



1. Baking oven, comprising an electrical cooking device operating on normal household voltage, at least one boundary wall defining a baking space, at least one lighting device each including a first part in the form of a 12 volt halogen bulb, a second part in the form of an electrical connection for said bulb, and a lamp socket disposed on said at least one boundary wall having means for receiving said bulb in said lamp socket from inside said baking space with said bulb protruding substantially completely into said baking space, said boundary wall having an opening formed therein for receiving and closely surrounding one of said parts of said lighting device.

4,880,956

DEVICE FOR RADIAL MACHINING AND WELDING ELEMENT

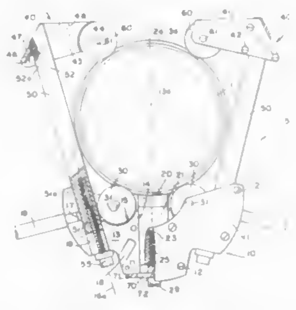
Pierre Mazoyer, Chanoz Chatenay, France, assignor to Orbital Sarl, Meximieux, France

Filed Sep. 23, 1987, Ser. No. 100,320

Claims priority, application France, Sep. 24, 1986, 86 13634

Int. Cl.⁴ B23K *9/225*

U.S. Cl. 219—60 A 17 Claims



1. A device for radial machining a tubular body comprising:

a tool support adapted and configured to be placed around said tubular body;

said tool support driven in rotation around said tubular body;

said support comprising four rollers;

said support comprising a main body having an axis of symmetry and a central part;

an opening in the central part thereof for receiving a tool;

two guide rollers fastened to said main body, each guide roller being placed on one side of the axis of symmetry;

two guide carriages;

a guide roller mounted on each guide carriage;

means for modifying the position of said guide carriages in relation to said main body as a function of the diameter of said tubular body;

wherein each of said guide rollers is provided with a groove, each groove determining two elastic wings;

each guide roller adapted and configured to be placed onto lips on said tubular body with elastic deformation of said wings, and to be centered on a joint face of said tubular body.

4,880,957

WIRE-CUT ELECTRICAL DISCHARGE MACHINE WITH ELECTRIC SHOCK PREVENTER

Toshiyuki Aso, Hino, and Hiroshi Hosoda, Hachioji, both of Japan, assignors to Fanuc Ltd., Yamanashi, Japan

PCT No. PCT/JP88/00338, § 371 Date Nov. 29, 1988, § 102(e) Date Nov. 29, 1988, PCT Pub. No. WO88/07429, PCT Pub. Date Oct. 6, 1988

PCT Filed Apr. 1, 1988, Ser. No. 298,606

Claims priority, application Japan, Apr. 2, 1987, 62-79667

Int. Cl.⁴ B23H *7/04*

U.S. Cl. 219—69.12 3 Claims

1. A wire-cut electrical discharge machine having a means for preventing an accident due to an electric shock, wherein said machine guides an electrode wire which is fed from an electrode wire supply reel, and to which an electric power is supplied from an electric power source via an electric power supply member, and runs to an electrode wire collection section through an electrospark machining area in which a workpiece is machined by an electrospark between the workpiece and the electrode wire, to the electrode wire collection section by means of a roller device disposed just before the electrode wire collection section, said means comprising:

a safety circuit for stopping an electric power supply from said electric power source by a current signal;

a conductive base plate made of a conductive material supporting said roller device;

an insulating layer disposed between and electrically insulating said conductive base plate and a machine body of said wire-cut electrical discharge machine to which said conductive base plate is attached; and

a lead wire for leading a current leaking from said electrode wire to said conductive base plate, to said safety circuit.

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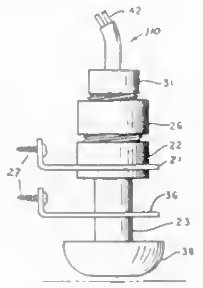
4,880,958
TORCH SUPPORT FOR PLASMA CUTTING SYSTEM

James A. Conley, Meadville, Pa.

Continuation of Ser. No. 042,058, Apr. 24, 1987, Pat. No. 479,265, and a continuation-in-part of Ser. No. 895,495, Aug. 11, 1986, abandoned, which is a continnation of Ser. No. 713,045, Mar. 8, 1985, Pat. No. 4,633,055. This application Aug. 1, 1988, Ser. No. 226,449

Int. Cl.⁴ B23K *9/00*

U.S. Cl. 219—121.39 **12 Claims**



1. A support for a plasma cutting torch comprising an upper bracket bearing and a torch tube,
   said torch tube having a torch bearing fixed in its lower end,
   a torch having a sleeve along a portion of its length,
   said sleeve being slidably received in said torch tube,
   said torch resting on said torch bearing,
   lower bracket bearing adapted to be attached to a plasma cutting system and shoulder on said upper bracket bearing supporting said torch tube,
   said torch having a tip,
   a ski cup on the lower end of said torch tube adapted to be moved over work supported on said plasma cutting system whereby said tip of said torch is maintained in a predetermined r lation to work supported on said system.

4,880,959
PROCESS FOR INTERCONNECTING THIN-FILM ELECTRICAL CIRCUITS

Thomas H. Baum, San Jose; Paul B. Comita, Menlo Park, and Robert L. Jackson, San Jose, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 26, 1988, Ser. No. 263,103

Int. Cl.⁴ B23K *26/00*

U.S. Cl. 219—121.85 **7 Claims**

1. A process for interconnecting thin-film electrical circuits, said process comprising the steps of: (a) partially ablating the metallurgy at the interconnection points by means of a pulsed laser, and (b) depositing metal to form an interconnection of the desired dimensions.

4,880,960
CONTINUOUS VACUUM EVAPORATION DEVICE FOR METAL

Olivier Remondiere, Ramonville St Agne; Patrick Bourquin, Merignac, and René Pailler, Cestas, all of France, assignors to Centre National d'Etudes Spatiales, Paris, France

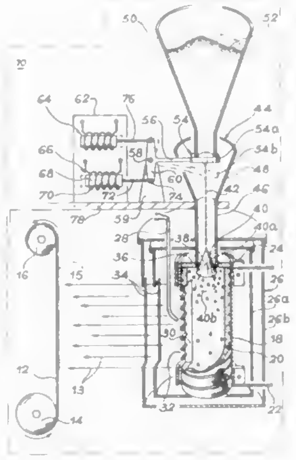
Filed Mar. 7, 1988, Ser. No. 165,079

Claims priority, application France, Mar. 6, 1987, 87 03092

Int. Cl.⁴ C23C *14/26*

U.S. Cl. 219—273 **7 Claims**

1. Apparatus for evaporation of a metal in a vacuum chamber, said apparatus comprising:
   a crucible wherein the crucible includes in one of its walls, at least one evaporation opening having dimensions that are sufficiently small so that metal particles in the crucible cannot escape, said evaporation opening comprises a window closed by a screen, said screen having a mesh with dimensions that are sufficiently small so that the metal particles in the crucible cannot pass through said mesh;
means for introducing metal particles into the crucible wherein said means for introducing comprises a supply opening, different from said evaporation opening, located in a wall of the crucible and means for at least partially sealing said supply opening during a specified length of time, said means for at least partially sealing said supply opening comprises a valve movable between a closed position in which it seals the supply opening of said crucible and an open position;
wherein said means for introducing the metal into the crucible comprises;



a reservoir located a distance from said crucible and having an opening allowing passage of said metal particles;
means for guiding the metal particles from said reservoir to said crucible;
a closure means movable between a closed position in which it closes said reservoir opening and an open position in which it does not close said reservoir opening; and
means for controlling the opening and closing of said valve and said closure means; and
means for causing evaporation of the metal particles in the crucible.

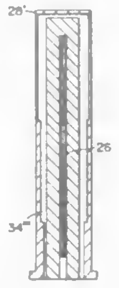
4,880,961
APPARATUS FOR HEATING YARN

James E. Duncan, Richmond, Va., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 2, 1988, Ser. No. 162,965

Int. Cl.⁴ H05B *3/42*

U.S. Cl. 219—388 **8 Claims**



8. A yarn heating element for use with an apparatus for drawing nylon yarn that includes at least one rotating feed roll and at least one rotating draw roll mounted on a frame for conveying the yarn at a yarn velocity, said draw roll having a surface speed higher than the surface speed of the feed roll to draw yarn conveyed from said feed roll to said draw roll, said yarn heating element being positioned to contact said yarn after leaving said feed roll and before contacting said draw roll to heat said yarn as it is drawn, said yarn heating element comprising: an elongated cylindrical core connected at one of its ends to said frame, said core having a central bore therein; an elongated electrical heater positioned in said bore; a sleeve mounted rotatably to said core, said sleeve being telescoped over said core defining a concentric space between said sleeve and said core, means for rotating said sleeve at a surface velocity less than the yarn velocity and means for energizing said heater, said yarn heating element further comprising: said sleeve having an inside diameter that varies along its length whereby the width of said concentric space varies along the length of the heating element to vary the temperature profile of the sleeve along its length.

4,880,962
ELECTRICAL DEVICE

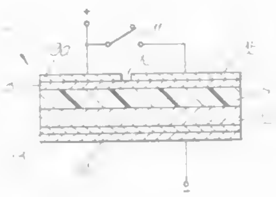
Jean-Marie E. Nolf; Jan L. M. F. G. Vansant, both of Korbeek-Lo, Belgium, and Michael L. Jensen, Cary, N.C., assignors to Raychem Corporation, Menlo Park, Calif.

Filed Feb. 24, 1988, Ser. No. 160,055

Claims priority, application United Kingdom, Feb. 24, 1987, 8704232

Int. Cl.⁴ H05B *3/36*

U.S. Cl. 219—549 **7 Claims**



1. An electrical heater in strip form, which comprises:
(a) a conductive strip heating element comprising a conductive polymer composition;
(b) a first electrode in strip form lying on a first surface of said strip and running along said strip;
(c) a second electrode in strip form lying on said first surface of said strip and running along said strip, said second electrode being spaced apart from said first electrode;
(d) a third electrode lying on a second surface of said strip opposite said first surface and running along said strip;
(e) means by which the first and second electrodes can be connected together;
(f) means by which the first and/or second electrodes can be connected to a first polarity of a source of electrical power; and
(g) means by which said third electrode can be connected to a second polarity of said source of electrical power;
the electrical widths of the first electrode being from 30-50% of the electrical width of the third electrode.

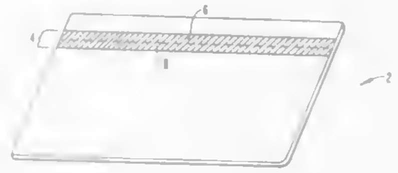
4,880,963
ENCODING MAGNETIC CARDS

Toshihiko Yamashita, The Third Industry Co. Ltd., 4-43, 2-Chome, Shibata Kita-Ku, Osaka, Japan

Filed Nov. 13, 1987, Ser. No. 120,279

Int. Cl.⁴ G06K *7/08*

U.S. Cl. 235—449 **7 Claims**



1. A system for encoding information on a magnetisable substrate, in which said substrate has first and second parallel tracks, on said first track, binary information is encoded with shorter spaces between changes of field representing one of the two binary digits and longer spaces representing the other of the two binary digits, and said second track is encoded with binary information in such a way that any change of field substantially coincides with a change of field in the first track and one digit of the binary pair is represented by no change in field on the second track as the field changes on the first track whilst the other binary digit is represented by a change of field on the second track coincidentally with a change of field on the first track.

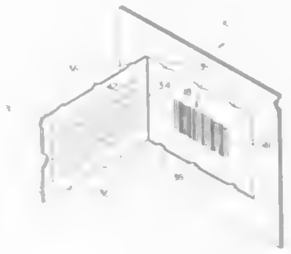
4,880,964
SCANNABLE FRAUD PREVENTING COUPON

Patrick J. Donahue, Bell Mead, N.J., assignor to Beatrice Foods Co., Chicago, Ill.

Filed Jun. 14, 1984, Ser. No. 620,741

Int. Cl.⁴ G06K *7/10*

U.S. Cl. 235—462 **16 Claims**



1. An optically scannable fraud preventing coupon or the like, comprising:
(a) a first panel having a plurality of parallel bars providing a first coded optically scannable image on a first surface thereof;
(b) a second panel secured to said first panel and including at least a portion thereof overlying said first coded scannable image;
(c) said first coded scannable image being scannable through said first and second panels;
(d) a series of parallel lines providing a second coded optically scannable image scannable through said first and second panels is disposed on said at least a portion of said second panel juxtaposed to said first image and the lines of said second image are angularly disposed relative to said bars for altering said first coded scannable image by creating a composite scanning image preventing scanning of

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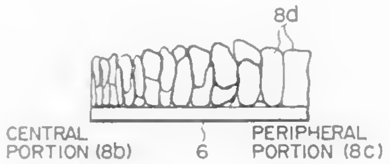
said first coded scannable image through said secured together first and second panels;
(e) means for indicating removal of said at least a portion of said second panel from overlying relation with said first coded scannable image; and,
(f) means for removing said overlying at least a portion of said second panel to thereby permit scanning of said first coded scannable image.

4,880,965
X-RAY IMAGE INTENSIFIER HAVING VARIABLE-SIZE FLUORESCENT CRYSTALS

Hiroshi Kubo, and Atsuya Yoshida, both of Ootawara, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Mar. 11, 1988, Ser. No. 167,245
Claims priority, application Japan, Mar. 13, 1987, 62-56741; Dec. 11, 1987, 62-311870
Int. Cl.⁴ H01J *31/50*
U.S. Cl. 250—213 VT 10 Claims

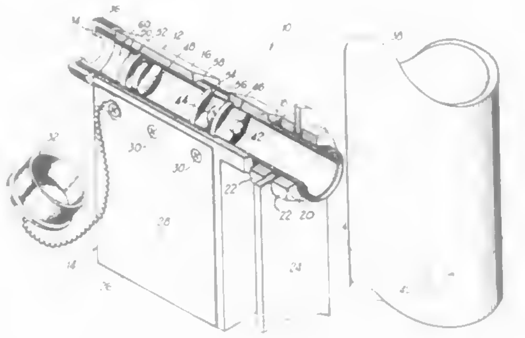


1. An X-ray image intensifier comprising:
a vacuum envelope having an input window for receiving X-rays;
an input fluorescent screen having a peripheral portion and a central portion, for converting X-rays received through said input window into light, said peripheral portion of said input fluorescent screen having a larger light transmission coefficient than said central portion;
a photoelectric layer for converting the light into electrons;
electrode means constituting an electron lens for accelerating and converging the electrons; and
an output fluorescent screen for converting the electrons, which were accelerated and converged by said electron lens, into a visible image.

4,880,966
TACHOMETER SENSOR USING A LENS SYSTEM TO A IN SENSING THE ROTATIONAL SPEED OF AN OBJECT

Jeffrey A. Goodrich; Charles M. Poe, Jr., and Jeffrey A. Prsba, all of San Diego, Calif., assignors to Scientific-Atlanta, Inc., Atlanta, Ga.
Filed Apr. 8, 1988, Ser. No. 179,644
Int. Cl.⁴ G01D *5/34*
U.S. Cl. 250—231 R 20 Claims

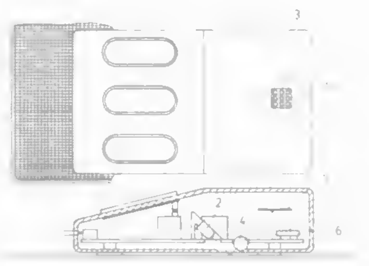
1. A tachometer sensor for sensing rotational speed of an object, comprising:
(a) a light emitting device for illuminating the object;
(b) at least one reflective mark on the object for reflecting light rays emitted by the light emitting device;
(c) an objective lens located in the path of the light rays emitted by the light emitting device and reflected by the mark;
(d) a beam splitter located in the path of light rays reflected by the objective lens and oriented substantially perpendicular to that ray-path, for reflecting a first portion of the rays in a direction substantially opposite and parallel to that in which the first portion of rays strikes the beam splitter and for allowing a second portion of the rays to pass through;
(e) a photoelectric sensor located at substantially the focal point of the first portion of the light rays reflected by the objective lens and reflected by the beam splitting means;
(f) an ocular lens located in the path of the second portion of light rays reflected by the objective lens and penetrating the beam splitting means, for aligning the second portion of rays so that one using the sensor can view the mark on the rotating object through the sensor in order to align the sensor;



(g) driver means for supplying power to the light emitting device; and
(h) circuit means for conditioning and providing for output the signals produced by the photoelectric sensor.

4,880,967
COORDINATE VECTOR METHOD FOR OPTICAL INPUT DEVICE

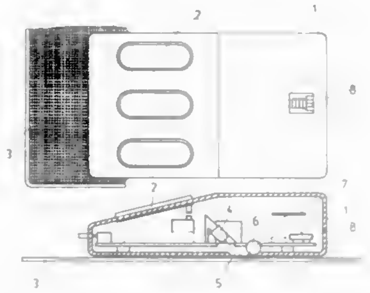
Fong Kwang-Chien, 3F-2 No. 3, Alley 6, Lane 118, Sec. 1, Chung Yang Road, Tu Cheng Hsiang, Taipei, Hsien, Taiwan
Continuation of Ser. No. 67,534, Jun. 29, 1987, abandoned. This application Apr. 25, 1989, Ser. No. 344,522
Int. Cl.⁴ G01V *9/04*
U.S. Cl. 250—221 3 Claims



1. An optical input device for a cursor or the like based on the coordinate vector method comprising:
a moveable light source, a coordinate plane having a grid thereon and a matrix of light sensitive units adapted to be coupled to a central processing unit said grid having a predetermined pitch of equal spacing both in the horizontal direction and perpendicular thereto each line in said grid having a predetermined width, said matrix having light sensitive units of a predetermined dimension horizontally and perpendicular thereto and a predetermined separation distance, the dimension and distance being related to the pitch and line width of the grid;
means for directing the light source onto the plane and for projecting a grid image;
magnifying means and reflecting means for magnifying the image and directing it onto the matrix, said grid being dimensioned relative to the matrix so that each light sensitive unit will emit either a high or a low signal depending on the intensity of the light striking it the relationship between the dimension and distance between light sensitive units and the pitch and line width of the grid in the image being such that all light sensitive units never emit either a high or a low signal at any position of said light source relative to said grid so that the signals emitted can be interpreted by a central processing to calculate distance and direction as the light source moves across said plane.

4,880,968
OPTICAL INPUT CURSOR DEVICE USING OPTICAL GRID MEANS

Fong Kwang-Chien, 3F-2 No. 3, Alley 6, Lane 118, Sec. 1, Chung Yang Road, Tu Cheng Hsiang, Taipei Hsien, Taiwan
Continuation of Ser. No. 64,250, Jun. 19, 1987, abandoned. This application Mar. 23, 1989, Ser. No. 328,731
Int. Cl.⁴ G09G *3/02*
U.S. Cl. 250—221 1 Claim

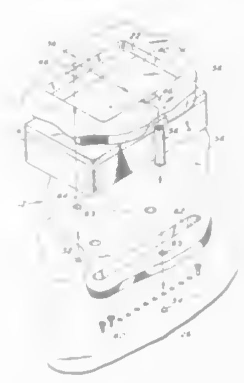


1. An optical cursor control comprising:
a reflection plane with parallel lines of constant width and pitch on its surface in horizontal and perpendicular directions of a definite ratio to reflect light;
a light source, lens, reflector and receiver to transmit light in the form of an image to the said reflection plane and reflect light therefrom, amplify it and transmit it, said receiver adapted to receive the image from said reflector,
said receiver having a plurality of mutually spaced optical grids disposed in horizontal and perpendicular directions, each of the optical grids having a wafer in the bottom thereof to give corresponding High and Low output signals upon receipt of bright light and shadow the image covering all grids and defining 3/2 of the pitch in the horizontal and perpendicular directions the optical grids on said receiver in a horizontal direction adapted to provide an electronic signal in response to change of light from horizontal displacement of the light source, and the optical grids on said receiver in a perpendicular direction adapted to provide an electronic signal in response to change of light from perpendicular displacement of the light source on the reflection plane; and
electronic signal processing means for receiving signals from said grids and amplifying, rectifying and computing to determine distance and direction of displacement and for controlling movement of a cursor responsive thereto.

4,880,969
OPTICAL TOUCH PANEL WITH HEAT SINK

George S. Lawrie, Mississauga, Canada, assignor to Litton Systems, Inc., Beverly Hills, Calif.
Continuation of Ser. No. 858,364, Apr. 30, 1986, abandoned. This application Aug. 26, 1988, Ser. No. 198,284
Int. Cl.⁴ G09G *1/00;* **G01V** *9/04*
U.S. Cl. 250—221 14 Claims

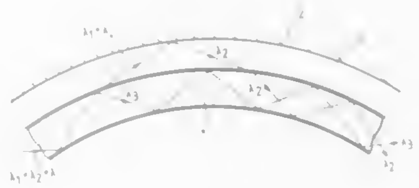
1. A programmable touch panel, comprising:
a plurality of keyswitches for entry of data, each keyswitch comprising;
a light source for providing a light beam along a first optical path;
first means for reflecting the light beam so that the light beam traverses a second optical path;
second means for reflecting the light beam so that the light beam traverses a third optical path generally parallel to the first optical path and opposite in direction thereto; and
detector means for producing a detector signal in response to light traversing the third optical path;
a display module for displaying information input via the keyswitches;



a printed circuit board upon which the plurality of keyswitches and the display module are mounted; and
a heat sink adjacent the printed circuit board, the heat sink including a plurality of openings therethrough such that the first and third optical paths for each keyswitch pass through corresponding openings in the heat sink.

4,880,970
OPTICAL SENSORS FOR MEASUREMENT OF A VARIABLE PARAMETER

Gordon R. Jones, 17 Brimstage Close, Heswall, Wirral, Merseyside, England
Filed Feb. 22, 1988, Ser. No. 158,668
Claims priority, application United Kingdom, Feb. 26, 1987, 8704540
Int. Cl.⁴ H01J *5/16, 40/14*
U.S. Cl. 250—227 8 Claims



1. Apparatus for measuring a parameter comprising a polychromatic light source; a detector; an optical fibre situated so as to transmit polychromatic light from the source to the detector, the optical fibre being disposed such that a change in the parameter to be measured causes a movement of the fibre to vary the amount of microbending such that the portion of the polychromatic light which is no longer constrained within the optical fibre is varied, there being provided a member against which at least a portion of the optical fibre is urged by a change in the parameter to be measured; and analysis means for interpreting the output of the detector in terms of the parameter to be measured, the detector comprising at least first and second photo-responsive elements, the responsivity with respect to wavelength of the first element being different from that of the second, and means for supplying signals from the photo-responsive elements to the analysis means, the analysis means including means for calculating, from the signals from

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the phot-responsive elements, the color of the polychromatic light transmitted by the optical fibre as represented by two or more parameters on the Chromaticity (CIE) Diagram.

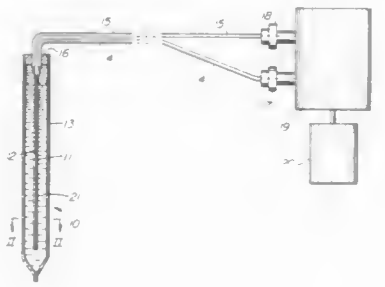
4,880,971
FIBER OPTIC LIQUID LEVEL SENSOR

Lee A. Danisch, 422 Northumberland Street, Fredericton, New Brunswick, Canada E3B 3K4

Filed Feb. 17, 1988, Ser. No. 156,660

Int. Cl.⁴ H01J *5/16;* G01F *23/00*

U.S. Cl. 250—227 14 Claims



1. A liquid level sensor comprising:

an elongate housing having at least part of its periphery of light transmitting material;

an elongate light emitter and an elongate light collector extending side-by-side in said housing;

a light transmitting medium in the housing and surrounding said emitter and said collector;

means for feeding light to the emitter and means for feeding light from the collector;

the index of refraction of said light transmitting medium being less than the index of refraction of said light transmitting material of said housing; and

the index of refraction of said light transmitting medium being one of less than or equal to the index of refraction of the liquid the level of which is being sensed.

4,880,972
FIBER-OPTIC MEASURING APPARATUS USING LUMINESCENT MATERIAL

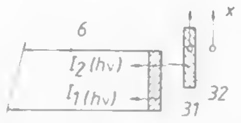
Torgny Brogardh, and Christer Ovren, both of Västerås, Sweden, assignors to ASEA Aktiebolag, Västerås, Sweden

Continuation of Ser. No. 550,731, Nov. 14, 1983, which is a continuation of Ser. No. 218,949, Dec. 22, 1980. This application Mar. 4, 1985, Ser. No. 708,095

Claims priority, application Sweden, Dec. 28, 1979, 7910715

Int. Cl.⁴ G01P *1/00;* G01N *21/64;* G02B *5/14*

U.S. Cl. 250—231 R 4 Claims



1. Fiber-optic measuring apparatus for measuring physical characteristics of an object, comprising:

a first member with at least one photoluminescent material and generating a first optical output signal from light emitted from said at least one photoluminescent material;

a second member with at least one another photoluminescent material and generating a second optical output signal from light emitted therefrom;

electrical processing means including light source means for generating light to be radiated onto said first and second members and means responsive to said first and second optical output signals to produce respective first and second electrical signals representative thereof, the spectral distribution of said light source means including the excitation spectra of said first and second photoluminescent materials;

at least one optical fiber for conducting light generated by said light source means to said first and second members and for conducting said first and second optical output signals to said responsive means;

at least one of said first and second photoluminescent materials emitting said first or second optical output signal such that the intensity thereof is a measuring signal representative of the relative movement of said first and second members in accordance with the variation in the characteristic of the object being measured, the other of said first or second output optical signal being a reference signal; and

said electronic processing means further including means responsive to said first and second electrical signals for producing an output signal representative of the characteristic being measured.

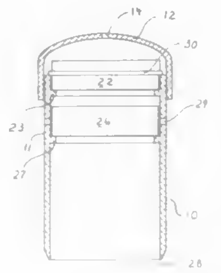
4,880,973
GROUND RADON FLUX SAMPLING DEVICE

John D. Reynolds, Star Route, Box 124, Topping, Va. 23169

Filed Jul. 15, 1988, Ser. No. 219,632

Int. Cl.⁴ G01V *5/00*

U.S. Cl. 250—253 12 Claims



1. A radon sampling apparatus for measurement of radon gas emanating from the ground by adsorption of said radon gas on an adsorption medium within a canister, said apparatus comprising:

holder means having a sidewall for defining an internal region, said holder means having a first opening disposed in its top end and a second opening disposed in its bottom end for admission of said radon gas into said internal region, said canister being at least partially insertable into said holder means proximate said top end of said holder means;

a cap for capping said first opening, said cap having a vent opening therein;

first retainer means formed on said sidewall of said holder means for retaining said canister therein;

second retainer means formed on said sidewall of said holder means for retaining a replaceable filter means and in said internal region below said canister; and,

venting means formed in said sidewall of said holder means to provide communication between said internal region and ambient atmosphere through said filter means.

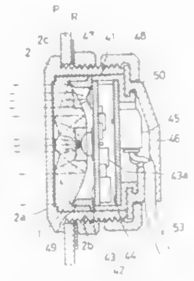
4,880,974
PHOTOELECTRIC SENSOR EMPLOYING CUSTOM LENS MEMBER

Masami Yamakawa, Yokohama, Japan, assignor to Wako Corporation, Kanagawa, Japan

Filed Oct. 14, 1988, Ser. No. 258,197

Int. Cl.⁴ H01J *3/14*

U.S. Cl. 250—216 10 Claims



1. In a photoelectric sensor comprising: a connecting cylinder for connecting an optical body integrally to a circuit block disposed therebehind; a transparent resinous casing for incorporating therein said optical body and said circuit block interconnected with each other; an electric wire connector disposed on an outer surface of said circuit block; and a cover body for covering a rear opening of said transparent resinous casing for incorporating therein all aforesaid components,

said optical body being made of a transparent resinous material and having a nearly crescent-shaped section, one surface of said optical body being formed as a circular objective surface, while the other surface thereof being formed as a circular convex surface;

said circular objective surface being, on a central part thereof, provided with a first recess having a concave bottom surface of a diameter one-third smaller than said circular convex surface and a convex protrusion as an objective lens;

said circular convex surface being, upon a central part thereof, provided with a second recess having a convex bottom surface of a slightly smaller diameter than said concave bottom surface as a collective lens means so as to oppose to said first recess;

said concave bottom surface in said first recess excluding said convex protrusion being formed as a second reflective surface by a vacuum evaporating plating means;

said circular convex surface excluding said second recess being formed as a first reflective surface by a vacuum evaporating plating means and being, on its circumference, provided with a skirt means;

said first reflective surface being, on a surface thereof, provided with an opening to transmit a luminous flux of a motion indicating lamp toward said circular objective surface;

said circuit block being, on a front surface thereof, provided with a photoelectric converting element and said motion indicating lamp, while, on both surfaces thereof, provided with a circuit substrate and a terminal substrate.

4,880,975
FINE ADJUSTMENT MECHANISM FOR A SCANNING TUNNELING MICROSCOPE

Tadashi Nishioka; Takao Yasue, and Hiroshi Koyama, all of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed Aug. 9, 1988, Ser. No. 229,981

Claims priority, application Japan, Apr. 22, 1988, 63-98230

Int. Cl.⁴ H01J *37/04*

U.S. Cl. 250—306 14 Claims

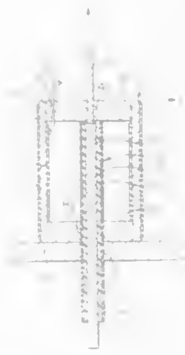
1. A fine adjustment mechanism for use in a scanning tunneling microscope, comprising:

a mounting member;

a cylindrical piezoelectric element fixed to said mounting member at one end thereof;

an electrode means provided on each of the inner and outer walls of said piezoelectric element;

a probe provided on the other end of said piezoelectric element in such a manner that said probe extends outwardly on the central axis of said piezoelectric element;



an electrically conductive member provided on the central axis of said piezoelectric element, one end of said conductive member being electrically connected to said probe within said piezoelectric element and the other end thereof extending to the outside of said piezoelectric element through the side of said piezoelectric element at which said piezoelectric element is fixed to said mounting member; and

a shielding means provided on the outer periphery of said conductive means for electrically shielding said conductive means.

4,880,976
SECONDARY ELECTRON DETECTOR FOR USE IN A GASEOUS ATMOSPHERE

James F. Mancuso, Rowley; William B. Maxwell, Dracut, both of Mass., and Gerasimos D. Danilatos, North Bondi, Australia, assignors to ElectroScan Corporation, Danvers, Mass.

Continuation of Ser. No. 52,700, May 21, 1987, Pat. No. 4,785,182. This application Nov. 10, 1988, Ser. No. 269,635

The portion of the term of this patent subsequent to Nov. 15, 2005, has been disclaimed.

Int. Cl.⁴ H01J *37/252*

U.S. Cl. 250—310 1 Claim

1. A device for generating, amplifying and detecting secondary electrons from a surface of a sample which comprises:

(a) a vacuum envelope having a pressure limiting aperture;

(b) a charged particle beam source located within the vacuum envelope and capable of emitting a charged particle beam;

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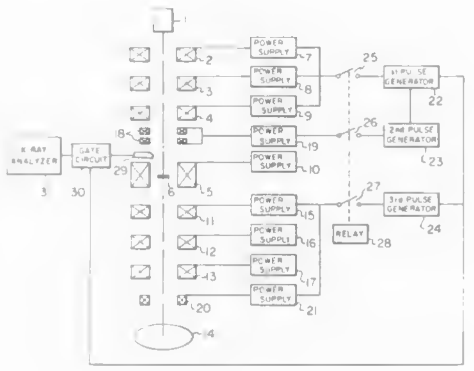
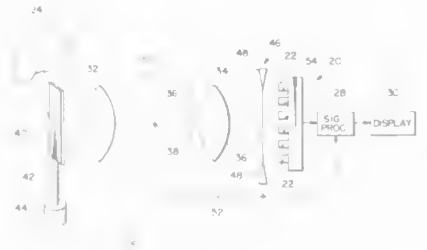
(c) focusing means located within the vacuum envelope and capable of directing a charged particle beam emitted by the charged particle beam source through the pressure limiting aperture;
(d) sample platform means, disposed outside the vacuum envelope, capable of maintaining a sample enveloped in gas in registration with the pressure limiting aperture such that a surface of the sample may be exposed to a charged particle beam emitted from the charged particle beam source and directed through the pressure limiting aperture;
(e) an electrode positioned within between about 1 and about 200 mm from the sample platform means such that secondary electrons emitted from a surface of a sample located on the sample platform means and exposed to a charged particle beam emitted from the charged particle bean source may come into contact with it;
(f) a voltage source, connected between the electrode and an electrical ground, capable of maintaining an electrical potential difference between the electrode and the sample platform means of greater than about 50 volts and less than about 2000 volts, the electrode potential being of a predetermined magnitude relative to the sample platform means potential so as to accelerate secondary electrons emitted from a surface of a sample located on the sample platform means with an electric field of sufficient strength so as to cause emitted secondary electrons to collide with gas molecules and produce negative charge carriers which can subsequently produce additional negative charge carriers through multiple collisions with other gas molecules resulting in a number of negative charge carriers greater than and proportional to the number of original secondary electrons, the strength of the electric field being sufficiently low so as to avoid catastrophic electrical discharging or arcing;
(g) a current amplifier operatively connected within the device to amplify the secondary electrons; and
(h) current detection means connected between the current amplifier and an electrical ground.

4,880,977
ANALYTICAL ELECTRON MICROSCOPE
Ken Tomita, and Seiichiro Mori, both of Tokyo, Japan, assignors to JEOL Ltd., Tokyo, Japan
Filed May 23, 1988, Ser. No. 197,458
Claims priority, application Japan, May 28, 1987, 62-133073
Int. Cl.⁴ H01J *37/26*
U.S. Cl. 205—311 **7 Claims**



1. An analytical electron microscope comprising:
an electron gun for producing an electron beam;
a condenser lens means for directing the electron beam onto a specimen;
an imaging lens means for projecting an image of the specimen onto a fluorescent screen; and
a control means which causes the condenser lens means to switch back and forth between a first operation mode, in which the focusing lens means finely focuses the beam irradiating on the specimen such that a bright spot appears on the fluorescent screen, and a second operation mode in which the focusing lens means defocuses the beam irradiating on the specimen such that a transmission electron microscope image appears on the fluorescent screen, the electron beam being switched between the two states at intervals shorter than the persistance time of the fluorescent screen whereby the location of the finely focussed beam appears as a bright spot upon the transmission electron microscope image enabling the positioning of the finely focussed beam upon a feature of the specimen represented by the image.

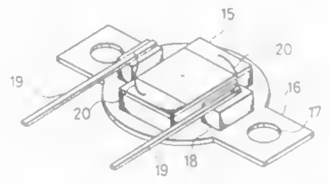
4,880,978
RESONANT RADIATION PROTECTOR
David B. Cohn, Torrance, and Gregory R. Sasaki, Long Beach, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.
Filed Nov. 25, 1988, Ser. No. 275,878
Int. Cl.⁴ H01L *25/00*
U.S. Cl. 250—332 **14 Claims**



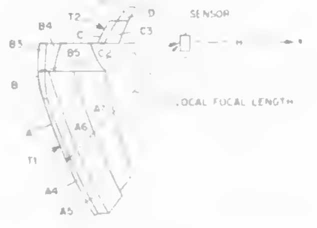
12. An imaging system comprising an array of detectors for viewing scene radiation emitted by a scene;
focusing optics for directing rays of the scene radiation to image upon said array of detectors;
means coupled to output terminals of said detectors for combining signals of said detectors to provide an image of said scene;
shutter means optically coupled to said focusing optics for protection of said detectors from laser radiation lying within a frequency band of the scene radiation, said shutter means terminating propagation of said laser radiation from said focusing optics to said array of detectors;
a cell having windows transparent to the scene radiation;
lasing material disposed within said cell, said focusing optics directing rays of said scene radiation and rays of said laser radiation along a path through said windows;
electrode means including electrodes for converting said laser radiation to fluorescent radiation; and
a further detector offset from said radiation path for detecting said fluorescent radiation, an output signal of said fluorescent detector being connected to said shutter means for activating said shutter means to terminate propagation of said laser radiation to said array of detectors.

4,880,979
INFRARED RAY DETECTOR
Yasuaki Yoshida, Itami, Japan, assignor to Mitisubishi Denki Kabushiki Kaisha, Japan
Filed Feb. 23, 1988, Ser. No. 158,735
Claims priority, application Japan, Feb. 27, 1987, 62-45635
Int. Cl.⁴ G01J *5/20*
U.S. Cl. 250—338.4 **10 Claims**

1. An infrared detector comprising:
a semiconductor infrared ray detection element disposed on a high resistivity substrate for generating an electrical signal at a pair of electrical terminals in response to incident infrared rays; and
a metal submount including a metal plate, two electrical lead terminals electrically insulated from each other and from said plate, said plate containing at least one hole for provisionally mounting the submount on a dewar with a fastener passing through the hole, wherein said element is soldered to said plate and the electrical terminals of said element are respectively electrically connected to the lead terminals of said submount.

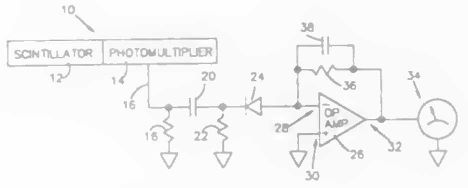


4,880,980
INTRUSION DETECTOR
Kurt Müller, Stäfa, and Hansjürg Mahler, Hombrechtikon, both of Switzerland, assignors to Cerberus AG, Switzerland
Filed Aug. 10, 1988, Ser. No. 230,795
Claims priority, application Switzerland, Aug. 11, 1987, 3083/87
Int. Cl.⁴ G01J *5/08*
U.S. Cl. 250—353 **12 Claims**



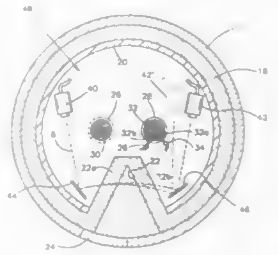
1. An intrusion detector comprising at least one infrared sensor and a focusing reflector wherein said reflector comprises a plurality of reflector groups, each group having at least one reflector segment, each of said segments having a focal point at said sensor and said segments being interconnected to form a composite reflector structure each of said segments having an optical axis with a selected vertical and horizontal angular displacement, said vertical and horizontal displacements being selected to focus infrared energy from a corresponding plurality of detector zones in a desired region of protection onto said sensor, said zones being staggered in both horizontal and vertical angular displacement, each of said segments having a focal length approximately inversely proportional to the size of the vertical angular displacement of the corresponding optical axis, each of said reflector groups corresponding to a range of vertical angular displacements, the vertical angular displacements within each group being different for different horizontal angular displacements to uniformly distribute said detector zones within said desired region of protection.

4,880,981
LOW LEVEL RADIATION MEASUREMENT DEVICE
Joseph G. Johnston, Newbury, Ohio, assignor to Bicron Corporation, Newbury, Ohio
Filed Mar. 11, 1988, Ser. No. 166,627
Int. Cl.⁴ G01T *1/17*
U.S. Cl. 250—369 **6 Claims**



1. A device for measuring low level environmental radiation, for example in the 0–200 μrem/h or equivalent range, comprising:
a detector on which ionizing radiation can impinge, the detector, in response to impinging radiation events, providing a pulse signal indicative of said detected impinging events as a function of time and indicative of the energy of each of said detected impinging events, said pulse signal including a direct current noise component not caused by said impinging radiation events; and
means for blocking said direct current noise component so as to filter from said pulse signal said direct current noise component, a remaining portion of said pulse signal indicating the average energy fluence of said detected impinging events as a function of time.

4,880,982
FLUID INDICATOR FOR A CONTAINMENT VESSEL
Harald Hoksaas, Sauda, Norway, assignor to Impex Production & Development A/S (Ltd.), Sauda, Norway
Filed Nov. 17, 1987, Ser. No. 122,049
Int. Cl.⁴ G01N *15/06*
U.S. Cl. 250—577 **11 Claims**



1. A fluid indicator for use in a containment vessel, comprising:
a sensor body movable relative to the vessel;
a drive connected to the body for moving it relative to the vessel;
means for indicating the location of the body relative to the vessel;
a passage in the body through which fluid from the vessel can be viewed;
means including a light emitter in the body for directing a beam through said fluid, and
means including a light sensor in the body for detecting the beam after it passes through the fluid and for producing a signal in response thereto.

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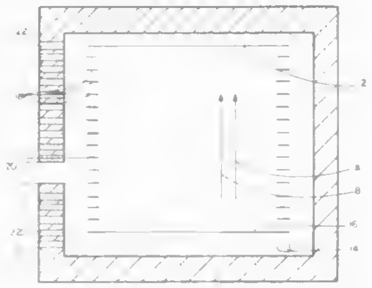
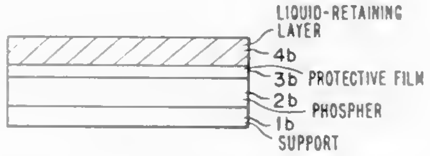
4,880,983
HIGH PRESSURE XENON IONIZATION DETECTOR
John K. Markey, New Haven, Conn., assignor to Yale University, New Haven, Conn.
Filed Mar. 31, 1988, Ser. No. 175,887
Int. Cl.⁴ G01T *1/185;* H01J *47/02*
U.S. Cl. 250—385.1 10 Claims



1. A method for detecting ionization comprising allowing particles that cause ionization to contact high pressure xenon maintained at or near its critical point and measuring the amount of ionization of the xenon.

4,880,984
SHEET-FORM RADIATION-MEASURING INSTRUMENT
Hisashi Shiraishi, Minami-ashigara, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Continuation of Ser. No. 614,670, May 29, 1984, abandoned. This application Jun. 15, 1987, Ser. No. 73,877
Claims priority, application Japan, Jun. 10, 1983, 58-103636
Int. Cl.⁴ G01T *1/20*
U.S. Cl. 250—484.1 5 Claims



1. A sheet-form radiation measuring instrument means for measuring radioactivity of a liquid sample, said instrument means comprising, in order, a liquid-retaining member having a porous structure, a transparent protective film of synthetic polymer material, and a stimulable phosphor member containing a stimulable phosphor.

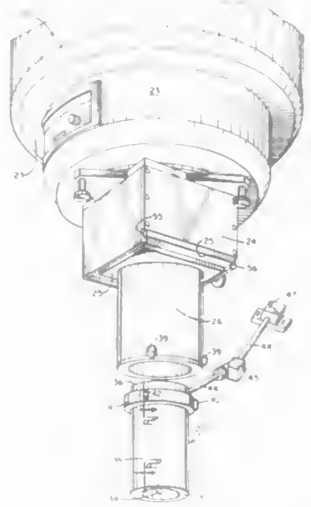
4,880,985
DETACHED COLLIMATOR APPARATUS FOR RADIATION THERAPY
Douglas Jones, 11618 - 20th St. Southeast, Everett, Wash. 98205
Filed Oct. 5, 1988, Ser. No. 253,597
Int. Cl.⁴ H01J *29/46*
U.S. Cl. 250—505.1 6 Claims

1. A separated collimator and alignment apparatus for use with linear electron accelerators having a beam output structure supported by a gantry and an associated patient couch movable in three-dimensional space relative to said gantry, comprising, in combination:

an aperture structure defining an orifice for passage of an electron beam therethrough, said aperture structure being releasably carried by an accelerator collimator tube and said orifice being similarly configured to and not larger than an aperture defined in a patient collimator tube;

the patient collimator tube defining a first medial channel for passage of a coherent electron beam and defining a planar input end facing the aperture structure and an exit end distal therefrom;

an annular positioning ring defining a second medial channel to fit about the periphery of the patient collimator tube, said positioning ring defining first means for attachment to a positioning jig mechanism and second means for releasable and adjustable positional maintenance upon the patient collimator tube;



the positioning jig mechanism having at least two rigid rods joined for articulating motion with said first means at a first end to fastenably interconnect with the positioning ring and said second means at a second end for support on a structure external of an electron accelerator to be serviced; and

an elongate alignment rod carried by a base support disk releasably positionable in a first inner accelerator facing end of the patient collimator tube to aid axial alignment of the alignment rod with the patient collimator tube.

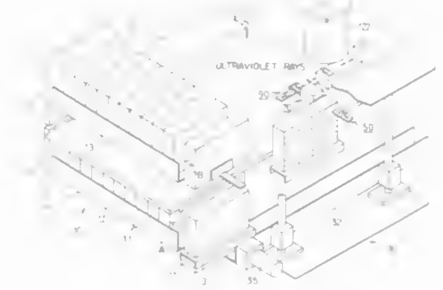
4,880,986
SYSTEM FOR MEASURING RADIATION DOSES USING FLUORESCENT DOSEMETERS
Junji Yamada, Yokohama; Yasushi Mawatari, Shizuoka; Toru Ikegami, Shimada; Koichi Nishio; Motoyuki Sato, both of Shizuoka, all of Japan; Bertram Burgkhardt, Karlsruhe, Fed. Rep. of Germany; Ernst Piesch, Eggenstein-Leopoldshafen, Fed. Rep. of Germany, and Siegfried Ugi, Weingarten, Fed. Rep. of Germany, assignors to Toshiba Glass Co., Ltd., Shizuoka, Japan and Kernforschungszentrum Karlsruhe GmbH, Karlsruhe, Fed. Rep. of Germany
Filed Sep. 28, 1988, Ser. No. 250,245
Claims priority, application Japan, Feb. 18, 1988, 63-34073
Int. Cl.⁴ G01T *1/06*
U.S. Cl. 250—484.1 6 Claims

1. A radiation dose measuring system for measuring a radiation dose with an intensity of fluorescent light emitted due to an excitation of a fluorescent glass element on a fluorescent dosemeter which is exposed with a radiation, said system comprising:

a fluorescent dosemeter including a fluorescent glass element having a fluorescent detection surface, a glass holder having an opening through which said fluorescent detection section is subjected to an exposure and holding the fluorescent glass element, and a capsule for holding the glass holder, said capsule comprising an inner case slidably receiving or withdrawing the glass holder and an outer case slidably receiving the inner case to allow it to be detachably mounted thereon;

at least one magazine capable of receiving a required number of fluorescent dosemeters, said magazine being divided into a predetermined number of segments and the fluorescent dosemeter being adapted to be received in the respective segment;

a magazine conveying device for allowing a predetermined segment of one of magazines fed one by one to be located in a predetermined position;

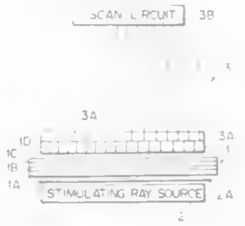


a fluorescent dosemeter take-out device for taking the fluorescent dosemeter from the segment of the magazine located in a take-out position and for returning it back to the magazine;

a fluorescent glass element setting device which, in the taken fluorescent dosemeter, moves the fluorescent glass element to permit it to be located in a predetermined measuring position; and

a dose measuring means for subjecting the fluorescent glass element, which is set in a measuring position, to an ultraviolet ray and for measuring an intensity of fluorescent light emitted from the fluorescent glass element excited.

4,880,987
RADIATION IMAGE READ-OUT APPARATUS
Yuichi Hosoi, and Kenji Takahashi, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Continuation of Ser. No. 727,988, Apr. 29, 1985, abandoned. This application Jul. 22, 1988, Ser. No. 222,299
Claims priority, application Japan, Apr. 27, 1984, 59-85722
Int. Cl.⁴ G01T *1/20*
U.S. Cl. 250—484.1 5 Claims



1. A radiation image read-out apparatus comprising:

(i) an elongated stimulating ray source (2) for linearly emitting stimulating rays to a stimulable phosphor sheet (1) carrying a radiation image stored therein.

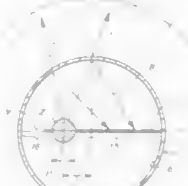
(ii) an elongate photodetector comprising a photoelectric conversion device (3A) axially aligned with and separate from said stimulating ray source and positioned to stand face to face with a portion of said stimulable phosphor sheet exposed to said stimulating rays emitted by said stimulating ray source, said photoelectric conversion device comprising a line sensor (3).

(iii) a wavelength converting phosphor layer (1D) positioned between said line sensor and a stimulable phosphor layer (1B) of said stimulable phosphor sheet, said wavelength converting phosphor layer emitting fluorescent light having a wavelength distribution within a sensitive wavelength range of said line sensor upon reception of light emitted by said stimulable phosphor sheet in proportion to the stored radiation energy when said stimulable phosphor sheet is exposed to said stimulating rays, said fluorescent light impinging upon said line sensor.

(iv) a long wave cut-off filter layer (1C), disposed between said stimulating ray source and said wavelength converting phosphor layer, for enabling read-out of radiation stored in said stimulable phosphor sheet, and

(v) a read-out means (3B) for reading out the output of said line sensor in a line by line manner.

4,880,988
LIGHT AND WEATHERING TESTING APPARATUS
Jürgen Witt, Hainburg, Fed. Rep. of Germany, assignor to W. C. Heraeus GmbH, Hanau, Fed. Rep. of Germany
Filed Mar. 16, 1988, Ser. No. 168,985
Claims priority, application Fed. Rep. of Germany, Aug. 12, 1987, 3726803
Int. Cl.⁴ G21K *3/00*
U.S. Cl. 250—504 R 19 Claims



1. Light and weathering testing apparatus having

a radiation source (2) for irradiating a test sample (T), said source emitting light in the ultraviolet (UV), visible and infrared (IR) spectral ranges;

a cylindrical filter (1) defining a cylinder axis (4), surrounding the source (2) and spaced therefrom, said filter (1) being transparent for UV and visible radiation, and reflecting IR radiation; and

IR radiation absorbent means (5) for absorbing said IR radiation reflected from said filter; further comprising, in accordance with the invention,

means for directing substantially all of said reflected IR radiation onto absorbent means (5, 9) located along a single plane, namely a spatial arrangement in which said radiation source is located eccentrically with respect to the cylinder axis (4) of the filter (1), but in a plane which includes the filter cylinder axis (4), said radiation source (2, 3) and said filter cylinder axis (4) thereby defining a reflected-radiation-receiving plane; and

wherein the IR radiation absorbent means (5) extends along said reflected-radiation-receiving plane from an inside wall of the cylindrical filter (1) up to the radiation source (2) part-diametrically across the cylindrical filter (1).

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4,880,989

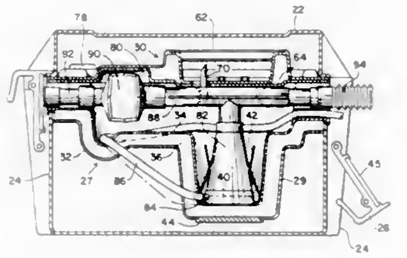
SHIELDING CONTAINER FOR RADIOAEROSOL DELIVERY APPARATUS

Thomas W. Burnett, Bellevue; Thomas R. Clary, Seattle, both of Wash.; Vincent F. Iannuzzelli, Califon, N.J., and Carl P. Kremer, Jr., Darien, Conn., assignors to Mallinckrodt, Inc., St. Louis, Mo.

Division of Ser. No. 817,808, Jan. 10, 1986, Pat. No. 4,782,828, which is a continuation of Ser. No. 477,277, Mar. 21, 1983, abandoned. This application Nov. 18, 1987, Ser. No. 88,427

Int. Cl.⁴ G21F *5/00*

U.S. Cl. 250—506.1 4 Claims



1. A shielding containing comprising:

an outer shell;

an inner shell supported within said outer shell, said inner shell being formed with an inner wall and outer wall defining a space therebetween for receiving radiation shielding material, said inner wall including means conforming generally to the contours of a radioaerosol source and a transport means for supporting said radioaerosol source and said transport means; and

a removable cover formed with radiation shielding material and including means conforming generally to the contours of the radioaerosol transport means to be positioned thereunder, said inner wall and said cover defining means including at least one opening between them to permit the transport means placed therein to be in fluid communication with the surrounding atmosphere when in use.

4,880,990

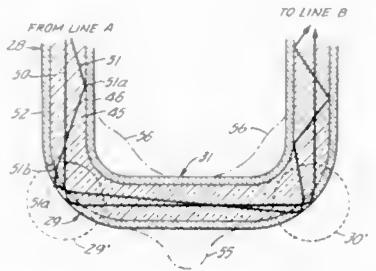
OPTICAL LIQUID-LEVEL SENSING APPARATUS

Joseph D. Rando, Dudley, Mass., assignor to Imo Industries, Inc., Princeton, N.J.

Filed Jun. 13, 1988, Ser. No. 205,932

Int. Cl.⁴ G01N *21/41*

U.S. Cl. 250—577 24 Claims



1. As an article of manufacture, a sensor element for mounting to a container to make an optical measurement of a particular level of liquid in the container, said sensor element comprising a tubular base housing having external means of fixed mounting to the container, said housing having an inner end for liquid exposure and an outer end for external communication of liquid-level intelligence, an elongate length of glass core of first refractive index with a cladding of second refractive index that is less than said first refractive index, said length having at least one bend exposed for liquid contact at the inner end of said housing, there being at least some straight extent of the cladded core with tangential continuity to the respective limits of said at least one bend, said straight extent attracting droplet formation away from said bend, said length otherwise extending in sealed relation within said housing, the outer radius of curvature of said bend being at least the diameter of the cladded core, and means at the respective ends of said length for completing a light circuit through said length.

4,880,991

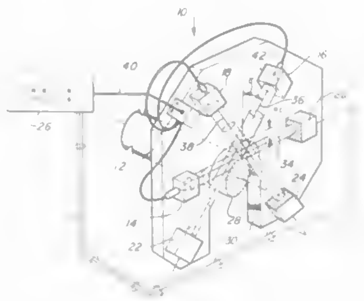
NON-CONTACT DIMENSIONAL GAGE FOR TURNED PARTS

Albert J. Boehnlein, Ypsilanti, and Kevin G. Harding, Ann Arbor, both of Mich., assignors to Industrial Technology Institute, Ann Arbor, Mich.

Continuation of Ser. No. 118,456, Nov. 9, 1987, abandoned. This application May 5, 1989, Ser. No. 349,957

Int. Cl.⁴ G01J *3/45*

U.S. Cl. 250—560 27 Claims



1. An optical gage for evaluating the diameter of a workpiece comprising:

light source means for presenting first, second, and third light beams oriented along mutually nonparallel optical axes which are generally tangent to said workpiece, said light beams having a width less than the diameter of said workpiece and are positioned to be partially interrupted by the outside surface of said workpiece wherein the included angle formed by the tangent points between said light beams and said workpiece is less than 180°,

detector means for receiving said partially interrupted light beams and outputting a signal proportional to the extent of said interruption of each of said light beams, and

processing means coupled to said detector means for receiving said detector means signals and outputting data representative of said interruption thereby evaluating the curvature of said workpiece.

4,880,992

NON-CONTACTING MEASURING SYSTEM FOR PRECISION CHARACTERISTICS, PARTICULARLY OF INDUSTRIAL ROBOTS

Erich Niedermayr, Haar, and Robert Griessbach, Siegertsbrunn, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jun. 6, 1988, Ser. No. 202,305

Claims priority, application Fed. Rep. of Germany, Oct. 8, 1987, 3734086

Int. Cl.⁴ G01N *21/86*

U.S. Cl. 250—561 11 Claims

1. A non-contacting measuring system for acquiring the position of two coordinate systems with respect to one another, comprising:

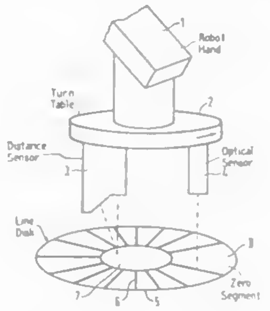
a stationary coordinate system lying in a measuring plane, said stationary coordinate system having x, y and z axes;

a moving coordinate system;

said measuring system having a turn table with a position sensor, a distance sensor and an optical sensor, said measuring system located in said moving coordinate system;

a planar measuring subject lying in said measuring plane; and

a data processing system connected to said distance and optical sensors for acquiring output signals therefrom and calculating the distance of the turn table from the measuring plane and of the tilt about the x axis and the y axis and the rotation about the z axis and the displacement in the x direction and in the y direction in response to output signals received from said measuring subject.



4,880,993

BUILDING HEAT AND POWER SYSTEM

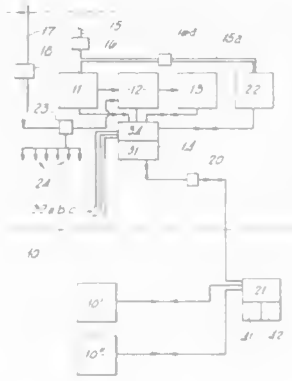
Julian P. Packer, Cheadle Hulme, and Sam Almozaffar, Near Northwich, both of England, assignors to Combined Power Systems Limited, Manchester, England

Filed Jun. 14, 1988, Ser. No. 206,503

Claims priority, application United Kingdom, Jun. 27, 1987, 8715131

Int. Cl.⁴ F02D *29/06*

U.S. Cl. 290—2 27 Claims



1. A combined space heat and electrical power producing system for a building and comprising in combination:

a prime mover,

an electrical generator connected to be driven by the prime mover and adapted to provide the electrical power to the building,

heat recovery means in heat exchange relationship with the prime mover to recover waste heat therefrom and adapted to provide the space heat to the building,

a control arrangement adapted automatically to control the prime mover,

the control arrangement including an intelligent knowledge-based system scheduling maintenance operations and predicting failures of components and of the system.

4,880,994

METHOD AND DEVICE FOR THE REDUNDANT CONTROL OF A POWER CONTROLLED UNIT

Frecon Richard, Chavanay, France, assignor to La Telemecanique Electrique, France

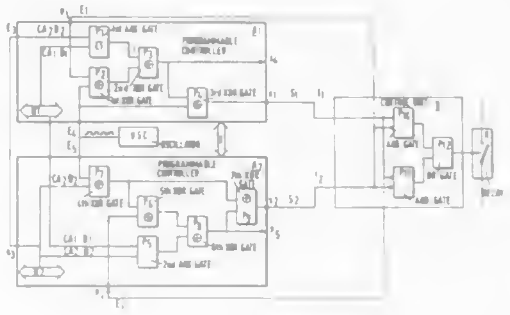
PCT No. PCT/FR87/00223, § 371 Date Feb. 17, 1988, § 102(e) Date Feb. 17, 1988

PCT Filed Jun. 17, 1987, Ser. No. 166,121

Claims priority, application France, Jun. 18, 1986, 86 09148

Int. Cl.⁴ H01J *19/82;* **H03K** *17/56, 9/06, 5/22*

U.S. Cl. 307—219 5 Claims



1. A redundant logic circuit comprising first and second logic circuits each having a first input to which a binary logic signal is applied and an output, and a third logic circuit having inputs connected to the respective outputs of the first and second logic circuits, said first and second logic circuits respectively providing first and second output binary logic signals which are first and second respective functions of said binary logic signal and said third logic circuit providing a third output binary logic signal which is a third logic function of both said first and second output signals, the output signal of said third logic circuit being, in a normal mode of operation in which no failure is present in the redundant logic circuit, identical to said binary logic signal, whereas, when a failure is present in the redundant logic circuit, said failure having the effect of forcing to a predetermined logic level the output of either one of said first and second logic circuits, the other one of said first and second logic circuits will provide an output signal which is either identical to said binary logic signal, or the logic complement of said binary logic signal, said first logic circuit having a second input which is connected to the output of said second logic circuit and said second logic circuit having a second input which is connected to the output of said first logic circuit and said first and second logic functions together forming the inverse function of said third function.

4,880,995

ELECTRICALLY ISOLATED MOSFET DRIVE CIRCUIT

Satoshi Mori, Takarazuka, and Gourab Majumdar, Itami, both of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 802,367, Nov. 27, 1985, abandoned. This application Aug. 18, 1988, Ser. No. 233,855

Claims priority, application Japan, Nov. 29, 1984, 59-253286

Int. Cl.⁴ A03K *3/01, 3/26*

U.S. Cl. 307—270 5 Claims

1. A circuit for driving a switching element in response to an input signal pulse from a driving signal generator, comprising:

isolation means, responsive to said input signal pulse, for producing a pulse signal electrically isolated from said input signal pulse;

first signal generator means, responsive to said electrically isolated pulse signal, for generating a first signal synchronous with said electrically isolated pulse signal;

second signal generator means comprising a monostable multivibrator, responsive to a falling edge of said electrically isolated pulse signal, for generating a second signal

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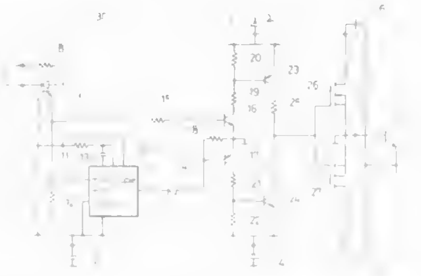
synchronous with the falling edge of said electrically isolated pulse signal;

third signal generator means, responsive to said second signal, for generating a third signal synchronous with said second signal; and



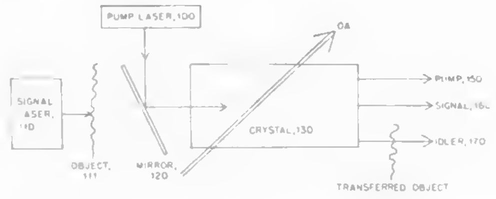
fourth signal generator means, responsive to said first and third signals, for generating an ON signal and an OFF signal, respectively, said ON signal activating said switching element and said OFF signal disabling said switching element.

4,880,996
OPTICAL PARAMETRIC AMPLIFYING VARIABLE SPATIAL FILTER

Phillip R. Peterson; Athanasios Gavrielides, and David A. Cardimona, all of Albuquerque, N. Mex., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Aug. 19, 1988, Ser. No. 234,451
Int. Cl.⁴ H03F *7/00*

U.S. Cl. 307—425 1 Claim



1. An optical parametric amplifier system which illuminates an object of interest using a signal beam and parametrically mixes the signal beam from the object with a pump beam to produce an idler beam which maintains an image of the object of interest, said optical parametric amplifier system comprising:

a signal laser which illuminates said object of interest with said signal beam, said signal beam having a first frequency of value ω_s wherein said first frequency of said signal laser has a wavelength of about 1.0×10^{-4} cm;

a pump laser which produces said pump beam with a second frequency of value ω_p such that said second frequency of said pump laser has a wavelength of about 353×10^{-7} cm and wherein said pump laser produces said pump beam with an adjustable amplitude;

a beam combiner which produces a combined output signal which contains said pump beam and said signal beam by receiving and combining said pump beam from said pump laser with said signal beam reflected from said object of interest; and

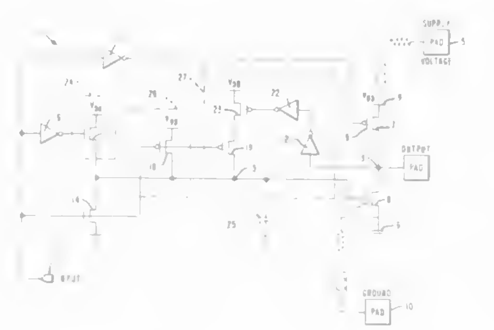
a nonlinear crystal which receives said combined output signal of said beam combiner, and which produces said idler beam by parametrically mixing the signal beam from said beam combiner which is contained in the combined output signal produced by the beam combiner with the pump beam such that said idler beam has a down conversion frequency ω_i which has a value which equals the value of the second frequency of said pump beam minus the first frequency of said signal abeam, said idler beam maintaining the image of the object of the object of interest in a transferred scene represented in a down converted frequency, and wherein said nonlinear crystal is a potassium dihydrogen phosphate crystal with a crystal length of about 5 cm and an optical gain of about 1.0/cm, and wherein said idler beam has an idler amplitude that is proportional to said adjustable amplitude of said pump beam so that said idler amplitude may be adjusted by variations in said adjustable amplitude in said pump beam, and wherein said potassium dihydrogen phosphate crystal has a cutoff frequency of about 500 radians/cm which enables said potassium dihydrogen phosphate crystal to act as an amplifying variable spatial bandpass filter as it produces said idler beam which has a tuneable amplitude which is adjusted with a direction of propagation determined by a paraxial phase match which is adjusted by varying an optical axis of the potassium dihydrogen phosphate crystal with the direction of propagation, and said idler beam produced by said potassium dihydrogen phosphate crystal during down conversion has a wavelength of about 545.0×10^{-7} cm, said potassium dihydrogen phosphate crystal thereby performing as a parametric downconverter.

4,880,997
LOW NOISE OUTPUT BUFFER CIRCUIT

David P. Steele, Colorado Springs, Colo., assignor to NCR Corporation, Dayton, Ohio

Filed Aug. 18, 1988, Ser. No. 233,506
Int. Cl.⁴ H03K *17/16, 19/094, 5/13*

U.S. Cl. 307—443 10 Claims



1. A CMOS circuit for providing a controlled transition rate output voltage at as output node in response to an input voltage on an input node and operable from common power supply and ground nodes, comprising:

first and second field effect transistors of respective first and second impurity type connected in electrical series to have the first transistor connected at one source/drain to the power supply node, the second transistor connected as one source/drain to the ground node, and the common connection of the remaining source/drains defining the output node;

a third field effect transistor of the second impurity type having a first source/drain connected to the power supply node and the second source/drain connected to the gate electrode of the second transistor and having its gate electrode connected to receive input node voltage based signals, the third transistor characterized in that the current conducted through the third transistor cuts off when its second source/drain voltage reaches a material fraction of the power supply node voltage;

a fourth field effect transistor of first impurity type connected between the power supply node and gate electrode of the second transistor and having its gate electrode connected to receive input node voltage based signals, the fourth field effect transistor characterized by materially lower current conduction capability than the third transistor;

means for pulling the gate electrode of the second transistor to the voltage of the power supply node responsive to the output node voltage approaching the ground node voltage; and

means for enabling the first field effect transistor to a conductive state complementary to that of the second field effect transistor in response to input node voltage based signals.

4,880,998
BIPOLAR TRANSISTOR AND CMOS TRANSISTOR LOGIC CIRCUIT HAVING IMPROVED DISCHARGE CAPABILITIES

Masahiro Ueda, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 8, 1988, Ser. No. 179,299
Claims priority, application Japan, Sep. 8, 1987, 62-225003
Int. Cl.⁴ H03K *17/04*

U.S. Cl. 307—446 6 Claims

1. A logic circuit formed by combination of a bipolar transistor and a CMOS transistor, said logic circuit comprising:

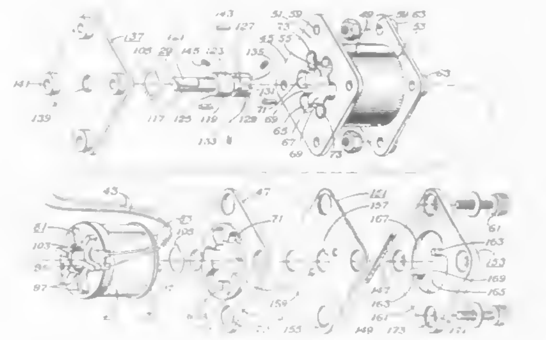
an input terminal;
an output terminal;
a high-potential power source;
a low-potential power source;
a PMOS transistor having a gate connected to said input terminal and a source connected to said high-potential power source;
a first resistor having an end connected to the drain of said PMOS transistor and another end connected to said output terminal:
a first NPN transistor having a base connected to a node between said first resistor and said PMOS transistor, a collector connected to said high-potential power source and an emitter connected to said output terminal;
a first NMOS transistor having a gate connected to said input terminal and a drain connected to said output terminal;
a second resistor having an end connected to the source of said NMOS transistor and another end connected to said low-potential power source;
a second NPN transistor having a base connected to a node between said second resistor and said first NMOS transistor, a collector connected to said output terminal and an emitter connected to said low-potential power source; and
a second NMOS transistor having a gate directly connected to said input terminal, a drain connected to said output terminal and a source connected to said low-potential power source respectively.

4,880,999
SOLENOID

Robert A. Williams, Fort Worth, and Jeffrey W. Herron, Arlington, both of Tex., assignors to Williams Instruments, Inc., Fort Worth, Tex.

Filed Mar. 7, 1989, Ser. No. 319,665
Int. Cl.⁴ H02K *33/00*

U.S. Cl. 310—37 15 Claims



1. A solenoid, comprising:

(a) a coil having conductive windings wrapped around a central opening, said central opening extending between first and second ends, said coil having inner and outer portions with said central opening extending through said inner portion;
(b) outer core means for providing an outer magnetic circuit portion on the outer portion of said coil, said outer core means having plural poles, each of said poles being separated from the adjacent poles by gaps;
(c) inner core means for providing an inner magnetic circuit portion in the inner portion of said coil, said inner core means being located within said coil central opening, said inner core means comprising rotor means;
(d) said rotor means being capable of turning relative to said coil, said rotor means having plural armatures located in said gaps between said poles such that each armature is between two of said poles, said rotor means being movable between a first position where there is an air gap between each of said armatures and said adjacent poles, and a second position where said armatures contact one of said respective adjacent poles, said rotor means moving from the first position to the second position when said coil is electrically energized;
(e) spring return means for returning said rotor means to the first position from the second position when said coil is deenergized;
(f) a shaft having an inner end and an outer end, said shaft inner end being located within said coil central opening such that said shaft outer end protrudes out of said coil, said shaft outer end being adapted to be coupled to a load.
(g) said shaft being made of a material with a relatively high magnetic permeability;
(h) drive means for driving said shaft when said rotor means moves from the first position to the second position, said drive means coupling said shaft to said rotor means when said rotor means moves from the first position to the second position, said drive means disengaging and allowing said shaft to remain stationary when said rotor means moves from the second position to the first position.

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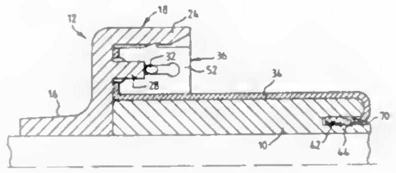
ARMATURE FOR AN ELECTRIC MOTOR

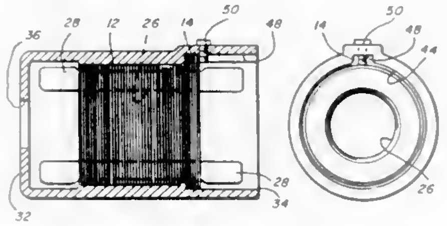
Patrick S. Wang, Repulse Bay, Hong Kong, assignor to Johnson Electric Industrial Manufactory, Ltd., Chaiwan, Hong Kong
Filed Jul. 29, 1987, Ser. No. 78,994
Claims priority, application United Kingdom, Mar. 16, 1987, 8706167; Apr. 13, 1987, 8708781
Int. Cl.⁴ H02K *13/04*
U.S. Cl. 310—234 10 Claims



1. An armature for an electric motor, comprising a winding having connector portions, a plurality of commutator segments, each commutator segment having an integral terminal provided with a slot which straddles and grips a respective connector portion, a commutator base for supporting said commutator segments, and a terminal support separate from the base, aid support having a plurality of housings in which the terminals are located.

4,881,001
STATOR LAMINATE RETAINER ASSEMBLY

Navinchandra R. Patel, and Robert A. Schwarz, both of Rockford, Ill., assignors to Sundstrand Corporation, Rockford, Ill. Continuation of Ser. No. 161,226, Feb. 17, 1988, abandoned, which is a continuation of Ser. No. 46,843, May 5, 1987, abandoned. This application Sep. 28, 1988, Ser. No. 251,966
Int. Cl.⁴ H02K *1/18, 5/00, 5/04*
U.S. Cl. 310—258 3 Claims



1. In a dynamoelectric machine, the combination comprising:

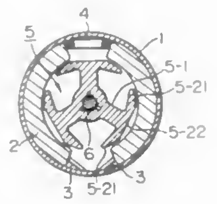
a stator assembly including a plurality of generally circular laminations bonded together in a generally cylindrical stacked array, a given number of laminations being enlarged in diameter substantially 360° thereabout, and at least some of said given number of laminations being further enlarged in diameter over less than 360° in circumference to define a radially outwardly projecting tab-like flange;

housing means having a generally cylindrical bore for receiving the stator assembly, shoulder means extending substantially 360° about the bore for axially abutting one side of said given number of laminations of the stator assembly to prevent axial movement of the stator assembly in at least one direction relative to the housing means, and an axially extending slot in the bore for receiving the flange of the stator assembly and preventing the stator assembly from rotating relative to the housing means; and

readily positionable axial retaining means movably mounted on the housing for radial movement into engagement with the opposite side of the given number of laminations to prevent movement of the stator assembly opposite said one direction.

4,881,002
MINIATURE MOTOR

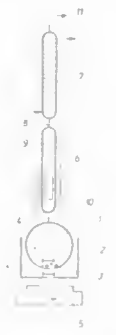
Hitoshi Yamaguchi, Matsudo, Japan, assignor to Mabuchi Motor Co., Ltd., Chiba, Japan
Filed Jun. 10, 1988, Ser. No. 205,196
Claims priority, application Japan, Jun. 19, 1987, 62-94445[U]
Int. Cl.⁴ H02K *1/22*
U.S. Cl. 310—261 6 Claims



1. A miniature motor comprising a stator having permanent magnets constituting a two-pole field, and a rotor having rotor windings wound on a rotor core of a three-pole construction, each rotor core pole of said rotor core is formed in such a manner that the cross-sectional shape of said rotor core pole viewed in a direction normal to a motor shaft is symmetrical with respect to a radial center line of each pole of said rotor core and that at each rotor core pole a gap is formed between said permanent magnet and a predetermined range from said center line of an arc-shaped outer periphery of said rotor core facing said permanent magnet which is larger than a gap formed between said permanent magnet and other ranges of the outer periphery of said rotor core.

4,881,003
METHOD AND DEVICE FOR REDUCING THE WATER CONTENT IN PIEZOELECTRIC GAPO$_4$ CRYSTAL ELEMENTS AND SO PRODUCED CRYSTAL ELEMENTS

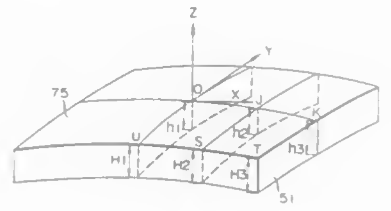
Günter Engel, Leitring; Peter W. Krempl, Graz/Ragnitz; Helmut List, Graz; Uwe Posch, Graz, and Alfred Nitsch, Graz, all of Austria, assignors to Avl Gesellschaft für Verbrennungskraftmaschinen und Messtechnik m.b.H. Prof.Dr.Dr.h.c. Hans List, Graz, Austria
Filed Nov. 10, 1988, Ser. No. 269,794
Claims priority, application Austria, Nov. 11, 1987, 2983/87; Dec. 23, 1987, 3424/87
Int. Cl.⁴ H01L *41/08*
U.S. Cl. 310—311 15 Claims



1. A method of reducing the water content in piezoelectric $GaPO_4$ crystal elements, wherein each of said piezoelectric $GaPO_4$ crystal elements is cut entirely from one uniform growth zone of a $GaPO_4$ raw crystal bar, and is free of any zone boundaries.

4,881,004
COLOR CATHODE RAY TUBE

Masatsugu Inone; Kiyoshi Tokita, both of Fukaya; Toshinao Sone; Takeshi Fujiwara, both of Kumagaya, and Kazunori Nakane, Fukiage, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Aug. 24, 1988, Ser. No. 236,184
Claims priority, application Japan, Aug. 26, 1987, 62-210287; Dec. 11, 1987, 62-311867
Int. Cl.⁴ H01J *29/81, 29/86*
U.S. Cl. 313—408 13 Claims



1. A color cathode ray tube comprising:

a vacuum chamber including a panel, a funnel, a neck, and a tube axis, said panel having a face plate having a substantially rectangular front surface and an inner surface, said funnel having a funnel shape and being contiguous with a skirt of said panel, aid neck being a substantially cylindrical shape and being contiguous with said funnel;

a phosphor screen formed on said inner surface of said face plate;

an electron gun assembly, arranged in said neck, for emitting three electron beams which impinge on said phosphor screen;

deflection means for deflecting the three electron beams;

a shadow mask arranged in said panel to oppose said phosphor screen, said shadow mask including a substantially rectangular effective curved surface and apertures for allowing the three electron beams from said electron gun assembly to pass therethrough, and on which said tube axis is defined as a Z axis, and major and minor-axis directions are respectively defined as X and Y axes having a center through which the Z axis passes as an origin, a radius of curvature at the center of said effective curved surface of said shadow mask in a section taken along on X-Z parallel plane being larger than a radius of curvature at an effective diameter edge portion on the Y axis, and a radius of curvature at an effective diameter edge portion on the X axis being smaller than a radius of curvature at a diagonal effective diameter edge portion; and

supporting means for supporting said shadow mask.

4,881,005
FLAT TYPE DISPLAY DEVICE

Kiyoshi Morimoto; Hiroshi Watanabe; Shigeo Itoh; Yukio Ogawa, and Satoshi Uzawa, all of Mobara, Japan, assignors to Futaba Denshi Kogyo Kabushiki Kaisha, Mobara, Japan
Filed Jul. 8, 1988, Ser. No. 216,350
Claims priority, application Japan, Jul. 14, 1987, 62-176764
Int. Cl.⁴ H01J *29/70*
U.S. Cl. 313—422 11 Claims

1. A flat type display device comprising:

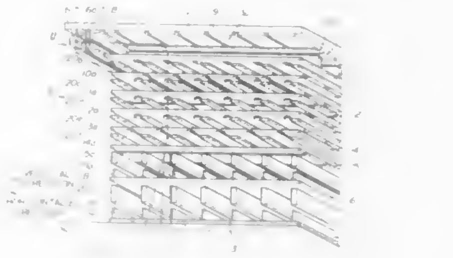
a box-like airtight casing in which electrodes are arranged and of which an interior is evacuated to high vacuum;

a phosphor screen section having phosphor layers deposited thereon to form a display plane; said phosphor layers each emitting light due to impingement of an electron beam thereon;

an electron supply section arranged in said airtight casing so as to be positioned at an end of said airtight casing opposite to said display plane and including an electron source for discharging electron streams in a direction parallel to said display plane and an electron flow guide for guiding said discharged electron streams and turning them toward said display plane at a predetermined position;

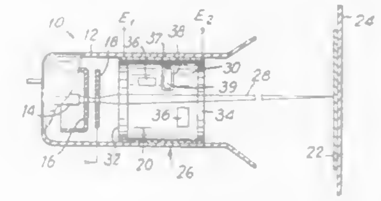
an address electrode section for selecting and controlling a plurality of said electron streams drawn out from said electron supply section by means of at least horizontal and vertical selecting electrodes to form an electron beam and addressing a desired position on said display plane; and

an accelerating electrode section for accelerating said electron beam formed at said address electrode section to impinge it on said phosphor screen section.



4,881,006
METHODS AND APPARATUS FOR POST-ASSEMBLY CUSTOM FINE-TUNING OF AN ELECTRON BEAM CHARACTERISTIC IN A CATHODE RAY IMAGING TUBE

Geoffrey S. M. Hedrick, Malverne, Pa., assignor to Innovative Solutions & Support, Inc., Malverne, Pa.
Filed Nov. 10, 1988, Ser. No. 269,587
Int. Cl.⁴ H01J *9/236, 9/44*
U.S. Cl. 313—450 41 Claims



16. An electrostatic lens operable for focusing an electron beam on a focusing screen in a sealed envelope cathode ray tube, comprising:

a lens element having an axially-defined substantially central opening through which the electron beam passes and to which an electrical potential is operatively applied;

a substantially continuous region on said lens element formed of an electrically resistive material and providing a voltage gradient across said region to generate a substantially uniformly positionally-varying electrostatic field which operates on the electron beam as the beam passes through said lens element opening;

said region having at least a discontinuity lacking said resistive material so as to create a nonuniformity in said substantially uniformly positionally-varying electrostatic field;

said discontinuity being defined with a configuration and at a location of said region predeterminately selected in accordance with the operating characteristics of the particular tube by operating the tube to produce an image on the screen, examining the image, and defining in accordance with said examination of the image a suitable configuration and location for said discontinuity by which the cross-sectional shape of the electron beam is adjusted by the electrostatic field as the beam passes through said lens

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opening to attain a predetermined cross-sectional shape of the beam, whereby said discontinuity provides compensation for tube-to-tube beam focus-affecting variations in the operating characteristics of the tube so as to assure attainment of the predetermined cross-sectional shape to the beam in each particular tube.

4,881,007

COMPACT GAS DISCHARGE TUBE AND A METHOD FOR ITS MANUFACTURE

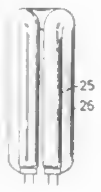
Hans Egelstam, Karlskrona, Sweden, assignor to Lumalampan Aktiebolag, Sweden

Filed Mar. 8, 1988, Ser. No. 165,503

Claims priority, application Sweden, Mar. 23, 1987, 8701184

Int. Cl.⁴ H01J *9/24, 61/32*

U.S. Cl. 313—493 22 Claims



10. A compact gas-discharge lamp tube defining a closed discharge chamber comprising at least two U-shaped main tube components, each of said main tube components being made of glass and each having at least two limbs, a fluorescent layer coated on the inside surface of said lamp tube, a U-shaped connection portion joining said at least two main tube components together at two free limb ends thereof, electrode means provided one at each of the two outer free ends and said lamp tube closed discharge chamber, and the glass thickness of the internal cross-sectional area in said U-shaped connection portion being in the range of about 50% to about 100% of the glass thickness and the cross-sectional area, respectively, of the limbs of said main tube components.

4,881,008

PHOTOMULTIPLIER WITH PLURAL PHOTOCATHODES

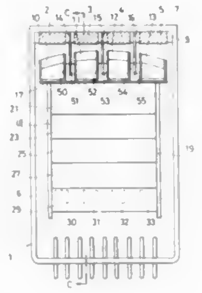
Hiroyuki Kyushima; Kimitsugu Nakamura, and Takahito Kato, all of Shizuoka, Japan, assignors to Hamamatsu Photonics Kabushiki Kaisha, Shizuoka and Research Development Corporation of Japan, Tokyo, both of, Japan

Filed Apr. 18, 1988, Ser. No. 182,517

Claims priority, application Japan, Apr. 18, 1987, 62-95874

Int. Cl.⁴ H01J *43/10*

U.S. Cl. 313—532 8 Claims



1. A photomultiplier for converting an incident light in to an amplified electrical signal, said photomultiplier comprising:

an air-tight enclosure having at the bottom thereof an end face plate for receiving the incident light, said end face plate being uniform in thickness in the longitudinal direction thereof;

a plurality of photocathodes provided on an inner surface of said end face plate, for converting the incident light into photoelectrons;

a plurality of dynodes of multiplying said photoelectrons, provided in common for all of said photocathodes;

a plurality of focusing electrodes provided between said photocathodes and said dynodes, for converging said photoelectrons into said dynodes; and

a plurality of anode electrodes assigned to said photocathodes respectively, for converting multiplied photoelectrons into electrical signals, each of said dynodes having on an inner wall thereof a plurality of electron emitting parts for emitting secondary electrons in response to said photoelectrons and a plurality of isolating parts for preventing said secondary electrons emitted from one of said electron emitting parts from straying into the other electron emitting parts, each of said isolating parts provided between adjacent electron emitting parts.

4,881,009

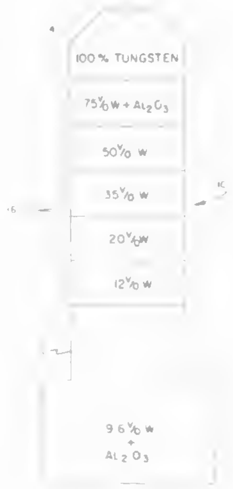
ELECTRODE FOR HIGH INTENSITY DISCHARGE LAMPS

Edmund M. Passmore, Gloucester, Mass., assignor to GTE Products Corporation, Danvers, Mass.

Filed Dec. 5, 1983, Ser. No. 557,812

Int. Cl.⁴ H01J *61/06*

U.S. Cl. 313—631 6 Claims



1. A high intensity discharge lamp electrode comprised of a mixture of a refractory oxide and a metal, said electrode having first and second ends separated by an intermediate body; said first end comprising a low volume percent of said metal and said second end comprising a high volume percent of said metal; said intermediate body comprising gradually increasing amounts of said metal in progression from said first end to said second end.

4,881,010

ION IMPLANTATION METHOD AND APPARATUS

Neil R. Jetter, Palm Beach, Fla., assignor to Harris Semiconductor Patents, Inc., Melbourne, Fla.

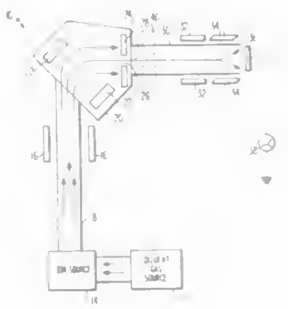
Continuation of Ser. No. 793,233, Oct. 31, 1985, abandoned. This application Jan. 22, 1988, Ser. No. 148,209

Int. Cl.⁴ H01J *7/24*

U.S. Cl. 315—111.81 6 Claims

1. In an ion implantation apparatus including an ion source, ion analyzer, ion acceleration means and deflection means interconnected in a sequential manner, the improvement comprising:

a controllable source of inactive diluent gas interconnected to the ion source so as to provide a means for selecting a concentration of dopant ions and diluent ions provided by the ion source to the ion analyzer, the diluent ions being of different mass than the dopant ions, the ion analyzer including an apertured plate that can be selectively moved so as to permit passage therethrough, based on the difference in mass thereof, of said copant ions while blocking passage of said diluent ions.



4,881,011

CONTROL GEAR FOR HIGH INTENSITY GAS DISCHARGE LIGHTING

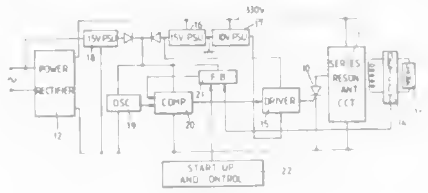
John Britton, Gnosall, Great Britain, assignor to Valor International Ltd. and HBH Equipment Ltd., both of London, England

Filed Oct. 21, 1987, Ser. No. 110,910

Claims priority, application United Kingdom, Oct. 22, 1986, 8625329

Int. Cl.⁴ H05B *41/36*

U.S. Cl. 315—209 SC 20 Claims



17. A control gear for a high intensity gas discharge lighting tube, comprising:

a control circuit having a switched side and a lamp side, and said switched side including:

an oscillator running at a fixed oscillator frequency,

drive means providing a drive signal exhibiting said oscillator frequency and a variable duty cycle ratio,

a switching element discrete from, and driven by said drive signal at said oscillator frequency,

a series resonant circuit tuned to said oscillator frequency,

transformer means having a primary winding connected in said series resonant circuit, and a secondary winding, for transferring power from said switched side to said lamp side of said circuit, and

said lamp side including means for connecting said secondary winding of the transformer to a lighting tube.

4,881,012

SWITCHING ARRANGEMENT

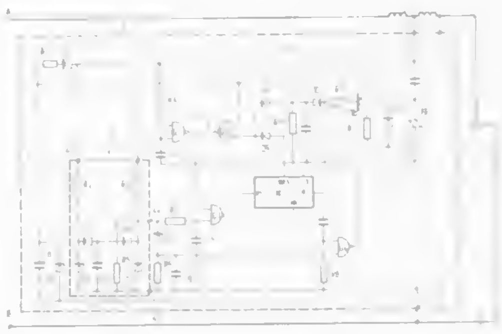
Antonius F. J. Almering, Breda, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 4, 1987, Ser. No. 128,667

Claims priority, application Netherlands, Dec. 15, 1986, 8603179

Int. Cl.⁴ H05B *41/04*

U.S. Cl. 315—209 R 17 Claims



1. A switching arrangement for ignition of at least one high-pressure discharge lamp by the production of ignition pulses comprising, a first connection terminal intended to be connected to a first terminal of the lamp and a second and a third connection terminal for connection on either side of an impedance connected in series with a second terminal of the lamp, and means for suppressing the production of ignition pulses if the lamp fails, characterized in that a pushpull circuit is connected between the first, second and third connection terminals and is responsive to a voltage between said first and second terminals to produce at an output terminal thereof a control signal for said ignition pulse suppressing means, and means connecting the output terminal of the pushpull circuit to the means for suppressing the production of ignition pulses.

4,881,013

FLASH PHOTOGRAPHIC APPARATUS

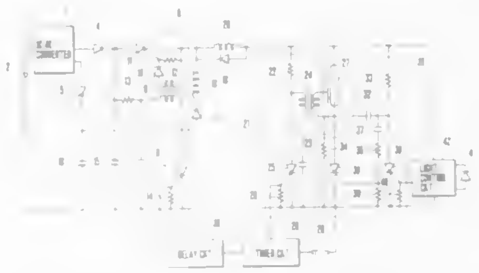
Hiroyuki Kataoka, Tokyo, and Tosiyuki Kumakura, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 761,194, Jul. 31, 1985, abandoned. This application Aug. 21, 1987, Ser. No. 88,977

Claims priority, application Japan, Aug. 6, 1984, 59-163901; Aug. 6, 1984, 59-163899; Dec. 11, 1984, 59-261648; Apr. 2, 1985, 6069471

Int. Cl.⁴ H05B *41/14*

U.S. Cl. 315—241 P 10 Claims



1. A flash photographing apparatus comprising:

(a) flash means;

(b) a power source circuit;

(c) a triggering circuit for triggering said flash means;

(d) a first capacitor which is connected to said power source

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circuit and is charged with an electric charge by an output of said power source circuit, said first capacitor being connected in parallel with said flash means;

(e) a first discharge path for discharging the electric charge accumulated at said first capacitor to said flash means, the discharging operating by said first discharge path being performed when the triggering operation of said triggering circuit is performed;

(f) a second capacitor which is connected to said power source circuit and is charged with an electric charge by an output of said power source circuit, said second capacitor being connected in parallel with said flash means;

(g) a second discharge path for discharging the electric charge accumulated at said second capacitor to said flash means; and

(h) discharge initiating means for discharging the electric charge accumulated at said second capacitor through said second discharge path after discharge of said first capacitor through said first discharge path is started by triggering said flash means by said triggering circuit, and during this discharging of the first capacitor, wherein an inductance value in said first discharge path to said flash means of the electric charge accumulated at said first capacitor is set larger than an inductance value in said second discharge path to said flash means of the electric charge accumulated at said second capacitor.

4,881,014

STABILIZED ELECTRIC POWER APPARATUS FOR GENERATING DIRECT AND ALTERNATING CURRENT SIMULTANEOUSLY IN ONE TRANSFORMER

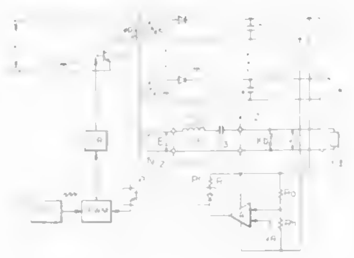
Sadao Okochi, Fussa, Japan, assignor to Kabushiki Kaisha Toshiba, Kanagawa, Japan

Continuation of Ser. No. 32,017, Mar. 30, 1987, abandoned. This application Dec. 20, 1988, Ser. No. 287,632

Claims priority, application Japan, Mar. 31, 1986, 61-73423

Int. Cl.⁴ H05B *41/16*

U.S. Cl. 315—246 4 Claims



1. A stabilized electric power apparatus, comprising:

switching means for converting direct current into an alternating current pulse by switching;

a primary coil for inputting the generated pulse;

a plurality of secondary coils, being connected electrically to said primary coil and corresponding to both direct and alternating current outputs;

impedance means including choke coil means connected in series with one of said plurality of secondary coils corresponding to the alternating current output for stabilizing the current output thereof and for operating as ballast;

control means responsive to the output voltage of one of said plurality of said secondary coils corresponding to the direct current output and for controlling said switching means so that the output of said direct current output and said alternating current output are constant; and

negative resistance means connected with said secondary coil for alternating current output.

4,881,015

COLOR CATHODE-RAY APPARATUS HAVING AN IMPROVED DEFLECTION UNIT

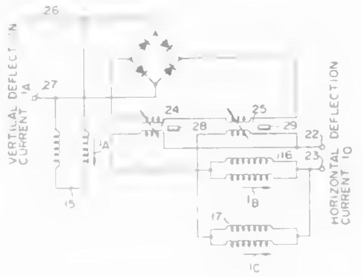
Taketoshi Shimoma, Isesaki; Katsuei Morobashi, Menuma, and Jiro Shimokobe, Fukaya, all of Japan, assignors to Kabushiki Kalshia Toshiba, Kawasaki, Japan

Filed Sep. 15, 1988, Ser. No. 244,824

Claims priority, application Japan, Sep. 16, 1987, 62-229453; Apr. 27, 1988, 63-102708

Int. Cl.⁴ H01J *29/56*

U.S. Cl. 315—371 13 Claims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VERTICAL DEFLECTION CURRENT IA
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HORIZONTAL DEFLECTION CURRENT IO

1. A color cathode-ray apparatus comprising:

an evacuated envelope having a tube axis and horizontal and vertical axes intersecting the tube axis at right angles and intersecting each other at right angles;

a phosphor screen incorporated within said evacuated envelope;

an in-line electron gun assembly for emitting three electron beams toward said phosphor screen;

horizontal deflection means for generating a horizontal deflection magnetic field thereby deflecting the electron beams along said horizontal axis;

first and second vertical deflection means for generating a vertical deflection magnetic field thereby deflecting the electron beams along said vertical axis, said first vertical deflection means including a first pair of deflection coils having a first deflection center, for generating a first magnetic field, and said second vertical deflection means including a second pair of deflection coils having a second deflection center, for generating a second magnetic field, said first and second deflection centers being located at different points on the tube axis and said second deflection center being defined between said first deflection center and said electron gun assembly; and

current-supplying means for supplying a horizontal deflection current, a first vertical deflection current and a second vertical deflection current to said horizontal deflection means, said first pair of deflection coils and said second pair of deflection coils, respectively, thereby energizing said horizontal deflection means and said first and second pair of deflection coils, and first and second vertical deflection currents being changed in different manners, in accordance with a degree to which the electron beam are to be deflected vertically.

4,881,016

ACTIVE SHADOW MASK COLOR CRT

Arthur A. Margolis, 1201 S. Ocean Dr., Apt. 2307N, Hollywood Beach, Fla. 33019

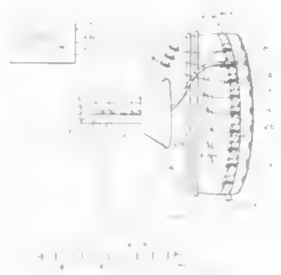
Filed Dec. 9, 1988, Ser. No. 282,322

Int. Cl.⁴ H01J *29/80*

U.S. Cl. 315—376 15 Claims

1. In combination with a cathode ray display having an electron gun from which a single electron beam is emitted, a deflection yoke through which the electron beam passes, a phosphor display screen on which the electron beam impinges at locations under control of the deflection yoke and collimation lens means operatively positioned adjacent to the deflection yoke for maintaining travel of electrons in the electron

beam along parallel paths approaching the display screen, a system for displaying multi-color image information on the display screen, comprising shadow mask means operatively positioned between the collimation lens means and the display screen for dividing said single electron beam into a plurality of color beam segments, modulating means operatively connected to the shadow mask means for respectively varying the color beam segments in intensity in accordance with different corresponding input signals and means operatively mounted on the shadow mask means for restoring the travel of the electrons along said parallel paths following displacement therefrom by operation of said modulating means.



4,881,017

DISPLAY DEVICE WITH STRETCHED ELECTRODE ASSEMBLIES HAVING DIFFERENT RESONANT FREQUENCIES

Yoshihisa Tsuruoka, Mobara, Japan, assignor to Futaba Denshi Kogyo Kabushiki Kaisha, Mobara, Japan

Filed Mar. 7, 1988, Ser. No. 164,900

Claims priority, application Japan, Mar. 20, 1987, 62-64325

Int. Cl.⁴ H01J *17/49, 63/02, 19/42*

U.S. Cl. 313—495 8 Claims

1. A display device comprising:

an envelope;

at least two sets of electrode groups arranged in directions intersecting each other within said envelope, one of said electrode groups being stretched in a space within said envelope;

said electrode group stretched in said space including a main electrode assembly wherein said main electrode is bifurcated and such that one of each of the auxiliary electrodes in the assembly is arranged so as to be in the gap of each of said main electrodes in the assembly; and

a plurality of display sections defined at intersections between said two sets of electrode groups, said display sections being selectively driven for luminous display by driving said two sets of electrode groups.

4,881,018

MANUALLY ASSISTABLE ELECTRIC DRIVING DEVICE

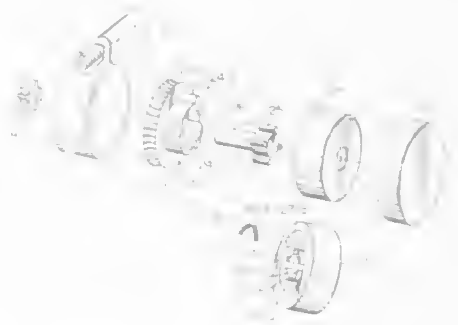
Yoji Kato, Konan; Osamu Minai, Kariya; Hirosi Tukamoto, Okazaki; Takashi Hagiwara, Chiryu, and Katsuji Kosaka, Anjo, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Dec. 9, 1988, Ser. No. 282,050

Claims priority, application Japan, Dec. 18, 1987, 62-322065

Int. Cl.⁴ F16D *23/00;* H02K *7/10*

U.S. Cl. 318—9 6 Claims



1. A manually assistable electric driving device of the type in which a driven member can be electrically driven in forward and backward directions and the movement of the driven member being driven electrically can be manually assisted to increase the speed of the movement, the device comprising:

a reversible electric motor;

a first rotor adapted to be driven by said electric motor and having an axial through-hole, said first rotor having at least one arcuate recess formed in the inner peripheral surface of said axial through-hole and having slopes at the opposite ends of said recess;

a second rotor having a cylindrical outer peripheral surface and rotatably disposed in said axial through-hole in said first rotor;

a bearing means disposed in said arcuate recess in said first rotor and adapted to be brought into engagement with said slopes of said arcuate recess and with said outer peripheral surface of said second rotor;

bearing retainer for supporting said bearing means such that said bearing means is movable radially and circumferentially of said first rotor;

resilient means operative to store an elastic energy when said first rotor is rotated by said electric motor relative to said second rotor so that one of said slopes of said first rotor is drivingly coupled by said bearing means to said outer peripheral surface of said second rotor, the thus stored elastic energy driving said bearing means to a substantially central portion of said arcuate recess when said electric motor is stopped whereby said second rotor is freely rotatable independently of said first rotor; and

said driven member being drivingly connected to said second rotor.

4,881,019

WIPER CONTROL SYSTEM FOR AUTOMOTIVE VEHICLE FACILITATED FRONT AND REAR WIPERS

Yasuhiro Shiraishi, Sagamihara, and Yoshinori Nagamine, Fujisawa, both of Japan, assignors to Nissan Motor Co., Ltd., Japan

Filed Apr. 29, 1987, Ser. No. 44,053

Claims priority, application Japan, Apr. 30, 1986, 61-100570

Int. Cl.⁴ B60S *1/08*

U.S. Cl. 318—68 11 Claims

1. A control system for an automotive wiper system including a front wiper and a rear wiper, comprising:

a front wiper motor for driving a front wiper blade;

a rear wiper motor for driving a rear wiper blade;

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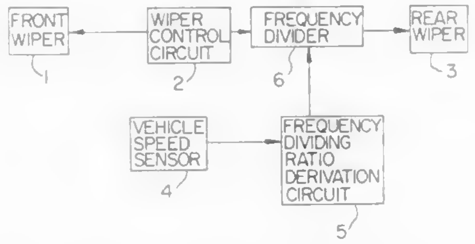
- a front wiper control circuit connected to said front wiper motor for producing a front wiper drive signal having a given frequency for driving said front wiper motor at said given frequency;
- a rear wiper control circuit connected to said rear wiper motor for receiving said front wiper drive signal, and for dividing the frequency of said front wiper drive signal by a given value and generating a rear wiper drive signal for driving said rear wiper motor;
- a vehicle speed sensor for producing a vehicle speed indicative signal having a value representative of the vehicle speed; and
- means, responsive to said vehicle speed indicative signal, for deriving said given value based on the vehicle speed indicative signal value.

9. A control system for an automotive wiper system including a front wiper and a rear wiper, comprising:
- a front wiper motor for driving a front wiper blade;
- a rear window motor for driving a rear wiper blade;



- a front wiper control circuit connected to said front wiper motor for producing a front wiper drive signal having a given frequency for driving said front wiper motor at said given frequency, said front wiper control circuit being operable in an intermittent mode for producing an intermittent signal for intermittently driving said front wiper motor with a predetermined interval;
- a rear wiper control circuit connected to said rear wiper motor for receiving said front wiper drive signal, and for dividing the frequency of said front wiper drive signal by a given value and generating a rear wiper drive signal for driving said rear wiper motor;
- a vehicle speed sensor for producing a vehicle speed indicative signal having a value representative of the vehicle speed; and
- means, responsive to said vehicle speed indicative signal, for deriving said given value based on the vehicle speed indicative signal value.

4,881,020

APPARATUS FOR CONTROLLING ATTITUDE OF VEHICLE MOUNTED DEVICE

Tsuneo Hida, Toyokawa; Sumio Takizawa; Hakumi Ishii; Hideo Kegasa, and Minoru Izawa, all of Toyota, Japan, assignors to Aisin Seiki Kabushiki Kaisha and Toyota Jidosha Kabushiki Kaisha, both of Aichi, Japan

Filed Aug. 12, 1986, Ser. No. 895,631

Claims priority, application Japan, Aug. 13, 1985, 60-178442; Aug. 13, 1985, 60-178443; Aug. 13, 1985, 60-178444; Aug. 13, 1985, 60-178445

Int. Cl.⁴ G05G *5/00*

U.S. Cl. 318—626 20 Claims

1. Apparatus for controlling the attitude of vehicle mounted device comprising
- an onboard attitude controlling mechanism which controls the attitude of a vehicle mounted device such as a steering wheel, a seat or the like;
- an electric drive unit for driving the onboard attitude controlling mechanism;
- means for detecting the attitude of a vehicle mounted device;
- at least one switch means commands a control over the attitude of a vehicle mounted device;
- and electronic control means for energizing the electric drive unit to control the attitude of a vehicle mounted device in response to the on condition of the switch means which is construed as a command to control the attitude, and the control means including storage means for storing a limit position with said control means being responsive to the presence or absence of a stored limit position, the control means having means for detecting an abnormality in the operation of said electric drive unit in the event of absence of a stored limit position to thereby determine and store as a limit position an attitude which is driven back through a given stroke as referenced to the prevailing attitude of the vehicle mounted device when the abnormality is detected, the control means deenergizing the electric drive unit automatically when the vehicle mounted device reaches a stored limit position in the event of the presence of the storage.

4,881,021

NUMERICAL CONTROL EQUIPMENT

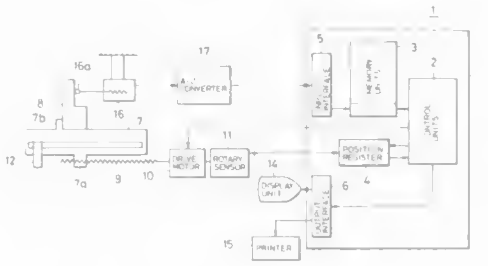
Hayao Hirai, Aichi, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 41,375, Apr. 22, 1987, abandoned. This application Oct. 23, 1987, Ser. No. 112,002

Claims priority, application Japan, Apr. 22, 1986, 61-91197

Int. Cl.⁴ G05B *19/18*

U.S. Cl. 318—569 14 Claims



1. A numerical control apparatus, comprising:
- a table for holding an object to be measured;
- drive means for driving said table;
- control means for providing movement instructions to said drive means in order to move said object on said table to a target position;
- position sensor means for detecting the position of said table;
- position register for receiving a detection signal from said position sensor means;
- measuring means for measuring the difference between a stop position of said object on said table and a reference position on said table, as said object on said table is moved to said target position; and
- memory means for storing the output of said measuring means as data;
- wherein said control means receives said output of said measuring means and an output of said position register, and controls said memory means to rewrite said data in said memory means as a measurement result.

4,881,022

METHOD AND/OR APPARATUS FOR CONTROLLING THE MOTOR SPEED OF AN ELECTRIC AC MOTOR AND/OR A METHOD OF DETERMINING TORQUE

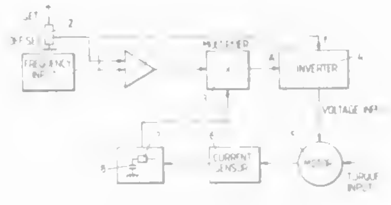
John T. Boys, Auckland, New Zealand, assignor to University of Auckland, Auckland, New Zealand

Continuation of Ser. No. 841,763, Mar. 20, 1986, abandoned. This application May 10, 1988, Ser. No. 191,711

Claims priority, application New Zealand, Mar. 21, 1985, 211523

Int. Cl.⁴ H02P *5/40*

U.S. Cl. 318—800 16 Claims



1. A method of controlling the motor speed of an electric AC motor comprising the steps of:

(a) generating a voltage having a frequency characteristic following substantially the relationship

$$|V_1| = k_1\sqrt{M_r}\left(\omega + \frac{R_1\omega_s}{R_2}\right)$$

where

V_1=generated voltage,

M_r=rated Torque of the motor, and

ω=supply frequency,

ω_s=rated slip

(b) measuring the motor current in per unit terms,

(c) multiplying said measured motor current signal and the said generated voltage, and

(d) supplying the voltage so formed as the terminal voltage supplied to the motor.

4,881,023

HYBRID HIGH SPEED VOLTAGE REGULATOR WITH REDUCTION OF MILLER EFFECT

Eugene T. Perusse, San Diego, and Eugene L. Hammer, Fullerton, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

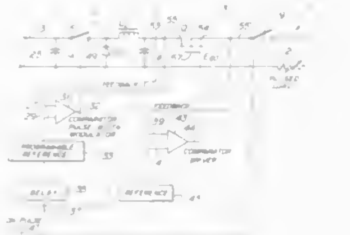
Continuation of Ser. No. 164,281, Mar. 4, 1988, abandoned. This application May 9, 1989, Ser. No. 349,876

Int. Cl.⁴ G05F *1/563*

U.S. Cl. 323—266 19 Claims

19. In a voltage regulator for regulating voltage supplied to a load which is activated during a load pulse and wherein said voltage regulator exhibits a response time which decreases with increase in input voltage to said regulator and power consumption which increases with increase in input voltage, the improvement comprising:

means for supplying an increased input voltage to said voltage regulator at the beginning of said load pulse to provide faster response and thereafter reducing said input voltage to reduce power consumption.



4,881,024

VOLTAGE SENSITIVE SWITCH

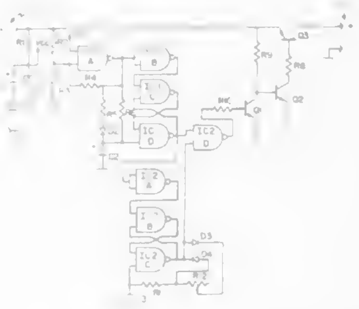
L. Paul Hartwick, London, Canada, assignor to Trek-Tron Coolers Inc., Brantford, Canada

Filed Dec. 9, 1988, Ser. No. 281,645

Claims priority, application Canada, Sep. 5, 1988, 566335

Int. Cl.⁴ G05F *5/00*

U.S. Cl. 323—299 6 Claims



1. A voltage comparison circuit for comparing an analogue voltage of a source, said circuit comprising:

(a) a first digital gate in series with a second digital gate acting as an inverter, and a pair of digital gates arranged as flip flops each digital gate with a pair of inputs;

(b) a feedback resistor interconnecting the output of said first digital gate to one of the inputs of said first digital gate;

(c) a voltage divider connected between the voltage source and said feedback resistor; and,

(d) means for providing a predetermined reference voltage to the other input of said digital gate.

4,881,025

FREQUENCY DEPENDENT IDENTIFICATION OF MATERIALS

William D. Gregory, Hannawa Falls, N.Y., assignor to Trustees of the Diotec Trust, Canton, N.Y.

Filed Sep. 26, 1988, Ser. No. 248,639

Int. Cl.⁴ G01R *27/26*

U.S. Cl. 324—61 R 18 Claims

1. A method of non-destructively identifying and assaying the make-up of a test object by comparison with a statistical record of a plurality of similar known objects by use of a capacitance sensor having a pair of parallel plates which have an adjustable spacing therebetween which can be established at

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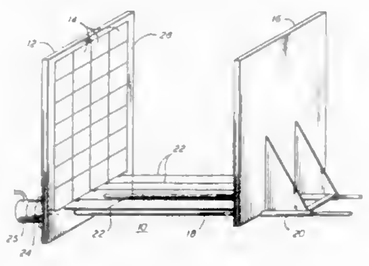
accurately known intervals, and at least a first of the plates being configured as an array of independent plate segments which can be selectively employed, each of the segments being coupled to respective means to sense a current thereat at an accurately measured phase and frequency, the method comprising the steps of

placing said test object between said parallel plates, accurately adjusting the spacing between said plates to correspond with a thickness dimension of the object, and selecting the appropriate ones of said segments to correspond with a cross section of the object;

applying a plurality of sinusoidal voltages each of an accurately known amplitude, frequency, and phase, to the other plate of said capacitive sensor;



accurately measuring magnitudes and phases of the electric currents in each of said selected segments of the first of the plates for the applied sinusoidal voltage of each said frequency;

from said measured electric current magnitudes and phases, calculating one or more parameters including at least one of the capacitance, conductance, frequency dependence of capacitance, and frequency dependence of conductance for said test object; and

comparing said calculated parameters for the test object with stored values that represent a statistically normal range of such parameters that characterize a plurality of known objects similar to said test object.

4,881,026

METHOD AND APPARATUS FOR DIAGNOSING ABNORMAL STATE OF SODIUM (NA)—SULFUR (S) CELL

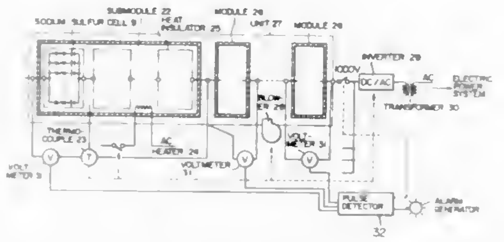
Yasumasa Ishida; Hiroyuki Kawamoto, both of Hitachi; Motoi Wada, Kyoto; Hisamitu Hatoh; Yoshiteru Miyatake, both of Hitachi; Sadao Mori, Chiba, and Eiji Takahashi, Tokyo, all of Japan, assignors to Hitachi, Ltd. and The Tokyo Electric Power Co., Ltd., both of Tokyo, Japan

Filed Jun. 25, 1987, Ser. No. 66,208

Claims priority, application Japan, Jun. 25, 1986, 61-147069

Int. Cl.⁴ G01N *27/00*

U.S. Cl. 324—71.1 7 Claims



1. A method of operating a power storage plant including DC to AC inverter means connected to the output of unit banks of batteries that are connected to receive a DC charge and to discharge through said inverter wherein the method includes:

diagnosing the presence or absence of an abnormal state in advance or breakdown of a cell in a bank including at least three or more modules connected in series which are replaceable as a unit, each module including at least two or more sub-modules connected in series with each sub-module including at least four or more cells connected in parallel and with each cell being a sodium-sulfur (Na/S) cell containing at least one of a porous electrical conductive material impregnated with molten sulfur and a porous electrical conductive material impregnated with sodium polysulfide as its positive electrode reactant and containing sodium as its negative electrode reactant, said method comprising:

observing separately the operating voltage of each of said modules as a smallest component to be monitored during direct current charging and discharging so as to detect occurrence of a minute ripple in the operating voltage which exceeds a predetermined amplitude; and

when the amplitude of said ripple and the frequency of occurrence of said ripple increases as a result of repeated cycles of charging and discharging, deciding that degradation of said sodium-sulfur cell has progressed to an extent that final breakdown of said cell will occur in a very near future.

4,881,027

CIRCUIT ARRANGEMENT COMPRISING INPUT CIRCUITS TO FIND A POWER OUTPUT SUM FOR APPLICATION IN MULTI-PHASE ELECTRICITY METERS

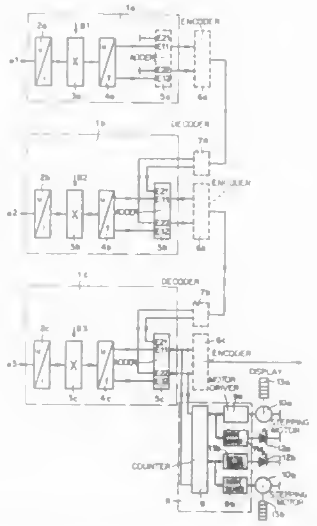
Andreas Joder, Unterägeri, and Franz Reoggli, Buchrain, both of Switzerland, assignors to LGZ Landis & Gyr Zug AG, Zug, Switzerland

Filed Jul. 28, 1988, Ser. No. 225,526

Claims priority, application Switzerland, Aug. 6, 1987, 03030/87

Int. Cl.⁴ G01R *11/16, 21/06*

U.S. Cl. 324—107 3 Claims



1. A circuit arrangement for summing power outputs for use in a multi-phase electricity meter, said circuit arrangement comprising:

a plurality of inputs circuits arranged in a sequence, each of said input circuits comprising an input converter, a multiplier connected to said input converter, and a voltage-to-frequency converter connected to said multiplier,

starting at least with the second input circuit in said sequence, each of said input circuits comprising an adder having a first input means connected to the voltage-to-frequency converter of the corresponding input circuit, a second input means connected to an output of the preceding input circuit in said sequence, and an output which forms an output of the corresponding input circuit.

wherein

each voltage-to-frequency converter is provided with a first output for positive power and a second output for negative power,

the first input means of each adder comprises first and second inputs,

the second input means of each adder comprises first and second inputs,

each adder has first and second outputs, one for positive power and one for negative power, said first and second outputs of each adder forming first and second outputs of the corresponding input circuit,

said first and second outputs of each frequency converter being connected, starting at least with the second input circuit in said sequence, to the first and second inputs of the first input means of the corresponding adder, and

said first and second inputs of the second input means of each adder being connected to a position power output and a negative power output of the preceding input circuit in said sequence.

4,881,028

FAULT DETECTOR

James A. Bright, 5721 S. Hanover Way, Englewood, Colo. 80111

Filed Jun. 13, 1988, Ser. No. 205,952

Int. Cl.⁴ G01R *1/20, 19/14*

U.S. Cl. 324—127 3 Claims

1. A fault detector and indicator for monitoring the current in a power line which may be immersed in water comprising, a detector mounted adjacent the power line, magnetic coupling means coupled to said power line and supplying an output to said detector, a light generator in said detector receiving the output of said magnetic coupling means and producing light emission in response thereto, a fiber optics cable with one end attached to said detector such that it receives light energy emitted by said light generator, and an indicator located remotely from said detector connected to a second end of said fiber optics cable and producing an indication from the received light energy indicative of the current in said power line, wherein said indicator includes a photo-voltic cell which is mounted so as to receive light energy from said second end of said fiber optic cable and indicating means connected to said photo-voltic cell, wherein said indicating means includes first and second display means for, respectively, displaying indications of "normal" or "alarm" conditions for the current monitored in said power line, including a threshold detector connected to the output of said photo-voltic cell, a two-way switch with a moveable switch contact connected to one output lead of said photo-voltic cell and with two fixed contacts, respectively, connected to said first and second display means, a second output lead of said photo-voltic cell connected to said first and second display means, and a relay connected to receive the output of said threshold detector and connected to the moveable contact of said two-way switch.

4,881,029

SEMICONDUCTOR INTEGRATED CIRCUIT DEVICES AND METHODS FOR TESTING SAME

Masahiko Kawamura, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 26, 1986, Ser. No. 911,739

Claims priority, application Japan, Sep. 30, 1985, 60-216513

Int. Cl.⁴ G01R *31/00, 31/02*

U.S. Cl. 324—158 R 15 Claims

1. A semiconductor integrated circuit device, comprising:

(i) a semiconductor integrated circuit chip having a plurality of signal wires;

(ii) a plurality of electron beam test terminals electrically connected to said signal wires, said electron beam test terminals being concentrated in at least one selected area of said semiconductor integrated circuit chip;

(iii) first connecting wires being connected to ones of said signal wires and extending into said selected area;

(vi) second connecting wires being connected to others of said signal wires, said second connecting wires having a level lower than that of said first connecting wires, extending into said selected area with a length longer than that of said first connecting wires, and being respectively positioned between said first connecting wires in said selected area;

(v) an insulating layer disposed between said first and second connecting wires, said insulating layer having apertures at which tip portions of said second connecting wires are exposed; and

(vi) conductive layers formed in the same plane and made from the same material as said first connecting wires, said conductive layers contacting said second connecting wires through said apertures and forming a first group of said electron beam test terminals, and portions of said first connecting wires in said selected area forming a second group of said electron beam test terminals.

4,881,030

METHOD AND APPARATUS FOR MEASURING AND PRECISELY LOCATING INTERNAL TENSILE STRESSES IN HARDENED REGIONS OF COMPONENTS BY MEASURING COERCIVE FIELD STRENGTH AND BARKHAUSEN NOISE AMPLITUDE

Erwin Stuecker, Essen-Frintrop; Gerhard Hofer, Roettenbach; Dietmar Koch, Muelheim an der Ruhr, and Uenal Guenes, Erlangen, all of Fed. Rep. of Germany, assignors to Siemens Aktinegesellschaft, Munich, Fed. Rep. of Germany

Filed Apr. 18, 1988, Ser. No. 182,845

Claims priority, application Fed. Rep. of Germany, Apr. 16, 1987, 3713062

Int. Cl.⁴ G01B *7/24;* G01N *27/72;* G01R *33/00. 35/00*

U.S. Cl. 324—209 16 Claims

10. Apparatus for ascertaining internal stresses in a hardened

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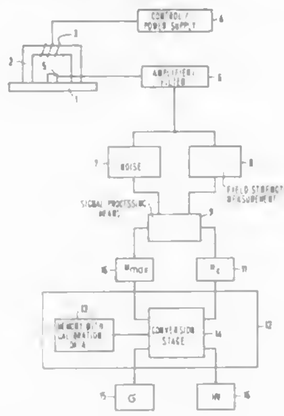
region to be tested of a component made of a predetermined material, comprising:

(a) an exciter system and a measurement pickup system measuring at least one of amplitude of magnetic Barkhausen noise and coercive field strength and producing measured values;

(b) electronic evaluation means connected to said measurement pickup system for processing the measured values of the coercive field strength and the amplitude of the magnetic Barkhausen noise in parallel;



(c) said electronic evaluation means including at least one memory having calibration data or calibration functions for at least one material relating to dependencies between the Barkhausen noise amplitude, the coercive field strength, the hardness and the mechanical stress; and

(d) said electronic evaluation means including a conversion stage converting the measured values into material properties of hardness and stress using the calibration data stored said at least one memory.

4,881,031

EDDY CURRENT METHOD AND APPARATUS FOR DETERMINING STRUCTURAL DEFECTS IN A METAL OBJECT WITHOUT REMOVING SURFACE FILMS OR COATINGS

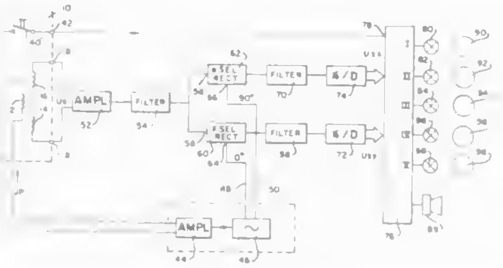
Helmut Pfisterer, Essen; Wolfgang Schütze, Oberhausen, and Heinz Wezel, Reutlingen, all of Fed. Rep. of Germany, assignors to Institut Dr. Friedrich Forster Pruferatebau GmbH, Reutlingen, Fed. Rep. of Germany

Filed Jun. 16, 1988, Ser. No. 207,664

Claims priority, application Fed. Rep. of Germany, Jun. 23, 1987, 3720686

Int. Cl.⁴ G01N *27/90;* G01R *33/12*

U.S. Cl. 324—233 5 Claims



1. Apparatus for determining the presence of corrosion in a metal object coated with a generally electrically non-conductive material, comprising:

probe means having a face for being placed on the surface of the metal object, the probe means including an excitation coil, and a pair of receiver coils which are disposed symmetrically to the excitation coil and connected serially opposed to one another, the receiver coils located at different distances from the face;

an oscillator interconnected with the excitation coil to induce eddy currents in the metal object, said eddy currents inducing a reaction signal in the receiver coils;

a preamplifier connected across the series connected receiver coils;

first and second phase selective rectifiers each having an input connected to the preamplifier output;

said oscillator having two output terminals for providing two control signals of 90 degree phase difference, which terminals are individually connected, respectively, to control the first and second phase selective rectifiers;

the rectifiers being individually connected to first and second analog to digital convertors; and

means responsive to the digital output of the analog to digital converters for producing separate identification displays for each of a plurality of ranges of paired digital signals from the first and second converters, into which a complex plane of the digital signals has been divided, each of said paired digital signals defining a point in said complex plane, and one of which ranges represents a metal surface substantially free of corrosion.

4,881,032

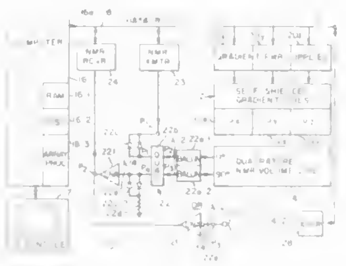
METHOD OF, AND APPARATUS FOR, NMR SPECTROSCOPIC METABOLITE IMAGING AND QUANTIFICATION

Paul A. Bottomley, Clifton Park; Peter B. Roemer; William A. Edelstein, both of Schenectady, and Otward M. Mueller, Ballston Lake, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Oct. 21, 1988, Ser. No. 260,633

Int. Cl.⁴ G01R *33/20*

U.S. Cl. 324—309 30 Claims



1. A method for nuclear magnetic resonance (NMR) cmspectroscopic imaging of metabolites in a sample, comprising the steps of:

(a) placing the sample in a static magnetic field B_0 directed in a first direction of a coordinate set;

(b) exciting NMR signals in at least a desired portion of the sample;

(c) applying to at least a desired portion of the sample a combination of d, where d=1, 2 or 3, phase-encoding magnetic field gradients, each in a different direction in the coordinate set, to define a d-dimensional set of voxels within the sample portion, in a manner to substantially eliminate from at least the desired sample portion eddy currents induced response to any phase-encoding gradient;

(d) then acquiring a free-induction-decay (FID) NMR response signal from each of the different voxels of the set within the sample portion; and

(e) processing the SNR-maximized FID response signals set to obtain a displayable image of the spectral information contained in at least one of the FID response signals.

4,881,033

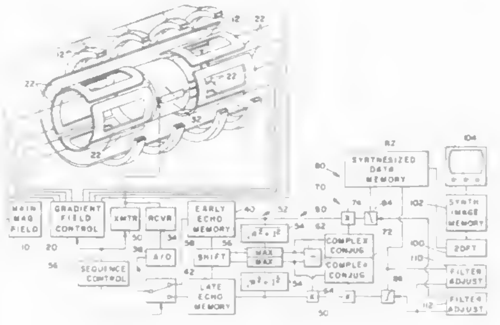
NOISE-REDUCED SYNTHETIC T2 WEIGHTED IMAGES

Kenneth S. Denison, Shaker Hts.; G. Neil Holland, Chagrin Falls, and Gordon D. DeMeester, Wickliffe, all of Ohio, assignors to Picker International, Inc., Highland Hts., Ohio

Continuation of Ser. No. 66,039, Jun. 24, 1987, abandoned. This application Apr. 3, 1989, Ser. No. 331,750

Int. Cl.⁴ G01R *33/20*

U.S. Cl. 324—309 22 Claims



1. A method of magnetic resonance imaging comprising:

after each excitation of magnetic resonance, causing a plurality of magnetic resonance echoes, early echoes close in time to the excitation having better resolution of details of structure in the image region and poorer T2 contrast and late echoes further in time from the excitation having poorer structural detail resolution and better T2 contrast;

collecting magnetic resonance signals during the early and late echoes to collect early echo data and late echo data;

combining a fractional portion of the early echo data with a fractional portion of the late echo data which is complementary to the early echo data portion to produce a synthesized data set; and,

Fourier transforming the synthesized data set to produce a synthetic image which has characteristics of an early echo image and characteristics of a late echo image.

4,881,034

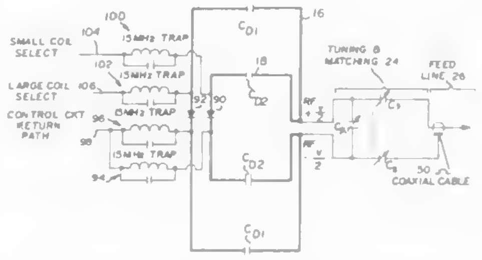
SWITCHABLE MRI RF COIL ARRAY WITH INDIVIDUAL COILS HAVING DIFFERENT AND OVERLAPPING FIELDS OF VIEW

Leon Kaufman, San Francisco; Mitsuaki Arakawa, Hillsborough; Barry M. McCarten, Los Altos; John H. Fehn, El Sobrante, and Stephen Krasnor, Oakland, all of Calif., assignors to The Regents of the University of California, Berkeley, Calif.

Filed Jan. 19, 1988, Ser. No. 145,279

Int. Cl.⁴ G01R *33/20*

U.S. Cl. 324—318 34 Claims



1. An RF MRI receiving coil array comprising:

a tuning and matching circuit for connection to an RF transmission line;

a first MRI RF receive coil adapted for receiving RF signals from a predetermined NMR species;

a second MRI RF receive coil also adapted for receiving RF signals from the same said predetermined species;

said first and second MRI RF receive coils having differently dimensioned and overlapping fields of view; and

controllable switch means connected with said tuning and matching circuit and with said first and second receive coils and capable of selectively conditioning either one of said coil assemblies for use in receiving RF signals and routing them through said tuning and matching circuit during an MRI procedure.

4,881,035

MAGNETIC STRUCTURAL ARRANGEMENT OF AN INSTALLATION FOR NUCLEAR MAGNETIC RESONANCE TOMOGRAPHY WITH SUPERCONDUCTING BACKGROUND FIELD COILS AND NORMAL-CONDUCTING GRADIENT COILS

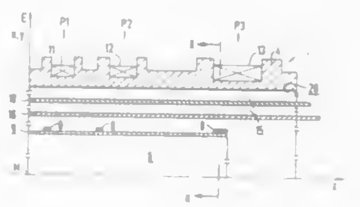
Horst Siebold, Erlangen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Oct. 28, 1988, Ser. No. 264,775

Claims priority, application Fed. Rep. of Germany, Nov. 24, 1987, 3739838

Int. Cl.⁴ G01R *33/20*

U.S. Cl. 324—320 14 Claims



1. A magnetic structural arrangement of an installation for nuclear magnetic resonance tomography having superconducting background field coils cooled by a cryogenic medium for generating a homogeneous magnetic background field, normal-conducting coils within an inner space bounded by the background field coils for forming magnetic field gradients, and at least one cooled radiation shield of electrically and thermally conducting material which is disposed between the normal-conducting gradient coils and the superconducting background field coils, on the side of the background field coils facing the inner space a tubular shielding structure being disposed which at least contains superconducting material of the second kind and is thermally coupled to the cryogenic medium of the background field coils, the radiation shield being configured to suppress eddy currents induced in it at least by the gradient coils.

4,881,036

PHASE SHIFT COMPENSATION FOR METAL DETECTION APPARATUS

Klaus Ausländer, Reutlingen; Hans-Jürgen Fabris, Pfullingen; Wolfgang Patzwaldt, Reutlingen, and Helmut Seichter, Pfullingen, all of Fed. Rep. of Germany, assignors to Institut Dr. Friedrich Förster Prüfgerätebau GmbH, Reutlingen, Fed. Rep. of Germany

Filed Jul. 16, 1987, Ser. No. 74,232

Claims priority, application Fed. Rep. of Germany, Mar. 30, 1987, 3707210

Int. Cl.⁴ G01V *3/11, 3/165*

U.S. Cl. 324—329 6 Claims

1. Inductive metal object detection apparatus with a search coil consisting of at least an excitation winding and at least one receiver winding, an A.C. current source connected to the

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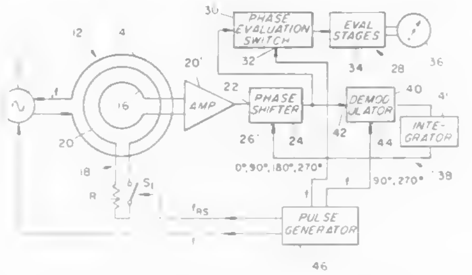
excitation winding to build up a magnetic field in the surroundings, and evaluation circuit apparatus connected to the receiver winding for indicating and evaluating signals induced in the receiver winding by the magnetic field embracing metal objects located in the surroundings, comprising:

a phase regulation circuit which holds the phase angle of an induced signal in a fixed phase relation to a predetermined reference phase angle including,
  a selectively controllable phase shifting member having an input, an output and a control signal terminal, said input being connected to the receiving winding and output to the evaluation circuit apparatus;
  a phase controlled demodulator having an input connected with the phase shifting member output, an output interconnected with the control signal terminal for the phase shifting member, and a control terminal;



a reference phase transmitter which modifies the coupling between the excitation and receiver windings, said transmitter including a wire loop which is coupled with the excitation winding and receiver winding, and a selectively actuatable switch for opening and closing the wire loop during use of the detection apparatus;
means for actuating the switch on and off at a predetermined frequency; and
a pulse generator having an output interconnected with the control terminal of the demodulator and actuated to provide output signals for controlling the demodulator on the reference phase transmitter being switched on, said output control signals including a signal of a first control phase, occurring during a first control phase period, and a signal of a second control phase differing from said first control phase by 180°, occurring during a second control phase period.

4,881,037

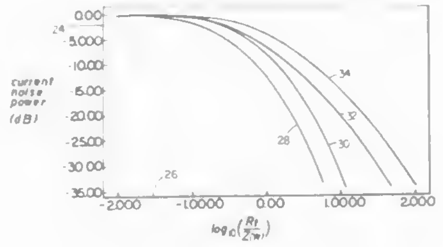
APPARATUS AND METHOD FOR MEASURING THE INTERFACIAL IMPEDANCE IN AN ELECTROCHEMICAL CELL

James G. Bellingham, West Harwich, Mass., and Margaret L. A. MacVicar, West Lebanon, Me. assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Jan. 26, 1989, Ser. No. 302,420

Int. Cl.^{4} G01N *27/00*

U.S. Cl. 324—425 10 Claims



8. A method for measuring the interfacial impedance in an electrochemical cell having a pair of electrodes in contact with an electrolyte medium comprising the steps of

determining the intrinsic interaction current flowing between said electrodes as a function of frequency at a series of predetermined external impedance values; and
determining said interfacial impedance based on said interaction current.

4,881,038

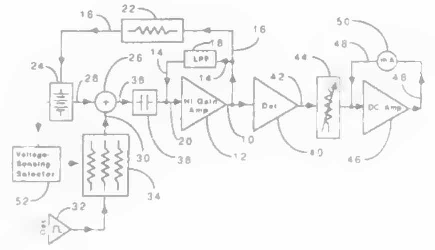
ELECTRIC BATTERY TESTING DEVICE WITH AUTOMATIC VOLTAGE SCALING TO DETERMINE DYNAMIC CONDUCTANCE

Keith S. Champlin, 5437 Elliot Ave. South, Minneapolis, Minn. 55417

Division of Ser. No. 198,484, May 25, 1988, Pat. No. 4,825,170. This application Nov. 18, 1988, Ser. No. 273,957

Int. Cl.^{4} G01N *27/46*

U.S. Cl. 324—426 19 Claims



1. A process for testing a battery having a dynamic conductance and a nominal voltage comprising the steps of:

a. measuring the battery's dynamic conductance;
b. determining the battery's nominal voltage;
c. automatically scaling the measured dynamic conductance in accordance with the battery's nominal voltage;
d. displaying the scaled result.

4,881,039

TRANSDUCER AND RELATED CIRCUITRY

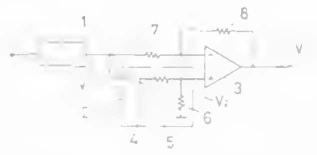
Hideaki Nakamura, Joyo; Tamotsu Shimamori, Nagaokakyo, and Shinichi Murashige, Kyoto, all of Japan, assignors to Omron Tateisi Electronics Company, Nagaokakyo, Japan

Division of Ser. No. 903,976, Sep. 5, 1986, abandoned. This application Aug. 17, 1987, Ser. No. 85,967

Claims priority, application Japan, Sep. 5, 1985, 60-196714; Sep. 27, 1985, 60-215645; Oct. 28, 1985, 60-241808; Oct. 28, 1985, 60-241809

Int. Cl.^{4} H03K *5/00*

U.S. Cl. 328—26 5 Claims



1. A ripple removal circuit, comprising:

an extraction circuit for extracting an AC component from an original signal containing a ripple therein; and
a computing means for receiving the AC component extracted by the extraction circuit and the original signal, and producing a DC output from the original circuit by substracting the AC component from the original signal.

4,881,040

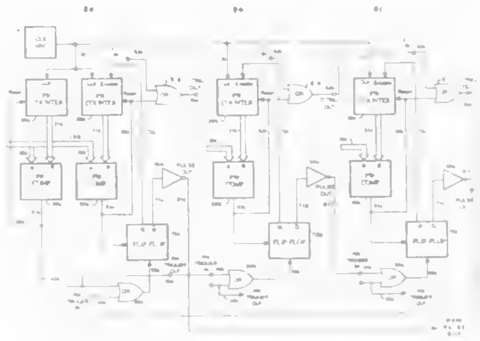
SIGNAL GENERATOR FOR PRODUCING ACCURATELY TIMED PULSE GROUPINGS

Charles J. Vaughn, Fremont, Calif., assignor to GTE Government Systems Corporation, Stamford, Conn.

Filed Aug. 4, 1988, Ser. No. 228,158

Int. Cl.^{4} H03K *5/04, 5/135*

U.S. Cl. 328—61 14 Claims



1. A pulse generator for producing a repetitive pulse output signal consisting of repetitive pulse groups, each group having as many as three pulses with predetermined pulse widths (PW), and each group having a predetermined/programmable pulse-group repetition interval (PGRI), both of which are time referenced to a clock pulse signal, $f_1(t)$, having a stable rep rate f_c, said pulse generator comprising:

first generator means (8*a*) for controlling the PGRI and the PW of each pulse in said group, said first generator section comprising:
  first counter means (20*a*) for counting the number of clock pulses in said $f_1(t)$ and for generating a second digital signal, $f_2(t)$, directly related to the number of counted clock pulses, said counter means including first resetting means for resetting said first counter means to a zero count;
  second counter means (30*a*) for counting the number of clock pulses in said $f_1(t)$ and for generating a third digital signal, $f_3(t)$, directly related to the number of counted clock pulses, said second counter means including second resetting means for resetting said second counter means to a zero count and first enabling means for enabling and disabling said second counter means;
  first comparator means (40*a*) for receiving said $f_2(t)$ and for producing a first start-pulse signal at said pulse-group repetition interval by comparing the number of clock pulses represented by $f_2(t)$ with a first predetermined number N_1, where

$$N_1=(PGRI)(f_c),$$

  said first start-pulse signal coupled to said first resetting means for resetting said first counter means;
  second comparator means (50*a*) for receiving said $f_3(t)$ and for producing an end-pulse signal when the number of pulses represented by said $f_3(t)$ equals a second predetermined number, N_2, where

$$N_2=(PW)(f_c), \text{ and where } N_2<N_1,$$

  said end-pulse signal coupled to said second resetting means for resetting said second counter means;
  first gating means (90*a*) having a single output and a plurality of inputs, a first of said inputs for receiving said first start-pulse signal, said gating means performing an OR-gating function of said inputs and producing a gated start-pulse signal;
  first bistable circuit means (70*a*) for receiving said gated start-pulse signal and for receiving said end-pulse signal, said first bistable circuit means producing said repetitive pulse output signal by generating a first output state when toggled by said gated start-pulse signal and by generating a second output state when toggled by said end-pulse signal, said bistable circuit means thereby generating a single output pulse upon receiving said gated start-pulse signal followed by said end-pulse 47 signal; and,
  first coupling means (72*a*) for coupling said repetitive pulse output signal to said first enabling means for enabling said second counter means when said bistable circuit means is in said first output state and disabling said second counter means when said bistable circuit means is in said second output state; first delay trigger means (8*b*) for receiving said first start-pulse signal and for generating a second start-pulse signal a predetermined time interval, Δt_1, after said first start-pulse, such that $\Delta t_1>PW$, said first delay trigger means including second coupling means (91*b*) for coupling said second start-pulse signal to a second input of said first gating means for toggling said first bistable circuit means, said first bistable circuit means thereby generating the second pulse of each pulse group in said repetitive pulse output signal;
second delay trigger means (8*c*) for receiving said first start-pulse signal and for generating a third start-pulse signal a predetermined time interval, Δt_2, after said first start-pulse, such that

$$\Delta t_2>(\Delta t_1+PW),$$

  said second delay trigger means including third coupling mens (91*c*) for coupling said third start-pulse signal to said second input of said first gating means for toggling said first bistable circuit means, said first bistable circuit means thereby generating the third pulse of each pulse group in said repetitive pulse output signal.

4,881,041

PULSE WIDTH DISTORTION CORRECTION CIRCUIT

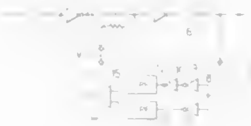
Yoshihiro Kawanabe, and Kazunaga Ida, both of Tokyo, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed May 12, 1988, Ser. No. 192,984

Claims priority, application Japan, May 21, 1987, 62-124420

Int. Cl.^{4} H03K *5/22, 5/04, 3/017*

U.S. Cl. 328—112 8 Claims



1. A pulse width distortion correction circuit comprising:

a pulse width control circuit to which a digital input signal is applied and providing an output signal having a corrected pulse width; and
a duty ratio detection circuit for detecting a duty ratio of said output signal of said pulse width control circuit and providing a pulse width control signal, said pulse width control circuit being controlled on the basis of said pulse width control signal;
said pulse width control circuit comprising edge smoothing means to which said digital input signal is applied, an adder for adding an output signal of said edge smoothing means to said pulse width control signal, and a logical element to which an output signal of said adder is applied

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and providing said output signal of said pulse width control circuit.

4,881,042
AUTOMATICALLY TUNABLE PHASE LOCKED LOOP FM DETECTION SYSTEM

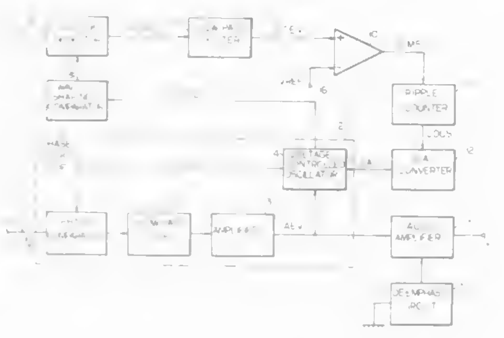
Sung-Ki Min, Inchon; Chan-Kyu Myung, Seoul, and Ki-Ho Sbin, Woolsan, all of Rep. of Korea, assignors to Samsung Semiconductor and Telecommunications Co., Ltd., Gumi, Rep. of Korea

Filed Jan. 25, 1988, Ser. No. 147,433

Claims priority, application Rep. of Korea, Jan. 31, 1987, 87-822

Int. Cl.⁴ H03D *3/02*

U.S. Cl. 329—326 2 Claims



1. A FM detection system using a phase locked loop which includes a phase comparator for comparing the phase differences and frequency differences between a frequency modulated input signal and first output signal from a voltage controlled oscillator, a low-pass filter for amplifying and converting the output of said phase comparator into a direct current voltage, an amplifier for amplifying the output of said low-pass filter, the output voltage of said amplifier being an input to an audio amplifier and to said voltage controlled oscillator, said audio amplifier being connected to a de-emphasis circuit, said system further comprising:

a wave shaping comparator for accepting a second output signal form said voltage controlled oscillator which is 90? out of phase with said first output signal from said voltage controlled oscillator, said comparator generating an output square wave signal;

an in-lock detector for accepting as inputs said square wave signal and said frequency modulated input signal to provide an output signal including the sum frequency and the difference frequency between said inputs;

a low-pass filter for receiving the output signal from said detector for cutting off said sum frequency component and filtering out said difference frequency signal when said phase locked loop is unlocked;

a comparator for comparing the output of said low-pass filter with a reference voltage and providing a constant logic level when said phase locked loop is locked, or providing a clock pulse corresponding to said difference frequency when said phase locked loop is unlocked;

a ripple counter for accepting and counting said clock pulse and generating a binary signal output in response to the count made;

a D/A converter for accepting said binary output to provide an anologue current; and

the oscillation frequency of said voltage controlled oscillator being controlled in response to said output voltage of said amplifier and said output current of said D/A converter.

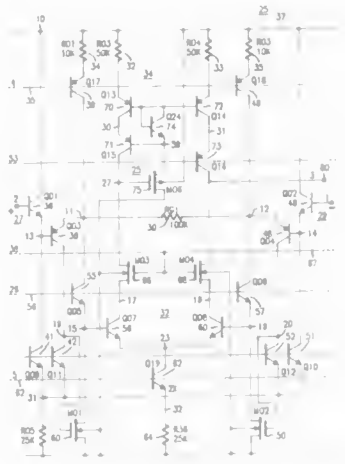
4,881,043
VARIABLE GAIN TRANSCONDUCTANCE AMPLIFIER AND VARIABLE BANDWIDTH FILTER

Barry L. Jason, Bedford, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 12, 1988, Ser. No. 242,998

Int. Cl.⁴ H03F *3/45*

U.S. Cl. 330—252 9 Claims



5. A low supply voltage, high swing input signal, variable gain transconductance amplifier, comprising:

a pair of complimentary input follower circuits, having complimentary inputs;

an element coupled to each of said follower circuits to provide a signal current in said element in response to a differential input voltage applied to the complimentary inputs of said follower circuits, said signal current element producing differential currents in each of said follower circuits;

a multiplier having a pair of input devices, one each coupled into and forming a common component with each of said follower circuits, said input devices sensing the differential current flowing into follower circuits,

said input devices of said multiplier including a pair of transistors having common connected bases and the multiplier further including a differential pair of transistors having common connected emitters;

said pair of complimentary input follower circuits including a pair of opposite conductivity transistors connected with the base of a first transistor of said pair forming one of the complimentary inputs, the emitter of the second transistor of said pair being connected to the element, and the emitter of the first transistor being connected to the base of the second transistor; and

a first biased current source coupled to the complimentary input follower circuits and a second biased current source coupled to the multiplier, said second biased current being variable to vary the transconductive gain of said amplifier, the ratio of the first biased current to the second biased current setting the transconductive gain if the amplifier.

4,881,044
AMPLIFYING CIRCUIT

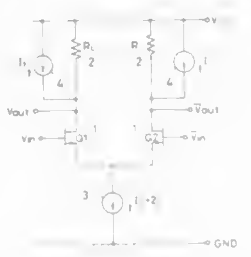
Taizo Kinoshita; Satoshi Tanaka, both of Kokubunji; Hirotoshi Tanaka, Kitatsuru; Nobuo Kotera, Kokubunji, and Minoru Nagata, Kodairashi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 30, 1987, Ser. No. 139,790

Claims priority, application Japan, Jan. 16, 1987, 62-5982

Int. Cl.⁴ H03F *3/45*

U.S. Cl. 330—253 11 Claims



1. A wide-band and high-gain amplifying circuit comprising:

(1) a first FET and a second FET whose sources are differentially connected to each other;

(2) a load means connected to the drain of one of said first FET and said second FET; and

(3) a current by-passing means which is connected to said drain and to said load means, and which permits a current to flow by-passing said load means to increase the conductance of either one of said FET's.

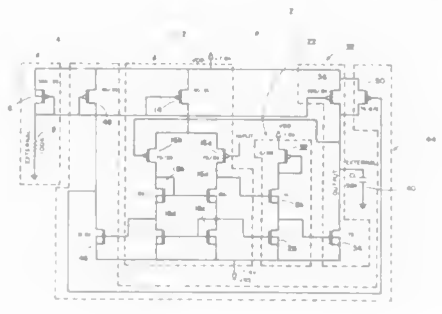
4,881,045
TRANSISTOR AMPLIFIER FOR HIGH SLEW RATES AND CAPACITIVE LOADS

Norman G. Dillman, El Paso, Tex., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Oct. 18, 1988, Ser. No. 260,854

Int. Cl.⁴ H03F *3/45*

U.S. Cl. 330—253 12 Claims



1. An apparatus for providing an improved slew rate in an amplifier, comprising:

first means for providing an error signal using an input signal and an output signal;

second means for providing a threshold and outputting a control signal depending upon the value of said threshold and said error signal;

output means for providing a output signal; and

third means communicating with said control signal and said output means for increasing a slew rate associated with said output signal depending upon said control signal.

4,881,046
MICROWAVE LINEAR AMPLIFIER WITH VERY WIDE PASS BAND

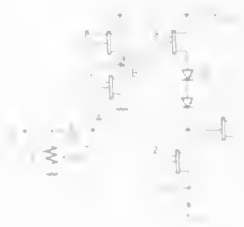
Pham N. Tung, Paris, France, assignor to Thompson Hybrides et Microondes, Paris, France

Filed Nov. 23, 1988, Ser. No. 275,382

Claims priority, application France, Nov. 27, 1987, 87 16466

Int. Cl.⁴ H03F *3/16*

U.S. Cl. 330—277 8 Claims



1. A basing circuit, for the biasing at neutral point of the gate of an input transistor wherein said biasing circuit is formed by a BFL type logic circuit comprising:

a inverter formed by a transistor and its active load, powered from a first voltage source;

a shifter formed by a transistor with its gate connected to the drain of the transistor of the inverter, and with its source connected to at least one diode and one transistor which is a current source, the shifter being powered between the first voltage source and a second negative voltage source,

the input signal being applied simultaneously to the gate of the transistor of the inverter and to the gate of the input transistor of the amplifier, and gate of the input transistor being furthermore connected to the output point of the shifter, common to the cathode of the diode and to the drain of the current source transistor.

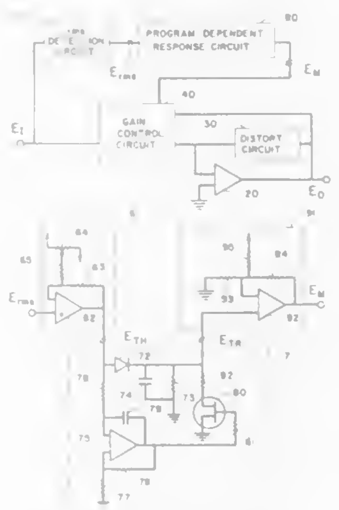
4,881,047
AUTOMATIC GAIN EXPANSION SYSTEM

James K. Waller, Jr., 174 Morgan Hill, Lake Orion, Mich. 48035

Filed Jun. 20, 1988, Ser. No. 209,176

Int. Cl.⁴ H03G *3/30*

U.S. Cl. 330—282 25 Claims



1. A system for amplifying an input signal comprising:

means for deriving a dc signal proportional to said input signal;

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means for passing said dc signal when said input signal exceeds a first predetermined level;
means for amplifying said input signal to produce an output signal;
means for distorting said output signal when the gain of said amplifying means exceeds a predetermined rate; and
means responsive to said passed signal for automatically varying the rate of gain of said amplifying means and for establishing a maximum gain of said amplifying means when said input signal exceeds a second predetermined level.

4,881,048

OSCILLATOR FREQUENCY LOCKING AND PREPOSITIONING CIRCUIT

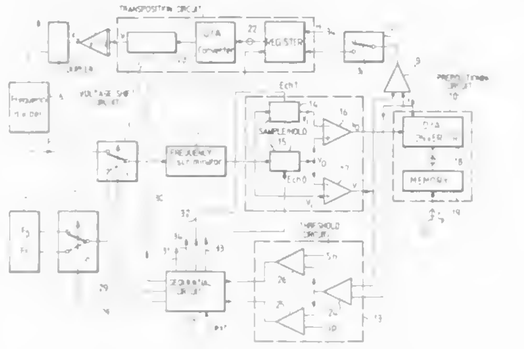
Gisèle Auneau, and Alain Boulanger, both of Brest, France, assignors to Thomson-CSF, Paris, France

Filed Jan. 19, 1989, Ser. No. 298,901

Claims priority, application France, Jan. 22, 1988, 88 00680

Int. Cl.^{4} H03L *7/02, 7/16*

U.S. Cl. 331—14 9 Claims



1. A frequency locking device for an oscillator of a type with voltage control of frequency of said oscillator, which comprises a frequency discriminator to which there is applied a first frequency signal Fi, having a determined frequency relationship with the frequency Fp of the output signal of said oscillator, said frequency locking device further comprising:
a first generator of a second signal with a frequency Fo;
a second generator of a third signal with a frequency F1;
switching-over means to apply the second and third signals and then the first signal, successively, to the frequency discriminator;
means coupled to an output of said frequency discriminator to give, firstly, a first voltage vo representing the frequency deviation Fo−F1 and, secondly, a second voltage v representing the frequency deviation Fi−Fo;
means to prepare, using the first voltage vo, a control voltage V to be applied to said oscillator to obtain a determined frequency Fp, and
a sequential circuit to prepare control signals for the abovementioned means.

4,881,049

QAM MODULATOR/DEMODULATOR

Manabu Yagi, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

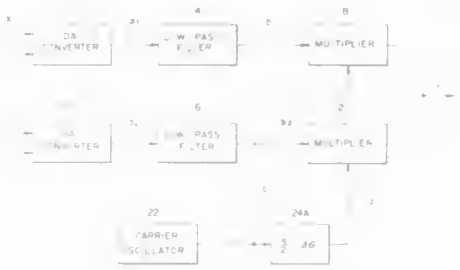
Filed Apr. 4, 1988, Ser. No. 177,281

Claims priority, application Japan, Apr. 3, 1987, 62-82752

Int. Cl.^{4} H04L *27/20, 27/22*

U.S. Cl. 332—103 8 Claims

1. A digital signal transmission system comprising:
a modulating device for effecting substantially quadrature amplitude modulation and including a phase shifter which applies phase shift processing to a carrier wave so as to produce two carrier waves which are different in phase from each other; and
a demodulating device for producing a demodulated signal from a received modulated signal by quadramplitude demodulation and including a phase shifter for applying phase shift processing to a recovered carrier wave so as to produce two recovered carrier waves which are different in phase from each other;
said phase shifters each effecting a phase shift of $(\pi/2-\Delta\theta)$ radian or $(\pi/2+\Delta\theta)$ radian where $\Delta\theta$ is a predetermined phase angle.



4,881,050

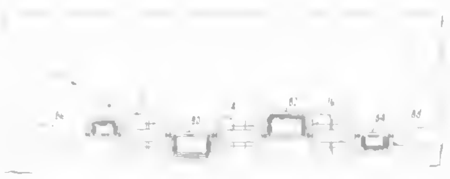
THIN-FILM MICROWAVE FILTER

Daniel G. Swanson, Jr., Mountain View, Calif., assignor to Avantek, Inc., Milpitas, Calif.

Filed Aug. 4, 1988, Ser. No. 228,288

Int. Cl.^{4} H03H *7/00*

U.S. Cl. 333—185 8 Claims



1. A thin-film filter comprising:
a planar dielectric substrate having a ground plane on one side thereof; and
first and second thin-film metal layers and an insulation layer therebetween disposed on the side of the dielectric substrate opposite the ground plane and forming one or more electrically interconnected capacitive pi networks and spiral inductors, wherein the capacitive pi networks and inductors are lumped elements;
wherein each capacitive pi network includes two pads of the first metal layer separated by a gap, and includes an overlying region of the second metal layer overlapping the two pads of the first metal layer and separated from at least one pad by the insulation layer, wherein each pad provides an electrical connection to the capacitive pi network; and
wherein each spiral inductor includes a first trace of the first metal layer looped into a coil and ending at an interior end, includes a second trace of the first metal layer disposed adjacent to the first trace, and includes a connecting bridge of the second metal layer contacting the interior end of the first trace and the second trace while bridging over an intermediate portion of the first trace and separated therefrom by the insulation layer, wherein each trace provides an electrical connection to the inductor.

4,881,051

DIELECTRIC IMAGE-RESONATOR MULTIPLEXER

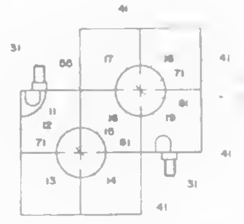
Wai-Cheung Tang, Kitchener, Canada; Richard J. Cameron, High Wycombe, and David M. T. Bryant, Abbots Langley, both of England, assignors to Com Dev Ltd., Cambridge, Canada

Filed Aug. 3, 1988, Ser. No. 227,788

Claims priority, application Canada, Apr. 5, 1988, 563315

Int. Cl.^{4} H01P *1/20*

U.S. Cl. 333—208 26 Claims



1. A multiplexer comprising two, three or four channels, each channel having one bandpass filter, each filter having at least one cavity, said at least one cavity of each filter being a common cavity with all of the other filters of the multiplexer, said common cavity containing one independent dielectric cut image resonator for each filter representing a channel of said multiplexer, each resonator being mounted on a suitable support, said common cavity providing a common junction and containing a means to couple electromagnetic energy between the various channels, said multiplexer having at least one input and at least one output.

4,881,052

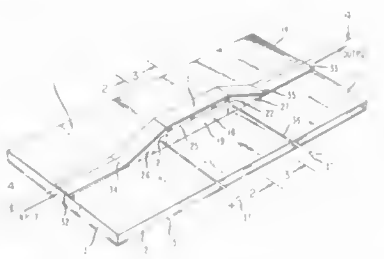
MILLIMETER WAVE MICROSTRIP NONRECIPROCAL PHASE SHIFTER

Richard A. Stern, Allenwood, and Richard W. Babbitt, Fair Haven, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 5, 1988, Ser. No. 280,055

Int. Cl.^{4} H01P *1/195*

U.S. Cl. 333—24.1 7 Claims



1. A microstrip nonreciprocal phase shifter comprising
a length of microstrip transmission line dielectric substrate having a pair of ends and top and bottom planar surfaces;
an electrically conductive ground plane mounted on the bottom surface of said substrate;
a rectangular ferrite rod having four sides and a pair of ends mounted on the top surface of said substrate with one of said rod sides abutting said substrate top surface and with said rod ends spaced a distance from the ends of said length of substrate, said rod having a dielectric constant greater than the dielectric constant of said substrate and a passageway therein extending along the longitudinal axis of the rod for at least a portion of the length of the rod so that the rod has a toroidal-shaped portion surrounding said passageway and extending the length of the passageway, said toroidal-shaped rod portion having a pair of walls disposed on opposite sides of said passageway which are substantially normal to said first-named rod side;
a dielectric waveguide core member disposed in said rod passageway and extending the length of said passageway, said dielectric core member having a dielectric constant which is at least as great as the dielectric constant of said rod;
a dielectric plate mounted on a second side of said rod which is parallel to said first-named rod side, said plate extending the length of the rod so that the ends of the plate are located at the ends of said rod and having a dielectric constant which is substantially the same as the dielectric constant of said substrate;
a pair of ramp-shaped dielectric waveguide members mounted on the top surface of said substrate at the ends of said rod, each of said ramp-shaped members having dielectric constant which is substantially the same as the dielectric constant of said rod, a width which is substantially the same as the width of said rod, a planar bottom surface abutting the top surface of said substrate, an end surface abutting the end of said rod and the end of said plate adjacent thereto and a downwardly-sloping top surface extending between the end of said plate adjacent thereto and the top surface of said substrate;
electrically conductive microstrip conductor means mounted on the top surface of said plate, the top surface of said pair of ramp-shaped dielectric waveguide members and the top surface of said substrate in alignment with the longitudinal axis of said rod and extending between the ends of said length of substrate; and
selectively operable control wire means extending through said dielectric waveguide core member along the longitudinal axis of said rod for creating a reversible circular magnetic field in said toroidal-shaped portion of said rod surrounding said dielectric waveguide core member so that said rod acts as a twin wall latching nonreciprocal phase shifter with respect to electromagnetic wave energy traveling along said microstrip conductor means between the ends of said microstrip conductor means.

4,881,053

ELECTROMAGNETIC RELAY

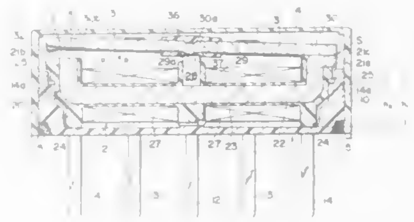
Takashi Tanaka, Takatsuki; Takezo Sano, Shiga, and Tsutomu Shimizu, Kusatsu, all of Japan, assignors to Omron Tateisi Electronics Co., Kyoto, Japan

Filed Mar. 11, 1988, Ser. No. 167,192

Claims priority, application Japan, Mar. 13, 1987, 62-59561

Int. Cl.^{4} H01H *51/22*

U.S. Cl. 335—80 9 Claims



1. An electromagnetic relay comprising an electromagnetic block with a roughly U-shaped iron core formed with a pair of bent opposing magnetic poles at both the ends thereof and with a coil wound therearound via a spool; and an armature block having an armature with both ends thereof opposing the magnetic poles and with the middle portion thereof pivotally supported, to bring or separate a movable contact provided for said armature block into contact with or away from a fixed contact by pivoting said armature block on the basis of energization and deenergization of said electromagnetic block, wherein a permanent magnet is disposed immediately adjacent

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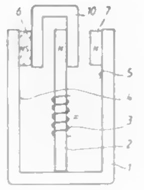
to the center of the iron core between the two opposing magnetic poles thereof so as to oppose said armature; said permanent magnet is supported by a support member formed integral with said spool of said electromagnetic block; the coil is wound around spool between said permanent magnet and each of said magnetic poles; and said armature is pivotally supported by said electromagnetic block.

4,881,054

RELAY DRIVE FOR POLARIZED RELAY

Tibor Polgar, Maria Enzersdorf, Austria, assignor to Schrack Elektronik-Aktiengesellschaft, Vienna, Austria
Filed Aug. 26, 1988, Ser. No. 236,920
Claims priority, application Austria, Aug. 27, 1987, 2164/87
Int. Cl.^{4} H01F *7/08*
U.S. Cl. 335—230 14 Claims

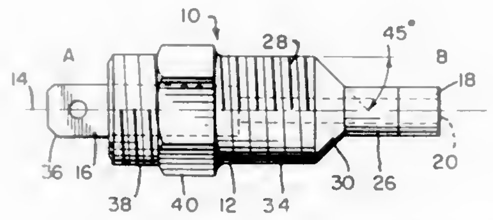


1. A relay drive for a polarized relay, comprising:
a split yoke having a plurality of limbs;
an armature moveably disposed between said limbs of said yoke;
coil means for inducing a magnetic field within said yoke;
a first flux guide magnetically coupled to said yoke and comprising a permanent magnet, one pole face of said permanent magnet defining a first pole face; and
a second flux guide, detachably mounted within said relay, magnetically coupled to said yoke and directly defining a second pole face;
said first and second pole faces at least partially defining at least one air gap, said air gap permitting movement of said armature between said limbs of said yoke.

4,881,055

HIGH-TEMPERATURE-FLUID SENSOR

F. William Capp, Winston-Salem; Don J. Gerhardt, Clemmons, and Randal A. Little, Mocksville, all of N.C., assignors to Ingersoll-Rand Company, Woodcliff Lake, N.J.
Filed Nov. 10, 1988, Ser. No. 269,707
Int. Cl.^{4} H01H *37/76*
U.S. Cl. 337—404 17 Claims

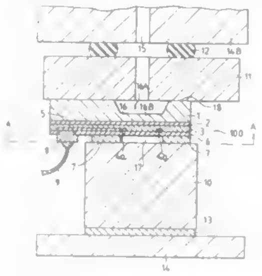


1. A high-temperature-fluid sensor, with a fusible detector, comprising:
a body having a longitudinal axis; and
a pair of electrical conductors, confined within said body, lying generally parallel with said axis; wherein
portions of said conductors, of said pair thereof, project from opposite axial ends of said body; and including fusible, electrically conductive material engaged with, and electrically bridging between those said conductors' portions which project from one of said axial ends of said body; wherein
said conductors' portions, which project from said one end of said body, are spaced-apart, in juxtaposition, defining a void therebetween;
a buffer, of electrically non-conductive material, is confined within said void; and
said buffer has means formed therein for securing said fusible material thereto.

4,881,056

FACEDOWN-TYPE SEMICONDUCTOR PRESSURE SENSOR WITH SPACER

Masahito Mizukoshi, Nagoya; Eishi Kawasaki; Takeshi Miyajima, both of Kariya, and Takeshi Fukazawa, Tokyo, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan
Filed Apr. 11, 1988, Ser. No. 180,134
Claims priority, application Japan, Apr. 9, 1987, 62-87696; Jul. 7, 1987, 62-169283
Int. Cl.^{4} G01L *1/22*
U.S. Cl. 338—4 28 Claims

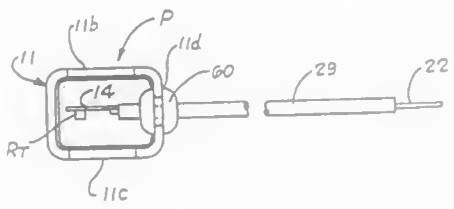


1. A facedown-type semiconductor pressure sensor comprising:
(a) a sensing element having:
  (i) a semiconductor substrate having in one surface a recess for receiving an applied pressure to be measured, said recess being formed such that a thin portion is provided in said semiconductor substrate at a place corresponding to a bottom of said recess;
  (ii) layer means formed on the other surface of said semiconductor substrate, said thin portion and a portion of said layer means corresponding to said thin portion forming a diaphragm;
  (iii) a spacer having a hole therein formed on said layer means, said hole being substantially coaxial with said recess;
  (iv) piezoresistive means embedded in said diaphragm to produce an output in accordance with displacement of said diaphragm caused by application of the pressure to be measured; and
  (v) electrode means connected to said piezoresistive means for obtaining the output from said piezoresistive means, and
(b) a pedestal to which said spacer is fixed such that a pressure chamber is defined by said hole and a surface of said pedestal, said pedestal supporting said layer means through said spacer.

4,881,057

TEMPERATURE SENSING APPARATUS AND METHOD OF MAKING SAME

Richard R. Garcia, and Royal H. Sites, both of Plano, Tex., assignors to Ranco Incorporated, Dublin, Ohio
Filed Sep. 28, 1987, Ser. No. 101,656
Int. Cl.^{4} H01C *3/04*
U.S. Cl. 338—28 19 Claims

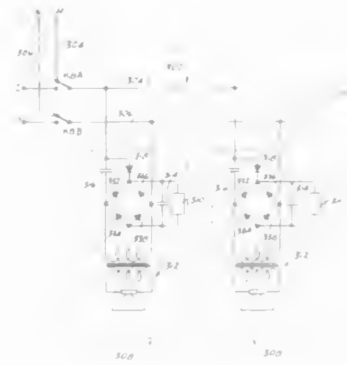


1. A method of manufacturing a temperature sensor comprising the steps of:
forming a voltage divider having first and second connected segments wherein forming said first segment comprises mounting a thermistor element having a resistance that varies with temperature on a substrate and forming said second segment comprises depositing a monolithic resistor element onto the substrate;
measuring the resistance of the thermistor element at a reference temperature and recording the measured resistance; and
precisely trimming the monolithic resistor element to produce a precise resistance ratio between the first and second segments at said reference temperature.

4,881,058

COMBINED AUDIBLE AND VISUAL ALARM SYSTEM

Robert W. Berry, III, Bridgeport, Conn., assignor to Audiosone, Inc., Stratford, Conn.
Filed Oct. 25, 1988, Ser. No. 262,459
Int. Cl.^{4} G08B *27/00*
U.S. Cl. 340—326 25 Claims

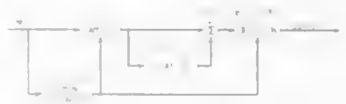


1. A combination audio and visual alarm system for selectively generating either audible, or visual, or combined audible and visual alarm signals, comprising in combination:
(a) signal generating means for producing an audio signal on a pair of output terminals thereof,
(b) a two-wire transmission line connected to said output terminals,
(c) a unit containing a sound transducer and a polarity-responsive electrical lamp, and
(d) means connected with said signal generating means, said transmission line, said sound transducer and said lamp, for selectively activating either the sound transducer by itself to be driven by the signal generating means, or the lamp by itself, or both the sound transducer and lamp simultaneously to be driven by the signal generating means.

4,881,059

MANCHESTER CODE RECEIVER

Burton R. Saltzberg, Middletown, N.J., assignor to American Telephone and Telegraph Company, New York, N.Y. and AT&T Information Systems Inc., Morristown, N.J.
Continuation-in-part of Ser. No. 44,267, Apr. 30, 1987, abandoned. This application Dec. 30, 1987, Ser. No. 143,244
Int. Cl.^{4} H03M *5/12*
U.S. Cl. 341—70 10 Claims



1. A Manchester code receiver comprising
input means for receiving a Manchester encoded data signal,
sampling means for generating samples of said data signal,
delay means connected to said sampling means for delaying said data signal samples by a predetermined fraction of the time period of said data signal, and
subtracter means for subtracting a delayed data sample outputted from said delay means from said data signal sample generated by said sampling means.

4,881,060

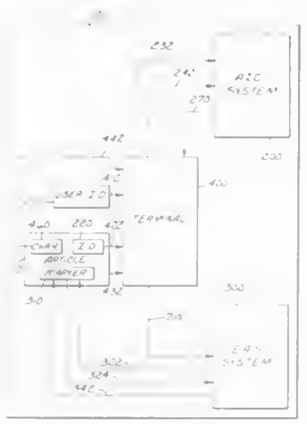
FIRE ALARM SYSTEM

Joseph M. Keen, Crystal Lake, and David S. Schiller, Hawthorn Woods, both of Ill., assignors to Honeywell Inc., Minneapolis, Minn.
Filed Nov. 16, 1988, Ser. No. 272,174
Int. Cl.^{4} G08B *29/00*
U.S. Cl. 340—511 20 Claims

1. In a fire detection system of the type including at least one sensor for sensing the level of a parameter of a fire condition such as heat or smoke density and which transmits electrical signals indicative of the sensed levels over a communication link, an alarm system for indicating a first alarm condition comprising:
control means coupled to said communication link for receiving said electrical signals from said sensor,
clock means responsive to said control means for keeping time from the time that said parameter reaches a first level and
alarm means responsive to said control means for indicating said first alarm condition when said parameter reaches a second level from said first level within a predetermined time period, said second level having a magnitude greater than said first level.

4,881,061
ARTICLE REMOVAL CONTROL SYSTEM

David C. Chambers, Saint Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.
Filed Dec. 5, 1988, Ser. No. 279,531
Int. Cl.⁴ G06F *7/06*
U.S. Cl. 340—568 14 Claims



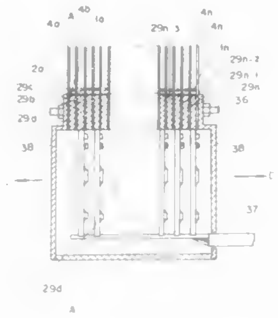
1. An article removal control system for enabling removal of a given article only by a given authorized user from a facility which has:
- (a) an article inventory control system which responds to inputs including user identification data and article identification data to issue an article removal authorization signal, and
- (b) an electronic article surveillance system which controls removal of the article by detecting within an interrogation zone a sensitized electronically detectable marker secured to the article;

the article removal control system comprising:
- (c) an article removal authorization signal receiver and
- (d) means responsive to the article removal authorization signal for initiating removal of the given article, comprising
  - (1) a measurer of a characteristic of the given article,
  - (2) a receiver of a coded input signal representing the measured characteristic,
  - (3) a comparer of the measured characteristic and the coded input signal, which produces a verification signal if they are substantially equal, and
  - (4) an enabler which upon receipt of the verification signal enables the initiation of the removal of the given article.

4,881,062
YARN BREAK DETECTOR FOR SPINNING AND WEAVING MACHINES

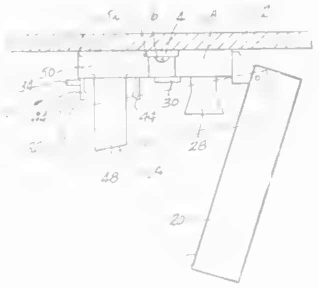
Syozaburo Makino, Kanagawa, and Shouji Hirabayashi, Gifu, both of Japan, assignors to Nippon Selen Co., Ltd., Kanagawa, Japan
PCT No. PCT/JP87/00959, § 371 Date Jun. 23, 1988, § 102(e) Date Jun. 23, 1988, PCT Pub. No. WO88/04644, PCT Pub. Date Jun. 30, 1988
PCT Filed Dec. 10, 1987, Ser. No. 219,153
Claims priority, application Japan, Dec. 15, 1986, 61-298012
Int. Cl.⁴ G08B *21/00*
U.S. Cl. 340—677 2 Claims

1. A yarn break detector comprising sensor electrodes disposed in correspondence to a plurality of closely arranged yarns so that a change of electric charge of yarn will be induced therein, high-input-resistance amplifiers each of which amplifies the varied potential induced in a corresponding one of said sensor electrodes and issues an output signal by discriminating between run and stoppage of said yarn, grounded conductive separators adapted for shielding said sensor lectrodes from any electric field while guiding said yarns, and a logic circuit having inputs connected to the outputs of corresponding ones of said high-input-resistance amplifiers, wherein each of said yarns is let run between two adjoining separators and when any of said yarns is caused to stop running, a signal is issued from the output of said logic circuit to stop the machine processing said yarns while giving an alarm.



4,881,063
BATTERY REMOVAL INDICATOR

Keith Fawcett, Limerick, Ireland, assignor to EI Company, Ltd., Shannon, Ireland
Filed Jan. 30, 1989, Ser. No. 302,913
Int. Cl.⁴ G08B *21/00*
U.S. Cl. 340—693 15 Claims



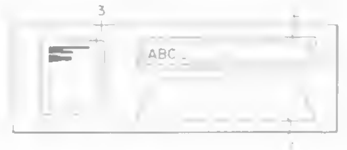
1. A battery removal indicator for use in a battery operated unit which includes a base member, at least one battery operated device attached to said base member, and a cover hingedly mounted to said base member for rotation about a first axis, said indicator comprising spring loaded means for preventing said cover from closing and for providing a separate visual indication that a battery is not present in said unit.

4,881,064
INFORMATION PROCESSOR HAVING CURSOR DISPLAY SYSTEM AND CONTROL

Tsutomu Nishino, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 702,679, Dec. 19, 1985, abandoned. This application Sep. 4, 1987, Ser. No. 94,087
Claims priority, application Japan, Feb. 23, 1984, 59-31445
Int. Cl.⁴ G09G *3/00*
U.S. Cl. 340—709 11 Claims

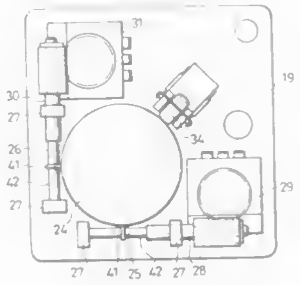
1. An information processor comprising:
- designation means for designating a cursor position,
- memory means for storing information;
- display means including a first display unit for displaying in dot form corresponding to a visual format information stored in said memory means and a second display unit for displaying in character form a portion of the information stored in said memory means;

- cursor memory means for storing a cursor position designated by said designation means; and
- cursor display means for displaying a cursor on said second display unit whenever the cursor position stored in said cursor memory means is designated in a position included in the portion of information displayed on the second display unit and for displaying a cursor on the first display unit whenever the cursor position stored in said cursor memory means is not designated in a position included in the portion of information displayed on the second display unit.



4,881,065
X-Y POSITION INPUT APPARATUS INCLUDING PREVENTING DUST INTERFERENCE

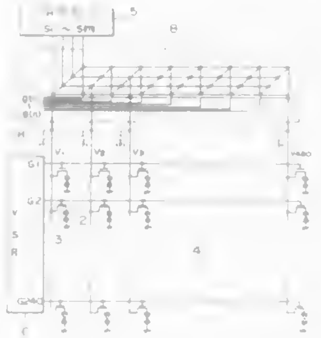
Masahiro Soma, Furukawa, and Shinya Tanaka, Yakohama, both of Japan, assignors to Alps Electric Co., Ltd., Japan
Filed Dec. 31, 1987, Ser. No. 139,906
Claims priority, application Japan, Apr. 28, 1987, 62-63433[U]
Int. Cl.⁴ G09G *1/00*
U.S. Cl. 340—710 6 Claims



1. An X-Y input apparatus comprising: a ball freely rotatably arranged;
- a first rotating shaft, having a large diameter portion and having a first contact portion, rotated by a rotating force caused by said first contact portion being in contact with said rotatable ball, said first contact portion having a diameter larger than the portions of said first rotating shaft adjacent thereto and having a diameter smaller than said large diameter portion and said first contact portion further having a first stepped portion connecting said first contact portion to said adjacent portions;
- a second rotating shaft, having a large diameter portion and having a second contact portion, having an axis of rotation substantially perpendicular to an axis of rotation of said first rotating member, and rotated by a rotating force caused by said second contact portion being in contact with said rotatable ball, said second contact portion having a diameter larger than the portions of said second rotating shaft adjacent thereto and having a diameter smaller than said large diameter portion, and said second contact portion further having a second stepped portion connecting said second contact portion to said adjacent portions;
- first rotation-angle detecting means for detecting a rotation angle of said first rotating shaft;
- second rotation-angle detecting means for detecting a rotation angle of said second rotating shaft; and
- a casing for storing said rotatable ball, first and second rotating shafts, and first and second rotation-angle detecting means therein,
- said rotatable ball partially projecting from an opening formed on a lower plane of said casing, resulting in performing X-Y input operation.

4,881,066
ACTIVE MATRIX-TYPE DISPLAY PANEL

Hideo Kanno; Shinichi Yamashita, both of Kawasaki; Satoshi Omata, Tokyo; Masahiko Enari, Yokohama; Mitsutoshi Kuno, Kawasaki, and Yoshiyuki Osada, Yokosuka, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 799,107, Nov. 18, 1985, abandoned. This application Jun. 20, 1988, Ser. No. 220,898
Claims priority, application Japan, Nov. 19, 1984, 59-242268
Int. Cl.⁴ G09G *3/00*
U.S. Cl. 340—719 6 Claims



1. An active matrix-type display panel, comprising:
- a liquid crystal panel comprising:
  - a first base plate having thereon:
    - a plurality of thin film transistors arranged in the form of a matrix comprising rows and columns;
    - a plurality of horizontal lines each commonly connected to the gates of thin film transistors in a row;
    - a plurality of vertical lines each commonly connected to the sources of the thin film transistors in a column; and
    - a plurality of pixel electrodes each connected to the drain of a thin film transistor;
  - a second base plate having thereon a counter electrode; and
  - a liquid crystal disposed between the first and second base plates;
- a scanning-side driving circuit provided with a first shift register;
- an information-side driving circuit provided with a second shift register;
- a plurality of capacitive elements respectively connected to the vertical lines for sampling-and-holding information signals, each capacitive element being formed between one of the vertical lines and the counter electrode with the liquid crystal disposed therebetween and having a capacitance at least thirty times the capacitance formed between one pixel electrode and the counter electrode with the liquid crystal disposed therebetween;
- a plurality of analog switching transistors disposed between said second shift register and said capacitive elements for holding the information signals at said respective capacitive elements for one scanning period for scanning a row of the transistors; and
- said plurality of analog switching transistors being divided into a plurality of blocks each comprises a plurality of

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analog switching transistors≷the gates of which are commonly connected to a switching line, and the sources of which are connected to data lines leading to the second shift register in such a manner that the sources of the analog switching transistors in each block are respectively connected to one of the data lines, and wherein a group of the sources of the analog switching transistors each belonging to a different block are commonly connected to one of the data lines.

4,881,067

IMAGE FORMING APPARATUS AND METHOD

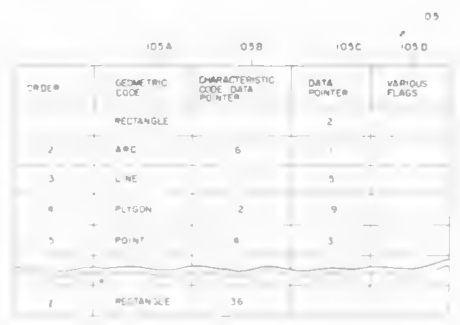
Osamu Watanabe, Tokyo; Kosuke Komatsu, Kanagawa; Masaichi Ishibashi, Saitama; Mutsumi Kimura, Tokyo; Shinsuke Koyama, Tokyo; Takahiro Fujimori, Tokyo; Tadashi Fujiwara, Tokyo, and Junko Kuroiwa, Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Nov. 26, 1985, Ser. No. 801,826

Claims priority, application Japan, Nov. 30, 1984, 59-253659

Int. Cl.⁴ G09G *1/14*

U.S. Cl. 340—750 12 Claims



1. An image forming apparatus for dealing with videotex codes consisting of a sequential arrangement of geometric codes representing individual image areas as respective geometric drawings and also characteristic codes representing attributes of said geometric drawings, said apparatus comprising:

means for effecting transmission of said geometric codes and characteristic codes;

an order table for supervising the order of transmission of said geometric codes and characteristic codes;

a characteristic code table communicating with said order table and enabling selection of said characteristic codes; and

means for analyzing data in said tables and effecting changes therein.

4,881,068

THREE DIMENSIONAL DISPLAY APPARATUS

Eric J. Korevaar, 7506 Charmant Dr. #825, San Diego, Calif. 92122, and Brett Spivey, 131 Seeman, Encinitas, Calif. 92024

Filed Mar. 8, 1988, Ser. No. 165,543

Int. Cl.⁴ G09G *3/06*

U.S. Cl. 340—766 16 Claims

1. A three-dimensional visual display apparatus comprising:

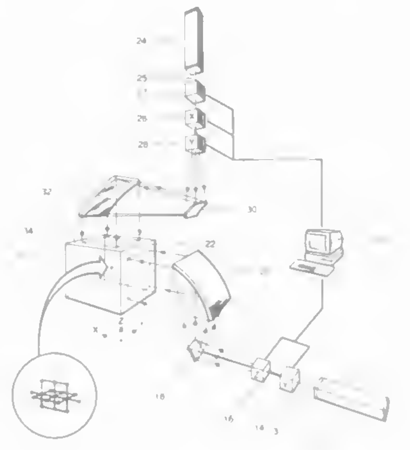
(a) a sealed chamber having one or more walls which are transparent to visible light,

(b) a single active element gas contained in said sealed chamber comprised of atoms or molecules having a ground state and a first excitation state having an excitation energy above said ground state, the difference defining a first energy level and a second excitation state having an excitation energy above said ground state, the difference defining a second energy level, which said second excitation state relaxes with the release of visible light,

(c) a first laser means for producing a first beam of laser radiation comprised of photons having energy equal or approximately equal to said first energy level,

(d) a second laser means for producing a second beam of laser radiation comprised of photons having energy equal to or approximately equal to the difference between said second eneryy level and said first energy level,

(e) means for rapidly moving and directing said first laser beam and said second laser beam so as raise the energy level of a substantial portion of the atoms in small volumes of said gas to said first energy level with said first laser beam and so as to further raise the energy level of a substantial portion of the atoms in portions of said small volumes to said second energy level with said second laser beam so as to produce small volume sources of visible light which in combination, produce what appears to the human eye as a three-dimensional display.



4,881,069

FONT COMPRESSION METHOD AND APPARATUS

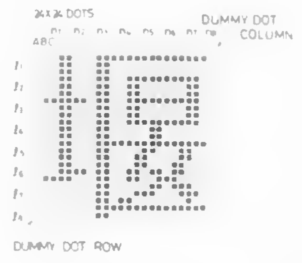
Kazuyoshi Kameda; Koichi Kaji, both of Yokohama; Hiroshi Yahiro, Yokosuka, and Kenichiro Kobayashi, Tokyo, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 760,513, Jul. 30, 1985, abandoned. This application Dec. 15, 1987, Ser. No. 134,552

Claims priority, application Japan, Nov. 15, 1984, 59-240982

Int. Cl.⁴ G09G *1/16*

U.S. Cl. 340—735 11 Claims



1. A font compression method for compressing a first type font of characters and figures arranged in an XY dot matrix into a second type font of the same characters, arranged in a second NM dot matrix by dropping predetermined dots in the column and row directions of the XY dot matrix, comprising the steps of:

(a) dividing said XY dot matrix into a plurality of sections comprising a predetermined number of bit positions along the columns and rows of said first type font;

(b) adding at least one dummy dot column and /or one dummy dot row to the final column and the final row of said XY matrix, so as to carry out a bit comparison of the final bit in the final section with the dummy dot of the XY matrix;

(c) comparing bit by bit information bits existing in the different specific bit positions in each one section and a first bit position of each of the adjacent next section with each other;

(d) dropping at least one information bit in a specified bit position in each section respectively in accordance with the result of each comparison and extracting a pair of specific information bits in specific positions in each section as compressed information bits from possible combinations of information bits; and

(e) repeating the operation of the steps (c) and (d) starting from the first section to the last section plus one dummy dot and then to the next row, until the last section of row plus one dummy dot has been reached, so as to extract each pair of compressed information bits, thereby obtaining the compressed font of the second type having a good compression quality arranged in the NM matrix from information bits thus extracted.

4,881,070

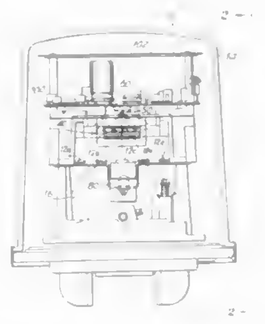
METER READING METHODS AND APPARATUS

David E. Burrowes, and Alan W. Holmes, both of Dayton, Ohio, assignors to Energy Innovations, Inc., Dayton, Ohio

Continuation of Ser. No. 253,438, Oct. 5, 1988, abandoned, which is a continuation of Ser. No. 909,851, Sep. 22, 1986, abandoned, which is a division of Ser. No. 747,243, Jun. 21, 1985, Pat. No. 4,646.084. This application Mar. 22, 1989, Ser. No. 327,360

Int. Cl.⁴ H04Q *9/02*

U.S. Cl. 340—870.02 4 Claims



1. A meter associated with and disposed at the premises of a customer who is consuming a service or commodity supplied to said premises from a remote location via a service or commodity channel which extends from said remote location to said premises comprising:

means for determining the rate at which said service or commodity is currently being consumed at said premises;

means for receiving from a remote location an input signal indicative of a maximum allowable rate of consumption of said service or commodity at said premises;

means responsive to said input signal for storing said maximum allowable rate;

means for comparing said rate at which said service or commodity is currently being used with said maximum allowable rate; and

means for producing an output signal indicative of whether or not said rate at which said service or commodity is currently being used is greater than said maximum allowable rate.

4,881,071

TRANSDUCER FOR MEASURING ONE OR MORE PHYSICAL QUANTITIES OR ELECTRIC VARIABLES

Gianpaolo Monterosso, Milan; Riccardo Marazzi, Vaprio D'Adda; Mario Nicotra, Segrate, and Luciano Manenti, Gussago, all of Italy, assignors to Nicotra Sistemi S.p.A., Pero, Italy

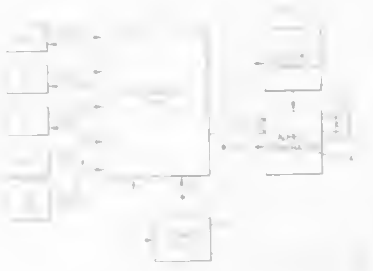
Continuation-in-part of Ser. No. 70,808, Jul. 7, 1987, abandoned. This application Nov. 16, 1987, Ser. No. 120,839

Claims priority, application Italy, Jul. 24, 1986, 21245 A/86

The portion of the term of this patent subsequent to Oct. 3, 2006, has been disclaimed.

Int. Cl.⁴ H04Q *11/00*

U.S. Cl. 340—870.13 8 Claims



1. A transducer for measuring one or more conventional physical quantities and electric variables, comprising:

at least one sensor, each of said at least one sensor detecting either a physical quantity or an electric variable, and outputting a frequency signal having a frequency which is proportional to a level of either said detected physical quantity or said detected electric variable;

a multiplexer unit for selecting and enabling said at least one sensor according to a coded address assigned to each of said at least one sensor, and for transmitting each said frequency signal received from each of said at least one sensor;

an address generator for forming and delivering to said multiplexer unit each said coded address assigned to each of said at least one sensor;

a clock generator connected to said multiplexer unit through said address generator, for controlling a rate of operation of said multiplexer unit and said address generator;

a power supply unit for delivering an operating voltage to said multiplexer unit, said clock generator, and said address generator; and,

a single loop for supplying electric power to said power supply unit and for delivering each said frequency signal transmitted from said multiplexer unit.

4,881,072

DEVICE FOR REMOTE METERING

Alain Carnel, Poitiers, France, assignor to Electricite de France, Paris and Service National and Enertec, Montrouge, both of, France

Filed Mar. 9, 1987, Ser. No. 23,355

Claims priority, application France, Mar. 7, 1986, 86 03271

Int. Cl.⁴ H04Q *9/00*

U.S. Cl. 340—870.020 12 Claims

1. Device for remote measuring, comprising measuring means for measuring a consumption, transmission means for transmitting information, which transmission means is suitable for transmitting information relating to quantities consumed, and consisting essentially of modulating means and of a bifilar line, said measuring means and said modulating means being connected to a first end of said bifilar line, and counting means for counting said information, which counting means is disposed at a second end of the line, characterized in that said modulating means comprises capacitive means (6) connected

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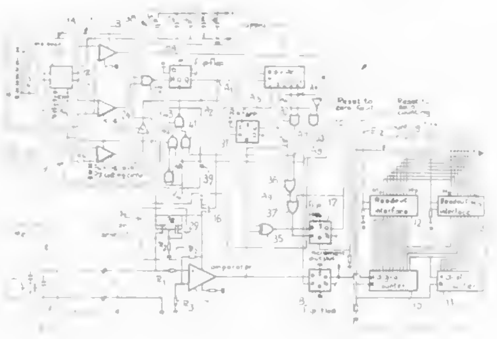
to the bifilar line and switching means (5) which is actuated by the measuring means (4) to modify correlatively the value of the total capacitance which is represented, for a signal passing along the bifilar line, by said capacitive means, and in that this device further comprises, on the counting means end of said bifilar line, a current generator (14) to apply a load current



pulse to the bifilar line, and detecting means (7) which is connected to the line (3) and which is adapted for distinguishing, as a function of the rise time of the voltage on this line in response to said current pulse, at least two states of the modulating means and one state corresponding to possible cutting and/or to a possible short-circuit of the transmission means.

4,881,073
PAGING SYSTEM WITH DYNAMICALLY PROGRAMMABLE RECEPTION FREQUENCIES

Andrew A. Andros, Spring, Tex., and Thomas J. Campana, Jr., Chicago, Ill., assignors to Telefind Corp., Miami, Fla.

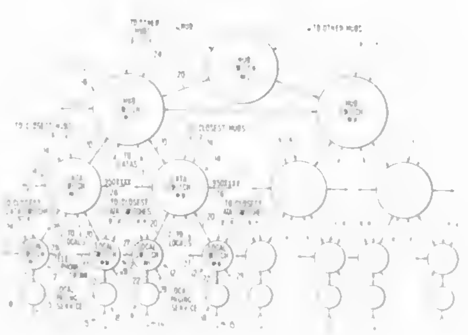
Filed Feb. 22, 1988, Ser. No. 158,931

Int. Cl.⁴ H04Q *7/00;* H04B *7/02*

U.S. Cl. 340—825.440 30 Claims

MICROFICHE APPENDIX INCLUDED

(274 Microfiche, 3 Pages)



30. A paging system including a paging service, a plurality of subscriber files, each subscriber file identifying a subscriber of the paging service by an identification number and a transmitter for transmitting pages on at least one radio common carrier channel, and at least one additional paging means which transmits pages to subscribers of the paging means on at least one non-radio common carrier channel, the paging service transmitting a channel programming command by RF transmission from the transmitter to a paging receiver, including a paging receiver identification code, and specifying a change in RF channel to be received by a paging receiver receiving the channel programming command comprising:

(a) means for generating a signal to initiate the generation of a channel programming command for changing at least one channel of a paging receiver the channel programming command in response to a communication containing an identification number of a subscriber identified within the subscriber files; and

(b) means, responsive to the means for generating a signal, for generating the channel programming command to cause the paging receiver to which the channel programming command is addressed to receive pages on the at least one radio common carrier and causing the transmitter to transmit the channel programming command to the paging receiver.

4,881,074
METHOD FOR FORMING AN ADDRESS TABLE IN A RING-SHAPED COMMUNICATIONS NETWORK

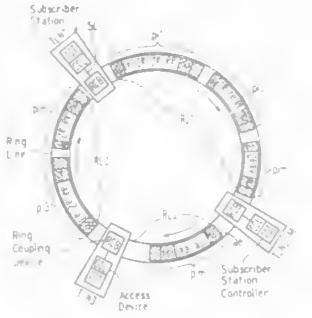
Hermann Reichbauer, Munich; Rudi Mueller, Groebenzell, and Aldo Riccato, Munich, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed May 5, 1988, Ser. No. 190,691

Claims priority, application Fed. Rep. of Germany, May 14, 1987, 3716177; Mar. 4, 1988, 3807146

Int. Cl.⁴ H04J *3/26, 1/16*

U.S. Cl. 340—825.05 15 Claims



1. A method for forming an address table in a token ring network having a plurality of subscriber stations, each having an address, among which information is transferred by transmission, in a transmission direction, of data packets consisting of the token and a frame, said method comprising the steps, after each configuring of a network, of:

(a) forming, in a first subscriber station a temporarily monitoring said network, a frame including an address signaling request, an address recognition bit having a selected binary state, and an information field including the address of said first subscriber station;

(b) broadcasting, from said first subscriber station, data packet including the frame formed in step (a);

(c) changing the state of said address recognition bit in each subscriber station upon receipt of a data packet addressed to it with said address recognition bit in said selected binary state, and returning the data packet, otherwise unchanged, to the network;

(d) forming, in each subscriber station after receipt of a data packet with an address recognition bit in said selected binary state, a further data packet having a frame including an address recognition bit having said selected binary state, an address signal request, and an information field including the contents of the information field in the received data packet with the address recognition bit in the selected binary state plus the address of the subscriber station immediately following, in the transmission direction, the last address in said contents;

(e) upon receipt by said first subscriber station of a data packet with an address recognition bit in said selected binary state, entering the address or addresses in the information field of the received data packet with the address recognition in said selected binary state into an address table in said first subscriber station; and

(f) monitoring the network with said first subscriber station using said address table.

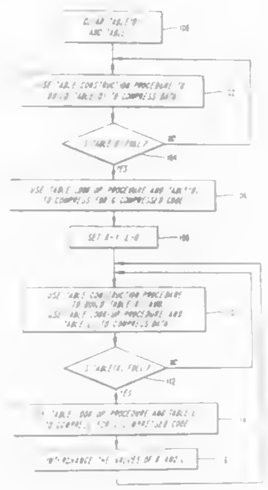
4,881,075
METHOD AND APPARATUS FOR ADAPTIVE DATA COMPRESSION

Lih-Jyh Weng, Lexington, Mass., assignor to Digital Equipment Corporation, Maynard, Mass.

Filed Oct. 15, 1987, Ser. No. 108,892

Int. Cl.⁴ H03M *7/30*

U.S. Cl. 341—87 28 Claims



1. A method for compressing input data symbol signals to generate a stream of code value signals constituting a compressed form of the input data symbol signals, the method comprising:

a first step of loading a first translation table in memory with data symbol signals;

a second step of loading a second translation table in memory with input data symbol signals according to a predetermined table construction procedure;

a third step of generating a stream of the code value signals representative of input data symbols according to a predetermined data compression procedure using the contents of the first table;

a fourth step of loading the first table with the input data symbol signals according to the same predetermined table construction procedure as used in the second step;

a fifth step of generating a stream of the code value signals representative of input data symbols according to the same predetermined data compression procedure as used in the third step using the contents of the second table; and

a sixth step of repeatedly performing the second through fifth steps.

4,881,076
ENCODING FOR PIT-PER-TRANSITION OPTICAL DATA RECORDING

Jonathan J. Ashley, Peekskill, N.Y.; Mark G. Call, Longmont, Colo., and Paul H. Siegel, San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 1, 1987, Ser. No. 126,653

Int. Cl.⁴ H03M *7/16*

U.S. Cl. 341—95 8 Claims

1. A method of generating y-bit words especially suitable for PPT or RZ recording techniques comprising the steps of:

selecting from the set of 2^y possible ybit words a subset to be recorded using pit-per-transition recording techniques according to predetermined characteristics including adjacency requirements; and

choosing from said subset code words producing a predetermined gray scale greater than zero and less than one-half.

4,881,077
RADAR ARRANGEMENT

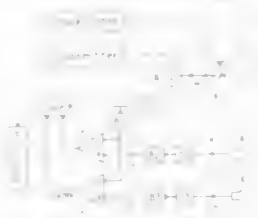
Franz Jehle, Ulm; Martin König, Günzburg, and Erwin Wölfle, Ehingen, all of Fed. Rep. of Germany, assignors to Licentia Patent-Verwaltungs-GmbH, Frankfurt, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 719,316, Apr. 3, 1985, abandoned. This application Jun. 9, 1987, Ser. No. 60,106

Claims priority, application Fed. Rep. of Germany, Apr. 14, 1984, 3414158

Int. Cl.⁴ G01S *13/94, 13/95*

U.S. Cl. 342—26 8 Claims



1. A radar arrangement comprising, transmitter means for supplying a circularly polarized signal being circularly polarized in a first direction, a directional antenna connected to said transmitter means for receiving said signal and transmitting a circularly polarized directional pattern which is circularly polarized in the first direction, a supplementary non-directional antenna which is sensitive to circularly polarized signals in an opposite direction to said circularly polarized signals being polarized in a first direction, said directional antenna being more sensitive to circularly polarized signals in the first direction than to circularly polarized signals in the opposite direction, a level comparator means connected to said directional antenna and said supplementary antenna for comparing the level of the signals of the directional antenna and the level of the signals from the supplementary non-directional antenna to each other for determining if the ratio of the level of the signals of the directional antenna to level of the signals of the supplementary non-directional antenna differs from a predetermined ratio of the directional antenna sensitivity to the supple-

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mentary non-directional sensitivity providing n indication of echo signals which are due to rain.

4,881,078
TRACKING SYSTEM WITH BEAM SWITCHING ANTENNA

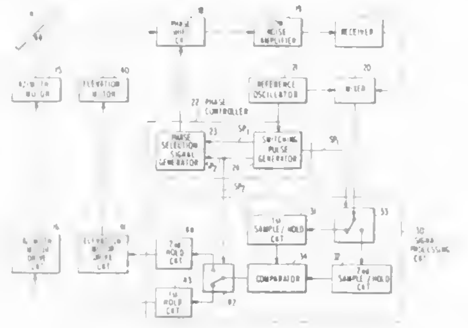
Toshinobu Yamane; Akio Kuramoto; Ryuji Shimizu, and Makoto Nakayama, all of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed May 31, 1988, Ser. No. 200,215

Claims priority, application Japan, May 29, 1987, 62-133808; Sep. 16, 1987, 62-229606; Apr. 30, 1988, 63-105516

Int. Cl.⁴ G01S *13/00;* H01Q *3/22*

U.S. Cl. 342—155 12 Claims



1. In a tracking system for tracking an electromagnetic energy source which comprises an antenna for receiving the electromagnetic energy, receiver means coupled with the antenna through feeding means for producing a signal of the electromagnetic energy received by the antenna as a receive signal, and moving means for mechanically and angularly moving the antenna so as to point the antenna to the electromagnetic energy source to thereby maximize the receive signal strength, the improvement which comprises:

- said antenna being a radiator having an antenna beam which is changeable in direction in response to variation of an electric characteristic in said feeding means;
- selection signal generating means for producing a first and a second selection signal alternately;
- said feeding means comprising electric variable means which is variable in impedance as the electric characteristic from one to another of a first and a second value, said antenna beam being directed in a first direction when said electric variable means has said first value, said antenna beam being directed in a second direction when said electric variable means has said second value, said first and said second directions having a predetermined small angular difference, said electric variable means having said first and said second values alternately in response to said first and said second selection signals alternately produced to thereby switch said antenna beam from one to the other of said first and said second directions;
- detection means coupled with said receiver means for detecting said received signal to produce a detected signal;
- processing means coupled with said detection means for deciding the detected signal strength before and after switching of said antenna beam to produce an error signal; and
- said moving means coupled with said processing means and responsive to said error signal for mechanically and angularly moving said antenna to thereby reduce said error signal.

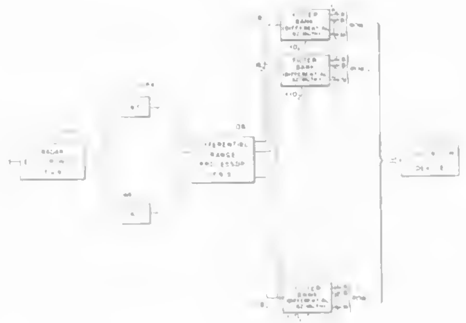
4,881,079
APERTURE RADAR

Theodore J. Peregrim, Bedford, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Dec. 28, 1987, Ser. No. 138,280

Int. Cl.⁴ G01S *7/44, 13/89*

U.S. Cl. 342—194 4 Claims



1. A radar apparatus mounted on an aircraft comprising:

- (a) means for transmitting radar pulses towards an illuminated area;
- (b) means for receiving radar pulses reflected from a first plurality of reflecting points in the illuminated area;
- (c) means, responsive to the means for receiving radar pulses, for forming a second plurality of signals characterizing the illuminated area based on the difference in ranges between the aircraft and each of the first plurality of reflecting points taken in pairs; and
- (d) means, responsive to the second plurality of signals, for producing a third plurality of signals characterizing the illuminated area based on the difference in ranges between the aircraft and each of the first plurality of reflecting points taken in pairs and the difference in azimuthal angle between the aircraft and each of the first plurality of reflecting points taken in pairs.

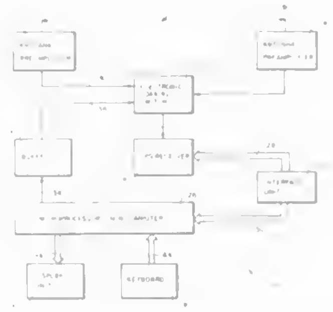
4,881,080
APPARATUS FOR AND A METHOD OF DETERMINING COMPASS HEADINGS

Daniel G. Jablonski, Silver Spring, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 24, 1985, Ser. No. 748,248

Int. Cl.⁴ G01S *5/02;* H04B *7/185*

U.S. Cl. 342—357 9 Claims



1. An improved method of determining compass headings of a platform (ship or aircraft) in association with the NAVSTAR/GPS multi-satellite system, said improved method comprising the steps of:

- positioning first and second antenna/preamplifiers fore and aft on paid platform a predetermined distance d apart in line with the heading of said platform;
- receiving position derivable data from said NAVSTAR/GPS multisatellite system via said first and second antenna/preamplifiers;
- reading the position fix of said first antenna/preamplifier from a GPS receiver into a microprocessor/minicomputer;
- switching said GPS receiver to said second antenna/preamplifier;
- reading the position fix of said second antenna/preamplifier from said GPS receiver into said microprocessor/-minicomputer; and
- computing an equivalent compass heading in said microprocessor/minicomputer according to a predetermined equation based on the position fixes of said first and second antenna/preamplifiers as determined by said GPS receiver and the predetermined distance d therebetween.

4,881,081
ANTENNA ORIENTATION ADJUSTING DEVICE FOR EARTH STATION

Masashi Yoshihara, Tokyo, Japan, assignor to NEC Corporation, Japan

Continuation of Ser. No. 97,661, Sep. 15, 1987, abandoned. This application Feb. 17, 1989, Ser. No. 313,291

Claims priority, application Japan, Sep. 17, 1986, 61-218855

Int. Cl.⁴ H01Q *3/00*

U.S. Cl. 342—359 6 Claims

1. A device comprising means for permitting a person in the vicinity of a common transmission-and-reception antenna to manually adjust the orientation of a reflecting surface of the antenna, where said antenna is included within an earth station that further includes indoor and outdoor units connected together solely by a solitary signal link used for both transmission and reception; said outdoor unit being located in the vicinity of said antenna; and said indoor unit having a demodulator for demodulating a signal that is received by said antenna and routed to said indoor unit through said solitary signal link and for applying automatic gain control to the received signal; said device further comprising;

- a converting means for converting an automatic gain controlled voltage signal output by said demodulator into a first signal;
- a control means for converting the first signal into a predetermined control signal and feeding the predetermined control signal to said outdoor unit through said solitary signal link;
- a display means electrically connected to the outdoor unit for viewing by the mentioned person and being responsive to the control signal for displaying a level which corresponds to the automatic gain controlled voltage; and
- disable means for preventing power from being radiated through said antenna when said control and display means are operating.

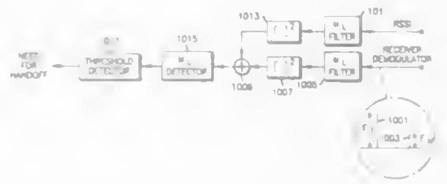
4,881,082
ANTENNA BEAM BOUNDARY DETECTOR FOR PRELIMINARY HANDOFF DETERMINATION

Victor Graziano, Oak Park, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 3, 1988, Ser. No. 163,591

Int. Cl.⁴ G01S *5/04*

U.S. Cl. 342—432 36 Claims



15. A cellular radiotelephone system antenna beam boundary handoff detector for sectorized cells, comprising:

- at least one directional antenna receiving a first radio signal from a first geographic area of radio coverage defined by a beam boundary;
- a broad beam antenna receiving a second radio signal from a second geographic area of radio coverage including at least part of said first geographic area, said second radio signal having a high correlation to said first radio signal at said first and second antennas;
- means for comparing a magnitude of said first radio signal with a magnitude of said second radio signal; and
- means, responsive to said means for comparing, for generating an output signal when said second radio signal magnitude exceeds a predetermined proportion of said first radio signal magnitude thereby determining said beam boundary.

4,881,083
HOMING TECHNIQUE FOR AN IN-GROUND BORING DEVICE

Albert W. Chau, Redmond, and John E. Mercer, Kent, both of Wash., assignors to FlowMole Corporation, Kent, Wash.

Filed Oct. 2, 1986, Ser. No. 914,706

Int. Cl.⁴ E21B *44/00, 47/022*

U.S. Cl. 342—459 17 Claims

1. A homing system including an in-ground boring device for directing said device through the ground from its particular location at a given point to a specific in-ground target point, said system comprising:

- (a) first means including a transmitting antenna carried by said boring device for producing a near full electromagnetic dipole field which functions as a predetermined homing signal;
- (b) second means including a receiving antenna arrangement and cooperating circuitry located at a ground level point for detecting said homing signal and for producing its own internal signal containing information which indicates whether the horizontal component of movement of the boring device is on or off a course leading to said target point and, if the boring device is off said course, whether its horizontal component of movement is headed to the left or right of some course which will bring the boring device to the target point;
- (c) third means including a second transmitting antenna and cooperating circuitry also located at said ground level

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point and responsive to said internal signal for producing a control signal containing said information and transmitting said control signal by electromagnetic waves to a remote location; and

(d) control means located in part at said remote location and in part on said boring device and at least in part responsive to said control signal for steering said device on a course to said target point.

4,881,084

IMAGE RECORDING METHOD USING FLUID INK ELECTROCHEMICALLY IMPARTED WITH ADHESIVENESS

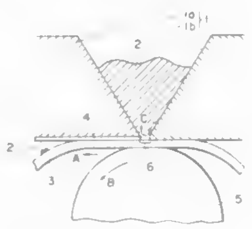
Fumitaka Kan, Tokyo; Yasuyuki Tamura; Naoki Kushida, both of Yokohama; Koichi Tohma; Hiroshi Fukumoto, both of Kawasaki; Toshiya Yuasa, Mitaka; Noboru Tohyama, Tokyo, and Norihiko Koizumi, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 17, 1987, Ser. No. 75,045

Claims priority, application Japan, Jul. 25, 1986, 61-175191; Sep. 13, 1986, 61-216752; Jan. 9, 1987, 62-1709; Apr. 23, 1987, 62-98590; May 29, 1987, 62-131584

Int. Cl.^{4} G01D *15/16;* **B41J** *3/04*

U.S. Cl. 346—1.1 15 Claims



1. A recording method comprising:

providing an ink which is fluid at room temperature and is substantially non-adhesive but can be imparted with an adhesiveness by a change in the crosslinked structure of the ink through an electrochemical reaction on application of an energy;

causing the fluid ink to contact a transfer-receiving medium at an ink contact position; and

applying a pattern of the energy corresponding to a given image signal to the fluid ink at or in the neighborhood of the ink contact position to selectively provide the ink with an adhesive pattern by said electrochemical reaction, which is then transferred to the transfer-receiving medium to form an ink pattern corresponding to the energy pattern applied.

4,881,085

VACUUM POWERED MANUALLY OPERATED CLEANING TOOL FOR ACTIVE SURFACES OF FLUID-JET PRINT HEAD

Jeffrey W. Gibson, Pleasant Garden, N.C., and Hal Bayman, Richardson, Tex., assignors to Burlington Industries, Inc., Greensboro, N.C.

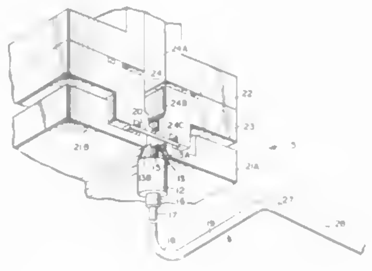
Filed Aug. 18, 1987, Ser. No. 86,486

Int. Cl.^{4} G01D *15/18;* **A47L** *9/00*

U.S. Cl. 346—75 29 Claims

1. A manually operated cleaning tool for use in a liquid jet printing apparatus of the type having a manifold assembly including an interior fluid cavity, means for generating a linear array of droplet streams under pressure through an orifice plate in fluid communication with said interior cavity, and mounting means for mounting said orifice plate to said manifold assembly, said cleaning tool comprising:

vacuum head means for contacting the active surfaces of said orifice plate and said mounting means, said vacuum head means comprising an elongated head having a fluid passageway formed therein for receiving an transporting excess printing fluid, connector means for operably connecting said vacuum head means to said adjusting means and said fluid conduit, and a pair of vacuum lips for contacting said active surfaces of said orifice plate and said mounting means, wherein said vacuum lips have a generally frusto-conical configuration and are disposed in parallel confronting relationship to define a laterally extending opening therethrough;



adjusting means for rotatably and angularly positioning said vacuum head means to contact said active surfaces;

a fluid conduit operatively connected to said vacuum head means; and

vacuum means for continuously removing excess printing fluid from said active surfaces of said orifice plate and said mounting means through said fluid conduit.

4,881,086

LASER RECORDER WITH SHEET EDGE DETECTION

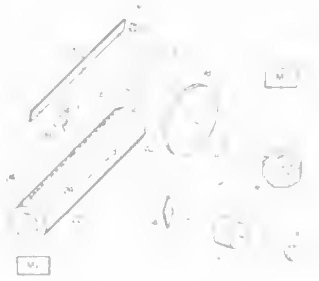
Naoya Misawa, Osaka, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Aug. 26, 1988, Ser. No. 236,989

Claims priority, application Japan, Aug. 31, 1987, 62-218285; Dec. 25, 1987, 62-331055

Int. Cl.^{4} G01D *15/14*

U.S. Cl. 346—108 30 Claims



13. A laser-beam image recording apparatus for recording images on a light-sensitive sheet medium through irradiation of an information-carrying laser beam, comprising

(a) laser beam generating means for emitting a laser beam,

(b) deflecting means for directing said laser beam toward a linear zone and deflecting the laser beam to swing repeatedly along the linear zone,

(c) means for transporting a light-sensitive sheet medium to pass through said linear zone,

(d) detecting means for detecting an arrival o the leading edge of the sheet medium at said linear zone, and

(e) beam modulating means for modulating the laser beam to be generated by said laser beam generating means, said beam modulating means being operative to modulate the laser beam depending on the image to be recorded on a leading portion of a light-sensitive sheet medium before said detecting means detects that the leading edge of the light-sensitive sheet medium which has been advancing toward said linear zone reaches the linear zone and to modulate the laser beam depending on the images to be recorded on a portion subsequent to said leading portion of the light-sensitive sheet medium after said detecting means detects that the leading edge of the light-sensitive sheet medium advanced toward said linear zone has reached the linear zone.

4,881,087

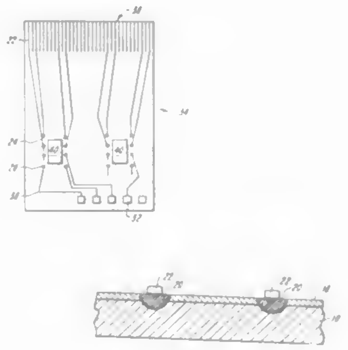
PRINTHEAD STRUCTURE AND METHOD OF FABRICATION

Joseph J. Bakewell, Boxford, Mass., assignor to Dynamics Research Corporation, Wilmington, Mass.

Filed Mar. 2, 1988, Ser. No. 163,365

Int. Cl.^{4} G01D *15/16, 15/10;* **H05B** *1/00*

U.S. Cl. 346—139 C 15 Claims



1. A printhead of a type having a writing plane on a side edge of the printhead, comprising:

a conductive sheet having a surface terminating at an edge, which edge defines the writing plane of the printhead;

a dielectric substance coating said surface of the conductive sheet and extending to said edge;

at least one dielectric-filled indentation in the dielectric coating and the conductive sheet and disposed along said edge of the conductive sheet; and

an array of spaced electrodes disposed on said dielectric coating on said surface, each electrode beginning at said edge over the dielectric-filled indentation and extending to a conductive pad on said coating on said surface.

4,881,088

PLOTTER PEN INK LEVEL DETECTOR

Paul C. Fisher, Jr., 785 Marita Dr., Boulder City, Nev. 89005; Wiebe H. Van Der Meer, Van Zijldreef 47, Postbus 64, 3980 CB Bunnik, Netherlands, and Paul C. Fisher, 711 Yucca St., Boulder City, Nev. 89005

Filed Aug. 26, 1988, Ser. No. 240,056

Int. Cl.^{4} G01D *15/16*

U.S. Cl. 346—140 R 14 Claims

1. A writing apparatus comprising:

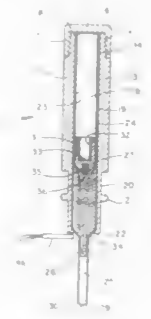
a) a hollow elongated cartridge, 23

b) writing means located at an end portion of the cartridge, 30

c) a column of writing fluid contained in the cartridge adjacent to the writing means, 26

d) ink-following object means contained in the cartridge and supported by the writing fluid, 27

e) magnet means carried by the ink-following object means; and 36



f) means for sensing the location of the magnet means whereby the level of the column of writing fluid can be determined. 46

4,881,089

THERMAL-ELECTROSTATIC INK JET RECORDING APPARATUS

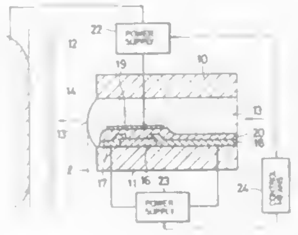
Koichi Saito; Yoshihiko Fujimura, and Nanao Inoue, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Mar. 26, 1987, Ser. No. 30,332

Claims priority, application Japan, Mar. 27, 1986, 61-67304

Int. Cl.^{4} E01D *15/16*

U.S. Cl. 346—140 R 4 Claims



1. An image recording apparatus adapted to apply both electric and thermal energy to a liquid coloring agent to jet droplets of the liquid coloring agent toward a backing electrode adapated to support a recording medium, said apparatus comprising:

container means for containing said liquid coloring agent, said container means comprising a pair of spaced apart, opposing wall members, each of said wall members including an inner surface and at least one edge, said container including a discharge portion at one of said edges of said wall members for discharging said liquid coloring agent from said container means;

a thermal energy applying means for selectively locally heating the liquid coloring agent, said thermal energy applying means comprising a plurality of heating elements arranged on the inner surface of a first one of said wall members and lead electrodes adapted to supply current to said heating elements;

a heat resistant insulating layer being provided over said heating elements;

electric energy applying means for applying an electric field to said liquid coloring agent, said electric energy applying means further comprising an electric field forming electrode positioned on the heat resistant insulating layer;

a first power supply for establishing a voltage drop between the electric field forming electrode and the backing electrode to produce the electric field, said electric field hav-

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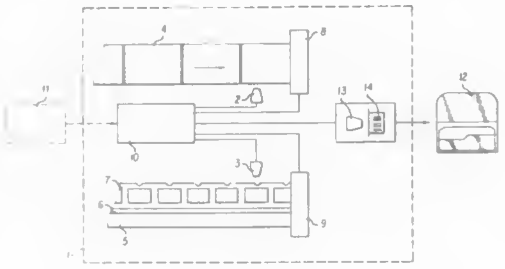
ing a level less than the level required to jet liquid coloring agent toward the backing electrode; and

second power supply means for selectively energizing said heating elements to raise the temperature of the liquid coloring agent in the area of said energized heating elements to jet droplets of said liquid coloring agent under the influence of said electric field.

4,881,090
METHOD AND APPARATUS FOR IDENTIFYING NEGATIVES IN PHOTOGRAPHIC LABORATORIES

Roberto Signoretto, Venice, Italy, assignor to Photo Engineering S.R.L., Venice, Italy
Filed Sep. 13, 1988, Ser. No. 243,631
Claims priority, application Italy, Sep. 25, 1987, 84159 A/87
Int. Cl.⁴ G03B *17/24*
U.S. Cl. 354—105 17 Claims



1. A method of correlating negatives and order envelopes in a finishing station of a photographic laboratory, comprising steps of

passing a continuous web of negatives into said finishing station,

affixing a continuous web along one edge of said web,

cutting said web into strips, each strip remaining attached to a corresponding length of said tab,

marking order identification data on said tab in synchronization with the cutting step, and

inserting each of said strips pertaining to a particular order into an envelope for that order.

4,881,091
DATA CARD ILLUMINATION ARRANGEMENT

Donald G. Josephson, Wilmington, Mass., assignor to Polaroid Corporation, Cambridge, Calif.
Filed Mar. 6, 1989, Ser. No. 318,959
Int. Cl.⁴ G03B *15/03*
U.S. Cl. 354—132 13 Claims

1. A data card illumination arrangement for use in a compact portable identification card camera system, comprising: means for defining a data card illumination compartment; a data card support structure for supporting a data card holder in

position for a data card frame supported thereby to be exposed,

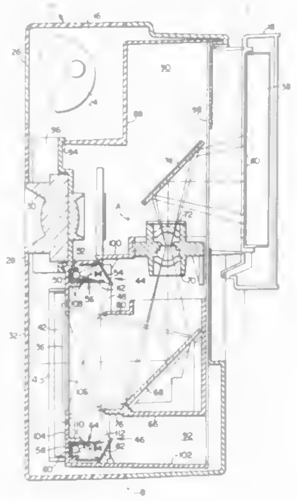
said support structure being located within said illumination compartment; means for defining an opening in a wall of said illumination compartment

to permit loading of the data card holder into said

support structure; first and second linear sources of illumination mounted on opposite ends

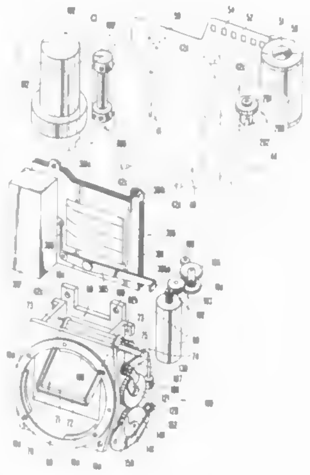
of said support structure;

reflector means mounted adjacent each of said first and second linear sources of illumination for reflecting light therefrom back toward said support structure; and filter means extending along the length of each of said first and second linear sources of illumination for providing uniform dispersion of illumination reflected by said reflector means over the data frame.



4,881,092
MOTOR DRIVEN CAMERA

Hidehiko Fukahori; Masayuki Suzuki, and Yoshihiko Aihara, all of Kanagawa, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 29, 1987, Ser. No. 139,844
Claims priority, application Japan, Jan. 7, 1987, 62-002172; Jan. 7, 1987, 62-002177; Jan. 7, 1987, 62-002178
Int. Cl.⁴ G03B *1/12, 19/12*
U.S. Cl. 354—152 9 Claims



1. A motor driven camera comprising:

a mirror drive mechanism for swinging a mirror to an exposure retracted position from a finger viewing position and to the finder viewing position from the exposure retracted position;

a shutter charge mechanism for performing charge driving and charge releasing of a shutter;

a first film drive mechanism for driving film in a direction reverse to a feeding direction for each successive shot;

a first motor serving as a drive source for driving said mirror drive mechanism, said shutter charge mechanism and said first film drive mechanism, wherein said mirror drive mechanism, for said mirror drive mechanism effects mirror movement from the finder viewing position to the exposure retracted positions and back to the finder viewing positions with unidirectional rotation of said first motor; and

a clutch mechanism having output transmission systems being changed over in response to a change of the direction of rotation of an output of said first motor, one of said output transmission systems being connected to said mirror drive mechanism and said shutter charge mechanism, and another of said output transmission systems being connected to said first film drive mechanism.

4,881,093
ELECTROMAGNETIC SHUTTER APPARATUS

David R. Dowe, Holley, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Apr. 21, 1988, Ser. No. 185,196
Int. Cl.⁴ G03B *9/10*
U.S. Cl. 354—234.1 8 Claims

1. A shutter apparatus comprising:

a. support means having an opening;

b. a plurality of shutter blades which are attached to the support means for movement about a main axis between a first position in which the blades cover a greater amount of the opening, and a second position in which the blades cover a lesser amount of the opening;

c. a plurality of permanent magnets which are respectively attached to the blades in a manner that the mass of the magnets are generally centered about the main axis;

d. a plurality of means, attached to the support means, for generating an electromagnetic field which interacts with the permanent magnets so as to cause movement of the magnets in a manner that the blades move between their first positions and their second positions, and

e. means for synchronizing the shutter blades and the means for generating an electromagnetic field in a manner to maintain equal rates of movement of the blades.

4,881,094
LENS INTERCHANGE TYPE SINGLE-LENS REFLEX CAMERA SYSTEM AND INTERMEDIATE BARREL THEREFOR

Nobuhiko Terui, Ichikawa; Yosuke Kusaka, Yokohama; Yoshiharu Shiokama, and Nobuaki Sasagaki, both of Kawasaki, all of Japan, assignors to Nikon Corporation, Tokyo, Japan
Filed Feb. 10, 1988, Ser. No. 154,585
Claims priority, application Japan, Feb. 16, 1987, 62-32635
Int. Cl.⁴ G03B *17/14*
U.S. Cl. 354—286 12 Claims

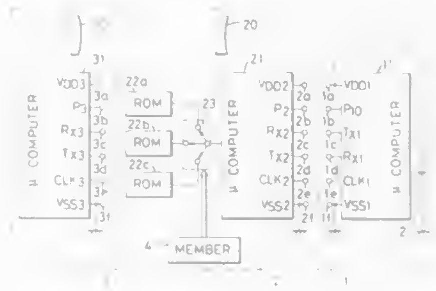
12. An intermediate barrel mountable between a camera body and each of a plurality of interchangeable lenses, comprising:

(a) memory means in which data are fixedly stored;

(b) selector means for selecting a part of said data; and

(c) output means for outputting the selected part of said data to said camera body, said data indicating a plurality of combined aberration information with respect to combined optical systems which consist of an optical system of said intermediate barrel and respective optical systems of said plurality of interchangeable lenses;

(d) said camera body effecting a calculation process on the basis of said selected part of said data.



4,881,095
PROCESS FOR DEVELOPING PHOTOGRAPHED FILM AND FOR PRINTING IMAGES THROUGH DEVELOPED FILM

Shinichi Shidara, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Sep. 12, 1988, Ser. No. 243,348
Claims priority, application Japan, Sep. 11, 1987, 62-226664; Sep. 11, 1987, 62-226665; Sep. 11, 1987, 62-226667
Int. Cl.⁴ G03D *3/13, 5/04;* **G03B** *27/80*
U.S. Cl. 354—298 22 Claims

1. A process for developing a film having one or more photographed image areas, comprising the steps of:

(a) exposing a region of said film other than said photographed image areas with a constant quantity of light;

(b) passing the region exposed with said constant quantity of light to a developing station preceding to said photographed image areas to develop said region exposed with said constant quantity of light;

(c) detecting the density of the developed image of said region exposed with said constant quantity of light, comparing the thus detected image density with a characteristic curve showing the change in density of the developed image in terms of the quantity of exposure light, and

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setting the condition for development to an optimum condition based on said characteristic curve; and

(d) developing said photographed image areas under said optimum condition.

4,881,096
MOTOR-DRIVEN SHUTTER FOR CAMERA

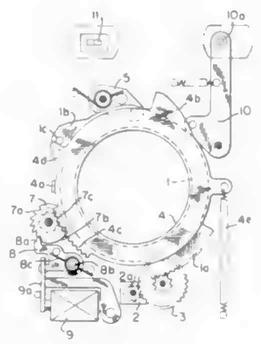
Masuo Ogihara; Hiroyuki Ishida; Shinji Nagaoka; Youichi Seki; Shigeru Tagami; Hiroshi Yamazaki, and Nobuo Shinozaki, all of Yotsukaido, Japan, assignors to Seikosha Co., Ltd., Tokyo, Japan

Filed Feb. 17, 1987, Ser. No. 15,169

Claims priority, application Japan, Feb. 28, 1986, 61-43230

Int. Cl.⁴ G03B *3/10, 7/00, 9/22*

U.S. Cl. 354—400 17 Claims



1. A shutter device for use in a camera, comprising:

motor means;

a drive member drivable by said motor means;

range adjustment means normally urged by a resilient member for movement with said drive member;

focus detecting means operable in coaction with said range adjustment means for producing a focusing signal;

solenoid means de-energized in response to the focusing signal from said focus detecting means for placing said range adjustment means in a focused position;

said range adjustment means including a locking member lockable by said solenoid means in a standby position, and a retracting member for unlocking said locking member to allow said solenoid means to place said range adjustment means in the focused position when the shutter device starts to operate.

4,881,097
APPARATUS FOR CONTROLLING AUTOMATIC FOCUSING IN CAMERAS

Yasuaki Ishiguro, Fujimi, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Mar. 8, 1988, Ser. No. 165,334

Claims priority, application Japan, Mar. 13, 1987, 62-58059

Int. Cl.⁴ G03B *1/00, 3/10, 19/12*

U.S. Cl. 354—402 5 Claims

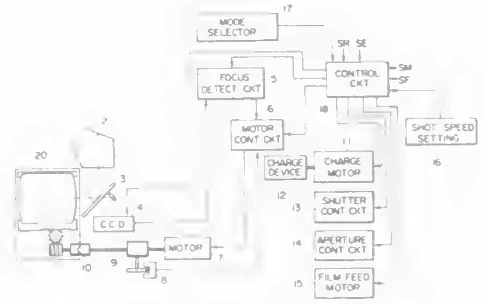
1. A camera system, comprising:

a phototaking lens forming a phototaking optical path;

a moving mirror arranged in said phototaking optical path;

mirror operating means actuatable to retract said moving mirror from said phototaking optical path for the purpose of exposing a film;

focal point detecting means for determining an amount of movement of said phototaking lens with respect to an object to be photographed on the basis of light from the object via said moving mirror in the phototaking optical path;



lens moving means for moving said phototaking lens according to the determined amount of movement of said lens; and

control means for controlling said mirror operating means and said lens moving means, the control means controlling timing of the start of the actuation of said mirror operating means so that substantially on the completion of the retraction of said moving mirror from said phototaking optical path, said lens moving means completes movement of said phototaking lens.

4,881,098

Patent Not Issued For This Number

4,881,099
READER PRINTER AND IMAGE RECORDING APPARATUS

Kazuhiko Onuki, Tokyo, and Masami Maetani, Ageo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 18, 1988, Ser. No. 220,245

Claims priority, application Japan, Jul. 31, 1987, 62-190430; Dec. 28, 1987, 62-329664

Int. Cl.⁴ G03B *13/28*

U.S. Cl. 355—45 13 Claims

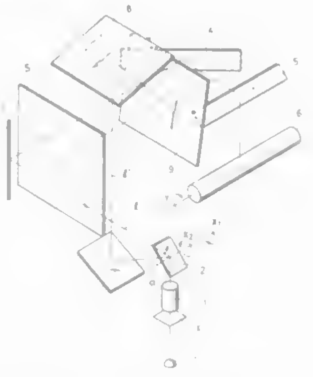
1. An image recording apparatus comprising:

a projection lens;

first reflection means rotatably disposed for reflecting light rays transmitted through said projection lens;

second reflection means for transmitting light rays reflected from said first reflection means onto an image display section; and

third reflection means for transmitting light rays reflected from said first reflection means onto an image recording



section, said third reflection means including a plurality of mirrors, arranged to reflect light from said first reflection means successively from mirror to mirror and then to said image recording section, said plurality of mirrors being further arranged such that the optical axes of light rays reflected to each of said mirrors are located in substantially the same plane.

4,881,100
ALIGNMENT METHOD

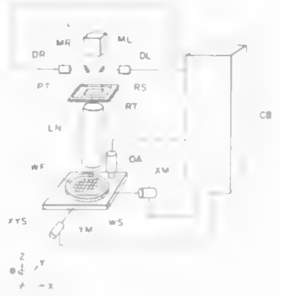
Akiya Nakai, Tokyo; Bunei Hamasaki, Yokohama, and Shinji Utamura, Chofu, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 201,260, May 25, 1988, abandoned, which is a continuation of Ser. No. 938,279, Dec. 5, 1986, abandoned. This application Nov. 16, 1988, Ser. No. 273,187

Claims priority, application Japan, Dec. 10, 1985, 60-275923; Dec. 10, 1985, 60-275924

Int. Cl.⁴ G03B *27/42;* G01B *11/00*

U.S. Cl. 355—53 9 Claims



1. An aligment method, usable with a workpiece having different portions, for positioning one by one the different portions of the workpiece with respect to a predetermined reference, said method comprising the steps of:

attempting detection of devation between at least one of the different portions of the workpiece and the predetermined reference;

discriminating whether the attempted detection has been achieved;

detecting deviation between another portion of the workpiece, which is in the neighborhood of said at least one portion of the workpiece, and the predetermined reference when the achievement of the attempted detection is not discriminated; and

positioning one by one the different portions of the workpiece with respect to the predetermined reference in accordance with the detection of the deviation of the workpiece with respect to said at least one portion when the achievement of the attempted detection is discriminated, and in accordance with the detection of the deviation of the workpiece with respect to said other portion when the achievement of the detection is not discriminated.

4,881,101
DEVICE FOR SETTING OPERATION MODES OF OFFICE EQUIPMENT

Hiroyasu Sumida, Ichikawa, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Nov. 9, 1988, Ser. No. 269,059

Claims priority, application Japan, Nov. 10, 1987, 62-283873

Int. Cl.⁴ G03G *15/00*

U.S. Cl. 355—204 8 Claims

1. A device for setting operation modes of a machine having a machine body, a housing surrounding said machine body, and an openable cover member forming part of said housing, and driven by a power supply unit, said device comprising:

power supply shut-off means for shutting off at least a part of power supplies of said power source unit when said cover member is opened;

store means for preserving data stored in said store means even when said power supply of said machine is shut off by said power supply shut-off means;

commanding means for commanding preservation of operation modes of said machine; and

control means for controlling said power supply unit, said store means and said commanding means;

said control means causing said store means to store operation modes of said machine when said machine is being powered by said power supply unit;

said control means initializing, when a command from said commanding means is absent, the operation modes of said machine after said machine has been powered by said power supply unit;

said control means restoring, when the command from said commanding means is present, said machine to the operation modes stored in said store means after said machine has been powered by said power supply unit.

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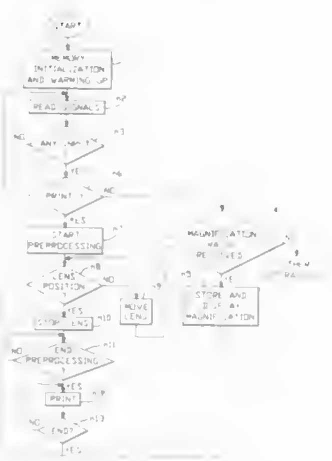
4,881,102
COPIER WITH VARIABLE MAGNIFICATION RATIO

Masaru Nishijima, and Akihiro Soga, both of Nara, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Oct. 3, 1988, Ser. No. 252,680
Claims priority, application Japan, Oct. 21, 1987, 62-266714
Int. Cl.⁴ G03G *15/00*
U.S. Cl. 355—243 3 Claims



1. A copier capable of varying magnification ratio comprising

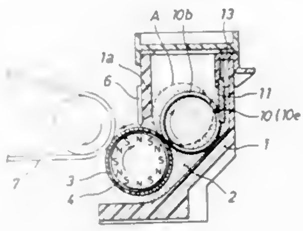
input means for receiving a magnification ratio,

lens moving means for moving an optical system of said copier according to said received magnification ratio, and

control means for driving said lens moving means only after a print switch is operated to start a copying operation of said copier to move said optical system to a position determined by said received magnification ratio.

4,881,103
DEVELOPING APPARATUS

Yutaka Seto; Shigehiro Suzuki; Tomohiro Suzuki, all of Hachioji; Atsushi Fujita; Akira Tai, both of Kobe, and Masahiro Yoshino, Hachioji, all of Japan, assignors to Konica Corporation, Tokyo, Japan
Filed Oct. 30, 1987, Ser. No. 114,867
Claims priority, application Japan, Oct. 31, 1986, 61-261442; Oct. 31, 1986, 61-168266[U]; Jun. 12, 1987, 62-146770
Int. Cl.⁴ G03G *15/09;* **B05C** *11/00*
U.S. Cl. 355—251 19 Claims



1. A developing apparatus comprising:

a developing vessel for containing a developing agent;

a developing sleeve having an external surface, said developing sleeve being rotatable about an axis of rotation and being disposed relative to said developing vessel so that a

a desired portion of said developing sleeve is disposed within said developing vessel;

a photosensitive body disposed adjacent said developing sleeve for developing an electrostatic latent image formed on said photosensitive body;

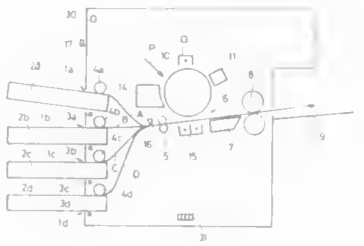
a permanent magnet disposed inside said developing sleeve for establishing a magnetic field to form a brush of developing agent adjacent said external surface of said developing sleeve, said developing sleeve being rotated while said brush is kept in contact with said photosensitive body;

an agitating member disposed in said developing vessel having at least two ring portions for providing frictional engagement with said external surface of said developing sleeve, so that said agitating member rotates as said developing sleeve rotates; and

an agitating portion joining said at least two ring portions, said agitating portion being for agitating developing agent in said developing vessel.

4,881,104
IMAGE FORMING APPARATUS HAVING A PLURALITY OF FEED OPENINGS

Keiji Kusumoto, and Kenzo Nagata, both of Osaka, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan
Filed Apr. 22, 1988, Ser. No. 184,621
Claims priority, application Japan, Apr. 24, 1987, 62-102876; Apr. 24, 1987, 62-102877; Apr. 24, 1987, 62-102878; Apr. 24, 1987, 62-102879; Apr. 24, 1987, 62-102880; Apr. 24, 1987, 62-102881
Int. Cl.⁴ G03G *15/00*
U.S. Cl. 355—309 52 Claims



1. An image forming apparatus comprising:

a plurality of paper feed means for feeding sheets of paper,

image forming means for forming an image on the sheet fed by said paper feed means,

counting means for counting the number of erroneous feeding operations occurring in each of said plurality of paper feed means,

first selection means for manually selecting any one of said plurality of paper feed means,

forbidding means for forbidding said first selection means to select the paper feed means in which the number of erroneous feeding operations counted by said counting means exceeds a predetermined number,

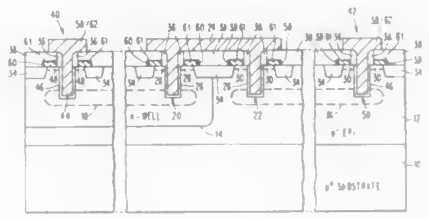
designation means for designating the paper feed means in which the number of erroneous feeding operations is the smallest out of the paper feed means the selection of which is not forbidden by said forbidding means, each time said forbidding means is operated,

initialization signal generating means, and

second selection means for selecting the paper feed means designated by said designation means, in response to the initialization signal from said initialization signal generating means.

4,881,105
INTEGRATED TRENCH-TRANSISTOR STRUCTURE AND FABRICATION PROCESS

Bijan Davari, Mahopac; Wei Hwang, Armonk, and Nicky C. Lu, Yorktown Heights, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Jun. 13, 1988, Ser. No. 206,148
Int. Cl.⁴ H01L *27/08, 29/78*
U.S. Cl. 357—23.4 11 Claims



1. An integrated, self-aligned trench-transistor structure comprising:

a substrate of semiconductor material,

a layer of epitaxial material,

a well region disposed in said epitaxial layer,

a first source element region disposed in said well region,

a second source element region disposed in said epitaxial layer proximate to said well region,

a first trench disposed in said epitaxial layer and into said first source element in said well region, said first trench being filled with conductive material to form a first gate element region,

a second trench disposed in said epitaxial layer and into said second source element region, said second trench being filled with conductive material to form a second gate element region,

a first drain element region disposed in the surface of said epitaxial layer around said first filled trench,

a second drain element region disposed in the surface of said epitaxial layer around said second filled trench,

said first filled trench gate element region, said first source element region and said first drain element region forming a first conductivity type vertical transistor,

said second filled trench gate element region, said second source element region and said second drain element region forming a second conductivity type vertical transistor,

a region of conductive material connecting said conductive gate material in said first trench and said conductive gate material in said second trench,

a third trench disposed in said epitaxial layer and into said first source element region in said well region proximate to said first trench, said third trench being filled with conductive material to form a third gate element region, and

a third drain element region disposed in the surface of said epitaxial layer around said third trench,

said third trench gate element region, said first source element region and said third drain element region forming a first conductivity type vertical trench strapping transistor for providing bias signal to said first source element region.

4,881,106
DV/DT OF POWER MOSFETS

Mark B. Barron, Danville, Calif., assignor to IXYS Corporation, San Jose, Calif.
Filed May 23, 1988, Ser. No. 197,540
Int. Cl.⁴ H01L *29/78, 29/44*
U.S. Cl. 357—23.8 5 Claims

1. A power MOSFET structure comprising:

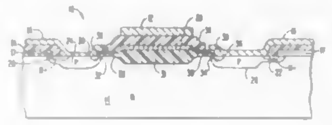
a volume of semiconductor material doped to a first conductivity type; and

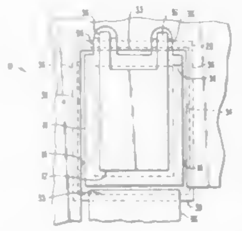
at least one MOSFET cell;

said MOSFET cell being formed in said semiconductor material, said MOSFET cell comprising:

a well region of semiconductor material doped to a second conductivity type opposite to said first conductivity type and having a source region and a gate region, said source region being formed of said first conductivity type,

a source metallization layer in electrical contact with substantially all of said source region,





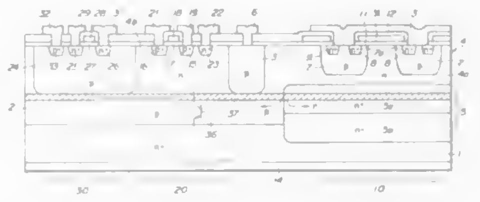
a gate metallization layer,

a gate pad area under said gate metallization layer confronting said gate region, and

a polysilicon material layer juxtaposed between said gate metallization layer and said gate region and forming only a strip perimeter region in said gate pad area, said polysilicon material layer separating said pad area from said volume, said polysilicon material layer being in electrical contact with said source metallization layer and electrically insulated from said gate metallization layer in order to tie the potential of said strip perimeter region to the potential of said source metallization layer.

4,881,107
IC DEVICE HAVING A VERTICAL MOSFET AND AN AUXILIARY COMPONENT

Tsutomu Matsushita, Yokohama, Japan, assignor to Nissan Motor Company, Ltd., Yokohama, Japan
Filed Jun. 29, 1988, Ser. No. 213,073
Claims priority, application Japan, Jul. 3, 1987, 62-165487; Aug. 13, 1987, 62-200996
Int. Cl.⁴ H01L *27/00*
U.S. Cl. 357—23.4 17 Claims



1. A semiconductor device comprising:

an underlying layer formed in a semiconductor substrate body, said underlying layer including a first layer of a first conductivity type;

an overlying layer of said first conductivity type located over said underlying layer in said substrate body;

an isolation layer of a second conductivity type located between said overlying layer and said first layer;

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- an isolation region of said second conductivity type extending into said overlying layer from an upper surface of said overlying layer and contacting said isolation layer, said isolation region separating first and second portions of said overlying layer from each other, said second portion being separated from said underlying layer by said isolation layer;
- a channel region of said second conductivity type located in said first portion of said overlying layer to form a vertical MOSFET;
- an auxiliary region formed in said second portion of said overlying layer to form an auxiliary integrated circuit component;
- a recombination layer capable of promoting recombination of carriers, said recombination layer being located under said second portion of said overlying layer and;
- a highly doped buried layer of said first conductivity type located between said first portion of said overlying layer and said underlying layer;
- wherein said recombination layer extends between said second portion of said overlying layer and said isolation layer, and further extends into said buried layer.

4,881,108
SEMICONDUCTOR DEVICE

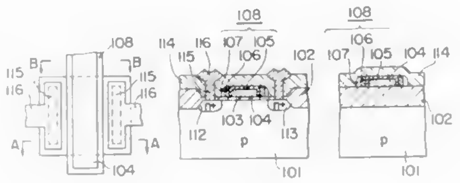
Kuniyoshi Yoshikawa, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 24, 1988, Ser. No. 172,495

Claims priority, application Japan, Mar. 26, 1987, 62-72174

Int. Cl.⁴ H01L *29/78, 29/34*

U.S. Cl. 357—23.5 3 Claims



1. A semiconductor device comprising:
- first and second regions separately provided from each other on a surface region of a semiconductor substrate, said first and second regions serving as source and drain regions, respectively,
- a charge accumulation region, and
- a gate provided on a channel region between said first and second regions,
- said charge accumulation region disposed on said channel region on a side surface of said gate and not on a top surface of said gate, said charge accumulation region including a silicon nitride interposed between said gate and said first or second region.

4,881,109
SENSOR USING A FIELD EFFECT TRANSISTOR AND METHOD OF FABRICATING THE SAME

Kazufumi Ogawa, Hirakata, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

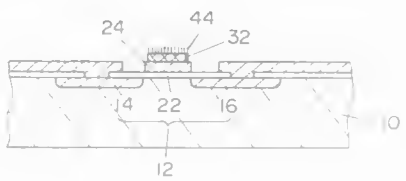
Filed Aug. 26, 1986, Ser. No. 900,629

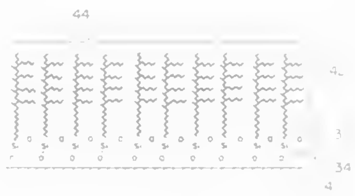
Claims priority, application Japan, Aug. 29, 1985, 60-190772; Aug. 29, 1985, 60-190776

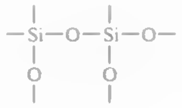
Int. Cl.⁴ H01L *29/66, 29/96*

U.S. Cl. 357—25 10 Claims

1. A sensor comprising:
- a field effect transistor having a gate electrode;
- a polymerized monomolecular film with







$$-\underset{\displaystyle|}{\underset{\displaystyle O}{\underset{\displaystyle|}{\overset{\displaystyle|}{Si}}}}-O-\underset{\displaystyle|}{\underset{\displaystyle O}{\underset{\displaystyle|}{\overset{\displaystyle|}{Si}}}}-O-$$

bonds formed selectively on the surface of said electrode; and
- a monomolecular film of sensing material fixed on said gate electrode through said polymerized monomolecular film by a chemical bond between said sensing material and said polymerized monomolecular film in such a manner that said sensing material is kept active.

4,881,110
DOUBLE-SCHOTTKY DIODE LIQUID CRYSTAL LIGHT VALVE

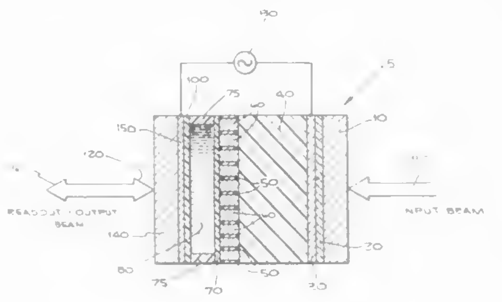
Paul O. Braatz, Canoga Park, and Uzi Efron, Los Angeles, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Division of Ser. No. 758,917, Jul. 25, 1985, Pat. No. 4,842,376.

This application May 16, 1988, Ser. No. 194,352

Int. Cl.⁴ G02F *1/135;* **H01L** *29/48, 27/14*

U.S. Cl. 357—30 6 Claims



1. A photosubstrate for use in light valve devices comprising:
- semiconductor substrate means for absorbing an incident beam of radiation, said absorption producing photogenerated carriers;
- first and second Schottky diode means, alternately reverse-biased, disposed on opposing sides of said substrate means for maintaining said substrate substantially depleted of said carriers, at least one of said Schottky diode means having a plurality of metal islands in a matrix pattern, wherein said second Schottky diode means comprises a plurality of metal islands with insulating channels therebetween oriented to reflect a readout beam of radiation whereby diodes are formed by the interface of asid metal islands and said substrate means.

4,881,111
RADIATION HARD, HIGH EMITTER-BASE BREAKDOWN BIPOLAR TRANSISTOR

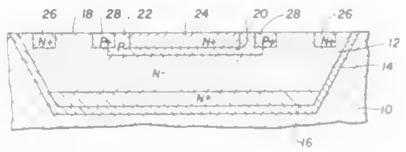
Thomas J. Sanders, Indialantic, Fla., assignor to Harris Corporation, Melbourne, Fla.

Continuation of Ser. No. 771,602, Feb. 24, 1977, abandoned.

This application Dec. 27, 1978, Ser. No. 973,822

Int. Cl.⁴ H01L *29/72*

U.S. Cl. 357—34 20 Claims



1. A vertical bipolar transistor comprising:
- means for operating as an emitter including an emitter region of first conductivity type having a first surface and a low impurity concentration;
- means for operating as a base including a base region of an opposed second conductivity type in said emitter region at said surface;
- means for operating as a collector including a collector region of said first conductivity type in said base region at said surface and extending along a substantial portion of the base surface;
- a ring of said second conductivity type in said emitter and base regions at their junction, speed from the collector region, extending down from said surface at least the depth of said collector region and having a substantially greater impurity concentration than said base region; and
- an emitter contact of said first conductivity type in said emitter region at said surface adjacent to said first ring having a substantially greater impurity concentration than said emitter region and spaced from said first ring a sufficient distance to provide an emitter to base breakdown voltage of greater than thirty volts.

4,881,112
IC WITH RECOMBINATION LAYER AND GUARD RING SEPARATING VDMOS AND CMOS OR THE LIKE

Tsutomu Matsushita, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

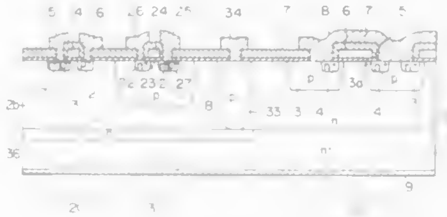
Filed May 20, 1988, Ser. No. 196,714

Claims priority, application Japan, May 29, 1987, 62-133962

Int. Cl.⁴ H01L *29/74*

U.S. Cl. 357—47 18 Claims

1. A semiconductor device comprising:
- a highly doped lower layer of a first conductivity type, formed in a substrate body,
- a lightly doped upper layer of said first conductivity type, formed above said highly doped lower layer within said body,
- a vertical MOSFET formed in a first portion of said lightly doped upper layer so that said lightly doped layer is used as a substantial drain region of said vertical MOSFET,
- a second circuit component formed in a second portion of said lightly doped upper layer,
- a guard ring formed in said lightly doped upper layer so as to separate said first and second portions, and
- a recombination layer for facilitating recombination of minority carriers, said recombination layer being formed between said highly doped lower layer and at least said second portion of said lightly doped upper layer, said guard ring reaching said recombination layer.



4,881,113
SEMICONDUCTOR INTEGRATED CIRCUITS WITH A PROTECTION DEVICE

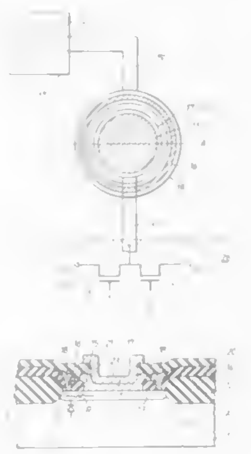
Masaki Momodomi; Mitsugi Ogura, both of Yokohama, and Takaki Kumanomido, Kawasaki, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Oct. 29, 1986, Ser. No. 924,444

Claims priority, application Japan, Oct. 31, 1985, 60-242655

Int. Cl.⁴ H01L *27/02, 29/78, 23/48, 29/46*

U.S. Cl. 357—51 27 Claims



1. A semiconductor integrated circuit device, comprising
- a semiconductor substrate having a circuit region thereon;
- a pad means formed on said semiconductor substrate;
- a first semiconductor region of one conductivity type, formed at the surface of said semiconductor substrate and forming a PN junction with said semiconductor substrate;
- first and second electrodes, each contacting said first semiconductor region, the contacting regions of said electrodes facing each other with a ring-shaped region between;
- first connection means for connecting said pad means to said first electrode; and
- second connection means for connecting said second electrode to said circuit region.

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4,881,114

SELECTIVELY FORMABLE VERTICAL DIODE CIRCUIT ELEMENT

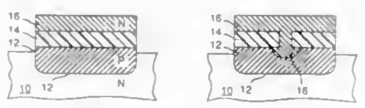
Amr M. Mohsen, Saratoga; Esmat Z. Hamdy, Fremont, and John L. McCollum, Saratoga, all of Calif., assignors to Actel Corporation, Sunnyvale, Calif.

Filed May 16, 1986, Ser. No. 864,038

The portion of the term of this patent subsequent to Apr. 18, 2006, has been disclaimed.

Int. Cl.⁴ H01L *29/48, 29/91, 29/04, 27/10*

U.S. Cl. 357—54 9 Claims



1. A selectively formable vertical diode circuit element formed by a process including the steps of:

forming a diffusion area of a first conductivity type in a semiconductor substrate of a second conductivity type,
forming a first oxide insulating layer over said diffusion area,
forming a second silicon nitride insulating layer over said first insulating layer,
forming a third oxide insulating layer over said second insulating layer,
forming a semiconductor layer of second conductivity type over said insulating layer above at least a portion of said diffusion area,
and further a step of applying a voltage source for a controlled time between selected ones of a said diffusion areas and said semiconductor layer, at a voltage sufficient to break down said first, second, and third insulating layers and form a diode.

4,881,115

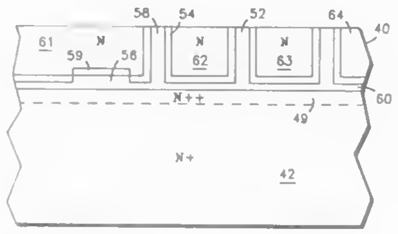
BIPOLAR SEMICONDUCTOR DEVICE HAVING A CONDUCTIVE RECOMBINATION LAYER

Israel A. Lesk, and Lowell E. Clark, both of Phoenix, Ariz., assignors to Motorola Inc., Schaumburg, Ill.

Division of Ser. No. 138,262, Dec. 28, 1987, Pat. No. 4,837,177. This application Feb. 21, 1989, Ser. No. 312,268

Int. Cl.⁴ H01L *29/167*

U.S. Cl. 357—64 13 Claims



1. A semiconductor device having a conductive recombination layer comprising:

a collector, said collector comprising:
  a first doped semiconductor substrate including a first surface and a second surface;
  a second doped semiconductor substrate having a greater dopant concentration than said first semiconductor substrate and including a first surface and a second surface; and
  a conductive recombination layer comprised of a doped polycrystalline material and disposed between said first and second substrates and further being contiguous to said first and second substrates at their first surfaces.

4,881,116

PACKAGE FOR INTEGRATED CIRCUIT

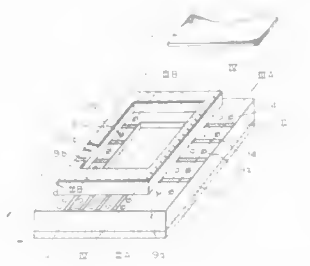
Norio Hidada, Kanagawa, and Yasutake Hirachi, Tokyo, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 56,709, Jun. 2, 1987, abandoned. This application May 2, 1989, Ser. No. 346,243

Claims priority, application Japan, Jun. 2, 1986, 61-127739; May 25, 1987, 62-125733

Int. Cl.⁴ H01L *23/30, 23/14, 23/48*

U.S. Cl. 357—74 24 Claims



1. A package for an integrated circuit having conductor lines which can be connected to an external circuit to connect the integrated circuit to the external circuit, comprising:

a dielectric plate having a first end face with a grounding conductor thereon and a second end face opposite the first end face, with the conductor lines thereon, said dielectric plate having conductor poles which are located between the conductor lines and which extend through the thickness of said dielectric plate to said grounding conductor, at least two of said conductor poles positioned intermittently between adjacent ones of the conductor lines, said at least two of said conductor poles defining a line which extends in substantially the same direction as said conductor lines.

4,881,117

SEMICONDUCTOR POWER DEVICE FORMED OF A MULTIPLICITY OF IDENTICAL PARALLEL-CONNECTED ELEMENTS

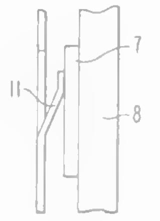
Luciano Gandolfi, Corsico, and Giuseppe Ferla, Catania, both of Italy, assignors to SGS-ATES Componenti Elettronici S.p.A., Milan, Italy

Filed Feb. 23, 1984, Ser. No. 582,793

Claims priority, application Italy, Feb. 28, 1983, 19832 A/83

Int. Cl.⁴ H01L *23/02, 23/12*

U.S. Cl. 357—74 4 Claims



1. A three-terminal semiconductor device formed of a plurality of active elements interconnected in parallel, in which each of said plurality of active elements are respectively formed in respective semiconductor chips and have three contact areas which constitute electrical terminals of said active element, the first of said three contact areas being located on one surface of said chip and the second and third of said contact areas being located on another surface of said chip, said device comprising:

a metal supporting plate to which are attached said plurality of active elements arranged in a predetermined configuration, said first contact areas of each of said active elements being in ohmic contact with said plate so as to thereby connect all of said first contact areas together;
a first metal electrode and a second metal electrode which are respectively in electrical contact with said second and third contact areas of each of said active elements so as to thereby connect all of said second contact areas together and all of said third contact areas together, said supporting plate and first and second electrodes thereby connecting said active elements in parallel;
a housing for hermetically sealing all of said device except for a portion of said metal plate and portions of said first and second electrodes, said portions forming said three terminals of said device;
wherein said first and second metal electrodes are arranged adjacent to said active elements and each of electrodes have lugs which are respectively located in the area of said second and third contacts of said active elements, such that at least some of said lugs are electrically connected, by an ohmic contact, to said second and third contact areas; and
wherein said first and second electrodes each have a metal sheet structure in the form of a comb with a plurality of teeth which are positioned so as to be insulated from each other and in the same plane and wherein said plurality of teeth of said first electrode are arranged between said plurality of teeth of said second electrode, and wherein said lugs of said first and second electrodes are formed by flanged portions of said metal sheet.

4,881,118

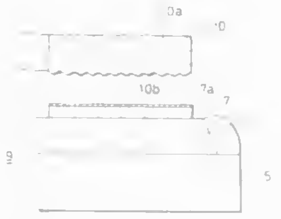
SEMICONDUCTOR DEVICE

Kazuhiko Niwayama; Tsutomu Nakagawa; Futoshi Tokunoh, and Shigekazu Yoshida, all of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 156,567, Feb. 17, 1988, abandoned. This application Apr. 28, 1989, Ser. No. 346,277

Int. Cl.⁴ H01L *23/10, 23/04, 21/603*

U.S. Cl. 357—79 12 Claims



1. A semiconductor device comprising:

a semiconductor having a cathode electrode layer formed of aluminum on one surface thereof and an anode electrode layer formed on another surface thereof;
an anode conductor arranged to contact with the surface of said anode electrode layer;
a cathode sliding compensator made of a material having a thermal coefficient substantially similar to that of a semiconductor and having one surface being finished as an irregular surface and another surface being finished as a sliding surface, said irregular surface being arranged to contact with the surface of said cathode electrode layer;
a cathode conductor made from a material having a thermal coefficient different than that of a semiconductor and arranged to contact with said sliding surface of said cathode sliding compensator; and
means for holding said cathode conductor and said anode conductor so as to pressurize respective junction surfaces between said cathode conductor, said cathode sliding compensator, said semiconductor element and said anode conductor such that the irregular surface of said compensator penetrates any oxide formed on said aluminum cathode electrode layer.

4,881,119

SEMICONDUCTOR DEVICES

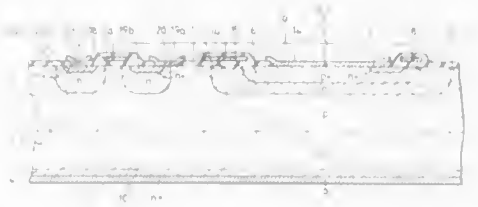
David H. Paxman, Redhill; John A. G. Slatter, Crawley Down, and David J. Coe, East Grinstead, all of England, assignors to U.S. Philips Corp., New York, N.Y.

Continuation of Ser. No. 46,972, May 5, 1987, abandoned. This application Feb. 2, 1989, Ser. No. 306,243

Claims priority, application United Kingdom, May 16, 1986, 8612010

Int. Cl.⁴ H01L *27/06*

U.S. Cl. 357—23.4 10 Claims



1. A semiconductor device comprising a bipolar transistor having an emitter region of one conductivity type, a base region of the opposite conductivity type in contact with said emitter region, and a collector region of the one conductivity type in contact with said base region, a first insulated gate field effect transistor, having a channel region for providing a switchable connection to the emitter region of the bipolar transistor, and a second insulated gate field effect transistor having a source region of said opposite conductivity type and a channel region for providing a charge extraction path from the base region when the bipolar transistor is turned off, the first insulated gate field effect transistor comprising a source region, a further region of the opposite conductivity type provided in the emitter region for separating said source region and said emitter region, and an insulated gate which overlies said channel region of the first transistor, said channel region comprising at least part of the further region between the emitter region and the source region of the first insulated gate field effect transistor to provide the switchable connection, and the second insulated gate field effect transistor comprising an insulated gate overlying said channel region of the second insulated gate field effect transistor, which includes at least part of the emitter region adjacent the base region to provide a switchable connection between the base region and the source region of the second insulated gate field effect transistor to provide the charge extraction path from the base region via the second insulated gate field effect when the bipolar transistor is turned off.

4,881,120

CONDUCTIVE MODULATED MOSFET

Akio Nakagawa, Hiratsuka; Hiromichi Ohashi, Yokohama; Yoshihiro Yamaguchi, Urawa; Kiminori Watanabe, Kawasaki, and Thuneo Thukakoshi, Zushi, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 19,337, Feb. 26, 1987, Pat. No. 4,782,372, which is a continuation of Ser. No. 738,188, May 28, 1985, Pat. No. 4,672,407. This application Nov. 4, 1987, Ser. No. 116,357

Claims priority, application Japan, May 30, 1984, 59-110244; Sep. 29, 1984, 59-204427; Nov. 20, 1984, 59-244811

The portion of the term of this patent subsequent to Jun. 9, 2004, has been disclaimed.

Int. Cl.⁴ H01L *29/78*

U.S. Cl. 357—23.4 13 Claims

1. A conductivity modulated metal oxide semiconductor field effect transistor, comprising:

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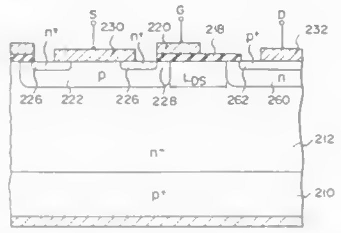
a first conductivity type region having a first surface;
a high resistance semiconductor region of a second conductivity type having a second surface;
a second conductivity type region provided between said first conductivity type region and said high resistance semiconductor region and having an impurity concentration higher than that of said high resistance semiconductor region;
a base region of the first conductivity type which is formed in the second surface of said high resistance semiconductor region;
a source region of the second conductivity type which is formed in said base region;
a gate electrode formed at least on a gate insulating film which is formed on a channel region formed in said base region between said high resistance semiconductor region and said source region;
a source electrode ohmic-contacting said source and base regions; and



a drain electrode formed on said first surface of the first conductivity type region;
wherein when a total channel width within a unit area (1 cm^2) of an active region is W(μm), an area of said high resistance semiconductor region which is formed beneath said gate electrode and is in direct contact with the gate insulating film within said unit area of the active region is SG(μm^2), a perimeter of said base region in contact with the high resistance semiconductor region, i.e., the perimeter of SG, within the 1 cm^2 unit area of the active region, in μm, is T(μm), a channel length is l(μm) and a thickness of said gate insulating film is d(μm), a condition $(W \cdot SG)/(T \cdot l \cdot d) < 1.46 \times 10^8$ is satisfied; and
wherein said active region is defined as a region including the base and source regions contacting the source electrode and the high resistance semiconductor region under the gate electrode.

4,881,121
COLOR VIDEO SIGNAL PHASE DETECTOR

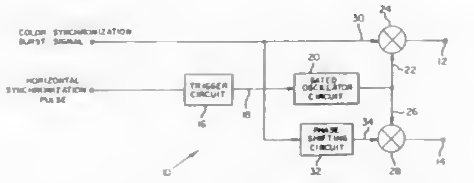
John L. Judge, Hillsboro, Oreg., assignor to Magni Systems, Inc., Beaverton, Oreg.

Continuation of Ser. No. 17,314, Feb. 20, 1987, Pat. No. 4,792,845. This application Dec. 16, 1988, Ser. No. 285,859

The portion of the term of this patent subsequent to Dec. 20, 2005, has been disclaimed.

Int. Cl.⁴ H04N *17/02*

U.S. Cl. 358—10 22 Claims



10. An electrical circuit for measuring the phase characteristics of a color video signal representing plural video image scan lines and including for each of them a color synchronization burst signal and a horizontal synchronization pulse, comprising:
triggering means receiving the horizontal synchronization pulse of one of the scan lines for providing a trigger signal in response to a transition between amplitude levels of the horizontal synchronization pulse of the one scan line;
oscillator means for providing in response to the trigger signal a continuous-wave reference signal having a phase characteristic that is defined relative to the horizontal synchronization pulse of the one scan line and is independent of the horizontal synchronization pulses of other scan lines; and
first mixing means for mixing the continuous-wave reference signal with the color synchronization burst signal of the one scan line, thereby to provide a first output signal corresponding to the phase angle between the color synchronization burst signal and the horizontal synchronization pulse.

4,881,122
THREE-DIMENSIONAL SHOOTING VIDEO CAMERA APPARATUS

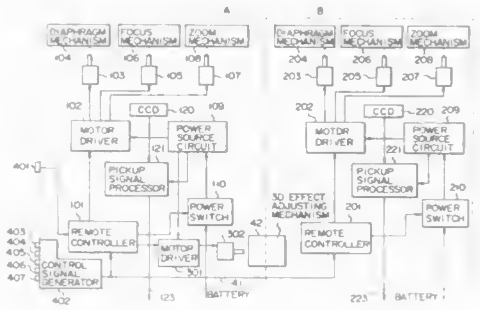
Kanji Murakami, 7-1-12-102, Minamiaoyama, Minato-ku, Tokyo, Japan

Filed Nov. 29, 1988, Ser. No. 277,565

Claims priority, application Japan, Mar. 29, 1988, 63-75350

Int. Cl.⁴ H04N *13/02*

U.S. Cl. 358—88 3 Claims



1. A 3D shooting video camera apparatus comprising:
first and second video camera main bodies each having a condition setting device built therein for setting shooting conditions including at least one of diaphragm, focus and zoom, of a lens section and each having a controller built therein for controlling said shooting conditions in accordance with a control signal;
coupling means for coupling said first and second video camera main bodies to each other so as to face a shooting point in a horizontal plane, for supporting, at one end, a front portion of said first video, camera main body to make said first video camera main body horizontally rotatable and for supporting, at another end, a front portion of said second video camera main body to make said video camera main body horizontally rotatable;
3D effect adjusting means for performing adjustment, in a shooting direction, of a cross point of optical axes of said lens sections of said first and second video camera main bodies which cross each other in front of said first and second video camera main bodies, said 3D effect adjusting means having one end coupled to a rear portion of said first video camera main body and another end coupled to a rear portion of said second video camera main body, whereby an interval between said rear portions of said first and second video camera main bodies can be adjusted by adjusting positions of where said 3D effect adjusting means is coupled to said first and second video camera main bodies; and
shooting conditions setting means for setting said shooting conditions for said first video camera main body the same as said shooting conditions for said second video camera main body, said shooting condition setting means including means for guiding data input to said controller of said first video camera main body to an input section of said controller of said second video camera main body.

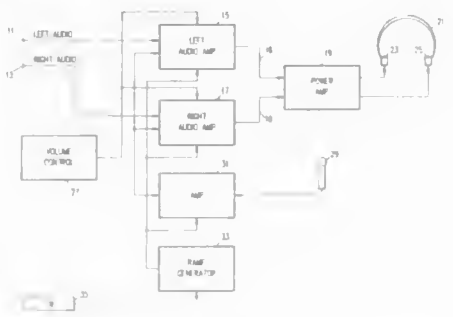
4,881,123
VOICE OVERRIDE AND AMPLITUDE CONTROL CIRCUIT

James H. Chapple, 415 Tyler Pl., Apt. L, Salinas, Calif. 93906

Filed Mar. 7, 1988, Ser. No. 164,886

Int. Cl.⁴ H04R *27/00*

U.S. Cl. 381—104 15 Claims



1. In an audio system, electronic circuitry for overriding a normal audio signal with a voice signal, said electronic circuitry comprising:
at least one audio channel having at least one stage of amplification, said amplification stage having a first input for inputting said normal audio signal and a second input for inputting said voice signal, said amplification stage including bias means for setting the relative input levels of said normal audio signal and said voice signal;
amplifier means having an output, said output coupled to said second input, for amplifying said voice signal and coupling said voice signal to said second input, said amplifier means including means responsive to a control signal for controlling the amplitude of said voice signal; and
control means coupled to said amplification stage and to said amplifier means and to said first and second inputs of said amplification stage for providing said control signal, said control signal applied to a bias input of said amplification stage, said bias means responsive to said control signal for linearly decreasing the level of said normal audio signal input to said amplification stage to a predetermined level of said normal audio signal and for linearly increasing the level of said voice signal input to said amplification stage from a minimum to a maximum level, said control means including adjusting means to adjust said predetermined level of said normal audio signal.

4,881,124
X-RAY TELEVISION APPARATUS

Hisatake Yokouchi, Tokyo; Fumitaka Takahashi, and Masayuki Tsuneoka, both of Kashiwa, all of Japan, assignors to Hitachi, Ltd. and Hitachi Medical Corporation, both of Tokyo, Japan

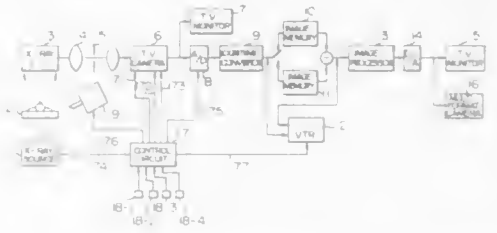
Continuation of Ser. No. 828,518, Feb. 12, 1986, abandoned. This application Jul. 18, 1988, Ser. No. 220,978

Claims priority, application Japan, Feb. 25, 1985, 60-34395

Int. Cl.⁴ H05G *1/64*

U.S. Cl. 358—111 9 Claims

4. An X-ray television apparatus comprising:
image intensifier means for intensifying an X-ray image of an object obtained by irradiation of an X-ray beam to the object and converting said X-ray image to a visible image;
television camera means for enabling production of said visible image using a photoconduction type image pickup tube, said image pickup tube including an electron beam which is scanned horizontally and vertically to provide a plurality of scanning lines;
A/D converter means for A/D converting an image signal from said television camera means;
image processing means for storing said image signal and processing said image signal on the basis of data stored in said image processing means;
mode selecting switch means for selecting one mode from a plurality of operating modes including a first operating mode having a predetermined number of pixels for an image and a predetermined number of scanning lines for said television camera means, and a second operating mode having a number of pixels $1/n^2$ times as large as that of said first operating mode and a number of scanning lines $1/n$ times as large as that of said first operating mode, n being an integer;
control means for controlling the horizontal synchronizing frequency and the vertical synchronizing frequency for scanning said television camera means in accordance with an output of said mode selecting switch means such that the vertical synchronizing frequency in said second operating mode becomes n^2 times as large as that in said first operating mode and that the horizontal synchronizing frequency in said second operating mode becomes n times as large as that in said first operating mode so that a converting period of said A/D converter means becomes constant through said first and second operation mode.



4,881,125
PROGRESSIVE SCAN DISPLAY OF VIDEO DERIVED FROM FILM

Edward A. Krause, San Diego, Calif., assignor to General Instrument Corporation, New York, N.Y.

Filed Oct. 14, 1988, Ser. No. 258,238

Int. Cl.⁴ H04N *7/04*

U.S. Cl. 358—141 2 Claims

2. A system for providing a progressive-scan video display signal from a received video signal derived from a film having successive image frames by producing odd and even video fields from each film frame, with the video fields being produced at a greater rate than the film frame rate and in a repetitive sequentially varying relationship to the film frames, the system comprising
means for delaying each field of the received video signal;
means for combining the received and delayed video fields to provide a progressive-scan video frame signal at the video field rate, in which alternate lines are derived respectively from odd and even video fields;
means for determining the positions of the received video fields in the repetitive sequence; and
means coupled to the determining means for controlling the combining means in accordance with said determined field positions to vary said combinations in accordance with the repetitive sequentially varying relationship of the received video fields to the film frames from which they were derived;
wherein in accordance with the repetitive sequentially varying relationship of the received video fields to the film frames from which they were derived, ten video fields are

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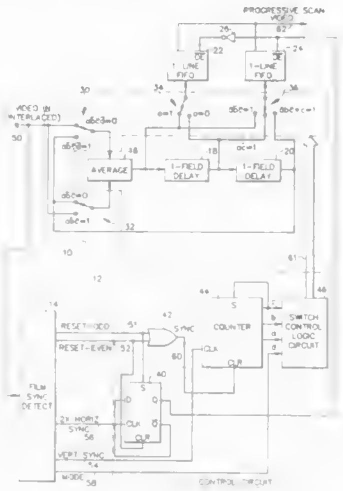
derived from every four film frames with the first video field being an odd field derived from the first film frame, the second video field being an even field derived from the first film frame, the third video field being an odd field derived from an average of the first and second film frames, the fourth video field being an even field derived from the second film frame, the fifth video field being an odd field derived from the second film frame, the sixth video field being an even field derived from the third film frame, the seventh video field being an odd field derived from the third film frame, the eighth video field being an even field derived from an average of the third and fourth film frames, the ninth video field being an odd field derived from the fourth film frame, and the tenth video field being an even field derived from the fourth film frame; and



wherein the controlling means cause the combining means to provide a progressive scan video frame signal by progressively interlacing the first and second video fields with each other to provide sequentially first, second and third identical video frames, by progressively interlacing the fourth and fifth video fields with each other to provide sequentially fourth and fifth identical video frames, by progressively interlacing the sixth and seventh video fields with each other to provide sequentially sixth, seventh and eighth identical video frames, and by progressively interlacing the ninth and tenth video fields with each other to provide sequentially ninth and tenth identical video frames.

4,881,126

IMAGE COMPOSING APPARATUS

Mitsuaki Uesugi; Masaichi Inomata, and Isamu Komine, all of Kanagawa, Japan, assignors to NKK Corporation, Tokyo, Japan

Filed Oct. 17, 1988, Ser. No. 258,604

Claims priority, application Japan, Mar. 31, 1988, 63-76392

Int. Cl.⁴ H04N *5/14*

U.S. Cl. 358—160 7 Claims

1. An image composing apparatus comprising:

Image composing means whereby external input signals are inputted and simultaneously a video signal inputted from a television camera is processed from moment to moment for a predetermined period of time to form a composite image in which a value of each of picture elements is represented by a value of corresponding one of said external input signals at an instant that a level of said video signal becomes highest or lowest during said predetermined period of time.

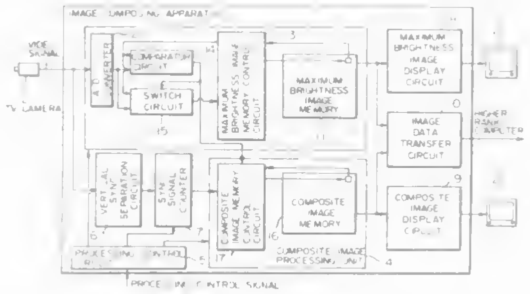


IMAGE COMPOSING APPARATUS
VIDEO SIGNAL
TV CAMERA
SWITCH CIRCUIT
MAXIMUM BRIGHTNESS IMAGE MEMORY
MAXIMUM BRIGHTNESS IMAGE DISPLAY CIRCUIT
IMAGE DATA TRANSFER CIRCUIT
COMPOSITE IMAGE MEMORY
COMPOSITE IMAGE DISPLAY CIRCUIT
COMPOSITE IMAGE PROCESSING
PROCESSING CONTROL SIGNAL

4,881,127

STILL VIDEO CAMERA WITH ELECTRONIC SHUTTER AND FLASH

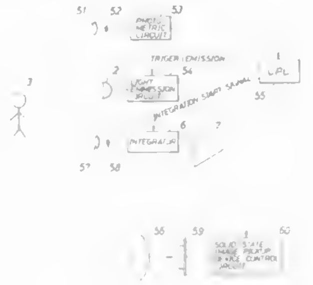
Seiichi Isoguchi; Yoshio Mnrai; Jun Takayama, and Katsuya Nagaishi, all of Hachioji, Japan, assignors to Konica Corporation, Shinjuku, Japan

Filed Feb. 24, 1988, Ser. No. 159,933

Claims priority, application Japan, Feb. 25, 1987, 62-44028; Mar. 6, 1987, 62-51488; Mar. 6, 1987, 62-51489; Apr. 20, 1987, 62-97914; Apr. 24, 1987, 62-101533; May 13, 1987, 62-117639; May 13, 1987, 62-117638; May 13, 1987, 62-117637

Int. Cl.⁴ H04N *5/238, 5/14*

U.S. Cl. 358—213.19 3 Claims



1. A still video camera for generating a still video image of an object, comprising:

photosensor means including odd and even rows of photosensors for generating an electrical charge in response to light incident thereon;

vertical transfer means for simultaneously accepting the electrical charge from both said odd and even rows of photosensors;

a charge extraction drain for extracting the charge on said photosensor means to initialize said photosensor means prior to exposing said photosensor means;

an electronic flash for illuminating the object to be photographed with electronic flash light;

electronic flash light receiving means for receiving electronic flash light reflected from the object and generating a signal in response thereto;

integrating means for integrating the signal from the electronic flash light receiving means and generating an integration signal in response thereto;

electronic shutter means for starting an exposure time after the charge extraction drain extracts the charge from said photosensor means, starting the emission of electronic flash light from said electronic flash after a predetermined period of time has elapsed from the start of the exposure time, and enabling the transfer of the electrical charge on said photosensor means to said vertical transfer means when said integration signal reaches a predetermined value.

4,881,128

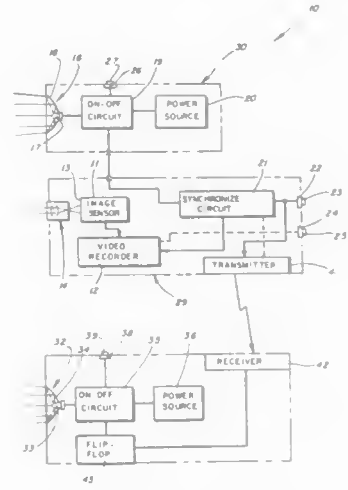
VIDEO CAMERA AND RECORDER SYSTEM WITH ILLUMINATION CONTROL FEATURES

Masahiro Yamada, North White Plains, N.Y., assignor to Asahi Research Corporation, North White Plains, N.Y.

Filed May 11, 1988, Ser. No. 192,849

Int. Cl.⁴ H04N *3/14*

U.S. Cl. 358—228 19 Claims



1. A video movie camera system for operation for prolonged periods of time of indefinite length under operator control, comprising: means including image sensor means for developing a video signal corresponding to images developed in an image region, lens means for projecting images from a view region to said image region, recording means coupled to said image sensor means for recording said video signal, electrically energizable light source means for illuminating said image region, an electrical power source, light source control means for controlling energization of said light source means from said electrical power source, and synchronizing means for controlling both said light source control means and said recording means for operating only during desired time intervals to effect energization of said light source means and illumination of said view region and to substantially simultaneously effect concurrent operation of said recording means, said energization means and said illumination means for recording of the video signal developed from the image of the view region illuminated by said light source means over prolonged periods of time and under the control of the operator, said synchronizing means including a switching means operable between two stable conditions on and off and said switching means being operated from said off condition to said on condition at the beginning of each period of time selected by an operator and from said on condition to said off condition at the end of each period of time selected by an operator.

4,881,129

FACSIMILE INTERFACE DEVICE FOR LAND-MOBILE TELEPHONES

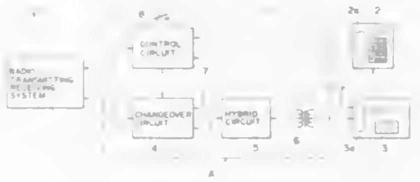
Yasuhiro Mitsuhashi, Yokohama, Japan, assignor to Keihin Co., Ltd., Yokohama, Japan

Filed Sep. 2, 1988, Ser. No. 239,743

Claims priority, application Japan, Mar. 31, 1988, 63-43990[U]

Int. Cl.⁴ H04B *1/46*

U.S. Cl. 358—434 12 Claims



1. An interface device for connection to a radio transmitter/-receiver, a telephone set, and a facsimile device, said interface device comprising:

a mode select means for selecting an operational mode of said interface device;

a changeover means for selectively connecting one of the telephone set and the facsimile device to the radio transmitter/receiver in accordance with a changeover signal supplied thereto;

a matching means connected to said changeover means for electrically matching the radio transmitter/receiver with the facsimile device;

a control means connected to said changeover means for determining based on said operational mode whether a signal received from said radio transmitter/receiver is to be transmitted to said telephone set or said facsimile device, and for outputting said changeover signal to said changeover means in accordance with the determination as to whether a signal received from said radio transmitter/receiver is to be transmitted to said telephone set or said facsimile device, and for setting said facsimile device into an automatic receiving mode.

4,881,130

IMAGE EDITING SYSTEM FOR AN IMAGE RECORDING APPARATUS WITH THE CAPABILITY OF MARKING AN EDITED IMAGE AREA IN THE FORM OF A VECTOR

Tadao Hayashi, Yokohama, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Dec. 7, 1988, Ser. No. 281,027

Claims priority, application Japan, Dec. 7, 1987, 62-307744; Dec. 8, 1987, 62-308681; Dec. 8, 1987, 62-308683; Oct. 17, 1988, 63-259445

Int. Cl.⁴ H04N *1/40*

U.S. Cl. 358—443 3 Claims

1. An image editing system for an image recording apparatus, comprising:

marking means for marking a particular image area being edited by said recording apparatus in the form of a vector;

outputting means for outputting a difference between area data which are determined on a line basis by an inclination of the vector;

memory means for storing the differences;

address setting means for feeding addresses to said memory means;

setting means for setting a start point of the vector; and

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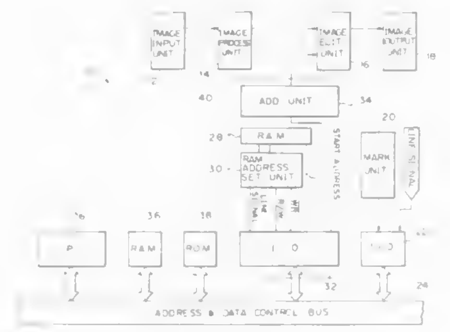
means for adding the differences stored in said memory means to the start point of the vector to produce data of the particular area associated with a main scanning direction.



4,881,131

PLOTTER ADJUSTMENT CIRCUIT

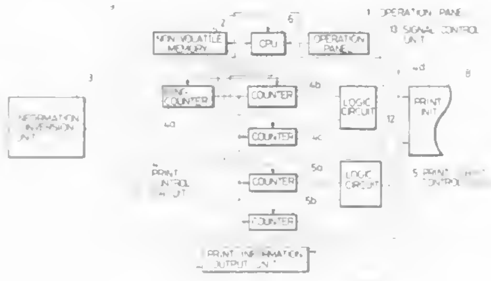
Hiroshi Morita, Tokyo, Japan, assignor to Seiko Instruments Inc., Chiba, Japan

Filed Jun. 27, 1988, Ser. No. 212,302

Claims priority, application Japan, Jun. 25, 1987, 62-158573

Int. Cl.⁴ H04N *1/21, 1/00;* **G01D** *9/42, 15/06*

U.S. Cl. 358—296 **5 Claims**



1. A plotter for plotting data in a selected print region, comprising:

A. a conversion means for converting input plot data into raster data;

B. shift circuit means connected to said conversion means for receiving raster data from said conversion means, said shift circuit means comprising: print control means for generating and outputting a print enable signal, and output means for outputting raster data received from said conversion means at a time different from the time of outputting of the print enable signal, the time different being determined by a shift value;

C. a print means having a print head and connected to said shift circuit means for receiving the raster data outputted by said output means and the print enable signal outputted by said print control means, and for plotting figures represented by the plot data in response to receipt of the print enable signal;

D. input means connected to said shift circuit means for supplying the shift value thereto; and

E. memory means connected to said input means for storing the shift value.

4,881,132

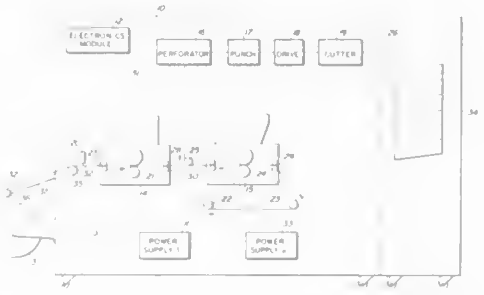
APPARATUS AND METHOD FOR COORDINATING THE FRONT AND BACK OF A PRINTER APPARATUS HAVING TWO-SIDED PRINTING CAPABILITY

Jaroslav Lajos, Edmond, Okla., assignor to Honeywell Bull Inc., Phoenix, Ariz.

Filed May 4, 1988, Ser. No. 190,209

Int. Cl.⁴ H04N *1/23;* **G01D** *15/06*

U.S. Cl. 358—296 **4 Claims**



1. A printer system for printing he front and back sides of paper processed therethrough, said printer system comprising:

(A) first and second print engines placed in a path through which paper to be printed travels, said first and second print engines each having a paper input, a paper output and a print station situated intermediate said paper input and said paper output, said respective print stations of said first and second print engines being displaced an operative distance L from one another;

(B) a source of a continuous stream of paper;

(C) paper cutting means adapted to cut said continuous stream of paper into individual pages;

(D) guide means guiding said continuous stream of paper;

(1) from said source to said input of said first print engine;

(2) from said output of said first print engine to said input of said second print engine, said continuous stream of paper being inverted during its transit therebetween; and

(3) from said output of said second print engine to said paper cutting means;

(E) means for generating a first control signal indicating that a reference position along the length of said continuous stream of paper is under said print station of said first print engine, which said first control signal identifies the position of the top of a first page to be printed;

(F) means for generating a second control signal delayed in time from said first control signal equal to the time required for said reference position to transit said operative distance L;

(G) means for generating a third control signal delayed in time from said first control signal equal to the time required for said reference position to transit from beneath said print station of said first print engine to a position one page length beyond said paper cutting means;

(F) means responsive to the generation of said first control signal and to the passage of said reference position through said first print engine for causing said first print engine to print a first page of information on said continuous stream of paper;

(H) means responsive to the generation of said second control signal and to the passage of said reference position through said second print engine for causing said second print engine to print a second page of information on said continuous stream of paper on the reverse side thereof from the first page of information; and

(I) means responsive to the generation of said third control signal for severing said continuous stream of paper, the printer thereby issuing the first and second pages of information on the two sides of a discrete sheet of paper.

4,881,133

ARRANGEMENT FOR THE RECORDING OF AN INFORMATION SIGNAL

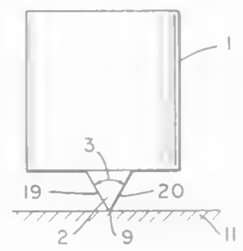
Horst Redlich, and Guoter Joschko, both of Berlin, Fed. Rep. of Germany, assignors to DMM Master Technik GmbH fur Informationstrager, Fed. Rep. of Germany

Filed Jul. 30, 1987, Ser. No. 79,421

Claims priority, application Fed. Rep. of Germany, Aug. 2, 1986, 3626021

Int. Cl.⁴ H04N *1/23;* **G01D** *15/16*

U.S. Cl. 358—299 **2 Claims**



1. Apparatus for the recording of an information signal in which the information signal is engraved into the information carrier surface by a penetrating element to produce individual successive indentations comprising:

a plate-shaped, metallic recording carrier, having a recording plane and a velocity vector V_t during recording; and

a penetrating element having a pyramid shape with at least a first edge, a second edge and a third edge which converge at a tip to penetrate the surface of the recording carrier during engraving, said first edge being arranged such that its projection into the recording plane lies in the direction of the velocity vector V_t of the recording carrier, said first edge forming with the velocity vector V_t an angle α which satisfies the condition:

$$180^\circ - \text{arc tangent}\,\frac{|V_a|}{|V_t|} > \alpha > 135^\circ$$

where V_a is the velocity component of the tip perpendicular to the recording plane, and the projections of said second and third edges into the recording plane lie perpendicular to the direction of the velocity vector V_t, said penetrating element being fixed on an approximately circular positioning element wherein one generatrix of the approximately circular positioning element lies in the plane given by said second and third edges of said penetrating element and wherein said second and third edges can be easily polished without removal of said penetrating element from said positioning element.

4,881,134

COMB FILTER FOR THE REJECTION OF INTERTRACK CHROMONANCE CROSSTALK

Ulrich Grothaus, Puschendorf, and Klaus Lagerpusch, Nuremberg, both of Fed. Rep. of Germany, assignors to Grundig E.M.V. Elektro-Mechanische Versuchsanstalt, Max Grundig Holland, Stiftung & Co. KG, Furth, Fed. Rep. of Germany

Filed Mar. 21, 1988, Ser. No. 170,496

Claims priority, application Fed. Rep. of Germany, Mar. 28, 1987, 3710420

Int. Cl.⁴ H04N *9/79*

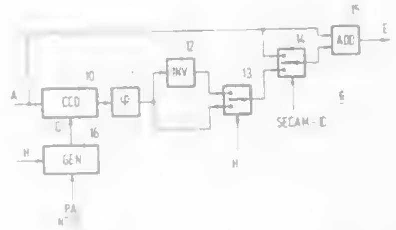
U.S. Cl. 358—328 **10 Claims**

1. A comb filter for rejecting intertrack chrominance cross talk during reproduction of a recorded color video signal recorded according to a recording standard, said color video signal having a signal standard and comprising a chrominance signal having a phase shift related to said signal standard and said recording standard, said comb filter comprising:

(a) a first signal path comprising a clocked CCD delay circuit for delaying said chrominance signal by a specific time interval thereby forming a delayed chrominance signal, and a first output coupled to said delay circuit for providing said delayed chrominance signal;

(b) a second signal path having a second output for providing said chrominance signal; and

(c) an adder stage coupled to said first and second outputs for adding said chrominance signal and said delayed chrominance signal,



characterized in that said first signal path comprises means for controlling the specific time interval of the delay provided to said chrominance signal in response to the period of the signal standard of said color signal and further comprises a phase correction circuit which eliminates said phase shift.

4,881,135

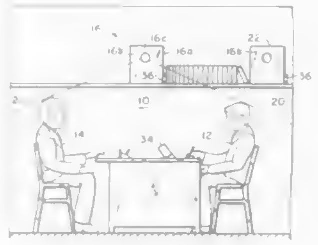
CONCEALED AUDIO-VIDEO APPARATUS FOR RECORDING CONFERENCES AND MEETINGS

Jordan B. Heilweil, Fox Rd., Florida, N.Y. 10921

Filed Sep. 23, 1988, Ser. No. 248,197

Int. Cl.⁴ H04N *5/76*

U.S. Cl. 358—335 **16 Claims**



1. Concealed audio video apparatus, comprising video recording means for recording video imaged on a portion of said recording means; a microphone connected to said recording means, said imaging portion of said recording means and microphone being arranged proximate to an area within which a conference or meeting is to take place; power input means for energizing said video recording means; enclosure means for housing at least said imaging portion of said video recording means; remote control means for selectively remotely controlling the operation of said video recording means, said enclosure means permitting recording therethrough while concealing said video recording means housed therein; and positioning means for positioning said enclosure means to provide a desired imaging field of view of the conference or meeting area, whereby both the video and audio information reflecting the conference or meeting can be recorded by the selective control by one of the parties to the conference or meeting without the knowledge of the other(s) to thereby enable the candid audio and video recordation of the statements and actions taken by the attendees of the conference or meeting.

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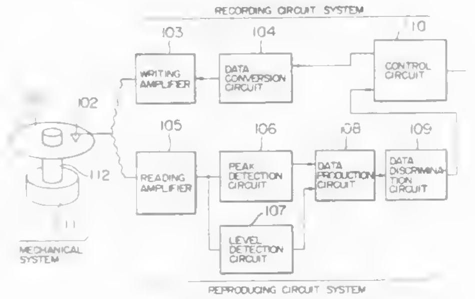
4,881,136

METHOD AND APPARATUS FOR DETECTING MINUTE DEFECTS ON MAGNETIC DISK BY MONITORING BOTH AMPLITUDE DECREASE AND PHASE SHIFT OF A REPRODUCED SIGNAL

Kazuhisa Shiraishi; Kazuo Nakagoshi, and Takuji Ogawa, all of Odawara, Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Nov. 7, 1986, Ser. No. 927,960
Claims priority, application Japan, Nov. 8, 1985, 60-248809
Int. Cl.⁴ G11B *5/455, 27/36;* **G01R** *33/12*
U.S. Cl. 360—25 6 Claims



1. A method for detecting defects on a recording medium, comprising the steps of:

recording onto the recording medium an amplitude signal corresponding to data to be written and coded in accordance with a 2-7 RLLC coding technique, the amplitude signal having a frequency which minimizes the peak value of the second derivative thereof within the frequency band of the amplitude signal;

reproducing the amplitude signal recorded on the recording medium;

detecting intervals of peak points of said reproduced amplitude signal;

detecting the peak-to-peak amplitude at each peak pint of said reproduced amplitude signal; and

determining a defect on the recording medium when said peak-to-peak amplitude is smaller than a predetermined value or the interval between said peak points of said amplitude signal is outside of a predetermined range.

4,881,137

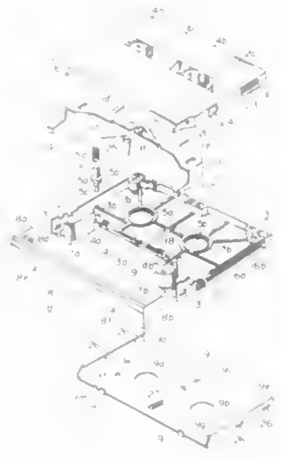
MAGNETIC TAPE CASSETTE WITH TAPE PROTECTIVE CLOSURE AND LOCK MECHANISM

Hiroshi Meguro, Miyagi; Yoshinori Yamamoto, Kanagawa; Masao Ohyama, Tokyo; Kenichi Horikawa, Tokyo; Shigeru Mizusawa, Tokyo, and Kenji Kawakami, Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan
Continuation of Ser. No. 867,940, May 29, 1986, abandoned, which is a division of Ser. No. 704,943, Feb. 25, 1985, abandoned. This application Sep. 1, 1988, Ser. No. 240,423
Claims priority, application Japan, Mar. 7, 1984, 59-43574
Int. Cl.⁴ G11B *23/04, 15/32*
U.S. Cl. 360—96.5 29 Claims

1. A cassette holder in a recording and reproducing apparatus said cassette holder comprising:

a holder body defining therein a cassette reception space and having a floor on which said cassette is mounted; and

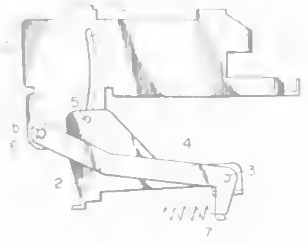
means, incorporated in said holder body and cooperatively associated with said locking means, for unlocking said locking means to allow movement of said shutter member from said first position to said second position when said magnetic tape cassette is inserted into said cassette reception space in a correct orientation, said unlocking means also serving to inhibit insertion of said magnetic tape cassette into said cassette reception space of said cassette holder in an improper orientation.



4,881,138

CASSETTE LOADING APPARATUS

Masaki Uesugi, Katsuta, Japan, assignor to Hitachi, Ltd., Tokyo, Japan
Filed Jun. 8, 1987, Ser. No. 59,516
Claims priority, application Japan, Jun. 11, 1986, 61-133612
Int. Cl.⁴ G11B *15/00*
U.S. Cl. 360—96.5 1 Claim



1 A cassette loading apparatus including:

a cassette receiving portion for receiving and holding a tape cassette in place;

a base plate fixed to a chassis;

said cassette receiving portion being collapsible toward said base plate so that said cassette receiving portion is movable from a cassette loading position to a loaded position;

said cassette receiving portion having at least a pair of opposite side walls, each of said side walls being provided with only one link which extends between and is pivotally connected to both said cassette receiving portion and said base plate;

a projection directly attached to said base plate, at each of the locations near the link pivotal supporting portion of said cassette receiving portion;

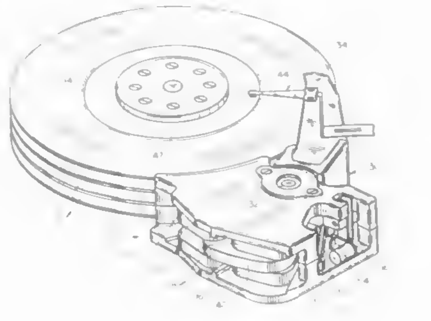
a generally vertical guide slot formed in said cassette receiving portion at each of said locations, the slots respectively receiving the projections therein to maintain the posture of said cassette receiving portion during the movement thereof; and

a spring adapted to bias said cassette receiving portion in a direction toward said loading position.

4,881,139

LATCH MECHANISM FOR ROTARY ACTUATOR AND THE LIKE

Henry B. Hazebrouck, Sunoyvale, Calif., assignor to Priam Corporation, San Jose, Calif.
Continuation of Ser. No. 694,708, Jan. 25, 1985, abandoned. This application Apr. 14, 1988, Ser. No. 183,457
Int. Cl.⁴ G11B *5/54, 21/16*
U.S. Cl. 360—105 3 Claims



1. A rotary actuator for use in a disc drive comprising

a support structure for supporting a plurality of magnets in spaced relationship,

a plurality of actuator magnets mounted to said support structure for use in driving said rotary actuator,

a shaft supported by and rotatable in said support structure,

a pivot block assembly mounted to said shaft for rotation therewith, said pivot block assembly including a coil cooperatively arranged with said actuator magnets for driving said pivot block assembly, and

a bistable latch mechanism for selectively locking said pivot block assembly, said latch mechanism including an energizable electromagnet mounted to said support assembly and spaced from said actuator magnets, a ferrous latch arm for providing a low reluctance path for stray magnetic flux from said actuator magnets, means pivotally attaching said latch arm between said actuator magnets and said energizable electromagnet whereby said latch arm pivots towards said actuator magnets and engages said pivot block assembly in a first stable low reluctance path and said latch arm pivots towards said electromagnet and disengages said pivot block assembly in a second stable low reluctance path, said electromagnet being momentarily energized to effect flux through said latch arm and assuming either one polarity for pivoting said latch arm to said first stable low reluctance path or assuming an opposite polarity for pivoting said latch arm to said second stable low reluctance path, whereby upon deenergization of said electromagnet said pivot arm remains in the stahle low reluctance path to which said pivot arm has been pivoted by the momentary energization of said electromagnet.

4,881,140

INTEGRATED DISC DRIVE AND ACTUATORS SUPPORT

Sanjoy Ghose, Santa Cruz; Efim Bronshvatch, Saratoga, and Miles L. Peterson, San Jose, all of Calif., assignors to Seagate Technology, Inc., Scotts Valley, Calif.
Continuation-in-part of Ser. No. 914,690, Oct. 2, 1986, abandoned. This application Nov. 2, 1987, Ser. No. 115,691
Int. Cl.⁴ G11B *5/55*
U.S. Cl. 360—106 9 Claims

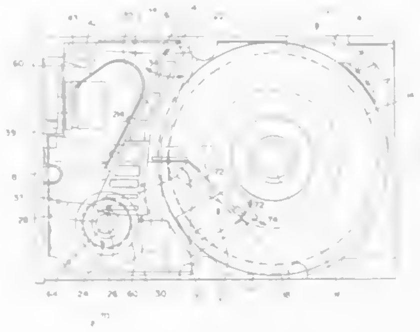
1. A rotary actuator head positioning apparatus located within the housing of a disc drive comprising means for positioning a transducer relative to a recording medium comprising a constantly rotating disc within the housing, including

an arm releasably having a transducer affixed to one end of a head arm portion,

an elongate positioner arm being movable about a pivot point for positioning the transducer relative to the recording medium,

spring means supporting an end of said arm assembly at a pivot point,

first motor means mounted in the housing and having an output drive shaft coupled to a driven end of the arm assembly distal from said pivot point and the transducer for positioning the arm assembly selectively over tracks on the disc,



second motor means mounted in said housing for supporting and constantly rotating said discs, whereby mounting both of said motors in said common base housing assures reliable relative positioning of said actuator and said discs, and

said head arm portion being attached to the side of said positioner arm and extending directly over said disc from a location between said pivot point and said first motor mount.

4,881,141

DRIVING APPARATUS FOR A MAGNETIC HEAD

Saburo Hasegawa, Hanamaki, and Eiji Minai, Sagamihara, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan
Division of Ser. No. 733,910, May 14, 1985. This application May 9, 1988, Ser. No. 191,968
Claims priority, application Japan, May 15, 1984, 59-96877; May 17, 1984, 59-99003; May 31, 1984, 59-111163; Jun. 12, 1984, 59-121164
Int. Cl.⁴ G11B *5/55*
U.S. Cl. 360—106 5 Claims

1. A driving apparatus for a magnetic head comprising

a capstan to be driven by a step motor;

a head carriage having a read-write head thereon and a recess part on a first face thereof and a second face;

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- a steel band which is connected to said head carriage along said first face and said second face of said head carriage and said band being operatively wound around said capstan at a side of said second face, to give linear motion to said head carriage in response to rotation of said capstan, the direction of said linear motion being substantially perpendicular to said first face; and
- a strong spring for pressing one part of said steel band into said recess part.

4,881,142
MAGNETIC DISC UNIT EMPLOYING TEMPERATURE COMPENSATION

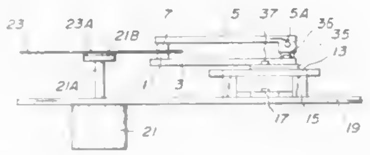
Masahiro Kato, Chichibu, and Yuichi Kakuta, deceased, late of Fukushima, both of Japan (by Rokuroh Kakuta, legal representative), assignors to Canon Denshi Kabushiki Kaisha, Chichibu, Japan

Continuation of Ser. No. 852,150, Apr. 15, 1986, abandoned. This application Sep. 30, 1988, Ser. No. 256,830

Claims priority, application Japan, Apr. 19, 1985, 60-82273; Jul. 12, 1985, 60-152169; Aug. 16, 1985, 60-179494

Int. Cl.⁴ G11B *5/55*

U.S. Cl. 360—106 18 Claims



1. A magnetic disc unit comprising:
- means for driving a magnetic disc;
- magnetic head means including a first magnetic head and a second magnetic head for recording and/or reproducing information on opposite surfaces of said magnetic disc;
- magnetic head driving means for transferring said first and second magnetic heads to predetermined position on said magnetic disc;
- a temperature-compensating member for compensating relative misalignment between said first and second magnetic heads due to a variation in temperature;
- a first magnetic head supporting member supporting said first magnetic head and being mounted on said magnetic head driving means via said temperature-compensating member; and
- a second magnetic head supporting member supporting said second magnetic head and being mounted on said magnetic head driving means via said temperature-compensating member, wherein said first and second magnetic head supporting members are mounted on said temperature-compensating member at positions separated from each other by a distance corresponding to the difference in the thermal expansion coefficients of said first and second magnetic head supporting members.

4,881,143
COMPENSATED MAGNETO-RESISTIVE READ HEAD

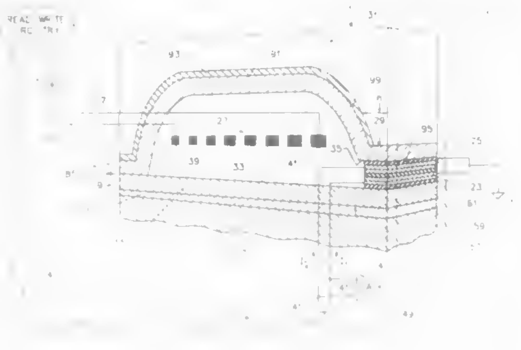
Manoj K. Bhattacharyya, Cupertino, Calif.; Robert J. Davidson, Eagle, Id., and Hardayal S. Gill, Los Altos, Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jan. 19, 1988, Ser. No. 145,784

Int. Cl.⁴ G11B *5/12*

U.S. Cl. 360—113 9 Claims

1. A device comprising:
- read means for modulating a voltage drop imposed on an electrical read current to provide a signal as a function of flux levels stored in a magnetic medium moving relative to said read means, said read means including input means for receiving said read current, said read means including output means for transmitting said signal;
- shield means for isolating said read means from magnetic fields from sources other than a portion of said magnetic medium at a predetermined location relative to said read means, said shield means being positioned with respect to said read means so that said read current induces a magnetic field in said shield means; and
- cancellation means for substantially cancelling said magnetic field in said shield means.



4,881,144
THIN FILM MAGNETIC HEAD

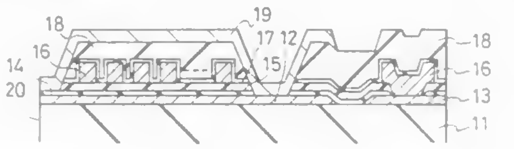
Isamu Yuito; Eijin Moriwaki, both of Hachiouji; Kazuo Shiiki, Kanagawa; Yoshihiro Hamakawa, Koganei, and Hisashi Takano, Hachiouji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 11, 1988, Ser. No. 142,697

Claims priority, application Japan, Jan. 19, 1987, 62-8031

Int. Cl.⁴ G11B *5/16*

U.S. Cl. 360—125 12 Claims



1. In a thin film magnetic head including a lower magnetic pole formed on a substrate, a gap layer, a first, insulating layer, a coil formed on said first insulating layer, a second insulating layer formed on said first insulating layer and on said coil, and an upper magnetic pole, the improvement wherein a surface active layer is formed having opposite sides wherein one side is sequentially contiguous to both said first insulating layer and said coil and the other side of said surface active layer is contiguous to said second insulating layer.

4,881,145
TAPE GUIDE MECHANISM

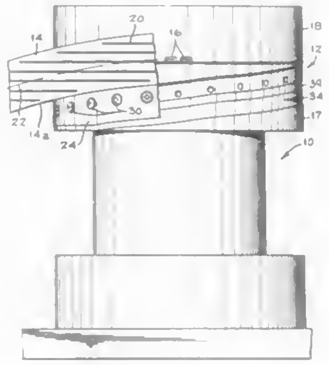
Mark A. Hathaway, Newark, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed Apr. 10, 1987, Ser. No. 36,762

Int. Cl.⁴ G11B *15/60*

U.S. Cl. 360—130.24 3 Claims

1. In a head assembly for a recording and reproducing apparatus for the storage and retrieval of information on a tape medium, including a cylindrical drum to position the tape medium for movement on a path defined on a tape-bearing surface of the drum, a guide mechanism tracing said path on the drum surface, said guide mechanism comprising:
- an inwardly directed step formed in the tape-bearing surface of the drum, said step having an upper face and including a second recessed channel portion disposed contiguous to the upper face, said step following said path of the tape medium; and
- a guide band mounted on the drum to define the position of the tape path around the drum, an upper face of the guide band received in the second recessed channel portion of the step, to be disposed adjacent the upper face of the step, to be provided a shelf which supports the tape medium at a lower edge thereof, and to minimize gaps between the guide band and the step, thereby to prevent the tape medium from being trapped between the guide band and the drum surface, as the tape medium moves along said guide band, and to fully support the tape medium both on the guide band and at the drum surface.



4,881,146
MASK FOR MAGNETIC TAPE CASSETTES

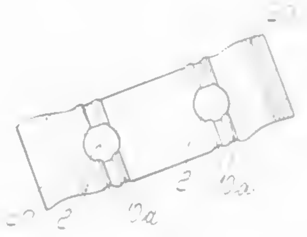
Abramo Bordignon, Senago, Italy, assignor to A.T.B. S.P.A., Senago Mi, Italy

Filed Nov. 23, 1987, Ser. No. 124,194

Claims priority, application Italy, Dec. 4, 1986, 22582 A/86

Int. Cl.⁴ G11B *23/02*

U.S. Cl. 360—132 9 Claims



1. Mask for magnetic tape cassettes of the type comprising reels of magnetic tape in a box-like cassette shell having a middle plane and inner walls, wherein the reels have hubs defining axial ends having a peripheral region and the magnetic tape has longitudinal edges and defines windings on said reels, said mask comprising a sheet-like element having a longitudinal extension and being insertable between said axial ends of said reels of magnetic tape and said inner walls of said box-like cassette shell, and a pair of holes formed in said sheet-like element and being located at said hubs of said reels, wherein said sheet-like element defines at least one centering ridge having a high degree of elastic rigidity and at least partially engaging said peripheral region of said axial ends for centering said hubs with respect to said middle plane of said box-like cassette shell, and at least one alignment ridge having a low degree of elastic rigidity and being engagable with said longitudinal edges of said magnetic tape for aligning said winding, wherein said at least one centering ridge and said at least one alignment ridge extend substantially perpendicular to said longitudinal extension of said sheet-like element.

4,881,147
PROTECTION OF SENSITIVE ELECTRICAL INSTALLATIONS AGAINST THE EFFECTS OF LIGHTNING, AND DEVICES PROPOSED FOR SUCH ARRANGEMENT

Jean-Paul Schaff, 18 avenue des Tilleuls, F-63400 Chamalieres, France

Filed Mar. 2, 1987, Ser. No. 9,331

Int. Cl.⁴ H02H *1/04*

U.S. Cl. 361—118 13 Claims

1. Arrangement for the protection of an installation for transformation of electric current of similar installation connected to an overhead line, characterized:
- in that the electrical relation between the line and the installation comprises for each of the phases:
  - at least a first set of arresters connected to the line, a first grounding conductor insulated for a minimum of 1,000 V for connecting the first set of arresters to ground,
  - at least a first inductance coil connected to the first set of arresters and having a winding of approximately fifty loops 25 to 30 centimeters in diameter, the loops being insulated from one another to at least 1,000 V in permanent tension,
  - at least one variable resistance arrester conected to the inductance coil, and
  - a second grounding conductor insulated for a minimum of 1,000 V for connecting the variable resistnace arrester to ground.

4,881,148
REMOTE CONTROL SYSTEM FOR DOOR LOCKS

George Lambropoulos, Grosse Pointe Woods; Kenneth R. Pitera, Warren, and Robert A. Hair, Pontiac, all of Mich., assignors to Wickes Manufacturing Company, Southfield, Mich.

Continuation of Ser. No. 052,469, May 21, 1987, abandoned. This application Oct. 19, 1988, Ser. No. 262,206

Int. Cl.⁴ H01G *1/06*

U.S. Cl. 361—172 36 Claims

1. In a remote control system including a receiver unit adapted to be fixedly mounted onto a motor vehicle having at least one door lock with a first locked condition and a second unlocked condition, said receiver unit including means for receiving a coded signal including a code portion of binary bits, memory means for storing a first code of binary bits, means for comparing the code portion of a received coded signal with said first code and means for shifting said door lock to one of said conditions upon a comparison match between said code portion of a received signal and said stored first code; and a transmitting unit including means for storing a second code of binary bits, selector means for indicating a desire to shift said door lock into one of said conditions, means responsive to said selector means for transmitting a coded signal including said second code as the code portion of the transmitted signal, which transmitted signal has a signal strength suffi-

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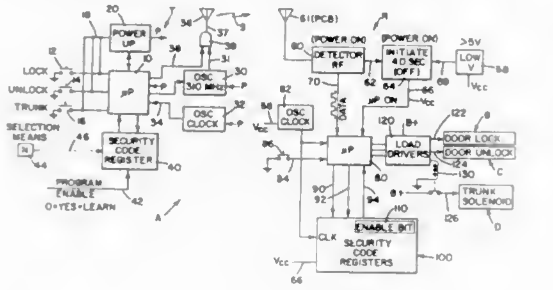
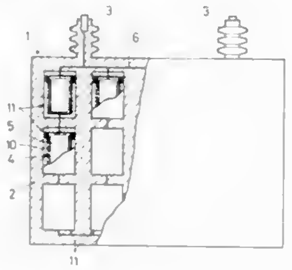
cient to drive said receiving means when said transmitting unit is in proximity to said receiver unit, the improvement comprising: programming means for establishing said stored first code, said programming means including field programming means for permitting entry of said coded portion of said received coded signal into said memory means to establish said first code as corresponding to said coded portion of said received signal, said field programming means including switch means associated with said receiver unit for permitting said entry of said coded portion only when said switch means is manually operated.



4,881,149
MOLDED CAPACITOR

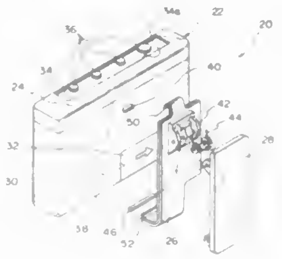
Koichi Tokura, Osaka, and Goro Matsui, Amagasaki, both of Japan, assignors to Risho Kogyo Co., Ltd., Osaka, Japan
Filed Oct. 12, 1988, Ser. No. 262,736
Claims priority, application Japan, Oct. 23, 1987, 62-162873; Oct. 27, 1987, 62-163767; Feb. 2, 1988, 62-23427
Int. Cl.^{4} H01G *4/38*
U.S. Cl. 361—328 **10 Claims**



1. A capacitor, comprising:
a plurality of inner casings, each said inner casing made of a relatively rigid material, and each said inner casing comprising a body portion having an open end and a lid portion covering said open end of said body portion;
a plurality of capacitor elements, one said capacitor element disposed in each said inner casing;
lead wires electrically connecting said plurality of capacitor elements with one another in an assembly;
each said lid having a hole therethrough and each said body portion having a hole therethrough in a bottom portion thereof for receiving said lead wires therethrough, each said hole sized so as to have a first gap between the wall of said hole and a said lead wire received therethrough, and each said inner casing having a second gap between its body portion and its respective lid portion, said first and second gaps sized sufficiently small so as to allow an electrically insulating gas to pass into said inner casing but sufficiently large so as to prevent molten synthetic resin from passing into said inner casing;
each said inner casing having an electrically insulating gas therein; and
an outer casing comprising molded synthetic resin surrounding said plurality of inner casings and sealing said electrically insulating gas in said plurality of inner casings.

4,881,150
HOUSING AND HOLDER ASSEMBLY FOR A PORTABLE COMMUNICATION APPARATUS

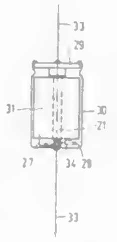
Takashi Oyamada, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan
Filed Jul. 11, 1988, Ser. No. 217,493
Claims priority, application Japan, Jul. 10, 1987, 62-105208[U]
Int. Cl.^{4} H05K *7/00*
U.S. Cl. 361—392 **7 Claims**



1. A housing and holder assembly for a portable communications apparatus, comprising:
a housing accommodating said apparatus;
a battery cover forming a part of said housing and slidable relative to said housing into and out of engagement with said housing, said battery cover closing a bore which is defined in said housing for receiving a battery which powers said apparatus;
a holder removably mounted on said housing and, when mounted on said housing, engaging said housing in at least two places such that at one of said at least two places the holder contacts both said housing and said battery cover simultaneously; and
locking means associated with said one of said at least two places for, when said holder is mounted on said housing, locking said holder in position such that said battery cover is removable from said housing with the holder being held in engagement with said housing, removal of said battery cover facilitating detachment of said holder from said housing.

4,881,151
ELECTROLYTIC FOIL CAPACITOR

Johannus W. Weekamp; Benedictus C. H. Fransen, and Hendrik van der Ploeg, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Feb. 15, 1989, Ser. No. 311,560
Claims priority, application Netherlands, Mar. 7, 1988, 8800558
Int. Cl.^{4} H01G *9/00*
U.S. Cl. 361—531 **3 Claims**

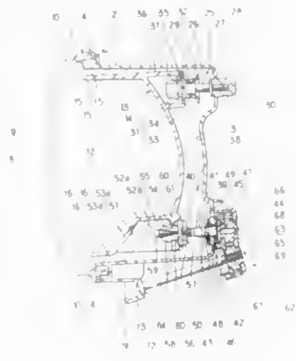


1. An electrolytic foil capacitor comprising a metal housing

which is open on one side and which is provided on said side with a seal of electrically insulating material, said housing containing, wound around a formed metal pin, an assembly of a strip of an anode foil provided with a dielectric oxide layer, two or more strips of separator foils impregnated with an electrolyte liquid, and a strip of a cathode foil, which are wound together to form a roll, the metal pin being lead outwards through the seal on the open side of the housing, and the cathode foil being provided with a first tag protruding from the roll, said tag being mechanically and electrically connected to the housing, characterized in that the roll is mechanically connected to the metal pin via a short side of a strip of a separator foil, and that the anode foil is provided with a second tag projecting from the roll, which tag is mechanically and electrically connected to the metal pin.

4,881,152
HEADLIGHT FOR AUTOMOBILE

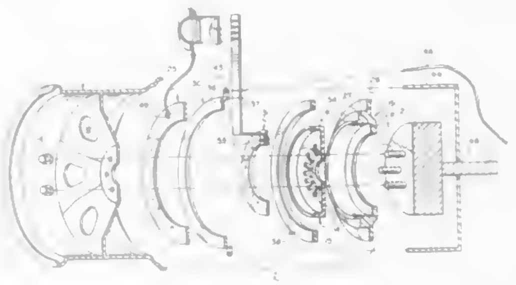
Shinji Watanabe, and Akira Saijo, both of Shizuoka, Japan, assignors to Koito Seisakusho Co., Ltd., Tokyo, Japan
Filed Sep. 14, 1988, Ser. No. 245,989
Claims priority, application Japan, Sep. 22, 1987, 62-145531[U]; Jun. 21, 1988, 63-152973
Int. Cl.^{4} B06Q *1/06;* F21V *3/18*
U.S. Cl. 362—61 **6 Claims**



1. A headlight device for use in an automobile, comprising:
a lamp body having a recess which opens forward with respect to a vehicle onto which the headlight device is to be mounted;
a lens covering the recess of the lamp body;
a reflective mirror tiltably supported in the lamp body;
one rotatable support portion and two space adjusting portions for supporting the reflective mirror on the lamp body, each space adjusting portion comprising a nut member supported on the lamp body and having a front and rear end with respect to the vehicle onto which the headlight device is to be mounted and a screw-thread portion for screw-threadingly engaging with the nut member, a gear unit consisting of two intermeshing bevel gears, one of said bevel gears, being connected to the rear end of the adjusting rod, and an actuating rod having a front end located near to a front end of a side surface of the lamp body and a rear end connected to the other bevel gear of the gear unit with respect to the vehicle onto which the headlight device is to be mounted; and
a recessed portion formed in the reflective mirror and in front of each of the nut members with respect to the vehicle onto which the headlight device is to be mounted.

4,881,153
VEHICLE WHEEL LIGHTING SYSTEM

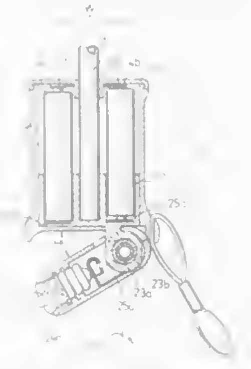
Russell E. Scott, Salt Lake City, Utah, assignor to David Duane Scott, Draper, Utah
Filed Jan. 17, 1989, Ser. No. 297,400
Int. Cl.^{4} B60Q *1/00*
U.S. Cl. 362—78 **14 Claims**



1. A wheel lighting apparatus for mounting on a vehicle having at least one wheel which is rotatable with respect to a nonrotating portion of the vehicle, one wheel hub with lug bolts, and a source of electrical power, said apparatus comprising:
disk means comprising
  an electrically conductive first ring which is rotatable with the wheel of the vehicle, and
  an electrically conductive second ring which is attachable to a nonrotating portion of the vehicle so as to be generally coaxial with said first ring and in continuous sliding electrical contact therewith as the wheel rotates,
mounting means for attaching said first ring to a hub of the vehicle,
light means attachable to said mounting means to rotate as the hub and wheel are rotated and responsive to electrical power for producing light, and
means for electrically coupling said light means to said first ring so that electrical power supplied from the vehicle power source to said second ring is thereby supplied via said first ring to said light means.

4,881,154
ILLUMINATING UMBRELLA HANDLE

Su Tseng, No. 6, Niu Pu Road, and Wan S. Chien, No. 25-1, Chung Hsiao Road, both of Hsinchu City, Taiwan
Filed May 17, 1988, Ser. No. 194,958
Int. Cl.^{4} A45B *3/02;* A63B *15/02*
U.S. Cl. 362—102 **1 Claim**



1. An umbrella handle for an umbrella having a shaft which is mounted on said handle, said handle being in form of a substantially rectangular hollow body of length L, width W and thickness T, wherein L slightly outsizes the length of a standard dry battery, said handle being provided with an illuminating means pivotable in a plane perpendicular to the direction of the thickness of said handle, the length of said illuminat-

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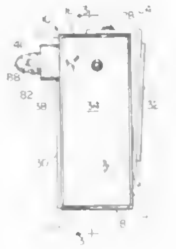
ing means being not greater than W, and the thickness of said illuminating means being not greater than T, said handle being so structured as to receive said shaft while defining two spaces one on each side of said shaft sufficient to respectively receive a standard dry battery, said handle being provided with terminal means which are so structured that said lighting means is only energized when batteries are loaded in said spaces and when said illuminating means is privoted a specific angle away from said handle.

4,881,155
MULTIPURPOSE FLASHLIGHT

William L. Gahagan, 8612 - 16th Ave. NE., Seattle, Wash. 98106
Filed Feb. 7, 1989, Ser. No. 307,756
Int. Cl.⁴ F21L *15/08*
U.S. Cl. 362—191 16 Claims



1. A multipurpose flashlight comprising:

a flashlight bulb;

a housing means; wherein said housing means further includes a flashlight bulb socket means for mounting said flashlight bulb; and wherein said housing means defines an internal compartment that is sized and shaped to be adapted to receive at least one battery;

an electrical switch means mounted to said housing means; and

electrical circuit means for electrically connecting said flashlight bulb, said at least one battery and said switch means to enable said at least one battery to supply electricity to said flashlight bulb when said switch means is on and to prevent said at least one battery from supplying electricity to said flashlight bulb when said switch means is off;

wherein said flashlight further comprises first and second magnets; wherein said first magnet is secured to a first magnet side of said housing means; wherein said second magnet is secured to a second magnet side of said housing means; wherein said first magnet has a strength that is sufficient to be adapted to magnetically fasten said flashlight in any orientation to a magnetically responsive surface to help permit a user to aim light emitted from said flashlight on a work surface; and wherein said second magnet is secured to said second magnet side of said housing means to help permit said user to more conveniently use said second magnet to magnetically hold objects for said user.

4,881,156
ADJUSTABLE MOUNTING DEVICE FOR A LUMINAIRE

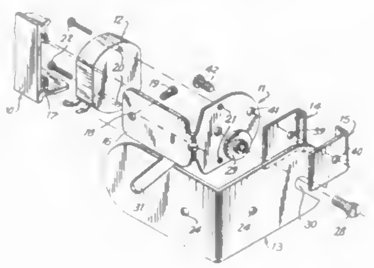
Sylvan R. Shemitz, Woodbridge; Theodore Lepak, and Steve Smith, both of Meriden, all of Conn., assignors to Sylvan R. Shemitz Associates, Inc., West Haven, Conn.
Filed May 22, 1987, Ser. No. 53,045
Int. Cl.⁴ F21V *3/02*
U.S. Cl. 362—220 6 Claims

1. An adjustable mounting device for a luminaire, comprising:

(a) an elongated reflector having a long axis and adapted to receive the adjustable mounting device at each end thereof;

(b) mounting straps attached at each end of the reflector coaxially with the long axis of the reflector;

(c) lampholders attached to mounting straps coaxially with the long axis of the luminaire;

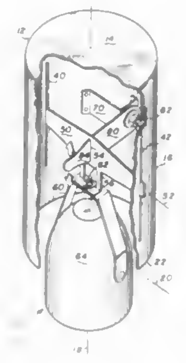


(d) mounting brackets attached at each end of the reflector coaxially with the long axis of the reflector; and

(e) locking means, separate from the mounting brackets, attached to mounting straps at each end of the reflector offset from the long axis of the reflector.

4,881,157
ADJUSTABLE LIGHT FIXTURE

Scott T. Pahl, San Ramon, Calif., assignor to USI Lighting, Inc., San Leandro, Calif.
Filed Apr. 27, 1989, Ser. No. 344,812
Int. Cl.⁴ F21V *21/04*
U.S. Cl. 362—371 10 Claims



1. An adjustable light fixture comprising:

a housing member having a pair of longitudinal slots;

a slide member positioned inside said slots and having a central aperture;

a lever member pivotally connected to said housing and having a first end positioned inside said central aperture; and

a lamp assembly connected to said slide member.

4,881,158
FLASHLIGHT SWITCH WITH SPARE BULB CARRIER

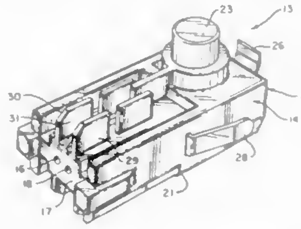
George T. Price, III, 2227 E. 37th St., Los Angeles, Calif. 90058
Continuation of Ser. No. 107,781, Oct. 13, 1987, Pat. No. 4,843,526. This application May 3, 1989, Ser. No. 346,641
Int. Cl.⁴ F21L *7/00*
U.S. Cl. 362—207 6 Claims

1. A bulb and switch assembly comprising:

a bulb having first and second leads,

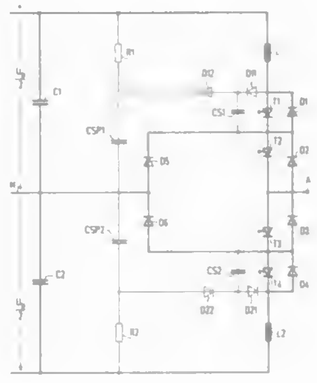
a fixed switch body having a first terminal and a conductor,

means for mounting said bulb on said switch body with the first lead contacting the first terminal and the second lead contacting the conductor and further including means for storing a spare bulb on the switch body.



4,881,159
SWITCHING-RELIEVED LOW-LOSS THREE-LEVEL INVERTER

Joachim Holtz; Samir Salama, both of Wnppertal, and Theodor Salzmann, Erlangen, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany
Filed Dec. 21, 1988, Ser. No. 288,284
Claims priority, application Fed. Rep. of Germany, Dec. 21, 1987, 3742437; Dec. 21, 1987, 3743436
Int. Cl.⁴ H02M *7/521*
U.S. Cl. 363—58 14 Claims



1. A three-level inverter, comprising:

at least one inverter phase having a series arrangement of first, second, third and fourth antiparallel circuits, each antiparallel circuit including a semiconductor switching element and a bypass diode;

a phase output formed by a junction point of said second and third antiparallel circuits;

a d-c voltage source which supplies voltage to the phase;

first and second switching-on relief chokes which couple said series arrangement to the positive and negative potentials of the d-c voltage source;

first and second voltage divider capacitors coupled to be supplied by the d-c voltage source, with a junction point formed between said first and second voltage divider capacitors;

a first decoupling diode coupled between said junction point between said first and second voltage divider capacitors and a junction point between said first and second antiparallel circuits;

a second decoupling diode coupled between said junction point between said first and second voltage divider capacitors and a junction point between said third and fourth antiparallel circuits; and

means for relieving the semiconductor switching elements during a switching-off process, said means for relieving including:

a first series circuit having a first wiring diode and a first switching-off relief capacitor, which said first series circuit shunts said first antiparallel circuit;

a second series circuit having a second wiring diode and a second switching-off relief capacitor, which said second series circuit shunts said fourth antiparallel circuit;

a third series circuit having a first storage capacitor and a first d-c load, which said third series circuit is shunted across said first voltage divider capacitor;

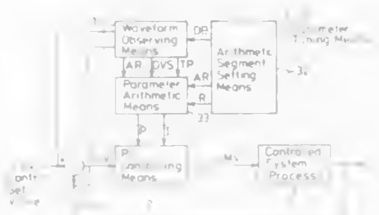
a fourth series circuit having a second storage capacitor and a second d-c load, which said fourth series circuit is shunted across said second voltage divider capacitor;

a third wiring diode coupled between the junction point of the first wiring diode and the first switching-off relief capacitor and the junction point of the first storage capacitor and the first d-c load; and

a fourth wiring diode coupled between the junction point of the second wiring diode and the second switching-off relief capacitor and the junction point of the second storage capacitor and the second d-c load.

4,881,160
SELF-TUNING CONTROLLER

Yoshikatsu Sakai; Yasuo Nakai; Asao Miyabe, and Takafumi Kawano, all of Tokyo, Japan, assignors to Yokogawa Electric Corporation, Tokyo, Japan
Filed Mar. 3, 1988, Ser. No. 163,915
Claims priority, application Japan, Mar. 9, 1987, 62-53494; Apr. 20, 1987, 62-97165
Int. Cl.⁴ G05B *13/00*
U.S. Cl. 364—161 12 Claims


Waveform Observing Means
DR
Arithmetic Segment Setting Means
AR
DVS
TP
AR
Parameter Arithmetic Means
R
33
P
I
Controlling Means
MV
Controlled System (Process)

1. A self tuning controller comprising

PI controlling means for outputting a manipulated variable to a controlled system, said PI controlling means comprising means for obtaining said manipulated variable by performing at least proportional integral arithmetic on a deviation signal between a control set value and a process variable from a process; and

parameter tuning means for tuning said PI arithmetic parameters of said PI controlling means, said parameter tuning means comprising means for observing a waveform of said process variable or said deviation signal, and means for taking an observed result of said process variable or said deviation signal and for producing a preset response target;

wherein said parameter tuning means comprises waveform observing means for computing a first area associated with said process variable or said deviation signal extending from a first generation timing (t_1) of a first peak of said process variable or said deviation signal to a subsequent second generation timing (t_2) of a second peak and a second area associated with said process variable or said deviation signal extending from said second generation timing to a subsequent timing given by $t_2+(t_2-t_1)$, and for outputting an area ratio of said first area to said second area, as one of a plurality of evaluation indexes representing waveform patterns, and parameters arithmetic means for computing said PI arithmetic parameters on the basis of said evaluation indexes, including said area ratio, given by said waveform observing means.

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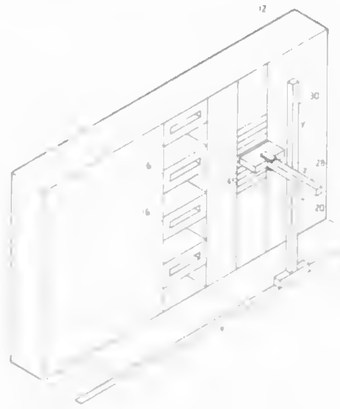
4,881,161
STEPPING MOTOR CONTROL

Murray A. Thompson, Madison, Wis., assignor to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed Jan. 29, 1988, Ser. No. 149,713
Int. Cl.⁴ G05F *1/00*

U.S. Cl. 364—167.01 19 Claims



1. A stepping motor control circuit for operating a stepping motor under the control of a digital computer, the stepping motor having at all times a current velocity and a current position, the circuit comprising

an input latch connected to receive two input values from the computer, one input value being desired velocity and the other input value being rate of change of velocity;

a velocity register holding a value corresponding to the current velocity of the stepping motor;

an adder to add the value of the rate of change of velocity to the value in the velocity register;

a position register holding a value corresponding to the current position of the stepping motor;

an adder to add the value of the current velocity to the value in the position register;

a digital-to-analog converter to convert the value in the position register to an analog voltage for the motor; and

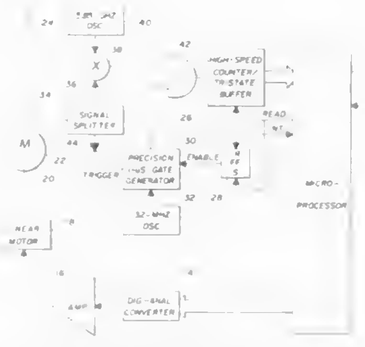
a drive circuit connected to the output of the digital-to-analog converter to receive the analog output thereof and amplify it to drive the stepping motor.

4,881,162
FREQUENCY CONTROL SYSTEM

Frederick G. Reinagel, Erie, N.Y., assignor to LTV Aerospace & Defense Co., Dallas, Tex.

Filed Mar. 15, 1988, Ser. No. 168,447
Int. Cl.⁴ H03B *9/10;* **H01J** *25/50*

U.S. Cl. 364—176 34 Claims



1. A frequency control system for controlling, under a wide variety of environmental conditions, the output frequency of a coaxial magnetron having a mechanically positionable tuning member, said frequency control system comprising:

programmable logic means, responsive to a frequency command signal, for generating a positioning signal derived from the frequency command signal, where the initial value of the positioning signal is functionally related to stored nominal magnetron tuning data;

driver means, intercoupling the programmable logic means and the tuning member of the magnetron, for positioning the tuning member in response to positioning signals generated by said programmable logic means;

sensor means, responsive to the output of the magnetron for sensing the output of the magnetron and producing a signal representative thereof;

measurement means, connected to said sensor means, for measuring the frequency of the sensor output signal and supplying a feedback signal to the programmable logic means; and

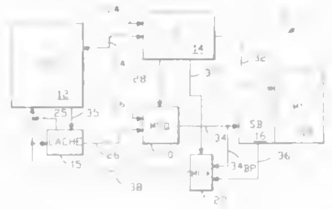
said programmable logic means being operative to compare the frequency command signal with the frequency of the sampled magnetron output, modify a resident dynamic calibration function according to any difference detected in the comparison, and generate a revised positioning signal based on the modified calibration function to thereby iteratively tune the output frequency of the coaxial magnetron.

4,881,163
COMPUTER SYSTEM ARCHITECTURE EMPLOYING CACHE DATA LINE MOVE-OUT QUEUE BUFFER

Jeffrey A. Thomas; Theodore S. Robinson, both of Cupertino; Robert A. Ertl, Santa Clara, and Harold F. Christensen,Jr., Fremont, all of Calif., assignors to Amdahl Corporation, Sunnyvale, Calif.

Filed Sep. 19, 1986, Ser. No. 909,500
Int. Cl.⁴ G06F *13/00*

U.S. Cl. 364—200 10 Claims



1. A queue buffer for preventing mainstore memory access contention between data line move-out and move-in requests issued from any of a plurality of logical request sources during an arbitrated request acceptance cycle, the requests including a data move-out request for the transfer of a data line present in a cache memory of a central processor to a mainstore memory, and a move-in request, specifying a data line by an address tag, for transfer to the cache memory, said queue buffer comprising:

(a) a first buffer memory having a plurality of data line storage locations;

(b) a second buffer memory having a plurality of address tag storage locations;

(c) control means for receiving and executing requests received from the plurality of logical request sources, said control means receiving the requests in the performance of an arbitrated request acceptance cycle wherein a received request is selected for execution, said control means including means for receiving a cache data line and address tag provided with a first data move-out request, said control means receiving and storing said cache data line at a first storage location within said first buffer memory and the address tag of said cache data line at a corresponding storage location within said second buffer memory; and

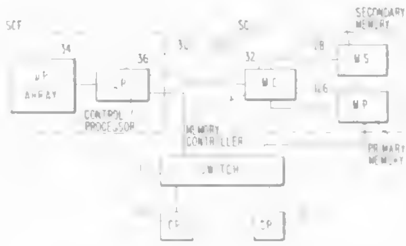
(d) background means, coupled to said control means as one of the plurality of logical request sources, for providing a second data move-out request to said control means for the transfer of a data line and address tag to said mainstore memory, said background means being coupled to said control means for determining the number of data lines stored in said first buffer means, said background means providing said second data move-out request to said control means during each arbitrated request acceptance cycle when more than a predetermined number of data lines are stored in said first buffer memory, said background means issuing said second data move-out requests at a priority less than that of said first move-out request and that of requests for the move-in data from mainstore memory.

4,881,164
MULTI-MICROPROCESSOR FOR CONTROLLING SHARED MEMORY

Brent T. Hailpern, Katonah; Lee W. Hoevel, Yorktown Heights, both of N.Y., and Eugene Shapiro, Stamford, Conn., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 567,304, Dec. 30, 1983, abandoned. This application May 18, 1987, Ser. No. 51,178
Int. Cl.⁴ G06F *13/14*

U.S. Cl. 364—200 25 Claims



1. A data processing system of the type including at least one intelligent terminal, a memory for storing data and control means for performing at least one memory control function in accordance with data requests from said terminal, said control means comprising a plurality of microprocessors for performing said at least one memory control function in accordance with said data requests and interconnected in an array for communication between one another, each microprocessor performing its control function with respect to a respective area of said memory and a control processor responsive to a request for data from said at least one intelligent terminal for determining which one of said microprocessors is responsible for the requested data, and for forwarding said request for data to said one microprocessor.

4,881,165
METHOD AND APPARATUS FOR HIGH SPEED DATA TRANSMISSION BETWEEN TWO SYSTEMS OPERATING UNDER THE SAME CLOCK WITH UNKNOWN AND NON CONSTANT SKEW IN THE CLOCK BETWEEN THE TWO SYSTEMS

David J. Sager, Acton; Anne S. Valiton, Westboro, both of Mass.; Jay C. Stickney, Derry, N.H., and Raj K. Ramanujan, Leominster, Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Apr. 1, 1988, Ser. No. 176,474
Int. Cl.⁴ G06F *15/00;* **H04L** *7/00*

U.S. Cl. 364—200 13 Claims

6. A digital system which comprises:

(a) a first system;

(b) a second system,

(c) a data transmission line coupling the first system to the second system;

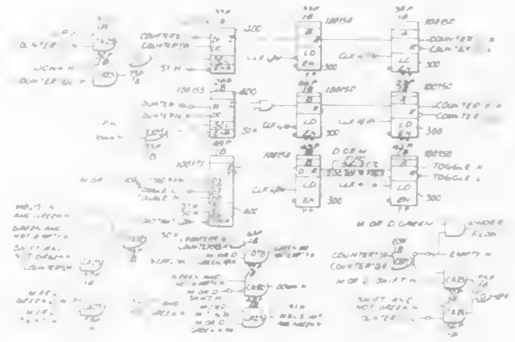
(d) a data forwarding signal line coupling the first system to the second system;

(e) a clock signal having a cycle time, coupled to the first system and the second system wherein there is a nonconstant and unknown skew in the clock signal between the first and second systems;

(f) the first system operating to continuously transmit a series of data items across the data transmission line to the second system as a function of the clock signal in the first system;

(g) the first system operating to transmit a data forwarding signal across the data forwarding signal line to the second system;

(h) a first state device in the second system coupled to the data transmission line, the data forwarding signal operating to enable the first state device to capture each one of the series of data items;



(i) a second state device in the second system coupled to the data forwarding signal line, the data forwarding signal operating to enable the second state device to generate a binary signal which inverts to indicate an instant of time when each one of the series of data items is received in the first state device;

(j) the second state device being coupled to a synchronizer, the synchronizer operating to synchronize the binary signal to the clock signal of the second system;

(k) a third state device being coupled to the first state device and the synchronizer;

(l) the clock signal of the second system and the synchronized binary signal operating to enable the third state device to capture each one of the series of data items from the first state device such that the synchronized binary signal determines which one of the cycles of the clock signal of the second system should be used to capture each one of the series of data items.

4,881,166
METHOD FOR CONSISTENT MULTIDATABASE TRANSACTION PROCESSING

Glenn R. Thompson, Tulsa, Okla., and Yuri J. Breitbart, Lexington, Ky., assignors to Amoco Corporation, Chicago, Ill.

Filed Jul. 24, 1987, Ser. No. 78,129
Int. Cl.⁴ G06F *9/00*

U.S. Cl. 364—200 11 Claims

1. A concurrency control method for permitting the correct execution of multiple concurrent transactions, each comprising one or more read and/or write operations, in a distributed heterogeneous database system, comprising:

(a) upon receipt of a read operation request, identifying the sites in the system that contain data needed for the read operation;

(b) determining if the transaction including the read opera-

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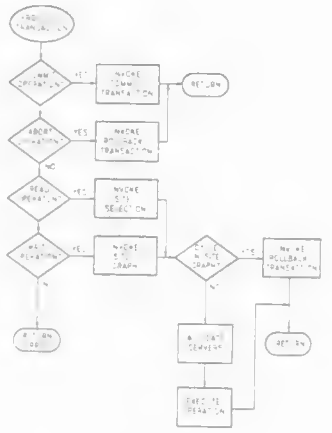
tion request has processed a previous operation at any of the identified sites;
(c) for the condition of step (b) where a previous operation has been processed, perform the read operation;
(d) for the condition of step (b) where a previous operation has not been processed, select a site from the identified sites and determine if a site cycle occurs at the selected site;



(e) for the condition of step (d) where a site cycle occurs, select another site from the selected sites and redo step (d);
(f) for the condition of step (d) where no site cycle occurs at one of the sites, perform the read operation at that selected site; and
(g) for the condition of step (d) where a site cycle occurs for all selected sites, cancel the transaction.

4,881,167
DATA MEMORY SYSTEM

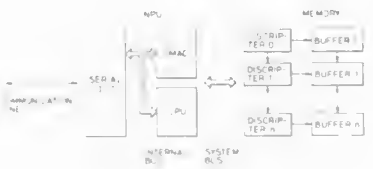
Hisao Sasaki, Tachikawa; Matsuaki Terada, Machida; Susumu Matsui, Sagamihara; Kenji Kawakita, Yokohama; Jiro Kashio, Kawasaki; Shiro Baba, Tokorozawa, all of Japan; Yasushi Akao, Ithaca, N.Y., and Toshio Okochi, Ohme, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 63,081, Jun. 17, 1987, abandoned. This application Mar. 2, 1989, Ser. No. 318,439

Claims priority, application Japan, Jun. 18, 1986, 61-140062

Int. Cl.⁴ G06F *12/00*

U.S. Cl. 364—200 21 Claims



1. A data memory system comprising:
a plurality of buffer regions, each buffer region having a respectively predetermined memory capacity for storing data;
a like plurality of descripter regions, each descripter region corresponding with a respective one of said plurality of buffer regions, each descripter region including a first portion for containing buffer region addressing information, designating the address of the corresponding one of said plurality of buffer regions, and a second portion for containing chain information, designating the address of another descripter region to be linked to said each descripter region so that said each descripter region is capable of being linked to another descripter region, allowing data stored in said buffer regions to be linked on the basis of the chain information in said descripter regions.

4,881,168
VECTOR PROCESSOR WITH VECTOR DATA COMPRESSION/EXPANSION CAPABILITY

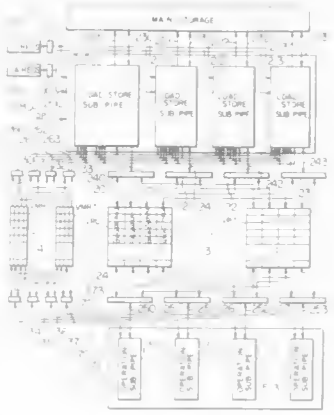
Yasuhiro Inagami, Kodaira; Takayuki Nakagawa, Kokubunji; Yoshiko Tamaki, Kawagoe, and Shigeo Nagashima, Hachioji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 6, 1987, Ser. No. 34,950

Claims priority, application Japan, Apr. 4, 1986, 61-76528

Int. Cl.⁴ G06F *12/00, 15/347*

U.S. Cl. 364—200 6 Claims



1. A vector processor, comprising:
(a) a memory for holding data;
(b) at least one vector register including means for holding a set of vector elements and means for reading out said vector elements sequentially in groups in response to a store compression instruction, wherein each group comprises m (m>1) vector elements which are read out in parallel;
(c) at least one vector mask register including means for holding a set of mask bits each corresponding to one vector element of the set of vector elements, each mask bit comprising a valid mask bit or an invalid mask bit, and means for reading out the set of mask bits sequentially in groups in response to said store compression instruction, wherein each group comprises m mask bits corresponding to a respective group of m vector elements, wherein a respective group of m mask bits are read out in parallel and in synchronism with read out of a corresponding group of vector elements;
(d) store means connected to said memory, said vector register and said vector mask register and responsive to said store compression instruction for selectively writing vector elements, within a set of vector elements currently read out of said vector register and corresponding to valid mask bits within the corresponding set of mask bits, into regularly spaced storage locations of said memory;
(d1) wherein said store means comprises first to m-th parallelly operable access means, wherein an i-th (1≦i≦m) access means includes means for writing into said memory an i-th vector element of a respective group of vector elements currently read out from said vector register, in response to an i-th mask bit of a group

of corresponding mask bits currently read out from the mask register when said i-th mask bit is a valid mask bit;
(d2) wherein said first access means includes means for generating an address of a storage location of said memory into which a first vector element of the read out group of vector elements is to be written when a first mask bit of the read out mask bits is a valid mask bit included in all groups of m mask bits read out before the currently read out group of m mask bits;
(d3) wherein each j-th (2≦j≦m) access means includes means for generating an address of a storage location of said memory into which a j-th vector element of the currently read out group of vector elements is to be written when a j-th mask bit of the currently read out group of m mask bits is a valid mask bit, depending upon said total number of valid mask bits in all previously read out groups of mask bits and upon a total number of valid or invalid mask bits included in the first to (j−1)th mask bits included in the currently read out m mask bits.

4,881,169
APPARATUS FOR CONTROLLING PERIPHERAL EQUIPMENT

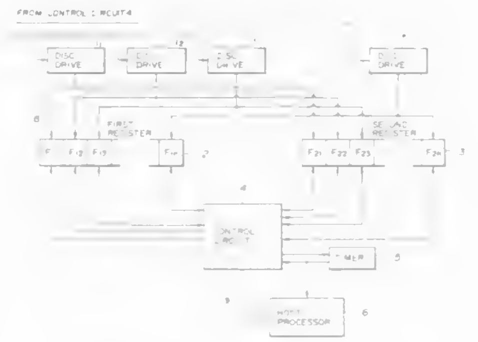
Shigenobu Tanaka, and Tomohisa Arai, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Nov. 9, 1987, Ser. No. 118,015

Claims priority, application Japan, Nov. 10, 1986, 61-268218

Int. Cl.⁴ G06F *3/00*

U.S. Cl. 364—200 5 Claims



1. An apparatus for controlling peripheral equipment, said apparatus comprising:
driving means for driving a plurality of peripheral equipment,
first storing means for storing first data indicating which peripheral equipment is under operation,
second storing means for storing second data,
a timer counting a time and producing a time over signal when said time becomes equal to a predetermined time, and
control means, connected to said driving means, said first and second storing means, and said timer, for controlling operation of said driving means, said first and second storing means, and said timer, said control means controlling said second storing means to store said first data which is stored in said first storing means into said second storing means when all of said second data has a predetermined value, said control means controlling said timer to start counting when any of said second data has a value other than said predetermined value.

4,881,170
INSTRUCTION PREFETCH CONTROL APPARATUS

Tsuyoshi Morisada, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Oct. 23, 1987, Ser. No. 117,152

Claims priority, application Japan, Feb. 28, 1986, 61-44478; Feb. 28, 1986, 61-44479

Int. Cl.⁴ G06F *9/38*

U.S. Cl. 364—200 2 Claims

1. An instruction prefetch control apparatus having a branch history table storing a paired branch instruction address and a branch destination address of a branch instruction for performing prefetch control of an instruction, said branch history table also storing said branch instruction and instruction-number-information, comprising:
readout means for reading out said branch instruction from said branch history table in accordance with an instruction prefetch address;
means for storing a number of instructions for indicating a number of possible instruction prefetches from a branch destination in said branch history table depending on said branch destination address;
instruction-number-information storing means for storing said instruction-number-information obtained from said branch history table; and
inhibiting means for inhibiting the number of instruction prefetches of a predicted branch destination on the basis of said instruction-number-information from said instruction-number-information storing means.

4,881,171
SCINTILLATION CAMERA HAVING SIMPLIFIED ELECTRONIC CONTROL

Michel R. Jatteau; Pierre H. Lelong, both of Paris; Vincent Pauzat, Montgeron, and Christian Plard, Rueil-Malmaison, all of France, assignors to U.S. Philips Corp., New York, N.Y.

Filed Jul. 8, 1987, Ser. No. 71,222

Claims priority, application France, Jul. 9, 1986, 86 09986; Jul. 16, 1986, 86 10326

Int. Cl.⁴ G01T *1/20, 1/208*

U.S. Cl. 364—413.24 21 Claims

1. A scintillation camera comprising a collimator directing photons, a scintillation crystal converting each photon received from said collimator into a scintillation, a light guide for coupling said crystal to an entrance window of an array of p photodetectors, said photodetectors converting each scintillation into a current, p acquisition channels receiving output signals of said photodetectors and supplying p characteristic electric signals relating to the intensity of the scintillation and to each distance between each respective scintillation and each of the photo-detectors, and a processor supplying coordinates x_j and Y_j of a scintillation j and its associated energy E_j, characterized in that:
(A) said p acquisition channels sample said output signals of the photo-detectors, followed by A/D conversion of said

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samples and summing of said samples, and apply p digital signals to an output of said processor;

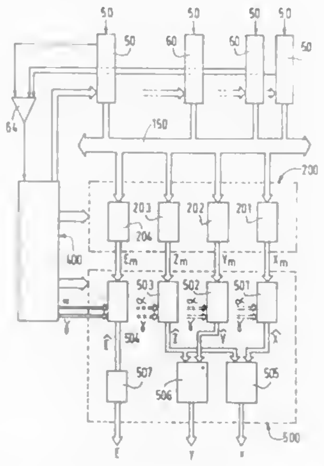
(B) said processor comprises:

(i) a bus for transferring said p digital signals;

(ii) a digital summing stage comprising four digital weighted sum forming devices supplying four digital signals X_m, Y_m, Z_m, E_m on the basis of said output signals of said p acquisition channels;

(iii) a scintillation processing stage including a plurality of unpiling calculation circuits and two dividers, said scintillation processing stage supplying three coordinate and energy signals x, y, E on the basis of said digital signals X_m, Y_m, Z_m, E_m; and

(C) a detection, sequencing and storage stage is provided in order to supply various clock signals for synchronizing elements of said p acquisition channels and elements of said processor, and to supply correction coefficients for said scintillation processing stage, said detection, sequencing and storage stage receiving a signal corresponding to a sum of the p output signals of said photodetectors, and characterized in that said scintillation processing stage comprises four unpiling calculation circuits receiving said digiatl signals X_m, Y_m, Z_m, E_m, respectively and supplying four signals X, Y, Z, E, and wherein said two dividers supply two signals $x=X/Z$ and $y=Y/Z$, respectively, said three signals x, y, E being formed by output signals of a first divider of said two dividers, a second divider of said two dividers, and a time realignment circuit, respectively, said time realignment circuit receiving an output signal of one of said four unpiling calculation circuits, said correction coefficients being coefficients for correction by extrapolation and interpolation, α and γ, respectively, and intended for said four unpiling calculation circuits of said scintillation processing stage.



4,881,172

OBSERVER CONTROL MEANS FOR SUSPENSION SYSTEMS OR THE LIKE

Lane R. Miller, Cary, N.C., assignor to Lord Corporation, Erie, Pa.

Filed Dec. 22, 1986, Ser. No. 945,380

Int. Cl.⁴ B60G *17/00*

U.S. Cl. 364—424.05 23 Claims

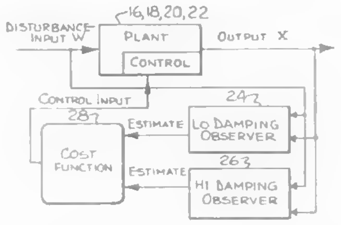
1. Apparatus for controlling operation of a suspension system having semiactive damper means, said damper means being adjustable to permit operation thereof in different modes of operation, adjustments of said damper means causing said damper means to operate in different ones of said modes of operation and thereby causing said suspension system to operate in different modes, the damping provided by said damper means in each of said modes of operation of said system being different from the damping produced by said damper means in other of said modes of operation of said system, said system receiving disturbance input and producing output, said apparatus comprising:

monitoring means for monitoring conditions of operation of said suspension system and for producing data indicative thereof;

system modeling observer means for modeling said different modes of said system, and for receiving data from said monitoring means, and for generating real time estimates of the output that would be produced by said system in each of said modes thereof modeled by said observer means;

function means for comparing said estimates generated by said means with each other and for identifying an optimum one of said estimates;

and control means for causing said damper means to operate in said system in the one of said modes thereof corresponding to the one of said modes thereof in the one of said modeled system modes producing said optimum one of said estimates.



4,881,173

ELECTRONICALLY CONTROLLED AUTOMATIC SPEED CHANGING APPARATUS

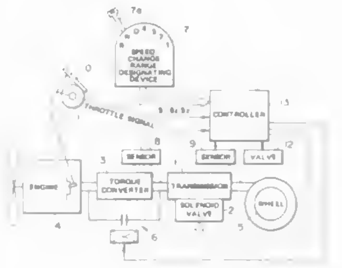
Takeo Kato; Shingo Kobayashi; Kazuo Takagi, all of Hiratsuka; Masahiro Watanabe, Yokohama, and Kiyoshi Kaneko, Kawasaki, all of Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Aug. 28, 1986, Ser. No. 901,148

Claims priority, application Japan, Sep. 6, 1985, 60-197244

Int. Cl.⁴ B60K *41/08;* G06F *15/20*

U.S. Cl. 364—431.07 6 Claims



1. An electronically controlled automatic speed changing apparatus comprising:

means for generating a speed stage change signal in accordance with a degree of throttle opening, engine speed and a predetermined speed change pattern;

actuator means for actuating a transmission in accordance with said speed stage change signal so as to change the speed stage of said transmission;

speed stage preselecting means for preselecting a desired speed stage of said transmission for a skipped speed stage change;

car speed detecting means for detecting car speed;

memory means for storing car speeds suitable for each speed stage of said transmission;

comparing means for comparing a current car speed detected by said car speed detecting means with the car speeds suitable for the desired speed stage; and

means for generating a skip speed stage change signal to instruct said actuator means to actuate said transmission so that the speed stage is skip-changed into said desired speed stage when said current car speed becomes less than the car speeds suitable for the desired speed stage.

4,881,174

SINUSOIDAL SIGNAL FREQUENCY MEASURING DEVICE

Helmut Gimmler, Waiblingen, Fed. Rep. of Germany, assignor to Daimler-Benz AG, Fed. Rep. of Germany

Filed Jul. 5, 1988, Ser. No. 215,471

Claims priority, application Fed. Rep. of Germany, Jul. 2, 1987, 3721827

Int. Cl.⁴ G01R *23/02*

U.S. Cl. 364—484 11 Claims

1. Device for measuring the frequency of a sinusoidal signal generated by a signal generator, said signal generator including a transmitter revolving with a shaft and having uniform divisions and a sensor, said device comprising:

oscillator means having a constant, but adjustable, sampling clock frequency higher than expected frequency of a sinusoidal signal;

analog to digital converter means, connected to said oscillator means, for receiving sinusoidal signals from said signal generator, sampling at a frequency determined by said sampling clock pulses and providing digital valves as a sign output and an absolute value output;

first digital memory means, connected to said oscillator means and analog to digital converter means, triggered by each sampling clock pulse from said oscillator means, for storing an absolute value formed during the preceding sampling clock pulse by said analog to digital converter means while said analog to digital converter means is providing a next digital value;

counter means, connected to said oscillator means, for counting sampling clock pulses until reset;

flip-flop means, connected to said analog to digital converter means, and triggered by a transition of said sign output from a first to a second sign, for providing a transition output pulse;

first adder means, connected to said first digital memory means, said analog to digital converter means and said flip-flop means, for adding the absolute value of the digital value of said second sign, which triggered said flip-flop means, from said analog to digital converter means to the presently absolute digital value of said first sign from said first digital memory means and providing a first sum output signal in response to said transition output pulse;

first divider means, connected to said first adder means, and said first digital storage means, for forming the quotient of the absolute digital value of said first sign from said first digital memory means and the first sum output signal and providing a first quotient signal in response to a first adder completion signal;

second adder means, connected to said first divider means and said counter means, for adding the present count and the first quotient signal and providing a reset signal to said counter means and a second sum output signal in response to a first quotient completion signal;

second digital storage means, connected to first divider means and said flip-flop means and triggered by said transition output pulse, for storing a first quotient signal, formed in response to a previous transition output pulse while said first divider is forming a present quotient;

subtractor means connected to second adder means and said second digital storage means for forming the difference of the second sum output signal from said second adder means and said first quotient signal of a previous transition output signal from said second digital storage means and providing a different output signal in response to said reset signal; and

first multiplier means, connected to said subtractor means and having a signal-generator-specific product input, for forming product of said difference output signal and a signal-generator specific-product signal and providing a frequency output signal for a period between transition output pulses in response to a subtraction completion signal.

4,881,175

COMPUTER BASED SYSTEM AND METHOD FOR DETERMINING AND DISPLAYING POSSIBLE CHEMICAL STRUCTURES FOR CONVERTING DOUBLE- OR MULTIPLE-CHAIN POLYPEPTIDES TO SINGLE-CHAIN POLYPEPTIDES

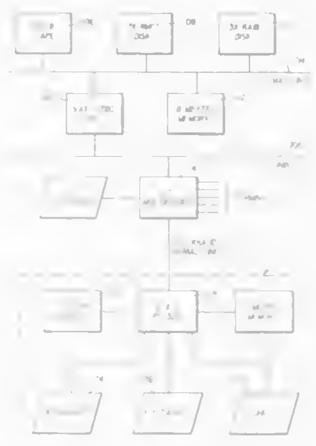
Robert C. Ladner, Iamsville, Md., assignor to Genex Corporation, Gaithersburg, Md.

Continuation of Ser. No. 115,919, Nov. 2, 1987, abandoned, which is a continuation of Ser. No. 902,970, Sep. 2, 1986, Pat. No. 4,704,692. This application Jun. 9, 1988, Ser. No. 204,940

The portion of the term of this patent subsequent to Nov. 3, 2004, has been disclaimed.

Int. Cl.⁴ G06F *15/46;* G01N *33/00*

U.S. Cl. 364—496 3 Claims



1. A computer based method, comprising the steps of:

(a) providing a first polypeptide and a second polypeptide;

(b) selecting, using computer methods, a first site on said first polypeptide, and a second site on said second polypeptide which are possible joining locations for a linker;

(c) selecting possible linkers, using computer methods, for bridging from said first polypeptide at said first site to said second polypeptide at said second site; and

(d) visually displaying, using computer graphics, computer-designed protein molecules, each comprising a portion of said first polypeptide, a portion of said second polypeptide, and one of said possible linkers selected by said step (c).

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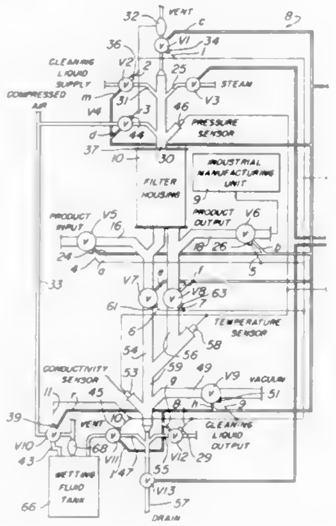
4,881,176
FILTER ANALYZING SYSTEM

Anthony Kononov, Church Rd., Box 162, Sumneytown, Pa. 18084

Filed Jan. 22, 1988, Ser. No. 147,331

Int. Cl.⁴ G06F *15/46;* **G01M** *3/20*

U.S. Cl. 364—500 28 Claims



1. A filter apparatus to purify a gas or liquid for use in an industrial means comprising:

(a) a filter means for housing a filter integrally connected with said industrial means;

(b) means connected to said filter means for automatically testing said filter in situ by integrity testing in-place, sterilizing in-place and cleaning in-place; and

(c) means for controlling said in-place means singly, in combination or in totality.

4,881,177
ULTRASONIC SCANNING SYSTEM

James H. McClean, Belfast; Neil A. Campbell, County Down, and Iain M. Reid, Belfast, all of Northern Ireland, assignors to Short Brothers PLC, Belfast, Northern Ireland

PCT No. PCT/GB85/00405, § 371 Date Apr. 28, 1986, § 102(e) Date Apr. 28, 1986, PCT Pub. No. WO86/01897, PCT Pub. Date Mar. 27, 1986

PCT Filed Sep. 9, 1985, Ser. No. 863,413

Claims priority, application United Kingdom, Sep. 12, 1984, 8423023

Int. Cl.⁴ G01B *7/34*

U.S. Cl. 364—513 13 Claims

1. A method of performing a non-destructive testing operation on a workpiece, wherein a testing probe is used to scan a surface of the workpiece, the method being characterized by the steps of:

i. mounting the probe on the working end of an arm of an identical robot having a controller;

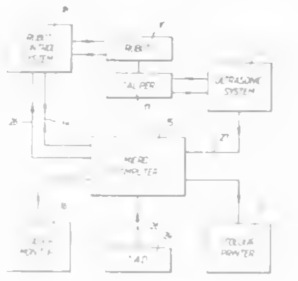
ii. mounting the workpiece adjacent the robot in a jig so that its position relative to the robot is determined;

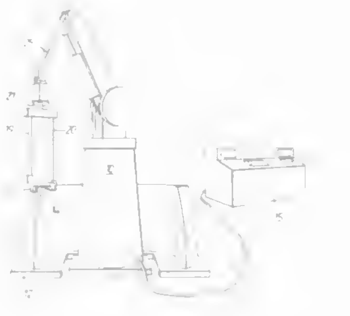
iii. providing the controller of the robot with such design data relating to the shape of the workpiece as will enable the robot to move the probe over the surface of the workpiece;

iv. programming the controller to command the robot to move the probe in a scanning path across the surface of the workpiece from a start point to a stop point, through a plurality of continue points, at a predetermined velocity;

v. inputting a computer with test data relating to the shape of the workpiece, the location of the start point on the surface of the workpiece, the predetermined velocity of probe movement, the instant of departure of the probe from the start point along the scanning path, and a signal representative of the output from the probe; and

vi. running a quality mapping program on the computer, for processing said test data to compute based solely upon said start point, said predetermined velocity, and said instant of departure without any feedback of position data the position of the probe on the surface of the workpiece which displays the position on the surface of the workpiece of zones of different quality within the material from which the workpiece is formed.





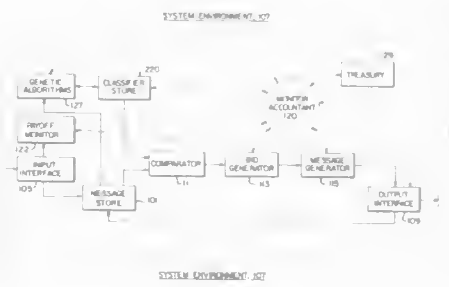
4,881,178
METHOD OF CONTROLLING A CLASSIFIER SYSTEM

John H. Holland, and Arthur W. Burks, both of Ann Arbor, Mich., assignors to The Regents of the University of Michigan, Ann Arbor, Mich.

Filed May 7, 1987, Ser. No. 47,724

Int. Cl.⁴ G06F *15/18*

U.S. Cl. 364—513 26 Claims



1. An adaptive computing system comprising, in combination,

a message memory for storing a plurality of messages, each message being represented by a sequence of binary digits;

a classifier memory for storing a plurality of classifiers, each such classifier consisting of

a condition part identifying a subset of messages in said message memory which are to be translated into result messages,

an action part which specifies the functional relationship between the messages in said subset and said result messages, and

a strength value;

processing means for producing the result messages specified by each of said classifiers, said processing means further including

bid generating means for producing a bid value for each given one of said classifiers which produces at least one of said result messages, said bid value being related to the strength value of said given classifier and being further related to the strength values of those classifiers which produced the messages in the subset specified by the condition part of said given classifier, and

selection means responsive to said bid value for placing the result messages specified by only chosen ones of said classifiers in said message memory for further processing.

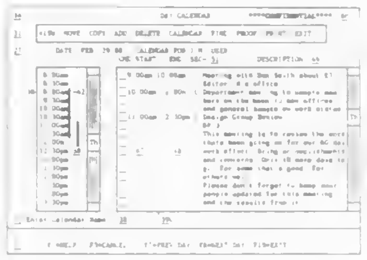
4,881,179
METHOD FOR PROVIDING INFORMATION SECURITY PROTOCOLS TO AN ELECTRONIC CALENDAR

James P. Vincent, Arlington, Tex., assignor to International Business Machines Corp., Armonk, N.Y.

Filed Mar. 11, 1988, Ser. No. 166,572

Int. Cl.⁴ G06F *15/40*

U.S. Cl. 364—518 10 Claims



1. A method for controlling the security of sensitive information entered into an individual electronic calendar by a user of an interactive information handling system having a display device and a keyboard when a day-calendar portion of said calendar containing a plurality of calendared events is displayed, said method comprising the following combination of sequential steps,

(A) entering one of a plurality of pre-established security classifications into said system at the time that each said event is being calendared,

(B) automatically developing a security label whenever said day-calendar portion is displayed, said label reflecting the highest security classification assigned to said plurality of events entered on said day-calendar portion, and

(C) displaying said security label with said day-calendar portion when said portion is displayed.

4,881,180
CHARACTER IMAGE GENERATING CIRCUIT

Masaaki Nishiyama, Toyohashi, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Mar. 4, 1987, Ser. No. 21,456

Claims priority, application Japan, Mar. 5, 1986, 61-49059

Int. Cl.⁴ G01D *15/06*

U.S. Cl. 364—518 2 Claims

2. A method for converting character code data to character image data of a dot pattern of specific character figures to be printed and for applying the character image data to a printer, comprising the steps of:

storing the character code data of one page in a first storing means;

converting a portion of said character code data in said first storing means to the character image data of the dot pattern corresponding to a section of one page to be printed;

storing said character image data corresponding to said section of one page in a second storing means;

compressing said character image data in second storing means and producing compressed character image data;

storing said compressed character image data in a third storing means;

repeating said converting step, said character image data storing step, said compressing step and said compressed character image data storing step until the compressed character image data corresponding to one page is stored in said third storing means; and

reconstructing said compressed character image data in said third storing means back to original character image data and applying reconstructed character image data to the printer.

4,881,181
PROCESS FOR THE DETERMINATION OF CONTROLLED VARIABLES FOR THE INKING UNIT OF PRINTING PRESSES

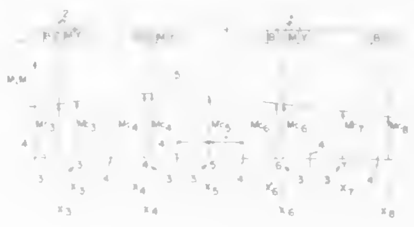
Willi Jeschke, Heldelberg, and Gerhard Löffler, Walldorf, both of Fed. Rep. of Germany, assignors to Heidelberger Druckmaschinen Aktiengesellschaft, Heidelberg, Fed. Rep. of Germany

Filed Dec. 21, 1987, Ser. No. 136,210

Claims priority, application Fed. Rep. of Germany, Dec. 20, 1986, 3643720

Int. Cl.⁴ B41F *31/04*

U.S. Cl. 364—519 21 Claims



1. A process for controlling the application of at least one ink in a printing press, said printing press having a plurality of ink metering ducts arranged laterally with respect to said printing press, each of said plurality of ink metering ducts substantially defining an ink zone of said printing press, each of said ink zones having a coordinate X'_i representing the lateral position of its center point with respect to said printing press, said process comprising the steps of:

(a) producing a print control strip with said printing press, said print control strip having printed thereon, by said printing press, a plurality of measurement fields of said at least one ink, each of said measurement fields having a

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coordinate X_i representing its lateral position with respect to said printing press;

(b) analyzing said plurality of measurement fields produced on said print control strip to obtain a plurality of color related values M_i, each color related value M_i being indicative of the application of said at least one ink within said printing press at each of said lateral positions X_i;

(c) fitting a mathematical curve to said measured values X_i and M_i;

(d) determining values M'_i of said mathematical curve at said coordinates X'_i representing the lateral positions of said ink zones with respect to said printing press; and

(e) adjusting said ink metering ducts in accordance with said determined values M'_i;

4,881,182
METHOD FOR CONTROLLING INK DENSITY

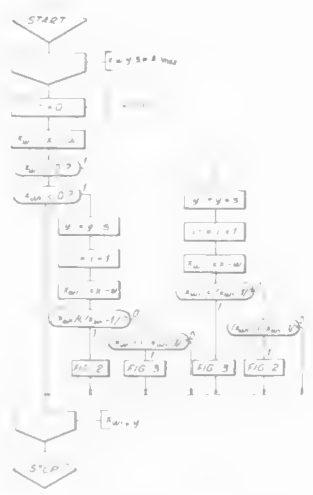
Dietrich Hank, and Peter Brüggemann, both of Leipzig, Fed. Rep. of Germany, assignors to VEB Kombinat Polygraph, "Werner Lamberz", Leipzig, Leipzig, Fed. Rep. of Germany

Filed Jul. 29, 1987, Ser. No. 79,632

Claims priority, application Fed. Rep. of Germany, Nov. 13, 1985, 2962177

Int. Cl.⁴ G01B *11/14;* G06F *15/626*

U.S. Cl. 364—519 3 Claims



1. A method for controlling ink density in a printing process in a rotary printing machine for offset printing, wherein ink density control strips are printed during the printing process, comprising the steps of periodically scanning the control strips to determine control deviations of respective ink densities from reference values; alternately applying the measured control deviations for controlling the dosing of moisture agent amounts and of printing ink amounts, beginning with the dosing of a moisture agent amount; adjusting the dosing of the moisture agent amounts in a searching process including at least one sequence of adjustment steps for providing an increased or reduced supply of uniform amounts of the moisture agent, and limiting the sequence to a given maximal number of adjustment steps in the direction of increased or reduced supply.

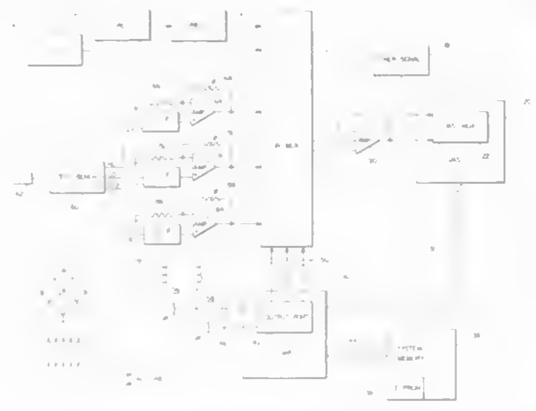
4,881,183
METHOD AND APPARATUS FOR EMISSION TESTING

David E. Groe, Oakwood Hills, Ill., assignor to Sun Electric Corporation, Crystal Lake, Ill.

Filed Mar. 25, 1988, Ser. No. 173,419

Int. Cl.⁴ G01N *21/00;* G06F *15/20*

U.S. Cl. 364—550 2 Claims



1. An emissions tester comprising:

means for calibrating said tester with a test sample having a known concentration of a particular gas;

means for storing pressure data for said test sample in a non volatile memory;

means for developing an analog voltage signal representative of the concentration of said particular gas in an exhaust emission;

an analog to digital converter for converting said analog voltage signal into a digital value, the range of said analog to digital converter being greater than the span of said analog voltage;

means for offsetting said analog voltage to substantially center it within the range of said analog to digital converter;

means for storing data, related to the amount of voltage offset, in a non-volatile memory;

means for correcting said analog voltage signal by said stored offset data;

means for sensing the pressure of said exhaust emission;

means for compensating said analog voltage signal based upon the difference in the sensed pressure and the stored pressure;

means for storing a gain factor in a non-volatile memory for relating said calibration voltage to a desired voltage; and

means for adjusting said analog voltage signal by said stored gain factor.

4,881,184
TURBINE MONITORING APPARATUS

Frank Abegg, III, and Stephen G. Gemmell, both of Fairbanks, Ak., assignors to Datac, Inc., Fairbanks, Ak.

Filed Sep. 8, 1987, Ser. No. 94,563

Int. Cl.⁴ G01L *25/00*

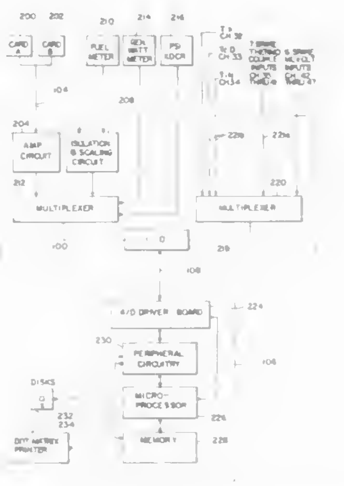
U.S. Cl. 364—551.01 8 Claims

1. Apparatus for monitoring operating conditions of turbines wherein the turbine includes an electronic control panel which provides a plurality of operation signals each signal being indicative of the status of a turbine parameter, said apparatus comprising:

a cable selectively coupleable to the turbine control panel during a test period for receiving the operation signals therefrom;

interface means selectively coupleable to said cable during a test period for receiving the operation signals, said interface means being adapted to scale the operation signals such that they vary within a predetermined voltage range, said interface means including an input/output (I/O) terminal; and

data processing means selectively coupleable to said I/O terminal during a test period for receiving the scaled operation signals, said processing means being adapted to process the received scaled operation signals to provide user data indicating the operation conditions of the gas turbine, said processing means including memory for storing the user data.



4,881,185
METHOD OF MEASURING TEMPERATURE AND APPARATUS FOR EFFECTING THE METHOD

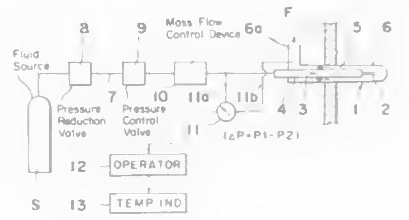
Koji Murakami, Settsu; Kazuya Higeta, Osaka, and Hachiro Touchi, Higashiosaka, all of Japan, assignors to Chugai Ro. Co., Ltd., Osaka, Japan

Filed Mar. 27, 1987, Ser. No. 30,606

Claims priority, application Japan, Apr. 1, 1986, 61-76023; Jul. 3, 1986, 61-157697; Dec. 27, 1986, 61-309926; Dec. 27, 1986, 61-309927

Int. Cl.⁴ G01K *13/00;* G01F *1/34*

U.S. Cl. 364—557 7 Claims



1. A fluidic resistance type temperature measuring apparatus for measuring a temperature, comprising:

a source of a working fluid;

temperature-sensitive means for providing a pressure drop for said working fluid;

said temperature-sensitive means including,

an external cylinder closed at one of its end,

an internal cylinder disposed inside said external cylinder, and

a capillary tube positioned at a forward end of said internal tube,

said capillary tube and said external cylinder having a structural relationship such that said pressure drop is generated across said capillary tube;

a supply tube for introducing said working fluid from said source into said internal cylinder;

pressure control means, disposed in series with said supply tube, for controlling said working fluid pressure;

mass flow control means, disposed in series with said supply tube and said pressure control means, for controlling said working fluid's mass flow rate;

differential pressure gauge means, operatively connected to said temperature-sensitive means, for detecting said pressure drop across said capillary tube and for providing an output signal corresponding to said pressure drop; and

temperature determining means, operatively connected to said differential pressure gauge means, for determining the temperature in accordance with said output signal from said differential pressure gauge means.

4,881,186
APPARATUS FOR MEASURING INJECTION SPEED OF DIE CAST MACHINES

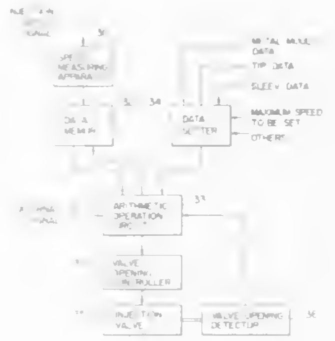
Hiroyuki Tsuboi, and Hiroshi Sugiyama, both of Zama, Japan, assignors to Toshiba Kikai Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 782,980, Oct. 2, 1985, abandoned, which is a continuation-in-part of Ser. No. 467,937, Feb. 18, 1983, abandoned. This application Jun. 14, 1988, Ser. No. 208,838

Claims priority, application Japan, Feb. 23, 1982, 57-26876; Feb. 23, 1982, 57-26874; Feb. 23, 1983, 57-26873

Int. Cl.⁴ B22D *17/32;* G01P *3/48;* G06F *15/46*

U.S. Cl. 364—565 1 Claim



1. Apparatus for measuring an injection speed of a die cast machine comprising:

pulse generating means responsive to a movement of an injection plunger over a unit length for generating a pulse signal;

detecting means provided with a clock pulse generator for detecting a width of said pulse signal according to a number of said clock pulses generated in a time interval corresponding to said width of said pulse signal;

first memory means having N (an integer) memory areas each successively storing the number (PSi) of said clock pulses corresponding to each unit length over an interval between commencement and termination of injection in one stroke of said injection plunger;

an arithmetic operation unit for figuring out a maximum average injection speed, said arithmetic operation unit including:

second memory means for storing a sum of the clock pulses corresponding to consecutive K (an integer) unit lengths in said first memory means;

means for calculating a first sum

$$\left(\sum_{i=1}^{i=K} PSi\right)$$

of pulses stored in successive memory areas of 1 to K (where $K<N$) of said first memory means;

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means for storing said first sum in said second memory means;
means for calculating a second sum

$$\left(\sum_{i=2}^{i=K+1} PSi\right)$$

of the numbers of clock pulses respectively stored in the memory areas 2 to K+1 of said first memory means;
means for subtracting said second sum from said first sum and for replacing the content of said second memory means with second sum

$$\left(\sum_{i=2}^{i=K+1} PSi\right)$$

when a result of said subtraction is positive; and
means for repeating said subtraction operation by sequentially incrementing suffix i by one until the suffix reaches N;
data setting means (**34**) for setting a desired maximum injection speed;
means for applying data stored in a data memory means (32) and data set by said data setting means to said arithmetic operation unit (**33**);
a value opening detector (**36**) for correcting a degree of opening of a hydraulic valve relative to a desired degree of injection valve opening;
means for feeding back a signal representing the degree of opening of said valve to said arithmetic operation unit; and wherein:
said maximum average injection speed at each K unit length is given by a sum remaining said second memory means; and
said arithmetic operation unit includes means for calculating a difference between said desired maximum injection speed set by said data setting means and a calculated maximum injection speed.

4,881,187

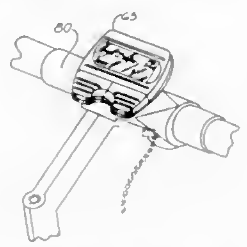
CYCLE COMPUTER WITH IMPROVED SWITCH AND PUSH-BUTTON ARRANGEMENT TO FACILITATE RESETTING

Robert Read, Bartlett, Ill., assignor to Schwinn Bicycle Company, Chicago, Ill.

Continuation of Ser. No. 160,406, Feb. 25, 1988, abandoned. This application Apr. 27, 1989, Ser. No. 346,337

Int. Cl.⁴ G01P *3/48, 3/54;* **G01C** *22/00*

U.S. Cl. 364—565 3 Claims



3. In a cycle computer having a casing, an improved multiple switch control for a circuit within said casing comprising a pair of separate and independently movable manually depressible push-buttons located in side-by-side relation abutting one another along a common line, the surfaces of said push-buttons having adjacent recess portions constituting a single shared recess straddling said common line enabling adjacent surfaces of said push-buttons to be located by feel alone to facilitate simultaneous depression of both push-buttons, said push-buttons being respectively operatively connected to a pair of control switches for said circuit and being manually depressible simultaneously by single finger actuation applied to said shared recess to actuate said pair of control switches simultaneously.

4,881,188

BINARY CODING CIRCUIT

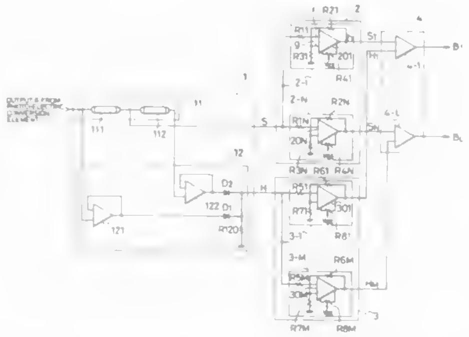
Naoki Maeda, Osaka, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Nov. 25, 1987, Ser. No. 125,680

Claims priority, application Japan, Nov. 27, 1986, 61-285337

Int. Cl.⁴ G06F *7/56*

U.S. Cl. 364—713 3 Claims



1. A binary coding circuit for binary coding an output of a photoelectric conversion element in an optical character reading unit which optically reads characters, said coding circuit comprising:
a parent signal generating circuit receiving an output of said photoelectric conversion element and generating a binary coding parent signal and a threshold parent signal;
a binary coding signal amplifier circuit group to which said binary coding parent signal is applied, said binary coding signal amplifier circuit comprising N amplifier circuits, where N is a positive integer, having different amplification factors and different offset levels;
a threshold signal amplifier circuit group to which said threshold parent signal is applied, said threshold signal amplifier circuit group comprising M amplifier circuits, where M is a positive integer, having different amplification factors and different offset levels; and
a comparison circuit group comprising L comparison circuits, where L is a positive integer satisfying MAX (M, N)≦L≦MN, in each of which an output of a respective one of said amplifier circuits in said binary coding signal, amplifier circuit group and a respective one of the outputs of said amplifier circuits in said threshold signal amplifier circuit group are subjected to comparison to provide a binary coded signal.

4,881,189

COMPUTER ANALYTICAL PROGRAM PROCESS

Don R. Proctor, 2700 Carol Dr., Big Spring, Tex. 79720

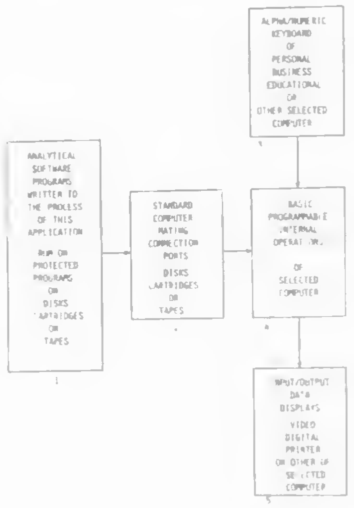
Continuation-in-part of Ser. No. 544,562, Oct. 24, 1983. This application Jul. 15, 1986, Ser. No. 885,667

Int. Cl.⁴ G06F *7/00*

U.S. Cl. 364—715.05 1 Claim

1. A method of entering and retrieving a function input and output data in a device comprising a programmable computer under the control of an operating system and said function, without the use of conversion factors, universal constants or analytical operators, the method comprising:
storing a plurality of predetermined functions in a program storing means;

selecting, via an alphanumeric keyboard, one of said plurality of functions;
displaying the selected function on a video display;
querying the operator, through said video display, for the necessary input data;
entering, via said alphanumeric keyboard, input data in response to said queries, the input data having a data format comprising a numeric value and a unitfactor; said unitfactor being selected from a limited plurality of unit factor symbols as defined on said video screen of said device; said unitfactors and their symbols being those most applicable to the discipline of said selected function and independent to the symboling of the other predetermined functions;
said device converting said input data into a compatible internal data format, said internal data format having a numeric value and an unitfactor which is equivalent to said input data;


ALPHA/NUMERIC KEYBOARD OF PERSONAL BUSINESS EDUCATIONAL OR OTHER SELECTED COMPUTER
ANALYTICAL SOFTWARE PROGRAMS WRITTEN TO THE PROCESS OF THIS APPLICATION RUN ON PROTECTED PROGRAMS ON DISKS CARTRIDGES OR TAPES
STANDARD COMPUTER MATING CONNECTION PORTS DISKS CARTRIDGES OR TAPES
BASIC PROGRAMMABLE INTERNAL OPERATING OF SELECTED COMPUTER
INPUT/OUTPUT DATA DISPLAYS VIDEO DIGITAL PRINTER OR OTHER OF SELECTED COMPUTER
1
5

determining, va said device a result of the selected function, using data in said internal data format;
storing the result of the selected function in said internal data format;
querying the operator, through said video display, for a desired output data format;
selecting, via said alphanumeric keyboard, said desired output data format, said output data format having a numeric value and an unitfactor which is equivalent to said internal data format; said unitfactor being selected form a limited plurality of unitfactor symbols as defined on said video screen; said unitfactors and their symbols being those most applicable to the discipline of said selected function and independent to the symbology of the other said predetermined functions;
said device converting said internal data format into the equivalent output data format; and outputting the output data format onto an output means.

4,881,190

DIGITALLY PROGRAMMABLE SIGNAL GENERATOR AND METHOD

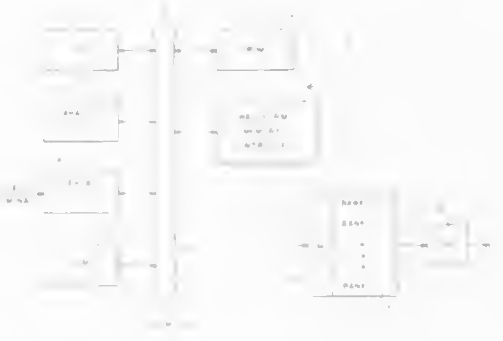
Gordon J. Priatko, Oakland, and Jeffrey A. Kaskey, San Leandro, both of Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Sep. 2, 1986, Ser. No. 902,843

Int. Cl.⁴ G06F *3/00*

U.S. Cl. 364—718 10 Claims

1. A digital waveform generator operating in successive time frames of a predetermined duration where each of said time frames has a plurality of clock cycles, said generator comprising:
first memory means for storing digital data in a plurality of addressable memory locations,
second memory means,
means for accessing some of said stored digital data and transporting said data into said second memory means,
said second memory means having parallel banks for storing digital data in a plurality of addressable memory locations, each of said parallel banks of said second memory means having a second access time within each of said time frames such that selected stored digital data is accessible after said second access time,



multiplexer means,
means for accessing some of said stored digital data during successive ones of said time frames yet after said second access time from said second memory means to said multiplexer means, said multiplexer means including
means for multiplexing within each of said time frames said stored digital data from second memory means within a third access time faster than both said first access time and said second access time to form a digital waveform having a data rate faster than the access time of said second memory means.

4,881,191

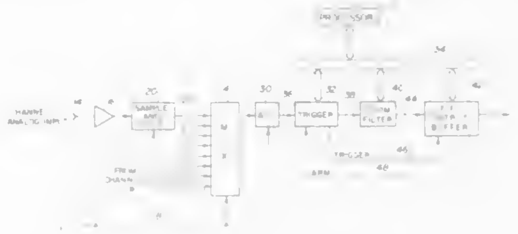
MULTICHANNEL DECIMATION/INTERPOLATION FILTER

Douglas W. Morton, Everett, Wash., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jan. 13, 1987, Ser. No. 3,158

Int. Cl.⁴ G06F *15/13*

U.S. Cl. 364—724.13 15 Claims



1. A digital, multichannel filter, comprising:
means for receiving digital channel input data comprising a sequence of time multiplexed samples from M channels, M being greater than one; and
digital filter means for low pass filtering the channel input data from each channel to produce channel output data for each channel, said digital filter means further comprising N digital low pass filters for each channel, the low pass filters for each channel being numbered and ordered from 1 through N such that low pass filters n and n +1 are

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serially connected for all n from 1 to N−1, each low pass filter comprising a plurality of state variables, the filter further including means for receiving pass input data and means for producing pass output data.

4,881,192
ONE-DIMENSIONAL LINEAR PICTURE TRANSFORMER

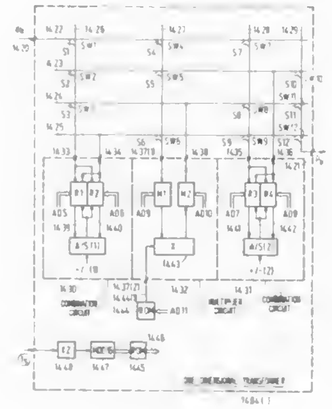
Roberto Woudsma; David C. H. Chong; Brian T. McSweeney; Stephanus M. C. Borgers, and Egidius A. P. Habraken, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 7, 1988, Ser. No. 178,952

Claims priority, application Netherlands, Apr. 10, 1987, 8700845

Int. Cl.⁴ G06F *15/332*

U.S. Cl. 364—725 6 Claims



1. A one-dimensional transformer for multiplying a received series of N input words with a transform matrix of N×N predetermined transform elements for generating a series of N product words, which transformer is provided with:

an input bus connection (**14.20**) for receiving the input words;

an output bus connection (**14.21**) at which the product words occur;

a main input connection bus (**14.22**) which is connected to the input bus connection (**14.20**);

a main output connection bus (**14.29**) which is connected to the output bus connection (**14.21**);

a group of data connection buses (**14.23**; **14.24**; **14.25**);

a number of combination circuits (**14.30**, **14.31**) each having an input bus connection (**14.33**; **14.35**) and an output bus connection (**14.34**; **14.36**) and each adapted to add or subtract each time two data words received successively at its input bus connection for supplying result words to its output bus connection, the output bus connections of said combination circuits being connected to particular respective data connection buses (**14.23**; **14.25**);

a multiplier circuit (**14.32**) each having two input bus connections (**14.37(1)**; **14.37(2)**) and an output bus connection (**14.38**), the latter being connected to the remaining data connection bus (**14.24**) and the input bus connections being adapted to receive data words and multiplication factors, respectively, said multiplier circuit being adapted to multiply each received data word by an appropriate multiplication factor for generating an auxiliary product word at its output bus connection;

a multiplication factor memory (**14.44**) having addressable memory locations each adapted to store a multiplication factor, said multiplication factors being related to the transform elements and said memory being provided with a multiplication factor output bus (**14.44(1)**) which is connected to one of the input bus connections (**14.37(2)**) of the multiplier circuit;

a plurality of switching means (SW.) each controlled by associated control data (S.), each combination circuit and the multiplier circuit having associated there with one of said plurality of switching means, each switching means being adapted to connect selectively the input bus connection of the circuit with which they are associated at any instant to at most one of said connection buses which is not connected to the output bus connection of the relevant circuit;

further switching means (SW**10**, SW**11**, SW**12**) which are controlled by further control data (S**10**, S**11**, S**12**) for connecting selectively the main output connection bus (**14.29**) at any instant) to at most one of the data connection buses (**14.23**; **14.24**; **14.25**); and

a control memory (**14.45**) having a control bus (**14.46**) which is connected to the said switching means and which is adapted to store at least the said control data and to supply selectively said control data to the control bus.

4,881,193
RATIONAL NUMBER OPERATION UNIT FOR REDUCTION

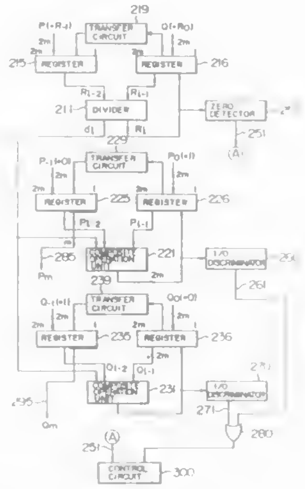
Hozumi Hamada, Chofu, and Hiraku Nakano, Hadano, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 11, 1987, Ser. No. 84,330

Claims priority, application Japan, Sep. 4, 1986, 61-208649; Sep. 5, 1986, 61-209016

Int. Cl.⁴ G06F *7/50*

U.S. Cl. 364—761 10 Claims



1. A rational number operation unit comprising:

divider means for sequentially calculating terms $d_1, d_2, \ldots$ or data $s_1, s_2, \ldots$ having a predetermined relation thereto of a continued fraction

$$d_1 + \frac{1|}{|d_2} + \frac{1|}{|d_3} + \frac{1|}{|d_4} + \cdots$$

for a rational number to be reduced, defined by a fraction comprising a numerator and a denominator,

said divider means including means for carrying out first division with said numerator as a dividend and said denominator as a divisor, outputting a quotient thereof as the first term d_1 or related data S_1, carrying out (i+1)th division for each of different positive integers i's starting from i=1 with a residue of i-th division as a divisor and the divisor of the i-th division as a dividend, and outputting a quotient d_{i+1} or related data S_{i+1} as a result of the (i+1)th division;

calculation means connected to said divider means for calculating

$$P_i = P_{i-2} + d_i P_{i-1}$$

$$Q_i = Q_{i-2} + d_i Q_{i-1}$$

where P_i is a numerator and Q_i is a denominator of i-th approximate fraction to the rational number, based on the quotient d_i or data S_i and previously calculated numerator P_{i-2} and denominator Q_{i-2} of the (i−2)th approximate fraction and numerator P_{i-1} and denominator Q_{i-1} of the (i−1)th approximate fraction, each time the term di or related data S_i is calculated by said divider means; and

control means connected to said divider means so as to receive a residue of division carried out thereby each time said divider means carries out division for determining whether the residue of the division is zero or not, and when the residue is zero, outputting the numerator P_i and denominator Q_i of the i-th approximate fraction calculated by said calculation means as a reduced fraction of said rational number.

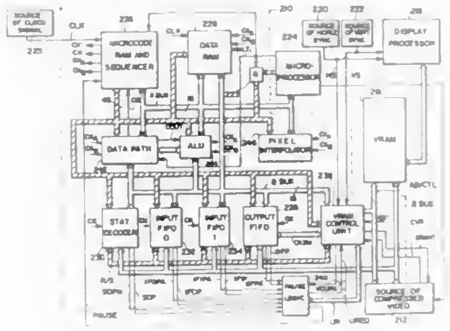
4,881,194
STORED-PROGRAM CONTROLLER FOR EQUALIZING CONDITIONAL BRANCH DELAYS

David L. Sprague, Hopewell, N.J.; Kevin Harney, Brooklyn, N.Y.; Allen H. Simon, Belle Mead, and Herbert H. Taylor, Jr., Hopewell Township, Mercer County, both of N.J., assignors to Intel Corporation, Santa Clara, Calif.

Filed Nov. 16, 1987, Ser. No. 121,820

Int. Cl.⁴ G06F *9/00*

U.S. Cl. 364—900 6 Claims



1. A data processing system comprising:

processing means responsive to control signals for processing data, including means for indicating values representative of a plurality of conditions;

a stored-program controller, coupled to said processing means including:

memory means for holding a plurality of instructions, wherein ones of instructions indicate conditional branch operations;

instruction decoding means for holding instructions provided by said memory means and providing said control signals for said processing means and control signals for said stored-program controller;

memory accessing means, responsive to control signals provided by said instruction decoding means for concurrently reading first and second instructions from said memory means; and

next instructions selection means responsive to control signals provided by said instruction decoding means and, when the instruction held in said instruction decoding means indicates a conditional branch operation, to said means for indicating the values of said plurality of conditions, for loading a selected one of said first and second instructions into said instruction decoding means.

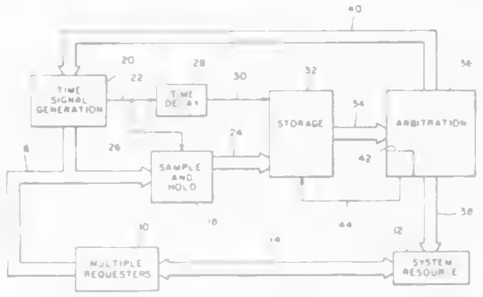
4,881,195
MULTI-REQUESTER ARBITRATION CIRCUIT

Steven T. DeLong, Bartlett, Ill., and James E. Snook, Plano, Tex., assignors to Rockwell International Corp., El Segundo, Calif.

Filed Nov. 26, 1986, Ser. No. 935,421

Int. Cl.⁴ G06F *9/46, 13/18*

U.S. Cl. 364—900 7 Claims



1. A multi-requester arbitration circuit for arbitrating between multiple asynchronous request signals requesting a common system resource comprising:

means for providing a first common timing signal from said request signals;

means for performing sample-and-hold on each of said request signals and producing corresponding output sample signals, said sample-and-hold means receiving said first common timing signal;

means for time delaying said first common timing signal to produce a second timing signal;

means for storing said output sample signals and producing corresponding output stored signals, said storing means receiving said second timing signal; and

means for arbitrating between said output stored signals to select one of said output stored signals and provide at least an output control signal having output enable signals corresponding to said output stored signals, and wherein said means for providing a first common timing signal receives said output enable signals, said means for arbitrating providing n number of output enable signals corresponding to an n number of request signals.

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4,881,196

DATA TRANSMISSION LINE BRANCHING SYSTEM

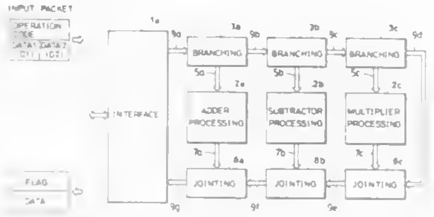
Hiroaki Terada, Suita; Katsuhiko Asada, Amagasaki; Hiroaki Nishikawa, Suita; Shinji Komori, Itami; Kenji Shima, Nishinomiya; Souichi Miyata; Satoshi Matsumoto, both of Nara; Hajime Asano, Toyonaka; Masahisa Shimizu, Kadoma, and Hiroki Miura, Hirakata, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo; Sharp Kabushiki Kaisha, Osaka; Matsushita Electric Industrial Co., Ltd., Kadoma and Sanyo Electric Co., Ltd., Moriguchi, all of, Japan

Filed Feb. 19, 1986, Ser. No. 830,750

Claims priority, application Japan, Feb. 19, 1985, 60-33036; May 17, 1985, 60-106672; May 17, 1985, 60-106669; May 17, 1985, 60-106670; May 17, 1985, 60-106671; Jun. 21, 1985, 60-136610; Jun. 21, 1985, 60-136608; Jun. 21, 1985, 60-136609; Jul. 5, 1985, 60-148597; Jul. 5, 1985, 60-148593; Jul. 5, 1985, 60-148594; Jul. 5, 1985, 60-148595; Jul. 5, 1985, 60-148596; Feb. 19, 1986, 60-33035

Int. Cl.⁴ G06F *13/40*

U.S. Cl. 364—900 31 Claims



1. A data transmission system for transmitting data synchronously or asynchronously, comprising:
   - an input data transmission line for transmitting data and for holding the data;
   - an output data transmission line for outputting the data transmitted by said input data transmission line and for holding the data;
   - a branching data transmission line, having a branching end, for outputting branched data from the data transmitted by said input data transmission line and for holding the data;
   - branching decision means for deciding whether the data transmitted by said input data transmission line is to be branched;
   - empty branching end detecting means for detecting emptiness of data at the branching end of said branching data transmission line;
   - branching control means for controlling branching of the data transmitted by said input data transmission line to provide the data to said output data transmission line unless the data to be transmitted by said input data transmission line is to be branched to said branching data transmission line and for branching the data to produce branched data in response to the decision by said branching decision means, said branching control means comprising means for branching data to said branching data transmission line when said empty branching end detecting means detects the emptiness of data at the branching end of said branching data transmission line; and
   - data transfer means for providing connections between said input, output and branching data transmission lines, said branching decision means, said empty branching end detecting means and said branching control means.

4,881,197

DOCUMENT COMPOSITION SYSTEM USING NAMED FORMATS AND NAMED FONTS

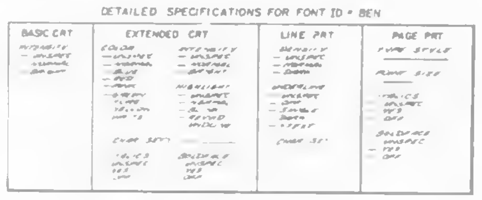
Addison Fischer, P.O. Box 9107, Naples, Fla. 33942

Filed Feb. 13, 1987, Ser. No. 14,853

Int. Cl.⁴ G06F *3/12, 3/14*

U.S. Cl. 364—900 88 Claims

39. In a data processing system for composing documents, said data processing system including means for entering data and commands relating to a document to be composed, data processor means for processing said data and executing commands, and at least one output means for presenting the document, said at least one output means including a first display device, a method for composing on a display device by a document composer a document comprising multiple lines of alphanumeric characters comprising the steps of:
   - a. assigning a first name to represent and be associated with data presentation characteristics for a predetermined portion of said document upon entry of said first name via said means for entering;
   - b. selecting by a document composer a first set of data presentation characteristics to be associated with a first field associated with said first name and defining the text character attributes used to produce the text characters appearing in said first field, said first field being associated with one part of said predetermined portion;



   - c. selecting by a document composer an independent second set of data presentation characteristics to be associated with a second field associated with said first name and defining the text character attributes used to produce the text characters appearing in said second field, said second field being associated with another part of said predetermined portion; and
   - d. responding to the entry of said first name by presenting the data in said one part of said predetermined portion with said first set of characteristics on the composer's display device and presenting the data in said other part of said predetermined portion with said second set of data presentation characteristics on the composer's display device, whereby the document composer may independently define a set of data presentation characteristics to be associated with each of a plurality of fields associated with said first name.

4,881,198

DUPLICATOR IN A MAGNETIC BUBBLE MEMORY AND PROCESS FOR DUPLICATING BUBBLES THEREIN

Jean-Marc Fedeli, St. Egréve, and Jöel Magnin, St. Martin d'Héres, both of France, assignors to Commissariat a l'Energie Atomiquc, Paris, France

Continuation of Ser. No. 719,706, Apr. 4, 1985, abandoned. This application Mar. 6, 1989, Ser. No. 320,860

Claims priority, application France, Apr. 5, 1984, 84 05378

Int. Cl.⁴ G11C *19/08, 11/42*

U.S. Cl. 365—12 6 Claims

1. A duplicator in a magnetic bubble memory comprising a magnetic material layer in which magnetic bubbles can be displaced by the application of a rotary field H_T in accordance with first and second propagation paths, the first path being defined by a first group of non-implanted patterns aligned along a planar crystallographic axis for the easy magnetization of the magnetic material, the second path being defined by a second group of non-imparted patterns aligned along an axis positioned transversely with respect to the axis of the first group of patterns, wherein said duplicator comprises a bubble extension conductor, a bubble splitting conductor, means for generating an extension pulse coupled to said bubble extension conductor and means for generating a splitting pulse coupled to said bubble splitting conductor, the extension conductor being positioned between the end pattern of the first group of patterns and the second group of patterns, the bubble splitting conductor being positioned transversely with respect to the bubble extension conductor between the two groups of patterns, the shape of the ends of the patterns of the first group of patterns forming bubble stable positions at the duplication location on each first propagation path at the said end and the shape of the second group of patterns forming bubble stable positions at the corresponding reception location of the duplicated bubble on the second propagation path, the extension pulse generating means applying an extension pulse to said bubble extension conductor and the splitting pulse generating means applying a splitting pulse to said bubble splitting conductor, said extension pulse starting before said splitting pulse and coinciding in time with the time during which the bubble to be duplicated is stationary in the duplication position, and said splitting pulse starting and ending before the end of the duration of said extension pulse.

4,881,199

READ CIRCUIT FOR READING THE STATE OF MEMORY CELLS

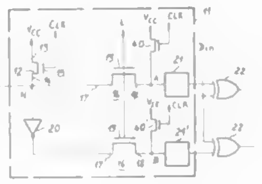
Jacek Kowalski, Trets, France, assignor to SGS-Thomson Microelectronics S.A., Paris, France

Filed Jan. 14, 1988, Ser. No. 143,717

Claims priority, application France, Jan. 16, 1987, 87 00449

Int. Cl.⁴ G11C *7/00, 11/34;* H03K *19/096, 19/017*

U.S. Cl. 365—189.01 7 Claims



1. A read circuit for an array of addressable memory cells, wherein said cells have two possible complementary logic states and the state of an addressed cell is readable by detecting a current variation on a bit line to which said cell is connected during a read operation, said read circuit comprising a first precharge circuit for precharging said bit line to a first specified voltage level prior to a read operation, and a first detection circuit having an input connected during a read operation, and a first detection circuit having an input connected during a read operation to said precharged bit line, for detecting a current variation on said bit line, said current variation depending on the state of the addressed cell, said read circuit further comprising:
   - an isolation switch between said bit line and the input of said first detection circuit, said isolation switch rendered conductive only during a read operation;
   - a second detection circuit identical to said first mentioned detection circuit and having an input connected to said bit line through at least a second isolation switch, said second switch also rendered conductive only during a read operation,
   - a second precharge circuit connected to the input of said first mentioned detection circuit for precharging to a second specified voltage the input of said first detection circuit prior to a read operation,
   - a third precharge circuit connected to the input of said second detection circuit, for precharging to a third specified voltage the input of said second detection circuit prior to a read operation;
   - said specified voltages being such that whatever the state of the addressed cell, one of the two detection circuits will detect a current variation corresponding to the actual state of the addressed cell and the other detection circuit will detect a current variation corresponding to a state which is complementary of this actual state.

4,881,200

ERASABLE PROGRAMMABLE READ ONLY MEMORY DEVICE

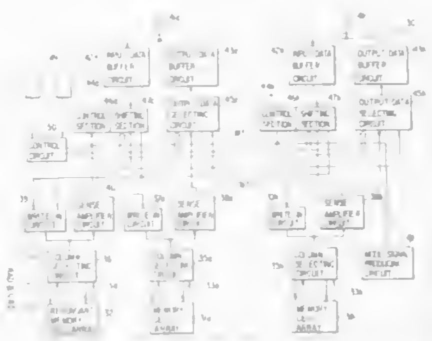
Takahiko Urai, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Oct. 24, 1988, Ser. No. 261,287

Claims priority, application Japan, Oct. 22, 1987, 62-267797

Int. Cl.⁴ G11C *7/00, 8/00, 7/02*

U.S. Cl. 365—189.04 9 Claims


INPUT DATA BUFFER CIRCUIT
OUTPUT DATA BUFFER CIRCUIT
INPUT DATA BUFFER CIRCUIT
OUTPUT DATA BUFFER CIRCUIT
REDUNDANT MEMORY ARRAY
MEMORY ARRAY
MEMORY ARRAY

1. An erasable programmable read only memory device capable of being shifted into an operation selected from the group of a write-in mode of operation, a read-out mode of operation and a diagnostic mode of operation, comprising:
   - (a) a plurality of memory cell arrays each having a plurality of memory cells arranged in memory cell rows and memory cell columns, each of said memory cells being capable of memorizing a data bit in a rewritable and non-volatile manner;
   - (b) at least one redundant memory cell array having a plurality of redundant memory cells arranged in redundant memory cell rows and redundant memory cell columns, each of said memory cells being capable of memorizing a data bit in the rewritable and nonvolatile manner, said memory cell columns being replacable with said redundant memory cell columns, respectively;
   - (c) a plurality of first write-in circuits each provided in association with each of said memory cell arrays and operative to write a data bit into a memory cell selected from the memory cell array;
   - (d) at least one second write-in circuit provided in association with said redundant memory cell array and operative to write a data bit into a redundant memory cell selected from the redundant memory cell array;
   - (e) a plurality of first sense amplifier circuits each provided in association with each of said memory cell arrays and operative to quickly decide the logic level of said data bit read out from the memory cell selected from the memory cell array;
   - (f) at least one second sense amplifier circuit provided in association with said redundant memory cell array and operative to quickly decide the logic level of said data bit read out from the memory cell selected from the redundant memory cell array;
   - (g) a plurality of first column selecting circuits each provided in association with each of said memory cell arrays and operative to provide a data path between one of said memory cell columns selected from the memory cell array and one of each first write-in circuit and each first sense amplifier circuit depending upon the operation to which said erasable programmable read only memory device is shifted;
   - (h) at least one second column selecting circuit provided in

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association with said redundant memory cell array and operative to provide a data path between one of said redundant memory cell columns selected from the redundant memory cell array and one of said second write-in circuit and said second sense amplifier circuit depending upon the operation to which said erasable programmable read only memory device is shifted;

(i) programmable link means operative to memorize a replacement between said memory cell columns and said redundant memory cell columns and providing a replacing information;

(j) a control circuit operative to compare the memory cell column selected from said memory cell columns with said memory cell column replaced with said redundant memory cell column on the basis of said replacing information and produce a multi-bit control signal if these memory cell columns are identical with each other;

(k) a plurality of input/output data buffer circuits each provided in association with each of said memory cell arrays and operative to temporally store the data bit read out from or written into the memory cell selected from said memory cell array;

(l) a plurality of output data selecting circuits each provided in association with each of said memory cell arrays and activated in said read-out mode of operation, each of said output data selecting circuits being operative to transfer the data bit read out from the memory cell selected from said memory cell array in the absence of said multi-bit control signal but transfer the data bit read out from the redundant memory cell selected from said redundant memory cell array in the presence of said multibit control signal;

(m) a plurality of input data distributing circuits each provided in association with each of said memory cell arrays and activated in said write-in mode of operation and said diagnostic mode of operation, each of said input data distributing circuits being operative to transfer the data bit stored in each input/output data buffer circuit to said first write-in circuit in the absence of said multi-bit control signal but transfer the data bit to the second write-in circuit when the erasable programmable read only memory device is shifted into the write-in mode of operation; and

(n) a mode signal producing circuit operative to produce a mode signal representative of said diagnostic mode of operation when said erasable programmable read only memory device is shifted into the diagnostic mode of operation, wherein at least one of said input data distributing circuits is responsive to the mode signal and transfer the data bit stored in said input/output data buffer circuit to both of said first and second write-in circuits.

4,881,201
SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE

Nobuyuki Sato, Tokorozawa; Kazuaki Ujiie, Tokyo; Masaaki Terasawa, Akishima, and Shinji Nabetani, Tokyo, all of Japan, assignors to Hitachi. Ltd. & Hitachi Microcomputer Engineering, Ltd., Tokyo, Japan

Division of Ser. No. 737,882, May 28, 1989, Pat. No. 4,692,904. This application Jul. 28, 1987, Ser. No. 78,764

Claims priority, application Japan, May 25, 1984, 59-104629

Int. Cl.⁴ G11C *7/00*

U.S. Cl. 365—189.09 6 Claims

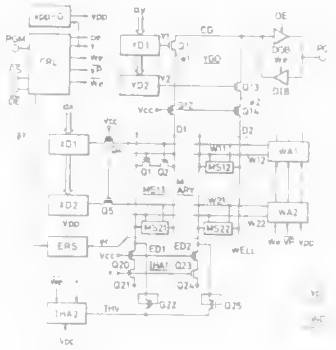
1. A semiconductor non-volatile memory used in a microcomputer including means for processing data comprising:

a memory circuit which includes a memory element for storing data, wherein a voltage equal to greater than a predetermined voltage level is required to be applied to said memory element in order to change the state of data stored in said memory element;

voltage generating means for forming an output voltage of a level different from that of a power source voltage, said output voltage being equal to or greater than the predetermined voltage level required to change the state of data stored in said memory element;

means for forming an internal control signal that changes from a first level to a second level when the data of said memory element is to be changed in response to a control signal;

control means coupled to said internal control signal forming means; and



writing means coupled to said memory circuit, to said voltage generating means and to said control means, said writing means including means for changing the state of data stored in said memory element in response to the second level of the applied internal control signal,

wherein said control means includes a power source closure detector circuit for forming an inhibiting signal which prevents an internal control signal being applied to said writing means from changing to the second level when said power source is closed.

4,881,202
SEMICONDUCTOR MEMORY DEVICE USING PARTIAL DECODERS FOR REDUNDANCY

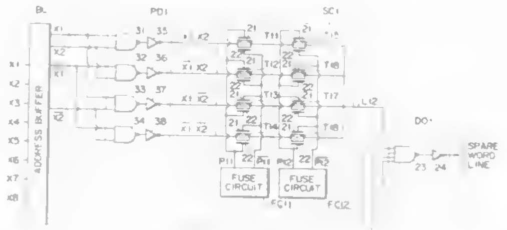
Jun-ichi Tsujimoto, Yokohama; Masataka Matsui, Tokyo; Hiroshi Iwai, Kawasaki, and Takayuki Ohtani, Tokyo, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 29, 1987, Ser. No. 138,800

Claims priority, application Japan, Jan. 6, 1987, 62-832

Int. Cl.⁴ G11C *7/00*

U.S. Cl. 365—200 6 Claims



1. A semiconductor memory device including a plurality of cells subject to defects and having normal word lines and spare word lines connected to said cells, comprising:

an address buffer for receiving a plurality of bit signals forming an address signal, and generating bit signals of the original logic levels of the received bit signals and bit signals of the complementary logic levels of the received bit signals;

a plurality of first partial decoders, each for receiving and decoding a predetermined two of said bit signals of the original logic levels and two of said bit signals of the complementary logic levels corresponding to said predetermined two bit signals, and outputting different signal

combinations of said predetermined two bit signals and said two corresponding bit signals;

a plurality of spare word line selecting circuits, each for receiving said different signal combinations output from the corresponding one of said first partial decoders and selecting one of said different signal combinations; and

a second partial decoder for receiving the signal combinations selected by said spare word line selecting circuits and taking the logical product of the selected signal combinations to produce a logical product signal, in order to select a spare word line which corresponds to a normal word line to which a defective cell is connected.

4,881,203
SEMICONDUCTOR MEMORY DEVICE

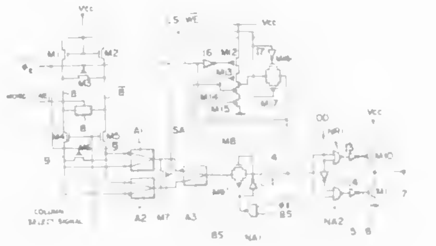
Kazuo Watanabe, and Akira Yumoto, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Mar. 15, 1988, Ser. No. 168,511

Claims priority, application Japan, Mar. 17, 1987, 62-63340

Int. Cl.⁴ G11C *7/00*

U.S. Cl. 365—203 9 Claims



1. A semiconductor memory device comprising:

a plurality of memory cell blocks;

each of said memory cell blocks having a plurality of memory cells, bit lines, and local data lines for reading out data stored in each of said memory cells;

a main data line connected to said local data lines; and

a precharge circuit connected to said main data line and not in series with the connection between said local data lines and said main data line, said precharge circuit serving to generate, immediately before producing a reading output, a medium-level voltage intermediate between and high and low levels of said main data line.

4,881,204
OPTICAL READING OR WRITING APPARATUS

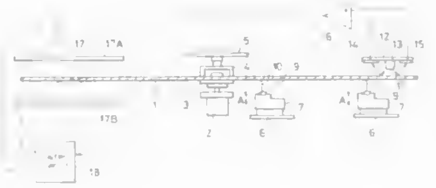
Michihiro Tadokoro; Hitoshi Imai, and Kazuo Okada, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 22, 1988, Ser. No. 185,052

Claims priority, application Japan, Apr. 28, 1987, 62-105866

Int. Cl.⁴ G11B *7/08*

U.S. Cl. 369—46 9 Claims



1. An optical reading or writing apparatus comprising an information-carrying medium on which information can be read or written optically, the information-carrying medium having the form of a disc rotating around a central axis and receiving a light beam from an optical head that is driven in the radial direction of the disc,

a detection means located near the information-carrying medium, for detecting the angle between the optic axis of the light beam and the surface of the information-carrying medium,

a temperature-adjusting element located near and facing the surface of the information-carrying medium, for creating a temperature difference between the two surfaces of the information-carrying medium and thereby causing a thermal deformation that bends the information-carrying medium in a desired direction, and

a control circuit for receiving a signal from the detection means and controlling the temperature-adjusting element by supplying energy to it in such a way as to maintain a perpendicular relationship between the surface of the information-carrying medium and the optic axis.

4,881,205
COMPACT ELECTRONIC APPARATUS WITH A REFRESH UNIT FOR A DYNAMIC TYPE MEMORY

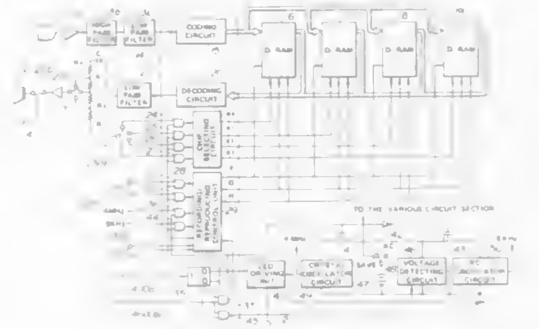
Toshiharu Aihara, Tokyo, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed Apr. 14, 1988, Ser. No. 181,444

Claims priority, application Japan, Apr. 21, 1987, 62-60166

Int. Cl.⁴ G11C *7/00, 8/00;* **G06F** *1/00*

U.S. Cl. 365—222 12 Claims


CODING CIRCUIT
D-RAM
D-RAM
D-RAM
D-RAM
DECODING CIRCUIT
TO THE VARIOUS CIRCUIT SECTION
LCD DRIVING UNIT
CRYSTAL OSCILLATOR CIRCUIT
VOLTAGE DETECTING CIRCUIT

1. A compact electronic apparatus having a refresh unit for a dynamic type memory, comprising:

a battery power source;

first oscillator means for generating a relatively high frequency signal;

second oscillator means for generating a relatively low frequency signal with respect to said high frequency signal;

a dynamic type memory required to be refreshed during a non-access time period;

first switch means coupled between said battery power source and said first oscillator means, for applying a battery voltage derived from said battery power source to said first oscillator means;

second switch means coupled between said battery power source and said second oscillator means, for applying the battery voltage obtained from said battery power source to said second oscillator means;

external operation switch means for starting an accessing operation of said dynamic type memory;

first output control means for actuating said first oscillator means, including means for applying said battery voltage to said first oscillator means when said first switch means is turned ON by operation of said external operation switch means, wherein said high frequency signal is generated;

memory access means for accessing said dynamic type mem-

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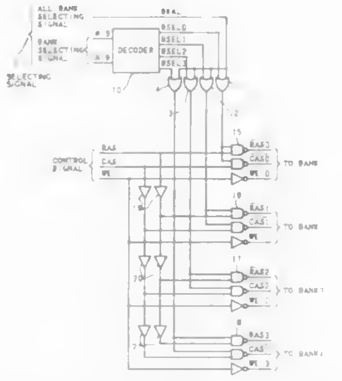
ory in response to said high frequency signal derived from said first oscillator means; and

second output control means for turning OFF said first switch means during a non-accessing operation time period of said dynamic type memory and interrupting the oscillation of said first oscillator means, and for simultaneously turning ON said second switch means to actuate said second oscillator means, wherein said low frequency signal derived from said second oscillator means is output in the form of a refresh signal for said dynamic type memory.

4,881,206
MEMORY DEVICE

Takashi Kadono, Osaka, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan
Filed Dec. 22, 1987, Ser. No. 137,234
Claims priority, application Japan, Dec. 26, 1986, 61-314268
Int. Cl.⁴ G11C *13/00*
U.S. Cl. 365—227 **16 Claims**



13. A memory device having a plurality of bank memories to which common address lines and common data lines are respectively connected, and a bank-selecting means having a plurality of first circuits respectively connected to the bank memories, each first circuit comprising a gate whose input signals are a bank-selecting signal designating the corresponding bank memory and control signals needed for writing data into the corresponding bank memory or reading data from the same, said gate providing the corresponding bank memory with the control signals on receipt of the bank-selecting signal, said memory device comprising:

a second circuit connected to said first circuits for simultaneously delivering a signal substantially equivalent to said bank-selecting signal to all of said first circuits so as to cause the first circuits to deliver said control signals to all of said bank memories, and

one or more of said first circuits comprising a delay circuit which temporarily delays the delivery of said control signals to the corresponding bank memories so as to prevent the control signals from being supplied simultaneously to all of the bank memories.

4,881,207
SEISMIC PROSPECTION METHOD PROVIDING IMPROVED KNOWLEDGE OF THE GEOLOGICAL DISCONTINUITIES OF THE SUBSOIL

Michel Dubesset, Bazemont, and Christian Cliet, Rueil-Malmaison, both of France, assignors to Insitut Francais du Petrole, Rueil-Malmaison, France
Filed May 4, 1988, Ser. No. 190,152
Claims priority, application France, May 7, 1987, 87 06544
Int. Cl.⁴ G01V *1/40, 1/30*
U.S. Cl. 367—31 **8 Claims**

1. A seismic prospection method for identifying the position and nature of geological discontinuities of the subsoil, including the steps of:

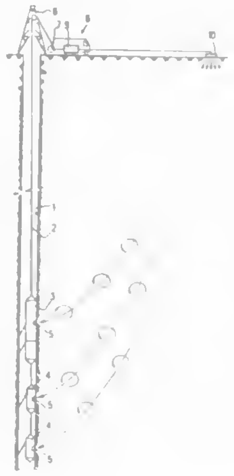
transmitting the acoustic waves into the ground;

receiving the acoustic waves which are propagated in the ground by means of a plurality of seismic triaxial receivers each having three sensors and recording the waves received;

determining, from the different signals delivered by each said receiver, parameters defining the real position in space and the form of the ellipsoid modeling displacement of the center of gravity of each said receiver, in response to the waves received;

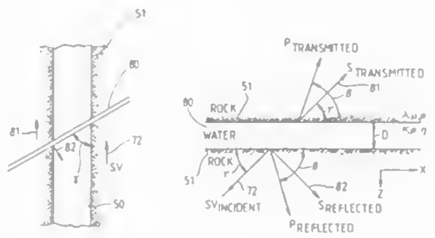
determining the variations of each of said parameters, as a function of the distance between each receiver and the transmission location; and

localizing geological discontinuities at depths where sensible concomitant variations of said parameters are measured.



4,881,208
ACOUSTIC WELL LOGGING METHOD AND APPARATUS

Olive Y. Liu, Houston, Tex., assignor to Schlumberger Technology Corporation, Houston, Tex.
Division of Ser. No. 70,470, Jul. 27, 1987, Pat. No. 4,813,028. This application Oct. 27, 1988, Ser. No. 263,657
Int. Cl.⁴ G01V *1/40*
U.S. Cl. 367—35 **1 Claim**



1. A method for determining the dip and orientation of a fracture or thin bed in a subsurface geological formation traversed by a borehole, comprising the steps of:

(a) passing a logging tool through the borehole, the logging tool having associated therewith a rare earth acoustic transducer;

(b) generating a known, low frequency acoustic energy at a point in the borehole with the rare earth acoustic transducer;

(c) while operating the rare earth acoustic transducer in a dipole mode at the point in the borehole, directing said known, low frequency acoustic energy into the subsurface geological formation in two alternating directions, the directions being disposed substantially perpendicular to one another;

(d) receiving acoustic signals at a plurality of receiver stations spaced one from the other and from the rare earth acoustic transducer;

(e) simultaneously producing full shear waveforms of the received signals for the point in the borehole;

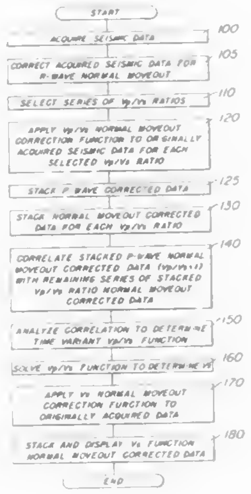
(f) determining the shear waveform reflection and transmission coefficients of the shear waveforms;

(g) measuring values of the amplitudes of the shear waveforms; and

(h) combining the values of the shear waveforms amplitudes with the known value of the frequency of the acoustic energy to obtain the dip and orientation of the fracture or thin bed.

4,881,209
METHOD OF PROCESSING CONVERTED MODE SEISMIC DATA

Marvin G. Bloomquist, Lewisville, and Barry N. Warner, Duncanville, both of Tex., assignors to Mobil Oil Corporation, New York, N.Y.
Filed Oct. 12, 1988, Ser. No. 256,674
Int. Cl.⁴ G01V *1/36*
U.S. Cl. 367—52 **9 Claims**


START
ACQUIRE SEISMIC DATA
100
CORRECT ACQUIRED SEISMIC DATA FOR P-WAVE NORMAL MOVEOUT
105
SELECT SERIES OF Vp/Vs RATIOS
110
APPLY Vp/Vs NORMAL MOVEOUT CORRECTION FUNCTION TO ORIGINALLY ACQUIRED SEISMIC DATA FOR EACH SELECTED Vp/Vs RATIO
120
STACK P WAVE CORRECTED DATA
125
STACK NORMAL MOVEOUT CORRECTED DATA FOR EACH Vp/Vs RATIO
130
CORRELATE STACKED P-WAVE NORMAL MOVEOUT CORRECTED DATA (Vp/Vs=1) WITH REMAINING SERIES OF STACKED Vp/Vs RATIO NORMAL MOVEOUT CORRECTED DATA
140
ANALYZE CORRELATION TO DETERMINE TIME VARIANT Vp/Vs FUNCTION
150
SOLVE Vp/Vs FUNCTION TO DETERMINE Vs
160
APPLY Vs NORMAL MOVEOUT CORRECTION FUNCTION TO ORIGINALLY ACQUIRED DATA
170
STACK AND DISPLAY Vs FUNCTION NORMAL MOVEOUT CORRECTED DATA
180
END

1. A method of correcting converted compressional to shear (P-SV) seismic data for t effects of normal moveout comprising the steps of:

(a) selecting a series of compressional wave velocity to shear wave velocity ratios

(b) determining the P-SV compressional to shear wave velocity ratios from said converted P-SV seismic data at said series of velocity ratios,

(c) applying a first normal moveout correction function dependent on said ratios to said converted P-SV seismic data for said series of ratios according to the following:

$$Tnmo = \sqrt{\left(\frac{x}{Vp} + \frac{k}{1+k}\right)^2 + T^2} + \sqrt{\left(\frac{x}{Vp} + \frac{k}{1+k}\right)^2 + (kT)^2}$$

where:

Tnmo = normal moveout corrected time;
Vp = average compressional wave velocity;
Vs = average shear wave velocity;
k = Vp/Vs;
x = source-receiver separation; and
T = compressional wave travel time;

(d) determining shear velocity from said applied P-SV seismic data; and

(e) applying a second normal moveout correction function to both compressional wave velocity and shear wave velocity according to the following:

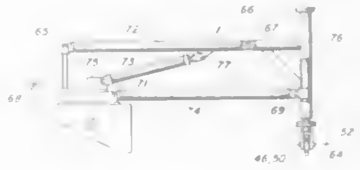
$$Tnmo = \sqrt{\frac{Xp^2}{Vp^2} + Tp^2} + \sqrt{\frac{Xs^2}{Vs^2} + Ts^2}$$

where:

Tnmo = normal moveout travel time;
Vp = average compressional wave velocity;
Vs = average shear wave velocity;
Xp = source–CMP offset;
Xs = CMP–receiver offset;
Tp = compressional wave travel time; and
Ts = shear wave travel time.

4,881,210
TORSIONALLY RIGID SUPPORT APPARATUS FOR MARINE SEISMIC TRANSDUCER

Wilbur J. Myers, Davis, and Jack H. Cole, Ponca City, both of Okla., assignors to Conoco Inc., Ponca City, Okla.
Filed Feb. 16, 1988, Ser. No. 155,782
Int. Cl.⁴ H04R *15/00*
U.S. Cl. 367—173 **18 Claims**



1. Apparatus for supporting a marine seismic transducer from a vessel, comprising:

an elongated substantially rigid towing arm;

a connector means for connecting said transducer to a lower end of said towing arm;

a swivel member which is secured to said vessel and is pivotable about a generally horizontal first axis transverse to a length of said vessel; and

a support means for pivotally connecting an upper end of said towing arm to said swivel member, said support means being pivotal relative to said swivel member about a second axis transverse to a longitudinal axis of said towing arm, said support means being substantially rigid so as to prevent any substantial rotation of said towing arm about its said longitudinal axis.

4,881,211
MULTIPLE FREQUENCY RANGE HYDRAULIC ACTUATOR

Wilbur J. Myers, Ft. Worth, Tex., assignor to Conoco Inc., Ponca City, Okla.
Filed Oct. 31, 1988, Ser. No. 265,601
Int. Cl.⁴ H04R *23/00*
U.S. Cl. 367—143 **3 Claims**

1. A compound hydraulic actuator for operating in two frequency ranges comprising:

a main cylinder housing means;

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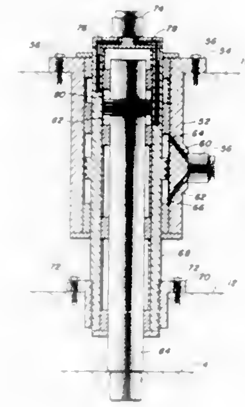
a low frequency piston means for providing low frequency, long stroke reciprocation within said main cylinder housing, said piston means having an internal opening configured to define a second cylinder; and



a high frequency piston means positioned within said second cylinder for providing high frequency, shorter stroke reciprocation.

4,881,212
ULTRASONIC TRANSDUCER

Yasubito Takeuchi, Tokyo, Japan, assignor to Yokogawa Medical Systems, Limited, Tokyo, Japan

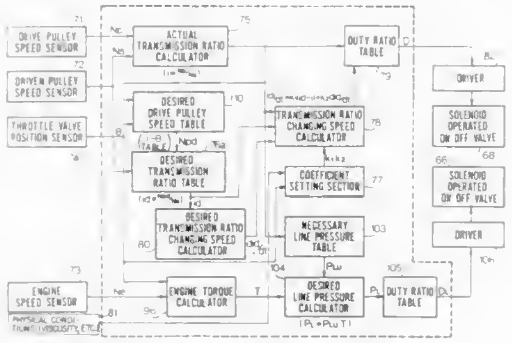
PCT No. PCT/JP87/00265, § 371 Date Oct. 18, 1988, § 102(e) Date Oct. 18, 1988, PCT Pub. No. WO87/06790, PCT Pub. Date Nov. 5, 1987

PCT Filed Apr. 24, 1987, Ser. No. 270,157

Claims priority, application Japan, Apr. 25, 1986, 61-96549

Int. Cl.⁴ H04R *1/02*

U.S. Cl. 367—152 5 Claims


DRIVE PULLEY SPEED SENSOR
DRIVEN PULLEY SPEED SENSOR
THROTTLE VALVE POSITION SENSOR
ENGINE SPEED SENSOR
PHYSICAL CONDITIONS (VISCOSITY, ETC.)
ACTUAL TRANSMISSION RATIO CALCULATOR
DESIRED DRIVE PULLEY SPEED TABLE
DESIRED TRANSMISSION RATIO TABLE
DESIRED TRANSMISSION RATIO CHANGING SPEED CALCULATOR
ENGINE TORQUE CALCULATOR
DUTY RATIO TABLE
TRANSMISSION RATIO CHANGING SPEED CALCULATOR
COEFFICIENT SETTING SECTION
NECESSARY LINE PRESSURE TABLE
DESIRED LINE PRESSURE CALCULATOR
DUTY RATIO TABLE
DRIVER
SOLENOID OPERATED ON OFF VALVE
SOLENOID OPERATED ON OFF VALVE
DRIVER
71
72
73
75
79
110
78
77
80
103
104
105
66
68
81

1. An ultrasonic transducer comprising an ultrasonic oscillator device and an acoustic impedance matching member useable in contact with an ultrasonic wave radiating surface, wherein said acoustic impedance matching member consists of

a plurality of layers, each layer being of a thickness less that one-fourth wavelength of an ultrasonic wave and consisting of a sublayer of plastic material and in contact therewith a sublayer of metallic material and arranged so that the sublayer of plastic material alternates with the sublayer of metallic material,

wherein the ratio of thickness of the sublayer of plastic material to the thickness of the sublayer of metallic material of each successive layer of the plurality of layers gradually changes from the said radiation surface to the oscillator device.

4,881,213
WATCH MOVEMENT HAVING DATE AND PHASES OF THE MOON INDICATORS

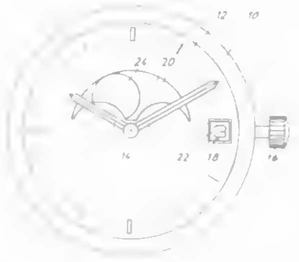
Abraham Zaslawsky, Neuchâtel, Switzerland, assignor to Eta sa Fabriques d'Ebauches, Switzerland

Filed Sep. 16, 1988, Ser. No. 245,182

Claims priority, application Switzerland, Sep. 24, 1987, 03692/87

Int. Cl.⁴ G04B *19/26*

U.S. Cl. 368—15 7 Claims



1. A watch movement having indicators for the date and the phases of the moon, the date indicator having thirty-one teeth and that of the phases of the moon being integral with a wheel having fifty-nine teeth, an intermediate revolving wheel member driven in rotation by the watch movement at the rate of one revolution every twenty-four hours causing these indicators to advance by one step for each revolution, whereby at a predetermined angle of rotation of said intermediate revolving wheel member said wheel member is displaced in the direction of the teeth of the date indicator and whereby, at another predetermined angle of rotation of said intermediate revolving wheel member said wheel member is displaced in the direction of the wheel having fifty-nine teeth.

4,881,214
DATA RECORD FORMATTING SYSTEM AND READING/WRITING SYSTEM FOR OPTICAL RECORDING MEDIUM

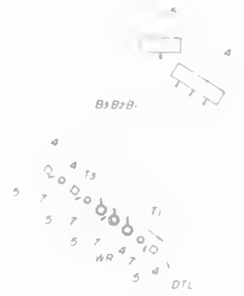
Shigeru Izawa, and Takashi Hasemi, both of Tokyo, Japan, assignors to CSK Corporation, Tokyo, Japan

Filed May 11, 1987, Ser. No. 48,573

Claims priority, application Japan, May 12, 1986, 61-108155; May 17, 1986, 61-113870; Jul. 8, 1986, 61-160444

Int. Cl.⁴ G11B *7/013, 21/10*

U.S. Cl. 369—44 12 Claims



1. An optical recording medium containing a data record formatting arrangement adapted to carry out data reading and/or writing along tracking lines, said data record formatting arrangement comprising:

tracking portions used as a reference for the reading and/or writing operation; and

data recording portions for storing data;

said tracking portions and said data recording portions being alternately arranged along the same line in a data recording region of the optical recording medium and wherein each of said tracking in the same line is formed square and has a length along one side of the tracking portion which is ½ the pitch or distance between any two adjacent tracking portions.

4,881,215
OPTICAL RECORDING MEDIUM AND METHOD FOR CORRECTING ANGULAR DEVIATION THEREOF

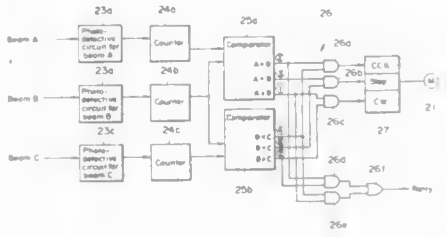
Kiyoshi Horie, Tokyo, Japan, assignor to Computer Services Corporation, Tokyo, Japan

Filed Nov. 25, 1986, Ser. No. 936,723

Claims priority, application Japan, Nov. 26, 1985, 60-265914

Int. Cl.⁴ G06K *7/015;* **G11B** *7/09*

U.S. Cl. 369—44 10 Claims



1. A method for correcting an angular deviation of an optical recording medium, which comprises:

relatively moving the optical recording medium having a plurality of optically detectable strip patterns having a length and a width and formed on part of a substrate of the optical recording medium, in a direction across the width of the strip pattern, with respect to a pattern-detecting means;

detecting said strip patterns by said pattern-detecting means at a plurality of detecting points along the length of the strip patterns to count the number of the strip patterns passed through the respective detecting points according to the relative movement of the medium;

comparing the count values obtained at the respective detecting points to detect an angular deviation of the deviation; and

correcting said angular deviation of the optical recording medium on the basis of said angular deviation amount and said direction of the deviation.

4,881,216
OPTICAL HEAD IN AN OPTICAL MEMORY DEVICE

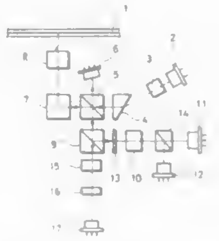
Toshihisa Deguchi; Yoshikazu Fujii; Tetsuya Inui, all of Nara; Kenji Ohta, Yao, and Schohichi Katoh, Yamatokoriyama, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 839,197, Mar. 13, 1986, abandoned. This application Aug. 26, 1988, Ser. No. 237,652

Claims priority, application Japan, Mar. 13, 1985, 60-50788

Int. Cl.⁴ G11B *7/00, 21/08, 21/10*

U.S. Cl. 369—54 16 Claims



1. An optical servo system for controlling the position of a light beam relative to an optical recording medium in an optical information retrieval system reading an optical information recording medium comprising:

a coherent light source emitting a coherent light beam;

a beam splitter, positioned between said source and the optical recording medium, said beam splitter allowing at least a major portion of the coherent light beam emitted by said coherent light source to be supplied to said optical recording medium and directing a reflected light beam from said recording medium along a first reflected path away from said coherent light source;

first optical detector means, disposed in said first reflected path, for monitoring a condition of said reflected light beam and generating at least one beam position output signal;

said beam splitter directing a portion of said coherent light emitted from said coherent light source along a second reflected light path different from said first reflected light path;

second optical detector means, disposed in said second reflected path, for receiving a portion of the light beam emitted from said light source and monitoring the intensity of the coherent light emitted from said light source and generating a source intensity signal;

circuit means responsive to said source intensity signal and said at least one beam position output signal for generating a servo error signal free of any offset caused by stray light beams incident on said first optical detection means; and

servo means for controlling the position of the light beam in response to said offset-free serve error signal.

4,881,217
METHOD OF MAKING OPTICALLY RECORDED INFORMATION MEDIUM BY EXPOSURE TO ULTRAVIOLET LIGHT

Hiroshi Ohki, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

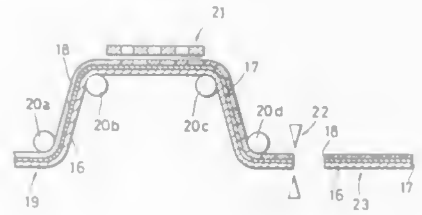
PCT No. PCT/JP85/00393, § 371 Date Mar. 18, 1986, § 102(e) Date Mar. 18, 1986, PCT Pub. No. WO86/01020, PCT Pub. Date Feb. 13, 1986

PCT Filed Jul. 12, 1985, Ser. No. 847,719

Claims priority, application Japan, Jul. 18, 1984, 59-149044

Int. Cl.⁴ G11B *3/00*

U.S. Cl. 369—132 6 Claims



1. A method of making an optically recorded information medium, which comprises the steps of:

preparing an optical information recording medium consisting of a substrate, a light reflecting layer and a recording layer formed on the light reflecting layer for recording information according to the difference in optical density between exposed portions and non-exposed portions caused by selective exposure to ultraviolet rays;

exposing said recording layer to unfocused ultraviolet rays through a mask for exposure having a predetermined recording pattern, to form a continuous recording layer having portions of different optical density;

cutting the recording medium including the portion of the recording layer which has recorded the said information, to make an information stripe; and

fixing the information stripe on a supporting plate, whereby the difference in optical density between said exposed and

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non-exposed portions form a visible indication of said information when viewed in light reflected from said light reflecting layer.

4,881,218
APPARATUS FOR ADAPTING THE DIAMETER OF A DISK-LIKE RECORDING MEDIUM

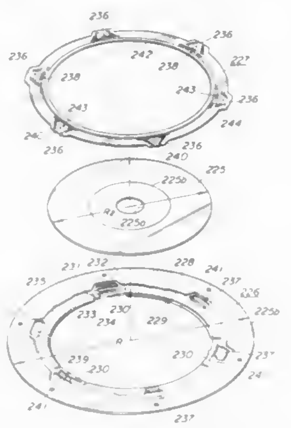
Elji Yamamori, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Division of Ser. No. 162,203, Feb. 29, 1988, Pat. No. 4,839,784. This application Dec. 5, 1988, Ser. No. 280,212

Claims priority, application Japan, Mar. 14, 1987, 62-59668; Mar. 14, 1987, 62-59669; Mar. 14, 1987, 62-59670; Nov. 30, 1987, 62-302060

Int. Cl.⁴ G11B *23/00, 25/04*

U.S. Cl. 369—289 19 Claims



1. An apparatus for adapting the diameter of a disk-like recording medium, comprising a holder having a diameter larger than that of the disk-like recording medium, said holder being formed so as to hold a non-signal record area on the outer periphery of the disk-like recording medium to allow signals recorded on the disk-like recording medium to be read out when the disk-like recording medium is held by said holder, and wherein said holder includes a supporting member for the disk-like recording medium which is shaped so that the disk-like recording medium is placeable thereon, said supporting member having an opening concentric with the disk-like recording medium placed thereon for exposing a signal record area of the disk-like recording medium, and clamping members for the disk-like recording medium removably mounted to said supporting member and including engaging means for engaging with mating engaging portions on said supporting member, said clamping members being mounted to said supporting member by engagement of said engaging means with said mating engaging means so as to clamp the disk-like recording medium in cooperation with said supporting member, said supporting member and said clamping members having respective thickenesses so that said holder has substantially the same thicknesses as said disk-like recording medium when said recording medium is clamped thereby.

4,881,219
CONTROL DEVICE FOR A SUNSHADE BLIND RESPONSIVE TO METEOROLOGICAL PHENOMENON

Dominique Jacquel, Marnaz, France, assignor to Somfy, France

Filed Mar. 30, 1984, Ser. No. 595,343

Claims priority, application France, Apr. 25, 1983, 8306754

Int. Cl.⁴ F24J *3/02*

U.S. Cl. 364—400 3 Claims

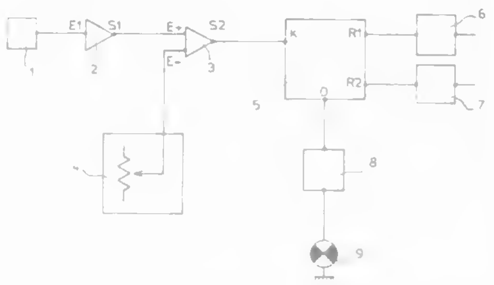
1. An automatic device for controlling a device for protection against meteorological phenomenon, such as a blind, comprising:

a sensor for measuring said meteorological phenomenon and generating a sensor signal responsive to the intensity of said phenomenon;

threshold regulating means for generating a presetable threshold signal;

a comparator coupled to said sensor and said threshold generating means for generating a comparator signal when said sensor signal exceeds said threshold signal, said comparator signal having a leading end corresponding to a first instance when said sensor signal exceeds said threshold signal and a trailing end corresponding to a second instance when said threshold signal exceeds said sensor signal;

an illuminating means for indicating a status of said device;



control means for activating said device in one of a first and a second direction, said control means including a first delay means for activating said device at the end of a first period after said leading end; and a second delay means for activating said device in a second direction at the end of a second period after said trailing end; and

illuminating control means for activating said illuminating means at the end of said first period if the trailing end does not occur before the end of said first period; said illuminating control means further being provided for activating said illuminating means intermittently during said second period if the illuminating means has been continuously activated; and for deactivating said illuminating means at the end of said second period.

4,881,220
MULTIPLEX COMMUNICATION SYSTEM FOR SEQUENCE CONTROLLERS

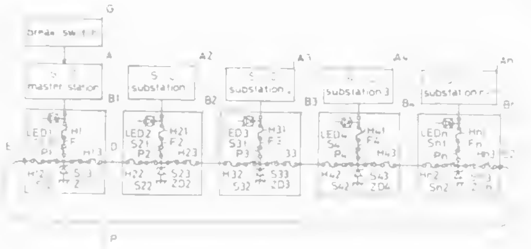
Toshihiko Yomogida, Kariya; Tsuyoshi Yamashita, Nagoya; Shigeo Yamamoto, Kariya; Hideaki Tobita; Hisanori Nakamura, both of Toyota, and Goro Kobayashi, Okazaki, all of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya and Toyota Jidosha Kabushiki Kiahsa, Toyota, both of, Japan

Filed Aug. 24, 1988, Ser. No. 235,498

Claims priority, application Japan, Aug. 24, 1987, 62-210859; Aug. 9, 1988, 63-198394

Int. Cl.⁴ H04J *1/16, 3/14*

U.S. Cl. 370—16 9 Claims



1. A multiplex communication system for plural sequence controllers disposed in respective of plural stations and connected in sequence to a communication line, comprising:

plural first switches, each first switch disposed on a branch line which connects a sequence controller of a respective station to said communication line;

plural second switches and plural third switches, said second and third switches connected in series, with each of said second switches disposed on one side of a connecting point of a respective branch line of a respective sequence controller to said communication line and each of said third switches connected to the other side of the connecting point of the respective branch line of the respective sequence controller to said communication line; and

a spare line which connects in a loop the second switch of the respective sequence controller at one end of the sequence of sequence controllers with the third switch of the respective sequence controller at the other end of the sequence of sequence controllers thereby forming a line in parallel with the series connected second and third switches.

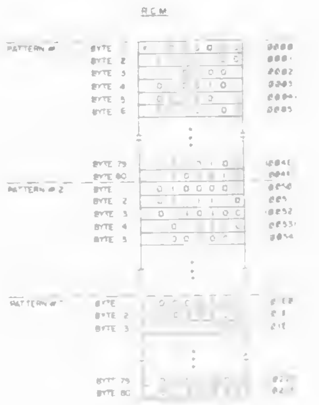
4,881,221
METHOD AND APPARATUS FOR DISABLING AN ECHO CANCELLER ON A DIGITAL TELECOMMUNICATIONS NETWORK

George L. Schroeder, Sherwood; Francis O. Couch, Portland, and Chamna Saenguraiporn, Aloha, all of Oreg., assignors to Kentrox Industries, Inc., Portland, Oreg.

Filed Jun. 23, 1988, Ser. No. 210,728

Int. Cl.⁴ H04B *3/20*

U.S. Cl. 370—32.1 11 Claims



1. A telecommunications system comprising:

a bit-synchronous digital transmission circuit;

an echo canceller coupled to said transmission circuit, the echo canceller including disabling means for disabling operation of the echo canceller upon receipt of a predetermined command signal, said command signal comprising a sequence of digital data bits, the echo canceller including means for receiving said data bits in synchronous data frames defining command data bytes of fixed lengths; and

remote signalling means for transmitting the predetermined command signal to the disabling means, said remote signalling means comprising means for transmitting the digital data bits comprising the predetermined command signal repeatedly, each time with a different frame boundary so that one sequence of data bits will be framed into the data bytes that comprise the predetermined command signal.

4,881,222
MULTICARRIER DEMODULATOR

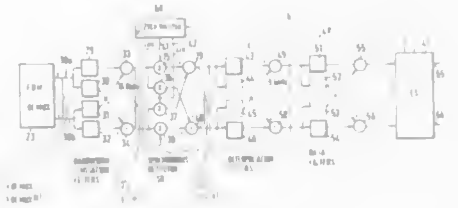
Heinz Goeckler, and Thomas Alberty, both of Backnang, Fed. Rep. of Germany, assignors to ANT Nachrichtentechnik GmbH, Backnang, Fed. Rep. of Germany

Filed Mar. 4, 1988, Ser. No. 164,465

Claims priority, application Fed. Rep. of Germany, Mar. 12, 1987, 3707960

Int. Cl.⁴ H04L *5/06, 27/00;* **H04J** *1/00*

U.S. Cl. 370—70 3 Claims



1. In a multicarrier demodulator for the separation and demodulation of a digitalized frequency multiplex signal into a plurality of individual channel signals comprising a frequency division demultiplexer for receiving and separating said digitalized frequency multiplex signal, a plurality of bandwidth limitation filters for filtering said individual separated channel signals, a synchronous demodulator for synchronously demodulating said individual separated and band-limited channel signals, a plurality of interpolation and Nyquist filters, and a decider circuit, wherein each of said individual separated and bandlimited channel signals is a complex signal and is fed to said synchronous demodulator.

4,881,223
ASYNCHRONOUS TIME DIVISION COMMUNICATION SYSTEM

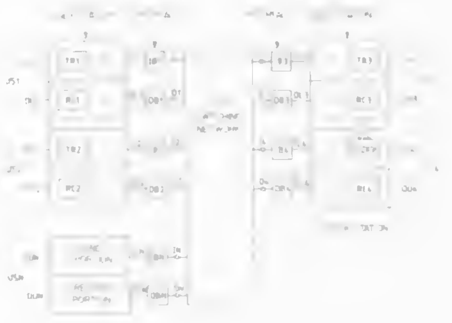
Pierre L. Debuysscher, Nazareth, Belgium, assignor to Alcatel N.V., Amsterdam, Netherlands

Filed Mar. 17, 1988, Ser. No. 169,867

Claims priority, application Belgium, Mar. 18, 1987, 8700280

Int. Cl.⁴ H04J *3/06*

U.S. Cl. 370—77 9 Claims



1. Asynchronous time division communication system comprising:

a switching network,

a first plurality of user stations, and

a corresponding first plurality of transmission links for coupling each of said user stations with said switching network whereby each of said user stations may transmit and receive asynchronous data to and from to any other of said user stations via said transmission links and said switching network,

wherein

at least some of said user stations each further comprise

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clock extraction means to extract a clock signal from received asynchronous clock information data, and

at least one of said first plurality of user stations further comprises

means to generate said clock signal and

clock output means for generating said clock information from said clock signal and for selectivity transmitting said clock information as asynchronous data via said transmission links and said switching network to one or more of said at least some of said user stations.

4,881,224

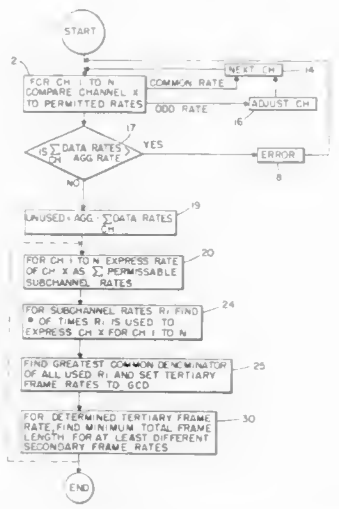
FRAMING ALGORITHM FOR BIT INTERLEAVED TIME DIVISION MULTIPLEXER

Kuldip S. Bains, Watertown, Conn., assignor to General Data-Comm, Inc., Middlehury, Conn.

Filed Oct. 19, 1988, Ser. No. 259,803

Int. Cl.^{4} H04J *3/16*

U.S. Cl. 370—82 20 Claims


START
2
FOR CH 1 TO N COMPARE CHANNEL X TO PERMITTED RATES
COMMON RATE
NEXT CH
14
ODD RATE
ADJUST CH
16
17
IS $\sum_{CH}$ DATA RATES > AGG RATE
YES
ERROR
8
NO
UNUSED = AGG - $\sum_{CH}$ DATA RATES
19
FOR CH 1 TO N EXPRESS RATE OF CH X AS $\sum$ PERMISSABLE SUBCHANNEL RATES
20
FOR SUBCHANNEL RATES R_i FIND # OF TIMES R_i IS USED TO EXPRESS CH X FOR CH 1 TO N
24
FIND GREATEST COMMON DENOMINATOR OF ALL USED R_i AND SET TERTIARY FRAME RATES TO GCD
25
FOR DETERMINED TERTIARY FRAME RATE, FIND MINIMUM TOTAL FRAME LENGTH FOR AT LEAST DIFFERENT SECONDARY FRAME RATES
30
END

1. A method for determining optimal frame rates so that a plurality of channels are efficiently multiplexed onto a sub-aggregate of an aggregate line, comprising:

(a) obtaining data rates of said channels, and expressing each of said channel data rates as a sum of a plurality of predetermined subchannel dates rates;

(b) accumulating the number of times each predetermined subchannel date rate is used to express said channel data rates over said plurality of channels, wherein a greatest common denominator of said predetermined subchannel data rates having an accumulated positive number is chosen as a tertiary frame rate (T); and

(c) given a predetermined sub-aggergate rate (A) and said channel data rates expressed as a sum of a plurality of predetermined subchannel date rates, determining suitable primary (P) and secondary (S) frame rates by finding and minimizing for a plurality of primary and secondary frame rates a sum of

(1) A/P,

(2) (P/S)F1 where F1 represents a number of calls of a primary frame of frame rate P to a secondary frame of frame rate S, and

(3) (S/T)F2 where F2 represents a number of calls of said secondary frame of frame rate S to a tertiray frame of frame rate T.

4,881,225

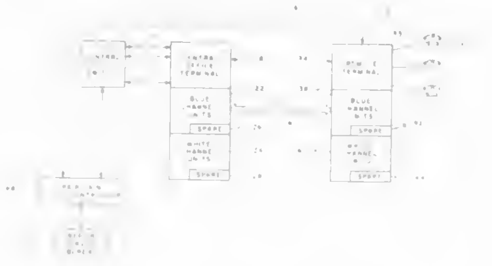
DIGITAL LOOP CARRIER SYSTEM HAVING MULTIPLEXED INTERRUPT STRUCTURE

Harry J. Dyke, Oak Forest, and Yoram Korn, Westmont, both of Ill., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Aug. 31, 1988, Ser. No. 239,141

Int. Cl.^{4} H04J *3/16*

U.S. Cl. 370—95.1 15 Claims



1. A system having a plurality of channel units for connection to a transmission line having a plurality of timeslots, said system having at least a central processing unit, comprising:

means for addressing oro providing a channel address via an address signal corresponding to a predetermined one of said plurality of timeslots to each of said channel units;

means for processing for assigning an assigned address to each channel unit of said plurality of channel units, each channel unit being assigned to a different selected timeslot of aid plurality of timeslots;

each of said channel units having means for comparing said channel address in said address signal to said assigned address, said channel unit upon having a correspondence between said channel address and said assigned address being an active channel unit;

means for providing a bus for connecting said plurality of channel units to said means for addressing; and

each of said channel units having interrupt means for signalling a means for interrupting in said means for addressing connected to said processing unit, thereby establishing a communication path between said active channel unit and said central processing unit.

4,881,226

DIGITAL INTERFACE OF AN INTEGRATED SUBSCRIBER LINE INTERFACE CIRCUIT

Robert Lechner, Sankt Poelten, Austria; Hans-Werner Rudolf, Munich, Fed. Rep. of Germany; Harald Stader, Munich, Fed. Rep. of Germany; Norbert Wingerath, Munich, Fed. Rep. of Germany; Christopher C. A. Priest, Maidenhead, United Kingdom; Nigel P. Dyer, London, United Kingdom; Robert K. P. Galpin, Cheshire, United Kingdom; Pierre Albouy, Lannion, France; Robert Le Gougnec, Lannion, France; Ramatchandirane Nadaradjane, Perros-Guirec, France; Marcello Manca, Milan, Italy; Virgilio Mosca, Milan, Italy, and Antonio Nicastro, Milan, Italy, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jan. 25, 1988, Ser. No. 147,429

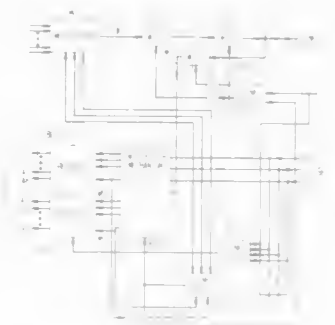
Claims priority, application Fed. Rep. of Germany, Feb. 12, 1987, 3704408

Int. Cl.^{4} H04J *3/12*

U.S. Cl. 370—110.1 5 Claims

1. A digital interface circuit for an integrated subscriber line interface circuit (SLIC) for the connection of analog subscriber lines of a digital time-multiplexed telecommunications network, over which the setting up of various operating conditions of the SLIC is effected and the query of the results of subscriber line status indications initiated in the SLIC occurs, said digital interface circuit comprising:

a parallel interface means having a plurality of input/output lines of which at least one of said lines is adapted to provide a signal entry operation for the subscriber line interface circuit as a signal input and a signal transmission operation for the subscriber line interface circuit as a data output, and additional lines adapted to provide input signal in both of said operating modes, whereby in signal entry operation said additional lines function as inputs for types of signals other than those types of signals present in signal transmission operation;



means for providing a group of lines adapted to receive input signals in both signal entry and signal transmission operating modes, including at least two registers, each of said registers having respective decoders coupled thereto, and further including a switch-over mechanism for the selective switching "on" of said registers and said associated decoders, whereby the possible binary values of the signals at the input lines to the group provides an increased number of operating instructions for the SLIC.

4,881,227

ARRANGEMENT FOR MONITORING A COMPUTER SYSTEM HAVING TWO PROCESSORS IN A MOTOR VEHICLE

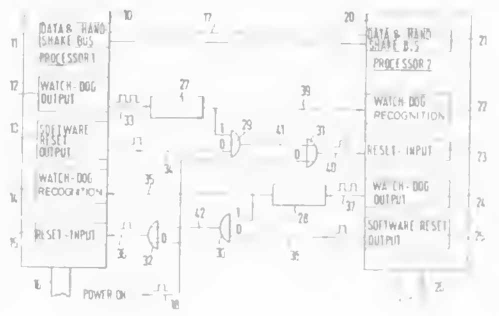
Harald Bühren, Bühl, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Dec. 29, 1987, Ser. No. 138,943

Claims priority, application Fed. Rep. of Germany, Jan. 15, 1987, 3700986

Int. Cl.^{4} G06F *11/30, 15/16;* **F02D** *41/22*

U.S. Cl. 371—9 4 Claims



1. An arrangement for monitoring a computer system with two equal access processors in a motor vehicle, the arrangement comprising:

data and control lines interconnecting said two processors with each other;

means for operating said processors independently of each other except for a cyclical data and command exchange via said data and control lines;

each of said processors having a dedicated first output for supplying a dynamic watch-dog signal;

each of said processors having a dedicated first input for identifying a static watch-dog signal;

each of said processors having a dedicated second output for supplying a software-reset signal;

said processors having respective reset inputs;

two logic OR-circuits, each of said OR-circuits having an output connected to the reset input of the processor corresponding thereto;

each of said OR-circuits having first and second inputs;

means for applying a start pulse in common to the first inputs of each of said OR-circuits;

two pump circuits corresponding to respective ones of said processors, each of said pump circuits having an input connected to the first output of the processor corresponding thereto and an output connected to the first input of the other one of the processors from which a static watch-dog signal can be taken in dependence upon an applied dynamic watch-dog signal;

two logic AND-circuits, each of said AND-circuits having a first input connected to the second output of the processor corresponding thereto;

each of said AND-circuits having a second input connected to the output of the pump circuit corresponding to the same processor as said AND-circuit for receiving the static watch-dog signal of the pump circuit; and,

each of said AND-circuits having an output connected to the second input of the OR-circuit corresponding to the other processor.

4,881,228

DEBUGGING MICROPROCESSOR

Masahiro Shouda, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Oct. 29, 1987, Ser. No. 114,285

Claims priority, application Japan, Oct. 29, 1986, 61-258915

Int. Cl.^{4} G06F *11/00*

U.S. Cl. 371—19 6 Claims

1. A debugging processor comprising:

a bus control unit for transmitting and receiving data, address and control signals to and from an external microprocessor development support system,

an instruction execution unit coupled to transmit and receive data and address signals to and from the bus control unit and also to receive an instruction code from the bus control unit for executing the given instruction, said instruction execution unit having a fixed branch destination address for a debug interrupt operation,

an interrupt control unit coupled to receive at least a debug interrupt from the external microprocessor development support system and for notifying the instruction execution unit of an interrupt request, and

a debug interrupt response control unit having a priority higher than that of the interrupt control unit,

said execution unit operating in response to the notification of the interrupt request from the interrupt control unit to instruct the bus control unit to start an internal information save operation after there have been completed an execution of an instruction which is being executed when the instruction execution unit is notified of the interrupt

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request, the execution unit also operating to notify the debug interrupt response control unit of the instruction of the internal information save operation to the bus control unit,

said bus control unit responding to the instruction of the internal information save operation from the execution unit to output a signal indicative of an execution of a bus cycle for the internal information save operation to the debug interrupt response control unit, in synchronism with a bus cycle of the bus control unit, after there has been completed a bus cycle which is being executed when the start of the internal information save operation of the execution unit is detected, so that the debug interrupt response control unit operates to generate to the external microprocessor development support system a debug interrupt response signal which becomes active only during a period of save operation for the internal information, and thereafter, the execution unit operating to move into an operation for the debug interrupt.

4,881,229

TEST CIRCUIT ARRANGEMENT FOR A COMMUNICATION NETWORK AND TEST METHOD USING SAME

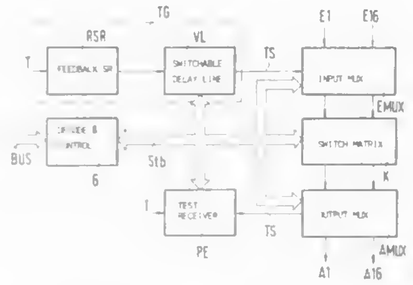
Gunter Kaltbeitzel, Schwieberdingen; Michael Klein, Ruckersdorf; Martin Renner, Mettmann, and Joachim Wolk, Besigheim, all of Fed. Rep. of Germany, assignors to Alcatel, N.V., Amsterdam, Netherlands

Filed Oct. 21, 1987, Ser. No. 111,935

Claims priority, application Fed. Rep. of Germany, Oct. 25, 1986, 3636427

Int. Cl.⁴ G05F *11/02*

U.S. Cl. 371—20.4 10 Claims



1. A circuit arrangement comprising:

at least one signal input terminal,

at least one signal output terminal,

signal path means for providing a signal path from a selected said signal input terminal to a selected said signal output terminal,

said signal path means comprising

a selecting multiplexer for allowing the signal path to be opened at a predetermined point thereof and a test signal to be injected into a subsequent portion of the signal path between said predetermined point and the selected signal output terminal,

input and output means for inputting control data to control the selecting multiplexer and for outputting operating parameters,

a test-signal generator for injecting a test signal through the selecting multiplexer to said subsequent portion,

an error-detection circuit for checking a received test signal for transmission errors and for providing operating parameters including an indication of any detected errors to said input and output means, and

test access means for providing said error-detection circuit access to said signal path at least one point of said subsequent portion.

4,881,230

EXPERT SYSTEM FOR PROCESSING ERRORS IN A MULTIPLEX COMMUNICATIONS SYSTEM

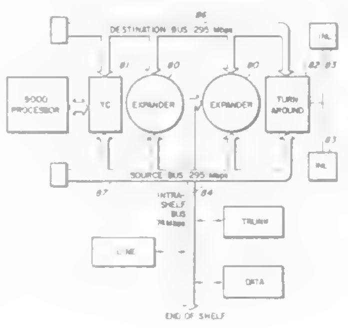
Mark E. Clark, San Jose; Richard G. Greever, Sunnyvale; Larry J. Schmier, Santa Rosa, and Jerome D. Wong, Sunnyvale, all of Calif., assignors to IBM Corporation, Armonk, N.Y.

Filed Oct. 5, 1987, Ser. No. 105,772

The portion of the term of this patent subsequent to Mar. 28, 2006, has been disclaimed.

Int. Cl.⁴ G06F *11/32;* **H04B** *3/46*

U.S. Cl. 371—20.1 11 Claims



1. A method to analyze errors in a system, the system having a plurality of resources with replaceable units, a display, a processor, and memory means for storing decision trees, data structures, and error analysis tasks, the resources including a diagnostics card having a processor and memory means for storing resource analysis tasks, and communication resources, the method comprising the steps of:

(a) testing said resources intermittently by said error analysis tasks invoking a card analysis task on said diagnostics card to test for an error in said communication resources in said system;

(b) detecting an error and invoking an appropriate error analysis task to further diagnose the cause of said error;

(c) isolating said error to a replaceable unit by automatically traversing said decision trees in said error analysis task on said diagnostics card;

(d) writing data to record said error in said data structure in said memory of said system; and

(e) displaying a message indicative of said error on said display of said system.

4,881,231

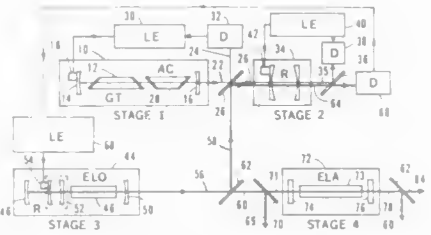
FREQUENCY-STABILIZED LINE-NARROWED EXCIMER LASER SOURCE SYSTEM FOR HIGH RESOLUTION LITHOGRAPHY

Kantilal Jain, 18 Algonquian Trail, Briarcliff Manor, N.Y. 10510

Filed Nov. 28, 1988, Ser. No. 277,028

Int. Cl.⁴ H01S *3/13*

U.S. Cl. 372—32 22 Claims



1. An excimer laser source system emitting radiation characterized by a wavelength with a high degree of stability and by a narrow spectral bandwidth, and comprising:

(a) a frequency-stabilized reference laser system of a wavelength different from the wavelength of said excimer laser source system;

(b) a resonator system (**34-42**,) stabilized by locking its cavity spacing to the wavelength of said reference laser system and comprising: a resonator (**34**) through which beam (**26**) from said reference laser system is transmitted; a detector (**38**) that measures the power in the reference laser beam (**35**) transmitted through said resonator (**34**); a piezoelectric transducer (**42**) that tunes said resonator (**34**); and a locking electronics system (**40**) that receives input from said detector (**38**) and drives said piezoelectric transducer (**42**) in such a way that the power in said transmitted reference laser beam (**35**) is maximized so as to keep the cavity spacing of said resonator (**34**) locked to the reference laser wavelength; and

(c) an excimer laser oscillator (**44**,), another detector (**66**) and another locking electronics system (**68**); said excimer laser oscillator (**44**) comprising a laser gain medium (**46**), laser cavity mirrors (**48, 50**), an intra-cavity resonator (**52**) and another piezoelectric transducer (**54**); and the output beam (**56**) from said excimer laser oscillator (**44**) being spectrally narrowed and frequency-stabilized by measuring its intensity with said detector (**66**) after transmitting it through said first resonator (**34**,), and inputting the signal from said detector (**66**) into said locking electronics system (**68**) to drive said piezoelectric transducer (**54**) and fine-tune said intra-cavity resonator (**52**) in such a way that the transmission of said excimer laser oscillator beam (**56**) through said first resonator (**34**,) is maximized.

4,881,232

METHOD AND APPARATUS FOR ERROR CORRECTION

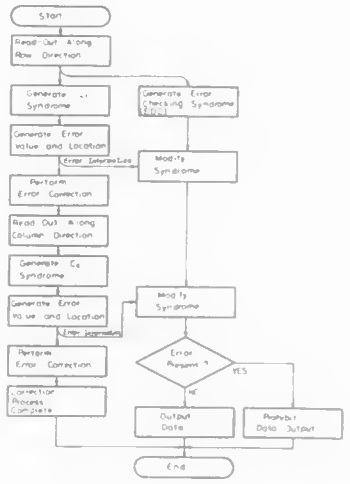
Yoichiro Sako, and Shinichi Yamamura, both of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Feb. 5, 1988, Ser. No. 152,472

Claims priority, application Japan, Feb. 10, 1987, 62-029351

Int. Cl.⁴ G06F *11/10*

U.S. Cl. 371—37.4 13 Claims



1. An error-correcting method for checking whether an error occurs in a predetermined data arrangement that includes an error-correcting parity for correcting an error by effecting an error-correcting process by the use of said error-correcting parity and an error-checking parity for checking an error by effecting an error-checking process by the use of said error-checking parity, said error-correcting method comprising the steps of:

(a) producing an error-correcting syndrome using said error-correcting parity during said error-correcting process;

(b) producing an error-checking syndrome substantially simultaneously with said producing of said error-correcting syndrome; and

(c) amending said error-checking syndrome on the basis of error information produced during said error-correcting process, whereby an amended error-checking syndrome is finally produced by the time the error-correcting process is completed.

4,881,233

LASER WITH IMPROVED COOLING SYSTEM

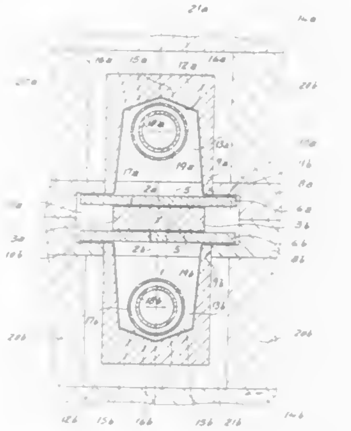
Hans-Peter von Arb, Kapfstrasse 38, 6020 Emmenbrücke, Switzerland; Ulrich Dürr, Mozartstrasse 28, 7310 Plochingen, Fed. Rep. of Germany; André Gressly, Honeggweg 16a, 3610 Steffisburg, and Franz Studer, Dammstrasse 34, 5200 Windisch, both of Switzerland

Filed Jun. 22, 1988, Ser. No. 209,708

Claims priority, application France, Jun. 22, 1987, 87 08791

Int. Cl.⁴ H01S *3/045*

U.S. Cl. 372—35 19 Claims



1. A cooled optical pumped laser having a laser medium in the form of a slab, said slab having at least two opposing parallel pumping faces between which a laser beam develops by propagation along a zig-zag path by means of total reflection between said opposing parallel pumping faces whereby a monolayer of solid material is directly applied to each one of said opposing parallel pumping faces, said solid material having a refractive index less than that of the slab and being at least indirectly in heat exchanging relationship with a cooling fluid, and wherein the material of said monolayer of solid material is transparent to the optical energy used to excite the medium of said slab.

4,881,234

METHOD FOR FORMING COPIOUS $(F_2{}^+)_A$ CENTERS IN CERTAIN STABLE, BROADLY TUNABLE LASER-ACTIVE MATERIALS

David R. Foster, Falls Church, and Irwin Schneider, Alexandria, both of Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 18, 1987, Ser. No. 27,473

Int. Cl.⁴ H01S *3/16*

U.S. Cl. 372—42 2 Claims

1. A laser-active material having regenerable color centers, comprising: a lithium-doped potassium iodide crystal free of

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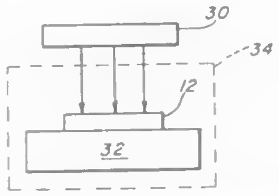
nitrogen contamination and having points defects consisting of F_2, F_{2A}, F_2+ and $(F_2+)_A$ color centers in the crystal structure,



the $(F_2+)_A$ color centers being laser-active regenerable color centers.

4,881,235
SEMICONDUCTOR LASER HAVING A MULTIPLE QUANTUM WELL STRUCTURE DOPED WITH IMPURITIES

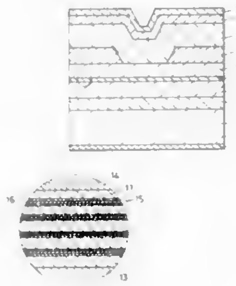
Naoki Chinone; Kazubisa Uomi, both of Hachioji; Tadashi Fukuzawa, Tokyo; Hideaki Matsueda, Tokorozawa; Takashi Kajimura, Tokyo, and Tsukuru Ohtoshi, Kokubunji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 888,073, Jul. 22, 1986. This application Apr. 23, 1987, Ser. No. 41,410

Claims priority, application Japan, Jul. 26, 1985, 60-164002; Sep. 13, 1985, 60-201543; Apr. 23, 1986, 61-92093

Int. Cl.⁴ H01S *3/19*

U.S. Cl. 372—45 40 Claims



1. A semiconductor laser comprising:
a semiconductor substrate;
a plurality of semiconductor layers formed on the substrate, the plurality of semiconductor layers including a cladding layer, at least one active layer and at least one barrier layer, the at least one active layer and at least one barrier layer being stacked alternately so as to form a multiple quantum well structure and together forming an active region, and a resonant cavity including said active region, wherein the at least one active layer respectively has a thickness that is smaller than a wave packet of free electrons within a crystal, and wherein the active region has a light emitting portion in which there is a part doped with impurities, the impurity concentration thereof being larger than 10^{18}cm^{-3}; and
a pair of electrodes for injecting carriers into the light emitting portion, to emit light.

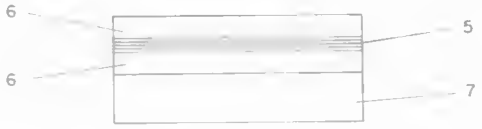
4,881,236
WAVELENGTH-RESONANT SURFACE-EMITTING SEMICONDUCTOR LASER

Steven R. J. Brueck; Christian F. Schaus; Marek A. Osinski, all of Albuquerque; John G. McInerney, Cedar Crest; M. Yasin A. Raja; Thomas M. Brennan, both of Albuquerque, and Burrell E. Hammons, Tijeras, all of N. Mex., assignors to University of New Mexlco, Albuquerque, N. Mex.

Filed Apr. 22, 1988, Ser. No. 184,745

Int. Cl.⁴ H01S *3/19*

U.S. Cl. 372—45 8 Claims



2. A semiconductor laser medium comprising pumping means for providing energy, a resonating gain medium for receiving said energy whereby standing electromagnetic waves are generated therein and composed of a first plurality of thin semiconductor bodies each acting as a quantum well of small bandgap and each equally separated from the other by a space, and a second plurality of thick semiconductor bodies, each thick body with a bandgap substantially larger than said small bandgap and occupying the space between adjacent ones of said first semiconductor bodies, both of said pluralities of bodies thereby constituting a stack of thick and thin semiconductor bodies alternately oriented along a line, the thickness of each of said thin semiconductor bodies in the direction of the line being at most approximately one-tenth the thickness of each of the thick semiconductor bodies and the combined thickness of a pair of adjacent thin and thick bodies being approximately equal to an integral multiple of one-half the lasing wavelength of the medium, whereby each of the maxima of the standing waves of the elctromagnetic field of the medium are in approximate registration with each of the thin semiconductor bodies.

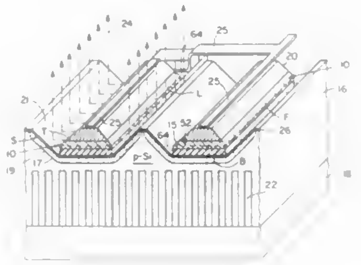
4,881,237
HYBRID TWO-DIMENSIONAL SURFACE-EMITTING LASER ARRAYS

Joseph P. Donnelly, Carlisle, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Aug. 26, 1988, Ser. No. 237,149

Int. Cl.⁴ H01S *3/19*

U.S. Cl. 372—50 30 Claims



1. A hybrid laser array comprising:
(a) an array substrate having a plurality of longitudinally extending grooves formed on a surface thereof with each groove comprised of a pair of inclined light reflective walls extending toward each other and terminating on a flat surface; and
(b) a linear array of laser edge emitting devices mounted in each groove, each laser device being formed with a region of light emitting material located within a resonant optical cavity formed between two electrodes for emitting laser light for reflection off the reflective surface of said light reflective walls.

4,881,238
SEMICONDUCTOR LASER HAVING QUANTUM WELL ACTIVE REGION DOPED WITH IMPURITIES

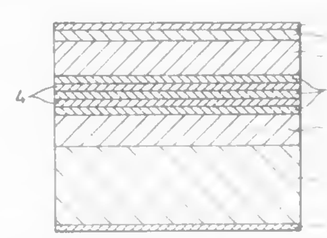
Naoki Chinone, Hachioji; Kazuhisa Uomi, Kokubunji; Tadashi Fukuzawa, Tokyo; Hideaki Matsueda, Tokorozawa, and Takashl Kajimura, Tokyo, all of Japan, asslgnors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 22, 1986, Ser. No. 888,073

Claims priority, application Japan, Jul. 26, 1985, 60-164002; Sep. 13, 1985, 60-201543

Int. Cl.⁴ H01S *3/19*

U.S. Cl. 372—68 51 Claims



34. A semiconductor laser comprising:
a semiconductor substrate;
a semiconductor layers stacked structure on the semiconductor substrate, the semiconductor layers stacked structure including a resonant cavity which includes an active region, wherein the active region has a quantum well structure, and wherein at least a portion of the active region is doped with impurities at an impurity density of not less than $1\times10^{18}\ \text{cm}^{-3}$; and
a pair of electrodes for injecting carriers so as to make the active region emit light.

4,881,239
FAULT DETECTION DURING REMELT OF ELECTRODES INTO BLOCKS

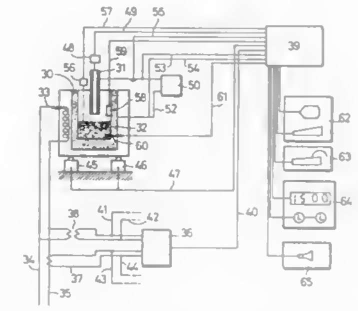
Otto Stenzel, Gründau; Felix Müller, Gelnhausen; Gerhard Brückmann, Asslar, and Alok Choudhury, Püttlingen, all of Fed. Rep. of Germany, assignors to Leybold Aktiengesellschaft, Hanau, Fed. Rep. of Germany

Filed Jun. 2, 1988, Ser. No. 201,588

Claims priority, application Fed. Rep. of Germany, Jul. 14, 1987, 3723166

Int. Cl.⁴ H05B *7/148*

U.S. Cl. 373—70 16 Claims



1. Apparatus for detecting the location of a fault in a metallic block during the remelting of an electrode in a vacuum are furnace to form said block, said apparatus comprising
means for monitoring a first process parameter,
means for monitoring a second process parameter,
means for continuously correlating the first process parameter to the second process parameter,
means for comparing the actual correlation of parameters so monitored to the ideal correlation of said parameters for a fault-free electrode, and
means for determining the position of faults in the block from deviations between the actual correlation and the ideal correlation.

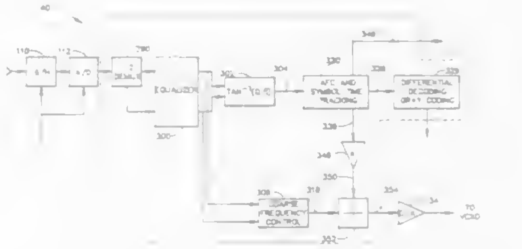
4,881,240
AM EQUALIZER CIRCUIT FOR DIGITAL SYSTEMS

David N. Critchlow; Graham M. Avis; Sandra J. Earlam, all of San Diego; Karle J. Johnson, Carlsbad; Bruce A. Smetana, Escondido; Gregory L. Westling, Poway, all of Calif.; Eric Paneth, Givataiim, Israel, and Mosbe Yehushua, San Diego, Calif., assignors to International Mobile Machines Corporation, Philadelphla, Pa.

Division of Ser. No. 893,916, Aug. 7, 1986, Pat. No. 4,825,448. This application Oct. 12, 1988, Ser. No. 256,557

Int. Cl.⁴ H03H *7/30;* H03K *5/159*

U.S. Cl. 375—15 5 Claims



1. In a subscriber unit for a wireless digital telephone, an equalizer circuit comprising
an input for time multiplexed I and Q samples;
means for applying said time multiplexed I and Q samples, in the form of complex sample pairs/symbol, to a demultiplexer;
an equalizer coupled to said demultiplexer for receipt therefrom of the demultiplexed I and Q samples;
frequency error detection means coupled to said equalizer to produce a frequency error signal;
said detection means including means for applying a plurality of training signals to said equalizer, said training signals corresponding to undesirable characteristics that might be present in the demultiplexed I and Q samples;
means for comparing the actual inputs applied to said equalizer with a set of desired outputs during the presentations of each of said training signals to obtain a set of weighting coefficients; and
frequency correction means coupled to said frequency error detection means to provide a corrected frequency signal.

4,881,241
METHOD AND INSTALLATION FOR DIGITAL COMMUNICATION, PARTICULARLY BETWEEN AND TOWARD MOVING VEHICLES

Daniel Pommier, Breal sous Montfort, and Michel Alard, Rennes, botb of France, assignors to Centre National d'Etudes des Telecommunications, Issy les Moulineaux and Telediffusion de France, Paris, both of, France

Filed Feb. 24, 1988, Ser. No. 159,920

Int. Cl.⁴ H04B *7/02*

U.S. Cl. 375—38 8 Claims

1. Digital broadcasting process comprising:

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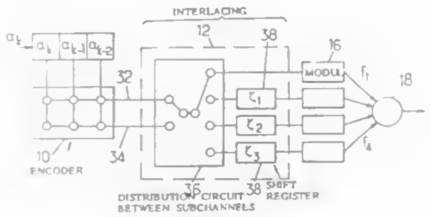
sampling information from a source to obtain data consisting of digital words,

encoding the bits of said words using a redundant encoder to obtain a sequence of modulation symbols representing a message,



transmitting said symbols in a plurality M of subchannels at different frequencies, with simultaneous transmission of M different ones of said symbols with such time interlacing that two adjacent symbols in the message cannot be transmitted in time succession at the same one of said frequencies, each symbol being transmitted once only.

4,881,242
CIRCUIT ARRANGEMENT FOR THE TRANSMISSION OF DATA SIGNALS

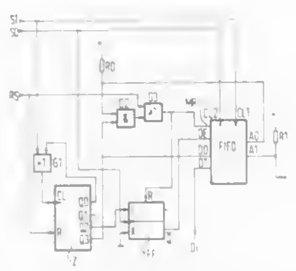
Herbert Haberer, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Aug. 31, 1987, Ser. No. 91,679

Claims priority, application Fed. Rep. of Germany, Sep. 9, 1986, 3630699

Int. Cl.⁴ H04L *7/08;* **H04J** *3/07*

U.S. Cl. 375—118 3 Claims



1. Circuit arrangement for the transmission of data signals, including a memory arrangement (FIFO) wherein signal bits forming the data signals can be read in a read-in time points determined by the occurrence of pulses of a first clock pulse train and from which the data signal bits can be read out at read-out time points determined by the occurrence of pulses of a second clock pulse train, and having a monitoring arrangement which, on the occurrence of a defined deviation of the read-in time points for the individual data signal bits from the read-out time points respectively allocated thereto, provides a control signal for such a change of the read-out, or as the case may be, the read-in time points, that the desired time separation between these time points is again brought about, comprising:

said monitoring arrangement providing a test bit, wherein said test bit, being periodically repetitively provided by the monitoring arrangement, having a predetermined binary value, and, subject to control by said pulses of both clock pulse trains in parallel with the data signal bits is readable into the memory arrangement and, together with these signal bits, is readable out again therefrom, the monitoring arrangement at its initialization enabling reading out of data signal bits and test bits previously read into the memory arrangement with delay such that following thereafter, a phase relationship exists between test bits read into and read out from the memory arrangement corresponding to said time separation between read-in time points and respective read-out time points corresponding thereto for data signal bits into or out of the memory arrangement, the monitoring arrangement causing a time limited disabling of the memory arrangement with regard to the reading out of data signal bits and test bits upon the exceeding of a defined predetermined change in this phase relationship by providing said control signal, such that the desired phase relationship between test bits read in and read out is at least substantially reestablished.

4,881,243
SIGNAL TIMING CIRCUITS

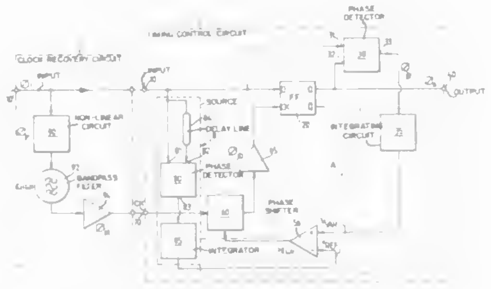
Steven Whitt, Ipswich, England, assignor to British Telecommunications public limited company, United Kingdom

Filed Jun. 6, 1985, Ser. No. 741,881

Claims priority, application United Kingdom, Jun. 7, 1984, 8414517

Int. Cl.⁴ H04L *7/02*

U.S. Cl. 375—4 36 Claims



30. A retiming circuit for digital signals ϕ_i comprising:

(a) means for providing timing signals;

(b) phase adjusting means for adjusting the phase of the timing signals;

(c) gating means for gating digital signals (ϕ_i) with the timing signals when adjusted by said phase adjusting means, thereby to generate re-timed digital signals (ϕ_o); and

(d) negative feedback control means having a first input connected to receive the digital signals (ϕ_i), a second input connected to receive re-timed digital signals (ϕ_o) and an output connected to said phase adjusting means and providing at said output a signal representing the phase difference between singals applied to its first and second inputs whereby said negative feedback control means is responsive to the phase difference between the digital signals and said negative feedback control means is adapted to adjust the phase adjusting means so as to maintain a predetermined phase relationship between the timing signals and the digital signals;

wherein said circuit is arranged to control the phase of clock signals relative to non-return-to-zero coded of binary digital signals.

4,881,244
TRANSMISSION-RECEPTION EQUIPMENT FOR A BUS SYSTEM

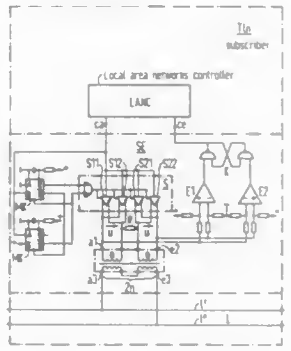
Friedrich Haug, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Dec. 11, 1987, Ser. No. 131,746

Claims priority, application Fed. Rep. of Germany, Dec. 11, 1986, 3642374

Int. Cl.⁴ H04B *3/00;* **H04L** *25/00*

U.S. Cl. 375—36 12 Claims



1. A transmission-reception equipment for a bus system having two signal conductors, having a difference bus transmission equipment connected respectively to the two signal conductors via difference outputs thereof and capable of two signal statuses, and having a difference bus reception equipment with two difference inputs connected respectively to the two signal conductors, having a repeater having a primary winding subdivided into first and second at least approximately identical halves and having a secondary winding having its two ends connected to the two signal conductors, respectively, having two ends of the two primary winding halves farthest opposed from one another connected to at least one difference bus receiver, and having a resistor connected between two adjacent center ends of the two primary winding halves, comprising the secondary winding having an at least approximately identical number of turns as the primary winding; two ends of the first primary winding half connected to two difference outputs of at least one first difference bus transmitter, two ends of the second primary winding half connected to two difference outputs of at least one second difference bust transmitter having its input side connected parallel to an input side of the first difference bus transmitter, and the value of resistance of said resistor being high in comparison to an output resistance of the bus line transmitters and low in comparison to an input resistance of the bus line receiver.

4,881,245
IMPROVED SIGNALLING METHOD AND APPARATUS

Watson F. Walker, Pittsford, and Jack L. Sutherland, Rochester, both of N.Y., assignors to Harris Corporation, Rochester, N.Y.

Continuation of Ser. No. 510,267, Jul. 1, 1983, abandoned. This application Mar. 27, 1987, Ser. No. 31,190

Int. Cl.⁴ H04B *7/02*

U.S. Cl. 375—38 17 Claims

15. A communication system comprising:

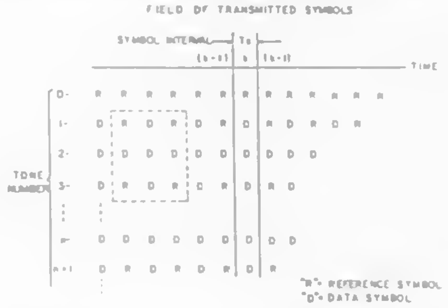
an input signal representing information to be transmitted;

a predetermined reference signal;

modulating means;

control means receiving said input signal and said reference signal to selectively apply either said input signal or said reference signal to said modulating means, said modulating means being operable to modulate a plurality of different tones in response to the signal selectively applied by said control means to produce a plurality of modulated tones; and

demodulating means to demodulate said plurality of modulated tones and to recover said input signal, wherein each element of said input signal is recovered with reference to elements of said predetermined reference signal transmitted on the same tone.



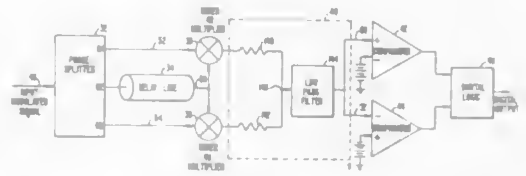
4,881,246
METHOD AND APPARATUS FOR DEMODULATING A CLASS OF M-ARY PHASE SHIFT KEYED (PSK) SIGNALS

James C. Long, Sunnyvale, Calif., assignor to First Pacific Networks, Sunnyvale, Calif.

Filed Feb. 28, 1989, Ser. No. 317,211

Int. Cl.⁴ H04L *27/22*

U.S. Cl. 375—84 7 Claims



1. A method for demodulating an M-ary phase shift keyed (MPSK) signal wherein modulation is constrained to phase transitions between adjacent phase states, said method comprising the steps of:

dividing a source signal into three paths with a preselected phase relationship among a first phase component, a second phase component and a third phase component;

delaying said second phase component by nominally one bit period, said delayed second phase component having a phase difference relative to both said first phase component and said third phase component, to produce a delayed-phase component;

mixing a representation of the delayed-phase component and said first phase component to produce a first mixed signal;

mixing a representation of the delayed-phase component and said third phase component to produce a second mixed signal;

combining said first mixed signal and said second mixed signal to produce a weighted mixed signal according to expected input signal type; and

comparing said weighted mixed signal against preselected decision thresholds in at least one comparator means to produce a digital output signal.

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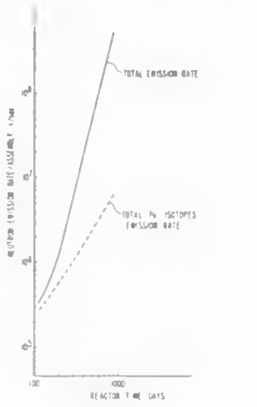
4,881,247
MEASURING NUCLEAR FUEL BURNUP

Richard C. Smith, O'Hara Township, Allegheny County; John Bartko, Monroeville, and Arnold H. Fero, Plum Borough, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation of Ser. No. 91,359, Aug. 28, 1987, abandoned, which is a continuation of Ser. No. 362,005, Mar. 25, 1982, abandoned. This application Mar. 16, 1989, Ser. No. 325,016

Int. Cl.^{4} G21C *17/00*

U.S. Cl. 376—257 18 Claims



1. A method of measuring the burnup of nuclear fuel comprising:

(A) measuring the fast neutron counting rate of said nuclear fuel;

(B) reading said burnup off a curve which expresses the relationship between neutron emission rate and burnup for a nuclear fuel of comparable history, where the emission rate which corresponds to said neutron counting rate is obained by multiplying said neutron counting rate by the ratio of the neutron emission rate given by said curve for nuclear fuel of comparable history and known burnup to its similarly measured counting rate, and is defined by the formula

$$n/s = 1.34\times10^{-3}3.92$$

where n/s equals neutron emission rate.

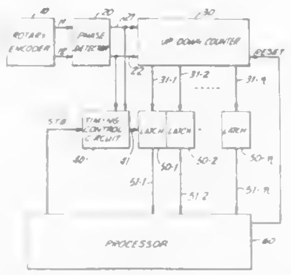
4,881,248
COUNTER CIRCUIT PROVIDED WITH MEANS FOR READING OUT COUNTED DATA BY READ-COMMAND SIGNAL APPLIED ASYNCHRONOUSLY WITH CLOCK SIGNALS TO BE COUNTED

Masako Korechika, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Aug. 28, 1987, Ser. No. 92,050

Int. Cl.^{4} H03K *21/12, 21/40*

U.S. Cl. 377—17 5 Claims



1. A positional information input circuit comprising:

a rotary encoder for generating two kinds of pulse signals representative of positional information;

a counting signal generation circuit coupled to said rotary encoder and generating an up-counting signal or a down-counting signal in response to said two kinds of pulse signals;

an up-down counter executing up-counting and down-counting in response to said up-counting signal and said down-counting signal, respectively;

a processor generating a read-command signal to read a counted value of said up-down counter into said processor;

a read-command signal inhibiting circuit receiving said read-command signal from said processor and generating a controlled read-command signal;

a plurality of latch circuits coupled to respective stages of said up-down counter and enabled when said controlled read-command signal is applied thereto;

a first applying means coupled to said read-command signal inhibiting a circuit and said latch circuits for applying said controlled read-command signal to said latch circuits; and

a second applying means coupled to said counting signal generation circuit, said up-down counter and said read-command signal inhibiting circuit for applying said up-counting signal and said down-counting signal to both said up-down counter and said read-command signal inhibiting circuit;

said read-command signal inhibiting circuit inhibiting said read-command signal, when at least one of said up-counting signal and down-counting signal was applied to said read-command signal inhibiting circuit, until said up-down counter terminates an execution of the up-counting or down-counting in response to the same up-counting or down-counting signal which has been applied to said read-command signal inhibiting circuit and thereafter generating said controlled read-command signal.

4,881,249
CHARGE TRANSFER MATRIX TYPE PHOTODETECTOR WITH INTEGRATED CHARGE-FILTERING DEVICE

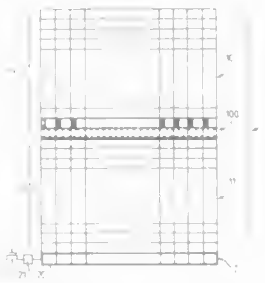
Jacques Chantemps, St. Egreve, and André Vidal, Brignoud, both of France, assignors to Thomson-CSF, Puteaux, France

Filed May 1, 1989, Ser. No. 345,232

Claims priority, application France, May 3, 1988, 88 05904

Int. Cl.^{4} G11C *19/28;* H01L *29/78, 27/14;* H04N *3/14*

U.S. Cl. 377—60 8 Claims



1. A charge transfer matrix photodetector of the type comprising:

a first, partly photosensitive zone, wherein said charges are stored, said first zone having, on a semiconducting substrate:

a plurality of parallel charge transfer devices;

transfer gates, surmounting the transfer channels and being capable of receiving low or high control signals to apply a low or high potential level to the transfer channels, so as to enable the transfer of charges therein;

a second zone, connected to the first zone, capable of receiving at least a portion of the charges stored in the first zone, and comprising:

a read-out buffer extended by a read diode;

a read gate, surmounting the read-out buffer, and being capable of receiving low or high control signals to apply a low or high potential level to the read-out buffer, so as to enable the transfer of the charges, contained in the read-out buffer, into the read diode; and,

filtering means acting on the read diode to deliver, at output, only useful charges corresponding to a useful portion of the incident light radiation,

wherein the filtering means comprise, in the first zone, an ancillary zone having a region with implantation of a type opposite to that of the substrate, parallel to the transfer channels and followed by a region for the passage of charges, said region being located in the extension of the transfer channels and being surmounted by an ancillary gate capable of receiving high or low ancillary control signals, to apply low or high ancillary levels of potential to the passage region, said ancillary levels of potential being respectively smaller, in terms of absolute value, than the low or high levels of potential produced by the other gates, thus enabling a first filtering of the charges to be performed before their transfer into the read-out buffer.

4,881,250
COMPACT CHARGE-COUPLED DEVICE HAVING A CONDUCTIVE SHIELDING LAYER

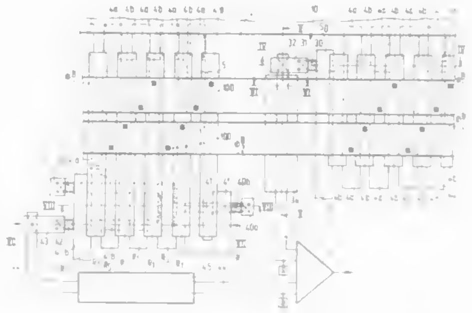
Geert J. T. Davids, and Wiegert Wiertsema, both of Eindhoven, Netherlands, assignors to U.S. Philips Corp., New York, N.Y.

Filed Jul. 7, 1988, Ser. No. 216,551

Claims priority, application United Kingdom, Jul. 10, 1987, 8716237; Netherlands, Jul. 21, 1987, 8701720

Int. Cl.^{4} G11C *19/28, 11/34;* H01L *29/78*

U.S. Cl. 377—60 11 Claims



1. A charge-coupled device, comprising a semiconductor body defining a charge transfer channel, charge storage and charge transfer electrodes for, respectively, defining charge wells within the charge transfer channel and transferring charge between charge wells, clock lines for providing clock signals to the charge storage and transfer electrodes for controlling movement of charge between charge wells and to an output connection of the charge transfer channel, signal processing means for processing an output from the output connection of the charge transfer channel, and a conductive path connecting the output connection and the signal processing means, characterized in that the conductive path crosses at least one of the clock lines and a conductive shielding layer extends between and is electrically isolated from said at least one clock line and the conductive path.

4,881,251
COMPUTED TOMOGRAPH APPARATUS

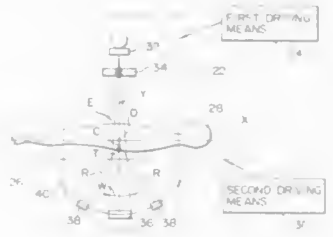
Kyojiro Nambu, and Toshihiro Rifu, both of Tochigi, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jul. 29, 1987, Ser. No. 78,969

Claims priority, application Japan, Jul. 31, 1986, 61-181061; Aug. 5, 1986, 61-182650; Aug. 5, 1986, 61-182651; Aug. 19, 1986, 61-192015

Int. Cl.^{4} A61B *6/02*

U.S. Cl. 378—7 17 Claims



1. A computed tomograph apparatus for obtaining tomograms of a subject under examination, comprising:

a supporting table for supporting said subject, and on which a tomogram image pick-up area is defined;

an X-ray source for radiating X-rays onto said image pick-up area, said X-rays proceeding along a slice plane which intersects with said image pick-up area;

a principal detector provided in said slice plane, for detecting X-rays transmitted linearly through said subject placed in said image pick-up area; and

a scattered ray detector provided in an arc existing in a plane perpendicular to said slice plane, for detecting scatter X-ray radiation not transmitted linearly through said subject, said arc having its center in said slice plane and a radius which is equal to the distance between said center and said principal detector.

4,881,252
SHELTERED HOUSING SCHEME COMMUNICATIONS SYSTEM

David Jones, North Humberside, and David I. Abbott, West Yorkshire, both of England, assignors to Tunstall Telecom Limited, Yorkshire, England

Filed Jun. 15, 1988, Ser. No. 207,124

Claims priority, application United Kingdom, Jun. 16, 1987, 8714003

Int. Cl.^{4} H04M *11/04, 1/64*

U.S. Cl. 379—38 10 Claims

10. A speech emergency call system comprising a central control unit; a system cable connected to the central control unit; a plurality of speech modules each capable of handling two-way speech communication, all the speech modules being connected in parallel to the central control unit by the system cable; each speech module having an associated call initiator

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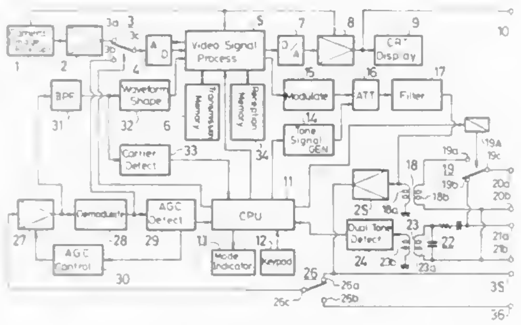
and means for transmitting a unique identity code from that speech module to the central control unit when a call is initiated from that speech module; a plurality of master units, each having a unique distinguishing code, each master unit comprising means whereby it is connectable to the system cable, alerting means capable of response to a call initiated from a speech module and two-way speech communication control means; the control unit including recognition means for recognising the identity code of any calling speech module, and routing means for initially routing all calls from a first group of speech modules as recognized by said recognition means to a first one of said master units, and for intially routing all calls from a second group of speech modules as recognized by said recognition means to a second one of said master units; an interface unit connected between the central control unit and a line of the public telephone network, the interface unit including autodial means for automatically diailing a telephone number; each master unit and the central control unit including emergency call means operative to cause an outgoing call to be autodialled over the public telephone network and for the master unit to be placed in two-way speech communication once the outgoing call has been connected; and the central control unit including means responsive to an incoming call from the public telephone network and for routing that call to any selected master unit, each master unit having means enabling it to receive an incoming call.

4,881,253
MIS-DETECTION OF A VIDEO SWITCHOVER KEY SIGNAL

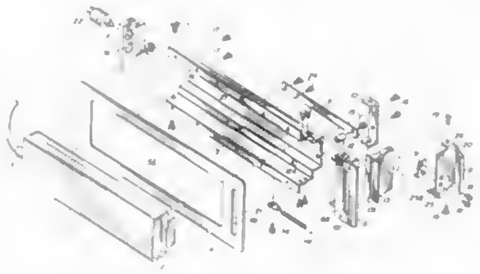
Kenichi Takeuchi; Shin Saito, both of Tokyo; Shoji Araki, and Atsushi Nakayama, both of Kanagawa, all of Japan, assignors to Nippon Telegraph and Telephone Corporation and Sony Corporation, both of Tokyo, Japan
Filed Jun. 8, 1988, Ser. No. 203,927
Claims priority, application Japan, Jun. 19, 1987, 62-152633
Int. Cl.⁴ H04M *11/00;* H04N *7/14*
U.S. Cl. 379—54 6 Claims



1. A television telephone system comprising:
(a) an image pick-up section;
(b) a picture receiving display section, said image pick-up section and said picture receiving display section counted within a single housing;
(c) an image pick-up control section for timebase-compressing a desired video signal from said image pick-up by said image pick-up section, transmitting through telephone lines said desired video signal to a television telephone set of the other party, processing said desired video signal and an audio signal from a terminal apparatus of said other party and reproducing the video signal on said picture receiving display section;
(d) a tone signal generating means for generating a tone signal having a predetermined duration, said tone signal being formed of at least of two frequencies and positioned at least at the starting portion of said transmission video signal;
(e) a detecting means for detecting said tone signal having at least two frequencies from a received transmission signal; and
(f) a means for starting the reception processing of the received transmission signal when said tone signals are detected for more than a predetermined ratio of a predetermined period of time from the received transmission signal.

4,881,254
HAND-HELD PAY TELEPHONE AND HOLDER

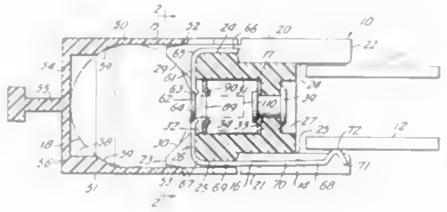
Edward J. Hollewed, Naperville; John D. Goeken, Plainfield, and Jerome L. Oldani, Aurora, all of Ill., assignors to GTE Mobilnet Incorporated, Houston, Tex.
Filed Dec. 28, 1987, Ser. No. 138,172
Int. Cl.⁴ H01M *11/00*
U.S. Cl. 379—144 37 Claims



1. In combination:
a hand-held telephone and a telephone holder;
said telephone including a retainer and a latch receiver;
said telephone holder including a telephone receiving cavity, adapted to receive said telephone in response to the manual placement of said telephone within said cavity, a retainer receiver adapted to accept said retainer, a latch operated automatically to engage said latch receiver and in cooperation with said retainer receiver accepting said retainer, maintaining said telephone within said telephone receiving cavity, and a matching plate having an unobstructed opening therein adapted to receive a predetermined implement inserted from the exterior of said telephone holder into said telephone holder to effect movement of said latch and disengagement of said latch receiver so that said telephone may be removed from said telephone holder.

4,881,255
PROTECTOR MODULE FOR QUICK CLIP TERMINAL TELEPHONE CONNECTOR BLOCKS

Helmuth Neuwirth, Garden City, and Carl H. Meyerhofer, Dix Hills, both of N.Y., assignors to Porta Systems Corp., Syosset, N.Y.
Filed Sep. 19, 1988, Ser. No. 245,574
Int. Cl.⁴ H02H *9/04*
U.S. Cl. 379—412 3 Claims

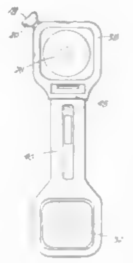


1. An improved subscriber circuit protector module for use with quick clip type telephone connector blocks comprising: a base element having a quick clip receiving recess therein, a

cover element partially overlying said base element, a plurality of elongated quick clip contact elements at least partially surrounding said base element and resiliently maintained thereon, said contact elements having a resilient arm thereon extending into said quick clip retaining recess in said base element and defining a resilient opening in a base portion thereof; said base element having a second recess therein, a ground contact element secured within said recess and having resilient openings therein in aligned relation relative to said openings in said clip contact elements; at least one three-element gas tube having elongated electrodes extending radially from a principal axis thereof, said electrodes each penetrating an opening in one of said clip contact elements and an opening in said ground contact element to establish electrical communication from said quick clip contact element to said ground contact element, said ground contact element having a free end thereon extending outwardly of said base element for communicating with a source of ground potential.

4,881,256
ADJUSTABLE HEAD SUPPORT FOR TELEPHONE HANDSETS

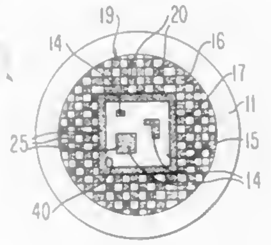
George E. Malekos, 897 Elliott Rd., Paradise, Calif. 95969
Continuation-in-part of Ser. No. 726,141, Apr. 22, 1985, abandoned. This application Mar. 25, 1987, Ser. No. 31,159
Int. Cl.⁴ H04M *1/05;* A47F *5/00*
U.S. Cl. 379—449 6 Claims



1. An adjustable head support for telephone handsets comprising:
a snap-on mounting ring sized to fit snugly over the earpiece housing ring of a standard telephone handset;
said mounting ring rimmed at two opposite ends with inwardly faced retainer edges;
a socket support member affixed to the outward surface of said mounting ring;
a concave receptacle in said socket support member sized for snap-in connection of
a ball member affixed a one end of
a single-strap headband;
said ball member reinforced at the headband connection by flanged extensions attached to the ball and extending along both flat sides of said headband;
said headband sized for the human head and having adjustability for variations in head size through pliability in the band material;
said headband of semicircular configuration with the ball-attach end angled outwardly and the tip of the opposite end angled outwardly to form a release flap;
said ball and said concave receptacle in cooperative snap-in attachment and snap-out detachment constituting an operational ball and socket connection;
said ball having on the rounded end thereof a short tab extension and
said socket having three rectangular grooves in the base thereof;
said tab on said ball inserted into one of said socket grooves when said ball and socket are engaged providing firm positioning to said headband and said telephone handset;
said ball tab moveable from groove to groove by force applied to said headband adjacent said reinforcing flange extensions said headband and ball connection;
said ball and socket with said ball tab and said socket grooves cooperatively providing adjustability to said headband.

4,881,257
DEFORMATION FREE X-RAY EXPOSURE MASK FOR X-RAY LITHOGRAPHY

Kenji Nakagawa, Isehara, Japan, assignor to Fujitsu Limited, Kawasaki, Japan
Filed Oct. 23, 1987, Ser. No. 111,679
Claims priority, application Japan, Oct. 28, 1986, 61-254790
Int. Cl.⁴ G21K *5/00*
U.S. Cl. 378—35 10 Claims



1. An X-ray exposure mask used for patterning a resist layer of a semiconductor wafer using an X-ray beam, said mask comprising:
a membrane, translucent to the X-ray beam, having a planar surface including a centrally located X-ray mask region on the surface and a non-mask region surrounding said X-ray mask region; and
a layer of X-ray absorbing material superposed on said planar surface of said membrane and comprising a first layer portion coextensive with said X-ray mask region and patterned for selectively exposing the X-ray mask region of the membrane surface in a corresponding pattern for selective transmission of an X-ray beam therethrough, and said layer of X-ray absorbing material further comprising a second layer portion coextensive with said non-mask region and patterned for reducing a pattern density of the X-ray absorbing material superposed on the non-mask region and balancing stress in said layer of X-ray absorbing material in the first and second layer portions.

4,881,258
PORTABLE TYPE MOBILE RADIO TELEPHONE

Ryoichi Kaiwa; Michiyoshi Kudo; Keiki Kobayashi, all of Yokohama, Japan; Yuichiro Suganuma, Schaumburg, Ill., and Naotomo Adachi, Yokohama, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Aug. 19, 1987, Ser. No. 87,038
Claims priority, application Japan, Aug. 20, 1986, 61-194301; Aug. 20, 1986, 61-194302; Aug. 20, 1986, 61-194303; Aug. 21, 1986, 61-196163
Int. Cl.⁴ H04M *1/02*
U.S. Cl. 379—58 9 Claims

2. A portable type mobile radio telephone comprising:
a transceiver unit with a flat configuration;
battery holding means for holding a battery which is placed on one wider surface of said transceiver unit; and
a cradle for holding a handset which is formed on the one wider surface of said transceiver unit to be in parallel to

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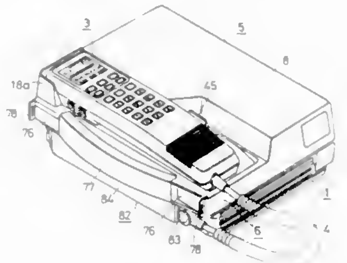
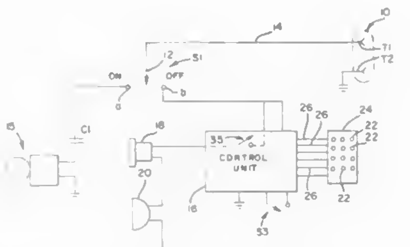
said battery holding means, said cradle having engaging means engaged with said handset;



said cradle mounted on a mounting rack which is integrally formed with said battery holding means.

4,881,259
ANSWERING MACHINE WITH CORDLESS TELEPHONE

James Scordato, Elmhurst, Ill., assignor to Dynascan Corporation, Chicago, Ill.
Filed Jan. 6, 1989, Ser. No. 294,429
Int. Cl.⁴ H04B *7/26*
U.S. Cl. 379—58 11 Claims

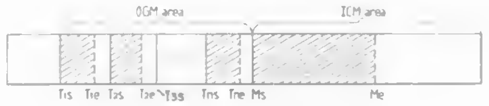


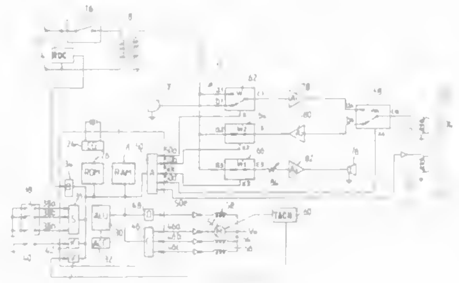
1. In combination with a telephone answering machine having connector means for making connection to telephone lines, said answering machine including recording and playing means operable to a playing mode for sending out onto telephone lines a recorded announcement and to a recording mode for recording incoming messages thereafter, and system control means operable between an active mode establishing communication between said telephone lines and telephone means and a passive mode establishing communication between said telephone lines and said recording and playing means:

telephone means in the form of a cordless telephone means including a base unit and a portable handset each having transmitter and receiver means, said base unit transmitter including means for transmitting to said handset receiver means ringing signals and incoming messages received from said telephone lines, said handset transmitter means having means for transmitting to said telephone lines through said base unit receiver means voice communications from the user and command means for transmitting to said base unit receiver means user-chosen control signal conditions, said system control means including means responsive to receipt of said control signal conditions by said base unit receiver means for operating said system control means between said active and passive modes, and said recording and playing means, said system control means, and said base unit are contained within a common housing.

4,881,260
AUTOMATIC TELEPHONE ANSWERING DEVICE WITH MULTIPLE OUTGOING MESSAGES AND SELECTING MEANS

Sayling Wen, Taipei, Taiwan, assignor to Inventa Electronics Co., Ltd., Taipei, Taiwan
Filed Dec. 16, 1987, Ser. No. 133,309
Int. Cl.⁴ H04M *1/64, 1/65*
U.S. Cl. 379—76 9 Claims





1. An automatic telephone answering device having an outgoing message recording operation mode and an automatic answering operation mode, comprising:

ring detecting circuit means for detecting an incoming call and generating a signal when an incoming call is detected;

phone line coupling means responsive to said signal generated by said ring detecting circuit means for connecting the device to a phone transmission line;

a recording medium having an outgoing message recording area which is divided into multiple sections, each of said outgoing message sections having a start position and an end position and being adapted to record one of a plurality of outgoing messages required for explaining different situations;

transducer means for recording messages on said recording medium or picking up the recorded messages therefrom;

drive means for advancing said recording medium relative to said transducer means with either a normal or a fast speed in either a forward or a backward direction;

selecting means for selecting one of said multiple outgoing message sections in order to record by said transducer means a specific outgoing message in said selected one section or play back by said transducer means a specific outgoing message pre-recorded in said selected one section such that a plurality of specific outgoing messages can be recorded respectively in said multiple outgoing message sections of said outgoing message recording area of said recording medium and a calling party can be greeted with one of the specific outgoing messages recorded in said selected section; and

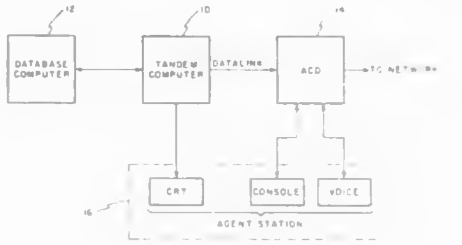
control circuit means including memory means for storing said start position and end position of each of said outgoing message sections, said control circuit means being coupled to said ring detecting circuit means, said phone line coupling means, said transducer means, said drive means, and said selecting means and being programmed so that:

said outgoing message recording operation mode, when a user actuates said selecting means to select one of said outgoing message sections for recording a specific outgoing message, said control circuit means enables said drive means to advance said recording medium with a fast speed to the start position of said selected section and then enables said transducer means to record said specific message in said selected section while said drive means is enabled to continue to advance said recording medium with a normal speed until the end position of said selected section is arrived, and

during said automatic answering operation mode, when an incoming call is received, as soon as said phone line coupling means has coupled this device to the phone transmission line in response to the signal generated by said ring detecting circuit means, said control circuit means enables said drive means to advance said recording medium with a fast speed to the start position of a specific outgoing message section pre-selected through said selecting means by the user, causes said transducer means to play back the outgoing message recorded in the selected section to the calling party while said drive means is actuated to continue to advance said recording medium with said normal speed until the end position of said selected section has arrived.

4,881,261
METHOD FOR PREDICTIVE PACING OF CALLS IN A CALLING SYSTEM

Jean R. Oliphant, Aurora; Harold W. Workman, Naperville, both of Ill., and Jasvantrai C. Shah, Richardson, Tex., assignors to Rockwell International Corporation, El Segundo, Calif.
Filed Jun. 29, 1988, Ser. No. 245,097
Int. Cl.⁴ H04Q *3/00*
U.S. Cl. 379—215 5 Claims



1. A method of automatically selecting and dialing customer telephone at a paced rate and keeping a plurality of agent stations at full occupancy, comprising:

providing a database containing telephone numbers to be called;

providing a computer for controlling the pacing of telephone numbers to be called connected to said database;

providing an automatic call distribution system for dialing the telephone numbers and establishing connection to the customer telephone and connected to said computer;

providing a plurality of agent stations connected to said computer and to said automatic call distribution system;

determining the maximum number, K, of calls to be in progress at any time by calculating the maximum number, K, such that an average number, Q, of calls waiting in a queue does not exceed a selected delay, DMAX;

initiating a new call only when there are less than K calls existing; and

for a set up state determining the number, NQ, of calls waiting in queue from the maximum permissible number, QMAX, of calls waiting in queue less a known number, NS, of calls dialed and waiting a response;

determining the probability P(NS) of having exactly NS calls in the set-up state from

$$P(NS)=e^{(-R^{*}S)}(R^{*}S)^{NS}/NS$$

where R is the rate of connection to agents and S is the average call set-up time, setting QMAX equal to a large value;

determining the average number, Q, of calls waiting in queue from

$$Q = F^{*}\sum_{i=0}^{QMAX-1}(R^{*}S)^{i}(QMAX-i)/i!$$

where

$$1/F \text{ is } \sum_{i=0}^{K}(R^{*}S)^{i}/i!;$$

determining the average delay D, in queue from D=Q/R; decreasing QMAX and recalculating Q until D exceeds DMAX; and

determining the value, K, from K=QMAX+M

4,881,262
ELECTRONIC HYBRID CIRCUIT

Peter Meschkat, Waiblingen, and Jurgen Zanzig, Weil der Stadt, both of Fed. Rep. of Germany, assignors to Alcatel N.V., Amsterdam, Netherlands
Filed Nov. 24, 1987, Ser. No. 124,982
Claims priority, application Fed. Rep. of Germany, Nov. 25, 1986, 3640127
Int. Cl.⁴ H04B *3/03*
U.S. Cl. 379—402 3 Claims

1. An analog electronic hybrid circuit having a predetermined complex internal impedance for connecting a bidirectional two-wire line to a unidirectional receive line and a unidirectional transmit line so as to obtain an impedance match, said hybrid circuit having only one capacitance component and comprising:

a complex impedance network consisting essentially of a parallel combination of said only one capacitance component and a resistance;

a controlled current source having an associated transfer factor and including

a first control input for accepting a control current,

a controlled current output for supplying an output current to the bidirectional line, and

a feedback input to which is applied a feedback signal representative of the current flowing through the bidirectional two-wire line;

an amplifier having

a first input coupled to the bidirectional two-wire line,

a second input coupled to the receive line, and

an output coupled by means of the complex impedance network, to the control input of the controlled current source to thereby produce said control current, said amplifier having an associated gain factor;

a transformer having

a single secondary winding coupled across the two-wire line, and

a primary winding through which passes the output current from the controlled current source and which together with the single secondary winding, defines a transformation ratio and an effective transformer loss resistance;

at least one measuring resistor for producing said feedback signal; and

means for applying to the transmit terminal an output volt-

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age which is obtained by summing the voltage across the complex impedance network with a second voltage proportional to the current flowing in the bidirectional two-wire line,

wherein said predetermined complex internal impedance consists essentially of

a series component which is resistive and has an effective resistance determined only by (a) the transformation ratio, and (b) by the effective combined resistance of the transformer loss resistance, of said measuring resistor and of any other resistances in series with the transformer, and

a parallel component effectively coupled in series with said series component and having an effective complex impedance equal to the value of the complex impedance network multiplied by (a) the gain of the amplifier, (b) the transformation ratio of the transformer, and (c) the transfer constant of the controlled current source.

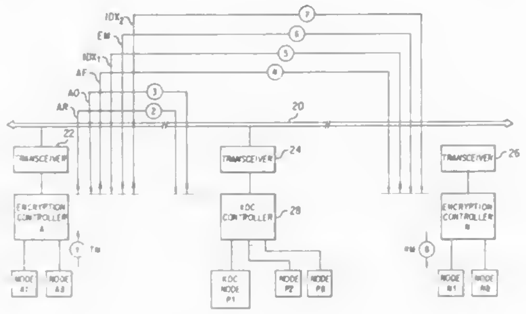
4,881,263
APPARATUS AND METHOD FOR SECURE TRANSMISSION OF DATA OVER AN UNSECURE TRANSMISSION CHANNEL

B. J. Herbison, Clinton, Mass.; Carter Lyman, Merrimack, N.H.; Paul Karger, Acton, Mass.; Bruce Mann, Mason, N.H.; Steve Lipner, Wellesley, Mass., and Arnold Miller, Austin, Tex., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Sep. 25, 1987, Ser. No. 101,125

Int. Cl.^{4} H04L *9/02*

U.S. Cl. 380—21 27 Claims



1. A method for transmitting data packets in a secure manner on an unsecured data transmission channel having a plurality of nodes coupled thereto, each of said nodes including a memory for storing encryption key words for use in encrypting said data packets, said method comprising the steps of:

generating at one of said nodes a data packet for transmission to a target one of said nodes;

searching the memory at said host node to locate an encryption key word designated for use with data packets to be processed by said target node;

assembling, upon determining that no said encryption key word is stored, a key request (AR) data packet; and

transmitting said AR data packet to a key distribution (KDC) one of said nodes to request assignment of an encryption key word for use in encrypting data packets to be processed by said host and target nodes.

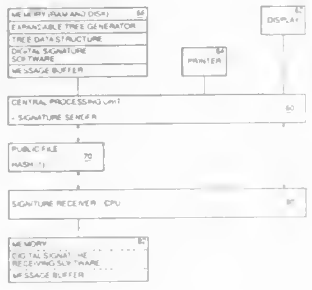
4,881,264
DIGITAL SIGNATURE SYSTEM AND METHOD BASED ON A CONVENTIONAL ENCRYPTION FUNCTION

Ralph C. Merkle, 1134 Pimento Ave., Sunnyvale, Calif. 94087

Filed Jul. 30, 1987, Ser. No. 79,675

Int. Cl.^{4} H04K *1/00*

U.S. Cl. 380—25 9 Claims



8. A method of generating digital signatures for signing a series of messages M_i, the steps of the method comprising:

defining a one way hash function F;

defining a tree of signature nodes having a root node and a multiplicity of additional nodes $\{node_i\}$, wherein said tree is infinitely expandable so that each node can be the parent node for a plurality of subnodes, and each subnode has one parent node;

wherein said root node and at least a multiplicity of said additional nodes include:

message signing means for signing a message using a predefined one time signature, and

subnode signing means for signing a plurality of subnodes using a predefined one time signature;

generating a root node authentication value for authenticating said root node by applying said function F to said message signing means and said subnode signing means for said root node, and storing said root node authentication value in a nonsecret location;

generating a signature for message M_i by

(a) generating a message signature for message M_i using said message signing means of node i;

(b) relating said message signature to said root node authentication value by using said subnode signing means for signing each node in said tree which forms a chain of subnodes between said root node and node i; wherein said step of signing each node in said chain is performed by the steps of:

generating a HASH value for said node by applying said function F to said message signing means and said subnode signing means for said node; and

using said subnode signing means of the parent node of said node to generate a signature for said HASH value;

whereby the receiver of message M_i can authenticate message M_i by using said predefined one time signatures to relate said message signature to said root node authentication value.

4,881,265
APEX LOUDSPEAKER

James M. Gala, Jr., Rochester, N.Y., assignor to Soundwave Fidelity Corporation, Rochester, N.Y.

Filed Sep. 13, 1988, Ser. No. 243,711

Int. Cl.^{4} H04R *5/02*

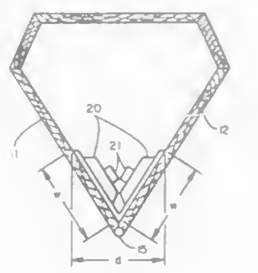
U.S. Cl. 381—90 10 Claims

1. A loudspeaker comprising:

a. a pair of mounting walls diverging from an apex at an angle of 70° or less, divergent ends of said mounting walls at a distance from said apex being joined to a cabinet closure;

b. a tweeter mounted in an upper region of each of said mounting walls so that drivers of said tweeters are angled into proximity with each other, and said tweeters face outward on opposite sides of said apex;

c. said tweeters being mounted as close to said apex as possible so that a distance spanned by said tweeters, from a viewpoint in front of said apex, approximately equals the frontal width of one of said tweeters;



d. a woofer mounted in each of said mounting walls below said tweeters so that drivers of said woofers are angled into proximity with each other, and said woofers face outward on opposite sides of said apex;

e. said woofers being mounted as close to said apex as possible so that a distance spanned by said woofers from said viewpoint in front of said apex approximately equals the frontal width of one of said woofers; and

f. said tweeters being driven by a single tweeter signal, and said woofers being driven by a single woofer signal.

4,881,266
SPEECH RECOGNITION SYSTEM

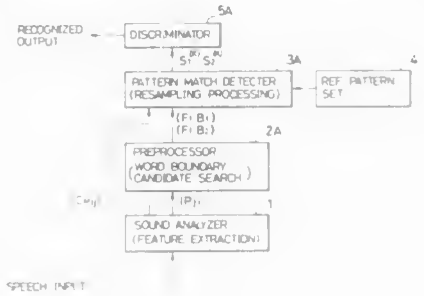
Tsuneo Nitta, Yokohama; Kensuke Uehara, Setagaya, and Sadakazu Watanabe, Kawasaki, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Feb. 27, 1987, Ser. No. 19,781

Claims priority, application Japan, Mar. 19, 1986, 61-59505

Int. Cl.^{4} G10L *5/06, 3/00*

U.S. Cl. 381—43 14 Claims


RECOGNIZED OUTPUT
DISCRIMINATOR
5A
3A
4
PATTERN MATCH DETECTER (RESAMPLING PROCESSING)
REF PATTERN SET
2A
PREPROCESSOR (WORD BOUNDARY CANDIDATE SEARCH)
1
SOUND ANALYZER (FEATURE EXTRACTION)
SPEECH INPUT

1. A speech recognition system comprising:

(a) means for analyzing a speech signal to obtain feature parameters of the speech signal;

(b) means for determining start and end points when sound power of the speech signal analyzed by said analyzing means drops below a predetermined threshold, a maximum power and a maximum power point, calculating a means noise level, calculating at least one threshold on the basis of the mean noise level, and searching the sound power from the maximum power point in both rearward and forward directions to obtain word boundary candidates when the sound power drops below the calculated threshold level for a predetermined frame time interval to obtain likelihoods of the obtained start and end word boundary candidates on the basis of frame interval length;

(c) means for equally dividing the obtained speech intervals of the obtained word boundary candidates into some sampling points to sample the feature parameters and calculating similiarities between the sampled feature parameters and reference pattern set, at each of the sampling points of the speech interval in the order of the likelihoods from the highest liklihood down to a predetermined lower likelihood; and

(d) means for discriminating the speech signal as recognized outputs on the basis of the calculated similiarities obtained at a plurality of determined candidate speech intervals and arranged in the order of the likelihood.

4,881,267
ENCODER OF A MULTI-PULSE TYPE CAPABLE OF OPTIMIZING THE NUMBER OF EXCITATION PULSES AND QUANTIZATION LEVEL

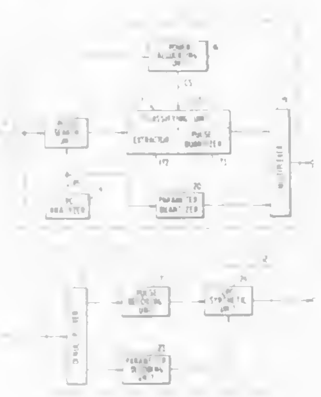
Tetsu Taguchi, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed May 16, 1988, Ser. No. 194,372

Claims priority, application Japan, May 14, 1987, 62-118475

Int. Cl.^{4} G10L *5/00*

U.S. Cl. 381—40 5 Claims



1. An encoder for use in encoding a speech signal into an encoded signal, said speech signal being divided into a succession of frames, said encoder including pulse producing means responsive to said speech signal for producing an excitation pulse sequence including a plurality of excitation pulses in each of said frames, wherein the improvement comprises:

detecting means responsive to said speech signal for detecting electric power of said speech signal to produce a detection signal representative of said electric power by one of a plurality of levels for each of said frames; and

processing means coupled to said pulse producing means and said detecting means for processing said excitation pulse sequence in accordance with said detection signal to produce a processed signal as said encoded signal.

4,881,268
PAPER MONEY DISCRIMINATOR

Shinya Uchida, Kanagawa; Kazuya Kohzu, Nagano; Kiyoshi Fujii, Tokyo, and Moriatsu Kawakami, Kanagawa, all of Japan, assignors to Laurel Bank Machines Co., Ltd., Tokyo, Japan

Filed Jun. 2, 1987, Ser. No. 56,716

Claims priority, application Japan, Jun. 17, 1986, 61-140879; Jun. 17, 1986, 61-92225[U]

Int. Cl.^{4} G06K *9/00*

U.S. Cl. 382—7 3 Claims

1. A bank note discriminator comprising:

light projecting means for projecting light onto a bank note being transported, said light projecting means including a light source and optical fiber bundles for transmitting light from said light source to the surface of the bank note;

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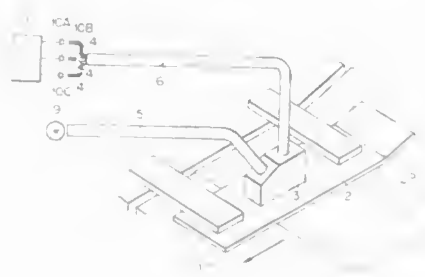
a plurality of detecting means for detecting reflected or transmitted light which issues from a bank note of a certain type in response to the projection of light thereon, said plurality of detecting means being arranged in the widthwise direction of the bank note being transported, each of said plurality of detecting means including optical fiber bundles for transmitting reflected or transmitted light;

two color filter means provided in said optical fiber bundles with respect to each of said plurality of detecting means and selectively transmitting two color components different from each other;

a plurality of calculating means provided with respect to said plurality of detecting means, each calculating means being connected to said optical fiber bundles of one of said plurality of detecting means for producing, in accordance with a time series, the ratio of two color components supplied from said one of said plurality of detecting means;



a plurality of money type identifying means provided with respect to said plurality of calculating means, each money type identifying means successively comparing a pattern signal calculated in a time series by corresponding one of said calculating means from said two color components with reference patterns previously formed and stored in a time series with respect to different money types, and each money type identifying means identifying a money type when judging that the sum of the difference between the pattern signal and one of said reference patterns falls within a predetermined range;

a money type determining means which determines a type of the transported bank note as identifies by said plurality of money type identifying means when all of the types of money respectively identified by said money type identifying means coincide with each other; and

at least one of said plurality of detecting means which are arranged in the widthwise direction of the bank note being transported is positioned such as to be capable of detecting a watermark portion of the bank note being transported.

4,881,269

AUTOMATIC METHOD OF OPTICALLY SCANNING A TWO-DIMENSIONAL SCENE LINE-BY-LINE AND OF ELECTRONICALLY INSPECTING PATTERNS THEREIN BY "SHAPE-TRACKING"

Jean-Marie Billiotte, Noisy Le Grand; Thierry Bouin, Boutigny; Frédéric Basset; Jacques Beauvois, both of Paris, all of France, and Didier Primat, Geneva, Switzerland, assignors to French Limited Company - Centaure Robotique, Montreuil, France

Continuation of Ser. No. 185,313, Apr. 20, 1988, abandoned, which is a continuation of Ser. No. 8,246, Jan. 29, 1987, abandoned. This application Jan. 13, 1989, Ser. No. 296,869

Claims priority, application France, Jul. 29, 1985, 8511535

Int. Cl.⁴ G06K *9/00*

U.S. Cl. 382—8 13 Claims

1. A method of automatically scanning and inspecting the pattern of a two-dimensional scene line-by-line, without recourse to a reference scene, said pattern including at least two different modulation levels for a scanning electromagnetic wave beam, said levels including a first modulation level representative of first scene zone which is constituted by a series of primary shapes which are separated from one another, and a second level of modulation representative of a second scene zone which is constituted by a series of secondary shape situated between said primary shapes, the method comprising the following steps:

emitting the scanning electromagnetic wave beam towards the scene;

inputting a modulated image of the portion of the scene illuminated by the beam of electromagnetic wages;

extracting a succession of parallel and adjacent linear images from the illuminated portion of the scene;

building up said linear images so as to constitute an inspected strip of the scene;

successively delivering for each linear image (I,j) processed of index (j) a primary analog signal (saj) in which variations in analog signal level are sequentially representative of the scene zones intersected by the linear image (I,j);

digitizing the primary analog signal (saj) in each processed linear image (I,j) in order to transform it by a thresholding technique into a secondary binary signal (sbj) having n bits organized sequentially, with a first bits value in a said secondary binary signal being representative of the processed linear image (I,j) intersecting a primary shape at the first bit location, and with a second bit value being representative of the processed linear image (I,j) intersecting a secondary shape at the second bit location, in addition, adjacent bits of the same value or "color" constituting contiguous segments (s,i,j) representative of the linear image (I,j) intersecting primary shapes and secondary shapes in the scene;

the method including the improvement of the following steps in combination:

prior to processing a new line lj of index (j), establishing and storing an electronic shape-change file (F,j−1) representative of previously intersected primary shapes and secondary shapes, and also representative of changes in said shapes in the portion of the scanned strip of the scene which has already been processed line-by-line;

prior to processing each new line lj of index (j), establishing and storing series of digital shape count parameters (f,j−1,i.count) within the electronic shape-change file (F,j−1), each shape having such a parameter associated therewith and each shape count parameter being representative of the number of lines during which the shape (f,j−1,i) has been intersected without interruption by successive preceding linear images;

while processing the line lj, processing the secondary binary signal (sbj) relating to said line lj to electronically determine an electronic segment table (s,j)=(s,i,j) for said line and relating to the geometric characteristics of position and color and of the segments (s,j,i) in the linear image (I,j);

using both the electronic shape file (F,j−1) and the electronic segment table (s,j) to establish a new electronic shape file (F,j) for use in conjunction with the following line of index (j+1), with said new electronic shape file being established electronically in accordance with fixed digital rules for tracking changes in shapes; and

after processing each linear image (I,j), using the old electronic shape-change file (F,j−1) and the segment table (s,j) for the current line of index (j) to update new count parameters (f,j,i.count) for the new shapes (f,j,i) within the new electronic shape-change file (F,j) for use in processing the following line of index (j+1).

4,881,270

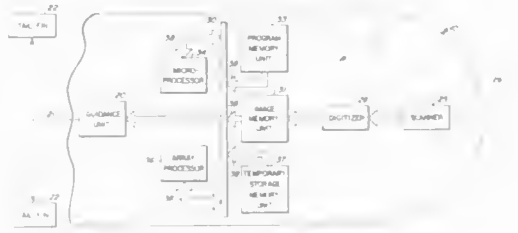
AUTOMATIC CLASSIFICATION OF IMAGES

John A. Knecht, Inyokern, Calif., and Chenoweth, Darrell L., Paoli, Ind., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 28, 1983, Ser. No. 546,755

Int. Cl.⁴ G06K *9/80*

U.S. Cl. 382—17 2 Claims



1. A method for the automatic classification of the image of a ship comprising the steps of:

scanning the ship to generate a two-dimensional image thereof represented by a matrix wherein the values of the elements thereof correspond to energy received from portions of the ship, the elements of the rows of the matrix corresponding to such portions spaced substantially horizontally and longitudinally of the ship and the elements of the columns of the matrix corresponding to such portions spaced substantially vertically;

summing predetermined elements of a plurality of said columns to generate a first vector in which the components thereof correspond individually to the columns of said plurality;

performing a discrete Fourier transform on the components of said first vector and squaring selected coefficients resulting from said transform to generate a feature vector which is the power spectrum of the first vector and which corresponds to said ship;

obtaining a plurality of such feature vectors under relatively ideal scanning conditions, the feature vectors of said plurality thereof corresponding individually to images of a ship of a predetermined class at a plurality of aspect angles and at a predetermined range; deriving from said plurality of feature vectors a decision rule corresponding to said class;

obtaining such a feature vector from such an image of a potential target ship; and

comparing the feature vector from the image of the potential target ship with said decision rule to classify said target ship as being in said class or as being outside said class.

4,881,271

PORTABLE WIRELESS COMMUNICATION SYSTEMS

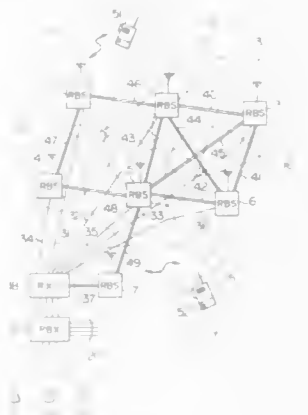
Yukiji Yamauchi, Kokubunji; Nobuo Tsukamoto, Tachikawa, and Masahiro Koya, Kodaira, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 9, 1988, Ser. No. 153,906

Claims priority, application Japan, Mar. 20, 1987, 62-63784; Nov. 6, 1987, 62-279199

Int. Cl.⁴ H04B *1/00*

U.S. Cl. 455—56 12 Claims



1. A wireless communication system comprising:

a plurality of base stations each disposed to cover a predetermined area for wireless communications;

a subscriber station movable within any of said predetermined areas and capable of communicating via radio propagation with the base station covering said predetermined area when said subscriber is positioned therein;

a dedicated line provided between adjacent base stations for exchanging information regarding the status of communication by the respective adjacent base stations;

radio exchange means connected between said base stations and other communication systems for exchanging communication between said other communication systems and any of said base stations;

wherein each of said base stations further comprises means for storing control information including information of status of communication by that base station and information of status of communication of adjacent base stations communicated through said dedicated lines, judging means for determining when a call from the subscriber station is received whether the base station covering the predetermined area into which the subscriber station has moved should respond to the call based on the control information stored in said storing means, and means responsive to said judging means having determined that said call should be responded to by one of said base station for selecting a radio channel by which said subscriber station performs communication based on said control information.

4,881,272

MULTI-BAND FM RECEIVER FOR RECEIVING FM BROADCASTING SIGNALS AND TV BROADCASTING SOUND SIGNALS

Toyokazu Eguchi, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kanagawa, Japan

Filed Mar. 29, 1988, Ser. No. 175,031

Claims priority, application Japan, Mar. 30, 1987, 62-76638

Int. Cl.⁴ H04B *11/16*

U.S. Cl. 455—143 6 Claims

1. A multi-band receiver for receiving a plurality of broadcast signals having first and second groups of frequencies, the

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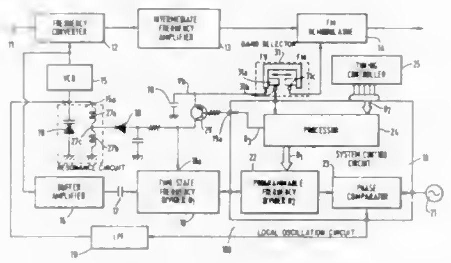
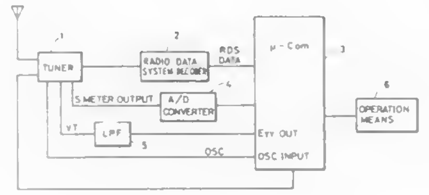
second group including at least two subgroups of frequencies separated by a fixed frequency gap, comprising:
- switch means for selecting one of said first and second groups;
- tuning control means coupled to the switch means for selecting a desired frequency within the selected one of the first and second groups from a predetermined tuning band;
- oscillation means having an oscillation frequency and responsive to said tuning control means for separating signals of the desired frequency from the received broadcast signals and for demodulating the separated signals into audio frequency signals; and
- adjusting means responsive to the switch means and the tuning control means for automatically adjusting the oscillation frequency of the oscillation means when the second group has been selected to substantially remove the fixed frequency gap from the predetermined tuning band.



4,881,273
RDS SYSTEM RADIO

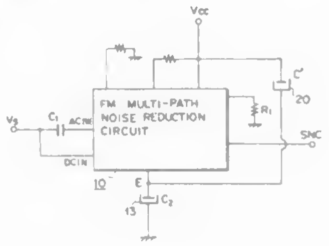
Kazuo Koyama, and Yoshikai Amano, both of Tokyo, Japan, assignors to Clarion Co., Ltd., Tokyo, Japan
Filed Aug. 24, 1988, Ser. No. 236,012
Claims priority, application Japan, Sep. 7, 1987, 62-223773
Int. Cl.⁴ H03J *7/00*
U.S. Cl. 455—161 **6 Claims**



1. An RDS-system radio which can receive broadcast waves each including an RDS code containing a program identification code and which has an automatic tuning operation, comprising:
- tuner means for selecting and receiving a desired broadcasting wave;
- RDS decoder means for decoding the RDS code included in a broadcasting wave received by said tuner means;
- control means coupled to said tuner means and responsive to said RDS decoder means in an arithmetic tuning mode for causing said tuner means to switch from receiving an originally broadcasting wave to a first new broadcasting wave if the program identification code of the original broadcasting wave is different from the program identification code of the new broadcasting wave, and for causing said tuner means not to switch to the first new broadcasting wave but to switch to receive a second new broadcasting wave having a program identification code different from the program identification code of said original broadcasting wave when said program identification codes of said original broadcasting wave and said first new broadcasting wave are identical; and
- operation means for causing said control means to initiate said automatic tuning mode.

4,881,274
FM MULTIPATH NOISE REDUCTION CIRCUIT

Satoru Tazaki, and Yasuhiro Yoshioka, both of Tokyo, Japan, assignors to Clarion Co., Ltd., Tokyo, Japan
Filed Feb. 5, 1988, Ser. No. 152,531
Claims priority, application Japan, Feb. 13, 1987, 62-19759[U]
Int. Cl.⁴ H04B *1/10*
U.S. Cl. 455—296 **2 Claims**



1. An FM multipath noise reduction circuit, comprising;
- a charge/discharge circuit having an output, and having an input to which is applied an S meter voltage which corresponds to a received electric field intensity and which is outputted by an intermediate frequency amplification stage in an FM stereo receiver;
- a first condenser having first and second ends, said first end being connected to said charge/discharge circuit;
- charge/discharge control circuit means for detecting in said S meter voltage an alternating current voltage corresponding to multipath noise and for causing said charge/discharge circuit to respectively discharge and charge said first condenser in response to detection of the presence and absence, respectively, of said alternating current voltage, said charge/disicharge circuit producing at said output thereof a control voltage having a value which varies as a function of the amount of charge on said first condenser;
- a second condenser for rapid charging which has two ends respectively connected to a power source and said first end of said first condenser, said power source further being connected to and supplying power to said charge/discharge circuit and said charge/discharge control circuit means; and
- control means for controlling signal separation of the FM demodulation in said FM stereo receiver as a function of said control voltage from said output of said charge/discharge circuit.

DESIGN PATENTS

GRANTED NOV. 14, 1989

ERRATA

For CLASS	See PATENT NO.
D 6-391	304,523
D14-151	4,564
D34-031	304,575

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DESIGNS

NOVEMBER 14, 1989

304,515
SHOE UPPER

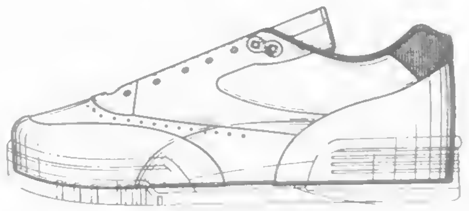
Patricia D. Quan, Hermosa Beach; Angelo Maccano, Simi Valley, and Robert Y. Greenberg, Woodland Hills, all of Calif., assignors to L.A. Gear, Inc., Los Angeles, Calif.

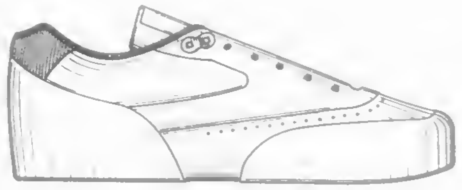
Filed Nov. 10, 1987, Ser. No. 119,415

The portion of the term of this patent subsequent to May 16, 2003, has been disclaimed.

Term of patent 14 years

U.S. Cl. D2—314





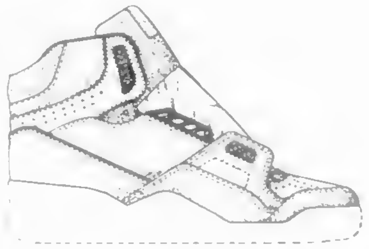
304,516
SHOE UPPER

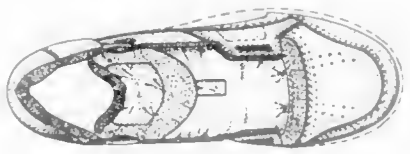
Lawrence Selbiger, and Peter P. Backus, both of Portland, Oreg., assignors to Avia Group International, Inc., Portland, Oreg.

Filed Feb. 2, 1989, Ser. No. 305,207

Term of patent 14 years

U.S. Cl. D2—314





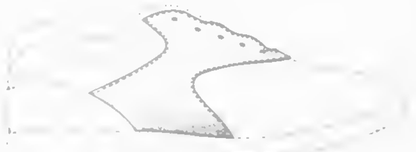
304,517
ELEMENT OF A SHOE UPPER

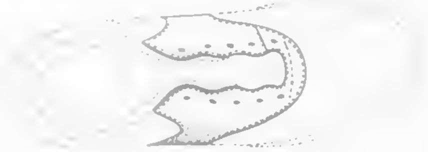
Juan A. Diaz, Weymouth, Mass., assignor to Reebok International Ltd., Canton, Mass.

Filed Feb. 8, 1989, Ser. No. 307,568

Term of patent 14 years

U.S. Cl. D2—314





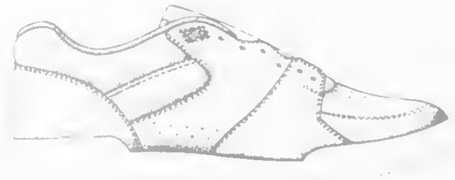
304,518
SHOE UPPER

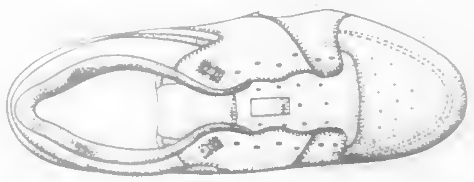
Paul D. Brown, Hingham, and Christopher Kittle, Cohasset, both of Mass., assignors to Reebok International Ltd., Stoughton, Mass.

Filed Feb. 8, 1989, Ser. No. 307,574

Term of patent 14 years

U.S. Cl. D2—314





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304,519

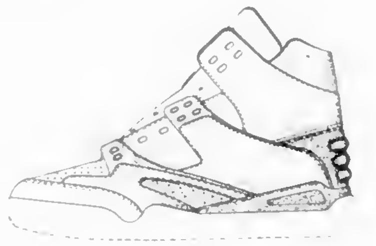
SHOE UPPER

David E. Miller, Carver, Mass., assignor to Reebok International Ltd., Canton, Mass.

Filed Feb. 8, 1989, Ser. No. 307,575

Term of patent 14 years

U.S. Cl. D2—314



304,520

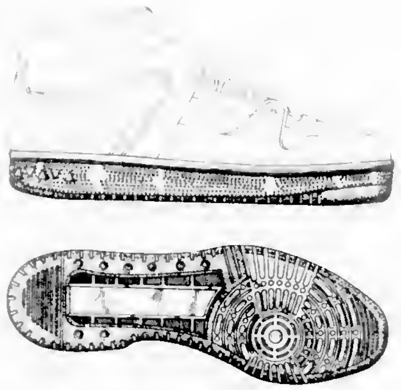
SHOE SOLE

Larry M. Clark, Simi Valley, Calif., assignor to L.A. Gear, Inc., Los Angeles, Calif.

Filed Nov. 5, 1987, Ser. No. 117,733

Term of patent 14 years

U.S. Cl. D2—320



304,521

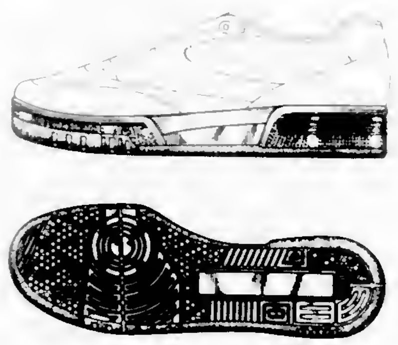
SHOE OUT SOLE

Larry M. Clark, Simi Valley, Calif., assignor to L.A. Gear, Inc., Los Angeles, Calif.

Filed Nov. 10, 1987, Ser. No. 119,982

Term of patent 14 years

U.S. Cl. D2—320



304,522

SUSPENDERS

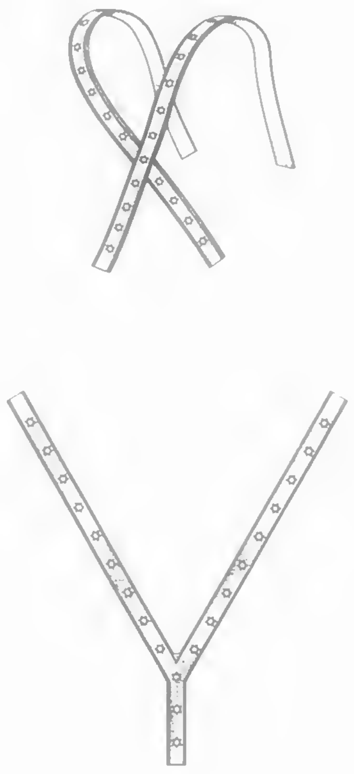
Richard C. Weidman, and W. Jeffrey Weidman, both of 12020 Greywing Sq., #A3, Reston, Va. 22091

Filed Oct. 14, 1986, Ser. No. 918,852

The portion of the term of this patent subsequent to Mar. 15, 2002, has been disclaimed.

Term of patent 14 years

U.S. Cl. D2—626



304,523

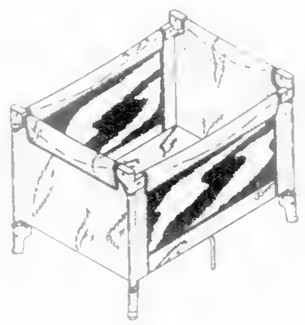
FOLDABLE PLAYYARD

James M. Dillner, Lancaster, and Nathanael Saint, Morgantown, both of Pa., assignors to Graco Metal Products Inc., Elverson, Pa

Filed Dec. 8, 1987, Ser. No. 130,341

Term of patent 14 years

U.S. Cl. D6—391



304,524

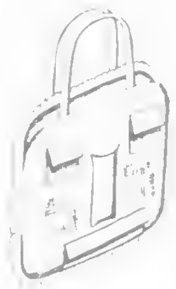
SEAT BAG

Sandra E. McNeely, 701 Blaine Pike, Portland, Ind. 47371

Filed Nov. 7, 1986, Ser. No. 928,291

Term of patent 14 years

U.S. Cl. D3—42



304,525

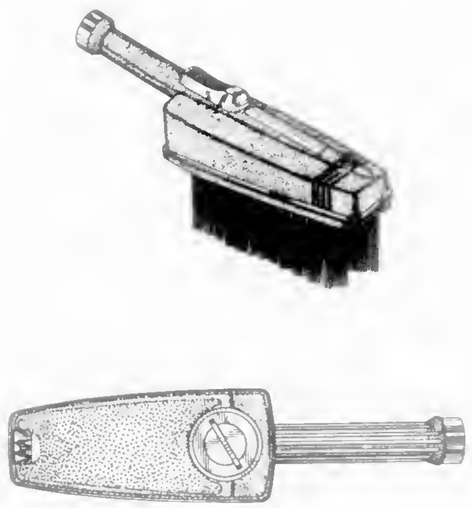
VEHICLE AND PATIO WASHING BRUSH

Keith D. Kitts, Glenview, and James C. Hand, Glen Ellyn, both of Ill., assignors to Suncast Corporation, Batavia, Ill.

Filed Feb. 25, 1987, Ser. No. 18,960

Term of patent 14 years

U.S. Cl. D4—115



304,526

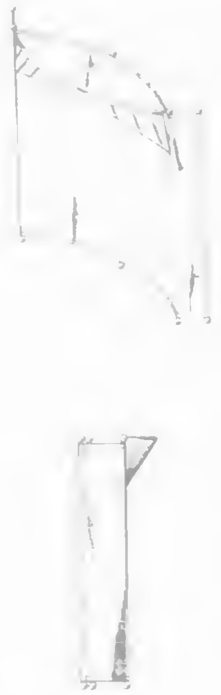
EXHIBIT PANEL

C. William Moss, Portland, Me., assignor to Moss Tent Works, Inc., Camden, Me.

Filed Mar. 9, 1987, Ser. No. 23,462

Term of patent 14 years

U.S. Cl. D6—332



304,527

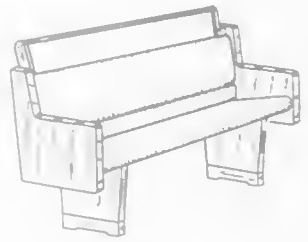
PEW

Virgil Miller, Archbold, Ohio, assignor to Sauder Manufacturing Co., Archbold, Ohio

Filed Oct. 16, 1986, Ser. No. 919,775

Term of patent 14 years

U.S. Cl. D6—381



304,528

GARMENT RACK

Milton E. Handler, Northbrook; Richard Sylvan, Glenview, and Herbert Baisch, Palatin, all of Ill., assignors to Hirsh Company, Skokie, Ill.

Filed Jan. 9, 1987, Ser. No. 2,303

Term of patent 14 years

U.S. Cl. D6—411

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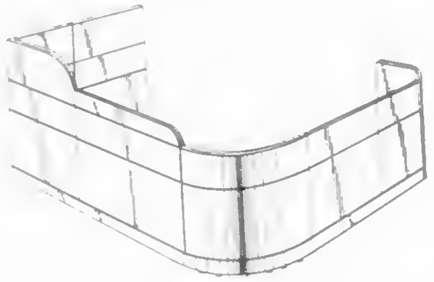
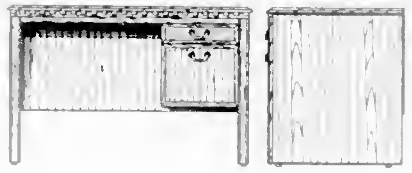
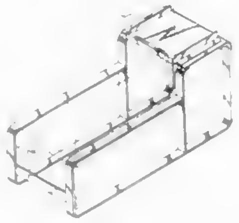
304,529
PANEL UNIT FOR A WORK STATION
Thomas D. Hontz, Quakertown, Pa., assignor to J.G. Furniture Systems, Quakertown, Pa.
Filed Nov. 17, 1986, Ser. No. 931,152
Term of patent 14 years
U.S. Cl. D6—421



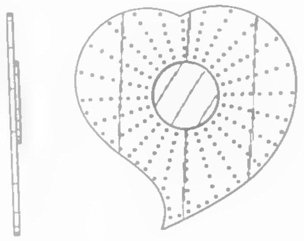
304,530
DESK
Paul Bush, Lakewood, N.Y., and Bruce O. Anderson, Talbott, Tenn., assignors to Bush Industries, Inc., Jamestown, N.Y.
Filed May 2, 1988, Ser. No. 189,693
Term of patent 14 years
U.S. Cl. D6—422



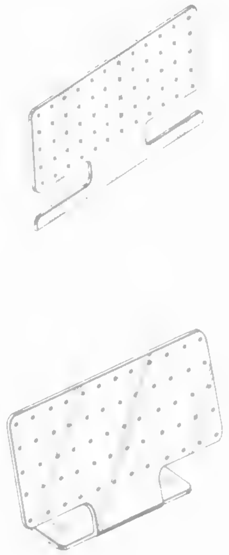
304,531
TEA BREWER STAND
Frank D. Williams, Laplace, La., assignor to Wm. B. Reily & Company, Inc., New Orleans, La.
Filed Dec. 4, 1986, Ser. No. 938,115
Term of patent 14 years
U.S. Cl. D6—464



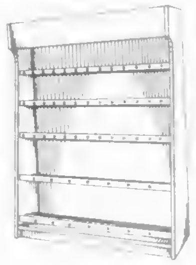
304,532
COMBINED EARRING STAND AND MIRROR
Terry A. Campbell, 1695 Pearson Avenue, Prince George, British Columbia, Canada V2L 4M7
Filed Apr. 13, 1987, Ser. No. 37,445
Term of patent 14 years
U.S. Cl. D6—469



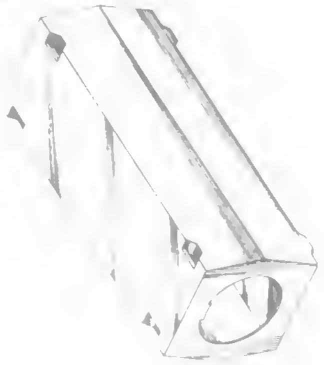
304,533
EARRING STAND
Terry A. Campbell, Prince George, Canada, assignor to Master Link Marketing Inc., Prince George, Canada
Filed Sep. 15, 1986, Ser. No. 907,643
Term of patent 14 years
U.S. Cl. D6—469



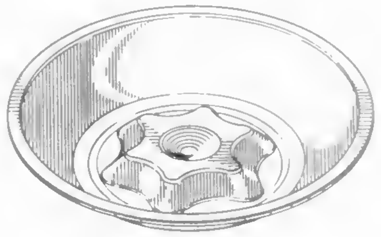
304,534
WIRE DISPENSER RACK
John R. Gustafson, Lincoln, R.I., assignor to Gustafson Enterprises, Inc., Lincoln, R.I.
Filed Dec. 23, 1986, Ser. No. 947,767
Term of patent 14 years
U.S. Cl. D6—469



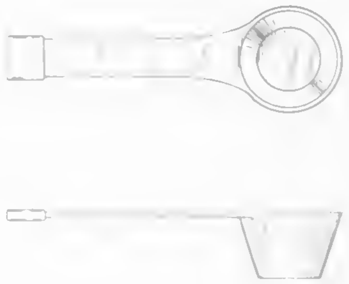
304,535
CUP DISPENSER HOUSING
O. Timothy White, Carnesville, Ga., assignor to Royston Corporation, Royston, Ga.
Filed May 29, 1987, Ser. No. 55,748
Term of patent 14 years
U.S. Cl. D6—516



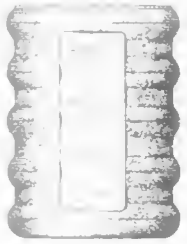
304,536
DISPLAY TRAY FOR FRUIT OR THE LIKE
Dean B. Blaser, Bryan, Ohio, assignor to Potter, Inc., Bryan, Ohio
Filed Mar. 6, 1986, Ser. No. 842,002
Term of patent 14 years
U.S. Cl. D7—27



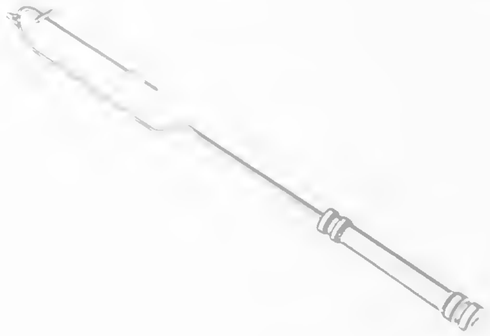
304,537
COMBINATION COFFEE MEASURING SCOOP AND RUBBER NIPPLE
Clark McCarroll, 168 Hillcrest Dr., Munhall, Pa. 15120
Filed Nov. 21, 1986, Ser. No. 933,600
Term of patent 14 years
U.S. Cl. D7—50



304,538
INSULATED CAN HOLDER
James E. Byrns, 1027 2nd Ave. South, Clinton, Iowa 52732
Filed Nov. 24, 1986, Ser. No. 935,689
Term of patent 14 years
U.S. Cl. D7—77



304,539
BARBECUE SPIT
Börje Johansson, Första Hedåkersgatan 1, Kinna, Sweden 511 00
Continuation of Ser. No. 779,052, Sep. 23, 1985. This application Jul. 13, 1988, Ser. No. 194,122
Claims priority, application Sweden, Mar. 22, 1985, 745-85
Term of patent 14 years
U.S. Cl. D7—102



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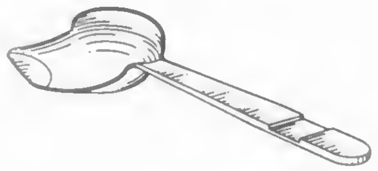
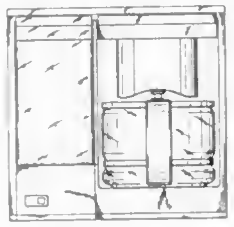
304,540
SPOON FOR USE BY THE HANDICAPPED

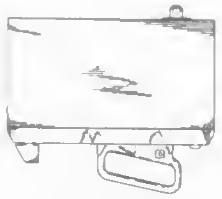
James Howard, Dover, and Lue Landsberger, Livingston, both of N.J., assignors to Maddak, Inc., Pequannock, N.J.
Filed Feb. 5, 1987, Ser. No. 11,307
Term of patent 14 years
U.S. Cl. D7—137



304,541
COFFEE MAKER

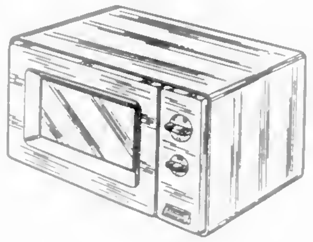
Florian Seiffert, Wiesbaden, Fed. Rep. of Germany, assignor to Black & Decker Inc., Newark, Del.
Filed Nov. 17, 1986, Ser. No. 931,635
Claims priority, application Fed. Rep. of Germany, May 27, 1986, URA 699/86
Term of patent 14 years
U.S. Cl. D7—309

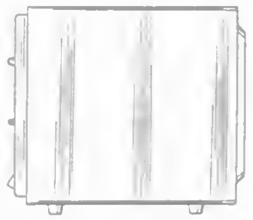




304,542
MICROWAVE OVEN

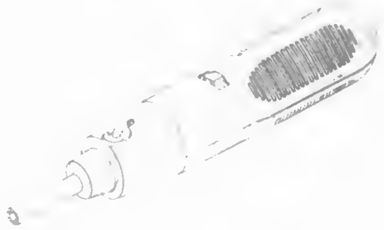
Seung H. Yoo, Buchon, Rep. of Korea, assignor to Gold Star Co., Ltd., Seoul, Rep. of Korea
Filed Feb. 18, 1987, Ser. No. 16,180
Claims priority, application Rep. of Korea, Aug. 27, 1986, Des.86-12211
The portion of the term of this patent subsequent to Aug. 30, 2002, has been disclaimed.
Term of patent 14 years
U.S. Cl. D7—351





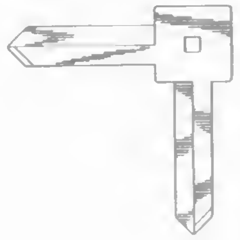
304,543
BATTERY-OPERATED SCREWDRIVER OR SIMILAR ARTICLE

Robert I. Somers, Sparks, and Martin P. Gierke, Baltimore, both of Md., assignors to Black & Decker Inc., Newark, Del.
Filed Sep. 12, 1986, Ser. No. 907,720
Term of patent 14 years
U.S. Cl. D8—61



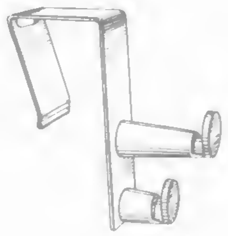
304,544
KEY

Larry E. Lobaugh, 132 Wilson Ave., Niles, Ohio 44446
Filed Mar. 15, 1988, Ser. No. 168,332
Term of patent 14 years
U.S. Cl. D8—347



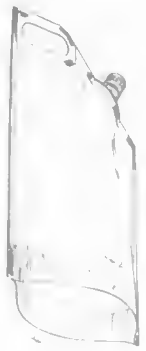
304,545
COAT HANGER RACK

Harold K. Hurrelbrink, Hinsdale, Ill., assignor to Magnuson Group, Burr Ridge, Ill.
Filed Aug. 25, 1986, Ser. No. 855,774
Term of patent 14 years
U.S. Cl. D8—373



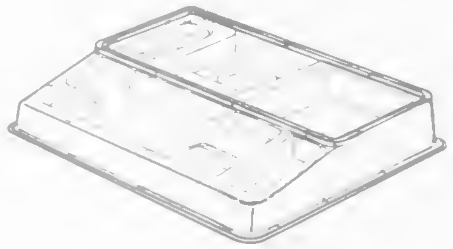
304,546
CONTAINER

Keith A. Cattach, South Oakleigh, Australia, assignor to Mallinckrodt Australia Pty. Ltd., Victoria, Australia
Filed Jun. 4, 1986, Ser. No. 870,731
Claims priority, application Australia, Dec. 5, 1985, 3548/85
Term of patent 14 years
U.S. Cl. D9—305



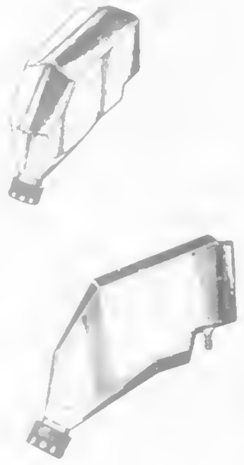
304,547
PLATFORM CONTAINER WITH TRANSPARENT LID

Robert D. Holewinski, Lakehurst, N.J., assignor to Johnson & Johnson Consumer Products, Inc., New Brunswick, N.J.
Filed Mar. 10, 1986, Ser. No. 842,049
Term of patent 14 years
U.S. Cl. D9—347



304,548
WALL MOUNTED DISPENSING BOTTLE

Michael W. Freitas, Irving, Tex., assignor to Dexide, Inc., Fort Worth, Tex.
Filed Jul. 14, 1986, Ser. No. 885,436
Term of patent 14 years
U.S. Cl. D9—373



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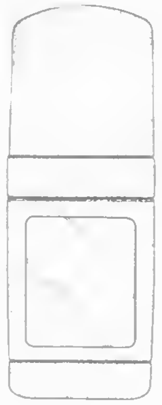
304,549

BOTTLE

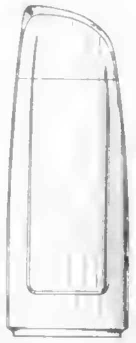
Joël Desgrippes, Paris, France, assignor to Desgrippes, Beauchant, Gobe, France
Filed Feb. 7, 1986, Ser. No. 827,231
Term of patent 14 years
U.S. Cl. D9—377



304,550

SQUEEZE BOTTLE AND DISPENSING CAP

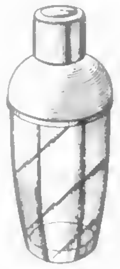
Scott W. Demarest, Racine County, Wis., assignor to S. C. Johnson & Son, Inc., Racine, Wis.
Filed Sep. 11, 1986, Ser. No. 906,130
Term of patent 14 years
U.S. Cl. D9—377



304,551

PERFUME BOTTLE OR THE LIKE

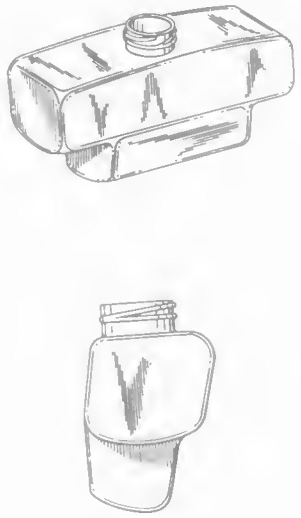
Joel Desgrippes, Paris, France, assignor to Comptoir Nouveau De La Parfumerie, S.A., Paris, France
Filed Oct. 30, 1986, Ser. No. 925,718
Term of patent 14 years
U.S. Cl. D9—385



304,552

CONTAINER FOR LIQUIDS

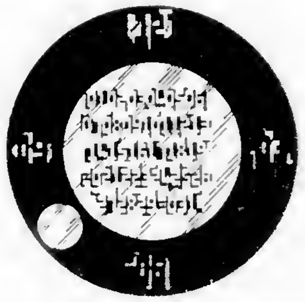
Jerome Lippman, 3342 W. Smith Rd., Akron, Ohio 44313
Filed Oct. 30, 1986, Ser. No. 925,117
Term of patent 14 years
U.S. Cl. D9—403



304,553

WATCH FACE

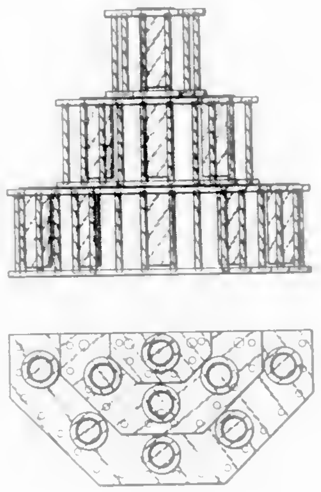
David T. Helsten, 8517 Horner St., Apt. D, Los Angeles, Calif. 90035, and Giovanni Interdonato, 1527 Stanley St., Los Angeles, Calif. 90041
Filed Sep. 17, 1986, Ser. No. 908,516
Term of patent 14 years
U.S. Cl. D10—126



304,554

COMBINED FLOWER VASES AND HOLDER

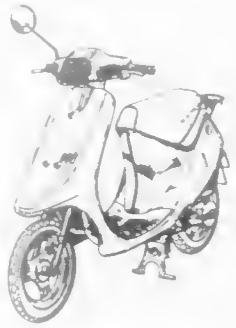
Edward V. Dinerman, 16 E. Observatory Hill La., Cincinnati, Ohio 45208
Filed Jan. 14, 1987, Ser. No. 3,217
Term of patent 14 years
U.S. Cl. D11—147



304,555

MOTORCYCLE

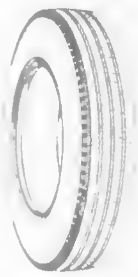
Seiji Nishiyama, and Hikoharu Shimokawa, both of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Japan
Filed Jul. 27, 1987, Ser. No. 78,249
Claims priority, application Japan, Jan. 27, 1987, 62-2824
Term of patent 14 years
U.S. Cl. D12—110



304,556

AUTOMOBILE TIRE

Toru Tsuda, and Kenichi Motomura, both of Tokyo, Japan, assignors to Bridgestone Corporation, Tokyo, Japan
Filed Jan. 15, 1987, Ser. No. 3,684
Claims priority, application Japan, Jul. 18, 1986, 61-27934
Term of patent 14 years
U.S. Cl. D12—142



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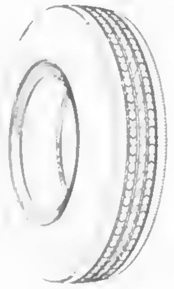
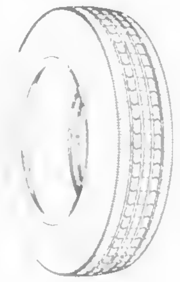
304,557
AUTOMOBILE TIRE

Kiyoshi Ochiai, Hyogo, Japan, assignor to Sumitomo Rubber Industries, Ltd., Hyogo, Japan
Filed Feb. 26, 1987, Ser. No. 19,076
Claims priority, application Japan, Sep. 18, 1986, 61-37089
Term of patent 14 years
U.S. Cl. D12—146



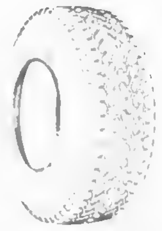
304,558
AUTOMOBILE TIRE

Tetsuhiro Fukumoto, Hyogo, Japan, assignor to Sumitomo Rubber Industries, Ltd., Hyogo, Japan
Filed Mar. 17, 1987, Ser. No. 26,646
Claims priority, application Japan, Dec. 9, 1986, 61-48719
Term of patent 14 years
U.S. Cl. D12—146



304,559
AUTOMOBILE TIRE

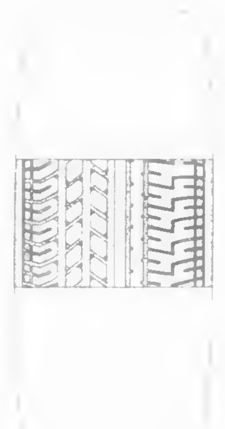
Munemitsu Yamada, Hyogo, Japan, assignor to Sumitomo Rubber Industries, Ltd., Hyogo, Japan
Filed Jun. 4, 1987, Ser. No. 57,860
Claims priority, application Japan, Dec. 9, 1986, 61-48720
Term of patent 14 years
U.S. Cl. D12—146



304,560
TIRE

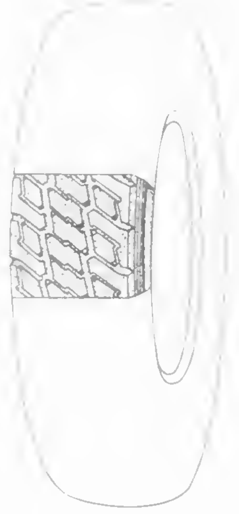
Mario Mezzanotte, Milan, Italy, assignor to Pirelli Coordinamento Pneumatici S.p.A., Italy
Filed Jun. 25, 1987, Ser. No. 66,413
Claims priority, application Italy, Jan. 26, 1987, 20620/87[U

Term of patent 14 years
U.S. Cl. D12—146



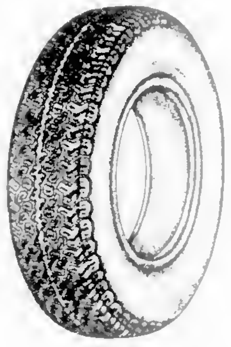
304,561
TIRE

Renato Caretta, Gallarate, Italy, assignor to Pirelli Coordinamento Pneumatici S.p.A., Italy
Filed Apr. 6, 1987, Ser. No. 35,140
Claims priority, application Italy, Oct. 31, 1986, 23565/86[U]
Term of patent 14 years
U.S. Cl. D12—147



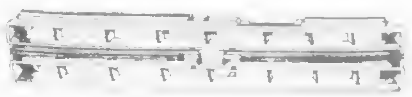
304,562
TIRE

James G. Guspodin, Barberton, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio
Filed Jun. 11, 1987, Ser. No. 60,587
Term of patent 14 years
U.S. Cl. D12—147



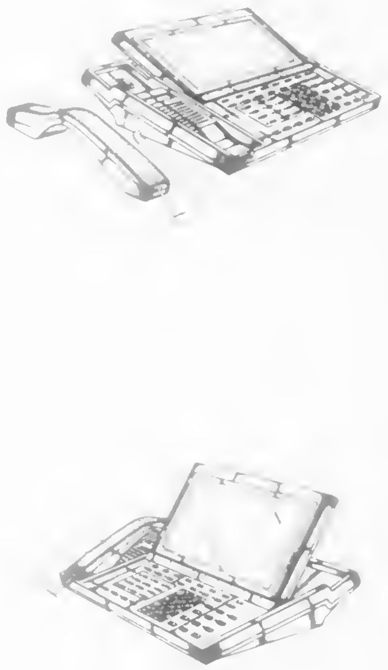
304,563
FRONT GRILLE FOR AN AUTOMOBILE

Mitsuo Ikeda, Toyota, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan
Filed Jun. 2, 1986, Ser. No. 869,944
Claims priority, application Taiwan, May 6, 1986, 75302278
Term of patent 14 years
U.S. Cl. D12—163



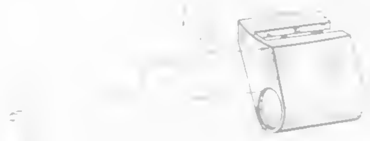
304,564
ATTENDANT TELEPHONE SWITCHBOARD

Shigeaki Kido; Sadao Isozaki, and Yasuko Yajima, all of Tokyo, Japan, assignors to Meisei Electric Co., Ltd.
Filed May 19, 1987, Ser. No. 51,998
Claims priority, application Japan, Dec. 1, 1986, 61-47554
Term of patent 14 years
U.S. Cl. D14—151



304,565
TURN SIGNAL HANDLE ADAPTOR

Wendell C. Lane, Laurinburg, N.C., assignor to Dana Corporation, Toledo, Ohio
Filed Jun. 10, 1987, Ser. No. 61,985
Term of patent 14 years
U.S. Cl. D12—155



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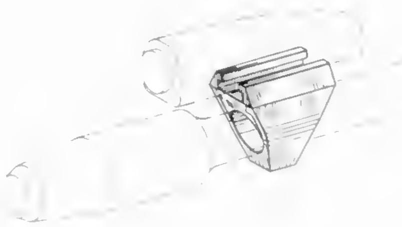
TURN SIGNAL HANDLE ADAPTOR

Wendell C. Lane, Laurinburg, N.C., assignor to Dana Corporation, Toledo, Ohio

Filed Jun. 10, 1987, Ser. No. 61,986

Term of patent 14 years

U.S. Cl. D12—155



304,567

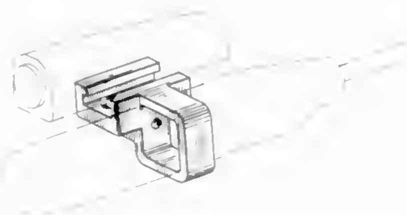
TURN SIGNAL HANDLE ADAPTOR

Wendell C. Lane, Jr., Laurinburg, N.C., assignor to Dana Corporation, Toledo, Ohio

Filed Jun. 10, 1987, Ser. No. 61,987

Term of patent 14 years

U.S. Cl. D12—155



304,568

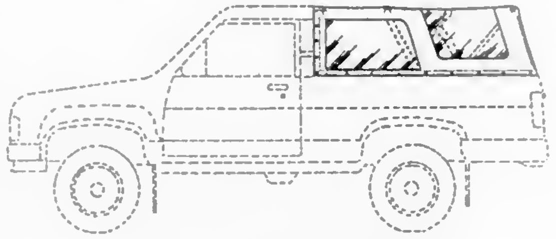
FOUR WHEEL DRIVE VEHICLE CONVERTIBLE TOP

Charles F. Furphy, 28502 La Noche St., Mission Viejo, Calif. 92692

Filed Apr. 27, 1987, Ser. No. 43,231

Term of patent 14 years

U.S. Cl. D12—156



304,569

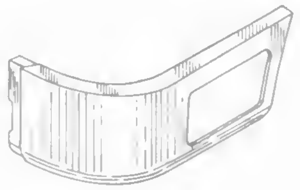
BUMPER EXTENSION

Ronald N. Brunger, and Larry N. Reynard, both of Ft. Wayne, Ind., assignors to Navistar International Transportation Corp., Chicago, Ill.

Filed Dec. 4, 1987, Ser. No. 129,039

Term of patent 14 years

U.S. Cl. D12—172



304,570

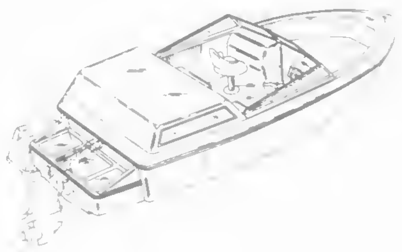
BOAT

Albert K. Lindstrom, P.O. Box 408, Gardiner, Wash. 98334; David R. Strader, 3100 W. Commodore Way #402, Seattle, Wash. 98199, and George S. Henley, 40516 S. Silver Lake Rd. E., Eatonville, Wash. 98328

Continuation-in-part of Ser. No. 947,706, Dec. 30, 1986. This application Apr. 2, 1987, Ser. No. 33,501

Term of patent 14 years

U.S. Cl. D12—315



304,571

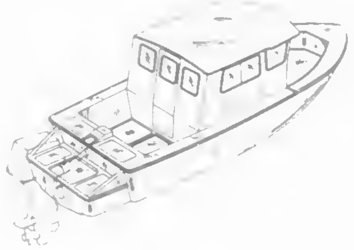
BOAT

Albert K. Lindstrom, P.O. Box 408, Gardiner, Wash. 98334; David R. Strader, 3100 W. Commodore Way #402, Seattle, Wash. 98199, and George S. Henley, 40516 S. Silver Lake Rd. E., Eatonville, Wash. 98328

Continuation-in-part of Ser. No. 947,706, Dec. 30, 1986. This application Apr. 2, 1987, Ser. No. 33,504

Term of patent 14 years

U.S. Cl. D12—315



304,572

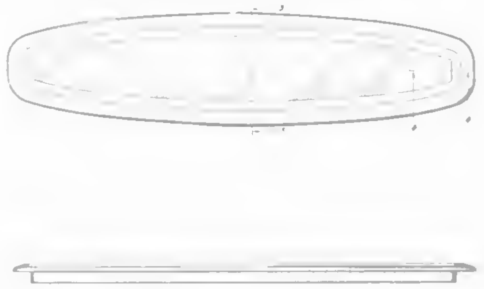
BOAT WINDOW

Frank S. Beckerer, Jr., 40 Dock Rd., Milford, Conn. 06460

Continuation of Ser. No. 827,093, Feb. 7, 1986, abandoned. This application Nov. 28, 1988, Ser. No. 279,229

Term of patent 14 years

U.S. Cl. D12—317



304,573

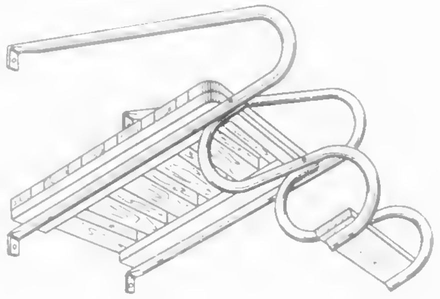
SWIM PLATFORM

Andrew K. Hoszowski, Greenville, Miss., assignor to Moeller Manufacturing Co., Inc., Greenville, Miss.

Filed Jul. 7, 1986, Ser. No. 882,626

Term of patent 14 years

U.S. Cl. D12—318



304,574

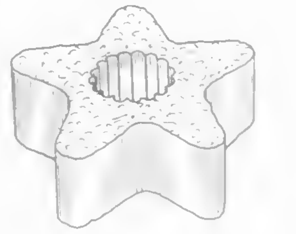
CHARCOAL FUEL ARTICLE

James E. Fay, III, Winnebago County, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed Apr. 16, 1987, Ser. No. 39,489

Term of patent 14 years

U.S. Cl. D13—3.2



304,575

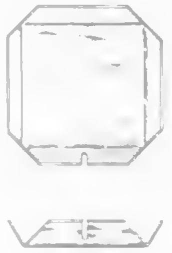
SUPPORT PAD FOR A RECREATIONAL VEHICLE JACK OR THE LIKE

Charles Batzel, 5223 Ruby St., Oak Lawn, Ill. 60453

Filed Jul. 24, 1987, Ser. No. 77,322

Term of patent 14 years

U.S. Cl. D34—31



304,576

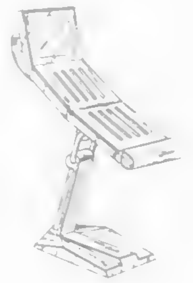
ELECTRONIC CONTROL DESK

Daniel Vissiere, 185 Avenue de la Jouannenque, 30340 Salindres, France

Filed Sep. 10, 1986, Ser. No. 905,946

Term of patent 14 years

U.S. Cl. D14—103



304,577

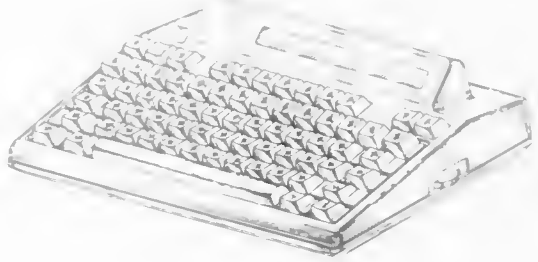
ALPHANUMERIC ENCODING TERMINAL OR SIMILAR ARTICLE

William J. Scheid, Coral Springs; Richard J. Toth, Boca Raton, and Robert J. Schwendeman, Pompano Beach, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 22, 1986, Ser. No. 923,078

Term of patent 14 years

U.S. Cl. D14—106



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304,578
FACSIMILE TRANSCEIVER

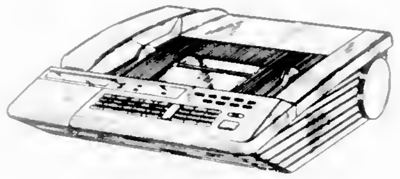
Masahito Saegusa, Mitaka; Kazunori Hashimoto, Tachikawa; Takashi Ohwada, Mitaka; Yoshihiro Kawakatsu, Sayama; Katsubumi Ohuchi, Chigasaki; Hiroshi Endo, Yokohama, and Taichiro Yamashita, Chigasaki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 28, 1987, Ser. No. 101,548

Claims priority, application Japan, Mar. 27, 1987, 62-11310

Term of patent 14 years

U.S. Cl. D14—118



304,579
FACSIMILE TRANSCEIVER

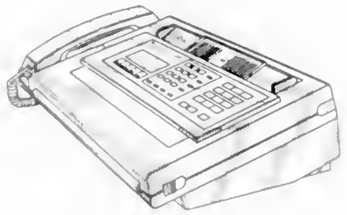
Yoshiyuki Fujiyama, Nagano; Sumio Ogawara, Tokyo; Akira Chiku, Nagano; Toshihiro Kumano, Nagano, and Yoshitatsu Okiyama, Nagano, all of Japan, assignors to Matsushita Graphic Communication Systems, Inc., Tokyo, Japan

Filed Oct. 2, 1987, Ser. No. 103,976

Claims priority, application Japan, Apr. 6, 1987, 62-13296

Term of patent 14 years

U.S. Cl. D14—118



304,580
MAGNETIC TAPE CASSETTE

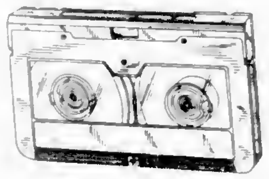
Haruyuki Enomoto, Yamato, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jun. 27, 1986, Ser. No. 879,371

Claims priority, application Japan, Jan. 31, 1986, 61-3244

Term of patent 14 years

U.S. Cl. D14—121



304,581
MAGNETIC TAPE CASSETTE

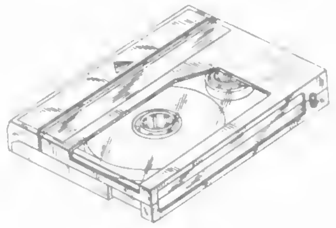
Hiroshi Nakaizumi, Fort Lee, N.J., assignor to Sony Corporation, Tokyo, Japan

Filed Jul. 10, 1986, Ser. No. 883,937

Claims priority, application Japan, Jan. 22, 1986, 61-1940

Term of patent 14 years

U.S. Cl. D14—121



304,582
MAGNETIC TAPE CASSETTE

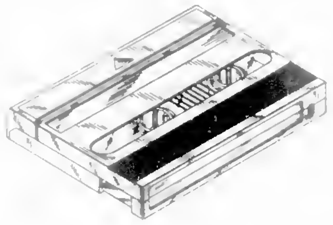
Hiroshi Nakaizumi, Fort Lee, N.J., assignor to Sony Corporation, Tokyo, Japan

Filed Jul. 10, 1986, Ser. No. 883,938

Claims priority, application Japan, Jan. 22, 1986, 61-1939

Term of patent 14 years

U.S. Cl. D14—121



304,583
MAGNETIC TAPE CASSETTE

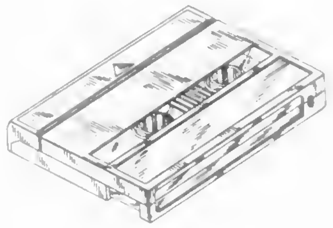
Hiroshi Nakaizumi, Fort Lee, N.J., assignor to Sony Corporation, Tokyo, Japan

Filed Jul. 10, 1986, Ser. No. 884,039

Claims priority, application Japan, Jan. 22, 1986, 61-1938

Term of patent 14 years

U.S. Cl. D14—121



304,584
REEL FOR A MAGNETIC TAPE CASSETTE

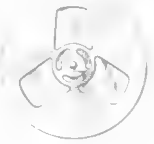
Kenichi Kano, Higashi, Japan, assignor to Sony Corporation, Tokyo, Japan

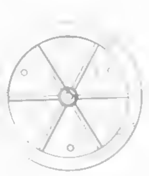
Filed Aug. 24, 1987, Ser. No. 88,870

Claims priority, application Japan, Feb. 24, 1987, 62-6869

Term of patent 14 years

U.S. Cl. D14—122





304,585
REEL FOR A MAGNETIC TAPE CASSETTE

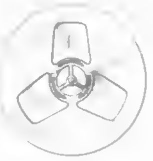
Kenichi Kano, Higashi-Utaru, Japan, assignor to Sony Corporation, Tokyo, Japan

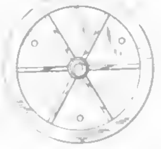
Filed Aug. 24, 1987, Ser. No. 88,871

Claims priority, application Japan, Feb. 24, 1987, 62-6871

Term of patent 14 years

U.S. Cl. D14—122





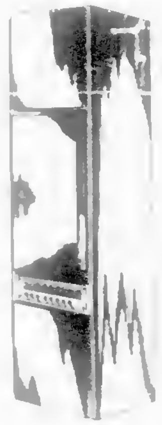
304,586
LOUDSPEAKER

Tommyca Freadman, Taipei, Taiwan, and John F. Castagna, Milford, Pa., assignors to Sparkomatic Corporation, Milford, Pa.

Filed Nov. 25, 1987, Ser. No. 125,443

Term of patent 14 years

U.S. Cl. D14—114



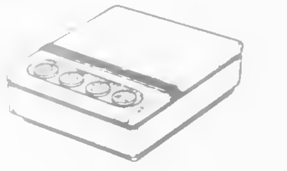
304,587
TELEPHONE DIALER ADJUNCT

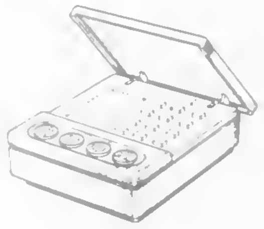
David C. Danielson, New Canaan, Conn.; James J. Hartmann, Indianapolis, Ind.; John N. McGarvey, Drexel Hill, Pa.; Alvin R. Tilley, Red Bank, N.J., and John M. Wuerz, Indianapolis, Ind., assignors to American Telephone and Telegraph Company, New York, N.Y. and AT&T Information Systems Inc., Morristown, N.J.

Filed Sep. 21, 1988, Ser. No. 247,458

Term of patent 14 years

U.S. Cl. D14—244





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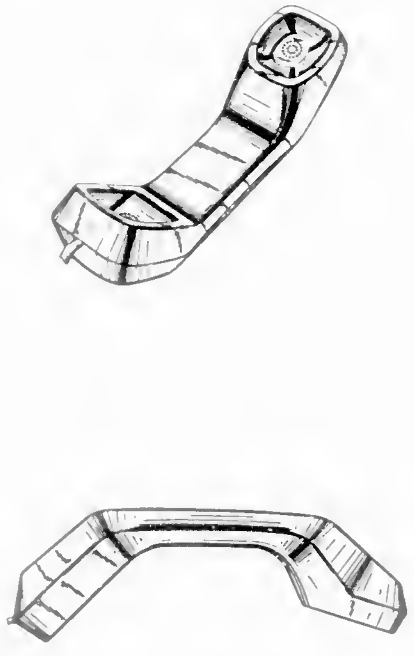
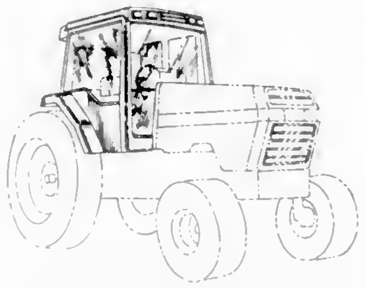
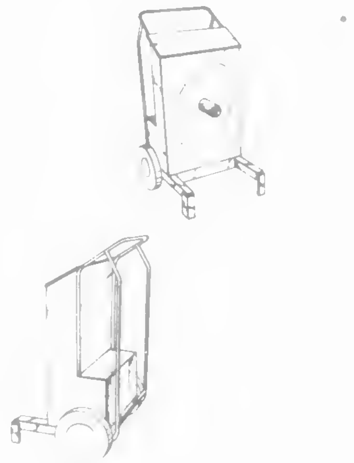
304,588
TELEPHONE HANDSET
Gus E. Desbarats, Putney, England, assignor to British Telecommunications public limited company, Great Britain
Filed May 13, 1988, Ser. No. 193,643
Claims priority, application United Kingdom, Nov. 13, 1987, 1046341
Term of patent 14 years
U.S. Cl. D14—248



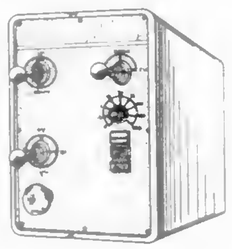
304,589
TRACTOR CAB
Ralph C. Lanphere, Racine, Wis., and Gregg C. Montgomery, Hinsdale, Ill., assignors to J. I. Case Company, Racine, Wis.
Filed Aug. 19, 1987, Ser. No. 73,202
Term of patent 14 years
U.S. Cl. D15—30



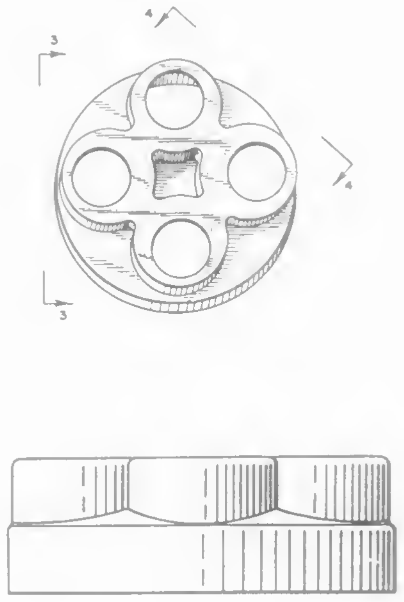
304,590
CONDUIT AND TUBE BENDER HOUSING
Larry G. Adleman, Rockford, and Vernon W. Wanner, Belvidere, both of Ill., assignors to Greenlee Textron, Inc., Rockford, Ill.
Filed Jun. 26, 1986, Ser. No. 879,235
Term of patent 14 years
U.S. Cl. D15—123



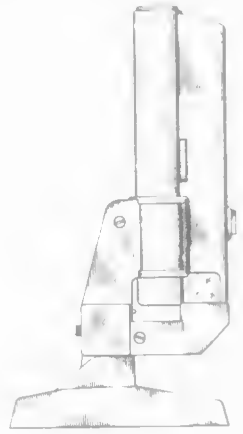
304,591
CONTROL FOR A SPINDLE HEAD
Robert L. Anderson, Boulder, Colo., assignor to Robotool Ltd., Broomfield, Colo.
Filed Apr. 18, 1986, Ser. No. 855,773
Term of patent 14 years
U.S. Cl. D15—138



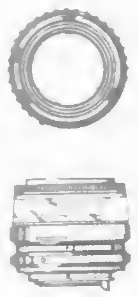
304,592
PROTECTIVE COVER FOR A ROTATABLE TURRET ASSEMBLY AND OBJECTIVES OF AN INVERTED MICROSCOPE
Paul A. Hoogesteger, Penfield, N.Y., assignor to Cambridge Instruments, Inc., Cheektowaga, N.Y.
Filed Apr. 9, 1987, Ser. No. 36,391
Term of patent 14 years
U.S. Cl. D16—131



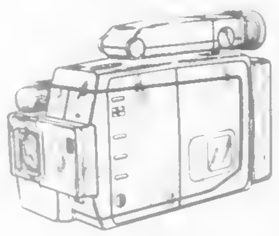
304,593
MICROSCOPE
Steven E. Hilko, Buffalo, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Oct. 10, 1985, Ser. No. 786,294
Term of patent 14 years
U.S. Cl. D16—131



304,594
CAMERA LENS
Masato Yamamoto, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Jan. 8, 1987, Ser. No. 1,490
Claims priority, application Japan, Aug. 20, 1986, 61-32588
Term of patent 14 years
U.S. Cl. D16—134



304,595
COMBINED VIDEO TAPE RECORDER AND CAMERA
Takanori Nishiyama, Koganei; Makoto Fukatsu, Kokubunji; Yuichi Kosukegawa, Chofu; Yukinobu Ichikawa, Tachikawa, and Shigeru Ichimura, Ibaragi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Jul. 7, 1987, Ser. No. 70,521
Claims priority, application Japan, Jan. 7, 1987, 62-39
Term of patent 14 years
U.S. Cl. D16—202



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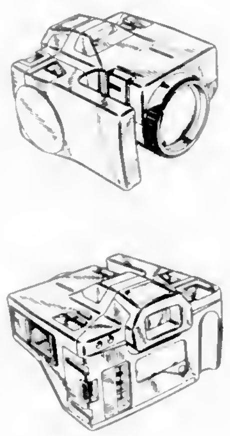
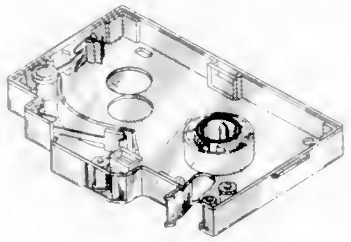
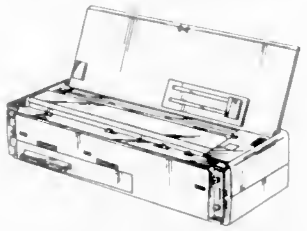
304,596
CAMERA
Tetsnya Goto, Kanagawa, Japan, assignor to Ricob Company, Ltd., Tokyo, Japan
Filed Nov. 26, 1986, Ser. No. 935,570
Claims priority, application Japan, May 26, 1986, 61-020014
Term of patent 14 years
U.S. Cl. D16—217



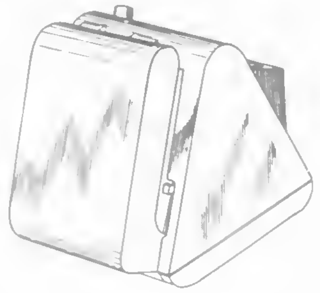
304,597
INK RIBBON CASSETTE
Sachie Sakurai, Aichi, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan
Filed Jul. 13, 1987, Ser. No. 72,621
Claims priority, application Japan, Jan. 7, 1987, 62-178
Term of patent 14 years
U.S. Cl. D18—12



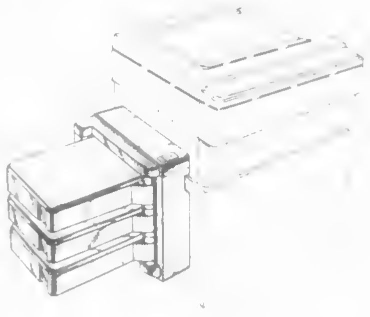
304,598
THERMAL PRINTER SPECIFICATION
Jane A. Jokl, Boca Raton, Fla., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Jan. 16, 1986, Ser. No. 819,951
Term of patent 14 years
U.S. Cl. D18—13



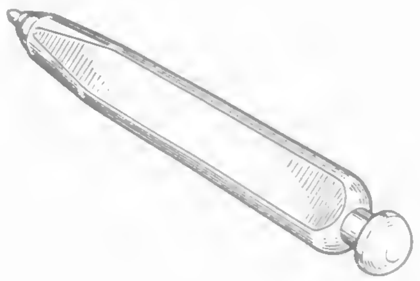
304,599
MOTOR DRIVEN IMPRINTER
Mark Cunnane, Clontarf, and Richard P. Delaney, Portmarnock, both of Ireland, assignors to Security Imprinter Corporation, Walkersville, Md.
Filed Sep. 23, 1986, Ser. No. 911,084
Claims priority, application Ireland, May 30, 1986, 165/86
Term of patent 14 years
U.S. Cl. D18—14



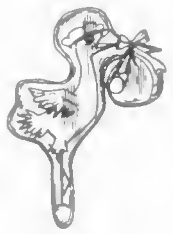
304,600
MULTI-LEVEL SHEET FEEDER
Tsutomu Takano, Aichi, Japan, assignor to Minolta Camera Kabushiki Kaisha, Japan
Filed Jun. 16, 1986, Ser. No. 875,362
Claims priority, application Japan, Dec. 18, 1985, 60-52657
Term of patent 14 years
U.S. Cl. D18—42



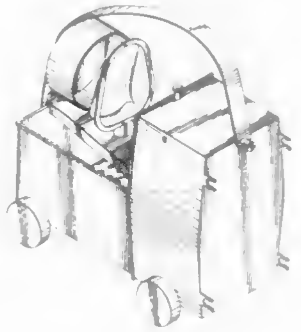
304,601
PEN
Björn M. Alskog, Hajdeby, S-620 23 Romakloster, Sweden
Filed Jul. 29, 1986, Ser. No. 891,730
Claims priority, application Sweden, Jan. 29, 1986, 86-0212
Term of patent 14 years
U.S. Cl. D19—49



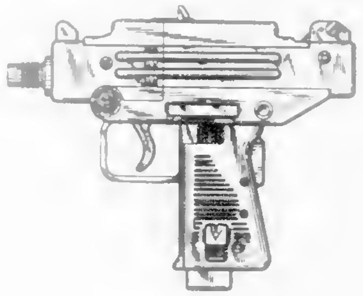
304,602
SIMULATIVE BALLOON
Mary G. McHugh, 201 Friedrichs Ave., Metairie, La. 70005
Filed Aug. 19, 1987, Ser. No. 87,244
Term of patent 14 years
U.S. Cl. D21—84



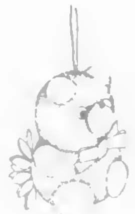
304,603
TOY CAR
Zin-Way Wen, No. 50-2, Alley 22, Lane 994, Kung Yen Rd., Tainan, Taiwan
Filed Dec. 7, 1987, Ser. No. 130,333
Term of patent 14 years
U.S. Cl. D21—124



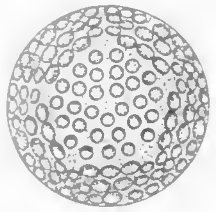
304,604
TOY GUN
Yung W. Fan, Kowloon, Hong Kong, assignor to Mee Tung Manufacturing Company Limited, Kowloon, Hong Kong
Filed Nov. 4, 1987, Ser. No. 116,754
Claims priority, application United Kingdom, May 15, 1987, 1,042,210
Term of patent 14 years
U.S. Cl. D21—147



304,605
TOY BEAR
Donald D. McKay, Jr., 1509 North Ave., W., Missoula, Mont. 59801
Filed Aug. 5, 1986, Ser. No. 893,371
Term of patent 14 years
U.S. Cl. D21—159



304,606
GOLF BALL
Wen-Shown Lo, 4 Tung Pei Street, Feng Yuan City, Taichung Hsien, Taiwan
Filed May 20, 1986, Ser. No. 865,053
Term of patent 14 years
U.S. Cl. D21—205



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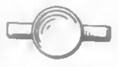
GOLF TEE

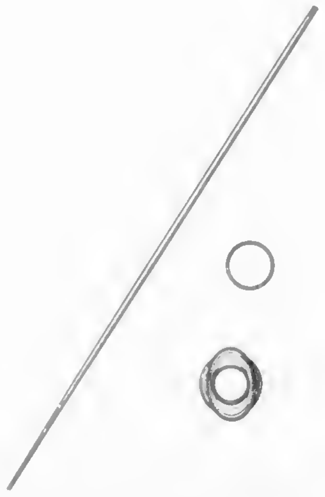
Robert D. Bagg, 387 Chestnut St., Oneonta, N.Y. 13820
Filed Oct. 3, 1986, Ser. No. 916,034
Term of patent 14 years
U.S. Cl. D21—208



304,608

SKI POLE SHAFT

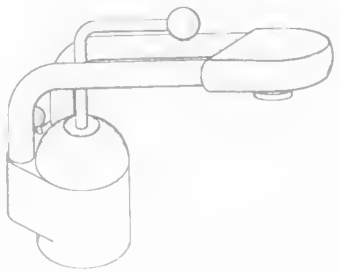
Gary Filice, Moorpark, Calif., assignor to Reflex Sport Products, Inc., Salt Lake City, Utah
Filed Jul. 8, 1987, Ser. No. 71,042
Term of patent 14 years
U.S. Cl. D21—230



304,609

FAUCET WITH A ROTATABLE LEVER FOR A WASH BOWL

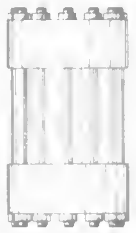
Bethany Lathrop, Los Angeles, Calif., assignor to Aloys F. Dornbracht GmbH & Co. KG, Muhle, Fed. Rep. of Germany
Filed Jan. 28, 1986, Ser. No. 823,372
Claims priority, application France, Jul. 29, 1985, 85 3654
Term of patent 14 years
U.S. Cl. D23—238



304,610

HIGH-PRESSURE CONTAINMENT VESSEL

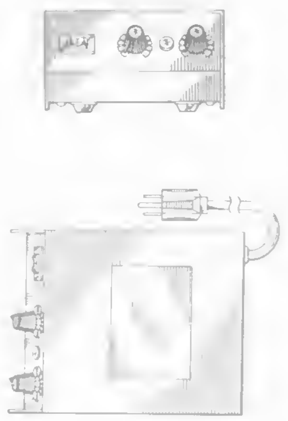
Robert M. Conaway, Columbus, Ohio, assignor to Vital Force, Inc., Columbus, Ohio
Filed Feb. 12, 1987, Ser. No. 14,523
Term of patent 14 years
U.S. Cl. D23—207



304,611

LABORATORY HEATER

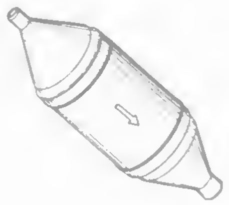
Lawrence W. Stalec, Franklin Park, Ill., assignor to Lab-Line Instruments, Inc., Melrose Park, Ill.
Filed Mar. 30, 1987, Ser. No. 32,390
Term of patent 14 years
U.S. Cl. D23—314



304,612

LASER SMOKE PARTICULATE/ODOR FILTER UNIT FOR USE IN SURGICAL ENVIRONMENTS

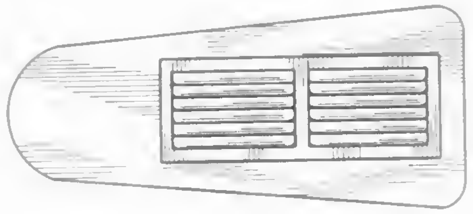
Wyman H. Stackhouse, Manhattan Beach, and Ian M. Williamson, Redondo Beach, both of Calif., assignors to W. Stackhouse Associates, Inc., El Segundo, Calif.
Filed Jan. 12, 1987, Ser. No. 2,185
Term of patent 14 years
U.S. Cl. D23—365



304,613

CEILING FAN BLADE

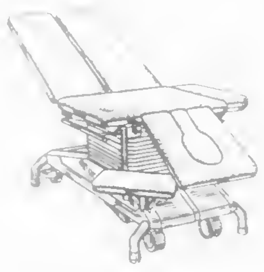
Paul Teal, 237 Mariner Cir., Cotuit, Mass. 02635
Filed Mar. 18, 1987, Ser. No. 27,505
Term of patent 14 years
U.S. Cl. D23—413



304,614

BENCH FOR PHYSIOTHERAPEUTICAL TREATMENT

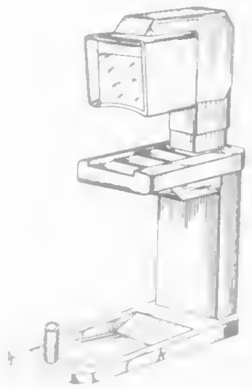
Rolf Guttormsen, N, Hjellegt. 28, 3700 Skien, Norway
Filed Sep. 23, 1986, Ser. No. 910,746
Claims priority, application Norway, May 13, 1986, 67297
Term of patent 14 years
U.S. Cl. D24—3



304,615

EYEWEAR PATIENT MEASURING STATION

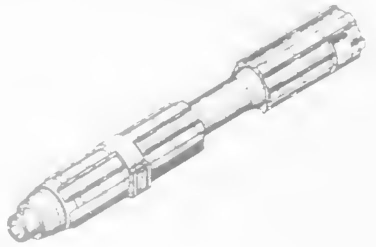
Richard Fischer, Offenbach-Burgel, Fed. Rep. of Germany, assignor to Eyemetrics-Systems AG, Chur, Switzerland
Filed Nov. 18, 1986, Ser. No. 932,484
Claims priority, application Fed. Rep. of Germany, May 28, 1986, URA717/86
Term of patent 14 years
U.S. Cl. D24—17



304,616

MEDICAMENT INJECTOR

Kenneth W. Dunlap, Plymouth, and David Bardwell, Minnetonka, both of Minn., assignors to Derata Corporation, Minneapolis, Minn.
Filed Apr. 30, 1987, Ser. No. 44,520
Term of patent 14 years
U.S. Cl. D24—24



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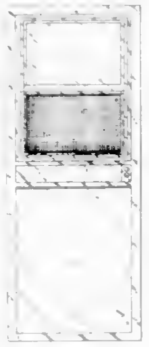
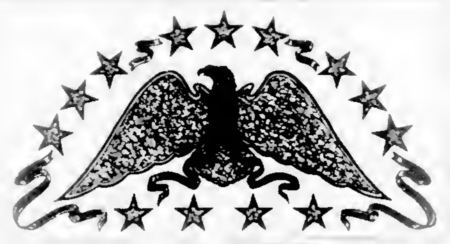
304,617
SELF STORING SECURITY STORM DOOR

Harold E. Werthman, Denver, Colo., assignor to All-Weather Industries, Inc., Denver, Colo.
Filed Jul. 11, 1988, Ser. No. 216,986
Term of patent 14 years
U.S. Cl. D25—48



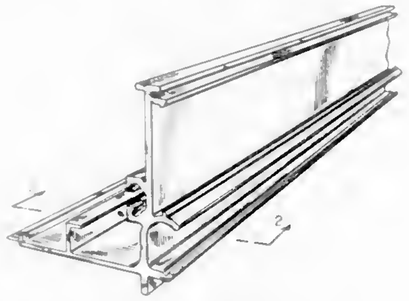
304,618
DECORATIVE GLASS PANEL

B. Jeremiah Shaffer, Worthington, Ohio, assignor to Pease Industries, Inc., Fairfield, Ohio
Filed Jul. 7, 1986, Ser. No. 882,816
Term of patent 14 years
U.S. Cl. D25—104



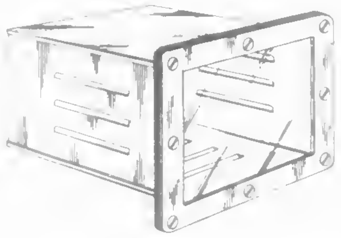
304,619
EXTRUSION FOR USE IN THE CONSTRUCTION OF A FLOOR OF A MOTOR LORRY

Philip K. Hockney, Smithfield, Australia, assignor to Hockney Pty. Limited, Smithfield, Australia
Filed Feb. 10, 1986, Ser. No. 828,017
Term of patent 14 years
U.S. Cl. D25—119



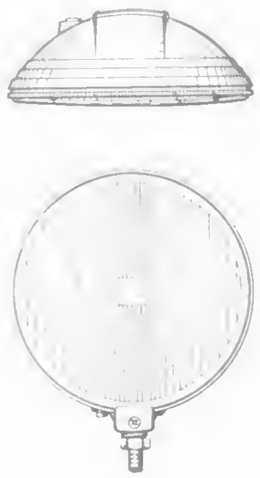
304,620
ABOVE GROUND POOL LIGHT

Tom Marcucci, 206 Old York Rd., Yardville, N.J. 08620
Filed May 23, 1986, Ser. No. 866,614
Term of patent 14 years
U.S. Cl. D26—24



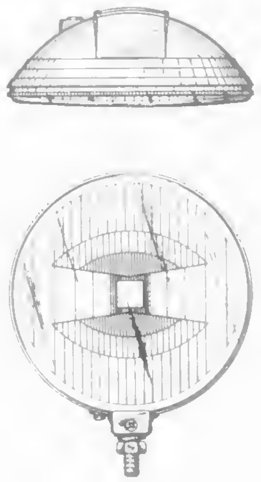
304,621
AUXILIARY HEADLAMP FOR MOTOR VEHICLES

Gerd Schmidt, Velbert, Fed. Rep. of Germany, assignor to Hella KG Hueck & Co., Lippstadt, Fed. Rep. of Germany
Filed Mar. 15, 1988, Ser. No. 168,732
Claims priority, application Fed. Rep. of Germany, Sep. 16, 1987, MR588
Term of patent 14 years
U.S. Cl. D26—36



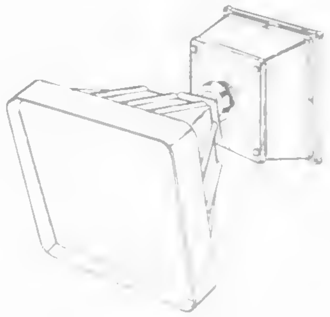
304,622
AUXILIARY HEADLAMP FOR MOTOR VEHICLES

Gerd Schmidt, Velbert, Fed. Rep. of Germany, assignor to Hella KG Hueck & Co., Lippstadt, Fed. Rep. of Germany
Filed Mar. 15, 1988, Ser. No. 168,733
Claims priority, application Fed. Rep. of Germany, Sep. 16, 1987, MR588
Term of patent 14 years
U.S. Cl. D26—36



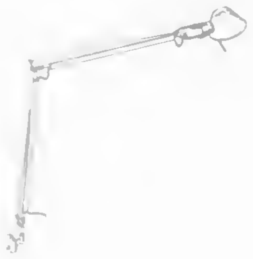
304,623
FLOOD LIGHT

James E. Roulstone, Spring, Tex., assignor to Innovative Controls, Inc., Houston, Tex.
Filed Jun. 24, 1987, Ser. No. 65,712
Term of patent 14 years
U.S. Cl. D26—63



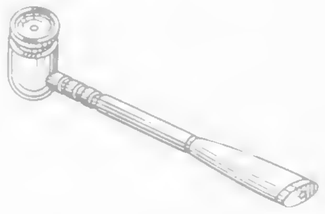
304,624
ADJUSTABLE WALL LAMP

Michele De Lucchi, Milan, Italy, assignor to Artemide S.p.A., Milan, Italy
Filed Jul. 6, 1987, Ser. No. 70,833
Claims priority, application Italy, Jan. 8, 1987, 20427/87[U]
The portion of the term of this patent subsequent to Aug. 8, 2003, has been disclaimed.
Term of patent 14 years
U.S. Cl. D26—65



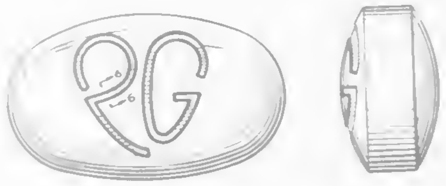
304,625
PIPE

Yutaka Katayama, Tokyo, Japan, assignor to Aruman Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 29, 1988, Ser. No. 174,937
Term of patent 14 years
U.S. Cl. D27—163



304,626
PHARMACEUTICAL TABLET

Avinash M. Contractor, Warminster; David E. Auslander, Yardley, and Wayne M. Grim, Doylestown, all of Pa., assignors to Rorer Pharmaceutical Corporation, Fort Washington, Pa.
Filed Dec. 21, 1987, Ser. No. 136,155
The portion of the term of this patent subsequent to Jun. 20, 2003, has been disclaimed.
Term of patent 14 years
U.S. Cl. D28—2



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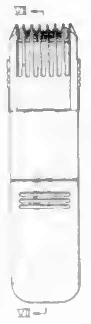
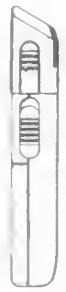
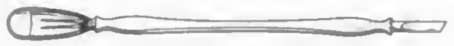
304,627
ELECTRIC HAIR CLIPPER
Kazuyoshi Yonesawa, Suita, Japan, assignor to Matsushita Electric Works, Ltd., Osaka, Japan
Filed Apr. 4, 1987, Ser. No. 81,168
Claims priority, application Japan, Feb. 16, 1987, 62-5691
Term of patent 14 years
U.S. Cl. D28—53

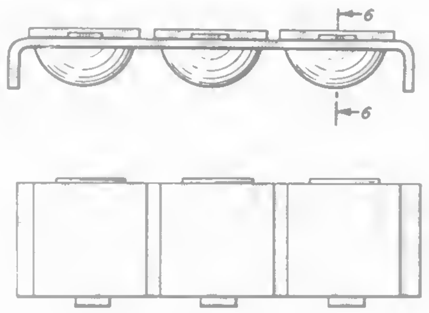




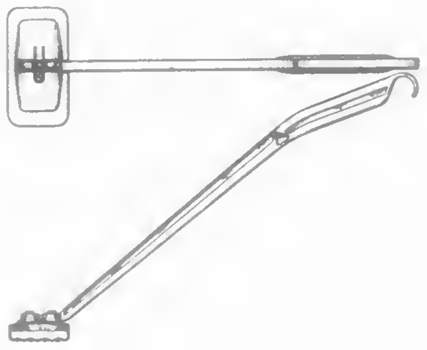
304,628
CUTICLE STICK
Welester G. Alvarado, Los Angeles, Calif., assignor to Joico Laboratories, Inc., City of Industry, Calif.
Filed Oct. 27, 1987, Ser. No. 113,711
Term of patent 14 years
U.S. Cl. D28—57



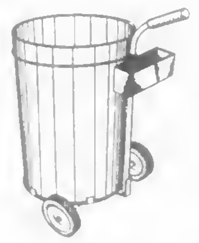
304,629
COSMETIC CASE
Welester G. Alvarado, Los Angeles, Calif., assignor to Joico Laboratories, Inc., City of Industry, Calif.
Filed Oct. 27, 1987, Ser. No. 113,716
Term of patent 14 years
U.S. Cl. D28—76



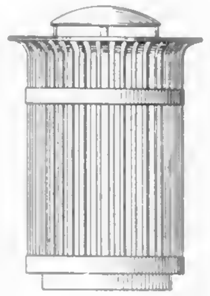
304,630
SPONGE MOP FOR CLEANING TUBS, TILE OR THE LIKE
David A. Jones, Dayton, and William J. O'Neil, Jr., Cincinnati, both of Ohio, assignors to The Drackett Company, Cincinnati, Ohio
Filed Jul. 31, 1987, Ser. No. 80,375
Term of patent 14 years
U.S. Cl. D32—40



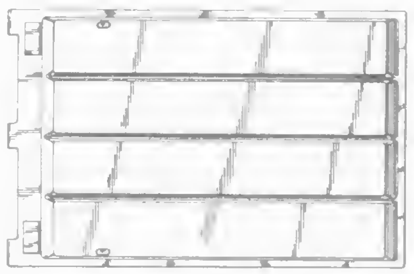
304,631
TRASH BAG RETAINING AND TRANSPORTING CART
Steven J. McCarville, 2921 Pleasant St., West Des Moines, Iowa 50265
Filed Feb. 9, 1987, Ser. No. 12,644
Term of patent 14 years
U.S. Cl. D34—5



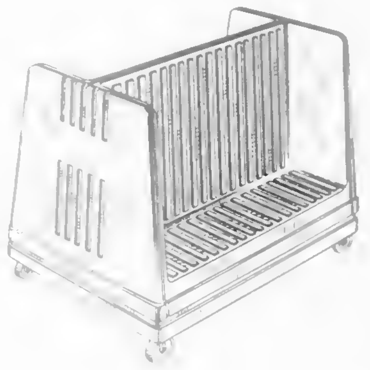
304,632
COVERED TRASH CAN HOLDER
Gerald P. Skalka, Washington, D.C., assignor to Victor Stanley, Inc., Dunkirk, Md.
Filed May 28, 1987, Ser. No. 58,025
Term of patent 14 years
U.S. Cl. D34—6



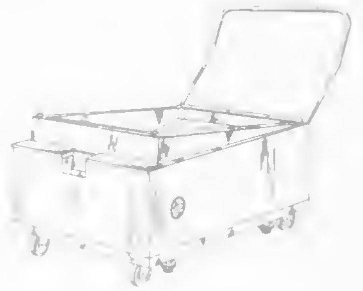
304,633
TRASH CONTAINER LID
Craig V. Taylor, 8924 Enfield Ave., Northridge, Calif. 91325
Filed Dec. 14, 1987, Ser. No. 132,134
Term of patent 14 years
U.S. Cl. D34—11



304,634
SIDE-LOADING DISH AND TRAY CART
Ronald C. Banko, North Wales, and Robert H. Nattress, Shavertown, both of Pa., assignors to InterMetro Industries Corporation, Wilkes-Barre, Pa.
Filed Sep. 18, 1987, Ser. No. 98,661
Term of patent 14 years
U.S. Cl. D34—14



304,635
CART
William H. Barrett, Woodstock; Joseph A. Gregory, Kingston; Lisa M. Mohr, and David L. Schaum, both of Woodstock, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Nov. 3, 1986, Ser. No. 926,473
Term of patent 14 years
U.S. Cl. D34—19



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304,636
VENTILATING COVER FOR CONTAINER

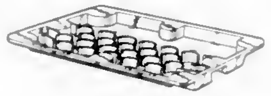
Seo Y. Jun, 1-1205, Hongsil Apartment, 79 Samsung-Dong, Kangnam-Ku, Seoul, Rep. of Korea

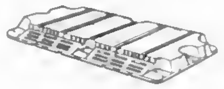
Filed Jan. 27, 1986, Ser. No. 823,042

Claims priority, application Rep. of Korea, Sep. 6, 1985, 12619/85

Term of patent 14 years

U.S. Cl. D34—28





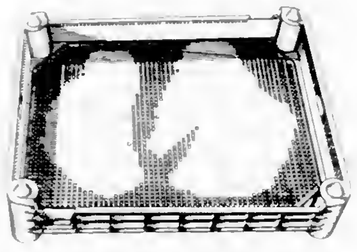
304,637
CRATE

Jean-Marie Chabot, St. Damien, Canada, assignor to Les Industries Provinciales Limitée, St. Damien, Canada

Filed Aug. 11, 1987, Ser. No. 83,804

Term of patent 14 years

U.S. Cl. D34—40



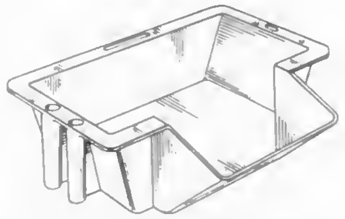
304,638
SUPPLY TRAY

Ann M. Ireland, 1931 Wilcox Ave., Hollywood, Calif. 90068

Filed Sep. 8, 1986, Ser. No. 905,050

Term of patent 14 years

U.S. Cl. D34—40



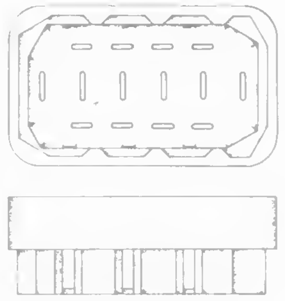
304,639
STACKABLE TRAY

Victor G. Davis, West Kingston, England, assignor to Foam Fabricators Ltd., St. Louis, Mo.

Filed Dec. 12, 1986, Ser. No. 941,264

Term of patent 14 years

U.S. Cl. D34—40



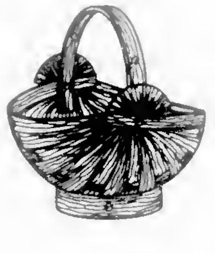
304,640
BASKET OR SIMILAR ARTICLE

Matthew S. Newman, P.O. Box 46, Scotts Road, New Braintree, Mass. 01531

Filed Aug. 29, 1986, Ser. No. 902,337

Term of patent 14 years

U.S. Cl. D34—44



304,641
CREMATION URN DISPLAY STAND

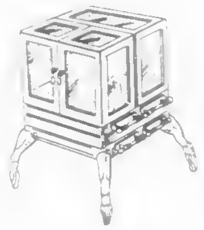
Marcel J. Bourassa, P.O. Box 3249, Kamloops, B.C., Canada V2C 6B8

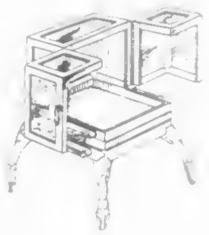
Filed Oct. 1, 1986, Ser. No. 914,592

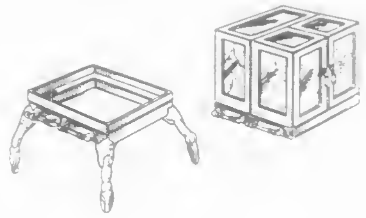
Claims priority, application Canada, Apr. 4, 1986, 04-04-86-1

Term of patent 14 years

U.S. Cl. D99—5







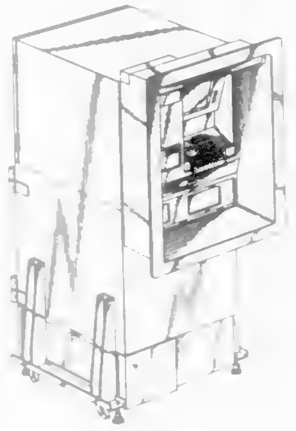
304,642
AUTOMATED TELLER MACHINE

Yoshinori Kakiuchi, Kawasaki, Japan, and Luigi Di Benedetto, Los Angeles, Calif., assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jan. 28, 1987, Ser. No. 7,827

Term of patent 14 years

U.S. Cl. D99—28



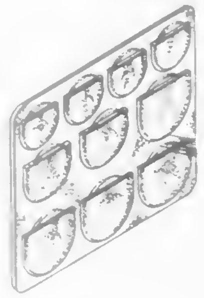
304,643
COIN ORGANIZER

Donald G. Sloan, 17263 Halsted St., Northridge, Calif. 91325

Filed Dec. 29, 1986, Ser. No. 947,555

Term of patent 14 years

U.S. Cl. D99—34



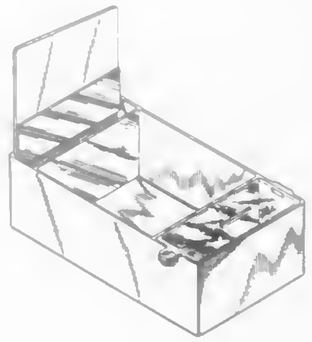
304,644
COMBINED CONFECTIONERY TRAY, ADVERTISING HOLDER AND DONATION BOX

Charles E. Silcox, Rte. #3, Box 499, Proctorville, Ohio 45669

Filed Jul. 16, 1986, Ser. No. 886,508

Term of patent 14 years

U.S. Cl. D99—36



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LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 14TH DAY OF NOVEMBER, 1989

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

- A. Ahlstrom Corporation: *See—*
  - Frejborg, Frey, 4,880,540, Cl. 210-413.000.
- A. O. Smith Corporation: *See—*
  - Stubbe, James S.; Chevalier, James L.; and Pow, Edwin C., 4,879,801, Cl. 29-455.100.
- A/S Ferrosan: *See—*
  - Watjen, Frank; and Engelstoft, Mogens, 4,880,799, Cl. 514-211.000.
- A.T.B. S.P.A.: *See—*
  - Bordignon, Abramo, 4,881,146, Cl. 360-132.000.
- Aardelite Holding B. V.: *See—*
  - Spanjer, Jacobs J.; and Rademaker, Pieter D., 4,880,582, Cl. 264-82.000.
- Aarestad, Jerome K., to Sundstrand Corporation. Centrifugal liquid pump. 4,880,352, Cl. 415-182.100.
- Aasen, Steven M.; and Oxman, Joel D., to Minnesota Mining and Manufacturing Company. Method for priming hard tissue. 4,880,660, Cl. 427-2.000.
- Abbott, David I.: *See—*
  - Jones, David; and Abbott, David I., 4,881,252, Cl. 379-38.000.
- Abbott Laboratories: *See—*
  - Callison, Oscar H., 4,880,912, Cl. 530-361.000.
  - Chu, Daniel T.; Rosen, Terry J.; and Cooper, Curt S., 4,880,814, Cl. 514-300.000.
- Abboud, George E.; Such, Christopher H.; Horley, Susan M.; and Waters, Julian A., to Imperial Chemical Industries PLC. Acryloxy-containing compounds. 4,880,931, Cl. 544-316.000.
- Abe, Masaaki: *See—*
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  Vanlerberghe, Guy; and Sebag, Henri, 4,880,620, Cl. 424-70.000

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- Yoshida, Kouichi; and Harada, Noritake, to Kabushikigaisha Tokyo Kikai Seisakusho. Ink supplying device. 4,879,951, Cl. 101-363.000.
- Yoshida, Shigekazu: *See—*
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- Yoshida, Takayuki; Fujii, Masao; and Sakuma, Kiyoshi, to Mitsubishi Denki Kabushiki Kaisha. Heat exchanger tube for evaporation or condensation. 4,880,054, Cl. 165-133.000.
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- Yoshihara, Masashi, to NEC Corporation. Antenna orientation adjusting device for earth station. 4,881,081, Cl. 342-359.000.
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- Yoshikawa, Kuniyoshi, to Kabushiki Kaisha Toshiba. Semiconductor device 4,881,108, Cl. 357-23.500
- Yoshikawa, Masato; Kusano, Yukihiro; Naito, Kazuo; Honda, Toshio; and Hata, Tomonobu, to Bridgestone Corporation Surface treatment method. 4,880,515, Cl 204-192.120.

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Zander, Hans-Gunter; Bornefeld, Horst; and Holle, Bernd-Michael, to Bayer Aktiengesellschaft. Process and device for micronizing solid matter in jet mills. 4,880,169, Cl. 241-5.000.

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Zimmermann, Wolfgang; and Harreus, Albrecht, to Hoechst Aktiengesellschaft. Polymer granulate, a process for its preparation, and its use. 4,880,870, Cl. 524-31.000.

Zinser Textilmaschinen GmbH: *See—*
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Zisapel, Nava; and Laudon, Moshe. Melatonin antagonist. 4,880,826, Cl. 514-415.000.

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Zolock, Michael J., to Micro Motion, Incorporated. Coriolis mass flow rate meter having four pulse harmonic rejection. 4,879,911, Cl. 73-861.380.

Zun, Hong-Fu. Releasable swivel lock assembly for a canopy support of a stroller. 4,880,331, Cl. 403-24.000.

Zwarun, Andrew A.; and Price, Gail L., to Edward Weck Incorporated. Ink formulation for monitoring sterilization processes. 4,880,466, Cl. 106-21.000.

501 Bellwether, Inc.: *See—*
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501 Herberts Gesellschaft mit Beschrankter: *See—*
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Aoki, Masayuki: *See—*
Kiritani, Masataka; Matsukawa, Hiroharu; and Aoki, Masayuki, Re. 33,113, Cl. 503-213.000.

Belmont Textile Machinery Company: *See—*
Niederer, Kurt W., Re. 33,111, Cl. 242-18.00A.

Doerr, Erwin: *See—*
Wood, Prentice J.; and Doerr, Erwin, Re. 33,110, Cl. 229-117.130.

Durham, Timothy N. Apparatus for housing and deploying a radar detector in an automotive vehicle. Re. 33,112, Cl. 296-37.700.

Fuji Photo Film Co., Ltd.: *See—*
Kiritani, Masataka; Matsukawa, Hiroharu; and Aoki, Masayuki, Re. 33,113, Cl. 503-213.000.

Kiritani, Masataka; Matsukawa, Hiroharu; and Aoki, Masayuki, to Fuji Photo Film Co., Ltd. Pressure sensitive recording paper. Re. 33,113, Cl. 503-213.000.

Matsukawa, Hiroharu: *See—*
Kiritani, Masataka; Matsukawa, Hiroharu; and Aoki, Masayuki, Re. 33,113, Cl. 503-213.000.

Mead Corporation, The: *See—*
Wood, Prentice J.; and Doerr, Erwin, Re. 33,110, Cl. 229-117.130.

Niederer, Kurt W., to Belmont Textile Machinery Company. Method and apparatus for automatically doffing and donning take-up packages on a winder. Re. 33,111, Cl. 242-18.00A

Wood, Prentice J.; and Doerr, Erwin, to Mead Corporation, The Carrying handle for a can carton. Re. 33,110, Cl. 229-117.130.

LIST OF REEXAMINATION PATENTEES

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CERTIFICATES WERE ISSUED

Buell, Kenneth B., to Procter & Gamble Company, The. Disposable garment with breatheable leg cuffs. B1 4,636,207, 11-14-89, Cl. 604-370.000.

Canon Kabushiki Kaisha: *See—*
Suzki, Akiyoshi; and Hirabayashi, Yoichi, B1 4,199,219, Cl. 350-6.100.

Dial-A-Channel, Inc.: *See—*
Doumit, Joseph A.; and Weiblen, Robert E., B1 4,203,130, Cl. 358-1.000.

Doumit, Joseph A.; and Weiblen, Robert E., to Dial-A-Channel, Inc. Information displaying system. B1 4,203,130, 11-14-89, Cl. 358-1.000.

Draai, Willem T.: *See—*
van Cooten, Robertus; Simons, Dick; Witteveen, Bontko; Draai, Willem T.; van Striphout, Johannes G. V.; and Huijben, Martinus J., B1 4,704,621, Cl. 346-153.100.

Eaton Corporation: *See—*
King, Monroe L., B1 4,514,636, Cl. 250-443.100.

Grant, Louis A.; and Trunzo, Arthur F., to Standard Steel Sponge. Drapable consumable heat retention shield for hot metal cars. B1 4,424,956, 11-14-89, Cl. 266-248.000.

Hirabayashi, Yoichi: *See—*
Suzki, Akiyoshi; and Hirabayashi, Yoichi, B1 4,199,219, Cl. 350-6.100.

Huijben, Martinus J.: *See—*
van Cooten, Robertus; Simons, Dick; Witteveen, Bontko; Draai, Willem T.; van Striphout, Johannes G. V.; and Huijben, Martinus J., B1 4,704,621, Cl. 346-153.100.

King, Monroe L., to Eaton Corporation. Ion treatment apparatus. B1 4,514,636, 11-14-89, Cl. 250-443.100.

McDonald, Charles H. Elastomeric pavement repair composition for pavement failure and a method of making the same. B1 3,891,585, 11-14-89, Cl. 523-307.000.

OCE-Nederland B.V.: *See—*
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Procter & Gamble Company, The: *See—*
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Rondeau, Henry S., to Rondeau, Virginia C., Executrix of State of Henry S. Rondeau. Spray bonding of nickel aluminum and nickel titanium alloys. B1 4,027,367, 11-14-89, Cl. 428-652.000.

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Silicon Technology Corporation: *See—*
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Simons, Dick: *See—*
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Standard Steel Sponge: *See—*
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Steere, Robert E., Jr., to Silicon Technology Corporation. Wafering system. B1 4,420,909, 11-14-89, Cl. 51-73.00R.

Suzki, Akiyoshi; and Hirabayashi, Yoichi, to Canon Kabushiki Kaisha. Device for scanning an object with a light beam. B1 4,199,219, 11-14-89, Cl. 350-6.100.

Trunzo, Arthur F.: *See—*
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- Aloys F. Dornbracht GmbH & Co. KG: *See—*
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- Alskog, Bjorn M. Pen. 304,601, 11-14-89, Cl. D19-49.000.
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- Avia Group International, Inc.: *See—*
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- Barrett, William H.; Gregory, Joseph A.; Mohr, Lisa M.; and Schaum, David L., to International Business Machines Corporation. Cart. 304,635, 11-14-89, Cl. D34-19.000.
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Danielson, David C.; Hartmann, James J.; McGarvey, John N.; Tilley, Alvin R.; and Wuerz, John M., 304,587, Cl. D14-244.000.
Toth, Richard J.: *See*—
Scheid, William J.; Toth, Richard J.; and Schwendeman, Robert J., 304,577, Cl. D14-106.000.
Toyota Jidosha Kabushiki Kaisha: *See*—
Ikeda, Mitsuo, 304,563, Cl. D12-163.000.
Tsuda, Toru; and Motomura, Kenichi, to Bridgestone Corporation. Automobile tire. 304,556, 11-14-89, Cl. D12-142.000.
Victor Stanley, Inc.: *See*—
Skalka, Gerald P., 304,632, Cl. D34-6.000.
Vissiere, Daniel. Electronic control desk. 304,576, 11-14-89, Cl. D14-103.000.
Vital Force, Inc.: *See*—
Conaway, Robert M., 304,610, Cl. D23-207.000.
W. Stackhouse Associates, Inc.: *See*—
Stackhouse, Wyman H.; and Williamson, Ian M., 304,612, Cl. D23-365.000.
Wanner, Vernon W.: *See*—
Adleman, Larry G.; and Wanner, Vernon W., 304,590, Cl. D15-123.000.
Weidman, Richard C.; and Weidman, W. Jeffrey. Suspenders. 304,522, 11-14-89, Cl. D2-626.000.
Weidman, W. Jeffrey: *See*—
Weidman, Richard C.; and Weidman, W. Jeffrey, 304,522, Cl. D2-626.000.
Wen, Zin-Way. Toy car. 304,603, 11-14-89, Cl. D21-124.000.
Werthman, Harold E., to All-Weather Industries, Inc. Self storing security storm door. 304,617, 11-14-89, Cl. D25-48.000.
White, O. Timothy, to Royston Corporation. Cup dispenser housing. 304,535, 11-14-89, Cl. D6-516.000.
Wm. B. Reily & Company, Inc.: *See*—
Williams, Frank D., 304,531, Cl. D6-464.000.
Williams, Frank D., to Wm. B. Reily & Company, Inc. Tea brewer stand. 304,531, 11-14-89, Cl. D6-464.000.
Williamson, Ian M.: *See*—
Stackhouse, Wyman H.; and Williamson, Ian M., 304,612, Cl. D23-365.000.
Wuerz, John M.: *See*—
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Yajima, Yasuko: *See*—
Kido, Shigeaki; Isozaki, Sadao; and Yajima, Yasuko, 304,564, Cl. D14-151.000.
Yamada, Munemitsu, to Sumitomo Rubber Industries, Ltd. Automobile tire. 304,559, 11-14-89, Cl. D12-146.000.
Yamamoto, Masato, to Asahi Kogaku Kogyo Kabushiki Kaisha. Camera lens. 304,594, 11-14-89, Cl. D16-134.000.
Yamashita, Taichiro: *See*—
Saegusa, Masahito; Hashimoto, Kazunori; Ohwada, Takashi; Kawakatsu, Yoshihiro; Ohuchi, Katsubumi; Endo, Hiroshi; and Yamashita, Taichiro, 304,578, Cl. D14-118.000.
Yonesawa, Kazuyoshi, to Matsushita Electric Works, Ltd. Electric hair clipper. 304,627, 11-14-89, Cl. D28-53.000.
Yoo, Seung H., to Gold Star Co., Ltd. Microwave oven. 304,542, 11-14-89, Cl. D7-351.000.

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LIST OF PLANT PATENTEES

Holtkamp, Reinhold, Sr. African violet plant name West Virginia. 7,056, 11-14-89, Cl. 69.000.

Moore, Ralph S., to Sequoia Nursery. Miniature rose plant 'Morjoyc'. 7,055, 11-14-89, Cl. 7.000.

Sequoia Nursery: *See*—
Moore, Ralph S., 7,055, Cl. 7.000.

CLASSIFICATION OF PATENTS

ISSUED NOVEMBER 14, 1989

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2	
24	4,879,765
101	4,879,766
243 B	4,879,767
268	4,879,768
312	4,879,769
441	4,879,770
CLASS 4	
191	4,879,771
506	4,879,772
612	4,879,773
CLASS 5	
8	4,879,774
400	4,879,775
436	4,879,776
453	4,879,777
CLASS 8	
182	4,880,433
188	4,880,430
549	4,880,431
	4,880,434
647	4,830,432
CLASS 12	
146 D	4,879,778
CLASS 15	
104 92	4,879,779
105 5	4,879,780
110	4,879,781
210 A	4,879,782
250.21	4,879,783
322	4,879,784
CLASS 16	
82	4,879,785
341	4,879,786
CLASS 24	
712.2	4,879,787
CLASS 26	
94	4,879,788
CLASS 27	
11	4,879,789
CLASS 29	
1.2	4,879,790
148.4 D	4,879,791
156.4 R	4,879,792
156.8 R	4,879,793
159.1	4,879,794
214	4,879,795
	4,879,796
240	4,879,797
434	4,879,798
447	4,879,799
450	4,879,800
455.1	4,879,801
568	4,879,802
598	4,879,803
605	4,879,804
622	4,879,805
623.5	4,880,435
741	4,879,806
828	4,879,807
845	4,879,808
860	4,879,809
861	4,879,810
CLASS 30	
89	4,879,811
CLASS 33	
1 MP	4,879,812
201	4,879,813
234	4,879,814
293	4,879,815
295	4,879,816
502	4,879,817
646	4,879,818
833	4,879,819
CLASS 34	
71	4,879,820
CLASS 36	
44	4,879,821
119	4,879,822
CLASS 40	
124 1	4,879,823
152.1	4,879,824
513	4,879,825
551	4,879,826
CLASS 42	
23	4,879,827
50	4,879,828
87	4,879,829
CLASS 43	
9 7	4,879,830
17.6	4,879,831
25.2	4,879,832
26.1	4,879,833
43.12	4,879,834
44.83	4,879,835
64	4,879,836
124	4,879,837
CLASS 44	
7.3	4,880,436
57	4,880,437
CLASS 47	
45	4,879,838
57.6	4,879,839
58	4,879,840
59	4,879,841
CLASS 48	
69	4,880,438
197 R	4,880,439
CLASS 49	
141	4,879,842
158	4,879,843
CLASS 51	
31	4,879,844
73 R	B1 4,420,909
98.5	4,879,845
137	4,879,846
170 R	4,879,847
CLASS 52	
8	4,879,848
10	4,879,849
82	4,879,850
169.5	4,879,851
	4,879,852
208	4,879,853
238.1	4,879,854
309.11	4,879,855
403	4,879,856
	4,879,857
741	4,879,858
	4,879,859
CLASS 53	
247	4,879,860
435	4,879,861
438	4,879,862
557	4,879,863
559	4,879,864
CLASS 54	
66	4,879,865
71	4,879,866
CLASS 55	
16	4,880,440
	4,880,441
	4,880,442
26	4,880,443
36	4,880,444
68	4,880,445
71	4,880,446
94	4,880,447
103	4,880,448
170	4,880,449
237	4,880,451
269	4,880,450
CLASS 56	
11.1	4,879,867
11.2	4,879,868
12.7	4,879,869
13.6	4,879,870
239	4,879,871
CLASS 57	
137	4,879,872
413	4,879,873
CLASS 60	
259	4,879,874
588	4,879,875
CLASS 62	
6	4,879,876
89	4,879,877
187	4,879,878
202	4,879,879
406	4,879,880
447	4,879,881
CLASS 63	
4	4,879,882
15.7	4,879,883
CLASS 65	
3.12	4,880,452
23	4,880,453
24	4,880,454
CLASS 66	
14	4,879,884
54	4,879,885
151	4,879,886
CLASS 68	
16	4,879,887
18 C	4,879,888
CLASS 70	
56	4,879,889
CLASS 71	
28	4,880,455
88	4,880,456
92	4,880,457
CLASS 72	
62	4,879,890
254	4,879,891
290	4,879,892
402	4,879,893
405	4,879,894
CLASS 73	
4 R	4,879,895
46	4,879,896
59	4,879,897
118.2	4,879,898
147	4,879,899
155	4,879,900
168	4,879,901
304 R	4,879,902
431	4.879,903
517 R	4,879,904
579	4,879,905
826	4,879,906
861.05	4,879,907
861.23	4,879,908
861.24	4,879,909
861.37	4,879,910
861.38	4,879,911
861.61	4,879,912
862.04	4,879,913
862.59	4,879,914
864.74	4,879,915
865.8	4,879,916
866	4,879,917
CLASS 74	
5.47	4,879,918
337.5	4,879,919
465	4,879,920
467	4,879,921
500.5	4,879,922
552	4,879,923
799	4,879,924
867	4,879,925
CLASS 75	
35	4,880,458
	4,880,459
236	4,880,460
238	4,880,461
253	4,880,462
257	4,880,463
CLASS 81	
9.51	4,879,926
56	4,879,927
488	4,879,928
CLASS 82	
110	4,879,929
158	4,879,930
CLASS 83	
23	4,879,931
30	4,879,932
76.1	4,879,933
76.9	4,879,934
748	4,879,935
842	4,879,936
CLASS 84	
95.2	4,879,938
240	4,879,939
322	4,879,940
699	4,879,937
CLASS 89	
1.14	4,879,941
14.3	4,879,942
CLASS 91	
224	4,879,943
516	4,879,944
518	4,879,945
CLASS 99	
453	4,879,946
CLASS 101	
93.04	4,879,947
114	4,879,948
157	4,879,949
217	4,879,950
363	4,879,951
CLASS 102	
331	4,879,952
507	4,879,953
CLASS 106	
1.05	4,880,464
20	4,880,465
21	4,880,466
85	4,880,467
98	4,880,468
203	4,880,469
271	4,880,470
286.6	4,880,471
493	4,880,472
CLASS 108	
6	4,879,954
50	4,879,955
53.3	4,879,956
CLASS 109	
79	4,879,957
CLASS 110	
245	4,879,958
264	4,879,959
CLASS 112	
291	4,879,960
CLASS 114	
102	4,879,961
188	4,879,962
363	4,879,963
CLASS 116	
28 R	4,879,964
209	4,879,965
CLASS 118	
207	4,879,966
259	4,879,967
300	4,879,968
638	4,879,969
719	4,879,970
CLASS 119	
14 03	4,879,971
109	4,879,972
CLASS 122	
379	4,879,973
CLASS 123	
51 A	4,879,974
52 M	4,879,975
90.31	4,879,977
90.67	4,879,978
136	4,880,856
190 BB	4,879,979
193 H	4,879,980
198 C	4,879,981
339	4,879,982
	4,879,983
450	4,879,984
501	4,879,985
571	4,879,986
651	4,879,976
CLASS 124	
25	4,879,987
41 A	4,879,988
79	4,879,989
CLASS 126	
25 R	4,879,990
CLASS 127	
37	4,880,473
CLASS 128	
6	4,879,991
	4,879,992
24 A	4,879,993
70	4,879,994
200.21	4,879,997
201 11	4,879,995
202.26	4,879,996
205.24	4,879,998
207.14	4,879,999
303 R	4,880,000
303 1	4,880,001
335.5	4,880,002
374	4,880,003
419 PG	4,880,004
	4,880,005
630	4,880,006
653	4,880,007
654	4,880,008
660.09	4,880,009
661.01	4,880,010
662.06	4,880,011
663.01	4,880,012
681	4,880,013
734	4,880,014
751	4,880,015
885	4,880,016
898	4,880,017
CLASS 131	
375	4,880,018
CLASS 132	
270	4,880,019
308	4,880,020
CLASS 134	
21	4,880,474
62	4,880,021
120	4,880,022
CLASS 135	
25 R	4,880,023
101	4,880,024
CLASS 137	
1	4,880,025
234 6	4,880,026
247.25	4,880,027
315	4,880,028
329 06	4,880,029
460	4,880,030
625 12	4,880,031
625.19	4,880,032
625 65	4,880,033
CLASS 138	
40	4,880,034
99	4,880,035
137	4,880,036
CLASS 139	
439	4,880,037
CLASS 140	
93.6	4,880,038
CLASS 141	
1	4,880,039
5	4,880,040
167	4,880,041
CLASS 144	
372	4,880,042
CLASS 148	
141	4,880,477
248	4,880,478
253	4,880,476
320	4,880,479
	4,880,480
325	4,880,481
403	4,880,482
CLASS 149	
6	4,880,483
CLASS 152	
526	4,880,043
CLASS 156	
51	4,880,484
108	4,880,485
273.5	4,880,486
327	4,880,487
344	4,880,488
345	4,880,489
541	4,880,490
584	4,880,491
610	4,880,492
628	4,880,493
633	4,880,494
642	4,880,495
643	4,880,496
CLASS 160	
84.1	4,880,044
	4,880,045
194	4,880,046
CLASS 162	
135	4,880,497
164 6	4,880,498
198	4,880,499
279	4,880,500
358	4,880,501
359	4,880,502
CLASS 164	
45	4,880,047
342	4,880,048
CLASS 165	
6	4,880,049
41	4,880,050
45	4,880,051
47	4,880,503
104 14	4,880,052
104.26	4,880,053
133	4,880,054
167	4,880,055
CLASS 166	
51	4,880,056
267	4,880,057
289	4,880,058
332	4,880,059
336	4,880,060
348	4,880,061
371	4,880,062
CLASS 169	
37	4,880,063
CLASS 173	
12	4,880,064
CLASS 174	
72 A	4,880,943
138 E	4,880,944
CLASS 175	
71	4,880,065
75	4,880,066
107	4,880,067
369	4,880,068
CLASS 177	
211	4,880,069
CLASS 180	
53.1	4,880,070
117	4,880,071
140	4,880,072
	4,880,073
142	4,880,074

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219	4,880,075
CLASS 181	
130	4,880,076
207	4,880,077
232	4,880,078
CLASS 182	
107	4,880,079
155	4,880,080
CLASS 184	
1 5	4,880,081
CLASS 187	
134	4,880,082
CLASS 188	
2 R	4,880,083
67	4,880,084
79.55	4,880,085
299	4,880,086
322 16	4,880,087
377	4,880,088
CLASS 190	
18 R	4,880,089
CLASS 192	
0.052	4,880,094
3 3	4,880,090
	4,880,091
4 A	4,880,092
45 1	4,880,093
58 B	4,880,095
CLASS 194	
206	4,880,096
239	4,880,097
CLASS 198	
346 2	4,880,098
371	4,880,099
379	4,880,100
403	4,880,101
418 3	4,880,102
434	4,880,103
445	4,880,104
465 4	4,880,105
763	4,880,106
779	4,880,107
803.12	4,880,108
833	4,880,109
CLASS 200	
61 54	4,880,945
144 B	4,880,947
148 A	4,880,946
151	4,880,948
501	4,880,949
547	4,880,950
CLASS 202	
185.6	4,880,504
CLASS 203	
60	4,880,505
CLASS 204	
1 5	4,880,506
44 4	4,880,507
59 R	4,880,508
129.2	4,880,509
131	4,880,510
151	4,880,511
157.61	4,880,512
182 4	4,880,513
192.12	4,880,515
192.2	4,880,514
196	4,880,517
224 M	4,880,516
298	4,880,518
425	4,880,519
CLASS 205	
311	4,880,977
CLASS 206	
0.5	4,880,110
209.1	4,880,111
216	4,880,112
287	4,880,113
418	4,880,114
427	4,880,115
454	4,880,116
487	4,880,117
513	4,880,118
584	4,880,119
CLASS 208	
46	4,880,520
120	4,880,521
216 PP	4,880,522
	4,880,523
	4,880,524
	4,880,525
217	4,880,526
251 R	4,880,527
409	4,880,528
CLASS 209	
3.1	4,880,120
167	4,880,529
268	4,880,532
380	4,880,530
702	4,880,121
CLASS 210	
104	4,880,533
130	4,880,534
169	4,880,531
181	4,880,535
232	4,880,536
323.1	4,880,537
401	4,880,538
408	4,880,539
413	4,880,540
496	4,880,541
611	4,880,542
635	4,880,543
639	4,880,544
654	4,880,545
699	4,880,546
728	4,880,547
767	4,880,548
805	4,880,549
CLASS 211	
70 6	4,880,122
CLASS 212	
177	4,880,123
218	4,880,124
CLASS 215	
11.3	4,880,125
100 R	4,880,126
252	4,880,127
CLASS 219	
10.55 B	4,880,952
10.55 E	4,880,951
10.55 M	4,880,953
	4,880,954
10.55 R	4,880,955
60 A	4,880,956
69.12	4,880,957
121.39	4,880,958
121.85	4,880,959
273	4,880,960
388	4,880,961
549	4,880,962
CLASS 220	
3.9	4,880,128
70	4,880,129
83	4,880,131
	4,880,132
85 H	4,880,133
85 K	4,880,130
85 P	4,880,134
85 VS	4,880,135
253	4,880,136
269	4,880,137
320	4,880,138
337	4,880,139
371	4,880,140
464	4,880,141
CLASS 222	
56	4,880,142
135	4,880,143
173	4,880,144
192	4,880,145
	4,880,146
195	4,880,147
	4,880,148
207	4,880,149
346	4,880,150
394	4,880,151
CLASS 224	
162	4,880,152
CLASS 228	
2.5	4,880,153
122	4,880,154
CLASS 229	
117.13	Re.33,110
125.09	4,880,155
CLASS 232	
43.1	4,880,156
CLASS 235	
449	4,880,963
462	4,880,964
CLASS 236	
25 R	4,880,157
CLASS 238	
8	4,880,158
CLASS 239	
1	4,880,159
167	4,880,160
330	4,880,161
406	4,880,162
422	4,880,163
423	4,880,164
525	4,880,165
526	4,880,166
542	4,880,167
553.5	4,880,168
CLASS 241	
5	4,880,169
	4,880,170
46.11	4,880,171
101 2	4,880,172
CLASS 242	
1.1 R	4,880,173
18 A	Re.33,111
18 DD	4,880,174
35.5 R	4,880,175
35.6 E	4,880,176
47.01	4,880,177
58.1	4,880,178
71 1	4,880,179
71 8	4,880,180
74	4,880,181
117	4,880,182
125.1	4,880,183
130	4,880,184
CLASS 244	
135 B	4,880,185
159	4,880,186
172	4,880,187
173	4,880,188
214	4,880,189
CLASS 246	
107	4,880,190
CLASS 248	
110	4,880,192
122	4,880,193
166	4,880,194
219.4	4,880,195
293	4,880,196
324	4,880,197
346	4,880,198
371	4,880,191
396	4,880,199
547	4,880,200
575	4,880,201
676	4,880,202
CLASS 249	
24	4,880,203
219.2	4,880,204
CLASS 250	
213 VT	4,880,965
216	4,880,974
221	4,880,967
	4,880,968
	4,880,969
227	4,880,970
	4,880,971
231 R	4,880,966
	4,880,972
253	4,880,973
306	4,880,975
310	4,880,976
332	4,880,978
338.4	4,880,979
353	4,880,980
369	4,880,981
385.1	4,880,983
443.1	B1 4,514,636
484.1	4,880,984
	4,880,986
	4,880,987
504 R	4,880,988
505.1	4,880,985
506.1	4,880,989
560	4,880,991
561	4,880,992
577	4,880,982
	4,880,990
CLASS 251	
30.02	4,880,205
129.21	4,880,206
337	4,880,207
356	4,880,208
363	4,880,209
CLASS 252	
33	4,880,550
34	4,880,552
47.5	4,880,551
58	4,880,553
143	4,880,555
156	4,880,556
174 15	4,880,557
174.23	4,880,558
186.21	4,880,559
299.01	4,880,560
299.61	4,880,561
299.63	4,880,562
312	4,880,563
321	4,880,564
355	4,880,565
389 22	4,880,566
512	4,880,567
	4,880,570
548	4,880,568
550	4,880,569
CLASS 256	
26	4,880,210
CLASS 257	
284	4,880,271
CLASS 260	
404	4,880,572
420	4,880,573
428	4,880,574
CLASS 264	
22	4,880,577
26	4,880,578
	4,880,579
	4,880,580
39	4,880,581
82	4,880,582
130	4,880,583
135	4,880,584
141	4,880,585
	4,880,586
154	4,880,587
163	4,880,588
216	4,880,589
275	4,880,590
327	4,880,591
514	4,880,592
532	4,880,593
CLASS 266	
44	4,880,211
94	4,880,212
248	B1 4,424,956
CLASS 267	
64 27	4,880,213
136	4,880,214
140.1	4,880,215
	4,880,216
167	4,880,217
CLASS 269	
21	4,880,218
60	4,880,219
71	4,880,220
139	4,880,221
322	4,880,222
CLASS 271	
293	4,880,223
CLASS 272	
72	4,880,224
73	4,880,225
97	4,880,226
118	4,880,227
122	4,880,228
123	4,880,229
130	4,880,230
CLASS 273	
1 GD	4,880,231
32 B	4,880,232
60 R	4,880,233
73 L	4,880,234
86 R	4,880,235
113	4,880,236
138 A	4,880,237
160	4,880,238
181 F	4,880,239
188 R	4,880,240
232	4,880,241
336	4,880,242
411	4,880,243
CLASS 277	
174	4,880,244
CLASS 279	
1 K	4,880,246
1 R	4,880,245
79	4,880,247
CLASS 280	
47.35	4,880,248
253	4,880,249
414.1	4,880,250
613	4,880,251
618	4,880,252
804	4,880,253
808	4,880,254
CLASS 282	
11.5 A	4,880,255
CLASS 283	
92	4,880,256
CLASS 285	
2	4,880,257
7	4,880,258
137.1	4,880,259
382 2	4,880,260
CLASS 290	
2	4,880,993
CLASS 292	
7	4,880,261
202	4,880,262
216	4,880,263
226	4,880,264
CLASS 294	
86 4	4,880,265
CLASS 296	
37.7	Re.33,112
37 9	4,880,266
56	4,880,267
65 1	4,880,268
190	4,880,269
CLASS 297	
188	4,880,270
296	4,880,272
325	4,880,273
362	4,880,274
391	4,880,275
452	4,880,276
467	4,880,277
CLASS 299	
79	4,880,278
CLASS 301	
36 R	4,880,279
105 B	4,880,280
124 R	4,880,281
CLASS 303	
116	4,880,282
CLASS 305	
35 R	4,880,283
CLASS 307	
219	4,880,994
270	4,880,995
425	4,880,996
443	4,880,997
446	4,880,998
CLASS 310	
37	4,880,999
234	4,881,000
258	4,881,001
261	4,881,002
311	4,881,003
CLASS 312	
263	4,880,284
312	4,880,285
CLASS 313	
408	4,881,004
422	4,881,005
450	4,881,006
493	4,881,007
495	4,881,017
532	4,881,008
631	4,881,009
CLASS 315	
111.81	4,881,010
209 R	4,881,012
209 SC	4,881,011
241 P	4,881,013
246	4,881,014
371	4,881,015
376	4,881,016
CLASS 318	
9	4,881,018
68	4,881,019
569	4,881,021
626	4,881,020
800	4,881,022
CLASS 323	
266	4,881,023
299	4,881,024
CLASS 324	
61 R	4,881,025
71 1	4,881,026
107	4,881,027
127	4,881,028
158 R	4,881,029
209	4,881,030
233	4,881,031
309	4,881,032
	4,881,033
318	4,881,034
320	4,881,035
329	4,881,036
425	4,881,037
426	4,881,038
CLASS 328	
26	4,881,039
61	4,881,040
112	4,881,041
CLASS 329	
326	4,881,042
CLASS 330	
252	4,881,043
253	4,881,044
	4,881,045
277	4,881,046
282	4,881,047
CLASS 331	
14	4,881,048
CLASS 332	
103	4,881,049
CLASS 333	
24 1	4,881,052
185	4,881,050
208	4,881,051
CLASS 335	
80	4,881,053
230	4,881,054
CLASS 337	
404	4,881,055
CLASS 338	
4	4,881,056
28	4,881,057
CLASS 340	
326	4,881,058
511	4,881,060
568	4,881,061
677	4,881,062
693	4,881,063
709	4,881,064
710	4,881,065
719	4,881,066
735	4,881,069
750	4,881,067
766	4,881,068
825.05	4,881,074
825 440	4,881,073
870.02	4,881,070
870.020	4,881,072
870.13	4,881,071
CLASS 341	
70	4,881,059
87	4,881,075
95	4,881,076
CLASS 342	
26	4,881,077
155	4,881,078
194	4,881,079
357	4,881,080
359	4,881,081
432	4,881,082
459	4,881,083
CLASS 346	
1.1	4,881,084
75	4,881,085
108	4,881,086
139 C	4,881,087
140 R	4,881,088
	4,881,089
153.1	B1 4,704,621
CLASS 350	
1.1	4,880,286
3.85	4,880,287
6.1	B1 4,199,219
96.12	4,880,288
96.18	4,880,289
96.20	4,880,290
96.21	4,880,291
128	4,880,292
269	4,880,293
	4,880,294
354	4,880,295
	4,880,296
355	4,880,297
414	4,880,298
415	4,880,299
618	4,880,300
636	4,880,301
CLASS 351	
59	4,880,302
CLASS 353	
122	4,880,303

CLASS 354	
105	4,881,090
132	4,881,091
152	4,881,092
234.1	4,881,093
286	4,881,094
298	4,881,095
400	4,881,096
402	4,881,097
403	4,881,098
CLASS 355	
45	4,881,099
53	4,881,100
204	4,881,101
243	4,881,102
251	4,881,103
309	4,881,104
CLASS 356	
41	4,880,304
141	4,880,305
153	4,880,306
375	4,880,307
401	4,880,308
	4,880,309
	4,880,310
CLASS 357	
23.4	4,881,105
	4,881,107
	4,881,119
	4,881,120
23.5	4,881,108
23.8	4,881,106
25	4,881,109
30	4,881,110
34	4,881,111
47	4,881,112
51	4,881,113
54	4,881,114
64	4,881,115
74	4,881,116
	4,881,117
79	4,881,118
CLASS 358	
1	B1 4,203,130
10	4,881,121
88	4,881,122
111	4,881,124
141	4,881,125
160	4,881,126
213.19	4,881,127
228	4,881,128
296	4,881,131
	4,881,132
299	4,881,133
328	4,881,134
335	4,881,135
434	4,881,129
443	4,881,130
CLASS 360	
25	4,881,136
96.5	4,881,137
	4,881,138
105	4,881,139
106	4,881,140
	4,881,141
	4,881,142
113	4,881,143
125	4,881,144
130.24	4,881,145
132	4,881,146
CLASS 361	
118	4,881,147
172	4,881,148
328	4,881,149
383	4,880,594
392	4,881,150
531	4,881,151
CLASS 362	
61	4,881,152
78	4,881,153
102	4,881,154
191	4,881,155
207	4,881,158
220	4,881,156
371	4,881,157
CLASS 363	
58	4,881,159
CLASS 364	
161	4,881,160
167.01	4,881,161
176	4,881,162
200	4,881,163
	4,881,164
	4,881,165
	4,881,166
	4,881,167
	4,881,168
	4,881,169
	4,881,170
400	4,881,219
413.24	4,881,171
424.05	4,881,172
431.07	4,881,173
484	4,881,174
496	4,881,175
500	4,881,176
513	4,881,177
	4,881,178
518	4,881,179
	4,881,180
519	4,881,181
	4,881,182
550	4,881,183
551.01	4,881,184
557	4,881,185
565	4,881,186
	4,881,187
713	4,881,188
715.05	4,881,189
718	4,881,190
724.13	4,881,191
725	4,881,192
761	4,881,193
900	4,881,194
	4,881,195
	4,881,196
	4,881,197
CLASS 365	
12	4,881,198
189.01	4,881,199
189.04	4,881,200
189.09	4,881,201
200	4,881,202
203	4,881,203
222	4,881,205
227	4,881,206
CLASS 366	
101	4,880,311
130	4,880,312
336	4,880,313
CLASS 367	
31	4,881,207
35	4,881,208
52	4,881,209
143	4,881,211
152	4,881,212
173	4,881,210
CLASS 368	
15	4,881,213
CLASS 369	
44	4,881,214
	4,881,215
46	4,881,204
54	4,881,216
132	4,881,217
289	4,881,218
CLASS 370	
16	4,881,220
32.1	4,881,221
70	4,881,222
77	4,881,223
82	4,881,224
95.1	4,881,225
110.1	4,881,226
CLASS 371	
9	4,881,227
19	4,881,228
20.1	4,881,230
20.4	4,881,229
37.4	4,881,232
CLASS 372	
32	4,881,231
35	4,881,233
42	4,881,234
45	4,881,235
	4,881,236
50	4,881,237
68	4,881,238
CLASS 373	
70	4,881,239
CLASS 374	
129	4,880,314
CLASS 375	
4	4,881,243
15	4,881,240
36	4,881,244
38	4,881,241
	4,881,245
84	4,881,246
118	4,881,242
CLASS 376	
257	4,881,247
313	4,880,595
336	4,880,596
419	4,880,597
CLASS 377	
17	4,881,248
60	4,881,249
	4,881,250
CLASS 378	
7	4,881,251
35	4,881,257
CLASS 379	
38	4,881,252
54	4,881,253
58	4,881,258
	4,881,259
76	4,881,260
144	4,881,254
215	4,881,261
402	4,881,262
412	4,881,255
449	4,881,256
CLASS 380	
21	4,881,263
25	4,881,264
CLASS 381	
40	4,881,267
43	4,881,266
90	4,881,265
104	4,881,123
CLASS 382	
7	4,881,268
8	4,881,269
17	4,881,270
CLASS 383	
39	4,880,315
75	4,880,316
CLASS 384	
45	4,880,317
125	4,880,318
215	4,880,319
	4,880,320
CLASS 400	
64	4,880,321
167	4,880,322
196.1	4,880,323
241	4,880,324
249	4,880,325
CLASS 401	
123	4,880,326
CLASS 402	
73	4,880,327
CLASS 403	
1	4,880,328
24	4,880,331
134	4,880,329
152	4,880,330
CLASS 404	
6	4,880,332
CLASS 405	
43	4,880,333
149	4,880,334
158	4,880,335
198	4,880,336
CLASS 407	
40	4,880,337
114	4,880,338
CLASS 408	
161	4,880,339
176	4,880,340
CLASS 410	
1	4,880,341
121	4,880,342
CLASS 411	
222	4,880,343
374	4,880,344
CLASS 414	
137 9	4,880,345
486	4,880,346
542	4,880,347
783	4,880,348
786	4,880,349
790.2	4,880,350
CLASS 415	
164	4,880,351
182.1	4,880,352
CLASS 416	
83	4,880,353
95	4,880,354
228	4,880,355
CLASS 417	
53	4,880,356
77	4,880,357
174	4,880,358
216	4,880,359
222	4,880,360
269	4,880,361
365	4,880,362
390	4,880,363
423.1	4,880,364
531	4,880,365
555.1	4,880,366
CLASS 418	
107	4,880,367
CLASS 419	
1	4,880,598
6	4,880,599
12	4,880,600
CLASS 422	
28	4,880,601
	4,880,602
218	4,880,603
220	4,880,604
232	4,880,605
CLASS 423	
20	4,880,607
21 1	4,880,758
210	4,880,685
220	4,880,606
226	4,880,609
244	4,880,608
305	4,880,610
306	4,880,611
413	4,880,612
446	4,880,613
CLASS 424	
1 1	4,880,615
	4,880,616
43	4,880,618
52	4,880,619
70	4,880,620
74	4,880,621
78	4,880,622
	4,880,623
84	4,880,624
	4,880,625
88	4,880,626
195.1	4,880,630
424	4,880,631
425	4,880,632
449	4,880,633
450	4,880,634
	4,880,635
470	4,880,830
480	4,880,636
501	4,880,617
605	4,880,628
640	4,880,627
641	4,880,637
662	4,880,638
678	4,880,629
CLASS 425	
116	4,880,368
	4,880,369
133.5	4,880,370
135	4,880,371
145	4,880,372
149	4,880,373
185	4,880,374
190	4,880,792
335	4,880,375
CLASS 426	
2	4,880,639
3	4,880,640
	4,880,641
5	4,880,642
16	4,880,643
46	4,880,644
89	4,880,645
93	4,880,646
239	4,880,647
241	4,880,648
302	4,880,649
330.4	4,880,650
386	4,880,656
394	4,880,651
417	4,880,652
549	4,880,653
574	4,880,654
593	4,880,655
601	4,880,657
607	4,880,658
656	4,880,659
CLASS 427	
2	4,880,660
38	4,880,661
54.1	4,880,662
69	4,880,475
96	4,880,663
109	4,880,664
126.3	4,880,665
128	4,880,666
160	4,880,667
162	4,880,668
210	4,880,669
226	4,880,670
356	4,880,671
	4,880,672
412	4,880,673
CLASS 428	
31	4,880,674
34.2	4,880,701
35 4	4,880,697
35.7	4,880,675
	4,880,676
38	4,880,677
40	4,880,678
57	4,880,679
74	4,880,680
116	4,880,681
141	4,880,687
	4,880,688
143	4,880,689
152	4,880,682
200	4,880,683
209	4,880,684
212	4,880,686
224	4,880,690
225	4,880,691
323	4,880,692
	4,880,693
333	4,880,698
	4,880,699
336	4,880,694
337	4,880,700
341	4,880,695
349	4,880,696
354	4,880,702
378	4,880,703
395	4,880,704
447	4,880,705
516	4,880,706
565	4,880,707
620	4,880,708
623	4,880,614
652	B1 4,027,367
654	4,880,709
CLASS 429	
13	4,880,710
40	4,880,711
97	4,880,712
100	4,880,713
197	4,880,714
CLASS 430	
41	4,880,715
49	4,880,716
58	4,880,717
	4,880,718
106 6	4,880,719
115	4,880,720
138	4,880,721
192	4,880,722
218	4,880,723
302	4,880,724
373	4,880,725
376	4,880,726
378	4,880,727
380	4,880,728
410	4,880,729
520	4,880,730
551	4,880,733
CLASS 431	
12	4,880,376
126	4,880,377
170	4,880,378
CLASS 432	
3	4,880,379
CLASS 433	
11	4,880,380
28	4,880,381
118	4,880,382
189	4,880,383
CLASS 434	
113	4,880,384
181	4,880,385
CLASS 435	
7	4,880,731
	4,880,752
29	4,880,732
68	4,880,734
71	4,880,735
87	4,880,736
106	4,880,737
	4,880,738
129	4,880,739
168	4,880,740
172 3	4,880,741
238	4,880,742
240 46	4,880,744
252.4	4,880,743
253 3	4,880,745
253.5	4,880,746
254	4,880,747
CLASS 436	
60	4,880,748
66	4,880,749
501	4,880,750
518	4,880,751
CLASS 437	
41	4,880,753
51	4,880,754
CLASS 439	
68	4,880,386
98	4,880,387
108	4,880,388
125	4,880,389
204	4,880,390
221	4,880,391
347	4,880,392
352	4,880,393
404	4,880,394
507	4,880,395
578	4,880,396
620	4,880,397
622	4,880,398
689	4,880,399
722	4,880,400
746	4,880,401
CLASS 440	
50	4,880,402
88	4,880,403
CLASS 446	
329	4,880,404
CLASS 455	
56	4,881,271
143	4,881,272
161	4,881,273
296	4,881,274
CLASS 464	
14	4,880,405
38	4,880,406
43	4,880,407
CLASS 501	
96	4,880,755
97	4,880,756
104	4,880,757
148	4,880,759
CLASS 502	
65	4,880,787
67	4,880,760
215	4,880,761
302	4,880,763
326	4,880,764
432	4,880,765
CLASS 503	
212	4,880,766
213	Re 33,113
217	4,880,767
220	4,880,762
227	4,880,768
	4,880,769
CLASS 505	
1	4,880,770
	4,880,771
	4,880,772
	4,880,773
CLASS 512	
2	4,880,774
12	4,880,775
CLASS 514	
2	4,880,776
12	4,880,777
	4,880,778
15	4,880,779
18	4,880,780
	4,880,781
45	4,880,782
46	4,880,783
48	4,880,784
50	4,880,785
53	4,880,786
150	4,880,788
161	4,880,791
166	4,880,794
183	4,880,789
184	4,880,790
192	4,880,793
202	4,880,795
206	4,880,796
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211	4,880,799
	4,880,800

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UMI

CLASSIFICATION OF PATENTS

215	4,880,801
222.2	4,880,802
232.8	4,880,803
234.5	4,880,804
237.5	4,880,805
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252	4,880,807
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	4,880,809
258	4,880,810
270	4,880,811
272	4,880,812
282	4,880,813
300	4,880,814
303	4,880,815
307	4,880,816
309	4,880,817
313	4,880,818
316	4,880,819
322	4,880,820
331	4,880,821
339	4,880,822
356	4,880,823
368	4,880,824
409	4,880,825
415	4,880,826
423	4,880,827
438	4,880,828
445	4,880,829
485	4,880,831
492	4,880,832
565	4,880,833
567	4,880,834
570	4,880,835
588	4,880,836
594	4,880,837
	4,880,838
613	4,880,839
645	4,880,840
654	4,880,841
CLASS 521	
64	4,880,842
98	4,880,843
107	4,880,844
114	4,880,845
129	4,880,846
157	4,880,847
174	4,880,848
CLASS 522	
10	4,880,849
79	4,880,850
CLASS 523	
102	4,880,851
	4,880,852
136	4,880,853
	4,880,854
	4,880,855
205	4,880,857
307	B1 3,891,585
CLASS 524	
31	4,880,870
60	4,880,858
91	4,880,859
94	4,880,860
314	4,880,861
373	4,880,862
377	4,880,863
404	4,880,864
449	4,880,865
504	4,880,866
507	4,880,867
549	4,880,868
773	4,880,869
CLASS 525	
43	4,880,871
	4,880,872
61	4,880,873
67	4,880,554
	4,880,874
	4,880,875
	4,880,876
84	4,880,877
89	4,880,878
130	4,880,879
163	4,880,880
438	4,880,881
446	4,880,882
454	4,880,883
468	4,880,908
469	4,880,884
CLASS 526	
62	4,880,885
80	4,880,886
141	4,880,887
209	4,880,888
323	4,880,889
CLASS 528	
45	4,880,890
	4,880,891
89	4,880,892
129	4,880,893
173	4,880,895
196	4,880,896
199	4,880,897
272	4,880,898
370	4,880,899
388	4,880,901
392	4,880,900
	4,880,902
	4,880,903
	4,880,904
399	4,880,905
403	4,880,906
423	4,880,907
487	4,880,909
CLASS 530	
350	4,880,910
351	4,880,911
361	4,880,912
387	4,880,913
395	4,880,914
413	4,880,915
CLASS 534	
606	4,880,916
CLASS 536	
17.4	4,880,917
27	4,880,918
127	4,880,919
	4,880,920
CLASS 540	
110	4,880,921
350	4,880,922
471	4,880,923
520	4,880,924
CLASS 544	
105	4,880,925
	4,880,926
193	4,880,927
237	4,880,928
242	4,880,929
295	4,880,930
316	4,880,931
320	4,880,932
332	4,880,933
384	4,880,934
CLASS 546	
281	4,880,935
339	4,880,936
344	4,880,937
CLASS 548	
152	4,880,894
492	4,880,938
544	4,880,940
CLASS 549	
57	4,880,941
228	4,880,942
458	4,880,939
CLASS 552	
297	4,880,571
CLASS 562	
21	4,880,575
828	4,880,576
CLASS 604	
36	4,880,408
73	4,880,409
110	4,880,410
149	4,880,411
165	4,880,412
192	4,880,413
283	4,880,414
291	4,880,415
307	4,880,416
355	4,880,417
356	4,880,418
368	4,880,419
370	B1 4,636,207
385.1	4,880,420
385.2	4,880,421
389	4,880,422
391	4,880,423
396	4,880,424
404	4,880,425
CLASS 623	
6	4,880,426
	4,880,427
15	4,880,428
18	4,880,429

CLASSIFICATION OF DESIGNS

D2—	314	304,515
		304,516
		304,517
		304,518
		304,519
	320	304,520
		304,521
	626	304,522
D3—	42	304,524
D4—	115	304,525
D6—	332	304,526
	381	304,527
	391	304,523
	411	304,528
	421	304,529
	422	304,530
	464	304,531
	469	304,532
		304,533
		304,534
	516	304,535
D7—	27	304,536
	50	304,537
	77	304,538
	102	304,539
	137	304,540
	309	304,541
	351	304,542
D8—	61	304,543
	347	304,544
	373	304,545
D9—	305	304,546
	347	304,547
	373	304,548
	377	304,549
		304,550
	385	304,551
	403	304,552
D10—	126	304,553
D11—	147	304,554
D12—	110	304,555
	142	304,556
	146	304,557
		304,558
		304,559
		304,560
	147	304,561
		304,562
	155	304,565
		304,566
		304,567
	156	304,568
	163	304,563
	172	304,569
	315	304,570
		304,571
	317	304,572
	318	304,573
D13—	3.2	304,574
D14—	103	304,576
	106	304,577
	114	304,586
	118	304,578
		304,579
	121	304,580
		304,581
		304,582
		304,583
	122	304,584
		304,585
	151	304,564
	244	304,587
	248	304,588
D15—	30	304,589
	123	304,590
	138	304,591
D16—	131	304,592
		304,593
	134	304,594
	202	304,595
	217	304,596
D18—	12	304,597
	13	304,598
	14	304,599
	42	304,600
D19—	49	304,601
D21—	84	304,602
	124	304,603
	147	304,604
	159	304,605
	205	304,606
	208	304,607
	230	304,608
D23—	207	304,610
	238	304,609
	314	304,611
	365	304,612
	413	304,613
D24—	3	304,614
	17	304,615
	24	304,616
D25—	48	304,617
	104	304,618
	119	304,619
D26—	24	304,620
	36	304,621
		304,622
	63	304,623
	65	304,624
D27—	163	304,625
D28—	2	304,626
	53	304,627
	57	304,628
	76	304,629
D32—	40	304,630
D34—	5	304,631
	6	304,632
	11	304,633
	14	304,634
	19	304,635
	28	304,636
	31	304,575
	40	304,637
		304,638
		304,639
	44	304,640
D99—	5	304,641
	28	304,642
	34	304,643
	36	304,644

CLASSIFICATION OF PLANTS

P.—	7	7,055
	69	7,056

GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

Alabama	1	Kentucky	21	Oregon	41
Alaska	2	Louisiana	22	Pennsylvania	42
American Samoa	3	Maine	23	Puerto Rico	43
Arizona	4	Maryland	24	Rhode Island	44
Arkansas	5	Massachusetts	25	South Carolina	45
California	6	Michigan	26	South Dakota	46
Canal Zone	7	Minnesota	27	Tennessee	47
Colorado	8	Mississippi	28	Texas	48
Connecticut	9	Missouri	29	Utah	49
Delaware	10	Montana	30	Vermont	50
District of Columbia	11	Nebraska	31	Virginia	51
Florida	12	Nevada	32	Virgin Islands	52
Georgia	13	New Hampshire	33	Washington	53
Guam	14	New Jersey	34	West Virginia	54
Hawaii	15	New Mexico	35	Wisconsin	55
Idaho	16	New York	36	Wyoming	56
Illinois	17	North Carolina	37	U.S. Air Force	57
Indiana	18	North Dakota	38	U.S. Army	58
Iowa	19	Ohio	39	U.S. Navy	59
Kansas	20	Oklahoma	40		

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

01 :	4,879,835		4,880,266		4,881,139		4,880,442		4,880,262		4,880,631
	4,880,225		4,880,280		4,881,140		4,680,804		4,880,327	21	4,880,258
	4,880,270		4,880,287		4,881,143	12	4,879,792		4,880,352	22	4,879,896
	4,880,445		4,880,295		4,881,145		4,879,809		4,880,377		4,880,346
	4,880,701		4,880,297		4,881,157		4,879,810		4,880,403		4,880,357
02	4,881,184		4,880,315		4,881,158		4,879,816		4,880,465		4,880,491
04	4,879,823		4,880,326		4,881,163		4,879,830		4,880,506		4,880,778
	4,879,882		4,880,362		4,881,190		4,879,844		4,880,545		4,880,779
	4,880,614		4,880,365		4,881,230		4,879,849		4,880,550		4,203,130
	4,880,708		4,880,390		4,881,240		4,879,876		4,880,604	23	4,879,768
	4,881,115		4,880,408		4,881,246		4,880,002		4,880,624		4,879,818
	3,891,585		4,880,411		4,881,256		4,880,049		4,880,652		4,880,168
05	4,880,097		4,880,412		4,881,264		4,880,057		4,880,665		4,880,588
	4,880,406		4,880,425		4,881,270		4,880,196		4,880,747	24	4,879,775
06	4,879,776		4,880,426	08	4,879,815		4,880,347		4,880,764		4,880,228
	4,879,782		4,880,429		4,879,828		4,880,349		4,880,814		4,880,250
	4,879,784		4,880,490		4,879,865		4,880,570		4,880,829		4,880,296
	4,879,786		4,880,514		4,879,909		4,880,593		4,880,919		4,880,367
	4,879,789		4,880,518		4,879,910		4,880,712		4,880,920		4,880,463
	4,879,790		4,880,521		4,879,911		4,880,743		4,880,953		4,880,475
	4,879,812		4,880,531		4,880,040		4,880,813		4,881,001		4,880,574
	4,879,829		4,880,534		4,880,113		4,880,816		4,881,060		4,880,600
	4,879,833		4,880,535		4,880,243		4,880,921		4,881,082		4,880,835
	4,879,848		4,880,584		4,880,380		4,881,010		4,881,183		4,881,080
	4,879,850		4,880,594		4,880,637		4,881,016		4,881,187		4,881,175
	4,879,859		4,880,596		4,880,997		4,881,111		4,881,195	25	4,879,805
	4,879,877		4,880,608		4,881,028		4,881,197		4,881,225		4,879,821
	4,879,889		4,880,610	09	4,879,846	13	Re.33,110		4,881,254		4,879,864
	4,879,903		4,880,647		4,879,854		4,880,037		4,881,259		4,879,879
	4,879,907		4,880,688		4,879,935		4,880,112		4,881,261		4,879,899
	4,879,940		4,880,696		4,879,989		4,880,120	18	4,879,787		4,879,985
	4,879,961		4,880,734		4,880,101		4,880,137		4,880,013		4,880,008
	4,879,971		4,880,740		4,880,121		4,880,184		4,880,141		4,880,020
	4,879,974		4,880,750		4,880,156		4,880,291		4,880,211		4,880,108
	4,879,995		4,880,784		4,880,200		4,880,632		4,880,232		4,880,110
	4,880,000		4,880,831		4,880,241		4,880,670		4,880,283		4,880,130
	4,880,005		4,880,863		4,880,275	15	4,880,145		4,880,366		4,880,147
	4,880,030		4,880,908		4,880,333	17	4,879,772		4,880,391		4,880,387
	4,880,038		4,880,910		4,880,358		4,879,847		4,880,422		4,880,414
	4,880,061		4,880,924		4,880,407		4,879,868		4,880,735		4,880,440
	4,880,083		4,880,959		4,880,437		4,879,894		4,880,850		4,880,504
	4,880,084		4,880,966		4,880,498		4,879,948		4,880,853		4,880,519
	4,880,111		4,880,978		4,880,551		4,879,990		4,880,855		4,880,544
	4,880,135		4,881,023		4,880,597		4,880,045		4,880,856		4,880,547
	4,880,151		4,881,034		4,880,711		4,880,055		4,880,862		4,880,602
	4,880,167		4,881,040		4,880,741		4,880,071		4,880,917		4,880,690
	4,880,171		4,881,050		4,880,810		4,880,104	19	4,879,972		4,880,738
	4,880,180		4,881,068		4,880,930		4,880,129		4,879,998		4,880,758
	4,880,185		4,881,106		4,880,983		4,880,143		4,880,046		4,880,777
	4,880,187		4,881,110		4,881,058		4,880,158		4,880,221		4,880,880
	4,880,190		4,881,114		4,881,156		4,880,161		4,880,276		4,880,918
	4,880,210		4,881,123		4,881,224		4,880,235		4,880,503		4,880,954
	4,880,229		4,881,125	10	4,880,286		4,880,255	20	4,879,832		4,880,976

VOL
1108

ISS
2

NO
14

1989

UMI

	4,880,990		4,879,928		4,880,178		4,880,159		4,880,559		4,880,581
	4,881,009		4,880,384		4,880,182		4,880,173		4,880,605		4,880,583
	4,881,037		4,880,714		4,880,186		4,880,194		4,880,622		4,880,609
	4,881,075	34	4,879,781		4,880,193		4,880,198		4,880,633		4,880,646
	4,881,079		4,879,838		4,880,197		4,880,205		4,880,635		4,880,653
	4,881,087		4,879,881		4,880,219		4,880,222		4,880,658		4,880,691
	4,881,091		4,879,960		4,880,273		4,880,300		4,880,664		4,880,751
	4,881,165		4,879,970		4,880,279		4,880,319		4,880,668		4,880,757
	4,881,237		4,880,019		4,880,301		4,880,369		4,880,755		4,880,788
	4,881,263		4,880,039		4,880,316		4,880,396		4,880,780		4,880,843
26	4,879,780		4,880,191		4,880,424		4,880,418		4,880,821		4,880,865
	4,879,811		4,880,202		4,880,439		4,880,468		4,880,842		4,880,878
	4,879,824		4,880,306		4,880,453		4,880,479		4,880,849		4,880,897
	4,879,920		4,880,350		4,880,466		4,880,495		4,880,864		4,880,904
	4,879,929		4,880,368		4,880,494		4,880,517		4,880,868		4,880,934
	4,879,956		4,880,371		4,880,507		4,880,546		4,880,879		4,880,999
	4,879,962		4,880,400		4,880,510		4,880,553		4,880,938		4,881,043
	4,879,978		4,880,413		4,880,520		4,880,556		4,880,947		4,881,045
	4,880,014		4,880,417		4,880,536		4,880,607		4,880,958		4,881,057
	4,880,032		4,880,420		4,880,538		4,880,638		4,881,006		4,881,073
	4,880,033		4,880,450		4,880,539		4,880,657		4,881,176		4,881,179
	4,880,053		4,880,513		4,880,540		4,880,667		4,881,247		4,881,189
	4,880,079		4,880,527		4,880,548		4,880,689		4,424,956		4,881,208
	4,880,081		4,880,530		4,880,599		4,880,845	44	4,879,963		4,881,209
	4,880,118		4,880,549		4,880,617		4,880,846		4,880,117		4,881,211
	4,880,128		4,880,555		4,880,626		4,880,912	45	Re.33,112		4,514,636
	4,880,140		4,880,567		4,880,684		4,880,981		4,880,146	49	4,879,988
	4,880,155		4,880,580		4,880,706		4,881,033		4,880,419		4,880,026
	4,880,165		4,880,611		4,880,713		4,881,070		4,880,459		4,880,234
	4,880,195		4,880,619		4,880,722		4,027,367	47	4,880,227		4,880,423
	4,880,248		4,880,625		4,880,749		4,636,207		4,880,2[illegible]		4,881,153
	4,880,271		4,880,627		4,880,752	40	4,879,869		4,880,47[illegible]	50	4,880,179
	4,880,338		4,880,640		4,880,754		4,880,028		4,880,485	51	4,879,813
	4,880,373		4,880,641		4,880,760		4,880,059		4,880,533		4,880,323
	4,880,381		4,880,645		4,880,761		4,880,363		4,880,578		4,880,335
	4,880,477		4,880,675		4,880,770		4,880,542		4,880,759		4,880,404
	4,880,554		4,880,682		4,880,790		4,880,679	48	4,879,774		4,880,478
	4,880,565		4,880,699		4,880,811		4,880,901		4,879,794		4,880,697
	4,880,655		4,880,748		4,880,836		4,881,132		4,879,814		4,880,704
	4,880,680		4,880,771		4,880,899		4,881,166		4,879,827		4,880,783
	4,880,781		4,880,775		4,881,025		4,881,210		4,879,852		4,880,871
	4,880,884		4,880,787		4,881,032	41	4,879,936		4,879,861		4,880,961
	4,880,991		4,880,793		4,881,076		4,879,964		4,879,891		4,880,973
	4,881,047		4,880,817		4,881,093		4,879,987		4,879,900		4,881,234
	4,881,148		4,880,820		4,881,105		4,880,031		4,879,912	53	4,879,875
	4,881,178		4,880,822		4,881,128		4,881,121		4,879,915		4,879,914
27	4,879,857		4,880,824		4,881,135		4,881,221		4,879,942		4,879,965
	4,879,902		4,880,844		4,881,162	42	4,879,779		4,879,953		4,880,050
	4,879,906		4,880,866		4,881,164		4,879,808		4,879,999		4,880,133
	4,880,042		4,880,872		4,881,231		4,879,883		4,880,001		4,880,348
	4,880,069		4,880,907		4,881,245		4,879,901		4,880,004		4,880,681
	4,880,076		4,880,914		4,881,255		4,879,934		4,880,025		4,880,772
	4,880,116		4,880,923		4,881,265		4,879,959		4,880,056		4,880,985
	4,880,126		4,880,928	37	Re.33,111		4,879,976		4,880,058		4,880,989
	4,880,312		4 880,950		4,879,777		4,880,017		4,880,060		4,881,083
	4,880,660		4,880,951		4,880,018		4,880,044		4,880,065		4,881,155
	4,880,683		4,880,964		4,880,107		4,880,052		4,880,067		4,881,191
	4,880,705		4,881,052		4,880,218		4,880,100		4,880,068	55	4,879,771
	4,881,038		4,881,059		4,880,636		4,880,106		4,880,152		4,879,801
	4,881,061		4,881,194		4,880,676		4,880,119		4,880,245		4,879,871
29	4,879,880		4,420,909		4,880,695		4,880,134		4,880,251		4,879,926
	4,879,895	35	4,879,855		4,880,812		4,880,162		4,880,257		4,879,946
	4,879,932		4,880,122		4,880,838		4,880,217		4,880,284		4,880,047
	4,879,943		4,880,493		4,881,055		4,880,242		4,880,304		4,880,124
	4,880,080		4,880,508		4,881,085		4,880,261		4,880,309		4,880,150
	4,880,125		4,880,996		4,881,172		4,880,364		4,880,438		4,880,160
	4,880,144		4,881,236	39	4,879,769		4,880,386		4,880,443		4,880,201
	4,880,148	36	4,879,831		4,879,798		4,880,388		4,880,444		4,880,328
	4,880,249		4,879,851		4,879,800		4,880,392		4,880,447		4,880,342
	4,880,471		4,879,867		4,879,819		4,880,397		4,880,487		4,880,376
30	4,880,230		4,879,996		4,879,822		4,880,449		4,880,522		4,880,502
	4,880,505		4,879,997		4,879,866		4,880,454		4,880,523		4,880,766
31	4,880,427		4,880,015		4,880,029		4,880,460		4,880,524		4,880,883
32	4,879,766		4,880,063		4,880,064		4,880,483		4,880,525		4,880,893
	4,880,203		4,880,132		4,880,099		4,880,512		4,880,526		4,881,161
	4,881,088		4,880,157		4,880,123		4,880,543		4,880,568	56	4,880,528
33	4,879,778		4,880,170		4,880,131						

DESIGN PATENTS

06	304,515	09	304,572	19	304,538	34	304,540		304,567		304,529
	304,520		304,587		304,631		304,547	39	304,527		304,537
	304,521	11	304,632	22	304,531		304,581		304,536		304,626
	304,553	12	304,577		304,602		304,582		304,544		304,634
	304,568		304,598	23	304,526		304,583		304,552	44	304,534
	304,608	13	304,535	24	304,543		304,620		304,554	48	304,548
	304,612	17	304,525	25	304,517	36	304,530		304,562		304,623
	304,628		304,528		304,518		304,592		304,610	51	304,522
	304,629		304,545		304,519		304,593		304,618	53	304,570
	304,633		304,575		304,613		304,607		304,630		304,571
	304,638		304,590		304,640		304,635		304,644	55	304,550
	304,643		304,611	27	304,616	37	304,565	41	304,516		304,574
08	304,591	18	304,524	28	304,573		304,566	42	304,523		304,589
	304,617		304,569	30	304,605						

PLANT PATENTS

06	7,055										

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Robert A. Mosbacher, *Secretary*
PATENT AND TRADEMARK OFFICE
Jeffrey M. Samuels, *Acting Commissioner*

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PATENTS

NOVEMBER 21, 1989

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1107 O.G. 5 on Oct. 3, 1989.

For use of the European Patent Office as an International Searching Authority for international applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 5 on Sept. 28, 1982.

For use of the European Patent Office as an International Preliminary Examining Authority for international applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2 on July 7, 1987 and at 1091 O.G. 2 on June 7, 1988.

The search fee of the European Patent Office was changed due to a difference in the exchange rate of the U.S. dollar in relation to the German Mark as of Sept. 1, 1989, and was announced in the *Official Gazette* at 1105 O.G. 36 on Aug. 15, 1989.

International PCT fees were changed on June 1, 1989 due to a difference in the exchange rate of the U.S. dollar in relaton to the Swiss Franc and were announced in the *Official Gazette* at 1102 O.G. 90 on May 30, 1989.

Certain domestic PCT fees and charges for International Search and Preliminary Examination have been changed effective Apr. 17, 1989 and were announced in the *Official Gazette* at 1100 O.G. 24 on Mar. 7, 1989.

The current schedule of PCT fees (in U.S. dollars) is as follows:

Transmittal fee:	170.00
Search Fee	
U.S. Patent and Trademark Office (USPTO) as International Searching Authority (ISA)	
—No corresponding prior U.S. national application filed	550.00
—Corresponding prior U.S. national application filed	380.00
—Supplemental search fee, per additional invention	150.00
European Patent Office as ISA	1040.00
Preliminary examination fee	
USPTO as International Preliminary Examining Authority (IPEA)	
—Search fee paid to USPTO as ISA.	400.00
—Additional examination fee, per additional invention	130.00
—ISA not the USPTO	600.00
—Additional examination fee, per additional invention	200.00
International fees	
Basic fee	436.00
Basic Supplemental fee (for each page over 30)	9.00
Designation fee per country or region for the first 10 national or regional offices	106.00
Designation fee for 11th and subsequent designations	No Charge
Handling fee	134.00

U.S. National Stage fees

	Small Entity	Regular
USPTO was IPEA	165.00	330.00
USPTO was ISA but not IPEA	185.00	370.00
USPTO was neither ISA nor IPEA	250.00	500.00
USPTO was IPEA and all claims presented satisfied provisions of PCT Article 33(2) to (4)	25.00	50.00
—For each independent claim in excess of 3	18.00	36.00
—For each claim in excess of 20	6.00	12.00
—For each application containing a multiple dependent claim	60.00	120.00
—Surcharge for filing national fee or oath or declaration after the time limit applicable under PCT Article 22 or 39.1	60.00	120.00
—Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39.1	30.00	30.00

Sept. 12, 1989.

DONALD J. QUIGG,
Assistant Secretary and Commissioner
of Patents and Trademarks.

Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d), effective Nov. 1, 1984, provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on application filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(k) or (l), as amended effective Apr. 17, 1989. If the maintenance fee is not paid in a patent requiring such payment the patent will expire on the 4th, 8th or 12th anniversary of the patent.

Attention is drawn to the patents which were issued on November 18, 1986, for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,622,696 through 4,624,014
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on November 16, 1982 for which maintenance fees due at 7 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,358,859 through 4,359,782
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

The current amounts of the maintenance fees due at 3 years and six months and seven years and six months are set forth in 37 CFR 1.20(e), (f), (h) and (i), as amended effective Apr. 17, 1989, which are reproduced below:

37 CFR § 1.20 Post-issuance fees

" (e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant..............$245.00

"(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 8 years; the fee is due by seven years and six months after the original grant..............$495.00"

"(h) For maintaining an original or reissue patent except a design or plant patent, based on an application filed on or after Aug. 27,1982, in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§1.9(f))..............$245.00
By other than a small entity..............$490.00"

"(i) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Aug. 27, 1982, in force beyond 8 years; the fee is due by seven years and six months after the original grant:

By a small entity (§1.9(f))..............$495.00
By other than a small entity..............$990.00"

The amounts of the surcharges as amended effective Apr. 17, 1989, are set forth in 37 CFR 1.20 (k), (l) and (m) which are reproduced below:

"(k) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months , seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980 and before Aug. 27,1982..............$120.00

"(l) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Aug. 27, 1982:

By a small entity(§1.9(f))..............$60.00
By other than a small entity..............$120.00"

"(m) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay is shown to the satisfaction of the Commissioner to have been unavoidable..............$550.00"

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fees

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th, or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED SEPTEMBER 3, 1989
DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
4,538,302	06/659,180	09/03/85
4,538,310	06/472,598	09/03/85
4,538,317	06/477,250	09/03/85
4,538,325	06/492,595	09/03/85
4,538,327	06/475,108	09/03/85
4,538,333	06/434,373	09/03/85
4,538,354	06/531,672	09/03/85
4,538,356	06/676,316	09/03/85
4,538,359	06/618,098	09/03/85
4,538,363	06/608,431	09/03/85
4,538,375	06/543,494	09/03/85
4,538,376	06/577,053	09/03/85
4,538,383	06/448,070	09/03/85
4,538,393	06/444,531	09/03/85
4,538,399	06/624,170	09/03/85
4,538,400	06/619,715	09/03/85
4,538,409	06/536,272	09/03/85
4,538,410	06/608,369	09/03/85
4,538,415	06/591,673	09/03/85
4,538,424	06/580,493	09/03/85
4,538,426	06/531,348	09/03/85
4,538,428	06/595,963	09/03/85
4,538,430	06/604,234	09/03/85
4,538,434	06/587,495	09/03/85
4,538,435	06/493,935	09/03/85
4,538,438	06/626,928	09/03/85
4,538,439	06/483,652	09/03/85
4,538,443	06/568,134	09/03/85
4,538,456	06/486,762	09/03/85
4,538,459	06/516,656	09/03/85
4,538,462	06/560,639	09/03/85
4,538,463	06/589,971	06/03/85
4,538,464	06/539,013	09/03/85
4,538,470	06/487,738	09/03/85
4,538,473	06/447,866	09/03/85
4,538,475	06/524,322	09/03/85
4,538,476	06/493,823	09/03/85
4,538,479	06/321,629	09/03/85
4,538,484	06/493,516	09/03/85
4,538,485	06/593,087	09/03/85
4,538,490	06/490,693	09/03/85
4,538,493	06/532,531	09/03/85
4,538,497	06/446,184	09/03/85
4,538,501	06/366,273	09/03/85
4,538,508	06/575,827	09/03/85
4,538,526	06/479,642	09/03/85
4,538,534	06/608,361	09/03/85
4,538,539	06/591,504	09/03/85
4,538,564	06/515,055	09/03/85
4,538,567	06/640,133	09/03/85
4,538,572	06/530,694	09/03/85
4,538,588	06/559,194	09/03/85
4,538,589	06/632,055	09/03/85
4,538,595	06/582,081	09/03/85
4,538,598	06/418,848	09/03/85
4.538,601	06/543,836	09/03/85
4,538,614	06/513,012	09/03/85
4,538,616	06/517,065	09/03/85
4,538,618	06/582,758	09/03/85
4,538,619	06/549,889	09/03/85
4,538,621	06/460,769	09/03/85
4,538,626	06/483,371	09/03/85
4,538,629	06/510,406	09/03/85
4,538,635	06/539.352	09/03/85
4,538,637	06/470,098	09/03/85
4,538,646	06/593,231	09/03/85
4,538,660	06/524,509	09/03/85
4,538,683	06/590,615	09/03/85
4,538,696	06/518,619	09/03/85
4,538,716	06/410,845	09/03/85
4,538,718	06/394,830	09/03/85
4,538,721	06/453,861	09/03/85
4,538,736	06/512,965	09/03/85
4,538,737	06/499,858	09/03/85
4,538,743	06/665,755	09/03/85
4,538,746	06/508,930	09/03/85
4,538,747	06/573,749	09/03/85
4,538,751	06/520,708	09/03/85
4,538,757	06/518,989	09/03/85
4,538,759	06/695,741	09/03/85
4,538,761	06/472,099	09/03/85
4,538,764	06/510,089	09/03/85
4,538,765	06/447,311	09/03/85
4,538,766	06/500,848	09/03/85
4,538,769	06/502,006	09/03/85
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4,538,786	06/548,147	09/03/85
4,538,788	06/596,857	09/03/85
4,538,792	06/512,062	09/03/85
4,538,794	06/479,261	09/03/85
4,538,796	06/652,159	09/03/85
4,538,797	06/511,836	09/03/85
4,538,802	06/273,331	09/03/85
4,538,803	06/579,208	09/03/85
4,538,804	06/469,853	09/03/85
4,538,809	06/557,616	09/03/85
4,538,815	06/603,728	09/03/85
4,538,823	06/621,849	09/03/85
4,538,826	06/620,609	09/03/85
4,538,827	06/601,071	09/03/85
4,538,842	06/530,793	09/03/85
4,538,848	06/551,721	09/03/85
4,538,850	06/473,102	09/03/85
4,538,855	06/504,842	09/03/85
4,538,859	06/402,095	09/03/85
4,538,861	06/562,857	09/03/85
4,538,865	06/575,762	09/03/85
4,538,876	06/477,851	09/03/85
4,538,887	06/587,618	09/03/85
4,538,917	06/690,376	09/03/85
4,538,926	06,467,323	09/03/85
4,538,927	06/570,207	09/03/85
4,538,932	06/623,683	09/03/85
4,538,934	06/520,634	09/03/85
4,538,939	06/581,453	09/03/85
4,538,942	06,620,354	09/03/85
4,538,947	06/554,992	09/03/85
4,538,965	06/655,879	09/03/85
4,538,967	06/486,510	09/03/85
4.538,970	06/542,849	09/03/85
4.538,979	06/587,880	09/03/85
4.538,981	06/311,116	09/03/85
4,538,992	06/611,253	09/03/85
4,538,995	06/621,114	09/03/85
4,538,996	06/464,851	09/03/85
4,539,007	06/492,821	09/03/85
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4,539,013	06/309,535	09/03/85
4,539,019	06/612,821	09/03/85
4,539,026	06/568,898	09/03/85
4,539,035	06/593,540	09/03/85
4,539,038	06/488,247	09/03/85
4,539,055	06/589,819	09/03/85
4,539,057	06/589,725	09/03/85
4,539,069	06/562,825	09/03/85
4,539,077	06/487,091	09/03/85
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4,539,100	06/552,865	09/03/85
4,539,119	06/517,434	09/03/85
4,539,122	06/581,932	09/03/85
4,539,124	06/578,828	09/03/85
4,539,127	06/345,505	09/03/85
4,539,128	06/399,711	09/03/85
4,539,142	06/604,230	09/03/85
4,539,146	06/639,749	09/03/85
4,539,147	06/447,715	09/03/85
4,539,150	06/625,656	09/03/85
4,539,151	06/625,815	09/03/85
4,539,167	06/482,161	09/03/85
4,539,201	06/546,600	09/03/85
4,539,202	06/478,326	09/03/85
4,539,209	06/679,386	09/03/85
4,539,213	06/613,237	09/03/85
4,539,221	06/607,602	09/03/85
4,539,235	06/673,188	09/03/85
4,539,236	06/574,017	09/03/85
4,539,292	06/454,219	09/03/85
4,539,310	06/615,337	09/03/85
4,539,314	06/616,371	09/03/85
4,539,315	06/547,130	09/03/85
4,539,319	06/504,257	09/03/85
4,539,323	06/531,842	09/03/85
4,539,326	06/510,723	09/03/85
4,539,328	06/478,959	09/03/85
4,539,330	06/664,926	09/03/85
4,539,337	06/592,603	09/03/85
4,539,368	06/634,539	09/03/85
4,539,425	06/564,198	09/03/85
4,539,427	06/543,092	09/03/85
4,539,430	06/611,558	09/03/85
4,539,432	06/573,520	09/03/85
4,539,440	06/495,054	09/03/85
4,539,442	06/562,876	09/03/85
4,539,449	06/396,383	09/03/85
4,539,454	06/652,897	09/03/85
4,539,455	06/484,851	09/03/85
4,539,457	06/558,774	09/03/85
4,539,468	06/475,825	09/03/85
4,539,471	06/605,131	09/03/85
4,539,477	06/499,484	09/03/85
4,539,481	06/435,690	09/03/85
4,539,508	06/441,186	09/03/85
4,539,519	06/371,203	09/03/85
4,539,540	06/495,648	09/03/85
4,539,545	06/614,457	09/03/85
4,539,557	06/434,705	09/03/85
4,539,561	06/464,049	09/03/85
4,539,562	06/454,716	09/03/85
4,539,564	06/405,301	09/03/85
4,539,567	06/531,260	09/03/85
4,539,568	06/660,539	09/03/85
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4,539,595	06/509,583	09/03/85
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4,539,609	06/402,827	09/03/85
4,539,611	06/422,645	09/03/85
4,539,612	06/427,598	09/03/85
4,539,614	06/495,801	09/03/85
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4,539,630	06/466,539	09/03/85
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4,539,643	06/420,951	09/03/85
4,539,662	06/384,243	09/03/85
4,539,669	06/458,590	09/03/85
4,539,693	06/488,574	09/03/85
4,539,700	06/596,570	09/03/85
4,539,701	06/448,848	09/03/85

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1,21(b)).

4,248,940, Re. S. N. 419,358, Filed Oct. 10, 1989, Cl. 428/633, THERMAL BARRIER COATING FOR NICKEL AND COBALT BASE SUPER ALLOYS, George W. Goward, et al., Owner of Record: *United Technologies Corp., East Hortford, Conn.*, Attorney or Agent: James M. Rashid, Ex. Gp.:111

4,299,012, Re. S. N. 417,241, Filed Oct. 4, 1989, Cl. 24/19, HOSE CLAMP, Hans Oetike, Owner of Record: *Inventor*, Attorney or Agent: Paul M. Craig, Ex. Gp.: 357

4,315,348,Re. S. N. 417,047, Filed Oct. 4, 1989, Cl. 24/20, MECHANICAL LOCK FOR CLAMPS, Hans Oetiker, Owner of Record: *Minnesota Mining and Manufacturing Company, St. Paul, Minn.*, Attorney or Agent: Paul M. Craig Jr., Ex. Gp.: 357

4,492,004, Re. S. N. 471,046, Filed Oct. 4, 1989, Cl. 24/20, ENDLESS CLAMP STRUCTURE, Hans Oetiker, Owner of Record: *Inventor*, Attorney or Agent: Paul M. Craig Jr., Ex. Gp.: 357

4,698,553, Re. S. N. 408,225, Filed Sept. 15, 1989, Cl. 315/200, ELECTRIC POWER SUPPLY, Ole K. Nilssen, Owner of Record: *Inventor*, Attorney or Agent: None, Ex. Gp.: 252

4,699,470, Re. S. N. 420,559, Filed Oct. 12, 1989, Cl. 350/334, NACP LIQUID CRYSTAL APPARATUS INCORPORATING A CONTROL, Charles W. McLaughlin, et al., Owner of Record: *Toliq Corp., Mountain View, Calif.*, Attorney or Agent: William J. Egan III, Ex. Gp.: 254

4,703,387, Re. S. N. 419,507, Filed Oct. 10, 1989, Cl. 361/79, ELECTRIC MOTOR UNDERLOAD PROECTION SYSTEM, Thomas A. Miller, Owner of Record: *Franklin Electric Co. Inc., Bluffton, Ind.*, Attorney of Agent: Donald J. Brott, Ex. Gp.: 214

4,730,143, Re. S. N. 421,909, Filed Oct. 16, 1989, Cl. 313/407, IMPROVED COLOR CATHODE RAY TUBE HAVING A FACEPLATE-MOUNTED SUPPORT STRUCTURE WITH A WELDED-ON HIGH-TENSION FOIL SHADOW MASK, James R. Fendley, Owner of Record: *Zenith Electronics Corp., Glenview, Ill.*, Attorney or Agent: John H. Coult, Ex. Gp.: 264

4,776,453, Re. S. N. 419,520, Filed Oct. 10, 1989, Cl. 198/803.2, ACCUMULATING CONVEYOR, Jack E. Miller, Owner of Record: *Harry Major Machine and Tool Co., Froser, Mich.*, Attorney or Agent: Andrew R. Basile, Ex. Gp.: 317

4,781,993, Re. S. N. 419,600, Filed Oct. 10, 1989, Cl. 426/242, INFRARED DEHYDRATOR UNIT FOR MINCED FISH, Joseph Fraioli, Owner of Record: *Inventor*, Attorney or Agent: Michael Ebert, Ex. Gp.: 132

4,824,049, Re. S. N. 419,232, Filed Oct. 6, 1989, Cl. 248/176, CUSHIONING DEVICE FOR REMOTE CONTROL TELEVISION EQUIPMENT, AND ASSEMBLY THEREOF, Les I. Butler, Owner of Record: *Bill Butler, Lynne Butler, Stephen W. Butler, North Hollywood, Calif.*, Attorney or Agent: John J. Posta, Ex. Gp.: 355

4,824,409, Re. S. N. 419,937, Filed Oct. 11, 1989, Cl. 440/47, MARINE VESSEL WITH INTERNAL COMBUSTION ENGINE HAVING AN EXHAUST PIPE, Noboru Kobayashi, Owner of Record: *Inventor*, Attorney or Agent: Frank J. Jordan, Ex. Gp.: 315

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b).

4,083,229, Reexam. No. 90/001,865, Requested Oct. 13, 1989, Cl. 73/40.005, METHOD AND APPARATUS FOR DETECTING AND LOCATING FLUID LEAKS, Allen R. Anway, Owner of Record: *Plaunt & Anderson Co., Duluth, Minn.*, Attorney or Agent: Nies, Webner, Kurtz & Bergert, Ex. Gp.: 260, Requester: Claude A. S. Hamrick, San Jose, Calif.

4,471,385, Reexam. No. 90/001,867, Requested Oct. 19, 1989, Cl. 358/230, ELECTRO-OPTICAL ILLUMINATION CONTROL SYSTEM, Gilbert P. Hyatt, Owner of Record: *Inventor, Anaheim, Calif.*, Attorney or Agent: None, Ex. Gp.: 260, Requester: Hoffman, Wasson, Fallow & Gitler, Arlington, Va.

4,680,224, Reexam. No. 90/001,868, Requested Oct. 23, 1989, Cl. 428/294, REINFORCED PLASTIC, James E. Connor, Owner of Record: *Phillips Petroleum Co., Bartlesville, Okla.*, Attorney or Agent: Unknown, Ex. Gp.: 150, Requester: Oblon, Spivak, McClelland, et al., Arlington, Va.

4,800,876, Reexam. No. 90/001,866, Requested Oct. 16, 1989, Cl. 128/303.100, METHOD OF AND APPARATUS FOR LASER TREATMENT OF BODY LUMENS, Kenneth R. Fox, et al., Owner of Record: *Kenneth R. Fox, et al., Arlington Va.*, Attorney or Agent: Wigman & Cohen, Ex. Gp.: 330, Requester: Wolf, Greenfield & Sacks, Boston, Mass.

Service by Publication

A petition to cancel the registration identified below having been filed, and the notice of such proceeeding sent by certified mail to registrant at the last known address having been returned by the Postal Service as undeliverable, notice is hereby given that unless the registrant listed herein, its assigns or legal representatives shall enter an appearance within thirty days from the date of this publication, the cancellation will be proceeded with as in the case of default.

Faberge USA, Inc., New York, N.Y., Reg. No. 695,808, for the mark "Degas Mauve", Canc. No. 17,960.

ERMA S. BROWN
Administrator of the Trademark
Trial and Appeal Board
For JEFFREY M. SAMUELS
Assistant Commissioner for
Trademarks

Adverse Decisions in Interference

In the designated interferences involving the following patents, final decisions have been rendered that the respective patentees were not the first inventors with respect to the claims listed.

Patent No. 4,256,104, Andrew John Muetterties, Joseph Nicholas Genese, EQUIPMENT SETS AND SYSTEM FOR THE SEQUENTIAL ADMINISTRATION OF MEDICAL LIQUIDS AT DUAL FLOW RATES, Inteference No. 101,078, decided Jan. 8, 1986, claims 1, 2, 5, 7, 8, 11, 12, 13/11, 13/12, 14/12, 16, 17 and 24.

Patent No. 4,256,104, Andrew John Muetterties, Joseph Nicholas Genese, EQUIPMENT SETS AND SYSTEM FOR THE SEQUENTIAL ADMINISTRATION OF MEDICAL LIQUIDS AT DUAL FLOW RATES, Inteference No. 100,817, decided Jan. 8, 1986, claims 3, 4 and 6.

Patent No. 4,325,366, Carl J. Tabor, VALVE AND METHOD FOR USE WITH A TRACHEOTOMY TUBE, Interference No. 101,290, decided Sept. 17, 1987, claims 3-6 and 9-14.

Patent No. 4,341,441, Paul Elliott Lighty, Philip William Black, John Irven, METHOD OF MAKING SOLID PREFORMS AND OPTICAL FIBERS DRAWN THEREFROM, Interference No. 101,316, decided July 1, 1987, claims 1, 3, 6-26.

NANNIE B. HENRY
Deputy Clerk,
Board of Patent Appeals and
Interferences

Adverse Decisions in Interference

In the designated interferences involving the following patents, final decisions have been rendered that the respective patentees are not entitled to patents containing the claims listed.

Patent No. 4,339,568, Louis M. Maresca, AROMATIC POLYMERS CONTAINING KETONE GROUPS, Interference No. 101,968, decided Aug. 8, 1989, claims 1-4.

Patent No. 4,339,453, Howard M. Berg, Gary L. Lewis, Curtis

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W. Mitchell, LOW THERMAL IMPEDANCE PLASTIC PACKAGE, Interference No. 102,088, decided Sept. 12, 1989, claims 1-7.

Patent No. 4,565,568, Howard Johnston, Lillian H. Troxell, PYRIDYL(OXY/THIO)PHENOXY COMPOUNDS, HERBICIDAL COMPOSITIONS AND METHODS, Interference No. 101,961, decided Oct. 11, 1989, claims 1-12.

Patent No. 4,572,253, M. Zane Farmer, Diane B. Farmer, AUTOMATIC LEVEL SENSING SYSTEM, Interference No. 102,128, decided Aug. 24, 1989, claims 25, 28-30.

Patent No. 4,572,253, M. Zane Farmer, Diane B. Farmer, AUTOMATIC LEVEL SENSING SYSTEM, Interference No. 102,129, decided Aug. 24, 1989, claims 1-12, 15-20, and 23.

Patent No. 4,598,086, Dennis Bigg, Jacques Menin, ALPHA$_2$ ANTAGONISTIC 2-(4,5-DIHYDRO-2-1H-IMIDAZOLYL)-2,3-DIHYDRO-1H-INDOLES, Interference No. 101,846, decided Aug. 31, 1989, claims 1 and 2.

Patent No. 4,598,086, Dennis Bigg, Jacques Menin, ALPHA$_2$ ANTAGONISTIC 2-(4,5-DIHYDRO-2-1H-IMIDAZOLYL)-2,3-DIHYDRO-1H-INDOLES, Interference No. 101,870, decided Aug 31, 1989, claims 1 and 2.

Patent No. 4,609,043, Alvin S. Cullick, ENHANCED OIL RECOVERY USING CARBON DIOXIDE, Interference No. 101,920, decided Sept. 22, 1989, claims 1-13.

Patent No. 4,617,608, Greg E. Blonder, Angelo A. Lamola, Robert A. Lieberman, VARIABLE GAP DEVICE AND METHOD OF MANUFACTURE, Interference No. 102,022, decided Oct. 19, 1989, claims 15-18.

Patent No. 4,618,616, Kenneth Richardson, Robert J. Bass, Kelvin Cooper, CYCLOPROPYLIDENE ANTIFUNGAL AGENTS, Interference No. 102,043, decided Sept. 28, 1989, claim 10.

Patent No. 4,631,422, Douglas S. Piasecki, TTL CIRCUIT WITH A CLAMPING TRANSISTOR FOR SPEEDY TURN-OFF OF OUTPUT TRANSISTOR, Interference No. 102,069, decided Aug, 23, 1989, claims 1-8.

Patent No. 4,659,731, Denis Bigg, Jacques Menin, 2-(4,5-DIHYDRO-1H-IMIDAZOL-2-YL)-2,3-DIHYDROINDOLE DERIVATIVES AND THEIR APPLICATION AS α_2 RECEPTOR ANTAGONIST OR α_1 RECEPTOR AGONISTS, Inteference No. 101,836, decided Mar. 3, 1989, claims 1-9, 12, 13 and 15.

Patent No. 4,659,731, Denis Bigg, Jacques Menin, 2-(4, 5-DIHYDRO-1H-IMIDAZOL-2-YL)-2, 3-DIHYDROINDOLE DERIVATIVES AND THEIR APPLICATION AS α_2 RECEPTOR ANTAGONIST OR α_1 RECEPTOR AGONISTS, Interference No. 101,847, decided Aug. 31, 1989, claims 1-9, 12, 13 and 15.

Patent No. 4,696,582, Donald A. Kasten, THREE MEMBER DRAWER SLIDE WITH SEQUENTIAL MOVEMENT, Interference No. 102,020, decided Aug. 9, 1989, claims 1-15.

Patent No. 4,726,835, Masatoshi Uemura, Masashi Sakamoto, Nobuyuki Kikkawa, HERBICIDAL AND PLANT GROWTH REGULATING IMIDAZOLINE DERIVATIVES, Interference No. 102,173, decided Sept. 21, 1989, claims 1-16.

NANNIE B. HENRY
Deputy Clerk
Board of Patent Appeals and Interferences

Extension of Time for Filing Notices of Opposition to Marks Published in the Official Gazette Dated October 17,1989

Copies of the Trademark Official Gazette dated October 17, 1989, were not mailed until October 24, 1989. Therefore, for marks published in the Trademark Official Gazette dated October 17, 1989, Notices of Opposition filed by November 24, 1989 will be considered timely.

Oct. 25, 1989

JEFFREY M. SAMUELS
Assistant Commissioner
for Trademarks

Errata

The Registrant of Registration No 165,247 listed in the "Index of Registrants" section of the Trademark Official Gazette of July 5, 1988, at TMI 11, was incorrectly identified as "HERSHEY FOOD CORPORATION".

The Registrant's name as corrected is "HERSHEY FOODS CORPORATION".

Oct. 27, 1989

PATRICIA M. DAVIS
Administrator for
Trademark Operations

The following registration number was inadvertently renewed in the "Trademark Registrations Renewed" section of the Official Gazette listed below:

TM 219 517,879 Oct. 31, 1989

Consequently, the above-identified registration is not renewed.

Oct. 27, 1989

PATRICIA M. DAVIS
Administrator for
Trademark Operations

Examination Guide

The following examination guide concerns the implementation of The Trademark Law Revision Act of 1988, Public Law 100-667, 102 Stat. 3935, and the amended Rules of Practice in Trademark Cases, 37 C.F.R. Part 2, which take effect on November 16, 1989. The guide is to be used in conjuction with Revision 7 to The Trademark Manual of Examining Procedure.

The guide presents a comprehensive statement of the revisions to Office policy and procedure related to the referenced amendments to the Trademark Act and rules. To the extent that the policies stated in the guide conflict with policies set forth in Revision 7, the provisions of the guide are controlling. Those policies set forth in Revision 7 which do not conflict with the guide remain operative.

Oct. 16, 1989

JEFFERY M. SAMUELS
Assistant Commissioner
for Trademarks

EXAMINATION GUIDE 3-89

IMPLEMENTATION OF THE TRADEMARK LAW REVISION ACT OF THE 1988 AND THE AMENDED RULES OF PRACTICE IN TRADEMARK CASES

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Preface

On November 16, 1988, the President signed The Trademark Law Revision Act of 1988 into law, Public Law 100-667, 102 Stat. 3935 (the 1988 amendments). The 1988 amendments, which take effect on November 16, 1989, represent the most significant reform in United States trademark law since the enactment of The Trademark Act of 1946, 15 U.S.C. Section 1051 *et seq.* (the Act). The principal purpose of this examination guide is to provide a comprehensive statement of revisions to Office policy and procedure associated with the 1988 amendments.

The Rules of Practice in Trademark Cases, 37 C.F.R. Section 2.1 *et seq.*, have also been revised effective November 16, 1989, principally to incorporate the provisions of the 1988 amendments. The rules were also revised to update Office policy in other respects. These additional revisions bring the rules into conformity with current Office practice in several areas and reflect changes in practice dictated by decisions such as the Trademark Trial and Appeal Board decision in *Crocker National Bank v. Canadian Imperial Bank of Commerce*, 223 USPQ 909 (TTAB 1984). This guide will also set forth these additional revisions to Office policy and procedure reflected in the rules. The revisions discussed here were published in final form on September 11, 1989, with the exception of the revisions to Trademark Rules 2.42 and 2.186, 37 C.F.R. Sections 2.42 and 2.186, which were published in final form on August 22, 1989, in conjunction with other revisions related to proceedings before the Trademark Trial and Appeal Board. All revisions published on both dates take effect on November 16, 1989. References in this guide to the rules relate to the rules as amended on November 16, 1989.

The most significant amendment to the Act is a provision permitting the filing of applications to register marks on the Principal Register based on a bona fide intention to use a mark in commerce, before actual use (intent-to-use applications). The examination guide will discuss the administration of this provision in detail. However, intent to use and other provisions of the 1988 amendments required revisions in policies and procedures affecting virtually all applications and all aspects of processing. Please read the entire guide carefully to become familiar with all of the provisions.

The first major section of the guide presents the requirements, policies and procedures related to intent-to-use applications. The second major section addresses provisions affecting all applications. The next two sections address provisions related to other specific types of applications, and the final section addresses multiple bases and changes in the basis for registration.

The policies set forth in this guide apply to all applications, affidavits and renewals filed on or after November 16, 1989, unless specifically indicated otherwise. The stated policies also apply to any action taken on or after November 16, 1989, with respect to applications filed before that date, unless specifically indicated otherwise. To the extent that the policies and procedures set forth in this examination guide conflict with policies or procedures set forth in the Trademark Manual of Examining Procedure (TMEP) or other statements of Office policy, the provisions of this examination guide are controlling. Note especially the discussion below concerning the application of the rule restricting amendments to the identification of goods and services to pending applications.

JAMES T. WALSH
Administrator for Trademark
Policy and Procedure

DAVID E. BUCHER
Director,
Trademark Examining Operation

A. INTENT-TO-USE APPLICATIONS

1. General Overview

a. Summary of Application Flow

The 1988 amendments revise Section 1 of the Act to permit filing of an application to register a mark on the Principal Register based on a statement of a bona fide intention to use the mark in commerce. Trademark Act Section 1(b), 15 U.S.C. Section 1051(b). The Act, as amended, further requires that such an applicant use the mark in commerce before issuance of the registration. The Act thus requires that the applicant file either an amendment to allege use or a statement of use before, and as a precondition to, the issuance of the registration. Trademark Act Sections 1(c) and 1(d), 15 U.S.C. Sections 1051(c) and (d).

The principal difference between the amendment to allege use and the statement of use is the time of filing. The amendment to allege use may be filed during initial examination, that is, after filing of the application but before either approval of the mark for publication or the expiration of the response period after issuance of a final action. Trademark Rule 2.76 (a), 37 C.F.R. Section 2.76(a). If the ammendment to allege use is acceptable and the application is otherwise in condition for publication, the mark will be published for opposition. After publication, the application will be processed in the same manner as an application based on use. If the application is not opposed, or if the applicant prevails in all oppositions filed, the application will proceed to registration.

If the applicant does not file an acceptable amendment to allege use during initial examination or if it is withdrawn, and the application is otherwise in condition for publication, the mark will be published for opposition. If the application is not opposed, or if the applicant prevails in all oppositions filed, the Office will issue a notice of allowance under Trademark Act Section 13 (b)(2), 15 U.S.C. Section 1063 (b)(2). The applicant must file a statement of use within six months of the issuance of the notice of allowance or within an extension of time granted for filing of the statement of use. Trademark Act Section 1(d), 15 U.S.C. Section 1051(d). The applicant may not file the statement of use before issuance of the notice of allowance. Trademark Rule 2.88(a), 37 C.F.R. Section 2.88(a). This period after approval for publication and before issuance of the notice of allowance during which the statement of use may not be filed is referred to as the blackout period. The statement of use will be examined as discussed below.

The applicant may request extensions of time for filing the statement of use under Trademark Act Section 1(d), 15 U.S.C. Section 1051(d). The applicant may request one six-month extension without a showing of good cause and four additional six-month extensions with a showing of good cause. Trademark Rule 2.89, 37 C.F.R. Section 2.89. Extensions of time are discussed below in detail (A.7.).

Please note that any reference to ''initial examination'' refers to examination of an intent-to-use application before approval for publication. The examination after filing of the statement of use will be referred to as ''examination of the statement of use.'' Also, please note that the ''notice of allowance'' refers to a new document required under the 1988 amendments. To avoid confusion, the term ''allowance'' will be used only in reference to this document and this phase of processing intent-to-use applications. Therefore, this guide will use the term ''approval for publication'' rather than ''allowance for publication'' to avoid any confusion with the notice of allowance.

As discussed in more detail below, the examining attorney must raise and dispose of all possible issues in the application during the initial examination. During examination of the statement of use, the examining attorney may not issue requirements or refusals which could or should have been presented in the initial examination unless the failure to do so initially was a clear error as defined below (A.9.b.).

The Office has established a special intent-to-use unit (ITU Unit) to process certain papers. Paralegals in the ITU Unit will review all statements of use to determine whether they meet the minimum requirements to be forwarded for examination on the merits, in the same way that the Application Section reviews the initial application for compliance with filing requirements. If the statement of use meets the minimum requirements, it will be referred to the examining attorney in the law office for

examination on the merits. The paralegals in the ITU Unit will also review and act on all requests for extensions of time to file statements of use.

b. Constructive Use Priority

Trademark Act Section 7 has also been amended to provide that the filing of *any* application for registration on the Principal Register, including an intent-to-use application, constitutes constructive use of the mark, provided the application matures into a registration. Trademark Act Section 7(c), 15 U.S.C. Section 1057(c). Upon registration, filing thus affords the applicant nationwide priority over others except parties who had used the mark before the applicant's filing date, parties who had filed in the Office before the applicant or parties who are entitled to an earlier priority filing date based on the filing of a foreign application under Trademark Act Section 44(d), 15 U.S.C. Section 1126(d).

The Office will not amend the filing date of any application filed before November 16, 1989, to a date on or after November 16, 1989, for the purpose of affording the applicant whatever benefit the constructive use date may provide.

c. Application Requirements

Intent-to-use applications must comply with all of the requirements of the Act and relevant regulations in all respects except as specifically noted in this guide. For example, the provisions of Sections 2(e)(1), 2(e)(2) and 2(e)(3) apply to intent-to-use applications as well as to other applications. This section of the guide will focus on those requirements, policies and procedures related to intent-to-use applications which differ from those related to the filing and processing of other applications.

d. Applications Not Accepted Until Effective Date

The Office will not accept any intent-to-use applications filed before November 16, 1989. If any such application is received before that date, the Office will return the application. If an intent-to-use application filed before the effective date reaches the examining attorney in error, the examining attorney should return the case to the Application Section for appropriate action. However, if the examining attorney has already issued an action, the examining attorney should issue a new action refusing registration because the application was void as filed.

Intent-to-use applications executed before the effective date, but filed on or after the effective date, will be accepted. However, the examining attorney will determine whether the time between execution and filing is within Office guidelines for all applications. *See* TMEP section 803.04. The applicant may reexecute the declaration verifying its statement of a bona fide intention to use the mark in commerce if the examining attorney determines that the delay between execution and filing was unreasonable.

All intent-to-use and Section 44 applicants must file the application within a reasonable time after execution to ensure the statement of intent is valid at the time of filing. The guidelines governing the reasonableness of the lapse of time are the same as those which apply to use applicants.

e. Good Faith

The Act specifies that an applicant may file an application based on a bona fide intention to use a mark in commerce ''...under circumstances showing the good faith of such person.'' Trademark Act Section 1(b), 15 U.S.C. Section 1051(b). The Office will *not* evaluate the good faith of an applicant in the ex parte examination of applications. The applicant's sworn statement of a bona fide intention to use the mark in commerce will always be sufficient evidence of good faith in the ex parte context. Consideration of issues related to good faith is appropriate in an inter partes proceeding.

2. Filing-Date Requirements

Trademark Rule 2.21, 37 C.F.R. Section 2.21, sets forth the minimum requirements for receiving a filing date for an intent-to-use application as well as other types of applications. These minimum formal requirements do not include all of the requirements which may ultimately apply for registration of the mark, but merely those requirements which must be met to receive a filing date. Please note the discussion below of those requirements for receiving a filing date which apply to all applications, in particular, the requirement that the application include a declaration or verification signed by the applicant to receive a filing date (B.1.).

With specific reference to intent-to-use applications, the application must include the following elements to receive a filing date: the name of the applicant; the name and address to which communications can be directed; a drawing of the mark substantially meeting all of the requirements of Trademark Rule 2.52, 37 C.F.R. Section 2.52; an identification of goods or services; a claim of a bona fide intention to use the mark in commerce; a verification or declaration under Trademark Rule 2.33(b), 37 C.F.R. Section 2.33(b), *signed by the applicant;* and the required filing fee for at least one class of goods or services.

In the case of an intent-to-use application, as in the case of all applications, if the application lacks any of the elements specified as necessary to receive a filing date, the application will be denied a filing date and all papers returned to the applicant with an explanation as to the deficiency. TMEP section 704. If an application which lacks one or more of the elements required for receiving a filing date is referred to the law office for examination in error, the examining attorney should return the case to the Application Section for appropriate handling. If the examining attorney discovers that an element was lacking after taking an action in the case, the examining attorney should issue a refusal on the ground that the application was not eligible to receive a filing date. TMEP section 705.02.

The fee for filing an intent-to-use application is the same as the filing fee for any other application, $175.00 per class.

3. Application Requirements - Initial Examination

In an intent-to-use application, the examining attorney will potentially examine both the application and a statement of use. After receipt of the application, the Office will perform the initial examination of the application to determine whether the mark is eligible for registration, but for the lack of use. If it is found to be eligible, the mark will be approved for publication and published for opposition. If the applicant has not submitted an amendment to allege use before publication, and the application is not opposed or survives all oppositions filed, the Office will issue a notice of allowance. Trademark Act Section 13(b), 15 U.S.C. Section 1063(b); Trademark Rule 2.81, 37 C.F.R. Section 2.81. In such a case, the applicant must submit a statement of use. Trademark Act Section 1(d)(1), 15 U.S.C. Section 1051(d)(1); Trademark Rule 2.88, 37 C.F.R. Section 2.88. If an amendment to allege use is filed and accepted, the application will be processed in the same manner as a use application from that point forward.

This section addresses examination before publication only; a later section will discuss the filing and examination of the statement of use after issuance of the notice of allowance.

The examining attorney must examine and act on all possible issues in the initial examination of the application. The intent-to-use application is subject to the same requirements and examination procedures as all other applications, except as specifically noted.

a. Drawings

The examination of the drawing in initial examination, before submission of any amendment to allege use and specimens, will focus primarily on the form of the drawing and compliance with Trademark Rule 2.52, 37 C.F.R. Section 2.52. The examination of the drawing after submission of an amendment to allege use is discussed below (A.4.d.iv.). As in any other application, the applicant may not amend the mark in a drawing if the amendment constitutes a material alteration of the mark. *In re The Wine Society of America, Inc.*, Serial No. 662,515 (TTAB, April 6, 1989). The applicant may not add or delete matter if the amendment would alter the character of the mark.

Please note the discussion below concerning the requirement in all applications that special-form drawings not exceed four inches by four inches to receive a filing date (B.1.b.).

b. Statutory Averments and the Identification of Goods and Services

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The application must include a statement that the applicant has a bona fide intention to use the mark in commerce with respect to specific goods and services as well as the other averments specified in Trademark Act Section 1(b), 15 U.S.C. Section 1051(b). Trademark Rule 2.33(b)(2), 37 C.F.R. Section 2.33(b)(2). If the application does not include the averments, the examining attorney must require a new verification including all necessary averments.

The general requirements related to identification of goods and services discussed below apply to intent-to-use applications as well as to all other applications. Under Trademark Rule 2.71(b), 37 C.F.R. Section 2.71(b), ''the identification of goods or services may be amended to clarify or limit the identification, but additions will not be permitted.'' The policies governing the application of this revised rule are discussed in detail below (B.6.) with examples and merit special attention.

Furthermore, under long-standing Office policy, the identification of goods and services must be specific and definite. Cf. *In re Societe Generale des Eaux Minerales de Vittel S.A.*, 1 USPQ2d 1296 (TTAB 1986), *rev'd on other grounds*, 824 F.2d 957, 3 USPQ2d 1450 (Fed. Cir. 1987).

As noted above, the Office will not examine the applicant's good faith in relation to the identification of goods or services or otherwise. Consideration of this issue is more appropriate in an inter partes proceeding.

In suggesting identifications, examining attorneys should not be overly restrictive. See *In re Sentry Chemical Company*, 230 USPQ 556 (TTAB 1986).

Because applicants may only limit or clarify the goods and services, the examining attorney should provide appropriate cautions to the applicant in requiring amendment to the identification of goods and services. When appropriate, the examining attorney should advise the applicant that goods or services explicitly deleted by amendment may not be reinserted at a later point in prosecution. Examining attorneys should take particular attention in the case of pro se applicants to ensure that they are aware of the restrictions related to amendments to the identification of goods and services.

c. Examination for Use as a Trademark or Service Mark

The Office will *not* examine the issue of use as a trademark or service mark in the initial examination of an intent-to-use application unless the applicant has submitted specimens of use in conjunction with an amendment to allege use under Section 1(c). However, as noted below (A.4.d.), if the applicant withdraws an amendment to allege use, the specimens remain of record, but the examining attorney may not consider or act on any such specimens in relation to the issue of use.

d. Examination under Sections 1, 2(a), 2(b), 2(c) and 2(e)

To the fullest extent possible, the examining attorney will examine the intent-to-use application for registrability under Trademark Act Sections 1, 2(a), 2(b), 2(c) and 2(e), 15 U.S.C. Sections 1051, 1052(a), (b), (c) and (e), according to the same procedures and standards which apply to any other application. The examining attorney should investigate all possible issues regarding registrability under these sections through all available sources. If appropriate, the examining attorney should request that the applicant provide literature or explanation concerning these issues under Trademark Rule 2.61(b), 37 C.F.R. Section 2.61(b). The examining attorney should request such information relevant to the types of goods or services or the trade, in general, or similar general information. The examining attorney should not request information regarding use of the specific mark in relation to the goods or services.

First and foremost, the examining attorney must develop evidence during the initial examination from sources other than the applicant. The examining attorney may not make any inquiry or request any information premised on use of the mark before the applicant files an amendment to allege use. If the applicant submits an amendment to allege use during the initial examination, the examining attorney may then obtain relevant information from the applicant in the same manner as would apply in any application based on use unless the amendment to allege use is withdrawn.

The examining attorney must raise all possible issues under these sections in the initial examination of the application. As discussed more fully below (A.9.), Office policy precludes the issuance of a requirement or refusal during examination of the statement of use if the issue could or should have been treated in the initial examination, unless the failure to do so in initial examination constitutes a clear error. **''Clear error'' means an error which, if not corrected, would result in issuance of a registration in violation of the Act**. The meaning and application of this standard are discussed in detail below (A.9.b.).

e. Examination under Section 2(d)

The examining attorney will perform a search and will issue refusals, as appropriate, under Trademark Act Section 2(d), 15 U.S.C. Section 1052(d), in the case of an intent-to-use application. The determination of likelihood of confusion under Section 2(d) in an intent-to-use application does not differ from the determination in any other type of application. The examining attorney should consider questions concerning the scope of the goods and services and related goods and services in determining likelihood of confusion under the standards which have historically governed in applications based on use or based on a foreign application or registration.

For the purpose of determining priority among pending applications, the intent-to-use application will be treated in the same manner as any other application. For purposes of publication for opposition, an intent-to-use application will receive priority over any application which has an effective filing date later than the intent-to-use application.

For the purpose of determining priority between two applications which have the same filing date, the application with the earlier date of execution will be accorded priority for purposes of publication for opposition. Trademark Rule 2.83(b), 37 C.F.R. Section 2.83(b). This would apply whether one or both of the applications are intent-to-use applications.

Also, an intent-to-use application, like any other application, cannot serve as the basis for a formal refusal under Section 2(d) until the application has matured into a registration.

f. Claims of Acquired Distinctiveness under Section 2(f)

An intent-to-use applicant may not assert that a nondistinctive designation has acquired distinctiveness under Trademark Act Section 2(f), 15 U.S.C. Section 1052(f), until the applicant has submitted an amendment to allege use or a statement of use. A claim of acquired distinctiveness, by definition, requires prior use. Section 2(f) is limited by its terms to ''a mark used by the applicant.'' Therefore, the examining attorney should reject any claim of acquired distinctiveness filed before submission of an acceptable amendment to allege use or statement of use. The examining attorney should consider and act on any claim of acquired distinctiveness filed after such time in the same manner and according to the same standards which would apply to any other application.

Please note the discussion below of the revision regarding five-year claims of acquired distinctiveness (B.7.).

g. Intent-to-Use Applications and the Supplemental Register

An intent-to-use applicant may not seek registration on the Supplemental Register until the applicant has submitted either an acceptable amendment to allege use or statement of use. Trademark Rule 2.75(b), 37 C.F.R. Section 2.75(b). Only applications under Trademark Act Section 44, 15 U.S.C. Section 1126, are excepted from the use requirement in seeking registration on the Supplemental Register. Trademark Act Section 44(e), 15 U.S.C. Section 1126(e).

If an applicant submits an application for the Supplemental Register based on intent to use, the Office will reject the application because it was void as filed and will return all papers to the applicant with any fees submitted. If any such application reaches an examining attorney in error, the examining attorney should return the papers to the Application Section for appropriate action.

If an intent-to-use applicant does file an acceptable amendment to allege use or statement of use *and* an acceptable amendment to the Supplemental Register, the Office will change the effective filing date of the application to the date of the filing of the amendment to allege use or the statement of use. Trademark Rule 2.75(b), 37 C.F.R Section 2.75(b). The examining

attorney must ensure that the effective filing date has been changed.

The amendment to allege use or statement of use should be examined before any action is taken on an amendment to the Supplemental Register.

4. Amendments to Allege Use under Section 1(c) of the Act

As stated earlier, an intent-to-use applicant must file either an amendment to allege use under Trademark Act Section 1(c), 15 U.S.C. 1051(c), or a statement of use under Trademark Act Section 1(d), 15 U.S.C. Section 1051(d), as a precondition to issuance of the registration. This section will discuss amendments to allege use only; the statement of use will be discussed below (A.8. and 9.).

a. Form and Permissible Time Period for Filing an Amendment to Allege Use under Section 1(c) of the Act

Any paper which includes an amendment to allege use under Section 1(c) of the Act should be entitled ''Amendment to Allege Use'' whether or not it includes other amendments. This title should appear at the top of the first page. Trademark Rule 2.76(d), 37 C.F.R. Section 2.76(d). This practice is recommended, not required. It will assist in the prompt and orderly processing of papers. The Office will not take any action to require a proper title.

An applicant may file an amendment to allege use under Section 1(c) of the Act at any time after filing the application and before the date the examining attorney approves the mark for publication or before the expiration of the six-month response period after issuance of a final action. Trademark Rule 2.76(a), 37 C.F.R. Section 2.76(a). If the applicant files an amendment to allege use after the time indicated, and before the permissible period for filing a statement of use, the review and amendment clerk will return the amendment to allege use and any fees to the applicant. The applicant may resubmit the amendment to allege use as a statement of use after issuance of the notice of allowance.

If the applicant submits a late amendment to allege use on the same paper with other amendments, the review and amendment clerk will retain the papers for appropriate processing of the other amendments and will advise the applicant that the amendment to allege use is late and must be resubmitted as a statement of use after issuance of the notice of allowance. The review and amendment clerk will arrange a refund of any fees in conjunction with this notification.

If the amendment to allege use is filed within the time permitted and complies with the minimum requirements to be referred for examination on the merits, but the application was approved for publication before the amendment to allege use was associated with the file, the examining attorney should withdraw the application from publication and examine the amendment to allege use.

If the applicant files the amendment to allege use in conjunction with a notice of appeal, the Trademark Trial and Appeal Board will institute the appeal, suspend action on the appeal and remand the case to the examining attorney to examine the amendment to allege use. The examining attorney should continue examination according to standard examining procedures until final resolution of all new issues arising in the examination of the amendment to allege use.

If the application becomes abandoned in the course of the examination of the amendment to allege use, the examining attorney will advise the Trademark Trial and Appeal Board. If the application is not abandoned in the course of the examination of the amendment to allege use, that is all issues are resolved or made the subject of a final action, the examining attorney should return the application to the Trademark Trial and Appeal Board for resumption of the appeal or other action, as appropriate. Trademark Rule 2.142(f)(3), 37 C.F.R. Section 2.142(f)(3).

The Office will not accept an amendment to allege use during the pendency of an ex parte appeal unless the amendment to allege use was filed within the six-month response period after issuance of the final action from which the appeal was taken.

The applicant may file the amendment to allege use only after the applicant has made use of the mark on or in connection with all goods or services for which the applicant will ultimately seek registration in the application, unless the applicant specifically requests that the application be divided. Trademark Rule 2.76(c), 37 C.F.R. Section 2.76(c). Trademark Rule 2.87, 37 C.F.R. Section 2.87, permits an applicant to divide the application into two or more separate applications. While an applicant can request division for any reason, the purpose of dividing the application in this case would be to effect publication or issuance of a registration for goods or services on or in connection with which the applicant had already made use while maintaining an active application for the remaining goods or services. The requirements attendant to submission of a request to divide an application are discussed more fully below (B.15.).

The filing of an amendment to allege use does not relieve the applicant of the duty to file a response to an outstanding Office action or to take any other action required in the case, including the filing of a notice of appeal. As noted, in the case of an appeal, the Trademark Trial and Appeal Board will remand the case for examination of the amendment to allege use.

b. Necessary Elements in a Complete Amendment to Allege Use under Section 1(c) of the Act

The amendment to allege use must include the following elements:

i. a verified statement that the applicant is believed to be the owner of the mark and that the mark is in use in commerce, specifying the date of the applicant's first use of the mark and first use of the mark in commerce, the type of commerce, those goods or services specified in the application on or in connection with which the mark is in use in commerce and the mode or manner in which the mark is used;

ii. three specimens or facsimiles of the mark as used in commerce conforming to the requirements of Trademark Rules 2.56, 2.57 and 2.58, 37 C.F.R. Sections 2.56, 2.57 and 2.58; and

iii. the prescribed fee.

Trademark Rule 2.76(b), 37 C.F.R. Section 2.76(b).

The fee for filing an amendment to allege use is $100.00 per class.

c. Minimum Requirements for an Amendment to Allege Use under Section 1(c) of the Act

The amendment to allege use must include the following minimum elements to be referred to the examining attorney for examination on the merits:

i. the prescribed fee;

ii. at least one specimen or facsimile of the mark as used in commerce; and

iii. a verification or declaration signed by the applicant stating that the mark is in use in commerce.

Trademark Rule 2.76(e), 37 C.F.R. Section 2.76(e).

The review and amendment clerk will conduct a preliminary review of the amendment to allege use to determine whether it is timely and complies with the minimum requirements. This preliminary review is similar to the review in the Application Section for filing-date requirements in a new application. If the amendment to allege use is timely and does comply with those requirements, the review and amendment clerk will refer the application to the responsible examining attorney for examination of the amendment to allege use on the merits.

If the amendment to allege use is untimely, the review and amendment clerk will return it to the applicant. If the applicant has submitted other amendments on the same paper with an untimely amendment to allege use, the review and amendment clerk will notify the applicant that the amendment to allege use is untimely and will not be considered and will process the other amendments, as appropriate, without consideration of the amendment to allege use. If a fee has been submitted, the review and amendment clerk will process the refund of the fee. The applicant may resubmit the amendment to allege use as a statement of use after issuance of the notice of allowance. Trademark Rule 2.76(f), 37 C.F.R. Section 2.76(f).

If the amendment to allege use is timely, but does not comply with the minimum requirements specified above, the review and amendment clerk will advise the applicant of the deficiency. The applicant may correct the deficiencies, provided the applicant does so before the mark has been approved for publication or the expiration of the response period after issu-

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ance of a final refusal. Trademark Rule 2.76(a), 37 C.F.R. Section 2.76(a). The review and amendment clerk should place the informal amendment to allege use in the file with copies of the relevant action advising the applicant of the deficiencies. If the applicant does not correct the deficiencies before approval of the mark for publication or before the expiration of the response period for a final refusal, the amendment to allege use will not be examined. In such a case, if the applicant has submitted the fee, the fee will not be refunded. If the mark is published for opposition, the applicant may file a statement of use after issuance of the notice of allowance.

If the amendment to allege use is not signed, the review and amendment clerk will hold it not in compliance with the minimum requirements and will require that the applicant submit a properly signed amendment to allege use. The review and amendment clerk will not inquire into the authority of the person who signed. The examining attorney will examine this issue if and when the amendment to allege use is referred for examination on the merits.

After the review and amendment clerk has taken appropriate action with respect to any deficient amendment to allege use, the review and amendment clerk will process any other amendments filed with the amendment to allege use and will refer the case to the responsible examining attorney for appropriate action on those other amendments.

As noted previously, the filing of an amendment to allege use does not constitute a response to any outstanding Office action in the case. The applicant must respond to any such action within the time provided to avoid abandonment of the application. Trademark Rule 2.76(g), 37 C.F.R. Section 2.76(g).

If the review and amendment clerk has issued an action holding the proposed amendment to allege use not in compliance with the minimum requirements, the examining attorney will act on any other amendments in the case without consideration of the amendment to allege use. The examining attorney should issue requirements or refusals in nonfinal or final form according to standard examination procedure without consideration of the amendment to allege use. Any specimens submitted, as in the case of specimens related to an amendment to allege use which is withdrawn, become part of the record and may be relied on in relation to issues unrelated to use.

If the examining attorney determines that the review and amendment clerk erred in holding that the amendment to allege use did not meet the minimum requirements to be referred for examination on the merits, the examing attorney should telephone to advise the applicant the the amendment to allege use will be examined on the merits and to disregard the review and amendment clerk's action citing deficiencies.

d. Examination of the Amendment to Allege Use by the Examining Attorney

The examing attorney must examine the amendment to allege use for compliance with all relevant sections of the Act. If the examination of the amendment to allege use raises any issues necessitating the issuance of requirements or refusals, the examining attorney must take appropriate action, as discussed below. The following sections present examples of issues which should be examined in relation to the amendment to allege use. These sections do not exhaust all possibilities, but present a general framework governing the areas for examination.

i. Ownership and Proper Execution

The examing attorney must confirm that the proper party has executed the amendment to allege use. The party submitting the amendment to allege use must be the same as the applicant or a valid assignee under Trademark Act Section 10, 15 U.S.C. Section 1060.

The person who executes the amendment to allege use must be entitled to do so on behalf of the applicant. The same persons identified as possessing the authority to sign the original application under Trademark Act Section 1, 15 U.S.S. Section 1051,are the only persons possessing the authority to sign the amendment to allege use. That is, only the individual owoner can sign for a partnership for an individual applicant, only a general partner can sign and only an officer can sign for a corporation or association. If the amendment to allege use is not signed by one of these persons, the examining attorney must require that the applicant submit a substitute amendment to allege use signed by a proper person, or that a proper person execute an affidavit or declaration verifying the facts as set forth in the amendment to allege use.

The color of authority provision of Trademark Rule 2.71 (c), 37 C.F.R. Section 2.71 (c), does not apply to amendments to allege use.However, the applicant need not demonstrate that the person who signed originally had color of authority because the applicant may submit a substitute declaration within the response period set in the examining attorney's action, whether or not the person who signed originally had color of authority. The specific date on which the applicant submits the amendment to allege use does not have the same importsance as the filing date for the application or the statement of use, since the amendment to allege use can be submitted up to the expiration of the six-month response period following a final action, including a final action requiring execution by a proper person.

ii. The Verified Statement and the Identification of Goods and Services

The examining attorney must examine the verified statement to ensure that the statement includes the necessary averments, that the dates are properly stated, that the type of commerce is indicated and that the mode of use is set forth. If the statement is defective, the examining attorney must require appropriate amendment.

The examining attorney must also examine the identification of goods and services to ensure that it conforms to the goods and services specified in the application. The applicant may limit or clarify the goods and services, but the applicant cannot add to or otherwise expand the identification of goods or services specified in the application.

If goods or services identified in the application are omitted from the amendment to allege use, but the applicant has not specifically indicated an intention to delete those goods or services from the application, the examining attorney should confirm that the applicant intends to delete the omitted goods or services. The applicant may amend the application to reinsert goods or services which have been omitted from the amendment to allege use, provided the applicant did not expressly delete the goods or services by amendment and provided the applicant verifies that it has used the mark in commerce on or in connection with the goods or services in an affidavit or declaration under Trademark Rule 2.20, 37 C.F.R. Section 2.20. Omission of goods or services in an amendment to allege use or statement of use is the only instance in which an applicant may reinsert goods or services. The general rule is that goods and services once deleted by express amendment or omitted from the identification of goods and services in a request for an extension of time to file a statement of use may not be reinserted in a later amendment.

iii. The Specimens

The examining attorney must review the specimens for compliance with all relevant requirements. The examining attorney must confirm that the designation is used as a mark on the specimens. The examining attorney must determine whether the specimens indicate descriptive or generic use of the mark. The examining attorney must examine the specimens to determine whether any issue concerning ownership of the mark is presented.

The clear-error standard which limits the issues that may be raised in examination of the statement of use does not apply to the examination of the amendment to allege use. However, the examining attorney must raise all possible issues, such as descriptiveness issues, in the initial examination without regard to whether the applicant will file an amendment to allege use or a statement of use. The applicant may do either, and the examining attorney may be precluded from raising an issue under the clear-error standard if the applicant files a statement of use.

If the applicant submits substitute specimens in conjunction with an amendment to allege use, the applicant need not verify that the substitute specimens were in use as of any specific date, but merely that the substitute specimens were used in commerce in connection with the goods or services.

iv. The Drawing

Trademark Rule 2.51, 37 C.F.R. Section 2.51, specifies that the drawing in an intent-to-use application must be a substantially exact representation of the mark as intended to be used *and* as actually used upon filing of the amendment to allege use before publication or the statement of use after issuance of the notice of allowance. Trademark Rule 2.88(j), 37 C.F.R. Section 2.88(j). An applicant may not amend the mark in a drawing if the amendment constitutes a material alteration of the mark. Also, the mark in the drawing must agree with the mark as used on the specimens. The same standards which apply to use applications in determining whether specimens support use of the mark and in determining whether amendments can be permitted apply in the examination of the amendment to allege use.

Therefore, in an intent-to-use application, the examining attorney must require amendment to the mark or the submission of new specimens if the mark in the drawing is not a substantially exact representation of the mark as used on the specimens. Trademark Rule 2.72(c), 37 C.F.R. Section 2.72(c). However, if amendment of the mark would constitute a material alteration of the mark, the examining attorney must require substitute specimens only. The same standards applied in use applications in determining whether the specimens support use of the applied-for mark apply to specimens in intent-to-use applications. See Examination Guide 2-89. *Cf. United Rum Merchants Ltd. v. Distillers Corp. (S.A.) Ltd.*, 9 USPQ2d 1481 (TTAB 1988).

e. Issuance of Actions by the Examining Attorney Related to the Amendment to Allege Use

If, upon examination, the examining attorney determines that the amendment to allege use is not acceptable, or that it raises new issues in the case, the examining attorney will issue an action stating all refusals and requirements arising in the examination of the amendment to allege use and incorporating all unresolved issues from any outstanding Office action in the case. The action related to the amendment to allege use thus supersedes any outstanding Office action, and the applicant's response on all issues is due six months from the date of the new action. The new action will be a nonfinal action since at least those issues arising from the examination of the amendment to allege use will have been raised for the first time.

If the amendment to allege use is received before any examination of the application, the review and amendment clerk will review the amendment to allege use to determine whether it complies with the minimum requirements and will take appropriate action. The review and amendment clerk will return the case to the new case docket after taking appropriate action. When the case is reached for examination, the examining attorney will examine the application as a whole, including the amendment to allege use, and will issue a first action addressing all issues in the case.

If the review and amendment clerk reviews the amendment to allege use and refers it to the examining attorney for examination on the merits, the examining attorney should examine the amendment to allege use regardless of the status of the application. If the application is in suspended status, the examining attorney should examine the amendment to allege use, and if any action is required, the examining attorney should remove the application from suspension and take appropriate action.

If the amendment to allege use is submitted at the same time as a response and it is referred for examination on the merits, the examining attorney should consider both the response and the amendment to allege use. If the examining attorney must take any action with respect to the amendment to allege use, the examining attorney should issue a nonfinal action incorporating any refusals or requirements which remain outstanding after the applicant's response. If the amendment to allege use is acceptable in all respects, the examining attorney should act on the response independent of the amendment to allege use. The examining attorney should proceed in the same manner if the amendment to allege use reaches the examining attorney when the case is in the examining attorney's amended docket after receipt of a response.

f. Amendment and Withdrawal of the Amendment to Allege Use

The applicant may amend the amendment to allege use to correct deficiencies, to overcome a refusal, to comply with a requirement or for any other purpose. *Cf.* Trademark Act Section 1(d)(3), 15 U.S.C. Section 1051(d)(3).

The applicant may withdraw the amendment to allege use. The applicant or the applicant's attorney may authorize withdrawal in an examiner's amendment. The applicant may do so at any time after submission of the amendment to allege use and before approval of the application for publication. The Office will not refund the fee for filing the amendment to allege use if it is withdrawn by the applicant.

If the applicant withdraws the amendment to allege use, the application will be processed as an intent-to-use application subject to publication, issuance of a notice of allowance and submission of a statement of use after issuance of the notice of allowance.

If the applicant wishes to request withdrawal of an amendment to allege use during an ex parte appeal, the applicant should direct the request to the Trademark Trial and Appeal Board for a determination by the Board on the request.

If the applicant withdraws the amendment to allege use, the examining attorney will withdraw any requirements or refusals specifically related to use of the mark, such as objections related to the form of the verified statement itself, objections related to the agreement of the mark as used with the drawing or objections related to use of the applied-for designation as a trademark or service mark on the specimens. The examining attorney should also withdraw any requirement or refusal related to the execution of the amendment to allege use. The examining attorney should maintain any requirement or refusal arising from the amendment to allege use not specifically related to the dates of use or use of the mark, such as ownership questions or refusals or requirements related to Sections 2(e)(1), 2(e)(2) or 2(e)(3) of the Act. The specimens or any other submission related to the amendment to allege use will remain part of the record for the purpose of determinations under these sections. Issues related to use include functionality, ornamentation and configuration issues.

If the applicant withdraws the amendment to allege use after issuance of the notice of final acceptance of the amendment to allege use, the examining attorney must withdraw the acceptance on the TRAM system.

g. Final Acceptance of the Amendment to Allege Use After Examination

If the amendment to allege use is acceptable in all respects, the Office will notify the applicant of its acceptance. The examining attorney will ensure that the computer-generated notice is issued. The examining attorney must also sign the file to indicate acceptance of the amendment to allege use. As noted above, after an amendment to allege use is accepted, the intent-to-use application will be processed in the same manner as a use application under Trademark Act Section 1(a), 15 U.S.C. Section 1051(a). The notification must be sent regardless of the status of the case, whether there is an outstanding Office action or not. Examination should continue on other issues in the case after the acceptance of the amendment to allege use.

5. Publication for Opposition and Issuance of the Notice of Allowance

In the case of an intent-to-use application, if the examining attorney determines that the mark is entitled to registration, but for the submission of a statement of use, that is, no amendment to allege use has been accepted, the examining attorney will approve the mark for publication and the mark will be published for opposition. In the case of an intent-to-use application where an amendment to allege use has been submitted and accepted, the application will be processed thereafter in the same manner as a use application. If the application is not opposed or survives all oppositions filed, the mark will proceed to registration.

In the case of an intent-to-use application where no amendment to allege use has been filed or where the applicant has withdrawn the amendment to allege use, the Office will issue a notice of allowance, provided the mark clears the opposition period or survives all oppositions. Trademark Act Section 13(b)(2), 15 U.S.C. Section 1063(b)(2); Trademark Rule 2.81(b), 37 C.F.R. Section 2.81(b).

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The notice of allowance in an intent-to-use application will issue on the same date that a registration would issue in a use application. The Office will not publish any notice that a notice of allowance has been issued in the *Official Gazette*.

The notice of allowance will state the serial number of the application, the name of the applicant, the correspondence address, the mark, the identification of goods or services, and the date of issuance of the notice of allowance. The notice of allowance is a key document because the issuance date establishes the due date for submission of the statement of use required prior to registration. The information stated on the notice of allowance is also important. If the notice of allowance includes any errors, the applicant should notify the Office immediately.

6. Amendments between Issuance of the Notice of Allowance and Submission of the Statement of Use

The only amendment permitted between the issuance of the notice of allowance and the submission of the statement of use is an amendment to delete goods or services. Trademark Rule 2.77, 37 C.F.R. Section 2.77. "Deletion" means the elimination of an existing item in an identification of goods and services in its entirety. Deletion is distinct from other types of amendments to limit, such as amendments to limit the goods as to types, channels of trade or class of purchasers or to restrict an existing item in scope by the introduction of some qualifying language or the substitution of specific for more general terms. The Office will not consider any other amendment to the application during this period. If the applicant submits any other amendments during this period, the Office will place the amendments in the file for consideration at the time of examination of the statement of use. The ITU paralegal will advise the applicant of receipt of any such amendment and that the amendment will not be considered until the examination of the statement of use.

The Office will process any change of address or change of attorney at any time during the prosecution of an application, even during the period between issuance of the notice of allowance and the filing of the statement of use.

7. Requests for Extensions of Time to File the Statement of Use

Trademark Act Section 1(d)(2), 15 U.S.C. Section 1051(d)(2), permits the Office to extend the time for filing a statement of use upon a written request from the applicant. Trademark Rule 2.89, 37 C.F.R. Section 2.89, sets forth Office policy and procedure governing the filing and processing of such requests. Essentially, an applicant may request one six-month extension without a showing of good cause and up to four additional six-month extensions with a showing of good cause. Thus, the time available for filing the statement of use may not be extended beyond thirty-six months from the issuance of the notice of allowance.

The six-month period following issuance of the notice of allowance will not be cut short by the grant of an extension. The extension will begin to run from the expiration of the six-month period following the notice of allowance. Likewise, an applicant will receive the full benefit of each extension before a subsequent extension will begin to run. No extension will be granted for more than six months. Trademark Rule 2.89(b), 37 C.F.R. Section 2.89(b).

The only amendment which is permitted in connection with the filing of a request for an extension of time is an amendment to delete goods or services. If any other amendment is submitted in conjunction with a request for an extension of time, the Office will place the amendment in the application file for consideration at the time of examination of the statement of use. The Office will process any change of address or change of attorney at any time during the prosecution of an application, even if filed in conjunction with a request for an extension of time.

Any request for an extension of time must be filed by the entity which owns the mark at the time the request is filed and must be executed by an individual possessing statutory authority to do so on behalf of the specific type of applicant entity. The individual must sign for an individual applicant, a general partner must sign for a partnership and an officer must sign for a corporation or association. If the party filing is different from the owner of record, the request should include the reel and frame number of any relevant assignment recorded in the Assignment Branch of the Office or other evidence that the party filing is the owner of the application in accordance with Trademark Rule 2.186, 37 C.F.R. Section 2.186. If the request does not include such evidence the ITU Unit will deny the request. The applicant may establish ownership within the time provided in the action advising the applicant of the denial, even if the time permitted for filing the statement of use has expired. However, the applicant must file another request for an extension of time before the time period related to the request which is under consideration expires to avoid abandonment.

As noted above (A.7.), only those individuals who possess statutory authority to sign the original application are permitted to sign the request for an extension of time. If the request is signed by any other person, the request for an extension of time will be denied. Because the request must include a statement of a continued bona fide intention to use the mark in commerce, only the applicant can execute the request under the Act. In the case of a request for an extension of time, the request cannot be reexecuted by one with proper authority after the expiration of the time permitted for filing the statement of use. The "color of authority" provision of Trademark Rule 2.71(c), 37 C.F.R. Section 2.71(c), does not apply to the filing of requests for extensions of time.

a. Requirements Related to the First Six-Month Extension

The applicant may request an initial six-month extension of time to file the statement of use by filing a request for such an extension before the expiration of the six-month period following the issuance of the notice of allowance. The request must include the prescribed fee of $100.00 per class and a verified statement signed by the applicant that the applicant has a continued bona fide intention to use the mark in commerce. The statement must specify those goods or services specified in the notice of allowance on or in connection with which the applicant has a continued bona fide intention to use the mark in commerce. Trademark Rule 2.89(a), 37 C.F.R. Section 2.89(a). The applicant may incorporate the goods and services specified in the notice of allowance by reference.

b. Requirements Related to Extensions Beyond the First Six-Month Extension - Good Cause Extensions

The applicant may request up to a maximum of four six-month extensions to file the statement of use in addition to the first six-month extension. Each request for such an extension must be filed before the expiration of the previously granted extension. The request must include the prescribed fee of $100.00 and a verified statement signed by the applicant that the applicant has a continued bona fide intention to use the mark in commerce. The statement must specify those goods or services specified in the notice of allowance on or in connection with which the applicant has a continued bona fide intention to use the mark in commerce. In addition, each such request must include a showing of good cause. Trademark Rule 2.89(b), 37 C.F.R. Section 2.89(b).

The showing of good cause must include an allegation that the applicant has not yet made use of the mark in commerce on or in connection with all of the goods or services specified in the notice of allowance for which the applicant has a continued bona fide intention to use the mark in commerce. The showing must also include a statement of applicant's ongoing efforts to use the mark in commerce on or in connection with the goods or services specified as those for which the applicant has a continued bona fide intention to use the mark in commerce. Trademark Rule 2.89(d), 15 U.S.C. Section 2.89(d).

Efforts to use the mark in commerce may include "...without limitation, product or service research or development, market research, manufacturing activities, promotional activities, steps to acquire distributors, steps to obtain required governmental approval, or other similar activities." Trademark Rule 2.89(d)(2), 37 C.F.R. Section 2.89(d)(2). In the alternative, the applicant must submit a satisfactory explanation for the failure to make such efforts. The applicant's statement concerning good cause need only refer to the appropriate types of activities listed in the rule or similar types of activities. The applicant need not provide an explanation or evidence providing details as to specific activities related to the types delineated. For instance, the applicant may simply state that it is engaged in manufacturing activities and promotional activities.

Any request for an extension of time, including the showing of good cause, will become a part of the permanent Office record and open to the public as such. As noted, the showing of good cause need only provide general statements identifying the types of efforts the applicant has undertaken as stated in the rule. The showing need not state specific facts which would disclose confidential business information or other proprietary information. The Office will not require any evidence or explanation in a showing of good cause.

c. Identifying the Goods and Services in the Request for an Extension of Time

The goods and services identified in the request for an extension of time must conform to the goods and services identified in the notice of allowance. If appropriate, the applicant may incorporate the specification of goods and services in the notice of allowance by reference. If goods or services are to be deleted, the applicant should clearly specify those goods and services to be deleted.

If the applicant lists the goods and services specifically in the request for an extension of time, and omits any goods or services which were listed in the notice of allowance, the Office will delete those goods or services from the application and will not grant the request as to the omitted items. Likewise, if the applicant lists the goods and services specifically, and the wording in the listing of the goods and services in the request does not conform to the wording of the specification of goods and services in the notice of allowance, the Office will delete from the application any wording not expressly included in the request in conforming language and will not grant the request as to the deleted items. The applicant cannot amend the application later to reinsert the deleted goods or services once they have been so deleted. Trademark Rule 2.89(f), 37 C.F.R. Section 2.89(f).

The paralegal in the ITU Unit will examine the identification of goods and services specified in the extension request to determine whether the goods and services specified conform to the goods and services specified in the notice of allowance. The paralegal will delete any items from the identification of goods and services in the application which are not either incorporated by reference or specified in the extension request in conforming language.

As noted above, applicants may incorporate goods and services by reference in the request for an extension of time. It is advisable to do so, if appropriate, to avoid the possibility that goods or services will be deleted unintentionally. Thus, the applicant may specify the goods or services by stating "those goods or services identified in the notice of allowance" or "those goods or services identified in the notice of allowance except..." followed by an identification of goods or services to be deleted.

The only amendment permitted between issuance of the notice of allowance and filing of the statement of use is an amendment to delete goods or services. Trademark Rule 2.77, 37 C.F.R. Section 2.77. "Deletion" means the elimination of an item from the identification of goods and services in its entirety as distinct from other types of amendments to limit, such as amendments to limit the goods as to types, channels of trade or class of purchasers or to restrict an existing item in scope by the introduction of some qualifying language or the substitution of specific for more general terms. The ITU paralegal will not process any proposed amendments filed with the request for an extension of time, other than deletions, and will place other amendments in the file for consideration at the time of examination of the statement of use. The paralegal will act on the extension request, apart from any such proposed amendment, as specified above.

d. Filing a Request for an Extension of Time in Conjunction with a Statement of Use

An applicant may file one final request for an extension of time at the time of filing the statement of use or during any time remaining in the existing six-month period in which a statement of use is filed. However, such a request is not permitted if the grant of such an extension would extend the time for filing more than thirty-six months beyond the issuance of the notice of allowance. Trademark Rule 2.89(e), 37 C.F.R. Section 2.89(e). The applicant may not request any further extensions of time after this request.

The purpose of such a request would be to secure additional time to correct any deficiency in the statement of use which is of a type which must be corrected before the expiration of the time permitted for filing the statement of use. Because the statement of use may not be withdrawn, the applicant must correct any such deficiency within the time provided to file the statement of use or the application will become abandoned.

The request must conform to all relevant requirements including payment of the applicable fee. If the request is not the first request for an extension of time, and thus a showing of good cause is required with the request for an extension of time filed with or after the statement of use, the applicant may satisfy the requirement for a showing of good cause by asserting that applicant believes that it has made valid use of the mark in commerce, as evidenced by the submitted statement of use, but that if the statement of use is found to be fatally defective, the applicant will need additional time to file a statement of use. Trademark Rule 2.89(e)(2), 37 C.F.R. Section 2.89(e)(2).

If the applicant files a final request for an extension of time in conjunction with a statement of use, and the applicant submits fees sufficient for one, but not both, the Office will apply the fees to the extension of time to avoid abandonment of the application.

e. Processing of the Request for an Extension of Time

The Office will notify the applicant of the grant or denial of the request for an extension of time. Trademark Rule 2.89(g), 37 C.F.R. Section 2.89(g). Any denial will specify the reasons for the denial. The Office's failure to notify the applicant of the grant or denial of the extension before the expiration of the existing period to file the statement of use or before the expiration of the period requested does not relieve the applicant of the responsibility to file the statement of use or a request for an extension of time within the relevant period. If the applicant fails to file the statement of use or a request for an extension of time within the time permitted, the application will become abandoned. Trademark Act Section 1(d)(4), 15 U.S.C. Section 1051(d)(4).

If the Office denies the request for an extension of time but time remains in the applicant's existing period for filing the statement of use, the applicant may file the statement of use or another request for an extension of time to file the statement of use. Otherwise, the applicant's only recourse after denial of the request for an extension of time is a petition to the Commissioner. A petition from the denial of a request for an extension must be filed within one month from the mailing date of the denial of the extension of time. Trademark Rule 2.89(g), 37 C.F.R. Section 2.89(g). The ITU Unit will not accept any request to reconsider a denial of a request for an extension of time. The ITU Unit will be responsible for processing all requests for extensions of time to file statements of use.

8. Submission of the Statement of Use under Section 1(d) of the Act

As noted earlier (A.1.a.), an intent-to-use applicant must file either an amendment to allege use under Trademark Act Section 1(c), 15 U.S.C. 1051(c), or a statement of use under Trademark Act Section 1(d), 15 U.S.C. Section 1051(d), as a precondition to issuance of the registration. This section will discuss statements of use only; the amendment to allege use is discussed above (A.4.).

a. Form and Permissible Time Period for Filing a Statement of Use under Section 1(d) of the Act

The statement of use should be entitled, "Statement of Use under Section 2.88." Trademark Rule 2.88(d), 37 C.F.R. Section 2.88(d). The title should be placed at the top of the first page. The mailing address should specify "Box ITU" also. Proper identification of the statement of use will expedite handling, but the Office will not take any action for failure to comply with these recommendations. The applicant may submit other amendments related to the application with the statement of use

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The statement of use must be filed within six months of the issuance date of the notice of allowance or within an extension of time for filing the statement of use granted under Trademark Rule 2.89, 37 C.F.R. Section 2.89. For purposes of establishing a date of receipt, the statement of use is not subject to the certificate-of-mailing procedure under Rule 1.8, 37 C.F.R. Section 1.8. The statement of use will be considered received on the date it is actually received or on the Express-Mail date under Rule 1.10, 37 C.F.R. Section 1.10.

Any statement of use filed before mailing of the notice of allowance is premature and will not be considered. In such a case, the ITU Unit will return the statement of use and refund the fee to the applicant. Trademark Rule 2.88(a), 37 C.F.R. Section 2.88(a). If the statement of use is not filed or is filed later than required, the application will be considered abandoned. Trademark Act Section 1(d)(4), 15 U.S.C. Section 1051(d)(4); Trademark Rule 2.88(h), 37 C.F.R. Section 2.88(h). A late statement of use will not be considered. The ITU Unit will return the late statement of use to the applicant with any fees paid.

The applicant may file the statement of use only after the applicant has made use of the mark on or in connection with all goods or services for which the applicant will ultimately seek registration in the application, unless the applicant specifically requests that the application be divided. Trademark Rule 2.88(c), 37 C.F.R. Section 2.88(c). Trademark Rule 2.87, 37 C.F.R. Section 2.87, permits an applicant to divide the application as filed into two or more separate applications. The purpose of filing a request to divide an application in conjunction with the filing of a statement of use would be to effect issuance of a registration for goods or services on or in connection with which the applicant has already made use while maintaining an active application for the remaining goods or services. After the division all applications retain the original filing date. The requirements attendant to submission of a request to divide an application are discussed below (B.15.).

b. Necessary Elements in a Complete Statement of Use under Section 1(d) of the Act

The statement of use must include the following elements:

i. a verified statement that the applicant is believed to be the owner of the mark and that the mark is in use in commerce, specifying the date of the applicant,s first use of the mark and first use of the mark in commerce, the type of commerce, those goods or services specified in the notice of allowance on or in connection with which the mark is in use in commerce and the mode or manner in which the mark is used;
ii. three specimens or facsimiles of the mark as used in commerce; and
iii. the prescribed fee.

Trademark Rule 2.88(b), 37 C.F.R. Section 2.88(b).

The filing fee for a statement of use is $100.00 per class.

c. Minimum Requirements for a Statement of Use under Section 1(d) of the Act

The statement of use must include the following minimum elements to be referred to the examining attorney for examination on the merits:

i. the prescribed fee;
ii. at least one specimen or facsimile of the mark as used in commerce; and
iii. a verification or declaration signed by the applicant stating that the mark is in use in commerce.

Trademark Rule 2.88(e), 37 C.F.R. Section 2.88(e).

The ITU Unit will review the statement of use to determine whether it is timely and whether it complies with the minimum requirements. As noted above (A.8.a.), if the statement of use is untimely, either because it is premature or late, the ITU Unit will return the statement of use with any fees to the applicant.

If the statement of use is timely, but does not comply with one or more of the minimum requirements, the ITU Unit will advise the applicant of the deficiency. The applicant may correct the deficiency provided the time permitted for filing the statement of use has not expired. Trademark Rule 2.88(g), 37 C.F.R. Section 2.88(g). If the applicant does not correct the deficiency before the expiration of the relevant time period, the statement of use will not be examined and the application will be declared abandoned. In such a case, if the applicant has submitted the fee, the ITU Unit will not refund the fee.

The applicant may not withdraw the statement of use and return to the previous status of awaiting filing of the statement of use, even if the statement of use as filed fails to meet the minimum requirements. Trademark Rule 2.88(g), 37 C.F.R. Section 2.88(g). The applicant may request extensions of time to file the statement of use in accordance with Trademark Rule 2.89, 37 C.F.R. Section 2.89, as discussed above (A.7.e.), including a final request for an extension filed with a statement of use or during the time remaining in the existing period in which the statement of use is filed.

The Office will not issue a filing receipt to acknowledge receipt of a statement of use.

If an applicant files a statement of use and a request to divide the application at the same time, and the fees submitted are insufficient for both, the fees will be applied to the statement of use first and the applicant will be notified of the deficiency.

9. Examination of the Statement of Use

If the statement of use is timely and complies with the minimum requirements, the ITU Unit will refer the entire application with the statement of use to the responsible examining attorney for examination on the merits. The same examining attorney who examined the application initially will examine the statement of use unless the examining attorney has left the Office or assumed other duties.

a. Procedures Governing Examination of the Statement of Use

Examination of the statement of use follows the same procedural course as the initial examination of the application under Trademark Rule 2.61 et seq., 37 C.F.R. Section 2.61 et seq. The examining attorney should issue actions, as appropriate, stating requirements and refusals and culminating in final action or acceptance of the statement of use. The examining attorney may issue examiners amendments or priority actions, as appropriate. The applicant must respond to actions within six months under routine Office procedure. If the examining attorney ultimately finds the statement of use acceptable in all respects, the Office will notify the applicant of its acceptance. The Office will then publish notice of the registration of the mark and will issue the registration to the applicant. The application is not once again subject to opposition. Trademark Rule 2.151, 37 C.F.R. Section 2.151.

If the examining attorney issues any requirements or refusals, the applicant may respond under standard examination procedure. The applicant may appeal or petition matters in the same manner and subject to the same procedures which would apply in the initial examination of the application.

The applicant may amend or otherwise correct the statement of use during examination, provided the applicant had complied with the minimum requirements attendant to the statement of use before the expiration of the time permitted to file the statement of use.

i. Complying with Minimum Requirements within the Time Permitted

The applicant must make valid use of the mark in commerce and must file a statement of use meeting the minimum requirements, including at least one specimen, before the expiration of the time permitted to file the statement of use. Trademark Rule 2.71(d)(3), 37 C.F.R. Section 2.71(d)(3). The applicant can provide substitute specimens, during examination, after the expiration of the time permitted to file the statement of use. However, the applicant must verify that the specimens were in use before the expiration of the time permitted for filing the statement of use. If the applicant attempts to amend the dates of use to state a date of first use in commerce which is later than the time permitted for filing the statement of use, the examining attorney must refuse registration because the applicant failed to make use within the time permitted and, as a result, the application is abandoned. The examining attorney must

refuse registration on the same grounds if the applicant cannot provide an acceptable specimen which was in use in commerce before the expiration of the time permitted for filing the statement of use.

Likewise, the party filing the statement of use must be the owner of the mark at the time of filing. However, even after the expiration of the time permitted for filing the statement of use, the applicant can provide information to establish that the party who filed was the owner at the time the statement of use was filed through a chain of title. Trademark Rule 2.186, 37 C.F.R. Section 2.186. The applicant must do so within the specified response period. However, if the party which did file was not the owner at the time of filing the statement of use, the applicant cannot provide a substitute statement of use or the equivalent to correct this error after the expiration of the time permitted for filing the statement of use. If the time permitted for filing the statement of use has not yet expired, the applicant may file a substitute statement of use in the name of the true owner.

Therefore, if the party filing the statement of use is not the owner of the mark at the time of filing the statement of use, the examining attorney must reject the statement of use. If no time remains within the time permitted for filing the statement of use, the examining attorney must refuse registration because the application is abandoned for failure to file the statement of use within the time permitted.

Also, the person who signs the statement of use must have the authority to do so under the Act. Only those persons who are authorized to sign the original application have authority to sign the statement of use: the individual for an individual applicant, a general partner for a partnership and an officer for a corporation or association. As in the case of the original application, the person who signs must have at least color of authority to sign in order for the statement of use to be considered received in the Office.

If the person who signed the statement of use lacked even color of authority to do so, the applicant cannot provide a statement of use or the equivalent, signed by a proper person, after the expiration of the time permitted to file the statement of use. If the person who signed the statement of use possessed at least color of authority, as discussed below (B.1.a.), the applicant can provide a substitute statement of use or an affidavit or declaration signed by the proper person verifying the facts as set forth in the statement of use after the expiration of the time permitted for filing the statement of use. Trademark Rule 2.71(c), 37 C.F.R. Section 2.71(c). The principles which govern the determination as to whether a person possesses color of authority are discussed below (B.1.a.) in relation to the signature requirements attendant to the filing of the original application.

If the person who signed the statement of use lacked even color of authority to so do, and the time permitted for filing the statement of use has expired, the examining attorney must refuse registration because the application is, therefore, abandoned for failure to file the statement of use within the time permitted.

ii. Correcting Defects

The applicant may correct defects in the statement of use after the expiration of the time permitted for filing the statement of use when compliance within the time permitted for filing the statement of use is not required by the Act. However, the applicant must respond to requirements related to these defects within the response periods established under standard examination procedure to avoid abandonment of the application.

As noted above (A.9.a.i.), the applicant may provide substitute specimens after the expiration of the time permitted for filing the statement of use. However, the applicant must verify that the substitute specimens were in use in commerce before the expiration of the time permitted for filing the statement of use.

As noted above (A.9.a.i.), the applicant may establish chain of title during examination, after the expiration of the time permitted for filing the statement of use. The applicant may establish color of authority of the person who signed the statement of use and provide a substitute statement of use signed by a proper person during examination after the expiration of the time for filing the statement of use. The applicant may correct the dates of use, subject to the limitations provided in Trademark Rule 2.71(d), 37 C.F.R. Section 2.71(d), or the method of use clause after the expiration of the time permitted for filing the statement of use. The applicant may amend the identification of goods and services, subject to the general restrictions governing such amendments under Trademark Rules 2.71(b) and 2.88(i)(1), 37 C.F.R. Sections 2.71(b) and 2.88(i)(1), after the expiration of the time permitted for filing the statement of use. The applicant may amend the drawing, subject to the restrictions generally governing amendments to drawings under Trademark Rule 2.72, 37 C.F.R. Section 2.72, during examination after the expiration of the time permitted for filing the statement of use.

iii. Withdrawal of the Statement of Use Prohibited

Once the applicant has filed the statement of use, the applicant may not withdraw the statement of use and return to the previous status of awaiting submission of the statement of use. Trademark Rule 2.88(g), 37 C.F.R. Section 2.88(g). The applicant may not do so, even if the Office determines that the statement of use does not comply with the minimum requirements. However, the applicant may amend the statement of use or file a substitute statement of use to correct even fatal defects within the time permitted for filing the statement of use.

b. The "Clear-Error" Standard in Examination of the Statement of Use

For the purpose of examination of the statement of use, the Office will issue requirements or refusals concerning matters specifically related to the statement of use only. The Office will not issue any requirements or refusals concerning matters which could have or should have been raised during initial examination, unless the failure to do so in initial examination constitutes a clear error. **"Clear error" refers to an error which, if not corrected, would result in issuance of a registration in violation of the Act.** *Cf. Century 21 Real Estate Corp. v. Century Life of America*, 10 USPQ2d 2034 (TTAB 1989); *Granny's Submarine Sandwiches, Inc. v. Granny's Kitchen, Inc.*, 199 USPQ 564 (TTAB 1978).

The examining attorney must act on all new issues in the examination of the statement of use. Examples of such issues are presented below (A.9.b.) in the discussion of various areas of examination related to the statement of use. For example, the examining attorney must issue an appropriate refusal if the specimens fail to show use of the designation as a mark. However, the examining attorney may not issue a refusal under Trademark Act Section 2(e)(1), 15 U.S.C. Section 1052(e)(1), unless the refusal is dictated by changed circumstances from the time of initial examination or the failure to issue such a refusal would constitute clear error.

If a significant length of time has elapsed since the initial examination, in some unusual circumstances, the mark may have become descriptive or even generic as applied to the goods or services. In such a case, the evidence of the descriptive or generic use would not have been available during initial examination.

However, if evidence that the mark is merely descriptive was available during initial examination, and thus the refusal could or should have been issued in initial examination, the examining attorney cannot issue the refusal unless clear error is present. That is, the evidence of descriptiveness must be substantial and unequivocal. The examining attorney should not issue such a refusal on the basis of information that was available during the initial examination unless clear error exists.

Likewise, the examining attorney must not issue requirements or refusals related to informalities which could or should have been addressed during the initial examination. For example, if the examining attorney determines that the initial declaration in support of the application was defective, the examining attorney should not issue a requirement for a new declaration.

If the goods or services were classified incorrectly and published for opposition in the wrong class, the examining attorney should require correction of the classification. In the case of any change of class after issuance of the notice of allowance, the mark must be republished for opposition unless the Petitions and Classification Attorney determines that republication is not necessary.

If a disclaimer could or should have been required during the initial examination, the examining attorney should not

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require a disclaimer during the examination of the statement of use unless there is clear error. For example, a disclaimer of all of the wording in a mark may be required under the clear-error standard where the mark consists of merely descriptive wording and distinctive design elements. Issuance of a registration without such a disclaimer would violate the Act by affording the applicant rights beyond those to which the applicant is entitled. In other cases where the requirement for a disclaimer is subject to greater discretion, the clear-error standard would not permit a disclaimer requirement when it could or should have been stated in initial examination. The determination that a term is descriptive or generic related to the requirement for a disclaimer is subject to the substantial-and-unequivocal-evidence standard stated above.

Generally, the Office will not conduct any search for conflicting marks, or issue any refusals on that basis, in the examination of the statement of use. However, if the examining attorney determines that a second search is necessary, due to an amendment of the mark or an amendment of the goods or services, the examining attorney will conduct a second search and take action, as appropriate. Likewise, the Office may discover a clear error under Trademark Act Section 2(d), 15 U.S.C. Section 1052(d), in the course of internal Office quality review or through a letter of protest. The Office will not issue any refusal under Section 2(d) in the examination of the statement of use unless the failure to do so constitutes a clear error. For the purposes of Section 2(d), the conflict between the application and registration at issue must be such that reasonable minds could not differ as to the necessity for the refusal, that is, failure to issue the refusal would result in issuance of a registration in violation of the Act.

In the case of an intent-to-use application, as in all applications, the Office will deny as untimely letters of protest which are filed more than thirty days after publication of a mark. *In re Pohn*, 3 USPQ2d 1700 (Comm'r Pats. 1987).

c. Examination of the Verified Statement of Use

The examining attorney should review the statement of use itself to confirm that the statement conforms to the requirements of the Act and the rules. As noted above (A.8.a.), the statement must include an averment that the applicant is the owner of the mark, the dates of use, an identification of the goods and services and the method of use. The statement must be verified. Trademark Act Section 1(d), 15 U.S.C. Section 1051(d); Trademark Rule 2.88(b), 37 C.F.R. Section 2.88(b).

The averment of ownership and use in commerce are essential elements of the statement. If the averment of ownership is omitted, the examining attorney must require the applicant to submit a verified statement including this averment.

If the statement of use was executed before the stated dates of use, the examining attorney must require that the statement be re-executed. The dates of use may not be amended to a date later than the expiration of the time permitted for filing of the statement of use. The applicant must verify amendments to the dates of use in the statement of use as in the application itself. Trademark Rule 2.71(d), 37 C.F.R. Section 2.71(d).

The date of first use in commerce must be no earlier than the date of first use anywhere. Office policies governing the correction of dates which do not conform to this requirement in use applications apply to statements of use also. TMEP section 806.03. The applicant must state dates of use for each class. The dates of first use for each class must apply to at least one item in the class but need not apply to more than one item. However, the applicant must have used the mark on all items covered by the statement of use before execution of the statement unless the applicant requests to divide the application under Trademark Rule 2.87, 37 C.F.R. Section 2.87.

The applicant must identify the type of commerce according to the same standards which govern use applications. TMEP section 806.05.

The applicant must indicate the method of use. Office policies governing this requirement relative to use applications apply to the statement of use as well. TMEP section 808.09. If the method of use indicated in the statement of use is inconsistent with the intended method of use stated in the initial application, the examining attorney should assume that the later statement is controlling and should not raise this inconsistency as an issue in examination.

d. The Identification of Goods and Services in the Examination of the Statement of Use

"The goods or services specified in a statement of use must conform to those goods or services identified in the notice of allowance." Trademark Rule 2.88(i)(1), 37 C.F.R. Section 2.88(i)(1). The referenced rule further recommends that, in appropriate cases, applicants specify the goods or services by stating "those goods or services identified in the notice of allowance" or "those goods or services identified in the notice of allowance except. . ." followed by an identification of the goods or services to be deleted.

The rules preclude additions to the identification of goods or services in all applications, as noted below. Trademark Rule 2.71(b), 37 C.F.R. Section 2.71(b). If the applicant proposes to add to the identification of goods or services in conjuncion with the statement of use, the examining attorney must reject the amendment.

If the applicant omits any goods or services specified in the notice of allowance from the identification of goods or services in the statement of use, and the applicant has not expressed a clear intention to delete those goods or services, the examining attorney must inquire as to the discrepancy. The examining attorney will permit the applicant to amend the statement of use to reinsert any omitted goods or services, provided the applicant did not delete the goods or services expressly in an amendment and provided the applicant verifies that the mark was in use in commerce with those goods or services before the expiration of the time permitted to file the statement of use. Trademark Rule 2.88(i)(2), 37 C.F.R. Section 2.88(i)(2).

The applicant may amend to delete items or to limit the identification of goods and services. For example, the applicant may amend to limit the goods as to types, channels of trade or class of purchasers or to restrict an existing item in scope by the introduction of some qualifying language or the substitution of specific for more general terms. The applicant may clarify the identification of goods or services, provided the amendment does not exceed the scope of goods or services specified in the notice of allowance. The principles which govern amendments to delete, limit or clarify in general also apply in the examination of the statement of use. If, due to any amendment to the identification of goods and services, the international class must be amended, the application must be republished for opposition unless the Petitions and Classification Attorney determines that republication is not necessary.

e. Examination of the Statement of Use Related to the Drawing

Trademark Rule 2.51, 37 C.F.R. Section 2.51, specifies that the drawing in an intent-to-use application must be a substantially exact representation of the mark as intended to be used *and* as actually used upon filing of the amendment to allege use before publication or the statement of use after issuance of the notice of allowance. Trademark Rule 2.88(j), 37 C.F.R. Section 2.88(j). An applicant may not amend the mark in a drawing if the amendment constitutes a material alteration of the mark. Also, the mark in the drawing must agree with the mark as used on the specimens. The same standards which apply to use applications in determining whether specimens support use of the mark and in determining whether amendments can be permitted apply in the examination of the statement of use.

Therefore, in an intent-to-use application, the examining attorney must require amendment to the mark or the submission of new specimens if the mark in the drawing is not a substantially exact representation of the mark as used on the specimens. Trademark Rule 2.72(c), 37 C.F.R. Section 2.72(c). However, if amendment of the mark would constitute a material alteration of the mark in such a case, the examining attorney must require substitute specimens only. The same standards applied in use applications in determining whether the specimens support use of the applied-for mark apply to specimens in intent-to-use applications. *See* Examination Guide 2-89. *Cf. United Rum Merchants Ltd. v. Distillers Corp. (S.A.) Ltd.*, 9 USPQ2d 1481 (TTAB 1988).

If the applicant submits substitute specimens in conjunction with a statement of use, the applicant must verify that the substitute specimens were in use in commerce before the expiration of the time permitted to file the statement of use. Trademark Rule 2.59(b), 37 C.F.R. Section 2.59(b). If the dates of first use change as a result of the submission of new specimens, the applicant must also amend the dates of first use in the statement of use with a supporting affidavit or declaration.

f. Consideration of the Specimens of Use in the Examination of the Statement of Use

Apart from the statement of use itself, the primary focus of examination of the statement of use is the specimens of use. The examining attorney must evaluate the specimens to confirm that the specimens exhibit appropriate use. Trademark Act Section 45, 15 U.S.C. Section 1127. The examining attorney must also examine the specimens to confirm that the specimens show use of the subject matter as a trademark or service mark on or in connection with the goods or services identified in the statement of use. The examining attorney will also consider any questions regarding ownership or control of the mark arising in the examination of the specimens. These issues are typical of those which are appropriate for action in examination of the statement of use. The examining attorney should issue requirements and refusals, as appropriate, based on the examination of the specimens, subject to the same standards which govern the examination of specimens in any other phase of examination. TMEP section 808.

10. Revival of Abandoned Intent-to-Use Applications

As noted below (B.13.), petitions to revive all abandoned applications must be filed promptly. Trademark Rule 2.66(d), 37 C.F.R. Section 2.66(d). Generally, a petition to revive should be filed within two months of abandonment. In any petition to revive an abandoned application, the applicant must show that the delay in responding was unavoidable. Delays due to circumstances which could have been avoided with the exercise of a modicum of care and attention will not be considered unavoidable delays.

In addition to the requirements which apply to all petitions to revive, a petition to revive an intent-to-use application, abandoned due to the failure to file the statement of use within the time allowed, is subject to additional requirements. The petition must include a fee equal to the required fees for the number of requests for extensions of time to file the statement of use which should have been filed if the application had not been abandoned *and* either a statement of use or a request for an extension of time. Trademark Rule 2.66(c), 37 C.F.R. Section 2.66(c).

The referenced fees are in addition to the standard petition and any statement of use fees. If an applicant has already filed a statement of use, the applicant need not file another statement of use with the petition. If a response to an outstanding Office action is due, the applicant must include that response with the petition.

However, the Office will not grant a petition to revive an intent-to-use application if the grant of the petition would extend the period for filing the statement of use beyond thirty-six months after issuance of the notice of allowance. Trademark Rule 2.66(d), 37 C.F.R. Section 2.66(d).

11. Assignment of Intent-to-Use Applications

The 1988 amendments to the Act provide as follows:

> However, no application to register a mark under section 1(b) shall be assignable prior to the filing of the verified statement of use under section 1(d), except to a successor to the business of the applicant, or portion thereof, to which the mark pertains, if that business is ongoing and existing.

Trademark Act Section 10, 15 U.S.C. Section 1060.

The Office will not examine proposed assignments to determine compliance with this provision as a general rule. However, the examining attorney will inquire to determine whether an assignment conforms to the requirements of this provision if the question is raised by the information of record. If the examining attorney issues an inquiry as to compliance, the applicant's response that the assignment was in compliance with the law is sufficient to resolve the issue. As discussed in detail below (B.11.b.), the applicant bears the burden of recording and notifying appropriate Office personnel of assignments or changes of name to ensure that the registration issues in the name of a new owner. Trademark Rule 2.187, 37 C. F. R. Section 2.187.

12. Mailing Procedures and Fees Related to Intent-to-Use Applications

a. Use of the "Box ITU" designation

Applicants are encouraged to include "Box ITU" in the address when submitting the following:

> i. statements of use under Section 1(d) of the Act, Trademark Rule 2.88, 37 C. F. R. Section 2.88, and
>
> ii. requests for extensions of time to file statements of use under Trademark Rule 2.89, 37 C.F.R. Section 2.89.

Rule 1.1(h), 37 C. F. R. Section 1.1(h). Applicants should *not* use the "Box ITU" designation when filing the intent-to-use application itself, amendments to allege use or when filing routine responses to Offfice actions in intent-to-use applications because it may delay processing.

b. The Certificate-of-Mailing Procedure

The following intent-to-use papers are specifically excepted from the certificate-of-mailing procedure:

> i. statements of use under Section 1(d) of the Act,
>
> ii. requests for extensions of time to file statements of use under Trademark Rule 2.89, 37 C. F. R. Section 2.89, and
>
> iii. amendments to allege use under Section 1(c) of the Act.

Rule 1.8(a), 37 C. F. R. Section 1.8(a). Also, the initial filing of all trademark applications, including intent-to-use applications, is excepted from this procedure. Thus, any of these papers will be considered filed on the date actually received or on the date specified under Rule 1.10, 37 C. F. R. Section 1.10 concerning the use of "Express Mail."

c. Fees Related to Intent-to-Use Applications

The filing fee for an intent-to-use application itself is $175.00 per class. The fee for filing an amendment to alleged use, statement of use or a request for an extension of time is $100.00 per class. Trademark Rule 2.6, 37 C. F. R. Section 2.6

B. PROVISIONS AFFECTING ALL APPLICATIONS

Certain changes in Office policy and procedure associated with the 1988 amendments and revisions to the rules affect all applications, that is, use applications under Tradfemark Act Section 1(a), 15 U. S. C. Section 1051(a), intent-to-use applications under Trademark Act Section 1(b), 15 U. S. C. Section 1051(b), as well as applications filed under Trademark Act Section 44, 15 U. S. C. Section 1126. Those changes will be set forth in this section.

1. Filing Date Requirements

Trademark Rule 2.21, 37 C. F. R. Section 2.21, sets forth the minimum requirements for receiving a filing date for all types of applications. These minimum requirements do not include all of the requirements which may ultimately apply for registration of the mark, but merely those formal requirements which must be met to receive a filing date.

a. Applicant's Signature

Under the rule, as revised, all applicants are required to provide a declaration or verification signed by the applicant to receive a filing date. Because the filing of an application for the Principal Register now establishes a constructive date of use,

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contingent on issuance of a registration, under Trademark Act Section 7(c), 15 U.S.C. Section 1057(c), the rule now imposes this requirement.

If an application is submitted unsigned, the Application Section will not grant a filing date and will return the papers to the applicant. If an unsigned application reaches the examining attorney in error, the examining attorney should return the application to the Application Section for appropriate action.

Under Trademark Act Section 1, 15 U.S.C. Section 1051, only the following persons have statutory authority to sign: the individual in an application filed by an individual, a general partner in a partnership application or an officer in an application filed by a corporation or association.

If the applicant submits a signed declaration or verification, the examining attorney will determine whether the person who signed had authority to sign for the applicant under the Act. If the person did not, the applicant may submit a substitute declaration and retain the filing date, provided the person who signed initially possessed color of authority to sign. Persons having color of authority are those who have firsthand knowledge of the truth of the statements in the application *and* who also have actual or implied authority to act on behalf of the applicant. Trademark Rule 2.71(c), 37 C.F.R. Section 2.71(c).

For example, in the case of a corporate applicant, a nonofficer, such as a manager, who had the requisite knowledge of the facts relevant to the application and actual or implied authority to act on behalf of the applicant, would possess color of authority, though not proper authority under the Act. In such a case, a substitute declaration could be submitted during prosecution of the application to correct this defect. An attorney who is an employee of a corporation might also satisfy the criteria.

On the other hand, the applicant's private attorney would not ordinarily be regarded as possessing color of authority to sign on behalf of an applicant. Private attorneys do not usually have firsthand knowledge of a client's business or the authority to act on behalf of a client, other than as legal representative. Here, the defect could not be corrected by filing a substitute verification or declaration, confirming the facts in tha application, signed by an appropriate person. If the person who signed the application lacked even color of authority to sign on behalf of the applicant, the examining attorney must refuse registration because the application did not meet the requirements of Trademark Rule 2.21, 37 C.F.R Section 2.21, for receiving a filing date.

If the examining attorney determines that the person who signed for the applicant lacked the requisite authority, but the person possessed at least color of authority, the examining attorney will require a substitute declaration or verification.

The Office will accept copies of signed applications for the purpose of granting a filing date. Applicants cannot send copies of applications by fax directly to the Office, but the Office will accept copies which have been produced by fax in the same manner as any other copy. However, if a copy is filed, the applicant must provide the signed original copy of the application during prosecution. If the applicant has not done so earlier, the examining attorney will require that the applicant do so in the first action in the case. In no case will anything other than a certificate or certified copy of a foreign registration be accepted for purposes of granting a filing date in an application based on Trademark Act Section 44(e), 15 U.S.C. Section 1126(e).

b. Drawing Size

Effective July 3, 1989, the Office requires that drawings conform to the size requirements specified in Trademark Rule 2.52(c), 37 C.F.R. Section 2.52(c), to receive a filing date. If the mark in a special-form drawing is displayed in an area larger than four inches by four inches, it will be regarded as not being in substantial conformity with the rule and the application will be denied a filing date and returned to the applicant. If an examining attorney discovers an application with a drawing which does not conform to this requirement, the examining attorney should return the application to the Trademark Services Division for appropriate handling. It should not be examined.

Other changes relating to the minimum requirements for receiving a filing date which relate to specific types of applications are noted under the discussion of those specific types of applications.

2. Identifying the Applicant and Applicant's Address

Trademark Rule 2.33(a)(1)(ii), 37 C.F.R. Section 2.33(a)(1)(ii), has been revised to state the requirements related to identifying a partnership. The rule now specifies that the application must identify "the state or nation under the laws of which the partnership is organized." This revision merely reflects long-standing Office practice. The applicant must also provide the names of all general partners and their state or nation of incorporation or their citizenship, as appropriate.

Also, an individual applicant may provide either a business or residence address. Both addresses are no longer required.

3. Drawings

Trademark Rule 2.51(d), 37 C.F.R. Section 2.51(d), has been added to provide guidance concerning the nature of drawings in the case of certain unusual types of marks. The rule provides as follows:

> (d) Broken lines should be used in the drawing of a mark to show placement of the mark on the goods, or on the packaging, or to show matter not claimed as part of the mark, or both, as appropriate. In an application to register a mark with three-dimensional features, the drawing shall depict the mark in perspective in a single rendition.

This provision is intended to provide guidance to applicants wishing to register certain types of marks, such as configurations of goods or configurations of packaging for goods and similar marks. The provision brings the rules into conformity with current practice. The drawing should clearly define the matter the applicant claims as its mark. *See In re Famous Foods, Inc.*, 217 USPQ 177 (TTAB 1983). If the mark is three-dimensional, the drawing should present the mark in three dimensions. *In re Schaefer Marine, Inc.*, 223 USPQ 170 (TTAB 1984).

Trademark Rule 2.52(e), 37 C.F.R. Section 2.52(e), has been revised to simplify the color linings used to identify the colors orange and yellow or gold in drawings of marks. If an applicant employs the color linings formerly designated for these colors, the examining attorney should not require a new drawing. The revised rule has been adopted for the convenience of applicants, and the Office will allow a reasonable time for applicants to adjust to the new coding.

Trademark Rule 2.52(d), 37 CF.R. Section 2.52(d), has been amended to modify the content of the drawing heading. Specifically, it now requires that an applicant claiming the benefit of a foreign application under Trademark Act Section 44(d), 15 U.S.C. Section 1126(d), specify the priority date in the drawing heading. It also recommends that applicants provide, as a part of the heading, a description of the essential elements of the mark in the case of a special-form drawing.

4. Specimens - Requirements

Trademark Rules 2.56 and 2.57, 37 C.F.R. Sections 2.56 and 2.57, have been revised to reduce the number of specimens or facsimiles required in an application from five to three. In view of this rule, the public may remove only two surplus copies of specimens from the file permanently. At least one original of each type of specimen submitted must be retained in the file to ensure a complete record of the case. In the case of applications filed before November 16, 1989, the Office will not require more than three specimens per class in any action taken on or after that date.

The referenced rules have also been revised to reflect the provisions of the 1988 amendments revising Trademark Act Section 45, 15 U.S.C. Section 1127. Specifically, the definition of "use in commerce" has been revised to provide that when the nature of the goods makes placement of the mark on the goods, containers, tags, labels or displays associated with the goods impracticable, then placement of the mark on documents associated with the goods or their sale constitutes use in commerce. The referenced rules have been amended to reflect this change. *See In re E.A. Miller & Sons Packing Co.*, 225 USPQ 592 (TTAB 1985). Therefore, the examining attorney should accept documents associated with the goods or their sale, in the case of goods sold in bulk or in similar cases, where placement of the mark on the goods themselves is impracticable.

The referenced rules regarding specimens or facsimiles have also been revised to establish 8.5 by 11 inches as the maximum size permitted for such items. This revision brings the rule into conformity with the preferred size indicated for all filings and standards prevailing in federal practice in general.

5. Specimens - Examination

The 1988 amendments also revise the definition of "use in commerce" to adopt a stricter standard. The Act now states, "The term `use in commerce' means the bona fide use of a mark in the ordinary course of trade, and not merely to reserve a right in a mark." Trademark Act Section 45, 15 U.S.C. Section 1127. This stricter definition of "use in commerce" applies to all applications, affidavits of use and renewals filed on or after November 16, 1989. *Cf. Ralston Purina Company v. On-Cor Frozen Foods Inc.*, 746 F.2d 801, 223 USPQ 979 (Fed. Cir. 1984).

The Office will not inquire into the sufficiency of an applicant's or registrant's use in the examination of applications, amendments to allege use, statements of use, affidavits of use or renewals unless the specimens or other evidence of record clearly raise a question concerning the applicant's or registrant's use. The consideration of whether a particular use satisfies the statutory definition is more appropriate in an inter partes proceeding. The examining attorney should require new specimens generally under the same circumstances where the examining attorney would have required new specimens prior to the 1988 amendments. If the specimens appear to be temporary in nature, the examining attorney may require specimens of a more permanent nature.

> *Example —If an applicant seeks to register a mark suggesting a Christmas theme for greeting cards and submits as specimens birthday cards with an additional pasted label displaying the mark, the specimens could not be regarded as exhibiting "use in commerce." The examining attorney should refuse registration and require substitute specimens exhibiting use in commerce or an explanation to establish use in commerce.*

When action is necessary, in appropriate cases, the examining attorney should require additional product or sales literature concerning the use of the mark to permit full consideration of the issue. Trademark Rule 2.61(b), 37 C.F.R. Section 2.61(b).

6. Identifications of Goods and Services

Trademark Rule 2.71, 37 C.F.R. Section 2.71, restricts amendments to the identification of goods or services as follows, "The identification of goods or services may be amended to clarify or limit the identification, but additions will not be permitted." Trademark Rule 2.71(b), 37 C.F.R. Section 2.71(b).

This rule applies to applications filed on or after November 16, 1989. The rule also applies to applications filed before November 16, 1989, for the purposes of any action taken on or after that date. However, if the Office issued a requirement or suggested an amendment in an action prior to that date, and the applicant submits an amendment substantially complying with the requirement or suggestion on or after the effective date, the examining attorney should accept the amendment, even though it does not comply with the new rule, if it is otherwise proper.

As noted previously, Trademark Act Section 7(c), 15 U.S.C. Section 1057(c), provides that the filing of any application for registration on the Principal Register establishes constructive use and nationwide priority contingent on issuance of the registration. The identification of goods and services in an application, therefore, defines the scope of those rights established by the filing of an application for the Principle Register. The following sections discuss identification of goods and services in general; additional information relevant to the identification of goods and services in an intent-to-use application is presented above with the specific discussion of such applications.

a. Limiting the Identification of Goods and Services

As indicated above, the rules permit amendments to limit the identification of goods and services. The rules also refer to "deletion" in relation to the identification of goods and services. *See, e.g.*, Trademark Rule 2.74, 37 C.F.R. Section 2.74."Deletion" means the elimination of an existing item in an identification of goods and servbices in its entirety. Deletion is distinct from other types of amendments to limit, such as amendments to limit the goods as to types, channels of trade or class of purchasers or to restrict an existing item in scope by the introduction of some qualifying language or the substitution of specific for more general terms.

Deletions from the identification of goods and services are permitted. If the applicant wishes to amend the identification of goods and services to delete one or more items, the examing attorney should accept the amendment, provided it is timely and otherwise proper. However, once the applicant has expressly amended the identification of goods and services to delete an item it may not be reinserted in a later amendment.

If an applicant wishes to amend the identification of goods and services to insert an item which is equivalent to or logically encompassed by an item already included in the identification of goods and services, the examining attorney should permit the amendment, provided it is timely and otherwise proper.

If the applicant wishes to amend the identification of goods and services to restrict one or more of the items by inserting qualifying language or substituting more specific language, the examining attorney should accept the amendment, provided it is timely and otherwise proper.

> *Example —If the applicant initially identifies the goods as "publications," the applicant may amend to substitute one or more terms which fall under the definition of publications. Likewise, if an applicant identifies its goods as "pamphlets," the applicant may amend to indicate brochures or both because these terms are generally equivalent and interchangeable. In either case, the applicant must specify the subject matter.*

> *Example — If the Applicant initially identifies the goods as "football uniforms, " the applicant may amend to indicate football uniforms in Class 25 and football helmets and shoulder pads in Class 28. These goods are logically included within the initial identification. Footballs, however, could not be added; this would add an item not logically included within the original identification.*

> *Example — If the applicant initially identifies the services as "prepaid medical services" and wishes to amend to underwriting prepaid medical plans and health care services in the nature of a health maintenance organization, the amendment should be permitted. Both specific services are logically included under prepaid medical services.*

On the other hand, an applicant may not amend an identification of goods or services to add or substitute a term which is not logically included within the scope of the terms originally stated or which is otherwise qualitatively different from the goods and services as originally stated.

> *Example —If the applicant identifies the goods as "computer programs," the applicant may not add or substitute computers or other types of computer hardware to the listing*

> *Example — If the applicant initially identifies the goods as "hats," the applicant may not add or substitute scarfs in the identification of goods. Likewise, the applicant may not add or substitute shirts for slacks.*

> *Example — If the applicant identifies its services as "ophthalmologist's services" and proposes to amend the identification to medical services, the amendment should not be permitted. The amendment would expand the identification to include services beyond the scope of those identified initially*

The scope of the goods and services, as originally identified or as amended by an express amendment, establishes the outer limit for any later amendments.

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Because the rule precludes additions to the identification of goods and services, examining attorneys should not require or suggest unduly restrictive identifications of goods and services. *See In re Sentry Chemical Company*, 230 USPQ 556 (TTAB 1986). Once the identification has been limited, it cannot be expanded later. Also, in requiring amendments to the identification of goods and services, examining attorneys should generally advise applicants that additions to the identification of goods and services are not permitted. This subject is discussed in greater detail above in conjunction with intent-to-use applications.

b. Clarifying the Identification of Goods and Services

Under the rule, an applicant may amend "to clarify" the identification of goods and services. The applicant may clarify an identification of goods and services which is indefinite or overly broad to identify goods or services which are within the scope of the goods and services as identified initially. As noted, the filing of an application for registration on the Principal Register establishes a constructive date of first use in commerce, contingent on issuance of the registration. Trademark Act Section 7, 15 U.S.C. Section 1057. Accordingly, the applicant may not expand those rights through amendment of the identification of goods and services.

Thus the applicant may amend from the more general to the specific, but the applicant may not amend the specific to the more general. The scope of the goods and services identified initially, or as limited by an express amendment, establishes the outer limit for permissible amendments. Classification may provide some guidance in determining whether an amendment exceeds the scope of the goods and services identified initially, but it is not controlling. The examining attorney may suggest and may permit amendments to the identification of goods and services resulting in a change of class, provided the amended identification does not exceed the scope of the original identification.

> *Example — If an applicant has erroneously identified its goods and services as "menus," but in fact, the applicant intends to register the mark for restaurant services, the applicant may not amend the identification of goods to "restaurant services." In such a case, the original identification, which is specific and narrow in scope, may not be expanded to services beyond the scope of that identification*
>
> *Example — If an applicant has erroneously identified its goods and services as "packaging and labels," but in fact, the applicant intends to register the mark for toys, the applicant may not amend to correct the identification. The initial identification failed to indicate the nature of the applicant's goods and services in any form, and therefore, the examining attorney must reject the amendment to insert an identification of goods and services beyond the scope of those stated initially.*
>
> *Example — If an applicant has identified its goods and services as "advertising and business" the appplicant may not amend to specific goods or to services other than those within the scope of these terms, generally those services included in International Class 35.*

7. Claims of Acquired Distinctiveness

The 1988 amendments revise Trademark Act Section 2(f), 15 U.S.C. Section 1052(f), to permit the filing of a prima facie showing of acquired distinctiveness based on five years use running up to the date the claim is made. The Act now states:

> The Commissioner may accept as prima facie evidence that the mark has become distinctive, as used on or in connection with the applicant's goods in commerce, proof of substantially exclusive and continuous use thereof as a mark by the applicant in commerce for the five years before the date on which the claim of distinctiveness is made.

Trademark Act Section 2(f), 15 U.S.C. Section 1052(f).

The Act previously required that the relevant five-year period precede the filing date of the application. Under the new provision, therefore, any five-year claim submitted on or after November 16, 1989, is subject to the new time period. This will apply even if the application was filed before November 16, 1989. *See* Trademark Rule 2.41(b), 37 C.F.R. Section 2.41(b). Note the discussion above concerning claims of acquired distinctiveness in intent-to-use applications (A.3.f.).

8. Supplemental Register

The 1988 amendments eliminate the one-year- lawful-use requirement for eligibility for the Supplemental Register. Therefore, on or after November 16, 1989, an applicant may apply for registration on the Supplemental Register at any time after commencing use of the mark. Likewise, on or after November 16, 1989, an applicant may amend a pending application to seek registration on the Supplemental Register at any time after use of the mark has commenced. The applicant may do so even if the original application for the Principal Register was filed before November 16, 1989. *See* Trademark Rule 2.47, 37 C.F.R. Section 2.47. However, if the application was filed before November 16, 1989, and the applicant had not used the mark in commerce for one year before the filing date, and the applicant amends to the Supplemental Register on or after November 16, 1989, the date of the amendment to the Supplemental Register becomes the effective filing date of the application.

As noted above (A.3.g.), an intent-to-use applicant may file an amendment to the Supplemental Register only after use has commenced and after the filing of an acceptable amendment to allege use or a statement of use. In such a case, the effective filing date of the application will be changed to the date on which the applicant filed the amendment to allege use under Section 1(c) of the Act or the statement of use under Section 1(d) of the Act.

In requesting registration on the Supplemental Register in either the original application or in an amendment to the Supplemental Register, the applicant need not include an additional statement as to lawful use. Although Section 23 still includes an explicit reference to lawful use, any use which is the basis for an application on either the Principal or the Supplemental Register must be lawful. It need not be stated explicitly.

In an application under Section 44 of the Act, the applicant may seek registration on the Supplemental Register without alleging lawful use in commerce and without alleging use anywhere in the world. Trademark Rule 2.47(b), 37 C.F.R. Section 2.47(b).

The 1988 amendments also add the following language to Trademark Act Section 27, 15 U.S.C. Section 1095, "Registration of a mark on the Supplemental Register shall not constitute an admission that the mark has not acquired distinctiveness." Examining attorneys, therefore, should note this provision in presenting any refusals or requirements related to the nondistinctive character of a mark previously registered on the Supplemental Register.

9. Affidavits of Use under Section 8

The 1988 amendments modify the requirements for the content of an affidavit of use which must be filed between the fifth and sixth anniversaries oi registration. Trademark Act Section 8, 15 U.S.C. Section 1058. Under the new provision, the registrant must identify the specific goods or services on or in connection with which the mark is in use in commerce. Similarly, if the registrant elects to present an explanation of excusable nonuse, this explanation must also relate to specific goods or services.

Formerly, the allegation of use in commerce related to one or more classes with no requirement to specify the goods or services within a class on or in connection with which the mark was in use. If the registrant fails to provide an allegation of use or a satisfactory explanation as to nonuse as to any goods or services in the registration, those goods or services will be cancelled from the registration. If the original affidavit of use fails to specify the goods and services, the registrant may not amend the affidavit to correct this omission after the expiration of the period during which the affidavit is due. The registrant

may incorporate the goods and services by reference. For example, the registrant may state, "those goods and services specified in the registration" or "those goods and services specified in the registration except. . ." specifying any goods or services to be deleted.

The new provision also explicitly requires specimens of use to support the affidavit. Formerly, the Act required a "showing" and the Trademark Rules of Practice required as follows, "The statement must be supported by evidence which shows that the mark is in use, and normally such evidence consists of a specimen or a facsimile specimen which is currently in use, or a statement of facts concerning use." In view of the 1988 amendments, the rules have been revised to specify that specimens or facsimiles are required. Trademark Rules 2.161 and 2.162, 37 C.F.R. Sections 2.161 and 2.162.

Specimens of use must be provided before the expiration of the sixth year following registration. If the registrant fails to do so, the registration will be cancelled. If the registrant does provide specimens, but the Office determines that those specimens are unacceptable, the Office will require substitute specimens. In such a case, the registrant must provide specimens of use within the time provided. Substitute specimens may be filed after the expiration of the sixth year. If the registrant fails to do so, the registration will be cancelled. The registrant must also verify in an affidavit or a declaration under Trademark Rule 2.20, 37 C.F.R. Section 2.20, that the substitute specimens were in use in commerce before the expiration of the sixth year following registration.

Registrants filing affidavits under Section 8 should also note the revised rule concerning the establishment of ownership. Trademark Rule 2.186, 37 C.F.R. Section 2.186, permits a registrant to establish ownership either by recording an assignment in the Assignment Branch of the Office or by submitting proof of the assignment without recording.

10. Term and Renewal

The 1988 amendments reduce the registration and renewal term from twenty to ten years. Trademark Act Sections 8(a) and 9, 15 U.S.C. Sections 1058(a) and 1059. Accordingly, registrations issued on or after November 16, 1989, will be issued for ten-year periods and subject to renewal for ten-year periods. Registrations issued prior to that date remain in force for their existing term of twenty years, but are subject to renewal for ten-year periods. Trademark Rule 2.181, 37 C.F.R. Section 2.181. For the purpose of determining the relevant renewal period, the Office will adhere to the following policy during the transition.

> i. If the registration expires on or after November 16, 1989, the registration will be renewed for ten years. The Office will not take final action to grant any such renewal until November 16, 1989.
> ii. If the registration expires before November 16, 1989, and the Office takes final action to grant the renewal before that date, the registration will be renewed for twenty years.
> iii. If the registration expires before November 16, 1989, and the Office takes final action to grant the renewal on or after November 16, 1989, the registration will be renewed for ten years.

All renewal terms run from the expiration date of the previous term.

Note Trademark Rule 2.186, 37 C.F.R. Section 2.186, regarding requirements related to the establishment of ownership of the registration for the purpose of renewals which permits a registrant to establish ownership either by recording an assignment in the Assignments Branch of the Office or by submitting proof of the assignment without recording.

11. Assignments

a. Content of Assignment Documents

Office policy governing trademark assignments provides that an assignment relating to an application or registration will be recorded, even if the assignment document itself does not identify the relevant application or registration numbers, provided certain conditions are met. Specifically, the policy requires as follows with respect to the identification of the properties assigned in such a case:

> (i) The mark and the goods and services are identified in the assignment document (or the assignment is of all registrations and/or applications owned by the assignor), and the application or registration is identified by number and date in a transmittal letter or attachment to the assignment document, in which case, such letter or attachment shall become part of the record of the assignment; or
>
> (ii) An assignment is executed concurrently with or subsequent to the filing of an application but before its serial number and filing date are ascertained, and the application is identified by its date of execution, name of the applicant, mark and goods or services.

b. Issuance of Registration in Current Owner's Name

Trademark Rule 2.187, 37 C.F.R. Section 2.187, has also been revised to clarify Office policy concerning issuance of registrations in the name of assignees or in a new name of the applicant. The rule provides as follows:

> The certificate of registration may be issued to the assignee of the applicant, or in a new name of applicant, provided that the party makes a written request in the application record, by the time the application is being prepared for issuance of the certificate of registration, and an appropriate document is of record in the Assignment Search Room of the Patent and Trademark Office. If the assignment or name change document is not of record in the Assignment Search Room, then the written request must state that the document has been filed for recordation. The address of the assignee must be made of record in the application file and in the recorded document.

Trademark Rule 2.187, 37 C.F.R. Section 2.187.

Any application where such a request has been submitted should be forwarded to the assigned examining attorney. The assigned examining attorney will ensure that the assignment or change of name is entered in the file after recording and will then return the application to processing.

If a party other than the applicant of record attempts to take any action in a case, the examining attorney must confirm that the new party is the owner in accordance with Trademark Rule 2.186, 37 C.F.R. Section 2.186. That is, the applicant must provide the reel and frame number of an assignment, or the applicant must submit other evidence of ownership.

c. Assignment Fees

Applicants should note that, effective April 17, 1989, the fee for recording assignments of trademarks is $8.00 per application or registration assigned. Trademark Rule 2.6, 37 C.F.R. Section 2.6.

12. Establishing Ownership of Applications or Registrations

Trademark Rule 2.186, 37 C.F.R. Section 2.186, as amended, provides:

> Any action with respect to an assigned application or registration which may or must be taken by an applicant or registrant may be taken by the assignee provided that the assignment has been recorded or that proof of the assignment has been submitted.

The previous rule required recording of an assignment in a case where the applicant/assignee or registrant/assignee was required to take an action, such as filing a response to an Office action, filing an affidavit of use under Trademark Act Section 8 or filing a renewal. While it may be advisable for an applicant or registrant to record an assignment of an application or registration in view of the provisions of Trademark Act Section 10, 15 U.S.C. Section 1060, concerning subsequent purchasers, neither the Act nor the rules require recordation.

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However, if the party taking the relevant action with respect to the application or registration is different from the applicant or registrant of record and the filing party has not recorded an assignment, the party taking the action must establish that it is the owner of the application or registration through appropriate evidence. This evidence may consist of a copy of a document transferring ownership from one party to another or an explanation in an affidavit or supported by a declaration under Trademark Rule 2.20, 37 C.F.R. Section 2.20, that a valid transfer of legal title has occurred.

13. Revival of Abandoned Applications

Trademark Rule 2.66, 37 C.F.R. Section 2.66, concerning petitions to revive abandoned applications, requires that all such petitions be filed "promptly." The Office will continue to consider each petition on the merits according to the circumstances of the case, but, as a general rule, all such petitions should be filed within two months of the abandonment date. The standard for granting a petition to revive continues to be "unavoidable delay." Please note the discussion above (A.10.) with specific reference to petitions to revive intent-to-use applications.

14. Concurrent Use

The 1988 amendments insert the following language in Trademark Act Section 2(d), 15 U.S.C. Section 1052(d), governing concurrent use applications which are subject to concurrent use proceedings in the Patent and Trademark Office:

> Use prior to the filing date of any pending application or a registration shall not be required when the owner of such application or registration consents to the grant of a concurrent registration to the applicant.

The statute now provides greater flexibility to applicants seeking concurrent use registrations. Therefore, if the applicant is not entitled to a concurrent use registration on the basis of the jurisdictional requirement of use of its mark prior to the earliest filing date of any relevant pending application or registration, but the relevant prior applicant or registrant has consented to the applicant's concurrent use application, the examining attorney should approve the mark for publication, subject to a concurrent use proceeding, provided it is otherwise eligible.

Also, Trademark Rule 2.42, 37 C.F.R. Section 2.42, no longer requires that the stated exceptions in a concurrent use application be inserted in the verification or declaration. The exceptions need only be provided in the statement portion of the application.

15.Requests to Divide an Application

Trademark Rule 2.87, 37 C.F.R. Section 2.87, establishes procedures for dividing one application into two separate applications. The rule provides as follows:

> (a) An application may be physically divided into two or more separate applications upon submission by the applicant of a request therefor, in accordance with paragraph (c) of this section. In the case of a request to divide out some, but not all, of the goods or services in a class, a fee for each new separate application to be created by the division must be submitted. Any outstanding time period for action by the applicant in the original application at the time of the division will be applicable to each new separate application created by the division.
>
> (b) A request to divide an application may be filed at any time between the filing of the application and the date the Trademark Examining Attorney approves the mark for publication or the date of expiration of the six-month response period after issuance of a final action; or during an opposition, upon motion granted by the Trademark Trial and Appeal Board. Additionally, a request to divide an application under section 1(b) of the Act may be filed with a statement of use under section 2.88 or at any time between the filing of a statement of use and the date the Trademark Examining Attorney approves the mark for registration or the date of expiration of the six-month response period after issuance of a final action.
>
> (c) A request to divide an application should be made in a separate paper from any other amendment or response in the application. The title "Request to divide application." should appear at the top of the first page of the paper.

By dividing the application, the applicant preserves the filing date, and thus the potential constructive use date, as to all of the goods and services covered by the application.

Under the rule, the applicant may request that certain goods or services in a single class be divided, that is, that a separate application with the same filing date be created to cover those goods or services. The applicant may also request that an entire class or several classes be divided, that is, that one or more separate applications with the same filing date be created to cover certain classes.

An applicant may request division of an application for any reason. For example, in an intent-to-use application, the applicant may wish to proceed to publication or registration with certain goods and services on or in connection with which it has used the mark in commerce and retain an active application for any remaining goods or services. The applicant can do so by requesting division of the application.

If the applicant requests that the goods or services in a single class be divided into one or more separate applications, the applicant must submit an application fee for each new application to be created. The fee is the same as the fee for the filing of a new single-class application, $175.00. If an entire class is to be divided out from a multiple class application, there is no fee. Trademark Rule 2.87(a), 37 C.F.R. Section 2.87(a). There is no fee for the request to divide itself.

a. Processing Requests to Divide

Specially designated personnel in the ITU Unit will process all requests to divide. All requests to divide will be given priority in processing over any other paper in the case. All requests to divide should be forwarded to the ITU Unit immediately for processing. However, if the application is the subject of a proceeding before the Trademark Trial and Appeal Board, the request should first be forwarded to the Board for appropriate action. The ITU Unit will process the request as promptly as possible and will return the application or applications to regular processing after completing action on the request to divide.

If the request to divide does not include a necessary fee or is otherwise deficient, the ITU Unit will notify the applicant of the deficiency. The applicant must correct any such deficiency within thirty days or, if the division is a necessary component of a statement of use, within the time permitted for filing the statement of use, whichever is shorter. If the applicant fails to correct the deficiency within the time provided, the request will be considered abandoned and the application will be processed without regard to the request. The ITU Unit will advise the applicant of any such action and will refund any fees paid in conjunction with the request to divide.

If the applicant submits a request to divide along with a statement of use and a request for an extension of time, and the fees are insufficient to cover all three, the fees will be applied first to the request for an extension of time, second to the statement of use and lastly to the request to divide.

If the applicant submits a request to divide along with a statement of use, and the fees are sufficient for the statement of use only, and no time remains for filing additional fees, the applicant will be given the opportunity to amend the statement of use to include all goods or services in the application. The applicant must establish that the applicant used the mark in commerce on or in connection with all such goods or services within the time permitted for filing the statement of use. If time does remain in the existing period for filing the statement of use, the applicant will be permitted to submit the additional fees within that time period.

Filing a request to divide an application does not relieve an applicant of the duty to respond to any outstanding Office action or to take any other required action.

Likewise, the applicant should note that any outstanding time period for action by the applicant in effect at the time the application is divided applies not only to the original application, but also to each new application created in the division of the application. Therefore, if a response to an Office action is due in a case, the response is due likewise in each new application created through the division of the application.

Similarly, if a statement of use is due, the period for filing the statement of use relevant to the original application is likewise relevant to each new application created through the division.

If a request to divide an application is received at any time other than those specified, it will be returned to the applicant with any fees submitted for that purpose and the application will not be divided.

The Office will not consider a request to merge two separate applications into a single application once again after a proper request to divide has been granted.

b. Division of Registration Not Permitted

A registration cannot be divided into one or more separate registrations.

16. Correspondence with Applicants Not Domiciled in the United States

Trademark Rule 2.18, 37 C.F.R. Section 2.18, has been revised to clarify Office policy with respect to correspondence with applicants not domiciled in the United States. In such a case, the Office will send correspondence to the applicant's domestic representative unless the applicant has authorized an attorney or another qualified person to prosecute the application. If the applicant has authorized an attorney or other qualified person to prosecute the application, the Office will send correspondence to that authorized person.

17. Preferred Size for Application Papers

Trademark Rule 2.31, 37 C.F.R. Section 2.31, now specifies that the preferred size for application papers is letter size. This policy applies to all submissions related to all applications.

C. PROVISIONS AFFECTING APPLICATIONS UNDER SECTION 44 OF THE ACT

The 1988 amendments introduce relatively few changes affecting applications filed under Trademark Act Section 44, 15 U.S.C. Section 1126. The amended Rules of Practice incorporate changes dictated by decisions in the area and clarify Office policy related to the administration of Section 44 in other respects. The provisions are summarized in this section.

1. Filing-Date Requirements

As noted above (A.1.a.), the amended Rules of Practice institute a number of changes related to receipt of a filing date which affect all applications. This section addresses only those changes which relate specifically to applications under Section 44. Trademark Rule 2.21, 37 C.F.R. Section 2.21, sets forth the minimum formal requirements to receive a filing date for the various types of applications. These minimum requirements do not include all of the requirements which may apply to qualify for registration.

a. Statement of a Bona Fide Intention to Use the Mark in Commerce

The 1988 amendments require all applicants under Section 44 of the Act to allege a bona fide intention to use the mark in commerce, although use in commerce is not required as a condition to registration. Any application under either Section 44(d) or 44(e) of the Act must include such a statement to receive a filing date. Trademark Rule 2.21(a)(5)(ii) and (iii), 37 C.F.R. Section 2.21(a)(5)(ii) and (iii).

The Office will not presume that an application under Section 44 is also based on intent to use under Trademark Act Section 1(b), 15 U.S.C. Section 1051(b). If the applicant wishes to assert both bases, the applicant must indicate so specifically. If the applicant indicates that Section 44 is the basis, and nothing more, and the applicant fails to comply with the relevant Section 44 filing-date requirements, the applicant will be denied a filing date, even if the application includes a statement of a bona fide intention to use the mark in commerce.

b. Priority Claim or Certified Copy of a Foreign Registration

In the case of an application claiming the benefits of Section 44(d), the application must be filed in the U.S. within six months of the relevant foreign filing and must include a claim of the benefit of a prior foreign application to receive a filing date. Trademark Rule 2.21(a)(5)(iii), 37 C.F.R. Section 2.21(a)(5)(iii). Trademark Rule 2.39, 37 C.F.R. Section 2.39, sets forth the required content of such a claim, essentially, the filing date and country of the first regularly filed foreign application. The applicant should also indicate the serial number of that application, if it is available. The serial number is not required to receive a filing date, however.

In the case of an application under Section 44(e), the application must include a certification or certified copy of the foreign registration on which the United States application is based to receive a filing date. Trademark Rule 2.21(a)(5)(ii), 37 C.F.R. Section 2.21(a)(5)(ii). If the applicant submits any type of copy other than an original of a certified copy, the Office will not grant a filing date.

2. Statement of Dates of Use and Method of Use and Specimens Not Required

In any application under Section 44, the applicant need not state a date of first use anywhere, nor a date of first use in commerce, nor the method of use. Also, the applicant need not provide specimens of use. *Crocker National Bank v. Canadian Imperial Bank of Commerce*, 223 USPQ 909 (TTAB 1984). Trademark Rules 2.21 and 2.33, 37 C.F.R. Sections 2.21 and 2.33, have been amended to reflect this change. In such a case, the mark need not be in use anywhere for the purposes of the U.S. application.

3. The Basis for Registration in Applications Claiming the Benefits of Section 44(d)

In *In re Daiwa Seiko, Inc.*, 230 USPQ 794 (Comm'r Pats. 1983), the Commissioner clarified the distinction between Sections 44(d) and (e) of the Act. The Commissioner held that Section 44(d) only provides a basis for receiving a priority filing date but does not provide a basis for registration. Therefore, an application claiming the benefit of a foreign application under Section 44(d) must include a basis for registration also. In most cases, the basis for registration will be the foreign registration which will issue from the foreign application relied upon for priority. The Office will presume that this is the basis for registration in any application under Section 44(d) unless the applicant indicates otherwise.

Furthermore, the assertion of a different basis for registration more than six months after the filing of the foreign application, including reliance on a different foreign registration under Section 44(e), will result in the loss of the priority filing date under Section 44(d) of the Act. In such a case, the Office will change the filing date in the United States to the date on which the applicant perfects the new basis for registration by providing either a proper statement of dates of use in commerce, a proper assertion of an intent to use in commerce under Section 1(b) of the Act or a certificate or certified copy of a foreign registration. *See* TMEP section 706 and Chapter 1000.

In an application filed under Section 44 before November 16, 1989, the applicant may amend to add Section 1(b) as a basis for registration on or after that date. However, if the applicant has claimed priority under Section 44(d) in such a case, and the applicant drops the original basis for registration to rely on Section 1(b) only, the applicant may not retain the priority date unless the amendment asserting Section 1(b) as a basis for registration was made within six months of the filing of the foreign application relied on for priority. If the amendment was made later and the applicant drops the original basis for registration, the effective filing date of the application is the date of the amendment to assert Section 1(b) as a basis for registration.

D. PROVISIONS AFFECTING APPLICATIONS BASED ON USE IN COMMERCE ONLY

The 1988 amendments and the amended Rules of Practice do not provide any changes, as such, related specifically to applications based on use in commerce under Trademark Act

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Section 1(a), 15 U.S.C. Section 1051(a), other than those noted above (Section B) affecting all applications. In one instance, noted here, the amended Rules of Practice merely set forth long-standing Office policy in the rules for the first time.

Trademark Rule 2.59(a), 37 C.F.R. Section 2.59(a), provides as follows:

> In an application under section 1(a) of the Act, the applicant may submit substitute specimens of the mark as used on or in connection with the goods, or in the sale or advertising of the services, provided that any substitute specimens submitted are supported by applicant's affidavit or declaration in accordance with Section 2.20 (37 C.F.R. Section 2.20) verifying that the substitute specimens were in use in commerce at least as early as the filing date of the application. The verification requirement shall not apply if the specimens are duplicates or facsimiles, such as photographs, of specimens already of record in the application.

As noted, this provision merely states long-standing policy in the regulations for the first time.

E. FILING ON MORE THAN ONE BASIS AND CHANGING THE BASIS OF THE APPLICATION

Trademark Rule 2.33(d), 37 C.F.R. Section 2.33(d), precludes the filing of an application based on both use in commerce under Trademark Act Section 1(a), 15 U.S.C. Section 1051(a), and a bona fide intention to use the mark in commerce under Trademark Act Section 1(b), 15 U.S.C. Section 1051(b). This prohibition precludes applications in a single class alleging both use in commerce and intent to use as to either the same goods and services or different goods or services. Likewise, the prohibition precludes applications in more than one class alleging both use in commerce and intent to use. If an applicant submits an application asserting both Section 1(a) and 1(b) bases for registration, the Office will not grant a filing date and will return the papers to the applicant.

The rule also precludes amendments in applications initially based on use in commerce under Section 1(a) to change the basis to intent to use under Section 1(b). In an application under Section 1(b) of the Act, an applicant may assert dates of first use which are earlier than the filing date of the application in an amendment to allege use or a statement of use.

Applicants may allege Section 44 as an additional basis for registration in conjunction with either use in commerce under Section 1(a) or intent to use under Section 1(b). In such a case, an applicant may also allege different bases for the application as to specific goods or services within a class. If an applicant asserts more than one basis for registration, the applicant must satisfy all of the requirements for registration which apply to each basis asserted. The applicant must indicate clearly that it asserts two bases for registration.

If an applicant asserts both intent to use and Section 44(e) as the bases for registration, the Office will not approve the mark for publication until the applicant submits a certificate or certified copy of the foreign registration.

In an application filed under Section 44 before November 16, 1989, the applicant may amend to add Section 1(b) as a basis for registration on or after that date. However, if the applicant has claimed priority under Section 44(d) in such a case, and the applicant drops the original basis for registration to rely on Section 1(b) only, the applicant may not retain the priority date unless the amendment asserting Section 1(b) as a basis for registration was made within six months of the filing of the foreign application relied on for priority. If the amendment was made later and the applicant drops the original basis for registration, the effective filing date of the application is the date of the amendment to assert Section 1(b) as a basis for registration.

PATENT NOTICES

Certificates of Correction For Week of November 21, 1989

D. 298,249
D. 299,786
D. 300,410
D. 300,577
PLT. 6,759
PLT. 6,812
4,086,384
4,491,577
4,550,573
4,559,247
4,595,619
4,641,676
4,642,674
4,658,341
4,659,662
4,687,775
4,690,940
4,698,152
4,701,175
4,702,108
4,704,114
4,709,367
4,718,403
4,725,292
4,745,189
4,748,265
4,754,897
4,754,987
4,755,836
4,756,421
4,760,180
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4,771,294
4,773,269
4,775,330
4,775,606
4,776,422
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4,776,975
4,777,260
4,778,894
4,780,457
4,780,999
4,781,620
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4,783,359
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4,784,882
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4,786,693
4,787,165
4,787,801
4,787,930
4,788,208
4,788,645
4,788,957
4,790,225
4,791,045
4,791,077
4,792,174
4,792,547
4,793,857
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4,795.453
4,795,510
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4,797,146
4,797,162
4,797,171
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4,822,840
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4,823,783
4,824,044
4,824,081
4,824,104
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4,831,455
4,831,708
4,832,929
4,833,093
4,833,190
4,833,291
4,834,447
4,838,057
4,839,051
4,841,037
4,847.519

Erratum

In the Notice of Certificate of Correction Appearing at 1104 O. G. 35, delete Patent No. 4,776,442, the number was erroneously mentioned and should be deleted.

Disclaimer

4,649,209.—*Emil J. Geering*, Grand Island, N. Y. PROCESS FOR PREPARING METHYL CHLOROSULFATES. Patent dated Mar. 10. 1987. Disclaimer filed Aug. 25, 1989, by the assignee, Occidental Chemical Corporation.

Hereby enters this disclaimer to the entire term of said patent.

4,652,115.—*Charles S. Palm*, Norcross; *Danny L. Slayton*, Lilburn; *Khosrow Lak; Peter F. Sampson*, both of Doraville; *David R. Davis*, Buford; *Maurice S. Wheatley, Jr.*, Duluth; *Gregory A. Chatham*, Marietta; *Wayne C. Jones*, Duluth; *Kirk W. Charles*, Atlanta, all of Ga.; *Anthony J. Ireland*, El Cerrito, Calif. PRINT ENGINE FOR COLOR ELECTROPHOTOGRAPHY. Patent dated Mar. 24, 1987. Disclaimer filed Aug. 18, 1989, by the assignee, Colorocs Corp.

Hereby enters this disclaimer to claim 6 of said patent.

4,774,230.—*Ronald R. Tuttle*, Plantation; *Ross Dixon*, Boca Raton; *Maciej M. Smulkowski*, Gainesville, all of Fla. GLUCURONIC ACID DERIVATIVES OF OPIOID ANTAGONISTS. Patent dated Sept. 27, 1988. Disclaimer filed June 22, 1989, by the assignee, Baker Cummins Pharmaceuticals, Inc.

Hereby enters this disclaimer to claims 1 and 2 of said patent.

4,776,157.—*Ary van der Lely*, Maasland; *Cornelis J. G. Bom*, Rozenburg, both of the Netherlands. MACHINE FOR WORKING GRASS, HAY OR OTHER CROPS ON THE FIELD. Patent dated Oct. 11, 1988. Disclaimer filed Aug. 18, 1989, by the assignee, C. van der Lely, N. V.

Hereby enters this disclaimer to claims 6, 7, and 8 of said patent.

4,822,108.—*Michael D. Benhart*, Moline, Ill. ROW STRADDLING DUAL WHEELS FOR A HARVESTER. Patent dated Apr. 18, 1989. Disclaimer filed Aug. 28, 1989, by the assignee, Deere & Company.

Hereby enters this disclaimer to claims 5, 6, and 7 of said patent.

Disclaimer and Dedication

4,369,419.—*James I. Portscheller*, Sparland, Ill. SOLENOID HAVING SPRING BLASED LOST MOTION LINK. Patent dated Jan. 18, 1983. Disclaimer and Dedication filed Sept. 11, 1989, by the assignee, Caterpillar Inc.

Hereby disclaims and dedicates to the Public claims 1-12 of said patent.

4,466,106.—*Arthur L. Serrano*, Canoga Park, Calif. FREQUENCY SHIFT KEYED MODEM CHIP SET. Patent dated Aug. 14, 1984. Disclaimer and Dedication filed Aug. 28, 1989., by the assignee, Practical Peripherals, Inc.

Hereby disclaims and dedicates to the Public the entire term of said patent.

4,544,468.—*Wolf D. Munz*, Somborn; *Gerhard Hessbeger*, Karlstein, both of Fed. Rep. of Germany. METHOD OF AND APPARATUS FOR COATING SHAPED PARTS BY CATHODIC ATOMIZTION. Patent dated Oct. 1, 1985. Disclaimer and Dedication filed Jun. 12, 1989, by the assignee, Leybold Aktiengesellschaft.

Hereby disclaims and dedicates to the Public the entire term of said patent.

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PATENT EXAMINING CORPS

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PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 110—D. E. TALBERT, Director	5-26-87
ORGANIC CHEMISTRY GROUP 120—S. N. ZAHARNA, Director	6-16-87
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 130—R. F. WHITE, Director	4-15-87
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 150—J. O. THOMAS, Director	5-14-87
BIOTECHNOLOGY, GROUP 180—J. E. KITTLE, Director	9-10-86
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—D. G. Kelly, Director	9-24-87
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MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 320—N. GODICI, Acting Director	4-13-88
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 330—J. J. LOVE, Director	4-20-87
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 340—C. CROYLE, Acting Director	2-26-88
GENERAL CONSTRUCTIONS, PETROLEUM AND MINING ENGINEERING, GROUP 350—A. L. SMITH, Director	1-3-89

Expiration of patents: The patents within the range of numbers indicated below expire during October 1989, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents	Numbers 3,694,814 to 3,702,011 inclusive
Plant Patents	None

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REEXAMINATIONS

NOVEMBER 21, 1989

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 4,503,095 (1159th)

HEAT-SENSITIVE COLOR TRANSFER RECORDING MEDIA

Tadao Seto, Matsudo, and Yoshikazu Shimazaki, Osaka, both of Japan, assignors to Fuji Kagakushi Kogyo Co., Ltd., Osaka, Japan

Reexamination Request Nos. 90/001,303, Aug. 7, 1987 and 90/001,655, Dec. 1, 1988.

Reexamination Certificate for Patent No. 4,503,095, issued Mar. 5, 1985, Ser. No. 465,017, Feb. 8, 1983.

Filed Dec. 1, 1988, Ser. No. 465,017

Claims priority, application Japan, Feb. 13, 1982, 57-21571; Feb. 13, 1982, 57-21572

Int. Cl.^{4} B41M *5/26*

U.S. Cl. 427—265

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claim **2** is cancelled.

Claims **1** and **3–10** are determined to be patentable as amended.

New claims **11–27** are added and determined to be patentable.

1. A heat-sensitive color transfer recording media comprising a continuous foundation and a multiplicity of coated areas of heat-sensitive transfer inks applied onto the foundation; the multiplicity of the coated area being disposed on the continuous foundation side by side so as to traverse the continuous foundation; the multiplicity of the coated areas being arranged sequentially in the longitudinal direction of the continuous foundation in a repeating unit which comprises a plurality of [different] color coated areas *of yellow, magenta and cyan*; each of the [different] color coated areas included in the repeating unit having a length in the longitudinal direction of the continuous foundation substantially equal to the length or width of a copy sheet; each of the heat-sensitive transfer ink layers of the *color* coated areas *of yellow, magenta and cyan* being a transparent ink layer comprising a transparent coloring agent and a transparent hot-melt vehicle *and having a visible light transmittance of not less than 68%*; and said plurality of the [different] color heat-sensitive transfer ink layers of the coated areas of the recording media being *capable of being* transferred onto the copy sheet so that different color ink images are superimposed on the copy sheet *without substantially admixing with each other* to give a color image.

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REISSUES

NOVEMBER 21, 1989

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue

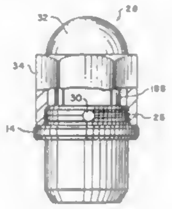
Re. 33,114
TAMPER-PROOF THREADED FASTENINGS

Ezio R. Chiavon, 17 Walnut La., Harrison, N.Y. 10528

Original No. 4,616,535, dated Oct. 14, 1986, Ser. No. 754,064, Jul. 11, 1985. Continuation of Ser. No. 476,031, Mar. 17, 1983, abandoned. Application for reissue Sep. 22, 1988, Ser. No. 247,751

Int. Cl.⁴ B25B *13/06*

U.S. Cl. 81—121.1 22 Claims



1. An anti-theft fastening device for securing an automobile wheel to a vehicle, said fastening device including a head portion defining a predetermined configuration on the outer periphery thereof adapted to complement the configuration of a tool for removing said head portion from an automobile wheel, and a cap [removable] *removably* mounted over said head portion to conceal said predetermined configuration defined on said head portion, the combined weight of *the fastening device including* said head portion and said cap being substantially equal in weight to the weight of conventional lug nuts mounted to said automobile wheel.

Re. 33,115
ACCOUCHEMENT APPARATUS

Julie M. Lewis, 18050 S. Skylands Cir., Lake Oswego, Oreg. 97034

Original No. 4,715,592, dated Dec. 29, 1987, Ser. No. 910,802, Sep. 22, 1986. Continuation of Ser. No. 806,124, Dec. 6, 1985, abandoned, which is a continuation of Ser. No. 612,321, May 21, 1984, abandoned. Application for reissue Aug. 1, 1988, Ser. No. 232,461

Int. Cl.⁴ A61G *13/00*

U.S. Cl. 269—328 6 Claims

6. Accouchement apparatus for disposition on an underlying horizontal support, the accouchement apparatus configured to engage and support the vertically extending upper body of a woman kneeling or squatting on the underlying horizontal support, for supporting the woman in an upright position on the underlying horizontal support during labor and delivery, the accouchement apparatus comprising:

(a) a U-shaped frame having an intermediate horizontal upper body support portion and laterally spaced vertically extending legs of sufficient length to position said horizontal upper body support portion above an underlying horizontal support a distance sufficient to support the vertical extending upper body of a woman kneeling or squatting on the underlying horizontal support with the arms of the woman hanging over said horizontal upper body support portion,

(b) a resilient pad secured to the intermediate upper body support portion of the frame for engagement by the vertically extending upper body of a woman kneeling or squatting on the underlying horizontal support and leaning against the padded upper body support portion for support in an upright position during labor and delivery, and

(c) means on the legs for engaging an underlying horizontal support to support the frame in vertically extending position with the resilient upper body support pad disposed substantially horizontally a spaced distance above the underlying horizontal support sufficient to engage and support the vertically extending upper body of a woman kneeling or squatting on the underlying horizontal support for the woman in upright position leaning against the padded upper body support portion during labor and delivery.

Re. 33,116
SINGLE-STAGE OILLESS SCREW COMPRESSOR SYSTEM

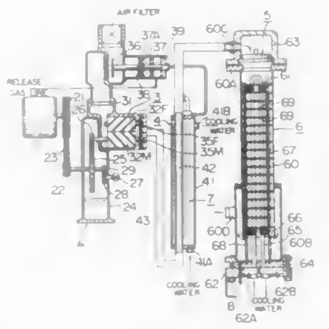
Akira Suzuki, Atsugi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Original No. 45,293,636, dated Jul. 16, 1985, Ser. No. 563,037, Dec. 19, 1983. Application for reissue Sep. 11, 1986, Ser. No. 905,957

Claims priority, application Japan, Sep. 12, 1983, 58-166644

Int. Cl.⁴ F04B *49/00;* F01C *1/08*

U.S. Cl. 417—295 19 Claims



9. A single-stage oilless screw compressor system comprising:

a drive unit;

transmission means connected to said drive unit for increasing a rotational speed thereof;

a single-stage oilless screw compressor connected to said transmission means and having a pressure discharge pressure to suction ratio of over four, said single-stage oilless screw compressor comprising a casing formed with a suction port and a discharge port, a pair of screw rotors rotatably located in said casing and meshing with each other, bearing means supporting said pair of screw rotors, seal means interposed between said casing and shafts of said pair of screw rotors, and synchronizing gear means mounted on said pair of screw rotors for bringing about synchronization of their rotations;

a precooler connected to a discharge side of said single-stage oilless screw compressor, said precooler comprising a heat transfer tube and a shell enclosing said heat transfer tube;

a cooler connected to an outlet side of said precooler, said cooler

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comprising a heat transfer tube and a shell enclosing said heat transfer tube; and

a check valve located in a compressed gas passage between said precooler and cooler.

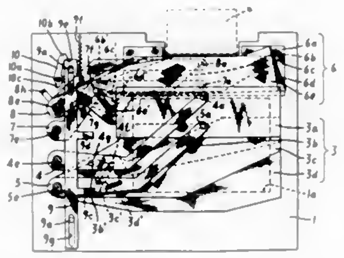
Re. 33,117
FOCAL PLANE SHUTTER FOR CAMERAS

Eiichi Onda, Yamanashi, and Masanori Watanabe, Narashino, both of Japan, assignors to Seiko Koki Kabushiki Kaisha, Tokyo, Japan

Original No. 40,965,05, dated Jun. 20, 1978, Ser. No. 713,591, Aug. 11, 1976. Continuation-in-part of Ser. No. 686,501, May 14, 1976, abandoned. Application for reissue Dec. 6, 1984, Ser. No. 679,036

Int. Cl.⁴ G03B *9/36*

U.S. Cl. 354—246 8 Claims



1. A camera shutter mechanism *for a camera having a view finder*for opening and closing a shutter aperture to effect an exposure comprising: *a base plate having therein a shutter aperture, the base plate having a vertical height dimension and a horizontal width dimension and having a widthwise extending recess at the upper part thereof at a location vertically above the shutter aperture, the recess being dimensioned to accommodate therein the lower part of the view finder;*a group of opening blades movable, when released, from a closed *charged*position in which they cover the shutter aperture to an open position in which they do not cover the shutter aperture to initiate an exposure, *said group of opening blades being arranged to be stowed in a space provided in the lower part of the camera;*a group of closing blades movable, when released, from an open *charged*position in which they do not cover the shutter aperture to a closed position in [with] *which* they cover the shutter aperture to terminate the exposure, *said group of closing blades being arranged to be stowed in a space provided in the upper part of the camera beneath the view finder such that the stowed closing blades do not obstruct the optical path of the view finder; said group of opening blades having better light-shielding effectiveness than said group of closing blades when in the closed position;*release means for releasing the opening blades thereby enabling them to move to the open position for initiating the exposure, and for subsequently releasing the closing blades thereby enabling them to move to the closed position for terminating the exposure; and means including a driving member automatically operable immediately after completion of the exposure for moving the group of opening blades back towards the closed position so that the aperture is at least partially covered thereby *sa that after termination of the exposure, though before charging of the shutter, the aperture is at least partially covered by the opening blade group which has better light-shielding effectiveness than the closing blade group.*

PLANT PATENTS

GRANTED NOVEMBER 21, 1989

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

7,057
AFRICAN VIOLET PLANT NAMED FARRAH

Reinhold Holtkamp, Sr., Werther Strasse 112, D4294 Isselburg, Fed. Rep. of Germany

Filed Oct. 26, 1988, Ser. No. 262,594

Int. Cl.⁴ A01H *5/00*

U.S. Cl. Plt.—69 1 Claim

1. A new and distinct cultivar of African violet named Farrah, as described and illustrated, and particularly characterized by its single, dark pink flowers with slightly wavy edges and a darker center radiating somewhat into the petals; strong, upright flower stems that curve toward the center to form a compact bouquet above the leaves; dark green slightly serrated leaves; profuse flowering; vigorous growth habit flowering 10–11 weeks after potting, and its long lasting and non-dropping flowers.

7,058
MINIATURE ROSE PLANT NAMED SAVACHAS

F. Harmon Saville, Newburyport, Mass., assignor to Nor'East Miniature Roses, Inc., Rowley, Mass.

Filed Sep. 12, 1988, Ser. No. 242,969

Int. Cl.⁴ A01H *5/00*

U.S. Cl. Plt.—7 1 Claim

1. A new and distinct variety of rose plant of the miniature rose class, substantially as shown and described, characterized particularly by attractive bright yellow and red bicolored flowers which are long lasting on the plant.

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PATENTS

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ERRATA

For CLASS	See PATENT NO.
606-084	4,881,534
606-098	4,881,535
606-094	4,881,536
606-084	4,881,537
227-178	4,881,544
227-178	4,881,545
280-287	4,881,615
417-012	4,881,873
106-495	4,881,980
428-242	4,882,089
552-279	4,882,095
361-538	4,882,115
427-126	4,882,183
514-185	4,882,234
401-032	4,882,304
310-323	4,882,500
310-316	4,882,525
328-028	4,882,571
362-373	4,882,667
379-284	4,882,699
365-051	4,882,700
364-401	4,882,724
364-187	4,882,778
380-024	4,882,779
378-084	4,882,780
364-510	4,882,781
361-100	4,882,782
360-134	4,882,783
364-567	4,882,784

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PATENTS

GRANTED NOVEMBER 21, 1989

GENERAL AND MECHANICAL

4,881,275

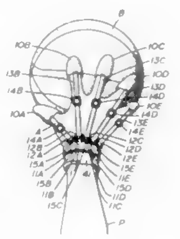
BASKETBALL GRIPPING GLOVE

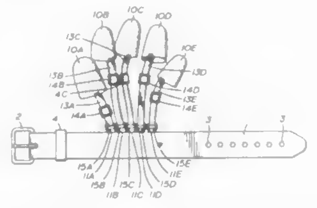
Albert Cazares, 5303 Manner Oak, Kingwood, Tex. 77339, and Holland R. Gibson, Jr., 1162 Cottage Oak, Houston, Tex. 77091

Filed Jun. 3, 1988, Ser. No. 201,946

Int. Cl.⁴ A41D *19/00;* **A63B** *63/00*

U.S. Cl. 2—161 A **3 Claims**





1. A new and improved basketball gripping apparatus comprising:

a. an anchor strap;
b. a means of fastening said anchor strap about user's wrist;
c. five elastomeric bands
d. one finger cowl for attachment to one end of each of said elastomeric bands opposite said anchor strap, wherein said finger cowls are constructed of a thin rubber, elastic or other material possessing a high coefficient of friction;
e. said elastomeric bands having a sufficiently low coefficient of elasticity to maintain said finger cowls adjacent to and in direct abutment with the user's fingers at all times; and wherein,
f. said five elastomeric bands are made adjustable in length, with each band comprising; a ring; means operatively connecting said ring to said anchor strap; and a slide buckle, wherein each elastomeric band is fixed to said finger cowl at one end, with its second end threaded through said slide buckle and then through said ring and then fixed to said buckle.

4,881,276

REINFORCED COLD WEATHER SPORTS GLOVE

Richard L. Swan, 1260 Monroe St., Reno, Nev. 89509

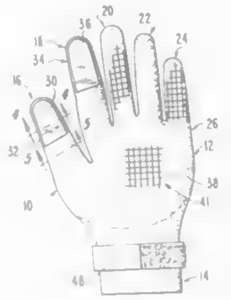
Filed Apr. 28, 1988, Ser. No. 187,552

Int. Cl.⁴ A41D *19/00*

U.S. Cl. 2—161 A **18 Claims**

1. A sports glove comprising:

a hand portion having a palm side and a backhand side;
a plurality of tubular portions, extending from said hand portion, for receiving a thumb, an index finger, a middle finger, a ring finger and a pinky, each having a palm side, a backhand side and a free distal end;
a first of said tubular portions having a first layer of compressible foam material having an outer surface with a high coefficient of friction on its palm side; and
a second of said tubular portions having a first layer of compressible foam material with an outer surface on its palm side, and an additional layer of flexible material having an outer surface with a low coefficient of friction, said additional layer overlying said first layer's outer surface of said second tubular portion,
whereby said first layers of said first and second tubular portions are compressible to create additional gripping ability by said first tubular portion and said second tubular portion which permit the user to grasp and release objects with more precision and sensitivity and whereby said additional layer provides an enhanced sliding surface to the glove.



4,881,277

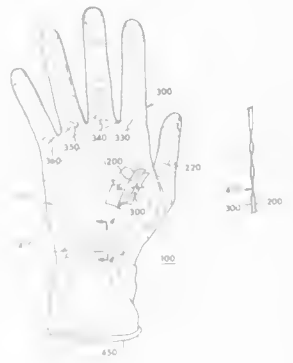
PROTECTIVE GLOVE AND METHOD OF MANUFACTURE

Gregory A. Hogle, 1675 Niagara, Denver, Colo. 80220

Filed Jun. 15, 1988, Ser. No. 207,262

Int. Cl.⁴ A41D *19/00*

U.S. Cl. 2—169 **8 Claims**



8. A method of forming surgical gloves for protection against punctures, said method comprises the steps of:

(a) forming a first inner layer;
(b) forming a separate second outer layer of slightly larger diametrical width and of substantially same finger lengths as the first inner layer;
(c) bonding said inner and outer layers at bonding areas at the base of the digit member portions on the palm side of said glove, at the knuckles of said digit portions on the back side of said glove and on the wrist portion on said palm and back sides of said glove to allow flexibility of hand movement;
(d) rolling the ends of said inner and outer layers extending beyond the wrist portions together to form gripping means.

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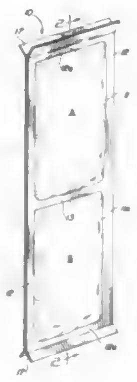
4,881,278
COMBINATION PACKAGE FOR DISINFECTING AND COVERING TOILET SEAT

Khaled S. Farah, 1512 W. Chalgrove, Corona, Calif. 91720
Filed Jan. 11, 1988, Ser. No. 141,835
Int. Cl.⁴ A47K *13/14*
U.S. Cl. 4—243 1 Claim



1. A single-use unitary package for carrying toilet seat disinfecting/covering materials on the person and for conveniently using and dispensing such materials, said package comprising, in combination:

(a) flexible, liquid-proof opposed sheets, releasably sealed together along opposed peripheral edges and along a line between two opposite ends thereof, to form two separately openable liquid-tight compartments having inner opposed faces;

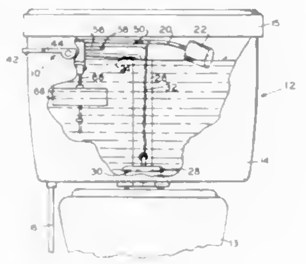
(b) a dry toilet seat cover in a first one of said compartments; and

(c) a toilet seat disinfectant -impregnated pad material secured to the inner opposed faces of said sheets in the other of said compartments,

said first compartment, while unopened, forming a handle for grasping said package with said other compartment opened and said pad material exposed for disinfecting wiping off said toilet seat.

4,881,279
DUAL FLUSH MECHANISM

Donald E. Harney, 1113 Highway 99 North, Eugene, Oreg. 97402
Filed Mar. 20, 1989, Ser. No. 325,886
Int. Cl.⁴ E03D *1/14, 3/12*
U.S. Cl. 4—324 5 Claims



1. A dual flush mechanism, to provide a full-flush and a partial-flush capability for toilets with a tank, in combination with a single flush valve, which dual flush mechanism comprises:

a. a flush valve actuating arm, having a first end and a second end, attached near or at its second end to the flush valve by means of a flexible connecting member;

b. a first handle control means, to which the first end of the flush valve actuating arm is attached;

c. wherein the combination of first handle control means, flush valve actuating arm, flexible connecting member, and flush valve comprise the full flush capability;

d. a partial-flush control arm, having a first end and a second end, the partial-flush control arm being constructed to be capable of engaging and lifting the flush valve actuating arm;

e. a second handle control means, to which the first end of the partial flush control arm is attached;

f means for limiting the movement of the partial-flush control arm due to operation of the second handle control means, thereby also limiting the resulting upwards rotational movement of the second end of the flush valve actuating arm due to the movement of the partial-flush control arm;

g. a partial-flush control plate, forming a portion of said partial-flush control arm;

h. a panial-flush control lever, having a first end and a second end, pivotally supported between said first and second ends at a pivot axis;

i. a partial-flush float, attached by a rigid connecting member to said first end of said partial-flush control lever; and

j. a lever extension attached to said second end of said partial-flush control lever;

k. wherein movement of the second handle control means will pivot the partial-flush control arm, to the extent permitted by the movement limiting means, thereby lifting the second end of the flush valve actuating arm a limited distance, and, through the flexible connecting member, lifting the flush valve a limited distance to permit egress of water from the tank; subsequent release of the second handle control means permitting the partial-flush control arm to rotate downwards until the lower edge of the control Plate rests against the transversely extending lever extension, thereby also limiting the downward movement of the flush valve actuating lever and keeping the flush valve in a partially open position with associated continuing water egress; said water egress lowering the position of the partial-flush float thereby pulling the first end of the partial-flush control lever downwards and rotating the partial-flush control lever about its pivot axis thereby causing the attached lever extension to retract out from beneath the partial-flush control plate, said retraction freeing restraint on the partial-flush control arm, allowing further downward movement of the partial-flush control arm, with a corresponding downward movement of the flush valve actuating arm and the reseating of the flush valve so as to terminate the egress of water from the tank; with refilling water raising the water level of the tank, the partial-flush float correspondingly rising, the first end of the partial-flush control lever being lifted, through the rigid connecting member attached to the partial-flush float, so as to move the lever about its pivot axis, causing the lever extension to move until in pressured contact against the side of the partial-flush control plate of the partial flush control arm, thereby terminating the partial flush cycle by the dual flush mechanism.

4,881,280
WATERFALL PRODUCING UNIT FOR USE IN SWIMMING POOLS

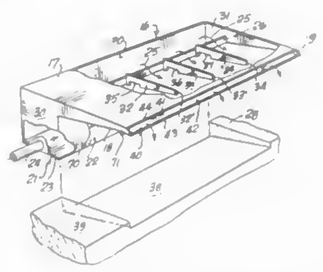
Fred C. Lesikar, 641 Ryan, La Habra, Calif. 90631
Filed Dec. 2, 1988, Ser. No. 279,431
Int. Cl.⁴ B05B *1/34;* **E04H** *3/18*
U.S. Cl. 4—507 14 Claims

1. A unit for producing a waterfall at the edge of a swimming pool, spa or the like, said unit adapted to be mounted in the side of the pool, spa or the like and being capable of producing a smooth sheet of water which is directed away from the side of the pool, spa or the like, said unit comprising:

a hollow unit body adapted to be mounted in the side of a pool, spa or the like said hollow unit body having a top, a bottom, a front, a back and a right side and a left side;

a throat portion at the front of said hollow unit through which water is directed outwardly from said hollow unit body, said throat portion adapted to extend slightly past the side of the pool, spa or the like and said throat portion having an upper edge and a lower edge;

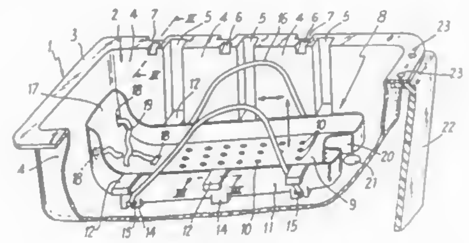
a manifold portion into which water is introduced, said manifold portion being located near the back of the unit body, and said manifold portion adapted to be located behind the side of the pool, spa or the like; and



at least one baffle extending substantially vertically over the majority of the distance between the top and the bottom of the hollow unit body, and said baffle extending between the right side and the left side of said body, and said baffle being positioned between the manifold portion and the throat portion and nearer the manifold portion.

4,881,281
BATHING DEVICE, IN PARTICULAR FOR BATHING BABIES

Jean-Claude Lavoine, 14 rue de la République, 77590 Bois-le-Roi, and Arsène Guedaguian, Neuilly-Plaisance, both of France, assignors to Jean-Claude Lavoine, France
PCT No. PCT/FR87/00407, § 371 Date Jun. 17, 1988, § 102(e) Date Jun. 17, 1988, PCT Pub. No. WO88/03000, PCT Pub. Date May 5, 1988
PCT Filed Oct. 19, 1987, Ser. No. 224,878
Claims priority, application France, Oct. 22, 1987, 86 14648
Int. Cl.⁴ A47K *3/024*
U.S. Cl. 4—572 12 Claims



1. An infant bathing device comprising

(a) a rigid receptacle having a bottom, an opened top with a rim and side walls, wherein at least two facing side walls have interior vertically contoured surface portions;

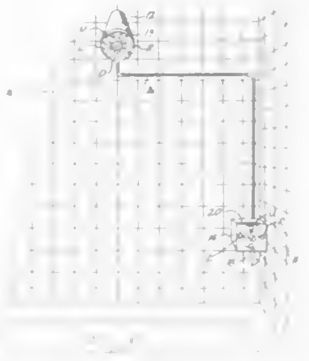
(b) a rigid platform means for supporting an infant in a sitting and reclined position and having a perforated bottom and being configured such that the platform is vertically movable within the entire receptacle while being in a substantially horizontal plane;

(c) an entire rigid periphery of the platform wherein the periphery has at least some periphery contoured portions which are contoured substantially opposite to and engagable within the said receptacle contoured surface portions, whereby the periphery contoured portions are vertically slidable in the said receptacle contoured surface portions so that the platform is vertically movable to any vertical position within the receptacle while being in a substantially horizontal plane and whereby the platform can be vertically moved to the top of the receptacle and the said contoured portions horizontally offset so that the platform is supportable by the said rim; and

(d) lifting means associated with the platform for vertically moving the platform.

4,881,282
ADJUSTABLE SHOWER HEAD

Edward J. George, and Frances George, both of Box 245, Fernie, Canada (V0B 1M0)
Filed Aug. 10, 1988, Ser. No. 230,356
Int. Cl.⁴ A47K *3/22*
U.S. Cl. 4—604 4 Claims



2. An adjustable shower head, comprising:
a shower head mounted for pivotal adjustment;
a remotely disposed pivotally mounted joystick;
a control yoke secured to said joystick;
a rigid hollow tube extending between said shower head and said joystick;
four elongated cable sheaths secured within said tube;
an elongated control cable received for longitudinal reciprocal sliding movement in each of said sheaths;
an upper end of each of said cables secured to said control yoke, said upper cable ends spaced in a common plane at ninety degree intervals around said control yoke;
a lower end of each of said cables secured to said master yoke, said lower end spaced in a common plane at ninety degree intervals around said master yoke; and
each of said lower cable ends oriented one hundred and eighty degrees from the respective upper cable end position on said control yoke, whereby movement of said joystick in any direction moves said shower head in a corresponding direction.

4,881,283
SELF CONTAINED EYE WASH FOUNTAIN

John R. Liautaud, 180 Stonegate, Cary, Ill. 60013
Filed Sep. 9, 1988, Ser. No. 243,067
Int. Cl.⁴ A61H *33/04;* **B65B** *3/04;* **B67D** *3/00*
U.S. Cl. 4—620 15 Claims

1. A self-contained emergency eye wash fountain for siting without connection to a remote source of eye wash liquid, said fountain comprising:

a fountain base including at least one liquid discharge orifice and a reservoir for holding a supply of eye wash liquid, said reservoir being positioned above said orifice, said base further including a flow channel means connecting said reservoir and said orifice;

at least two separate tanks each containing eye wash liquid supported by sad base and independently removable from said base, each tank having a mouth adjacent its lower end extending into said reservoir, the mouth of each tank

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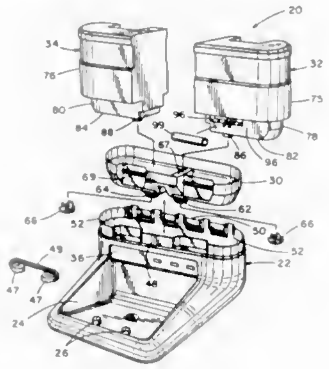
being the only opening of that tank, the mouth of one tank being disposed above the level of the other tank, each of said tanks having a bottom wall and a neck dependent from the bottom wall and terminating in said mouth, the neck of said one tank being shorter than the neck of the other tank; and



means for blocking and unblocking the flow of the eye wash liquid from said reservoir t said orifice whereby with said means permitting the flow, said one tank drains before said other tank and the level of the eye wash fluid in said reservoir drops from a higher level to a lower level when said one tank has drained.

4,881,284

SELF-CLEANING RESTROOM

Glenwood L. Garvey, Los Angeles, Calif., assignor to Self-Cleaning Environments, Inc., Santa Monica, Calif.

Filed Oct. 21, 1988, Ser. No. 260,936

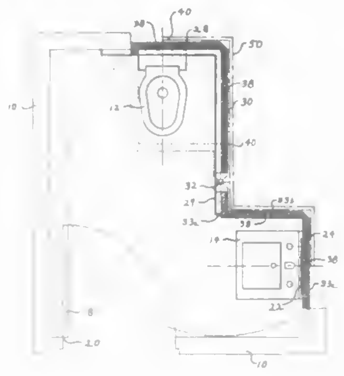
Int. Cl.⁴ A47K *4/00*

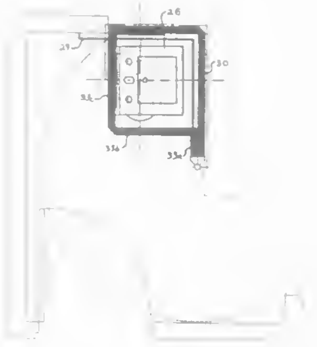
U.S. Cl. 4—662 5 Claims

1. In a self-cleaning restroom of the type having at least one non-rotatable wall member associated with a fixed toilet and at least one rotatable wall member supporting a restroom fixture and adapted to move between a first position in which said toilet and said fixture are accessible for use and a second position in which said wall members, said toilet and said fixture are nested in close proximity to each other to define a cleaning space for automatic cleaning; means for cleaning said walls, toilet and fixture in their second position with a fluid solution; restroom fixture support means carrying said fixture; means for rotating the fixture support means into said second position; stationary and non-rotatable plumbing means including stationary plumbing lines in fluid communication with said toilet; fixture plumbing means in fluid communication with said fixture and in fluid communication with said stationary plumbing means, including plumbing lines and means for rotating at least a portion of said plumbing lines and means for rotating at least a portion of said plumbing lines with respect to said stationary plumbing lines; and said cleaning means including cleaning lines and means for rotating at least a portion of said cleaning lines with said fixture support means with respect to said stationary plumbing lines, the improvement comprising:

one of said wall members having first and second wall sections formed at right angles to form a non-recess single angle wall member; and

at least one other of said wall members having a zig-zag double angle configuration, with first, second, and third wall sections, said second wall section being formed at a first right angle to the first wall section, and said third wall section being recessed relative to at least the width of said restroom fixture with respect to said single angle wall member and being formed at a second right angle opposite to said first right angle.





4,881,285

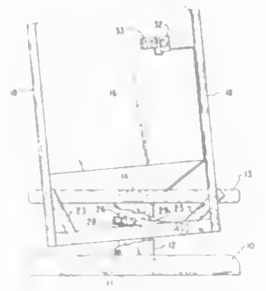
MOTORIZED CRADLE

Rhinhold J. Zeeb, Box 506, Menno, S. Dak. 57045

Filed Nov. 3, 1988, Ser. No. 266,844

Int. Cl.⁴ A47D *9/02*

U.S. Cl. 5—103 3 Claims



1. A cradle comprising a base member and a bed member, linkage between said base member and said bed member whereby said bed member is supported from said base member, said linkage being pivotally attached to said base member and said bed member to form a trapezoidal figure having a longer part at the top of said trapezoid and a shorter part at the bottom of said trapezoid, and power means including a motor mounted on said base member, said motor having a shaft, crank means mounted on said shaft, and link means connected between said crank means and said bed member whereby motion of said shaft causes a rocking of said bed member, said link means being L-shaped in plan form having one long leg pivotally connected to said crank means and one short leg at right angle to said long leg, said short leg being of a resilient material to provide a resilient connection between said bed member and said crank means.

4,881,286

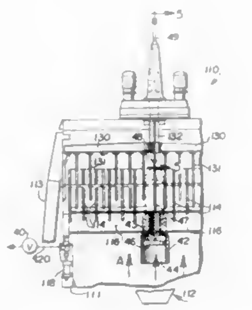
EFFECTIVE DIFFUSER/THICKENER SCREEN BACKFLUSHING

Johan C. F. C. Richter, Olso, Norway; Ole J. Ricter, and Finn Jacobsen, both of Karlstad, Sweden, assignors to Kamyr AB, Karlstad, Sweden

Division of Ser. No. 125,710, Nov. 27, 1987. This application Aug. 29, 1988, Ser. No. 237,407

Int. Cl.⁴ D21D *5/02*

U.S. Cl. 8—156 9 Claims



1. A method of effecting treatment of pulp, a liquid slurry of cellulosic fibrous material, with screens while minimizing screen clogging, utilizing a generally upright vessel having a pulp inlet and a pulp outlet, the screens mounted to a supporting conduit within the vessel, and the screens having screening surfaces extending generally vertically, said method comprising the steps of:

(a) passing pulp generally vertically in the vessel from the inlet to the outlet;

(b) effecting substantially continuous extraction of liquid from the pulp slurry through the screens and through the screen support conduit at a predetermined flow rate;

(c) effecting generally vertical movement of the screens and support conduit in the direction of pulp flow at a first speed, and in the direction opposite pulp flow at a second speed much higher than the first speed;

(d) when moving the screens in the direction opposite pulp flow, supplying a known volume of liquid, by means of an element that is independent of the screen movement, to the conduit and screens from within the vessel to effect backflushing of the screens without a surge in the vessel volume; and

(e) controlling the continuous extraction flow rate with respect to the known volume of backflushing liquid so that the known volume of backflushing liquid is sufficient to effectively back flush the screens to prevent clogging thereof.

4,881,287

APPARATUS FOR TREATING ROUND OBJECTS

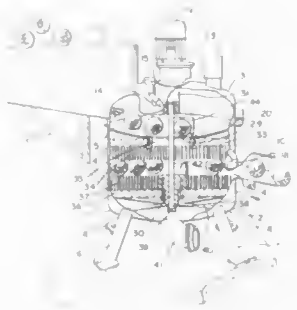
Jordan Knez, Industrivägen 21, S-Halmstad, Sweden

Filed Mar. 3, 1988, Ser. No. 163,942

Int. Cl.⁴ A63B *47/04*

U.S. Cl. 15—21 A 12 Claims

1. An apparatus for the treatment of round objects, for example the washing of golf balls, comprising two circular disks disposed in register and in spaced-apart relationship, at least one of the disks being provided with brush devices on its side facing the other disc the space between the disks being less than the diameter of the objects, one disk being rotary and one disk being fixed, a central aperture in the fixed disk for feeding objects into the space between the disks, said disks being disposed in a circular container having a cup-shaped bottom portion and a cup-shaped partition with a central aperture corresponding to the central aperture in the fixed disk, said fixed disk being fixedly mounted on the underside of the partition.



4,881,288

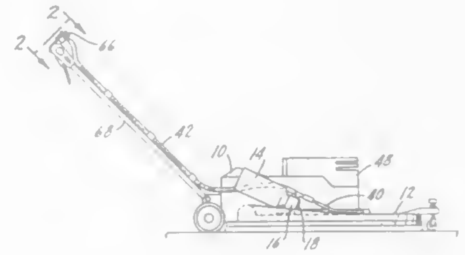
CENTER FEED DISPENSER FOR CLEANING SOLUTION

Barry A. May, North Tonawanda, N.Y., and James Armstrong, Lewiston, N.Y., assignors to Tennant Trend Inc., Niagara Falls, N.Y.

Filed Jul. 13, 1988, Ser. No. 218,631

Int. Cl.⁴ A47L *11/34*

U.S. Cl. 15—98 12 Claims



1. In a cleaning machine for removing soilage from a surface, a mobile frame, a rotary cleaning element on the frame for working on the surface and power means for rotating it, the rotary cleaning element being constructed and arranged so that, when rotated at a relatively high speed, it will create an air pressure differential, a source of cleaning solution on the frame, and a connection between the cleaning solution source and the air pressure differential so that the air pressure differential causes cleaning solution to be supplied from the source to the center of the rotary cleaning element.

4,881,289

PAINT-COATING BRUSH

Nagata Tsuyoshi, and Fujita Katsuto, both of Osaka, Japan, assignors to Sunstar Engineering Inc., Osaka, Japan

Filed Apr. 27, 1988, Ser. No. 186,596

Int. Cl.⁴ A46B *9/12*

U.S. Cl. 15—168 2 Claims

1. A paint-coating brush comprising:

a body having an axial center bore;

piliform members provided on the outer surface of a cylindrical spindle-shaped portion which is formed at one end of said body;

a cylindrical sleeve which covers said piliform members on said spindle-shaped portion and securely fastens said pili-

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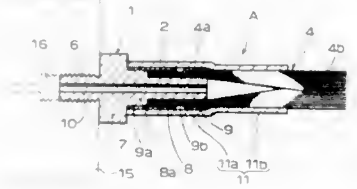
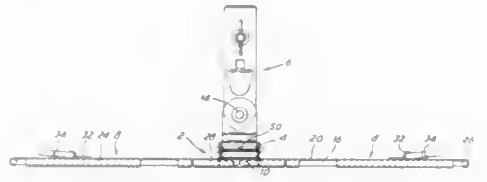
form members to said body, forming a single unit with said body; and

a cover tube, said cover tube comprising a cylindrical socket portion having substantially the same inner diameter as the outer diameter of said cylindrical sleeve and an end portion having substantially the same inner diameter as the inner diameter of said cylindrical sleeve, said socket portion and end portion being continuous to form a unitary structure, and said cover tube further being removably fitted on said cylindrical sleeve at its socket portion and covering said piliform members, except for the tip ends thereof, at its end portion.



4,881,290
MOPS AND MOP FRAMES

Jan Bohacek, Lower Kingswood, England, assignor to Jani-Jack Limlted, Surrey, England
Filed Jul. 25, 1988, Ser. No. 224,125
Claims priority, application United Kingdom, Jul. 27, 1987, 8717742
Int. Cl.⁴ A47L *13/258*
U.S. Cl. 15—228 **14 Claims**



1. A mop frame comprising a pair of frame sections, said sections being in laterally opposed relation and taking up an essentially co-planar extending configuration in a generally horizontal working position, pivot means on the frame, mutually adjacent end regions of said frame sections being engaged by said pivot means, remote from said adjacent regions opposite end regions of the frame sections each extending in cantilever manner in said extended configuration, said sections being downwardly pivotable on the pivot means to bring said opposite end regions towards each other to assume a collapsed configuration, attachment means at said opposite end regions of the frame sections for attaching a mop head to the frame, said attachment means being resiliently deformable in the lateral direction, whereby the mop head can be held taut by the attachment means when the frame sections are in their extended configuration and the attachment means can yield in response to shrinkage of the material of the mop head.

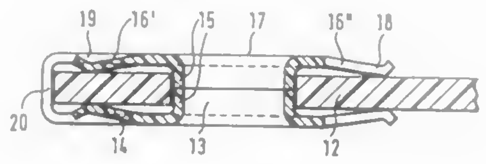
4,881,291
LOTTERY TICKET SCRAPER ENABLING PRECISE REMOVAL OF SURFACE LAYER FROM TICKET

John L. Ellis, 301 Birch Ter., Winter Springs, Fla. 32708
Filed May 16, 1988, Ser. No. 194,103
Int. Cl.⁴ A47L *13/02;* **B26B** *3/00*
U.S. Cl. 15—236.01 **10 Claims**

6. A hand held scraper device involving a generally elongate housing having a central cavity, said housing being defined by a comparatively narrow front portion, diverging side portions, a rear portion, and essentially flat top and bottom portions, said narrow front portion being rearwardly slanted, with a flat blade located at the bottom of said narrow front portion, in a position readily visible to the user of the scraper, closely located above which blade is a slot, said blade being usable as a scraping tool by a person grasping said generally elongate housing, by the use of which blade, selected portions of the surface layer of a lottery ticket or the like can be carefully removed, with scrapings from the lottery ticket entering said slot for retention in said cavity.

4,881,292
HOUSING ATTACHMENT ASSEMBLY WITH A PLASTIC ATTACHMENT TAB AND A CLIP

Richard Hoferer, Bietigheim-Bissingen; Arthur Klotz, Remseck; Volker Lehmann, and Günter Trumpfheller, both of Ludwigsburg, all of Fed. Rep. of Germany, assignors to Filterwerk Mann & Hummel GmbH, Ludwigsburg, Fed. Rep. of Germany
Filed Nov. 29, 1988, Ser. No. 277,350
Claims priority, application Fed. Rep. of Germany, Dec. 2, 1987, 3740760
Int. Cl.⁴ B65D *55/00;* **F16L** *5/00*
U.S. Cl. 16—2 **8 Claims**



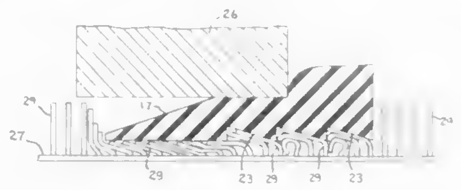
1. A housing attachment assembly comprising:

(a) a plastic attachment tab having at least one through aperture for receiving a fastening screw for attaching said housing to a support structure; and

(b) a one-piece, U-shaped attachment clip with two generally parallel legs, said clip being arranged on said attachment tab with said tab projecting between said legs, each of said legs comprising a sleeve formed on the inside of the leg in the vicinity of said through aperture of said attachment tab, each said sleeve extending into said through aperture and being supported against the other sleeve when a fastening screw is screwed therethrough, and each of said legs further comprising at least one resilient tongue projecting into engagement with said attachment tab.

4,881,293
WEDGE MEMBER FOR USE ON CARPETED FLOORS

Francis A. Reynolds, 300 Edgeley Road, Cheadle Heath, Stockport, Cheshire, England
Filed Jul. 21, 1988, Ser. No. 222,049
Int. Cl.⁴ E05C *17/54*
U.S. Cl. 16—86 A **1 Claim**



1. A three dimensional wedge member designed to rest on a carpet to engage the lower edge of a door for retaining said door against movement:

said wedge member being formed of a resilient elastomeric material;

said wedge member having two upstanding side faces, a lower face, and an inclined longitudinally extending upper face;

said lower face having only three similarly configured transverse grooves, said three transverse grooves occupying slightly more than half of the length of the wedge member lower face in the thickest vertical section of the wedge member, said three grooves having a triangular cross-section and extending transverse to the side faces for the full width dimension of the wedge member;

each triangular groove being defined by a vertical upstanding side surface and an inclined roof surface; each said roof surface being inclined in a direction opposite to the direction of the incline of the wedge member upper face, each said roof surface being inclined at an angle of about seventeen degrees measured from the plane of the wedge member lower face;

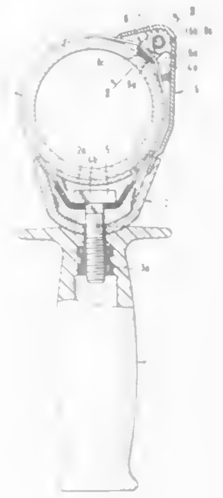
the length of each said roof surface being about three times the height of each said groove side surface; each said groove side surface having a height of a least one eighth inch;

whereby each said groove is of sufficient volume and configuration as to cause pile yarns in the carpet to be bent by the groove roof surface toward the associated vertical side surface when the door exerts a downward force on the wedge member upper face.

4,881,294
AUXILIARY HANDLE FOR HAND-HELD TOOL

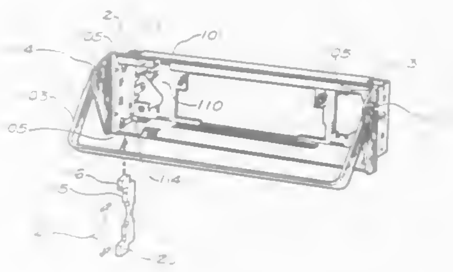
Reinhard Riedl, Grossenzemoos, Fed. Rep. of Germany, assignor to Hilti Aktiengesellschaft, Fürstentum, Liechtenstein
Filed Sep. 15, 1988, Ser. No. 245,129
Claims priority, application Fed. Rep. of Germany, Sep. 16, 1987, 3731059
Int. Cl.⁴ B23B *47/00;* **B25G** *1/00, 3/00*
U.S. Cl. 16—114 R **9 Claims**

1. Auxiliary handle attachable to a hand-held device, such as a drill, comprising an axially elongated gripping sleeve having an axis, clamping means for fastening said handle on a housing part of a tool, said sleeve being rotatable about the axis thereof, said clamping means including a clamping member for encircling the housing part, said clamping member connected to said sleeve so that by selectively rotating sleeve the clamping member can be clamped on the housing part, said clamping means includes means forming a through guide for an axially elongated rod-shaped depth stop with the axis of said stop extending transversely of the axis of said sleeve, wherein the improvement comprises that said clamping member is a band-shaped member and is looped completely around said housing part and has an inside cross-section so that as said sleeve is selectively rotated, the inside cross-section of said clamping member is reduced and tightens about said housing part, a bearing part separate from said clamping member and arranged to contact the housing part and having at least one through opening for the depth stop, said bearing part being stationary during selective rotation of said sleeve, said through guide of said clamping means being alignable with the through opening of said bearing part and said through guide being displaceable transversely of the axis of the through being displaceable transversely of the axis of the through opening for clamping said depth stop.



4,881,295
HANDLE ASSEMBLY FOR REMOVABLE AUTO ELECTRONIC EQUIPMENT

Walter Odemer, Burbank, Calif., assignor to Walter Odemer Co., Inc., Burbank, Calif.
Filed Aug. 19, 1988, Ser. No. 234,273
Int. Cl.⁴ A47B *95/02;* **G12B** *9/00*
U.S. Cl. 16—114 R **3 Claims**



1. In a foldable handle assembly for vehicle dash mounted electronic equipment having an enclosure with a flanged front face comprising:

a frame of substantially rigid sheet material having an opening therein corresponding to the exterior dimensions of the enclosure and a size corresponding substantially to the flanged front of said enclosure;

said frame including a pair of ears extending in front of the front face of the enclosure from opposite sides thereof;

a handle pivotally secured to said pair of ears and having dimensions closely approximating the dimensions of the flanged front face of the electronic assembly enclosure whereby said handle may be pivoted from a virtually unnoticable position along the flanged front face of the electronic equipment to a working position in front of said flanged front face;

the improvement by which said frame is securable to said

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electronic equipment by tabs extending through openings in the enclosure of said electronic equipment and bearing upon one edge of said openings; and

locking means having one surface bearing gupon said tabs to hold said tabs against the edge of said opening and a second surface bearing against said enclosure.

4,881,296

VARIABLE HINGE FOR A DOOR OR WINDOW

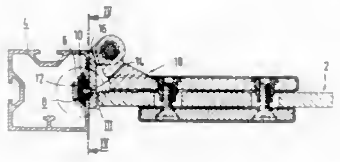
Mario Marinoni, Magenta, Italy, assignor to Casma S.p.A., Magenta, Italy

Filed Feb. 3, 1989, Ser. No. 305,909

Claims priority, application Fed. Rep. of Germany, Feb. 18, 1988, 3805095

Int. Cl.⁴ E05D *7/04*

U.S. Cl. 16—237 3 Claims



1. A mounting for a covering for an opening, comprising:

a vertical frame piece which provides a vertically extending receiving space, said space being accessible through a vertical slit;

an anchor member located within said receiving space, said anchor member having an internal thread, a transverse dimension smaller than the width of the slit, and a longitudinal dimension greater than the width of the slit;

a hinge attached to said anchor member via attaching means for engaging said internal thread; and

a friction drive member which contacts said anchor member and is penetrated by the screw, said friction drive member comprising an elastomeric O-ring provided in the slit and an annular collar contacting the internal thread of said anchor member, said annular collar having an external diameter smaller than the width of the slit, wherein the sum of the thickness of the annular collar and the thickness of the O-ring is greater than the depth of the slit.

4,881,297

FURNITURE HINGE WITH SNAP-IN MECHANISM

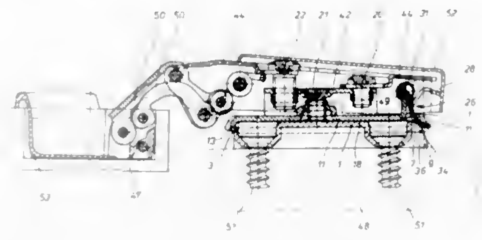
Alfred Grass, Höchst, Austria, assignor to Grass AG, Hochst/Vlbg., Austria

Filed Sep. 28, 1988, Ser. No. 250,346

Claims priority, application Fed. Rep. of Germany, Oct. 6, 1987, 3733700

Int. Cl.⁴ E05D *7/12*

U.S. Cl. 16—258 8 Claims



1. A furniture hinge for mounting a door to an article of furniture comprising: an articulation housing mounted on the door; one or more swivel arms pivotally connected at one end to said housing; a cover bracket connected to the other end of said swivel arm; an adjusting plate secured to said cover bracket; a mounting plate secured to said cover bracket; a base plate mounted on the furniture article having an upwardly curved sliding surface, said mounting plate having a hook-shaped supporting surface and a spring-mounted rocker, said rocker having backwardly curved locking shoulders with gripping projections that lockably engage said base plate upwardly curved sliding surface thereby forming a snap-in mechanism for locking the door and components of the hinge onto the base plate, said mounting plate having a wing and an opening therein cooperatively receiving said rocker and said rocker has an offset gripping wing and a bushing spring holding said rocker in an engaged position with said gripping wing.

4,881,298

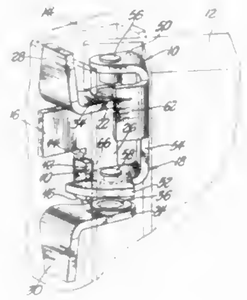
SEPARABLE DOOR HINGE FOR VEHICLE BODY

Roy C. Turnbull, Troy, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Jul. 21, 1988, Ser. No. 223,127

Int. Cl.⁴ E05D *7/10*

U.S. Cl. 16—266 6 Claims



1. A separable door hinge for removably hanging a door on a vehicle body comprising:

first and second hinge leaves mounted respectively upon the body and the door,

one of said hinge leaves having a pivot pin mounted thereon and the other hinge leaf having a hinge aperture adapted to engage the pivot pin to establish a door hinge pivot axis, said first and second leaves having portions bearing upon one another through a range of door pivoting movement so that the engagement is maintained between the hinge aperture and the pivot pin,

said door being separable from the body by pivoting the door beyond the range of door pivoting movement to disengage the bearing portions of the hinge leaves from one another and lifting the door axially of the hinge pivot axis to disengage the hinge aperture and the pivot pin,

and means provided on the hinge leaves adapted to facilitate rehanging of the door on the body by providing an auxiliary pivot axis offset from and parallel with respect to the door hinge pivot axis operable during attempted rehanging of the door and serving to enable swinging movement of the door about the auxiliary pivot axis to carry the pivot pin and the pivot aperature into axial alignment with one another so that the door mounted hinge leaf may be lowered onto the body mounted hinge leaf to then enable pivoting movement of the door about the door hinge pivot axis to within the normal range of door pivoting movement.

4,881,299

ORTHOPAEDIC AND ORTHOTIC BI-PIVOTAL HINGE WITH IMPROVED ADJUSTMENT MEANS

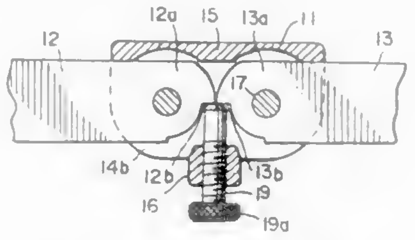
David E. Young, Bowler's Piece, 16 Couching Street, Watlington, Oxon, England (OX9 5QQ), and Kenneth P. Davis, 7 Dean Close, Hillingdon, Middlesex, England (UB10 9LB)

Filed Feb. 16, 1988, Ser. No. 156,250

Claims priority, application United Kingdom, Feb. 18, 1987, 8703823

Int. Cl.⁴ E05D *11/06*

U.S. Cl. 16—371 8 Claims



1. An adjustable bi-pivotal hinge assembly comprising a hinge body including a pair of side plates with spaced opposing inner surfaces; first and second hinge arms having a pair of proximal end portions received between opposing inner surfaces of said side plates; pivot means pivotally connecting said hinge arms and said hinge body for independent movement of said arms between positions of flexion and extension about a pair of parallel pivot axes; each proximal end portion having a planar abutment surface parallel with said pivot axes; said abutment surfaces of said first and second arms extending in a common plane, facing in the same direction, and being disposed in side-by-side relation, when said arms are aligned in positions of full extension; said hinge body also including a screw housing having a threaded bore with a longitudinal axis normal to the common plane of said abutment surfaces when said arms are in positions of full extension; and adjuster screw means threadedly received in said bore and engagable with both of said abutment surfaces for limiting the extension of said arms.

4,881,300

MOLDING APPARATUS TO MOLD GROUND MEAT OR THE LIKE

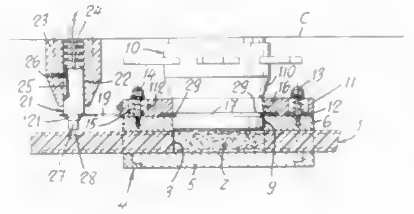
Andrea S. Chiodini, Bologna, Italy, assignor to La Minerva Di Chiodini Mario S.r.l., Bologna, Italy

Filed Dec. 6, 1988, Ser. No. 280,347

Claims priority, application Italy, Dec. 23, 1987, 12608 A/87

Int. Cl.⁴ A22C *7/00*

U.S. Cl. 17—32 7 Claims



1. A molding apparatus particularly adapted to be associated to a meat chopper or the like comprising a die to mold the extruded ground meat for the formation of hamburgers, a formation chamber communicating with said die, a mold slidably guided in said formation chamber, a seat in said mold for receiving the extruded ground meat, a feeler or sensor monted on a support, to detect the movement of any portion of said molding apparatus when a hamburger has formed in said seat, means controlled by said feeler to automatically control the meat chopper, so as to disactivate it whenever a hamburger has been formed in said seat, and to re-activate it when the emptied mold is re-introduced into said formation chamber, resilient means for urging said sensor away from the meat chopper, the said molding apparatus being further provided with means mounted on the die of the meat chopper, which are in turn provided with an extension interferring with the sensor-supporting means or with the body of said sensor or with both said elements, and which keeps said sensor always suitably positioned with respect to the movable portion of the hamburger-forming molding apparatus, against the action of said resilient means associated to said sensor, regardless of the changes in the positioning of said molding apparatus due to the wear of the cutting knives.

4,881,301

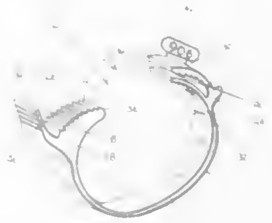
METHOD OF TYING THE OPEN END OF A BAG

Dennis R. Sweeney, 1010 N. Paradise Pl., Anaheim, Calif. 92806, and Gerald E. Hefner, 16162 Norgrove Cir., Huntington Beach, Calif. 92647

Filed Dec. 8, 1987, Ser. No. 130,012

Int. Cl.⁴ B65D *77/10*

U.S. Cl. 24—30.5 R 1 Claim



1. A method of tying the open end of a bag comprising the steps of:

(a) gathering the wall of the bag together at an open end of the bag to close said open end,

(b) manipulating with one hand an open, arcuate, flexible band made of plastic and having opposed tips to insert the gathered bag wall between the opposed tips, which are spaced apart a distance exceeding 0.5 inch so that the gathered bag be readily inserted between said tips each of said tips having an interlocking member thereat, one member including a pair of flexible inner and outer lip elements extending toward the other member and spaced apart and aligned with each other to form an open mouth structure, and a tab carried on said outer lip element, and the other member including a tongue element which fits snugly between said lip elements in said open mouth structure, so that said members engage and releasably lock together upon said tips being pushed together manually, and

(c) with said one hand pushing the tips together to engage the interlockable members and encompass the gathered bag wall with the band and wherein with one hand the tab is grasped and pulled to peel away the outer member from the tongue element to open the band.

4,881,302

CORD OR ROD CLAMP

So-Sun K. Lee, #1-38 Moonwa-Dong Apt. D-408, Choong-ku, Daejeon, Choong-nam, Rep. of Korea

Filed Jul. 7, 1988, Ser. No. 215,998

Int. Cl.⁴ F16G *11/00*

U.S. Cl. 24—136 R 21 Claims

1. A cord or rod clamp, comprising:

a housing defining a central opening and an interior compartment in fluid communication with said opening;

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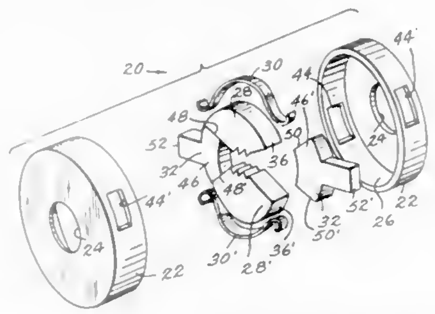
first and second opposed jaw members movably positioned within said compartment;

means in operative relationship with said housing and with said jaw members for normally positioning said jaw members in substantially contacting relationship with each other within said opening; and



wedge means movably positioned within said interior compartment and in operative relationship with said housing and with said jaw members for enabling an operator to selectively separate said jaw members from each other to permit insertion of a cord or rod into said opening and between said jaw members.

4,881,303

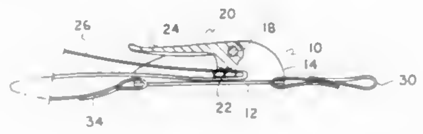
QUICKLY ADJUSTABLE STIRRUP BUCKLE

M. Vey Martini, 14243 Oxford Dr., Laurel, Md. 20707

Filed Feb. 17, 1989, Ser. No. 311,859

Int. Cl.⁴ A44B *11/12;* B68C *1/20*

U.S. Cl. 24—170 3 Claims



1. A quickly adjustable stirrup buckle comprising:

a rectangular planar base portion;

said rectangular planar base portion having two vertical sides extending from the edges of said rectangular planar base portion;

said rectangular planar base portion having two parallel slots at the opposing longitudinal ends of said rectangular planar base portion, a buckle strap slot and a unitary stirrup strap slot;

wherein said buckle strap slot and said unitary stirrup strap slot being each threaded with a strap member, an uppermost buckle strap through said buckle strap slot and an unitary stirrup strap through said unitary stirrup strap slot;

said vertical sides having each an aperture allowing for the acceptance of an elongated cylindrical member connected therebetween;

said vertical sides having a rigid plate portion connected therebetween;

said cylindrical member being surrounded at least in part by a spring member enabling said cylindrical member to return to a fixed position when not forcibly moved;

said spring member being surrounded at least in part by a latch means having gripping means on the side of said latch means displaced next to said rigid plate portion;

said latch means being arcuately shaped;

whereby said unitary strap connecting to the topmost portion of the stirrup arrangement; and

whereby said buckle strap connecting to the saddle proper.

4,881,304

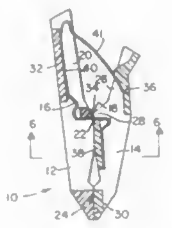
SELF-TIGHTENING PIVOTABLE GRIPPERS

Gabriel Colangelo, 35 Fearless Ave., Lynn, Mass. 01902

Filed Sep. 6, 1988, Ser. No. 240,509

Int. Cl.⁴ A41F *1/00*

U.S. Cl. 24—511 9 Claims



1. A self-tightening pivotable gripper having two pin members and an elongated leaf spring, which pin members each have a jaw and pivot arm with a pivot portion therebetween, which spring bends around and joins said pin members at their respective pivot portions, so that said jaws and pivot arms are positioned in opposed pivotable relationship, the improvements comprising, (a) bending said spring around said pivot portions with a reverse curve to hold said pin members in secure pivotable alignment relative to each other, (b) with one end of said spring working against a bearing surface of a pin member on one side of said pivot portions and the other end of said spring working against the same pin member on the other side of said pivot portions and (c) providing one of said pivot arms with a backer wall therein for a spring section which extends outwardly from said pivot portions and proximate said backer wall on the inside thereof and thence bends to cross diagonally and inwardly toward the pivot zone of said two pin members, to extend to proximate the other of said arms in a diagonal spring span, so as to contact such other arm when an outward pressure is applied to said spring span so that said pivot arms are pushed apart more widely, closing said jaws more tightly.

4,881,305

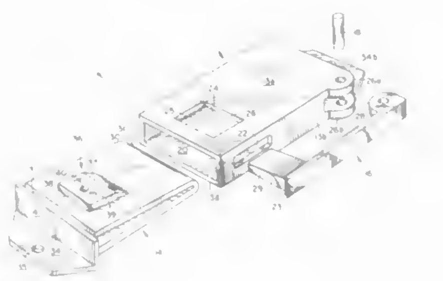
LOCKING BOX CLASP FOR JEWELRY

Jose C. Rivera, 216 S. Dakota, Laredo, Tex. 78041

Filed Apr. 29, 1988, Ser. No. 188,285

Int. Cl.⁴ A44B *11/25*

U.S. Cl. 24—616 10 Claims



1. A clasp for removably uniting two ends of a jewelry chain, comprising:

a box, with a top wall containing a top opening therein and a bottom wall, a first side wall containing a side opening therein and a second sidewall, and an open front end wherein said box is generally rectangular and the top opening, the side opening, and the open front end of said box are likewise generally rectangular in shape;

a clip, with an apex, a release leg and an anchor leg, the release leg containing a boss thereon, the boss dimensioned to fit within the top opening of said box, said clip for inserting, the apex first, into the open front end of said box until the boss engages the top opening of said box, such engagement thereby securing said clip to said box wherein said clip is folded over at the apex to form a generally "U"-shaped configuration such that during insertion of said clip into the open front end of said box, the release leg and the anchor leg require compression there between for the boss to clear the top wall of said box wherein said clip further contains a frontal closure, located on the anchor leg of said clip and sized such that it is flush with the open end of said box when said clip is fully inserted into said box and engaged therewith, the frontal closure sized such that it overlaps the first side wall for protecting a locking pin from accidental unlocking; and

said locking pin including a bar with a first and a second end articulated at the first end thereof to said box and movable in a plane generally parallel to the top wall, and having a locking tongue projecting from the second end of said locking pin, the locking tongue sized to fit within the side opening of said box and between the release leg and the anchor leg of said clip when said clip is inserted into said box, said locking pin for removably placing the locking tongue into said box, said locking pin dimensioned such that when said locking pin is inserted into said box, said locking pin lays flush against the side of said box;

wherein the placing of the locking tongue into the side opening of said box prevents the boss from disengaging from the top opening by preventing compression of the boss and therefore prevents removal of said clip from said box, and the removal of the locking tongue from the side opening of side box allows compression of the boss and therefore disengagement and removal of said clip, and wherein said box, said clip and said locking pin are sized such that when said clip and said locking pin are engaged in said box, the clasp has a substantially smooth exterior, with generally plane, tubular sides.

4,881,306

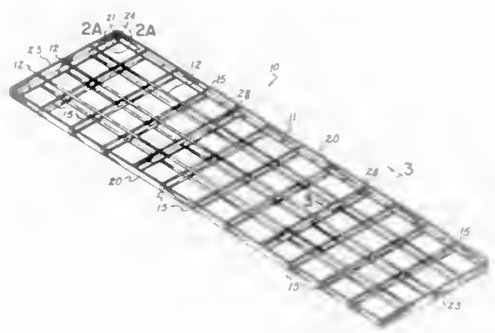
CASKET BED

John Ernat, Oxford, Miss., and Dennis C. Laphan, Batesville, Ind., assignors to Batesville Casket Company, Inc., Batesville, Ind.

Filed May 22, 1989, Ser. No. 354,824

Int. Cl.⁴ A63G *17/00*

U.S. Cl. 27—12 8 Claims



6. A casket bed comprising:

a rectangular frame of angle irons, said angle irons overlapping at the corners of said frame,

at each corner, one of said angle irons having a slot and the other having a tongue projecting into said slot and bent over to lay against the adjoining angle iron,

and polymeric straps wrapped longitudinally and transversely about said frame with ends overlapped and heat-sealed, said straps being under tension to keep said frame angle irons held tightly together and to prevent rattling.

4,881,307

EXPANSION OF SHEET MATERIALS

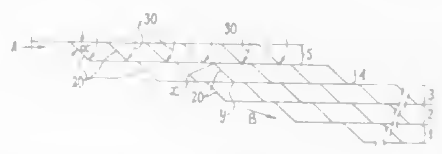
Rudi Gaissmaier, Lyndoch, Australia, assignor to Watership PTY. Ltd., Harrisfield, Australia

Filed Jun. 29, 1987, Ser. No. 67,709

Claims priority, application Australia, Jun. 30, 1986, PH06644

Int. Cl.⁴ B21D *31/04*

U.S. Cl. 29—6.1 4 Claims



1. A process for the formation of expanded mesh materials wherein a substantially planar starting sheet having a predetermined regularly repeated pattern comprising parallel rows each containing a plurality of slots with each slot in any one row partially overlapping at each end with a different slot in its laterally adjacent row or rows thus forming a plurality of strands consisting of the areas of overlap between adjacent rows of slots at each end of a respective slot, is fed in a stepwise manner through a machine in which each alternate strand diagonal consisting of the successive strands between a given end of a slot in a first row and the opposite end of the adjacent slot in the adjacent second row, between the other end of said adjacent slot and the opposite end of the adjacent slot in the adjacent third row, and between opposite ends of similarly adjacent slots extending diagonally across the sheet, is clamped between working faces of opposed bending tools and bent in succession with all strands in any one diagonal being bent simultaneously, with each strand being bent in opposite directions at each of two positions between the slots which define the sides of each strand, the strands so bent being moved through an arc having a radius corresponding to the distance between said two positions, each strand in each strand diagonal being bent in the same manner and to the same extent so that the strands of the strand diagonal being bent remain in substantially parallel planes during and after bending.

4,881,308

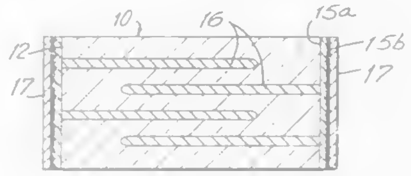
METHOD OF TERMINATING LEAD FILLED CAPACITOR

William McLaughlin; Doug Lee, and Ricardo Garcia, all of Myrtle Beach, S.C., assignors to AVX Corporation, Great Neck, N.Y.

Filed Jul. 1, 1988, Ser. No. 214,513

Int. Cl.⁴ H01G *4/30*

U.S. Cl. 29—25.42 5 Claims



1. In the method of manufacturing a ceramic capacitor of the lead filled type from a ceramic monolith having a plurality of electrode receiving voids, alternate said voids extending to opposite ends of the monolith, the improvement which comprises coating said ends of said monolith with a termination paste comprised of frit and at least one metal subject to oxidation when heated in an oxidizing environment, the selected metal being characterized in that the metal is wettable by lead and the oxide of such metal is essentially non-wettable by lead,

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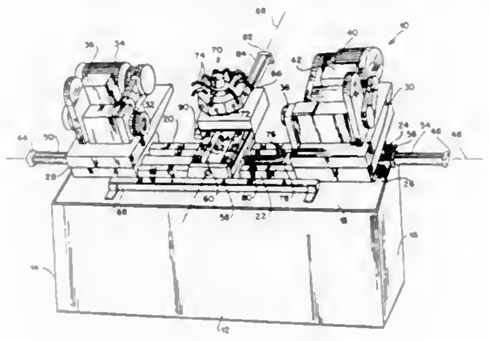
heating said monolith to fuse said frit, causing said coating to be exposed in heated condition to an oxidizing environment for a time sufficient to substantially oxidize the metal components of said paste adjacent the surface of said coating while metal components in the portions of said coating remote from said surfaces remain in an unoxidized or lesser oxidized condition, thereafter injecting lead into the interior of said voids through said coating, and thereafter applying a conductive metallic layer over said coating.

4,881,309
FLEXIBLE MACHINING SYSTEM

Reno D. Sansone, Watchung, N.J., assignor to Wadell Equipment Company, Inc., Edison, N.J.

Continuation of Ser. No. 648,897, Sep. 10, 1984, Pat. No. 4,719,676. This application Nov. 18, 1987, Ser. No. 122,068
Int. Cl.⁴ B23B *3/30*
U.S. Cl. 29—27 A 20 Claims

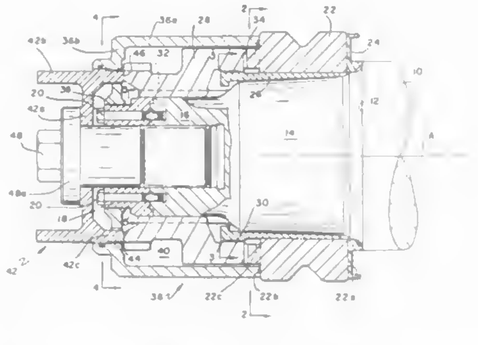


1. A flexible machining system, comprising first adjustable receiving means for interchangea bly and rotatably receiving workpieces or tools, whereby a tool received in said first receiving means can be removed therefrom and replaced with a workpiece or vice versa; first rotating means for rotating said first receiving means; first mounting means for mounting said first receiving means such that said first receiving means is movable bidirectionally along a first axis; second adjustable receiving means for interchangeably and rotatably receiving workpieces or tools, whereby a tool received in said second receiving means can be removed therefrom and replaced with a workpiece or vice versa; second rotating means for rotating said second receiving means; second mounting means for mounting said second receiving means such that said second receiving means is movable bidirectionally along said first axis and such that said second receiving means is arranged coaxially relative to said first receiving means; third receiving means for releaseably receiving a workpiece or a tool; third mounting means for mounting said third receiving means such that said third receiving means is movable bidirectionally along said first axis between said first and second receiving means and such that said third receiving means is movable bidirectionally along a second axis which is arranged perpendicular to said first axis, said third mounting means including a main slide movable bidirectionally along said first axis and a cross slide mounted on said main slide for bidirectional movement relative thereto along said second axis, said cross slide including attaching means for removably and interchangeably attaching a horizontal tool turret, a vertical tool turret, a workpiece holder of a jig milling slide to said cross slide such that said horizontal tool turret, said vertical tool turret, said workpiece holder or said jig milling slide functions as said third receiving means when attached to said cross slide, whereby said system has the flexibility to perform numerous diverse machining operatons; supporting means for supporting said first, second and third mounting means such that said first, second and third mounting means are movable bidirectionally and independently of each other along said supporting means, said supporting means including a single way system common to said first, second and third mounting means such that each of said first second and third mounting means is supported by said way system; first moving means for bidirectionally moving said first mounting means along said way system between a first position in which said first mounting means is remote from said third mounting means and a second position in which said first mounting means is adjacent one side of said third mounting means; second moving means for bidirectionally moving said second mounting means along said way system between a third position in which said second mounting means is remote from said third mounting means and a fourth position in which said second mounting means is adjacent an opposite side of said third mounting means, whereby when said first mounting means is in said second position and said second mounting means is in said fourth position said first and second receiving means are close enough to each other such that workpieces can be transferred from said first receiving means to said second receiving means or vice versa; third moving means for bidirectionally moving said main slide along said way system between said first and second mounting means; and fourth moving means for bidirectionally moving said cross slide along said second axis.

4,881,310
OVERHUNG ROLL ASSEMBLY

Philip Wykes, Shrewsbury, and David L. Pariseau, Southbridge, both of Mass., assignors to Morgan Construction Company, Mass.

Division of Ser. No. 133,798, Dec. 16, 1987, Pat. No. 4,813,113. This application Nov. 28, 1988, Ser. No. 276,646
Int. Cl.⁴ B23P *19/00, 19/04*
U.S. Cl. 29—122 2 Claims



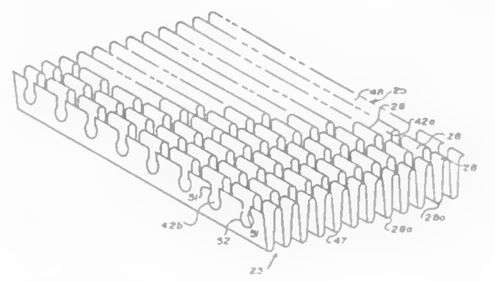
1. For use in combination with a roll shaft having a tapered portion and an end portion, an annular roll surrounding the tapered shaft portion and having circumferentially spaced keys in an outer face thereof, an abutment engageable with an inner face of the roll to axially locate the roll on the roll shaft, a tapered sleeve axially received in a tightly wedged position between the roll and the tapered portion of the roll shaft, an axially shiftable drive ring connected to the sleeve and splined to the shaft for rotation therewith, the drive ring having lugs rotatably interengaged with the keys on the outer face of the roll, a first retainer engageable with the outer face of the roll to axially urge the roll against the abutment, and a second retainer engageable with and acting through the drive ring to prevent axial removal of the sleeve from between the roll and the tapered portion of the roll shaft, a tool for axially shifting the tapered sleeve into and out of its wedged position between the roll and the tapered portion of the roll shaft, said tool comprising:

a cylinder defining a first open ended annular chamber containing a first annular piston, a second open ended annular chamber defined by said cylinder and said first piston, a second annular piston contained in said second chamber, means for axially fixing said cylinder in relation to said roll shaft with said second piston in contact with said second retainer, whereupon the introduction of a pressurized medium into said second chamber will cause said second piston to act in one direction against said second retainer and through said drive ring to axially shift said tapered sleeve into said wedged position, and means for axially fixing said first piston in relation to said roll shaft with said cylinder in axial interengagement with said drive ring, whereupon the introduction of a pressurized medium into said first chamber will cause said cylinder to act in the opposite direction through said drive ring to axially shift said tapered sleeve out of said wedged position.

4,881,311
HEAT EXCHANGER ASSEMBLY WITH INTEGRAL FIN UNIT

Roger Paulman, Barrington, and Franz X. Wohrstein, Park Ridge, both of Ill., assignors to Peerless of America Incorporated, Chicago, Ill.

Division of Ser. No. 940,910, Dec. 10, 1986. This application May 26, 1988, Ser. No. 198,994
Int. Cl.⁴ B21D *53/00*
U.S. Cl. 29—157.3 A 11 Claims



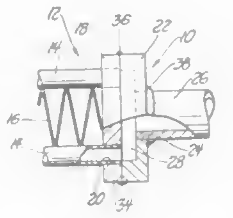
1. A method of making a heat exchanger assembly comprising the steps of:

providing a fin unit having first and second surfaces by folding a first sheet of a heat conductive material back and forth on itself to provide accordion-like folds which define a plurality of fins on the first surface of the fin unit;
providing a plurality of notches in each of said fins;
providing a one-piece heat exchanger tube;
and wrapping the heat exchanger tube around the fin unit in a generally oval-shaped helical path with the tube threading the notches of the fin unit and being recessed relative to the first surface of the fin unit.

4,881,312
METHOD FOR MANUFACTURING A FITTING FOR A HEAT EXCHANGER

Dominic N. Dalo, Buffalo, N.Y., assignor to General Motors Corporation, Detroit, Mich.

Filed Jul. 22, 1988, Ser. No. 222,875
Int. Cl.⁴ B21D *53/08*
U.S. Cl. 29—157.3 C 3 Claims

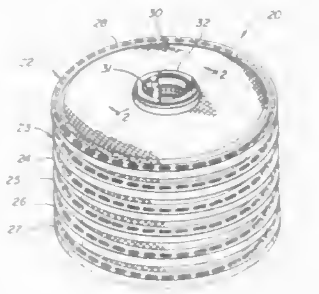


1. The method of making a fitting for a heat exchanger having flat tubing comprising the steps of; forming a rectangular aluminum plate having slots for coupling with heat exchanger tubing, forming a second rectangular aluminum plate having a round opening for coupling with a nipple, forming a recess in the second plate around the opening of sufficient size to couple the opening to the slots when the plates are assembled, assembling the first and second plates at an interface and assembling a nipple into the opening, and bonding the second plate to the first plate and bonding the second plate to the nipple at the opening.

4,881,313
METHOD OF FORMING A CELL FILTER WITH AN EXPOSED SURFACE

Arto Artinyan, Southington, and John Krzyston, Guilford, both of Conn., assignors to Cuno, Incorporated, Meriden, Conn.

Filed Feb. 3, 1988, Ser. No. 151,853
Int. Cl.⁴ B01D *29/34*
U.S. Cl. 29—163.8 11 Claims



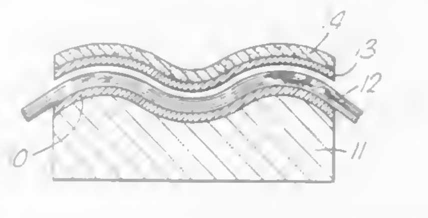
1. A method for forming a multi-cell filter, comprising the steps of:

(a) forming a plurality of filter cells having reinforcing netting on external surfaces of a filter medium;
(b) removing a portion of the reinforcing netting to expose a surface of the filter medium for coactive sealing of the filter medium to a sealing member;
(c) disposing a sealing member on the exposed surface of the filter medium and on the surface of the netting to hold the netting; and
(d) compressing the sealing member against the cell to secure the netting to the cell and to sealingly engage the filter medium.

4,881,314
METHOD OF EXPLOSIVELY FORMING A MULTILAYERED COMPOSITE MATERIAL

Suresh K. Gupta, Alpharetta, and John T. Pinder, Marietta, both of Ga., assignors to Rolls Royce, Inc., Greenwich, Conn.

Filed Sep. 23, 1988, Ser. No. 248,188
Int. Cl.⁴ B23P *17/04;* **B23K** *20/08*
U.S. Cl. 29—421.2 2 Claims



1. A method of manufacturing a multilayered composite material in which reinforcing fibres are embedded in a metal matrix, the method comprising the steps of providing in contact with an anvil a first metal layer consisting of a green compact of powdered metal particles bonded together by

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means of a suitable binder, laying at least one layer of reinforcing fibres onto said first metal layer, locating adjacent the fibres a second metal layer, providing an explosive charge adjacent the second layer consisting of a green compact of powdered metal particles or a metal bonded together by means of a suitable binder, on the side of the second layer remote from the fibres, detonating the explosive thereby to explosively form the second layer around the fibres and join the first and second layers and the fibres together, and subsequently sintering the explosively formed composite at a temperature below the reaction temperature of metal in said first and second metal layers with the material of the reinforcing fibres to reduce unwanted chemical reaction between said metal layers and said fibres layer.

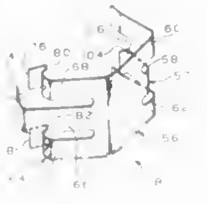
4,881,315

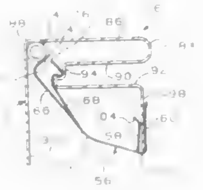
METHOD OF ASSEMBLING AN ANTI-SWEAT HEATER IN A REFRIGERATOR CABINET

John M. Powell, Charlestown, Ind., and Louis D. Bruck, Louisville, Ky., assignors to General Electric Company, Louisville, Ky.

Filed Jan. 18, 1989, Ser. No. 300,528
Int. Cl.⁴ B23P *11/02*

U.S. Cl. 29—450 7 Claims





1. A method of assembling an anti-sweat heater in a refrigerator cabinet comprising:

forming an outer sheet metal shell having side panels and a front face, said front face formed to provide a first U-shaped portion which includes a first outer wall perpendicular to the side panel to form a corner therebetween and a second inner wall spaced from the first outer wall, both walls being connected by the first U-shaped portion, said second inner wall being reversely bent to form a third wall and provide a second U-shaped portion formed between the second inner wall and the third wall and formed to provide a groove along the second U-shaped portion, said first, second and third walls being in spaced parallel planes with the third wall bent at a right angle to form a flange having a free terminal edge,

forming an anti-sweat heater retainer member from sheet metal having,

a body portion,

a first end portion having three spaced legs including a center leg and a side leg on each side of the center leg attached to and depending from the body portion,

a second end portion at the end of the body portion opposite from the first end portion having three spaced legs with free terminal ends and including a center leg and a side leg on each side of the center leg attached to and depending from the body portion in the same direction as the legs of the first end portion and having a depending tang portion with the terminal end of the center leg extending beyond the terminal ends of the side legs and each of the side legs having a reverse bend portion open in the direction of the tang portion of the center leg,

placing the anti-sweat heater in the outer metal shell near the corner located between the side panel and first outer wall,

inserting the anti-sweat heater retainer member into the outer metal shell,

positioning the legs of the first end portion of the retainer member so that the center leg bears against one side of the flange of the outer metal shell and the two side legs bear against the opposite side of said flange, and

positioning the legs of the second end portion so that the tang portion of the center leg contacts the anti-sweat heater and urges it into the corner between the side panel and first outer wall while the reverse bend portion of the side legs are seated in the groove in the second U-shaped portion in spring biased relationship.

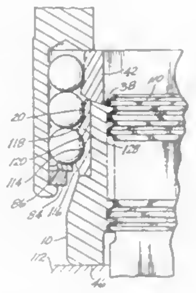
4,881,316

PROCESS FOR SETTING A THREADED TORQUE-LIMITED COLLAR AND PIN JOINT

George S. Wing, 531 Esplanade, Apt. 515, Redondo Beach, Calif. 90277

Division of Ser. No. 122,493, Nov. 16, 1987, Pat. No. 4,784,549, Continuation of Ser. No. 702,811, Feb. 15, 1989, abandoned. This application Sep. 15, 1988, Ser. No. 245,133
Int. Cl.⁴ B21D *39/00;* **B23P** *11/00*

U.S. Cl. 29—510 4 Claims



1. A process for making a joint that has a predetermined pre-load, the joint having at least one sheet, a threaded pin through the sheet, and an internally-threaded collar on the pin, the process comprising the steps of:

(a) engaging axially-extending troughs in bark of the collar with driving elements and by rotating said driving elements and tightening the threads of the collar onto the threads of the pin through such engagement; and

(b) continuing to rotate said driving elements to cause deforming and failing of the bark of the collar over the location of threaded engagement between the collar and pin with the driving elements in circumferential compression and developing circumferential furrows in the bark between the troughs by the driving elements plowing through the bark, the bark failing at the predetermined pre-load on the joint.

4,881,317

TERMINAL INSERTING APPARATUS

Maurice H. Brown, 11700 S. Mayfield, Worth, Ill. 60482

Division of Ser. No. 139,660, Dec. 30, 1987, Pat. No. 4,836,006. This application Feb. 21, 1989, Ser. No. 313,175
Int. Cl.⁴ H01R *43/00*

U.S. Cl. 29—739 1 Claim

1. An apparatus for picking up a terminal being supported horizontally, rotating the terminal to a vertical position, and inserting it in a plastic part, including:

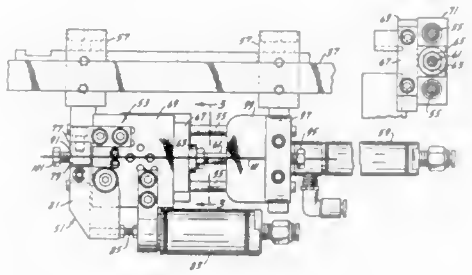
a tubular body having a terminal-receiving passage and an opening into the passage at a free end thereof,

said passage having a cross section that is slightly smaller than that of the terminal to be received therein,

said tubular body consisting of two longitudinal half sections held together near the free end thereof by an elastic member,

a larger diameter passage formed in a tubular body and connecting with the terminal-receiving passage,

an inertia rod positioned in the larger diameter passage in engagement with an end of the terminal located in the terminal passage,



means pivotally mounting said tubular body for rotation between a horizontal position and a vertical position in which the free end thereof extends downwardly,

means to rotate said tubular body between a horizontal position and vertical position, and

means to move said tubular body downwardly to insert the terminal in a plastic part and to return said tubular body to an upright position where it can be rotated to its horizontal position.

4,881,318

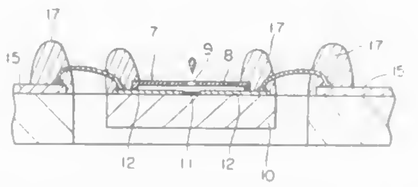
METHOD OF MANUFACTURING A LIQUID JET RECORDING HEAD

Hirokazu Komuro, Hiratsuka, and Masami Ikeda, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 77,090, Jul. 23, 1987, abandoned, which is a continuation of Ser. No. 740,494, Jun. 3, 1985, abandoned. This application Aug. 5, 1988, Ser. No. 228,677

Claims priority, application Japan, Jun. 11, 1984, 59-118333
Int. Cl.⁴ H01R *43/00*

U.S. Cl. 29—827 8 Claims



1. A method for manufacturing a liquid jet recording head, comprising the steps of:

providing a recording head unit including a support having an energy generator thereon and a cover attached to said support to form therewith a liquid chamber, wherein said cover has an orifice therein opposed to said energy generator for discharging liquid in said liquid chamber from said orifice by operating said energy generator;

providing a substrate member comprising a frame having a wiring unit including at least one connector;

electrically connecting electrodes for supplying an electrical signal to said energy generator to generate energy used to discharge flying droplets and said wiring unit for supplying the electrical signal to said electrodes; and

molding said electrodes, said external wiring unit, said recording head unit and said substrate member into an integral unit with an insulative sealing material, wherein said connector extends externally of said integral unit.

4,881,319

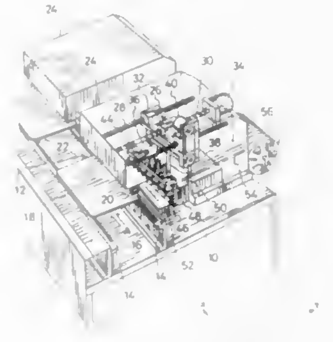
PROCESS FOR MOUNTING CHIP TYPE CIRCUIT ELEMENTS ON PRINTED CIRCUIT BOARDS AND APPARATUS THEREFOR

Hiroshi Yagi; Hisashi Fujita; Yoshio Harada, and Kenichi Takahashi, all of Tokyo, Japan, assignors to TDK Corporation, Japan

Continuation of Ser. No. 775,732, Sep. 13, 1985, abandoned. This application Jun. 26, 1987, Ser. No. 67,648

Claims priority, application Japan, Sep. 17, 1984, 59-192679; May 20, 1985, 60-106056; Jun. 10, 1985, 60-86380; Jun. 17, 1985, 60-90162; Jul. 26, 1985, 60-113797
Int. Cl.⁴ H05K *3/34;* **B23P** *19/00*

U.S. Cl. 29—840 5 Claims



1. A mounting head for apparatus for mounting chip type circuit elements on printed circuit boards, said mounting head comprising

a suction pin for sucking up said chip type circuit elements thereon;

an air cylinder casing having a partition member separating said casing into a cylinder chamber and a vacuum chamber;

a piston slidable with respect to said cylinder chamber, said piston having a lower rod portion projecting from the lower end of said casing and an upper rod portion projecting through said partition member into said vacuum chamber;

a vacuum suction passage in said piston extending from the lower end of said lower rod portion to the upper end of said upper rod portion, said suction pin being affixed to said lower end of said lower rod portion; and

an air filter at said upper end of said upper rod portion, said air filter closing the upper end of said vacuum suction passage.

4,881,320

METHOD OF MAKING VENTED SEAL FOR ELECTRONIC COMPONENTS AND AN ENVIRONMENTALLY PROTECTED COMPONENT

Michael R. Koble, Atascadero, and Durward H. Priebe, Paso Robles, both of Calif., assignors to CTS Corporation, Elkhart, Ind.

Filed Oct. 26, 1987, Ser. No. 112,615
Int. Cl.⁴ H05K *3/30;* **G01L** *7/00*

U.S. Cl. 29—841 17 Claims

1. An improved process for sealing an electronic component having a housing with an aperture therein, and a chamber in

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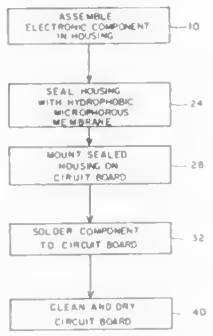
communication with the housing aperture, and a conductive portion extending through the housing, which comprises:

- a. assembling the electronic component substantially within the housing chamber;
- b. sealing the housing aperture with a hydrophobic, microporous membrane secured to the housing about the housing aperture;
- c. positioning the assembled and sealed electronic component upon a circuit board having at least one conductive path thereon;
- d. soldering the conductive portion of the housing to at least one conductive path on the circuit board; and
- e. cleaning the assembled circuit board with a liquid that is substantially impervious to the hydrophobic, micro-porous membrane;

wherein the hydrophobic, micro-porous membrane provides substantial pressure equalization between the housing chamber and the surrounding environment during temperature and pressure variations, while substantially sealing the housing chamber from damaging amounts of contaminating fluids.


ASSEMBLE ELECTRONIC COMPONENT IN HOUSING
10
SEAL HOUSING WITH HYDROPHOBIC MICROPHOROUS MEMBRANE
24
MOUNT SEALED HOUSING ON CIRCUIT BOARD
28
SOLDER COMPONENT TO CIRCUIT BOARD
32
CLEAN AND DRY CIRCUIT BOARD
40

13. An environmentally protected electrical component comprising

a substantially enclosed chamber containing at least a portion of an electrical device means and a quantity of gaseous matter,

a selectively permeable means which allows relatively unimpeded transfer of gaseous matter and which is relatively impermeable to a first liquid means for cleaning and to solid matter, said selectively permeable means operatively interconnected to said chamber to allow passage of gaseous matter between said chamber and a region exterior to said chamber to yield gaseous pressure equalization therebetween,

whereby said selectively permeable means operatively prevents both said first liquid means for cleaning and solid matter from significant infiltration into said chamber.

4,881,321

METHOD AND APPARATUS FOR MAKING A HARNESS

Katsumi Komuro, Tokyo, Japan, assignor to AMP Incorporated, Harrisburg, Pa.

Filed May 1, 1989, Ser. No. 345,383

Int. Cl.⁴ H01R *43/04;* B23P *19/04*

U.S. Cl. 29—861 12 Claims

1. An electrical cable-making apparatus, comprising: conductor-positioning means onto which an electrical cable is affixed and having first comb means including first spaces into which exposed ends of electrical conductors of the cable are disposed;

second comb means alignable opposite said first comb means and having second spaces in alignment with said first spaces of said first comb means when the first and second comb means are positioned opposite one another;

connector-retaining means for retaining an electrical connector having electrical contacts provided with termination sections and being positioned adjacent said second comb means with the contact termination sections being aligned with said second spaces;

conductor-moving means positioned along said first comb means and being movable from a first position to a second position whereby during such movement moving the conductors from the first spaces of the first comb means to the second spaces of the second comb means so that the conductors are aligned with the contact termination sections;

cutting means for cutting the conductors; and

means for terminating the conductors into the contact termination sections thereby effecting electrical connections between the conductors and the contacts.

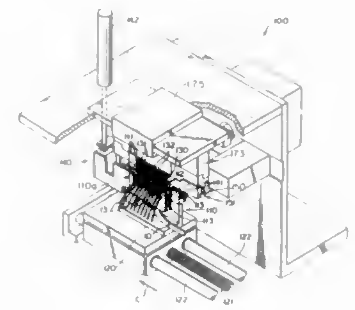
8. A method of making electrical cable assemblies comprising the steps of:

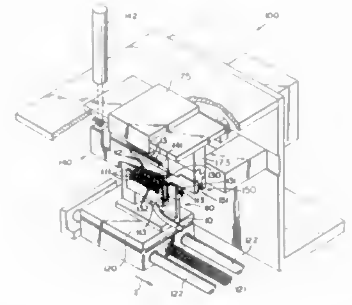
positioning electrical conductors of an electrical cable in first spaces of a first comb member;

moving the conductors from the first spaces of the first comb member to second spaces of a second comb member that are aligned with the first spaces and also align the conductors with termination sections of electrical contacts of an electrical connector, the conductors being moved by a conductor moving means positioned proximate the first comb member, the conductor moving means being movable between a first position and a second position;

cutting the electrical conductors; and

terminating the conductors in the contact termination sections thereby effecting electrical connections between the conductors and the contacts.





4,881,322

MACHINE AND METHOD FOR MAKING SCREW-ON CONNECTORS

Jerome W. Finn, Waterman; Robert L. Montgomery, Ridott, and Frank B. Schuchard, Sycamore, all of Ill., assignors to Ideal Industries, Inc., Sycamore, Ill.

Continuation of Ser. No. 940,424, Dec. 22, 1986, abandoned, and a continuation of Ser. No. 165,032, Mar. 7, 1988, abandoned.

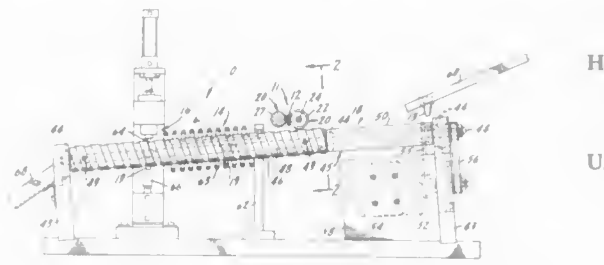
This application Apr. 13, 1989, Ser. No. 336,780

Int. Cl.⁴ H01R *43/20;* B23P *19/00*

U.S. Cl. 29—878 22 Claims

1. A method of making screw on connectors which have an insulating shell with a tapered bore open at one end and a tapered wire coil in the bore of the shell, including the steps of putting the coil in the bore of the shell, heating the coil sufficiently such that it in turn heats the bore of the shell in contact with it to soften the interior of the bore, thereafter applying a compressive axial thrust between the tapered bore of the shell and coil while the interior of the bore is still soft to force the coil further into the bore of the shell, and stopping the axial thrust when the coil and shell are in a predetermined axial relationship.

7. In a machine for assembling screw on electrical connectors which have a wire coil in the bore of an insulating shell that is closed at one end and open at the other, a pair of paired rotatably mounted spaced rails, one pair for the coils and the other pair for the shells, the pairs being constructed and arranged to accept and support a line of the coils and shells, an assembly station where the pairs of paired rails are brought together with the coil rails above the shell rails so that the coils may be dropped into the shells, a helical groove on at least one of the rails of each pair at the assembly station to support and space the individual coils and shells and to feed them when the rails are rotated, the coil helical groove being aligned with and terminating over the opening between the shell rails, and means for rotating and synchronizing the rails so that a shell will be under each coil to receive it when it is dropped by the coil rails.



4,881,323

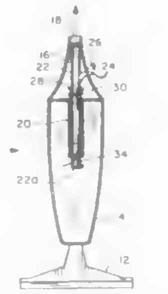
DISPOSABLE AEROSOL RAZOR

Thomas McGaughan, 1601 Lee St., Melrose Park, Ill. 60160

Filed Mar. 29, 1988, Ser. No. 146,624

Int. Cl.⁴ B26B *21/44*

U.S. Cl. 30—41 3 Claims



1. A disposable aerosol razor comprising:

a container/dispenser containing a shaving cream under pressure and having an aperture on a first end thereof and an elongated cylindrical bore aligned with said aperture therein, wherein said cylindrical bore includes a first end extending into the shaving cream;

a safety razor affixed to a second end of said container/dispenser;

an elongated linear tube disposed in said bore and movable along the length thereof and having a first open end positioned adjacent to the aperture in said container/dispenser and an aperature adjacent to a second end thereof;

biasing means coupled to sid tube for urging said tube to a first position in said bore, wherein the aperture adjacent to the second end of said tube is disposed within said bore and its second end blocks the first end of the bore to prevent shaving cream from entering said bore; and

manual engaging means coupled to said tube for displacing said tube to a second position in said bore, wherein the aperture adjacent to the second end of said tube extends into the shaving cream allowing the shaving cream to enter said tube and exit said container/dispenser via the aperture therein.

4,881,324

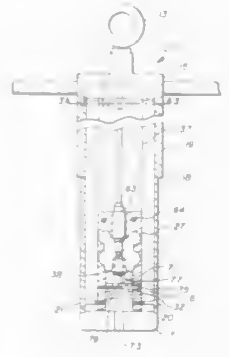
APPARATUS FOR LINEAR MEASUREMENTS

Henry Khinchuk, Oak Park, Mich., assignor to GTE Valenite Corporation, Troy, Mich.

Filed Dec. 30, 1988, Ser. No. 292,055

Int. Cl.⁴ G01B *7/12*

U.S. Cl. 33—555.1 3 Claims



1. Gauging apparatus for making at least one displacement measurement comprising a unitary flexure member, said flexure member comprises a pair of spaced apart and substantially parallel body sections, each body section includes an extending portion for contacting a workpiece to be gauged, spaced apart and substantially parallel top and bottom sections join said parallel body sections forming said unitary flexure member having a central opening, said unitary flexure member includes a plurality of webs formed by a sufficiently thin section of material so as to form a hinge, each of the parallel body sections include a pair of spaced webs for permitting said top and bottom sections to move in parallel motion, said bottom section includes an additional pair of webs for permitting movement of the respective extending portions toward and away from each other and a proportional movement of the bottom section in response to such movement of the respective extending portions, a transducer operably associated with the bottom section for sensing movement thereof, said transducer being operably associated with an indicator means for giving a positive indication of the movement of said respective extending portions.

4,881,325

STATIC FREE CLOTHES DRYER

Raymond L. Jordan, and Rita A. Jordan, both of Rte. 2, Box 139A, Tonganoxie, Kans. 66086

Filed Oct. 6, 1988, Ser. No. 254,189

Int. Cl.⁴ H05F *3/00*

U.S. Cl. 34—60 6 Claims

1. An anti-static assembly for use in clothes dryers and like appliances having a rotatable drying drum including:

contact means within the drum engageable with clothes being tumbled therein and adapted to collect electrical charges from the clothes; and

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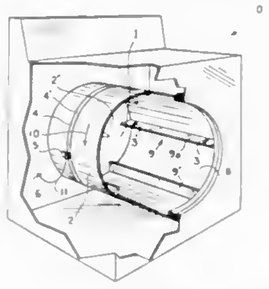
conductive means joining said contact means within the drum to a stationary ground discharge point,

said conducting means comprising an electrically conductive band surrounding the dryer drum, wiring connecting said contact means to said band, and stationary brush means engageable with said band, whereby

electrical charges built up in clothes in the dryer are neutralized.



4,881,326

STERILIZING DEVICE FOR A FREEZE-DRYING APPARATUS

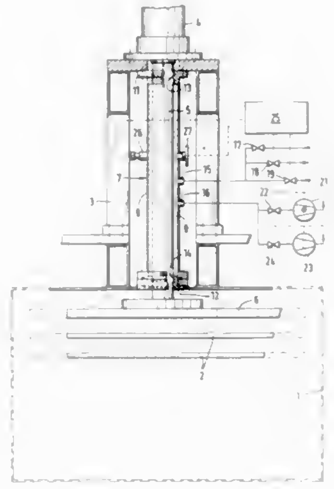
Heinz May, Pulheim, Fed. Rep. of Germany, assignor to Leybold Aktiengesellschaft, Cologne, Fed. Rep. of Germany

Filed Feb. 16, 1988, Ser. No. 156,002

Claims priority, application European Pat. Off., Feb. 13, 1987, EP87102062.4

Int. Cl.⁴ F26B *13/30;* **B25J** *1/00*

U.S. Cl. 34—92 7 Claims



1. In a freeze-drying apparatus including a freeze-drying chamber; a plurality of generally horizontally oriented, vertically spaced and generally vertically displaceable shelf plates for supporting thereon receptacles containing the product to be freeze dried; a plate shifting rod projecting into the freeze-drying chamber and being operatively connected to said shelf plates; drive means situated externally of said freeze-drying chamber and being connected to said plate shifting rod for moving the plate shifting rod in directions into and out of said freeze-drying chamber; said plate shifting rod having a first position in which a length portion of said plate shifting rod is situated externally of said freeze-drying chamber and a second position in which said length portion is situated within said freeze-drying chamber; the improvement comprising a sterilization device including means defining a sterilizing chamber having opposite longitudinal ends; said sterilizing chamber adjoining said freeze-drying chamber and accommodating said length portion in the first position of said plate shifting rod; flanges surrounding said plate shifting rod and being mounted on said means at opposite longitudinal ends of said sterilizing chamber for closing off said sterilizing chamber; and a seal assembly mounted in each flange for effecting a seal between the plate shifting rod and a respective said seal assembly; the seal assembly mounted in at least one of said flanges including two sealing rings; said one flange having an inner face oriented towards said plate shifting rod; further comprising two spaced circumferential grooves in said inner face for receiving respective said sealing rings and a throughgoing radial bore provided in said one flange between said two circumferential grooves.

4,881,327

DRYER SECTION

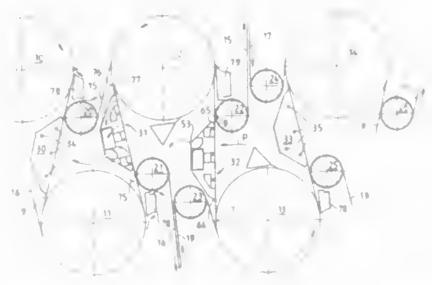
Ludwig Hauser, and Winfried Haessner, both of Heidenheim, Fed. Rep. of Germany, assignors to J. M. Voith GmbH, Heidenheim, Fed. Rep. of Germany

Filed Feb. 8, 1989, Ser. No. 308,258

Claims priority, application Fed. Rep. of Germany, Mar. 10, 1988, 3807857

Int. Cl.⁴ F26B *5/00*

U.S. Cl. 34—114 15 Claims



1. A dryer section for a machine for the processing of fibrous webs, in particular paper webs, comprising:

several heatable drying cylinders arranged in a top row and a bottom row one above the other so that the fibrous web can meander over each drying cylinder successively while traveling in a running direction through the dryer section;

several carrier rolls associated with said several heatable drying cylinders, with at least one carrier roll disposed in one of said rows and located opposite a drying cylinder of the other row;

at least one top supporting belt allotted to the top row of cylinders and at least one bottom supporting belt allotted to the bottom row of cylinders, with each supporting belt running in the direction of web travel on a drying cylinder and over a carrier roll;

several air pockets associated with said heatable drying cylinders, each air pocket being delimited by a free peripheral part of a drying cylinder, by the opposite carrier roll and by the fibrous web; and

several web stabilizers, each disposed in one of the air pockets, for contactless stabilization of the run of the fibrous web, each of said web stabilizers including at least one nozzle element extending transversely across the width of the fibrous web and connected to a supply-air pipe, the nozzle element having an air blow slot open towards the fibrous web and a web-guiding surface interacting therewith;

said nozzle element being arranged in such a way that the direction of flow of the blow air over the web-guiding surface is the same as the running direction of the fibrous web, and said nozzle element having an exhaust side;

said nozzle element being arranged inside an exhaust air box having an exhaust air space on the exhaust side of each nozzle element, to which exhaust space is connected a pipe for the re-exhaust of the supplied blow air.

4,881,328

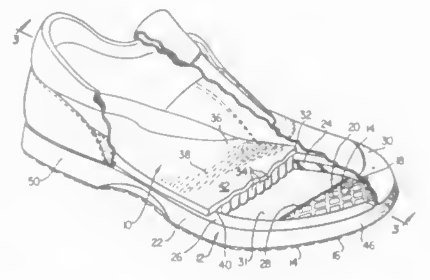
CUSTOM MIDSOLE

Lin Yung-Mao, Taichung, China, assignor to Autry Industries, Inc., Dallas, Tex.

Continuation-in-part of Ser. No. 97,806, Sep. 7, 1987, which is a division of Ser. No. 25,010, Mar. 12, 1987, Pat. No. 4,733,483. This application Apr. 12, 1988, Ser. No. 180,529

Int. Cl.⁴ A43B *13/14, 13/18, 13/04, 13/42*

U.S. Cl. 36—28 7 Claims



1. A shoe, comprising:

a thin, durable outsole having an outsole upper surface;

a cushionable midsole comprising at least one peripheral portion and a separate, removable insert, a lower surface of said peripheral portion joined to said outsole upper surface, said at least one peripheral portion forming a receptacle for receiving said insert;

said peripheral portion being designed to give structural support while being more cushionable and yieldable than said outsole;

said insert and said peripheral portion designed so that said insert supports the majority of the wearer's weight;

a reinforcing layer joined to said outsole upper surface within and laterally coextensive with said receptacle, said reinforcing layer being substantially thinner than the depth of said receptacle, said receptacle layer laterally coextensive with said receptacle and substantially less cushionable and more resilient than said peripheral portion so as to provide torisonal strength;

said removable insert having a lower surface for contacting said reinforcing layer and a preselected cushionability, said insert selected from among a plurality of like inserts having differing degrees of cushionability, the selected insert selected according to the weight of the wearer;

a lip member of said removable insert including an upper surface of said insert, said lip member extending laterally outwardly over an upper surface of said peripheral portion when said insert is inserted into said receptacle;

said lip member designed to provide one smooth and soft surface for the foot to rest upon; and

an upper joined to said peripheral portion.

4,881,329

ATHLETIC SHOE WITH ENERGY STORING SPRING

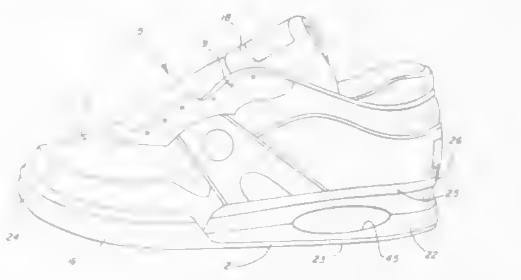
Kevin J. Crowley, Brentwood, N.H., assignor to Wilson Sporting Goods Co., River Grove, Ill.

Filed Sep. 14, 1988, Ser. No. 244,035

Int. Cl.⁴ A43B *21/30*

U.S. Cl. 36—38 15 Claims

12. An athletic shoe comprising a sole, an upper attached to the sole, and a spring positioned in the sole, the spring having top and bottom walls which are joined at the front and rear ends thereof and a center opening which extends laterally through the spring between the top and bottom walls, said sole including an out-sole and a mid-sole above the out-sole, the mid-sole having top and bottom surfaces and a spring chamber between the top and bottom surfaces, the spring being positioned within the spring chamber, both walls of the spring being convexly curved and the bottom wall being thicker than the top wall.



4,881,330

SKI BOOT

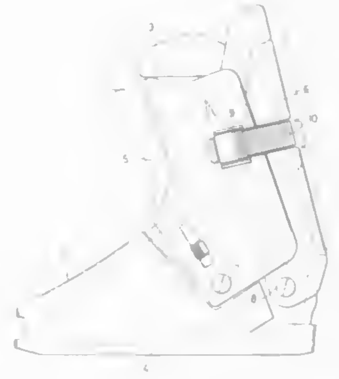
Shinichi Iwama, Saitama, Japan, assignor to Daiwa Seiko, Inc., Tokyo, Japan

Continuation of Ser. No. 146,421, Jan. 21, 1988, abandoned. This application May 29, 1989, Ser. No. 351,324

Claims priority, application Japan, Feb. 3, 1987, 62-23396

Int. Cl.⁴ A43B *5/04, 1/14*

U.S. Cl. 36—117 6 Claims



1. A ski boot having improved flexural elasticity and abrasion resistance essentially consisting of an outer shell and an innerboot installed inside said outer shell, characterized by the fact that said outer shell is formed out of thermoplastic synthetic resin mixed with a desired amount of whisker.

4,881,331

TEETH FOR USE WITH EARTH MOVING EQUIPMENT

George Paizes, Benoni, South Africa, assignor to Gamma Lock (Proprietary) Limited, Johannesburg, South Africa

Continuation-in-part of Ser. No. 827,577, Feb. 10, 1986, abandoned. This application Jul. 22, 1987, Ser. No. 76,468

Claims priority, application South Africa, Apr. 3, 1985, 85/2501; Sep. 4, 1985, 85/6769; Jan. 27, 1986, 86/8644; Jun. 12, 1987, 87/4224

Int. Cl.⁴ E02F *9/28*

U.S. Cl. 37—142 A 22 Claims

1. A shanked solid tooth having

(a) a shank which in use fits into an adapter in the form of a tooth socket secured to a bucket, the shank having therethrough a transverse passage, and

(b) a fastener within the passage comprising

(b.1) a pair of fastening members that have inner and outer ends and are pivot mounted relative to one another in a configuration to pivot about the inner ends from an

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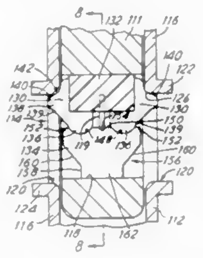
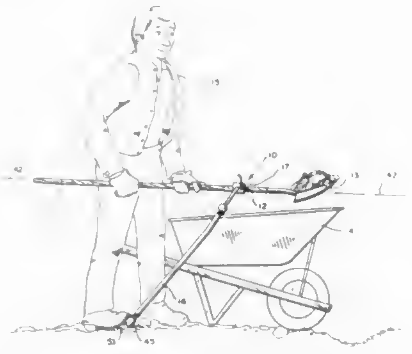
inner position in which they are contained wholly or substantially wholly within the passage to an outer position in which said fastening members project out of the socket, and



(b.2) biassing means to bias the fastener members apart from inner positions to the said outer positions.

4,881,332
SHOVEL LIFTING AID

Gary L. Evertsen, 4627 Porter Ave., Ogden, Utah 84403
Filed May 20, 1988, Ser. No. 196,251
Int. Cl.⁴ E01H *5/02*
U.S. Cl. 37—285 10 Claims

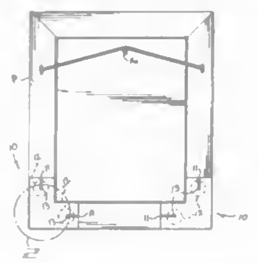


1. An attachment for a shovel, or a like tool, having a material handling head and an elongate handle having a longitudinal axis, the attachment comprising:
an elongate stem extending vertically downward from the handle to the vicinity of the ground when the tool is oriented with the head in normal shoveling position;
pivot means providing pivotal movement about two different axes connecting the uppermost end of the stem directly to the handle, said uppermost end pivot connecting means permitting the handle to pivot up and down to provide a lifting motion in a plane containing the stem, and to be twisted about said longitudinal axis with respect to the stem to provide a dumping motion; and
ground contacting means carried by the stem at its lowermost end, said ground contacting means permitting rotation of the stem about its lowermost end with respect to the ground at least about each of a pair of mutually perpendicular horizontal axes.

4,881,333
FRAME STABILIZING APPARATUS

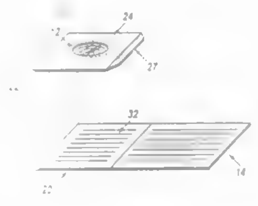
Robert Manrubia, 422 Roading Dr., San Jose, Calif. 95123
Filed Oct. 27, 1987, Ser. No. 113,054
Int. Cl.⁴ A47G *1/06*
U.S. Cl. 40—152.1 4 Claims

1. A picture frame stabilizing apparatus in combination with a picture frame formed with a plurality of upper and lower corners and a rear perimeter surface wherein said picture frame stabilizing apparatus comprises,
at least one "L" shaped means securable to a lowermost corner of said frame at a rear surface thereof, and
said at least one "L" shaped means formed with a plurality of leg portions wherein each leg portion includes an elongate slit formed therein originating at terminal ends of said leg portions and extending inwardly along each leg portion of a distance substantially less than the length of each leg portion, and
securement elements positionable within said slits for penetration of a rear support surface, and
wherein each of said "L" shaped means includes an adhesive sponge-like portion formed at a rear surface of said "L" shaped means.



4,881,334
VIEWER

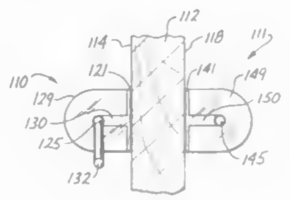
Morrie Brown, R.D. 1, Box 220A, Palisades, N.Y. 10964
Continuation-in-part of Ser. No. 56,156, Jun. 1, 1987, abandoned. This application Dec. 22, 1988, Ser. No. 288,236
Int. Cl.⁴ G02B *27/04*
U.S. Cl. 40—365 19 Claims



1. An information display device comprising:
a body member having front, rear, and first and second side panels joined along contiguous edges, said rear panel being imperforate, said front, rear, and side panels having top and bottom edges;
a circular opening formed in the center of said front panel;
a plano-convex magnifying lens located in said central opening of said front panel and secured to said front panel on an inner surface thereof, said lens having a substantially flat surface and an oppositely facing convex surface, the lens being secured to said front panel so that said convex surface extends from said inner surface of said front panel, and said flat surface is substantially flush with said front panel;
first information printed on substantially the entire rear panel, said printed information occupying a substantially larger area of said rear panel than is occupied by said magnifying lens on said front panel;
second information printed on said first side panel;
said body member being movable into a first condition so as to adopt a parallelepiped configuration and so as to align said magnifying lens with said rear panel for making all of said first information legible when viewed through said magnifying lens, said body member being movable into a second compressed condition so as to align said magnifying lens with said second information printed on said first side panel for making said second information legible.

4,881,335
DOOR SIGN DEVICE

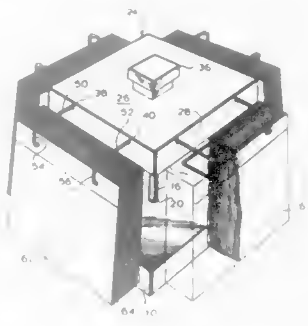
Kamran Khoshkish, 25081 Devon, Mission Viejo, Calif. 92691
Continuation-in-part of Ser. No. 143,737, Jan. 13, 1988. This application Apr. 19, 1988, Ser. No. 183,667
Int. Cl.⁴ G09F *9/00*
U.S. Cl. 40—449 4 Claims



1. A door sign device for mounting on a door having an inner door surface and an outer door surface, comprising:
an actuator assembly mounted on the inner door surface, the actuator assembly including an actuator and first mounting means for mounting the actuator on the inner door surface of the door so that a user can move the actuator between first and second actuator positions;
a follower assembly mounted on the outer door surface, the follower assembly including a follower and second mounting means for mounting the follower on the outer door surface so that the follower can be moved between first and second follower positions that each correspond to a respective one of the first and second actuator positions;
coupling means for coupling the actuator to the follower magnetically so that when the actuator is moved to the first actuator position the follower moves to the first follower position and when the actuator is moved to the second actuator position the follower moves to the second follower position;
a predetermined sign located on the follower assembly; and
sign-indicating means responsive to the follower being in the first follower position for indicating that the predetermined sign applies;
wherein the first mounting means includes a first mounting member that is dimensioned and arranged to be mounted on the inner door surface, the first mounting member having a first mounting surface to be placed against the inner door surface, and the actuator is rotatably mounted on the first mounting member to enable rotation of the actuator between the first and second actuator positions about an actuator axis of rotation that is generally parallel to the first mounting surface; and
wherein the second mounting means includes a second mounting member that is dimensioned and arranged to be mounted on the outer door surface, the second mounting member having a second mounting surface to be placed against the outer door surface, and the follower is rotatably mounted on the second mounting member to enable rotation of the follower between the first and second follower positions about a follower axis of rotation that is generally parallel to the second mounting surface.

4,881,336
DISPLAY DEVICE

Melvin Braverman, and Joseph Lazar, both of Westbury, N.Y., assignors to Jefferson International, Westbury, N.Y.
Filed Jun. 3, 1988, Ser. No. 202,718
Int. Cl.⁴ G09F *19/00*
U.S. Cl. 40—530 2 Claims



1. An improved display device for displaying selected items comprising:
a base;
an upright standard fixedly mounted by its lower end on said base;
a unitary frame including a polygonal top member having an integral dependent skirt extending around the periphery thereof, means for rotatably fastening said unitary frame on the upper end of said standard, spaced from said base and at least one pair of holes in said depending skirt extending inwardly of said top member parallel to said base;
bent spring rod means for supporting the selected items to be displayed, said rod means having a generally "U" shaped portion with opposing legs, an intermediate leg extending perpendicular from each of the opposing legs, and an arm extending freely from each of the intermediate legs in parallel to the associated one of said opposing legs, said arms being removably received in respective ones of a pair of spaced holes in said integral dependent skirt such that the "U" shaped portion is disposed freely in the space between said base and said integral dependent skirt, said rod means being removable from said holes to permit said items to be placed on or removed therefrom.

4,881,337
METHOD OF LINING BAIT

Donald N. Mehl, 5520 Dell La., Minnetonka, Minn. 55345
Filed Apr. 26, 1988, Ser. No. 186,368
Int. Cl.⁴ A01K *97/00*
U.S. Cl. 43—4 7 Claims

1. Process of placing a fishing line in a fishing bait comprising the step of:
a. inserting a configured stylet with a point at one end, finger grasping member at another end, and a hole with substantially flattened diametrically opposed surfaces on all sides of the hole and on both sides about the hole of the stylet, the hole is located adjacent to the point, into the fishing bait and out of the fishing bait;
b. threading an end of the fishing line through the hole and having an overlapping portion of the fishing line whereby said flattened surfaces aids in the ease of threading a fish-

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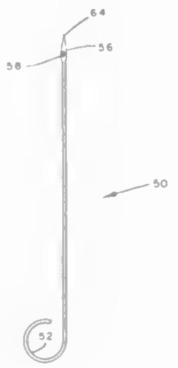
ing line through the stylet and back through the fishing bait;



c. pulling the stylet back through the bait with the fishing line in the hole; and,

d. removing the fishing line from the stylet.

4,881,338

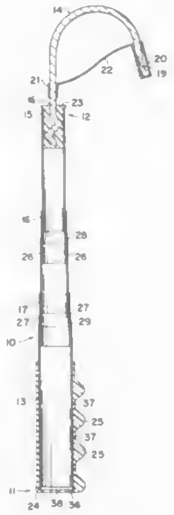
TELESCOPIC GAFF HOOK DEVICE

Jimmy R. Lung, Destin, Fla., assignor to Destin Machine, Inc., Destin, Fla.

Filed Nov. 7, 1988, Ser. No. 267,800

Int. Cl.⁴ A01K *97/14*

U.S. Cl. 43—5 16 Claims



1. A gaff hook for use in fishing comprising a tubular member having a plurality of telescoping sections extending from a butt end to a tip end, a hand grip at said butt end, and a hook at said tip end, said hook having a shank and a point end, said shank being firmly, nonrotatably fixed in said tip end, a tubular cover having a closed end and an open end with open end slidable over said point of said hook a tubular keeper ring slidable over said shank of said hook and a tether member connected at one end to said cover and at the other end to said keeper ring.

4,881,339

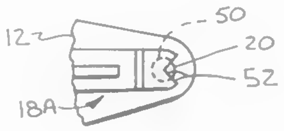
METHOD OF AND APPARATUS FOR FISHING WITH A BACKWARDS HOOK

Clarence Wirkus, 13435 NW. Jay St., Andover, Minn. 55304

Filed Apr. 4, 1988, Ser. No. 177,092

Int. Cl.⁴ A01K *83/00*

U.S. Cl. 43—42.04 26 Claims



1. An artificial fishing lure, comprising
(a) a body having a leading end with pulling means for connection to a fishing line;
(b) a hook having a floppy mounting to an aft portion of the body; and
(c) movable hook holder means mounted to and movable with respect to said body and engagable with said hook for
  (1) normally holding said hook backwards with respect to said body, and for
  (2) instantly releasing said hook to a typical trailing position upon disturbance of either said holder or said hook by a fish.

4,881,340

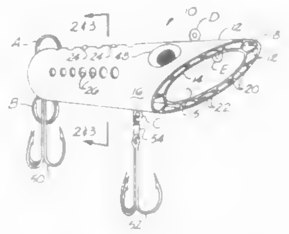
FISHING LURE WITH DOUBLE-WALLED ANNULAR REGION HAVING PLURAL PASSAGES

F. Darell Davis, West Columbia, S.C., assignor to American Angler Corporation, Columbia, S.C.

Filed Jan. 11, 1989, Ser. No. 295,909

Int. Cl.⁴ A01K *85/00*

U.S. Cl. 42—42.06 19 Claims



1. A fishing lure having a hollow generally longitudinal body comprising an inner tubular member and an outer tubular member spaced outwardly therefrom to define an annular space therebetween extending along the length of said body, said body being formed for varying orientation thereof as same is drawn through water, and said outer tubular member being formed with at least one opening transversely thereof for allowing water and air bubbles to escape outwardly from within said annular space, said lure further including a plurality of channel means, positioned in said annular space and extending along the length of said tubular members, for enhancing release of air bubbles and aiding the alluring effect.

4,881,341

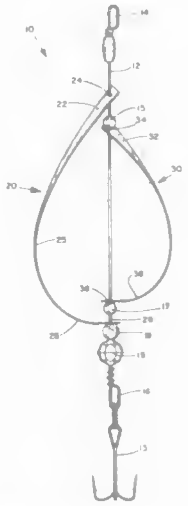
SPINNER FISHING LURE

Larry A. Dickey, 5755 East River Rd., #1514, Tuscon, Ariz. 85715, and John J. Amsler, 3462 Dromedary Way, #1299, Las Vegas, Nev. 89115

Filed May 19, 1988, Ser. No. 195,907

Int. Cl.⁴ A01K *85/00*

U.S. Cl. 43—42.12 65 Claims



1. A fishing lure comprising
(a) a shaft having means for connecting a fishing line to one end of the shaft for retrieving the lure during fishing,
(b) means for connecting a fishhook to the opposite end of the shaft,
(c) a first spinner comprising a generally rectangularly shaped half loop ribbon member having aperture means at each end thereof for rotatably mounting the first spinner to the shaft, said ribbon member being pitched at an angle to the shaft at the location at which said first spinner is mounted to the shaft,
(d) a second spinner comprising a generally rectangularly shaped half loop ribbon member having aperture means at each end thereof for rotatably mounting the second spinner to the shaft, said ribbon member being pitched at an angle to the shaft at the location at which said second spinner is mounted to the shaft, said angle being opposite to the angle of pitch of said first spinner,

whereby as the lure is retrieved during fishing the spinners will rotate about the shaft in opposite directions to each other so that the rotational forces of each spinner approximately cancel out.

4,881,342

PLANT SUPPORT DEVICE AND DISPLAY STAND THEREFOR

George W. Ferguson, 981 W. 99th Ave., Northglenn, Colo. 80021

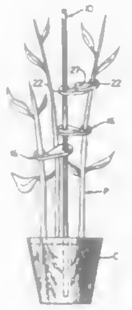
Filed Jan. 19, 1988, Ser. No. 145,257

Int. Cl.⁴ A01G *17/14*

U.S. Cl. 47—47 5 Claims

1. In a plant support device wherein a standard is inserted into the soil at the base of a growing plant for upward extension from the soil along the center portion of the plant, the improvement comprising:

a plurality of plant stem support members disposed in vertically spaced relation to one another on said standard, each said support member extending radially outward from said standard and having a hook shaped end portion at a free end of said support member into which a stem of said growing plant is inserted, each said support member having a thickened end in surrounding relation to said standard and tapering away from said thickened end into said hook shaped end portion, said thickened end and said hook shaped end portion joined by a straight wall portion, said hook shaped end portion defined by opposing walls, said opposing walls oriented at an acute angle to said straight wall, and support means and said hook shaped end portion provided with correspondingly sized openings to interchangeably receive said standard.



4,881,343

SEED COLORANT

Takanori Sannan, Tokyo; Mitsutaka Seki, Kawaguchi; Shinya Tsuchida, Urawa, and Shojiro Horiguchi, Omiya, all of Japan, assignors to Dainichiseika Color & Chemicals Mfg. Co. Ltd., Tokyo, Japan

Division of Ser. No. 152,498, Feb. 5, 1988, Pat. No. 4,853,429. This application Apr. 4, 1989, Ser. No. 333,003

Claims priority, application Japan, Feb. 14, 1987, 62-30700

Int. Cl.⁴ A01C *1/06*

U.S. Cl. 47—57.6 10 Claims

1. Seeds colored with a colorant comprising:
an aqueous medium;
a dye and/or pigment; and
a binder resin composed of the salt of chitosan and an organic acid.

4,881,344

SLEEVE FOR PLANT GERMINATION SUBSTRATE

Günter Frey, Schliengen, and Rudolf Wagner, Heitersheim, both of Fed. Rep. of Germany, assignors to Firma Carl Freudenberg, Weinheim/Bergstr., Fed. Rep. of Germany

Filed Feb. 27, 1989, Ser. No. 316,087

Claims priority, application Fed. Rep. of Germany, Mar. 12, 1988, 3808320

Int. Cl.⁴ A10G *9/02*

U.S. Cl. 47—77 9 Claims

1. A sleeve adapted to be filled with a substrate for plant germination, having a tubular shape and consisting of a nonwoven, bonded fiber material having a specific weight of 15 to 50 g/m^2, treated with a polymer mass and with amounts of 0.1 to 3 g/m^2 of a fungicide, said fiber material comprising 50 to 80 percent by weight of cellulose fibers, 10 to 40 percent by weight of synthetic fibers with a size of 1.3 to 17 dtex, and 10 to 30 percent by weight of a fiber binding agent, said fiber material having an air passage porosity at 1.0 mbar of 1000 to 1600 liters per second per square meter, said polymer mass having 10 to 50 grams per square meter of a slow-release fertilizer with a grain size of less than 80 microns embedded therein.

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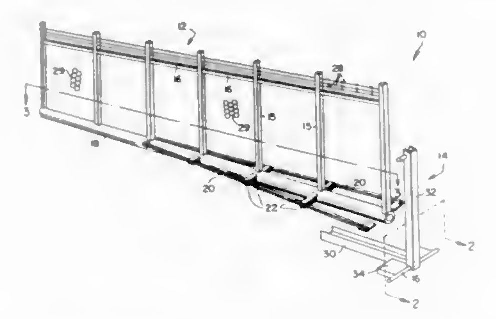
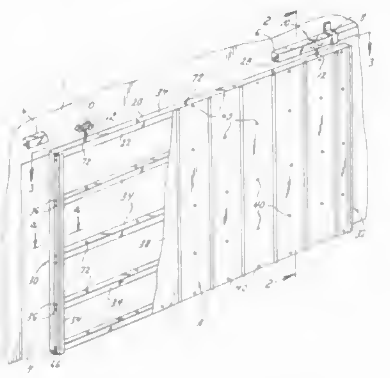
4,881,345
VERTICALLY ROTATABLE GATE
Jerome Cysewski, P.O. Box 1998, Billings, Mont. 59103
Filed Sep. 7, 1988, Ser. No. 241,910
Int. Cl.⁴ E05D *7/00*
U.S. Cl. 49—385 **4 Claims**



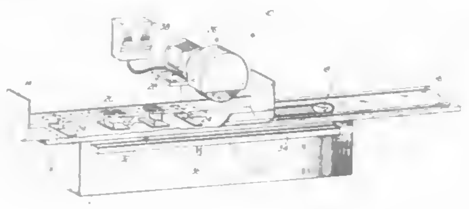
1. A vertically rotatable gate assembly having a top and bottom and rotatable about an axle comprising:
- a torsion beam having a first end and a second end, the torsion beam extending the length of the gate assembly along the bottom thereof;
- means for mounting the first end of the torsion beam to the axle;
- a bracing stringer having a first end and a second end;
- the first end of the bracing stringer being mounted to the torsion beam adjacent the first end of the torsion beam and spaced apart therefrom in a direction parallel to the longitudinal axis of the axle and the second end of the bracing stringer converging toward the second end of the torsion beam and secured to the torsion beam;
- a plurality of fence stiles, each having an end connected to the torsion beam and extending to the top of the gate assembly, the fence stiles together being positioned to form a plane fence surface;
- a fence mounted to the fence stiles on the plane fence surface and being supported by the fence stiles;
- whereby torsional forces on the fence are resisted by the torsion beam and forces transverse to the torsion beam are resisted by the bracing stringer.

4,881,346
DOOR AND METHOD OF FABRICATING THE SAME
Gordon S. Block, Winnebago, Ill., assignor to C. Hager & Sons Hinge Manufacturing Company, St. Louis, Mo.
Filed Jun. 20, 1988, Ser. No. 209,178
Int. Cl.⁴ E06B *3/00;* E05D *13/00*
U.S. Cl. 49—501 **20 Claims**



1. A door comprising: first and second vertical members located at the ends of the door, each vertical member having spaced apart front and rear walls and an end wall connecting the front and rear walls so that the vertical members in cross-section are generally channel-shaped, the vertical members being oriented with their end walls presented away from each other so that their hollow interiors open toward each other, each vertical member having a rib on at least its front or rear wall, each rib extending substantially the entire height of the vertical member on which it is located and projecting into the hollow interior of that member, each rib further being substantially continuous along the wall of the member on which it is located; a plurality of lateral members extended between the vertical members and at their ends being fitted into the hollow interiors of the vertical members, the lateral members at their ends having vertical slots which align with and receive the ribs on the vertical members, so as to interlock the vertical and lateral members; connecting means for securing the vertical members to the lateral members; and a siding material extended over and attached to the lateral members.

4,881,347
SKI REPAIRING MACHINE
Petrin Mario, 548 15 Ave., LaSalle, Quebec, Canada (H8P 2R9), and Petrin Blaise, 4470 Lafontalne, Montreal, Quebec, Canada (H1V 1P3)
Filed Jan. 27, 1988, Ser. No. 148,946
Int. Cl.⁴ B24B *7/00*
U.S. Cl. 51—5 R **18 Claims**

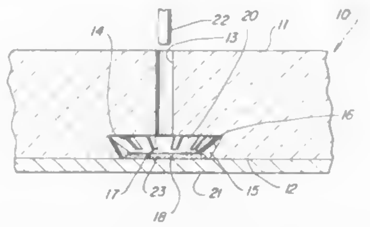


1. An apparatus for grinding the base of a ski, said base having a given contour, said apparatus comprising:
- a frame;
- a carriage for receiving said ski, said carriage being mounted to said frame for movement thereabout,
- means for supplying motive power in driving relationship with said carriage to impart a reciprocating movement to said carriage;
- a grinding tool mounted for movement to said frame, reciprocating movement of said carriage causing said grinding tool to engage said base in successive grinding strokes, during a grinding stroke said grinding tool moving with respect to said frame to follow the contour of said base;
- pressure control means coupled to said grinding tool for maintaining the grinding pressure thereof generally constant at various positions of said grinding tool with respect to said frame, thus allowing said grinding tool to exert a generally constant grinding pressure on said base while following the contour thereof;
- and further comprising a scraper means mounted to the frame for movement relative to said frame between an inoperative position and an operative position, wherein in said operative position said scraper means engages said base.

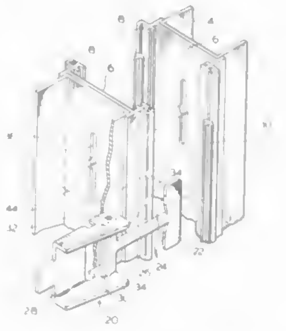
4,881,348
CERAMIC BRICK
Thomas E. Davis, Ann Arbor, Mich., assignor to Visuron, Inc., a Mich. Corp., Essexville, Mich.
Filed Jun. 10, 1988, Ser. No. 204,846
Int. Cl.⁴ E04B *1/60*
U.S. Cl. 52—127.7 **27 Claims**

1. An abrasion resistant weldable brick adapted to be welded to a weldable backing, said brick having inner and outer faces and a recess therein opening at the inner face of said brick in a

direction transverse to said inner face, said recess having an interior ceiling transverse to said direction and spaced from the opening at said inner face, said recess enlarging adjacent to said ceiling with respect to said opening to effect an insert receiving undercut, a weldable insert within said recess, said insert having a central base and means for interlocking said insert within said recess comprising portions of said insert extending from said base into said undercut and deformed into mechanical interlocking engagement with portions of said brick defining said undercut.

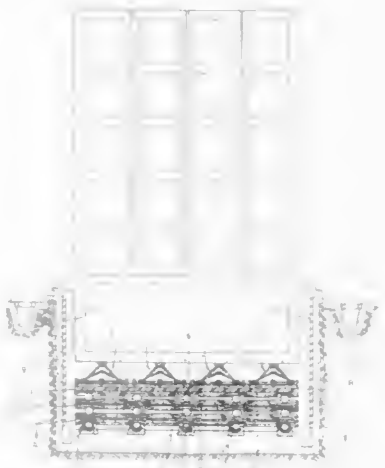


4,881,349
PANEL LOCKING SYSTEM
Mortimer Brown, Oakville, and John Hellwig, Toronto, both of Canada, assignors to Teknion Furniture Systems Inc., Downview, Canada
Filed May 25, 1988, Ser. No. 198,295
Claims priority, application Canada, May 29, 1987, 538353
Int. Cl.⁴ E04B *2/82*
U.S. Cl. 52—127.11 **5 Claims**



1. In an office panelling system, a clamp for securing two panels each of which has a frame, said clamp comprising a first portion having a head and a shank, said head extending either side of said shank to form at least a 'T' shaped configuration, said shank at an end opposite said head including a pivoted lever and camming member which, in a first orientation, defines a certain distance between said head and said lever and camming member and is movable to a second position defining a reduced distance relative to said first orientation, said lever and camming member being shaped to pass through a point of minimum spacing between said first and second orientations to create a bias maintaining said lever and camming member in said second orientation when effecting a clamping action, wherein said head is generally planar and said shank and head act as a key which is inserted through slots in panels and rotated, once so inserted, to a clamping orientation with said head engaging an interior surface of the frame of an office panel with said camming member engaging an interior surface of the frame of an adjacent panel, and wherein said camming member includes two camming surfaces spaced either side of said shank and generally opposite panel engaging surfaces of said 'T' shaped head.

4,881,350
ANTI-EARTHQUAKE STRUCTURE INSULATING THE KINETIC ENERGY OF EARTHQUAKE FROM BUILDINGS
Chyuang-Jong Wu, 15, lane 47, Ta Tung Rd., Fay Sha Tsun, Sze Hu Hsiang, Yun Lin Hsien, Taiwan
Filed Apr. 6, 1989, Ser. No. 334,606
Claims priority, application Japan, Apr. 25, 1988, 63-102315
Int. Cl.⁴ F16M *13/00;* E04H *9/02*
U.S. Cl. 52—167 R **12 Claims**



1. An anti-earthquake structure constructed between a building and the construction site thereof, comprising:
- a plurality of supporting layers having upper and lower surfaces, both said upper and lower surfaces being provided with multiple ball seats;
- a plurality of ball members correspondingly disposed on and pressed between said ball seats with extremely small rolling friction thereagainst;
- a plurality of sliding block linkages disposed between the building and said supporting layers, said linkages including pivot blocks, multiple linkage bars pivoted on said pivot block, sliding blocks on which said linkage bars are pivoted, and guide means guiding said sliding blocks;
- levers each having two ends and a fulcrum, to which said sliding block is opposed; and
- buffer springs opposed to said lever for absorbing kinetic energy transmitted from said sliding blocks via lever motion.

4,881,351
SELF-SUPPORTING UNIT ELEMENT STAIRCASE
Wilfred Hamm, D-4330 Mulheim-Ruhr, Im, Wiesenggrund 28, Fed. Rep. of Germany
Filed Jan. 27, 1983, Ser. No. 149,130
Claims priority, application Fed. Rep. of Germany, Jan. 27, 1987, 3702278
Int. Cl.⁴ F04F *11/02*
U.S. Cl. 52—182 **7 Claims**

1. A staircase comprising a plurality of U-shaped supporting elements, each element having a horizontally extending base and vertically upwardly extending legs integrally connected to the base, a plurality of steps having opposed ends and marginal edges between said opposed ends and said marginal edges are longer than said opposed ends, means for clamping said step ends of each step to the legs of at least two of said U-shaped elements so that each step is supported above both bases of said

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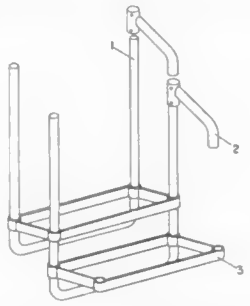
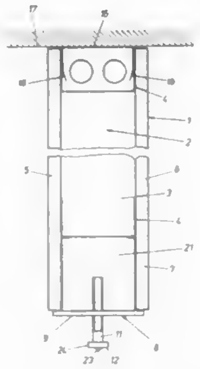
two U-shaped elements with said step marginal edges parallel said elements bases, said U-shaped elements being spaced vertically one relative to another so as to define a predetermined pitch or rise for successive steps in the staircase.

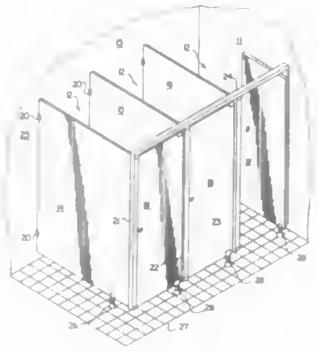


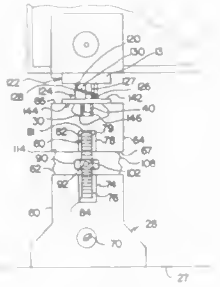
4,881,352
WALL PANEL ARRANGEMENT
Karl Glockenstein, Mautner Markhofg., Vienna, Austria (1110)
Filed Jul. 29, 1988, Ser. No. 226,107
Claims priority, application Austria, Jul. 30, 1987, 1932/87
Int. Cl.⁴ E04H *1/00*
U.S. Cl. 52—239 14 Claims



1. A wall panel arrangement with wall panels for the interior structure of a building having a ceiling, comprising:
a bearing frame having first and second sides, upper and lower sides, and including first and second U shaped profiles, each said U shaped profile including spaced apart shanks;
first and second covering sheets attached respectively to the first and second sides of the bearing frame;
filling material, disposed between the first and second covering sheets for providing insulation;
a bracing member, disposed on the lower edge of the bearing frame, for compensating for dimensional differences between the wall panel and the building structure accommodating the wall panel;
at least one of the edges of the bearing frame being recessible relative to an edge surface of at least one of the covering sheet
the first U shaped profile of the bearing frame being disposed adjacent the lower edge of the bearing frame between the first and second covering sheets with;
a ceiling bearing member, defining a U shaped profile having shanks separated by a web, mounted to the ceiling;
each of said shanks having a length and an end, the shank ends being bent at about mid-shank length towards the other shank to define an acute angle with respect to a median profile plane;
the shanks of the second U shaped profile of the bearing frame being spaced apart a distance greater than the distance separating the shanks of the ceiling bearing member, the second U shaped profile being disposed adjacent the upper edge of the bearing frame between the first and second covering sheets such that the shanks of the ceiling bearing member extend into a space between the shanks of the second U shaped profile and are retained therein by the shanks of the second U shaped profile; and
means for securing the web of the ceiling bearing member to the ceiling, for concealably mounting the wall panel to the building structure.

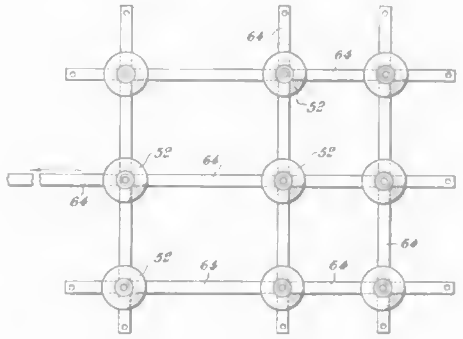
4,881,353
CUBICLE
Gregory G. Braendel, Los Angeles, Calif.; David M. Goodwin, Pyrford, England, and Brian J. Moore, Wirral, United Kingdom, assignors to Braendel & Associates, Inc., Sun Valley, Calif.
Filed Apr. 21, 1987, Ser. No. 40,893
Int. Cl.⁴ E04H *1/2*
U.S. Cl. 52—239 17 Claims





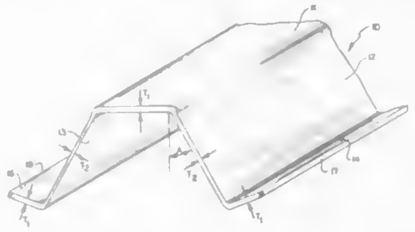
1. A cubicle construction comprising:
an upright rear planar means for supporting edges of normally disposed upright panel means;
plural spaced apart planar side means for defining sides of a cubicle, the side means coupled to the upright rear planar means;
vertical post means for engaging the plural spaced apart planar panels means, the vertical post means defining an upper portion;
elongated headrail means for structurally engaging the post means, the elongated headrail means coupled at the upper portion of the post means, extending normal to the planes of the side means;
door means pivotally mounted about an axis adjacent, parallel and spaced apart from the vertical post means, the door means comprising upper pivot means for pivotally coupling the door to the cubicle at an upper portion of the door, and downwardly extending pivot means for pivotally coupling the door at the lower portion of the door; and
foot means for pivotally supporting the door means, the foot means having an adjustable length; the foot means characterized by
threaded means for adjusting the length of the foot means, the threaded means coupled to the foot means;
first fastener means for fixing the length adjustment of the foot means, the first fastener means coupled to the threaded means; and
second fastener means coupled to the first fastener means for engaging the threaded means to thereby prevent further adjustment of the length of the foot means despite rotation of the door means about the pivot.

4,881,354
SECURITY GRILLE AND MANUFACTURING METHOD
Alan D. Pitt, Tree Tops, 19 Forest Close, Bewdley, DY12 2UF, England
Filed Jun. 3, 1988, Ser. No. 202,197
Claims priority, application United Kingdom, Jun. 26, 1987, 8715037; Mar. 2, 1988, 8804977
Int. Cl.⁴ E04C *2/38, 2/42*
U.S. Cl. 52—665 12 Claims



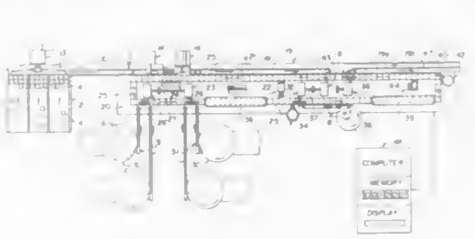
1. A security grille adapted for fixing to a structure so as to extend across an aperture therein, said grille including at least one pair of rods whose corresponding one ends are adapted to be fixed to said structure and whose corresponding other ends are adapted to be connected to one another by two initially separate portions of a device which are subsequently so permanently joined to one another as to clamp said other ends between them, each of said two separate portions including a central portion and a plurality of channel-shaped limbs extending radially outwardly from said central portion, each limb having a proximal end attached to said central portion and a free distal end, said other ends of said pair of rods being placed between an associated pair of inwardly facing channel-shaped limbs comprising one limb from each of said two separate portions, the respective free distal ends of said associated pair of limbs being canted toward one another with respect to said respective central portions, whereby the respective free distal ends exert a clamping force on the rod ends when the two separate portions of the device are joined together.

4,881,355
COLD ROLL-FORMED STRUCTURES AND METHOD AND APPARATUS FOR PRODUCING SAME
George F. Bosl, Westlake; Patrick M. Kelly, Cleveland; Dennis A. Alvarez, Euclid, all of Ohio; Gale Sauer, Sinclairville, N.Y., and Joseph A. Hocevar, Willoughby Hills, Ohio, assignors to USG Interiors, Inc., Chicago, Ill.
Division of Ser. No. 19,214, Feb. 26, 1987, Pat. No. 4,770,018, and a continuation-in-part of Ser. No. 838,918, Mar. 12, 1986, abandoned. This application May 23, 1988, Ser. No. 197,622
Int. Cl.⁴ E04C *3/32*
U.S. Cl. 52—738 16 Claims



1. A substantially straight elongated strip of sheet metal formed by cold-rolling from a strip of sheet metal having a substantially uniform first thickness, comprising a first longitudinal portion spaced from at least one lateral edge of said strip, and a second longitudinal portion interconnected between said first longitudinal portion and said at least one edge of said strip, said second longitudinal portion including a plurality of narrow shear-deformed laterally adjacent separately formed bands of reduced thickness cooperating to provide said second longitudinal portion with a thickness substantially less than the thickness of said first portion and a width substantially equal to the sum of the width of said bands.

4,881,356
APPARATUS FOR ASSEMBLING MULTI-PART ARTICLE
William E. Beezer, and Earl F. Beezer, both of Mahwah, N.J., assignors to Stelron Components, Mahwah, N.J.
Filed Jan. 25, 1988, Ser. No. 148,357
Int. Cl.⁴ B65B *3/04, 43/38, 43/56, 7/26*
U.S. Cl. 53—53 29 Claims



1. An apparatus for assembling a multi-part article, having a base with at least one receptacle for receiving a component, and a lid hinged to the base for movement from a closed position, covering the receptacle to an open position exposing the receptacle, the apparatus comprising:
an assembly chassis having an endless guideway;
a plurality of pucks mounted for movement on said guideway to a plurality of accurately located stations in sequence around said guideway, each puck having a site for receiving the base of an article to be assembled;
puck drive means for indexing each puck from one station to the next around said guideway;
article loading means for loading an article into the site of each puck on said guideway at an article loading station along said guideway;
lid opening means for opening the lid of each article at an opening station along said guideway;

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component loading means for loading a component into the receptacle of each article at a component loading station along said guideway;

lid closing means for closing the lid of each article at a lid closing station along said guideway;

sensing means adjacent said guideway, at a location along said guideway between said opening station and an article unloading station, for sensing the readiness of each article, for successfully receiving a component;

computing means connected to said sensing means for keeping track of each puck as it moves from station to station along said guideway, said computing means being connected to said sensing means for determining whether each article is ready to receive a component or not, and, upon receiving a signal from said sensing means indicating that an article is not ready to receive a component, identifying the puck carrying that article as containing an unacceptable article; and

article unloading means at said article unloading station along said guideway, for unloading unacceptable articles onto an unacceptable article pathway and all remaining articles onto an acceptable article pathway, said computing means being connected to said article unloading means for controlling said article unloading means to unload articles from pucks identified as carrying unacceptable articles onto said unacceptable pathway, and all remaining articles onto said acceptable article pathway when the pucks carrying said articles reach said article unloading station.

4,881,357

PACKAGING MACHINE FOR THE CONTINUOUS PACKAGING OF PRODUCTS HAVING A VARIABLE SIZE

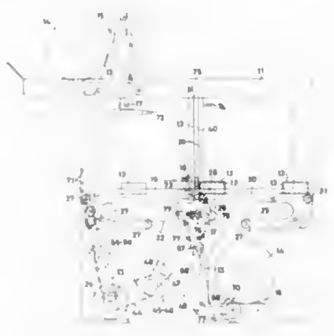
Aris Ballestrazzi, and Lamberto Tassi, both of Savignano Sul Panaro, Italy, assignors to Sitma-Societa Italiana Macchine Automatiche, S.p.A., Spilamberto, Italy

Filed Jul. 25, 1988, Ser. No. 223,915

Claims priority, application Italy, Aug. 27, 1987, 21732 A/87

Int. Cl.⁴ B65B *9/02*

U.S. Cl. 53—64 12 Claims



1. Packaging machine for the continuous packaging of products having a variable size, of the type comprising a framework fitted with conveyor means for conveying the produts to be packaged, a transversal welding unit for the transversal welding of a plastic material having the form of a continuous sheet sduitable for wrapping said products to be packaged, wherein said continuous-sheet material is fed by a couple of bobbins positioned on relevant unwinding units and free ends of said bobbins are transversely welded so as to form a single continuous sheet, with said conveyor means being a first conveyor belt and a second conveyor belt respectively positioned upstream and downstream said welding unit, which is transversal relatively to the direction of unwinding of said packaging material and which is composed by an upper, vertically movable, welding bar, which moves in a transit describing an inverted trapezoid and by a lower welding bar, stationary, and positioned at the same level as of said first conveyor belt and second conveyor belt, with relevant motor means and actuator means being furthermore provided, characterized in that said welding unit is positioned on a horizontally translatable car, with said car bearing, on opposite sides relatively to said welding unit, a return roller of said first conveyor belt and a return roller of said second conveyor belt, wherein said first conveyor belt and said second conveyor belt run along a closed-loop path and are provided with a belt tightening device suitable for enabling them to correctly operate, a single centralized motor means being provided, which, through a first transmission, determines the continuous revolution of said conveyor belts, and, with the interposition of a brake-clutch unit, selectively actuated by sensor means monitoring the position of said products on said conveyor belts, drives an intermediate shaft to revolve in order to actuate a cam for the vertical movement of said upper welding bar and for actuating a crank and slotted link for driving the horizontal reciprocating of said car.

4,881,358

METHOD OF PACKAGING ARTICLES OF A COMPRESSIBLE MATERIAL

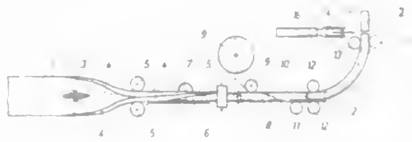
Anders Berg, Tranas, Sweden, assignor to Shampoo Sponge International B.V., Berkel en Rodenrijs, Netherlands

Filed Jul. 9, 1984, Ser. No. 628,745

Claims priority, application Sweden, Jul. 22, 1983, 8304094

Int. Cl.⁴ B65B *1/24, 13/20, 63/04*

U.S. Cl. 53—399 3 Claims



1. A method of packaging a compressible blank such as a sponge or the like in a state of compression with a removable foil, comprising folding the blank lengthwise along a transverse centre line a first time, folding the once folded blank lengthwise along a transverse centre line of the folded blank a second time, advancing the blank thus folded twice lengthwise through a piece of pipe, forming and welding a web of foil into a tubular cover around the outer side surface of the pipe to enclose coaxially the discharge end of sid pipe and said twice-folded blank, advancing said twice-folded blank and the encircling tubular cover beyond the discharge end of said piece of pipe, and cutting said blank and the encircling tubular cover into pieces of a predetermined length, said cut-off pieces thus forming an article packaged in said tubular cover, the surface of said article exposed at the two ends of said tubular cover corresponding to the lengthwise marginal edges of the finished article in its non-folded condition, said cover being removable to access said blank for its expansion and use.

4,881,359

METHOD FOR MAKING A VACUUM SKIN PACKAGE

Henry G. Schirmer, Spartanburg, S.C., assignor to W. R. Grace & Co., Duncan, S.C.

Division of Ser. No. 115,458, Oct. 31, 1987, Pat. No. 4,815,602. This application Nov. 4, 1988, Ser. No. 267,054

Int. Cl.⁴ B65B *11/52, 31/00*

U.S. Cl. 53—427 3 Claims

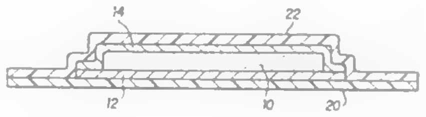
1. A method for packaging a moisture-sensitive product comprising:

(a) placing the product to be packaged on a first metallic sheet;

(b) placing a second metallic sheet having outer and inner non-heat sealable metallic surfaces over said product;

(c) placing the first metallic sheet, product, and second metallic sheet on a supporting member such that the product is in contact with the inner metallic surfaces of the respective sheets;

(d) applying a top thermoplastic web over the second metallic sheet and in sealing arrangement with the supporting member, by a vacuum skin packaging process; and



(e) simultaneously with step d), clamping the first and second metallic sheets together to substantially mechanically enclose the product between the two metallic sheets.

4,881,360

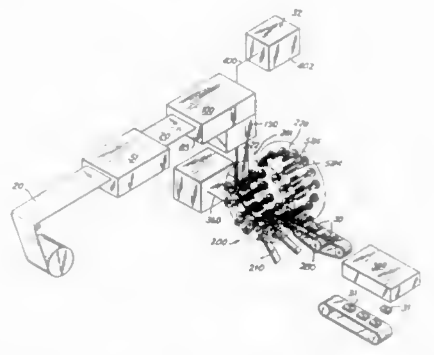
HIGH CAPACITY PACKAGE SEAL, SEVER, AND BRICK APPARATUS AND METHOD

Daryl Konzal, Colgate, and Gunars Salnajs, Milwaukee, both of Wis., assignors to International Paper Company, Purchase, N.Y.

Division of Ser. No. 942,986, Dec. 17, 1986, Pat. No. 4,817,366. This application Nov. 23, 1988, Ser. No. 275,730

Int. Cl.⁴ B65B *61/24, 9/08, 51/22, 51/30*

U.S. Cl. 53—439 13 Claims



1. Apparatus for controlling the volume of product in an advancing polyfoil tube including a plurality of clamping means for sequentially transversely clamping the tube at spaced intervals as the tube advances, each clamping means having a first member and a second member pivotally connected together having an open and unclamped position and a closed and clamped about the tube position, comprising;

means for controlling the orientation of each clamping means as it closes about the tube at a predetermined location to adjust the length of the advancing tube to be transversely clamped;

a pair of fingers oriented to contact the polyfoil tube before each clamping means closes to adjust the configuration of the tube and the volume of product in the tube; and

a first boundary surface extending from one of the first or second members of each clamping means, and a second boundary surface extending from the other of the first or second members of each clamping means, said first and second boundary surfaces cooperating to contact the tube and confine the tube to a predetermined configuration as each clamping means closes about the tube to control the amount of product in the tube as the tube is clamped.

4,881,361

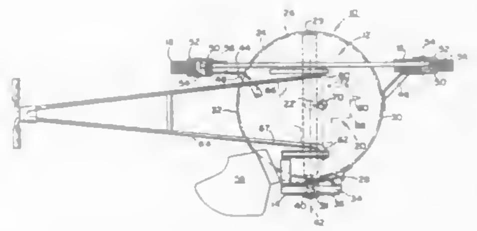
WHEELED VEHICLES FOR GROUND WORK

John F. Dalton, Devon, Pa., assignor to Camerun Constructors, Inc., Newark, Del.

Filed Sep. 28, 1987, Ser. No. 101,514

Int. Cl.⁴ A01O *34/68*

U.S. Cl. 56—17.5 22 Claims



1. A work vehicle comprising:

a chassis having generally front, rear, first lateral and second lateral sides;

three ground-contacting wheels coupled with the chassis for supporting, turning and moving the vehicle on the ground;

a first one of the three wheels being positioned generally on the first lateral side of the chassis, the first wheel being mounted for rotation about only a generally horizontal, first axis fixedly extending laterally towards the second lateral side;

a ground-working implement coupled with the chassis for working at least generally beneath the second lateral side of the chassis generally opposite the first wheel;

a second one of the three wheels being positioned generally to a front side of the first axis and being mounted to the chassis for rotation about two axes including a generally vertical pivot axis;

a third one of the three wheels being positioned generally to a rear side of the first axis and being mounted to the chassis for rotation about two axes including a generally vertical pivot axis; and

the vehicle having a center of gravity positioned among the three wheels, the first wheel being spaced laterally from the center of gravity towards the first lateral side a first distance and the second wheel and third wheel each being spaced laterally from the center of gravity towards the second lateral a side distance approximately one-half the first distance to distribute substantially the same portion of the weight of the vehicle on each of the three wheels.

4,881,362

MOBILE VACUUM SYSTEM FOR USE WITH A RIDING TRACTOR MOWER

Richard W. Parker; James P. Beery; Donald L. Boblitt, and Robert L. Starr, all of Springfield, Ohio, assignors to Parker Sweeper Company, Springfield, Ohio

Continuation of Ser. No. 698,700, Feb. 6, 1985, Pat. No. 4,761,943. This application Aug. 8, 1988, Ser. No. 229,651

The portion of the term of this patent subsequent to Aug. 9, 2005, has been disclaimed.

Int. Cl.⁴ A01D *34/12*

U.S. Cl. 56—202 22 Claims

1. A mobile vacuum system in combination with a rotary mower including a deck having a discharge portion defining an outlet for discharging cut grass, leaves and other debris, said system comprising a power driven vacuum-blower unit having an inlet and an outlet, a hollow boot having a generally vertical first wall portion defining an inlet and a second wall portion defining an outlet, a flexible hose connecting said outlet of said boot to said inlet of said vacuum-blower unit, connecting means mounted on said deck and positioning said first wall portion in horizontally spaced relation to said discharge portion of said deck with said inlet of said boot opposing said

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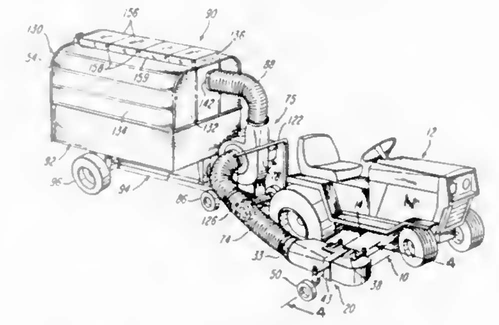
outlet of said deck, said connecting means including a pivot connection providing for pivoting said boot on a generally horizontal axis relative to said deck, and said first wall portion defining said inlet of said boot cooperating with said discharge portion of said deck to define a substantial air suction gap between said discharge portion of said deck and said first wall portion substantially around said discharge portion of said deck to provide for an envelope flow of air into said boot around said discharge portion of said deck to assure a continuous flow of debris from said mower to said vacuum-blower unit.



4,881,363
MOWING MACHINE

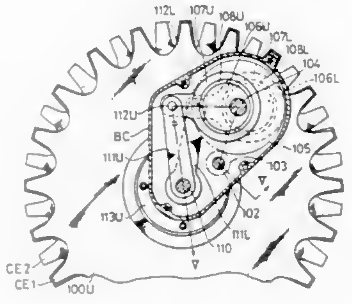
Akio Terai, Machida; Junichi Yoshino, Tokyo; Shinroku Satsumi, Machida, and Mitsuru Taniguchi, Tokyo, all of Japan, assignors to Kamatsu Zenoah, Co., Tokyo, Japan

Filed Sep. 21, 1987, Ser. No. 86,496

Claims priority, application Japan, Aug. 26, 1986, 61-198226; Jul. 6, 1987, 62-102664; Jul. 6, 1987, 62-102665

Int. Cl.⁴ A01D *34/76, 34/68*

U.S. Cl. 56—255 4 Claims



1. A mowing machine comprising:
(a) motive power source;
(b) a pair of superposed pivotal cutting wheels each provided with a number of grass cutting edges; and
(c) means for converting a rotational motion supplied from said motive power source into two pivotal motions to drive said pivotal cutting wheels in two mutually different rotational directions, said rotational motion converting means comprising:
a casing (BC);
a cam shaft (**104**) rotatably driven by said motive power source within said casing;
first and second circular and eccentric cams (**106U,106L**) fixed to said cam shaft in radially symmetrical positional relationship to each other with respect to a center of said cam shaft;
first and second annular connecting rods (**107U, 107L**), each slidably fitted to each outer periphery of said first and second circular and eccentric cams, respectively;
a pivotal cutter wheel shaft (**110**) having at one end thereof a first arm (**111U**) pivotally connected to an end of said first annular connecting rod (**107U**) and at the other end thereof a first pivotal cutter wheel (**100L**); and
a cylindrical member (**120**) loosely and coaxially fitted to said pivotal cutter wheel shaft, said member having at a middle thereof a second arm (**111L**) pivotally connected to an end of said second annular connecting rod (**107L**) and at one end thereof a second cutter wheel (**100U**) in such a way that said two pivotal cutting wheels are concentrically superposed with each other.

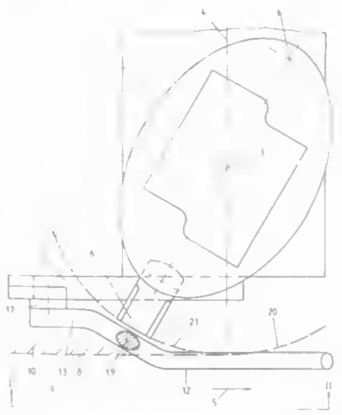
4,881,364
SEPARATING DEVICE FOR REAPERS WITH CUTTER PLATES DRIVEN TO ROTATE ABOUT VERTICAL AXES

Hans Grenzebach, Gemunden, Fed. Rep. of Germany, assignor to Friedrich Mortl Schleppergerate Bau GMBH & Co. KG., Gemunden, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 892,844, Aug. 4, 1986, abandoned. This application Jul. 29, 1988, Ser. No. 225,893

Int. Cl.⁴ A01D *63/00*

U.S. Cl. 56—314 12 Claims



1. A separating device for use on crop reapers having cutter plates rotatable about vertical axes defining a vertical plane, with the cutter plates defining a cutting plane, the outermost cutter plate further defining a cutting track between cut and uncut crop material, and the vertical plane dividing the cutting circle of the outermost plate into forward and rear semicircles,
said separating device comprising means for causing the outermost plate to make a vertical cut in a previously cut area defined by the rear semicircle and within the cutting track and a horizontal cut independent of said vertical cut in an uncut area defined by the forward semicircle.

4,881,365
ASSEMBLY APPARATUS FOR TRUCK LINKS

Yasumitsn Moriki, Tokyo, and Hirotomo Numakura, Kawasaki, both of Japan, assignors to Maruma Jyusharyo Kabushiki Kaisha, Tokyo, Japan

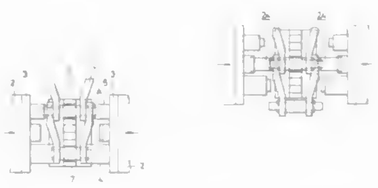
Filed Jan. 6, 1989, Ser. No. 295,042

Int. Cl.⁴ B21L *19/00*

U.S. Cl. 59—7 4 Claims

1. Apparatus for assemblying link chains of the type having paired links joined together with cross pins joining successive pairs of chain links longitudinally, the chain links having a pitch corresponding to a distance between successive cross pins connecting paired chain links, the apparatus comprising a press having two ram heads cyclically operable toward each other from a retracted position to a position closer to each other and cyclically retracted to said retracted position, trolley means disposed for travel between the opposed press ram heads, means for cyclically advancing the trolley means in a direction forwardly three half pitches of a link successively and then in a reverse direction one half pitch and cyclically in

timed relationship with the cyclically operable rams heads of the press, the trolley means being disposed stationary between the ram heads each time the ram heads are operated toward each other, said trolley means having transport means for receiving and transporting cross pins spaced thereon successively a distance of a pitch of a link corresponding to the distance between successive cross pins in the assembled link chain, the individual ram heads having means for each transporting a respective link and for placing corresponding links respectively on opposite ends of each successive pair of cross pins while the trolley means is stationary between the two ram heads for forming successive paired links, said ram heads having means for fixing individual retainer rings on corresponding opposite ends of a corresponding cross pin joining longitudinally a pair of successive paired links when the transport means is stationary between ram blocks each time after having moved in said reverse direction one half pitch, and the retainer rings retaining the successive paired links in assembly on corresponding cross pins.



4,881,366
CLEAN ELECTRIC POWER GENERATION PROCESS

Trevor W. Nurse, Herts, United Kingdom, assignor to Humphreys & Glasgow Ltd., London, England

Continuation of Ser. No. 90,094, Aug. 27, 1987, abandoned. This application Feb. 13, 1989, Ser. No. 309,966

Claims priority, application United Kingdom, Aug. 29, 1986, 8620919; Nov. 27, 1986, 8628429

Int. Cl.⁴ F02C *3/28*

U.S. Cl. 60—39.07 5 Claims

1. A process for the production of power from a carbonaceous fuel, which comprises partially oxidizing the fuel with oxygen or an oxygen-containing gas to yield a gas stream containing carbon monoxide at supra-atmospheric pressure, directly downstream of the oxidizing step quenching said gas stream with water, passing the quenched gas stream through a boiler in which the gas stream is cooled, thereby raising steam in the boiler, separating water from the cooled gas stream, ensuring that the gas stream is at sufficient temperature to initiate an exothermic shift reaction, and then subjecting the gas stream to a carbon monoxide shift reaction whereby at least some of the carbon monoxide is converted into carbon dioxide with a consequent evolution of heat, and directly downstream of the shift reaction expanding the gas stream to produce power, and then using at least a major portion of the expanded stream as a fuel for a gas turbine to produce additional power.

4,881,367
GAS TURBINE ENGINE

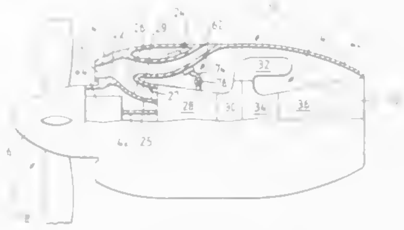
Richard J. Flatman, Derby, England, assignor to Rolls-Royce PLC, London, England

Filed Feb. 19, 1988, Ser. No. 157,942

Claims priority, application United Kingdom, Apr. 14, 1987, 8708859

Int. Cl.⁴ F02C *3/32*

U.S. Cl. 60—39.07 12 Claims



1. A turbopropeller gas turbine engine comprising at least one propeller, a gas generator, and intake means,
the at least one propeller being positioned upstream of the gas generator,
the gas generator comprising a compressor and a gas generator casing,
the intake means supplying air to the gas generator being positioned downstream of the at least one propeller, the intake means comprising at least one intake opening formed in the gas generator casing and an associated inlet duct extending from the intake opening to the gas generator, the intake duct including:
separating means for removing foreign bodies from the air

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supplied to the gas generator, the separating means including a separating duct comprising:

a mixing duct, connected to said intake duct for receiving foreign bodies, the mixing duct having a tubular wall and having a length to diameter ratio of between two and five;

a transition duct connected to said mixing duct, downstream of said mixing duct;

an outlet duct connected to said transition duct, downstream of said transition duct, the outlet duct having an outlet opening and being of rectangular cross-section;

ejector means to produce a fluid flow through the separating duct for drawing foreign bodies through the separating duct, the ejector means comprising a plurality of equispaced ejector nozzles arranged circumferentially in the mixing duct wall, the compressor supplying air to the ejector nozzles to produce a fluid flow through the separating duct,

conduit means fluidly interconnecting the compressor and the ejector nozzles for supplying air from the compressor to the ejector nozzles, and

a control valve controlling the flow of air from the compressor to the ejector nozzles through the conduit means.

4,881,368

DOUBLE AIR-FUEL RATIO SENSOR SYSTEM HAVING IMPROVED EXHAUST EMISSION CHARACTERISTICS

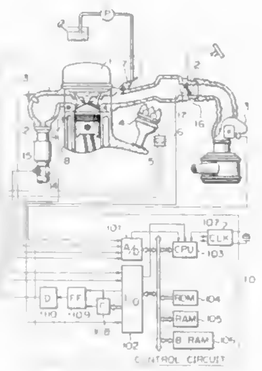
Takayuki Demura, Mishima, and Kohei Igarashi, Susono, both of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Japan

Filed Feb. 5, 1988, Ser. No. 152,928

Claims priority, application Japan, Feb. 9, 1987, 62-026339; Mar. 6, 1987, 62-050324

Int. Cl.⁴ F02D *41/14;* F01N *3/20*

U.S. Cl. 60—274 **86 Claims**



1. A method for controlling an air-fuel ratio in an internal combustion engine having a catalyst converter for removing pollutants in the exhaust gas thereof, and upstream-side and downstream-side air-fuel ratio sensors disposed upstream and downstream, respectively, of said catalyst converter, for detecting a concentration of a specific component in the exhaust gas, comprising the steps of:

determining whether or not all air-fuel ratio feedback control conditions for said downstream-side air-fuel ratio sensor are satisfied;

calculating an air-fuel ratio correction amount in accordance with the outputs of said upstream-side and downstream-side air-fuel ratio sensors when all of said air-fuel ratio feedback control conditions are satisfied;

determining whether or not the output of said downstream-side air-fuel ratio sensor is reversed;

lowering a speed of renewal of said air-fuel ratio correction amount in accordance with the output of said downstream-side air-fuel ratio sensor after all of the air-fuel ratio feedback control conditions for said downstream-side air-fuel ratio sensor are satisfied and until the output of said downstream-side air-fuel ratio sensor is reversed; and

adjusting an actual air-fuel ratio in accordance with said air-fuel ratio correction amount.

4,881,369

EXHAUST GAS PURIFYING APPARATUS

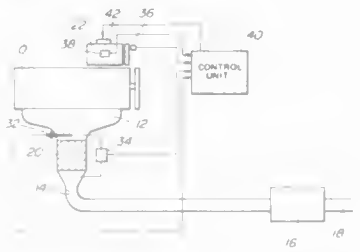
Nobukazu Kanesaki, Kanagawa, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed May 26, 1987, Ser. No. 53,741

Claims priority, application Japan, May 27, 1986, 61-78773

Int. Cl.⁴ F01N *3/02*

U.S. Cl. 60—285 **8 Claims**



1. An exhaust gas purifying apparatus for use in an internal combustion engine into which fuel is injected at a timing, the engine having an exhaust system through which exhaust particles are discharged from the engine to the atmosphere, comprising:

catalytic trap means disposed in the exhaust system for collecting the exhaust particles and burning the collected exhaust particles;

first sensor means sensitive to engine exhaust gas temperatures for providing a signal indicative of a sensed engine exhaust gas temperature;

second sensor means sensitive to pressure differentials across the catalytic trap means for providing a signal indicative of a sensed pressure differential;

means sensitive to engine operating conditions for producing signals indicative of sensed engine operating conditions; and

a control unit responsive to the sensed engine operating condition indicative signals for controlling the fuel injection timing, the control unit including means responsive to the signals from the first and second sensors for retarding the fuel injection timing when the engine exhaust gas temperature is in a predetermined range and the sensed pressure differential exceeds a reference value.

4,881,370

EXHAUST DEVICE FOR OUTBOARD MOTOR

Yoshihiro Sakurai; Yoshihide Fukuda, and Kouji Abe, all of Hamamatsu, Japan, assignors to Sanshin Kogyo Kabushiki Kaisha, Hamamatsu, Japan

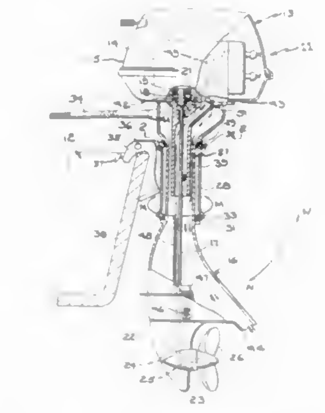
Filed Feb. 2, 1988, Ser. No. 151,524

Claims priority, application Japan, Feb. 10, 1987, 62-29223

Int. Cl.⁴ F01N *7/12;* B63H *21/26*

U.S. Cl. 60—310 **25 Claims**

1. An outboard motor construction comprised of a swivel bracket to be affixed to the transom of an associated watercraft, a power head containing an internal combustion engine having an output shaft, a drive shaft housing depending from said power head and containing a generally vertically extending drive shaft driven by said engine output shaft, a lower unit affixed to the lower end of said drive shaft housing and carrying propulsion means and means for driving said propulsion means from the lower end of said drive shaft, bearing means between said drive shaft housing and said swivel bracket for supporting said drive shaft housing for steering movement through substantially 360 degrees relative the transom of the associated watercraft, and an exhaust pipe affixed at its upper end to said engine and extending from said engine downwardly into said drive shaft housing and terminating at a position therein below said bearing means and above said lower unit for discharging exhaust gases from said engine to the atmosphere through said drive shaft housing, the lower end of said exhaust pipe being out of heat exchanging relationship with said drive shaft housing by being spaced therefrom for precluding the transfer of heat from said exhaust gases to said bearing means.



4,881,371

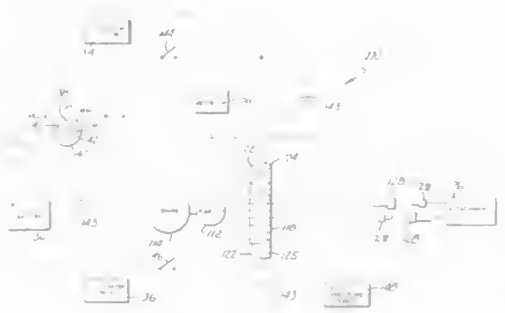
AUXILIARY COUPLER PRESSURE RELIEF HYDRAULIC SYSTEM WITH PUMP DRIVE IGNITION SWITCH RELIEF

Thomas Q. Haeder, Lisbon, and William C. Shelbourn, Bismarck, both of N. Dak., assignors to Clark Equipment Company, South Bend, Ind.

Filed Jul. 26, 1988, Ser. No. 224,165

Int. Cl.⁴ F15B *13/043, 21/08;* F04B *49/02, 49/06*

U.S. Cl. 60—431 **5 Claims**



4. An auxiliary coupler pressure relief hydraulic system for a mobile vehicle, including:

a battery;

an engine;

an engine ignition system;

a reservoir of hydraulic fluid;

a pump coupled to the engine and reservoir for providing hydraulic fluid under pressure;

coupler means coupling hydraulic fluid to an attachment;

a pilot pressure source;

an electro-hydraulic spool valve coupled to the pilot pressure source and connected in a hydraulic circuit between the pump and the coupler means, for controlling the flow of hydraulic fluid to the coupler means in response to valve actuating signals;

auxiliary control switch means coupled to the spool valve for providing attachment control valve actuating signals; and

an operator actuated ignition switch having RUN, OFF and RELIEF positions for controlling the flow of electricity from the battery to the engine ignition system and the spool valve, wherein the ignition switch provides pressure relief valve actuating signals to the spool valve when the ignition switch has been switched to its RELIEF position and while the engine RPM is decreasing to zero.

4,881,372

STIRLING ENGINE

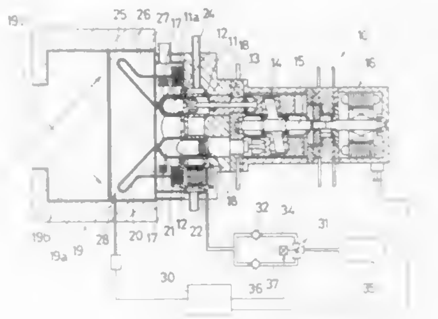
Yoshihiro Naito, Nagoya, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Feb. 28, 1989, Ser. No. 316,853

Claims priority, application Japan, Feb. 29, 1988, 63-048084

Int. Cl.⁴ F02G *1/04*

U.S. Cl. 60—521 **8 Claims**



1. A Stirling engine comprising;

heater means for collecting solar radiation energy,

a heater tube disposed in said heater means and connecting an expansion space and a compression space through a regenerator and a cooler;

a transparent partition disposed in said heater means and defining a closed space within which said heater tube is located;

a heat storage material positioned in said closed space;

temperature detecting means for detecting a temperature of said heat storage material;

pressure regulating means for regulating a pressure of a working gas in a working space from said expansion space to said compression space; and

control means for controlling said pressure regulating means in response to a signal from said temperature detecting means.

4,881,373

PULSE COMBUSTION DEVICE

Shigeki Yamaguchi; Norio Ohiwa, and Katsusuke Ishiguro, all of Nagoya, Japan, assignors to Paloma Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Apr. 25, 1988, Ser. No. 185,423

Int. Cl.⁴ F23R *7/00*

U.S. Cl. 60—732 **13 Claims**

1. A pulse combustion device comprising a housing forming therein a combustion chamber in which pulse combustion of a mixture of gaseous fuel and air takes place, a cylindrical support member coupled with said housing to form a mixing chamber in open communication with said combustion chamber, and a gas container arranged to store an amount of gaseous fuel and connected to said mixing chamber to supply the gaseous fuel therefrom into said combustion chamber through said mixing chamber,

wherein the pulse combustion device further comprises an air intake system composed of a primary air supply system including means for supplying primary air into said mixing chamber and means for adjusting a supply amount of the primary air in such manner as to create a rich mixture of gaseous fuel and primary air in said mixing chamber, and a secondary air supply system including means for supply-

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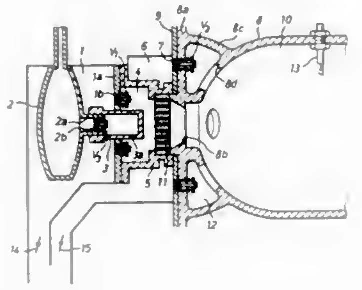
ing secondary air into said combustion chamber and means for adjusting a supply amount of the second air to be mixed with the rich mixture supplied into said combustion chamber from said mixing chamber, whereby valve means for regulating flow of said rich mixture and said secondary air are controlled according to actuation of ignition means for burning the mixture in the combustion chamber, thereby providing pulse combustion of the mixture in the combustion chamber.



4,881,374

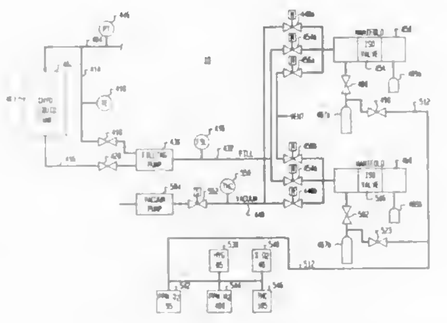
AUTOMATED CYLINDER TRANSFILL SYSTEM AND METHOD

Paul A. Mattiola, Coopersburg, and James Van Ommeren, Werley's Corner, both of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Division of Ser. No. 111,532, Oct. 20, 1987. This application Mar. 8, 1989, Ser. No. 320,745

Int. Cl.⁴ F17C *13/00*

U.S. Cl. 62—50.6 **8 Claims**



1. A system for filling gas storage devices containing substance prior to filling in a filling station having a storage tank containing liquefied gas comprising:

vacuum means coupled to a gas storage device for removing the substance from the gas storage device prior to filling thereby evacuating the gas storage device;

a vacuum means including vacuum line means for conducting the removed substance from the gas storage device during the evacuation;

analyzer means coupled to the vacuum line means and in fluid communication with the removed substance for detecting the presence of at least one predetermined substance in the removed substance; and

the analyzer means including means for providing a signal in response to the detecting.

4,881,375

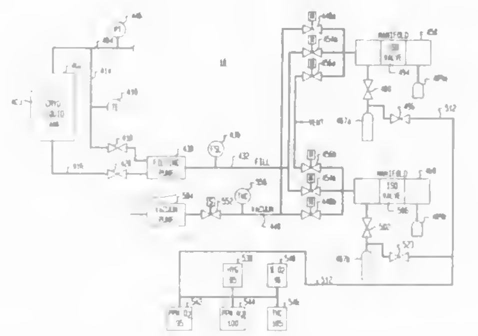
AUTOMATED CYLINDER TRANSFILL SYSTEM AND METHOD

Paul A. Mattiola, Coopersburg, and James VanOmmeren, Werley's Corner, both of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Division of Ser. No. 111,532, Oct. 20, 1987. This application Mar. 8, 1989, Ser. No. 320,730

Int. Cl.⁴ F17C *13/00*

U.S. Cl. 62—50.6 **11 Claims**



1. A method for preventing cavitation of a pump in a filling station having a storage tank containing liquefied gas for loading into a gas storage device, the pump having a pump motor, comprising the steps of

(a) supplying liquefied gas to the pump for cooling the pump;

(b) sensing the pressure of the storage tank;

(c) sensing the temperature of the cooled pump; and

(d) starting the pump motor in response to the sensed pressure and temperature.

4,881,376

ADSORPTION REFRIGERATION SYSTEM

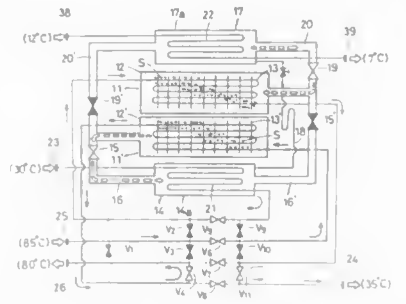
Yasuo Yonezawa, Nara; Masao Matsushita, Hirakata; Kenzo Oku, Kyoto; Hiroki Nakano, Neyagawa; Shin-ichi Okumura, Ootsu; Motoshi Yoshihara, Yawata; Akiyoshi Sakai, Toyonaka, and Atsushi Morikawa, Minoo, all of Japan, assignors to Nishiyodo Air Conditioner Co., Ltd., Osaka, Japan

Filed Feb. 19, 1988, Ser. No. 158,294

Claims priority, application Japan, Aug. 28, 1987, 62-216140; Aug. 28, 1987, 62-131725[U]

Int. Cl.⁴ F25B *17/00*

U.S. Cl. 62—106 **15 Claims**



1. In a method of operating an adsorption refrigerant system comprising a plurality of adsorption columns, each of which contains heat transfer tubes and the same solid absorbent; a condenser; an evaporator; and pipelines equipped with valves connecting said adsorption columns with said evaporator and condenser so that a refrigerant may be circulated therethrough, the improvement comprising operating each of said plurality of adsorption columns in such a manner that it alternates between an adsorption stage and a desorption stage and at least two of said adsorption columns are at different stages at the same time; supplying a heat transfer medium to the heat transfer tubes of one of said at least two adsorption columns during its desorption stage and a coolant to the heat transfer tubes of another of said at least two adsorption columns during its adsorption stage; immediately preceding the termination of said desorption stage in said one adsorption column and said adsorption stage in said another adsorption column, transferring the heat transfer medium contained in the heat transfer tubes of said one adsorption column to the heat transfer tubes of said another absorption column to preheat the adsorbent contained therein; and switching said one adsorption column to said adsorption stage and said other adsorption column to said desorption stage.

4,881,377

APPARATUS FOR DIVIDING PARALLELIPIPEDIC BLOCKS OF DEEP FROZEN FOODSTUFFS INTO SMALLER UNITS

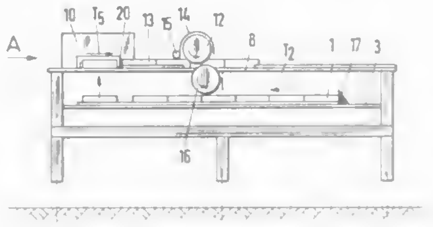
Heinz Nienstedt, Zum Nonnenberg 8 A, D - 4350 Recklinghausen, Fed. Rep. of Germany

Filed Aug. 30, 1988, Ser. No. 238,299

Claims priority, application Fed. Rep. of Germany, Sep. 4, 1987, 3729547; Jan. 28, 1988, 3821712

Int. Cl.⁴ F17C *5/02*

U.S. Cl. 62—320 **6 Claims**



1. An apparatus for dividing parallelpipedic blocks of deep frozen foodstuffs into smaller parallelpipedic units, comprising:

a main conveying path,

a first circular saw comprising a plurality of parallel blades mounted on a common drive shaft, said blades being disposed above said main conveying path at a distance from said main conveying path which is smaller than the height of said parallelpipedic blocks;

a second circular saw comprising a second plurality of blades disposed beneath said main conveying path and protruding through said main conveying path, said blades of said second circular saw being aligned with said blades of said first circular saw so as to act as parting means for separating said smaller parallelpipedic units which are not separated by said blades of said first circular saw;

a subsidiary conveying path disposed beneath said main conveying path and running parallel to said main conveying path; and

lifting means for transferring arriving parallelpipedic blocks from said subsidiary conveying path to said main conveying path.

4,881,378

HIGH SPEED ICEMAKER

Jimmy L. Bryant, 4832 Linden St., Columbia, S.C. 29203

Filed May 13, 1988, Ser. No. 193,792

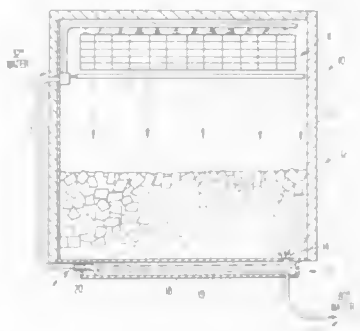
Int. Cl.⁴ F25C *1/00*

U.S. Cl. 62—348 **2 Claims**

1. An apparatus, in kit form or for factory installation, for cooling tap water fed to a conventional commercial ice cube maker having an ice cube making section, a storage bin with side walls and a drain for draining residual ice water from the interior of said storage bin, comprising:

a reservoir attached to the underside of said storage bin so as to catch and store residual ice water draining from said storage bin via said drain, and

precooling tubing, carrying said tap water from the tap water source to the ice making section of said commercial ice cube maker, coiled within said reservoir so as to be immersed in said residual ice water therein, and



an overflow tube, attached to said reservoir, for removing excess residual ice water which may accumulate in said reservoir and for carrying said excess water to a sewer or other disposal area, and

holding tubing, for temporarily storing and cooling the precooled tap water, inserted in the flow line from said precooling tubing to said ice making section and coiled in the lower interior section of said storage bin underneath the stored ice cubes therein.

4,881,379

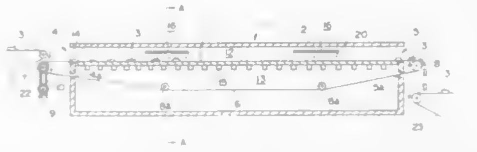
CONTINUOUS QUICK FREEZING APPARATUS FOR FOOD

Tadaaki Sakai, Osaka, Japan, assignor to Nissin Gourmet Beef Co., Ltd., Osaka, Japan

Filed Dec. 23, 1988, Ser. No. 289,192

Int. Cl.⁴ F25D *25/04*

U.S. Cl. 62—380 **5 Claims**



1. A continuous quick freezing apparatus for food comprising a freezing container having a hollow rectangular shape, a cooling plate for separating said freezing container into an upper compartment and a lower compartment, a first cooling means coupled to said cooling plate and located beneath said cooling plate in said lower compartment, a conveying belt disposed movably on said cooling plate for conveying food, a conveying means for driving said conveying belt, an air cooling plate disposed in said upper compartment which is composed of a metal plate and a second cooling means coupled to said metal plate, a support plate for said air cooling plate and a vertical moving device for moving said support plate and air cooling plate vertically within said upper compartment, and openings for food and said conveying belt are provided at both ends of said freezing container.

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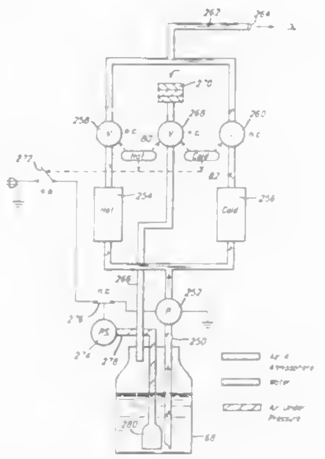
4,881,380
PLUMBING MODULE FOR BOTTLED WATER COOLER

Ronald J. Mrugala, Rockford; Doyle Raymer, Davis; Dipak J. Negandhl, Freeport, all of Ill., and Robert L. Latzko, Wauwatosa, Wis., assignors to King-Seeley Thermos Co., Freeport, Ill.

Filed Mar. 31, 1988, Ser. No. 176,352
Int. Cl.⁴ B67D *5/62*

U.S. Cl. 62—389 24 Claims



1. A plumbing module for liquid dispensing systems comprising:

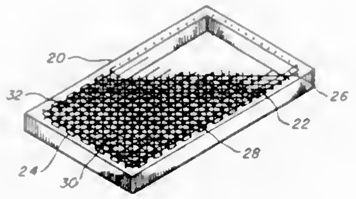
a housing having a front panel;
a pump mounted within said housing;
liquid draw tube coupled to said pump for connection to a source of liquid to be dispensed;
a liquid storage tank coupled to said pump for receiving and storing liquid from said pump;
a refrigeration system for removing heat from said liquid stored in said tank which includes a condenser comprising at least one coolant conducting tube for dissipating heat removed from said liquid stored in said tank;
a dispensing conduit coupled to said tank and valve means disposed on said front panel in communication with said dispensing conduit, said valve means having means for energizing said pump and having means for selectively closing said dispensing conduit; and
wherein said draw tube is adapted to draw liquid from a sealed bottle and wherein said valve means includes means for selectively venting said bottle to atmosphere.

4,881,381
TEXTILE FABRIC

Irving Townsend, 11910 Mayfield Ave., Los Angeles, Calif. 90049

Filed Dec. 20, 1988, Ser. No. 286,693
Int. Cl.⁴ D04B *35/00*

U.S. Cl. 66—1 A 7 Claims



1. The method of forming a fabric, a textile fabric using a frame having a plurality of pegs at equally spaced intervals around the perimeter threof which comprise the steps of:

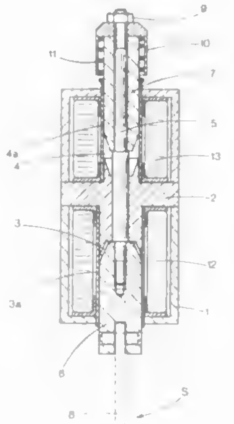
(a) winding yarn a first direction around each of a number of adjacent parallel pegs forming a warp;
(b) winding yarn a second direction 90 degrees from the first around each of the remaining adjacent parallel pegs forming a woof-like layer on top of said warp;
(c) crocheting yarn in a chain stitch a first diagonal direction across the frame around adjacent pegs along two nonadjacent vertices through the woof-like layer and warp layer simultaneously;
(d) crocheting yarn in a chain stitch a second diagonal direction 90 degrees from the first around adjacent pegs along two nonadjacent vertices in the same manner as the first diagonal crocheting; and,
crocheting yarn in a chain stitch through the perimeter of the thus formed textile joining the edge of the wound and crocheted yarn into a substantial sturdy fabric creating tactile depth with a patterned surface.

4,881,382
ELECTROMECHANICAL DEVICE FOR DRAWING ALONG SLIDES SUPPORTING THE SAME NUMBER OF THREAD GUIDES IN AN AUTOMATIC FLAT KNITTING MACHINE

Benito Stoppazzini, Sala Bolognese, Italy, assignor to E.M.M. Emiliana Macchine Maglieria S.R.L., Padulle di Sala Bolognese, Italy

Filed Feb. 24, 1989, Ser. No. 314,939
Claims priority, application Italy, Mar. 1, 1988, 4749/88[U]
Int. Cl.⁴ D04B *15/52*

U.S. Cl. 66—126 R 2 Claims



1. An electromechanical device for drawing along slides, supporting a same number of thread guides, of an automatic flat knitting machine, with said machine comprising: a carriage that is made to move with an outward and return motion above needle beds of said machine; at least one bar, located parallel to and above said needle beds, with said slides mounted upon and coupled with said bar in such a way that said slides are able to slide along said bar; a plurality of stops removably mounted on said bars, said stops delimiting a stroke os said slides located between two consecutive said stops, with upper surfaces of said stops and slides having a shape designed to form a sliding track, each slide featuring at least two vertical ledges, laterally deliminating a cutout in the upper rib of said slide; and with said device being comprising: a casing including a central body located between two coaxial seats, first and second respectively, with said seats being open to the outside, said casing being fixed to said carriage in such a way as to position the axes of said seats in a vertical plane; two cores, lower and upper respectively, in a ferromagnetic material, which are inserted in such a way that they are able to slide in said first and second seats respectively, said cores being connected to one another by means of a rod inserted into a hole that passes through said

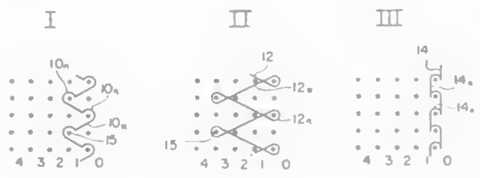
central body, a downward-facing anchor plate being fixed on the outside to said lower core; elastic means acting on said cores and rod, with an upward axial force able to lift said cores when there are no outside forces acting on said cores, consequently positioning said anchor plate in an extreme raised position in which said anchor plate does not strike said tracks of said slides; a first coil located in a an annular chamber surrounding said first seat, designed, as a result of being energised, to exert an upward axial force on said lower core in agreement with the action of said elastic means, very rapidly raising said cores and consequently bringing said anchor plate to said raised position; a second coil, located in an annular chamber surrounding said second seat, designed, as a result of being energised, dependent upon said first coil being de-energised, to exert a dowaward axial force on said upper core, in opposition to said action of said elastic means, lowering said cores and consequently bringing said anchor plate to an extreme lowered position, in which said anchor plate strikes one of said ledges of a corresponding slide depending upon the direction of movement of said carriage, said downward force, although opposed by said elastic means, being suitable to permit said cores to move with a slight vertical oscillating motion caused by said anchor plate sliding over said tracks.

4,881,383
WARP KNITTED FABRIC WITH SATIN-LIKE BACK AND BRUSHABLE FACE AND METHOD OF KNITTING SAME

Robert T. Spillane, Greensboro; Charles A. Wyrick, Gibsonville; Holger Scheller, and Duval, Paul A., both of Greensboro, all of N.C., assignors to Guilford Mills, Inc., Greensboro, N.C.

Filed Jul. 5, 1988, Ser. No. 215,228
Int. Cl.⁴ D04B *7/12*

U.S. Cl. 66—194 17 Claims



1. A warp knitted fabric of an at least three-bar construction characterized by a brushable surface on the technical face of said fabric and a satin-like surface on the technical back of said fabric, said fabric comprising a set of pile yarns warp knitted in overfed needle loops at the technical face of said fabric forming a brushable pile surface, a set of yarns warp knitted in extended underlaps at the technical back of said fabric forming a satin-like surface effect, and a set of tie-down yarns of substantially smaller denier than said satin yarns and warp knitted at the technical back of said fabric in substantially shorter underlaps than said satin-effect yarns for shielding said satin-effect yarns from picking without significantly obstructing the satin-like appearance of said satin-effect yarns.

4,881,384
HIGH TEMPERATURE DYEING APPARATUS

Mario M. Chicharro, Martorell, Spain, assignor to Montaje Y. Construcciones Del Hierro, S.A., Barcelona, Spain

Filed Jul. 8, 1988, Ser. No. 216,274
Claims priority, application Spain, Apr. 22, 1988, 8801372
Int. Cl.⁴ D06B *3/28*

U.S. Cl. 68—27 12 Claims

1. In a high temperature dyeing apparatus of the type operating in an open chamber on an endless rope of fabric to be dyed, the rope being drawn by mechanical and hydraulic means, the improvement comprising:

a cylindrical body having curved end walls, a top portion and upper sectors on said top portion;
an even number of open treatment and storage chambers within said cylindrical body;
a cylindrical turret on one of said upper sectors;
means on said turret for opening and closing said turret; and
a drive winch for driving the endless rope of fabric mounted horizontally in the interior of said turret, said drive winch comprising a cylindrical core, two circular flanges, pairs of rods disposed between said flanges, each rod having an outer side, a cover of non-slip material on said outer side of said rods, and a knurled configuration on said cover material.

4,881,385
APPARATUS FOR PROCESSING TEXTILES

Frank M. P. Lambrechts, 31, Lange Ridderstraat, 2000 Antwerpen, Belgium

Filed Mar. 25, 1988, Ser. No. 173,621
Claims priority, application Netherlands, Mar. 26, 1987, 8700715
Int. Cl.⁴ D06F *21/02, 37/04, 37/30*

U.S. Cl. 68—29 5 Claims

1. A stone-washing machine comprising the combination of a rigid, open base frame having opposite sides, a horizontally disposed drum defining a substantially horizontal axis of rotation, said drum having opposite imperforate end walls of regular polygonal shape defining aligned peripheral edges, a plurality of imperforate substantially rectangular panels each of which extends between an aligned pair of said peripheral edges, said panels engaging one another and said end walls to provide a liquid tight drum, one of said panels having at lest a major section which is selectively removable to define an enlarged opening for loading and unloading the drum with solid stone-like objects and textile objects which are to be stone-washed, means for introducing liquid such as potassium permanganate into the drum, support means on said frame for rotatably supporting said drum about said axis, said support means including a pair of spaced coplanar support wheels supported for rotation at one of said sides of the base frame, drive means for rotating said drum about said axis, and guide means on said drum including a circular track circumscribing one end of the drum and rigidly secured thereto, said circular

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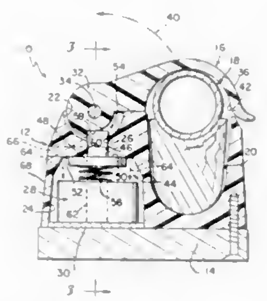
track being of generally outwardly directed U-shaped cross section to define a pair of spaced circular leg portions disposed in substantially parallel planes extending perpendicular to said axis, said support wheels being supported for rotation about axes which are substantially parallel with said first-mentioned axis and having a width fitting into said track, said support wheels having opposite lateral surfaces disposed in facing relation to said leg portions of the associated track to provide means for constraining said drum against axial movement along said axis relative to said frame.

4,881,386
ARTICLE LOCK

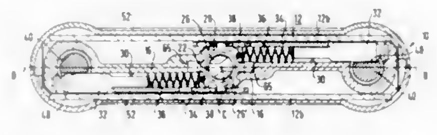
James A. Glines, Indianapolis, Ind., assignor to Meyer Plastics, Inc., Indianapolis, Ind.
Filed May 26, 1988, Ser. No. 199,027
Int. Cl.⁴ E05B *73/00*
U.S. Cl. 70—19 19 Claims



1. An article lock comprising
means for receiving an article,
means for releasably retaining the article in the receiving means, the retaining means being movable relative to the receiving means, and
a single means for blocking movement of the retaining means relative to the receiving means to fix the retaining means in a predetermined position locking the article in the receiving means, the blocking means being movable by an actuating means between a projected position engaging the retaining means and a retracted position away from the retaining means, the receiving means being formed to include means for introducing a key to the blocking means so that the key is movable in the introducing means to cause a key bit on the key to engage and act on the blocking means independent of the actuating means to move the blocking means to its retracted position, thereby permitting movement of the retaining means relative to the receiving means to release the article.

4,881,387
SHACKLE LOCK

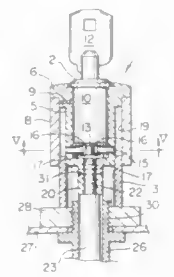
Ludger Kortenbrede, Telgte, Fed. Rep. of Germany, assignor to Aug. Winkhaus GmbH & Co. KB, Telgte, Fed. Rep. of Germany
Filed Apr. 28, 1989, Ser. No. 345,417
Claims priority, applicatioo Fed. Rep. of Germany, May 6, 1988, 3815584
Int. Cl.⁴ E05B *67/22*
U.S. Cl. 70—39 18 Claims



1. A shackle lock, especially with a long shackle, comprising a lock body (10) and a locking shackle, the end portions (4) of the shackle arms being adapted to fit into respective shackle arm housings (42) until a locked position is reached (FIG. 1), and being completely seaparable from the lock body (10) by withdrawal of the arm end portions (40) from the housings (42) (FIG. 8), at least one lock bolt (32) being furthermore guided for movement in the lock body (10) and being pretensioned by biassing means (36) in the direction of an engaged position (FIGS. 1 and 2), so that after the arm end portions (40) have been pushed into their locked position inside the arm housings (42), they move into the engaged position (FIGS. 1 and 2), engaging thereby into a bolt engagement surface (48) of at least one arm end portion (40), so preventing withdrawal of this arm end portion (40) from the associated arm housing (42), there being furthermore provided inside the lock body (10) a key-operated bolt withdrawal mechanism (20) which is connected by a gearing (28, 34) to the lock bolt (32) and which can by means of the key be moved against the action of the biassing means (36) from a basic state (FIGS. 1 and 2) corresponding to the engaged position of the lock bolt (32) and in which the key can be inserted and withdrawn, into a lock-opening state (FIG. 9) which necessarily produces a disengaged position of the lock bolt (32), characterised in that there is in the shackle arm housing (42) a bolt control member (46), which, subject to spring pressure (44), bears on the arm end portion (40), so that when the lock bolt (32) is moved out of the engaged position (FIGS. 1 and 2) and into the disengaged position (FIGS. 8 and 9), it causes a displacement of the arm end portion (40) out of the locked position and into the direction of separation from the lock body (10) (FIGS. 8 and 9) and thereby out of a bolt release position (FIGS. 1 and 2) into a bolt influencing position (FIGS. 8 and 9) in which it prevents the return of the lock bolt (32) to its bolt engaged position (FIGS. 1 and 2) (FIGS. 8 and 9).

4,881,388
LOCK FOR A BRAKE VALVE

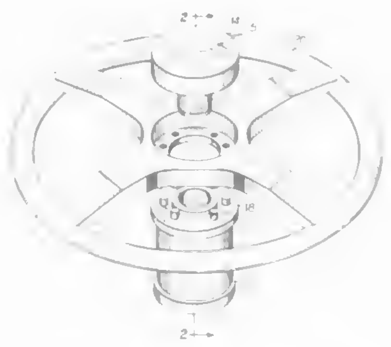
Ronald Pruim, 29 Lynn Ridge Villas S.E., Calgary, Alberta, Canada (T2C 2N1)
Filed Oct. 28, 1988, Ser. No. 264,138
Int. Cl.⁴ F16K *35/00*
U.S. Cl. 70—175 13 Claims



1. A lock device for a plunger operated valve comprising tubular casing means; coupler means on one end of said casing means for engaging the plunger of a valve so that the plunger can be operated by movement of said casing means only; sleeve means slidable in said one end of said casing means for movement into said casing means permitting plunger operation and actuation of the valve, and out of said casing means against a fixed element carrying said valve plunger; pin means radially slidable in said casing means for enaging said sleeve means to prevent movement thereof into said casing means, and consequently to prevent actuation of the valve; and lock means for controlling movement of said pin means, and thereby control actuation of said valve means.

4,881,389
ANTI-THEFT DEVICE FOR AUTOMOBILE VEHICLES

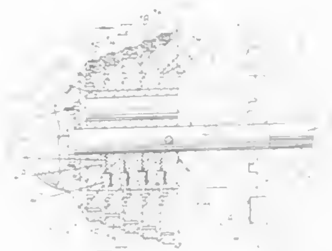
José Alfon; Alberto Martinez, and Abelardo Martínez, all of Final Ave. La Industria, Galpón No. 2, Urb. Industrial Palo Verde - Petare, Caracas, Venezuela
Filed Dec. 1, 1987, Ser. No. 126,661
Int. Cl.⁴ E05B *13/10*
U.S. Cl. 70—209 2 Claims



1. An anti-theft device for preventing unauthorized use or theft of vehicles by rendering the steering mechanism unserviceable, comprising:
a. a hollow fastening cylinder secured firmly to the steering column;
b. a steering wheel with a cylindrical opening in the upper side of the central part, said opening having a central hole; and
c. a lock casing removably mounted with its upper flanged part in the cylindrical opening of the steering wheel, and its lower cylindrical part in the hollow part of the fastening cylinder, axially and radially secured as well to the steering wheel as to the fastening cylinder, wherein said steering wheel, said fastening cylinder and said lock casing are mutually secured radially by means of studs placed on top of the fastening cylinder entering through suitable holes in the steering whcel into convenient holes in said lock casing.

4,881,390
COMBINATION LOCK

Michael Vale, 3 Beech Avenue, Beech Barn, Sanderstead, Surrey CR2 ONN, England
Filed Jun. 30, 1988, Ser. No. 213,386
Claims priority, application United Kingdom, Jul. 2, 1987, 8715607; Mar. 7, 1988, 8805377
Int. Cl.⁴ E05B *37/02*
U.S. Cl. 70—219 17 Claims



1. A combination lock comprising a shaft, a plurality of discs mounted coaxially on the shaft for individual rotation thereon, each disc having a first internal annular surface formed with a depression, the depression of at least one disc defining an abutment edge, a latch member mounted between the shaft and the annular surfaces and extending parallel to the shaft, biasing means urging the latch member into engagement with the first annular surfaces, the discs being rotatable on the shaft without turning the shaft, except when all the depressions are aligned with the latch member, so that with the latch member in its latched position extending into the depressions rotating in one direction of the disc or discs having an abutment surface causes the abutment surface or surfaces to engage the latch member and turn the shaft.

4,881,391
MOVABLE COVER DEVICE FOR AN AUTOMOBILE LOCK

Ezio Villa, Arese, and Giuseppe Biazzi, Uboldo, both of Italy, assignors to Alfa Lancia Industriale S.p.A., Arese, Italy
Filed Jun. 27, 1988, Ser. No. 211,560
Claims priority, application Italy, Jul. 16, 1987, 22026/87[U]
Int. Cl.⁴ E05B *17/18*
U.S. Cl. 70—455 1 Claim

1. A movable cover device for an automobile lock, said device comprising a plate supporting a lock operating actuator. means for fixing said plate to a wall of a compartment of an automobile, and a cover being pivotably mounted on said plate, said cover having an area substantially equal to that of said plate, said cover having a wall and a pivot positioned substantially orthogonal to said cover wall, said plate having a wall and a bush for rotatably supporting said pivot, said bush being rigid with said plate wall and positioned substantially orthogonal to said plate wall, said plate wall and said cover wall being in contact when said cover and said plate are completely superposed, a load-reversing wire spring being positioned between said plate and said cover, and said load-reversing wire spring having a pair of ends, one of said spring ends being pivotably mounted in said plate and the other of said spring ends being pivotably mounted in said cover, said track having a profiled base formed from a depressed step close to its closure end and being situated at a depth equal to the length of said peg, a connection ramp, and a raised runway being situated at a depth less than the length of said peg.

4,881,392
HOT LEVELLER AUTOMATION SYSTEM

Noel E. Thompson, Mangerton; Richard Martin Johns, Balgownie; Gregory Rozmus, Figtree; George F. Voss, Bar Beach; William J. Edwards, Carey Bay, and Peter J. Thomas, Adamstown, all of Australia, assignors to Broken Hill Proprietary Company Limited, Victoria and Industrial Automation Services Pty Ltd., New South Wales, both of, Australia
Filed Apr. 13, 1988, Ser. No. 180,911
Claims priority, application Australia, Apr. 13, 1987, PI1404/87
Int. Cl.⁴ B21D *1/02*
U.S. Cl. 72—7 30 Claims

1. A method of controlling a hot leveller for metal plates, said hot leveller having upper and lower work rolls mounted in

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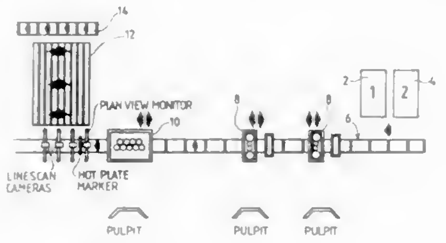
upper and lower cartridges, a drive means for driving the work rolls, an adjustment means for controlling relative positions of the upper and lower work rolls, and a control means for controlling the drive means and adjustment means, said method including the steps of:

inputting data to the control means relating to (i) type of levelling required, (ii) type of material of the plates, and (iii) temperature and thickness of the plates;



determining the number of passes of the plates through the hot leveller to achieve the levelling required based on the data input to the control means;

determining setting values for controlling the drive means and adjustment means based upon leveller deflection and plate deflection;

applying the setting values to the drive means and adjust means; and

passing a plate between the upper and lower work rolls for said number of passes to level the plate.

4,881,393

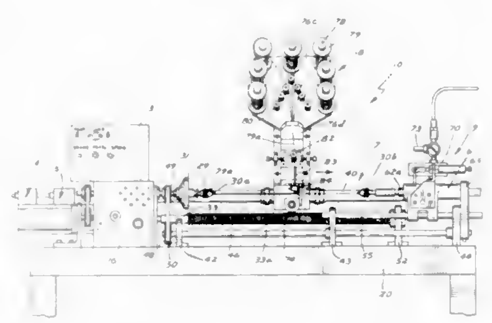
WIRE COILING APPARATUS

Willard D. Sykes, 921 SW. 15th St., Forest Lake, Minn. 55025

Filed Aug. 26, 1988, Ser. No. 240,069

Int. Cl.⁴ B21F *3/04, 35/00*

U.S. Cl. 72—27 6 Claims



1. A wire coiling apparatus, having in combination

an arbor,

first and second belts directly and respectively engaging opposite ends of said arbor for rotating said arbor,

a first servo motor driving said first and second belts,

a lead screw parallel to said arbor,

third and fourth belts directly and respectively engaging opposite ends of said lead screw for rotating said lead screw,

a second servo motor driving said third and fourth belts,

a programmed computer in operatively connected to said first and second servo motors for driving said motors at the same or relative speeds,

an upstanding frame having a face for mounting a spool of coiling wire thereon,

means mounted on said frame for feeding wire or a plurality of wires to said arbor, and

said computer causing said servo motors within the continuous operation of coiling said wire or wires upon said arbor to produce variations in pitch and spacing thereof at programmed intervals in the process of a continuous coiling operation.

4,881,394

METHOD AND APPARATUS FOR IRONING THE WALL OF A ONE-PIECE CYLINDRICAL BODY

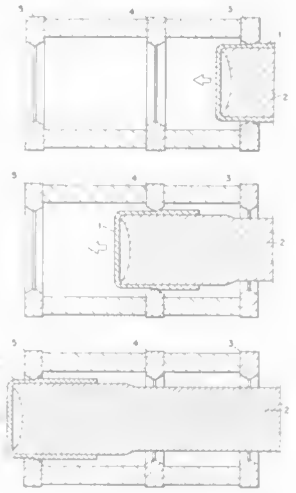
Egbert Jansen, Purmerend, Netherlands, assignor to Hoogovens Groep B.V., Ijmuiden, Netherlands

Filed Jul. 6, 1988, Ser. No. 215,562

Claims priority, application Netherlands, Jul. 10, 1987, 8701623

Int. Cl.⁴ B21D *22/20*

U.S. Cl. 72—45 17 Claims



1. Wall ironing apparatus for ironing the wall of a deep-drawn cylindrical body having a ram and at least one ring die structure for reducing the wall thickness of the body forced through the die structure by the ram, wherein said die structure has successive first and second ring die regions arranged for simultaneously performing a wall thickness reduction in two phases, the first die region having an internal diameter slightly larger than that of said second die region and the die dimensions being such that the first die region performs a relatively small reduction while the second die region performs a relatively large reduction, said die structure being constructed to provide a fluid-tight sealed annular space which in use is bounded by die structure and the portion of the body between contact regions of the body with the first and second die regions, there being at least one inlet for introducing lubricant to said annular space, and said die structure including an elongate face of internal diameter slightly greater than that of the second die region and bounding said annular space at a region between the lubricant inlet and the second die region to provide a narrow region of said annular space along which in use lubricant is entrained towards the second die region by the moving body being ironed.

4,881,395

PROCESS AND APPARATUS FOR FABRICATING STEPPED NAILS

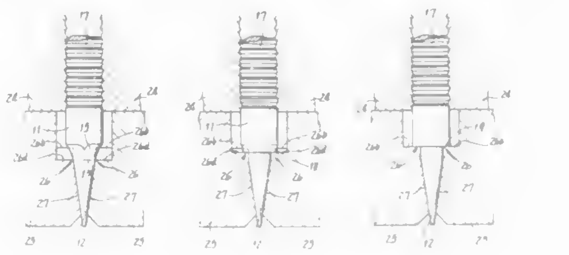
Katsumi Shinjo, Osaka, Japan, assignor to Yugen Kaisha Shinjo Seisakusho; Teruyuki Matsui; Kikuma Matsuyama and Toshisaida Saito, all of Osaka, Japan

Filed Jun. 21, 1988, Ser. No. 209,380

Int. Cl.⁴ B21H *3/06, 3/30*

U.S. Cl. 72—90 4 Claims

1. A process for fabricating stepped nails, the process comprising the steps of pressing an end portion of a blank by a first die means for shaping the same into a rough slender tip portion having a smaller diameter than a diameter of a shank portion of the blank, pressing the shank portion of the blank by a thread rolling die means of a second die means for cutting threads on a peripheral surface of the shank portion to prevent the blank from coming out of the first die means, providing a correction die means having a shoulder with a rising portion and a curved surface complimentary with an outer profile of the slender tip portion, and squeezing a round shoulder formed between the shank portion and the slender tip portion by the rising portion of the shoulder of the correction die means so as to cause squeezed metal to protrude radially until it has a diameter of the shank portion, thereby forming a shoulder perpendicular to an axis of the shank portion.



4,881,396

ROLLING MILL STAND WITH AXIALLY SLIDABLE ROLLS

Jürgen Seidel, Kreuztal-Ferndorf; Dieter Rosenthal, Niederfischbach, and Jürgen Klöckner, Netphen-Eschenbach, all of Fed. Rep. of Germany, assignors to SMS Schloemann-Siemag Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

Filed Apr. 11, 1988, Ser. No. 180,141

Claims priority, application Fed. Rep. of Germany, Apr. 9, 1987, 3712043

Int. Cl.⁴ B21B *31/18, 37/00, 31/20*

U.S. Cl. 72—247 7 Claims

1. In a rolling mill stand with work rolls which are supported by back-up rolls or by intermediate and back-up rolls, wherein the work rolls, the intermediate rolls and the back-up rolls are axially slidable relative to each other into and out of a neutral position, the rolls having bodies with circumferential lines, the bodies being provided with alternatingly concavely and convexly shaped contours, such that the rolls supplement each other in at least one axial position of the rolls so that no gap exists between the rolls, wherein corrections of the roll gap between a pair of rolls are carried out by relative axial displacement of the rolls, the improvement comprising the contours of each of the rolls having in the neutral roll position thereof, in addition to a possible maximum in the middle, maximum inclinations of the circumferential lines on both sides of the middle of the circumferential surfaces of the rolls in longitudinal direction of the rolls in which roll gap profile changes are to be effected, wherein the contours of the rolls correspond in dependence upon the radius r from the respective axial position x to the equation

$$r_{(x)}=a+bx+cx^2+dx^3+ex^4+fx^5$$

wherein the contours are determined by inserting given preferred fixed values into this equation.

4,881,397

AIR CONVEYOR FOR REMOVING PARTS FROM A HIGH SPEED FORMING PRESS

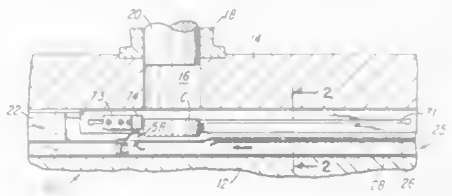
Harry D. Stewart, Tipp City, and Ralph P. Stodd, Dayton, both of Ohio, assignors to Formatec Tooling Systems, Inc., Dayton, Ohio

Continuation of Ser. No. 12,500, Feb. 9, 1987, Pat. No. 4,741,196. This application May 2, 1988, Ser. No. 189,319

The portion of the term of this patent subsequent to May 3, 2005, has been disclaimed.

Int. Cl.⁴ B21D *45/02;* **B21J** *13/08*

U.S. Cl. 72—361 13 Claims



12. A method of rapidly and dependably transferring a succession of metal articles through a tunnel defined between the bed of a mechanical press and the lower die shoe of an article forming die set mounted on the press bed, comprising the steps of positioning within the tunnel on the press bed an elongated air conveyor including parallel spaced walls and defining therebetween an air receiving chamber with the conveyor

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having an inner end portion and an outer end portion, blowing air into the chamber from a motor driven blower connected to the outer end portion, directing a flow of air from the inner end portion of the chamber through an air outlet adjacent an article receiving zone on one of the walls of the conveyor and then longitudinally above the one wall for quickly moving each article from the article receiving zone towards the outer end portion of the conveyor, and directing an additional flow of air from the air chamber through an opening spaced longitudinally from the air outlet for continuing the transfer of each article to the discharge end of the conveyor.

4,881,398

TRANSFER PRESS

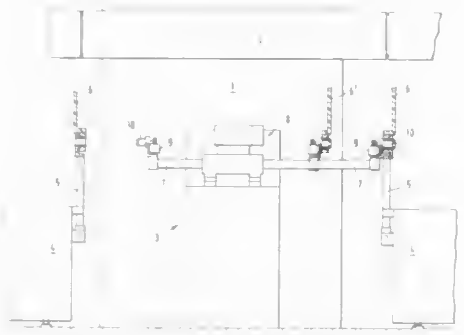
Edmund Daubner, Goeppingen-Bartenbach, and Gerald Mikusch, Goeppingen, both of Fed. Rep. of Germany, assignors to L. Schuler GmbH, Geoppingen, Fed. Rep. of Germany

Filed Mar. 23, 1988, Ser. No. 172,311

Claims priority, application Fed. Rep. of Germany, Mar. 25, 1987, 3709762

Int. Cl.⁴ B21D *43/20*

U.S. Cl. 72—419 6 Claims



1. An arrangement for the intermediate deposit of workpieces in inoperative idling stage areas of transfer presses remote from active work stage areas of transfer presses, comprising gripping and holding devices arranged in the idling stage areas for template means moved into tool spaces of the transfer press with sliding table means movable between the idling stage areas and the work stage areas of transfer presses by way of retaining means, template carrier means arranged at the gripping and holding devices which are displaceable generally horizontally toward the sliding table means and away from the same by a motorized drive means associated with the template carrier means, rotatable mounting bolt means provided at the template carrier means and rotatable by way of an adjusting means, said rotatable bolt means cooperating with apertures in the template means in the manner of a bayonet connection, the template means being provided with rotatably supported mounting bushing means, into which the mounting bolt means are adapted to be inserted, the retaining means being bored out for receiving the mounting bushing means, a first bayonet-like connection means being provided between the mounting bushing means and the mounting bolt means, a second bayonet-like connection means being provided between the retaining means and the mounting bushing means, the bayonet-like connection means being operable to be activated one after the other in such a manner that the bayonet-like connection means between the mounting bushing means and the mounting bolt means becomes effective in time prior to the bayonet-like connection means between the retaining means and the mounting bushing means when the mounting bolt means has been guided into the mounting bushing means for taking over the template means.

4,881,399

DOUBLE-ACTION SCREW PRESS

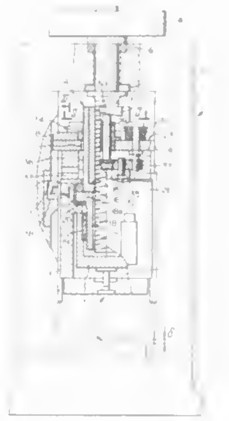
Jury A. Bocharov; Anatoly V. Safonov; Anatoly P. Nosov; Jury I. Tamaris, all of Moscow; Evgeny S. Lunkov, Chimkent; Vladimir I. Myakinenkov, Chimkent; Igor Y. Perepechin, Chimkent; Leonid L. Rudman, Kiev; Viktor P. Salov, Voronezh; Igor V. Bovykin, Voronezh, and Mark M. Zaidlin, Voronezh, all of U.S.S.R., assignors to Moskovskoe Vyschee tekhnicheskoe uchilische imeni N.E.Baumana, Moscow and Experimentalny nauchno-issledovatelsky institut kuznechno-pressovogo mashinostroenia "ENIKMASH", Voronezh., both of, U.S.S.R.

PCT No. PCT/SU86/00054, § 371 Date Jan. 28, 1988, § 102(e) Date Jan. 28, 1988, PCT Pub. No. WO87/07210, PCT Pub. Date Dec. 3, 1987

PCT Filed May 29, 1986, Ser. No. 174,519

Int. Cl.⁴ B21D *22/00;* B21J *9/10*

U.S. Cl. 72—454 4 Claims



1. A double-action screw press comprising:

a frame for receiving a load and including upper and lower traverses interconnected by two vertical uprights, the lower traverse of said frame secured to a foundation, the two vertical uprights spaced apart from each other and securely fastened on said lower traverse, the upper traverse of said frame mounted on said two vertical uprights;

a first plurality of guideways, at least one of said guideways disposed on each of said two vertical uprights along a longitudinally extending axis of said frame;

a first screw rotatably mounted with respect to the axis of said frame and fastened in said upper traverse;

an outer slide positioned concentrically with said first screw, guided by said first plurality of guideways and having two coaxially arranged, intercommunicated spaces formed therein;

a press tool received within one of said intercommunicated spaces;

a second plurality of guideways provided on an inner surface of said outer slide and located in said one of said interconnected spaces;

an inner slide mounted on said second plurality of guideways and having a space formed therein arranged coaxially to said first screw;

a first nut in engagement with said first screw and arranged concentrically with the axis of said first screw;

a second nut placed in the space formed in said inner slide and rigidly mounted on an inner side surface of said inner slide;

a hollow screw, embracing said first screw, in engagement with said second nut, said hollow screw rigidly connected with a nut body of said first nut, said nut body forming a carrying member;

at least two first stops arranged symmetrically to the axis of said first screw and mounted on the outer surface of said carrying member, each of said first stops including a supporting surface having an angle of inclination opposite to the inclination of helical threads of said first screw; and

a braking mechanism for braking said outer slide, when it approaches an extreme bottom position, comprising:

(1) a plate for braking the outer slide, arranged perpendicularly to the axis of said first screw, movable along the axis of said first screw and having a through hole arranged concentrically with said first screw, said plate embracing said carrying member;

(2) elastic elements located on a surface of said plate facing said at least two first stops;

(3) traverses installed between said plate and an upper face surface of said outer slide and kinematically coupled with a pair of said elastic elements;

(4) screws, a pair of which is connected with each of said traverses by first threaded ends, second ends of said pair of screws including heads thereon resting on the upper face surface of said outer slide;

(5) second stops, each of which is mounted for rotation relative to the axis thereof in said plate and interacts with one of said traverses at one end thereof and with one of said at least two first stops by means of an inclined face surface at the opposite end thereof, the inclined face surface having an angle of inclination coinciding with the angle of inclination of the support surface of said at least two first stops; and

(6) two stops for limiting movement of said plate for braking the outer slide, each being rigidly coupled with one of said two vertical uprights and having sloping and horizontal thrust faces interacting with said plate to limit movement of said plate when said outer slide approaches its extreme bottom position.

4,881,400

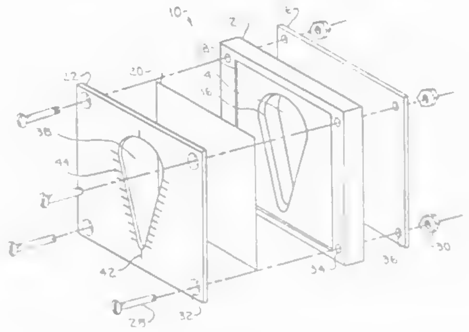
CONTINUOUS MEASURING DIAPHRAGM PRESSURE GAGE

Henry J. Goodman, Baltimore; Evan H. Walker, Aberdeen, both of Md., and Emmett L. Bell, Glennville, Ga., assignors to The United States of America as represented by the Secretary of The Army, Washington, D.C.

Filed Sep. 22, 1988, Ser. No. 248,761

Int. Cl.⁴ G01N *33/22;* F16K *17/40*

U.S. Cl. 73—35 4 Claims



1. A mechanical pressure gage for measuring the peak pressure of a pressure range of a fluid comprising:

a housing including:

a first plate member having a wedge-shaped opening centrally located and extending therethrough;

a second plate member having front and back sides;

said front side having a recess;

diaphragm means being frictionally positioned in said recess and being deformed in a mechanical and ruptured manner by a peak pressure that exceeds a threshold pressure sufficient to rupture said diaphragm means;

a third plate member forming a back support for said second plate member;

said first, second, and third plate members being fixedly attached on their respective outer edges; and

scale marking means located adjacent to the edge of said wedge-shaped opening for measuring said peak fluid pressure.

4,881,401

KNOCK DETECTION SYSTEM

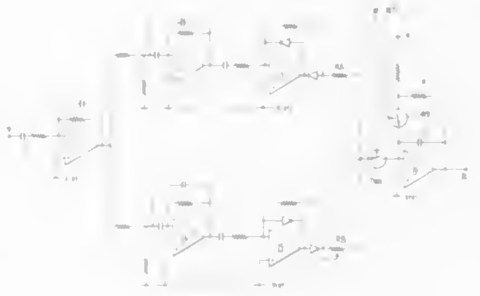
Kevin Cockerham, Sutton Coldfield, England, assignor to Lucas Industries public limited company, Birmingham, United Kingdom

Filed Mar. 2, 1988, Ser. No. 162,972

Claims priority, application United Kingdom, Mar. 4, 1987, 8705023

Int. Cl.⁴ G01L *23/22*

U.S. Cl. 73—35 4 Claims



1. A knock detection system for an internal combustion engine having a vibration sensing transducer, said knock detection system comprising:

an input for receiving a signal from said vibration sensing transducer, which signal includes a knock component;

first and second bandpass filter means connected to said input, each bandpass filter means having an output, said first bandpass filter means being arranged to pass said knock component of the received signal and said second bandpass filter means having a pass band adjacent that of said first bandpass filter means for substantially blocking said knock component;

means for comparing the output of said first bandpass filter means with the output of said second bandpass filter means so as to provide a knock-representing signal, said comparing means comprises rectifying means connected to the outputs of said bandpass filter means; and means for forming said knock-representing signal as the difference between said rectified outputs of said first and second bandpass filter means, said rectifying means including means for rectifying opposite polarities of outputs from said first and second bandpass filter means and said means for forming said knock-representing signal comprises a summing means; and

integrating means for integrating said knock-representing signal for a predetermined period.

4,881,402

PROCESS FOR THE DETERMINATION OF LIQUID ABSORPTION OF POWDERY SOLIDS

Jurgen Markert, Dulmen; Klaus-Dieter Schubel, Datteln, and Milan Krizek, Marl, all of Fed. Rep. of Germany, assignors to Huels Aktiengsellschaft, Marl, Fed. Rep. of Germany

Filed Aug. 19, 1988, Ser. No. 233,743

Claims priority, application Fed. Rep. of Germany, Aug. 20, 1987, 3727794

Int. Cl.⁴ G01N *13/00*

U.S. Cl. 73—61 R **4 Claims**

1. A process for measuring the liquid absorption capacity of a powder, comprising the steps of:

stirring the powder in a mixing chamber of a planetary

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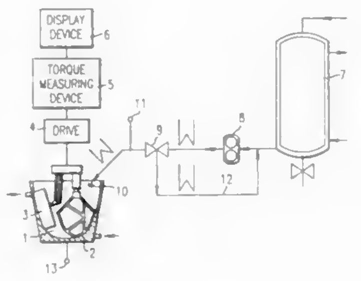
mixer, the mixing chamber being between 10% and 80% filled with the powder;

spraying a liquid in the form of a spray cone, and at a throughput which is constant over time, onto the powder from at least one spraying device, said liquid being heated to have a viscosity of 0.1 to 50 mPa·s at shear rates of 5×10^3/sec. to 5×10^6/sec., said constant throughput having such a value that a liquid mass of 0.05 to 6 times the mass of the powder is sprayed in 0.1 to 10 minutes;



measuring a torque of a stirrer of said mixer before and during said spraying step;

determining a maximum level of said torque and a time difference between the beginning of said spraying step and a time when said maximum level is reached; and

determining an amount of liquid absorption of the powder based on the liquid mass which is sprayed during said time difference.

4,881,403

SPARK PLUG WITH PRESSURE SENSOR

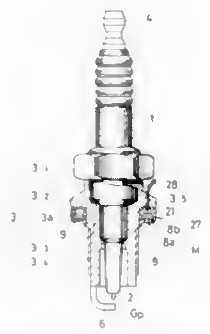
Junichi Kagawa; Yoshiaki Saiki, and Kozo Amano, all of Nagoya, Japan, assignors to NGK Spark Plug Co., Ltd., Nagoya, Japan

Filed Aug. 19, 1988, Ser. No. 234,214

Claims priority, application Japan, Aug. 25, 1987, 62-209313

Int. Cl.⁴ G01L *9/08*

U.S. Cl. 73—115 **7 Claims**



1. A spark plug with pressure sensor comprising;

a center electrode having a high voltage terminal;

an insulator provided around said center electrode to securely support it;

a tubular metallic shell provided to support said insulator at its inner side;

a pressure sensor having a piezoelectrical element at least enclosed by a casing of metallic hollow ring;

said metallic shell having a diameter-increased portion and a diameter-reduced portion;

said casing of said sensor being inserted into said diameter-reduced portion with an inner side of said casing tightly engaging said outer side of said diameter-reduced portion;

a mount means having a ring portion and a flange portion said ring portion tightly inserted into said diameter-reduced portion while said flange portion tightly sandwiching said casing with a step between said diameter-increased portion; and

said ring portion being welded to said diameter-reduced portion to maintain air-tight relationship between an inner side of said ring portion and an outer side of said diameter-reduced portion.

4,881,404

DIESEL ENGINE SIMULATOR AND A METHOD OF ADJUSTING THE DYNAMIC RUNNING CHARACTERISTICS OF A DIESEL ENGINE

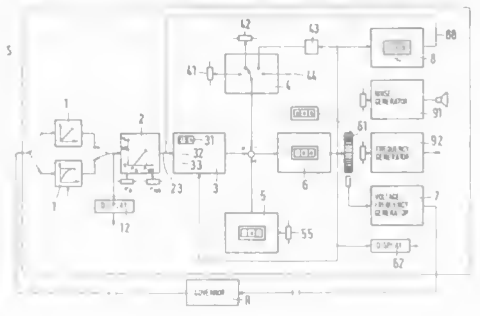
Walter Siegl, Zurich, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Mar. 9, 1988, Ser. No. 165,830

Claims priority, application Switzerland, Mar. 19, 1987, 1038/87

Int. Cl.⁴ G01M *15/00*

U.S. Cl. 73—119 A **19 Claims**



1. A diesel engine simulator comprising

at least one input stage for receiving an input signal from an electronic speed governor and emitting a corresponding voltage signal;

an injection pump simulation block for simulating an injection pump setting, said simulation block being connected to said input stage to receive said voltage signal and emit a corresponding torque signal;

a diesel engine simulator circuit connected to said simulation block to emit a speed signal corresponding to said torque signal;

at least one adjustable torque-load simulation block for superimposing a signal therefrom on said speed signal of said diesel engine simulator circuit; and

a convertor for converting a resultant simulated speed signal from said diesel engine simulator circuit to a frequency signal for output to the electronic speed governor.

4,881,405

METHOD AND DEVICE FOR MECHANICAL TESTING OF CIVIL ENGINEERING STRUCTURE SURFACINGS

Jean Paquet, Plaisir, France, assignor to Centre Experimental De Recherche et D'Etudes Du Batiment, France

Filed Jan. 19, 1988, Ser. No. 145,147

Claims priority, application France, May 21, 1986, 86 07234

Int. Cl.⁴ G01M *19/00*

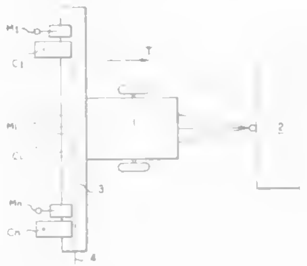
U.S. Cl. 73—146 **18 Claims**

6. Device for mechanical testing of civil engineering structure surfacings, characterised in that it comprises:

a mobile support (3) adapted to be moved (T) across the surface of the surfacing,

percussion means (Mi) disposed on the support (3), said means (Mi) serving to generate sequential calibrated test impacts on said surface of the surfacing,

sensor means (Ci) fastened to the mobile support, said sensor means being mechanically decoupled from the support (3), said sensor means (Ci) serving to deliver an electrical signal representative of the impulse response of the surfacing to the calibrated test impacts.



4,881,406

APPARATUS AND METHOD FOR TAKING MEASUREMENTS WHILE DRILLING

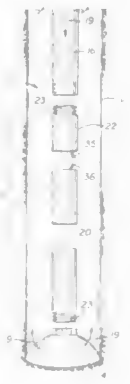
Glenn E. Coury, P. O. Box 666, Wheat Ridge, Colo. 80034

Continuation-in-part of Ser. No. 25,192, Mar. 12, 1987, Pat. No. 4,765,183. This application Aug. 22, 1988, Ser. No. 235,112

The portion of the term of this patent subsequent to Aug. 23, 2005, has been disclaimed.

Int. Cl.⁴ E21B *47/06*

U.S. Cl. 73—154 20 Claims



1. An apparatus for taking measurements while drilling an earth formation at the wall of a well bore and calculating therefrom by the laws of multidimensional and transient heat transfer by conduction a desired reservoir property, comprising:

a temperature sensing means for measuring the temperature of the face of a well bore;

a support means for carrying said temperature sensing means at a preselected depth in the well bore, substantially at the position of the earth formation to be measured;

a locating means for positioning said temperature sensing means laterally of the support means at a proper position with respect to the bore wall for taking a temperature measurement of the face of the bore wall;

an activating means for causing the temperature sensing means to register temperature readings of the face of the well bore over a predetermined period of elapsed time;

a processing means for receiving the temperature readings of the well bore face from said temperature sensing means and calculating therefrom by the laws of multidimensional and transient heat transfer by conduction said desired reservoir property; and means for transmitting the readings of the temperature sensing means to said processing means.

4,881,407

HOT WIRE AIR FLOW METER

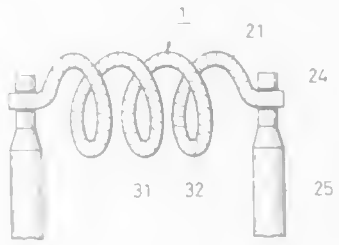
Minoru Tashahashi, Mito; Hiroastu Tokuda, Katsuta; Izumi Watanabe, Katsuta, and Yutaka Nishimura, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo and Hitachi Automotive Engineering Co., Ltd., Katsuda, both of, Japan

Filed Oct. 8, 1987, Ser. No. 105,809

Claims priority, application Japan, Oct. 8, 1986, 61-239940; Oct. 8, 1986, 61-239941

Int. Cl.⁴ G01F *1/68*

U.S. Cl. 73—204.16 5 Claims



1. For use in a hot wire air flow meter, to be arranged at an air passage for measuring an intake mass air flow for an electronic control fuel injection apparatus, having a heating resistor and a driving circuit for controlling current flowing through the heating resistor to produce an output voltage of said heating resistor as a signal corresponding to the mass air flow, said heating resistor comprising a platinum film deposited on a bobbin made of zirconia or glass fiber, said platinum film providing a predetermined resistance value, wherein said bobbin has the shape of a coil.

4,881,408

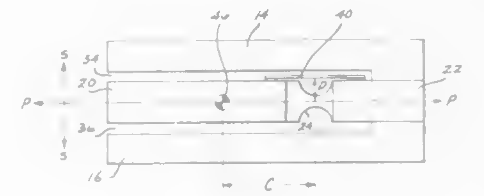
LOW PROFILE ACCELEROMETER

Rand H. Hulsing, II, Redmond; Rex B. Peters, Woodinville, and Brian L. Norling, Mill Creek, all of Wash., assignors to Sundstrand Data Control, Inc., Redmond, Wash.

Continuation of Ser. No. 28,591, Mar. 20, 1987, abandoned. This application Feb. 16, 1989, Ser. No. 313,289

Int. Cl.⁴ G01P *15/10*

U.S. Cl. 73—517 AV 7 Claims



1. An accelerometer for measuring acceleration along a sensitive axis, the accelerometer comprising:

a support;

a proof mass, the proof mass and the support having a coefficient of thermal expansion different from the coefficient of thermal expansion of crystalline quartz;

mounting means for mounting the proof mass to the support such that the proof mass has a rotational degree of freedom about a hinge axis perpendicular to the sensitive axis;

force sensing means comprising one or more force sensing elements, each force sensing element comprising a vibrating beam transducer having a beam consisting essentially of crystalline quartz, each force sensing element being connected between the proof mass and the support, each force sensing element being positioned along a line that is parallel to a pendulous axis defined as an axis normal to the hinge axis and passing through the hinge axis and the

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center of mass of the proof mass, the force sensing means being symmetrically positioned with respect to a plane that is normal to the hinge axis and that passes through the center of mass of the proof mass, all force sensing elements being connected between the proof mass and support such that rotation of the proof mass in a given direction about the hinge axis puts all force sensing elements in tension or all forces sensing elements in compression, the force sensing means and the mounting means being the only constraints on rotation of the proof mass about the hinge axis; and

the perpendicular distance between the hinge axis and each line being less than the distance between the hinge axis and the center of mass of the proof mass.

4,881,409

MULTI-POINT WALL THICKNESS GAGE

David H. Roarty, Murrysville, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 13, 1988, Ser. No. 205,891

Int. Cl.⁴ G01N *29/00*

U.S. Cl. 73—597 **19 Claims**

1. An apparatus for simultaneously measuring the thickness of a ferro-magnetic material at a plurality of discrete points, the measuring apparatus comprising:

a magnetic pad securable to said ferro-magnetic material at a predetermined location;

a plurality of individual ultrasonic transducers associated with the magnetic pad so as to form a grid pattern for measuring the thickness of the material at each of said discrete points;

means for transmitting an ultrasonic pulse through each of said transducers and into the ferro-magnetic material; and

means for receiving a plurality of return signals from the ferro-magnetic material, one signal through each of said transducers, said return signals being indicative of the thickness of the material at each of said discrete points.

4,881,410

ULTRAMINIATURE PRESSURE SENSOR AND METHOD OF MAKING SAME

Kensall D. Wise, and Hin-Leung Chau, both of Ann Arbor, Mich., assignors to The Regents of the University of Michigan, Ann Arbor, Mich.

Division of Ser. No. 57,884, Jun. 1, 1987, Pat. No. 4,815,472. This application May 4, 1988, Ser. No. 190,310

Int. Cl.⁴ G01L *7/08, 9/12*

U.S. Cl. 73—724 **24 Claims**

17. A transducer including a pressure-adjustable parallel plate capacitor, comprising:

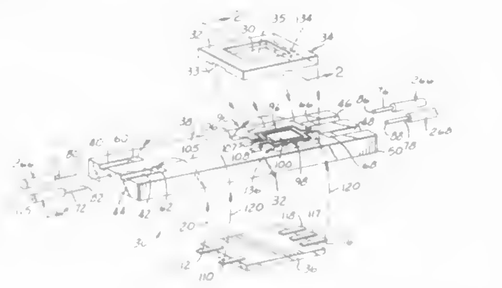
a first electrically conductive plate; and

an integrally formed structure made from single-crystal silicon semiconductor material and having a diaphragm and a rim that extend entirely around the periphery of the diaphragm and mechanically supports the diaphragm in a nominal position parallel to and at a predetermined nominal distance from the first plate,

the diaphragm and rim being electrically conductive and heavily impregnated with at least a first material which alters an etching characteristic thereof in comparison to single-crystal material which is identical to the heavily impregnated material of the diaphragm and rim except for containing substantially less of such first material,

the diaphragm constituting a second electrically conductive plate, and

being sufficiently thin relative to its overall size to allow it to respond to a mechanical force applied which is thereto in the form of changing pressure in a range designed to be measured by said transducer, thereby changing the capacitance of the parallel place capacitor.



4,881,411

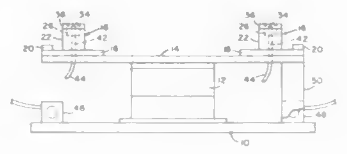
SPECIMEN HOLDER AND ROTARY ASSEMBLY

Daron C. Holderfield, Boaz; Bernard E. Martin, Huntsville, both of Ala., and Samuel S. Russell, Irmo, S.C., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 27, 1988, Ser. No. 263,305

Int. Cl.⁴ G01N *3/04*

U.S. Cl. 73—856 14 Claims



1. A mount for mounting a chip test specimen and including a die table having an upper surface with a 90 degree angle arc segment cut-out in the surface thereof to provide an indented flat surface from a periphery of said die table to said 90 degree angle for mounting of a chip test specimen and means in said flat surface for applying vacuum to the test specimen to secure the test specimen in a predetermined position relative to the sides of the 90 degree angle cut-out.

4,881,412

FLOW METERS

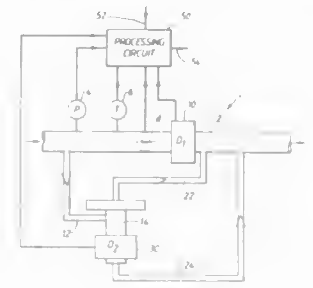
Ronald Northedge, Old Signal Point, La Moye, St. Brelades, Jersey, Channel Islands

Continuation of Ser. No. 895,931, Aug. 13, 1986. This application Aug. 4, 1988, Ser. No. 228,781

Claims priority, application United Kingdom, Aug. 14, 1985, 8520363

Int. Cl.⁴ G01F *1/74*

U.S. Cl. 73—861.04 **14 Claims**



1. A flow meter, suitable for location in a sub-sea environment, for continuously measuring the flow of each of up to three distinct fluid components, at least one being liquid and at least one other being gaseous, of a mixture flowing through a pipeline, and comprising:

first sensing means operatively associated with said pipeline and producing continuous first signals representing the values, existing in the mixture, of parameters on which the total volume flow rate of the mixture is dependent,

second sensing means operatively associated with said pipeline and producing a continuous second signal representing the density of the mixture in said pipeline,

a pipe connected into said pipeline in order continuously to withdraw a fraction of said fluid mixture from the pipeline at the pipeline pressure,

a continuous separator having an inlet connected to said pipe to receive said fraction of said fluid mixture at the pipeline pressure and first and second outlets, the separator being operative to separate any gaseous component from the non-gaseous component(s) of said mixture, any said gaseous component being supplied to said first outlet and said non-gaseous component(s) to said second outlet,

third sensing means operatively associated with said separator adjacent said second outlet to produce a continuous third signal representing the combined density of the non-gaseous component(s) of the mixture,

processing means operatively connected to said first, second and third sensing means for continuously receiving therefrom said first, second and third signals and operative to process them, together with known data on the density of each component, to produce outputs respectively representing the flow rate of each fluid component passed through said pipeline, and

further pipe means connecting said two outlets of said separator into said pipeline whereby to feed back into said pipeline, at the pipeline pressure, any said gaseous component and said non-gaseous component(s).

4,881,413

BLOOD FLOW DETECTION DEVICE

Donald K. Georgi, Wayzata; Andrew X. Basile, Minnetonka, and Lloyd E. Graupmann, Plato, all of Minn., assignors to Bio-Medicus, Inc., Eden Prairie, Minn.

Filed Oct. 31, 1988, Ser. No. 265,410

Int. Cl.⁴ G01F *1/58*

U.S. Cl. 73—861.12 35 Claims

1. A blood flow meter system comprising:

a. a transducer means;

b. a tray means;

c. first electrical terminal means mounted in said tray means;

d. magnetic field generating means mounted in said transducer means for generating a magnetic field;

e. said magnetic field generating means including an electromagnet means mounted in said transducer means with poles of said electromagnetic means terminating at opposite sides of an opening in said transducer means;

f. said tray means adapted to move into engagement with said transducer means in said opening to position said first electrical terminals means generally between the poles of said electromagnetic means;

g. means for activating said generating means to generate a magnetic field between the poles of said electromagnetic means;

h. a disposable sensor means constructed of nonmagnetic and non-conductive material having a constricted section of lumen adapted to accommodate blood flow;

i. second electrical terminal means mounted in said sensor means perpendicular to the flow of blood through said sensor means and in communication with said constricted section of lumen;

j. said sensor means positioned in said tray means with said second terminal means in electrical contact with said first electrical means;

k. a first electromagnetic field focus means positioned within the electromagnetic field between the poles of said electromagnetic means and in alignment with the constricted section of lumen of said sensor means to focus said electromagnetic field perpendicular to said blood flow in said constricted section of lumen of said sensor means to amplify the electromagnetic field intensity; and

l. detection means connected to said second terminals for detecting the voltage induced by said flow of blood through said electromagnetic field.

4,881,414

TORQUE DETECTION APPARATUS

Yousuke Setaka, Anjo; Sumio Yanase, Okazaki; Kanji Takeuchi, Gamagori, and Masahiko Miyahara, Chiryu, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed May 10, 1988, Ser. No. 192,187

Claims priority, application Japan, May 12, 1987, 62-115271

Int. Cl.⁴ G01L *3/10*

U.S. Cl. 73—862.33 5 Claims

1. A torque detection apparatus provided between first and second shafts for measuring a torque applied therebetween, comprising:

an elastic member for coupling between said first and second

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shafts, the torsion angle of said elastic member corresponding to the relative rotational displacement occurring between said first and second shafts, said first and second shafts being arranged to be in opposed relation to each other so that the axes thereof are coincident with each other;

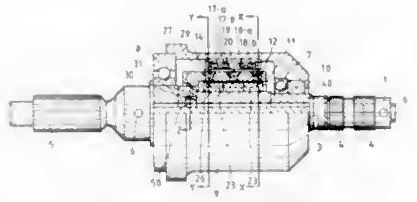
a first rotating body coupling to said first shaft so as to be rotatable in accordance with rotation of said first shaft, said first rotating body being shaped cylindrically;

a second rotating body directly coupled to said second shaft so as to be rotatable in accordance with rotation of said second shaft, said second rotating body being closely positioned with respect to said first rotating body so that a predetermined space is formed therebetween and being shaped cylindrically and provided coaxially with respect to said first rotating body such that said predetermined space therebetween is formed cylindrically;

magnetic field supply means for causing a magnetic flux to flow through a first magnetic flux path which runs from a portion of said first rotating body through said predetermined space to a portion of said second rotating body and for further causing a magnetic flux to flow through a second magnetic flux path which runs from another portion of said first rotating body through said predetermined space to another portion of said second rotating body, said first magnetic flux path being positioned at the first shaft side and said second magnetic flux path being positioned at the second shaft side;

magnetic flux changing means engaged with said first and second rotating bodies for changing the amounts of the magnetic fluxes flowing through said first and second magnetic flux paths in accordance with a relative rotational displacement occurring between said first and second shafts so that the amount of the magnetic flux flowing through said second magnetic flux path decreases when the amount of the magnetic flux flowing through said first magnetic flux path increases and the amount of the magnetic flux flowing through said second magnetic flux path increases when the amount of the magnetic flux flowing through said first magnetic flux path decreases, said magnetic flux changing means composed of first and second magnetic toothed wheels which are provided in connection with said first magnetic flux path and third and fourth magnetic toothed wheels which are provided in connection with said second magnetic flux path, and further composed of non-toothed magnetic portions, said first and second magnetic toothed wheels being mounted on said first and second rotating bodies, respectively, and said third and fourth magnetic toothed wheels being mounted on said first and second rotating bodies, respectively, said first and second magnetic toothed wheels respectively having pluralities of tooth portions and ones of which are positioned to be in opposed relation to each other and said third and fourth magnetic toothed wheels respectively having pluralities of tooth portions and ones of which are positioned to be opposed relation to each other, the increase and decrease of the magnetic fluxes flowing through said first and second magnetic paths being affected in accordance with the positioning relations between said pluralities of tooth portions of said first and second magnetic toothed wheels and between said pluralities of tooth portions of said third and fourth magnetic tooth wheels which depends upon the degree of the relative rotational displacement occurring between said first and second rotating bodies, said non-toothed magnetic portions being provided between said first and second magnetic toothed wheels and said third and fourth magnetic toothed wheels so as to form a common portion of said first and second magnetic flux paths, and being mounted on said first and second rotating bodies respectively so as to be in opposed relation to each other; and

signal generating means for generating a signal indicative of the difference between the amount of the magnetic flux flowing through said first magnetic flux path and the amount of the magnetic flux flowing through said second magnetic flux path, said signal being used to detect the torque applied between said first and second shafts.



4,881,415
DEVICE AND METHOD FOR HIGHLY ACCURATE MEASUREMENT OF THE THICKNESS OF FIBER MATS

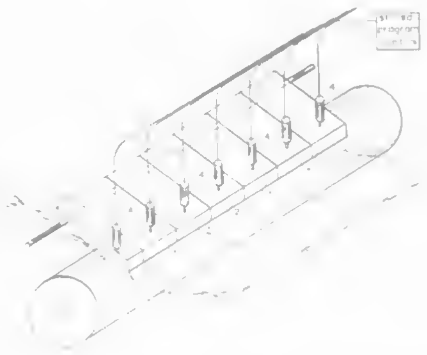
Hubert Hergeth, Kockerellstrasse 3, 5100 Aachen, Fed. Rep. of Germany

Filed Mar. 4, 1988, Ser. No. 164,107

Claims priority, application Fed. Rep. of Germany, Mar. 13, 1987, 3708186

Int. Cl.⁴ G01B *5/06*

U.S. Cl. 73—865.8 5 Claims



1. A method of measuring the thickness of a fiber mat comprising the steps of:

(a) rotating a roller, having a circumference over which a fiber mat is adapted to pass, about an axis of said roller;

(b) at each of a plurality of locations axially spaced apart on said circumference with respective feelers adapted to contact said circumference, generating measured values of displacement of said feelers for each of a plurality of angular positions of said roller during a calibration revolution thereof;

(c) storing each of said values as respective calibration values corresponding to locations upon said circumference;

(d) thereafter passing said fiber mat between said feelers and said circumference by rotating said roller, thereby advancing said mat while said feelers are displaced by said mat;

(e) measuring an actual value of displacement of each of said feelers by said mat for each of said locations upon rotation of said roller; and

(f) correcting an actual value as measured in step (e) with the respective stored value for respective locations to obtain actual measurements of thickness of said mat.

4,881,416
ENGINE STARTER

Shuzoo Isozumi, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Japan

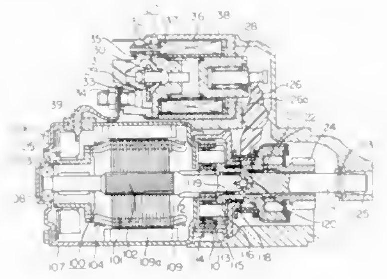
PCT No. PCT/JP87/00730, § 371 Date Jul. 15, 1988, § 102(e) Date Jul. 15, 1988, PCT Pub. No. WO88/02568, PCT Pub. Date Apr. 7, 1988

PCT Filed Oct. 1, 1987, Ser. No. 210,491

Claims priority, application Japan, Oct. 3, 1986, 61-236559; Oct. 6, 1986, 61-153450; Oct. 6, 1986, 61-153451

Int. Cl.⁴ F02N *15/06;* **H01H** *51/06;* **H02K** *13/10*

U.S. Cl. 74—7 A 6 Claims



1. An engine starter comprising:

an electric motor connected to receive electric current via a stationary contact, said electric motor having a cylindrical armature rotating shaft,

an output rotating shaft disposed at a first axial end of said motor in an axially aligned relationship with respect to said armature rotating shaft and supported to slide in an axial direction of said shafts,

a clutch mechanism connected between said armature rotating shaft and said output rotating shaft to transmit rotational force of said armature rotating shaft to said output rotating shaft, and

a solenoid switch which has a moving member disposed on a second axial end of said motor, said moving member including a plunger rod movable in the axial direction responsive to a state of said solenoid switch to push and slide said output rotating shaft by electromagnetic force in the axial direction, said solenoid switch also having a movable contact movable in the axial direction responsive to the state of said solenoid switch to establish and break contact with a stationary contact, thereby supplying current to said motor,

a rear portion of said output rotating shaft and a front portion of said moving member extending into a cylindrical bore of said armature rotating shaft from opposite directions,

said motor including a rear bracket of molded plastic, said rear bracket including a front portion having a bearing recess containing a bearing which journals a rear end portion of said armature rotating shaft wherein said stationary contact is installed on said rear bracket.

4,881,417
TRANSMISSION SYSTEM FOR VEHICLE

Takashi Yoshii, Sakai, and Humitoshi Iinuma, Wakayama, both of Japan, assignors to Kubota Ltd., Osaka, Japan

Filed Nov. 13, 1987, Ser. No. 119,937

Claims priority, application Japan, Apr. 13, 1987, 62-91670; Apr. 13, 1987, 62-91671

The portion of the term of this patent subsequent to Jan. 3, 2006, has been disclaimed.

Int. Cl.⁴ B60K *17/28, 25/00*

U.S. Cl. 74—15.84 6 Claims

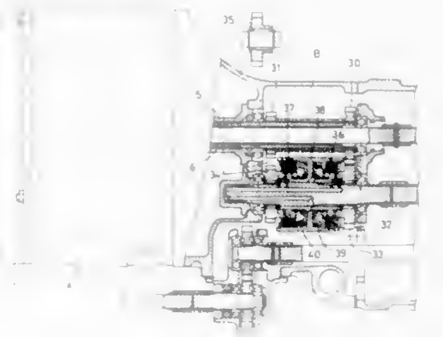
1. A transmission system for a vehicle comprising;

an engine output shaft,

a dry type frictional clutch mechanism including a drive member connected to the engine output shaft, a driven member having at least one clutch plate, frictional coupling means disposed between the drive member and the driven member, and control means for controlling the coupling means to couple and uncouple the drive member and the driven member,

a propelling transmission line for driving ground engaging wheels, the propelling transmission line including propelling line input shaft connected to the drive member, transmission means having at least one oil clutch for establishing and breaking drive transmission from the input shaft, and a propelling line change speed device for receiving drive from the transmission means, and

a PTO transmission line including a PTO line input shaft connected to the driven member.



4,881,418
PIVOTABLE SCREW JACK DRIVE

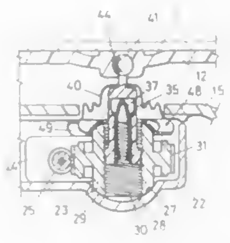
Garry G. Fimeri, Morphett Vale, Australia, assignor to Britax Rainsfords Pty. Ltd., Adelaide, Australia

Filed Dec. 8, 1987, Ser. No. 130,265

Claims priority, application Australia, Dec. 12, 1986, PH9492

Int. Cl.⁴ F16H *25/20;* **G02B** *7/18;* **G05G** *11/00*

U.S. Cl. 74—89.14 10 Claims



1. In combination with a tiltable element, a pivotable screw jack drive for tilting control of the element, comprising:

a housing, a jacking nut bearing surface of concave part-spherical shape in a wall of the housing,

a single piece jacking nut having an outer surface which is a complementary convex part-spherical shape against which said jacking nut surface bears, an inner threaded surface, and a series of gear teeth spaced around its periphery defining a worm wheel,

a motor assembly within the housing having an output shaft, a drive worm on the output shaft, said drive worm having threads in direct meshing contact with the gear teeth of the worm wheel to drive the worm wheel,

a jacking screw having a first end with a threaded male portion which is threadably engaged in direct mating contact with said inner threaded surface of the jacking nut, and a second end which engages said element for relative pivotal movement about an axis which is perpendicular to the axis of the screw, and

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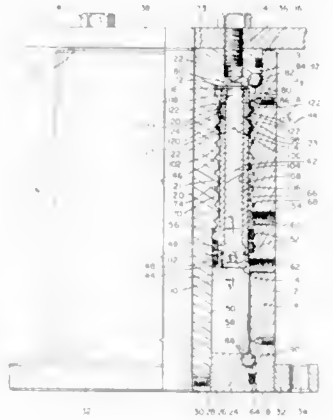
restraining means for restraining the screw from rotation, the arrangement being such that, upon motor rotation, the nut extends or retracts the jacking screw and effects tilting of the element.

4,881,419
FLUID-POWER BEARING ACTUATOR

Paul P. Weyer, 48811 - 284th Ave. SE., Enumclaw, Wash. 98022
Continuation-in-part of Ser. No. 6,007, Jan. 20, 1987, and a continuation-in-part of Ser. No. 931,223, Nov. 14, 1986, and a continuation-in-part of Ser. No. 881,904, Jul. 3, 1986, Pat. No. 4,741,250, which is a continuation-in-part of Ser. No. 662,256, Oct. 17, 1984, Pat. No. 4,667,528, and a continuation-in-part of Ser. No. 692,293, Jan. 17, 1985, Pat. No. 4,683,767, and a continuation-in-part of Ser. No. 803,954, Dec. 2, 1985, Pat. No. 4,691,582, which is a continuation-in-part of Ser. No. 575,228, Jan. 30, 1984, Pat. No. 4,590,816. This application Nov. 30, 1987, Ser. No. 126,837
Int. Cl.⁴ F01B *3/08*
U.S. Cl. 74—89.15 34 Claims



1. A fluid-powered, rotary actuated support for a crane or other device platform, comprising:

an elongated generally cylindrical body having first and second ends with a generally vertical axial orientation during use, said body having an outer surface and having at least one groove formed on an end portion of an inner surface thereof toward one of said first or second body ends, said body further having first and second axially spaced apart fluid ports therein for introducing pressurized fluid within said body and a stationary seal axially positioned between said ports axially away from said grooved body end portion toward an other one of said first or second body ends, said first port being to a side of said stationary seal axially toward said grooved body end portion and said second port being to a side of said stationary seal axially away from said grooved body end portion;

a drive member having a hollow generally cylindrical drive shaft portion extending generally coaxially within said body generally between said first and second body ends, and an annular flange portion attached to an end portion of said drive shaft portion towards said first body end at a position adjacent to and confronting the platform, said flange portion having attachment means for providing driving attachment to the platform with the platform positioned generally concentric with said cylindrical body at said first body end and rotatable relative thereto about a common generally vertical axis through a generally horizontal plane during use, said flange portion providing rotational drive between said body and the platform, said drive shaft and flange portions being formed as an integral unit free of connection joints therebetween, said flange portion projecting generally radially outward from said drive shaft portion to and beyond said inner surface of said body;

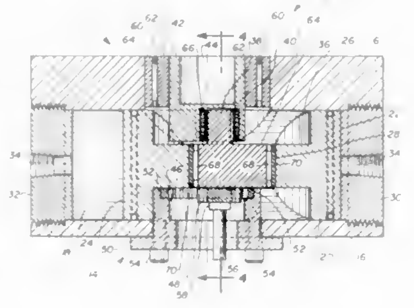
load-carrying bearing means disposed between said flange portion and said body at said first body end for allowing relative rotary motion between said drive member and said body for selective rotation of the platform, said bearing means including a first ball race formed in said flange portion and a second ball race formed in said body towards said first body end with a plurality of balls disposed between said first and second ball races, said first and second ball races having a center ball contact angle of from 30 to 60 degrees relative to said horizontal plane when in use, said second ball race being formed in a portion of said body radially outward of said body groove formed on said inner body surface and radially inward of said body outer surface, said bearing means providing support against both axial thrust and radial loads applied to said flange portion by the platform while carrying the crane or other device thereon and its load;

bearing means disposed between said drive member and said body for providing support against axial thrust applied to said drive member in the direction of said first end; and

linear-to-rotary transmission means disposed within said body and operable in response to fluid pressure introduced within said body through said ports for providing relative rotational movement between said drive member and said body, said transmission means including a reciprocating piston with means for engaging said body groove and having a smooth surface portion slidably engaging said stationary seal as said piston axially reciprocates within said body to define a pair of fluid tight compartments to each side of said piston, each said compartment being in fluid communication with a different one of said ports, said piston having an end limit of travel toward said other one of said first or second body ends located between said second port and said other one of said first or second body ends.

4,881,420
POWER ACTUATOR WITH LOST MOTION ARRESTER

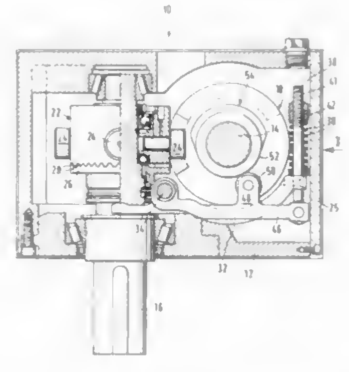
Herman L. Paul, Jr., 370 Dogwood La., R.D. 5, Lebanon, Pa. 17042
Filed Dec. 5, 1988, Ser. No. 279,655
Int. Cl.⁴ F16K *31/163*
U.S. Cl. 74—109 5 Claims



1. An improved power actuator with lost motion arrester for converting rectilinear motion to oscillatory motion to be employed in coupled use with a rotary device for accomplishing remote control adjustment set and adjustment set hold thereof, comprising in combination a body block provided with a longitudinal cylindrical bore adapted to receive a double faced piston reciprocally mounted therewithin said double faced piston having a right piston face and a left piston face connectably joined by an intermediate interconnecting means having a centrally intermediate symmetrically disposed opening therethrough along an axis normal to that of said cylindrical bore, an oscillatable valve stem coupling rotatably mounted in said body block at an axis normal to that of said cylindrical bore, a rotor rotatably mounted in the opening of said connecting means said rotor being operatively connected to said oscillatable valve stem coupling about an axis parallel thereto and adapted to cooperatively rotate whenever said piston is moved, a rotor pin connecting said oscillatable valve stem coupling and said rotor and positioned eccentrically to their axes of rotation, and a lost motion arrester comprised of a circular rack and pinion timing gear assembly operatively assembled to said body block and said rotor pin and adapted to cooperatively displace whenever said piston is moved and automatically set hold said oscillatable valve stem coupling in a set locked position of adjustment whenever said piston is stopped.

4,881,421
DRIVE WITH OVERLOAD SAFETY COUPLING

Stefan Schön, Düdingen, Switzerland, assignor to Elpatronic AG, Switzerland
PCT No. PCT/EP87/00512, § 371 Date Mar. 22, 1988, § 102(e) Date Mar. 22, 1988, PCT Pub. No. WO88/02079, PCT Pub. Date Mar. 24, 1988
PCT Filed Sep. 9, 1987, Ser. No. 183,737
Claims priority, application Fed. Rep. of Germany, Sep. 13, 1986, 3631215
Int. Cl.⁴ F16H *35/10, 27/04*
U.S. Cl. 74—412 TA 9 Claims

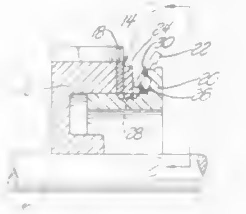


1. A stepping drive having a first rotatable member adapted to be driven by a drive shaft, a second rotatable member adapted to drive a driven sahft, said first and second rotatable members engaging each other for transforming a continuous rotation of said first rotatable member into an intermittent rotation of said second rotatablel member, one of said rotatable members being connected to its associated shaft by coupling means, a retaining member being arranged to exert a retaining force onto said coupling means to keep the same in an engaged condition, and control means associated with one of said shafts, said control means establishing a predetermined relationship between said retaining force and the angular position of said one shaft.

4,881,422
ANTI-LASH GEAR MECHANISM

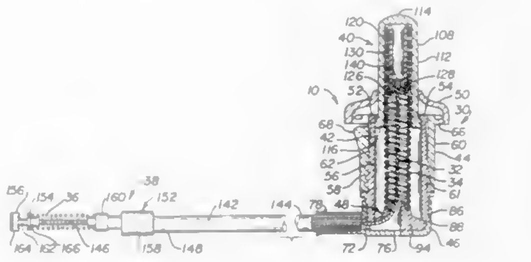
Joel M. Maguire, Dearborn, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Aug. 15, 1988, Ser. No. 232,072
Int. Cl.⁴ F16H *55/18*
U.S. Cl. 74—440 2 Claims

1. A lash removal apparatus for gearing comprising: a driven gear having a predetermined number of teeth and being operatively connected with a torque delivery means for transmitting torque;. an anti-lash gear rotatably supported adjacent said driven gear and having a predetermined number of teeth at least one greater than the number of teeth on said driven gear; gear means meshing with said driven gear and said anti-lash gear and being forced into engagement between and with respective teeth on said driven gear and said anti-lash gear due to the tooth differential therebetween; resilient means for applying a force for urging said anti-lash gear into frictional engagement with said driven gear for encouraging conjoint rotation thereof and for maintaining engagement with said gear means; and speed responsive means for urging said resilient means to reduce said applying force when the speed of the driven gear increases above a predetermined value to reduce the engagement force.



4,881,423
CABLE ACTUATING ASSEMBLY

Thomas Troiano, 1725 McManus St., Troy, Mich. 48084, assignor to Thomas Troiano, Battle Creek, Mich.
Filed May 9, 1988, Ser. No. 191,321
Int. Cl.⁴ F16C *1/10;* B60R *22/00*
U.S. Cl. 74—501.6 13 Claims



1. A cable operated assembly for actuating a device, said assembly comprising:

a housing;

actuating means mounted to said housing for movement relative thereto between return and actuating positions;

first biasing means urging said actuating means toward said return position;

a cable reciprocally movable in return and actuating directions relative to said housing and having first and second ends, said first end being positioned within said housing, said second end being engageable with a device to be actuated;

means for connecting said first end of said cable to said actuating means, said connecting means permitting movement of said cable first end relative to said actuating means when said actuating means is moved toward said actuating position, said connecting means limiting movement of said cable first end relative to said actuating means when said actuating means is moved toward said return position thereby to move said cable in said return direction;

second biasing means having a biasing force less than that of said first biasing means and urging said cable in said actuating direction, said second biasing means being normally compressed; and

means for routing said cable first end from said housing at

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90° with respect to directional movement of said actuating means, said routing means being disposed in said housing;

whereby movement of said actuating means toward said actuating position in response to external forces exerted thereon acts to compress said first biasing means and free said cable from said actuating means to permit said cable to be drawn in said actuating direction through said routing means exclusively by said second biasing means thereby to deter interference with movement of said cable in said actuating direction by said housing.

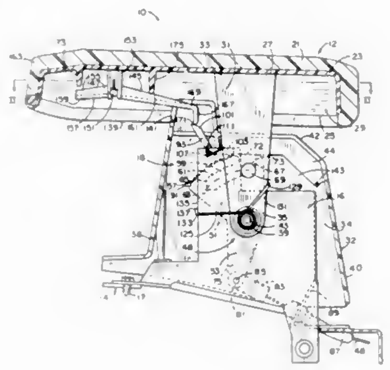
4,881,424
BRAKE ACTUATOR

Russell L. Clark, Zeeland, and Roger Bomgaars, Mattawan, both of Mich., assignors to Prince Corporation, Holland, Mich.

Filed May 19, 1988, Ser. No. 195,806

Int. Cl.⁴ G05G *1/04, 5/06*

U.S. Cl. 74—523 17 Claims



1. A armrest including a parking brake actuator for use in actuating and releasing a vehicular parking brake through a brake control element comprising:

a frame;

an armrest movably mounted on said frame between a first position and a second position;

said brake control element extending to an assembly between said frame and said armrest; and

said assembly coupled to said brake control element so that the parking brake is actuated as said armrest is moved from said first position toward said second position.

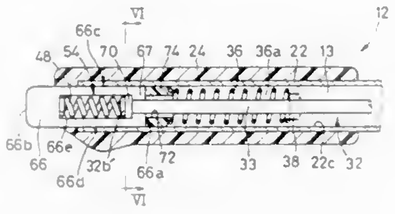
4,881,425
PARKING-BRAKE OPERATING DEVICE

Kimio Kanno, Toyota, Japan, assignor to Toyoda Iron Works Co., Ltd., Aichi, Japan

Division of Ser. No. 199,146, May 26, 1988. This application Apr. 14, 1989, Ser. No. 338,094

Int. Cl.⁴ G05G *1/10*

U.S. Cl. 74—538 6 Claims



1. A parking-brake operating device for selectively placing a parking brake in an operative and an inoperative position thereof, the device including (a) an operating lever which is selectively placed in a first and a second position thereof to place said parking brake in said operative and inoperative position, respectively, said lever being disposed pivotably about a first pivot axis and connected to said parking brake through a brake cable, said lever including a free-end portion having a free end, said portion having a longitudinal hole which is formed therein longitudinally of the lever and is open in said free end; (b) a stationary sector having a plurality of teeth; (c) a pawl supported by said lever pivotably about a second pivot axis parallel to said first pivot axis, said pawl having a first and a second arm; (d) a knob having a first and a second end, and fitted, over an axial part thereof having said first end, in said longitudinal hole of said lever such that said knob is retractable inward upon operation thereof on said second end, said axial part having an axial recess which is formed therein and is open in said first end and a lateral surface adjacent to said first end, said knob having at said first end a stopper protruding radially inward from an inner wall surface thereof defining said axial recess; (e) a release rod having a first and a second end and a shaft including said first end, said second arm of said pawl being connected to said first end, said rod including a head having said second end, said head being fitted in said axial recess of said knob such that said head is engaged with said stopper; (f) a first spring possessing a first biasing force for permitting said pawl to be pivoted about said second pivot axis in a first direction in which to cause said first arm of the pawl to be engaged with said plurality of teeth of said sector; and (g) a second spring fitted in said axial recess of said knob and possessing a second biasing force for permitting said head of said rod to be engaged with said stopper of the knob, said second biasing force being determined such that, upon retraction of said knob when said lever is held in said second position, said second spring causes said rod to be moved relative to said lever with said head engaged with said stopper, whereby said pawl is pivoted in a second direction opposite to said first direction and said first arm of the pawl is released from the engagement with said sector, and that, upon retraction of said knob when the lever is held in said first position, said second spring permits said knob to be moved relative to said rod, while said second biasing force is overcome by pivot resistance associated with the forced engagement between said pawl and said sector due to tension force of said brake cable, whereby said rod is not moved relative to said lever and said pawl is not released from said forced engagement,

the improvements comprising:

an annular sleeve disposed in said longitudinal hole of said operating lever, said annular sleeve having an inside hole formed therethrough axially thereof, said release rod being disposed in said longitudinal hole such that said shaft of said rod extends through said inside hole of said annular sleeve, whereby interference between said head of the rod and said lever is prevented.

4,881,426
DUAL-TYPE DAMPER DEVICE

Minoru Serizawa, Komaki, and Yutaka Tazuke, Kasugai, both of Japan, assignors to Tokai Rubber Industries, Ltd. and Toyota Jidosha Kabushiki Kaisha, both of, Japan

Division of Ser. No. 917,543, Oct. 10, 1986, Pat. No. 4,794,816. This application Sep. 28, 1988, Ser. No. 250,449

Claims priority, application Japan, Oct. 15, 1985, 60-157477; Dec. 25, 1985, 60-200984

Int. Cl.⁴ F16F *15/10*

U.S. Cl. 74—574 6 Claims

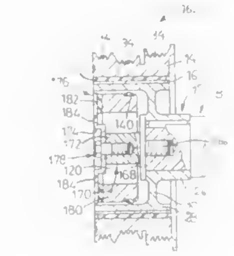
1. A dual-type damper device for damping vibration of a rotation axle, comprising:

a damper pulley including a boss portion joined to said rotation axle, a cylindrical portion located radially outwardly of said boss portion, and a connection portion connecting said boss portion and said cylindrical portion;

a first damper-mass member disposed radially outwardly of said cylindrical portion of said damper pulley, such that said first damper-mass member is spaced apart from, and concentric with, said cylindrical portion;

a first resilient member interposed between said cylindrical portion of said damper pulley and said first damper-mass member;

a second damper-mass member having a cylindrical shape and two axial ends, said second damper-mass member being disposed in an inner space of said cylindrical portion of said damper pulley, such that a space is provided between said second damper-mass member and said cylindrical portion, said space permitting said second damper-mass member to be radially displaced relative to said cylindrical portion, without being brought into butting contact with said cylindrical portion, upon application of the vibration of the rotation axle to the dual-type damper device;



a set bolt for joining said boss portion of said damper pulley to said rotation axle, said set bolt being fixed to said rotation axle and extending in an inner space of said second damper-mass member;

a circular member fixed at a central portion thereof to said set bolt; and

a second resilient member disposed between said circular member and one of the axial ends of said second damper-mass member which is opposed to said circular member, said second resilient member securing said second damper-mass member to an outer annular portion of said circular member, said second resilient member being subjected to shear deformation due to relative radial displacement between said circular member and said second damper-mass member.

4,881,427
CRANKSHAFT OF INTERNAL COMBUSTION ENGINE AND METHOD OF PRODUCING THE SAME

Kousuke Yasutake, Kawagoe, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 861,653, May 5, 1986, abandoned, which is a continuation of Ser. No. 495,696, May 18, 1983, abandoned. This application Jun. 2, 1988, Ser. No. 205,032

Claims priority, application Japan, Oct. 21, 1982, 57-185180

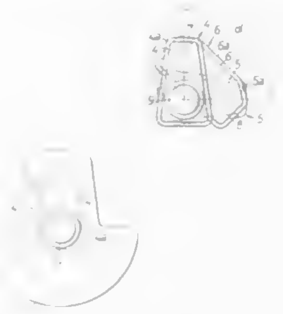
Int. Cl.⁴ F16C *3/04*

U.S. Cl. 74—603 5 Claims

1. A crankshaft comprising:

a forged crankshaft body, said crankshaft body including
  a plurality of adjacent web core portions including two outer web core portions and one central web core portion located between the two outer web core portions,
  crank pins interconnecting adjacent web core portions, and
  journals defining an axis of rotation of the crankshaft and extending axially from the said outer web core portion, said outer web core portions being trapezoidal in section as viewed along said axis of said journals, said trapezoidal web core portions having a lesser-width at crank pin interconnected portions thereof than at journal extending portions thereof, said trapezoidal outer web core portions having upper and lower sides, said upper side being parallel to and shorter in length than said lower side, said trapezoidal web core portions having left and right divergently inclined sides extending between the upper and lower sides; and

a plurality of balancer weights, each of said balancer weights being integrally formed with and surrounding a corresponding one of said web core portions, said balancer weights each having a substantial portion thereof disposed



offset with respect to the journal extending portion of said web core portions to a side remote from said crank pin interconnected portions, wherein said central web core portion being directly connected with said two outer web core portions by said crank pins and said central web core portion having a substantially rectangular shape with two corners thereof, which are remote from the rotational axis of the crankshaft, being cut away.

4,881,428
THROTTLE VALVE CONTROL APPARATUS FOR INTERNAL COMBUSTION ENGINE

Yoshikazu Ishikawa; Kouji Yamaguchi, and Kouji Sasajima, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 18, 1987, Ser. No. 63,398

Claims priority, application Japan, Jun. 18, 1986, 61-143421

Int. Cl.⁴ B60K *41/06*

U.S. Cl. 74—859 4 Claims

1. A control apparatus for a throttle valve disposed in an intake system of an internal combustion engine, for controlling a degree of opening of said throttle valve, comprising:

accelerator actuation detection means for producing an output representing a current actuation position of an accelerator pedal;

setting means, responsive to said accelerator actuation detection means, for setting a target degree of opening for said throttle valve according with said current actuation position of said accelerator pedal detected by said accelerator actuation detection means;

throttle valve opening degree detection means, operatively connected to said throttle valve, for producing an output

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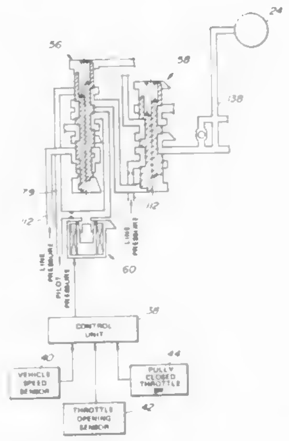
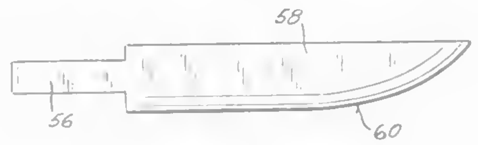
representing an actual degree of opening for said throttle valve;
drive means, responsive to said setting means and said throttle valve opening degree detection means, for driving said throttle valve in a direction to reduce an amount of deviation between said actual degree of opening for said throttle valve and said target degree of opening; and
shift position detection means for detecting a current shift position among a plurality of shift positions of a vehicle's transmission which is coupled to said internal combustion engine; wherein said setting means selecting, from a plurality of different throttle valve target opening degree characteristics corresponding to accelerator pedal actuation positions, a characteristic corresponding to the detected shift position and utilizing the selected characteristic for setting said target degree of opening of said throttle valve in accordance with said current accelerator pedal actuation position.

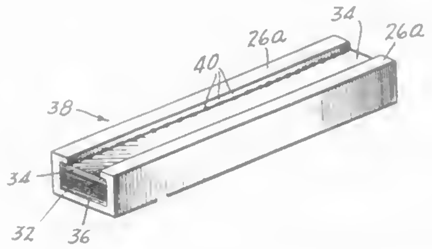
4,881,429
SHIFT CONTROL ARRANGEMENT FOR AUTOMATIC TRANSMISSION
Masayuki Kobayashi, Isehara, and Masahiro Takiguchi, Fuji, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama and Japan Automatic Transmission Co., Ltd., Fuji, both of, Japan
Filed Apr. 29, 1988, Ser. No. 188,509
Int. Cl.⁴ B60K *41/18, 41/16*
U.S. Cl. 74—867 7 Claims



1. In a transmission
a one-way clutch;
a first clutch, said first clutch being directly connected with said one way clutch;
a second clutch, said second clutch being connected in parallel with said first clutch and said one-way clutch;
a solenoid valve, said solenoid valve having first and second operative states, said solenoid valve being arranged to induce said second clutch to engage when in said first operative state;
means for discerning a transmission upshift operation;
means for detecting an engine throttle valve assuming a closed position; and
solenoid energization means responsive to said upshift discerning means and said closed throttle valve detection means, for conditioning said solenoid to assume said first state for a predetermined time.

4,881,430
METHOD OF MAKING HETEROGENEOUS BLADE-LIKE METALLIC CUTTER MEMBER
Arthur J. Hubbard, 574 Cutlers Farm Rd., Monroe, Conn. 06468
Filed Sep. 6, 1988, Ser. No. 240,504
Int. Cl.⁴ B21K *11/02*
U.S. Cl. 76—104 R 21 Claims



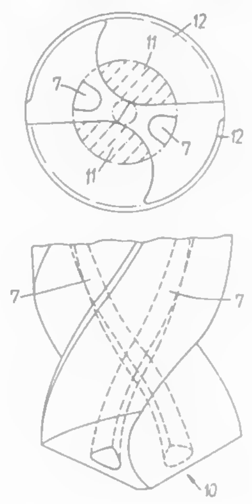


1. The method of making a heterogeneous blade-like member constituted of different metals, which includes the steps of working metal to form an open metal enclosure, depositing a stack of different metallic foils in said enclosure through the opening thereof, folding-in portions of said enclosure on said stack of foils to form with said enclosure a tight assemblage, heating said assemblage and applying force to said heated assemblage to attenuate it and bond together the foils of said stack, and thereafter removing said enclosure from the attenuated stack of foils.

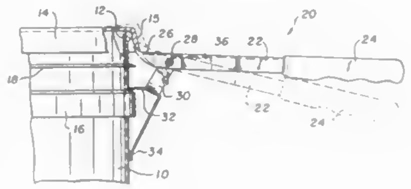
4,881,431
METHOD OF MAKING A SINTERED BODY HAVING AN INTERNAL CHANNEL
Jürgen Bieneck, Essen, Fed. Rep. of Germany, assignor to Fried. Krupp Gesellscahft mit beschränkter Haftung, Essen, Fed. Rep. of Germany
Division of Ser. No. 3,262, Jan. 14, 1987, Pat. No. 4,813,823. This application May 23, 1988, Ser. No. 197,264
Claims priority, application Fed. Rep. of Germany, Jan. 18, 1986, 3601385
Int. Cl.⁴ B21K *5/04;* **B22F** *7/06*
U.S. Cl. 76—108 R 21 Claims

1. A method for manufacturing a sintered body having a longitudinal axis and at least one internal channel spaced from the axis, comprising:
providing a first member of a sinterable hard metal in the form of a core having an exterior surface;
providing a second member of a sinterable and heat shrinkable hard metal in the form of a hollow tubular casing having an interior surface which initially encloses a region larger in cross section than said first member;
forming in said surface of one of said members at least one groove corresponding to the at least one channel;
inserting said first member into said second member after said step of forming a groove; and

after said step of inserting, finish sintering at least said second member and shrinking said second member for bonding said members together at said surfaces by diffusion to form a composite member.

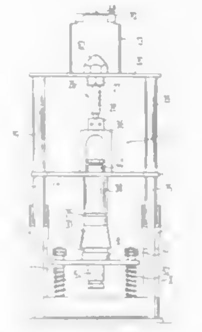


4,881,432
LID REMOVING TOOL
George M. Olorenshaw, 11810 Stephens Street, Maple Ridge, B.C. V2X 6S3, and Al Macedo, P. O. Box 2462, Squamish, B.C. VON 3GO, both of Canada
Filed Apr. 10, 1989, Ser. No. 335,486
Int. Cl.⁴ B67B *7/00*
U.S. Cl. 81—3.36 4 Claims



1. A tool for removing a lid from a container, the lid having an overlapping rim, and the container having an integral peripheral rib extending around a container wall below the lid, the tool comprising:
a lever arm having a handle at one end and a rim engaging means at the other end,
an anchor pivoted at a pivot position on the lever arm adjacent the rim engaging means, the anchor having a top member adapted for engagement with the peripheral rib on the container wall, and a bottom stabilizing member adapted to rest against the container wall below the peripheral rib, such that when the tool is engaged with a container, the rim engaging means positioned under the overlapping rim of the lid, and the top member of the anchor engaging the peripheral rim of the container wall, lever action of the tool raises the lid from the container.

4,881,433
REMOTE MANIPULABLE DEVICE FOR ESTABLISHING A TRANSPORT CONNECTION WITH A REMOTE MANIPULABLE TOOL
Jürgen Forster, Minden, and Manfred Bramer, Waldmohr, both of Fed. Rep. of Germany, assignors to Duetsche Gesellschaft fur Wiederaufarbeitung von Kernbrenstoffen mgH, Hanover, Fed. Rep. of Germany
Filed Jul. 24, 1987, Ser. No. 77,285
Claims priority, application Fed. Rep. of Germany, Aug. 7, 1986, 3626740
Int. Cl.⁴ B25B *21/00*
U.S. Cl. 81—55 14 Claims



1. In a combination of a remote manipulable tool with a movable remotely actuable device, said tool actuating said movable device for establishing and releasing a connection between a first subassembly and a second subassembly, said movable remotely actuable device comprising a first retaining element adapted to establish a transport connection with said tool, a second retaining element connected with one of said first and second subassemblies, said second retaining element being movably mounted in said movable device and being partially configured for a direct mechanical engagement with said tool in such a manner that said second retaining element is reciprocally movable in said movable device upon actuation of said tool between two extreme positions, said first retaining element and said second retaining element being constructed so that said second retaining element holds an actuating portion of said tool fixed between said first retaining element and said second retaining element in one of said two extreme positions but permits said tool to be brought into and out of said engagement in another of said extreme positions so as to release or establish the connection between said first subassembly and said second subassembly.

4,881,434
TOOL FOR THREADING OVERSIZED ROPE THROUGH OPENING IN AN ELASTIC STRAP
Robert L. Keller, 8512 Keystone, Omaha, Nebr. 68103
Filed May 9, 1988, Ser. No. 191,643
Int. Cl.⁴ B25B *7/02*
U.S. Cl. 81—426 9 Claims

1. A tool for threading oversized rope through an opening in an elastic strap comprising:
a plier type implement having an upper jaw and a lower jaw movable between an open position and a closed position, said upper jaw including a opening therein and said lower jaw including a cone shaped hollow member having an inside surface and an outside surface, said cone shaped hollow member extending upwardly toward said upper jaw such that said cone shaped hollow member is disposed in alignment with said upper jaw opening when said jaws are in the closed position, wherein the outside surface of said cone shaped hollow member is disposed for insertion

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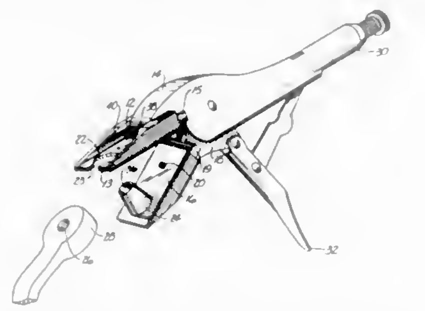
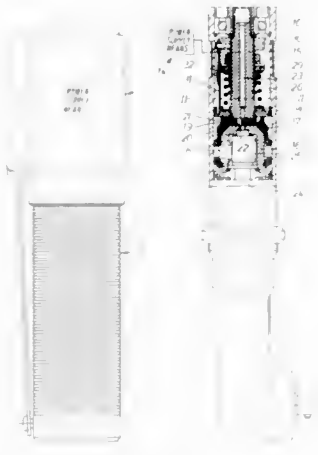
into an opening in an elastic strap and the inside surface of the cone shaped hollow member allows an oversized rope to pass therethrough and be threaded through the opening in the elastic strap.



4,881,435

POWER TOOL FOR TWO STEP TIGHTENING OF SCREW JOINTS

Gunnar C. Hansson, Stockholm, Sweden, assignor to Atlas Copco Aktiebolag, Nacka, Sweden
Filed Jan. 21, 1988, Ser. No. 146,711
Claims priority, application **Sweden, Jan. 27, 1987, 8700294**
Int. Cl.^{4} B25B *23/151*
U.S. Cl. 81—469 2 Claims



1. A power supply tool for two step tightening of screw joints, the two steps including a first high speed screw joint tightening step and a second low-speed screw joint tightening step, the power tool comprising:

a housing;

a rotation motor supported in said housing;

an output spindle rotated by said motor and connectable to a screw joint to be tightened;

a power transmission including a releasable clutch means for coupling said motor to said output spindle in an unreleased state and for disconnecting said motor from said output spindle in a released state;

power supply means coupling said motor to a power source for supplying power to said motor;

said clutch means comprising:

a yielding element which is axially movable against the action of a bias spring for releasing said clutch means to its released state to disconnect said motor from said output spindle; and

shift means responsive to the speed of screw joint tightening for shifting the mode of operation of said clutch means between (i) a torque responsive releasing action whereby said clutch means is able to occupy its released state during the first, high speed screw joint tightening step and (ii) a non-releasing action whereby said clutch means is prevented from occupying its unreleased state during the second, low speed screw joint tightening step;

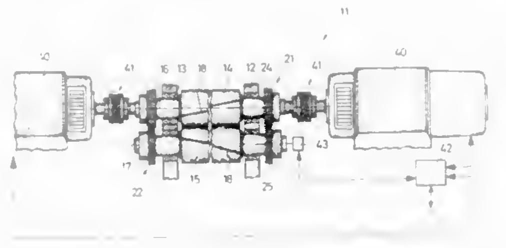
said shift means comprising at least one lock finger which is radially movable by centrifugal action during rotation of said motor from (i) an active position in which said at least one lock finger blocks said yielding element against said axial movement, to (ii) an inactive position in which said yielding element is unblocked and free to move axially as a predetermined torque level is reached in said clutch means; and

release detecting means coupled to said clutch means and to said power supply means for causing said power supply means to at least substantially reduce the power supply to said motor as said clutch means is released to its released state during the first, high speed screw joint tightening step.

4,881,436

TRANSVERSE CUTTER FOR SHEET MATERIALS

Jörg Rommel, Reutlingen, Fed. Rep. of Germany, assignor to Bielomatik Leuze GmbH & Co., Fed. Rep. of Germany
Continuation of Ser. No. 20,752, Mar. 2, 1987, abandoned. This application Nov. 1, 1988, Ser. No. 267,611
Claims priority, application **Fed. Rep. of Germany, Mar. 12, 1986, 3608111**
Int. Cl.^{4} B23D *25/12;* **B26D** *1/40*
U.S. Cl. 83—342 10 Claims



1. A transverse cutter for sheet materials, especially paper, comprising:

two rotatable cutter spindles,

at least one knife disposed at the periphery of each cutter spindle,

a drive for the cutter spindles, and

at least one gear wheel drive for synchronizing rotation of the two cutter spindles, said at least one gear wheel drive having mutually co-operating gear wheels in meshing engagement under pre-stress and a resilient element being disposed between one of said gear wheels and one of said cutter spindles, said resilient element being resilient to permit displacement in a radial direction, whereby said resilient element permits limited resilient radial movement at a point of circumference where the cooperating gear wheels come closest together during each rotation thereof.

4,881,437

ANGLE GUIDE DEVICE

Albert A. Macksoud, 558 Bevel Line Rd., R.R. #1, Leamington, Province of Ontario, Canada (N8H 3V4)
Continuation of Ser. No. 1,819, Jan. 8, 1987, abandoned. This application Jun. 8, 1988, Ser. No. 206,951
Claims priority, application **Canada, Apr. 11, 1986, 506524**
Int. Cl.^{4} B27B *27/08*
U.S. Cl. 83—477.2 5 Claims

1. A device for guiding a workpiece to be cut at a right angle and at a plurality of angles on a table saw, said table saw including a blade, a tabletop and a cutting line along which said blade passes for cutting said workpiece; said device comprising:

a first guide means fixed to said tabletop adjacent said cutting line at a permanent 90° angle with respect to said cutting line;

a second guide means interconnected to said first guide means, said second guide means being selectively adjustable with respect to said first guide means for adjusting the angle of said second guide means with respect to said cutting line;

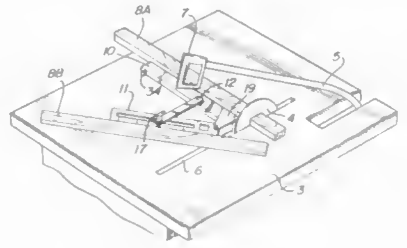
a first connecting link pivotally interconnecting said first and second guide means allowing pivotal movement of said second guide means with respect to said first guide means;

a second connecting link interconnecting said first and second guide means for controlling said pivotal movement of said second guide means with respect to said first guide means, said second connecting link having opposed ends with one end pivotally attached to one of said first and second guide means and said other end slideably connected to said other of said first and second guide means for longitudinal movement there along;

said first and second guide means each having inner sides facing one another and outer sides, said outer side of said first guide means being adapted to receive a workpiece in abutting engagement and position the workpiece across said cutting line at a right angle to said cutting line for cutting the workpiece at a right angle;

said outer side of said second guide means being adapted to receive a workpiece in abutting engagement and position the workpiece across said cutting line at a preselected angle to said cutting line for cutting the workpiece at said preselected angle;

whereby said device may be used for guiding a workpiece for perpendicular cuts and for preselected angled cuts by abutting a workpiece against said outer side of said first or second guide means.



4,881,438

BRUSH CUTTER BLADE

J. Dana Pinney, P.O. Box 877, Medford, Oreg. 97501
Continuation-in-part of Ser. No. 929,636, Nov. 12, 1985, abandoned, which is a continuation-in-part of Ser. No. 754,761, Jul. 15, 1985, abandoned. This application Nov. 24, 1987, Ser. No. 124,673
Int. Cl.^{4} B27B *33/12*
U.S. Cl. 83—840 5 Claims

1. A brush cutting blade for a motor driven brush cutting machine, said blade comprising,

a circular disc having opposite planar parallel side surfaces and a smooth continuous periphery,

and a plurality of cutter teeth individually attached to the peripheral margin of said disc,

said teeth being of alternating left and right configuration and being mounted in peripherally spaced relation alternately on opposite sides of said disc

each of said teeth comprising a flat plate portion abutting a side surface of said disc,

fastener means extending through each of said tooth plate portions and said disc rigidly to secure said teeth to said disc,

each of said teeth having a single cutter element consisting of a side wall portion integral with said plate portion and an outer flange portion,

said side wall portion being laterally offset from said plate portion, the amount of offset progressively decreasing from the forward end to the rearward end thereof,

said flange portion extending from said side wall portion substantially at right angles to disc side surfaces across the median plane of said disc,

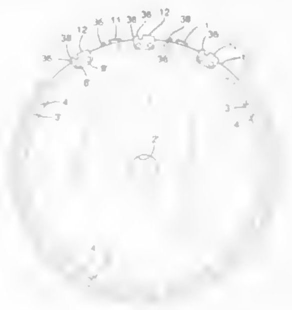
said flange portion being inclined downwardly at an angle of between seven and ten degrees with respect to a perpendicular to a radius of said disc intersecting the forward edge of said flange portion,

the forward edge of said side wall portion and said flange portion of each cutter element being formed with a beveled surface defining a cutting edge,

and a depth gauge integral with the forward end portion of each tooth plate portion positioned forwardly of said cutter element, said depth gauge defining an upwardly facing flat surface sloping upwardly from its forward to its rearward edge at an angle of between twenty-five and thirty-five degrees with respect to a plane parallel to the axis of said disc and normal to a radius of the disc intersecting the trailing edge of said depth gauge,

said depth gauge surface having a width of between 0.075 to 0.275 inch,

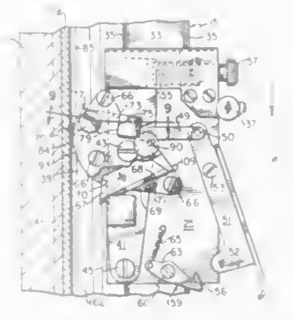
the top trailing edge of said depth gauge being spaced between 0.025 and 0.030 inch below the cutting edge of said flange portion.



4,881,439

CUTTING APPARATUS FOR SHEET MATERIAL

Robert E. Biedermann, Brick, N.J., and Albert J. Countryman, New Brighton, Minn., assignors to Esselte Pendaflex Corporation, Garden City, N.Y.
Filed Apr. 14, 1988, Ser. No. 181,433
Int. Cl.^{4} B26D *3/08*
U.S. Cl. 83—879 14 Claims



7. Apparatus for scoring a glass sheet material or the like comprising:

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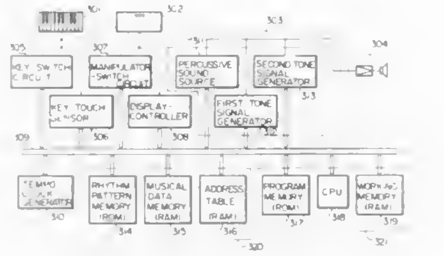
a. a holder for said sheet material;
b. a slide movable along said material;
c. a glass scoring element;
d. a carrier fixedly holding said element;
e. a first member on which said carrier is pivotally mounted, said first member being freely pivotally connected to said slide;
f. resilient means urging said first member and carrier toward said material;
g. means responsive to movement of said slide and including a curved periphery on said carrier facing said material, with one portion of said periphery spaced from the edge of said scoring element by a distance less than the thickness of said material to cause said carrier to pivot relative to said first member to cause said carrier to lift said scoring element over the edge of said material upon movement of said slide from a position above the upper edge of said material to a position opposite said material.

4,881,440
ELECTRONIC MUSICAL INSTRUMENT WITH EDITOR

Tadasu Kakizaki, Shizuoka, Japan, assignor to Yamaha Corporation, Hamamatsu, Japan
Filed Jun. 24, 1988, Ser. No. 210,926
Claims priority, application Japan, Jun. 26, 1987, 62-160754; Jun. 26, 1987, 62-160755
Int. Cl.⁴ G10H *1/38, 1/46, 7/00*
U.S. Cl. 84—609 **14 Claims**

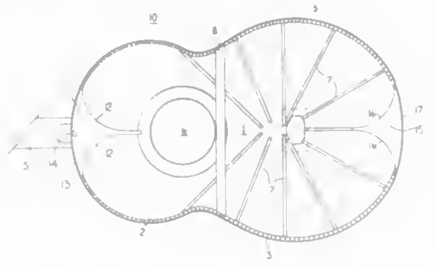


1. An electronic musical instrument capable of producing musical tones on the basis of a sequence of pieces of musical data information, said musical tones representing a music, said pieces of musical data information being representative of attributes of said musical tones, comprising:
(a) memory means for storing said pieces of musical data information grouped by time durations with respect to a beginning of a performance;
(b) modification range defining means for specifying a head position and a terminational position in said pieces of musical data information, said head position and said terminational position defining a part of said music;
(c) setting means for providing a variation for modifying one of said attributes;
(d) modifying means for modifying said pieces of musical data information between said head position and said terminational position on the basis of said variation.

4,881,441
STRINGED INSTRUMENT BLOCKING SYSTEM

John M. Larsen, Rte. 1, Box 23, Marsing, Id. 83639
Filed Jun. 16, 1988, Ser. No. 207,244
Int. Cl.⁴ G01D *3/02*
U.S. Cl. 84—291 **3 Claims**

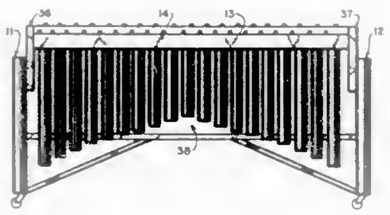
1. In a stringed instrument having a neck connected to a sound box which is constructed from a top, back, and sides disposed about a longitudinal axis, a blocking system which comprises:
a neck block having a substantially isosceles triangular shape, the equal length sides of which being concave and centered about the longitudinal axis, said neck block is supportively attached to said neck and further attached to said sound box top, back, and sides;

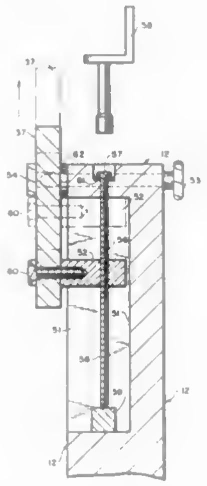


a tail block having a substantially isosceles triangular shape, the equal length sides of which being concave and centered about the longitudinal axis, said tail block being slidably attached to the bottom side wall.

4,881,442
PLAYING HEIGHT ADJUSTMENT FOR KEYBOARD PERCUSSION INSTRUMENTS

Leigh H. Stevens, Asbury Park, N.J., assignor to The Selmer Company, Elkhart, Ind.
Filed Oct. 28, 1987, Ser. No. 114,482
Int. Cl.⁴ G10D *13/08*
U.S. Cl. 84—403 **9 Claims**



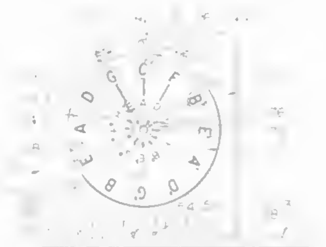


1. In a musical percussion instrument having a pair of spaced end supports, a generally horizontal array of tuned elements for producing musical tones between said end supports, and support rails for supporting said array of tuned elements, the improvement comprising:
a pair of intermediate supports secured to opposing ends of said support rails, each intermediate support being mounted on a respective end support for allowing vertical translation of said intermediate supports with respect to said end supports;

a pair of jack screws each rotatably mounted and supported on a respective end support;
coupling means for coupling each jack screw to a respective intermediate support for raising said intermediate support when said jack screw is rotated in one direction and for lowering said intermediate support when said jack screw is rotated in an opposite direction, said coupling means including a screw block secured to each intermediate support, said screw block having a tapped hole for threadedly receiving said jack screw;
said end support including a bearing block for supporting said jack screw;
whereby height adjustment of said bar support rails and said tuned elements in a vertical plane relative to said end supports is accomplished by selective rotation of said jack screws.

4,881,443
MUSIC TEACHING APPARATUS

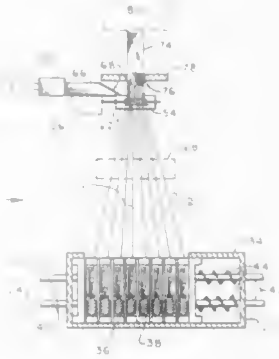
Howard W. Bertram, Carleton Place, Ontario, Canada, assignor to Mutech - Music Technologies, Inc., Ontario, Canada
Filed Aug. 3, 1988, Ser. No. 227,617
Int. Cl.⁴ G09B *15/02*
U.S. Cl. 84—473 **19 Claims**



1. Music teaching apparatus comprising a display base, a circular display disc rotatably associated with said base, and a display keyboard moveable relative to said display base;
said base having first indicia including a circular array of twelve equally spaced, radially extending, lines and having second indicia spaced from said first indicia, said second indicia including a linear array of thirteen, equally spaced, parallel lines;
said disc having third indicia in a circular array, said third indicia representing twelve notes of an octave, which notes are at intervals of two and one-half tones on a musical scale, and the progression of notes, in a first direction, being according to 4th intervals and, in a second, opposite direction, being in accordance with 5th intervals, said notes being angularly spaced for registration with lines of said first indicia;
said keyboard providing fourth indicia comprising representation of at least one octave of a piano keyboard including white and black keys, the spacing of said keys coinciding substantially with the spacing of the linear array of lines of said second indicia;
whereby registration of a note from the disc third indicia with a line of said first indicia at the 12 o'clock position, hereinafter denoted as a base note, provides registration of other notes of the third indicia with other lines of the first indicia, and provides information about the prime chords of the base note from said registration of said base note and registration of notes of said other notes in registration with the 1 and 11 o'clock positions; and
registration of a key of the base note as represented on the keyboard fourth indicia with the first line of said second indicia provides spacial information as to the prime chords of said base note on the keyboard fourth indicia in registration with the first, sixth and eighth lines from the left of said second indicia.

4,881,444
METHOD AND APPARATUS FOR BRAIDING THREE-DIMENSIONAL FABRICS

Konrad L. Krauland, 15542 Toway La., Huntington Beach, Calif. 92647
Filed Jun. 24, 1988, Ser. No. 211,479
Int. Cl.⁴ D04C *1/06, 3/00*
U.S. Cl. 87—8 **20 Claims**



1. An apparatus for braiding a fabric comprising:
a. a plurality of braiding elements constructed and arranged to move in preselected paths in a first plane;
b. a plurality of forming elements constructed and arranged to move in preselected paths in a second plane spaced from said first plane, the movement of each of said forming elements corresponding to the movement of one of said braiding elements;
c. fiber supply means for supplying fibers from said braiding elements through said forming elements, whereby movement of said braiding and forming elements braids said fibers into a fabric.

16. A method for braiding a fabric comprising the steps of:
a. providing a plurality of braiding elements movably disposed in a first plane;
b. providing a plurality of forming elements movably disposed in a second plane, each of said forming elements corresponding to one of said braiding elements;
c. supplying fibers from said braiding elements through said forming elements to a forming zone; and
d. moving said braiding and forming elements synchronously in predetermined path to braid said fibers into a fabric.

4,881,445
SHAPED CHARGE

Scott L. Hayes, Mansfield, Tex., assignor to Goex, Inc., Cleburne, Tex.
Filed Sep. 29, 1988, Ser. No. 251,200
Int. Cl.⁴ E21B *7/00, 43/117*
U.S. Cl. 89—1.15 **29 Claims**

1. A shaped charge comprising:
(a) a shaped charge case having first and second ends and a cavity therein, said case cavity opening up to said case first end, said case first end having a first surface that is circumferential, said case second end having means for holding a portion of a detonating cord;
(b) a shaped charge cap having first and second ends and a cavity therein, said cap cavity opening up to said cap first end, said cap first end having a second surface that is circumferential and that is close to said first surface when said case and said cap are assembled together;
(c) said case and said cap being assembled together to form

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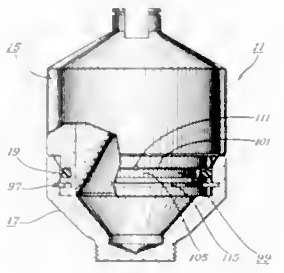
an enclosed cavity from said case and cap cavities by one of said first ends matingly receiving the other of said first ends such that said first and second surfaces face each other, with a passageway formed by a clearance between said first and second surfaces, said passageway extending between said enclosed cavity and the exterior of said shaped charge, said enclosed cavity being adapted to receive and hold an explosive charge;

(d) circumferential groove means for receiving elastomeric seal means, said groove means being located between said case and said cap when said case and said cap are assembled together, said groove means being formed in at least one of said surfaces such that said passageway extends through said groove means, said groove means substantially surrounding said seal means such that said seal means is confined within said groove means for blocking said passageway and providing a seal between said case and said cap;



(e) said groove means having spaced apart first and second portions such that said passageway extends from said first portion of said groove means to the exterior of said shaped charge and from said second portion of said groove means to said enclosed cavity;

(f) said first portion of said groove means having gap means sized and located such that when the internal pressure of said enclosed cavity becomes greater than the external pressure of said shaped charge said seal means is unable to close said passageway and the internal pressure vents to the exterior of said shaped charge;

(g) said gap means being blocked from communicating with said enclosed cavity and its internal pressure by said seal means when said seal means is undeformed by internal pressure.

4,881,446
SPACE TRAIN

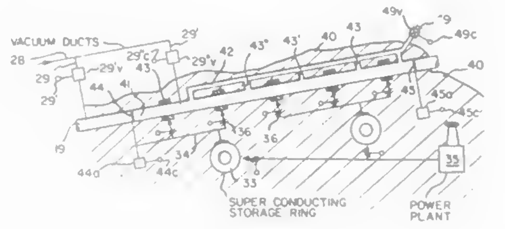
Alvin M. Marks, Bigelow Rd., Atbol, Mass. 01331, and Peter H. Diamandis, Box 153, Mit Br P.O., Cambridge, Mass. 02139

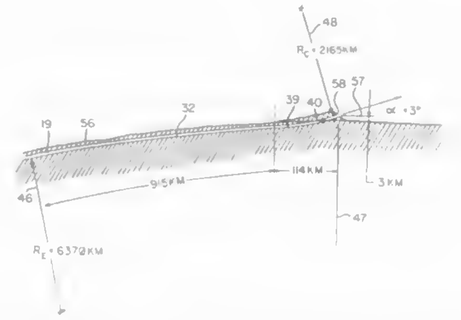
Filed Jul. 28, 1988, Ser. No. 187,246

Int. Cl.⁴ B64F *1/04;* **F41F** *1/02*

U.S. Cl. 89—8 13 Claims

1. A system for projecting a Vehicle into space, comprising a Tube having a total length D_T such that $500\ \text{km} < D_t < 1500\ \text{km}$, and an inside diameter d of about 5 m, an entrance port and an exit port on said Tube, Airlocks at each of said ports, the axis of said Tube being parallel to to the surface of the earth for a distance D_1, such that $450\ \text{km} < D_1 < 1250\ \text{km}$, and curving upward with a radius R_c such that $1000\ \text{km} < R_c < 3000\ \text{km}$ for a distance of D_2 such that $40\ \text{km} < D_2 < 240\ \text{km}$, the said exit to said Tube being located at a height H such that $1\ \text{km} < H < 6\ \text{km}$, and an angle α to the horizontal such that $1^\circ < \alpha < 6^\circ$, a Vehicle in said Tube, a first means comprising coils mounted along said Tube, a second means mounted on said Vehicle, an external electric power source, a third means for storing electric energy from said power source, a fourth means along said Tube to supply electric power from said third means to said first means to provide an electromagnetic field travelling along said Tube, said first and second means producing electromagnetic forces which levitate and accelerate said Vehicle, electronic control means, a vacuum pump, ducts and valves connecting said vacuum pump with said Tube and each of said Airlocks, said vacuum pump evacuating said Tube and said Airlocks, each said Airlock comprising at least two doors, electromechanical actuating means on said doors, signals from said control means to said actuating means to control the opening and closing of said doors, said doors opening as the Vehicle approaches and closing after said Vehicle has passed, said Tube having a residual air pressure due to a partial vacuum in which the aerodynamic drag on the said Vehicle is less than 1% of the drag said Vehicle would encounter at 1 Atmosphere at the same velocity, said Vehicle having such mass and velocity at said exit port to enable its escape from earth into space.





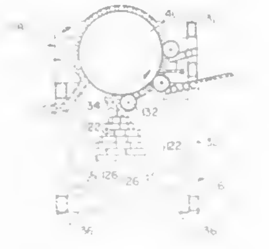
4,881,447
ROUND-ORIENTING REPLENISHER FOR AMMUNITION STORAGE AND TRANSPORT SYSTEM

David P. Yanusko, Pottstown, and Robert Geiger, Jr., Geigertown, both of Pa., assignors to Teleflex Incorporated, King of Prussia, Pa.

Filed May 27, 1988, Ser. No. 200,010

Int. Cl.⁴ F41F *9/02;* **F42B** *39/10, 39/12*

U.S. Cl. 89—34 20 Claims



11. An apparatus for orienting and feeding ammunition, comprising:

means defining a feed path for successive individual ones of the rounds, and an inlet to the feed path, the inlet narrowing to an opening leading to the feed path such that loose rounds passing through the inlet to the feed path are oriented in one of two opposite directions;

means for separating individual rounds passing the opening as a function of orientation of the rounds in said opposite directions, including a starwheel sprocket receiving and carrying the individual rounds around an axis of the starwheel sprocket, the rounds being positioned substantially parallel to the axis of the starwheel sprocket, and at least two guide rails extending around a portion of a circumference of the starwheel sprocket, the guide rails engaging extractor flanges of the rounds, the guide rails diverging from one another axially progressing around said portion of a circumference, whereby the rounds in the two opposite directions are caused to diverge as a function of orientation; and,

two helical feed screws disposed adjacent the guide rails, each of the helical feed screws receiving said rounds from one of the guide rails, the feed screws turning the rounds and the feed screws converging leading to the feed path, whereby the rounds are combined into a succession of rounds oriented in a same direction.

4,881,448
REACTIVE ARMOR ARRANGEMENT

Gunnar Medin; Erik Olsson; Lennart Sjöö , all of Eskilstuna, and Roger Lundgren, Bromma, all of Sweden, assignors to Affarsverket FFV, Eskilstuna, Sweden

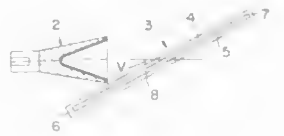
PCT No. PCT/SE87/00131, § 371 Date Nov. 24, 1987, § 102(e) Date Nov. 24, 1987, PCT Pub. No. WO87/05993, PCT Pub. Date Oct. 8, 1987

PCT Filed Mar. 16, 1987, Ser. No. 124,989

Claims priority, application Sweden, Mar. 27, 1986, 8601435

Int. Cl.⁴ F41H *5/04*

U.S. Cl. 89—36.02 5 Claims



1. A reactive armour arrangement for protection against an obliquely impinging hollow explosive charge jet, comprising

two mutually parallel metal plates which can be penetrated by the jet to form a hole in said two mutually parallel metal plates, and

an interlayer of non-explosive formaldehyde compound located between said two mutually parallel metal plates, said interlayer being an incompressible material and having a density at most ⅓ of a density of said two mutually parallel metal plates, and a major part of shockwaves generated by the hollow explosive charge jet in said two mutually parallel metal plates being reflected against said interlayer so that reflective forces give rise to forces which strive to move said two mutually parallel metal plates apart, and so that edges of said hole lift in a crater-like fashion therewith forcing material of said two mutually parallel metal plates around said edge of said hole to be shifted progressively into a path of the obliquely impinging hollow explosive charge jet and therewith progressively decreasing energy content thereof.

4,881,449
HYDRAULIC BOOSTER DEVICE

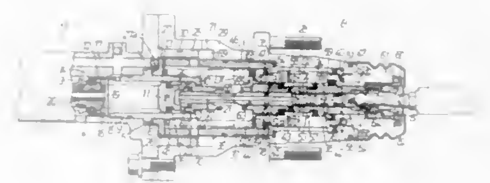
Makota Horinchi; Atsushi Shimizu, botb of Ueda; Yoshitaka Miyakawa, and Kazuya Sakurai, both of Wako, all of Japan, assignors to Nissin Kogyo Kabushiki Kaisha, Ueda and Honda Giken Kogyo Kabushiki Kaisha, Tokyo, both of, Japan

Filed Oct. 25, 1988, Ser. No. 262,366

Claims priority, application Japan, Oct. 26, 1987, 62-270025

Int. Cl.⁴ F15B *9/10*

U.S. Cl. 91—372 7 Claims



1. A hydraulic booster device, comprising a booster cylinder coupled with a rear end of a cylinder body of a master cylinder, a booster piston slidably received in a piston guide mounted in said booster cylinder and spring-biased in a retreating direction, a valve piston leading to an operating member and slidably received in said booster piston, an output hydraulic pressure chamber defined to face a back of said booster piston, an input hydraulic pressure chamber leading to a hydraulic pressure supply source, an inlet valve interposed between said input and output hydraulic pressure chambers and opened in response to an advancing operation of said valve piston relative to said booster piston, an outlet valve interposed between said output hydraulic pressure chamber and an outlet chamber leading to an oil reservoir and closed in response to an advancing operation of said valve piston relative to said booster piston, and a booster chamber facing a back of an operating piston in said master cylinder and defined between said operating piston and a guide member disposed rearwardly of said operating piston to be able to abut against a leading end of said booster piston, said valve piston having a leading end oil-tightly and movably passed through said guide member to project into said booster chamber, said valve piston being perforated with an oil supply passage which permits communication between said input hydraulic pressure chamber and said booster chamber in response to opening of said inlet valve.

4,881,450
DRIVE CONTROL SYSTEM FOR HYDRAULIC MACHINE

Toichi Hirata, Ushiku; Masakazu Haga; Ichiro Hirami, both of Chiyoda, and Kuniaki Yoshida, Tsuchiura, all of Japan, assignors to Hitachi Construction Machinery Co., Ltd., Tokyo, Japan

Filed Mar. 25, 1988, Ser. No. 173,585

Claims priority, application Japan, Mar. 27, 1987, 62-71761; Jun. 10, 1987, 62-143185; Jul. 15, 1987, 62-174974

Int. Cl.⁴ F15B *13/044*

U.S. Cl. 91—459 23 Claims

1. A drive control system for a hydraulic machine, including an electric lever device equipped with a manipulation lever and a first output means for generating an electrical manipulation signal corresponding to the degree of each manipulation of the lever, a control valve connected to a hydraulic circuit adapted to actuate a hydraulic actuator, and a control means equipped with a main controller for receiving the manipulation signal and computing a control signal for the control valve on the basis of the manipulation signal and a second output means for generating an electrical actuation signal corresponding to the control signal, characterized in that said system additionally comprises a neutral position sensing means provided with the electric lever device for sensing a neutral position of the manipulation lever and an inhibition means which receives an

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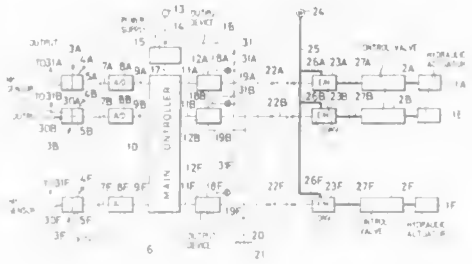
output signal from the neutral position sensing means and when the manipulation ever is at the neutral position, inhibits the transmission of a signal between the main controller of the control means and the control valve.



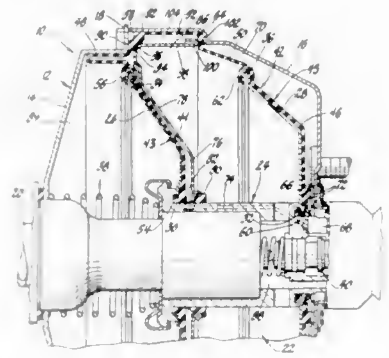
4,881,451

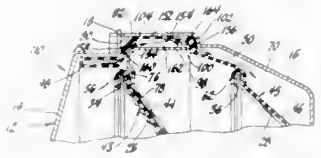
TANDEM VACUUM BOOSTER AND DIAPHRAM FOR SAME

Delvert W. Newhouse, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Sep. 3, 1987, Ser. No. 92,634
Int. Cl.⁴ F01B *19/00*

U.S. Cl. 92—48 3 Claims





1. In a tandem vacuum booster having a booster housing defined by a housing front section and a housing rear section and divided into a front booster section and a rear booster section by a divider wall, an annular front diaphragm support and an annular rear diaphragm support mounted on a movable booster piston at their inner peripheries, diaphragm means dividing said front booster section into a front vacuum chamber and a front variable pressure chamber and said rear booster section into a rear vacuum chamber and a rear variable pressure chamber, first passage means providing continuous fluid communication between said front and rear vacuum chambers, second passage means providing continuous fluid communication between said front and rear variable pressure chambers, and valve means controlling the pressure value in the variable pressure chambers to actuate and release the vacuum booster, said diaphragm means being a single flexible diaphragm member comprising:

- a front diaphragm section having a beaded front inner periphery secured to said booster piston adjacent said front diaphragm support, a front supported section in supported relation with said front diaphragm support, a recessed front mounting portion secured to the outer periphery of said front diaphragm support, a front outer peripheral support bead in sealing engagement with said front and rear booster housing sections and said divider wall, and a front roll section extending between said recessed front mounting portion and said outer peripheral support bead and folded into rolling engagement with said booster housing front section;
- a rear diaphragm section having a beaded rear inner periphery secured to said booster piston adjacent said rear diaphragm support, a rear supported section in supported relation with said rear diaphragm support, a recessed rear mounting portion secured to the outer periphery of said rear diaphragm support, a rear outer peripheral support bead in sealing engagement with said rear booster housing section and said divider wall, and a rear roll section extending between said recessed rear mounting portion and said rear outer peripheral support bead and foldable into rolling engagement with a portion of said divider wall as said booster is actuated;
- and a circumferentially extending annular connecting section extending between and connecting said front and rear outer peripheral support beads and sealingly engaged with at least a circumferentially extending annular portion of said booster housing rear section radially outward of said divider wall.

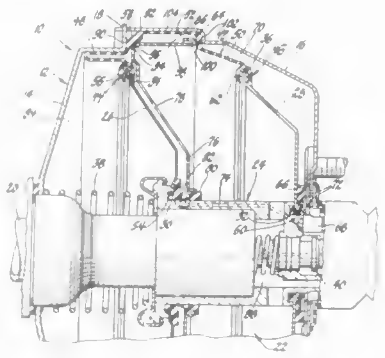
4,881,452

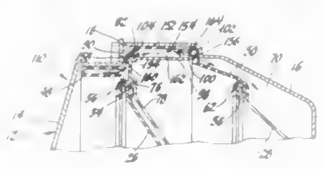
TANDEM VACUUM BOOSTER AND DIAPHRAGM FOR SAME

Delbert W. Newhouse, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Sep. 3, 1987, Ser. No. 92,642
The portion of the term of this patent subsequent to Nov. 21, 2006, has been disclaimed.
Int. Cl.⁴ F01B *19/00*

U.S. Cl. 92—48 3 Claims





1. In a tandem vacuum booster having a booster housing defined by a housing front section and a housing rear section and divided into a front booster section and a rear booster section by a divider wall, an annular front diaphragm support and an annular rear diaphragm support mounted on and sealingly secured to a movable booster piston at their inner peripheries for movement therewith, diaphragm means cooperating with said front and rear diaphragm supports and said divider wall and dividing said front booster section into a front vacuum chamber and a front variable pressure chamber and said rear booster section into a rear vacuum chamber and a rear variable pressure chamber, first passage means providing continuous fluid communication between said front and rear vacuum chambers, secondn passage means providing continuous fluid communication between said front and rear variable pressure chambers, and valve means controlling the pressure value in the variable pressure chambers to actuate and release the vacuum booster, said diaphragm means comprising a single flexible diaphragm member having:

- a front diaphragm section having a recessed front mounting portion with an inner periphery bead sealingly secured to the outer periphery of said annular front diaphragm support, a front outer peripheral support bead in sealing engagement with said front and rear booster housing sections and said divider wall, and a front roll section extending between said front recessed mounting portion and said outer peripheral support bead and folded into rolling engagement with said booster housing front section;
- a rear diaphragm section having a recessed rear mounting portion with an inner periphery bead sealingly secured to the outer periphery of said rear diaphragm support, a rear outer peripheral support bead in sealing engagement with said rear booster housing section and said divider wall, and a rear roll section extending between said recessed rear mounting portion and said rear outer peripheral support bead and foldable into rolling engagement with a portion of the divider wall as said booster is actuated;
- and a circumferentially extending annular connecting section extending between and connecting said front and rear outer peripheral support beads and sealingly engaged with at least a circumferentially extending annular portion of said booster housing rear section radially outward of said divider wall;
- said diaphragm member front and rear diaphragm sections and said front and rear diaphragm supports and said booster piston cooperatively defining a tandem power wall movable piston assembly.

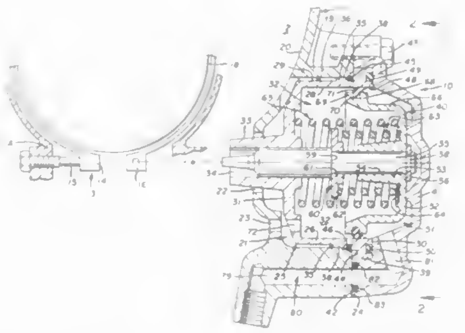
4,881,453

SERVO MECHANISM FOR ACTUATING A FRICTION BAND ASSEMBLY IN A PLANETARY GEAR SET

Douglas C. Armstrong, Novi, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Jun. 27, 1988, Ser. No. 211,614
Int. Cl.⁴ F16J *1/00*

U.S. Cl. 92—84 2 Claims



1. A self contained servo for selectively actuating a friction band assembly in a planetary gear set in combination with a transmission case having an interior cavity for receiving a planetary gear set, said servo and transmission case combination comprising: a socket cavity presented from said transmission case; said socket cavity communicating with the interior cavity of said transmission case; a closure face presented from said transmission case and circumscribing said socket cavity; said servo having a housing; locating pilot means presented from the exterior of said housing; said locating pilot means engaging said socket cavity; a piston chamber provided interiorly of said housing; a pilot bore penetrating said housing and being aligned with said piston chamber; an actuating pin slidably received within said pilot bore; piston means slidably received within said piston chamber and operatively secured to said actuating pin; a cover secured to said closure face and operatively engaging said housing to close said piston chamber and to define a pressure chamber against said piston means; and, feed means provided through said cover to effect hydraulic communication with said pressure chamber.

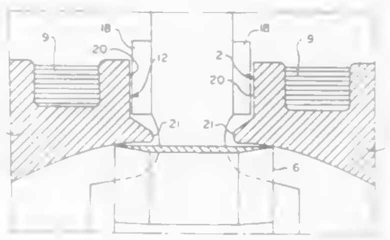
4,881,454

PRESSURE FLUID CYLINDER DEVICE

Bo Granbom, 13 Lostigen, S-731 42 Köping, Sweden

Continuation of Ser. No. 881,716, Jul. 3, 1986, abandoned. This application Aug. 12, 1988, Ser. No. 231,658
Int. Cl.⁴ F01B *29/08*

U.S. Cl. 92—88 1 Claim



1. A fluid pressure cylinder, comprising: wall means defining an axially extending cylinder having an axial bore having two opposite ends, said wall means including an inner peripheral surface; said cylinder further including two axially-opposite end walls and means for admitting fluid pressure to and relieving fluid pressure from said axial bore near each of said opposite ends;

- means defining an axially-extending slot through said cylinder, said slot communicating with said axial bore; said slot including a laterally wider radially outer portion and a laterally narrower radially inner portion, each having two laterally spaced opposite edges;
- a flexible band received in said axial bore and extending axially therealong bridging said slot;
- means normally urging opposite lateral margins of a radially outer face of said flexible band into sealing engagement with said inner peripheral surface of said cylinder on respectively opposite sides of said slot;
- a piston having two axially opposite ends, each including a respective sealing cuff; said piston being axially slidingly received in said axial bore with said sealing cuffs thereof disposed in circumferential sealing engagement, at two respective axially-spaced locations, with a composite of said inner peripheral surface and a radially inner face of said flexible band;
- an axially slidable carrier, said carrier having:
  - a laterally wider portion disposed in said laterally wider portion of said slot and located so as to be accessible from externally of said cylinder,
  - a laterally narrower portion extending radially inwardly from said laterally wider portion of said carrier, into said axial bore, and
  - a further portion extending part-way around said flexible band and connecting with said piston at a site located axially between said sealing cuffs, said further portion including means for locally distending said flexible band away from sealingly bridging a radially inner end of said slot, whereby as said carrier and said piston are moved together axially of said cylinder, a site where said flexible band is locally distended correspondingly axially moves along the radially distended correspondingly axially moves along the radially inner end of said slot while remaining located axially between said sealing cuffs of said piston; and
- said carrier further includes means located on said laterally wider portion thereof for securing other structure to said

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carrier so that said carrier may be used for moving such other structure or such other structure may be used for moving said carrier axially along said slot;

said laterally wider portion of said carrier being laterally wider than said laterally narrower portion of said slot; and said carrier, in said laterally wider portion thereof, including slide means disposed in sliding engagement with both said edges of said laterally wider portion of said slot.

4,881,455
PISTON FOR USE IN A GAS PUMP

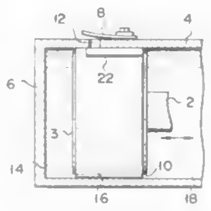
Fuminori Hirose, Tokyo, Japan, assignor to Nitto Kohki Co., Ltd., Tokyo, Japan

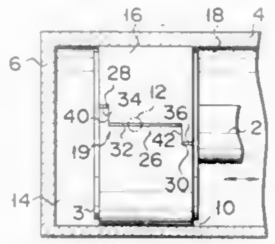
Filed May 27, 1988, Ser. No. 199,759

Claims priority, application Japan, May 30, 1987, 62-84780[U]

Int. Cl.⁴ F16J *9/00*

U.S. Cl. 92—248 **1 Claim**





1. A piston for use in a gas pump, which is to be slidably inserted in a cylinder having a blocked cylinder head, and a valve hole and an outlet valve located on an outside surface thereof near the cylinder head, said outlet valve being opened when said piston moves in the direction of the cylinder head and approaches the cylinder head, said piston comprising:

a cylindrical piston body having an outer periphery, a distal end portion and a central portion; and

a wear-reducing sheet wound one time around the outer periphery of the piston body,

said wear-reducing sheet being made of a fluorine resin having a small coefficient of friction and a high resistance to heat, and sized to surround substantially the entire outer periphery of said cylindrical piston body, said wear-reducing sheet having a pair of opposing edges;

each of the edges of said wear-reducing sheet being provided with at least one crank-shaped portion, at least two gaps set apart from each other by a predetermined distance in the circumferential direction of the piston body, and at least one no-gap portion being formed between the edges, the no-gap portion extending substantially in the circumferential direction of the piston body to connect the two gaps; and

the first gap located at the distal end portion of the piston body being longer than the second gap located in the central portion thereof in the axial direction of the piston body,

whereby the no-gap portion passes the valve hole and the valve hole is located in the central portion of the piston body when said piston moves in the direction of the cylinder head and approaches the cylinder head, so that air in a pressure chamber defined by the cylinder head and piston head is prevented from leaking by the no-gap portion.

4,881,456
ONBOARD AIR DISCHARGE SYSTEM

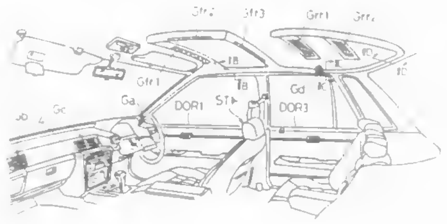
Tomio Yasuda, Kasukabe; Kohji Aoki, and Kazuo Mori, both of Nagoya, all of Japan, assignors to Aisin Seiki Kabushikikaisha, Aichi, Japan

Filed Feb. 29, 1988, Ser. No. 162,104

Claims priority, application Japan, Mar. 5, 1987, 62-50588

Int. Cl.⁴ B60H *1/24*

U.S. Cl. 98—2.01 **7 Claims**



1. An onboard air discharge system comprising:
two or more seats onboard a vehicle;
a plurality of air ejection ports corresponding to the seats;
air producing means;
an air channel for leading the air produced by the air producing means to each of the ejection ports;
an occupant detecting means for detecting the presence or absence of an occupant on each of the seats including:
  a plurality of first electrodes mounted on part of each of the seats as insulated from the respective seats;
  a second electrode associated with each of the first electrodes and insulated therefrom and arranged such that at least part of a person present in the seat on which the first electrode is mounted is disposed therebetween;
  means for detecting a capacitance between each of the first electrode and the second electrode and providing first electrical signals representing each of the capacitances;
  processing means including:
    storage means for storing each of the first electrical signals;
    storage update means for causing each of the first electrical signals stored in the storage means to be updated at given time intervals;
    comparison means for producing second electrical signals representing the occupation of each of the seats whenever a difference between each of the first electrical signals developed by the capacitance detecting means and the signal stored by the storage means which is associated with the first electrical signals exceeds a first threshold value; and
    means for setting second threshold values based upon each of the first electrical signals developed during the presence of an occupant and determining the departure of an occupant when each of the first electrical signals decreases below each of the second threshold values which is associated with the first electrical signals; and
  means for blocking an air ejection from the air ejection port corresponding to the seat for which the absence of a person has been detected.

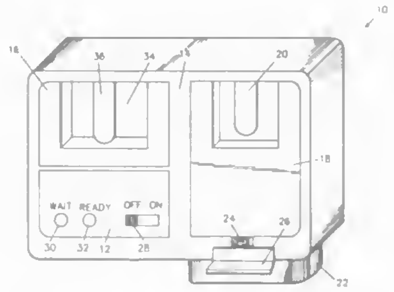
4,881,457
LOW-HEADROOM POPCORN POPPER

Thomas M. Lyga, Terryville, and William D. Ryckman, Jr., Orange, both of Conn., assignors to Black & Decker, Inc., Newart, Del.

Filed Nov. 2, 1987, Ser. No. 115,846

Int. Cl.⁴ A23L *1/18*

U.S. Cl. 99—323.5 **18 Claims**



1. An air popper for popping popcorn comprising:
a blower;
a plenum;
air conditioning means for conducting air from said blower to said plenum;
a popping chamber in said plenum;
air admitting means for admitting air from said plenum into said popping chamber;
air heating means disposed about a circumference of said popping chamber, said air heating means for heating air in at least one of said air conducting means and said plenum; and
said blower, said plenum and said air conducting means being horizontally disposed with respect to each other, whereby vertical height of said air popper is minimized.

4,881,458
METHOD OF AND APPARATUS FOR DISPERSING AND DISTRIBUTING A PICKLE IN RAW MEAT

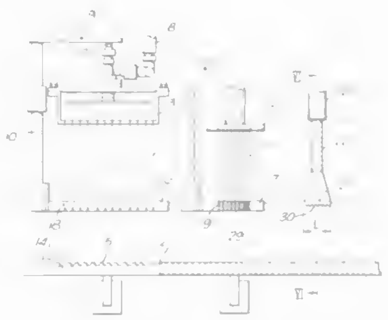
Tsuyoshi Higashimoto, Ikoma, Japan, assignor to Higashimoto Kikai Co., Ltd., Japan

Filed Feb. 29, 1988, Ser. No. 161,903

Claims priority, application Japan, Mar. 5, 1987, 62-51084; Mar. 5, 1987, 62-51085

Int. Cl.⁴ A23B *4/00*

U.S. Cl. 99—533 **7 Claims**



1. An apparatus for distributing and dispersing a pickle solution throughout raw meat, comprising:
(a) a conveyor operative for intermittantly feeding along a feed direction successive masses of raw meat containing a pickle solution, said conveyor having opposite sides spaced apart along a transverse direction that extends generally oormally of the feed direction;
(b) a pair of guide walls at, and extending upwardly of, the opposite sides of the conveyor, said guide walls being spaced apart along the transverse direction by a predetermined distance and bounding with the conveyor a channel in and along which the successive raw meat masses containing the pickle solution are confined and guided;
(c) a movable press block having a transverse width dimension corresponding to said predetermined distance and situated above the conveyor for reciprocal movement toward and away from the conveyor and into and out of the channel, said press block having a rectangular bottom surface formed with a number of projections, said projections being in the form of pyramids arranged in a lattice pattern on the entire bottom surface of said press block, said projections being adapted to bite into said raw meat masses to resist slippage occurring between the bottom surface of said press block and said raw meat masses; and
(d) drive means for reciprocally moving the press block between a remote position in which the press block is disposed remotely from the raw meat masses in the channel, and a pressing position in which the press block enters the channel and compresses the raw meat masses confined in the channel between the guide walls to forcibly disperse and uniformly distribute the pickle solution throughout the raw meat masses.

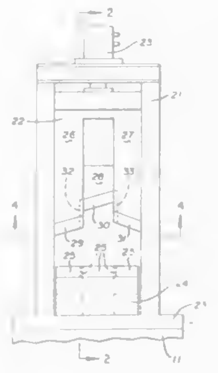
4,881,459
HYDRAULIC SCRAP SHEAR

John R. Ramun, Youngstown, Ohio, assignor to Allied Gator, Inc., Youngstown, Ohio

Filed Mar. 17, 1988, Ser. No. 169,277

Int. Cl.⁴ B30B *9/32, 15/06;* **B26B** *5/12*

U.S. Cl. 100—95 **6 Claims**



1. A hydraulic scrap shear for compaction and multiple segmentation in sequence shearing of scrap fed into the shear in a scrap feed direction into uniform scrap blocks, which comprises: a support and guide frame, a shearing block within said frame, a shear member within said frame registerable with said shear block and moving in an essentially linear direction in a vertical plane, shear block shear blades positioned on said shear block in right angular and co-planar relation to one another, said shear block shear blades including a central blade extending transverse to the scrap feed direction, side blades connectd to opposite ends of said central blade and extending in the scrap feed direction and outer side blades connected to ends of said side blades that are remote from said central blade and which extend transverse to the scrap feed direction, means for moving said shear member within said support frame, multiple interconnected shear member blades positioned on said shear member, said shear member blades including a first blade extending transversely of the scrap feed direction, second and third blades connected to ends of said first blade and extending in the scrap feed direction and fourth and fifth blades connected to ends of said second and third blades that are remote from said first blade and which extend transversely of

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the scrap feed direction, each of said shear member blades being positioned angularly in relation to said co-planar shear block blades on said shear block and at right angles to each other, said blades being engageable on an elongated scrap section as said scrap section is intermittently advanced into said scrap shear, means for supporting and advancing said scrap section, each of said blades on said shear member being positioned at a different relative height to said registrable shear blades on said shear block, means on said shear member conforming to said angular position of said blades.

4,881,460

POSTAGE METER AND CONTROL ARRANGEMENT FOR SAME

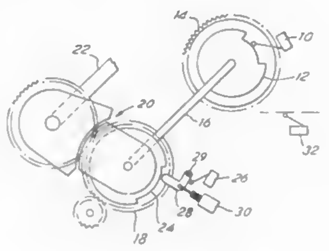
Ray L. Bannister, Richmond; Frederick C. Close, Great Amwell, and Peter J. Coeber, Earith, all of United Kingdom, assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Aug. 26, 1987, Ser. No. 89,720

Claims priority, application European Pat. Off., Aug. 27, 1986, 86306619

Int. Cl.⁴ B41L *39/00*

U.S. Cl. 101—91 7 Claims



1. A postage meter having printing means for envelopes and comprising:

a motor drive connected to said printing means for operating same, said motor drive requiring a predetermined amount of movement in order to cause said printing means to carry out a single printing operation, and

means connected to said motor drive for preventing a second printing operation from being carried out until a current envelope is fully discharged from the meter and the next envelope introduced;

said preventing means comprising:

control means connected to said motor drive for activating same while a current envelope is present in said postage meter,

said control means including electrical circuit means operable upon operation of the motor drive during a printing operation to prevent a second printing operation until the drive means has completed the current printing operation and the current envelope has been fully discharged;

said electrical circuit means comprising first and second parallel current paths for activating said motor drive, and means for establishing and interrupting said first and second current paths in response to different states of said postage meter.

4,881,461

MAILING MACHINE INCLUDING IMPROVED DRIVING MEANS CIRCUIT

John R. Nobile, Fairfield, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Feb. 8, 1989, Ser. No. 307,803

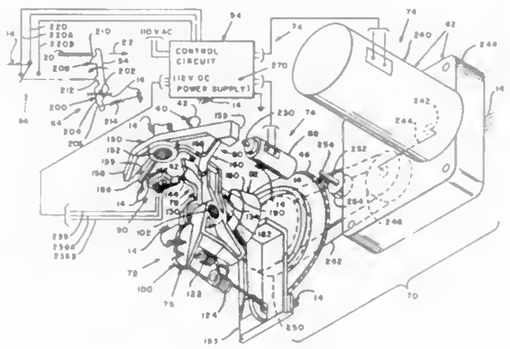
Int. Cl.⁴ B41F *13/24*

U.S. Cl. 101—235 10 Claims

1. In a mailing machine including a postage meter and means for feeding a sheet through and from the machine, wherein the postage meter includes rotary printing means for printing indicia on a sheet fed through the machine, and the machine includes means for driving the printing means, wherein the driving means includes a drive gear for rotating the printing means, the driving means includes a shutter bar movable into and out of locking engagement with the drive gear, the driving means includes an actuating member for moving the shutter bar, and wherein the machine includes trip means for sensing a sheet, an improvement comprising:

a. a source of supply of d.c. power;

b. circuit means for controlling the driving means, the circuit means including a trip switch actuatable in response to the trip means sensing a sheet fed to the machine;



c. the driving means responsive to actuation of the trip switch for causing the actuating member to move the shutter bar out of locking engagement with the drive gear and then causing the drive gear to rotate; and

d. the circuit means including means for disabling the trip switch for a predetermined time period after the driving means commences rotating the drive gear.

4,881,462

PORTABLE ELECTRICAL LABELLING MACHINE

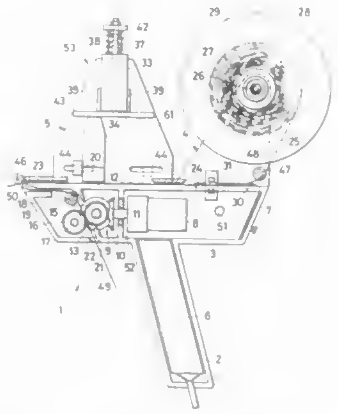
Carlo Vanoni, Varese, Italy, assignor to Mlda S.r.l., Varese, Italy

Filed Mar. 10, 1988, Ser. No. 166,239

Claims priority, application Italy, Mar. 17, 1987, 21146 B/87

Int. Cl.⁴ B41F *1/02*

U.S. Cl. 101—292 15 Claims



1. A portable electrical labelling machine for applying labels carried by a tape to an object, comprising:

a body having a tape path therein and a handle portion attached thereto;

a tape holder coupled to said body for carrying a roll of said label-carrying tape, said tape comprising a continuous band of paper transparent to infra-red light and which supports the labels in spaced relationship so that a gap of transparent paper is between the spaced labels;

photocell detection means coupled to said body in the tape path for emitting and receiving infra-red light across the

tape path and being responsive to produce an enabling output in the absence of received light resulting from the presence of a label therein and being responsive to produce a disabling output in response to received infra-red light passing through the transparent tape in the gap between the labels;

a printing device responsively coupled to said photocell detection means, for printing a label upon the occurrence of said enabling output; and

drive means responsively coupled to said photocell detection means for pulling said tape upon the occurrence of said enabling output such that said tape is unwound from said holder means and the label is withdrawn from said photocell detection means, said drive means being disabled in response to the occurrence of the disabling output to stop the tape.

4,881,463

ELECTRIC IGNITER ASSEMBLY

Jacob Ninio, Tel-Aviv; Jacob Baratz, Kfar Saba, and Haim Moshe, Hod Hasharon, all of Israel, assignors to The State of Israel, Ministry of Defence, Israel Military Industries, Israel, Israel

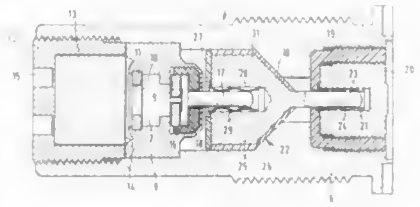
Filed Apr. 26, 1988, Ser. No. 186,451

Claims priority, application Israel, Feb. 24, 1988, 85527

The portion of the term of this patent subsequent to Sep. 20, 2005, has been disclaimed.

Int. Cl.⁴ F42B *3/18;* **F42C** *19/12*

U.S. Cl. 102—202.2 4 Claims



1. An electric igniter assembly of the kind that comprises a body holding an initiator charge and in association therewith an electric ignition element comprising an insulating carrier member bearing two electric conductors insulated from each other and interconnected by an electric resistor bridge, one of which conductors is permanently electrically linked with one of two terminals of a DC source while the other is electrically linked to a contactor connectable at will to the other of said terminals, the improvement by which said contactor comprises an aluminium body having part of its surface covered by an aluminium oxide coating that serves as electric insulator, and further characterized by the provision of an intermediary electric conductor member designed as a radio frequency (RF) filter and comprising a pin electrically linked to said contactor and a block enclosed within an insulating sheath and electrically linked to said electric ignition element, which block comprises a conical portion adjacent to said pin tightly fitting onto a correspondingly shaped seat in said body thereby being designed as a stopper preventing any backflowing combustion gases or materials from reaching the base portion of the igniter assembly.

4,881,464

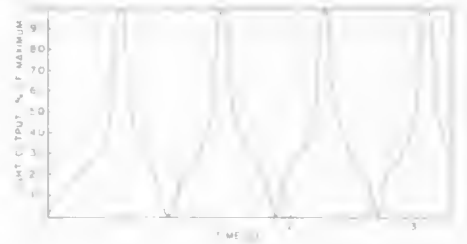
SIGNAL OR RESCUE FLARE OF VARIABLE LUMINOSITY

David C. Sayles, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 6, 1989, Ser. No. 319,581

Int. Cl.⁴ B41K *1/48;* **C06B** *45/10*

U.S. Cl. 102—336 9 Claims



1. A composition of matter, consisting essentially of:

a. about 36 to 44 percent by weight of an octafluorohexanediol compound;

b. about 21 to 27 percent by weight of a metal selected from the group consisting of magnesium and aluminum;

c. about 16 to 21 percent by weight of a chlorinated benzene compound;

d. about 14 to 18 percent by weight of an inorganic oxidizer; and

e. about 1 to 3 percent by weight of an polyisocyanate compound.

4,881,465

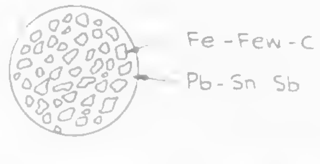
NON-TOXIC SHOT PELLETS FOR SHOTGUNS AND METHOD

Robert C. Hooper, 16209 Congo La., Houston, Tex. 77040, and Franz R. Brotzen, 2701 H Bellefontaine, Houston, Tex. 77025

Filed Sep. 1, 1988, Ser. No. 239,310

Int. Cl.⁴ F42B *5/24*

U.S. Cl. 102—501 14 Claims



1. A non-toxic shotgun pellet comprising the following components:

a first alloy containing primarily a ferrotungsten alloy;

a second alloy containing primarily lead;

wherein said first alloy is in the form of particles suspended in a matrix of said second alloy;

wherein the concentration of lead in said pellet is no greater than forty percent by weight; and

wherein the specific gravity of said pellet is at least 9.5 grams per cubic centimeter.

4,881,466

HIGH VELOCITY SABOT FOR SPIN STABILIZED PENETRATOR

Jeremiah E. McGinley, Essex Junction, Vt., assignor to General Electric Company, Burlington, Vt.

Filed Dec. 23, 1988, Ser. No. 288,939

Int. Cl.⁴ F42B *13/16*

U.S. Cl. 102—522 4 Claims

1. A sabot assembly, for launching a spin stabilized subcaliber projectile, from the bore of a gun barrel, comprising:

a one-piece-has sabot having

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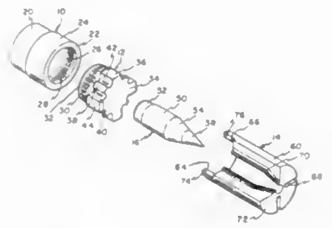
a longitudinal axis;
a center, longitudinally extending bore for receiving the projectile;
a plurality of more than two longitudinally and radially extending slots, for, upon rupture, dividing the sabot into a like plurality of petals, each slot terminating in and centered on a respective notch,
each pair of immediately adjacent notches defining a respective sabot lug;
a base having



a cylindrical body having a rotating band, and
a like plurality of lugs, each lug interfitted within a respective sabot notch;
each pair of immediately adjacent lugs defining a respective notch in said body, which is interfitted with a respective sabot lug;
each interfitted base lug and sabot notch having a sole torque transmitting interface which is a flat plane extending longitudinally and chordally.

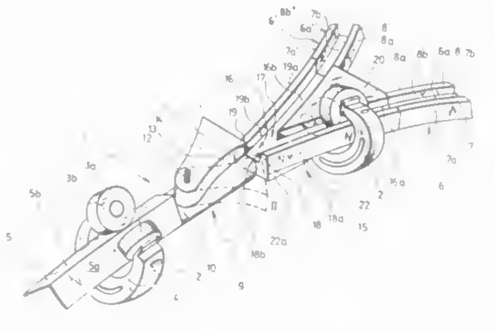
4,881,467
CONTINUOUSLY ADVANCING TRACK MAINTENANCE OR REHABILITATION MACHINE

Josef Theurer, Vienna, Austria, assignor to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H., Vienna, Austria
Filed May 20, 1988, Ser. No. 196,285
Claims priority, application Austria, Sep. 4, 1987, 2237/87
Int. Cl.⁴ E01B *27/17*
U.S. Cl. 104—7.2 10 Claims

1. A machine continuously advancing in an operating direction for maintaining or rehabilitating a railroad track consisting of two rails fastened to successive ties resting on ballast, which comprises:
(a) a first machine frame supported on two undercarriages for continuous movement in the operating direction, the undercarriages being spaced apart in said direction and the machine frame having a front end and a rear end with respect to said direction,
(b) a carrier frame arranged between the undercarriages,
(c) a track lifting and lining unit vertically adjustably mounted on the carrier frame,
(d) a ballast tamping unit vertically adjustably mounted on the carrier frame, the ballast tamping unit comprising
  (a) pairs of reciprocatory and vibratory tamping tools immersible in the ballast upon vertical adjustment of the ballast tamping unit for tamping ballast under respective ones of said ties,
(e) a drive linking the carrier frame to the first machine frame for longitudinally displacing the carrier frame with respect thereto,
(f) a second machine frame supported on two undercarriages, the undercarriages being spaced apart in said direction and the second machine frame having a front end and a rear end with respect to said direction,
(g) a coupling linking the second machine frame front end to the rear end of the first machine frame,
(h) a plow arrangement vertically adjustably mounted on the second machine frame between the undercarriages thereof, the plow arrangement comprising
  (1) drive means connecting the plow arrangement to the second machine frame for vertically adjusting the plow arrangement with respect thereto,
  (2) a center plow for plowing ballast between the rails of the track,
  (3) shoulder plows for plowing ballast laterally adjacent each one of the rails, and
  (4) drive means for operating each one of the plows,
(i) a third machine frame supported on two undercarriages, the undercarriages being spaced apart in said direction and the third machine frame having a front end and a rear end with respect to said direction,
(j) a coupling linking the third machine frame front end to the rear end of the second machine frame, and
(k) a track stabilization unit vertically adjustably mounted on the third machine frame between the undercarriages thereof, the track stabilization unit comprising
  (1) drive means connecting the track stabilization unit to the third machine frame for vertically adjusting the track stabilization unit with respect thereto,
  (2) track stabilizing tools engaging the rails, and
  (3) vibratory drive means connected to the track stabilizing tools for vibrating the same,
(l) the front end of the second machine frame being supported on a rear one of the undercarriages supporting the first machine frame at the rear end thereof and the rear end of the second machine frame being supported on a front one of the undercarriages supporting the third machine frame at the front end thereof, said rear undercarriage of the first machine frame and a front undercarriage of the third machine frame at the front end thereof constituting the two undercarriages supporting the second machine frame.

4,881,468
SUSPENSION CONVEYOR SYSTEM

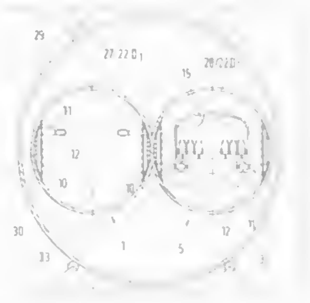
Josef Hafner, Gröbenzell; Werner Bergmeler, Munich; Rolf Schönenberger, Landsberg, and Matthias Fischer, Ismaning, all of Fed. Rep. of Germany, assignors to Veit GmbH & Co., Landsberg, Fed. Rep. of Germany
Filed Feb. 10, 1987, Ser. No. 13,254
Claims priority, application Fed. Rep. of Germany, Feb. 19, 1986, 3605317; Nov. 3, 1986, 3637287
Int. Cl.⁴ B61B *3/00*
U.S. Cl. 104—103 66 Claims



62. Conveyance unit for traveling along a rail of a suspension conveyor system comprising a first and a second travelling roller connected to one another by an open yoke, and a suspension apparatus for objects to be conveyed connected to said yoke for travelling therewith, said objects being in a hanging position with their centers of mass below said rail, means mounting said yoke to said suspension apparatus for tilting and rotational movement relative thereto and about an axis substantially parallel to said rail, said suspension apparatus being supported by said mounting means so as to maintain said hanging position of said object during tilting and rotation of said yoke.

4,881,469
OPERATING SYSTEM FOR HIGH SPEED TUNNEL TRAINS

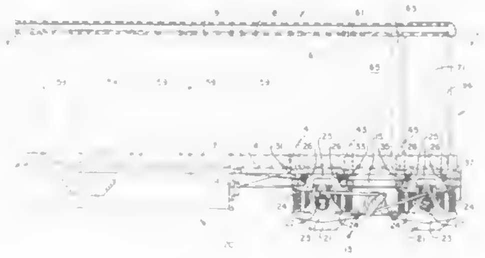
Helmut Hirtz, Alemannenstrase 7, 1000 Berlin 28, Fed. Rep. of Germany
Filed Jun. 29, 1987, Ser. No. 86,298
Int. Cl.⁴ B61B *13/10*
U.S. Cl. 104—138.1 16 Claims



5. Operating system of claim 4, characterized by that in the region (A-C) of the intersection, the toroid (21) of the branch tunnel (5), exhibits in the wall section adjacent the directional tunnel (1) sector-shaped cutouts (23), that cylinder walls (24) of rotational cylinder segments ($25\,IV_{1-n}$; $25V_{1-n}$; $25VII_{1-n}$) extend into those sector-shaped cutouts (23) with a snug fit, that each cylinder wall (24) exhibits a convex, retracted, cylindrical section (26), whose radius of curvature is equal to the inner radius of the toroid (21), that from this convex, retracted, cylindrical section (26), a drive rail (12) extends outwardly, and that in each rotational cylinder segment ($25V_n$), at an angular distance of 180° from the convex, retracted, cylindrical section (26), a switch segment (22) of the directional tunnel (1) is mounted.

4,881,470
GONDOLA CAR HAVING FRAMELESS RADIAL TRUCK

Donald B. Yates, Birmingham, Ala., and Phillip G. Przbylinski, Shererville, Ind., assignors to Trinity Industries, Inc., Dallas, Tex.
Filed May 7, 1987, Ser. No. 47,979
Int. Cl.⁴ B61F *5/38*
U.S. Cl. 105—165 9 Claims



1. A railway car comprising:
a truck including a first laterally extending axle having a first pair of wheels supported thereon for rolling support on a pair of rails; said truck having first and second longitudinally spaced pairs of laterally spaced support means thereon; a car body having an end structure supported on the truck; said end structure including:
a bottom closure member having an upper surface and a lower surface;
a center sill connected with the bottom closure member;
receiving means on the lower surface of the bottom closure member and engaging said support means for supporting said car body on the truck;
first and second laterally extending longitudinally spaced truck support members fixedly connected with the the upper surface of the bottom closure member, each of said truck support members being substantially vertically above a respective pair of support means for reinforcing the bottom closure member to support the car body on the truck;
said truck having a second laterally extending axle thereon spaced longitudinally from the first axle and having a second pair of wheels thereon,
said truck having a third pair of laterally spaced support means spaced longitudinally outward from said first and second pairs of support means; and
said receiving means engaging said third pair of support means for supporting said car body thereon;
a third truck support member fixedly connected with the upper surface of the bottom closure member, said third truck support member being substantially vertically above the third pair of support members for reinforcing the bottom closure member to support the car body on the truck;
said truck having a fourth pair of laterally spaced support means spaced longitudinally outward from the first, second, and third pairs of support means,
said receiving means including a pair of laterally spaced engagement means each engaging respective support means of the fourth pair of support means.

4,881,471
VERTICALLY ADJUSTABLE, RETROFITTABLE WORKSTATION

Edward M. Schwartz, Kansas City; Robert E. Morgan, Grain Valley, and Wilburn D. Everman, Belton, all of Mo., assignors to Edtech Company, Mo.
Filed Nov. 8, 1988, Ser. No. 268,415
Int. Cl.⁴ A47B *9/12*
U.S. Cl. 108—144 7 Claims

1. A vertically adjustable, work station adapted to be mounted to a wall panel, comprising:
(a) a pair of horizontally spaced, vertically oriented support rails secured to said panel;
(b) a work surface;
(c) a pair of support brackets for supporting said work surface;
(d) a first pair of elongate, vertically oriented, rails horizontally displaced from one another and adapted to be individually and stationarily mounted to the support rails;
(e) a second pair of elongate, vertically oriented, rails individually slidably mounted to said first pair of rails;
(f) means for individually mounting said support brackets and thus said work surface to said second pair of rails;

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(g) a first elongate, horizontally oriented, channel member interconnecting said first pair of rails;
(h) a second elongate, horizontally oriented, channel members interconnecting said second pair of rails; and
(i) drive means coupled between said first and second channel members for selectively displacing said channel members towards or away from each other to attendantly vertically displace the work surface.

4,881,472

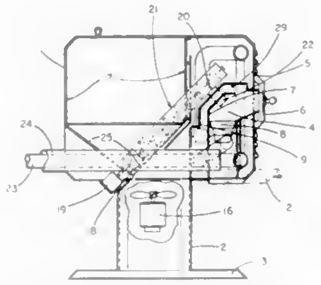
IGNITION SYSTEM AND CONTROL MEANS FOR PELLETIZED-FUEL FURNACE

Thomas Stromberger; Douglas Freeland, both of Spokane, Wash., and Dwain Freeland, Spirit Lake, Id., assignors to Deeze, Inc., Spokane, Wash.

Filed Oct. 20, 1988, Ser. No. 260,446

Int. Cl.⁴ F23N *5/18*

U.S. Cl. 110—186 5 Claims



1. An electrical-arc ignition system which automatically ignites and automatically controls the operation of a furnace system having a fuel feed means and which burns fragmented and pelletized wood-type fuel, and which comprises:

an electrical-arc ignition means responsive to a thermostat means, including a fire pot which contains the fuel during ignition and combustion, and two electrode means configured relative to said fire pot and separated from each other by an air gap such that, when energized, an electrical-arc will occur between the two electrodes and said electrical-arc will be in a location relative to the bottom containment surface of the fire pot to contact and ignite the fuel;

said fire pot being made from material which is non-conductive, refractory material, comprising four internally sloped side-walls and a bottom surface which contains air passageways through which combustion air may be drawn;

a system control means which energizes for purposes of ignition in response to a thermostat means, and which de-energizes the electrical-arc ignition means after a predetermined time interval of sufficient duration to ignite the selected fuel.

4,881,473

METHOD AND APPARATUS FOR TREATING OIL-WATER-SOLIDS SLUDGES AND REFINERY WASTE STREAMS

James L. Skinner, Plano, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Division of Ser. No. 796,349, Nov. 8, 1985, Pat. No. 4,839,022, which is a continuation-in-part of Ser. No. 677,658, Dec. 3, 1984, abandoned. This application Jan. 30, 1989, Ser. No. 303,324

Int. Cl.⁴ F23J *3/00*

U.S. Cl. 110—244 14 Claims

1. A system for treating sludge such as refinery waste streams, oil storage tank sludges and marine tanker ballast water to distill low boiling temperature liquids, oxidize heavy hydrocarbon substances and oxidize heavy metal solids contained in said sludge for reduction of said sludge to recovered liquids, oxidized hydrocarbons, and oxides of heavy metals which are substantially water insoluble, said system comprising:

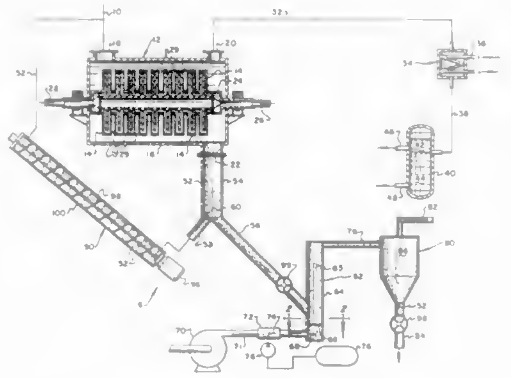
dryer means for receiving a flow stream of said sludge, said dryer means being operable to conduct said sludge therethrough and to vaporize liquids in said sludge which are boilable at temperatures in the range of 700° F. or less, said dryer being operable to discharge substantially dried solid particles therefrom;

a combustor/oxidizer in communication with said dryer for receiving said dried solid particles;

means for supplying an oxygen containing gaseous flow stream to said combustor/oxidizer for oxidizing hydrocarbons in said combustor/oxidizer and for reducing heavy metals in said solid particles to oxides which are substantially water insoluble;

means for discharging oxidized solid particles from said combustor/oxidizer; and

means for separating said gaseous flow stream from said oxidized solid particles for disposal.



4,881,474

PULVERIZED COAL COMBUSTION APPARATUS

Osamu Okada, Kure; Shigeki Morita, Hiroshima; Shigeto Nakashita, Kure; Tadahisa Masai, Ageo; Shigeru Tominaga, Hiroshima, and Hiroshi Inada, Kure, all of Japan, assignors to Babcock-Hitachi Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 5, 1988, Ser. No. 253,675

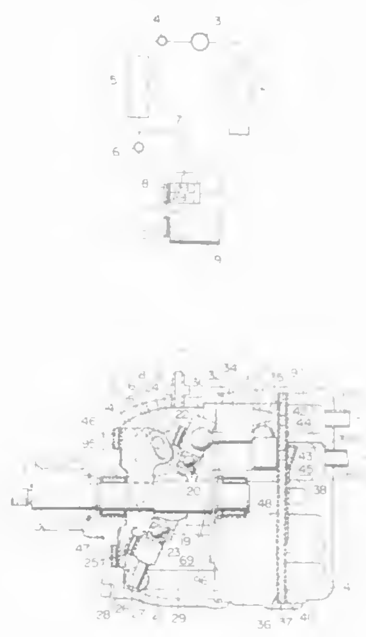
Claims priority, application Japan, Oct. 7, 1987, 62-251537; Jun. 30, 1988, 63-160704

Int. Cl.⁴ F23D *1/02*

U.S. Cl. 110—263 3 Claims

1. A pulverized coal combustion apparatus comprising a burner through which pulverized coal and carrier medium are passed to be burnt in a combustion chamber, and a flame retainer disposed at an end of said burner, said flame retainer including a flared tube and an annular plate, which plate has a plurality of radially inwardly projecting parts equiangularly spaced from each other, wherein said annular plate comprises a plurality of ceramic pieces and a plurality of fastener elements, both of which are arranged and assembled alternately to form said annular plate, said ceramic piece being so shaped that is projects radially inwardly to serve as said projecting part when assembled, and said ceramic piece having at opposite

sides thereof smoothly curved edge surfaces, and said fastener element having at opposite sides thereof smoothly curved edge surfaces which are engaged with the curved edge surfaces of neighboring two ceramic pieces of said ceramic pieces.



4,881,475

METHOD FOR CLEANING UP CONTAMINATED SOIL

Laurens C. De Leur, Rijnsburg, Netherlands, assignor to B.V. Aannemingsbedriof N.B.M., The Hague, Netherlands

Filed Mar. 24, 1988, Ser. No. 172,373

Claims priority, application Netherlands, Mar. 27, 1987, 8700726

Int. Cl.⁴ F23G *5/00*

U.S. Cl. 110—346 6 Claims

1. Method for cleaning up contaminated soil by means of indirect heating of the soil in a rotating furnace which is sealed with respect to the environment, contaminants released from the soil in said rotating furnace being subsequently combusted in a second furnace at an appreciably higher temperature than the wall temperature of said rotating furnace, the method comprising:

maintaining said wall temperature of said rotating furnace above the spontaneous combustion temperature of pyrolysis products which are released from the soil and maintaining said wall temperature sufficiently high to react hydrocarbons released as said pyrolysis products form the soil in said rotating furnace with any oxygen present in said rotating furnace and thereby remove said oxygen from said rotating furnace.

4,881,476

CYCLONE REACTOR WITH INTERNAL SEPARATION AND AXIAL RECIRCULATION

Frederick E. Becker, Reading, and Leo A. Smolensky, Concord, both of Mass., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jul. 26, 1988, Ser. No. 224,413

Int. Cl.⁴ F23D *1/04*

U.S. Cl. 110—347 49 Claims

1. A chemical reaction vessel, suitable for use as a combustor for burning fine coal particles, which comprises in combination, a reaction chamber having a circular inlet end wall containing a central circular first fluid inlet opening; a circular discharge end wall containing a central circular first fluid outlet opening; a cylindrical reaction chamber wall therebetween containing a tangential second fluid inlet opening proximate said circular inlet end wall and a tangential second fluid outlet opening proximate said circular discharge end wall; and, a cylindrical inlet chamber contiguous with and attached to said reaction chamber, said inlet chamber having a cylindrical inlet chamber wall attached to said reaction chamber circular inlet end wall coincident with and encompassing said central first fluid inlet opening.

4,881,477

METHOD AND APPARATUS FOR THE AUTOMATIC TRANSFER OF PANTYHOSE AND SIMILAR ARTICLES FROM A TOE SEWING MACHINE TO A DRAWING MACHINE

Vinico Gazzarini, Impruneta, Italy, assignor to Solis S.r.l., Firenze, Italy

Filed Jul. 14, 1988, Ser. No. 219,285

Claims priority, application Italy, Jul. 14, 1987, 9434 A/87

Int. Cl.⁴ D05B *21/00*

U.S. Cl. 112—121.15 9 Claims

1. A machine for the automatic transfer of pantyhose of similar articles from a toe sewing machine (T) having a standing surface to a drawing machine comprising:

a first section (A) in correspondence to an unloading station (TS) of a toe sewing machine (T) and comprising a sewing machine having a plurality of overturning tubes comprising a driven carriage arrangement, a horizontal track located above said tubes, means connected to said carriage for driving it in a straight reciprocating motion on said horizontal track above said overturning tubes (**1**) of the toe sewing machine (T), an arm on the toe sewing machine with two grippers (**13**) on said arm for clamping the elastic edge (**5′**) of the pantyhose (**5**) supported by said tubes (**1**) at points of maximum horizontal spacing in order to carry said elastic edge (**5′**) outside of the toe sewing

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machine (T) and overturn means for applying a pneumatic suction on the pantyhose legs (5″) within said overturning tubes and allowing the whole pantyhose to be overturned;

a second section interposed between the unloading station of the toe sewing machine (T) and the loading station (CV) of the drawing machine (W) and comprising:

a bench with a horizontal table intermittently rotating about its own vertical axis and performing a dwell at six operative stations, on which an equal number of supports are mounted each of which with a corresponding horizontal arm carrying two pairs of beaks which are vertically stretchable apart in order to seize the elastic edge on the pantyhose from said pair of grippers of said first section and to then stretch it open in the form of a rectangle while leaving the pantyhose hanging down, said arm and said support having rotation means so that said arm and said support are able to rotate about their own axis in order to first arrange said elastic edge of the thus stretched pantyhose in horizontal position and above tips of shapes (4) of the drawing machine (W), and with the longitudinal seams of pantyhose resulting in a vertical plane intermediate to said shapes and, subsequently, take up again the initial position of the table first station;

a third section in correspondence of a drawing machine and comprising:

a carriage driven by a vertical alternate motion and provided with two horizontal arms with right-angle bent and facing ends which allow, during the downwards travel of carriage, the introduction of said ends through the opening of the pantyhose and the withdrawal of the elastic edge (5′) from the beaks of an arm of said second section and, during the successive upwards travel of the carriage, the fitting of the pantyhose legs over the shapes of the drawing machine.

9. A machine for the transfer of pantyhose or like garments from a toe sewing machine to a drawing machine comprising:

a track;

a carriage riding on said track;

a plurality of gripper means connected to said carriage, for grabbing an elastic edge of pantyhose from an unloading area of said toe sewing machine and for transferring the pantyhose outside the toe sewing machine with horizontal motion while keeping said elastic edge of said pantyhose in a vertical plane;

a bench with rotatable table means for stopping intermittently at a plurality of stations;

support means positioned at each station, said support means having a vertical axis for rotation of substantially 120° about said vertical axis,

a horizontal arm on each support means connected to two spaced apart posts, one end of each post connected to the arm, the other end being free, said horizontal arm being rotatable on its axis;

beak means connected to each said free end, said beak means being synchronized with the sewing machine for picking up the pantyhose from said gripper means by stretching apart the elastic edge of said pantyhose to form a rectangle;

linkage means, connected to a program actuated pneumatic cylinder overhanging said table and fixed to said bench for operating closing of the beak means when in correspondence to the unloading station of the toe sewing machine;

said horizontal arm and said support means positioning said pantyhose edge in a horizontal position, as said pantyhose rotates towards the drawing machine;

the drawing machine having a corresponding fixed structure, a carriage means that rides vertically on said fixed structure, said carriage means provided with parallel horizontal arms and means to allow the parallel arms to move together and apart, said parallel arms being at a higher position than said pantyhose as said pantyhose comes into alignment to the drawing machine, said carriage means moving downward until said parallel arms are within said elastic edge of said pantyhose, said parallel arms then moving apart to spread apart said elastic edge and remove said edge from said beak means,

said carriage means and said pantyhose subsequently moving upward to contact shapes of the drawing machine, extracting means releasing said parallel arms of said carriage from said pantyhose.

4,881,478
DEVICE FOR ATTACHING ELECTRONIC CIRCUIT PLATE OF COMPUTER-OPERATED SEWING MACHINE

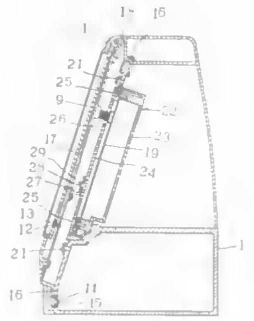
Yasuro Sano, Tokyo, Japan, assignor to Janome Sewing Machine, Tokyo, Japan

Filed Apr. 22, 1988, Ser. No. 183,625

Claims priority, application Japan, Apr. 24, 1987, 62-99695

Int. Cl.⁴ D05B *3/02*

U.S. Cl. 112—259 2 Claims



1. In a computer-operated sewing machine having a standard machine frame which includes an arm and a bed, a needle bar which is supported in the machine frame and which performs vertical and horizontal reciprocal movements, a loop taker which is rotatably supported on the machine frame and which interlinks upper and lower threads in association with a needle fixed to the needle bar, a drive motor which moves the loop taker and the needle bar, stepping motors which control the movements of the needle bar and fabric feed, and a computer control portion which delivers control data to the stepping motors, a device for attaching electronic plates of different models of the computer-operated sewing machine, comprising a circuit plate case which holds a control circuit plate for said drive motor and which is fixed to said machine frame, an operational panel which holds an operating keyboard for an operator and a control circuit plate for said computer control portion and which is fixed to said machine frame, and coded keying means composed of pins and holes positioned for each model of the sewing machine and provided between said operation panel and said machine frame and between said operation panel and said circuit plate case.

4,881,479
METHOD OF TRANSVERSELY SUBDIVIDING AN ELONGATED FLEXIBLE WEB

Johannes Freermann, Ochtrup, Fed. Rep. of Germany, assignor to Carl Schmale GmbH & Co. KG, Ochtrup, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 76,593, Jul. 23, 1987, abandoned. This application Jun. 17, 1988, Ser. No. 210,149

Claims priority, application Fed. Rep. of Germany, Jul. 24, 1986, 3624994

Int. Cl.⁴ D05B *1/00, 27/00*

U.S. Cl. 112—262.3 4 Claims

1. A method of cutting pieces from an elongated flexible web and delivering the pieces to a treatment machine, the method comprising the steps of sequentially:

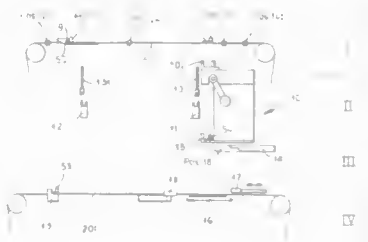
(a) feeding a leading edge of the web to a cutting station downstream in a longitudinal direction with the edge extending transversely and affixing the leading edge at the

cutting station to a first one of a plurality of transversely extending circulating needle bars;

(b) advancing the first needle bar longitudinally downstream away from the cutting station to a holding station spaced downstream from the cutting station and arresting the first needle bar in the holding station;

(c) at the cutting station affixing to the web a second one of the transversely extending circulating needle bars and, closely but spacedly downstream therefrom, a noncirculating needle bar;

(d) while maintaining the first and second circulating bars and the noncirculating needle bar substantially stationary, cutting the web transversely between the second circulating bar and the noncirculating bar and thereby cutting a piece from the web, the piece being spanned between a trailing edge at the noncirculating bar and a leading edge at the first circulating needle bar;



(e) dropping the noncirculating and first circulating needle bars with the web piece spanned between them and thereby transferring the piece to a conveyor extending transversely from between the stations to the treatment machine for conveyance of the piece away on the conveyor toward the treatment machine;

(f) advancing the second circulating needle bar longitudinally downstream away from the cutting station to the holding station and arresting the second needle bar in the holding station;

(g) at the cutting station affixing to the web a another one of the transversely extending circulating needle bars and, closely but spacedly downstream therefrom, the noncirculating needle bar; and

(h) repeating steps (d) and (e) with the second needle bar and the other needle bar to cut another piece from the web.

4,881,480
MARINE SAIL WITH BATTENS

William H. Stevenson, IV, P.O. Box U, St. Michaels, Md. 21663

Continuation-in-part of Ser. No. 105,742, Oct. 8, 1987, Pat. No. 4,838,192. This application Feb. 29, 1988, Ser. No. 162,198

Int. Cl.⁴ B63H *9/04*

U.S. Cl. 114—103 14 Claims

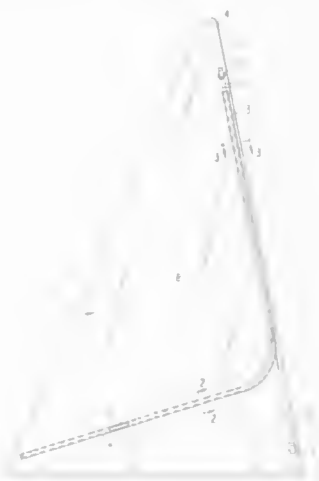
1. A marine sail comprising, in combination:

a sail body having a leech and a forward edge spaced forwardly of the leech;

an elongated batten;

means for holding the batten in an operative position relative to the sail body when the sail is at least partially unfurled; and

means for slidably moving the batten generally along its axis relative to the sail body to a position in which the batten is at least generally parallel to the forward edge of the sail body when the sail is being furled,



the batten having adequate stiffness in its operative position to stiffen the sail body along the batten.

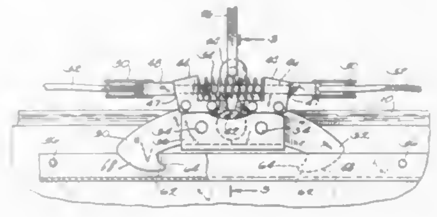
4,881,481
TRAVELER CONTROL

Hans P. Asmussen, 2620 S. Shore Dr., Milwaukee, Wis. 53207

Filed Oct. 31, 1988, Ser. No. 265,045

Int. Cl.⁴ B63B *21/24*

U.S. Cl. 114—204 9 Claims



1. A traveler control for the mainsheet on a sailboat, comprising,

an elongated athwartship track having a center midway between the ends of the track,

a car mounted on said track for movement athwartship and having a connector to which a mainsheet is connected,

a pair of opposed hooks each of which is mounted on said car for movement between an operative position and an inoperative position, and

a fixed stop pin mounted on said track on each side of the center of said track,

each hook including a hooking surface operative to engage a stop pin as the car moves from either end of said track towards the center of the track with said hook in its operative position.

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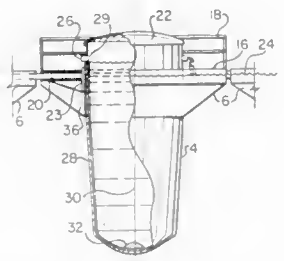
4,881,482
FLOATING STORAGE FACILITY FOR FLUID-LIKE MATERIALS

Stanley R. Sandwith, 4883 Coleman Place, Delta, B. C., Canada, and Daniel Wittenberg, 3459 River Road West, Ladner, B. C., Canada

Filed May 31, 1988, Ser. No. 200,448
Claims priority, application Canada, Oct. 30, 1987, 550714
Int. Cl.⁴ B63B *35/44*
U.S. Cl. 114—256 11 Claims



1. A self-contained mobile water floating storage facility module for fluid-like materials comprising:

(a) waterproof pressure compensating hollow flexible diaphragm means which is suitable for retaining therein a fluid-like product within the interior of the diaphragm means, said diaphragm means being enclosed except for an opening at the top which is maintained above the surface of the water;

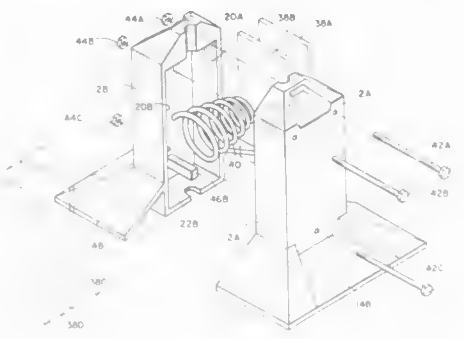
(b) flotation means associated with the diaphragm means, said flotation means being adapted to enable the majority of the diaphragm means to be immersed in the water while maintaining the opening of the diaphragm means above the surface of the water; and

(c) containment means connected with the flotation means and the diaphragm means, said containment means enclosing a substantial portion of the diaphragm means below the surface of the water, and being open at the top to receive therein the top open end of the diaphragm means.

4,881,483
BOAT ANCHOR

J. B. Wood, 1503 E. Edgewood La., Sapulpa, Okla. 74066

Filed Jan. 30, 1989, Ser. No. 303,313
Int. Cl.⁴ B63B *21/24*
U.S. Cl. 114—294 8 Claims



1. A boat anchor comprising:

an enclosed housing having a cavity therein defined in part by two opposing internal walls, the housing having opposed ends;

means at one end of said housing for attachment of a flexible cable means whereby the anchor may be attached to a boat;

outwardly extending flange means at the other end of the housing;

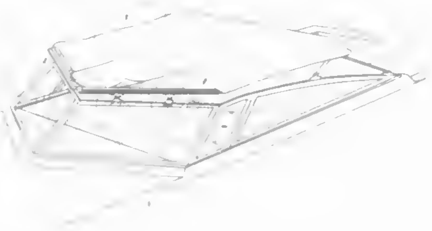
a plurality of generally flat weight members received in said housing; and

a spring means between said weight members urging them against said housing opposed internal walls.

4,881,484
AIR DEFLECTOR FOR SECURING BOAT TOP

John F. Cavanaugh, 210 E. Glassboro Ct., Box 10, Hernando, Fla. 32642

Continuation of Ser. No. 50,690, May 18, 1987, abandoned. This application Jul. 29, 1988, Ser. No. 227,437
Int. Cl.⁴ B63B *17/02*
U.S. Cl. 114—361 15 Claims



1. An apparatus for securing and supporting a forward edge of an existing canvas top to an existing windshield with the windshield having a top edge and for directing a flow of air, comprising:

an air deflector extending in use substantially parallel to and coextensively with the top edge of the windshield for directing in use a flow of air;

said air deflector having a top surface and a lower surface;

a mounting means for permanently securing said lower surface of said air deflector in use to the top edge of the windshield and to permanently space said air deflector apart from the top edge of the windshield thereby forming an opening between the windshield and said air deflector to provide for air flow through said opening; and

a fastening means disposed on said air deflector for removably securing the forward edge of the canvas top to said top surface of said air deflector to enable in use the flow of air through said opening when said air deflector is secured to the top edge of the windshield and the canvas top is secured to said air deflector and to provide support of the forward edge of the canvas top.

4,881,485
ORNAMENTAL VEHICLE IDENTIFICATION DEVICE

Vera L. Feinberg, 1902 S. Ocean Blvd., Apt. 502, Boca Raton, Fla. 33432

Filed Jun. 10, 1988, Ser. No. 204,741
Int. Cl.⁴ B60Q *1/26*
U.S. Cl. 116—28 R 1 Claim

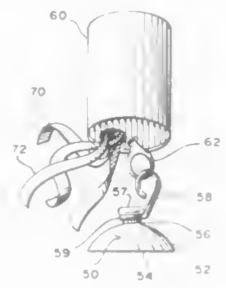
1. A ornamental identification device for vehicles, wherein the device is adapted to be secured to a surface of the vehicle, which comprises, in combination:

a removable mount for attachment to the surface of said vehicle;

a frangible, semi-rigid, disposable container for comestibles from which any comestible has been substantially removed through an opening therein; and having an eye; formed by a ring attached to said container

a plurality of streamers inserted into said opening; and

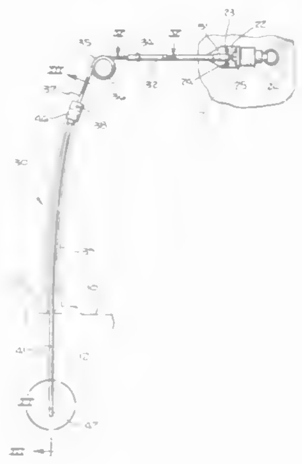
means for attachment of said mount said container comprising a hook having a tail attached to said mount, said hook being adapted to engage said eye of the comestible container.



4,881,486
REMOTE INDICATING DIP STICK

William M. Willis, 19440 Citronia St., Northridge, Calif. 91324

Filed Oct. 4, 1988, Ser. No. 253,226
Int. Cl.⁴ G01F *23/04, 23/06*
U.S. Cl. 116—227 9 Claims



1. A manually operated fluid level indicator for indicating at a location remote from a fluid reservoir whether the level of fluid therein has reached a predetermined level, said indicator comprising:

an indicator housing and means for mounting it at a location remote from said reservoir, said housing having a chamber therein;

a fluid conduit connected at one end to said housing in fluid communication with said housing chamber and having a second end depending into said reservoir and having an aperture in said second end, said aperture being normally closed by fluid in said reservoir when said fluid is above a predetermined level, but being opened to the interior of said reservoir when the level of fluid in said reservoir falls to a level below said predetermined level;

a plunger manually moveable inwardly and outwardly of said housing in a pumping action relative said chamber and associated conduit;

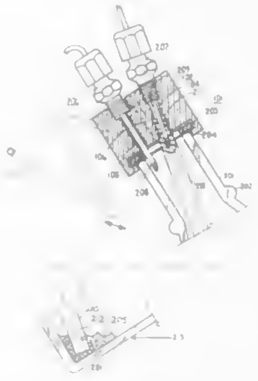
a piston in said chamber and means for biasing said piston to move relative said housing with movement of said plunger when the level of fluid in said reservoir is below said conduit second end aperture and to remain stationary relative said housing with movement of said plunger when the level of fluid in said reservoir is above said conduit second end aperture; and wherein

said housing is provided with a chamber venting aperture for venting said chamber to atmosphere when said plunger is fully withdrawn relative said housing whereby air is pumped through said conduit from said chamber by movement of said plunger inwardly of said chamber following a fully withdrawn movement thereof to purge said conduit of reservoir fluid.

4,881,487
FLUID LEVEL SENSING METHOD AND APPARATUS

Scott E. Moore, Boise, Id., assignor to Micron Technology Inc., Boise, Id.

Filed Nov. 21, 1988, Ser. No. 273,580
Int. Cl.⁴ B65B *3/04*; G01N *21/27, 1/10*
U.S. Cl. 116—227 10 Claims



1. Apparatus to sense a predetermined level of a fluid being dispensed from a bottle means by a pump, comprising:

(a) a substantially vertical pickup tube within said bottle means, having a bubble hole located at a preselected point along its length at a corresponding elevation to the predetermined level to be sensed, said pickup tube having a first end immersed in the fluid, so that as said fluid is being pumped out of said bottle means through said pickup tube, said fluid level moves along the outside of said pickup tube and passes said bubble hole, said bubble hole then introducing a bubble into said pickup tube; and

(b) bubble detection means mounted within said bottle means and at a second end of said pickup tube, to detect said bubble and hence said predetermined level.

4,881,488
EQUIPMENT FOR AUTOMATING THE DISTRIBUTION OF PREPARATORY SOLUTION USED IN THE RECAPPING OF TIRE TREADS

Tosco Fantacci, Pistoia, Italy, assignor to CISAP S.p.A., Pistoia, Italy

Filed May 26, 1988, Ser. No. 199,325
Claims priority, application Italy, May 27, 1987, 9397 A/87
Int. Cl.⁴ B05B *13/04*; B05C *5/00*
U.S. Cl. 118—320 9 Claims

7. An arrangement for automatic distribution of a solution over surfaces of a tire, comprising:

a conveyor including suspension means for suspending a plurality of tires, each tire of the plurality of tires being positioned at spaced-apart locations along said conveyor, said conveyor being movable to position tires along a tire path and successively position tires adjacent a treatment location;

tire bead engagement means movable between a position outside of the tire path and a position along the tire path, for engaging beads of a tire, of the plurality of tires, positioned at the treatment location and for rotating the tire

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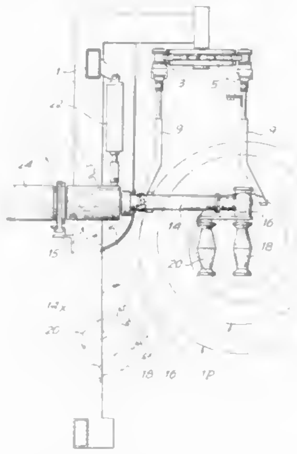
positioned at the treatment location about a predetermined tire axis of rotation;
a spray nozzle positioned adjacent said treatment location; and
spray nozzle movement means, connected to said spray nozzle, for moving said spray nozzle about a spray nozzle axis between a first and second position, to spray the surface of the tire positioned at the treatment location upon rotation of the tire positioned at the treatment location, said spray nozzle axis being substantially perpendicular to the tire axis of rotation.



4,881,489
COLOR CODING LIGHT WAVE CONDUCTORS

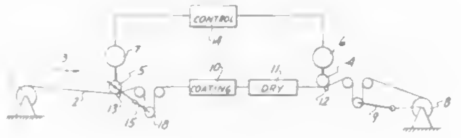
Wolfram Klebl, Isernhagen; Rainer Bruenn, Essel, and Harry Staschewski, Langenhagen, all of Fed. Rep. of Germany, assignors to Kabelmetal Electro GmbH, Hanover, Fed. Rep. of Germany

Filed Jun. 14, 1988, Ser. No. 207,117

Claims priority, application Fed. Rep. of Germany, Jun. 16, 1987, 3720044

Int. Cl.⁴ B05C *9/14, 11/00*

U.S. Cl. 118—672 7 Claims



1. In an apparatus for color coding and dyeing or otherwise marking a light wave conductor optical fiber passing through dyeing equipment and a drying stage and being unreeled from a spool for such passage, the marked conductor being taken up by another spool or the like, the improvement comprising:
first and second drives respectively arranged upstream and downstream from the dyeing equipment in engagement with the conductor for pulling the same from the supply spool and through the dyeing equipment; and
control means for ensuring uniformity in the driving and a particular linear drive speed of the conductor as being driven by the first and second drives, and as passed by them through the dyeing equipment.

4,881,490
ABSORBENT COMPOSITION, AND METHOD OF MAKING SAME

Cyril L. Ducharme, 3405 High Ln., Long Lake, Minn. 55356; Ralph C. Eick of, Union Lake, Erskine, Minn.; David A. Heider, 776 Fairmount Ave., St. Paul, Minn. 55105; Denny W. Neiberger, 5238 Holiday Rd., Minnetonka, Minn. 55345, and Fred Maass, 856 Carpenter St., Oak Park, Ill. 60134

Filed Feb. 19, 1988, Ser. No. 157,913

The portion of the term of this patent subsequent to Jul. 4, 2006, has been disclaimed.

Int. Cl.⁴ A01K *1/015*

U.S. Cl. 119—1 25 Claims

1. In an absorbent composition comprised of clay as an absorbent material the improvement wherein said absorbent contains a nitrogenous compound absorber, said nitrogenous compound absorber being selected from the group consisting of cyclodextrin, cyclodextrin derivatives, polymerized cyclodextrin and polyacrylate compounds having a matrix system similar to cyclodextrin.

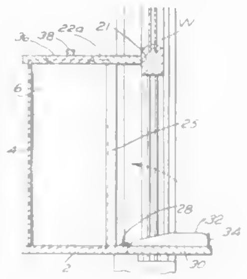
4,881,491
WINDOW BIRD FEEDER

Arthur C. Brown, P.O. Box 277, West Kingston, R.I. 02892

Filed Sep. 29, 1988, Ser. No. 250,608

Int. Cl.⁴ A01K *31/00*

U.S. Cl. 119—51.01 2 Claims



1. In combination with a window and frame therefor a window bird feeder for mounting inside a dwelling comprising a substantially rectangular body having a closed rear with an open front facing the window, end walls and a back wall at least one of which is translucent, top and bottom walls, the bottom wall resting in part on the inside sill of a window frame, the top wall providing an access port opening into the interior of the rectangular body, said top wall having a front edge that lies on a line extending between the inside track of the window frame so that the edge may normally lie against the bottom sash of the window, a mounting member adjacent the end walls extending between the top and bottom walls to allow the box to be fastened to the window frame, a perch hinged to the front edge of the bottom wall to normally lie in the same plane as the bottom wall, said perch extending outwardly over the sill when the box is mounted in a window frame and adapted to fold inside and over the bottom wall in an arc in excess of 90° whereby the window may be closed when the perch is folded inside and over the bottom wall.

4,881,492
BREAK-AWAY COLLAR COUPLING DEVICE

Jeff R. Jones, 14575 Kennebunk St., Poway, Calif. 92064

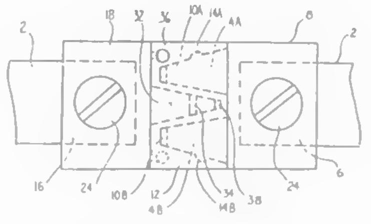
Filed Aug. 18, 1986, Ser. No. 897,593

Int. Cl.⁴ A01K *27/00*

U.S. Cl. 119—106 14 Claims

1. A collar coupling means comprising:
(a) a plug means,
(b) means angularly affixing the plug means to a first end of a collar,

(c) a socket means defined by a socket housing and generally conforming to the plug means,
(d) means angularly affixing the socket housing to a second end of the collar, the plug means affixing means, the socket housing affixing means together generally forming an arc when the plug means is disposed in the socket means;
(e) said means for angular affixing the plug means and the means angularly affixing the socket means each comprising, (a) an angular base member, (b) a cavity defined by the base member adapted to have disposed therein an end portion of the collar, (c) a through-hole defined by a wall of the cavity, an axis of the through-hole intersecting the collar end portion disposed in the cavity, and (d) a screw means adapted to engage the through-hole and to vise the collar end portion between the screw means and a wall of the cavity opposite the through-hole,
(f) latching means for releasably latching the plug means in said socket means, the latching means being suitably resiliently flexible to allow the latching means to be defeated by a force of a predetermined magnitude applied to the collar in a direction which urges separation of the socket means from the first plug means.



4,881,493
STEAM GENERATOR

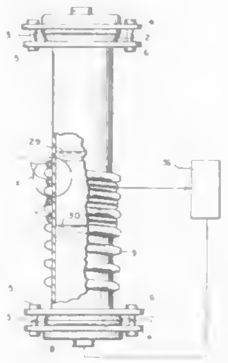
Günther Riba, Rosenbergstr. 26, D-5455 Hardert, Fed. Rep. of Germany

PCT No. PCT/EP87/00138, § 371 Date Oct. 27, 1987, § 102(e) Date Oct. 27, 1987, PCT Pub. No. WO87/05681, PCT Pub. Date Sep. 24, 1987

PCT Filed Mar. 10, 1987, Ser. No. 127,899

Int. Cl.⁴ F22B *5/00*

U.S. Cl. 122—13 A 14 Claims



1. A steam generator comprising a vertically-disposed, cylindrical boiler, means connected to the lower end of said boiler to supply water thereto, means connected to the top of said boiler for discharging steam therefrom, control means for supplying water to said means connected to the lower end of said boiler, said control means embodying an inlet and an outlet, means for generating a signal of the water level within said boiler operable to actuate said control means and heating means in the form of a coil of generally triangular cross section disposed about the outer side of the lower portion of said boiler with the broad face of its triangular cross section in all over heat-conductive contact with the outer side of said boiler.

4,881,494
ENGINE COOLING APPARATUS FOR AUTOMOTIVE VEHICLE

Kazuhiro Ishigami, Sagamihara, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Mar. 14, 1988, Ser. No. 167,900

Claims priority, application Japan, Mar. 16, 1987, 62-62091

Int. Cl.⁴ F01P *7/02*

U.S. Cl. 123—41.12 10 Claims

1. An engine cooling apparatus provided with a cooling fan for an automotive vehicle, comprising:
(a) means for detecting engine temperature;
(b) means for detecting vehicle speed; and
(c) means, coupled to said engine temperature detecting means, for actuating the cooling fan when the engine temperature detecting means detects an engine temperature higher than one of plural predetermined temperature values corresponding to vehicle speed detected by the vehicle speed detecting means.

4,881,495
DEVICE FOR VAPORIZING A CRYOGENIC FLUID

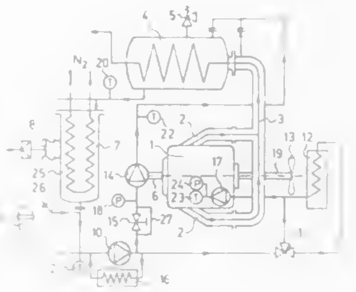
Jean Tornare, Arisdorf/BF, and Klaus Bofinger, Ettingen, both of Switzerland, assignors to Cryomec AG, Switzerland

Filed Dec. 16, 1987, Ser. No. 133,305

Claims priority, application European Pat. Off., Sep. 22, 1987, 87810547

Int. Cl.⁴ F01P *1/06*

U.S. Cl. 123—41.31 9 Claims



1. A device for vaporizing a cryogenic fluid with an internal combustion engine (1), the exhaust heat of which can be at least partially transferred to a vaporizing unit (7), from the cooling water and the exhaust gases and through a water circuit, characterized in that a water brake (14) in the form of a water brake restrainer is present, which can be driven by the output shaft (6) of the internal combustion engine (1), and that this water

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brake (14), together with at least the vaporizing unit (7), forms a closed cooling circuit for the water transferring the heat produced in the water brake.

4,881,496

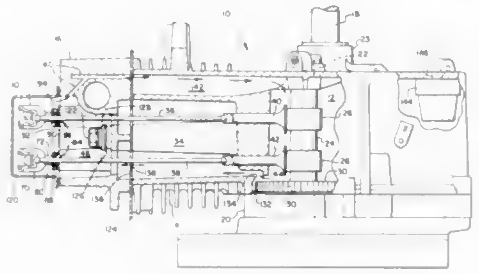
VALVE MECHANISM LUBRICATION SYSTEM FOR HORIZONTAL CYLINDER OVERHEAD VALVE ENGINE

Peter G. Kronich, Sheboygan, Wis., assignor to Tecumseh Products Company, Tecumseh, Mich.

Filed May 20, 1988, Ser. No. 196,979

Int. Cl.⁴ F01M *9/10, 13/02, 11/02*

U.S. Cl. 123—90.33 **20 Claims**



1. A lubrication system for the valve actuating mechanism of an overhead valve, horizontal cylinder internal combustion engine comprising:
a crankcase having lubricating oil therein;
a rocker box housing said valve actuating mechanism, said valve actuating mechanism including a lower rocker arm and an upper rocker arm with the lower rocker arm disposed for rocking in a substantially horizontal rocking plane;
a push rod cavity communicating at one end with said crankcase and at another end with said rocker box; and
oil slinger means for slinging liquid oil from said crankcase through said push rod cavity into said rocker box such that the lower rocker arm is at least partially submerged.

4,881,497

VALVE OPERATING SYSTEM FOR INTERNAL COMBUSTION ENGINE

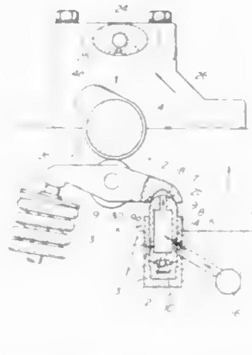
Yutaka Matayoshi, Yokosuka, and Shigeru Kamegaya, Tokyo, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed May 24, 1988, Ser. No. 197,886

Claims priority, application Japan, May 25, 1987, 62-125758

Int. Cl.⁴ F01M *9/10*

U.S. Cl. 123—90.34 **13 Claims**



1. A valve operating system for an internal combustion engine, comprising:
a swing arm having a first end section connected to an engine valve, and a second end section, said swing arm being swingable around said second end section upon rotation of a camshaft;
a support member secured to the body of the engine and having an end section which fittingly contacts with said swing arm second end section;
means defining a clearance between said swing arm second end section and said support member end section, said clearance being filled with lubricating oil;
means defining an oil supply passage in said support member and communicating with said clearance, lubricating oil flowing through said oil supply passage and being supplied to said clearance;
means for establishing sealing contact between said swing arm second end section and said support member end section to maintain a fluid tight seal for said clearance; and
means defining a communication passage for communicating said clearance with outside of said clearance so that lubricating oil within said clearance is discharged out of said clearance only through said communicating passage, said communicating passage being defined between said swing arm second end section and said support member end section, thereby interrupting said fluid tight seal,
wherein said clearance (i) has a central axis that is perpendicular to an uppermost surface of said clearance and (ii) decreases in volume radially from said central axis to said fluid tight seal.

4,881,498

ROCKER ARM MADE OF CERAMICS

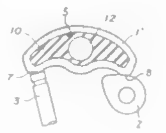
Tooru Matsuura, and Yoshinori Narita, both of Aichi, Japan, assignors to NGK Spark Plug Co., Ltd., Nagoya, Japan

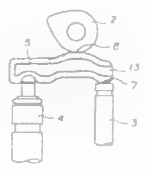
Filed Mar. 2, 1989, Ser. No. 317,999

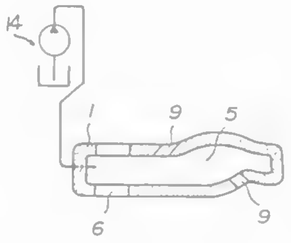
Claims priority, application Japan, Mar. 5, 1988, 63-28700[U]

Int. Cl.⁴ F01L *1/18*

U.S. Cl. 123—90.39 8 Claims







1. A rocker arm made of ceramics and formed into a single piece, comprising:
a cavity;
a sliding surface portion; and
an opening providing communication between said cavity and the outside of said rocker arm.

4,881,499

HYDRAULIC PLAY COMPENSATING ELEMENT

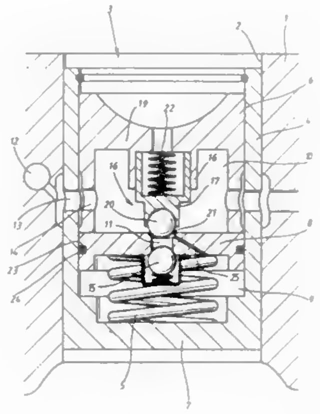
Markus Dietrich, Fellbach-Oeffigen, and Frank Berger, Leutenbach, both of Fed. Rep. of Germany, assignors to Mercedes-Benz AG, Stuttgart, Fed. Rep. of Germany

Filed Jan. 13, 1989, Ser. No. 296,599

Claims priority, application Fed. Rep. of Germany, Jan. 15, 1988, 3800945

Int. Cl.⁴ F01L *1/24, 13/06*

U.S. Cl. 123—90.52 **8 Claims**



1. Hydraulic play compensating element for a valve train of an internal combustion engine comprising:
(a) a cylinder part closed at one end;
(b) a hollow piston part slidable axially in the cylinder part and having a supply chamber adapted to be pressurized by lubricating oil pressure of the internal combustion engine;
(c) a presusre chamber, enclosed by the hollow piston part and the cylinder part, for providing play compensation for the valve train of the internal combustion engine;
(d) a compression spring for biasing the cylinder part and the piston part in opposite directions;
(e) a connecting duct for connecting the pressure chamber and the supply chamber;
(f) a spring biased closure element for opening and closing the connecting duct; and
(g) a shut-off valve for opening and closing the connecting duct independently of the closure element.

4,881,500

POPPET VALVE MADE OF CERAMICS

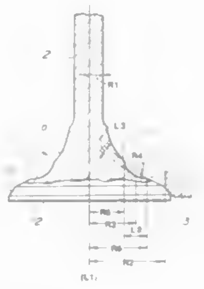
Takio Kojima, and Masato Taniguchi, both of Aichi, Japan, assignors to NGK Spark Plug Co., Ltd., Nagoya, Japan

Filed Nov. 22, 1988, Ser. No. 274,908

Claims priority, application Japan, Dec. 4, 1987, 62-307951

Int. Cl.⁴ F01L *3/00*

U.S. Cl. 123—188 AA **5 Claims**



1. A poppet valve made of ceramics, comprising:
a valve head having a valve seat contacting portion; and
a valve stem integral with said valve head;
said valve head having an inclined surface extending between said valve head and said valve seat contacting portion;
said inclined surface having an annular portion in the place intermediate between said valve stem and said valve contacting portion;
said inclinded surface being ground at said annular portion only.

4,881,501

DIESEL ENGINE HAVING SHAPED FLAME DISPERSING RECESS IN PISTON CROWN

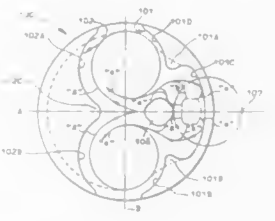
Motohiro Shinzawa, Yokosuka, and Yoshiki Sekiya, Yokohama, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Jan. 31, 1989, Ser. No. 304,076

Claims priority, application Japan, Feb. 3, 1988, 63-23388

Int. Cl.⁴ F02F *3/26*

U.S. Cl. 123—279 **12 Claims**



1. In an internal combustion engine
a piston reciprocatively disposed in a bore to define a variable volume combustion chamber; and
a swirl chamber, said swirl chamber being fluidly communicated with the combustion chamber by a transfer passage, said piston comprising:
an essentially flat crown;
a shaped cavity formed in said crown, said cavity defining first and second shaped opposed wall portions;
a first flame deflecting projection, said first flame deflecting projection comprising a member which is disposed in said cavity, said first flame deflecting projection being arranged to be in the path of the flame which ejects from said transfer passage during the expansion phase of the engine and when the piston is close to its TDC position;
said first shaped wall being arranged to have first and second guide portions, said first and second guide portions extending essentially toward said first flame deflecting projection, said first wall further comprising a first curved section which merges with said first and second guide portions, said first curved section extending along the crown of said piston in a location which is proximate the mouth of said transfer port when the piston is close to TDC, said first and second guide portions and said first curved portion defining in part a first flame dispersing zone in said cavity, said first curved wall portion being so constructed and arranged as to deflect a portion of the flame which flows theretoward and which promotes mixing of the flame with the air contained in said first flame dispersing zone.

4,881,502

PEDAL FORCE RESPONSIVE ENGINE CONTROLLER

Daniel F. Kabasin, Rochester, N.Y., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 24, 1988, Ser. No. 235,674

Int. Cl.⁴ F02D *11/10, 41/22*

U.S. Cl. 123—399 **3 Claims**

1. A control system for an internal combustion engine of a

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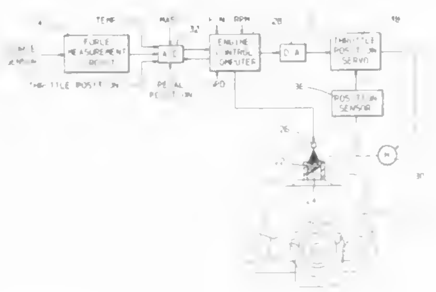
vehicle, the engine having an intake space into which air and fuel are supplied, the system comprising in combination:

an accelerator pedal biased to an engine idle position and operable to an engine off-idle position in response to a force applied thereto;

position sensing means for sensing the position of the accelerator pedal established by force applied thereto;

force sensing means for sensing the force applied to the accelerator pedal;

normal fuel control means selectively operable (A) in a first mode for controlling the air and fuel mixture in accord with the accelerator pedal position sensed by the position sensing means and (B) in a second mode for controlling the air and fuel mixture in response to a predetermined operating condition independent of the accelerator pedal position, the force applied to the accelerator pedal being normally zero in the second mode;



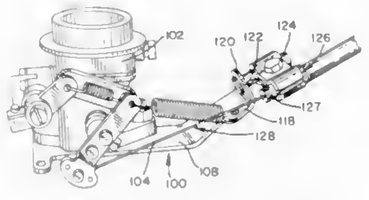
means for sensing selected operation of the normal fuel control in the second mode; and

means for controlling the air and fuel mixture to a predetermined amount independent of the normal fuel control means in the absence of a sensed selected operation of the normal fuel control in the second mode when the force applied to the accelerator pedal is zero.

4,881,503

THROTTLE CABLE CONTROL ASSEMBLY FOR CARBURETORS

Norman H. Andreasen, 1522 Norwood Ave., Itasca, Ill. 60143
Filed May 11, 1989, Ser. No. 350,241
Int. Cl.⁴ F02D *11/04*
U.S. Cl. 123—400 11 Claims

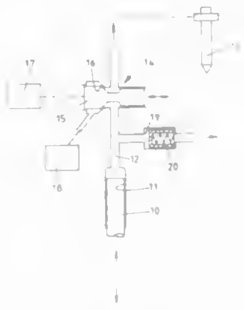


1. A throttle cable control assembly for carburetors comprising a bracket body for attachment to the carburetor, said bracket body having a base for mounting on the carburetor and at least one arm extending outward from said base, said at least one arm includes a free end portion, a post mounted on said free end portion of said base, and clamp means being adjustably clamped to said post and to the throttle cable for the carburetor.

4,881,504

FUEL INJECTION PUMP

Christopher H. Best, Maidstone, England, assignor to Lucas Industries Public Limited Company, Birmington, England
Filed Feb. 1, 1988, Ser. No. 150,893
Claims priority, application United Kingdom, Feb. 13, 1987, 8703419
Int. Cl.⁴ F02M *39/00*
U.S. Cl. 123—447 1 Claim



1. A fuel injection pump for supplying fuel to an internal combustion engine comprising a plunger reciprocable within a bore, means including a cam driven by the associated engine for causing reciprocation of the plunger, an outlet from the bore, said outlet being connected to a fuel injection nozzle of said engine, a spill valve connected to said outlet, said spill valve including a spill valve member movable into contact with a seating to prevent flow through said valve, an electromagnetic device coupled to said spill valve member, said device when energized causing movement of said valve member into contact with said seating and a resiliently loaded piston located upstream of said spill valve and housed within a cylinder, said piston and cylinder in communication with said outlet whereby upon closure of said spill valve during a pumping stroke of said plunger, fuel will be displaced from said bore to said cylinder, said piston moving in response to fuel displaced by said spill valve and said plunger so as to maintain the fuel pressure in said bore at a level below the pressure of fuel required to open a valve in said injection nozzle, until a predetermined movement of said piston has taken place.

4,881,505

ELECTRONIC LEARNING CONTROL APPARATUS FOR INTERNAL COMBUSTION ENGINE

Naoki Tomisawa, Isesaki, Japan, assignor to Japan Electronic Control Systems Co., Ltd., Isesaki, Japan
Filed Oct. 19, 1988, Ser. No. 260,003
Claims priority, application Japan, Oct. 20, 1987, 62-262782; Oct. 20, 1987, 62-262783; Oct. 20, 1987, 62-262784; Oct. 20, 1987, 62-262791; Oct. 20, 1987, 62-262793
Int. Cl.⁴ F02M *51/00*
U.S. Cl. 123—480 20 Claims

1. An electronic learning control apparatus for an internal combustion engine, which comprises:

engine driving state detecting means for detecting the driving state of the internal combustion engine;

basic control quantity setting means for setting a basic control quantity corresponding to a target control value of an objective control factor;

feedback correction value setting means for comparing the actual control value with the target control value and setting a feedback correction value for bringing the actual control value close to the target control value by increasing or decreasing the actual control value;

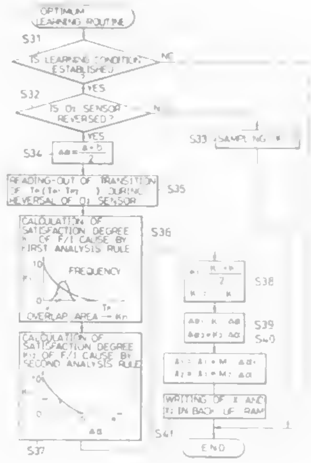
rewritable learning correction value storing means for storing a learning correction value for each of a plurality of error causes, control quantity computing means for computing a control quantity by making a correction based on the learning correction value for each of the error causes

according to a computing formula set for each of the error causes;

control means for controlling the objective control factor of the internal combustion engine according to the computed control quantity;

entire deviation detecting means for detecting the entire deviation of the feedback correction value from a predetermined reference value;

error cause analyzing means for analyzing qualitatively and quantitatively a cause for producing an error in said entire deviation according to a predetermined analysis rule and separating the entire deviation into deviations of the respective error causes based on the analysis results;


OPTIMUM LEARNING ROUTINE
S31
IS LEARNING CONDITION ESTABLISHED?
NO
YES
S32
IS O₂ SENSOR REVERSED?
NO
YES
S33 SAMPLING
S34
READING-OUT OF TRANSITION OF DURING REVERSAL OF O₂ SENSOR
S35
CALCULATION OF SATISFACTION DEGREE OF F/I CAUSE BY FIRST ANALYSIS RULE
S36
FREQUENCY
OVERLAP AREA
CALCULATION OF SATISFACTION DEGREE OF F/I CAUSE BY SECOND ANALYSIS RULE
S37
S38
S39
S40
WRITING OF IN BACK UP RAM
S41
END

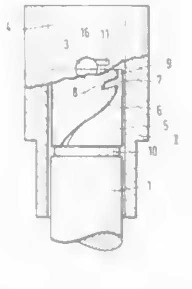
learning correction value setting means for computing and setting the learning correction value of each error cause based on the deviation of each error cause; and

learning value renewal means for rewriting the learning correction value of each error cause stored in said storing means based on the set learning correction value of each error cause.

4,881,506

INJECTION PUMP WITH PREINJECTION

Manfred Hoecker, Rosrath, Fed. Rep. of Germany, assignor to Kloeckner-Humboldt-Deutz AG, Fed. Rep. of Germany
Filed Jun. 9, 1988, Ser. No. 204,594
Claims priority, application Fed. Rep. of Germany, Jun. 10, 1987, 3719253; Feb. 10, 1988, 3804018
Int. Cl.⁴ F02F *39/00, 39/28*
U.S. Cl. 123—503 22 Claims

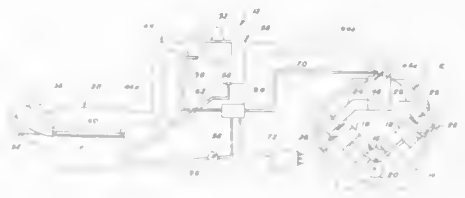


1. An injection pump for a diesel engine including a casing having a cylinder with a pump chamber (4) in which a rotatable and reciprocatable pump plunger (1) operates and to which fuel is supplied through a main release opening (3) during the intake stroke of the plunger (1) and from which fuel is release through said main release opening (3) near the end of the delivery stroke of plunger (1) via a first release groove (5) with a slanting control edge (6) in the outer cylindrical surface of the pump plunger, and with a second release groove (7) in said outer cylindrical surface between said first release groove (5) and the pump plunger upper edge (13) which in a specific rotational and axial position of pump plunger (1) registers with an auxiliary release opening in pump cylinder (2), whereby the upper edge (14) of said second release groove (7) inclines relative to said pump plunger upper edge (13) at an angle whose size is between one-half the size of the angle of inclination of upper edge (6) of said first release groove (5) relative to said plunger upper edge (13) and an angle which is 6 degrees greater than one-half said angle of inclination.

4,881,507

FUEL SUPPLY MECHANISM FOR AN INTERNAL COMBUSTION ENGINE

Frank J. San Filipo, P.O. Box 536, Lakeville, N.Y. 14480
Filed Jan. 4, 1988, Ser. No. 140,400
Int. Cl.⁴ F02M *17/26*
U.S. Cl. 123—523 9 Claims



1. A fuel supply mechanism for an internal combustion engine having a plurality of combustion chambers, said mechanism comprising:

a remote reservoir adapted to contain a primary supply of fuel;

means, located in said remote reservoir, for evaporating fuel in said remote reservoir into an air stream moving therethrough; and

means for transporting said air stream containing such evaporated fuel from said remote reservoir directly into said combustion chambers of said internal combustion engine, said evaporated fuel transporting means including a conduit connected at one end to said remote reservoir and at the opposite end to an intake chamber for said combustion chambers of said engine, a housing located in said conduit intermediate said remote reservoir and said intake for said combustion chambers, and fan apparatus associated with said housing for moving evaporated fuel through said conduit to said combustion chambers.

4,881,508

HEATING DEVICE FOR FLUID, PARTICULARLY FUEL

Fredrik M. N. Van Den Elst, Almelo, and Jan Bakker, Hengelo, both of Netherlands, assignors to Texas Instruments Incorporated, Dallas, Tex.
Filed Feb. 19, 1988, Ser. No. 157,817
Claims priority, application Netherlands, Feb. 20, 1987, 8700430
Int. Cl.⁴ F02M *31/12*
U.S. Cl. 123—549 4 Claims

1. A fluid heater comprising a thermally conductive metal plate, a self-regulating electrical resistance heater element of a ceramic material of positive temperature coefficient of resistivity mounted on the plate in heat-transfer relation thereto, fin-means of thermally conductive material secured in heat-transfer relation to the plate and extending from the plate for transferring heat from the plate to a fluid, means for electrically energizing the heater element to heat the plate, means defining a fluid flow path of selected cross-sectional configuration, the heater plate being disposed in said flow path, and the fin-means comprising a multiplicity of baffles disposed in the

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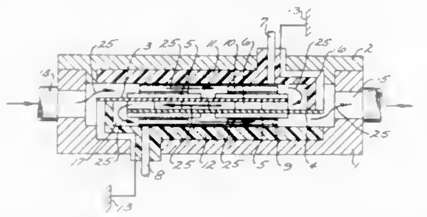
flow path for introducing a multiplicity of diversions of fluid flow along each line of flow through the paths for substantially preventing laminar fluid flow therethrough, the means defining the fluid flow path defining a path having a selected width, length and height, the plate being disposed with a width and length of the plate extending in a plane along the length of the flow path, and the fin-means comprising a strip metal member having a base portion secured to the plate and having a multiplicity of baffle portions upstanding from the base to provide said multiplicity of diversions along the length of said path, characterized in that means define a second fluid flow path separate from the first-named fluid flow path, an additional thermally-conducting metal plate is disposed between the fluid flow paths, fin-means comprising an additional strip metal member has a base secured to one side of the additional plate and has a multiplicity of baffle portions upstanding from the base into the first-named fluid flow path in heat-transfer relation with a fluid flowing in said first-named fluid flow path, and fin-means comprising another additional strip metal member has a base secured to an opposite side of the additional plate and has a multiplicity of baffle portions upstanding from the base into the second fluid flow path in heat-transfer relation to a fluid flowing through the second fluid flow path, the baffle portions of said additional strip metal members being disposed to provide a multiplicity of diversions of fluid flow along each of the paths for rapidly transferring heat from a fluid flowing in one of the fluid flow paths to a fluid flowing in the other fluid flow paths.



4,881,509
ELECTRONIC CONTROL DEVICE FOR INTERNAL COMBUSTION ENGINE WITH EGR CONTROL APPARATUS

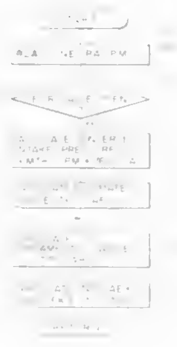
Michihiro Ohashi, Mishima, and Norio Nakamura, Susono, both of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Aug. 19, 1988, Ser. No. 234,373

Claims priority, application Japan, Aug. 21, 1987, 62-208913

Int. Cl.⁴ F02M *25/06*

U.S. Cl. 123—571 7 Claims



1. An electronic control device for controlling an internal combustion engine by means of a control value, said engine having an intake pipe, an exhaust pipe, an exhaust gas recirculating passage extending between said exhaust pipe and said intake pipe, and a vacuum-operated control valve arranged in said exhaust gas recirculating passage, said electronic control device comprising:

first detecting means for detecting a revolutional speed of said engine;
second detecting means for detecting an intake pressure in said intake pipe;
third detecting means for detecting an atmospheric pressure;
first calculating means for calculating a fundamental value of said control value in response to said intake pressure and said revolutional speed;
second calculating means for converting said detected intake pressure under said detected atmospheric pressure into a converted intake pressure under a predetermined atmospheric pressure in response to said atmospheric pressure;
third calculating means for calculating a correcting value of said control value in response to said revolutional speed and said converted intake pressure, said correcting value being in correspondence with an amount of recirculated exhaust gas attained under said predetermined atmospheric pressure when said vacuum-operated control valve is opened; and
control means for controlling engine operation in response to said fundamental value when said vacuum-operated control valve is closed, and in response to said fundamental value and said correcting value when said vacuum-operated control valve is opened.

4,881,510
BREATHER DEVICE OF AN ENGINE

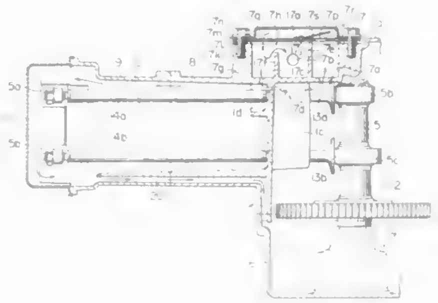
Motoaki Etoh, and Keisuke Ishii, both of Tokyo, Japan, assignors to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 28, 1988, Ser. No. 276,577

Claims priority, application Japan, Dec. 21, 1987, 62-194659[U]

Int. Cl.⁴ F01M *9/10;* **F02M** *25/06*

U.S. Cl. 123—572 2 Claims



1. A breather device of an engine having a crank chamber, a lubrication system including an oil pan holding lubrication oil, and an air intake system, said breather device comprising:

oil return passage means having a downstream end submerged in said lubrication oil in said oil pan;
an oil sump chamber communicating at a bottom part thereof with said oil return passage means;
a pressure chamber communicating with said crank chamber and provided with a pressure-responsive valve which is openable by a positive pressure within said pressure chamber to permit flow of fluid from said pressure chamber into said oil sump chamber; and
a breather chamber which is communicative over an oil holding wall with said oil sump chamber and is communicating with said air intake system, whereby:
positive pressure in said crank chamber causes blow-bye gas therein to flow via said pressure chamber and said pressure-responsive valve into said oil sump chamber, then to detour over said holding wall into said breather chamber, and to flow into said air intake system, while lubricating oil initially contained in the blow-bye gas in the crank chamber is separated from the blow-bye gas successively in the pressure chamber, the pressure-responsive valve, and the oil sump chamber; and oil retained in the oil sump chamber is circulated back through the oil return means to the oil pan.

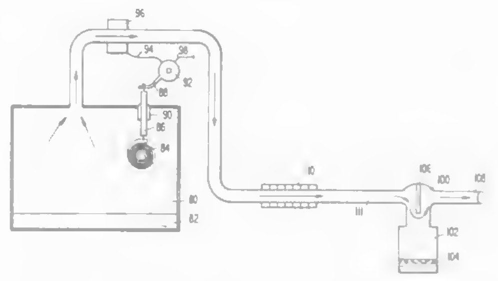
4,881,511
CRANKCASE VENTILATOR

John J. Pickering, 102 Barrett Ave., North Providence, R.I. 02904

Divislon of Ser. No. 62,072, Jun. 12, 1987, Pat. No. 4,821,513. This application Dec. 23, 1988, Ser. No. 290,269

Int. Cl.⁴ F02M *25/06*

U.S. Cl. 123—572 5 Claims



1. A crankcase ventilator comprising a conduit adapted to be attached to crankcase and a suction means for drawing air containing vapors from said crankcase through said conduit, a temperature sensitive element adapted to be placed in thermal contact with said crankcase, means for continuously varying the rate at which said suction means draws said air containing vapors from said crankcase according to temperature, and means connecting said varying means to said temperature sensitive element for causing said suction means to draw a greater volume of air from the crankcase when the crankcase is hot than when the crankcase is cold.

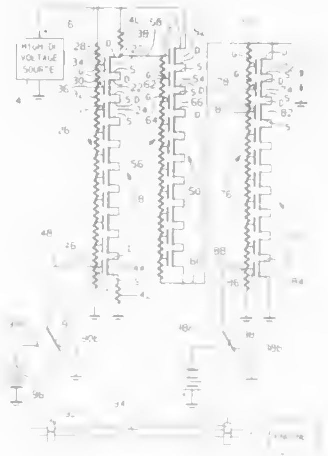
4,881,512
INTERNAL COMBUSTION ENGINE IGNITION SYSTEM

James C. Erskine, Birmingham, and Stephen J. Valeri, Warren, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Aug. 31, 1988, Ser. No. 238,656

Int. Cl.⁴ F02P *3/01*

U.S. Cl. 123—628 9 Claims



1. An ignition system for a spark ignited internal combustion engine comprising, an internal combustion engine, a spark plug for igniting the combustible mixture in a cylinder of said engine, a source of direct voltage having a magnitude that is high enough to cause said spark plug to fire when applied to said spark plug to ignite said combustible mixture, a high voltage semiconductor switch connected between said source of voltage and said spark plug, said semiconductor switch comprising a plurality of series connected transistors, each of said transistors having two current carrying electrodes and a control electrode, the current carrying electrodes of said transistors being connected in series, a voltage divider having a plurality of junctions, means connecting respective control electrodes of said transistors to respective junctions of said voltage divider, and means coupled to a movable part of said engine and to said voltage divider for causing said transistors to be biased alternately conductive and nonconductive.

4,881,513
TWO-CYCLE INTERNAL COMBUSTION ENGINE

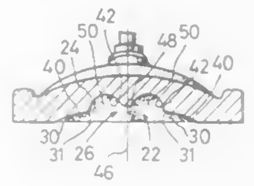
Tamotsu Hamanaka, Saitama, Japan, assignor to Tohatsu Corporation, Tokyo, Japan

Filed Jun. 23, 1988, Ser. No. 210,359

Claims priority, application Japan, Nov. 19, 1987, 62-292388

Int. Cl.⁴ F02B *23/08, 33/44*

U.S. Cl. 123—664 11 Claims



1. A two-cycle internal combustion engine comprising:

a cylinder having a cylinder wall formed with a plurality of scavenging ports and a discharge port;
a cylinder head for covering a top of said cylinder;
a piston movably arranged in said cylinder;
said cylinder, cylinder head and piston cooperating together to define a combustion chamber,
said cylinder head being formed therein with a top chamber constituting a part of said combustion chamber;
an ignition plug of which a tip end is arranged in said top chamber and positioned on a vertical plane extending through said top chamber; and
a partition provided in a region of said top chamber apart from said ignition plug in a manner to extend substantially along said vertical plane from one end of said top chamber by a distance toward said ignition plug, to thereby divide said region into two compartments;
said partition cooperating with said top chamber to define corners on both sides of said one end of said top chamber with said partition being interposed therebetween, said corners serving to direct fuel gas supplied to said top chamber toward ignition plug;
said scavenging ports being arranged to feed fuel gas through said partition to said corners;
said discharge port being arranged on a side of said cylinder wall opposite to said corners.

4,881,514
ARCHERY BOW

Jurnior J. Denslow, and Ronald S. Denslow, both of Lakeview, Mich., assignors to Benslow Incorporated, Lakeview, Mich.

Filed Jun. 30, 1988, Ser. No. 213,313

Int. Cl.⁴ F41B *5/00*

U.S. Cl. 124—23 R 9 Claims

1. An archery bow comprising:

an elongated flexible member having a central riser and a pair of limbs extending oppositely therefrom, said riser

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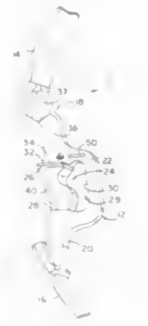
being shaped to define a generally channel-shaped recess opening away from an archer when using said archery bow and a handle positioned adjacent to and rearwardly of said recess and inwardly of the concave shape of said bow to effect an easy, comfortable manner of carrying the bow;

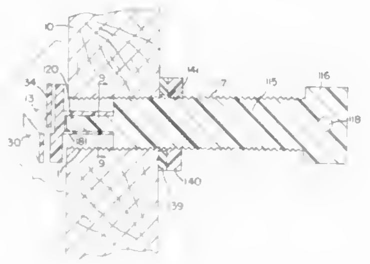


a bowstring attached to each end of said limbs and extending tautly therebetween, said bowstring being positioned rearwardly of said handle such that said handle is oriented between said recess and said bowstring; and

a hand grip rotatably mounted to said riser in said recess for improved accuracy in shooting.

4,881,515
LATERALLY ADJUSTABLE REPLACEABLE ARROW REST

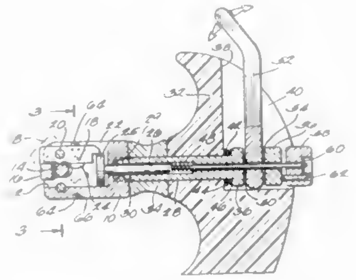
Miroslav A. Simo, 370 N. Delaplaine Rd., Riverside, Ill. 60546
Continuation-in-part of Ser. No. 788,486, Oct. 17, 1985, Pat. No. 4,732,135, which is a continuation-in-part of Ser. No. 482,186, Apr. 5, 1983, Pat. No. 4,548,188. This application Mar. 18, 1988, Ser. No. 170,161
Int. Cl.⁴ F41C *5/00*
U.S. Cl. 124—24 R 47 Claims



9. In a laterally adjustable replaceable arrow rest and mounting means mounted on a bow handle, an arrow rest having a pivotal arrow support means which automatically returns to an initial position after discharge of an arrow comprising: said mounting means including a mounting plate and an adjustable screw which is threadably engaged with a threaded hole in the bow handle and said arrow rest including a second connecting means secured to and extending outward from an opposite side of said mounting plate, said opposite side being in a generally opposite direction from an arrow side of said mounting plate, and said second connecting means is mateable with a first connecting means on said mounting means; a pivotal arrow support arm pivotally attached to a side of said arrow rest facing toward said arrow by a resilient arm spring means formed by an arm groove in resilient polymeric material, and said arm groove forming an arm section of said arrow support arm having an arm reduced moment of inertia, with respect to an arm moment of inertia of adjacent arm sections of said arrow support arm, thereby reducing an arm force necessary to deflect a support arm cantilever portion.

4,881,516
ADJUSTABLE GRIP AND TRIGGER BOW STRING RELEASE

Paul L. Peck, Fond du Lac, Wis., assignor to Archery Designs, Inc., North Fond du Lac, Wis.
Filed May 16, 1988, Ser. No. 194,221
Int. Cl.⁴ F41C *19/00*
U.S. Cl. 124—35 A 6 Claims



1. A bow string release comprising,

a body having a string receiving notch in one end of said body and an axial hole through the other end of said body,

a sear pivoted in the body adjacent said notch and having string retaining means operative to retain a bow string in said notch when said sear is in its operative position,

handle means having an axial hole therethrough,

an internal shoulder in said axial hole in said body,

guide means comprising a guide sleeve having one end threaded into said axial hole of said body and extending through said axial holes, an enlargement on the other end of said guide sleeve capturing said handle means relative to said guide sleeve, said guide sleeve bearing against said shoulder to fix the location of said enlargement relative to said body,

a Belleville spring effective between said other end of said guide sleeve and said handle means to take up dimensional variations,

pull pin means slideably mounted in said guide sleeve for movement between a first position and a retracted position, said pull pin means engaging said sear in said first position to retain said sear in said operative position and releasing said sear upon movement to said retracted position,

spring means biasing said pull pin means to said first position,

a trigger carried by said handle means and operative to move said pull pin means to said retracted position,

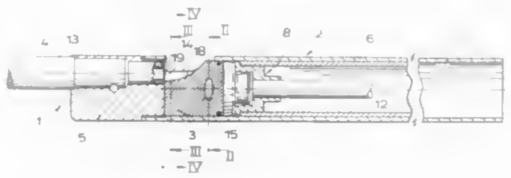
means adjusting the axial position of said pull pin means relative to said sear to adjust the release stroke of said pull pin means,

said guide sleeve being non-rotatable relative to said body during use of the release and during adjustment of the release,

said handle means and said body being rotatable relative to each other and relative to said pull pin means and the release stroke of said pull pin means remaining constant during rotation of said handle means and said body relative to each other and relative to said pull pin means.

4,881,517
AIR GUNS

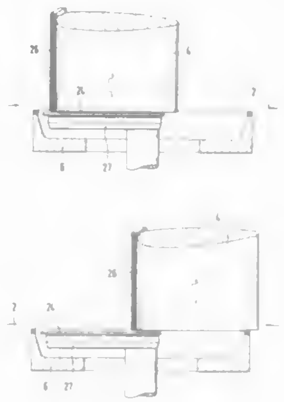
Roger D. Wackrow, Redditch, and Harold C. Jones, Studley, both of England, assignors to BSA Guns (UK) Limited, Birmingham, England
Filed Mar. 10, 1988, Ser. No. 166,385
Claims priority, application United Kingdom, Mar. 13, 1987, 8705993
Int. Cl.⁴ F41B *11/00*
U.S. Cl. 124—65 17 Claims



1. An air gun comprising a body which houses a source of compressed gas, a barrel which is fixed in relation to said body and which has a bore extending forward from a bore entry at a rear end of said barrel, and a breech block mounted rearwardly of and adjacent to said bore entry, said block being shaped externally to form a guide chute and having a through passage separate from said chute, said breech block being angularly movable between a loading position in which said guide chute is aligned with said bore entry and said entry is exposed for a pellet to be inserted manually into position in said entry and a firing position in which said guide chute is displaced from said entry and said through passage is aligned with said entry and completes a connection for gas between said source of compressed gas and said entry, said passage not being aligned with said entry and not communicating with said entry when said breech block is in said loading position.

4,881,518
APPARATUS FOR MANUFACTURING AND HANDLING THIN WAFERS

Fritz Feldmeier, Nuremberg, Fed. Rep. of Germany, assignor to GMN Georg Muller Nurnberg AG, Fed. Rep. of Germany
Filed Nov. 3, 1988, Ser. No. 266,790
Claims priority, application Fed. Rep. of Germany, Nov. 5, 1987, 3737540
Int. Cl.⁴ B28D *5/04*
U.S. Cl. 125—14 5 Claims



1. Apparatus for manufacturing thin wafers of hard, non-metallic material, such as monocrystalline or polycrystalline material for use as semiconductor substrates, from a bar of such material, said wafers having at least one substantially precisely planar surface, comprising:

internal hole saw means including a blade having an inner peripheral blade edge for slicing said bar to separate a disc-shaped wafer therefrom having a first surface constituted by an end face of said bar, said inner peripheral blade edge defining an open region of said saw means;

a substantially cup-shaped grinding wheel having peripheral grinding means situated at said open region of said inner blade edge for grinding said end face of said bar to a substantially precisely planar condition prior to completion of said slicing by said saw means;

means associated with said saw means for holding said bar during said slicing, said holding means including a holder member fastened to a side surface of said bar extending longitudinally at least from said end face thereof, said holder member adapted to be partially, but not completely, sliced through by said saw means after a wafer is separated from said bar by said saw means so that a portion of said holder member connects said separated wafer to said bar;

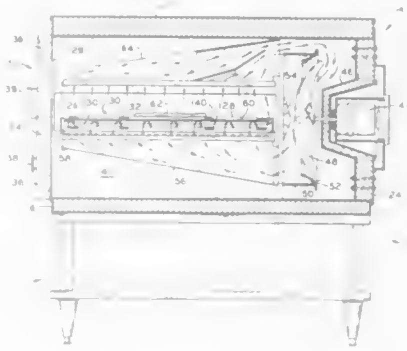
said peripheral grinding means of said cup-shaped grinding wheel comprises means for abrading said portion of said holder member connecting said separated wafer to said bar to disconnect said wafer from said bar ;

take-off plate means situated substantially within said cup-shaped grinding wheel for receiving and holding said separated wafer after said separated wafer has been disconnected from said bar by said peripheral grinding means of said cup-shaped grinding wheel; and

transfer arm means for picking up a wafer from said take-off plate means and transferring it for subsequent processing.

4,881,519
HOT AIR OVEN HAVING INFRA-RED RADIANT SURFACES

Mitchell C. Henke, Fort Wayne, Ind., assignor to Lincoln Foodservice Products, Inc., Fort Wayne, Ind.
Filed Jul. 18, 1988, Ser. No. 220,462
Int. Cl.⁴ A21B *1/00;* **A23L** *3/00*
U.S. Cl. 126—21 A 16 Claims



1. A food preparation oven, comprising:

an enclosure defining a chamber for receiving a food product therein;

support means for supporting a food product in said chamber;

air recirculating means, including an inlet, for recirculating a mass of air within said chamber;

heating means for heating the recirculating air within said chamber; and

a return duct in flow communication with the inlet of said recirculating means, said return duct including a wall

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disposed above and generally parallel to said support means, the wall having an outer radiant energy emissive surface means for radiating infra-red energy towards said support means when said wall is heated, said return duct further including means for heating said wall by communicating heated air from said chamber into said return duct.

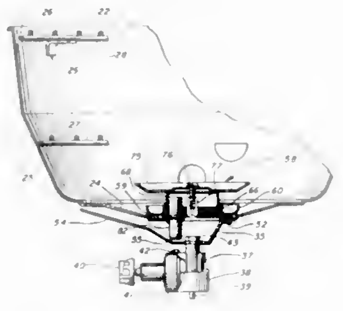
4,881,520
PROPANE-FUELED COOKING APPARATUS

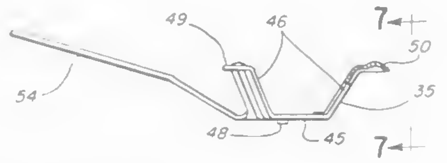
Dennis V. Hefling, Wichita, Kans., assignor to The Coleman Company, Inc., Wichita, Kans.

Continuation-in-part of Ser. No. 930,520, Nov. 14, 1986, Pat. No. 4,759,339. This application Nov. 13, 1987, Ser. No. 120,038

Int. Cl.⁴ F24C *3/04, 3/08*

U.S. Cl. 126—44 5 Claims





3. A gas grill which is adapted to be connected to a propane tank comprising:

(a) a bowl-shaped casing having a bottom wall and an upwardly extending side wall;

(b) a burner bowl supported inside the casing by the bottom wall thereof;

(c) a burner assembly mounted on the burner bowl;

(d) a regulator assembly including a threaded connector adapted to be connected to a propane tank whereby the propane tank is supported solely by the regulator assembly;

(e) a mounting bracket attached to the bottom wall of the casing below the burner bowl, the mounting bracket having a central portion attached to the regulator assembly and a plurality of arms which extend outwardly and upwardly from the central portion and which are attached to the bottom wall of the casing, said arms of the mounting bracket providing the only connection between the regulator assembly and the casing, each of the arms terminating in an end portion which includes a convex embossment which engages the casing in the area of the attachment between the arm and the casing for minimizing heat convection between the casing and the arm;

(f) a plurality of legs attached to the casing and extending downwardly therefrom for supporting the casing above a support surface so that the propane tank does not contact the support surface.

4,881,521
VACUUM SOLAR COLLECTOR

Bernd Kellner, Ruckäckerweg 5, D-8400 Regensburg 25, Fed. Rep. of Germany

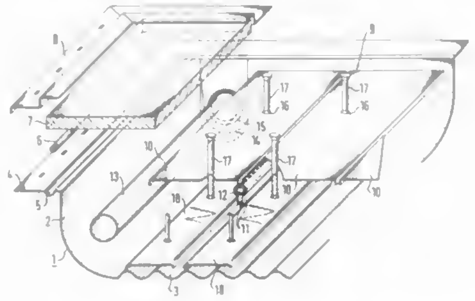
PCT No. PCT/EP87/00189, § 371 Date Oct. 5, 1988, § 102(e) Date Oct. 5, 1988, PCT Pub. No. WO87/06328, PCT Pub. Date Oct. 22, 1987

PCT Filed Apr. 7, 1987, Ser. No. 272,742

Claims priority, application Fed. Rep. of Germany, Apr. 8, 1986, 3611764

Int. Cl.⁴ F24V *2/10*

U.S. Cl. 126—438 20 Claims



1. Vacuum solar collector comprising an integrally seamless deep-drawn sheet metal trough (1) which contains an absorber (9) and conduits (12, 13) for a heat transport medium and has an edge (4) on which a radiation-permeable pane (7) rests which covers the sheet metal trough and which is supported over a trough bottom wall by support elements (17) which lie at intervals apart and which in turn bear against metal members disposed on the trough bottom wall (3), characterized in that the trough bottom wall (3) is undulated in the form of a corrugated sheet.

4,881,522
METHOD FOR ACTIVATING THE COMBUSTION IN A HEATING APPARATUS USING SOLID FUEL, AND CHIMNEY FOR IMPLEMENTING SUCH METHOD

André Meusy, 6, ruelle du Canal, CH-2926 Boncourt, Switzerland

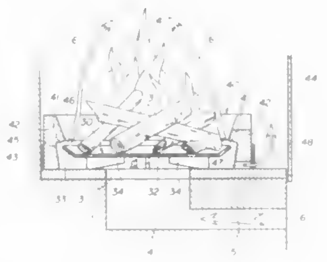
PCT No. PCT/CH86/00164, § 371 Date Aug. 7, 1987, § 102(e) Date Aug. 7, 1987, PCT Pub. No. WO87/03669, PCT Pub. Date Jun. 18, 1987

PCT Filed Nov. 26, 1986, Ser. No. 96,352

Claims priority, application France, Dec. 6, 1985, 8518219

Int. Cl.⁴ F24B *7/00*

U.S. Cl. 126—540 7 Claims



1. A fireplace hearth fitting for activating combustion for burning solid fuel, including a metallic support in the form of a dish having a raised free edge which is continuous along the whole periphery of said dish, and support elements for maintaining said dish at a predetermined height, and an air emission opening underneath said dish defining under the dish a preheating zone for combustion air, said combustion air flowing from

said preheating zone upwardly along said raised free edge as a substantially continuous stream over the whole periphery of said dish, including a belt laterally surrounding said dish and said preheating zone, said belt being disposed in such manner as to define with the edge of the dish an air emission slit extending over the entire periphery of the dish, for the passage of air coming from said preheating zone.

4,881,523
ENDOSCOPE

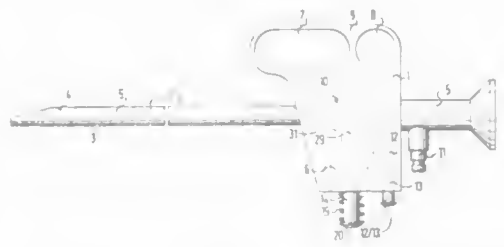
Helmut Heckele, Knittlingen, Fed. Rep. of Germany, assignor to Richard Wolf GmbH, Fed. Rep. of Germany

Filed Feb. 2, 1989, Ser. No. 305,165

Claims priority, application Fed. Rep. of Germany, Feb. 4, 1988, 3803212

Int. Cl.⁴ A61B *1/12*

U.S. Cl. 128—4 10 Claims



1. An endoscope comprising a suction and flushing shaft provided with a suction and a flushing channel, a handle adapted to be coupled to said shaft and a switching valve accommodated in said handle and having switching positions for connecting the suction channel and the flushing channel to a suction sources and to a flushing fluid source, respectively, and for interrupting the connections of said channels to said sources, the switching valve having a further switching position for connecting said suction channel to said flushing fluid source.

4,881,524
INSTSRUMENT FOR GUIDING A LASER LIGHT TRANSMITTING FIBER

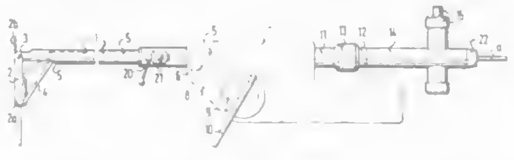
Manfred Boebel, Oetisheim, and Siegfried Hiltebrandt, Knittlingen, both of Fed. Rep. of Germany, assignors to Richard Wolf, GmbH, Fed. Rep. of Germany

Filed Jan. 26, 1989, Ser. No. 301,834

Claims priority, application Fed. Rep. of Germany, Jan. 27, 1988, 3802307

Int. Cl.⁴ A61B *1/06*

U.S. Cl. 128—6 18 Claims



1. An instrument for guiding a laser light transmitting fiber in intraabdominal endoscopic work, the instrument comprising a shaft having a distal end and a proximal end and through which said fiber can be passed, a fiber guide deflectably pivoted to said distal end for angularly deflecting an end portion of said fiber projecting from said distal end, and a thrust device for deflecting said fiber guide; said thrust device comprising a fiber guide drive tube extending through said shaft and through which said fiber can be passed to extend up to a proximal end of said fiber guide, a link articulating said fiber guide to said tube, and a lever for displacing said tube axially of said shaft, said instrument further comprising a proximally positioned handle carrying said lever, and a fiber feed device arranged proximally of said tube and having a fiber feed member mounted for limited movement axially of said shaft and being provided with a device for releasably clamping said fiber.

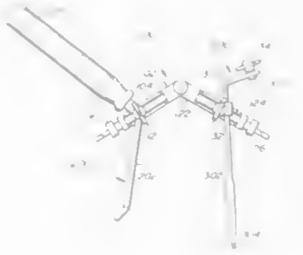
4,881,525
CERVICAL FUSION RETRACTOR

Richard C. Williams, 55 Highland Dr., San Luis Obispo, Calif. 93401

Continuation-in-part of Ser. No. 50,150, May 14, 1987, abandoned. This application Sep. 9, 1988, Ser. No. 242,634

Int. Cl.⁴ A61B *17/02*

U.S. Cl. 128—20 3 Claims



1. A tissue retractor for cervical fusion surgical procedures comprising, in combination:

(a) a pair of elongat retractor mounting members each having a proximal and a distal end;

(b) means connecting the proximal ends of the respective retractor mounting members pivotally together to permit relative articulation between such members and to clamp such members at any selected angle relative to each other;

(c) retractor securing means; and

(d) means mounting the retractor securing means on the respective retractor mounting members for movement reciprocally along the length of the retractor mounting members and positioning the rectractor securing means at a selected point thereupon; and

(e) first and second retractors secured by the respective retractor securing means to the respective retractor mounting members, the first retractor comprising a blade and handle, the second retractor comprising a pair of elongate retractor arms pivotally connected together proximate the idstal end and forming oppositely facing hooks on the distal end for engaging and retracting muscle during use.

4,881,526
INTRAVAGINAL ELECTRODE AND STIMULATION SYSTEM FOR CONTROLLING FEMALE URINARY INCONTINENCE

Michael T. V. Johnson, Minneapolis, and Donald D. Maurer, Anoka, both of Minn., assignors to Empi, Inc., St. Paul, Minn.

Filed May 27, 1988, Ser. No. 200,037

Int. Cl.⁴ A61H *21/00;* **A61N** *1/05, 1/36*

U.S. Cl. 128—24.5 29 Claims

1. An intravaginal electrode assembly including:

an elongated and generally cylindrical carrier having a tip at a distal end and an extended lip at a proximal end;

a pair of motor electrodes positioned adjacent one another on an exterior surface of the elongated carrier between the tip and lip approximately eight centimeters from the lip;

sensory stimulation means for stimulating sensory receptors mounted to the carrier adjacent the lip;

motor electrode terminal means coupled to the pair of motor

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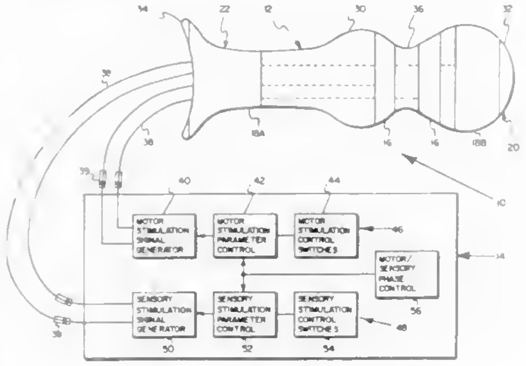
electrodes, for receiving motor receptor electrical stimulation signals; and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18A
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18B
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MOTOR STIMULATION SIGNAL GENERATOR
MOTOR STIMULATION PARAMETER CONTROL
MOTOR STIMULATION CONTROL SWITCHES
46
14
MOTOR/SENSORY PHASE CONTROL
56
SENSORY STIMULATION SIGNAL GENERATOR
SENSORY STIMULATION PARAMETER CONTROL
SENSORY STIMULATION CONTROL SWITCHES
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54

sensory stimulation terminal means coupled to the sensory stimulation means, for receiving sensory receptor stimulation signals.

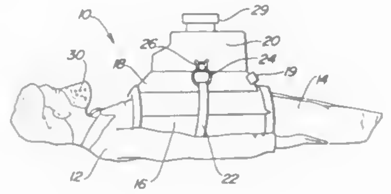
4,881,527
CARDIAC ASSIST CUIRASS

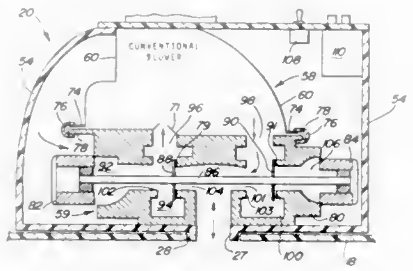
Samuel I. Lerman, 8552 Canton Center Rd., Canton, Mich. 48187

Filed Nov. 14, 1988, Ser. No. 271,585

Int. Cl.⁴ A61H *31/02*

U.S. Cl. 128—30.2 15 Claims





1. A method of cardiac assist comprising the steps of:

mounting a shell about a patient's torso;

sealing the shell with the patient's torso;

mounting a control and power mechanism on top of the shell that is readily attachable thereto and supported thereby which provides alternating connection of suction and pressure to a chamber within the shell to alternate squeezing and expansion of a patient's torso;

communicating the pressure and suction directly into said chamber such that said control unit cycles quickly and has almost instantaneous response to control unit signals to shift from suction to pressure;

placing a restrictor over the patient's mouth and nose that restricts the flow of air into the patient's body;

controlling the frequency of connection of pressure into the shell such that it approximates a patient's heartbeat and controlling the pressure of the discharge air entering the shell such that it approximates a patient's blood pressure.

4,881,528
SPINAL TRACTION AND SUPPORT UNIT USED WHILE SEATED

Henry Scott, 1109 Rock Creek Dr., Wyncote, Pa. 19095

Filed Oct. 21, 1988, Ser. No. 260,755

Int. Cl.⁴ A61F *5/04*

U.S. Cl. 128—75 7 Claims

1. A sedentary traction and support device for supporting the lumbosacral spine of a patient while the patient is in a sitting position on a seat or the like without preventing the patient from attaining on upright position while wearing the device, the device comprising:

a girdle having an upper edge and a lower edge and a back panel portion defined between first and second wrap panels wherein the wrap panels engage the sides and front of the patient and the back panel portion engages only the back of the patient, the wrap panels having an upper edge and a lower edge with at least the upper edge of the wrap panels converging toward the lower edges of the wrap panels; wherein the wrap panels, when fastened around a patient, position the upper edge at the girdle beneath the patient's scapulae and press on the patient's abdomen to provide supplemental support for the patient's spine;

rigid support mounting means on the back panel of the girdle in proximity with the upper edge and the lower edge thereof;

rigid vertical support means, having rigid horizontal bracking means extending therebetween at a location beneath the lower edge of the girdle, secured to the rigid support mounting means and extending downwardly from the mounting means for engagement with an upper surface of the seat upon which the patient is sitting so as to provide support for the patient's lumbosacral spine.

4,881,529
NECK SUPPORT COLLAR

Richard Santos, 21 Bird St., Apt. 1, Foxboro, Mass. 02035

Filed Aug. 10, 1988, Ser. No. 230,365

Int. Cl.⁴ A61F *5/01, 5/04;* **A61H** *1/02*

U.S. Cl. 128—75 12 Claims

12. A neck support collar, comprising:

a generally rectangular elongated central section formed by a plurality of parallel adjacent tubes;

a first group of said plurality of tubes disposed adjacent a first longitudinal side edge of said central section, formed by three flexible plastic tubes, each having a diameter of one inch and a central longitudinal bore of one-fourth inch diameter;

a second group of said plurality of tubes disposed adjacent a second longitudinal side edge of said central section, formed by three flexible plastic tubes, each having a diameter of one half inch and a central longitudinal bore of one-eighth inch diameter;

each of said plurality of tubes having an outer tubular wrapping of a perforated leather material;

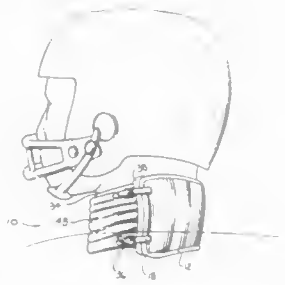
a longitudinal seam sewn in said leather material between each pair of adjacent tubes;

an arcuate recess formed at a midpoint in said second longitudinal side edge, said recess extending laterally through an outer one and partially through a next adjacent one of said second group of tubes;

said recess lined with a soft leather material;

a pair of spaced buckle fasteners at a first end of said central section;

a generally rectangular end pad attached to said first end of said central section;



said end pad formed from a soft perforated leather sewn to said central section, a first outer side of said end pad having a plurality of diagonally extending first hook and loop fastening strips;

a generally rectangular support pad attached to a second end of said central section, opposite said first end;

said support pad having an interior rubber pad enclosed within a leather covering;

said support pad having a plurality of parallel spaced seams which subdivide the support pad into a plurality of adjacent sections which extend transversely to said plurality of tubes;

a back side of said support pad provided with second hook and loop fastening strips for cooperation with said first hook and loop fastening strips; and

a pair of fastening straps extending from a free end of said support pad for cooperation with said buckle fasteners.

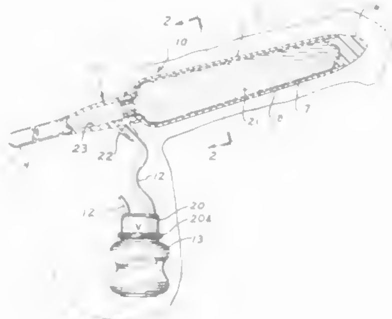
4,881,530
PENILE PROSTHESIS

Robert E. Trick, Racine, Wis., assignor to Medical Engineering Corporation, Racine, Wis.

Continuation-in-part of Ser. No. 145,629, Jan. 19, 1988. This application Oct. 7, 1988, Ser. No. 254,976

Int. Cl.⁴ A61F *2/26*

U.S. Cl. 128—79 5 Claims



1. A penile prosthesis comprising at least one elongated, flexible cylindrical implant to be implanted in the pendulous penis, said implant containing a non-distensible inflatable bladder; pump means to be implanted in the scrotum for inflating said bladder with fluid; tubing connecting the pump means to the bladder; valve means for retaining fluid in the bladder; and, a retracting member positioned about said bladder, said retracting member being of an elastic material and smaller than the bladder so that when the bladder is inflated with fluid the retracting member is stretched and will exert pressure upon the bladder so that when the valve is opened and the bladder is permitted to empty, the retracting member will automatically force fluid out of the bladder.

4,881,531
POSITION STABLE SEGMENTED COLUMN PENILE PROSTHESIS

Gerald W. Timm, Woodland, and Stephen K. Sundquist, Chanhassen, both of Minn., assignors to Dacomed Corporation, Minneapolis, Minn.

Continuation of Ser. No. 934,245, Nov. 21, 1986, abandoned. This application Apr. 27, 1989, Ser. No. 346,386

Int. Cl.⁴ A61F *2/26*

U.S. Cl. 128—79 26 Claims

1. A penile prosthesis having a range of motion between a concealed position and an erect position, comprising:

(a) an elongated body having a longitudinal axis and further having first and second end portions interconnected by an intermediate portion, the elongated body including an outer sheath of physiologically inert and pliable material;

(b) the intermediate portion including an articulated column of segments disposed intermediate of the first and second end portions of the elongated body, adjacent ones of the segments cooperating to form joints therebetween; and

(c) friction causing means cooperating with the segments for causing frictional contact between the segments at the joints, the frictional contact resulting in a frictional force sufficient to provide the prosthesis with positional stability throughout its range of motion, whereby the prosthesis will remain in any position where placed throughout its range of motion, the friction causing means including tension means for forcing adjacent ones of the segments into frictional contact with one another, the tension means including spring means disposed in at least one of the end portions, the intermediate portion having substantially uniform predetermined flexibility along its entire extent.

4,881,532
ORTHOPEDIC HIP HINGE PROVIDING ADJUSTMENT FOR ABDUCTION

Donald A. Borig, 44 Pine Dr., Chester Springs, Pa. 00000; Godfrey Harris, 10676 W. Turfts Pl., Littleton, Colo. 00000, and Gary P. Korngold, 3435 Fayance Pl., Thousand Oaks, Calif. 00000

Filed Jul. 30, 1987, Ser. No. 79,761

Int. Cl.⁴ A61F *5/00*

U.S. Cl. 128—80 A 4 Claims

1. An orthopedic device of the kind suitable for hip casts and orthoses, comprising:

(a) an upper arm for attaching said device to a location on a patient's waist;

(b) pivot head means rotatably affixed to said upper arm for rotation about an axis alignable with the femoral head of such patient, said pivot head means having an outwardly-facing convex surface;

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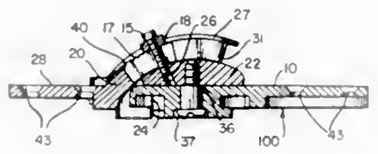
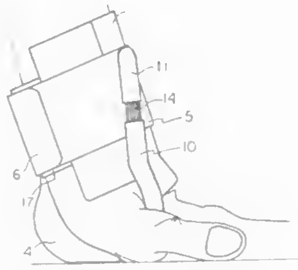
(c) a lower arm for attaching said device to a location alongside a patient's thigh, said lower arm having a sleeve portion with an inwardly-facing concave surface slidably receiving said convex surface of said pivot head means for abductive and adductive movement of said lower arm;



(d) said sleeve portion having a slot therein and said pivot head means being provided with control means secured thereto and extending through said slot for retaining said concave surface against said convex surface and for limiting the extent of said abductive and adductive movement.

4,881,533
VARIANCE WRIST BRACE
Luc Teurlings, 711 Wilcox Ave., #304, Los Angeles, Calif. 90038
Filed Mar. 3, 1988, Ser. No. 163,869
Int. Cl.⁴ A61F *5/04, 13/00;* **A41D** *13/08;* **A63D** *5/00*
U.S. Cl. 128—87 R 8 Claims



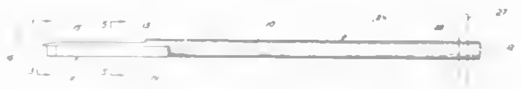
1. A wrist supporting device for gymnasts comprising, in combination, a dorsal body of flexible sheet material positioned to contour the back of the user's wrist and lower one third of said user's metacarpal bones,

said dorsal body having three pockets whereof two lateral pockets are positioned on each side of said user's wrist, each containing a pad of resilient material,

said dorsal body having a central pocket, enclosing a thick malleable support member of said resilient material, reinforced by a more rigid support member positioned on the free surface of said malleable support member and said rigid support member having a longitudinal dimension shorter on the distal end than said malleable support member,

said central pocket covering substantially the width of said user's wrist and said lower third of said metacarpals and being elongated more towards distal margin than said lateral pockets when said dorsal body is wrapped around said user's wrist, and means for wrapping said dorsal body around said wrist whereby a wrist strap is secured to said dorsal body, encircling said wrist, then looping through a ring attached to the beginning of said wriststrap, tightly pulled in reverse direction by said user to secure a loose end to removably adhering material on said beginning of said wriststrap, and a palmar body of said flexible sheet material which is sized and shaped to cover the front side of both said wrist and lower half of palm below proximal creaseline, thus covering said thumbside of said palm more distally than the covering of said little finger side of said palm, attachment means of said palmar body attaching said wriststrap on front of said wrist and using a long palmar strap emerging from said free edge of said thumbside wrapping around said thumb adhering to backside of said wriststrap, a short palmar strap emerging from distal end on said little finger side of said palmar body, wrapping around side of said hand adhering to backside of said wriststrap, and a palmer pad of said resilient material encased in said palmar body covering and cushioning lower portion of said palm, wherein upper edge of said palmer pad coincides with upper edge of said palmar body, and lower edge of said palmar pad extends only as far as the lower edge of said palm.

4,881,534
CORTICOTOMO OSTEOTOME WITH T-SHAPED CUTTING END
Richard L. Uhl, 36 Hawthorne Pl., Montclair, N.J. 07042, and Robert J. Uhl, 29 Lake Dr., E., Wayne, N.J. 07470
Filed Oct. 3, 1988, Ser. No. 252,666
Int. Cl.⁴ A61B *17/32*
U.S. Cl. 606—84 6 Claims



1. A corticotomy osteotome comprising an elongated body having a cutting end an an anvil end adapted for engagement with a mallet in advancing the cutting end, wherein the cutting end is of T-shaped cross-sectional form with the cross-head of the T providing closely spaced and essentially parallel inner and outer bearing surfaces for engaging respectively the outer surface of the cortex, and the inner surface of the periosteum, and a rib extending perpendicularly and centrally of the inner bearing surface a distance approximately equivalent to the thickness of the bone cortex, the rib having closely spaced parallel surfaces terminating in a tapered cutting edge extending perpendicularly to said inner bearing surface, and being spaced inwardly from the leading edge of said inner bearing surface, and the outer bearing surface being smoothly rounded along its edges and tapered in the direction of said leading edge of the inner bearing surface permitting the leading edge to lift the periosteum from the bone cortex, and support it in spaced relation to the cortex, as the osteotome is advanced to cut the cortex, and the anvil end having means engagable by a transverse member providing leverage for axial twisting of the osteotome at the end of a cortex cutting operation to facilitate enlargement of the cut made in the cortex.

4,881,535
INTRAMEDULLARY ROD TARGETING DEVICE
Gary W. Sohngen, 2101 Paseo Del Mar, San Pedro, Calif. 90732
Filed Sep. 6, 1988, Ser. No. 240,937
Int. Cl.⁴ A61B *17/56*
U.S. Cl. 606—98 7 Claims

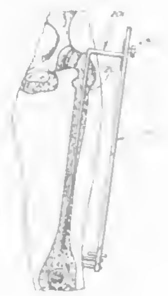
1. An intramedullary rod targeting device for guiding drilling of distal fastener screw passages in the femur of a patient during the installation in the patient's femur of an intramedullary rod which comprises at least one fastener screw receiving aperture therethrough proximate the distal end thereof, comprising:

a rigid external support member adapted to reside outside the patient generally parallel to and along the patient's femur during installation of an intramedullary rod in the patient's femur, the external support member comprising an elongate channel support member comprising a web portion and edge flange portions, the web portion having formed therein connector screw apertures and alignment pin apertures;

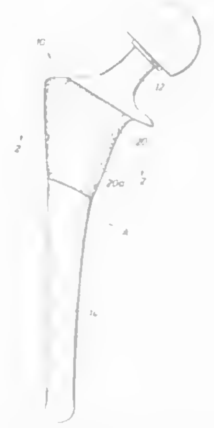
means for removably mounting the proximal end of said intramedullary rod to and spaced from the proximal end of the external support member positioning the intramedullary rod generally parallel to the external support member with the axes of the fastener screw apertures in a predetermined relationship with respect to the rigid external support member, said means for mounting the proximal end of the intramedullary rod including an alignment pin for being received in an alignment pin aperture in the rigid·external support member for accommodating specific intramedullary rods of specific lengths;

trochar alignment means movably mounted proximate the distal end of the external support member for being aligned with the axes of the fastener screw apertures through the intramedullary rod, the alignment pin and the corresponding alignment pin aperture being so positioned that for a specific intramedullary rod the trochar alignment means is aligned longitudinally with the fastener screw apertures; and

means for adjusting the position and orientation of the trochar alignment means for guiding drills in the drilling of said fastener screw passages in the femur in alignment with the apertures through the distal end of the intramedullary rod.



4,881,536
METHOD AND APPARATUS FOR PROSTHESIS PLACEMENT
Phillip C. Noble, 2601 S. Braeswood, Apt. 103, Houston, Tex. 77025, and Hugh S. Tullos, 2151 Troon, Houston, Tex. 77019
Filed Jan. 22, 1987, Ser. No. 6,563
Int. Cl.⁴ A61F *1/04*
U.S. Cl. 606—94 7 Claims

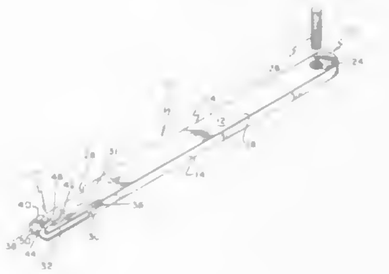


1. A method of preparing a prosthesis for subsequent securing within a surgically prepared opening in a patient's bone using plastic bone cement, including the steps of:

bonding to the prosthesis a shaped layer of plastic bone cement comparable material of sufficient annular thickness to form sealing collar means for operably effecting a pressurizing seal with the anticipated size of the bone opening during the final increment of movement of the prosthesis during insertion into the surgically prepared bone opening for securing and;

curing the layer of bone cement compatible material under controlled pressurized conditions to obtain a desired minimum level of mechanical properties of the bone cement compatible material prior to securing the prosthesis within the prepared opening.

4,881,537
SURGICAL INSTRUMENT, AND METHODS FOR FORMING A CHANNEL IN A FEMORAL CONDYLE INCLUDING RECONSTRUCTING AN ANTERIOR CRUCIATE LIGAMENT
Charles Henning, 7401 Pagent, Wichita, Kans. 67206
Filed Aug. 10, 1988, Ser. No. 232,427
Int. Cl.⁴ A61B *17/16, 17/56*
U.S. Cl. 606—84 19 Claims



1. A surgical instrument comprising a shank means having a pair of shank sides, a shank back and a shank front and a cutting end means and a handle end means; said cutting end means having a pair of grooves in said shank front and along said pair of shank sides such that said cutting end means has a structure defining a pair of opposed flanges; said shank back having a back channel; a first cutting member secured on said shank front at said cutting end means; and a second cutting member superimposed on said first cutting member and secured thereto.

4,881,538
RESPIRATOR AIR GUIDE
Cyril N. E. Angell, Trowbridge, England, assignor to Avon Industrial Polymers Limited, Melksham, England
Continuation of Ser. No. 773,186, Sep. 6, 1985, abandoned, which is a continuation of Ser. No. 469,894, Feb. 25, 1983, abandoned. This application Aug. 7, 1986, Ser. No. 894,087
Claims priority, application United Kingdom, Feb. 26, 1982, 8205716
Int. Cl.⁴ A62B *18/08*
U.S. Cl. 128—201.15 13 Claims

1. A respirator with a face-piece having an air inlet located asymmetrically relative to a line of said face-piece which is in the median plane of the face of the user, in use, and an air guide connected to said face-piece so as to be positioned, in use, between the air inlet and the face of the user and oriented so as to have its upper edge near but below the eyes of a user, with ridges extending between the face-piece and the air guide and toward the upper edge of the air guide to act as guide vanes

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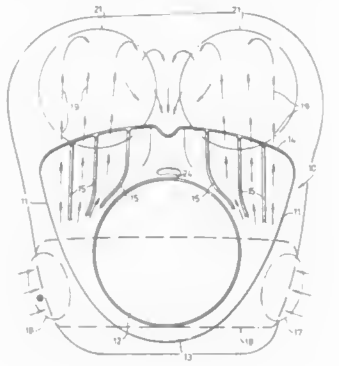
and to define channels for directing and improving symmetry of air flow, relative to the median plane, from the asymmetrical air inlet along the surface of the air guide adjacent said face-piece.



4,881,539
PROTECTIVE SUIT HAVING A SUPPLY OF BREATHING AIR

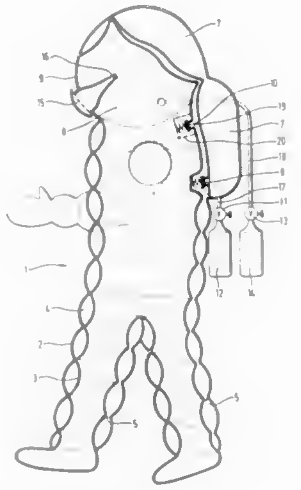
Adalbert Pasternack, Bad Schwartau, Fed. Rep. of Germany, assignor to Drägerwerk Aktiengesellschaft, Lübeck, Fed. Rep. of Germany

Filed Mar. 27, 1987, Ser. No. 31,938

Claims priority, application Fed. Rep. of Germany, Mar. 27, 1986, 3610491

Int. Cl.⁴ B63C *11/02;* A62B *17/00, 7/00*

U.S. Cl. 128—201.27 6 Claims



1. A protective suit comprising:
- a helmet portion having head and neck regions adapted to enclose the entire head and neck of a wearer;
- a body portion adapted to enclose the body of the wearer therein, said body portion being connected to said helmet portion and comprising a plurality of hollow chambers fillable with breathing gas and adapted to surround the body of the wearer of the suit, said hollow chambers having respective hollow interiors and being interconnected to cause said interiors of said hollow chambers to communicate one with the other;
- a plurality of hollow bodies fillable with breathing gas and being arranged on said suit in the head, neck and upper torso regions thereof;
- said hollow bodies having respective hollow interiors and being interconnected so as to cause said hollow interiors to communicate one with the other;
- breathing gas supply means connected to said hollow bodies for supplying breathing gas thereto;
- first pretensioned transition means interposed between said hollow bodies and said hollow chambers for permitting breathing gas to pass from said hollow bodies to said hollow chambers;
- second pretensioned transition means interposed between said hollow chambers and the interior of said helmet portion for permitting breathing gas to pass from said hollow chambers to said interior of said helmet portion; and,
- said first pretensioned transition means being configured to open in response to a first pressure of the breathing gas and said second pretensioned transition means being configured to open in response to a second pressure of the breathing gas, said first pressure being less than said second pressure.

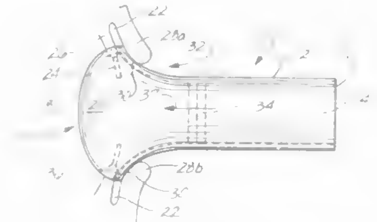
4,881,540
DEVICE AND METHOD FOR ASSISTING IN ARTIFICIAL RESPIRATION

Larry P. Vigilia, 341 Harvey Dr., #1, Glendale, Calif. 91206

Filed Feb. 5, 1988, Ser. No. 152,651

Int. Cl.⁴ A61M *16/00*

U.S. Cl. 128—202.28 7 Claims



1. A device to assist in providing artificial respiration to a person comprising:
- a conduit defining an airway to pass air into the mouth and lungs of the person, said conduit having a first end to be received in the person's mouth and an open second end to receive respiring air;
- a flange portion extending outwardly from the conduit to be received into the person's mouth between the gums and lips, said flange portion defining a surface adapted to seal the device against the inside surface of the lips about the mouth,
- means to induce a seal between the flange and the inside of a person's lips without conscious cooperation of the person, said means including means for urging the flange portion against the inside surface of the lips, and
- means for preventing reverse flow of air from said person through the conduit.

4,881,541
VAPORIZER FOR AN ANESTHETIC HAVING A VAPOR PRESSURE ABOUT ONE ATMOSPHERE

Edmond I. Eger, II, San Francisco, and Brynte H. Johnson, San Ramon, both of Calif., assignors to The Regents of the University of California, Oakland, Calif.

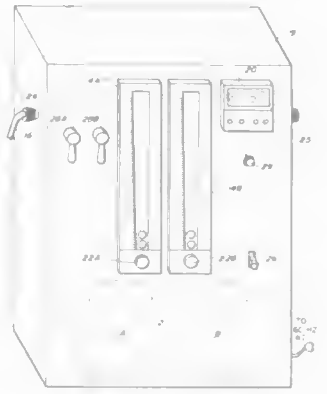
Filed Dec. 21, 1988, Ser. No. 287,721

Int. Cl.⁴ A61M *15/00*

U.S. Cl. 128—203.25 20 Claims

1. An apparatus for mixing a volatile anesthetic, having a vapor pressue of about 760 mm of mercury at about 20° C., into a effective anesthetic/diluent gas mixture to be supplied to a patient, useful to monitor the flow rate of volatilized anesthetic, the flow rate of diluent gas and the anesthetic/diluent

gas mixture ratio at an effective anesthetic concentration, which apparatus comprises:
- (a) a housing effective to thermally insulate the interior of the apparatus from the operating room environment;
- (b) a diluent gas supply;
- (c) an anesthetic gas supply located within the space created by the housing;
- (d) a mixing chamber within the space created by the housing which has
  - (i) an inlet conduit, for a diluent gas supply which is external to the housing and a flowmeter, within or without the space created by the housing between the diluent gas supply and the mixing chamber;
  - (ii) an inlet conduit, for an anesthetic gas supply which is located within the housing and a flowmeter both within the space created by the housing, between the anesthetic gas supply and the mixing chamber; and
  - (iii) an outlet conduit within the space created by the housing to deliver the anesthetic plus diluent gas mixture to the patient;
- (e) at least one heating means to maintain the constant temperature of the components within the space created by the housing of between about 30° and 50° C. within plus or minus 1° C., and
- (f) at least one sensing means within the space created by the housing to accurately monitor and maintain the internal temperature of the space enclosed by the housing.



4,881,542
TUBULAR FLEXIBLE PROBE FOR INTRODUCTION INTO THE TRACHEA AND, RESPECTIVELY, INTO THE BRONCHIAL SYSTEM

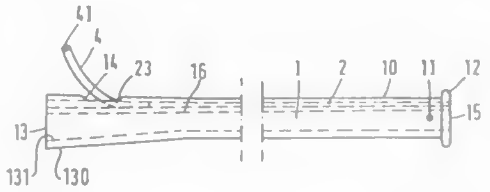
Christoph Schmidt, Am Kumpel 12, 5300 Bonn 1; Rudolf Schon, Im Spichelsfeld 34, 5205 St. Augustin, and Jurgen Rucs, Rosental 32, 5300 Bonn 1, all of Fed. Rep. of Germany

Filed Mar. 18, 1987, Ser. No. 27,432

Claims priority, application Fed. Rep. of Germany, Mar. 18, 1986, 3608943; PCT Int'l Appl., Jul. 10, 1986, DE86/00283

Int. Cl.⁴ A61M *16/00*

U.S. Cl. 128—207.14 14 Claims



1. A tubular flexible probe said probe comprising a unitary body means for introduction into the trachea and, respectively, into the bronchial system having a longitudinal axis, a proximal end, a distal end and an outer wall, said outer wall defining a cylindrical portion at the distal end extending to and integrally joined with a conically flared portion at the proximal end, said body means being made of a synthetic resin and containing a continuous first lumen means for suctioning and a continuous second lumen means for administration of fluid media having a smaller diameter than the first lumen means, said unitary body means further including an inner partition wall separating the first lumen means and said second lumen means the outer wall of the body means having a recess extending through said outer wall into the second lumen means, said recess being adjacent to the proximal end of the body means; an elastic connecting hose having two ends, one of the ends defining an inlet and the other end being inserted via said recess into the second lumen means and joined thereto; said first lumen means and said second lumen means extending from the proximal end of the body means to at least a zone adjacent to the distal end of the body means in side-by-side relationship and in parallel to the longitudinal axis of the body means and at least the first lumen means terminating at the distal end of the body means; and the exterior of the distal end of the body means having a round configured means whereby introduction of fluid media into the second lumen means and suctioning of fluids including secretions through the first lumen means can be effected alternatingly and whereby a high exit velocity of the fluid media introduced into the second lumen means is provided at the distal end of the body means; said probe having the following characteristic features:
- (a) the body means has a length of about 30–55 cm,
- (b) the outer wall of the body means has a diameter of about 5–8 mm,
- (c) the first lumen means has an inner diameter of about 3–4.5 mm,
- (d) the second lumen means has an inner diameter of about 1 to maximally 2 mm, and
- (e) attachment means at the inlet end of the connecting hose providing a fitting for a syringe.

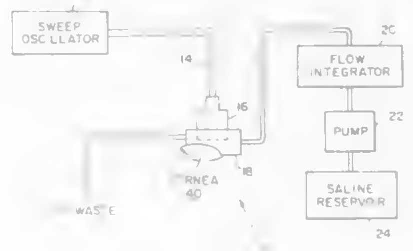
4,881,543
COMBINED MICROWAVE HEATING AND SURFACE COOLING OF THE CORNEA

B. Stuart Trembly, Hanover, N.H., and Ralph E. Crump, Turnbull, Conn., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Jun. 28, 1988, Ser. No. 212,506

Int. Cl.⁴ A61B *17/36;* A61N *5/02*

U.S. Cl. 128—303.1 16 Claims



1. An applicator for selectively heating portions of the eye comprising:
- (a) an antenna means for radiating microwave energy in a pattern to apply a portion of said energy at a predetermined depth within the cornea to elevate the temperature of the cornea tissue at said depth to shrink such tissue; and
- (b) cooling means for flowing fluid over the outer surface of the cornea to prevent excessive temperature elevation of the cornea surface tissue during radiation of said microwave energy.

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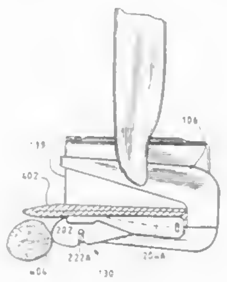
4,881,544

SURGICAL STAPLER APPARATUS WITH IMPROVED TISSUE SHIELD

David T. Green, Westport, and Ernest Aranyi, Easton, both of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.

Filed Dec. 19, 1988, Ser. No. 286,507
Int. Cl.⁴ A61B *17/04;* B31B *1/00*
U.S. Cl. 227—178 20 Claims



1. In an improved surgical stapler for substantially simultaneously applying a plurality of surgical fasteners to body tissue comprising a handle, a gripping lever, a frame with a U-shaped distal portion, an anvil assembly mounted at the distal leg of the U-shaped distal portion, a fastener holder pivotally connected to the anvil assembly adjacent one end of the anvil assembly thereby defining a gap between them and containing a plurality of surgical fasteners and optionally including a knife means for cutting body tissue, the stapler mechanism further including a fastener driving means for substantially simultaneously driving all of the fasteners from the fastener holder, and means for actuating the fastener holder, the improvement comprising:

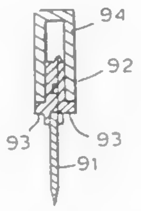
shield assembly means mounted on the sides of the anvil assembly for preventing extraneous body tissue from being operated upon the surgical stapler, said shield assembly means comprising a wedge member for separating the extraneous tissue from the body tissue to be fastened and two shutter blades acting in cooperation with the wedge member for deflecting the extraneous tissue from entering the gap between the anvil assembly and the fastener holder.

4,881,545

SURGICAL FASTENER CARTRIDGE WITH IMPROVED BODY TISSUE CUTTING KNIFE ASSEMBLY

Jack L. Isaacs, Trumbull, Conn., and Boris Zvenyatsky, Bronx, N.Y., assignors to United States Surgical Corporation, Norwalk, Conn.

Filed Dec. 8, 1988, Ser. No. 281,552
Int. Cl.⁴ A61B *17/04*
U.S. Cl. 227—178 10 Claims



1. In a surgical fastener cartridge which is adapted for use with an actuator apparatus having a rigid frame and a generally U-shaped protion for receiving the fastener cartridge, the actuator apparatus actuating the fastener cartridge to apply substantially parallel rows of fasteners to the tissue on both sides of a line of incision formed by a body tissue cutting knife assembly included within the fastener cartridge, said fastener cartridge possessing:

(a) a fastener holder containing a quantity of fasteners, the fasteners being driven, upon actuation of the fastener cartridge, through substantially parallel rows of apertures defined upon a fastener ejecting surface of the fastener holder;

(b) an anvil having a surface opposed to the fastener ejecting surface of the fastener holder and, upon actuation of the fastener cartridge, cooperating therewith to apply substantially parallel rows of fasteners to body tissue positioned between thef astener holder and anvil;

(c) means for driving the fasteners through the apertures upon actuation of the fastener cartridge;

(d) a tissue cutting knife assembly including (i) a knife element having an upper non-cutting edge and a lower cutting edge, (ii) a knife holder engaging the upper edge of the knife element and (iii) a knife pusher enclosing the knife holder, the cutting edge of the knife element being recessed within the fastener holder in the non-actuated condition of the fastener cartridge and, upon actuation of the fastener cartridge, extending beyond a slot formed between the rows of apertures; and,

(e) means for driving the cutting edge of the knife assembly through the slot upon actuation of the fastener cartridge,

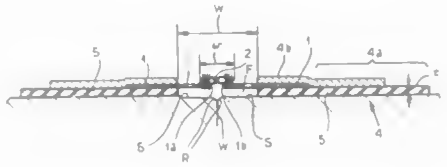
the improvement which comprises a knife holder having two opposed sides defining at their lower sections a groove therebetween, the knife element being received into, and held in permanent and irreversible locking engagement with, the groove.

4,881,546

WOUND-CLOSURE DEVICE AND METHOD

Hans-Jürgen Kaessmann, Norden, Fed. Rep. of Germany, assignor to Opti-Patents-, Forschungs-und Fabrikations-AG, Riedern-Allmeind, Switzerland

Filed Dec. 16, 1987, Ser. No. 133,554
Claims priority, application Fed. Rep. of Germany, Dec. 16, 1986, 3642892; Feb. 28, 1987, 3706599
Int. Cl.⁴ A61B *17/08, 17/04;* A44B *19/00*
U.S. Cl. 128—335 25 Claims



1. A device for closing a wound in the body of a subject, especially a linear surgical incision, comprising:

a pair of low-extensibility garment-type flexible textile support tapes having juxtaposed inner edges;

respective continuous flexible garment-type slide-fastener coupling elements affixed to said tapes along said edges and having mutually interdigitatable coupling heads composed of polyester or polyamide and compression and buckling resistant when coupled together;

a slider shiftable along said coupling elements for selectively interdigitating the coupling heads of said coupling elements to couple said elements together and separating said coupling elements;

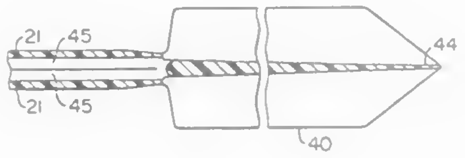
a respective spacer strip fixed on a surface of each tape, said surface facing toward said body and said strip spaced from the respective coupling element for holding said coupling elements away from said wound; and

means for adhesively bonding said tapes to said body on opposite sides of said wound with said spacer strips interposed between said tapes and said body, said means including an adhesive layer having a hypoallergenic adhesive facing toward and contacting said body, and at least one adhesive strip overlapping each of said tapes and having a portion projecting beyond an outer edge of the respective tape opposite the respective inner edge, the widths of said adhesive strips including the projecting portions thereof being at least sufficient to enable the bond between said tapes and said body to withstand the wound-closing force between opposite sides of the wound.

4,881,547

ANGIOPLASTY DILITATION BALLOON CATHETER

John W. Danforth, 875 25th Ave., San Francisco, Calif. 94121
Continuation-in-part of Ser. No. 91,689, Aug. 31, 1987, abandoned. This application Sep. 1, 1988, Ser. No. 239,061
Int. Cl.⁴ A61M *29/02*
U.S. Cl. 128—344 33 Claims



1. A catheter comprising:

a guidewire extending from a proximal end to a distal end;

an inflatable dilitation balloon having a wall defining the interior of the balloon and with at least a portion of said balloon wrapped around a portion of the guidewire proximate the distal end of the guidewire without any portion of said guidewire being in said interior of said balloon; and

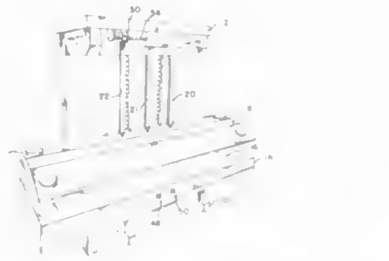
means for inflating the balloon.

4,881,548

TANNING BED TOP COVER ACTUATOR

Donald D. Kramer, Yakima, Wash., assignor to Circle K Enterprises, Inc., Yakima, Wash.

Filed Feb. 10, 1987, Ser. No. 12,844
Int. Cl.⁴ A61N *5/06*
U.S. Cl. 128—376 7 Claims



1. A tanning bed and an apparatus for supporting, raising and lowering a top cover of said tanning bed, comprising:

a frame having an upper support structure supporting a top member;

a bottom member on which a user reclines while in said tanning bed, said bottom member having a plurality of ultraviolet lights and being connected to said frame and located directly below said top member;

a rotatable axle coupled to said frame at an upper region;

a motor coupled to said axle for rotating said axle to lower or raise said top member;

a plurality of reels attached to said axle said plurality of reels including a plurality of reels fixedly attached to said axle and a variable position reel;

a plurality of flexible first support straps coupled to said fixed reels at one end thereof and to said top member at another end thereof, all of said first support straps being the same length;

a flexible second support strap coupled at one end thereof to said variable position reel means, said variable position reel means capable of being fixed to said axle at a plurality of angular positions and to said top member at another end thereof, said second support strap being of a length longer than said first support straps, said first and second support straps being of such a length that if fully extended from said axle and coupled to said top member, permitting said top member to be in the lowest possible position, said top member is positioned a predetermined distance above said bottom member, said predetermined distance being greater than the expected size of a user's body when said user is reclined on said bottom member; and

a locking member means for locking said variable position reel means in a desired fixed position on said axle, said second support strap being coupled to said variable position reel.

4,881,549

APPARATUS AND METHOD FOR OBTAINING ULTRASONIC BACKCATTER MEASUREMENT FROM TISSUE

Theodore L. Rhyne, Whitefish Bay, Wis., assignor to Marquette Electronics, Milwaukee, Wis.
Continuation of Ser. No. 55,732, May 29, 1987, abandoned. This application Jul. 14, 1988, Ser. No. 219,895
Int. Cl.⁴ A61B *8/00*
U.S. Cl. 128—660.07 60 Claims

1. Apparatus for obtaining an optimal measurement of the absolute magnitude of the ultrasonic backscatter from a selected tissue region in a body of tissue, the tissue of the region forming distributed, unresolved ultrasonic reflectors, said apparatus being couplable to means for applying a transmitted ultrasonic signal to the body exteriorly thereof and for receiving a signal having spectral components of frequency at the exterior of the body, said received signal including the backscatter signal from the tissue region, said apparatus comprising:

means for signal processing the backscatter signal form the region for compensating the backscatter signal for the frequency spectrum alterations contained in the backscatter signal resulting from the frequency response characteristics of the apparatus and the signal transmitting/receiving means, the bulk tissue loss, and the tissue of the region to provide an output in which each spectral component is equally weighted; and

means coupled to said signal processing means for determining the power of the signal processing means output and providing an output of said power determining means being indicative of the absolute magnitude of the ultrasonic backscatter from the tissue of the region.

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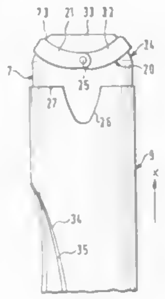
4,881,550

MEDICAL INSTRUMENT

Lutz Kothe, Bodmaner Str. 17, D-7760 Radolfzell 14, Fed. Rep. of Germany
Filed Feb. 16, 1988, Ser. No. 155,917
Claims priority, application Fed. Rep. of Germany, Feb. 18, 1987, 8702446[U]
Int. Cl.⁴ A61B *17/32*
U.S. Cl. 128—752 21 Claims

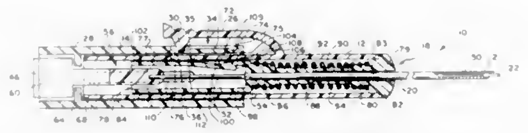


1. A medical instrument with cutting forceps for taking tissue samples and removing elongated body elements, such as nerve or vein portions or the like, which comprises: an outer tube; an inner tube inserted in said outer tube, with one of said tubes being axially displaceable relative to the other and with one of said tubes having a terminal edge with depressions; cutting forceps affixed to the other of said tubes, said cutting forceps having two cutting blades with cutting edges and common pivots affixed to the other of said tubes, wherein the closing movement of said forceps is caused by the depression acting upon said cutting forceps when said tubes are axially moved relative to each other, and wherein said pivots are introduced into said depressions on closing the cutting edges.

4,881,551

SOFT TISSUE CORE BIOPSY INSTRUMENT

Glenn N. Taylor, Longmont, Colo., assignor to Hart Enterprises, Inc., Wyoming, Mich.
Filed Feb. 1, 1988, Ser. No. 150,984
Int. Cl.⁴ A61B *10/00*
U.S. Cl. 128—754 16 Claims



1. A soft tissue core biopsy instrument comprising: a proximal outer barrel member having a distal end and a proximal end;

a distal inner barrel member which is slidably received within said outer barrel member, which has a distal end and a proximal end and which has a stop in said distal end;

a cannula driver in said inner barrel member;

a cannula extending distally from said inner barrel member, being fixed to said cannula driver, and having a distal tip, said cannula driver being slidably received in and movable within said inner barrel member and said cannula extending a predetermined distance out of a distal end of said inner barrel member when the instrument is in ann at-rest condition;

a stylet having a distal end, a proximal end, and being removably received in said outer barrel, in said inner barrel, and in said cannula, said distal end having a biopsy sample receiving notch therein;

a stylet hub mounted to said proximal end of said stylet;

said stylet hub being removably attached to the proximal end of said proximal outer barrel member to enable multiple biopsies to be obtained with one insertion of said cannula, said stylet extending distally from said hub and within said cannula and having a distal tip portion (a) positioned within said cannula when the instrument is in an at-rest position and (b) extending distally of said distal tip of said cannula in position to capture a biopsy sample when the instrument is in a cocked condition;

biasing means within said inner barrel member between said stop and said cannula driver for biasing said cannula driver;

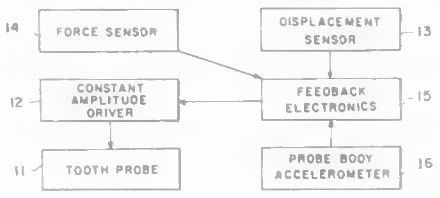
latching means associated with said cannula driver and said inner barrel member for latching said cannula driver in a proximally retracted cocked position within said outer barrel member and said inner barrel member against the biasing action of said biasing means;

and a trigger, associated with said latching means, for unlatching said latching means, said trigger, upon being actuated for unlatching of said latching means, allowing said biasing means to quickly return said cannula driver and said cannula to said distally extending position thereof and over said stylet distal tip portion.

4,881,552

TOOTH STABILITY MONITOR

Joseph S. Heyman, Williamsburg, Va., assignor to Measurement Resources Inc., Newport News, Va.
Filed Jan. 20, 1988, Ser. No. 146,288
Int. Cl.⁴ A61B *5/10*
U.S. Cl. 128—774 6 Claims



1. A tooth stability monitor comprising:

means for sinusoidally moving the tooth under investigation at a small constant amplitude comprising a hand held tooth probe including a probe tip mounted in a probe mount for making contact with the tooth, a hand held probe body, and means for sinusoidally moving said probe mount relative to said hand held probe body;

means for generating a first electrical signal representing the resulting displacement of the tooth;

means for generating a second electrical signal representing the force applied to said tooth to produce the movement of the tooth;

means for generating a third electrical signal proportional to vibrations of said hand held probe body; and

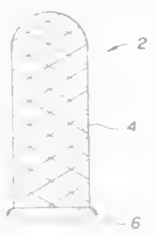
means receiving said first, second and third electrical signals for modifying said first and second electrical signals to remove the effects of the hand held probe body vibrations, and for computing the tooth modulus using the modified first and second electrical signals.

4,881,553

MESH REINFORCED CONDOM

Richard A. Grossman, 1620 Forest Ave., Durango, Colo. 81301
Filed Nov. 20, 1987, Ser. No. 123,587
Int. Cl.⁴ A61F *13/00*
U.S. Cl. 128—844 18 Claims

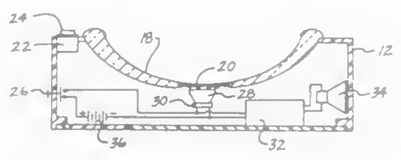
1. An elastic mesh, in the size and shape of a condom, which is useful for the production of a latex condom wherein all walls of the condom are reinforced, said mesh having an elasticity about equal to the elasticity of latex of a condom and said mesh being open at its lower end and closed at its upper end.



4,881,554

SMOKING HABIT BREAKER

Jackson Obasogie, 1251 NE. 108th St., #302, Miami, Fla. 33161
Filed Nov. 16, 1987, Ser. No. 121,278
Int. Cl.⁴ A24F *19/10*
U.S. Cl. 137—270 7 Claims



1. A new and improved ashtray for helping smokers to break the smoking habit, comprising;

a hollows housing having an interior;

a concave ash receiving depression formed in a top surface of said housing;

a smoke passage centrally disposed in said depression, said passage communicating with the interior of said housing;

a smoke tunnel in said housing interior in registry with said smoke passage;

a smoke detector in said housing interior;

a fan in said tunnel for drawing smoke to said smoke detector;

auido means for playing a recorded audio anti-smoking verbal message in response to detection of smoke by said smoke detector;

a digital counter operatively connected for counting the number of activations of said smoke detector;

battery means operatively connected for powering said fan, said smoke detector, said audio means and said counter; and

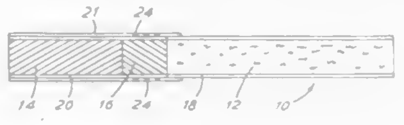
a switch for selectively connecting said disconnecting said battery means.

4,881,555

SMOKING ARTICLES

Anthony J. N. Bolt, and John S. Sadd, both of Bristol, England, assignors to Imperial Tobacco Limited, Bristol, England
Filed Sep. 16, 1988, Ser. No. 245,646
Claims priority, application United Kingdom, Sep. 22, 1987, 8722309
Int. Cl.⁴ A24D *1/00, 1/04*
U.S. Cl. 131—335 12 Claims

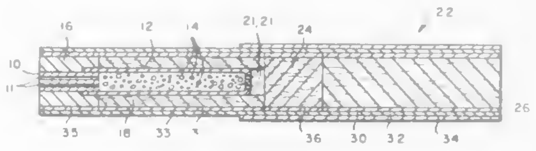
1. A smoking article comprising a rod of smoking material, a heat sensitive aroma-release element disposed adjacent an end of the smoking material, said heat sensitive aroma release element releasing the aroma into the ambient atmosphere when the burning smoking material reaches the vicinity of the element so that the aroma is relased only after substantially all the smoking material is combusted, said heat sensitive aroma release element being combustible and adapted to smoulder under the influence of heat from the burning smoking material.



4,881,556

LOW CO SMOKING ARTICLE

Jack F. Clearman, Blakely, Ga.; Olivia P. Furin; Joseph J. Chion, both of Clemmons, N.C., and William C. Squires, Winston-Salem, N.C., assignors to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.
Filed Jun. 6, 1988, Ser. No. 203,392
Int. Cl.⁴ A24D *1/00*
U.S. Cl. 131—359 17 Claims



1. A smoking article comprising:

(a) a carbonaceous fuel element having a plurality of passageways therein, said fuel element having a diameter of less than about 7 mm and a length of less than about 7 mm; and

(b) a physically separate aerosol generating means including an aerosol forming material;

said smoking article providing no more than about 10 mg of carbon monoxide over 8 puffs under smoking conditions consisting of 35 ml puff volumes of two seconds duration separated by 58 seconds of smolder.

4,881,557

SMOKING ARTICLE WRAPPER AND METHOD OF MAKING SAME

Richard H. Martin, Brevard, N.C., assignor to P. H. Glatfelter Company, Spring Grove, Pa.
Filed Apr. 20, 1988, Ser. No. 183,979
Int. Cl.⁴ A24D *1/02*
U.S. Cl. 131—365 36 Claims

1. A wrapper for smoking articles such as cigarettes, cigars and the like comprising a cellulosic fiber sheet containing, as filler, freshly precipitated magnesium hydroxide and particulate magnesium hydroxide applied to the fibers of the sheet.

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4,881,558
ROTATABLE LIQUID HAIR TREATMENT MEDIUM APPLICATOR

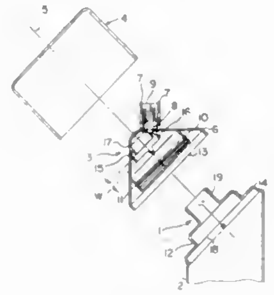
Detlef Hollenberg, Hilden; Hans Schneider, Schwalmtal, and Georg Weihrauch, Wald-Michelbach, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

Filed Jan. 26, 1988, Ser. No. 148,410

Claims priority, application Fed. Rep. of Germany, Jan. 26, 1987, 3702167

Int. Cl.⁴ A45D *24/22*

U.S. Cl. 132—112 6 Claims



1. A rotatable liquid hair treatment medium applicator comprising:

a container for a liquid hair treatment medium, which is generally cylindrical and capable of being held in one hand, having an opening on its top extending outward perpendicularly from a container distal face, the plane of which face is angularly disposed with respect to the vertical axis of the container, which opening comprises a plurality of concentric rising annular steps of decreasing diameter;

an applicator head rotatably mounted upon the container opening concentrically with the container opening central axis, having a generally conical outer surface concentric with the container opening central axis, and one or more descending interior cylindrical appendages concentric with the opening central axis and adapted to complement and envelope one or more of said annular steps;

applicator mouth means projecting from the applicator head at an angle to the opening central axis and co-rotatable therewith from a closed first position in vertical alignment with the vertical axis of the container to an open second position in angular alignment with the vertical axis and farther to an open third position again in vertical alignment with the vertical axis;

passage means communicating between the applicator mouth means and the interior of the container, so that hair treatment medium may flow from the container through its opening, through the applicator head, and out the applicator mouth means, when the applicator head is an open position;

sealing means for preventing the flow of medium when the applicator head is in its first position; and

said distal annular step of said container opening consisting of a nipple whose outer edge moveably biases in an axial direction against the inside of the innermost cylindrical appendage of the applicator head upon rotation of said applicator head, so that fluid flow between the nipple and the cylindrical appendage is effectively controlled.

4,881,559
HAIR CURLING SYSTEM

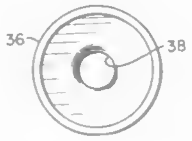
Lai Kin, Kowloon, Hong Kong, assignor to Windmere Corporation, Miami Lakes, Fla.

Continuation of Ser. No. 503,181, Jun. 10, 1983, Pat. No. 4,564,033. This application Nov. 24, 1986, Ser. No. 934,081

The portion of the term of this patent subsequent to Nov. 25, 2003, has been disclaimed.

Int. Cl.⁴ A45D *2/02*

U.S. Cl. 132—226 30 Claims



1. A hair curling roller system comprising:

a housing;

a plurality of post members arranged within said housing and being capable of generating heat in hair rollers placed on said post members, all of said post members of said system being of substantially the same diameter;

a plurality of rollers for curling hair, each of said rollers having an inner core means with an axially extending inner cavity and an outer surface for contact with hair to be rolled;

a first group of said plurality of rollers having a first outer diameter along their center section of their outer surface and a second group of said plurality of rollers having a second outer diameter along the center section of their outer surface with said second outer diameter being larger than said first outer diameter, each of said rollers of both of said groups of rollers having said axially extending inner cavity extending from an opening at one end of said roller and said inner cavities of all of said rollers having substantially the same inner diameter, each of said rollers being capable of being arranged on one of said post members such that said post member extends into said inner cavity of the respective said roller;

said core means of each of said rollers of said second group of rollers including heat transfer means for facilitating the transfer of heat from its said inner cavity to its said outer surface so that when both said groups of said rollers are positioned on said post members and are heated at approximately equal rates the level of heat on the outer surface of all of said rollers is approximately the same.

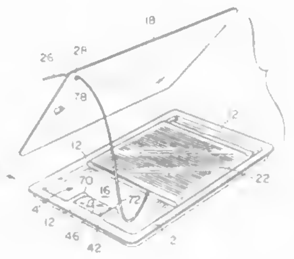
4,881,560
DISPENSER FOR DENTAL FLOSS

Eric Blank, 81 New Bridge Rd., Sudbury, Mass. 01776, and Robert A. Endelson, 330 E. 79th St., New York, N.Y. 10021

Filed Jun. 9, 1988, Ser. No. 204,491

Int. Cl.⁴ A61C *15/00*

U.S. Cl. 132—324 13 Claims



5. A thin dental floss dispenser in a credit card format, said dispenser comprising:

a base panel provided with a peripheral ridge to define a shallow well with a substantially flat bottom,

a flattened supply coil of dental floss located in the well,

a matching face panel marginally bonded to the ridge,

means to permit the leading end of the coil to be pulled out of the well,

a blade with which to sever the floss,

the blade being formed as a tab projecting from a plate,

wall members projecting from the well bottom and surrounding at least a portion of the plate to locate the blade inwardly of the peripheral ridge with the tab projecting through the face panel.

4,881,561
PROCESS AND DEVICE FOR THE FULLY AUTOMATIC CLEANING OF SPRAY GUNS FOULED WITH PAINT OR VARNISH

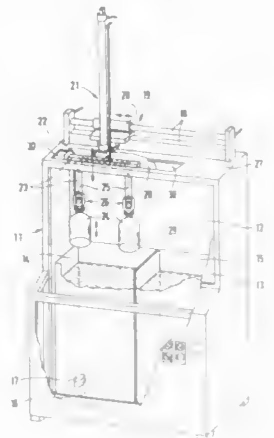
Gottlob Schwarzwälder, Max-Eyth-Strasse 15, 7488 Wolfschlugen, Fed. Rep. of Germany

Filed Sep. 7, 1988, Ser. No. 241,187

Claims priority, application Fed. Rep. of Germany, Sep. 14, 1987, 3730828; Oct. 9, 1987, 3734267

Int. Cl.⁴ B08B *3/10*

U.S. Cl. 134—76 11 Claims



1. A device for the fully automatic cleaning of spray guns fouled with paint or varnish, characterized by the combination of the following features:

(a) two preferably closely juxtaposed containers (**14, 15**) open at the top and containing a cleaning fluid on the one hand and a rinsing fluid on the other are disposed in a cabinet-like housing (**11**) with a closable loading and removal opening (**12**);

(b) at least one sonic head (**16**) emitting ultrasonic waves is disposed on the one side wall and/or on the bottom at least of the container (**14**) containing the cleaning fluid;

(c) a vertically reciprocal holder (**22; 49**) is mounted above the containers (**14, 15**), with preferably adjustable holding elements (**23, 25, 26; 50–52; 61–63, 65**) for hanging on or supporting the spray guns (**24**) being disposed on said holder;

(d) the vertically reciprocal holder (**22; 49**) is connected to a motor-driven elevating mechanism (**21; 43**) mounted on a motor-driven carriage (**20; 44**) displacing said elevating mechanism horizontally back and forth;

(e) associated with the containers (**14, 15**) is a circulating and filter means moving the fluid contained in said containers;

(f) the conduit (**78, 79**) feeding the fluid back into the containers (**14, 15**) is connected to one or more jet pipes (**53, 53'**) provided with jet nozzles (**54, 59**), said jet pipes projecting into the open paint reservoir (**24*a***) of the spray gun (**24**) immersed in the cleaning and/or rinsing fluid, and to one or more flexible connecting hoses connectable to the paint inlet and/or, if applicable, also to the compressed air inlet of the spray guns (**24**).

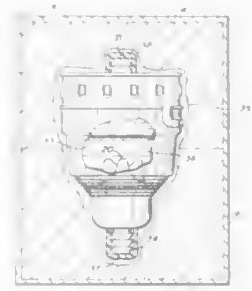
4,881,562
HEART VALVE AND XENOGRAFT WASHING SYSTEM

Diana R. Wright, Conifer, Colo., and David W. Schlerf, Martinez, Calif., assignors to Pioneering Technologies, Inc., Wheat Ridge, Colo.

Division of Ser. No. 167,707, Mar. 14, 1988, Pat. No. 4,838,288. This application May 1, 1989, Ser. No. 345,180

Int. Cl.⁴ B08B *3/04, 11/02*

U.S. Cl. 134—110 4 Claims



1. A packaged prosthesis comprising, in combination, a wash chamber comprising top and bottom portions removeably secured together in fluid tight sealed contact, a prosthesis in the wash chamber, the wash chamber comprising means for supporting the prosthesis and, in use, for directing flow of fluid over all surfaces thereof, fluid inlet means on the top, fluid outlet means on the bottom, removeable seals on the respective fluid inlet and outlet means, sterile preservative fluid in the chamber for maintaining the sterility and physical or chemical condition, or both, of the prosthesis contained therein, a protective wrapper entirely enclosing the wash chamber, and means for protecting the chamber from shock and damage enclosing the chamber, the wash chamber being so constructed and configured as to be connectable with a source of sterile wash solution to thereby cause the wash solution flow over the prosthesis for removing chemicals therefrom or treating the prosthesis, or both, all without breaching the sterility of the wash chamber.

4,881,563
PAINT COLOR CHANGE SYSTEM

Robert L. Christian, Livonia, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Sep. 5, 1986, Ser. No. 904,167

Int. Cl.⁴ B08B *3/02*

U.S. Cl. 134—166 C 2 Claims

1. A paint color change system for supplying paint to an applicator means comprising, individual sources for at least two paints, a cleaning fluid, high pressure air and low pressure air, manifold means having a common passage for connecting said individual fluid sources to a paint supply line adapted to feed paint to said applicator means, said sources of at least two paints being connected to said common passage downstream of the connections of said source of cleaning fluid and said source of low pressure air to said common passage, said source of high pressure air being connected to said common passage upstream of the connection of said source of cleaning fluid with said common passage, valve means for selectively coupling said individual sources to said manifold, and a controller connected to said valve means and controlling operation thereof so that, after one of said sources of two paints is connected to said applicator means, the low pressure air is connected to the common passage and said supply line to remove essentially all of said one of said two paints followed by the simultaneous introduction into said supply line and said common passage of

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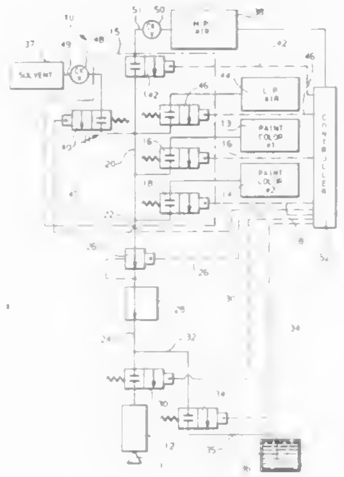
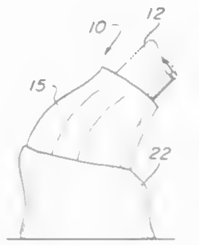
a metered flow of said cleaning fluid and said high pressure air so when the high pressure air flows by the connection of said common passage with said source of cleaning fluid the cleaning fluid is atomized into fine droplets which are propelled by the high velocity flow of said high pressure air against the residue paint coating the interior walls of said common passage and said supply line to effect removal of said residue paint.



4,881,564
CRUTCH TIP

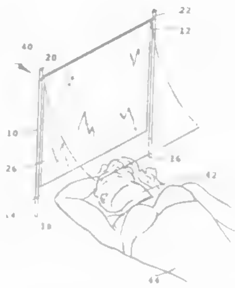
Thomas Fetterman, 1122 Green St., Philadelphia, Pa. 19123
Filed Oct. 22, 1987, Ser. No. 111,183
Int. Cl.⁴ A45B *9/04*
U.S. Cl. 135—82 7 Claims



1. A crutch tip for installation on the lower end of a crutch shaft comprising:
- an upwardly open receiver for receiving the lower end of the crutch shaft, the receiver including a lower end;
- an enlarged skirt extending about and depending downwardly from the lower end of the receiver, the skirt including a shoulder with an underside extending radially outwardly from and circumferentially about the lower end of the receiver and a peripheral wall extending downwardly from the outer extremity of the shoulder;
- a generally rigid plate within the skirt and extending across and secured to the lower end of the receiver and the underside of the shoulder and into engagement with the peripheral wall for receiving and spreading forces imparted by the crutch shaft;
- a yieldable shock absorption pad in the skirt and extending downwardly from a lower surface of the plate;
- a flexible tread piece in the skirt extending downwardly from a lower surface of the shock absorption pad, the plate, the shock absorption pad and the tread piece cooperating with the receiver and the skirt for damping and reducing reaction forces from the crutch tip to a user, the tread piece including a plurality of dependent projections for frictional engagement with a supporting surface, said receiver and said skirt being integrally fabricated of a rubber-like material to permit canting of a received crutch shaft at a substantial angle with the tread piece remaining in generally flat facing engagement with the supporting surface.

4,881,565
SUNSHADE

Alan S. Turk, Edgewater, Md.
Filed Aug. 25, 1988, Ser. No. 236,207
Int. Cl.⁴ E04H *15/00*
U.S. Cl. 135—101 5 Claims



1. A sunshade comprising a pair of rigid support members each having a lower end adapted to be inserted into the ground and an upper end, a substantially rigid cross member having opposed ends, means for releasably interconnecting the opposed ends of said cross member and the respective upper ends of said support members, a panel of flexible sunshading sheet material, and means for connecting an edge of said panel to said cross member along the length thereof such that when the latter is in its position of use connected to said support members and the lower ends thereof are inserted into the ground, said panel is freely supported by said cross member between said support members and out of engagement with any part thereof below said cross member so that when said support members with said cross member and panel connected thereto are disposed in a substantially vertical position across the path of wind said panel may be blown freely from its edge supported by said cross member towards a horizontal position to provide therebeneath an area shaded from the sun, said panel being solely supported by said cross member.

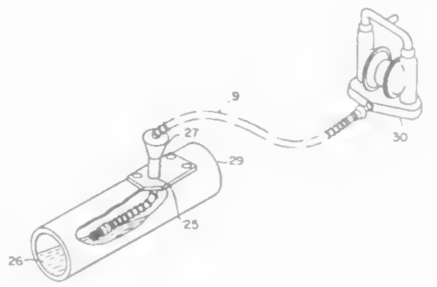
4,881,566
METHOD FOR REDUCING PRESSURE DROP IN THE TRANSPORTATION OF DRAG REDUCER

Sibrand A. Ubels, Waterloo, Belgium, and Steven L. Baxter, Ponca City, Okla., assignors to Conoco Inc., Ponca City, Okla.
Filed Oct. 11, 1988, Ser. No. 256,806
Int. Cl.⁴ F17D *1/16*
U.S. Cl. 137—13 13 Claims

1. A method for reducing the pressure drop in a conduit flowing a viscous drag reducing material which comprises injecting into the conduit at the periphery thereof a liquid material of lower viscosity substantially immiscible with the viscous drag reducing material in a sufficient amount to form a flowing layer of such liquid material on the walls of the conduit.

4,881,567
LIQUID REMOVAL SYSTEM

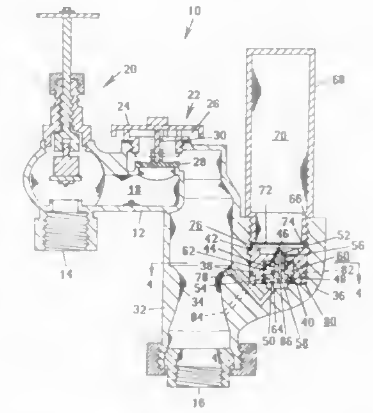
Gerald Rockower, Brooklyn, N.Y., assignor to Brooklyn Union Gas, Brooklyn, N.Y.
Filed Dec. 2, 1987, Ser. No. 127,396
Int. Cl.⁴ F17T *1/00*
U.S. Cl. 137—203 41 Claims



1. A liquid removal apparatus for removing liquid from a container into which it has been inserted, said apparatus comprising:
- an elongate hollow flexible member for channelling the liquid as it is removed;
- stiffening means disposed within said flexible member for providing longitudinal rigidity to said flexible member, one end of said stiffening means being connected to one end of said flexible member; and
- a nose guide fixed to said one end of said flexible member, said nose guide including means for preventing debris from entering said flexible member.

4,881,568
IRRIGATION CHEMICAL DISPENSER

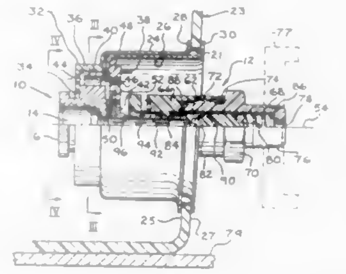
I-Chung Ho, 6958 Grovespring Dr., Rancho Palos Verdes, Calif. 90274
Filed Jul. 6, 1988, Ser. No. 215,741
Int. Cl.⁴ A01C *23/04;* **A01G** *25/06*
U.S. Cl. 137—268 14 Claims



1. An irrigation chemical dispenser comprising: a housing defining an inlet, an outlet, and a flow path extending from said inlet to said outlet for communicating a flow of water therebetween, said housing including a constricting portion intermediate of said inlet and said outlet whereat said flow path defines a venturi throat of minimum cross sectional flow area, an external boss portion of said housing adjacent said constriction portion defining a blind bore opening outwardly upon said housing, a chambered cartridge member for receiving therein a store of water-dispersable irrigation chemical removably and sealingly received in said bore, said cartridge member defining an opening from said chamber thereof within said housing bore, said cartridge member further carrying a penetrable diaphragm member closing said cartridge opening and cooperating with said housing to bound a first chamber within said bore, penetrating means for penetrating said diaphragm member and communicating said cartridge member chamber with said first chamber upon occurence of irrigation water flow in said flow path, and passage means for communicating water from said flow path to said cartridge member chamber and for communicating water mixed with said water-dispersable irrigation chemical to said flow path.

4,881,569
SELF-ALIGNING COUPLING

Paul J. E. Fournier, Jackson; Ernest F. Kulikowski, Marshall, and Alan R. Allread, Jackson, all of Mich., assignors to Aeroquip Corporation, Jackson, Mich.
Filed Nov. 7, 1988, Ser. No. 268,368
Int. Cl.⁴ F16L *5/00, 37/28*
U.S. Cl. 137—360 8 Claims



1. A coupling used to connect laboratory animal cages to a drinking water supply, comprising in combination, a female coupling part having an axial passage having an inner connection end and an open outer end and a spring biased valve located within the female axial passage axially moveable between open and closed positions, a male coupling part having an axial passage having an inner connection end and a probe having a free end to be received within said female outer end, first and second support members for supporting said male and female coupling parts, releasable connection means defined on said coupling parts for selectively coupling said parts placing said passages in fluid communication, said first support member attached to a fluid supply manifold, said second support member attached to the rear of a laboratory animal cage, each of said support members supporting an associated coupling part in a position whereby displacing said cage toward said first support member automatically couples said female and male parts coupling parts, said second support member comprising cup shaped male and female grommets, said cage having walls having inside and outside surfaces, said female grommet being received in said cage engaging said cage inside surface, said male grommet engaging said cage outside surface and protruding through said cage wall and received within said female grommet defining a recess, said male part having an annular shoulder engaging said male grommet and an inner end protruding through said grommets into said cage, a nut having mating means with said male inner end whereby tightening said nut compresses said grommets to said cage and supports said male probe within said female gromment recess.

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4,881,570
SEAL FOR VALVES

Helmut Ziebach, and Peter Lange, both of Lüdenscheid, Fed. Rep. of Germany, assignors to Flühs Drehtechnik GmbH, Lüdenscheid, Fed. Rep. of Germany

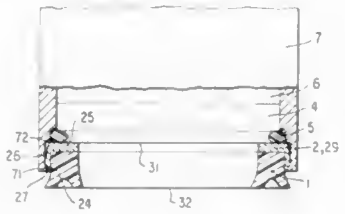
PCT No. PCT/DE87/00388, § 371 Date May 12, 1988, § 102(e) Date May 12, 1988, PCT Pub. No. WO88/02082, PCT Pub. Date Mar. 24, 1988

PCT Filed Aug. 29, 1987, Ser. No. 210,769

Claims priority, application Fed. Rep. of Germany, Sep. 12, 1986, 3631030; Mar. 5, 1987, 8703325[U]

Int. Cl.⁴ F16K *3/08*

U.S. Cl. 137—454.2 7 Claims



1. A valve and seal therefor comprising:

(a) a profiled ring having an external surface and an internal end face formed of a rubber elastic material;

(b) a supporting ring disposed about said profiled ring;

(c) said supporting ring being an unslotted spring ring having a cross section in the shape of a horizontal L, the rear portion of said L resting against the internal end face of said profiled ring and the base of said L embracing the external surface of said profiled ring;

(d) an external portion of said supporting ring projecting outwardly from the center of said ring beyond the external surface of said profiled ring, further including a sleeve, a ceramic inlet disc secured by said sleeve at an end face thereof, said profiled ring projecting beyond said end face, a ceramic control disc resting against said inlet disc at the side thereof distant from said end face, said unslotted spring ring being positioned in said sleeve between said profiled ring and said inlet disc,thė internal diameter of said spring ring being smaller than the external diameter of said inlet disc.

4,881,571
MODULATING PRESSURE OPERATED PILOT RELIEF VALVE

Raymond G. Reip, Indian Head Park, Ill., assignor to Dresser Industries, Inc., Dallas, Tex.

Continuation of Ser. No. 864,665, May 19, 1986, Pat. No. 4,791,955, which is a continuation of Ser. No. 534,594, Sep. 22, 1983, Pat. No. 4,615,356. This application Oct. 26, 1988, Ser. No. 263,173

The portion of the term of this patent subsequent to Oct. 7, 2003, has been disclaimed.

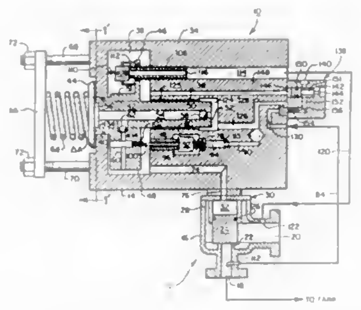
Int. Cl.⁴ G05D *16/00*

U.S. Cl. 137—488 14 Claims

9. A valve assembly, comprising:

a main valve including a main valve body with an inlet and an outlet, a chamber, a closure member reciprocally mounted in said chamber sealingly engaging said inlet in the valve closed position, a head volume in said chamber above said closure member,

a pilot valve including a body defining first and second pilot chambers, means isolating said first pilot chamber from said second pilot chamber, a differential pilot piston reciprocally mounted in said first and second pilot chambers, said pilot piston including at least one surface in said first pilot chamber with a first side of larger diameter than a second side, first means for communicating said first pilot chamber and said head volume, second means for communicating said inlet of said main valve with said first pilot chamber, said second means including a first valve actuable by said pilot piston for controlling fluid flow into said first pilot chamber, third means for communicating said outlet of said main valve with said first pilot chamber, said third means including a second valve actuable by said pilot prison for controlling fluid flow out of said first piston chamber.



4,881,572
SYSTEM FOR CONTROLLING AUTOMATICALLY THE SETTING OF A DAMPER IN A VENTILATION DUCT

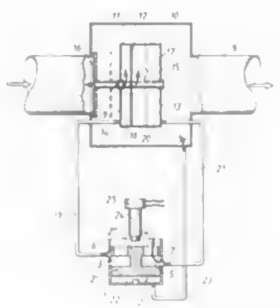
Lars-Erik Bengtsson, Saltsjö Duvnäs, Sweden, assignor to Stifab AB, Tomelilla, Sweden

Filed Apr. 1, 1988, Ser. No. 176,641

Claims priority, application Sweden, Apr. 3, 1987, 8701398

Int. Cl.⁴ G05D *16/00*

U.S. Cl. 137—488 2 Claims



1. A control system for setting the position of a damper in a ventilation duct and maintaining a substantially constant pressure at a selected region downstream of said damper in the ventilation duct, said system comprising a double acting pilot valve having:

a vertically oriented cylinder and housing;

a readily movable, pressure-responsive piston device which rides on air in the cylinder and which together with the cylinder defines a pressure space, which communicates directly with the ventilation duct at said selected region;

said cylinder having two control orifices being disposed for being selectively obstructed by said piston device;

said pressure responsive piston device being disposed for vertical movement in said vertically oriented cylinder, said piston having two surfaces for selectively obstructing said two control orifices;

one of said two control orifices being disposed in said vertically oriented cylinder for being obstructed by said pressure responsive piston device on upward movement thereof; and

the other of said two control orifices being disposed in said vertically oriented cylinder for being obstructed by said pressure responsive piston device on downward movement thereof;

said two control orifices comprising a first and second control orifice;

said system further comprising drive means being connected to said damper for driving said damper and thus for opening and closing said damper;

said drive means being for adjusting the damper setting in response to movement of said pressure-responsive piston device, such as to maintain said pressure, wherein the pressure-responsive device has a mass which corresponds to a selected pressure at said region in the duct, and is intended when in a floating position in the cylinder to balance the force acting on the side of said device which faces the pressure space with said selected pressure;

said drive means comprising:

a double acting drive cylinder;

a double acting drive piston having two sides being disposed in said double acting drive cylinder;

a first and a second chamber being diposed one on each side of said double acting drive piston;

means for admitting a gas under pressure to each of said chambers on either side of said drive piston;

a first conduit connected between said first of said control orifices of said double acting pilot valve and second of said two chambers of said drive piston;

a second conduit connected between said second of said control orifices of said double acting pilot valve and said second of said two chambers of said drive piston;

said first and said second conduits being connected for adjusting the damper to a position in which the pilot valve piston device is returned to a balance position thereof;

the piston of the drive means and the damper being adjustable, in dependence on a position of imbalance of said piston device of said pilot valve by pressure control in the chambers to adjust the damper to a position in which the pilot piston device is returned to a balance position determined by the mass of said pilot piston device.

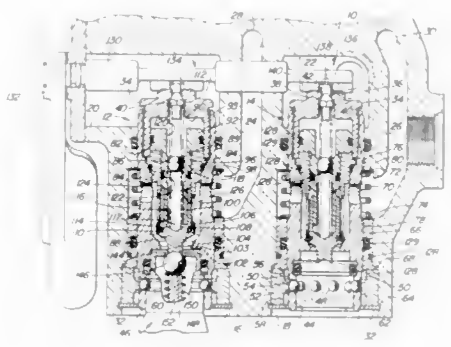
4,881,573
FEMALE HYDRAULIC COUPLER WITH PUSH-CONNECT AND LEVER DISCONNECT

Douglas M. Durant, Waterloo; Uwe H. Kugler, Cedar Falls; Bennie J. Vaughn, Cedar Falls; Douglas W. Nordquist, Cedar Falls, and Larry M. Delfs, Cedar Falls, all of Iowa, assignors to Deere & Company, Moline, Ill.

Filed Jan. 31, 1989, Ser. No. 304,699

Int. Cl.⁴ F16L *29/00*

U.S. Cl. 137—614.04 14 Claims



1. A female hydraulic coupler comprising:

(a) a housing having formed therein a stepped bore, a sump chamber at one end of said stepped bore and a fluid passage connecting to said stepped bore;

(b) a hollow substantially cylindrical receptacle slidably mounted within said stepped bore, said receptacle having a sump end at least adjacent to said sump chamber and a receiving end away from said sump chamber, and further having:

  (1) a receiving bore formed at said receiving end of said receptacle for receiving a male coupler, with a plurality of lock ball bores spaced around said receiving bore and extending substantially radially through said receptacle;

  (2) a plurality of lock balls, each being disposed in a corresponding one of said lock ball bores;

  (3) a main valve seat formed on an inner surface of said receptacle adjacent to said receiving bore; and

  (4) first and second shoulders formed in the outer circumference of said receptacle;

(c) an end cap sealingly closing said sump end of said receptacle, said end cap extending into said sump chamber of said housing;

(d) a piston slidably mounted within said end cap and said receptacle, said piston having:

  (1) a piston head slidably received within said end cap, said piston head, end cap and receptacle defining a piston chamber therebetween; and

  (2) a piston rod extending towards said receiving bore;

(e) piston fluid connection means for fluidly connecting said fluid passage formed in said housing with said piston chamber;

(f) a main poppet slidably mounted to said piston rod and sealable against said main valve seat to seal the receiving bore off from the remainder of the receptacle;

(g) spring means for biasing said main poppet towards said main valve seat;

(h) an annular control sleeve surrounding the receiving bore end of said receptacle and having a land formed on the inner surface thereof with a recess formed on either side of said land, said control sleeve forcing said lock balls into a position extending inside said receiving bore when said lock balls are positioned adjacent said land and allowing said lock balls to move to a position completely outside of said receiving bore when said lock balls are positioned adjacent either of said recesses;

(i) first and second washers surrounding said receptacle, each washer being engagaeable with one of said shoulders formed on said receptacle exterior and with one of a corresponding shoulder formed in said stepped bore in said housing and said control sleeve;

(j) a receptacle spring surrounding said receptacle and compressed between said first and second washers;

(k) a cam shaft pivotally mounted in said housing adjacent said end cap and having an end cap cam surface thereon for engaging said end cap; and

(l) a lever connected to said cam shaft for rotating said cam shaft.

4,881,574
ENCLOSED ROTARY DISC AIR PULSER

A. L. Olson; Tom A. Batcheller, both of Idaho Falls; J. A. Rindfleisch, and John M. Morgan, both of Arco, all of Id., assignors to The United States of America as represented by the Department of Energy, Washington, D.C.

Filed Aug. 12, 1988, Ser. No. 231,427

Int. Cl.⁴ F16K *11/06*

U.S. Cl. 137—624.13 11 Claims

1. An enclosed rotary disc air pulser for controlling the flow of a non-lubricating source of air comprising:

a housing a first end plate with an inlet port, a second end plate with an exhaust port and a central section disposed between said end plates and having a pulse leg port;

and elongated shaft mounted in said housing and adapted for axial rotation therein;

first and second disc members, each said disc member being fixedly secured to said shaft within said housing in spaced relation to each other between said first and second end plates and on opposing sides of said pulse leg port so as to define an undivided chamber therebetween, said chamber being in communication with said pulse leg port, each said

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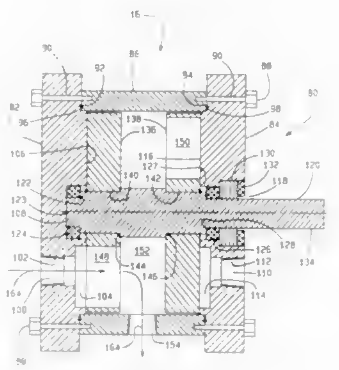
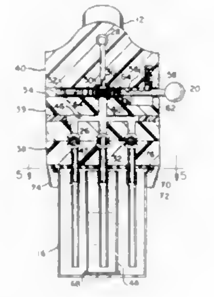
disc member having a substantially identical milled out portion defining a single opening and being positioned upon said shaft, said milled out portions being diametrically out of phase with each other so that as said shaft rotates, said disc members permit alternating cyclical communication of the non-lubricating source of air through said milled out portions and between said inlet port and said chamber and said exhaust port and said chamber.



4,881,575
SHOWER HEAD DISPENSING FIXTURE

Richard J. Smith, 715 Rose Ave., Pleasanton, Calif. 94566
Filed Sep. 12, 1988, Ser. No. 242,600
Int. Cl.^{4} F16K *19/00*
U.S. Cl. 137—889 13 Claims

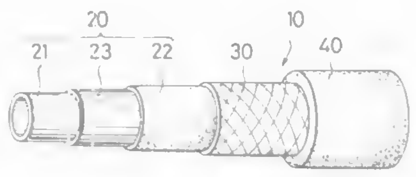


1. A personal shower fixture insertable between a shower water input pipe and a shower head for introducing selected fluids into the water flow to the shower head, said fixture comprising:

a housing having a water input pipe and output pipe;
a venturi between said input pipe and output pipe;
a plurality of fluid chambers;
a fluid conduit having a first end and a plurality of second end branches, each of said plurality of second end branches terminating in one of said plurality of chambers, the first end of said fluid conduit terminating in the throat of said venturi;
a manually operable on-off switch in each of said plurality of second end branches for selecting fluid from one or more of said plurality of fluid chambers to be drawn through said conduit into said venturi and into the water flow to the shower head;
said manually operable on-off switch comprising a valve rod slideable through a valve rod hole through said housing and normal to said conduit branch, said valve rod having an opening alignable with said conduit branch and having sealing means for preventing leakage of fluid between said rod and said valve rod hole; and
a manually operable flow regulator in said fluid conduit for controlling the amount of fluid drawn from said fluid chambers into said venturi.

4,881,576
HOSE FOR TRANSPORT OF REFRIGERANT FLUIDS AND FUEL OILS

Tetsu Kitami, Hadano, and Jun Mito, Naka, both of Japan, assignors to The Yokohama Rubber Co., Ltd., Tokyo, Japan
Filed Dec. 11, 1987, Ser. No. 131,670
Claims priority, application Japan, Dec. 16, 1986, 61-297720
The portion of the term of this patent subsequent to Nov. 14, 2006, has been disclaimed.
Int. Cl.^{4} F16L *9/12*
U.S. Cl. 138—125 5 Claims

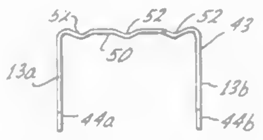


1. A hose for use in transporting refrigerant fluids or fuel oils which hose comprises:

(a) a core tube comprising an inner peripheral wall, an intermediate peripheral wall and an outer peripheral wall, said inner wall being formed of a first resin which is predominately nylon 11 or nylon 12, or a combination thereof; said intermediate wall being formed of a second resin which essentially comprises 40–80% by weight of nylon 6 or nylon 6/66, 5–30% by weight of nylon 11 and 10–40% by weight of a polyolefin; and said outer wall being formed of a rubbery material;
(b) a reinforcing layer laminated over said outer wall; and
(c) an outer wall disposed outwardly around said reinforcing layer, said hose having a high gas impermeability and a high resistance to stress cracking.

4,881,577
METHOD OF FORMING CANTILEVERED SUPPORT ARMS FOR PLASTIC BAG RACK

Alvin L. Stroh, Downey, and Terry C. Pilon, Claremont, both of Calif., assignors to McMillin Wire & Plating, Inc., Los Angeles and Challenge Bag California, Inc., Rancho Cucamonga, both of, Calif.
Division of Ser. No. 202,329, Jun. 6, 1988, Pat. No. 4,840,336. This application Apr. 17, 1989, Ser. No. 339,320
Int. Cl.^{4} B21F *45/00*
U.S. Cl. 140—71 R 6 Claims



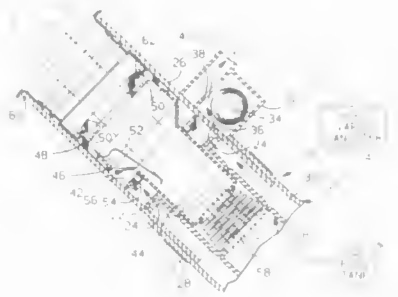
1. A method for forming an integral pair of cantilevered support arms for use in suspending plastic bags on a rack, said method comprising:

providing a single straight length of wire having a middle portion and end portions with terminal ends;

forming a bent structure by bending back each of the end portions of the single length of wire below its middle portion so as to be parallel therewith but spaced therefrom with the terminal ends thereof spaced from each other and with each end of the bent structure having a U shape;
pulling the spaced terminal ends of the end portions together and securing them to provide a straight lower portion thereby causing the middle portion to be bowed upwardly resulting in the U shaped ends on the structure now opening up with a wider angle;
pressing down on the upwardly bowed middle portion inward from each end thereof such that it is now in contact with the straight lower portion thereby causing the ends of the two-wire structure to have upwardly directed looped protuberances thereon; and
bending each end portion of the bent structure so formed so that it is positioned at right angles to the remaining straight back portion to thereby provide the cantilevered support arms.

4,881,578
COMBINATION FILLER PIPE AND VAPOR CONTROL MEANS

Gregory E. Rich, Richmond; Roy A. Giacomazzi, Rochester Hills, and Jack C. Wilds, Mount Clemens, all of Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed Nov. 2, 1988, Ser. No. 265,971
Int. Cl.^{4} B65B *31/00;* **F16K** *24/00*
U.S. Cl. 141—44 2 Claims

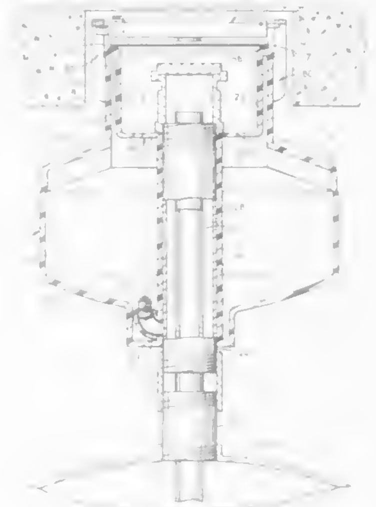


1. In a vehicle fuel vapor loss control system of the type that uses a stream of liquid fuel that exits a fuel nozzle during fuel fill to prevent fuel fill vapor displaced from said tank from exiting past said nozzle to atmosphere, a combined filler pipe and vapor control means for routing said fuel fill vapors to a storage canister and for also preventing pressurized fuel vapors that form in said tank when said filler pipe is closed by a cap from exiting to atmosphere when said cap is removed, said combined filler pipe and vapor control means comprising,

a first generally cylindrical pipe sized to receive said nozzle at an upper end and opening at a lower end into said tank so as to admit fuel thereto, said first pipe further including a radially outwardly extending flange at said upper end with at least one opening therethrough,
a second generally cylindrical pipe of larger diameter opening at a lower end to said tank and surrounding said first pipe so as to form an annular space therewith, said second pipe upper end being located proximate to said first pipe upper end and having a predetermined radial spacing from said flange,
a generally cylindrical sleeve having a wall thickness substantially equal to said predetermined radial spacing so that the lower end thereof may be tightly inserted between said second pipe and said flange to maintain said first and second pipe upper ends rigidly coaxial to one another, said sleeve further including means at the upper end thereof to receive said cap and seal said sleeve from atmosphere until said cap is completely removed,
a hollow valve body in the form of a stepped cylinder having a lower portion that fits slidably within said first pipe upper end and an upper portion that fits slidably within said sleeve upper end,
resilient means biasing said valve body upwardly,
a seal mounted to the outside of said valve body and having a lower face sized so as to cover said flange opening,
a ring at the top of said valve body through which nozzle is receivable with radial clearance and which is engageable with said cap when said cap is in place to hold said valve body down with said seal face covering said flange opening, and,
a vent line opening through said sleeve just above said flange and running to said storage canister,
whereby, when said cap is in place, said annular space and said vent line are separated by said seal face covering said flange opening, and as said cap begins to be removed from said sleeve, said sleeve upper end remains blocked to atmosphere by said cap as said valve body begins to slide up under the force of said resilient means, guided by said first pipe and said sleeve, to uncover said flange opening so that any pressurized fuel vapors in either said first pipe or said annular space may exit only through said vent line, and after said cap is removed and said nozzle is inserted through said ring and into said first pipe upper end and fuel is dispensed, said valve body remains up and fuel vapors displaced from said tank will be displaced up said annular space and out through said vent line only.

4,881,579
LIQUID OVERFILL TANK ASSEMBLY

Bruce R. Sharp, 4090 Rosehill Ave., Cincinnati, Ohio 45229
Continuation-in-part of Ser. No. 858,656, May 1, 1986, abandoned. This application Jun. 26, 1987, Ser. No. 66,701
Int. Cl.^{4} B65B *3/06*
U.S. Cl. 141—86 21 Claims



1. An assembly for use with an underground liquid storage tank to control overfill of liquid during a filling operation, comprising:

(a) a dump tank molded of one piece construction from a polymeric material having a reservoir portion with a bottom wall and a neck extending from the reservoir portion wherein the bottom wall has an opening to accommodate a fill tube and the neck has an opening at its top whereby access is gained to the interior of the dump tank;
(b) a fill tube securely positioned in said dump tank with a first extremity near the dump tank's neck and a second extremity extending through the opening in the dump tank's bottom wall, further wherein an extension of the bottom wall of the reservoir portion of the dump tank

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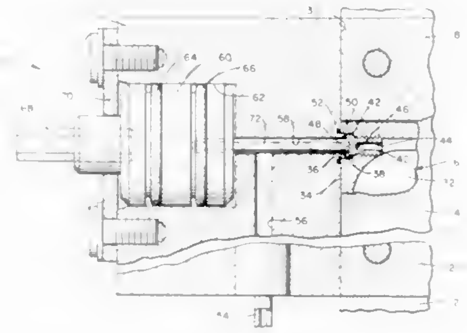
extends at least one inch along the fill tube's length from the point where the fill tube's second extremity enters said dump tank bottom wall to encase the at least one inch of the fill tube with a shrink-fit covering to ensure that liquid which spills into the dump tank will not seep therethrough;
(c) piping which extends from the dump tank's reservoir portion to the fill tube;
(d) a directional flow control valve associated with the piping through which overfilled liquid can flow in response to opening of the flow control valve; and
(e) a cover for fitting over the opening at the top of the dump tank neck so as to form a sealed closing of the dump tank.

4,881,580

FIXTURE ADAPTED FOR EVACUATING AND FILLING HEAT PIPES AND SIMILAR CLOSED VESSELS

John E. Murphy, Los Angeles; Joseph E. Soyder, El Segundo, and William T. Gardner, Los Angeles, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.
Division of Ser. No. 825,127, Feb. 3, 1986, Pat. No. 4,776,389. This application Jul. 18, 1988, Ser. No. 220,631
Int. Cl.⁴ F28D *15/02;* B65B *3/04*
U.S. Cl. 141—98 7 Claims



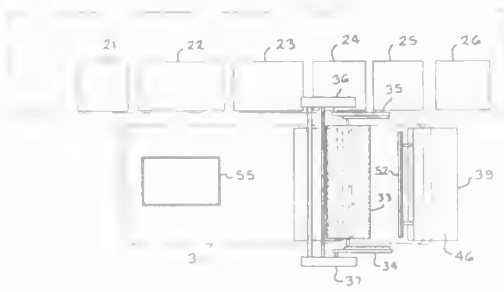
1. A fixture for holding a heat pipe having a filling end and an opposite end and having a fill port with a valve in the filling end, comprising:
a base adapted to be longer than the heat pipe;
a block mounted on said base having a stop face thereon;
guide means adapted for guiding a heat pipe so that the filling end of the heat pipe engages said stop face;
clamp means on said base adapted for engaging on the opposite end of the heat pipe for clamping the heat pipe against said stop surface;
a passage adapted for said block in communication with the fill port in the heat pipe;
seal means adapted for sealing said stop face against the heat pipe; and
a hex driver in said passage adapted for engaging and rotating the valve in the fill port and means for sealing said driver with respect to said block.

4,881,581

VEHICLE AUTOMATIC FUELING ASSEMBLY

James A. Hollerback, 5693 Wood Valley Dr., Haslett, Mich. 48840
Filed Sep. 23, 1988, Ser. No. 248,154
Int. Cl.⁴ B67D *5/04;* B65B *3/04*
U.S. Cl. 141—113 5 Claims

1. In a vehicle automatic fueling assembly for automatically fueling a vehicle while the driver remains in the vehicle and without external manual assistance, the combination comprising:
an automatic teller-type command center provided in a vehicle automatic fueling assembly, said command center adapted to be selectively energized by a vehicle driver in a vehicle parked in close proximity thereto so as to initiate automatic fueling of said vehicle;
a vehicle mounted specially modified gasoline tank, said specially modified gasoline tank provided with an automatic cut-off fuel receiving valve assembly in operative engagement therewith;
a computer control assembly in operative command control engagement with said automatic teller-type command center, said computer control assembly adapted to selectively operate selected components of a vehicle automobile fueling assembly upon receipt of commands from said teller-type command center;
a robot controlled fueling assembly provided in close proximity to said vehicle being fueled, said robot controlled fueling assembly provided with an automatic cut-off fueling nozzle assembly, said robot fueling assembly being operatively connected to said computer control assembly, said robot controlled fueling assembly adapted to move said automatic cut-off fueling nozzle into mating fueling engagement with said automatic cut-off fuel receiving valve assembly upon command from said computer control assembly, said robot fueling assembly adapted to selectively disengage from said fuel receiving valve assembly when the fueling has been completed upon command from said control assembly;
fuel supply and delivery assembly means operatively connected to said computer control assembly, said fuel supply and delivery means adapted to selectively deliver fuel to said automatic cut-off fueling nozzle upon command from said computer control assembly; and
at least one wheel stop lock assembly operatively connected to said computer control assembly, said wheel stop lock assembly movable into retentive lock engagement with the front wheels of a vehicle proximate thereto upon command from said computer control assembly.



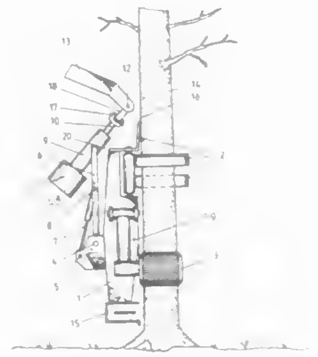
4,881,582

JIB-MOUNTED SUSPENSION DEVICE FOR A TIMBER HARVESTER

Lauri K. Ketonen, Huvilakatu 15, SF-64100 Kristiinankaupunki, Finland
PCT No. PCT/FI87/00064, § 371 Date Oct. 28, 1988, § 102(e) Date Oct. 28, 1988, PCT Pub. No. WO87/06794, PCT Pub. Date Nov. 19, 1987
PCT Filed May 13, 1987, Ser. No. 267,123
Claims priority, application Finland, May 13, 1986, 861985; Feb. 10, 1987, 870530
Int. Cl.⁴ A01G *23/08*
U.S. Cl. 144—3 D 4 Claims

1. A suspension device for suspensing a feller processor from the end of a loader jib, comprising:
universal joint means supported from the end of the loader jib;
an axle having a proximal end depending from the universal joint means so as to hang freely from the loader jib, and having a distal end;
a sleeve disposed on the axle spaced apart from the proximal end;

a bearing supporting the sleeve from the distal end of the axle;
a turning motor secured to the sleeve and operative to rotate the axle relative to the sleeve;
a suspension frame secured to the sleeve at an acute angle relative to the axle and having a lower end depending downwardly therefrom;
means at the lower end of the suspension frame for pivotable attachment of a feller processor which has a center of gravity spaced beyond the pivotable attachment; and
operating means associated with the suspension frame and the feller processor and operative to pivot the attached feller processor either to a substantially horizontal position where the center of gravity of the feller processor is below the pivotable attachment and is approximately in line with the pivotable attachment and the swivel joint means or to a substantially vertical position where the attached feller processor is positioned to receive a tree to be cut and said center of gravity is horizontally spaced from the pivotable attachment and from the suspension frame on the side thereof opposite the turning motor;
thereby causing the weight of the attached feller processor acting through the suspension frame to position the freely-hanging axle and sleeve at an acute angle to horizontal in both the horizontal and vertical positions of the feller processor, so that rotation of the axle by the turning motor causes the suspension frame and the attached feller processor to turn on substantially a vertical axis about the universal joint means while imparting only axial loading on the bearing.



4,881,583

WOODWORKING MACHINE

Jürgen Zehender, Huettlingen, Fed. Rep. of Germany, assignor to Okoma Oberkochener Machinen GmbH, Oberkochen, Fed. Rep. of Germany
Filed May 23, 1988, Ser. No. 197,187
Claims priority, application Fed. Rep. of Germany, May 23, 1987, 3717411; Apr. 26, 1988, 3814018
Int. Cl.⁴ B27M *1/08*
U.S. Cl. 144—3 R 12 Claims

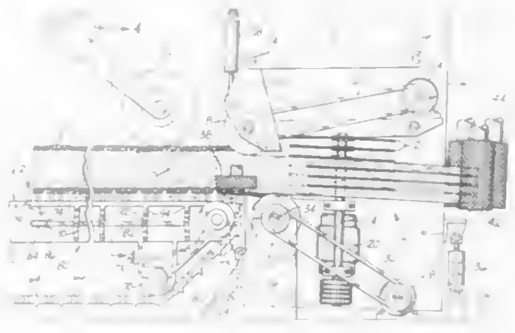
1. A woodworking machine for tenon and mortise cutting and lenghwise profiling of a rectangular wooden workpiece, comprising:
(a) a table;
(b) a conveyor mounted on said table for advancing said workpiece;
(c) a roller table having a first side and a second side and first end and a second end mounted on said table perpendicular to said conveyor;
(d) means on said roller table for clamping said workpiece;
(e) means for tenoning and mortising said workpiece;
(f) means for lengthwise cutting said workpiece;
(g) means for lowering said means for tenoning and mortising and said means for lengthwise cutting below said table and said roller table;
(h) means for displacing said means for tenoning and mortising from a first position on said first side to a second position on said second side;
(i) means for advancing said workpiece from said first end to said second end past said first position;
(j) means for lengthwise adjustment of said workpiece in said means for clamping at said second end;

(k) means for advancing said lengthwise adjusted workpiece from said second end to said first end past said second position;
(l) means for lengthwise profiling said workpiece mounted on said table; and
(m) means for transferring said workpiece from smaid first end to said means for lengthwise profiling.

4,881,584

INFEED CONVEYOR FOR SAW

Frank Wislocker, Sumner, and Charles Blickenderfer, Puyallup, both of Wash., assignors to Weyerhaeuser Company, Tacoma, Wash.
Filed Jan. 9, 1989, Ser. No. 294,233
Int. Cl.⁴ B27C *9/00, 1/08*
U.S. Cl. 144—39 15 Claims



9. In combination, a saw and an infeed conveyor for the saw for optimally feeding cants or logs having varying amounts of sweep from piece to piece which comprises:
an endless sharp chain for conveying the cants to the saw;
means to drive the sharp chain, said means including a tail sprocket at the cant receiving end and a head sprocket at the cant discharging end;
a flexible slide bar for supporting at least that portion of the sharp chain adjacent the head sprocket;
first frame means for mounting and supporting the drive means and slide bar;
bending means for conforming the slide bar between a straight line and a line which approximates an arc of a circle so that said sharp chain path thereby follows the slide bar configuration;
fixed position third frame means for supporting a saw assem-

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bly, said assembly including at least one saw mounted on an arbor;

pivotable fourth frame means mounted on said third frame means, said foruth frame means including at least one generally horizontal circular saw; and

tilting means for the fourth frame means to skew the saw assembly so that the projected continuation of the discharge portion curvature of the conveyor is essentially tangent to a plane parallel to the plane of the saw at a point on the projection of the axis of the saw arbor thereby controlling the entry angle of the cant into the saw to prevent binding, said conveyor being configurable into an arc which approximates the sweep curvature of a cant so as to guide the cant into the saw along a path approximating its radius of curvature.

4,881,585
BENCH TYPE MILLING CUTTER

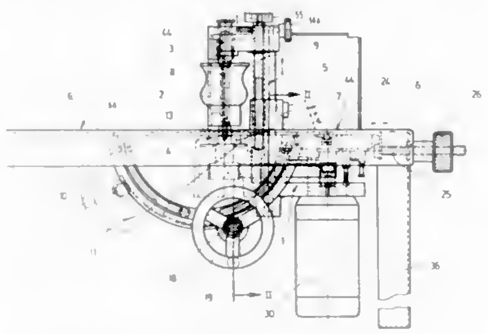
Otto Bergler, Mühlacker-Lomersheim, Fed. Rep. of Germany, assignor to Black & Decker Overseas AG, Vaduz, Liechtenstein

Filed Oct. 27, 1988, Ser. No. 263,263

Claims priority, application Fed. Rep. of Germany, Oct. 30, 1987, 3736757

Int. Cl.⁴ B27C *5/00*

U.S. Cl. 144—134 A **24 Claims**



1. A milling apparatus comprising:
- a work bench having a work table with a passage therethrough,
- a carrier operably connected to said work bench for rotation relative thereto within an upright plane, said carrier including a first portion disposed beneath said table and a second portion disposed above said table,
- a bearing block assembly carried by said carrier and including:
  - a lower leg carrying a lower bearing;
  - an upper leg carrying an upper bearing aligned with said lower bearing, said upper and lower legs spaced apart, with said upper portion of said carrier disposed therebetween,
  - a tool axle lying in said upstanding plane and mounted in said upper and lower bearings, and
  - drive means for driving said tool axle about an axis,
  - said bearing block assembly extending through said passage and arranged such that said lower leg is disposed below said table, and said upper leg is disposed above said table,
  - said bearing block assembly being connected to said carrier for vertical linear adjustment relative to said carrier,
- first manually actuable means disposed above said table for effecting said vertical linear adjustment of said bearing block assembly, and
- second manually actuable means for effecting said rotation of said carrier relative to said table.

4,881,586
ALL-TERRAIN PNEUMATIC TIRE

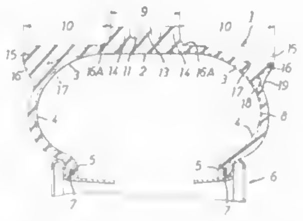
Masami Shinomiya, Osaka, Japan, assignor to The Ohtsu Tire & Rubber Co., Ltd., Osaka, Japan

Filed Feb. 4, 1988, Ser. No. 152,308

Claims priority, application Japan, Feb. 28, 1987, 62-45786

Int. Cl.⁴ B60C *11/03*

U.S. Cl. 152—209 B **10 Claims**



1. An all terrain pneumatic tire having a central circumferential area with a tread pattern thereon for on-road service comprising traction grooves and having an off-road tread pattern on both sides of the central area, said off-road pattern comprising a plurality of lugs formed on each shoulder of said tire, wherein said tread pattern for on-road service is projected radially outward further than the off-road pattern so that the tread pattern for on-road service is used during on-road service while the off-road pattern is kept out of contact with the road, and wherein during off-road service, the tread pattern for on-road service is immersed in the ground and the off-road pattern is subjected to contact with the ground; said lugs of said off-road pattern projecting generally axially of the tire and said lugs formed to be radially inward of groove ends at the bottoms of said traction grooves to keep the lug outer surfaces from contact with the road in on-road service during the entire period of wear of the tread pattern for on-road service, said off-road pattern further having an annular wing which extends circumferentially along the tire between adjacent lugs, wherein a curved recess is formed facing generally outwardly of said tire circumferentially adjacent each said wing between said lugs, so that said curved recess and said lugs together form a means for surrounding and holding soft material that otherwise would be displaced towards the tire sides during off-road service to enhance tire flotation, wherein a circumferential surface of each wing is located radial-heightwise at an intermediate height of the lugs and is located to be inward of the groove ends of said traction grooves.

4,881,587
HEAVY DUTY PNEUMATIC RADIAL TIRE

Kazuyuki Kabe, Tokyo; Tatsuo Suzuki, Hayama, and Ken Takahashi, Atsugi, all of Japan, assignors to The Yokohama Rubber Co., Ltd., Tokyo, Japan

Filed May 5, 1988, Ser. No. 190,449

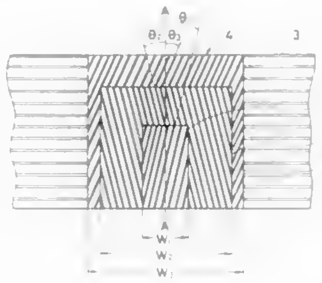
Claims priority, application Japan, May 29, 1987, 62-131592

Int. Cl.⁴ B60C *9/20*

U.S. Cl. 152—534 **5 Claims**

1. A heavy duty pneumatic radial tire for a road vehicle comprising at least three belt layers V_1, V_2, and V_3 disposed in that order between a tread and a carcass layer from the ground-contacting portion of said tread towards said carcass layer wherein the angles Θ_1, Θ_2, and Θ_3 of cords constituting said belt layers V_1, V_2, and V_3, respectively, relative to a circumferential tire plane satisfy the relationships represented by the following formulae (I) to (IV):

(I) $\Theta_1<\Theta_2<\Theta_3$,



(II) $10^\circ<\Theta_1<20^\circ$

(III) $0^\circ<\Theta_2-\Theta_1<5^\circ$, and

(IV) $7^\circ<\Theta_3-\Theta_2<13^\circ$.

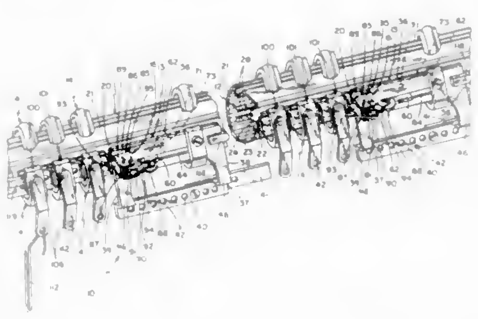
4,881,588
DRAPERY HANGER AND MANIPULATOR

Harold L. Madsen, 14615 S. Clark St., Dolton, Ill. 60419

Filed Sep. 22, 1988, Ser. No. 247,497

Int. Cl.⁴ A47H *1/00*

U.S. Cl. 160—345 **16 Claims**



1. An improved drapery hanger and manipulator for supportably hanging and manipulating one or more drapery curtain panels having a leading and a trailing edge portion comprising a single track traverse track bridge to be positioned over an area to be covered by the drapery curtain panels, drapery hook hanger means, said bridge having a track means therealong slidably supporting said drapery hook hanger means, drapery carriers serially slidably supported in said bridge track having independent movement along said bridge and supporting leading portions of respective drapery panels, drapery hook hanger means slidably supported in said bridge track means and supporting drapery hook means slidably along said bridge supporting the drapery panels from the leading to the trailing edge thereof, said drapery hook hanger means supporting the trailing edge of said panels having frictional mounting means frictionally slidably supporting said trailing edge drapery hook hanger means in said bridge track normally retaining and resisting rearward movement of said panel trailing edge, a linear drive means having forward and reverse drive means selectively providing forward and reverse linear drive along said bridge, said carriers having forward drive receiving means for sequentially receiving forward drive from said linear drive means for respectively moving said panels by urging the leading edge thereof along said bridge in a direction away from the trailing edge thereof, said carriers having a releasable reverse drive receiving means for disconnectably and respectively receiving said reverse drive means to normally respectively drive said carriers in a reverse direction along said bridge for respectively moving said panels by urging the leading edge along said bridge in a direction toward the trailing edge thereof for collapsing said panels toward the respective trailing edge thereof and moving said panels in the reverse direction, a reverse drive disengaging means as part of one or more of said carriers and adapted for normally releasably engaging and retaining said carrier thereof to said drive, said reverse drive disengaging means having a release means adapted for responding to contact with the next adjacent object in the reverse direction releasably disengaging said carrier thereof from said drive, whereby said carriers can be driven in the forward direction by said forward drive means to sequentially position drapery curtain panels over a given drapery area, and in the reverse direction by said reverse drive means respectively toward and against the frictional retention of said trailing hook hanger means to individually respectively collapse said panels toward said frictionally positioned retainers or to withdraw said panels from the given area by continuous reverse movement to provide respective separate light openings for each panel or to selectively completely remove or collapse said panels from the given area.

4,881,589
MOLD FOR CONTINUOUS CASTING OF A FLANGED ROLLABLE BILLET FOR A ROLLED GIRDER OR BEAM AND ROLLABLE BILLET MADE THEREWITH

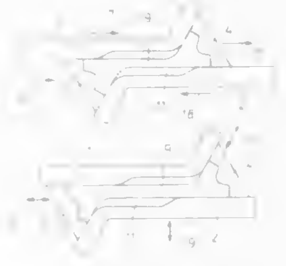
Hans-Heinrich Hartmann, Meerbusch, and Hans Streubel, Erkrath, both of Fed. Rep. of Germany, assignors to SMS Schloemann-Siemag Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

Filed Jun. 27, 1988, Ser. No. 211,757

Claims priority, application Fed. Rep. of Germany, Jun. 27, 1987, 3721266

Int. Cl.⁴ B22D *11/00*

U.S. Cl. 164—491 **12 Claims**



1. In a mold for continuous casting of a rollable steel flanged billet comprising a web and two flanges for making a steel beam or girder comprising two side walls extending over said web and said flanges and two end walls determining the thickness of said flanges positioned movably between said side walls, the improvement wherein each of said side walls has a single straight portion and a single bent out end portion directed exteriorly bent from said straight portion, each of said end walls is positioned between one of said straight portions and an adjacent opposing one of said bent out end portions and at least one of said side walls is movable in the direction of a planar surface of said side wall relative to the other of said side walls transverse to the casting direction.

4,881,590
APPARATUS FOR COOLING, STORING AND INDUCTIVELY REHEATING COMPLETE MEALS

Hermann Meier, Horw, Switzerland, assignor to Berndorf Luzern AG, Luzern, Switzerland

Filed Mar. 17, 1988, Ser. No. 169,483

Claims priority, application Switzerland, Mar. 30, 1987, 01210/87

Int. Cl.⁴ F25B *29/00*

U.S. Cl. 165—48.1 **4 Claims**

1. Apparatus for cooling, storing and reheating complete

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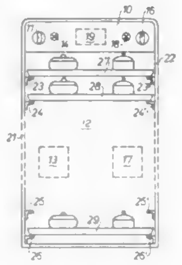
meals, which are prepared so that they are ready to eat, introduced in portions into appropriate tableware for eating and drinking and arranged on a tray, comprising a refrigerator which, in addition to a cooling unit for the refrigerator , is equipped with a generator for inductively transmittable electrical energy, and trays, each of which has at least one induction coil which is operatively coupled to the generator when the tray is placed in the refrigerator, and tableware components which have a metal layer at least on the outer surface of the base, the said metal layer being suitable for inductive heating by said induction coils, a temperature monitoring means (19), wherein the temperature monitoring means contains an induction (41) fixed in the refrigerator apart from said trays and a workpiece (42) adjacent to said induction coil (41) disposed for inductive heating thereby the heat capacity of said workpiece being virtually equivalent to that of a full plate of tableware and said workpiece having a temperature measuring means (47) mounted thereon for controlling a switch for the supply voltage to the generator (17), said temperature monitoring means switching the generator (17) off or on during the heating time responsive to the temperature measuring means (47) exceeding a predetermined temperature or falling below it thereby simulating the temperature of the tableware in the region of the metal layer.



4,881,591

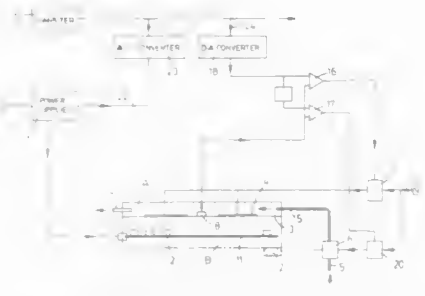
OVEN FOR THE BURN-IN OF INTEGRATED CIRCUITS

Michael W. Rignall, Dursley, Great Britain, assignor to Sharetree Limited, Stroud, England

Filed May 21, 1987, Ser. No. 53,107

Int. Cl.⁴ F25B *29/00;* **G01R** *15/12*

U.S. Cl. 165—26 12 Claims



1. An oven for the burn-in of integrated circuits, comprising: a first chamber for receiving such circuits: first means for heating such integrated circuits in the first chamber; means for feeding such circuits with supply voltages; and control means for controlling the first means, including computer means for monitoring power consumed by the circuits, the computer means being capable of storing information concerning the number of said circuits and being adapted to provide, from said power, a signal dependent on the mean power dissipation of the circuits; and in which oven the control means controls the heating of the circuits in dependence on said signal.

4,881,592

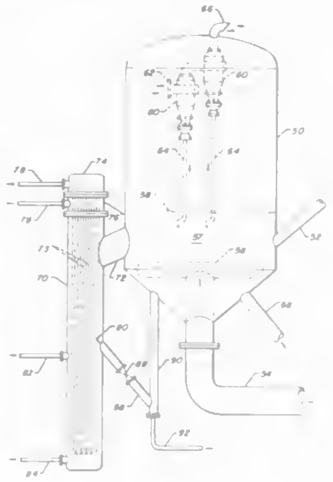
HEAT EXCHANGER WITH BACKMIX AND FLOW THROUGH PARTICLE COOLING

Ismail B. Cetinkaya, Palatine, Ill., assignor to UOP, Des Plaines, Ill.

Filed Feb. 1, 1988, Ser. No. 150,864

Int. Cl.⁴ F28D *13/00, 19/02*

U.S. Cl. 165—104.16 3 Claims



1. A method for indirect heat exchange between fluidized particles and a heat exchange fluid comprising:
(a) collecting hot particles in a particle collection zone at a first elevation;
(b) transferring said particles through a particle inlet by gravity flow to the top of a heat removal zone located at a second elevation below said first elevation;
(c) fluidizing the particles in said heat removal, at least in part, by introducing a fluidizing gas into said heat removal zone;
(d) removing heat from the particles in said heat removal zone by indirect heat exchange with a heat transfer fluid in a first section where particles flow from the inlet to an outlet located in a central portion of said heat removal zone and a second section below the inlet and outlet having no net particle flow; and,
(e) recovering relatively cool particles from said heat removal zone through said outlet and pneumatically transporting said particles from said outlet to said first elevation.

4,881,593

HEAT CONDUCTING DEVICE

Kenji Okayasu, 20-15, Mukai-machi, Gyoda-shi, Saitama-ken, 361, Japan

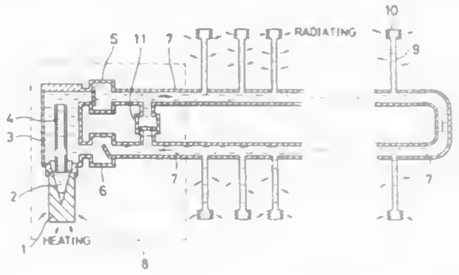
Filed Dec. 22, 1988, Ser. No. 288,611

Claims priority, application Japan, Dec. 22, 1987, 62-324819

Int. Cl.⁴ F28D *15/00*

U.S. Cl. 165—104.29 2 Claims

1. A heat conducting device having dream pipes for spatially transporting heat without circulation of liquid by repeating heat accumulation and radiation in a boundary layers formed on wall surfaces of flow passages by forward and rearward movement of liquid with vibration applied thereto, said conducting device comprising:
a flow passage or a chamber including a heat drive pump arranged to be operated by growth and contraction of steam bubbles in which each end of said dream pipes is opened, wherein a power for forward and rearward moving said liquid in said dream pipes depends upon said heat drive pump and another end of each of said dream pipes is designed to be telescopic.



4,881,594

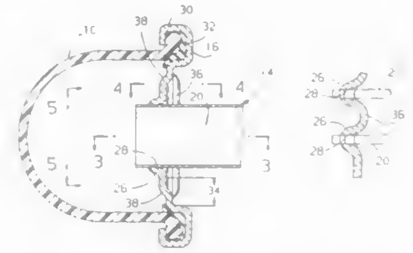
HEADER PLATE FOR PRESSURE VESSELS, HEAT EXCHANGERS AND THE LIKE

Henry E. Beamer, Middleport, and William J. Buchanan, Olcott, both of N.Y., assignors to General Motors Corporation, Detroit, Mich.

Filed Mar. 27, 1989, Ser. No. 328,913

Int. Cl.⁴ F28F *9/02*

U.S. Cl. 165—173 6 Claims



1. A header plate for a pressure vessel, heat exchanger and the like, said plate having one side adapted to be exposed to one fluid and an opposite side adapted to be exposed to another fluid, said plate further having a first set of integral strengthening ribs, said plate further having a second set of integral strengthening ribs located between adjacent ones of the ribs in said first set, and the ribs in said second set each having one and only one tube receiving aperture therein and extending oppositely with respect to the ribs in said first set and adjoining the respective ribs in said first set so as to cooperatively extend their effective rib height.

4,881,595

CLAMPING CONNECTION

Herbert Damsohn, Aichwald; Juergen Hoeing, Esslingen, and Lieselotte Heck, Gerlingen, all of Fed. Rep. of Germany, assignors to Sueddeutsche Kuehlerfabrik Julius Fr. Behr GmbH & Co. KG, Stuttgart, Fed. Rep. of Germany

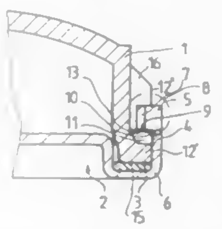
Filed Sep. 30, 1988, Ser. No. 251,247

Claims priority, application Fed. Rep. of Germany, Sep. 30, 1987, 3732964

Int. Cl.⁴ F28F *9/02*

U.S. Cl. 165—173 5 Claims

1. A clamping connection comprising:
a plastic water tank equipped with at least one flange;
a heat-exchanger tube sheet carrying a deformable edge region; and
an elastic sealing means retained under prestress between said tank and said sheet, the deformable edge region, before its deformation, extending parallel to the outer contour of the flange and, after its deformation to make the clamping connection, having first partial regions deformed in an approximately wave-shaped manner over the flange of the plastic water tank, and non-deformed further partial regions extending parallel to the outer contour of the flange,
wherein the first partial regions are cut free parallel to and at a distance from an outer edge at the height of the flange top edge and the lower edges of the deformed first partial regions rest on the top side of the flange under prestress, and wherein the top side of the flange of the plastic water tank has, at least partially, a sloping face in the region of the deformed first partial regions, wherein the sloping face descends toward the outer contour of the flange, and wherein the lower edges of the respective deformed first partial regions are deformed over this sloping face.



4,881,596

HEAT EXCHANGE PIPE FOR HEAT TRANSFER

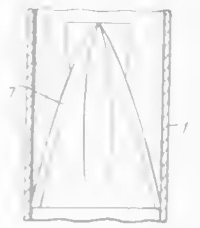
Gyorgy Bergmann, Karpat u. 40, Budapest 1133; Gabor Csaba, 1021 Tosojato ut 100/b, Budapest II, and Géza Hivessy, 1151 Platan u. 4, Budapest XV, all of Hungary

Continuation of Ser. No. 40,638, Apr. 21, 1988, abandoned. This application Apr. 17, 1989, Ser. No. 339,893

Claims priority, application Hungary, Apr. 21, 1986, 1648/86

Int. Cl.⁴ F28F *9/02;* **F15D** *1/06*

U.S. Cl. 165—174 10 Claims



1. An insert usable in a heat exchange pipe for improving heat transfer in inhomogeneous media which flow in the pipe, said insert having a beginning, a middle, an end and a longitudinal length which is equal to 1–3 times the diameter of the pipe and comprising a continuous partition-wall part formed from sheet material, wherein the thickness of said partition-wall part is on the order of one-tenth to one-hundredth of the pipie diameter, and the surface of said partition-wall part situated along the flow is a three-dimensional surface having continuous curvature without any sharp changes of direction; whereby along the length of said insert, in place of a single-flow channel of the pipe, there are established at least two channels, completely separated from one another by the walls forming the insert, the walls bounding said channels being formed by said partition-wall part and by the wall of the pipe, the average radial distance of the flowing medium in at least one channel from the axis of the pipe being continuously variable from the beginning of the insert until the end of the insert.

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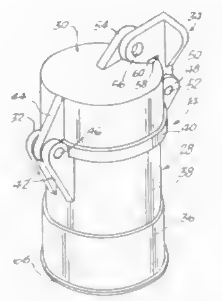
ENVIRONMENTALLY SAFE LOCKING CAP FOR MONITORING WELL

Jerry C. Hensley, 6374 SW. 22nd Ct., Miramar, Fla. 33023
Filed May 17, 1988, Ser. No. 194,868
Int. Cl.⁴ E21B *33/02*
U.S. Cl. 166—92 **10 Claims**



1. A cap for an environmental monitoring well, said well including a casing extending from an area below ground to be monitored, said casing being encased in grout, said cap comprising:

a base, including affixation means extending therefrom to form an environmentally safe seal with said well casing and further including a flange extending outwardly therefrom positioned downward from said affixation means at a position to be covered by said grout;

a cap hingedly affixed to said base at a position upward from said affixation means for permitting said cap to be rotated from an open position, allowing access to said casing through said base, to a closed position covering said base;

environmentally safe seal means between said cap, when in said closed position, and said base; and

mating first and second locking means affixed to said base and cap respectively to permit said cap to be locked in said closed position;

wherein said cap is affixed to a cap end of said base; and

wherein said base includes a ridge around an outer surface of said base, positioned remote from an upper edge of said base, against which said seal means is compressed by said cap when said cap is in said closed positioned, said cap being juxtaposed against said base from said seal means to said cap end when said cap is in said closed positioned.

4,881,598
BLOW-OUT PREVENTOR TEST TOOL

Michael P. Stockinger, Missouri City, Tex.; James R. Tietema, Gretna, and Lee S. Bass, New Iberia, both of La., assignors to Conoco Inc., Ponca City, Okla.
Filed Nov. 3, 1988, Ser. No. 266,971
Int. Cl.⁴ E21B *41/00, 47/00;* **G01M** *3/08*
U.S. Cl. 166—250 **24 Claims**

1. Apparatus for testing a blow-out preventor system designed to close upon a smaller first tubular member and a larger second tubular member, said apparatus comprising:

an inner elongated cylindrical testing mandrel having an outside diameter substantially equal to an outside diameter of said first tubular member;

an outer elongated cylindrical testing mandrel having an outside diameter substantially equal to an outside diameter of said second tubular member, said inner testing mandrel being telescopingly received within said outer testing mandrel; and

releasable locking means, operably associated with said inner and outer testing mandrels, for releasably locking said testing mandrels in one of a telescopingly extended position, and a telescopingly retracted position, whereby said blow-out preventor system can be tested against one of said testing mandrels, and for releasing said testing mandrels from said one position so that they can move to the other of said telescopingly extended position and said telescopingly retracted position whereby said blow-out preventor system can also be tested against the other of said testing mandrels without tripping said apparatus out of a well in which said blow-out preventor system is installed.

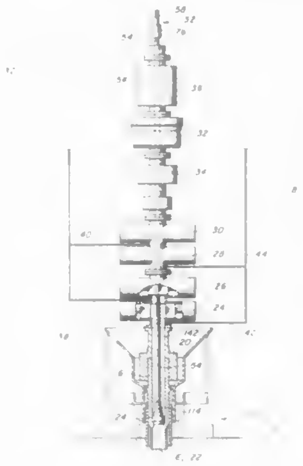
18. A method of testing a blow-out preventor system, said method comprising the steps of:

(a) providing a testing apparatus including inner and outer telescoping testing mandrels, said mandrels being telescopingly movable between a telescopingly extended position, with said inner mandrel extending downward below a lower end of said outer mandrel, and a telescopingly retracted position;

(b) providing a test plug conncted to a lower end of said inner testing mandrel;

(c) lowering said testing apparatus and said test plug into a well until said test plug is located at a location below said blow-out preventor system;

(d) plugging said well with said test plug at said location;



(e) closing said blow-out preventor system against a first one of said inner and outer testing mandrels with said mandrels positioned in a first one of said extended and retracted positions and thereby defining a first enclosed zone between said blow-out preventor system and said test plug;

(f) pressurizing said first zone to perform a first test of an ability of said blow-out preventor system to seal against said first one of said inner and outer testing mandrels;

(g) telescopingly moving said testing mandrels to the other of said extended and retracted positions;

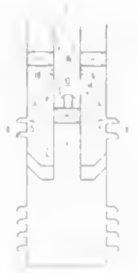
(h) closing said blow-out preventor system against said other of said inner and outer testing mandrel to define a second enclosed zone between said blow-out preventor system and said test plug;

(i) pressurizing said second zone to perform a second test of an ability of said blow-out preventor system to seal against said other of said inner and outer testing mandrels; and

(k) wherein said testing apparatus and test plug remain in said well throughout steps (e)–(i).

4,881,599
MECHANICAL SYSTEM FOR DIVERSION IN THE ACIDIZING TREATMENT OF OIL FORMATIONS

Zadson d. A. Franco, and Demóstenis A. W. Barreto, both of Aracaju, Brazil, assignors to Petroleo Brasileiro S.A. - Petrobras, Rio de Janeiro, Brazil
Filed Mar. 29, 1988, Ser. No. 174,557
Int. Cl.⁴ E21B *33/124, 33/13*
U.S. Cl. 166—284 **14 Claims**



1. An apparatus for supplying treatment fluid to at least one perforation contained in an oil well casing comprising:

a production string;

a packer, disposed above the at least one perforation to be treated, for fixing said production string and for providing a hydraulic seal between said production string and the oil well casing;

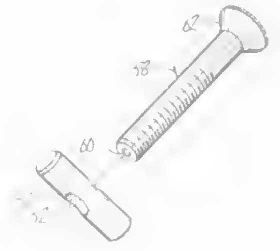
washer cups, disposed below the at least one perforation to be treated, for providing a hydraulic seal between said production string and the oil well casing; and

a swivel disposed directly below said packer for turning said production string;

wherein said production string includes a centralized tail portion disposed between said packer and said washer cups, said centralized tail portion having a ball ejection port for introducing the treatment fluid from said producing string into an interval formed between said packer and said washer cups containing the at least one perforation.

4,881,600
HORSESHOE ASSEMBLY AND METHOD OF USING SAME

David J. Nebel, R.R. 3, Box 196A1, Dubuque, Iowa 52001
Filed Nov. 25, 1987, Ser. No. 125,366
Int. Cl.⁴ A01L *3/00*
U.S. Cl. 168—11 **6 Claims**



1. A horseshoe assembly for shoeing the hoof of a horse, said hoof having an arcuate front surface and a bottom surface comprising an approximately U-shaped hoof wall having an outer edge and an inner edge, a sole located radially inwardly from inner edge of said U-shaped hoof wall, a substantially U-shaped white line located between said sole and said inner edge of said U-shaped hoof wall, and a frog located adjacent and between the U-shaped ends of said white line; said assembly comprising:

a substantially U-shaped base shoe having a closed forward end

and a pair of spaced apart legs extending rearwardly therefrom to terminate in spaced apart legs ends, said base shoe having an upper flat surface, a lower flat surface, an outer U-shaped edge, and an inner U-shaped edge, said outer U-shaped edge conforming in size and shape to said outer edge of said hoof wall;

an elongated strap means having opposite ends, strap attachment means operatively connecting said opposite ends of said strap means to said spaced apart legs of said U-shaped base shoe, said strap means extending upwardly from said spaced apart legs in an arcuate shape capable of retentive engagement with said arcuate front surface of said horse's hoof when said upper surface of said base shoe is in registered facing relation with said bottom surface of said horse's hoof;

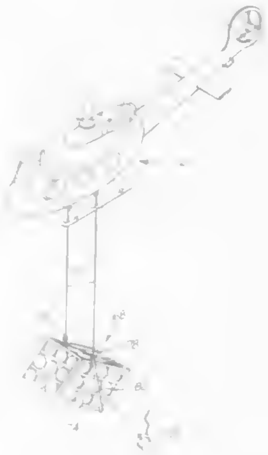
said strap attachment means comprising a horizontal sleeve at each of said opposite ends of said strap means, said sleeve having a vertically registered pair of sleeve openings therein, an elongated threaded bolt having an upper end with a head thereon and a lower end with an Allen wrench receiving opening therein, said bolt extending through said vertically registered pair of sleeve openings with said lower end thereof protruding downwardly below said sleeve;

said base shoe having a pair of threaded tightening openings extending vertically therethrough in registered alignment below said pairs of sleeve openings in said sleeves at said opposite ends of said strap means; each of said tightening openings having an open upper end and an open lower end;

said lower ends of said threaded bolts extending within and threadably engaging said threaded tightening openings of said base shoe, said Allen wrench receiving openings of said bolts being accessible through said lower ends of said tightening openings.

4,881,601
APPARATUS FOR DEPLOYMENT OF AERIAL-DROP UNITS

Wayne D. Smith, 6017 122nd S.W., Tacoma, Wash.
Filed May 18, 1988, Ser. No. 195,212
Int. Cl.⁴ A62C *27/30, 28/00;* **B64D** *1/02;* **F41F** *5/02*
U.S. Cl. 169—53 **30 Claims**



1. An apparatus for deployment of aerial-drop units, comprising:

a plurality of substantially parallel tubes each having upper and lower ends, each said tube being sized to hold a longitudinal stack of said units;

a carrier for said tubes suspendible from an aircraft;

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releasable unit support element for each of said tubes; and
means for releasing said support elements, allowing each said stack, as its support is removed, to drop by gravity from the tube.

4,881,602

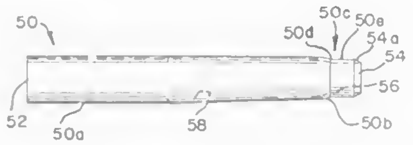
TURF AERATING TINE

Loren F. Hansen, and Mark L. Cozine, both of Lincoln, Nebr., assignors to Outboard Marine Corporation, Waukegan, Ill.

Filed Aug. 5, 1988, Ser. No. 228,984

Int. Cl.⁴ A01B *45/02*

U.S. Cl. 172—22 4 Claims



1. A coring tine for use in a turf aerator machine having a plurality of such tines and designed to automatically cause said tines to undergo substantially longitudinal penetration into and retraction from a turf surface so as to form a pattern of generally cylindrical aeration holes in the turf surface as the machine traverses the surface, said tine comprising, an elongated, generally tubular and slightly tapered body having a discharge end and a turf penetrating end, a portion of said body including said turf penetrating end having a tapered configuration including a tapered shoulder portion and a narrowed neck portion, said neck portion including an interior core gripping surface with a diameter which is narrower than that of any portion of said body and said shoulder and being adapted to frictionally engage and retain a turf core upon longitudinal movement of said penetrating end into a turf surface and retraction therefrom, said neck portion terminating in a sharpened circumferential cutting edge.

4,881,603

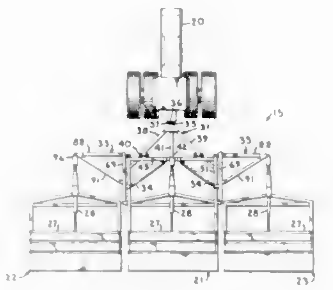
TOW FRAME

LeRoy Hartman, Rte. 2, Box 79A, Grainfield, Kans. 67737

Filed Dec. 19, 1988, Ser. No. 286,255

Int. Cl.⁴ A01B *73/00*

U.S. Cl. 172—311 15 Claims



1. A folding frame for towing first and second implements, which comprises:

(a) a primary subframe including:
   (1) a front, transverse drawbar with opposite ends;
   (2) a side member extending rearwardly from one of said drawbar ends; and
   (3) hitch means adapted for hitching one of said implements to said drawbar;
(b) a wing subframe including:
   (1) a proximate end pivotally connected to said primary subframe side member; and
   (2) a distal end including hitch means adapted for hitching said second implement to said wing subframe distal end;
(c) said wing subframe being pivotable about its proximate end with respect to said primary subframe between a field position with said wing subframe extending substantially laterally from said primary subframe and with said implements being substantially transversely aligned, and a transport portion with said wing subframe trailing its connection with said primary subframe and with said second implement located at least partly behind and trailing said first implement; and
(d) connector means adapted for lockably connecting said wing subframe to said primary subframe with said wing subframe in its field position.

4,881,604

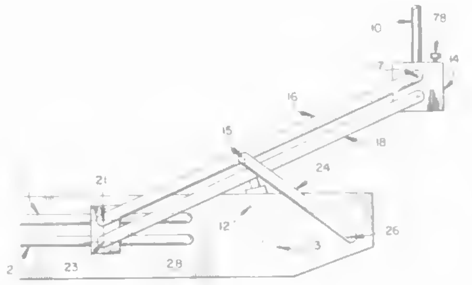
COMPUTER AIDED ANTI-BUCKLING DEVICE FOR MINE ROOF BOLTING MACHINES

William C. Orthwein, P.O. Box 3332, Carbondale, Ill. 62902

Filed Apr. 21, 1987, Ser. No. 41,010

Int. Cl.⁴ B23Q *15/00;* **F21C** *5/16*

U.S. Cl. 173—11 24 Claims



1. An apparatus, comprising:

a mine shaft roof bolting machine for drilling holes into a mine shaft roof, said bolting machine comprising a torque motor, means capable of holding an elongated implement for rotation by said torque motor, and means for applying an upward thrust to said torque motor and elongated implement; and
means for operating said applying means comprising:
means for determining the length of said elongated implement exposed below said mine roof comprising at least one ultrasonic transceiver mounted for movement with said torque motor for directly measuring the distance between said torque motor and said mine roof through a signal reflected off said mine roof;
means responsive to said length determining means for calculating a maximum thrust that can be applied to an unconstrained length of said elongated implement between the mine roof and the torque motor of the bolting machine without causing a buckling failure of said elongated implement; and
means responsive to said calculating means for controlling said applying means to maintain said upward thrust at a level at least as low as said maximum thrust.

4,881,605

STABILIZING AND DRILLING APPARATUS AND METHOD

Tommy M. Warren, Coweta; Warren J. Winters, and Jame F. Brett, both of Tulsa, all of Okla., assignors to Amoco Corporation, Chicago, Ill.

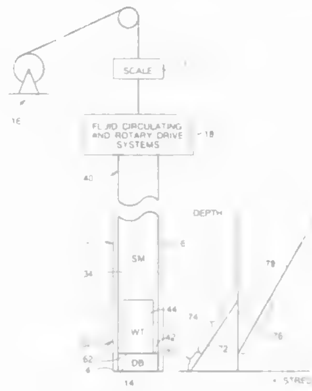
Filed Sep. 15, 1988, Ser. No. 244,767

Int. Cl.⁴ E21B *17/16*

U.S. Cl. 175—320 4 Claims

1. A drill collar assembly adapted to form part of a drill string used in drilling a borehole in the earth, comprising:

one or more elongated outer tubular members having connection means at both ends each thereof for interconnection one to another, a lower-most tubular member interconnectable with a drill bit and the lower-most turbular member including an interior weight transfer shoulder; and



one or more free-standing weighting members disposed within the tubular members, a lower-most weighting member being adapted to rest upon the interior shoulder of the lower-most tubular member.

4,881,606

POINT-OF-SALE APPARATUS

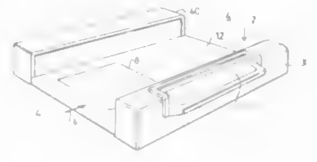
Yosef Halfon, Kfar Saba, and Uzi Hadar, Kibbutz Beit Keshet, both of Israel, assignors to Shekel Electronics-Scales Beit Kesbet Electronics (Registered Partnership), Lower Galilee, Israel

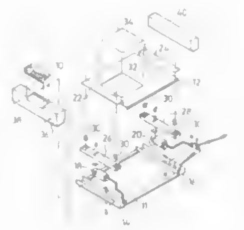
Filed Jan. 25, 1989, Ser. No. 301,413

Claims priority, application Israel, Jul. 15, 1988, 87114

Int. Cl.⁴ G01G *21/00, 21/28, 19/00*

U.S. Cl. 177—126 20 Claims





1. Point-of-sale apparatus to be used with an optical scanner for identifying the articles sold, comprising:

a housing to be placed over the optical scanner;
a light-transparent window carried by said housing so as to be aligned with the optical scanner when the housing is placed thereover;
a weighing scale carried by said housing to weigh the article identified by the optical scanner;
and a display for displaying the weight and/or the price of each article identified by the optical scanner and weighed by the weighing scale.

4,881,607

PLATFORM SCALE

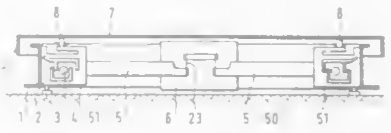
Konrad Backu, Albstadt-Ebiogen, Fed. Rep. of Germany, assignor to August Sauter GmbH, Albstadt-Ebinge, Fed. Rep. of Germany

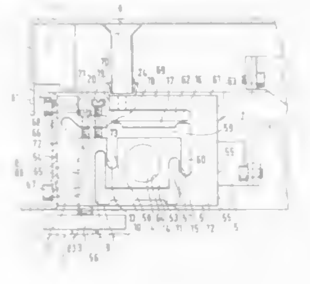
Filed Mar. 10, 1989, Ser. No. 321,863

Claims priority, application Fed. Rep. of Germany, Mar. 11, 1988, 3808232

Int. Cl.⁴ G01G *21/08, 21/10*

U.S. Cl. 177—256 20 Claims





1. A platform scale having a load platform for receiving articles to be weighed, a force sensor for generating a measuring signal related to the weight of articles to be weighed, and a lever arrangement supported on a basic frame substantially rectangular in shape in the plane of the frame and having two opposite lateral sides, the plane being parallel to the plane of the load platform, wherein on the input side of the scale the load platform is supported vertically on the lever arrangement for transmitting the force corresponding to the weight of articles to be weighed, and on the output side the lever arrangement is coupled to the force sensor by at least one force-transmitting arm, the improvement in the lever arrangement comprising:

a single-piece force-transmitting member disposed in each corner region of the basic frame, each single-piece force transmitting member comprising an anchoring member attached to a lateral side of the basic frame, a load-bearing member extending substantially parallel and in horizontal spaced relationship relative to said anchoring member, an upper and a lower link member disposed in vertical spaced relationship with respect to each other and between said anchoring member and load-bearing member, thin strip members disposed at the corners of a parallelogram and connecting said link members to said anchoring member and said load-bearing member so that said load-bearing member is supported and guided by said thin strip members and link members for parallel movement relative to said anchoring member, a free inner space between said anchoring member, load-bearing member and link members, a lever member disposed in said free inner space, and two additional thin strip members connecting said lever member to said anchoring member and said load-bearing member;
a connecting member extending along and adjacent to each lateral side of the basic frame and rotationally rigidly coupling together said single-piece force-transmitting members attached to the same lateral side of the basic frame;
a force sensor means between the opposite lateral sides; and
a force-transmitting arm connected to each connecting

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member and extending therefrom toward and in operative engagement with said force sensor means.

4,881,608
COORDINATES INPUT SYSTEM TO DATA TRANSMITTER

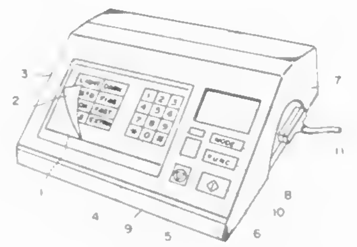
Shinnichirou Otsuki, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 127,774, Dec. 1, 1987, abandoned. This application Mar. 27, 1989, Ser. No. 328,707

Claims priority, application Japan, Dec. 16, 1986, 61-297773; Dec. 16, 1986, 61-297774

Int. Cl.⁴ G08C *21/00*

U.S. Cl. 178—18 12 Claims



1. A coordinates input system which is connected to a data transmitter, said system comprising:

coordinates input means, comprising a plate, for detecting coordinate values which are input onto said plate;

a sheet member set on said plate, said sheet member bearing a collection of instructions for the data transmitter;

instructing means for outputting a signal representing an instruction from said collection of instructions on said sheet member which instruction corresponds to said coordinate values;

control means for receiving the signals and for outputting the instructions to the data transmitter; and

synthesizing means for receiving graphic data from said coordinates input means and synthesizing the graphic data with an original to be transmitted by the data transmitter.

4,881,609
SUSPENSION MECHANISM FOR A TRACK-TYPE VEHICLE

Robert J. Purcell, Washington, and Robert R. Farris, Peoria, both of Ill., assignors to Caterpillar Inc., Peoria, Ill.

Filed Dec. 22, 1987, Ser. No. 136,884

Int. Cl.⁴ B62D *5/06, 5/12*

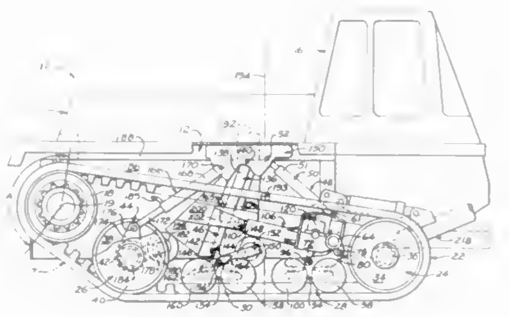
U.S. Cl. 180—9.5 14 Claims

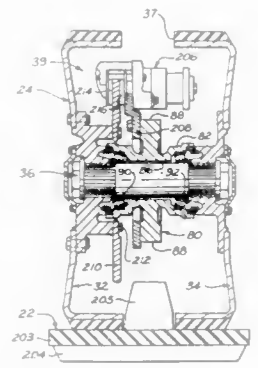
1. A suspension mechanism for a vehicle having frame, including a front idler wheel, a rear drive wheel connected to the frame, and an elastomeric drive belt entrained about the wheels and driven by the rear wheel, comprising:

suspension means for resiliently biasing the front idler wheel downwardly, for resiliently biasing the front wheel forwardly and obtaining the desired tension of the drive belt, and for providing the desired recoil of the front idler wheel with respect to the frame, the suspension means including a front member (rotatably) supporting the front idler wheel;

the front idler wheel including an axially inner side portion, an axially outer side portion, and shaft means for releasably connecting the side portions together; and

brake means for braking movement of the vehicle by selective engagement with the front idler wheel, the brake means being mounted on the front member of the suspension means, and wherein the brake means are disposed in protected location between the side portions of the front idler wheel.





4,881,610
GUIDE FOR HOT AIR FROM RADIATOR IN FOUR WHEELED VEHICLE OPERATED BY DRIVER IN SITTING POSTURE

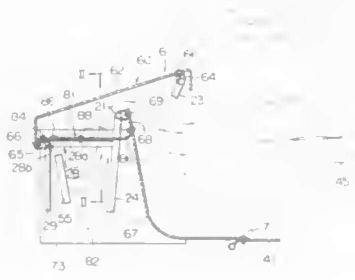
Hideyoshi Kosuge, Hyogo, Japan, assignor to Kawasaki Jukogyo Kabushiki Kaisha, Japan

Filed Dec. 22, 1987, Ser. No. 136,545

Claims priority, application Japan, Dec. 27, 1986, 61-200484[U]

Int. Cl.⁴ B60H *1/00;* B60K *11/00*

U.S. Cl. 180—68.2 11 Claims



1. A four wheeled vehicle operated by a driver in a sitting posture, comprising:

an elongated main frame structure;

a pair of front wheels and a pair of rear wheels mounted respectively adjacent longitudinal front and rear end portions of said main frame structure;

a liquid-cooled engine mounted on said main frame structure;

a radiator mounted on the front end portion of said main frame structure for radiating heat from engine cooling liquid to air passing through said radiator to cool the cooling liquid;

a front body mounted on the front end portion of said main frame structure so as to cover said radiator, said front body including an upper body member of a generally inverted U-shaped cross-section having a top panel section and a pair of side panel sections depending respectively from opposite sides of said top panel section and located respectively adjacent said pair of front wheels, and a pair of cover members formed from an elastic material and covering respectively said pair of front wheels, each of said cover members being of a generally inverted L-shape having a top panel section and a side panel section depending therefrom, the top panel section of each of said cover members being located above a corresponding one of said pair of front wheels and connected to a corresponding one of said pair of side panel sections of said upper body member, the side panel sections for the respective cover members being positioned between said pair of front wheels respectively adjacent them;

a driver's seat mounted on said main frame structure at a location rearward of said front body;

a plate member extending between the side panel sections of the respective cover members and cooperating with the side panel sections of the respective cover members to define a guide passage for guiding hot air having passed through said radiator toward said driver's seat; and

a partition movable between an open position where said partition opens said guide passage to permit the hot air having passed through said radiator to flow toward said driver's seat and a closed position where said partition closes said guide passage to prevent the hot air having passed through said radiator from flowing toward said driver's seat.

4,881,611
ABNORMALITY DETECTOR FOR MOTOR ASSISTED STEERING APPARATUS

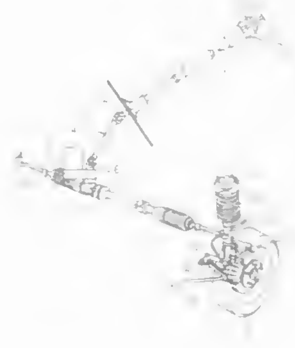
Hiroshi Nakashima, Nishio; Naoji Sakakibara, Chiryu, and Takehiko Fushimi, Kariya, all of Japan, assignors to Aisin Seiki Kabushikikaisha, Kariya, Japan

Filed Jan. 21, 1988, Ser. No. 146,742

Claims priority, application Japan, Jan. 22, 1987, 62-13048

Int. Cl.⁴ B62D *5/04*

U.S. Cl. 180—79.1 20 Claims



13. An abnormality detector for detecting an abnormality in a motor assisted steering apparatus, the apparatus comprising:

a steering mechanism for adjusting the orientation of wheels with respect to a car body;

an input means for manually inputting a steering force to adjust the wheels with respect to the car body;

an input detecting means for detecting steering force information indicative of the magnitude of the steering force manually input to the input means;

an electric motor producing a drive force;

an energization control means for controlling the energization or deenergization of the electric motor in accordance with at least the steering force information from the input detecting means;

a transmission mechanism for transmission to the steering mechanism the steering force manually input to the input means combined with the drive force produced by the electric motor;

an operation condition detecting means for detecting operation information indicative of an operational condition of the electric motor;

an abnormality annunciator means for annunciating the existence of an abnormality in the event a relationship between the steering force manually input to the input means, and the operation information detected by the operation condition detecting means deviates from the predetermined relationship;

the energization control means energizing the electric motor for rotation in a forward direction when the steering force information from the input detecting means indicates the use of a steering force which turns the wheels to the right with respect to the car body, and energizing the electric motor for rotation in a reverse direction when the steering force information from the input detecting means indicates the use of a steering force which turns the wheels to the left with respect to the car body; and

the abnormality annunciator means annunciating the existence of an abnormality when the steering force information from the input detecting means indicates the use of a steering force which turns the wheels to the right with respect to the car body and when the operation information from the operation condition detecting means indicates that the motor is energized for rotation in the forward direction, or annunciating the existence of an abnormality when the steering force information from the operation condition detecting means indicates the use of a steering force which turns the wheels to the left with respect to the car body and when the operation information from the operation condition detecting means indicates that the motor is energized for rotation in the reverse direction.

4,881,612
STEERING APPARATUS FOR A VEHICLE

Kazuhiko Yano, Toyonaka; Shigenori Sakikawa, Itami, and Toshiaki Okanishi, Kobe, all of Japan, assignors to Kanzaki Kokyukoki Mfg. Co. Ltd., Japan

Filed Jan. 19, 1988, Ser. No. 144,974

Claims priority, application Japan, Jan. 22, 1987, 62-7865[U]; Feb. 6, 1987, 62-16820[U]

Int. Cl.⁴ B62D *5/06, 5/07, 5/087*

U.S. Cl. 180—132 4 Claims

4. A steering system for a vehicle as set forth in claim 3, wherein said first gear train and said second gear train include said means for axially moving said counter shaft, said means comprising helical gears;

said helical gear of said first gear train having gear teeth which are disposed in an opposite direction of gear teeth of said helical gear of said second gear train whereby the

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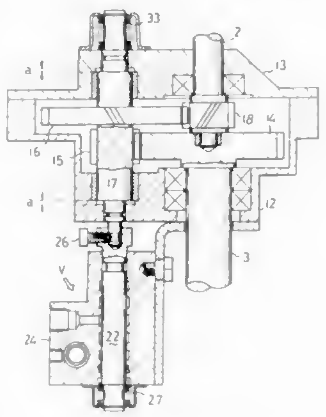
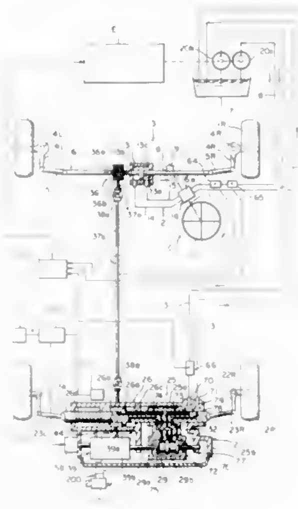
axial force on said counter shaft is increased as a result of the difference in relative rotation between said handle shaft and said side shaft, thereby causing axial motion which controls said hydraulic valve.



4,881,613
FOUR-WHEEL STEERING APPARATUS FOR VEHICLE

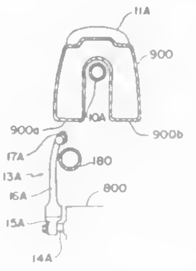
Hirotaka Kanazawa, Hiroshima; Koushun Note, Higashhiroshima, and Yasuhiro Nakashima, Hiroshima, all of Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan
Filed Apr. 22, 1988, Ser. No. 184,984
Claims priority, application Japan, Apr. 23, 1987, 62-102775
Int. Cl.⁴ B62D *5/06*
U.S. Cl. 180—140 12 Claims



1. A four-wheel steering apparatus for a vehicle, including:
a vehicle engine;
a manually operated steering member for producing steering movements in front and rear wheels of the vehicle through front and rear wheel steering means;
a first power assist means actuated by an oil pump driven by the vehicle engine included in said front wheel steering means;
a second power assist means actuated by an oil pump driven by the vehicle engine included in said rear wheel steering means;
biasing means for returning the rear wheels to a neutral position;
first oil pressure detecting means for sensing the oil pressure in the first power assist means;
second oil pressure detecting means for sensing the oil pressure in the second power assist means; and
control means for increasing engine output power by a first predetermined amount when an oil pressure rise signal from said first oil pressure detecting means is received, and for increasing engine output power by a second predetermined amount which is different from the first predetermined amount when both an oil pressure fall signal from said first oil pressure detecting means and an oil pressure rise signal from said second oil pressure detecting means are received.

4,881,614
MOTORCYCLE

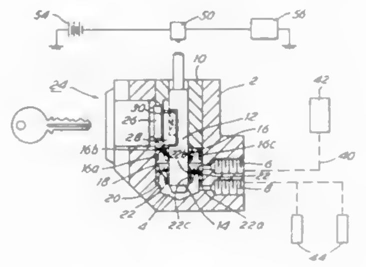
Norio Hoshi; Tetsuro Yamaguchi, both of Saitama; Yasuhiro Okada, Tokyo, and Takao Matsukawa, Saitama, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Feb. 16, 1988, Ser. No. 156,021
Claims priority, application Japan, Feb. 16, 1987, 62-31511; Feb. 17, 1987, 62-20744[U]; Feb. 17, 1987, 62-20745[U]
Int. Cl.⁴ B62D *61/02;* **B62M** *7/06*
U.S. Cl. 180—225 8 Claims



1. A motorcycle exhaust pipe arrangement comprising:
a frame including a head pipe, a main pipe, a down tube, at least one under pipe and a pair of center pipes;
a space being defined between said pair of center pipes;
a fuel tank operatively connected to said main pipe;
an engine mounted on said at least one under pipe and being disposed beneath said fuel tank;
a seat mounted adjacent said fuel tank and being disposed above said engine;
a rear shock absorber operatively mounted between said main pipe and a rear fork for absorbing shock supplied to said main pipe, said rear shock absorber being centrally disposed relative to a longitudinal axis of said motorcycle;
an exhaust pipe connected to said engine and extending rearwardly therefrom, said exhaust pipe being disposed substantially at a side of said rear shock absorber and extending substantially horizontally therefrom in said longitudinal direction of said motorcycle for lowering the center of gravity of said motorcycle and providing a symmetrical rigid frame for supporting said engine, fuel tank and seat; and
a kick operating starter device having a pivot portion and an arm portion, said pivot portion being operatively connected to said engine, said exhaust pipe being disposed within an area adjacent to said arm portion for enabling said kick operating starter device to be positioned directly adjacent to said engine in an inoperative position.

4,881,615
ANTI-THEFT DEVICE FOR MOTOR VEHICLES

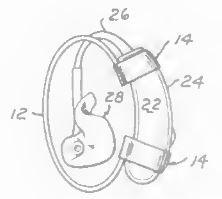
Robert Conway, 12 Tweed Grove, Lemington, Newcastle upon Tyne NE15 8EX, England
Filed Nov. 28, 1988, Ser. No. 276,777
Claims priority, application United Kingdom, May 27, 1987, 8712384; May 23, 1988, 8812140
Int. Cl.⁴ B60K *27/00*
U.S. Cl. 180—287 7 Claims



1. An anti-theft device for a motor vehicle having a hydraulically operated braking system, said system comprising a hydraulic pressure supply means and a brake operating means for actuation by pressure fluid from said supply means, a pressure fluid path extending between said supply and operating means, the device being disposed in said fluid path and comprising a valve body, inlet and outlet ports in said body for connection to the supply means and the operating means respectively, a fluid flow path in said body between said ports, a flexible sealing ring mounted within the body defining an orifice in said path, a closure member slidably supported in said body for displacement coaxially of the sealing ring into and out of engagement therewith, said sealing ring comprising an annular portion projecting radially inwards from a fixed seal support in said body, and a radially inner portion extending axially from said annular portion in the direction of flow along said fluid flow path from the inlet port to the outlet port, by said coaxial displacement the closure member being removably inserted into sealing engagement with said axially extending portion of the sealing ring to close said fluid flow path, said axially extending portion being resiliently deformable by the application of hydraulic pressure through the inlet port whereby it allows the passage of pressure fluid past said closure member to the outlet port but is urged more firmly into sealing contact with said closure member when the outlet port pressure is greater than the inlet port pressure.

4,881,616
HEARING AID RETENTION APPARATUS

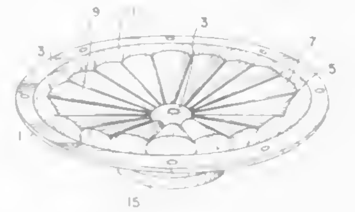
Gwen V. Janssen, and Roy C. Rowland, both of 837 NW. 10, Oklahoma City, Okla. 73106
Filed Apr. 7, 1989, Ser. No. 335,079
Int. Cl.⁴ H04R *25/00*
U.S. Cl. 181—129 5 Claims



1. In a normally ear auricle supported hearing aid having an elongated housing arcuately curved longitudinally and adapted to be supported generally longitudinally upright in a space between the auricle and head of a user adjacent a rearward upper limit of a juncture of the ear auricle with the head by a conductor member extending, in inverted generally J-shaped book fashion across a forward and upper limit of an ear helix juncture with the head, between an upper limit of the housing and a hearing aid ear mold disposed in an ear fossa, the improvement comprising:
an elongated flexible member snugly surrounding the major forward, upper and lower portion of the ear auricle at the juncture with the head of the user's head; and,
resilient means attached to said flexible member for connecting the end portions of said flexible member with respective end portions of said hearing aid housing.

4,881,617
RADIALLY ARCUATED SPEAKER CONE

Alexander Farnone, R.D. #2, Box 75 A, Frenchtown, N.J. 08825
Filed Dec. 30, 1988, Ser. No. 292,339
Int. Cl.⁴ G10K *13/00*
U.S. Cl. 181—164 10 Claims



1. In an acoustic speaker having a center, having a transducer located at said center and having a cone for conversion of electromechanical energy to sound located about said transducer, the improvement which comprises:
a cone having a plurality of thin, pie shaped segments which radiate outwardly from said transducer, each of said segments having an arcuated cross-section, thereby creating a concave side and a convex side to each such segment, all of said concave sides of said segments facing one direction and all of said convex sides of said segments facing an opposite direction, and further wherein said arcuated segments have a highly concave cross section at the transducer and a less concave cross-section with increasing radial distance from the center of the speaker.

4,881,618
ACOUSTIC LENS FOR USE IN ACOUSTIC MICROSCOPE

Hitoshi Tateoka, Ohme, and Fumio Uchino, Hachioji, both of Japan, assignors to Olympus Optical Co., Ltd., Japan
Filed Jun. 2, 1987, Ser. No. 56,685
Claims priority, application Japan, Jun. 6, 1986, 61-131511
Int. Cl.⁴ G10K *11/06*
U.S. Cl. 181—176 7 Claims

1. An acoustic lens for use in an acoustic microscope, comprising:
a solid state medium for prepagating an acoustic wave having a wavelength λ, said solid state medium including

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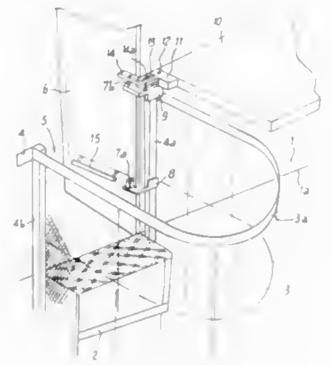
opposed end surfaces separated from each other by a length l;
an electric-acoustic piezoelectric transducer applied on one end surface of said solid state medium and having a radius a; and
a lens portion formed in the other end surface of said solid state medium in coaxial arrangement with said transducer and having an aperture radius w;
whereby the dimensions of said acoustic lens are further defined by a ratio $l\lambda/a^2$, represented by a variable Z, and a ratio w/a, represented by a variable W, wherein Z is equal to a positive value less than 1 and W is equal to a positive value other than 1, and Z and W are not contemporaneously equal to 1/5 or ⅓, such that an acoustic field having desired power and/or phase can be obtained in the solid-state medium.

4,881,619

DEVICE FOR BARRING ACCESS TO THE TOP OF A VERTICAL TUBULAR DUCT

Charles Coutier, Thionville-Garches, France, assignor to Coutier Industrie, France
Filed Oct. 25, 1988, Ser. No. 261,873
Claims priority, application France, Oct. 30, 1987, 87 15115
Int. Cl.^{4} E06C *9/10, 5/36*
U.S. Cl. 182—77 9 Claims



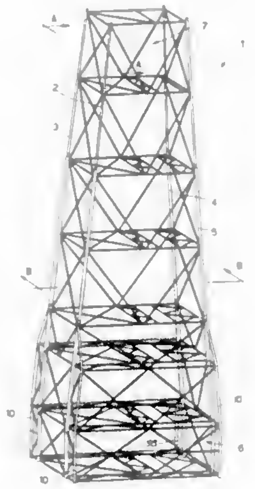
1. A device for closing a substantially vertical tubular duct provided with ladder rungs, wherein the device includes a closure member which is retractable by pivoting about a fixed vertical hinge axis provided to one side of the rungs, and means for rotating and for locking the closure member, said means comprising an operating lever pivotally mounted about a second fixed vertical axis adjacent to the above-mentioned axis, and coupled to rotate with the closure member.

4,881,620

FOUR-LEG TRESTLEWORK STRUCTURE FOR SUPPORTING AN OFF-SHORE PLATFORM

Alberto Agostoni, Lissone; Alfredo D'Agostino, Gallarate; Enrico Craighero, Varese, and Renzo Marazza, Milan, all of Italy, assignors to Tecnomare S.p.A., Venice, Italy
Filed Jun. 2, 1988, Ser. No. 201,216
Claims priority, application Italy, Jul. 15, 1987, 21288 A/87
Int. Cl.^{4} E04G *1/04*
U.S. Cl. 182—179 4 Claims

1. An improved, four-legged obelisk shaped trestlework structure for supporting an off-shore platform comprising:
an obelisk frame having ends and sides, said frame having a bottom base area, a middle area and a top end area and four tapered main leg members;
said four tapered main leg members having a lower section, a middle section and an upper section where said lower section is larger than said middle section and said middle section is larger than said upper section;
said bottom base area comprising two mutually opposite inclined plane side faces, two mutually opposite side faces, one bottom face and said lower section of said four tapered main leg members and correspondingly four main trestlework appendices;
said four tapered main leg members of said bottom base area are connected to each other by crossbeams and tie-rods and run upward from said bottom face;
said four tapered main leg members of said bottom base area are positioned parallel to each other on said two mutually opposite inclined plane side faces;
said middle area comprising two mutually opposite inclined plane side faces, two mutually opposite side faces and said middle section of said four tapered main leg members;
said four tapered main leg members of said middle area are connected to each other by crossbeams and tie-rods and run upward from the top of the four tapered main leg members of said bottom base area;



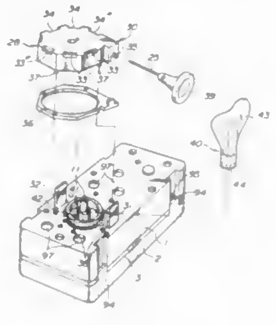
said four tapered main leg members of said middle area are positioned parallel to each other on said two mutually opposite inclined plane side faces;
said top end area comprising two mutually opposite inclined plane side faces, two mutually opposite side faces, one top face and said top end area of said four tapered main leg members;
said four tapered main leg members of said top end area are connected to each other by crossbeams and tie-rods and run upward from the top of the four tapered main leg members of said middle area;
said four-tapered main leg members of said top end area are positioned parallel to each other on said two mutually opposite inclined plane side faces; and
said top face matches the plan of said off-shore platform.

4,881,621

SPIRAL SPRING POWER SOURCE FOR TOY

Minoru Ishida, Tokyo, Japan, assignor to Marusan Co., Ltd., Tokyo, Japan
Filed May 25, 1988, Ser. No. 198,562
Claims priority, application Japan, May 30, 1987, 62-136009
Int. Cl.^{4} F03G *1/08*
U.S. Cl. 185—39 5 Claims

1. In combination with a power source for toys comprising a housing which includes therein a spiral power spring assembly, a wind-up shaft extending from the housing for winding up the spring assembly, and an output shaft connected with the spring assembly for rotation thereby when the spring assembly is released, a wind-up mechanism for the spring assembly comprising a wind-up casing, a winding ring journalled in the casing, a wind-up cord wound on the ring and having an outer end accessible through an opening in the casing for exerting a pull on the cord to rotate the ring, connector means in the casing for providing a drive connection between said ring and said wind-up shaft for rotating the shaft when the cord is progressively drawn through said opening in the casing, a spring return mechanism in the casing for rewinding the cord on the ring by rotation of the ring upon release of the cord, and

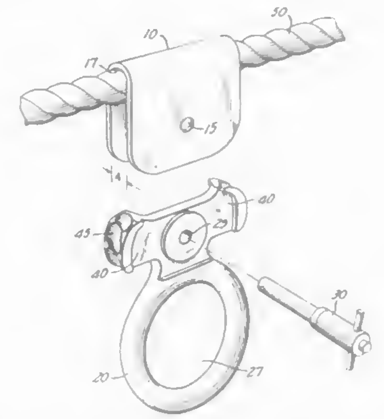


releasable attachment means between the housing and the casing for selectively attaching the casing on the housing in different angular orientations of the casing relative to the housing and with said drive connection formed between the connector means and the wind-up shaft in each of said orientations whereby said cord can be drawn through said opening in different directions relative to said housing dependent on the selected orientation of the casing on the housing.

4,881,622

SAFETY GRAB PROTECTION DEVICE

Henry Machal, 380 Elkwood Ter., Englewood, N.J. 07631
Filed Mar. 1, 1988, Ser. No. 162,679
Int. Cl.^{4} B65H *59/16*
U.S. Cl. 188—65.1 9 Claims

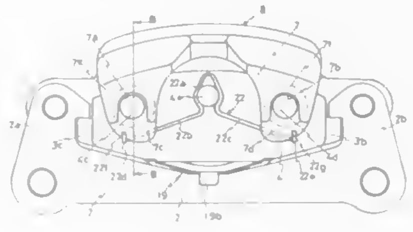


1. A safety grab protection device operable bi-directonally for connecting a safety belt lanyard to a vertical safety rope or the like comprising:
a clevis-like housing through which a safety rope can be reeved, a unitary brake cam for disposition between the ends of said clevis-like housing, said housing being apertured through its ends and said cam having a through bore for alignment with said housing apertures,
a removable pin for insertion through said apertures and said bore to pivotally join said cam to said housing, said cam having arms extending to either side of said bore normal to the axis of said bore which arms are selectively articulable about said bore as a pivot into bi-directional apposition with the bight of said housing for alternative wedging a rope against said bight, and
a rope engaging intaglio formation at the ends of each said arms where said intaglio formation is a curved, knurled intaglio image of a helically intertwined safety rope.

4,881,623

DISK BRAKE ASSEMBLY

Toshio Kondo, Okazaki, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan
Continuation of Ser. No. 143,041, Jan. 12, 1988, abandoned. This application Apr. 10, 1989, Ser. No. 336,611
Claims priority, application Japan, Jan. 12, 1987, 62-002759
Int. Cl.^{4} F16D *65/40*
U.S. Cl. 188—73.38 3 Claims



1. A disk brake assembly comprising:
a rotary brake disk rotatable with a wheel in a body;
a mounting member fixed to a stationary member of a vehicle;
a guide member positioned parallel with respect to an axial direction of said brake disk and fixed at one end portion to said mounting member;
a caliper member having a tubular portion slidably supported on said guide member to be movable in an axial direction, said caliper member straddling a portion of said brake disk and having a fluid actuator provided with a piston on one side thereof to press an inner brake pad against one face of said brake disk and a reaction portion on an opposite side thereof to press an outer brake pad against an opposite face of said brake disk;
said outer brake pad having a projection portion projected axially outwardly of said brake disk at a center of its backing plate between nail portions of said reaction portion of said caliper member;
a spring member disposed between said outer brake pad and said reaction portion of said caliper member and rigidly supporting said outer brake pad on said caliper member; and
said spring member urging said outer brake pad axially outwardly of said brake disk and having a center clipping portion rigidly and elastically clipped to said projection portion of said outer brake pad and having a pair of arm portions extending from said center clipping portion, said arm portions and said center clipping portion being substantially coplanar and said arm portions being engaged with inclined concave portions on an axially inner surface of said nail portions of said reaction portion of said caliper member, said arm portions having end portions elastically engaged with an axially outer surface of said nail portions of said reaction portion at ends of said arm portions, said center clipping portion having a diameter that is decreased as a result of the force produced by the elastic engagement of the end portions of the spring member with the axially outer surface of said nail portions, said spring member urging said outer brake pad toward a center section of said brake disk and substantially equalizing an elastic force operating on the outer brake pad.

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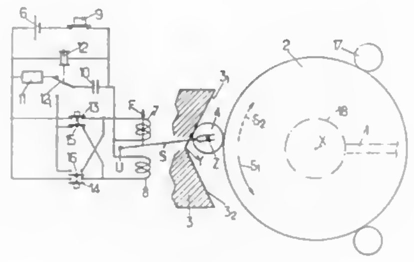
4,881,624
ANGULAR ANTI-RETURN DEVICES ASSOCIATED WITH TURNSTILES

Jean-Pierre Ulmann, Paris, France, assignor to Etablissements Georges KLEIN, Paris, France
Filed Jun. 24, 1988, Ser. No. 211,313
Claims priority, application France, Jul. 2, 1987, 37 09395
Int. Cl.⁴ F16D *63/00*
U.S. Cl. 188—82.2 10 Claims

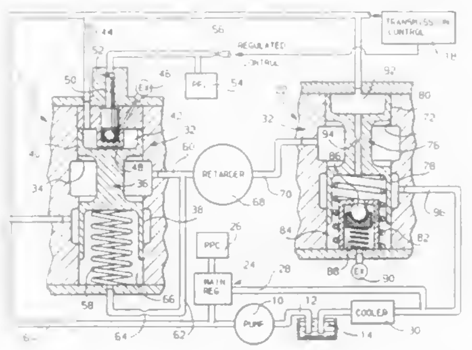


1. Dual action angular anti-return device associated with a turnstile and comprising a drum of revolution of axis X fast to the turnstile and coaxial with the latter, a fixed vee whose bisector plane contains the axis X of the drum, said vee being open on the side of said drum and positioned a short distance from the latter, a roller of axis parallel with the axis X, interposed between the vee and the drum and mounted so that, on a moveable support, it can be moved between a first end position for which it is blocked by wedging between the drum and one face of the vee and a second end position for which it is blocked by wedging between the drum and the other face of the vee, two electromagnets associated with the support of the roller so as to urge this support respectively in two reverse directions on their respective energizations, a source of DC electric current and switch means enabling said source to be connected alternately to each of the electromagnets for its supply, or to neither of them, said device comprising in addition an electric capacitor mounted so as to be charged by the source each time that either of the two electromagnets is supplied by this source and to be automatically discharged into the other electromagnet as soon as said supply is interrupted; the discharge from the capacitor causing the other electromagnet to momentarily energize and attract the support, thereby causing the roller to more rapidly assume a neutral, non-blocking position.

4,881,625
CONTROL VALVING FOR A HYDRAULIC RETARDER

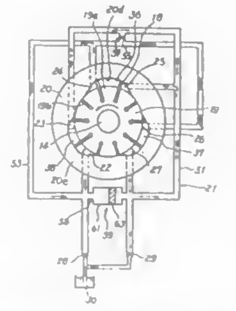
James A. Redelman, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.
Filed Jun. 27, 1988, Ser. No. 211,623
Int. Cl.⁴ F16D *57/06;* B60K *41/20*
U.S. Cl. 188—290 2 Claims

1. An improvement in hydraulic retarder cooling and torque capacity in a hydraulic transmission having a source of fluid pressure; a main pressure regulator for normally maintaining the pressure level of said source; a hydraulic retarder; means for controlling the operation of said retarder; and cooler means for cooling the fluid wherein the improvement comprises: inlet valve means for controlling inlet fluid flow to said retarder; outlet valve means for controlling the outlet fluid flow from the retarder to the cooler, said outlet valve means having control valve means in fluid communication with said source for preventing fluid outlet flow from said retarder when the fluid pressure of the source is below a predetermined level, and control valve means on said inlet valve means for controlling the inlet pressure to said retarder.



4,881,626
POWER TRANSMISSION APPARATUS FOR VEHICLE OF FOUR-WHEEL DRIVE TYPE

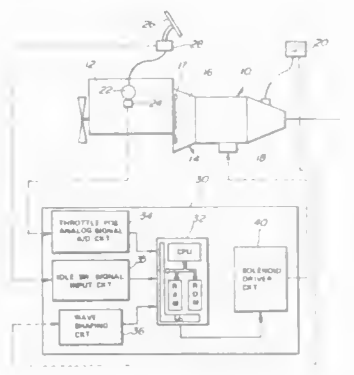
Takeo Hiramatsu, Nagaokakyo, Japan, assignor to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Japan
Continuation of Ser. No. 88,059, Aug. 21, 1987, abandoned. This application Jan. 24, 1989, Ser. No. 302,037
Claims priority, application Japan, Sep. 1, 1986, 61-205300
Int. Cl.⁴ F16D *31/02*
U.S. Cl. 192—60 2 Claims



1. In a power transmission apparatus for a vehicle of four-wheel drive type comprising:
a first rotary shaft for transmitting drive force to front wheels of the vehicle,
a second rotary shaft for transmitting drive force to rear wheels of the vehicle,
a hydraulic oil pump used as a connecting means for connecting said first and second rotary shafts and driven by a difference in rotational speed between said first and second rotary shafts to deliver hydraulic oil of an amount depending on said difference in rotational speed and having a suction passage and a delivery passage to be changed over in dependence on relative rotational direction of said first and second rotary shafts, restricting means for restricting communication between said suction passage and said delivery passage to restrict pressure of hydraulic oil delivered from said hydraulic oil pump;
the improvement comprising:
a cylinder having axial ends and a continuous imperforate axial wall, said cylinder communicating at one of its axial end with said suction passage and communicating at its opposite axial end with said delivery passage;
an imperforate piston slidably disposed inside said cylinder and dividing said cylinder into a first expansion chamber connected to said suction passage and a second expansion chamber connected to said delivery passage;
whereby, each of said chambers operate as an expansion chamber for reserving hydraulic oil to temporarily suppress increases in pressure of hydraulic oil delivered from said hydraulic oil pump.

4,881,627
CONTROL SYSTEM FOR AUTOMOTIVE TRANSMISSION ARRANGEMENT INCLUDING LOCK-UP CLUTCH

Shigeru Ishii, Atsugi, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan
Filed Apr. 25, 1988, Ser. No. 185,407
Claims priority, application Japan, Jun. 26, 1987, 62-160423
Int. Cl.⁴ F16H *45/02*
U.S. Cl. 192—0.076 11 Claims

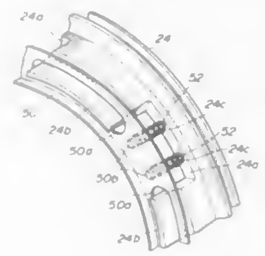


6. In a system having a prime mover and a device assocated with said prime mover:
means for sensing the load on said prime mover;
means for determining the rate at which the load is changing;
means for sensing if the rate at which load is changing is within a first range;
means for sensing, in response to the rate being sensed as being within said first range, if the rate is within a second predetermined range which is narrower than said first range;
means for issuing a control signal to said device in the event that the rate at which load on the prime mover is changing is sequentially sensed as being within said first and second ranges.

11. In a system:
an internal combustion engine;
a transmission;
a clutch arrangement interconnecting said engine and said transmission, said clutch arrangement including a torque converter and a lock-up clutch; and
a control arrangement for selectively controlling said lock-up clutch, said control arrangement comprising:
a sensor for sensing a parameter which varies with one of (a) the torque produced by said engine and (b) the load on said engine;
a sensor for sensing the rotational speed of said transmission;
a circuit responsive to said first and second sensors for selectively producing a lock-up control signal, said circuit including means for:
sensing the magnitude of said parameter;
determining the rate at which the parameter magnitude is changing;
sensing if the rate at which the parameter magnitude is changing is within a first range;
sensing, in response to the rate being sensed as being within said first range, if the rate is within a second predetermined range which is narrower than said first range;
issuing a control signal to the control arrangement which controls said lock-up clutch in the event that the rate at which the parameter magnitude is changing is sequentially sensed as being within said first and second ranges;
sensing the magnitude of said parameter being below a predetermined minimum value; and
preventing the issuance of said control signal while the magnitude of said parameter is above said predetermined minimum value.

4,881,628
AUTOMATIC TRANSMISSION HAVING COAXIALLY OVERLAPPED CLUTCHES

Toshio Yamaguchi, Hatano, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan
Filed Jan. 13, 1988, Ser. No. 143,413 .
Claims priority, application Japan, Jan. 17, 1987, 62-8841
Int. Cl.⁴ F16D *55/10, 25/06*
U.S. Cl. 192—85 AA 10 Claims



1. An automatic transmission comprising:
a first means including a first drum with a closed bottom portion, and a first piston axially slidably received in said first drum to define a piston working fluid chamber in said first drum between said first piston and said closed bottom portion, said fist piston having a cylindrical outer wall portion which extends coaxially away from said closed bottom portion of the first drum;
a second means including a second drum coaxially received in said first drum in a manner to define between a cylindrical inner surface of said first drum and a cylindrical outer surface of said second drum a cylindrical clearance;
a clutch plate unit including drive and driven plates which are juxtaposed, said clutch plate unit being arranged within said cylindrical clearance and being compressed by a leading end of the cylindrical outer wall portion of said first piston upon application of fluid pressure to said piston working fluid chamber;
an annular spring retainer fixed at its outer peripheral portion to said cylindrical inner surface of said first drum, said annular spring retainer being formed with spaced slots;
means providing said cylindrical outer wall portion of said first piston with alternately arranged recesses and projections, said projections passing through said spaced slots and projecting toward said clutch plate unit to actuate the same; and
at least one return spring arranged in each of said recesses of the first piston having one end pressed on a bottom wall of the recess and the other end pressed on a solid portion of said annular spring retainer;
wherein said at least one return spring in each of said recesses and said projection lie in a common plane.

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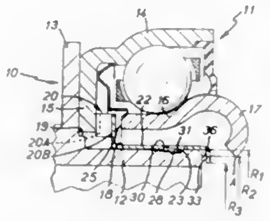
4,881,629
CLUTCH RELEASE BEARING

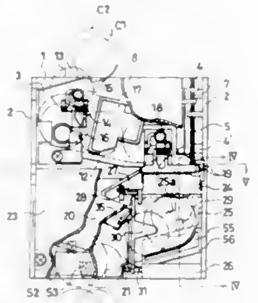
Christian Gay, Paris, and Philippe Lassiaz, Boulogne, both of France, assignors to Valeo, Paris, France
Filed Feb. 9, 1988, Ser. No. 154,103
Claims priority, application France, Feb. 17, 1987, 87 02000
Int. Cl.⁴ F16D *23/14*
U.S. Cl. 192—98 9 Claims



1. A clutch release bearing assembly comprising an operating element adapted to be subject to the action of a control device, and a drive element applied either directly or indirectly axially against said operating element and which said drive element is adapted to act on the release device of a clutch, said bearing assembly having an axis, said operating element having a transverse flange for the axial abutment of the drive element, and said drive element carrying transversely, for axial application to said flange, a flanged edge referred to hereinafter as an applied flanged edge; and an elastic washer adapted to apply said drive element to said operating element and to locate it axially with respect thereto, said elastic washer bearing axially on the drive element and having at least one lug provided with a transverse shoulder by which said elastic washer is retained by the operating element, said lug being prolonged beyond said transverse shoulder and being formed with a washer flange extending radially towards the axis of the assembly and beyond said shoulder.

4,881,630
COIN DISCRIMINATING APPARATUS

Osamu Kobayashi, Sakado; Osamu Sugimoto, Iruma; Yonezou Furuya, Saitama; Takeshi Ishida; Masanori Tanaka, both of Sakado, and Jun Ishii, Kawagoe, all of Japan, assignors to Nippon Conlux Co., Ltd., Tokyo, Japan
Continuation of Ser. No. 56,335, May 22, 1987, abandoned, which is a continuation of Ser. No. 752,455, Jul. 5, 1985, abandoned. This application Sep. 2, 1988, Ser. No. 241,817
Claims priority, application Japan, Jul. 7, 1984, 59-101975
Int. Cl.⁴ G07F *9/00, 3/02, 1/04*
U.S. Cl. 194—203 2 Claims



1. A coin discriminating apparatus comprising:

a common coin path through which all inserted coins to be discriminated pass downward, said common coin path having a curved portion and extending obliquely of said apparatus to said curved portion at which the downward movement direction of a coin is changed, and then extending vertically of the apparatus;

a detection coil means arranged to oppose said common coin path for detecting the denomination of the coin and discriminating a counterfeit coin from an authentic coin;

a return coin path and a first authentic coin path each disposed at a location downstream of said common coin path, said return coin path and said first authentic coin path each extending vertically of said apparatus and defined between a plurality of plate members;

a plurality of second authentic coin paths each corresponding to an associated one denomination of coin, said second authentic coin paths being stacked with each other and with said return coin path and said first authentic coin path and defined between said plurality of plate members, said second authentic coin paths having an upper section which extends from said first authentic coin path and then extends obliquely and in a direction opposite to that of said common coin path;

a first solenoid operative in response to the discrimination of a counterfeit coin from an authentic coin by said detection coil means and a second solenoid operative in response to a detection of a denomination of a coin by said detection coil means;

a first selector means disposed at a location downstream of said curved portion of said common coin path for passing all of said inserted coins therethrough and for diverting counterfeit coins to said return path and authentic coins to said first authentic coin path, said first selector means being arranged for pivotal movement around a shaft extending horizontally of said apparatus and in a direction along which said second authentic coin paths, said return coin path and said first authentic coin path are stacked, so as to communicate said common coin path with said first authentic coin path and said return coin path when said first selector means is selectively operated by said first solenoid; and

a second selector means disposed at a location downstream of a lower curved portion of said first authentic coin path and downstream of said first selector means for passing only authentic coins therethrough and for sorting authentic coins by denomination into said second authentic coin paths, said second selector means being arranged for pivotal movement around a shaft extending vertically of said apparatus and in the direction along which said second authentic coin paths, said return coin path and said first authentic coin path are stacked, so as to direct the authentic coin to a corresponding one of said second authentic coin paths when said second selector means is operated by said second solenoid.

4,881,631
BREAKOVER HANDLE FOR PARKING METER

Seth Ward, II, Little Rock, Ark., assignor to POM Incorporated, Russellville, Ark.
Filed Jun. 9, 1988, Ser. No. 204,352
Int. Cl.⁴ F16D *3/00;* **G05G** *1/00*
U.S. Cl. 194—228 1 Claim

1. A parking meter comprising:

a housing having a substantially open viewing region;

a coin operated timing mechanism disposed in said housing having coin slots for accepting coins therein and a calibrated display of indicating the amount of time corresponding to the monetary value of the inserted coins, said calibrated display viewable in said substantially open viewing region;

a shaft connected to said coin operated timing mechanism and extending along a longitudinal axis to the exterior of said housing and terminating in a radially enlarged flange having a first detent recess therein comprising a slotted aperture extending through said flange and spaced radially from said longitudinal axis and sized to accommodate movement of a detent member only in a direction parallel to said longitudinal axis but to captivate the detent for rotatable movement with the flange;

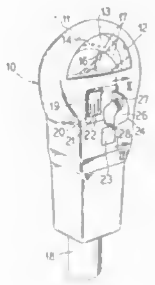
a cylindrical cup shaped receptor having an end wall intersecting the central axis thereof and a side wall extending axially and longitudinally with respect to said central axis for receiving said flange of said shaft, said end wall having a single second recess spaced radially inwardly of said side wall and selectably alignable with said first recess;

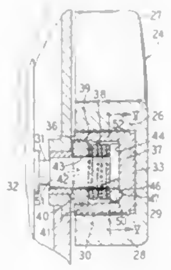
screw threads formed in the interior of said sidewall;

a spherically shaped detent member constructed and arranged to be complemental in size and shape for reception within said first and second recesses to join said shaft and said receptor in co-rotatable relationship with one another;

a cap having threaded sidewalls for engaging the screw threads in the interior of said sidewall of said receptor and an aperture in the center thereof constructed and arranged to pass said shaft therethrough;

spring means comprising a series of spring washers disposed radially about said shaft between the endwall of said receptor and said cap for bias loading said flange of said shaft against said endwall of said receptor; and





a manual activating handle having an aperture for receiving said receptor,

interfitting knurling means on said handle and said receptor locking them together in a co-rotatable relationship with said handle in a pre-aligned orientation relative to said viewing region,

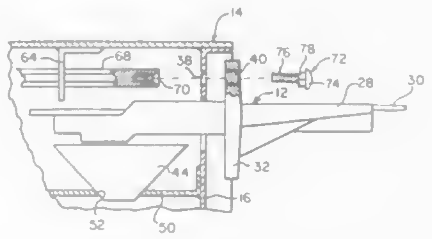
said handle adapted for gripping by a human hand so that an operator of said parking meter upon turning said handle will apply normal torque to said receptor and said detent thereby to turn said shaft for activating said coin operated timing mechanism,

the application of excessive abnormal torque to said manual activating handle displacing said detent member longitudinally out of said second recess into said first recess against said end wall and against the bias of said spring means and allowing said handle and receptor to turn together without simultaneously turning said shaft thereby allowing said handle, said receptor and said detent to turn through a rotation of only 360 degrees before said detent once against engages said second recess so that said handle will return and remain in said pre-aligned orientation;

whereby the actuating handle is once again conditioned for normal action of the parking meter from its pre-aligned orientation.

4,881,632
MOUNTING DEVICE FOR A COIN CHUTE ASSEMBLY

Anthony LiCausi, Middle Village, N.Y., assignor to Greenwald Industries Inc., Brooklyn, N.Y.
Filed Jul. 27, 1988, Ser. No. 224,738
Int. Cl.⁴ G07F *9/00*
U.S. Cl. 194—350 3 Claims



1. A lockable coin chute assembly comprising:

a housing including a wall having an opening therein and an aperture located adjacent to said opening;

a coin chute mechanism mounted on said housing, said mechanism including a chute flange engageable with said housing wall in the mounted position thereof and covering said housing wall opening, said chute flange having an aperture therein located in alignment with the aperture in said housing wall when said chute mechanism is in its mounted position on said housing;

a locking shaft supported within said housing, said shaft including a bearing surface having a transverse dimension greater than the corresponding dimension of the aperture in said housing wall, said shaft being positioned with its bearing surface in contact with an inside surface area of said housing wall surrounding the aperture thereof;

a headed member having an enlarged head portion and a shank portion extending from said head portion, said shank portion configured to extend through the aligned apertures in said chute flange and said housing wall with said head portion in contact with and bearing against an outer surface area of said chute flange surrounding the aperture thereof;

said headed member being made of hardened steel and having a portion configured to engage said chute flange to prevent rotation of said headed member relative to said locking shaft; and

interengaging fastening means associated with said locking shaft and said shank portion of said headed member for removably securing said coin chute mechanism in its mounted position on said housing.

4,881,633
MODULAR WORK INDEXING MACHINE AND METHOD OF CONSTRUCTING SUCH A MACHINE

Ronald J. Cailey, Flint; John F. Nichols, Essexville, and Herman F. Heidtman, Bay City, all of Mich., assignors to RWC, Inc., Bay City, Mich.
Filed Sep. 28, 1987, Ser. No. 101,399
Int. Cl.⁴ B65G *21/20*
U.S. Cl. 198—345 13 Claims

1. In a precision indexing conveyor system for moving workpieces incrementally along a longitudinal pathway from work station to work station:

a. a frame;

b. a pair of in-line sprockets at opposite ends of said frame;

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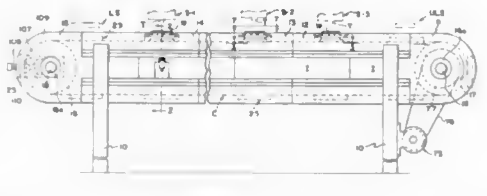
c. an endless conveyor trained around said sprockets comprising longitudinally spaced apart workpiece carriers mounting on a series of prestretched equal length, flexible, spirally wound cable links having precisely longitudinally spaced apart, rigid pins fixed to their ends at locations such as to provide a common cable length at a time when the cables are all under a predetermined common tensile load;
d. a drive for driving said conveyor sprockets in increments of revolution punctuated by periods of dwell sufficient for a work operation to be performed at the work stations;



e. mechanism maintaining a predetermined tensile load on said conveyor substantially equal to the load applied to the cables when the pins are fixed thereto;
f. said carriers having longitudinally central, transversely elongate, longitudinally adjacent sockets for receiving the adjacent pins on adjacent cable links; and
g. the adjacent pins on adjacent cable links being connected by rigid roller chain links, and said carriers having transversely spaced grooves for accommodating said roller chain links.

4,881,634

REPOSITIONING APPARATUS FOR ELONGATED GOODS, ESPECIALLY LOADING AND UNLOADING APPARATUS FOR RAILS, STRIPS, OR THE LIKE, ON OR FROM A ROLLER CONVEYOR

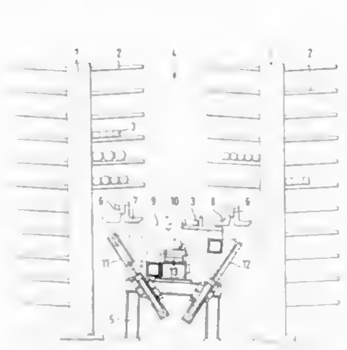
Armin Stolzer, Renchen, Fed. Rep. of Germany, assignor to KEURO Maschinenbau Gesellschaft mit beschrankter Haftung & Co. Kommanditgesellschaft, Achern-Gamshurst, Fed. Rep. of Germany

Filed Sep. 23, 1988, Ser. No. 248,778

Claims priority, application Fed. Rep. of Germany, Oct. 26, 1987, 37361228

Int. Cl.⁴ B65G *37/00*

U.S. Cl. 198—372 **14 Claims**



1. Repositioning apparatus for elongated goods, especially loading and unloading apparatus for elongated goods on a roller conveyor (**13**) having rollers for supporting the goods, comprising

a frame element (**5**) located adjacent the roller conveyor;
guide track means (**11**, **12**) on said frame element extending in a plane essentially transverse to the roller conveyor in an upwardly inclined direction from below the roller conveyor to above and laterally of the roller conveyor;
a plurality of movable support elements (**9**, **14**, **16**; 10, 15, 17) positioned along the roller conveyor and movable in said guide means,
said movable support elements having upper support surfaces positioned in an essentially common plane for, temporarily supporting the goods when transferring the goods to and from the roller conveyor,
said movable support elements being conjointly movable between a lowered position in which the upper support surfaces are below a support plane defined by the rollers of the roller conveyor (**13**) and a raised position in which the upper support surfaces are above the support plane and positioned laterally of the roller conveyor.

4,881,635

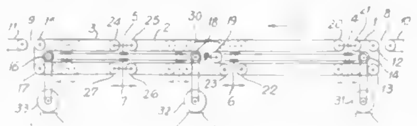
METHOD OF AND ARRANGEMENT, FOR TRANSPORTING PIECE GOODS AND FOR ORGANIZED CHANGING THEIR POSITION

Hans D. Raschke, Hannover, Fed. Rep. of Germany, assignor to H. Bahlsens Keksfabrik KG, Hannover, Fed. Rep. of Germany

Filed Sep. 11, 1987, Ser. No. 96,965

Int. Cl.⁴ B65G *47/26*

U.S. Cl. 198—460 **45 Claims**



1. A method of transporting piece goods and organized changing their position, comprising the steps of transporting goods in a plurality of substantially parallel tracks by a transporting device from a supply conveyor to a discharge conveyor spaced from one another in a predetermined direction; determining a position of the goods by sensing means at least in the region between the supply conveyor and the transporting device; supplying the goods to each track of the transporting device with a mean value of arrival and a variance of arrival; providing in each track of the transporting device at least three transporting conveyors, and transitions between two adjacent ones of the transporting conveyors; changing a speed of the transporting conveyors of the transporting device; and moving a respective one of the transitions in said direction to change their position, so that by changing the position of the transition and the speed of the transporting conveyors pieces or groups of goods can change their position separately from other pieces or groups of goods so as to be accelerated or decelerated.

4,881,636

FLOATING SEPARABLE KEY CASE

G. James Oletzke, 24150 E. Cedar Lake Dr., New Prague, Minn. 56071

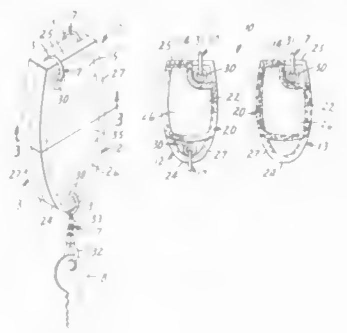
Filed Dec. 28, 1987, Ser. No. 137,969

Int. Cl.⁴ A45C *11/00*

U.S. Cl. 206—37.1 **9 Claims**

1. A floating key case comprising first and second totally separate generally planar wall portions each having a periphery and inner and outer surfaces, said wall portions each comprising a layer of a soft flexible material having a density substantially less than that of water;

key retaining means on each of said wall portions adapted to have a key attached thereto and to afford movement of the key from a position adjacent the inner surface of said wall portion to a position projecting beyond the peripheral edge of said wall portion; and
attaching means for releasably attaching said wall portions together with said inner surfaces adjacent and for defining adjacent portions of said inner surfaces bounded by said attaching means adapted to receive keys attached by said key retaining means between said adjacent portions of said wall portions, said wall portions being totally separable to afford use of the keys attached thereto by said key retaining means in separate locations.



4,881,637

HAT AND BOOT CASE

Jack Peters, 806 Eastwood Dr., and Jack T. Melton, 537 S. Cortez St., both of, Prescott, Ariz. 86303

Filed Mar. 21, 1989, Ser. No. 326,357

Int. Cl.⁴ B65D *85/18*

U.S. Cl. 206—278 **11 Claims**

1. Means for carrying both boots and a hat comprising:
an enclosed container having an interior partition dividing said container into separate boot and hat storage compartments;
a pair of generally opposed parallel doors on opposite sides of said interior partition for providing selective access to said boot and hat compartments;
means for mounting said hat in said hat storage compartment,
at least one aperture defined in said partition adjacent its edge for each boot to be stored in said boot compartment, said apertures permitting the widest portion of each boot to extend into said hat compartment.

4,881,638

GOLF BAG WITH DIVIDER AND PUTTER HOUSING

Sung C. Cho, Seoul, Rep. of Korea, assignor to Haidon Industrial Co., Ltd., Seoul, Rep. of Korea

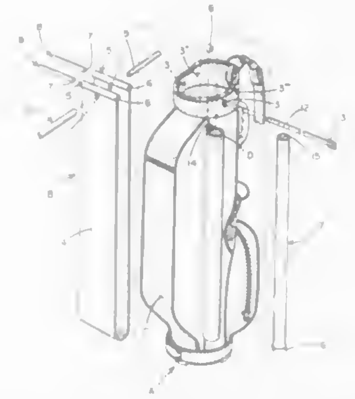
Filed May 27, 1988, Ser. No. 199,378

Claims priority, application Rep. of Korea, Mar. 9, 1988, 3122[U]

Int. Cl.⁴ A63B *55/00*

U.S. Cl. 206—315.3 **3 Claims**

1. A golf bag and insert, comprising in combination:
(a) a golf bag having a body portion defining an elongated interior recess and an upper annular edging about an upper periphery of the body portion, and a first pair of transversely opposed aligned openings through said edging, and a second pair of transversely opposed aligned openings through said edging spaced apart from said first pair;
(b) a flexible insert comprising an elongated strip of material having a width approximately equal to the distance between said aligned openings, said strip having respective ends formed into loops and having a center section suspended into the interior recess of said golf bag defining a U-shaped divider;



(c) a first tube passing through one of said loops and arranged between said first pair of aligned openings, and a second tube passing through the other of said loops and arranged between said second pair of aligned openings; and
(d) a belt passing serially through said aligned openings, said first tube and said second tube, and having fastening means for interlocking said belt in attaching said tubes and said golf bag together, thereby containing said flexible insert in suspension in said interior recess.

4,881,639

IC CARRIER

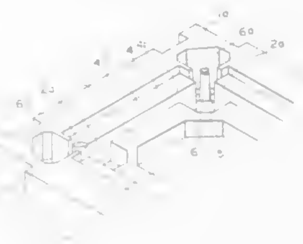
Noriyuki Matsuoka, and Masaaki Kubo, both of Tokyo, Japan, assignors to Yamaichi Electric Mfg. Co., Ltd., Tokyo, Japan

Filed Feb. 22, 1989, Ser. No. 313,604

Claims priority, application Japan, Feb. 26, 1988, 63-43976

Int. Cl.⁴ B65D *85/62*

U.S. Cl. 206—328 **2 Claims**



1. An IC carrier comprising a generally rectangular carrier body including a generally rectangular IC accommodating section at a generally central portion thereof, torsion bars each disposed at each corner portion of said carrier body, each torsion bar being disposed on a line opposite each corner portion of said IC accommodating section and diagonally crossing two sides forming the corner portion of said carrier body, resiliently displacable latch arms each rising from each of said torsion bars, and engaging claws each formed on a free end of each of said latch arms and adapted to engage with an upper

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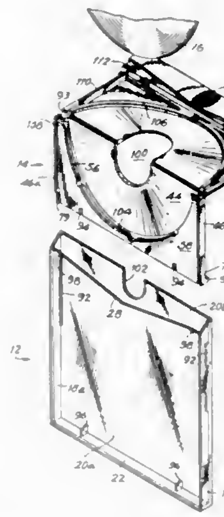
edge portion of each of the corner portions of an IC package of a generally rectangular shape accommodated in said IC accommodating section.

4,881,640
ARTICLE FOR STORING OPTICALLY READABLE AND RECORDABLE DISC DEVICES

Arthur Herr, New York, N.Y.; Toby S. Welles, Norwalk, and Robert W. Johnson, Westport, both of Conn., assignors to Reynard CVC, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 143,897, Jan. 13, 1988, Pat. No. 4,771,883. This application Aug. 26, 1988, Ser. No. 237,581
Int. Cl.⁴ B65D *85/57*
U.S. Cl. 206—313 15 Claims



1. An insertable drawer member configured and dimensioned for receiving and storing optically readable and recordable disc means within an outer housing in a manner so as to ensure that information hearing areas on said disc means are not damaged during insertion of removal therefrom, said insertable drawer member comprising:

(a) a base portion divided into an upper half and a lower half by a living hinge located therebetween so as to permit downward rotation of said upper half from a first position, coplanar with said lower half, to a second position spaced a distance therefrom, said base portion further having, upon said lower half thereof, a semicircular groove, said groove configured and dimensioned for receiving said optically readable and recordable disc means by pressure-contact with non-information bearing areas of said disc means so as to releasably retain said disc means within said groove;

(b) a lid integrally formed with said upper half of said base portion, said lid configured and dimensioned to include a V-shaped lower edge for contact relation with a corresponding V-shaped upper edge of said outer housing, which V-shaped housing edge ensures insertion and removal of said disc means in a manner which avoids damage to information-bearing areas thereof; and

(c) retaining means for producing a pressure contact between said drawer member and an interior position of said housing, said retaining means comprising

(1) at least one channel member located along a rear surface of said base portion, each said channel member oriented substantially perpendicularly to said living hinge;

(2) a first projecting member extending within each said channel member on said lower half of said base portion, said first projecting member configured and adapted for non-reciprocal slidable passage over a corresponding member located upon an inner surface of said housing; and

(3) a second projecting member corresponding to said first projecting member, said second projecting member extending from an inner surface of a rear wall of said housing at a location opposite and adjacent that of said first projecting member.

5. An insertable drawer member configured and dimensioned receiving and storing optically readable and recordable discs such as compact discs, CD-ROMs, video laserdiscs and the like within an outer housing in a manner which ensures that information bearing areas of said discs are not damaged during insertion or removal therefrom, said insertable drawer member comprising:

(a) a base at least partially defined by a pair of opposed parallel side walls, said base being divided into an upper portion and a lower portion by hinge means located therebetween to permit the downward rotation of said upper portion from a first position coplanar with said lower portion to a second position spaced a distance therefrom, said lower portion comprising an arcuately shaped seat member spaced a distance apart from a flat plate member, said seat member and said plate member forming a front face and a rear face, respectively, of a semicircular groove, wherein said groove is defined by the space therebetween, and further, a portion of said plate member forming a rear face of said groove being at least partially detached from a remaining portion of said plate portion, said semicircular groove additionally comprising at least one member positioned to permit a degree of separation within said groove sufficient to allow retention by pressure contact of at least an uncoded peripheral portion of said disc without scratching or otherwise damaging a remaining coded portion thereof, said lower portion further comprising a relatively narrow, arcuately configured peripheral shelf, located adjacent at least a portion of said semicircular groove, and wherein said upper portion of said base comprises an arcuately shaped raised plateau to support an upper circumferential portion of said disc;

(b) a lid integrally formed with said base, said lid having on at least a portion of a front face thereof a serrated gripping area to facilitate grasping of said lid for movement thereof to permit access to said digital disc, said lid further being configured and dimensioned to include a V-shaped lower edge for contact relation with a corresponding V-shaped edge portion of said housing, which V-shaped housing edge ensures insertion and removal of said disc in a manner which avoids damage to information-bearing areas thereof; and

(c) a parallel pair of vertical channel members located on a rear surface of said base, said channel members oriented substantially perpendicularly to said hinge means, each said channel member being of a sufficient depth, along the upper portion of said base, to form a corresponding raised ridge on a reverse side of said channel member along a front face of said base, each said channel member further comprising a first sloping ramp member projecting substantially perpendicularly from said base in said lower portion thereof, said first ramp member configured for non-reciprocal sliding movement over a correspondingly positioned and configured second ramp member on an inner surface of a rear wall of said housing, and further, each said channel member having a projecting button member located in the upper portion thereof to facilitate snap-locking engagement of said base within said housing.

15. A container configured and dimensioned for receiving and storing optically readable and recordable discs such as compact discs, CD-ROMs, video laserdiscs and the like upon a drawer member adapted for reciprocal back and forth motion within an outer protective housing in a manner which ensures that information bearing areas of said discs are not damaged during insertion or removal from said container, said container comprising:

(a) an outer housing member configured and adapted for insertion and reciprocal back and forth motion of said drawer member therein, said housing having a front face and a rear face, each said face having, along an upper edge portion thereof, a semi-circular groove configured to permit passage

therethrough of at least one finger for subsequent insertion within a corresponding aperture defined by said disc to facilitate removal and insertion of said disc, said front face comprising, adjacent said semicircular groove thereon, a V-shaped edge portion configured to prevent all but an uncoded edge portion of said disc from contacting said housing during insertion and removal therefrom said front face further comprising, on an inner portion thereof on both sides of said semicircular groove, elongated horizontal members each configured in the form of a ½ cone having a rounded outer edge portion, said ½ cone members defining between said front face and said drawer member an aperture configured in the form of a shallow elongated funnel to prevent any portion other than an uncoded edge portion of said disc from contacting either said drawer member or said housing when said disc is accessed;

(b) a base at least partially defined by a pair of opposed parallel side walls, said base being divided into an upper portion and a lower portion by hinge means located therebetween to permit the downward rotation of said upper portion from a first position coplanar with said lower portion to a second position spaced a distance therefrom, said lower portion comprising an arcuately shaped seat member spaced a distance apart from a flat plate member, said seat member and said plate member forming a front face and a rear face, respectively, of a semicircular groove, wherein said groove is defined by the space therebetween, said seat member comprising, along a first and a second peripheral edge portion thereof, a free floating projecting member, each said projecting member not attached to an adjacent one of said side walls and projecting upwardly from said seat member at an angle of less than about 45° therefrom to facilitate correct positioning of said disc, and further, a portion of said plate member forming a rear face of said groove being at least partially detached from a remaining portion of said plate portion, said semicircular groove additionally comprising at least one member positioned to permit a degree of separation within said groove sufficient to allow retention by pressure contact of at least an uncoded peripheral portion of said disc without scratching or otherwise damaging a remaining coded portion thereof, said lower portion further comprising a relatively narrow, arcuately configured peripheral shelf, located adjacent at least a portion of said semicircular groove, and wherein said upper portion of said base comprises an arcuately shaped raised plateau to support an upper circumferential portion of said disc and at least one pair of substantially parallel rib members extending perpendicularly from said base, said rib members positioned and configured to operate, in cooperation with a pair of button members extending upwardly from a front face of said arcuate seat member, so as to support a promotional booklet packaged with said disc;

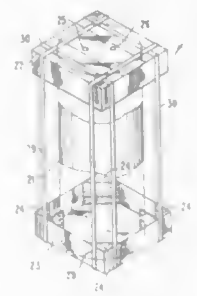
(c) a lid integrally formed with said base, said lid having on at least a portion of a front face thereof a serrated gripping area to facilitate grasping of said lid for movement thereof to permit access to said disc, said lid further being configured and dimensioned to include a V-shaped lower edge for contact relation with said corresponding V-shaped edge portion on said front face of said housing; and

(d) a parallel pair of vertical channel members located on a rear surface of said base, said channel members oriented substantially perpendicularly to said hinge means, each said channel member being of a sufficient depth, along the upper portion of said base, to form a corresponding raised ridge on a reverse side of said channel member along a front face of said base, each said channel member further comprising a first sloping ramp member projecting substantially perpendicularly from said base in said lower portion thereof, said first ramp member configured for non-reciprocal sliding movement over a correspondingly positioned and configured second ramp member on an inner surface of a rear wall of said housing, and further, each said channel member having a projecting button member located in the upper portion thereof to facilitate snap-locking engagement of said base within said housing.

4,881,641
WATER HEATER PACKAGE CONSTRUCTION AND METHOD

Bruce W. Mattingly, Louisville, and Roger J. Coates, Cox's Creek, both of Ky., assignors to Soltech, Inc., Shelbyville, Ky.

Filed Feb. 6, 1989, Ser. No. 307,322
Int. Cl.⁴ B65D *85/30*
U.S. Cl. 206—320 25 Claims



1. A composite package for appliances and the like comprising:

a top support including a first member having a reinforcing panel and a second member having a reinforcing panel, said reinforcing panels arranged in an overlapping relationship to each other wherein said first member includes in addition to said reinforcing panel, eight other panels, four on each side of said reinforcing panel;

a bottom support including a first member having a reinforcing panel and a second member having a reinforcing panel, said reinforcing panels arranged in an overlapping relationship to each other;

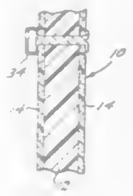
attachment means for attaching said top support to the appliance received within said composite package; and

securement means for securing together in a stacked relationship said top and bottom supports with said appliance therebetween.

4,881,642
ELECTROSTATIC CHARGE DISSIPATOR AND METHOD OF MAKING

William D. Adam, 1822 1/2 Newport Blvd., #347, Costa Mesa, Calif. 92627

Filed Dec. 8, 1988, Ser. No. 283,146
Int. Cl.⁴ B65D *73/02*
U.S. Cl. 206—328 9 Claims



1. Extruded sheet material for draining off an electrostatic charge comprising:

a substrate made of electrically non-conductive resin;

a relatively thin layer fused to at least one of the opposite faces of the substrate, the layer being made of a resin having electro-conductive inclusions dispersed throughout the resin; and

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an electrical conductor coupled to the layer for dissipating any electrostatic charge.

4,881,643
CARRIER STRIP

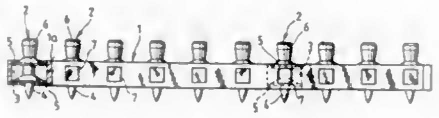
Norbert Pfister, Buchs, Switzerland, assignor to Hilti Aktiengesellschaft, Fürstentum, Liechtenstein

Filed Mar. 2, 1989, Ser. No. 317,855

Claims priority, application Fed. Rep. of Germany, Mar. 2, 1988, 3806624

Int. Cl.⁴ B65D *83/00, 85/24, 83/02*

U.S. Cl. 206—343 8 Claims



1. Carrier strip for elements to be driven into a receiving material by an explosive powder charge operated setting device, said carrier strip being elongated and having two pair of opposite sides extending in the elongated direction, one said pair of opposite sides comprising a first side and a second side disposed in spaced relation, a second said pair comprising two third sides disposed in spaced relation and extending between said first and second sides, said carrier strip having bores extending between said first and second sides and each said bore having a bore surface with an inside diameter, axially extending nails disposed in spaced relation and displaceably supported in said bores, each said nail has a head at one end and a shank extending axially from the head, at least one guidance member located on each said shank of said nails and extending radially outwardly therefrom into engagement with the bore surface for holding and supporting said nails in said strip, said heads of said nails having an outside diameter not greater than the inside diameter of sid bore surface, wherein the improvement comprises that said head projects axially outwardly from the first side of said strip.

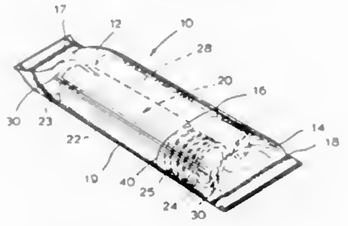
4,881,644
TAMPON APPLICATOR WRAP

Robert C. Norquest, Dover, and Kevin M. Coverdale, Hartley, both of Del., assignors to Playtex Family Products Corporation, Stamford, Conn.

Filed Sep. 16, 1988, Ser. No. 245,832

Int. Cl.⁴ B65D *83/10*

U.S. Cl. 206—363 8 Claims



1. A tampon package assembly comprising: a tampon applicator having a barrrel member for containing a tampon therein and a plunger member for reciprocal movement within said barrel member to eject the tampon from said barrel member, said barrel member having a fingergrip region at one end and a tampon ejection end at its opposite end; and

a protective wrap having a hollow body for initially containing said tampon applicator therein and having a single score line located at a predetermined position along said wrap to separate said wrap into first and second discrete portions; and

said barrel and plunger members initially sealed in said protective wrap in adjacent side-by-side relationship; and

said second wrap portion including opposed first and second ends, said first end located at said score line and means sealing said second end; and

said score line extending transverse to the sealed applicator members contained therein, overlying the barrel member at its fingergrip region and an end region of the plunger, said score line spaced from the end termini of said barrel fingergrip region and plunger end region in the direction of said second end of the second wrap portion; and

said tampon applicator members remaining in said second portion of the opened wrap with said barrel fingergrip region and plunger end region extending outwardly of the first end of said second wrap portion for grasping by a user for ready removal of said plunger from the wrap while said barrel member remains within said second wrap portion with its tampon ejection end located at, and completely protectively enclosed by, said sealed first end of the second wrap portion, whereby the barrel member may be manually grasped from about said second wrap portion while said plunger member is manually removed therefrom and inserted in said barrel member.

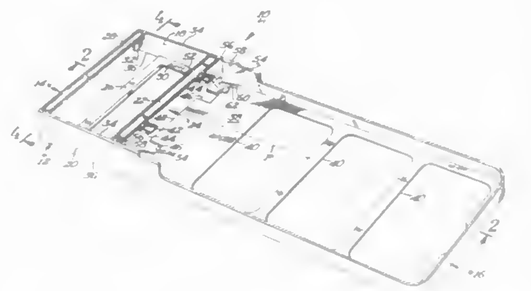
4,881,645
SECURITY CASSETTE HOLDR HAVING INTEGRALLY FORMED RETAINING RAMPS

Mark G. Smiler, Eagan, and John E. Richard, Rockford, both of Minn., assignors to Shamrock Industries, Inc., Minneapolis, Minn.

Filed Jun. 24, 1988, Ser. No. 211,244

Int. Cl.⁴ B65D *85/672*

U.S. Cl. 206—387 21 Claims



1. A security holder for an article such as a cassette, said security holder comprising:

a frame member having a generally enclosed region and a handle region connected to and extending from the generally enclosed region, said enclosed region defining an opening through which the article may be slidably inserted along a path and engagingly received within the enclosed region; and

retaining means for retaining the article within said enclosed portion of said frame member such that the article cannot be removed from said enclosed portion without destructively altering a portion of said frame member, said retaining means including a pair of opposing retaining ramps integrally molded in a substantially fixed and unbending relation to and along said frame member at least partially obstructing said opening such that the article contacts the retaining ramps and deforms said frame member from an original configuration sufficiently to permit the article to be slidably inserted between said retaining ramps and through said opening with said frame member returning to said original configuration once the article is fully received within said enclosed portion.

4,881,646
ISOTHERMAL PACKAGE MATERIAL

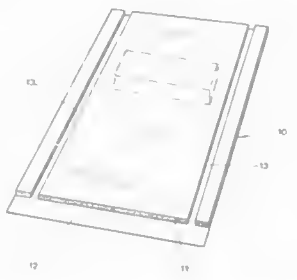
Jean-Pierre Weber, Avenue Gasparin 14, CH-1224 Chene Bougeries, Switzerland

PCT No. PCT/CH82/00103, § 371 Date Apr. 27, 1984, § 102(e) Date Apr. 27, 1984, PCT Pub. No. WO84/00943, PCT Pub. Date Mar. 15, 1984

PCT Filed Aug. 30, 1982, Ser. No. 610,994

Int. Cl.⁴ B65D *85/45*

U.S. Cl. 206—460 7 Claims



1. Sheet material for making a sealed isothermal package comprising:

a flexible sheet having a highly reflective outer surface and a self-adhesive inner surface, and

a flexible insulating layer of low heat conductivity material bonded to said flexible sheet by said self-adhesive inner surface,

said insulating layer being of lesser area than said flexible sheet and leaving marginal areas of said self-adhesive inner surface of said flexible sheet exposed for adhesion to an underlying portion of said sheet material when wrapped around an object to be package to seal the package.

4,881,647
PLASTICS CAN

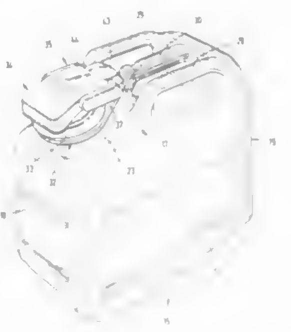
Wolfram Schiemann, Eugen-Nagele-Strasse, 7140 Ludwigsburg, Fed. Rep. of Germany

Filed Nov. 15, 1988, Ser. No. 271,494

Claims priority, application Fed. Rep. of Germany, Apr. 29, 1988, 3814558

Int. Cl.⁴ B65D *21/02, 41/06*

U.S. Cl. 206—510 14 Claims



1. Plastic can having a capacity in the region of 10 liters and more, comprising a bottom wall with a standing surface thereon, a top wall opposite to said bottom wall, a front wall, said top wall having a portion inclined towards said front wall, a back wall opposite to said front wall, two lateral walls, a pouring spout on said portion of said top wall inclined towards said front wall, a screw cap adapted to rotate to a closed state for closure of said pouring spout, a device for arresting said screw cap in said closed state in a predetermined rotational position and two bar-shaped handles molded from said upper wall and spaced apart from each other, said handles having upper edges that are tangential to an imaginary plane extending parallel to said standing surface of said bottom wall, said screw cap having an upper face with a first plane surface that in said closed state is the highest raised portion of said screw cap and is tangential to said imaginary plane.

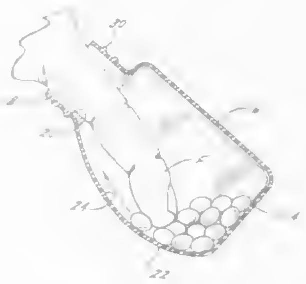
4,881,648
CONTAINER FOR TABLETS, PILLS OR THE LIKE

Robert F. Hagerty, 159 Rutledge Ave., Charleston, S.C. 29403

Filed Sep. 15, 1988, Ser. No. 244,989

Int. Cl.⁴ B65D *83/04*

U.S. Cl. 206—540 7 Claims



1. A container adapted for containing a plurality of tablets, pills, or the like, and characterized by the ability to permit the tablets, pills, or the like to be readily and individually grasped by one's finger and slidably removed from the container without requiring a high degree of manual dexterity, and comprising an integral body which includes

a generally horizontal bottom wall having an outer periphery;

a circumferential side wall extending upwardly from said outer periphery of said bottom wall so as to define an enclosure;

a generally cylindrical neck positioned at the upper extremity of said side wall and defining a generally cylindrical opening which is sized to receive one's finger therethrough and so that the finger is able to flex and reach downwardly a substantial distance within said enclosure, said neck being relatively short and having a length of only a small fraction of the length of one's finger so that one's finger may extend beyond the neck within the confines of the container;

means on said neck for receiving a closure member for sealingly closing the container;

a closure member cooperating with said means on said neck for sealingly closing the container, and wherein said closure member is relatively short and has a length of about the same as said neck; and

wherein said side wall includes a bulbous portion extending downwardly from said neck and laterally outwardly from said opening of said neck and being continuously curved to said horizontal bottom wall, and with said bulbous portion and said neck defining a continuous inner wall surface which extends along the length of said bulbous portion and through said neck opening, and with said continuous inner wall surface being smooth along its entire length so as to permit a single tablet, pill, or the like to be grasped and isolated on said inner wall surface in said bulbous portion by one's finger extending through said opening and then slidably withdrawn by one's finger along said inner wall surface and outwardly through said neck opening without engaging any abutment.

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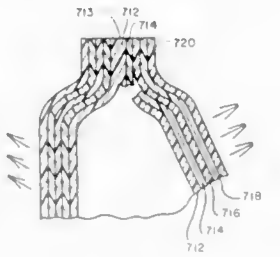
4,881,649
PACKAGE HAVING INSEPARABLE SEALS AND A MODIFIED PLY-SEPARATION OPENING

Joseph C. Hsu, Neenah, and Anthony C. Guckenberger, Appleton, both of Wis., assignors to American National Can Company, Chicago, Ill.

Continuation of Ser. No. 52,299, May 21, 1987, abandoned, which is a continuation of Ser. No. 819,312, Jan. 16, 1986, Pat. No. 4,704,314. This application Apr. 17, 1989, Ser. No. 339,969

Int. Cl.⁴ B65D *17/00*

U.S. Cl. 206—634 **14 Claims**



1. A closed and sealed package made with packaging materials including a multiple layer packaging sheet material having a plurality of layers bonded to each other at respective layer interfaces, defining a thickness of said sheet material, said sheet material including a first seal layer on a first surface thereof disposed on the interior of said package, said first seal layer being bonded to a substrate comprising a second outer surface disposed toward the exterior of said package, said package having been closed by seals forming a closure between surface layers forming a substantial portion of the interior surface of said package, said seals comprising inseparable seals between first and second surface seal layers of corresponding first and second opposing packaging sheet materials at an interface therebetween, whereby said first and second seal layers are so fused together that said interface therebetween ceases to exist as an interface, at least one of said opposing first and second sheet materials comprising said multiple layer sheet material, said inseparable seals being sufficiently strong that no amount of force is effective to separate material comprising said first and second surface seal layers of said opposing packaging sheet materials into their prior configuration with separation preferentially taking place along the original seal interface, said package being adapted to be opened, and thereby to enable gaseous communication between the interior of said package and a surrounding gaseous environment, said opening comprising a combination of tearing through said first seal layer, and thus partially through said thickness of said sheet material, but not to said outer surface, followed by ply separation peeling at one of said interfaces within the interior of said sheet material between two adjoining layers, and wherein the opening of said package to enable gaseous communication between the interior of said package and the surrounding environment is accomplished by propagation of said ply separation peeling outwardly to an edge of said sheet material on the outside of said package.

5. A closed and sealed package made with packaging materials including a multiple layer packaging sheet material having a plurality of unoriented layers bonded to each other at respective layer interfaces, and including a first seal layer on one surface thereof disposed on the interior of said package, said first seal layer being bonded to a substrate comprising a second outer surface disposed toward the exterior of said package, said package having been closed by seals between surface layers forming a substantial portion of the interior surface of said package, said seals comprising inseparable seals such that said package cannot be opened by ply separation of said seals, said package being adapted to be opened, and thereby to enable gaseous communication between the interior of said package and the surrounding environment, said opening comprising a combination of tearing through said first seal layer, and thus partially through the thickness of said sheet material, but not to said outer surface, followed by ply separation peeling at one of said interfaces within the interior of said sheet material between two adjoining layers, and wherein the opening of said package to enable gaseous communication between the interior of said package and the surrounding environment is accomplished by propagation of said ply separation peeling outwardly to an edge of said sheet material on the outside of said package, said multiple layer packaging sheet material having an interface between two of said multiple layers, said interface having a peel strength of 50 to 400 grams per inch width; the required forces being individually less to tear from an inner surface of said package outwardly partially through said sheet material to said interface and to peel apart the layers at said interface, with said peel progressing to an edge of said sheet material, to thereby open said package, than (i) the force required to peel apart said seals between said packaging surface layers or (ii) the force required to tear from an inner surface of said package partially through said sheet material to said interface, peel along said interface to a point between said corresponding seal and an edge of said sheet material, and tear back through said sheet material to a surface outside the seal area of said package and corresponding to continuation of said inner surface.

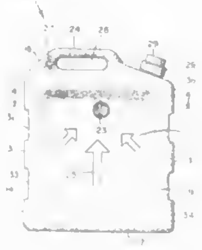
4,881,650
FLUID COLLECTION CONTAINER

Richard O. Bartz, 7017 Mark Terrace Dr., Edina, Minn. 55435

Filed Jun. 14, 1988, Ser. No. 206,313

Int. Cl.⁴ B65D *85/00*

U.S. Cl. 220—1 C **22 Claims**



1. An apparatus for collecting liquid draining from a motor vehicle and storing the same comprising: a container having an internal chamber for storing liquid, first and second side walls, a bottom wall for supporting the container in a prone position to collect liquid draining from a motor vehicle, said side walls and bottom wall having a plurality of transverse ribs separated by the transverse grooves, a first end wall normally disposed relative to the bottom wall for supporting the container in an upright position to store liquid in said chamber, a second end wall opposite the first end wall, and a top wall joined to the side walls and end walls, said walls surrounding said chamber, said top wall having an upright continuous outer peripheral ridge and a funnel-shaped portion surrounded by said ridge, said funnel-shaped portion having an inwardly and downwardly sloping wall with a lower most portion thereof located in close relationship with respect to the second end wall, said lower most portion having an opening in communication with said chamber whereby liquid drained onto the funnel-shaped portion flows through said opening into the chamber, a spout secured to the second end wall, said spout having a second opening open to the chamber, said spout being located adjacent said first side wall, removable cap means mounted on the spout for closing the second opening, a first handle secured to said second end wall whereby the container can be transported in the upright position, and a second handle secured to the top and bottom walls adjacent the bottom of the second side wall and first end wall, said second handle being spaced from the second side wall and the first end wall to provide a recess in said second side wall and first end wall under the second handle, said recess being open adjacent to the second side wall and open adjacent to the first end wall to accommodate a person's hand for firmly gripping said second handle, said first and second handles adapted to be gripped by both hands of a person to facilitate pouring of liquid from the chamber out through the spout.

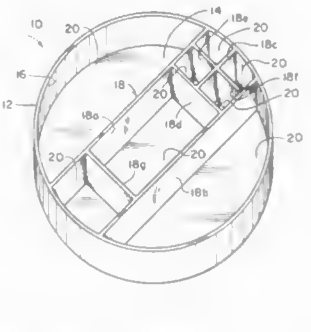
4,881,651
ROTATABLE ORGANIZER WITH INTEGRAL PIVOT NUB AND PERIPHERAL REDUCED AREA CONTACT NUBS

Nancy Mimoun, and Benson Zinbarg, both of Stamford, Conn., assignors to Snn Hill Industries, Inc., Stamford, Conn.

Filed Aug. 12, 1988, Ser. No. 232,326

Int. Cl.⁴ B65D *25/24*

U.S. Cl. 220—18 **14 Claims**



1. A rotatable organizer comprising:

a container having a bottom adapted to rest on a support surface;

main pivot nub means fixed to said bottom and consisting of a non-rotatable element projecting downwardly from said bottom for rotatably supporting said container on said support surface such that said container is spaced from said support surface at least in the vicinity of said main pivot means; and

a plurality of spaced apart, off-center reduced area contact means fixed to said bottom and consisting of a plurality of non-rotatable elements projecting downwardly from said bottom, and arranged in surrounding relation to said main pivot nub means, for raising said bottom off of said support surface during rotation of said container and for reducing the area of contact of the rotatable organizer with said support surface during rotation thereof.

4,881,652
DEVICE SUITABLE FOR USE AS A DUAL-CHAMBERED CAN

Wolfram Schiemann, Eugen-Nagele Strasse 17, 7140 Ludwigsburg, Fed. Rep. of Germany

Filed Oct. 3, 1988, Ser. No. 252,528

Int. Cl.⁴ B65D *8/04*

U.S. Cl. 220—20 **6 Claims**

1. Device suitable for use as a one-piece dual-chambered can of blow-molding synthetic material

said device having a larger chamber for holding gasoline, a smaller chamber for holding oil, a separation plane between said chambers, a thin connecting member arranged between said chambers in said separation plane and forming part of said chambers, an upper side on said larger chamber and a handle straddling said separation plane, said handle having a handle root that begins on said upper side of said larger chamber, wherein:

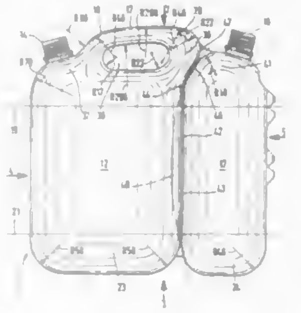
(a) said connecting member is arranged outside of said handle,

(b) said smaller chamber has an upper zone that extends cupola-like at least partway up the height of said handle,

(c) said handle has a second handle root having a bulge that extends very close to said upper cupola-like zone of said smaller chamber,

(d) said second handle root emerges from said upper side of said larger chamber adjacent said upper cupola-like zone of said smaller chamber,

(e) said device has a floor zone on both of said chambers, and viewed from the side, said connecting member describes a



curve from said floor zone to a zone situated between said second handle root and said upper cupola-like zone of said smaller chamber,

(f) said curve comprises a first longer section that extends upward from said floor zone and a second shorter section that rises at a bend between said first and second sections to form an obtuse angle with said first section, and

(g) said second handle root is considerably thicker in the zone of said second section than said first handle root, and said second handle root protrudes in the manner of a chin over said smaller chamber and then curves inwardly.

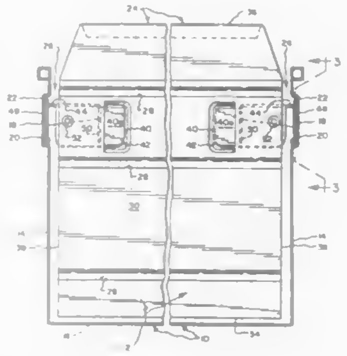
4,881,653
COMPRESSOR

Alleo R. Norton, Great Valley, N.Y., assignor to American Locker Group Incorporated, Jamestown, N.Y.

Filed Jul. 11, 1988, Ser. No. 217,437

Int. Cl.⁴ A47B *63/00, 88/00*

U.S. Cl. 220—22.3 **13 Claims**



1. A filing device comprising a drawer for receiving contents to be filed, said drawer having a pair of guide channels defining essentially parallel upper and lower channel guide surfaces arranged to extend lengthwise of said drawer and normally being spaced apart through a first distance; and a compressor, said compressor having a compressor plate and a pair of guide means fixed to said compressor plate and arranged in association one with each of said guide channels to support said compressor plate to extend transversely of said drawer between said guide channels and for movement length-

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wise within said drawer, each said guide means having essentially parallel upper and lower guide surfaces arranged in facing relation with said upper and lower channel guide surfaces, respectively, with which said guide means is associated and having a spacing therebetween less than said first distance, an upper tooth, a lower tooth spaced from said upper tooth through a distance exceeding said first distance, and abutment means, at least one of said guide channels and said guide means being formed at least in part of resiliently deformable material to permit the upper teeth of said guide means to pass through an over center position relative to the lower teeth of said guide means as an incident to manually effected pivotal movement of said compressor relative to said drawer about a pivot axis defined by engagement of the lower teeth with said lower channel guide surfaces, from a first position defined by surface engagement of said lower guide surfaces with said lower channel guide surfaces into a further position defined by surface engagement of said abutment means with said upper channel guide surfaces, said compressor when in said first position being supported by said guide channels for sliding movement lengthwise of said drawer and when in said further position being constrained by said guide channels against movement lengthwise of said drawer.

4,881,654

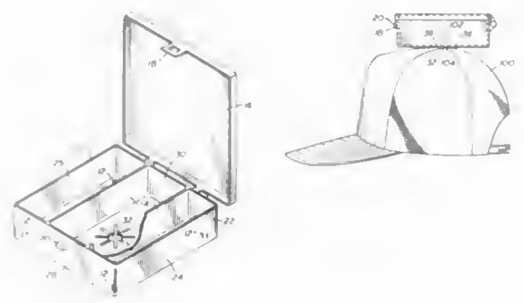
CONTAINER FOR MOUNTING ON HEADGEAR

Jack Stazo, 10606 N. Evers, Houston, Tex. 77024, and Joseph W. Whitmer, 13106 Loguna, Houston, Tex. 77015

Filed Jan. 12, 1989, Ser. No. 295,995

Int. Cl.⁴ B65D *23/08*

U.S. Cl. 220—85 H 18 Claims



1. A container for mounting on headgear having four sides, a bottom and a top closure means, said bottom having an opening therein formed by the intersection of at least two cuts to form a plurality of tines, said opening being deformable to allow penetration of a button from said headgear, said button being of smaller diameter than the circumference of the terminal end of the shortest cut.

4,881,655

SELF-CLOSING FUEL TANK SEAL

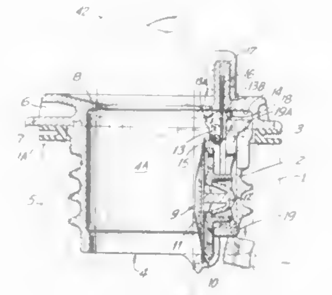
Jaroslav Jansky, Rosenheim, and Angelika Temmesfeld, Raubling, both of Fed. Rep. of Germany, assignors to Temtec Fahrzeugtechnik Entwicklungsgesellschaft mbH, Raublin, Fed. Rep. of Germany

Filed Jul. 21, 1988, Ser. No. 222,409

Int. Cl.⁴ B65D *51/16*

U.S. Cl. 220—209 14 Claims

1. Self-closing fuel tank closing device mountable on a fuel tank filler pipe and comprising a filler cap which is tensioned in the direction of a sealing seat, is rotatable in the direction of an interior of a spout of the fuel tank roller pipe and is carried by a swivel arm supported at a free end thereof on a supporting surface running approximately perpendicular to a longitudinal axis of the fuel tank closing device, and a clamping device which tensions the filler cap in the direction of the sealing seat and is mounted on the swivel arm in the region between said free end and said filler cap, said free end of the swivel arm being constructed as a cam guide which glides over the supporting surface as said filler cap is tilted.



4,881,656

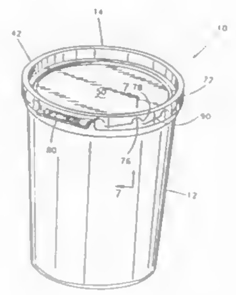
TAMPER EVIDENT CONTAINER LID AND METHOD OF MAKING THE SAME

Dexter W. Chumley, Fremont, Ohio, and Fredrick O. Miller, Saginaw, Mich., assignors to Sandusky Plastics, Inc., Sandusky, Ohio

Filed Oct. 24, 1988, Ser. No. 261,508

Int. Cl.⁴ B65D *17/40, 41/48*

U.S. Cl. 220—270 19 Claims



1. A package comprising:

(a) a container having an open end defined by end structure forming a sealing portion and a rim surrounding the open end; and

(b) a tamper evident lid closing the container end, the lid comprising:

  (i) seal structure in sealing engagement with the container sealing portion;

  (ii) a skirt disposed about said end structure and extending from said rim along said container in a direction away from the open end, said skirt defining a first skirt portion adjacent said rim and a second tear strip portion extending from said first skirt portion, said skirt portions connected by a plurality of narrow necks extending between skirt perforations, and latching projections formed in said tear strip portion adjacent said first skirt portion, said projections extending inwardly from said skirt and projecting in a direction toward said end opening, said projections extending into latching relationship with said container rim with said projections engaging the container rim and tearing the necks to strip off the tear strip when the lid is removed from the container.

4,881,657

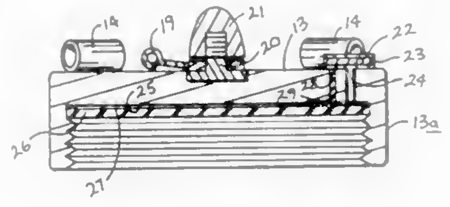
MILITARY GAS CAN VENT CAP

Gary L. Capasso, 6121 Collins Rd., #251, Jacksonville, Fla. 32244

Filed Aug. 10, 1988, Ser. No. 230,524

Int. Cl.⁴ B65D *51/16*

U.S. Cl. 220—303 3 Claims



1. A vent cap apparatus for use in combination with a container, and container formed with an internally threaded opening, said apparatus comprising,

an adapter means for threadedly interfitting with said internally threaded opening at a lower end of said adapter and accepting an internally threaded cap at an upper end of said adapter, and

said cap including an exterior upper surface with a vent tube integrally secured thereto for permitting passage of vapor from within said container and prevent liquid intrusion from entering said container, and

a vent conduit operatively connected from a first cavity interiorly of said vent tube to a second cavity defined between an annular gasket positioned interiorly of said cap and an upper interior surface of said cap, and

wherein said adapter means comprises an externally threaded annular conduit wherein said lower end is of a first diameter and said upper end is of a second diameter and said upper end is of a diameter greater than said first diameter, and said adapter is formed with an upper terminal planar surface means for engagement with an outer perimeter of said gasket and

wherein said vent conduit includes a porous non-corrosive material secured therein for enabling passage of vapors and preventing passage of liquid therethrough, and

wherein said gasket includes a stem positioned within a bore adjacent said vent conduit for maintaining said gasket at a desired orientation relative to said upper interior surface to define said second cavity.

4,881,658

SEALED CONTAINER

James M. VanCucha, Strongsville, Ohio, assignor to Cleveland Container Corporation, Cleveland, Ohio

Filed Aug. 17, 1988, Ser. No. 233,071

Int. Cl.⁴ B65D *43/06, 43/10*

U.S. Cl. 220—306 5 Claims

1. A container assembly comprising a container having a sidewall and open at one end and closed at the other end by a bottom wall, and a lid for closing the open end of said container either with or without the use of sealing material, said sidewall having a lip extending along the open end thereof, said lip comprising an upper horizontally protruding arm and a lower downwardly extending protruding leg spaced beneath said upper arm, said lid including a radially inner vertical leg and a radially outer vertical leg extending substantially parallel to said sidewall of said container and a bridge extending substantially perpendicular to the sidewall and connecting said inner and outer legs, said inner and outer legs and said bridge cooperatively forming a downwardly extending circumferential channel into which said lip of said container is received, said outer leg including a single protruding hook which is capable of engaging said upper arm of said lip at a first position relative to said sidewall so as to facilitate the use of such sealing material between said lid and said container and which is capable of engaging said lower leg of said lip at a second position relative to said sidewall when such sealing material is not utilized between said lid and said container.

4,881,659

GOVERNOR CAP SEALING STRUCTURE OF TRANSMISSION GEARBOX

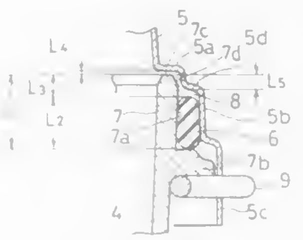
Hirao Uchiyama, Yokohama, and Hiromi Taguchi, Zama, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Jul. 19, 1988, Ser. No. 221,359

Claims priority, application Japan, Jul. 23, 1987, 62-111855[U]

Int. Cl.⁴ B65D *45/32*

U.S. Cl. 220—319 3 Claims



1. A governor cap sealing structure of a transmission gearbox, comprising:

a governor cap for covering a governor valve arranged outside the transmission gearbox;

a mount member having a sealing surface, attached to the outside of the transmission gear box; and

a sealing member arranged between the governor cap and the sealing surface of the mount member when the governor cap is mounted to the mount member, a width of the sealing surface of the mount member being larger than that of the sealing member, wherein

the governor cap includes a sealing portion and first and second shoulder portions arranged approximately perpendicular to the sealing portion, the second shoulder portion being positioned closer to the sealing portion than the first shoulder portion,

the mount member includes one end surface positioned approximately perpendicular to the sealing surface, the one end surface defining one end of the sealing surface, and

when the governor cap is mounted to the mount member, the sealing portion of he governor cap is positioned opposite to and approximately parallel to the sealing surface of the mount member, and the one end surface of the mount member is positioned opposite to and approximately paral-

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lel to the first shoulder portion of the governor cap with a small gap therebetween.

4,881,660

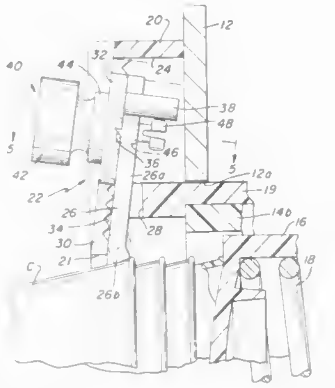
JUMBO CUP DISPENSER

J. Marshall Suttles, Elberton, Ga., assignor to Royston Corporation, Royston, Ga.

Filed May 3, 1988, Ser. No. 189,847

Int. Cl.⁴ A47F *1/04*

U.S. Cl. 221—44 12 Claims



1. A dispenser for paper cups and the like comprising, in combination:

tube means formed to fit in a panel cutout and to receive a nested stack of the cups for discharging from one end thereof, said tube means having a continuous unobstructed interior surface;

flange means fixed to said one end having a central opening coaxial with said tube means for flush mounting around the panel cutout, said flange means including radial slots communicating with the central opening and closed on the outside periphery thereof;

tabs radially slidable in respective ones of said slots from a position completely withdrawn from the central opening to an extended position within said opening for frictionally engaging the rim of the cups; and

fasteners coupled to said tabs and said flange means for locking said tabs in either one of said positions.

4,881,661

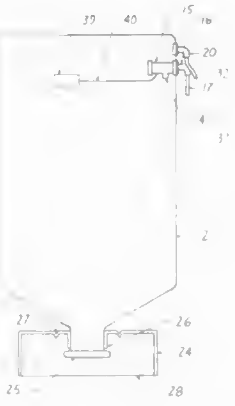
WATER BOTTLE REFILL SYSTEM

Josh B. Jones, 3920 Delery Dr., Marrero, La. 70072

Filed Apr. 1, 1988, Ser. No. 177,424

Int. Cl.⁴ G01F *23/10*

U.S. Cl. 222—67 4 Claims



1. An inverted water bottle dispenser means, said dispenser means having a main frame stand provided with at least one spigot operably connected to an inverted water bottle, said water bottle positioned on said main frame stand by converting the dispenser means from a single batch water source to a continuous source, a water tight convoluted flexible sealing means between a neck of the inverted water bottle and the main frame stand, the water bottle being provided with vent means and operably connected to water flow control means adapted for connection to a continuous source of purified water to be supplied to the bottle wherein said water tight convoluted flexible sealing means comprises a circular member having an inner neck portion adapted for being positively sealed to the neck of the inverted water bottle, and an outer bottom portion adapted for being positively sealed to the main frame stand, the member being further defined as comprising a flexible bellows portion operably connecting said inner neck portion to said outer bottom portion.

4,881,662

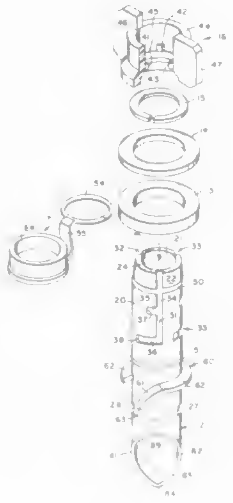
DISPENSING SPOUT

Gary C. Tallman, P.O. Box 4, Whitefish, Mont. 59937

Filed May 27, 1988, Ser. No. 199,830

Int. Cl.⁴ B67B *7/24*

U.S. Cl. 222—81 29 Claims



1. A dispensing spout comprising a generally tubular body defining a passage therethrough between axially opposite end portions of said tubular body, means at one axial end portion of said tubular body for penetrating a wall of a container within which is packaged a dispensable product, said tubular body including thread means for connecting said tubular body to said wall upon rotation of said tubular body, a ring surrounding said tubular body in free axial reciprocal sliding relationship thereto, and said ring including first means in external free axially reciprocal sliding relationship and rotating relationship to said tubular body and cooperative with second means upon said tubular body for initially imparting rotation to said tubular body thereby threading said thread means to an associated container wall followed by a relative axial movement between said tubular body and said first means and thereafter a relative rotational movement between said tubular body and said first means to clampingly connect said tubular body to an associated container wall.

4,881,663

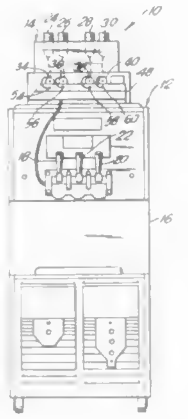
VARIEGATED SOFT ICE CREAM DISPENSING APPARATUS

William B. Seymour, 22-17 72nd St., Jackson Heights, N.Y. 11370

Filed Jun. 20, 1988, Ser. No. 209,020

Int. Cl.⁴ B67D *5/60*

U.S. Cl. 222—132 7 Claims



1. A syrup dispensing apparatus for mounting to a soft ice cream freezer apparatus for producing a variegated ice cream product of the type having one or more syrup flavors combined in an ice cream with a marble-like appearance, said soft ice cream freezer apparatus comprising a dispensing nozzle and actuator means for selectively starting and stopping a flow of soft ice cream through the dispensing nozzle, said syrup dispensing apparatus comprising:

a plurality of syrup reservoirs for storing respective ones of a plurality of different flavors of syrup therein;

a multi-channel pump in communication with each of said plurality of syrup reservoirs and operative to selectively pump syrup from selected ones of said syrup reservoirs; and

a syrup nozzle head mountable to the dispensing nozzle of the soft ice cream freezer, said syrup nozzle head comprising a mounting collar having means for fixedly engaging the dispensing nozzle of the soft ice cream freezer, an annular inlet collar having a through aperture through which soft ice cream from the dispensing nozzle of the soft ice cream freezer is flowable, said annular inlet collar further having a plurality of nipples spaced circumferentially around and extending generally radially into the through aperture, said nipples being in communication with said multi-channel pump such that said pump is operative to direct selected flavors of syrup from said reservoirs into said nipples at a plurality of locations circumferentially around and into a flow of soft ice cream directed through the through aperture of said syrup nozzle head for creating a variegated soft ice cream product, whereby the type of variegated soft ice cream produced can be changed by selecting the reservoirs from which the multi-channel pump will pump the syrup.

4,881,664

DISPOSABLE VALVE WITH DISK-LIKE VALVE ELEMENT

Raymond P. Kawolics, Solon, Ohio, assignor to The Meyer Company, Cleveland, Ohio

Filed Sep. 13, 1988, Ser. No. 243,695

Int. Cl.⁴ B67D *5/32*

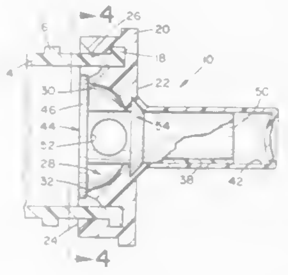
U.S. Cl. 222—153 5 Claims

1. A dispensing valve particularly suited for use on the outlet nozzle of a membrane type beverage container comprising:

a first unitary component formed from a resilient resinous material and having a generally cylindrical main body with opposed axial ends, one of said axial ends including an axially open circumferential groove adapted to sealingly receive and be retained on the outer end of said outlet nozzle, a circumferentially continuous seat lying radially inwardly of said groove and extending axially outward, an opening extending axially through said body from said one axial end to the other axial end, said opening having an enlarged end portion in said one axial end, and a cylindrical closed end tubular portion extending outwardly from said other axial end joined to said body about said opening;

an integral valve element and dispensing tube component comprising an imperforate disk having opposed faces and a diameter at least greater than the maximum diametric extent of said seat, a hollow dispensing tube joined centrally to one face of said disk and extending axially thereof, said tube having an inlet port formed in the wall thereof at a location adjacent said disk and an outlet port adjacent the end of said tube remote from said disk, a radially extending flange carried on said tube at a location intermediate said inlet and outlet ports; and,

said valve element and dispensing valve component assembled in said main body with the tubular portion of said main body enclosing said tube and said outlet port, said radially extending flange being engaged by said body and biased thereby in a direction to cause said disk to sealingly engage said seat.



4,881,665

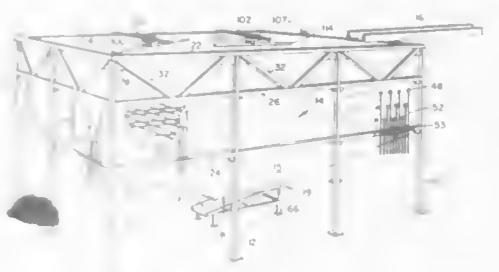
SUSPENDED FLEXIBLE MEMBRANE STORAGE SILO AND ARTICLE DISPENSER

Michael L. McGuire, 1102 Wild Orchid Dr., Fallston, Md. 21047

Filed Mar. 22, 1988, Ser. No. 171,785

Int. Cl.⁴ B67D *5/06*

U.S. Cl. 222—181 24 Claims



1. A bulk storage silo for damageable articles, comprising:

a rigid frame of a desired configuration and dimensions including vertical members having a top and a bottom and horizontal members extending between and interconnecting said vertical members, said horizontal members defining upper horizontal supports and medial horizontal supports, said upper supports being located proximate to the

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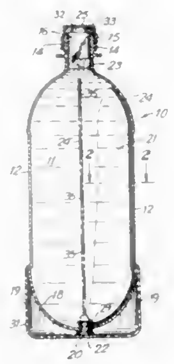
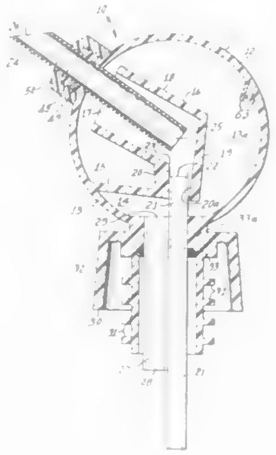
top of said vertical members and extending around the upper periphery thereof and said medial supports extending around the periphery between the upper supports and the bottom of said vertical members,
a flexible member for attachment to and suspension within said frame fashioned from at least one sheet-like membrane, said flexible member being composed of a tear-resistant reinforced grid of interconnected strands embedded in a synthetic resin, said flexible member defining side walls extending between said upper supports and said medial supports and an inverted frustum configured bottom converging within the frame between said medial supports and the bottom of said vertical members at a fixed elevation above the bottom, said flexible member operative to contain articles in anon-damaging manner,
connecting means for connecting said flexible member to both said upper and medial supports,
a discharge duct located at the frustum of said flexible member, and
vibrating means isolated from said rigid frame and vibrationally associated with said discharge duct for inducing vibration of a selected amplitude and frequency and imparting the vibration to the articles contained in said flexible member proximate to said discharge duct in a manner that the articles discharge substantially uniformly from said discharge duct without imparting undue vibration to said rigid frame,
where articles are stored in and discharged from the silo in a manner to preserve the integrity of the articles after being introduced over top of said frame and into the space defined by the flexible member urged through the discharge duct by said vibratory means.

4,881,666
VARIABLE VOLUME CONTAINER
Robert Tullman, and Stephen Tullman, both of 83 Knollwood Dr., Cherry Hill, N.J. 08002
Filed Jan. 19, 1988, Ser. No. 145,588
Int. Cl.⁴ B65D *23/00*
U.S. Cl. 222—386.5 **14 Claims**



1. A liquid dispenser which comprises:
a rigid container defining a volume for said liquid, said container having a pouring orifice and an aperture;
a flexible, gas impermeable follower disposed in said container for defining a variable volume, said follower having an opening at one end; and
a valve secured in said aperture in said container with said open end of said follower secured about said valve for providing communication between ambient atmosphere and said variable volume when said valve is open,
said valve moving to said open position when a pressure differential is established between ambient atmosphere and said container volume as liquid is dispensed through said orifice, whereupon ambient gas enters and expands said follower solely by virtue of said pressure differential,
said valve moving to a closed position when liquid dispensing ceases and said pressure differential diminishes for substantially retaining said gas in said follower, whereby said gas filled follower substantially fills the container volume vacated by dispensed liquid, thereby minimizng the headspace in said container even after the contents thereof are partially dispensed.

4,881,667
SIPHON DISPENSER
Mike Perakis, 1704 N. Atlantic Ave., Daytona, Fla. 32018
Filed Jul. 6, 1987, Ser. No. 69,760
Int. Cl.⁴ G01F *11/28*
U.S. Cl. 222—437 **12 Claims**

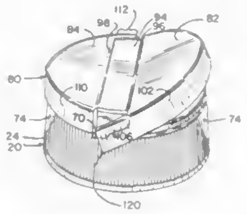


1. In a siphon dispenser device for dispensing liquid from a container in predetermined amounts having a hollow body, said body having an interior partial partition to form a liquid receiving chamber and a measuring chamber communicating with each other, a tubular and vertically disposed lower neck portion communicating between said receiving chamber and an aperture of a fluid container holding liquid to be dispensed, an upper elongated tubular pouring spout having an inner end communicating with said measuring chamber, said body having an air vent communicating between the hollow of said body and exteriorly thereof, tubular siphon means located within said body about said inner end of said pouring spout to periodically siphon a predetermined amount of liquid into a serving container, said tubular neck portion including an elongated air tube having a lower end portion, said tubular neck portion further including a tubular fluid conduit communicating with said liquid receiving chamber, the improvement comprising aperture restriction means being located adjacent said lower end portion of said air tube and having a ball sized to be freely movable vertically therein, upper and lower stop means in said lower end portion of said air tube for restricting the movement of said ball therein, a lateral aperture located in said tube spaced above said upper stop means.

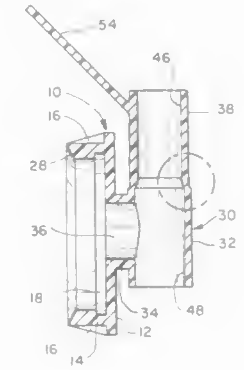
4,881,668
CLOSURE WITH OPEN LID RETAINER
Lawrence R. Kitterman, Antioch, and Robert D. Rohr, Elgin, both of Ill., assignors to Seaquist Closures, A division of Pittway Corporation, Crystal Lake, Ill.
Filed Jun. 8, 1988, Ser. No. 204,109
Int. Cl.⁴ B65D *47/00*
U.S. Cl. 222—482 **24 Claims**

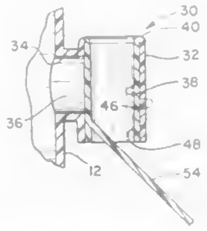
1. A closure for use on a container defining an opening communicating with the container interior, said closure comprising:

a body for being mounted to said container over said container opening and defining at least a first aperture for communicating through said container opening with the container interior, said body having a peripheral side wall outwardly of said first aperture, said body including a transverse top wall defining at least said first aperture;
a cover mounted to said body over said body top wall and defining at least a first lid;
at least a first hinge means for connecting said first lid directly to another part of said cover for accommodating the pivoting of said first lid between a closed position occluding said first aperture and an open position spaced away from said first aperture;
said first lid including a first arm at one end of said first hinge means projecting away from the rest of said first lid beyond said first hinge means;
at least one of said first arm and said side wall being resilient; and
said first arm being configured to engage said body side wall when said first lid is in said open position whereby said first lid is held in said open position by frictional engagement between said first arm and said side wall.



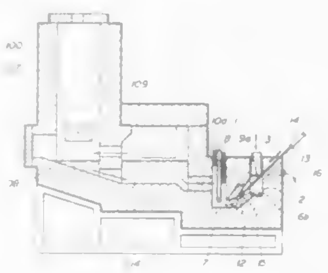
4,881,669
DISPENSER VALVE AND METHOD OF FORMING THE SAME
James P. Leigh, and Henry G. Roethel, both of Ravenna, Ohio, assignors to The Meyer Company, Cleveland, Ohio
Filed Jun. 16, 1988, Ser. No. 207,742
Int. Cl.⁴ B67D *3/00*
U.S. Cl. 222—505 **21 Claims**





1. A dispensing closure assembly comprising:
a one piece tube member comprising a first tube section with a circumferentially continuous side wall and
a second tube section joined with said first tube section by a relatively thinner and flexible intermediate section molded integrally with said first and second tube sections and forming a continuation thereof, said second tube section having a relatively resilient, circumferentially continuous side wall;
a fluid passage opening formed through said side wall of said first tube section;
said second tube section being inverted relative to said first tube section at said intermediate section to place the continuous side wall of said second tube section in sealing engagement with the side wall of said first tube section and overlying said fluid passage; and,
means for selectively deflecting said second tube section away from said first tube section to permit flow through said fluid passage opening.
10. A method of forming a dispensing valve comprising:
(a) providing a tubular body having a first circumferentially continuous side wall portion and a second relatively resilient circumferentially continuous side wall portion which extends from and forms an integral continuation of said first wall portion;
(b) forming a flow passage port through said first side wall portion; and,
(c) invaginating said second relatively resilient side wall portion into said first portion to sealingly overlie said flow passage port.

4,881,670
AUTOMATIC MELT SUPPLYING METHOD AND HOLDING FURNACE HAVING AUTOMATIC MELT SUPPLYING SYSTEM
Masao Yamaoka, and Tomohiro Toyota, both of Yao, Japan, assignors to Kabushiki Kaisha Daiki Aluminium Kogyosho, Osaka, Japan
Filed Sep. 13, 1988, Ser. No. 246,570
Claims priority, application Japan, Jul. 1, 1988, 63-164257
Int. Cl.⁴ C21C *5/42*
U.S. Cl. 222—590 **14 Claims**



1. A method for automatically supplying a melt to a casting device, comprising;
supplying a melt to a holding chamber for holding said melt at a predetermined temperature,
supplying said melt in said holding chamber to a melt supply chamber via an opening between said holding chamber and said supply chamber,
controlling a stopper plug for opening and closing said opening to control a melt flow from said holding chamber to said supply chamber, and
lowering a vertically movable force block into said supply chamber to displace and force a predetermined amount of melt from said supply chamber to said casting device.

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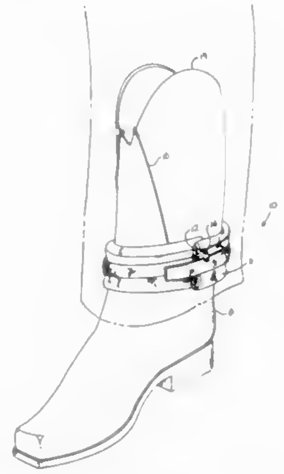
4,881,671
SELF-DUSTING INSECTICIDE BOOT ATTACHMENT

Robert D. Horton, Rte. 3, Box 3456, Athens, Tex. 75751, and Doyle J. Farley, R.R. #1, Box 8-2, Murchison, Tex. 75778
Filed Apr. 25, 1988, Ser. No. 185,883
Int. Cl.⁴ A45C *13/30*
U.S. Cl. 224—222 3 Claims



1. A self-dusting boot apparatus for the distribution of insect repelling powder about a boot for use in combination with said boot wherein said boot comprises a lower surface and an integral upper vertical surface terminating in an upper vertical edge, said apparatus comprising,

a pouch means for selective attachment about the upper vertical surface of said boot and said pouch means including a selective opening means for filling said pouch means with the insect repelling powder, and

strap means including fastening elements integrally secured to an exterior surface of said pouch means for encircling securement of said pouch means to said boot about said upper vertical surface, and

wherein said fastening elements include hook and loop fasteners with respective hook and loop fasteners at opposed terminal ends of said strap means, and

wherein said strap means is secured to said pouch means immediately below said selective opening means, and

wherein said selective opening means includes a zipper positioned between opposed coextensive terminal ends of said pouch means to an interior surface of said pouch means, and

wherein said pouch means is of a linear dimension equal to or greater than a permieter surface about said upper vertical surface of the boot, and

wherein a plurality of elongate boot hooks are secured to a rear surface of said pouch means at lower ends of the hook on an opposite side of said pouch means to that having secured thereto said zipper and said strap means to enable securement of the hooks to the upper edge of the boot wherein each of the hooks further includes a "U" shaped upper end for overlying securement to the upper edge of the boot to enable said pouch means to be positioned and arranged for attachment to the upper edge of said boot.

4,881,672
SAFETY ATTACHMENT PRUSE HOOK

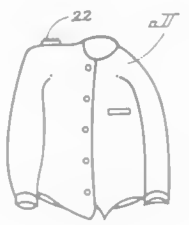
Olivia Gustafson, 514 A St., Fairbanks, Ak. 99701
Filed May 3, 1988, Ser. No. 189,950
Int. Cl.⁴ A41F *15/02*
U.S. Cl. 224—264 5 Claims

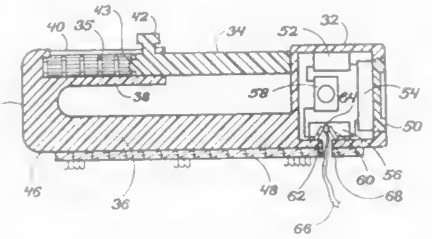
1. A safety attachment purse hook for securing a purse strap to an article of apparel, comprising:

hook means for engagement with a purse strap;

cooperating hook and loop type fastening strips on said hook means and on said article of apparel for releasably securing said hook means to said article of apparel;

alarm means on said hook means for providing a signal upon attempted theft of a purse carried thereon; and

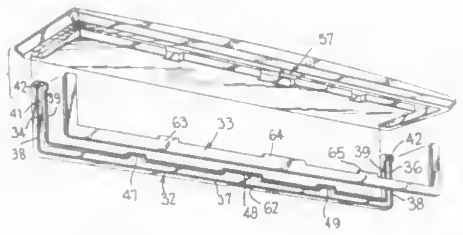




means for actuating said alarm means upon disengagement of said cooperating hook and loop type fastening strips on said hook means and said article of apparel.

4,881,673
RETRACTIBLE SUPPORT BAR

Gregory W. Kapp, Coloma, Mich., assignor to Ianocorp Manufacturing, Inc., Coloma, Mich.
Filed Apr. 21, 1988, Ser. No. 184,355
Int. Cl.⁴ B60R *7/08*
U.S. Cl. 224—311 8 Claims



1. A retractible support-bar assembly for supporting various kinds of objects in a vehicle, comprising:

means defining a base having an outwardly facing surface, said base means having a generally U-shaped, outwardly opening, recess in said outwardly facing surface;

a generally U-shaped bar having a pair of spaced legs which lie in a common plane with a bight portion of said bar, said U-shaped bar being conformed in size to be received in said U-shaped recess in said base means and conformed in thickness so as to provide a surface thereon which is flush with said outwardly facing surface of said base means when said bar is received in said U-shaped recess;

pivot means for pivotally securing said bar to said base means so that said bar is movable into and out of said recess, said pivot means including protuberances projecting into said recess and being located adjacent the free ends of said legs of said U-shaped bar, said plane of said bar being, when said bar extends out of said recess, inclined to said outwardly facing surface at a defined angle;

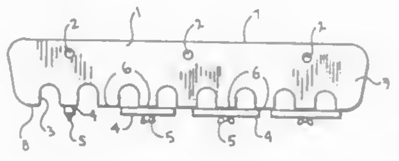
said bar including first and second parts, said first part being generally U-shaped in cross section throughout its length with legs of the U adjacent said free ends having openings therein adapted to receive therein said protuberances, said legs of said first part being resiliently yieldable to allow at least said free ends of said legs to move past said protuberances to facilitate introduction of said protuberances into said openings, said second part being conformed in its shape to said first part to facilitate it being operatively secured to an open side of said first part defined by an open end of said U-shaped cross section to render said resiliently yieldable legs of said first part rigid so as to prevent removal of said protuberances from said openings; and

releasable latch means for holding said bar in said recess;

whereby a release of said latch means will enable said bar to pivot out of said recess to expose and thereby render accessible said bight portion of said bar to enable various of said objects to be supported therefrom.

4,881,674
FISHING ROD HOLDER

Anatoly Medianik, 46 Tone Ter., Rochester, N.Y. 14617
Filed May 3, 1988, Ser. No. 189,949
Int. Cl.⁴ B60R *7/00*
U.S. Cl. 224—311 1 Claim



1. A fishing rod holder for holding a plurality of fishing rods adjacent an interior ceiling of a pickup truck cap having a plurality of spaced transverse cross braces, comprising:

an elongated first support member;

a plurality of spaced apertures formed through said first support member;

first clamping means for securing said first support member to a pickup truck cap cross brace, said first clamping means including a pair of serrated jaws disposed on opposite sides of said first support member and a threaded fastener extending through said spaced apertures of said first support member and through said jaws for clamping said first support member to a pickup truck cap cross brace;

a plurality of spaced U-shaped notches formed in a bottom edge of said first support member;

a clamp bar pivotally mounted on said bottom edge of said first support member, between adjacent pairs of said U-shaped notches, opposite ends of said clamp bar movable to a position blocking said adjacent pair of U-shaped notches for selectively retaining a handle portion of a fishing rod in each of said notches;

a thumb screw pivotally mounting each of said clamp bars on said bottom edge of said first support member;

an elongated second support member;

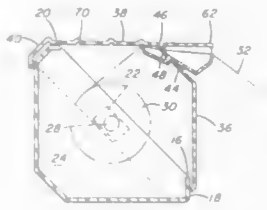
a plurality of spaced apertures formed through said second support member;

second clamping means for securing said second support member to a pickup truck cap cross brace in spaced parallel relation with said first support member, said second clamping means including a pair of serrated jaws disposed on opposite sides of said second support member and a threaded fastener extending through said and through said jaws for clamping said second support member to a pickup truck cap cross brace second support member connecting said jaws;

a plurality of second spaced apertures formed through said second support member for receiving tip portions of fishing rods.

4,881,675
APPARATUS FOR DISPENSING STRIP MATERIAL FROM A ROLL

George J. Varley, III, 136 Locust St., McKees Rocks, Pa. 15136
Filed May 5, 1988, Ser. No. 190,579
Int. Cl.⁴ A47K *10/36*
U.S. Cl. 225—43 4 Claims



2. Apparatus for dispensing a preselected length of strip material from a roll comprising,

a housing having a top wall and an elongated slotted portion, said top wall having an inner surface, said top wall inner surface having a strengthening means which includes an elongated recessed portion,

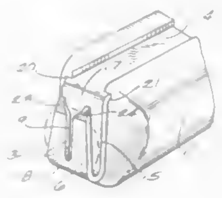
a bracket member having a rear edge portion with an upwardly flanged edge portion, said bracket member having a front edge portion with an upstanding cutting portion,

said bracket member positioned in said slotted portion of said housing with said rear edge portion within said housing and said front edge upstanding cutting portion positioned outside of said housing, and

said bracket member movably supported in said housing so that said upwardly flanged edge portion is movable into said recessed portion to frictionally engage said strip material therebetween while a preselected length of said strip material is severed along said front edge upstanding cutting portion.

4,881,676
THUMBTACK TOOL

Larry St. Peter, 521 Division St., Hubbell, Mich. 49934
Filed May 16, 1988, Ser. No. 194,220
Int. Cl.⁴ B25C *1/02*
U.S. Cl. 227—63 8 Claims



1. A tool for supporting a thumbtack having an enlarged head and a shaft extending away from the head, the tool comprising a body having a first elongated portion having a longitudinal axis and a forward end, said body also having a second generally elongated portion spaced from said forward end and extending laterally of said longitudinal axis in the form of a pistol grip, said forward end supporting means for releaseably gripping the thumbtack for insertion into a surface and for releaseably gripping the thumbtack for removal from a surface, said gripping means including a U-shaped clip member having a pair of parallel members joined by a bite portion, said parallel members being spaced apart nd adapted to slideably house at

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least a portion of the head of the thumbtack therebetween, one of said parallel members including a portion slideably engaged with the forward end of said body and the other of said parallel members including a central slot adapted to house a portion of the shaft of the thumbtack with the pointed shaft of the thumbtack projecting forwardly through the slot away from the body.

4,881,677

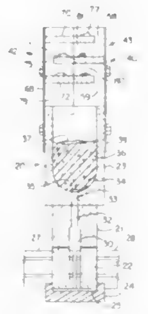
EXOTHERMIC WELDING APPARATUS INCLUDING A BAFFLE COVER ASSEMBLY

Michael D. Amos, Burton; Denis A. Brosnan, Solon; Mark V. Samas, Euclid; Richard E. Singer, Beachwood; James E. Whetsel, Bedford, and David P. Kovarik, Eastlake, all of Ohio, assignors to Erico International Corporation, Solon, Ohio

Continuation-in-part of Ser. No. 128,597, Dec. 4, 1987, which is a continuation-in-part of Ser. No. 30,169, Mar. 25, 1987, abandoned. This application Aug. 29, 1988, Ser. No. 237,080

Int. Cl.⁴ B23K *23/00*

U.S. Cl. 228—33 43 Claims



1. Exothermic apparatus comprising a chamber, a crucible above said chamber, adapted to contain exothermic material and connected to said chamber by a tap hole, whereby when such exothermic material is ignited molten reaction products of said exothermic mixture flow through said tap hole to enter said chamber, and baffle cover means on said crucible operative to reduce the amount of smoke emitted from the crucible when the exothermic material is ignited, said baffle cover means comprising a plurality of interconnected expansion chambers reducing the velocity of the gases emitted from the crucible.

4,881,678

PROCESS FOR THE REMOTE-CONTROLLED SEMI-AUTOMATIC WELDING OF TWO ROTATIONALLY SYMMETRICAL COMPONENTS

Jean P. Gaudin, Chassieu, France, assignor to Framatome, Courbevole, France

Filed Jan. 20, 1988, Ser. No. 145,991

Claims priority, application France, Jan. 20, 1987, 87 00590

Int. Cl.⁴ B23K *9/02, 9/10*

U.S. Cl. 228—102 5 Claims

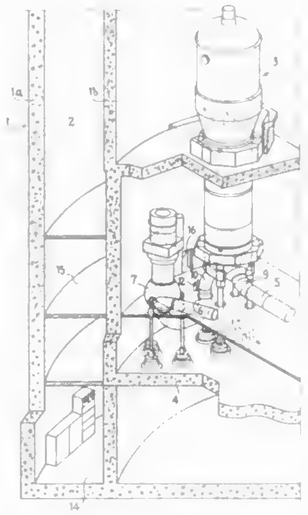
1. Process for the remote-controlled semi-automatic welding of two large-size rotationally symmetrical components **(6, 10)** by filling an annular chamfer **(17)** with a welding metal in successive shielded-arc orbital welding passes **(20)**, making it possible to form layers of welding metal **(18)** in the chamfer **(17)** by placing metal beads **(18)** next to one another, each bead deposited during a pass being of a specific type, depending on its position in the chamfer **(17)**, said process comprising performing the following steps, from a control station **(14)** located at a distance from the welding zone and managed by an operator, for each of the passes:

(a) setting the welding parameters, the type of pass and the values to be given to the parameters as a function of the type of pass being supplied to the operator by a storage memory means, in which the information relating to the welding operation is stored;

(b) checking that each of the welding parameters is set at a suitable value according to the type of pass;

(c) starting the welding operation manually and remotely;

(d) monitoring the welding operation continuously by means of a remote screen display **(38, 40)** of the welding zone;



(e) changing one or more welding parameters according to the image of the welding zone, the limits within which the parameters can be changed being supplied to the operator by the memory means; and

(f) stopping the welding operation manually when the image obtained on the screen **(39, 40)** corresponds to the end of a pass.

4,881,679

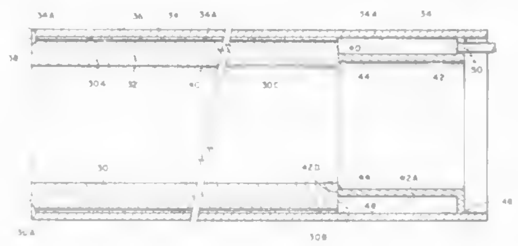
SUBASSEMBLY FOR USE IN MANUFACTURING A TUBULAR PRODUCT

William C. Turner, 85 Pinto La., Sedona, Ariz. 86336

Division of Ser. No. 920,594, Oct. 20, 1986, Pat. No. 4,765,529. This application Jul. 5, 1988, Ser. No. 180,312

Int. Cl.⁴ B23K *1/00*

U.S. Cl. 228—132 6 Claims



1. For use in the manufacture of an externally clad tubular product a subassembly comprising:

a tubular metallic host having a first and second end, the external tubular surface being plated with a low melting point bonding metal alloy;

a tubular metallic cladding member having a first and second end, the cladding member being telescopically assembled over said tubular host and having the first end thereof circumferentially welded to the first end of said tubular host; and

a metallic tubular bag welded to said tubular host adjacent the second end thereof and to said cladding member adjacent said second end forming a closed space including the annular area between the interior of said tubular cladding member and the exterior of said tubular host member, the tubular bag having a small diameter opening therein, said closed space being sufficiently evacuated and filled with an inert gas so that the water and oxygen therein is substantially at a level below a dew point of about −60° F

4,881,680

PROCESS FOR THE PRODUCTION OF A COMPOSITE CAMSHAFT

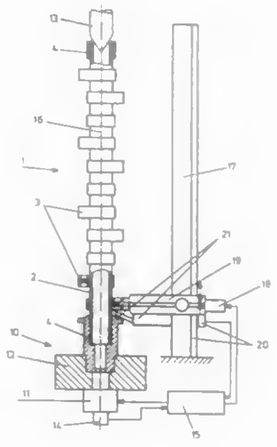
Peter Toelke, Diessenhofen, and Walter Greulich, Uhwiesen, both of Switzerland, assignors to Georg Fischer AG, Schaffhausen, Switzerland

Filed May 6, 1988, Ser. No. 190,930

Claims priority, application Switzerland, May 7, 1987, 738/87

Int. Cl.⁴ B23K *31/00*

U.S. Cl. 228—182 6 Claims



1. A process for the production of a composite camshaft having a plurality of cam elements mounted on a shaft at a desired locaion and a desired orientation comprising:

(a) providing an elongated shaft having a longitudinal axis and an outer circumferential surface configuration;

(b) providing a plurality of cam elements wherein each of said cam elements are provided with an internal bore having a size and configuration substantially similar to the outer circumferential configuration of said shaft;

(c) positioning said plurality of cam elements successively on said shaft;

(d) locating said shaft in a rotary drive means for rotating sahd shaft about its longitudinal axis;

(e) gripping one of said plurality of cam elements and locating said one cam element at a desired location along the longitudinal axis of said shaft;

(f) rotating said shaft so as to locate said one cam element at a desired orientation on said outer circumferential surface of said shaft at said desired location along the longitudinal axis thereof;

(g) bonding said one cam element on said shaft at said desired location and orientation;

(h) releasing said gripping means from one cam elements; and

(i) repeating steps (e), (f), (g) and (h) until all of said plurality of cam elements are secured on said shaft.

4,881,681

PROCESS FOR MODIFYING THE SURFACE OF METAL OR METAL ALLOY SUBSTRATES AND SURFACE MODIFIED PRODUCTS PRODUCED THEREBY

Robert B. Pond, Sr., 299 Ridge Rd., Westminster, Md. 21157

Filed Sep. 13, 1988, Ser. No. 243,608

Int. Cl.⁴ B23K *23/00*

U.S. Cl. 228—198 2 Claims

1. A process for joining a plurality of reactive metal or reactive metal alloy substrates together, said process comprising:

disposing a powdered mixture comprising fly ash produced by combustion of fossil fuels between adjacent reactive metal or reactive metal alloy substrates; and

heating the substrates and powdered mixture at a temperature lower than a melting point or solidus temperature of said substrates, thereby producing a bonded structure having a hard bonding layer between said adjacent substrates.

4,881,682

VAPOR PHASE SOLDERING WITH PERFLUORINATED BUTYL DERIVATIVE COMPOUNDS

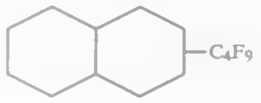
Frank K. Schweighardt, Allentown, and Webb I. Bailey, Fogelsville, both of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Division of Ser. No. 89,475, Aug. 25, 1987, Pat. No. 4,777,304. This application Jun. 6, 1988, Ser. No. 203,401

Int. Cl.⁴ B23K *3/00;* **C07C** *19/08*

U.S. Cl. 228—242 11 Claims

1. In a method of soldering wherein a component to be soldered is immersed in a vapor bath to melt the solder, and the component is then withdrawn from the vapor bath, the improvement comprising that the vapor bath is composed substantially of a compound of the formula:



wherein the carbon rings are fully fluorinated, or mixtures thereof.

4,881,683

PAPERBOARD CONTAINER FOR SHIPPING MATERIAL IN BULK

Kent A. Linnemann, Cincinnati, Ohio, assignor to Shippers Paper Products Company, Loveland, Ohio

Filed Jan. 27, 1988, Ser. No. 148,928

Int. Cl.⁴ B65D *5/36, 3/28*

U.S. Cl. 229—117.01 3 Claims

1. A bulk container comprising:

a base including an annular base rim and a circular center portion having a circumferential edge, said annular base rim being formed of multiple layers of paperboard laminated together and formed into a rigid right angle to provide a first upstanding leg forming an annulus about the base of the container, and a second leg at right angles thereto underlying said center portion, a cap including an annular top rim, said annular top rim being formed of multiple layers of paperboard laminated together and formed into a rigid right angle to provide a first downwardly projecting leg and a second leg at substantially right angles thereto, a generally cylindrical side wall having a top and a base and being comprised of a foldable paperboard sheet and a plurality of vertically aligned paperboard slats secured thereto in substantially edge abutting relation, each said slat comprising a plurality of layers of paperboard laminated together and folded upon itself and laminated to itself to provide a slat of predeter-

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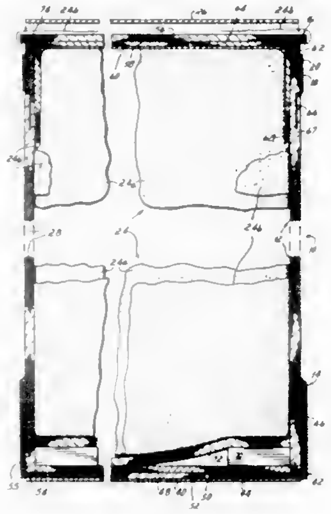
mined width and length having at least one rounded edge and being substantially flat,

said base of said side wall being insertable in between said first upstanding leg of said annular base rim and said cir-



cumferential edge of said center portion of said circular base and wedged therebetween, and

said side wall being foldable to a substantially flat condition for shipping and storing and being assembleable in said circular base into an upright container.

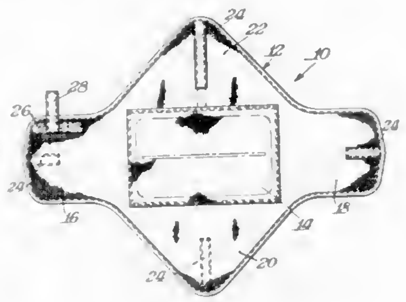
4,881,684
WRAPPER FOR ARTICLES WITH IMPROVED SECURING ARRANGEMENT

Carole Chinman, 922 Blackshire Rd., Wilmington, Del. 19805

Filed Jun. 30, 1988, Ser. No. 214,008

Int. Cl.⁴ B65D *65/10;* **A45F** *5/10*

U.S. Cl. 229—87 A 31 Claims



1. In a wrapper for articles wherein a flexible member has a reinforced central area and a plurality of wing sections extending outwardly from the central area, the wing sections being foldable over the reinforced portion of the central area in overlapping relation with each other to form a closed container for articles placed therein, the wing sections comprising a lower flap and an upper flap and a pair of intermediate side flaps, each flap having opposing faces, fastening means on each of the flaps for maintaining the flaps in a folded condition when said fastening means is in the closed condition of said wrapper, the improvement being in that said fastening means including adjustable securing means for securing said lower flap and said side flaps together to form an envelope of adjustable thickness which is open at its top side, said fastening means selectively securing said upper flap to the remaining flaps to close said envelope whereby said wrapper functions as an adjustable briefcase, said securing means including a permanent securing strip permanently mounted on one of said side flaps on a face of said side flap opposite its face having its fastening means, and a detachable securing strip selectively mounted to said permanent securing strip during periods of non-use and mounted to said permanent securing strip and to said fastening means on one of said flaps other than said upper flap and said side flap having said permanent securing strip.

4,881,685
PACKAGING CONTAINER

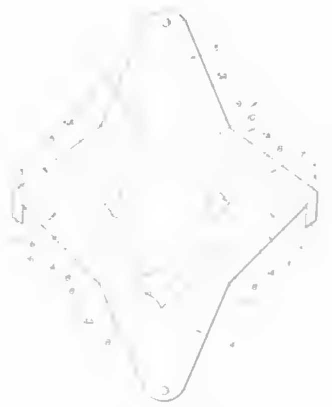
Sakai Isao, No. 2-11, 1-chome, Nishiogi-minami, Suginami-ku, Tokyo, Japan

Filed Dec. 30, 1988, Ser. No. 292,245

Claims priority, application Japan, Apr. 4, 1988, 63-44793[U]

Int. Cl.⁴ B65D *5/20, 5/46*

U.S. Cl. 229—115 3 Claims



1. A packaging container formed by folding a blank comprising a rectangular bottom wall and four lateral walls each extending from one of the four sides of said bottom wall and by fastening the top ends of said lateral walls with a staple,

wherein the four sides of said bottom wall constitute respectively bases of said four lateral walls which consist of a front wall, a rear wall and a pair of opposite side walls; boundaries between adjacent said lateral walls have equal length and intersect respective said bases at an angle of 45 degrees; each said lateral wall tapers toward the top end thereof with the maximum width being a distance between points where the side edges of adjacent said lateral walls are joined together; each of said side walls has a projection at the top end thereof and a pair of laps formed outside of two equal sides, respectively, of an isosceles triangle which is defined by linking the ends of said base and an apex of said side wall positioned below said projection; and said blank is folded along said bases and said boundaries to raise said lateral walls with respect to said bottom wall, said side walls being folded along said equal sides in such a manner that said laps face and abut said front and rear walls, respectively, with said projections being sandwiched between the top ends of said front and rear walls, whereby a staple fastens said projections and said top ends together.

4,881,686
TEMPERATURE RECOVERY DISPLAY DEVICE FOR AN ELECTRONIC PROGRAMMABLE THERMOSTAT

Vinay Mehta, Germantown, Tenn., assignor to Hunter-Melnor, Inc., Memphis, Tenn.

Filed Oct. 13, 1988, Ser. No. 256,987

Int. Cl.⁴ F23N *5/20*

U.S. Cl. 236—46 R 15 Claims

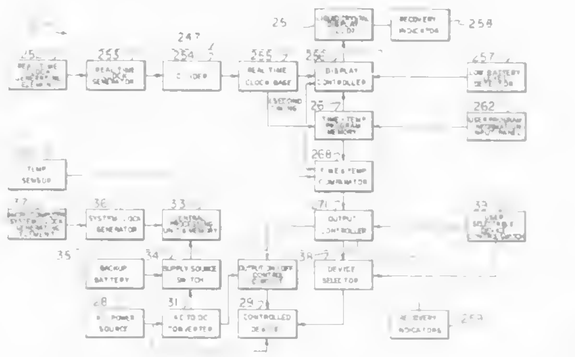
1. A programmable thermostat which controls an air conditioning system for a predetermined volume of space, said thermostat comprising:

sensor means for sensing the ambient temperature of the predetermined volume of space;

timing means for generating the current time of day;

a digital memory for storing a plurality of program times and at least one control temperature corresponding to each of the plurality of program times;

control means for controlling the on/off switching of said air conditioning system in response to (1) a comparison of the current time of day with the program times stored in said digital memory means to access the corresponding current control temperature stored in said digital memory means and (2) a comparison of the current ambient temperature sensed by said sensor means with the current control temperatures stored in said memory means;



a temperature recovery means for activating and controlling said air conditioning system prior to a given program time to bring the ambient temperature to the predetermined volume of space to a control temperature corresponding to the given program time by the given program time; and

a display device including visual indicator means for visually indicating when said temperature recovery means has activated and is controlling said air conditioning system.

4,881,687
PORTABLE LIQUID SPRAYER, PARTICULARLY FOR THE TREATMENT OF PLANTS

Patrick J. M. Ballu, Reims, France, assignor to Tecnoma, Epernay, France

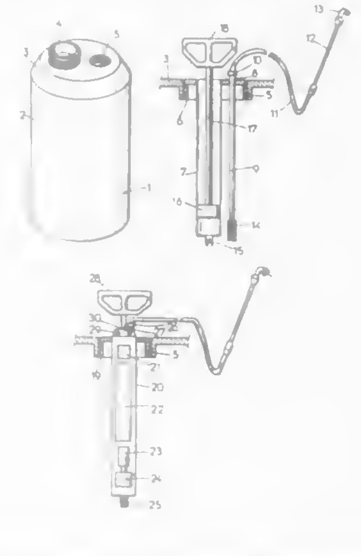
Filed Jun. 20, 1988, Ser. No. 209,197

Claims priority, application France, Jun. 29, 1987, 87 09126

Int. Cl.⁴ B05B *9/043*

U.S. Cl. 239—332 8 Claims

1. Sprayer comprising a container capable of containing a liquid, a lance connected to the container by a flexible tube, and two means for delivering the liquid under pressure into the tube, said means being capable of use alternately in place of one another and one of said means comprising a hand pump capable of pressurizing the interior of the container, and means for sealingly fastening said pump in the container, the other of said delivering means comprising an electric pump capable of taking the liquid from the container and delivering the liquid under pressure into the lance without pressurizing said container, and means for fastening said pump in the container, the container being capable of withstanding the pressure generated by the hand pump.



4,881,688
DEVICE FOR INSULATING THE SPRAY LIQUID SOURCE FROM THE HIGH TENSION VOLTAGE OF AN ELECTROSTATIC SPRAY SYSTEM WHEN USING AN ELECTRICALLY CONDUCTIVE SPRAY LIQUID

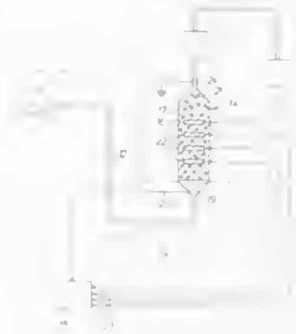
Bo A. Hankvist, Stockholm; Peter N. Kling, Nacka, and Rolf T. Spongh, Tyresö, all of Sweden, assignors to Atlas Copco Aktiebolag, Nacka, Sweden

Filed Oct. 31, 1988, Ser. No. 265,226

Claims priority, application Sweden, Nov. 4, 1987, 87043097

Int. Cl.⁴ B05B *5/02*

U.S. Cl. 239—691 5 Claims



1. Device for insulating a spray liquid source from a high tension voltage of an electrostatic spray system when using an electrically conductive spray liquid, comprising:

a spray gun (13) connected to a high potential and to a supply line (12) which connects the spray gun (13) to a spray liquid source (10), and which includes a vessel (16) containing a barrier forming liquid (17) of low electrical conductivity and a density other than that of the spray liquid;

a spray liquid injection means (21) for disintegrating the spray liquid into drops, and located at an inlet end (24) of said vessel (16);

said vessel (16) being substantially non-conductive between its inlet end (24) which is connected to ground potential

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and an outlet and thereof (**19**) which is connected to the same high potential as the spray gun (**13**); and

electrode means (**22**; **25**) provided between the inlet end (**24**) of said vessel (**16**) and the outlet end (**19**) of said vessel (**16**), for exposing the spray liquid to at least one intermediate potential for controlling the tension gradient in the barrier forming liquid by limiting and controlling the charging of the spray liquid.

4,881,689

METHOD FOR SETTING THE GRINDING ROLLERS IN ROLLER FRAMES OF A FLOUR MILLING PLANT, AS WELL AS FLOUR MILLING PLANT FOR PERFORMING THE METHOD

Christian Lippuner, CH-9244 Niederuzwil, Switzerland, and Werner Baltensperger, CH-9242 Oberuzwil/Schweiz, Switzerland, assignors to Gebrueder Buehler AG, Switzerland

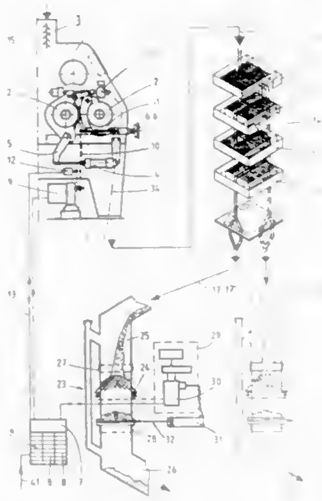
PCT No. PCT/EP86/00112, § 371 Date Nov. 4, 1986, § 102(e) Date Nov. 4, 1986, PCT Pub. No. WO86/05416, PCT Pub. Date Sep. 25, 1986

PCT Filed Mar. 5, 1986, Ser. No. 12,663

Claims priority, application Switzerland, Mar. 15, 1985, 01164/85; Fed. Rep. of Germany, May 31, 1985, 3519625

Int. Cl.⁴ B02C *9/04, 21/00*

U.S. Cl. 241—9 16 Claims



1. In a method for setting spacings of grinding rollers in rolling frames of a cereal milling plant, the rolling frames being followed by a screening system, from which is tapped a test signal and supplied to a computer, which compares it with a stored desired value and, in the case of a difference, by means of a control signal and adjusting means, automatically adjusts the spacings of the grinding rollers, the improvement comprising deriving the test signal only from the material which passes through the screening system or from the material which does not pass through the screening system and supplying the test signal only from certain selected key passages of the screening system to the computer.

4,881,690

WASTE COMMINUTING APPARATUS

Henry C. Maier, Seaford, Australia, assignor to Llangtraco (Aust) Pty. Ltd., Victoria, Australia

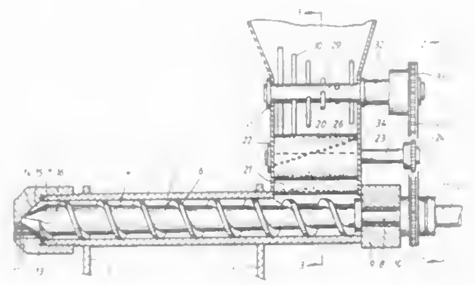
Filed Aug. 15, 1988, Ser. No. 232,095

Claims priority, application Australia, Jan. 28, 1988, P16494

Int. Cl.⁴ B02C *7/04*

U.S. Cl. 241—82.3 12 Claims

1. A comminuting apparatus comprising an elongate cylindrical barrel, an extrusion screw mounted for rotation within said barrel, means for rotating said screw within said barrel, inlet opening means at one end of said barrel through which material to be comminuted may be presented to the extrusion screw, and means for closing the other end of said barrel having openings through which comminuted material is forced by said extrusion screw, said extrusion screw having a generally helical flight extending from one end of the screw to the other and having a substantially constant pitch and a flight depth which reduces towards the closed end of the barrel whereby the material to be comminuted is increasingly compressed and comminuted, said extrusion screw also having a shaped end portion housed within said closed end of said barrel, said shaped end portion and said closed end of said barrel being shaped to provide a space therebetween; and recirculation means for recirculating partly comminuted material into said space, said recirculating means comprising edge means formed in said end portion of said extrusion screw at an acute angle to the longitudinal axis of said screw.



4,881,691

TRANSFER STATION WITH LIFTING DEVICES

Michael Oldengott, Witten; Jörg Schade, Herten, and Peter Stephan, Oer-Erkenschwick, all of Fed. Rep. of Germany, assignors to Klockner-Becorit GmbH, Castrop-Rauxel, Fed. Rep. of Germany

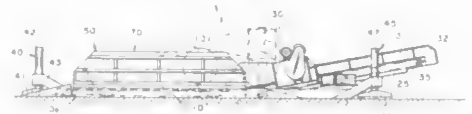
Continuation of Ser. No. 837,292, Mar. 7, 1986, abandoned. This application Oct. 22, 1987, Ser. No. 111,131

Claims priority, application Fed. Rep. of Germany, Mar. 13, 1985, 3508890

The portion of the term of this patent subsequent to Jun. 2, 2004, has been disclaimed.

Int. Cl.⁴ B02C *23/02*

U.S. Cl. 241—101.5 7 Claims



1. A transfer station for processing debris which comprises a unitary, rigid elongated main frame which includes two parallel, rectilinear beam members and defines a front end and a rear end; a conveyor which is movably mounted between said rectilinear beam members of said frame; a crusher mechanism mounted above said elongated main frame for crushing debris deposited on said conveyor; a feeder box positioned at said front end of said elongated main frame, said feeder box including separate feeder devices located on opposite sides of said elongated frame, each feeder device including a box compartment which is pivotally connected to said elongated main frame to be in either a non-tilted or in a tilted orientation, a ground plate below the box compartment which is pivotally connected to said elongated main frame so as to pivot about an axis extending in parallel with said elongated main frame, and

a hydraulic cylinder connected between said ground plate and said box compartment thereabove; and a plurality of hydraulic lifting devices for separately raising and lowering each of the front and rear ends of said elongated main frame relative to the ground, each of said pluraity of hydraulic lifting devices comprising a ground-engaging base, a vertical cylinder, and a lifting arm which is fixedly attached to said main frame, said lifting devices functioning to lower said main frame so that both the front and rear ends thereof are in contact with the ground, thereby positioning the transfer station in an operational mode, and to lift both the front and rear ends of said elongated main frame above the ground such that the transfer station is in a transport mode, said transfer station having no elements that extend below said elongated main frame when in said operational mode.

4,881,692

STRIPPING MEANS FOR SHREDDING MACHINE OR THE LIKE

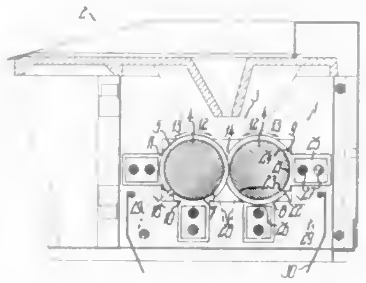
Albert Goldhammer, Ueberlingen; Hans Schleicher, Markdorf; Hartmut Stangenberg, Owingen, and Rolf Gasteier, Markdorf, all of Fed. Rep. of Germany, assignors to Feinwerktechnik Schleicher & Co., Fed. Rep. of Germany

Filed Mar. 3, 1988, Ser. No. 163,737

Claims priority, application Fed. Rep. of Germany, Mar. 4, 1987, 3706862

Int. Cl.⁴ B02C *18/22*

U.S. Cl. 241—167 32 Claims



1. A stripping means in combination with at least one shredding roller of a shredding machine having a shredding zone for material to be comminuted, said shredding roller having annular slots located between shredding disks and defining a longitudinal direction, a circumferential direction and rotational operating direction, said combination comprising:

a plurality of stripper members, each of said stripper members engaging in an annular slot of said shredding roller, said stripper members forming adjacent primary strippers located adjacent to one another with respect to said longitudinal direction and closest to said shredding zone with respect to said rotational operating direction, wherein at least several of said primary strippers are displaced with respect to one another in said circumferential direction of said shredding roller.

4,881,693

SPOOLING MACHINE WITH A PLURALITY OF WINDING HEADS

Kresimir Mista, Heusenstamm, Fed. Rep. of Germany, assignor to Karl Mayer Textilmaschinenfabrik GmbH, Obertshausen, Fed. Rep. of Germany

Filed Jun. 3, 1988, Ser. No. 202,196

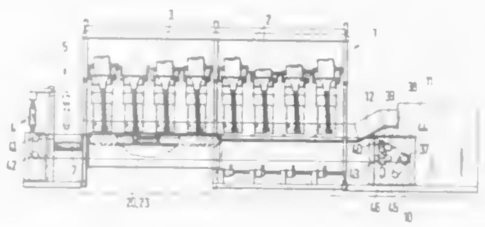
Claims priority, application Fed. Rep. of Germany, Jun. 6, 1987, 3719091

Int. Cl.⁴ B65H *67/06*

U.S. Cl. 242—35.5 A 13 Claims

1. In a spooling machine having a plurality of cop-utilizing winding heads and a delivery point for cops, a forwarding means for transporting the cops from the delivery point to a selected one of said cop-utilizing winding heads in response to a routing signal signifying said selected one of said winding heads, said forwarding means comprising:

a drive means operating over the path between the delivery point and the winding heads, said drive means including a control motor having an input for receiving said routing signal and controlling said motor, said motor being intermittently operable to an extent determined by said routing signal; and



a moveable or slidable transport arrangement mounted to move along a conveyor path, said transport arrangement being coupled to and driven by said drive means, said transport arrangement comprising:

(a) a takeup means coupled to said drive means for holding one of said cops; and

(b) a discharge means coupled to said drive means and mounted alongside said takeup means for discharging the cops at one of said winding heads, so that said transport arrangement can transport cops from said delivery point to said selected one of said winding heads.

4,881,694

YARN TRAVERSING APPARATUS FOR A WINDING MACHINE

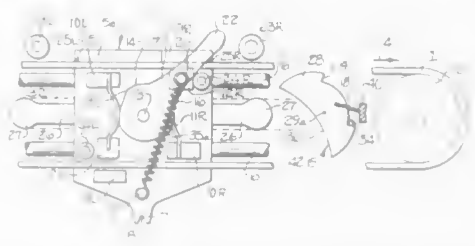
Klaus Bartkowiak, Herne; Joachim Graf, Remscheid; Friedrich Urbahn, Remscheid, and Klaus Weber, Remscheid, all of Fed. Rep. of Germany, assignors to Barmag, AG, Remscheid, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 130,062, Dec. 8, 1987. This application Sep. 15, 1988, Ser. No. 245,001

Claims priority, application Fed. Rep. of Germany, Sep. 16, 1987, 3731115; Oct. 9, 1987, 3734235; Dec. 8, 1987, 3741544; Jan. 27, 1988, 3802267; Mar. 8, 1988, 3807535; Apr. 22, 1988, 3813534; Apr. 22, 1988, 3813602; May 25, 1988, 3817639; Jun. 9, 1988, 3819675; Jul. 8, 1988, 3823169

Int. Cl.⁴ B65H *54/28*

U.S. Cl. 242—43 R 33 Claims



1. A yarn traversing apparatus adapted for guiding a running yarn onto a rotating core to form a core supported package, and comprising

a machine frame,

yarn guide means including a yarn guide,

means mounting said yarn guide means to said frame for back and forth movement along a stroke path,

drive means for moving said yarn guide means back and forth along said stroke path, and

energy recovery means for recovering the kinetic energy of said yarn guide means during its reversal of movement at

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each end of the stroke path, said energy recovery means comprising
(a) mass means movably mounted to one of said frame and said yarn guide means,
(b) contact means mounted to the other of said frame and said yarn guide means, and
(c) cooperating surface means on said mass means and said contact means for providing a positive drive connection therebetween during each reversal of movement of said yarn guide means and so as to transmit kinetic energy from said yarn guide means to said mass means as the yarn guide means approaches each end of said stroke path to thereby impart movement to said mass means, and then retransmit the resulting kinetic energy from said moving mass means to said yarn guide means to thereby cause said yarn guide means to move away from each end of said stroke path.

4,881,695

UNWINDING APPARATUS FOR PAPER OR BOARD WEB ROLLS

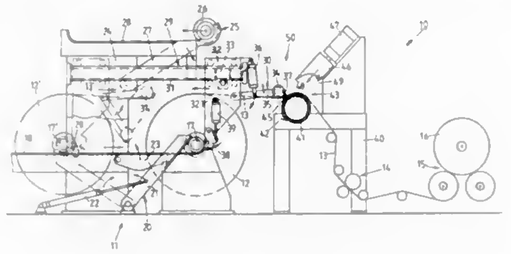
Rudolf Beisswanger, Steinheim, Fed. Rep. of Germany, assignor to J.M. Voith GmbH, Heidenheim, Fed. Rep. of Germany

Filed Jul. 18, 1988, Ser. No. 220,327

Claims priority, application Fed. Rep. of Germany, Jul. 17, 1987, 3723601

Int. Cl.⁴ B65H *19/18, 19/20*

U.S. Cl. 242—58.4 12 Claims



1. An apparatus for unwinding a paper web wound as a parent roll on a roll axle for subsequent handling by a succeeding rewind station, said apparatus comprising:
an unwinding unit having guideway means for receiving the ends of the roll axle of the parent roll, the parent roll being movable between a waiting position and an unwinding position on said guideway means;
means for moving the parent roll from the waiting position to the unwinding position;
separating means for separating the web unwound from the parent roll substantially perpendicularly to the direction of web travel;
holding means for holding the end of the unwound web parallel to the roll axle on web standstill;
lifting means for lifting out of the unwinding position the roll axle of an expired parent roll whose unwound web has been separated by said separating means;
joining means for joining the end of an unwound web to the beginning of the web of a parent roll located in the unwinding position, said joining means including splicing means having a cross member arranged substantially parallel to the roll axle for receiving the beginning of the web of a parent roll located in the waiting position; and
a carriage movable substantially parallel to said guideway means and carrying said splicing means, said carriage having a dog engaging an end of the roll axle such that the parent roll in moving from the waiting position to the unwinding position move said carriage and the cross member of said splicing means with the beginning of the web against said holding means with the end of the unwound web, such that the webs come to lie one above the other and are joined together.

4,881,696

MECHANISM FOR PREVENTING LOOSENING OF TAPE IN A TAPE CARTRIDGE

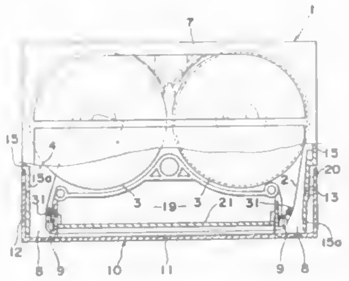
Hikaru Mizutani, Osaka, and Yoshimi Maehara, Kyoto, both of Japan, assignors to Hitachi Maxell, Ltd., Osaka, Japan

Continuation of Ser. No. 825,551, Jan. 23, 1986, abandoned. This application Dec. 21, 1987, Ser. No. 139,159

Claims priority, application Japan, Jan. 26, 1985, 60-9779

Int. Cl.⁴ G11B *23/087*

U.S. Cl. 242—199 9 Claims



1. A tape cartridge consisting of a case body including a top half and a bottom half, a pair of tape reels having a tape wound thereon, an opening defined at a front portion of said case body for drawing said tape therethrough by a front lid in a closed positon and an inner cover lid movably coupled to said front lid, vertical suspended walls from said top half and vertical standing walls projecting from said bottom half on either side of said inner cover lid such that when said top half and bottom half are combined together to form said case body said suspended walls combine with said standing walls to form side walls lateral to said inner cover, a pair of tape guides provided at each lateral side of said front portion of said case body in front of said vertical standing walls for guiding said tape along a predetermined path through said front portion opening of said case body and at least one pressure means for preventing loosening of said tape comprising a base portion and a free end portion, said at least one pressure means for preventing loosening of said tape being juxtapositioned to a corresponding one of said tape guides between said respective tape guide and corresponding tape reel for slidably and resiliently contacting an inner or back surface of said tape immediately before or after said tape passes over said corresponding tape guide such that said at least one pressure means maintains a constant force in an outward direction against said tape due to the flexible nature of said pressure means thereby preventing loosening of said tape as the amount of tape on said tape reels changes while eliminating the need for a tape guide pin.

4,881,697

REEL WITH STARTING FORCE SPRING CASTING

Kyoichi Kaneko, Tokyo, Japan, assignor to Daiwa Seiko, Inc., Tokyo, Japan

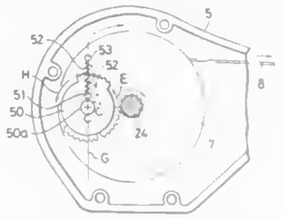
Filed Jun. 13, 1988, Ser. No. 205,475

Claims priority, application Japan, Jul. 1, 1987, 62-165024; Oct. 6, 1987, 62-253318

Int. Cl.⁴ A01K *89/01*

U.S. Cl. 242—254 3 Claims

1. A casting reel including a spool which is free-rotatably supported by a reel body and can be rotated for winding-up of a fishing line by a rotation operating mechanism built in the reel body,
characterized by a spool forcibly rotating unit composed of an operating member rotatably attached to the reel body, a spring member for applying a spool starting torque to the operating member, a first gear provided on the spool, and a segment gear secured to an end of said operating member, wherein said segment gear intermittently engages said first gear to transmit the spool starting torque of the operating member to the spool, said spool forcibly rotating unit being provided in the reel body for rotating the spool in the direction of paying out the line at the beginning of releasing the line.



4,881,698

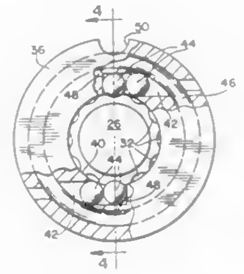
FISHING REEL INCLUDING A ONE-WAY BRAKE

Gerald J. Doiron, 40 Franklin St., Athol, Mass. 01331

Filed Feb. 1, 1988, Ser. No. 151,156

Int. Cl.⁴ A01K *89/015, 89/02*

U.S. Cl. 242—256 1 Claim



1. A fishing reel comprising a housing, a spool mounted therein, a spindle for the spool, said spindle having an axis, a handle connected to the spindle for turning the spool, and a connection between the spindle and handle,
said connection comprising a removable circular ratchet member on the handle and a series of parallel, mutually peripherally spaced grooves on the spindle, a separate element in the ratchet, means mounting the element for limited motion to and from the grooves, and an abutment on the member to contact and apply pressure to the element to tend to move the element to firm contact in a groove, or selectively to relax pressure on the element to allow it to be loose in its mounting means so that the spool is enabled to rotate freely,
the means mounting the element being in the form of a blind hole intersecting the spindle in the area of the grooves, the blind hole being tangential to the spindle axis, and an O-ring on the ratchet member closing the blind hole.

4,881,699

ROTOR-LOCKING MECHANISM FOR A FISHING REEL

Masaharu Emura, Hiroshima, Japan, assignor to Ryobi Ltd., Hiroshima, Japan

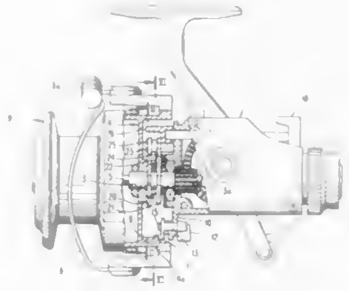
Continuation of Ser. No. 792,924, Oct. 30, 1985, abandoned. This application Dec. 16, 1987, Ser. No. 134,545

Claims priority, application Japan, Oct. 31, 1984, 59-166139[U]

Int. Cl.⁴ A01K *89/01*

U.S. Cl. 242—248 3 Claims

1. A spinning-type fishing reel comprising:
a reel body;
a rotor rotatably mounted on said reel body for rotation in a line-winding direction and for rotation in a line-casting direction opposite said line-winding direction;
rotor locking means mounted on said reel body for selectively preventing rotation of said rotor in said line-winding direction, said rotor locking means including a projection extending along an inner surface of said rotor, a pivoting arm pivotally mounted on said reel body for engaging said projection; spring means for applying a resilient force to oppose rotation of said pivoting arm in both directions of rotation of said pivoting arm; and lever means connected to said pivoting arm for selectively pivoting said pivoting arm into engagement with said rotor to prevent rotation of said rotor in said line-winding direction; and
self-centering means for preventing rotation of said rotor in said line-casting direction, said self-centering means including a ratchet gear; a centering ratchet having a circumferential face and a tooth formed thereon; a backstop pawl disposed to selectively engage said ratchet gear; a centering pawl disposed to selectively engage said centering ratchet; a cam adapted to selectively engage said backstop pawl and said centering pawl with said ratchet gear and said centering ratchet, respectively; and tooth springs disposed to bias said centering pawl to allow said centering pawl to engage said tooth in the neutral position when said backstop pawl is released from said ratchet gear.



4,881,700

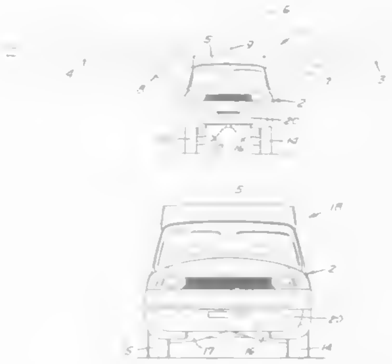
CONVERTIBLE FIXED WING AIRCRAFT

Branko Sarh, 2597 Devonshire Rd., Riverside, Calif. 92506

Filed Jan. 5, 1988, Ser. No. 141,096

Int. Cl.⁴ B64C *3/56, 37/00*

U.S. Cl. 244—2 11 Claims



1. A convertible fixed wing aircraft comprising, in combination:
a fuselage of generally rectangular planform having a pair of steerable front wheels and a pair of rear wheels, said fuselage enclosing a passenger compartment having front and rear seats;
a middle box attached to the roof of said fuselage substantially over the center of gravity of the loaded vehicle and

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elevated above said passenger compartment so that the space between front and rear seats is substantially unobstructed;

a telescopic wing attached to said middle box and projecting laterally therefrom on opposite sides, said wing comprising a plurality of wing sections that telescope into one another, thereby retracting the wing from an extended flight configuration to a retracted automotive configuration telescoped within the middle box wherein the wing tips are spaced apart no more than the allowable highway width limitation;

horizontal and vertical stabilizer means mounted at the rear end of said fuselage and retractable to a total width no greater than the allowable highway width limitation;

energy absorbing bumpers fixed to the front and rear ends of said fuselage beyond the fore and aft extremities of the retracted components;

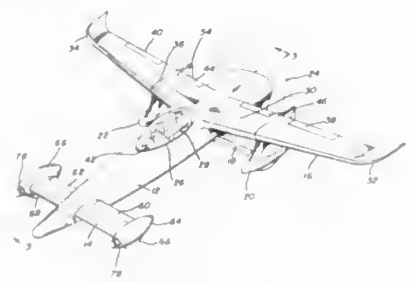
a propeller;

an engine and transmission means alternatively connecting the engine to either said propeller or to one of said pairs of wheels; and

control means for controlling the aircraft when in the flight configuration, or for controlling the vehicle when in the automotive configuration.

4,881,701
COMBINATION AUTOMOBILE AND AIRPLANE

Gary M. Bullard, Rte. #1, Box 177, Accomac, Va. 23301
Filed Mar. 14, 1988, Ser. No. 168,015
Int. Cl.^{4} B64C *3/56*
U.S. Cl. 244—49 7 Claims



1. A convertable airplane to automobile for air flight and road use, comprising;

a fuselage having a cockpit, a forward end and a rearward end,

a canard wing mounted on the forward end of said fuselage,

steerable wheels mounted on the ends of said canard wing,

a foldable wing mounted on said rearward end of said fuselage,

a vertical stabilizer means connected to the underside of said foldable wing, and

powered drive wheels mounted in said vertical stabilizers for automobile mode.

4,881,702
READILY CONVERTIBLE AIRCRAFT PASSENGER SEATS

Richard J. Slettebak, Kirkland, Wash., asslgnor to The Boelng Company, Seattle, Wash.
Filed Dec. 29, 1987, Ser. No. 139,282
Int. Cl.^{4} A47C *15/00*
U.S. Cl. 244—118.6 25 Claims

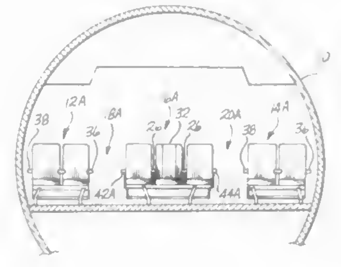
1. An aircraft passenger seat assembly convertible between two side-by-side seats and three side-by-side seats, comprising:

support leg structure for a seat cushion support frame;

a seat cushion support frame on said support structure, said seat cushion support frame having a fixed central portion secured to the support structure and opposite end portions movable in and out relative to the fixed central portion;

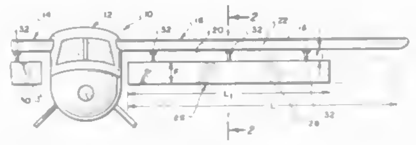
three side-by-side seat cushions on said seat cushion support frame, with the center cushion being on the fixed central portion of the frame and with the two outside seat cushions being on the movable end portions of the frame,

whereby the end portions of the frame can be moved inwardly to move with them the outer seat cushions and place said outer seat cushions against the center seat cushion, so that the three seat cushions can define two side-by-side sitting areas, and with the outer frame portions being movable outwardly from the fixed center frame portion for the purpose of moving the outer seat cushions away from the center seat cushion, so that each of the three seat cushions can define a separate seating area.



4,881,703
AIRCRAFT FLAP ASSEMBLY

Roger A. Nahas, 17001 Adlon Rd., Encino, Calif. 91436
Filed Jun. 27, 1988, Ser. No. 211,557
Int. Cl.^{4} B64C *3/58*
U.S. Cl. 244—213 1 Claim

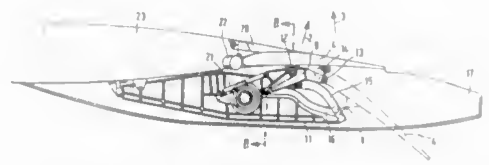


1. In combination with an aircraft wing, said aircraft wing having a leading edge and a trailing edge, said aircraft wing having a top surface and an undersurface, said undersurface being substantially planar, a flap assembly hingedly mounted on a hinge axis on said undersurface, said flap assembly including a single flap, said flap being essentially planar, said flap being elongated and narrow and when deployed against the airstream causes substantial resistance to the moving of the aircraft wing through the air, said flap being movable from a stowage position to a deployed position, said stowage position being when the plane of said flap is located parallel to the plane of said undersurface of said aircraft wing, said deployed position being when the plane of said flap is positioned across the airstream with said flap being spaced from said undersurface and located perpendicular to said undersurface , said flap assembly including an air gap area between said flap and said undersurface with said flap in said deployed position, said aircraft wing having a cord "C" and a length "L", said flap having a length "L_1" and a cord "F", the depth between said undersurface and said flap of said air gap area being substantially constant and defined as "F_1", the improvement comprising:

the surface area of said flap (FxL_1) facing into the airstream is between the range of one-fourth to one-sixth of the wing area (CxL), said hinge axis being located at five-eighths of the cord (C) from said trailing edge.

4,881,704
LANDING FLAP SYSTEM

Gerhard Hofrichter, Bremen, Fed. Rep. of Germany, assignor to Messerschmitt-Boelkow-Blohm GmbH, Bremen, Fed. Rep. of Germany
Filed Apr. 21, 1988, Ser. No. 184,197
Claims priority, application Fed. Rep. of Germany, Apr. 22, 1987, 3713465
Int. Cl.^{4} B64C *3/38*
U.S. Cl. 244—213 5 Claims



1. A landing flap system in an aircraft wing, the aircraft having a longitudinal axis, there being an upper and a lower track and a drive means, a tandem, flap moving carriage, comprising:

an inner carriage having a plurality of rollers for running on the upper track;

an outer carriage having at least two rollers for running on the lower track;

said rollers each having an axis;

hinge means for interconnecting the inner carriage and the outer carriage, for hinging about an axis that extends parallel to said axes of said rollers;

said hinge means connecting the carriages to the landing flap;

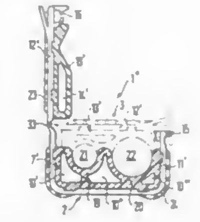
second hinged connect means for connecting the outer carriage to the landing flap in a second downstream connection point;

thrust rod and tension means hingedly connecting the outer carriage to the drive means; and

further rollers arranged at an acute angle to an axis that extends vertically to said roller axes and to a particular axis that is parallel to said longitudinal axis of the craft, the further rollers stabilizing and thereby balancing the positions of the carriages.

4,881,705
PLASTIC HOLDING ELEMENT

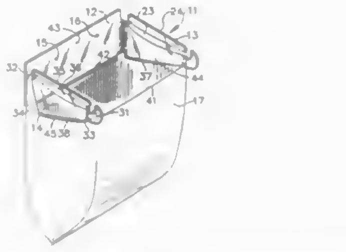
Willibald Kraus, Grunstadt, Fed. Rep. of Germany, assignor to TRW United Carr GmbH, Alsenborn, Fed. Rep. of Germany
Filed Mar. 17, 1988, Ser. No. 169,417
Claims priority, application Fed. Rep. of Germany, Mar. 18, 1987, 3708864
Int. Cl.^{4} F16L *3/12*
U.S. Cl. 248—74.2 7 Claims



1. A plastic holding element mounting at least one tube member on a support, comprising a relatively rigid moulded plastic body having a tube bearing portion and a mounting portion for attaching the body to a support, the holding element bearing portion having at least one inlay defining a tube engaging surface formed of softer material than the plastics of the holding element, characterized in that the inlay (7,7';13,13') is formed of softer and less rigid material than the plastics of the holding element and that the inlay is permanently connected and bonded to a surface of the bearing portion (3,3') through at least one key type connecting element (8;9) by being directly moulded to said connecting element and said surface by a two component moulding process.

4,881,706
HOLDER FOR HANDLE BAGS

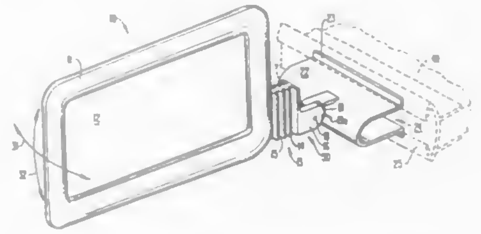
Brian R. Sedlik, 3170 Madison, Apt. 4, Carlsbad, Calif. 92008
Filed Jul. 5, 1988, Ser. No. 215,284
Int. Cl.^{4} B65B *67/12*
U.S. Cl. 248—99 17 Claims



14. The apparatus recited in claim 1, and further comprising means for pivotably mounting said first and second side arm members to said back plate, said pivotable mounting means further comprising means for removably connecting said first and second side arm members to said back plate.

4,881,707
SIGN HOLDER DEVICE

Benjamin L. Garfinkle, Alameda, Calif., assignor to Clamp Swing Pricing Co., Alameda, Calif.
Filed Feb. 23, 1989, Ser. No. 314,379
Int. Cl.^{4} A47B *96/00*
U.S. Cl. 248—221.4 7 Claims



1. A sign holder assembly comprising in combination:

(a) a frame member capable of supporting and displaying a sign in a substantially vertical orientation;

(b) hinge means for supporting said frame member and for maintaining said frame member in a substantially vertical orientation, said hinge means being further characterized as comprising a plurality of stria formed of a flexible material, said stria connecting adjacent rib sections enabling said hinge means to flex horizontally in response to a horizontally applied impact being applied to said frame member but preventing significant flex in a vertical direction;

(c) attachment means for securing said frame member through said hinge means to a substantially horizontally oriented shelf; and

(d) connector means for attaching said hinge means to said attachment means, said connector means being capable of allowing rotation of said frame member about a horizontal axis while maintaining said frame member in a substantially vertical orientation.

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4,881,708

SHELF FOR DISPLAYING ARTICLES

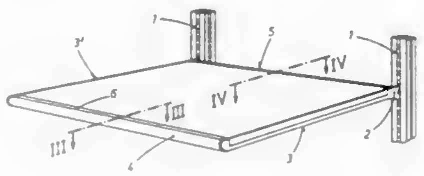
Herbert Walter, Müllheim, Fed. Rep. of Germany, assignor to Protooed B.V., Amsterdam, Netherlands

Filed Nov. 18, 1987, Ser. No. 122,356

Claims priority, application Switzerland, Nov. 19, 1986, 4622/86-2

Int. Cl.⁴ A47H *29/02*

U.S. Cl. 248—243 19 Claims



1. A display shelf adapted to be removably attached to a supporting device, comprising an overhanging frame structure including a first bracket extending along one side of said frame structure, a second bracket extending along an opposite side of said frame structure, a first cross member extending between said first and second brackets adjacent one end of said frame structure, said first cross member having a first pocket formed integrally therewith, a first flange extending toward an opposite end of said frame structure from a first inner leg positioned on one side of said first pocket and a first outer leg positioned on an opposite side of said first pocket, a second cross member extending between said first and second brackets adjacent said opposite end of said frame structure, said second cross member having a second pocket formed integrally therewith, a second flange extending toward said one end of said frame structure from a second inner leg positioned on one side of said second pocket and a second outer leg positioned on an opposite side of said second pocket, first supporting means for supporting said first cross member between said first and second brackets, said first supporting means including a first support member attached to said first bracket at a point located underneath said first flange and extending from said first bracket toward said second bracket, said first support member being received within said first pocket such that said first cross member is in bearing and clamping engagement with said first support member, which is substantially covered by said first outer leg, and a second support member attached to said second bracket at a point located underneath said first flange and extending from said second bracket toward said first bracket, said second support member being received within said first pocket such that said first cross member is in bearing and clamping engagement with said second support member, which is substantially covered by said first outer leg, and second supporting means for supporting said second cross member between said first and second brackets, said second supporting means including a third support member attached to said first bracket at a point located underneath said second flange and extending from said first bracket toward said second bracket, said third support member being received within said second pocket such that said second cross member is in bearing and clamping engagement with said third support member, which is substantially covered by said second outer leg, and a fourth support member attached to said second bracket at a point located underneath said second flange and extending from said second bracket toward said first bracket, said fourth support member being received within said second pocket such that said second cross member is in bearing and clamping engagement with said fourth support member, which is substantially covered by said second outer leg, and a shelf rest element releasably supported on said frame structure by said first and second flanges.

4,881,709

STAND MECHANISM FOR A MEDICAL OPTICAL EQUIPMENT

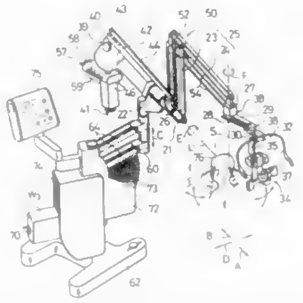
Katushige Nakamura, Hachioji, Japan, assignor to Mitaka Kohki Company Ltd., Mitaka, Japan

Filed May 19, 1988, Ser. No. 195,973

Claims priority, application Japan, May 29, 1987, 62-134500

Int. Cl.⁴ E04G *3/00*

U.S. Cl. 248—281.1 14 Claims



1. A stand mechanism for supporting medical optical equipment, comprising:

parallel linkage means for supporting said optical equipment upon one extremity end thereof, and having base end portions defined at an opposite extremity end thereof;

rotary shaft means, rotatable about a longitudinal axis thereof and having one end thereof connected to said base end portions of said parallel linkage means at predetermined locations along said longitudinal axis of said rotary shaft means such that said optical equipment is always focused upon a line which is an extension of said longitudinal axis of said rotary shaft means and wherein said parallel linkage means extends substantially radially outwardly from said longitudinal axis of said rotary shaft means in first direction with respect to said longitudinal axis of said rotary shaft means, for supporting said parallel linkage means and said optical equipment; and

counterweight means, movably mounted upon an opposite end of said rotary shaft means and extending substantially radially outwardly from said longitudinal axis of said rotary shaft means in a second direction opposite to said first direction of said parallel linkage means with respect to said longitudinal axis of said rotary shaft means, for counterbalancing the weight of said optical equipment and said parallel linkage means, and the moments created thereby, with respect to said longitudinal axis of said rotary shaft means when said parallel linkage means is transformed substantially within a plane which includes said parallel linkage means and said longitudinal axis of said rotary shaft means as a result of positional movement of said optical equipment, and when said optical equipment and said parallel linkage means are pivotably moved about said longitudinal axis of said rotary shaft means.

4,881,710

HANGER BRACKET

Clifford H. Ownby, 3615 Pittsburg, Houston, Tex. 77005, and Larry E. Lesher, 628 West Dr., Channelview, Tex. 77530

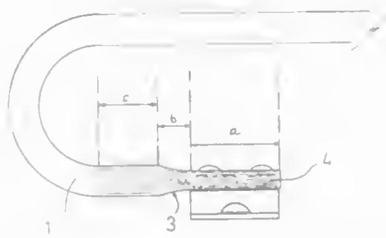
Continuation of Ser. No. 917,831, Oct. 10, 1986, abandoned. This application Apr. 25, 1988, Ser. No. 185,344

Int. Cl.⁴ A47F *5/08*

U.S. Cl. 248—311.2 1 Claim

1 A bracket for supporting communication equipment from a vertical support surface in which the communication equipment can be adversely affected by magnetic fields, said bracket comprising an aluminum rod formed into a C shape, said rod being circular in cross section over a major portion of its length and including a straight middle portion and a pair of ends, each of said pair of ends being reversely bent inwardly

relative to said middle portion toward each other to form said C shape, said reversely bent ends being smoothly curved through 180°, each of said pair of ends including a reversely bent portion which is round in cross section, a straight portion parallel to said middle portion which is round in cross section, a smoothly tapered transition zone, and a terminal flattened end section, said smoothly tapered transition zone including a pair of opposed surfaces which diverge from the straight portion to the flattened end section and a pair of opposed surfaces which converge from the straight portion to the flattened end section, said smoothly tapered transition zone being disposed between said straight portion and said flattened end section, each said straight portion, each said smoothly tapered transition zone and each said flattened end section being coaxially aligned along a single straight line axis, each of said flattened end sections including opposed parallel surfaces and having a rectangular cross section and including a pair of wide parallel surfaces merging with the converging surfaces forming the transition zone and a pair of narrow parallel surfaoes merging with the diverging surfaces forming the transition zone, said pair of wide parallel surfaces being disposed in perpendicular relation to the plane of the middle portion, bent portion and straight portion of the bracket, a mounting tab extending transversely of each flattened end section, rivet means securing the mounting tabs to said flattened end sections, said rivet means including spaced rivets to connect the tab to the flattened end section at spaced points to rigidly mount the tabs, each of said tabs including an aperture on opposite sides of the flattened end section to receive fastening means to mount the tabs on said vertical support surface with the bracket disposed horizontally and said converging surfaces forming the transition zone, the pair of wide surfaces forming the flattened end section and the tabs being disposed vertically, said smoothly tapered transition zone forming a stress diffusion zone in which torsional stress causes the transition zone and flattened sections to deform downward before the torsional shear load limit is reached within the transition zone and flattened end sections, said downward deformation of the horizontal bracket reducing the moment arm of torsion transmitted to said transition zone, the aluminum rod forming the bracket being metallurgically altered by a combination of cold work hardening and alignment of the grain of the aluminum rod at the transition zone followed by heat treating to increase deformation and break strength by increasing the temper state of the aluminum rod.



4,881,711

FULL FORMAT VARIABLE WIDTH FILM HOLD-DOWN DEVICE

Joseph F. Vollaro, Pleasantville, N.Y., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Mar. 21, 1988, Ser. No. 170,472

Int. Cl.⁴ G03B *27/60*

U.S. Cl. 248—362 6 Claims

1. A variable width film hold-down device comprising:

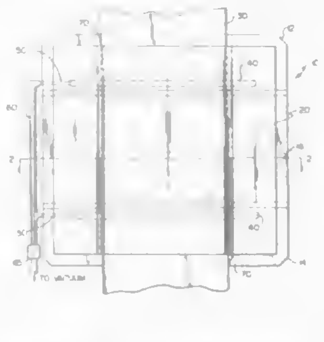
a platen;

said platen having a pair of substantially parallel slits therein;

a section of elongated film traversing said pair of substantially parallel slits, the width of said elongated film being less than the length of one of said substantially parallel slits;

a transparent flexible cover sheet covering said pair of slits and said section of film so that a gap is formed at each edge along the length of film and the surface of said platen which opens to the environment; and

vacuum means for applying a vacuum to said pair of slits.



4,881,712

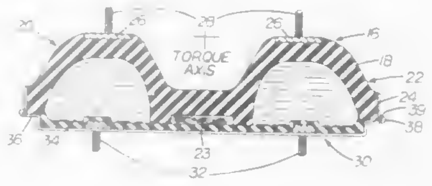
HYDRAULIC MOUNT

Saiman Lun, Englewood, Ohlo, assignor to General Motors Corporation, Detroit, Mich.

Filed Jun. 21, 1988, Ser. No. 209,394

Int. Cl.⁴ F16M *7/00*

U.S. Cl. 248—562 4 Claims



1. A self contained hydraulic mount assembly for torsional damping of a vehicle engine or the like on the frame of the vehicle, said engine having a torsion axis, comprising:

first and second mounting members;

said first member being connected to said engine and the second member to the frame of the vehicle;

a singular elongated elastomeric body including first and second longitudinally aligned spaced, integral, flexible engine mounts, each of said engine mount connected to a first and second mounting members;

each said engine mount having a chamber defined in part by said elastomeric body;

said engine mounts including their respective said chambers located adjacent to and with said first mount on one side and said second mount on the opposite side of said torsion axis;

an integral orifice track in said body for providing restricted hydraulic fluid flow between said chambers;

whereby upon operation of said engine said first and second engine mounts are compressed and expanded to effect forced exchange of bydraulic fluid along said orifice track between said chambers to provide damping of the vibration and the torsional motion of the engine, thereby providing isolation from the frame.

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4,881,713

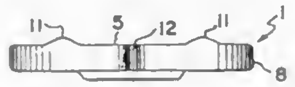
PREFORMED PATTERN FOR PRODUCING OCCLUSAL SPLINTS

Thomas B. Wise, 2568 Cheyenne Pl., Saginaw, Mich. 48603

Filed May 22, 1988, Ser. No. 197,516

Int. Cl.^{4} A61C *9/00*

U.S. Cl. 249—54 10 Claims



1. A preformed pattern for use in the production of a dental splint, said pattern comprising a generally U-shaped trough member formed of material that is form-stable at room temperature but flowable at elevated temperatures, said member having a pair of limbs converging in a direction toward one end of said member and being joined to one another by an arcuate bight, said member having a relatively flat base from one side of which spaced apart inner and outer side walls extend in the same direction, the opposite side of said member having a surface that is substantially flat except for a pair of upstanding protrusions spaced from one another along the arc of said bight, each of said protrusions having its maximum height at a point substantially co-planar with one of said side walls and declining smoothly from said point toward said surface.

4,881,714

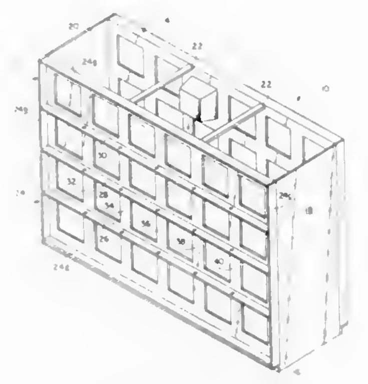
CONCRETE MOLDING SYSTEM WITH TUBS

Bruce G. Koppenberg, 9674 Mt. Baker Hwy., Deming, Wash. 98244

Filed Jul. 5, 1988, Ser. No. 215,268

Int. Cl.^{4} B28B *7/16;* **E04H** *13/00*

U.S. Cl. 249—60 2 Claims



1. Concrete molding apparatus comprising:

an integral lattice frame including a first set of multiple elongate expanses paralleling and laterally spaced from each other extending in one direction in the frame, and a second set of multiple elongate expanses parallelling and laterally spaced from each other extending transversely of said first set and joined therewith, said sets of expanses forming openings in said frame and said expanses having front sides collectively forming the front of the lattice frame and rear sides collectively forming the rear of the lattice frame,

a plurality of tub molds mounted in said frame, one mold in each respective one of said openings, the tub molds having a closed rear end, sides, and a front end and further including a perimeter rim extending about the front end, said molds being mounted with said rims against the front side of said expanses and said closed ends exposed rearwardly of the rear side of the frame,

an elongate retaining bar structure paralleling each expanse in one of said sets of expanses and disposed in front of the expanse associated therewith, the retaining bar structure bearing against mold perimeter rims disposed intermediate the bar structure and the expanse associated with the bar structure, and

plural detachable fasteners distributed along the length of each bar structure detachably fastening the bar structure to the expanse of the frame associated with the bar structure,

an elongate expanse in said one of said sets of expanses including a base web extending therealong and an elongate flange joined to and projecting from the base web, the rims of said molds lying against the base web and said detachable fasteners securing the retaining bar structure to said flange, the retaining bar structure being an elongate channel-shaped element with opposed shoulders defining a channel extending therealong and said bar structure being mounted with said shoulders straddling said flange.

4,881,715

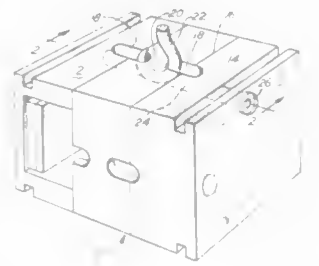
SAFETY LIFT LOCK WITH INTERNAL MEMBER

John W. Von Holdt, 6864 Lexington La., Niles, Ill. 60648

Filed Dec. 30, 1988, Ser. No. 292,248

Int. Cl.^{4} B29C *33/30*

U.S. Cl. 249—165 10 Claims



1. In a mold which comprises a pair of mating, openable and closable mold halves and a lock to hold the mold halves together while being lifted, the improvement comprising, in combination:

a recess defined in the outer surface of one of said mold halves; a lifting bridge crossing said recess and proportioned to permit a lifting hook to pass in the recess underneath said bridge to engage said bridge to lift the mold; an elongated member secured to the other of said mold halves, said member slide ably extending into said recess when the mold halves are substantially closed and substantially separated from said recess when the mold halves are open, said elongated member defining a longitudinal slot facing outwardly of said recess in said closed position to receive at least a portion of said lifting hook as the hook engages said bridge, said slot defining an end opposed to said other mold half which is closed to prevent a hook portion in the slot from sliding in the slot past said opposed end, whereby said mold in closed position cannot be opened while the lifting hook is present in said slot.

4,881,716

ASSEMBLY FOR PREFABRICATED FORMWORK

Gerhard Dingler, Schillerstrasse 49, 7274 Haiterbach, Fed. Rep. of Germany

Filed Oct. 11, 1988, Ser. No. 255,387

Int. Cl.^{4} E04G *17/04*

U.S. Cl. 249—192 22 Claims

1. Assembly of two formwork panels and a plurality of locks for clamping the panels together which assembly has a plurality of clamping positions corresponding to the number of

formwork locks, each of said formwork panels having one formwork panel profile frame comprising

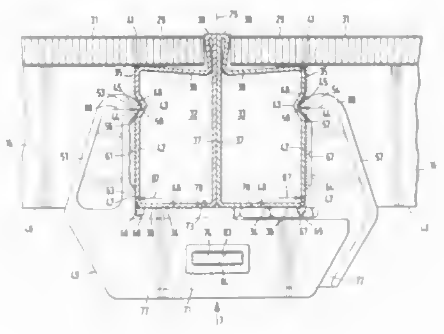
two mutually parallel longitudinal frame arms,

a plurality of stiff transverse members that are parallel to one another, are spaced approximately at equal intervals apart and have ends that are rigidly connected with said two mutually parallel frame arms, and

a formwork panel plate situated against and supported by front surfaces of said transverse members,

each of said frame arms having an outer transverse surface, an internal peripheral surface, a first sloping surface extending outwardly along said internal peripheral surface and facing towards said formwork panel plate, which sloping surface lies nearer to said formwork panel plate than to said outer transverse surface and is at a constant distance from said outer transverse surface, a first region possessing said outer transverse surface, a second region possessing an external bearing surface which is at least partly perpendicular to said formwork panel plate and bears against an external bearing surface of an adjacent formwork panel, a third region extending behind said formwork panel plate, and a fourth region possessing said first sloping surface and being spaced at a distance from said second region,

first regions on adjacent formwork panels being in alignment, said first and fourth regions each forming a corner having an external corner surface on said fourth region, and said frame arms being elastically compressible perpendicularly to said fourth region in a region of said first sloping surface,



each of said formwork locks comprising two claws, a yoke carrying said claws with an inner surface, and a wedge drive for each formwork lock that urges said two claws towards each other, said two claws having mutually-facing regions with second sloping surfaces that cooperate with said first sloping surfaces and press adjacent frame arms towards each other and towards said yoke, a flat bearing surface on said inner surface of said yoke, against which said outer transverse surfaces of said frame arms bear in aligning manner at least partially, and the improvement wherein:

(a) projections are provided on said mutually-facing regions adjacent to and contacting said corner surfaces, a free space being present between said projections and both said first and second sloping surfaces,

(b) said first sloping surfaces have positions thereon to which movement of said second sloping surfaces on said claws is limited,

(c) said projections always bear against said corner surfaces with a bearing force that is greater than opening forces on said profile frames that occur in operation, and

(d) with said projections bearing against said corner surfaces, said second sloping surfaces on said claws are still at a distance from said limiting positions on said first sloping surfaces on said fourth region, even after forces have been applied onto said wedge drive by hammer blows from building hammers and before permanent deformation of said first and fourth regions.

4,881,717

VACUUM CHAMBER

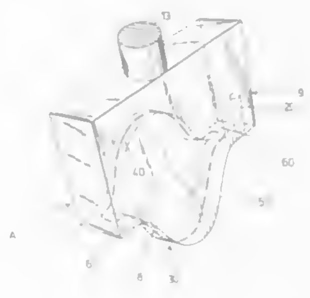
Friedrich Geiser, Nüziders, Austria, assignor to Siegried Schertler, Haag, Switzerland

Filed Jan. 23, 1989, Ser. No. 300,477

Claims priority, application Fed. Rep. of Germany, Jan. 23, 1988, 3801998

Int. Cl.^{4} F16K *51/00*

U.S. Cl. 251—144 9 Claims



1. In a vacuum-tight chamber for use in vacuum plants, the chamber serving for treating or storing objects therein or for passing objects therethrough, the chamber being formed by walls, at least one of the walls having at least one opening for placing the objects in the chamber and removing the objects therefrom, the opening having an axis and a plane extending perpendicularly to the axis, a closing member for closing the opening, a sealing surface being provided within the chamber and laterally spaced from the opening, a circumferentially closed sealing member being arranged on the closing member, the sealing member resting against the sealing surface in the closed position of the closing member, the improvement comprising the sealing surface having imaginary straight generatrices which extend parallel to the axis of the opening of the chamber, the sealing surface having at least two sealing surface portions, the sealing surface portions being laterally offset from each other relative to the axis of the opening and leading into each other at opposite locations, the circumferentially closed sealing member being formed of one piece, the sealing member having sections including two principal sections of different lengths or shapes which are located in different planes, the two principal sections of the sealing member being located in planes which extend perpendicularly to the axis of the opening, the two principal sections being spaced apart from each other and being connected by lateral sections, the closing member having a surface carrying the circumferentially closed sealing member and corresponding in shape to the sealing surface, the closing member extending in a plane, the closing member being slidable in the wall of the chamber in the plane of the closing member and parallel to the plane of the opening.

4,881,718

BALL CONTROL VALVE

Raymond P. Champagne, Coventry, R.I., assignor to Jamesbury Corporation, Worchester, Mass.

Filed Nov. 27, 1987, Ser. No. 125,979

Int. Cl.^{4} F16K *47/04, 5/06, 5/10*

U.S. Cl. 251—209 1 Claim

1. A precision fluid control ball valve comprising:

(a) a valve housing defining an inlet conduit, a ball chamber and an outlet conduit;

(b) an annular valve seat surrounding each of said inlet and outlet conduits;

(c) a spherical ball valve member mounted in said ball cham-

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ber for rotation about an axis and in engagement with said valve seats;

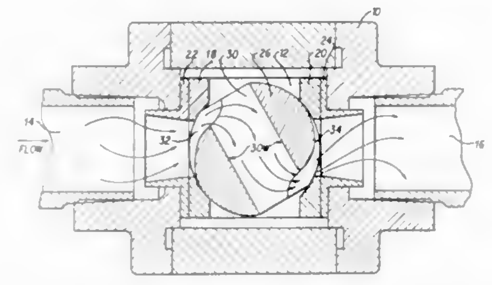
(d) means for rotating said spherical ball valve member about said axis;

(e) said spherical ball valve member comprising:

  (1) a ball port extending through said spherical ball valve member in a direction perpendicular to said axis and adapted to permit the flow of fluid from said inlet conduit to said outlet conduit when said spherical ball valve member is rotated about said axis to an open position;

  (2) an elongated groove adjacent to and connected with each end of said ball port extending into the surface of said spherical ball valve member and extending partially around the circumference of said spherical ball valve member in a common direction away from said port in the plane of rotation of said spherical ball valve member, said grooves having a selected depth and width at the point of intersection with said port thus providing a selected area for fluid flow through said grooves at said point and said area decreasing as said groove extends around said circumference away from said port, thus providing for a reduced area for fluid flow; and

a diffuser located in said outlet conduit, said diffuser lining said outlet conduit and diverging outwardly from said ball chamber wherein said diffuser is replaceable and is formed of a material harder than said valve housing.



4,881,719

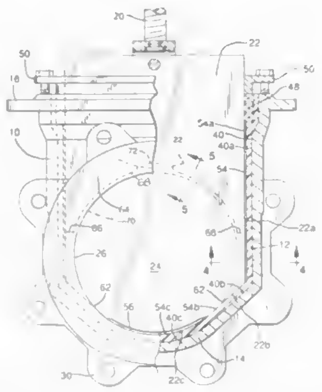
GATE VALVE

Jeffrey M. Bowman, 6920 SW. 2nd Ave., Portland, Oreg. 97219

Filed Sep. 23, 1988, Ser. No. 248,050

Int. Cl.⁴ F16K *3/02*

U.S. Cl. 251—328 8 Claims



1. A gate valve for controlling the flow of fluid between a pair of pipes, comprising:

a body member having upper and lower portions,

an opening in the lower portion of said body member,

a gate having a bottom sealing edge,

gate operating means for said gate on the upper portion of said body member,

a plastic liner secured to said body member in said opening and having upper and lower and side defining portions forming a valve flow passage having opposite side portions,

a bottom seating surface on said liner engageable by said gate and having a center portion with upwardly and outwardly extending side portions,

and wall means defining a top opening, downwardly extending recess in said liner receiving said gate in a slidable surface sealing fit,

said recess and gate being wider than said flow passage and the wall means of said recess terminating at a bottom portion of said flow passage above the center portion and adjacent the upwardly disposed side portions of said seating surface to provide side sealing and pressure backing support for said gate from the bottom of said wall means and upwardly of the gate.

4,881,720

HAND OPERATED CHAIN BLOCK

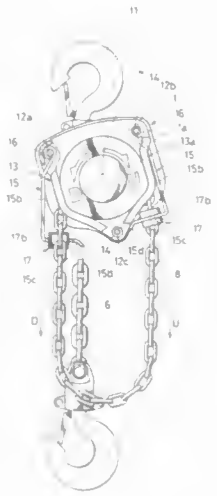
Yosaku Nishimura, Osaka, Japan, assignor to Vital Kogyo Kabushiki Kaisha, Osaka, Japan and Ingersoll-Rand Company, Phillipsburg, N.J.

Filed Aug. 24, 1988, Ser. No. 236,031

Claims priority, application Japan, Feb. 29, 1988, 63-26556[U]

Int. Cl.⁴ B66D *3/16*

U.S. Cl. 254—358 3 Claims



1. In a hand-operated chain block comprising a load sheave rotatably supported by and between a pair of side plates and a hand chain wheel mechanically coupled to said load sheave and positioned on the side of one of said side plates facing away from said load sheave, the improvement comprising an enclosure for covering substantially the entire periphery of said hand chain wheel, said enclosure including:

a plurality of stays mounted on said side of said one of said side plates about said hand chain wheel, two of said stays lying above the axis of rotation of said hand chain wheel when said hand-operated chain block is suspended from above;

a hand chain wheel cover having a leftwardly laid-down U-shaped sectional configuration, said hand chain wheel cover mounted on said plurality of stays so as to cover upper, lower, and front portions of said hand chain wheel,

a pair of hand chain guide plates, each said hand chain guide plates mounted on one of said two of said plurality of stays as to cover side portions of said hand chain wheel, each of said hand chain guide plates being formed of one metal plate in a folded pattern, with a pivotal support portion formed at an upper end portion thereof in a crooked pattern and with a cylindrical hand chain guide portion formed at a lower end portion thereof, said two stays extending through said pivotal support portions, said hand chain guide plates being suspendingly pivotally supported by said stays, and

a hand chain wound around said hand chain wheel, said hand chain being inserted through said hand chain guide portions for being guided by said hand chain guide portions.

4,881,721

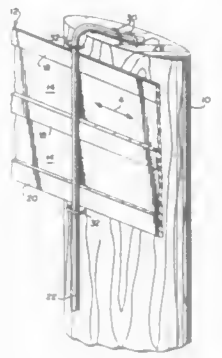
FENCE POST AND WEB CONNECTION SYSTEM

Jack Manley, Leighton, Ala., assignor to Edward S. Robbins, III, Florence, Ala.

Filed Nov. 6, 1987, Ser. No. 117,496

Int. Cl.⁴ B21F *27/00*

U.S. Cl. 256—52 26 Claims



25. In a fencing system comprising a plurality of fence posts and at least one elongated web extending between and substantially perpendicular to said plurality of fence posts, an improved connector system for attaching said web to each of said posts such that said web is free to move axially in the direction of elongation of the web, said connector system comprising, for each post, at least one elongated strand extending along the post and over said web, said at least one strand comprising at least one plastic-coated high tensile strength member, said strand firmly secured at either end to said post; and at least one pair of fasteners associated with each of said at least one web, said fasteners holding said strand against said post at locations adjacent upper and lower edges of said web, such that said web is free to move horizontally in the direction of elongation of the web.

4,881,722

APPARATUS FOR PRODUCING SUPERFINE PARTICLE

Tadashi Koizumi, Tokyo; Seiji Yokota, Kanagawa; Shigeo Matsumura, and Yoshiaki Inoue, both of Tokyo, all of Japan, assignors to Neturen Company Limited, Tokyo, Japan

Continuation of Ser. No. 143,644, Jan. 13, 1988, abandoned. This application Apr. 11, 1989, Ser. No. 336,560

Claims priority, application Japan, Jan. 27, 1987, 62-9300[U]

Int. Cl.⁴ B22F *9/14*

U.S. Cl. 266—176 5 Claims

1. An apparatus for producing superfine particles of inorganic substances which comprises:

a substantially airtight outer vessel,

an enclosed inner vessel disposed within said outer vessel, the outer surface of said inner vessel being in proximity to the inner surface of said outer vessel,

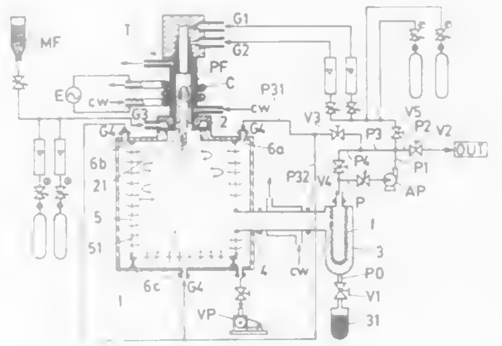
a means to form superfine particles from inorganic materials disposed within said inner vessel,

a vacuum means outside said outer vessel connected by a conduit passing through said outer vessel to the inner surface of said inner vessel, and

a collecting means connected to said vacuum means for collecting said superfine particles,

said inner vessel having a plurality of pores extending from the outer surface to the inner surface thereof, to permit the flow of an atmospheric gas for collection of resulting superfine particles therethrough,

said inner vessel further having an inlet for the introduction of inorganic materials capable of forming superfine particles,



said outer vessel having at least one inlet for the introduction of said gas in said inner vessel flowing through said pores,

whereby substantially all superfine particles formed in said inner vessel are removed by suction created by said vacuum means in a stream of gas entering said outer vessel and flowing through said pores of said inner vessel for collection by said collecting means.

4,881,723

DOUBLE-DAMPED GAS SPRING WITH FRICTION LINER AND SEALING RING

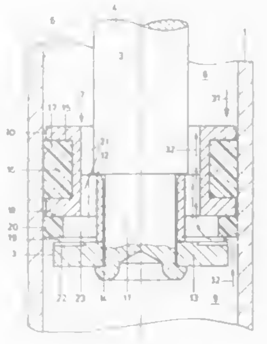
Hans J. Bauer; Hans-Peter Bauer, and Ludwig Stadelmann, all of Altdorf, Fed. Rep. of Germany, assignors to Fritz Bauer + Sohne oHG, Altdorf, Fed. Rep. of Germany

Filed Apr. 8, 1988, Ser. No. 179,502

Claims priority, application Fed. Rep. of Germany, Aug. 3, 1985, 3527997

Int. Cl.⁴ F16F *5/00, 9/36, 11/00*

U.S. Cl. 267—64.12 10 Claims



1. A gas spring, comprising a substantially cylindrical housing tightly closed at one end and a piston rod disposed concentrically in the housing and extending out of said housing in a sealed manner at the other end of said housing, the piston rod being provided on its end located in the housing with a piston assembly fixed thereto, said piston assembly comprising a sealing ring forming part of a valve means resting on the inner wall of the housing and being guided in a damped manner, wherein

the piston assembly has a friction damping liner resting against the inner wall of said housing, and

pneumatic damping means for pneumatically damping said

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piston assembly, said pneumatic damping means including at least one gas passage channel extending through said piston assembly and the valve means for restricting said channel as said piston assembly moves in a first direction in said housing and for opening said channel as said piston assembly moves in a direction opposite said first direction in said housing;

said piston assembly including a holding means for retaining said friction damping liner in said piston assembly and against said inner wall of said housing, said holding means further defining at least a portion of the length of said channel;

said friction damping liner comprising an expanded plastic band of foamed polyurethane impregnated with lubricant and constituting means for producing a damping force of between 30 and 120N in addition to said pneumatic damping.

4,881,724
FLEXIBLE MOUNTING FOR ENGINES, MACHINE ASSEMBLIES AND THE LIKE

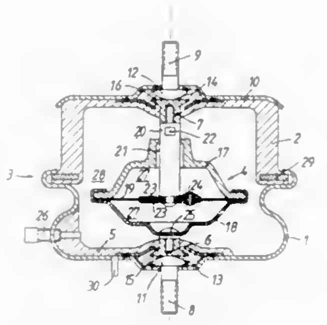
Paul Bausch, Hattenheim, Fed. Rep. of Germany, assignor to General Motors Corporation, Detroit, Mich.

Filed Jun. 27, 1988, Ser. No. 211,632

Claims priority, application Fed. Rep. of Germany, Aug. 7, 1987, 3726314

Int. Cl.^{4} F16F *15/04, 9/04;* **B62D** *21/00*

U.S. Cl. 267—64.23 3 Claims



1. Flexible mounting for machine assemblies comprising a pair of mounting members **(1,10)**, an elastomeric body (2) connecting said mounting members and cooperating therewith to define a first chamber **(28)**, damper means **(4)** mounted within said first chamber, said damper means comprising a housing **(17,18)** fixed to one of said mounting members (1), a diaphragm **(19)** separating the interior of said damper housing into a pair of damper chambers **(27)**, a damper bore **(24)** connecting said damping chambers, a plunger **(20)** guided in said damper housing and fixed at one end to said diaphragm and at another end to the other of said mounting members **(10)**, a gas passage between one of said damper chambers **(27)** and said first chamber **(28)**, and all of said chambers charged with pressurized gas so that upon vibration of one mounting member relative to the other, gas flow is forced through said damper bore and said gas passage and steadily seeks to equalize the pressure in said chambers and wherein peak pressures in said damper chambers occur with a phase shift.

4,881,725
ACCUMULATOR PISTON HAVING A COIL SPRING SECURED THERETO

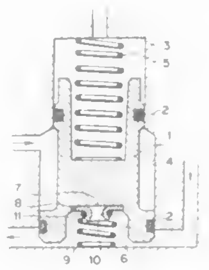
Yasuhiro Shioda, Toyota; Shinya Nakamura, Owariashahi; Makoto Funahashi, and Seitoku Kubo, both of Toyota, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Japan

Filed Feb. 17, 1988, Ser. No. 156,575

Claims priority, application Japan, Feb. 23, 1987, 62-39901

Int. Cl.^{4} F16F *1/12;* **F01B** *31/00;* **F16L** *55/04*

U.S. Cl. 267—179 12 Claims



7. An accumulator comprising: a cylinder; a piston fitted in said cylinder in a manner to move in response to a hydraulic pressure; and a sealing element for sealing up the outer circumference of said piston and the inner circumference of said cylinder,

wherein the improvement comprises:
- a spring for urging said piston in a first one of the moving directions of said piston;
- a bottomed cylindrical hollow portion formed in the end of said piston toward said first moving direction; and
- a plate secured to the bottom of said hollow portion by caulking on the inner wall of said hollow portion near said bottom, said spring being secured to said piston through said plate.

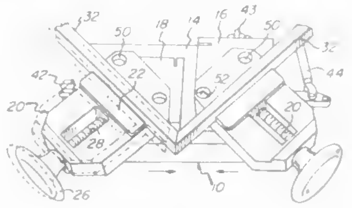
4,881,726
VISE FOR JOINING FRAMES

Robert M. Jolkovski, 34 Hamilton Rd., Arlington, Mass. 02174

Filed Mar. 31, 1988, Ser. No. 175,843

Int. Cl.^{4} B25B *1/20*

U.S. Cl. 269—41 10 Claims



1. A vise for joining frame pieces having complementary end faces, comprising:
- a base having an upper surface;
- a first clamp assembly including a first plate slidably mounted on said base upper surface, said first plate and said base having cooperating means for constraining said first plate to movement laterally with respect to said base along a path on a first rectilinear axis and in a single plane, and a first body supported on said first plate and having means for clamping a frame piece thereon;
- a second clamp assembly including a second plate slidably mounted on said base upper surface, said second plate and said base having cooperating means for constraining said second plate to movement transversely with respect to said base along a path on a second rectilinear axis perpendicular to said first axis and in a single plane, and a second body supported on said second plate laterally adjacent said first body, said second body having means for clamping a frame piece thereon to dispose it in a common plane with a frame piece clamped on said first body;
- first screw means operatively connected to said first plate for finely adjusting the position of said first clamp assembly along said path on said first axis, and for fixing it thereat; and
- second screw means operatively connected to said second plate for finely adjusting the position of said second clamp assembly along said path on said second axis, independently of the adjustment of said first clamp assembly by said first screw means, and for fixing it thereat, whereby frame pieces clamped on said bodies can be brought into and maintained in mutual contact in at least one accurate angular relationship to one another.

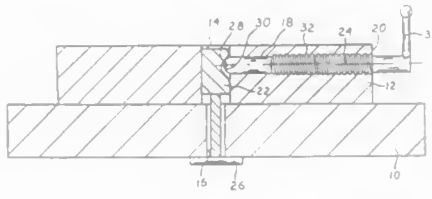
4,881,727
CLAMPING MECHANISM

Robert Nemirovsky, 1117 Hyman Ave., Bay Shore, N.Y. 11706, assignor to Joseph Deutsch and Robert Nemirovsky, both of Bay Shore, N.Y.

Continuation-in-part of Ser. No. 82,307, Aug. 6, 1987, Pat. No. 4,784,064. This application Jun. 24, 1988, Ser. No. 211,478

Int. Cl.^{4} B23Q *3/02*

U.S. Cl. 269—309 11 Claims



1. A clamping mechanism for clamping a first and a second member, said members having corresponding first and second openings, respectively, said second member having a longitudinal channel transversal to said first opening, comprising:
- a shaft disposed in said aligned openings, said shaft having engaging means for engaging said first member, and a shaft concave surface facing said longitudinal channel;
- actuating means reciprocatingly disposed in said longitudinal channel, said actuating member terminating in a convex surface facing said concave surface;
- said shaft and said actuating means cooperating to urge said shaft in a first direction to clamp said members when said actuating means is moved toward said shaft by engagement of said curved surfaces to generate an axial force on said shaft;
- said shaft and actuating means cooperating to release said members when said actuating means is moved away from said shaft; and
- returning means for urging said shaft in a second direction opposite said first direction.

4,881,728
ADJUSTABLE HEAD SUPPORT ATTACHMENT FOR THERAPY TABLE

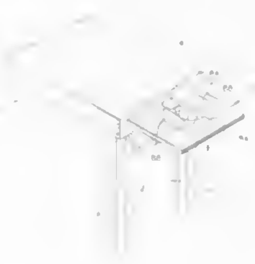
Lemna J. Hunter, 2005 MacKinnon Ave., Cardiff, Calif. 92007

Filed Sep. 6, 1988, Ser. No. 240,622

Int. Cl.^{4} A47C *7/38*

U.S. Cl. 269—328 11 Claims

1. An adjustable head support for a therapy table, comprising:
- an elongated telescoping shaft having means one each end thereof for attachment to opposite side rails of tables of different width;
- a pair of arms each rotatably mounted at an inner end at spaced positions along said shaft;
- a head support member mounted on an outer end of said arms;
- a one-way brake on one of said arms for stopping rotation thereof relative to said shaft in one direction, said brake comprises a hub rotatably supporting said arm on said shaft, and an eccentric cam mounted on said hub and biased into engagement with said shaft; and



- brake release means for selectively releasing said brake for enabling rotation in said one direction, said brake release means comprises an elongated cable connected at one end to said eccentric cam and a handle connected at the other to said cable and positioned beneath said head support member.

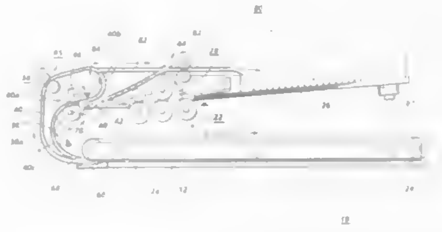
4,881,729
RECIRCULATING DOCUMENT HANDLER WITH INTEGRAL SADH

Robert L. Culligan, West Henrietta Road, and George J. Roller, Penfield, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 202,348, Jun. 6, 1988. This application Nov. 28, 1988, Ser. No. 276,849

Int. Cl.^{4} B65H *5/26*

U.S. Cl. 271—3.1 6 Claims



1. In a document handler for feeding documents to be copied at a copier imaging station, with a document stacking tray overlying the imaging station and accessible from the upper surface of said document handler:
- a recirculating document handling system for sequentially feeding and recirculating a set of documents from and back to one side of said document stacking tray in a document recirculation path;
- said document recirculation path including a document feeding path portion from said document stacking tray to an adjacent side of said imaging station;
- said document recirculation path also including a document restacking return path portion for returning documents back from said same side of the imaging station to said same side of said document stacking tray;
- a semi-automatic document feeding system integral said recirculating document handler for sequentially feeding individual document sheets to said copier imaging station in a semi-automatic document feeding path;
- said semi-automatic document feeding path having a document inserting entry separate from said document stacking

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tray but adjacent thereto and also accessible from the upper surface of said document handler;

said semi-automatic document feeding path extending downwardly from said document inserting entry thereof to said document feeding path portion of said document recirculation path by intersecting and extending through said document restacking return path;

said semi-automatic document feeding path merging into and commonly utilizing said document feeding path portion of said document recirculation path to feed documents from said document inserting entry to said imaging station for copying.

4,881,730
SORTER

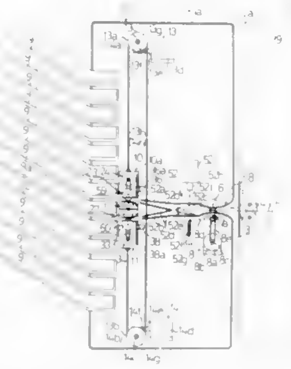
Tamaki Kaneko, Fujisawa, Japan, assignor to O/A Technologies, Inc., Irvine, Calif.

Continuation of Ser. No. 3,146, Jan. 14, 1987, abandoned. This application Feb. 16, 1988, Ser. No. 159,497

Claims priority, application Japan, Jan. 20, 1986, 61-008007; Jan. 21, 1986, 61-008981; Oct. 20, 1986, 61-247457

Int. Cl.⁴ B65H *3/10*

U.S. Cl. 271—296 12 Claims



1. A sorter having a bank of receptacles vertically disposed at given intervals to sort sheets discharged from a sheet handling machine onto said receptacles, comprising:

a plurality of lift members disposed close to said bank of receptacles and movable up and down,

lift driving means for respectively raising and lowering said respective lift members from a wait position at which sheets are received,

sheet pinching means respectively disposed at said respective lift members to momentarily hold a sheet being transferred,

sheet discharge means respectively disposed at said respective lift members to discharge sheets toward receptacles,

means for discharging sheets from said sheet handling machine so that said discharge sheet is held by said sheet pinching means on one of said lift members positioned at said wait position,

means for transporting said one of lift members to a target position while said sheet pinching means holds the sheet, and

means for controlling said sheet discharge means to discharge the sheet toward the target receptacle.

4,881,731
SHEET FEEDING APPARATUS

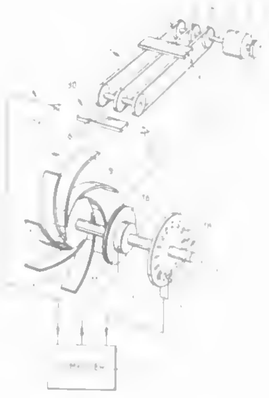
Raymond Simpson-Davis, Hampshire, England, assignor to De La Rue Systems, Ltd., England

Filed Sep. 13, 1988, Ser. No. 243,683

Claims priority, application United Kingdom, Sep. 16, 1987, 8721744

Int. Cl.⁴ B65H *29/40*

U.S. Cl. 271—315 5 Claims



1. Sheet feeding apparatus comprising a feed system for feeding sheets, and a sheet stacking system to which said sheets are fed by said feed system, said sheet stacking system including a rotatable stacking wheel having a plurality of sheet receiving slots into which said sheets are fed by said sheet feed system, rotation of said stacking wheel carrying sheets from a sheet receiving position to a sheet stacking position, said sheet stacking system including means actuable to stop the rotation of said sheet stacking system to enable at least the leading end of a sheet to be fed into a sheet receiving slot of said stacking wheel, drive means to rotate said stacking wheel, and a clutch connecting said drive means to said stacking wheel to enable said drive means to continue rotating when said stacking wheel is stopped, wherein said clutch comprises a drive belt entrained around first and second pulley wheels, said first pulley wheel being driven by said drive means and said second pulley wheel being connected to said sheet stacking wheel, said drive belt being adapted to slip around one or both of said pulley wheels when the rotation of said stacking wheel is stopped.

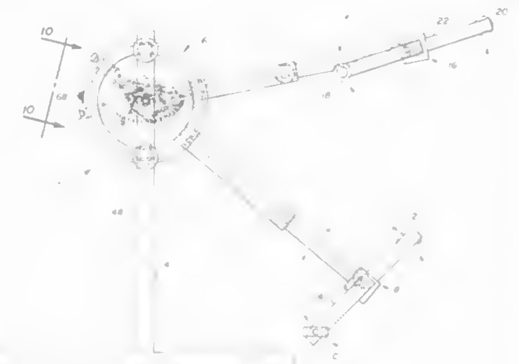
4,881,732
EXERCISE DEVICE

Joseph Kepiro, 810 Waterfront Dr., Lancaster, Pa. 17602

Filed Feb. 22, 1988, Ser. No. 158,649

Int. Cl.⁴ A63B *21/00*

U.S. Cl. 272—73 2 Claims



1. An exercise device comprising:

(a) a frame means for supporting the structure that will be used for exercising the muscles of the arms and legs;

(b) a first pedal means adapted to be driven by the legs of one using the exercise device;

(c) a second pedal means adapted to be driven by the arms of one using the exercise device;

(d) both said first and second pedal means being mounted on the frame means;

(e) means interconnecting said first pedal means and said second pedal means so that a force applied to one pedal means will assist in the movement of the other pedal means;

(f) said means interconnecting said pedal means is within the perimeter surface and ends of a drum supported on the frame means, said first and second pedal means each being on the end of their individual support structures extending from the drum, means transmitting the rotating motion of each pedal means to the rotating motion of bevel gears on a common axle, one bevel gear for each pedal means, within the perimeter surface and ends of said drum;

(g) clutch means on said common axle selectively engaging none, one or both of the bevel gears of the two pedal means whereby when the clutch means engage said gears, the force applied to either of the pedal means is transmitted to the other pedal means; and

(h) said clutch means is composed of two clutch structures keyed to the common axle and slidable therealong, means moving each clutch structure selectively into and out of engagement with each of said bevel gears for each pedal means.

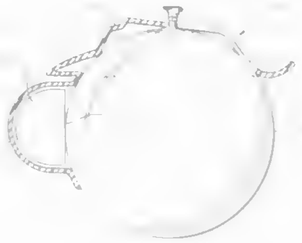
4,881,733
BALLOON POPPING MECHANISM

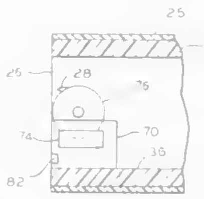
Steven Rehkemper, and Denni Rivette, both of Chicago, Ill., assignors to C&S Distributing Co., Santa Monica, Calif.

Filed Mar. 14, 1988, Ser. No. 167,575

Int. Cl.⁴ A63F *9/00*

U.S. Cl. 273—1 R 7 Claims





1. A toy comprising:

holder means for retaining an expandable article;

a wheel retained by said holder so that the periphery of said wheel is in close proximity to said expandable article;

puncturing means fixed to the periphery of said wheel; and

means for rotating said wheel through a variable distance, so that when said puncturing means rotates sufficiently it contacts said expandable article and causes it to burst.

4,881,734
METHOD AND APPARATUS FOR ADJUSTING A BASKETBALL GOAL

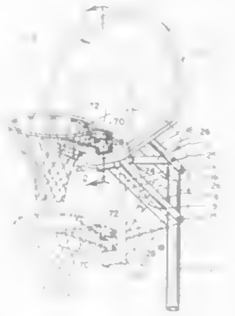
Stephen F. Nye, Roy, Utah, assignor to Lifetime Products, Inc., Salt Lake City, Utah

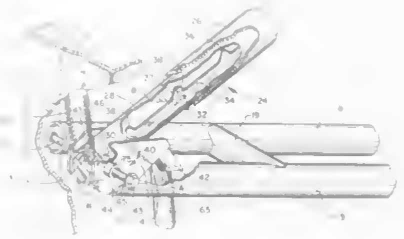
Continuation of Ser. No. 922,041, Oct. 21, 1986, Pat. No. 4,781,375. This application Jun. 16, 1988, Ser. No. 207,708

The portion of the term of this patent subsequent to Nov. 1, 2005, has been disclaimed.

Int. Cl.⁴ A63B *63/08*

U.S. Cl. 273—1.5 R 36 Claims





15. An adjustable basketball goal system for adjustment of the height of a basketball goal above a playing surface, comprising:

a deformable parallelogrammatic structure;

means for securing the basketball goal to said parallelogrammatic structure;

means for securing said parallelogrammatic structure to a rigid vertical support such that said parallelogrammatic structure is suspended above the playing surface;

a telescoping support, said telescoping support being slidable a maximum distance between a retracted configuration and an extended configuration and disposed substantially as a diagonal for said parallelogrammatic structure wherein said telescoping support has two ends, each of which is pivotally connected to said parallelogrammatic structure, comprising:

  a first cylindrical member having a longitudinal slot with a plurality of notches;

  a second cylindrical member slidably connected to said first cylindrical member and having a post disposed within said slot, wherein said post slides along the length of said slot as said first cylindrical member slides with respect to said second cylindrical member and said post may engage one of said notches to restrict further movement of said first and second cylindrical members with respect to each other;

a lever plate configured to receive the end of an elongated implement and to restrain the end of the implement from inadvertent slippage as the implement is used to apply a force to said lever plate, said lever plate being further configured such that when a sufficient force is applied to said lever plate, said lever plate supports the effective weight of the goal and causes one of the cylin-

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drical members to rotate about its longitudinal axis such that said post is disengaged from one of said notches and is disposed for slidable movement along the length of said slot thereby allowing said telescoping support to extend and contract its length; and

means for restricting the sliding movement of said first and second cylindrical members when one of the cylindrical members is rotated and released such that the inadvertent momentary actuation of said rotator means results in the cylindrical members sliding substantially less than said maximum distance.

25. A method for adjusting the height of a basketball goal secured to a deformable parallelogrammatic structure, the deformable parallelogrammatic structure being secured to a rigid support and being restricted against deformation by restricting means, the restricting means being biased by a biasing means in an engaged position, the restricting means being configured such that it will move from the engaged position to a disengaged position upon actuation of a releasing means, the releasing means configured to receive the end of a force applying implement and to restrain the end of the implement from inadvertent slippage as the implement is used to apply a force to the releasing means, the releasing means further configured such that when a sufficient force is applied to the releasing means, the releasing means supports the effective weight of the goal and causes the restricting means to move from the engaged position to the disengaged position, the method comprising the steps of:

applying a force to the releasing mans such that the effective weight of the goal is supported and such that the restricting means moves from an engaged position to a disengaged position;

changing the height of the basketball goal thereby changing the shape of the parallelogrammatic structure from a first configuration to a second configuration; and

removing the force from the releasing means thereby allowing the restricting means to return under the biasing force to the engaged position thereby restricting further deformation of the parallelogrammatic structure.

4,881,735

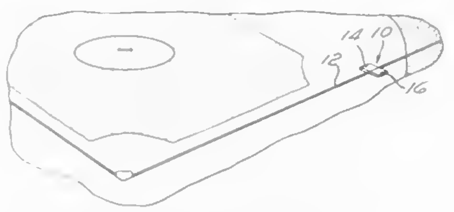
SAFTEY BASE

Louis A. Orsatti, Laguna Hills, Calif., assignor to Adams, U.S.A., Inc., Cookeville, Tenn.

Filed Jun. 17, 1988, Ser. No. 208,244

Int. Cl.⁴ A63B *71/02*

U.S. Cl. 273—25 7 Claims



1. A double-width base pad comprising:

first and second single-width base pad members, each having a pliable outer skin defining a generally horizontal upper surface and a plurality of lateral edges and a resilient inner core positioned within said pliable outer skin; and

a means for connecting the first single-width base pad member to the second single-width base pad member such that one lateral edge of the first single-width base pad member abuts one lateral edge of the second single-width base pad member, thereby forming the desired double-width base pad;

wherein said means for connecting the first single-width base pad member to the second single-width base pad member comprises:

a first elongate bar positioned inside the pliable outer skin and along a selected lateral edge of the first single-width base pad member;

a second elongate bar positioned inside the pliable outer skin and along a selected lateral edge of the second single-width base pad member;

a plurality of individually alignable apertures extending through said first and second elongate bars and the respective selected lateral edges of the first and second single-width base members; and

a plurality of connecting members passing through said alignable apertures so as to connect the first single-width base pad member to the second single-width base pad member such that the respective selected lateral edges thereof will be held in abutment with one another, thereby forming the desired double-width base member.

4,881,736

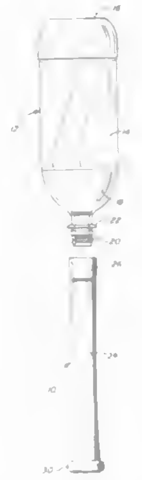
BAT HANDLE FOR PLASTIC BEVERAGE BOTTLE

Daniel W. Fox, 202 East Sharon, Phoenix, Ariz. 85022

Filed Sep. 7, 1983, Ser. No. 530,090

Int. Cl.⁴ A63B *59/00*

U.S. Cl. 273—26 B 6 Claims



1. A bat handle for attachment to the screw threaded neck of a plastic container such as a plastic beverage bottle comprising an elongated member constructed in a manner to simulate the handle of a ball bat, said member including an internally threaded socket on one end thereof for screw threaded attachment to the neck of a container with the container adapted to form an extension of the elongated member and the combination of the elongated member and container adapted to form a bat by which a ball may be struck, said elongated member being an elongated tubular plastic member with the internally threaded socket being of one-piece unitary construction therewith, said elongated tubular member including a peripheral knob at the end thereof remote from the internally threaded socket to prevent the bat handle from slipping out of the hands of a user when a combined bat handle and container are swung in a manner to bat a ball, said knob end of the elongated member being provided with a concave end surface to supportingly engage a portion of the periphery of a ball thereby enabling a combined bat handle and container to serve as a batting tee for supporting a ball in elevated position for engagement by another bat.

4,881,737

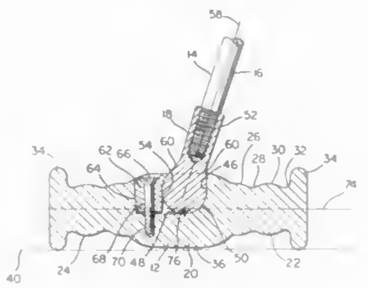
TRUE ROLL PUTTER

Billy J. Mullins, 2009 11th St., Wichita Falls, Tex. 76301

Filed Feb. 9, 1989, Ser. No. 307,926

Int. Cl.⁴ A63B *53/02, 53/04*

U.S. Cl. 273—80 A 18 Claims



1. A golf putter including a horizontally elongated, generally cylindrical head including opposite ends, an elongated upstanding handle having upper and lower ends, mounting means mounting said lower end from said head centrally intermediate said opposite ends and with said handle inclined relative to the vertical toward one end of said head, said head including a substantially cylindrical central portion and cylindrical opposite end portions, said opposite end portions including alternating longitudinally spaced zones of large and small diameter cross section with the terminal ends of said end portions comprising large diameter zones of said end portions and the last mentioned large diameter zones convexly rounded in directions extending longitudinally of said head, said central portion and end portions being coaxial, the undersurfaces of said terminal ends lying in a horizontal plane above which the undersurface of said central portion is spaced.

4,881,738

MANIPULATIVE AMUSEMENT DEVICE

David B. Ayers, 13908 Cravenridge Dr., Houston, Tex. 77083

Filed Jan. 11, 1989, Ser. No. 295,819

Int. Cl.⁴ A63F *9/08*

U.S. Cl. 273—153 S 11 Claims

1. In a manipulative amusement device including an upper plate and lower plate parallel to and in coaxial alignment with the upper plate and rotatable relative to said upper plate, each plate having a common center-point and including a plurality of openings on the outer periphery thereof alignable in vertical registry upon relative rotation, each plate further including a pair of spaced collar pieces disposed on opposite sides of of each of said plurality of openings which when said plate openings are in vertical registry mating pairs of said collar pieces define a plurality of coaxially disposed spaced pairs of collar members each having a pair of coaxially aligned recesses, a plurality of cylinder assemblies each formed about a respective longitudinal axis and comprised of an even number of cylinder segments numbering at least six, and each said cylinder assembly having opposing annular end projections for being rotatably received by each said pair of annular recesses in one of said pair of spaced coaxially aligned collar members and in coaxial alignment therewith for permitting rotation of each of said cylinder assemblies about said axis of one of said pairs of collar members the improvement in combination therewith, comprising

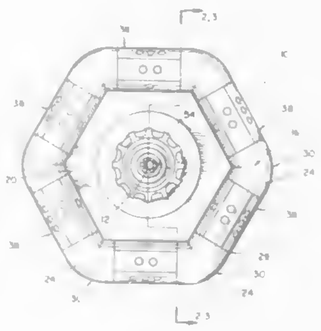
a knob portion having an inner generally cylindrical recess projecting axially outwardly from said upper plate, said upper plate further having a central aperture disposed axially thereof and coaxially aligned within in said generally cylindrical knob portion,

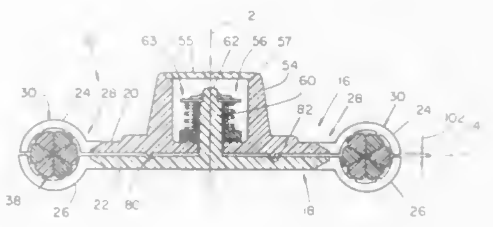
said lower plate having an axial post projecting outwardly from the inner face thereof for registering with and projecting through said upper plate central aperture and coaxially into said knob portion generally cylindrical recess,

force exerting means cooperating with said lower plate projecting post and the interior of said upper plate knob portion generally cylindrical recess for securing said upper plate to said lower plate in rotational relationship thereto and biasing said upper plate into radial contact with said lower plate for forming said pairs of cylinder members, said force exerting means permitting limited axial separation of said upper and lower plates in response to outward forces exerted therebetween,

each of said collar members having disposed within said annular recesses a plurality of circumferentially-spaced longitudinally disposed projecting lugs, and

each of said cylinder assembly annular end projections having a plurality of circumferentially-spaced longitudinally disposed recesses registering with said plurality of collar member circumferentially-spaced projecting lugs,





wherein when said circumferentially-spaced lugs and recesses are in registry said force exerting means biases said upper plate into contact with said lower plate and one half of said cylinder segments comprising each said cylinder assembly is axially aligned within each of said pairs of spaced collar pieces for permitting planar rotation of said upper and lower plates and said circumferential displacement of said one half of said cylinder segments from one plate opening to an adjacent plate opening,

wherein when said circumferentially-spaced lugs and recesses are out of registry said lugs ride out of said recesses and contact the circumferential surface of said annular end projections to produce an outward force acting between said upper and lower plates against said force exerting means for permitting limited axial separation between said vertically registering collar pieces and said pair of plates for facilitating axial rotation of each said cylinder assembly.

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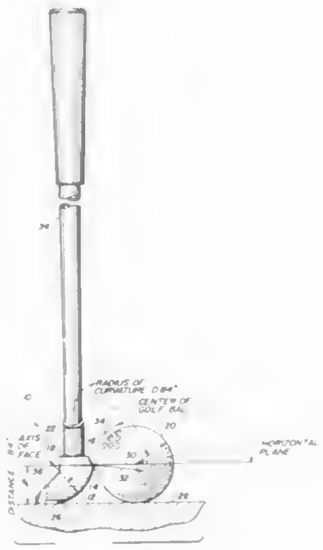
4,881,739

GOLF PUTTER

Larry Garcia, 160 Ashley La., Oldsmar, Fla. 34677
Filed Nov. 16, 1987, Ser. No. 121,749
Int. Cl.⁴ A63B *53/04*
U.S. Cl. 273—164 1 Claim



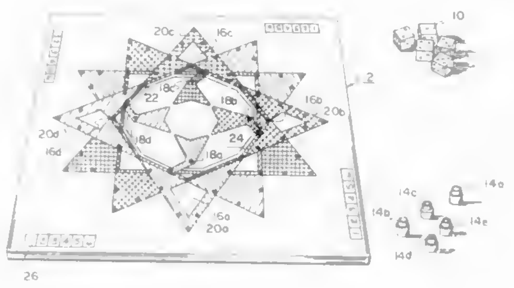
1. A golf putter comprising in combination:
a shaft;
a grip located on the upper end of the shaft;
an elongated putter head having a heel area and a toe area; the putter head being formed with a top portion including means for coupling the head to the shaft, a centrally located bottom portion constituting a sole for positioning the putter head in a ball-striking orientation on a putting green, a quarter right circular cylinder ball-striking face located therebetween and terminating at its lower end in the bottom portion and at its upper end in a horizontal edge parallel to said flat sole and adjacent to the top portion, and an upwardly and rearwardly beveled generally rectangular area between the horizontal edge and the top portion, the ball-striking face being arcuate in its cross-sectional shape with a 0.84 inches radius of curvature and curved about an axis located in a first horizontal plane above the sole, the first horizontal plane including the axis, the center of a golf ball to be struck, and the striking point of the ball-striking face, the vertical distance between the first horizontal plane and a second horizontal plane comprising the sole and the bottom of the golf ball to be struck being 0.84 inches.

4,881,740

BOARD GAME METHOD OF PLAY

Hugo V. Odhner, P.O. Box 185, Bryn Athyn, Pa. 19009
Filed Oct. 26, 1987, Ser. No. 112,288
Int. Cl.⁴ A63F *3/00*
U.S. Cl. 273—248 7 Claims

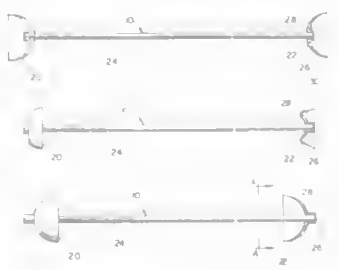
1. A method of playing a board game with at least one player playing in turn on a playing board having at least one path, said path having a predetermined number of spaces and a defined start and finish, which method comprises
providing at least one die, each die having multiplied numbered faces, the total number of dice being at least one less than the total number of faces on any die;
rolling the dice to provide a randomly selected number on each die;
wherein a tallying means is provided which comprises a series of numbers, each corresponding to a different number on each of the faces of a die, and
scoring is accomplished by eliminating each number on the tallying means with a corresponding number selected on a die and summing any numbers not eliminated;
each player provided with multiple playing pieces and moving at least one playing piece along a path, progression through the spaces determined by the dice score each turn;
determining a winner by the player who progresses each of its playing pieces from the start to the finish.



4,881,741

JUGGLING SYSTEM FOR AMUSEMENT, EXERCISING AND TRAINING

James R. Shapiro, 10 Malibu Ct., Towson, Md. 21204
Filed Dec. 29, 1988, Ser. No. 291,657
Int. Cl.⁴ A63B *67/00*
U.S. Cl. 273—327 14 Claims



1. A juggling system having: at least one stick, a projectile rod assembly for dynamic sustainment by manual manipulation of the projectile rod assembly using thereagainst blows of said at least one stick, the projectile rod assembly being of the type having a rod with first and second ends, and a respective enlargement axially disposed on each of the first and second ends, characterized by: means for changing said dynamic sustainment characteristics of the projectile rod assembly, including: each of the enlargements having cup shape with a rim and a stable first position with the cup shape facing coaxially outward on the rod, the enlargements being of a flexible material, and said rim having a diameter permitting the cup shape to be partially reversed by being flexed axially back over itself to a second position providing for a portion of said at least one stick to be engaged in said partially reversed cup shape at said second position, as an aid in dynamic sustainment.

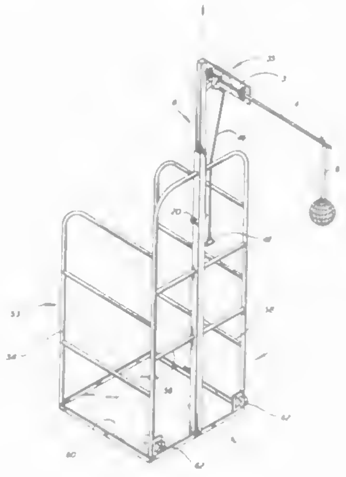
4,881,742

VOLLEYBALL TECHNIQUE TRAINER

Francis M. Hargreave, P.O. Box 1104, Quogue, N.Y. 11959
Filed Nov. 14, 1988, Ser. No. 271,032
Int. Cl.⁴ A63B *69/00*
U.S. Cl. 273—413 8 Claims

1. An apparatus for use in teaching volleyball techniques, comprising:
support means supporting said apparatus in a substantial horizontal orientation at predetermined height above a surface;

an arm member having a first end rotatably supported by said support means such that said arm rotates about a substantially horizontal axis;

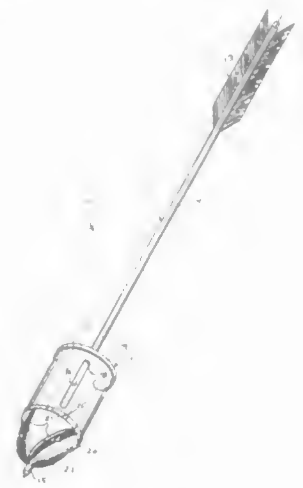


a ball; and
means for semi-rigidly suspending said ball from a second end of said arm member.

4,881,743

SCENT HEAD ARROW

William S. Florenzo, 49A Traphaen Rd., Wayne, N.J. 07470
Filed Jun. 8, 1988, Ser. No. 203,890
Int. Cl.⁴ F41B *5/02*
U.S. Cl. 273—418 2 Claims

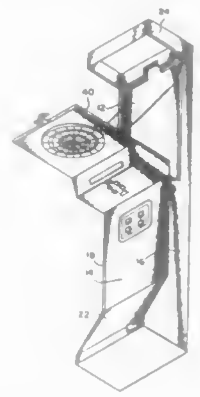


1. A scent head arrow for imparting an animal scent during flight and impact of the arrow comprising,
an arrow including guidance means at one end of said arrow and a weighted forward tip secured to a forward portion of said arrow, and
a scent head container means arranged for securement to the arrow adjacent the tip, and
said scent head container including a cylindrical body, a top cap securable to an uppermost end of said body, and a forward conical cap for securement to a lowermost end of said body, and
scent means contained within said scent head container for distributing scent throughout the flight and impact of said arrow through openings formed in said scent head container, and
wherein said openings include a plurality of radial slots formed in said top cap, and
wherein openings further include a series of slots formed in said cylindrical body arranged parallel to the axis of said cylindrical body, and
wherein said top cap and forward conical cap include central openings for accepting said arrow therethrough, and
wherein said conical cap is formed with a series of vanes for imparting rotation to said arrow during flight of said arrow.

4,881,744

ELECTRONICALLY SCORED DART GAME HAVING FRONT OPENING SERVICE DOOR

Norman C. Hansen, Delanco, N.J., assignor to Merit Industries, Inc., Bensalem, Pa.
Filed Mar. 10, 1988, Ser. No. 166,353
Int. Cl.⁴ F41J *5/04;* A47B *88/00*
U.S. Cl. 273—376 7 Claims



1. In an electronically scored dart game having a housing, including a front surface, a dart board on the housing front surface, the dart board comprising a plurality of generally vertically extending target plates, each target plate having a front surface including a plurality of openings for receiving the tip of a dart and having a rear surface, the dart board further comprising support means for supporting the target plates, the support means permitting a target plate to move rearwardly when receiving the tip of a dart within one of said openings, the support means including stop means for preventing the target plate from moving toward the front surface beyond the support means, and electronic means for sensing the rearward movement of the target plates and for determining a score, the electronic means including display means for displaying the score, the improvement comprising:
a service door for providing access to the interior of the housing from the front of the housing, the service door being formed of at least a portion of the housing front surface, including the dart board and having an upper end and a lower end, the service door being hinged to the housing along at least a portion of the lower end, whereby the service door is pivotable about the hinge for movement between a generally vertical operational position and a service position in which the service door extends outwardly from the front surface of the housing at a predetermined angle of less than 180 degrees, the service door including means for preventing the service door from pivoting to a position exceeding the predetermined angle, when in the service position gravity causes the target plates to engage the stop means and prevents the target plates from moving rearwardly with respect to the support means.

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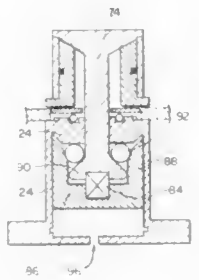
4,881,745
MECHANICAL PLATE CLAMP

Roger D. Peters, 152 Chicago Way, San Francisco, Calif. 94112
Filed Apr. 25, 1988, Ser. No. 185,504
Int. Cl.⁴ B23Q *3/14*
U.S. Cl. 279—4 4 Claims



1. A clamp for supporting a supported plate having a first side and a second side and an opening and a clamping area with a projected boundary on both said sides around said opening which comprises:

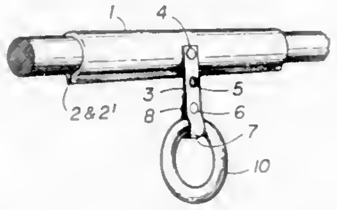
a plate support means having a first clamping surface in contact with said clamping area on said first side;

a segmented clamp means which comprises at least three segments and each segment comprises a flat segment plate having a straight beveled edge whose angle is complementary to an adjacent edge of a segment plate of a neighboring segment so that when said segments are withdrawn to said unloading position within said projected boundary, beveled edges of neighboring segments slide over one another so that said segment plates move to different planes thereby avoiding interference with one another and when said segment plates are in said clamping position, said adjacent beveled edges are in complementary contact with one another so that all the segment plates of all said segments lie in the same plane and wherein each said segment plate has attached to it an elastic band attachment means;

a clamp positioning means which moves said segmented clamp means between said clamping position and said unloading position which comprises a flat bearing having a surface in contact with said segment plates and a rod having a cam on its surface and an elastic band attached to said band attachment means which maintains said segments in sliding contact with said cam so that when said rod slides axially, said segments are constrained by said bearing surface and said cam to move between said unloading position and said clamping position.

4,881,746
HANDLE COVER AND TOY HOLDER

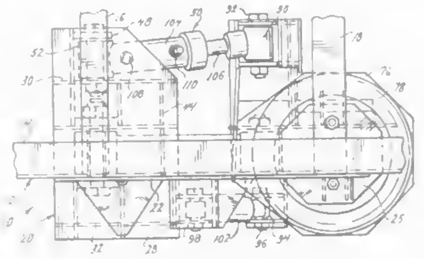
Sara Andreesen, 314 S. 17th, Ord, Nebr. 68862
Filed Jul. 25, 1988, Ser. No. 223,626
Int. Cl.⁴ B62B *3/02, 9/26*
U.S. Cl. 280—33.992 5 Claims



1. A cover and toy holder for a shopping cart handle comprised of a strip of washable fabric of a width sufficient to encompass a shopping cart handle and of a length sufficient to substantially cover the handle, said strip of fabric having closure means along the edges of both longitudinal sides of the strip, said strip of fabric being equipped with a strap, said strap being of a length at least as long as that required to snugly encompass said strip of fabric when compactly folded about its longitudinal length, said strap being equipped with a cooperating pair of closure means with the first closure means of the pair on the proximal portion of the strap and the second closure means of the pair on the distal portion of the strap at a distance from each other approximately equal to the girth of the folded strip of fabric, said strap being further equipped with third closure means cooperating with the second closure means located at a distance from said second closure means long enough to form a loop to hold a toy when this third closure means is engaged with the second closure means.

4,881,747
SELF STEERING SUSPENSION ASSEMBLY

John E. Raidel, Rte. 9, Box 400-M, Springfield, Mo. 65804
Filed Apr. 11, 1988, Ser. No. 179,762
Int. Cl.⁴ B62D *61/12*
U.S. Cl. 280—81.6 20 Claims



1. A consolidated, self-steering suspension system for a vehicle having a transmission, a chassis with side rails, and an axle, the system comprising:

a hanger means;

an axle seat adapted to support a vehicle axle;

an upper torque rod pivotally connected to the hanger means and the axle seat;

a lower torque rod pivotally connected to the hanger means and the axle seat;

wherein one of the torque rods is a piston and cylinder assembly arranged to selectively vary the length of the said one torque rod with one of the piston and cylinder of the assembly pivotally connected directly to the hanger means and the other of the piston and cylinder of the assembly pivotally connected directly to the axle seat.

4,881,748
STEERING SYSTEM FOR FRONT AND REAR WHEELS OF AUTOMOTIVE VEHICLE

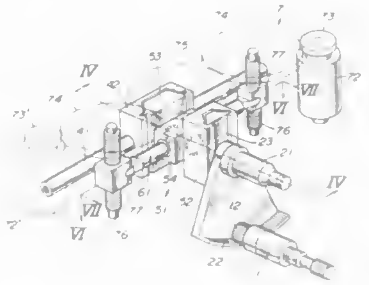
Shoichi Sano; Yoshimi Furukawa; Masami Ogura; Masaru Abe, and Yasuharu Oyama, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Division of Ser. No. 35,646, Apr. 7, 1987, Pat. No. 4,772,036, and a continuation-in-part of Ser. No. 822,008, Jan. 24, 1986, Pat. No. 4,703,946. This application May 9, 1988, Ser. No. 191,543
Claims priority, application Japan, Apr. 7, 1986, 61-79567; Sep. 9, 1986, 61-211929; Sep. 9, 1986, 61-211930
Int. Cl.⁴ B62D *5/06*
U.S. Cl. 280—91 3 Claims

1. A steering system for steering front and rear wheels of an automotive vehicle, comprising:

a front steering means for steering front wheels;

a rear steering means for steering rear wheels at a steering angle having a prescribed ratio to a steering angle for the front wheels;

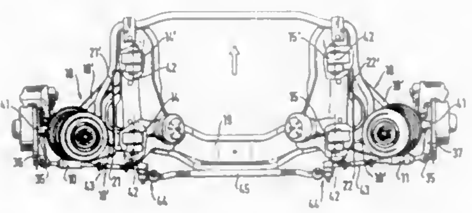
said rear steering means including an adjustment device for varying the steering angle of the rear wheels and drive means for driving said adjustment device; and



said drive means including a gear mechanism connected with said adjustment device and a pair of motors coupled to said gear mechanism for driving said gear mechanism, said pair of motors being driven in association with each other.

4,881,749
STEERABLE FRONT AXLE FOR MOTOR VEHICLES

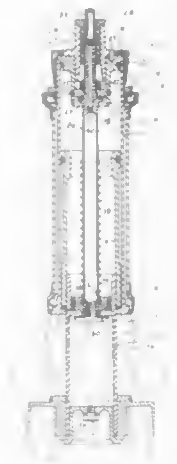
Paul Bausch, Hattenheim, Fed. Rep. of Germany, assignor to General Motors Corporation, Detroit, Mich.
Filed Sep. 6, 1988, Ser. No. 241,044
Claims priority, application Fed. Rep. of Germany, Sep. 9, 1987, 3730244
Int. Cl.⁴ B62D *7/20*
U.S. Cl. 280—95.1 9 Claims



1. Steerable front axle for motor vehicles, comprising a steering knuckle for each of the two front wheels which is rotatably mounted on at least one axle connecting rod pivoted on the chassis via a connecting rod bearing, in which the axes of rotation of the connecting rod bearings are essentially arranged in the longitudinal direction of the motor vehicle, and one steering tie rod each associated with each of the front wheels, which steering tie rod is linked with a steering tie rod lever connected to the corresponding steering knuckle, in which a steering mechanism connected to the steering tie rods is arranged between the two steering tie rods, characterized in that, for hydraulic length adjustment, the steering tie rods have an expansion chamber to which a hydraulic fluid can be admitted and that both the connecting rod bearings associated with each of the front wheels have a hollow displacement zone between the junction points of the axle connecting rod and the chassis which displacement zone is compressible in the longitudinal direction of the vehicle and in which the hydraulic fluid is housed which enters the expansion chamber of the steering tie rod of the associated front wheel via a hydraulic tube in the case of the compression of the displacement zone which occurs during braking.

4,881,750
ATB SHOCK ABSORBER

Dirck T. Hartmann, 4121 Morning Star Dr., Huntington Beach, Calif. 92649
Filed Feb. 6, 1989, Ser. No. 306,913
Int. Cl.⁴ B62K *21/20*
U.S. Cl. 280—276 4 Claims



1. In an All Terrain Bicycle with a conventional frame including a head tube and a front fork, an ATB Shock Absorber providing an improved means of shock and vibration isolation and comprising:

a separate steering tube mounted on angular contact ball bearings in said head tube;

a fork tube slidably mounted inside said steering tube with a means for transferring torque from said steering tube to said fork tube;

a fork crown rigidly fastened on the lower end of said fork tube with a means for sealing the lower end of said fork tube.

a fork tube extension rigidly fastened on the upper end of said fork tube and slidably mounted inside said steering tube, with a sealant means for sealing against the loss of compressed air between said fork tube and said fork tube extension;

a seal installed on the upper end of said fork tube extension preventing the loss of compressed air between said fork tube extension and said steering tube;

a plug rigidly clamped in the upper end of said steering tube and a means for sealing between said plug and said steering tube against the loss of compressed air;

a damper tube rigidly clamped to said plug with a length of said damper tube extending up through the center of said plug, and a length of said damper tube extending down inside the upper end of said fork tube;

a means for sealing against the loss of compressed air between said damper tube and said plug;

a floating piston slidably mounted on said damper tube with a means for preventing the passage of any compressed air or any hydraulic fluid past said floating piston;

a spring holding said floating piston against a damper head fastened in the lower end of said damper tube.

a pneumatic valve installed inside the upper end of said damper tube with an air passageway connecting said pneumatic valve with the inside of said steering tube;

a handlebar stem rigidly clamped to said plug with a short length of the damper tube extending above said handlebar stem;

a short length of the upper end of said fork tube extension having reduced inside diameter;

a portion of said plug with a reduced outside diameter extending a short distance down from the top end of said steering tube with the upper end of said fork tube exten-

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sion sliding over said reduced outside diameter portion of said plug near the upper end of the shock absorber stroke;
a seal on said plug trapping an annular volume of air between said plug and said fork tube extension near the end of the shock absorber stroke; and
an elastomeric boot installed between said steering tube and said fork tube to prevent the intrusion of dirt.

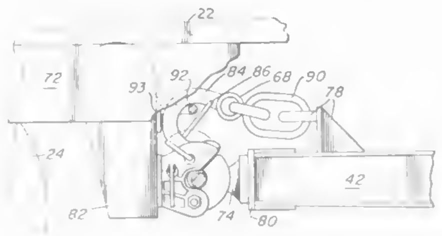
4,881,751
ARTICULATED TRUCK/TRAILER COMBINATION: SECOND CARGO UNIT COUPLING MECHANISM

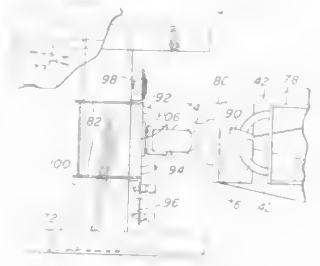
Albert Torcomian, Havertown, Pa., assignor to LHT Industries, Inc., Bala Cynwyd, Pa.

Continuation of Ser. No. 1,057, Jan. 7, 1987, abandoned. This application Nov. 17, 1988, Ser. No. 273,126

Int. Cl.⁴ B60D *1/00*

U.S. Cl. 280—457 1 Claim





1. A cargo-carrying vehicle comprising:
a power unit;
a first cargo-carrying unit releasably mounted on the power unit, the first cargo-carrying unit having a chassis and a torsional tube rigidly affixed to the chassis, the torsional tube having an axis;
a second cargo-carrying unit having a drawbar affixed thereto, the drawbar having one end extending from the second cargo-carrying unit, the drawbar including an eye affixed to the one end thereof and safety hook connected thereto; and
means, including a mounting rigidly affixed to the torsional tube and extending generally vertically and radially outwardly from the torsional tube, the mounting including first and second generally parallel spaced arm members surrounding and rigidly affixed to the torsional tube and extending downwardly therefrom, a plate secured to the downwardly extending portion of each of the arm members, a coupler rigidly affixed to the plate for receiving the eye on the drawbar and a ring member affixed to the plate for receiving the safety hook, for releasably and pivotally coupling the one end of the drawbar to the torsional tube at a location displaced form the axis of the torsional tube, the torsional tube twisting about its axis, as required, in response to generally horizontal movement of the one end of the drawbar to provide a non-rigid coupling of the second cargo-carrying unit to the first cargo-carrying unit.

4,881,752
INDEPENDENT REAR WHEEL SUSPENSION SYSTEM

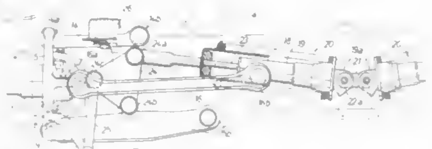
Hiromasa Tanaka, Saitama, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 2, 1988, Ser. No. 227,271

Claims priority, application Japan, Aug. 3, 1987, 62-194209; Aug. 3, 1987, 62-194211; Aug. 3, 1987, 62-194212; Aug. 3, 1987, 62-194210; Sep. 4, 1987, 62-135275[U]

Int. Cl.⁴ B60G *3/00*

U.S. Cl. 280—690 17 Claims



1. A rear wheel suspension system, comprising:
a pair of hub carriers each for rotatably supporting a wheel;
a plurality of lateral links for coupling said hub carriers to a vehicle body;
a pair of bell crank members pivotally supported by said vehicle body at first ends;
a pair of coupling rods each pivotally connected at one end to a corresponding one of said hub carriers and at another end connected to a second end of a corresponding one of said bell crank members; and
a pair of shock absorbers each consisting of a spring and a linear hydraulic damper for controlling impacts which are applied to one of said wheels and connected at one end to said vehicle body and to a third end of a corresponding one of said bell crank members.

4,881,753
AIR SUSPENSION SYSTEM WITH AN AIR DRIER

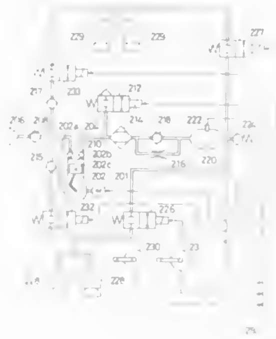
Kotaro Shima, Toyota; Masaharu Ohba, Aichi, and Masakatsu Nonaka, Toyota, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed Nov. 29, 1988, Ser. No. 277,187

Claims priority, application Japan, Nov. 30, 1987, 62-301666

Int. Cl.⁴ B60G *17/08*

U.S. Cl. 280—707 4 Claims



2. An air suspension system for a vehicle comprising:
an air actuator for a wheel of the vehicle;
a compressor for supplying air to the air actuator;
an air circuit including a first path connecting the compressor and the air actuator through a raising valve, and a second path connecting the air actuator and the compressor through a lowering valve;
an accumulator equipped with a pressure sensor in the first path;
an air drier in the first path between the accumulator and the compressor, the air drier containing reversible desiccating material;
an exhaust path branching from the first path between the air drier and the compressor, and having a discharge valve for discharging air from the air circuit to the atmosphere;
a one-way throttle valve in the first path between the accumulator and the air drier that throttles air from the accumulator, but freely passes air from the air drier;
a vehicle-height controller for operating the compressor to transfer air from the air actuator, via the air drier and the one-way throttle valve, to the accumulator when lowering the vehicle height; and
a subsidiary controller for opening the discharge valve when both the raising valve and the lowering valve are shut and the pressure of the accumulator exceeds a preset value, thus discharging the air from the accumulator through the one-way throttle valve and the air drier to regenerate the air drier.

4,881,754
SAFETY DEVICE FOR THE OCCUPANT OF THE CENTRAL REAR SEAT POSITION IN A MOTOR VEHICLE

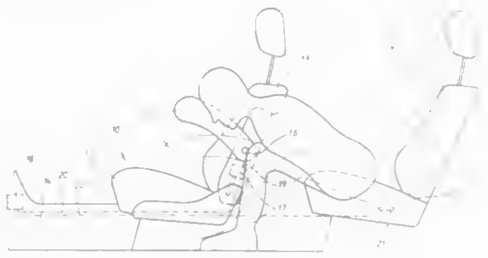
Hans Lütze, Aidlingen, and Falk Zeidler, Sindelfingen, both of Fed. Rep. of Germany, assignors to Mercedes-Benz AG, Stuttgart, Fed. Rep. of Germany

Filed Aug. 29, 1988, Ser. No. 237,759

Claims priority, application Fed. Rep. of Germany, Sep. 3, 1987, 3729392

Int. Cl.⁴ B60R *21/08*

U.S. Cl. 280—728 15 Claims



1. Safety device for the occupant of the central rear seat position in a motor vehicle, having an upholstered arm-rest arranged between the front seats which is constructed pivotable about a horizontal pivot axis aligned transversely to the longitudinal direction of the vehicle, wherein a pivoting drive engages the arm-rest in order to pivot the latter out of a position extending horizontally in the longitudinal direction of the vehicle towards the front seat back-rests, and wherein the pivoting drive is connected to a sensor which detects a vehicle deceleration and which generates an output signal which trips the pivoting drive to erect the arm-rest when a prescribed value of the integrated vehicle deceleration is exceeded.

4,881,755
STEERING DEVICE FOR MOTOR VEHICLE

Eric Vuagnat, Carre d'Aval, 1252 Meinier, Switzerland

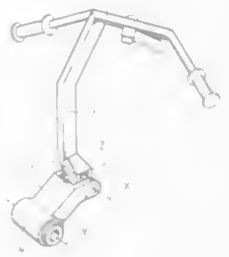
Filed Aug. 5, 1988, Ser. No. 228,736

Claims priority, application Switzerland, Aug. 5, 1987, 3007/87

Int. Cl.⁴ B62D *1/18*

U.S. Cl. 280—779 7 Claims

1. A steering device for a motor vehicle having a single front wheel, such as motor cycles, side cars and three-wheeled vehicles, which steering device comprises a handle bar pivotally mounted on a frame of the vehicle, said handle bar fixed to a first end of a steering rod to form a monolithic steering assembly, said steering assembly being offset from the plane of the wheel to be steered, a second end of said steering rod being connected by double articulation means to a support means for the bearing of said wheel, the pivot axis of said steering assembly on said support means residing in a plane which is parallel to the axis of said wheel bearing, and said wheel bearing support means being connected to the frame of said vehicle by suspension means.



4,881,756
VEHICLE STRUCTURE, ESPECIALLY CHASSIS FRAME STRUCTURE

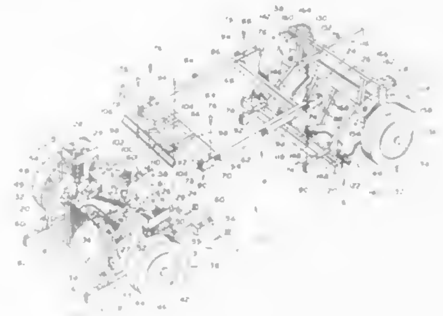
Hideyuki Kumasaka, Yokohama; Kouji Takao, Atsugi, and Hiroshi Kuriyama, Yokohama, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Feb. 10, 1988, Ser. No. 154,406

Claims priority, application Japan, Feb. 10, 1987, 62-29051; Feb. 25, 1987, 62-26892[U]; Feb. 25, 1987, 62-42380

Int. Cl.⁴ B62D *21/12*

U.S. Cl. 280—785 13 Claims



1. A method for assembling a chassis structure for a vehicle comprising:
providing a front frame module having a front frame section with bracket means at the rear end thereof;
providing a rear frame module having a rear frame section with bracket means at the front end thereof;
installing chassis sub-assemblies including an engine, wheels and a suspension system in said front frame module;
installing chassis sub-assemblies including wheels and a suspension system in said rear frame module;
interposing a center frame module having a center frame section between said front and rear frame modules, said center frame section having at the front and rear ends thereof bracket means respectively associated with said bracket means at the rear and front ends of said front and rear frame sections; and
mechanically fastening said bracket means of said center frame module to said bracket means of said front and rear frame modules.

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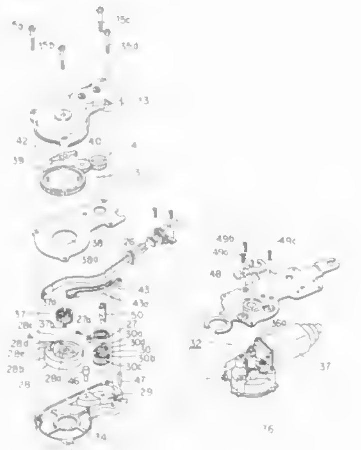
4,881,757

DRIVE DEVICE FOR VEHICLE PASSIVE SAFETY BELT

Juichiro Takada, 12-1, Shinmachi 3-chome, Setagaya-ku, Tokyo, Japan

Filed Feb. 1, 1989, Ser. No. 305,296
Claims priority, application Japan, Feb. 3, 1988, 63-21912
Int. Cl.⁴ B60R *21/10*
U.S. Cl. 280—804 2 Claims



1. A drive device for a vehicle passive safety belt system in which the belt is wound automatically between a restraining configuration and a releasing configuration in response to opening and closing of the vehicle door, comprising a first rotatable drum, a flexible drive tape having one end affixed to the first drum and leading from the first drum along a constrained path to a belt guide that is movable along a guide rail in the vehicle, a second rotatable drum positioned adjacent the path of the drive tape and proximate to the first drum, a flexible driving band having one end affixed to the first drum and its other end affixed to the second drum, the driving band overlapping the drive tape and being arranged to wind onto the second drum while unwinding from the first drum conjointly with the drive tape and to keep the drive tape from slackening on the first drum upon unwinding, drive means for conjointly rotating the first and second drums selectively in one direction to wind the driving band onto the second drum and unwind the drive tape and the driving band from the first drum and in the opposite direction to wind the drive tape and driving band onto the first drum and unwind the driving band from the second drum, a spring coupled between the first drum and the drive means and biasing the first drum in said opposite direction relative to the drive means and yieldable to enable the first drum to rotate at a speed different from the drive means, and a lost motion coupling between the second drum and the drive means and adapted to couple the drive means to the first drum upon rotation in said one direction and to permit free rotation of the second drum within a predetermined range relative to the drive means upon rotation in said opposite direction.

4,881,758

PARKED VEHICLE LOCATING AID

David Ben-David, 6770 Indian Creek Dr., Miami Beach, Fla. 33141

Filed Jan. 30, 1989, Ser. No. 303,901
Int. Cl.⁴ B42D *15/00*
U.S. Cl. 283—102 6 Claims

1. A vehicle location aid for use with (a) a parking lot divided into a plurality of areas, each said area having a corresponding unique area designation, and (b) a vehicle located in one of said areas, said location aid comprising:

a card comprising a printed section, said section having a series of indicia, each member of said series corresponding uniquely to one of said area designations; and

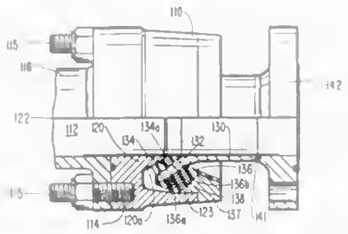
recording means for recording the member corresponding uniquely to the designation of the area in which said vehicle is located.

4,881,759

ALL WELDED SOUND ISOLATION FLEXIBLE CONNECTION

Frank J. Kovitch; Charles M. Reinhardt, both of Arlington, and Paul E. Sullivan, Bedford, all of Tex., assignors to Lockheed Corporation, Calabasas, Calif.

Filed Jan. 4, 1988, Ser. No. 140,471
Int. Cl.⁴ F16L *55/02*
U.S. Cl. 285—49 7 Claims



1. In a flexible joint for pipelines where an annular housing has a nipple partially submerged therein with said nipple having a flared end on the submerged portion, control of sound and vibration transmission along the pipeline being a critical characteristic, the combination which comprises:

(a) an elastomer ring adhered to the inner surface of said flared end and internally contoured spherically with respect to a common center point spaced from said flared end and located on the longitudinal axis of said joint;

(b) an elastomeric body having an assembly of concentric spherical rings embedded therein, with said elastomeric body adhered to the outer surface of said flared end and with said spherical rings contoured and positioned symmetrically to said common center point;

(c) a collar encircling said nipple and engaging the outer surface of said elastomeric body to maintain said elastomeric body in position, said collar being weldably mounted to said housing to reduce the level of sound and vibration transmission through the flexible joint as compared to a flexible joint where the collar is bolted to said housing; and

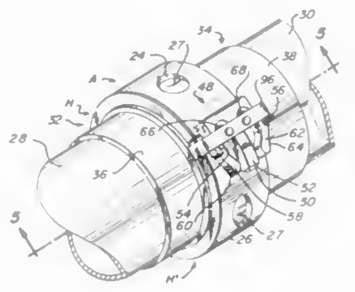
(d) a support structure within said housing having an outward facing spherical surface mating in sliding relation with the internal surface of said elastomeric ring.

4,881,760

CONDUIT COUPLING DEVICE WITH REDUNDANCY FEATURES

Richard R. Runkles, Englewood; John A. Dyer, Westminster, and Jack W. Beyer, Denver, all of Colo., assignors to Stanley Aviation Corporation, Aurora, Colo.

Filed Nov. 7, 1988, Ser. No. 267,841
Int. Cl.⁴ F16L *23/00, 23/04;* A41F *1/00*
U.S. Cl. 285—93 8 Claims



1. A coupling assembly for releasably interconnecting confronting ends of first and second fluid carrying conduit members wherein each has an annular flange fixedly attached to each of the confronting ends, each flange having means defining an external peripheral groove and a sealing ring positioned in each of the flange grooves, said assembly comprising:

a sleeve for circumferentially surrounding the sealing rings and the flanges;

a pair of arcuate coupling halves pivotally joined together at first adjacent ends for circumferentially surrounding said sleeve, each of said coupling halves including an arcuate circumferential wall having a pair of spaced ribs extending inwardly from opposite circumferential edges thereof;

a central longitudinal channel on the outer surface of the opposite end of one of said coupling halves;

a pair of longitudinal locking channels on the outer surface of said opposite end of said one coupling half, one of said pair of channels being located on one side of said central channel and the other of said pair of channels being located on the other side of said central channel, each of said pair of channels having a locking surface and an inner side edge tapered inwardly in the longitudinal direction of tine movement during closing;

a central tine extending longitudinally from the outer surface of the opposite end of the other of said coupling halves, being aligned for reception within said central channel; and

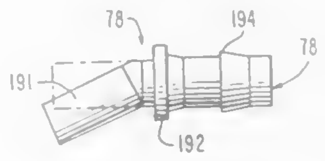
a pair of resilient locking tines extending longitudinally from the outer surface of the opposite end of said other of said coupling halves, one of said pair of locking tines being laterally spaced to one side of said central tine and the other of said pair of locking tines being laterally spaced to the other side of said central tine, each of said locking tines being aligned for reception within said respective pair of locking channels and each having an outer edge with a radius so that each said inner side edge of said locking channels makes substantially line contact with each of said outer edges of said respective locking tines during closure and release and each further including a locking surface which snaps into engagement with locking surfaces of said respective locking channels to releasably hold said coupling halves in closed position around said sleeve.

4,881,761

IRRIGATION TUBING CONNECTOR FOR AN ULTRASONIC SURGICAL SYSTEM

Robert W. Hornlein, Stamford; Joseph N. Logan, Trumbull, both of Conn.; Alan Broadwin, Brooklyn, N.Y., and Vaclav O. Podany, New Fairfield, Conn., assignors to Cooper LaserSonics, Inc., Stamford, Conn.

Division of Ser. No. 849,830, Apr. 9, 1986, Pat. No. 4,747,820.
This application May 26, 1988, Ser. No. 198,836
Int. Cl.⁴ F16L *33/00, 47/00, 49/00*
U.S. Cl. 285—239 3 Claims



1. An irrigation tubing connector for use in connection with a nosecone adapter in an ultrasonic surgical system of the type which includes an irrigation cowl defining an irrigation port of an irrigation fluid passage in an assembled handpiece of an ultrasonic surgical system, said irrigation tubing connector comprising:

an elongated tubular body, said elongated body defining a first tubular end portion structurally adapted for insertion in the irrigation port;

a radially extending, generally centrally located rib portion limiting the insertion of said first portion in the irrigation port, and

said tubular body defining a second tubular end portion for insertion in a tubing end of irrigation tubing, the insertion of said second end portion being limited by said rib,

said first portion has an axis which is oriented at an acute angle relative to an axis of said second portion, so that the irrigation tubing can extend along a portion of the handpiece,

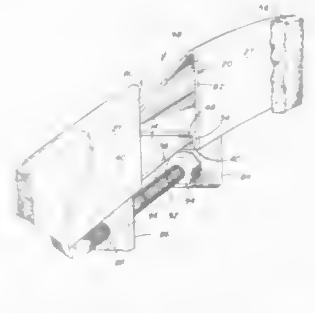
said second portion includes a circumferentially located barb tapered to facilitate slip fitting of the irrigation tubing thereonto and inhibiting withdrawal therefrom.

4,881,762

DUCT CONNECTOR FOR A CIRCULAR DUCT

Peter J. Arnoldt, Clairton, Pa., assignor to Ductmate Industries, Inc., Monongahela, Pa.

Filed Jun. 10, 1988, Ser. No. 205,305
The portion of the term of this patent subsequent to Sep. 19, 2006, has been disclaimed.
Int. Cl.⁴ F16L *23/00*
U.S. Cl. 285—367 19 Claims



1. A duct joint frame assembly for connecting the end portions of generally circular ducts comprising,

a pair of circular frame members each having spaced end portions, each said frame member connected to an end portion of a circular duct and having a gap formed between said end portions,

each said frame member having a vertical wall portion ex-

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tending upwardly from said circular duct end portion, said vertical wall having a bottom portion and a top portion,

stiffening means connected to each said frame member vertical wall portion at said vertical wall top portion, said stiffening means extending rearwardly away from said vertical wall portion,

said stiffening means forming an annular pocket means for receiving said circular duct end portion,

a portion of each of said duct end portions arranged to extend into said gap to a location adjacent said frame member vertical wall portion,

gasket means positioned between a pair of adjacent frame members vertical wall portions, said gasket means arranged to contact said pair of adjacent vertical wall portions, and

means for urging said pair of adjacent vertical wall portions towards each other and into further contact with said gasket means to provide a seal between said pair of adjacent vertical wall portions and between said gasket and said portions of said duct end portions in said gaps.

4,881,763
FUEL INJECTION LINE WITH COMPRESSION NIPPLE FORMED THEREON BY UPSETTING AND PROCESS FOR THE PRODUCTION THEREOF

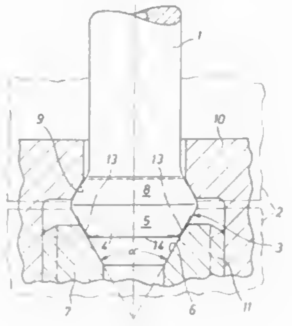
Jürgen Guido, Berliner Strasse 6, D-8402 Neutraubling, and Norbert Binzer, Neutraubling, both of Fed. Rep. of Germany, assignors to Jürgen Guido, Neutraubling, Fed. Rep. of Germany

Filed Oct. 31, 1988, Ser. No. 264,931

Claims priority, application Fed. Rep. of Germany, Jan. 21, 1988, 3801703

Int. Cl.⁴ C21D *1/00;* F02M *55/02;* F16L *19/00, 35/00*

U.S. Cl. 285—382 **10 Claims**



1. A fuel injection line for an internal combustion engine including at, at least one of the line's ends, a compression nipple formed thereon by upsetting, the nipple comprising a forward sealing taper portion (4) having a sealing surface (5) which with plastic deformation thereof serves for sealing against a hollow taper surface (6) of matching taper angle of a co-operating portion (7) which is harder than said sealing surface (5), the nipple also comprising a rearward bearing surface (8) for bearing against a hollow taper surface (9) of a cap nut (10), the rearward bearing surface (8) being in the form of a spherical segment which blends into the outside periphery of an adjoining pipe portion by way of a rounded portion, wherein the injection line is formed from a pipe of steel of cold-worked hardness, the compression nipple is formed by upsetting on said pipe and the compression nipple is subjected to inductive soft annealing only in a material zone (13) defined by a contact surface at which said forward sealing taper portion (4) is to be in contact against said hollow taper surface (6) of said co-operating portion.

4,881,764
LOCKING DEVICE

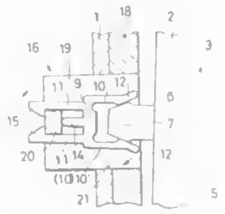
Atsushi Takahashi, Fujisawa, and Haruhiko Watari, Tokyo, both of Japan, assignors to Nifco Inc., Yokohama, Japan

Filed Ang. 22, 1988, Ser. No. 235,176

Claims priority, application Japan, Ang. 27, 1987, 62-129173[U]

Int. Cl.⁴ E05C *19/06*

U.S. Cl. 292—13 **4 Claims**



1. A locking device comprising a striker projecting from the back side of an openable wall hinged to a housing and a latch secured in a frontally inserted snap-fit engagement to the housing in a face-to-face relation to said striker for engaging with said striker and holding said striker in a snap-engaged state when said openable wall is closed, said latch including means for rotatably mounting said latch in said housing to be able to follow the direction of insertion of said striker into said latch, said means including resiliently flexible arm means snapped into engagement with a mounting portion on said housing as said arm means are inserted through a window in a front side of said housing, said arm means permitting pivotal movement of said latch relative to said housing during insertion of the striker into said latch.

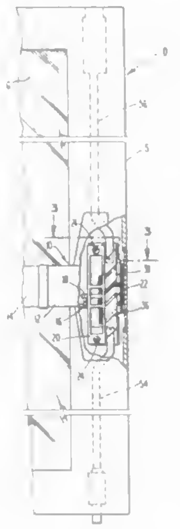
4,881,765
EXIT DEVICE HAVING LENGTH ADJUSTMENT MEANS FOR ITS CONCEALED VERTICAL RODS

George E. Held, Charlotte, N.C., assignor to Yale Security Inc., Monroe, N.C.

Filed Feb. 19, 1988, Ser. No. 157,535

Int. Cl.⁴ E05C *9/00*

U.S. Cl. 292—92 **5 Claims**



1. An exit device having a push bar and a slide adjacent the bar adapted to move vertically when the bar is pressed, the device being mounted waist high on a door having a hollow stile formed with an aperture adjacent the slide, a vertically disposed channel in the stile secured through the aperture to the slide, a pair of blocks disposed in the channel having inclined engaging surfaces, retaining means to retain the engaging surfaces in slidable contact, wall means on the channel holding the first block against horizontal movement, threaded means in the channel holding the second block from moving vertically relative to the channel and for adjusting the position of the second block in a horizontal direction to raise or lower the first block, a vertical rod having an end attached to the first block, the other end of the vertical rod adapted to drive a latch on the door remote from the device.

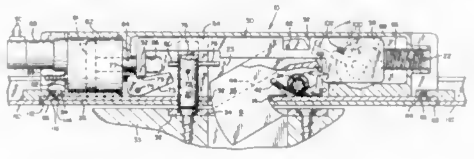
4,881,766
LOCK MECHANISM

Theodore E. Schmidt, Carlton, and Alfred J. Peirish, McMinnville, both of Oreg., assignors to Pacific Security Systems of America, Inc., Portland, Oreg.

Filed Sep. 9, 1987, Ser. No. 94,710

Int. Cl.⁴ E05B *51/02*

U.S. Cl. 292—201 **8 Claims**



1. A pneumatically operated lock comprising:

a housing,

a latch bolt including a cam-surfaced end portion, the latch bolt being movably mounted within the housing and shiftable between an extended position where the end portion protrudes from the housing and a retracted position where the end portion is retracted within the housing, biasing means urging the bolt to its extended position,

a sliding actuator movably mounted within the housing for sliding linear movement,

means operatively connecting the actuator and latch bolt whereby on movement of the actuator in one direction to one position the latch bolt is shifted to a retracted position,

means operatively interposed between the actuator and latch bolt whereby on movement of the actuator in the opposite direction to another position a mechanical deadlock is produced deadlocking the latch bolt in an extended position, said actuator having an intermediate position between said one end and said other positions where the bolt is free to move between extended and retracted positions and urged to its extended position by said biasing means, and

a pneumatically operated extensible device for producing movement of the actuator.

4,881,767
LATCH DEVICE FOR FOLDABLE BACKREST OF AUTOMOTIVE SEAT

Nobuaki Kondo, Chigasaki, Japan, assignor to Nissan Motor Co., Ltd., Japan

Filed Dec. 13, 1988, Ser. No. 283,829

Claims priority, application Japan, Dec. 23, 1987, 62-328008

Int. Cl.⁴ E05C *3/26*

U.S. Cl. 292—224 **11 Claims**

1. In a foldable backrest of an automotive seat, a latch device comprising:

a striker secured to a fixed member other than said backrest;

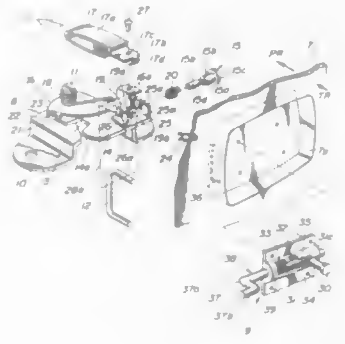
a base member secured to said backrest to move therewith;

a latch plate pivotally supported by said base member, said latch plate being latchingly engageable with said striker when said backrest assumes a given raised position;

a lock lever pivotally supported by said base member and having a portion contactable with a peripheral portion of said latch plate;

biasing means for biasing said lock lever and said latch plate in the same direction;

connecting means for selectively connecting said latch plate and said lock lever to achieve an integrated pivoting movement of said latch plate and said lock lever; and



actuating means for actuating said connecting means, said actuating means including a projection which, upon operation of said actuating means, pushes said latch plate to rotate the same in a direction to cancel the latched engagement between said latch plate and said striker and at the same time to induce a folding of said foldable backrest.

4,881,768
SECURITY DEVICE

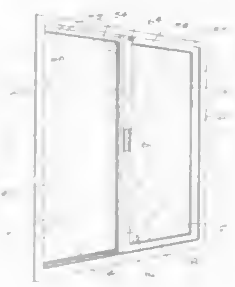
Edwin L. Lange, Bull Creek, Australia, assignor to Kenneth G. Kavanagh, Cottesloe and Edward I. Kavanagh, Thornlie, both of, Australia

Filed Dec. 22, 1987, Ser. No. 136,848

Claims priority, application Australia, Dec. 23, 1986, PH9655; Feb. 13, 1987, PI358

Int. Cl.⁴ E05D *13/00*

U.S. Cl. 292—251 **4 Claims**



1. A security device for a sliding window or door and frame assembly, said sliding window or door including a border-frame around its periphery and being slidable to assume an open and a closed position in said frame assembly, said frame assembly defining upper and lower channel means in which said sliding window or door is slidable, said upper channel means comprising an outer depending portion, an inner depending portion and an upper frame portion, said security device comprising:

a projecting member having a shaft, a head located at one end of said shaft defining a circumferential groove so that when said security device is affixed to the front face of said border-frame of said sliding window or door beneath the edge of said outer depending portion said security device projects outwardly from said border-frame with said circumferential groove positioned adjacent to the lower edge of said outer depending portion of said upper

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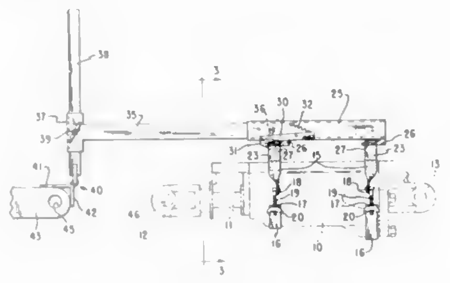
channel means to prevent removal of said sliding window or door from said frame assembly.

4,881,769

HANDLING DEVICE FOR HYDRAULIC CYLINDER

Paul D. Ims, R.R. 1, Box 180, Echo, Minn. 56237
Filed Jun. 23, 1988, Ser. No. 210,315
Int. Cl.⁴ B25G *7/12*
U.S. Cl. 294—15 10 Claims

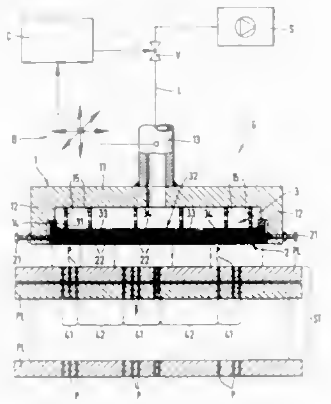


1. For use with a hydraulic piston-cylinder assembly having an attachment eye on said cylinder and a clevis attached to said piston, said clevis being attachable to a means to be operated by said assembly, carrying and adjustment means comprising strap means adapted to be attached to said cylinder, said strap means including T-shaped attachment means, handle means including forked members slideably engageable with said T-shaped attachment means or said strap means, said handle means when engaged being spaced from said cylinder whereby hand carrying is possible.

4,881,770

METHOD AND APPARATUS FOR TRANSPORTING PERFORATED OBJECTS

Francesco Marzinotto, Zürich, Switzerland, and Jürgen Junghans, Hof, both of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland
Filed Nov. 10, 1987, Ser. No. 118,934
Claims priority, application Switzerland, Nov. 10, 1986, 4481/86
Int. Cl.⁴ B66C *1/02*
U.S. Cl. 294—64.1 21 Claims



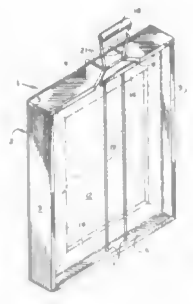
1. A transport device for transporting perforated objects, comprising:

a gripper head including a permeable suction plate;
suction means connected with said gripper head for providing a pressure drop across said permeable suction plate;
means for adjusting the position of said gripper head;
means for controlling the operation of said suction means and said positioning means, said control means operable to place said gripper head against a perforated object and to actuate said suction means to hold said perforated object against said gripper head; and
means for masking selected portions of said permeable suction plate, said selected portions being selected to align with portions of said perforated object having a relatively large number of perforations.

4,881,771

CARRIER FOR PAINTINGS

Wayne R. Sullivan, 2711 Lindholm, Shreveport, La. 71108
Filed Jun. 3, 1988, Ser. No. 202,020
Int. Cl.⁴ B65D *61/00*
U.S. Cl. 294—151 10 Claims

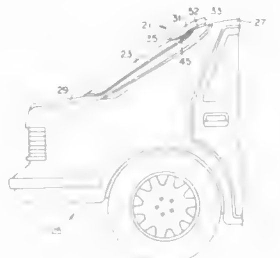


1. A carrier for a work of art comprising a frame having a closed back panel and an open front area for receiving the work of art; at least two spacers attached to said frame in spaced relationship for spacing the work of art from said back panel; a pair of spaced cord openings provided in one end of said frame and a pair of slotted holes provided in the opposite end of said frame; a continuous flexible cord having a first loop extended through said space cord openings and said slotted holes in spaced relationship; a handle attached to said cord; and a second loop extended around said back panel and looped over said handle and said first loop, for removably securing the work of art in said frame.

4,881,772

REAR-WINDOW WIND DEFLECTOR FOR A VEHICLE

Lee N. Felnberg, 10763A Lady Palm La., Boca Raton, Fla. 33498
Filed Oct. 11, 1988, Ser. No. 255,980
Int. Cl.⁴ B62D *35/00*
U.S. Cl. 296—180.1 7 Claims

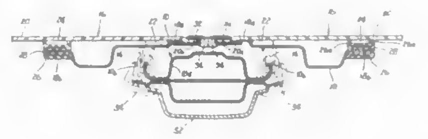


1. A wind deflector for use with a vehicle, said vehicle comprising a vehicle body having a rear window mounted in said body at low angles relative to horizontal, said wind deflector comprising a channel plate having a leading edge, a trailing edge, and a plurality of substantially parallel channels therethrough between said leading edge and said trailing edge, each channel having a cross-section that decreases smoothly from said leading edge to said trailing edge, said wind deflector including means integral with said channel plate for mounting said channel plate directly on said rear window with said trailing edge over said window and said leading edge cantilevered over a portion of said vehicle body forward of said window.

4,881,773

SUNROOF PANEL ASSEMBLY

Hisao Ichinose, Atsugi, Japan, assignor to Nissan Motor Co., Ltd., Japan
Filed Aug. 23, 1988, Ser. No. 235,165
Claims priority, application Japan, Aug. 28, 1987, 62-130971[U]
Int. Cl.⁴ B60J *7/11*
U.S. Cl. 296—216 12 Claims



1. A sunroof panel assembly comprising:

an outer panel made of a synthetic resinous material and having an outer peripheral portion;
an inner panel made of metal and in the form of a frame covering said outer peripheral portion of said sunroof panel, said inner panel having an inner peripheral edge portion and an outer peripheral edge portion;
a non-curable adhesive bonding said inner panel to said outer peripheral portion of said outer panel;
an elastic member provided to at least part of said inner peripheral edge portion of said inner panel;
a curable adhesive bonding said elastic member to said outer peripheral portion of said outer panel; and
clip means for holding at least part of said outer peripheral portion of said outer panel and at least part of said outer peripheral edge portion of said inner panel tightly together so that said outer peripheral edge portion of said inner panel and said outer peripheral portion of said outer panel are slidingly movable relative to each other when there is a thermal expansion differential between said inner panel and said outer panel.

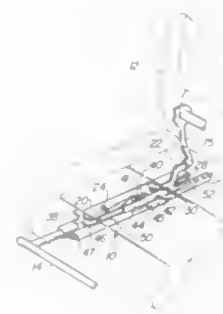
4,881,774

MEMORY SEAT TRACK ASSEMBLY FOR VEHICLE SEAT

David W. Bradley, St. Clair Shores; Angelo R. Melotti, Troy; Oliver Lecere, Farmington Hills, and Gerald P. Bonnici, St. Clair Shores, all of Mich., assignors to Bertrand Faure Automobile, Rocquencourt, France
Filed Nov. 7, 1988, Ser. No. 268,131
Int. Cl.⁴ A47C *1/02;* F16M *13/00*
U.S. Cl. 297—341 10 Claims

1. A vehicle seat positioning assembly that comprises:

a seat;
a first channel fixed to the vehicle;
a second channel being slidably mounted on said first channel;
a latch means that secures the second channel to the first channel at a selected position;
a memory means that engages a third channel at the selected position;
a first release that unlatches the latch means and unlocks the memory means and allows said seat and said memory means to be moved to another position;
a second release that unlatches the latch means and allows said seat to be moved forwardly while leaving the memory means at the selected position; and

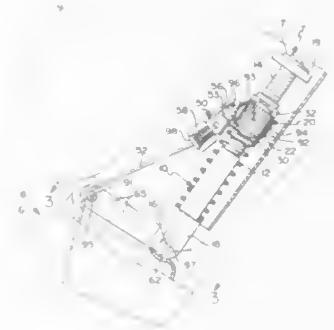


upon actuation of the second release, the assembly allowing the seat to be moved forwardly and, upon returning rearwardly, stopping the seat at the selected position;

4,881,775

RECLINING SEAT BACK APPARATUS AND METHOD OF UTILIZATION THEREOF

Richard W. A. Rees, Holland Landing, Canada, assignor to General Motors Corporation, Detroit, Mich.
Continuation of Ser. No. 154,756, Feb. 11, 1988. This application Feb. 1, 1989, Ser. No. 304,436
The portion of the term of this patent subsequent to Apr. 25, 2006, has been disclaimed.
Int. Cl.⁴ A47C *1/00;* B60N *1/02*
U.S. Cl. 297—361 1 Claim



1. A vehicle seat recliner seat latch for setting the inclination of a seat back having an aperture and being pivotally mounted with respect to a seat cushion along a first pivotal axis, said seat latch in combination comprising:

A threaded rod pivotally mounted with respect to said seat cushion along a second pivotal axis generally parallel with said first axis;
a sleeve threadably connected on said rod with exterior gear teeth;
bearing means capturing said sleeve and being pivotally mounted in said aperture of said seat back along a third pivotal axis fixed with respect to said seat back;
a first spring encircling said rod and captured between said second pivotal axis and said third pivotal axis urging said seat back away from said second pivotal axis and biasing said seat back towards an upright position;
a second spring having a fixed position with respect to said seat back and a slider having an inclined slot and being mounted by said inclined slot along a rod fixed with respect to said seat back, whereby said slider is biased by said second spring into a position to selectively incremen-

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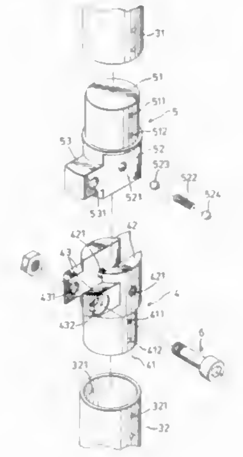
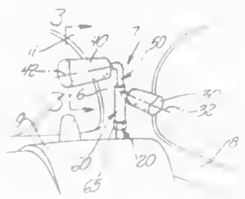
tally engage with said gear teeth of said sleeve for restraining said sleeve from rotating on said rod to set the inclination of said seat back and whereby said slider is connected with a release cable to pull said slider away from engaging with said sleeve to allow the adjusting of the inclination on said seat back.

4,881,776
CHAIRS WITH FOLDABLE BACKS
Oliver Wang, Taipei, Taiwan, assignor to Casual Living International Inc., San Francisco, Calif.
Filed Nov. 22, 1988, Ser. No. 275,004
Int. Cl.⁴ A47C *7/40*
U.S. Cl. 297—379 1 Claim



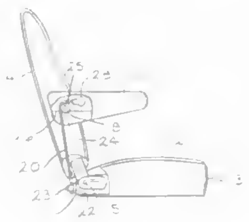
1. A chair, comprising:
a chair seat and a chair back, said chair back connected to and generally upstanding from an edge of said chair seat;
said chair back including an upper back frame having two downwardly directed spaced-apart upper legs, and a lower back frame having two upwardly directed spaced apart lower legs, said lower legs connected to said upper legs by individual pivot means;
each of said pivot means including an upper connector secured to said upper leg, a lower connector secured to said lower leg, a pivot pin interconnecting said upper and lower connectors, and a lock mechanism for releasably interlocking said upper and lower connectors to prevent relative rotation therebetween, one of said upper and lower connectors including two spaced-apart generally parallel first projections extending from an end thereof, the other of said upper and lower connectors including a second projection extending from an end thereof, said second projection disposed between said two spaced-apart first projections;
each of said first and second projections including transversely extending parallel lugs through which coaxial pivot holes are formed for receiving said pivot pin, thereby allowing rotational relative movement between said upper and lower connectors;
said lock mechanism including at least one positioning hole formed in an inner surface of one of said first projections, and a spring and at least one spring biased ball retained in said second projection, said ball having a portion extendable from a surface of said second projection and urged by said spring to engage the positioning hole when said locking mechanism is in the locked position;
whereby, when said upper back frame is rotated relative to said lower back frame about said pivot pin, said ball moves away from the positioning hole thereby releasing said lock mechanism, and said upper back frame is folded so as to situate adjacent said lower back frame.

4,881,777
APPARATUS AND METHOD OF UTILIZATION THEREOF OF A PROFILE HEADREST
Glenn E. Dorshlmer, Ann Arbor, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Aug. 22, 1988, Ser. No. 234,854
Int. Cl.⁴ A47C *7/38*
U.S. Cl. 297—406 5 Claims



1. A vehicle seat headrest for a seat occupant of a vehicle seat, said headrest in combination comprising:
a post means comprised of at least two independent colinear members for mounting said headrest with respect to said vehicle seat in a generally upward extending vertical fashion;
an upper head support adjustably horizontally pivotally connected to said post means for supporting the head of an occupant of said seat, whereby said headrest can be adjusted to a profile of a seat occupant; and
a lower head support connected with said post means and generally parallel with and vertically spaced from said upper head support and said lower head support is autonomously adjustably horizontally pivotally connected to said post means independent of said upper head support.

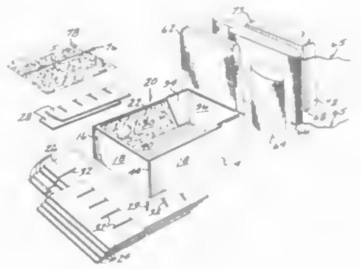
4,881,778
VEHICLE SEAT ASSEMBLY WITH AUTOMATICALLY MOVABLE ARM REST
Robert L. Stephenson, Orchard Lake, and Harvey R. Rumpel, Plymouth, both of Mich., assignors to Hoover Universal, Inc., Ann Arbor, Mich.
Filed Aug. 15, 1988, Ser. No. 232,216
Int. Cl.⁴ A47C *7/54*
U.S. Cl. 297—417 1 Claim



1. A seat assembly for a motor vehicle comprising:
a seat cushion having front and rear ends;
a seat back having upper andlower ends and extending upwardly in an upright position from said seat cushion adjacent said rear end thereof, means pivotally supporting the lower end of said seat back on said seat cushion such that said seat back can be pivotally moved forwardly from said upright position toward a forwardly inclined position;
an arm rest having a forward end and a rearward end, an arm rest pivot member pivotally connecting the rearward end of said arm rest to said seat back at a position between said upper and lower ends of said seat back, said arm rest having an operative position extending forwardly from said seat back and said arm rest being pivotable from said operative position to a raised position along side said seat back;

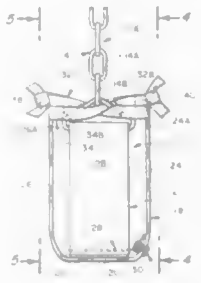
means operatively associated with said arm rest for pivotally raising said arm rest from said operative position toward said raised position as said seat back is pivoted from an upright position toward said forwardly inclined position, said raising means including cam means adjacent said arm rest pivot member, said cam means having an arcuate cam surface above and rearward of said arm rest pivot member, and a cable attached at one end to said seat cushion at a predetermined attachment point and attached at the opposite end to said arm rest at a position forwardly of said cam means and said arm rest pivot member, said cable extending over and behind said cam surface and engaging said cam surface at a location rearwardly of said arm rest pivot member, said one end of said cable being attached to said seat cushion at a location relative to said seat back pivotal support means such that as said seat back is pivoted from said upright position toward said forwardly inclined position, the distance between said predetermined cable attachment point and the location of engagement of said cable with said cam surface is increased, thereby increasing tension in said cable, said opposite end of said cable being attached to said arm rest at a location such that the tension in said cable acts upon said arm rest to create a moment about said arm rest pivot member in a direction to pivot said arm rest from said operative position toward said raised position and
spring means operatively associated with said cable for maintaining sufficient tension in the cable to avoid slack in the cable when said arm rest is in said raised position.

4,881,779
PACKED TRANSPORTABLE FURNITURE
Ray Bubien, Rolling Hills Estates, Calif., assignor to Arma, Inc., Rolling Hills Estates, Calif.
Filed Apr. 3, 1989, Ser. No. 332,891
Int. Cl.⁴ A47C *7/00*
U.S. Cl. 297—442 18 Claims



1. A packed transportable furniture article of manufacture made of corrugated paper or fiberboard that comprises:
a foldable reversible furniture frame having left, right, front, and rear sides, bottom flanges, and a back support wherein said left, right, front and rear sides and said back support are covered on one surface with foam or bonded polyester padding; and
wherein said foldable reversible furniture frame has a container mode and a frame mode such that when in said container mode said foldable reversible furniture frame is folded to form an open box with all outside surfaces of said box being corrugated paper or fiberboard and such that when said foldable reversible furniture frame is in said frame mode said foldable reversible furniture frame is folded to form a frame for a chair loveseat, sofa, or sectional sofa and said foam or bonded polyester padding on said left, right, front and rear sides and said back support is on the outside surfaces of said foldable reversible furniture frame; and
a honeycomb support having longitudinal and latitudinal members forming a seat structure and a back structure mounted inside said foldable reversible furniture frame in said frame mode and packed inside said foldable reversible furniture frame in said container mode; and
a seat platform placed on top of said honeycomb support on said seat structure when said foldable reversible furniture frame is in said frame mode and packed inside said foldable reversible furniture frame in said container mode; and
a back platform placed on top of said honeycomb support on said back structure when said foldable reversible furniture frame is in said frame mode and packed inside said foldable reversible furniture frame in said container mode.

4,881,780
SECURING DEVICE AND METHOD FOR HOLDING A CHILD UPRIGHT ON A SWING SEAT
Graciela Barnes, 4566 El Carro La., Carpinteria, Calif. 93013
Filed Sep. 2, 1988, Ser. No. 239,800
Int. Cl.⁴ A47C *31/00, 3/02*
U.S. Cl. 297—467 12 Claims



1. A securing device for holding a child upright on a moving swing seat, said device comprising:
(a) an elongated panel of flexible material, said panel having an intermediate portion extendable in forward-and-aft relation below a swing seat and front and rear portions connected to and extending in opposite directions from said intermediate portion, said front and rear panel portions extendable upwardly from the front and rear of a swing seat and along the front and rear of a child seated on the swing seat, said front and rear panel portions having respective outer ends located proximate the elevation of the arm pits of the child seated on the swing seat;
(b) means attached to said intermediate portion of said panel for anchoring said intermediate portion to the swing seat in underlying relation thereto between opposite lateral sides thereof, said anchoring means including an elastic strap extendable in forward-and-aft relation above the swing seat opposite said intermediate panel portion extending below the swing seat, said strap being attached to one end to a first location on said intermediate panel portion; and means for detachably attaching an opposite end of said strap to a second location on said intermediate panel portion being spaced from said first location thereon; and
(c) means attached to said respective outer ends of said front and rear penal portions being extendable about the child and flexible members supporting the swing seat for coupling said front and rear panel portions to the flexible members and thereby retaining said front and rear panel portions in generally vertically-extending relation at the respective front and rear of the child for holding the child upright on the swing seat as the seat and child therewith undergo swinging motion.

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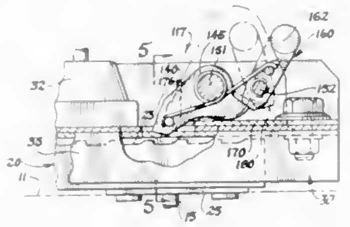
4,881,781

RESTRAINT BELT LOAD CAPACITY FORE AND AFT POWER SEAT ADJUSTER APPARATUS AND METHOD

Hans J. Borlinghaus, Roseville, and Michael G. Orlowsky, Sterling Heights, both of Mich., assignors to General Motors Corporation, Detroit, Mich.
Division of Ser. No. 93,722, Sep. 8, 1987, Pat. No. 4,832,409.
This application Feb. 1, 1989, Ser. No. 304,435
Int. Cl.⁴ B60R *22/25*
U.S. Cl. 297—473 5 Claims



1. A vehicle power seat adjuster with an occupant restraint belt connected thereto, said sea adjuster in combination comprising:

an elongated floor channel fixably connected with said vehicle with a flange portion, and said floor channel having a series of notches along a significant length of said floor channel;

an elongated seat channel connected with said seat and slidably mounted on said floor channel with a flange portion interlocked with said flange portion of said floor channel;

an actuator for selectively moving said seat channel on said floor channel and retaining said seat channel position on said floor channel under an imposed load on said seat channel up to a first predetermined amount;

a restraint anchor connected with said seat channel, said anchor providing a means for connection of said belt restraint;

a first lever pivotally connected with said seat channel and angularly biased in a first angular direction; and

a locking lever pivotally connected with said seat channel biased in an angular direction to engage with said notches of said floor channel, said locking lever being held out of engagement with said floor channel notches by contact engagement with said first lever whereby an acceleration of a predetermined value causes said first lever to rotate opposite said first angular direction to disengage from said lock lever to allow said locking lever to engage with said floor channel so that the force retaining said seat channel to said floor channel significantly exceeds the restraining force of said actuator and significantly exceeds the loading imposed on said seat channel by said belt restraint under said predetermined acceleration.

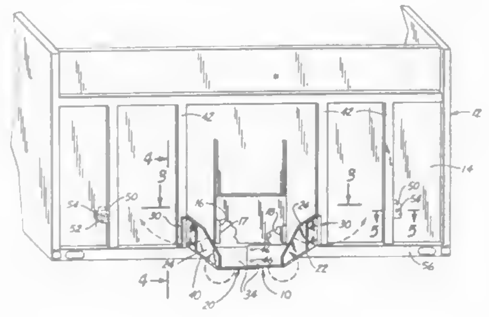
4,881,782

UNLOADING SPOUT FOR GRAIN TRUCKS

Charles A. Gagner, Rte. 1, Box 117, Brooks, Minn. 56715
Filed May 16, 1988, Ser. No. 194,521
Int. Cl.⁴ B60P *1/00*
U.S. Cl. 298—7 10 Claims

1. An unloading spout for use with a mobile bin holding discrete flowable material, said bin having at least one upright bin wall provided with an unloading port partially bounded by first and second generally upright, spaced-apart, bin port side edges; said unloading spout including:

(a) a first spout means including:
  (1) a first spout wing partially defined by top, bottom, leading and trailing edges,
  (2) first hinge means fastening the trailing edge of said first wing to said upright bin wall adjacent said first upright bin port side edge to pivot on a generally upright axis between an assembled operable position extending outwardly from the bin wall to confine the direction of flow of such material from said port, and a stowed position generally parallel to the bin wall,
  (3) a first spout floor partially defined by a leading edge, a trailing edge, an outward edge and an inward edge, and
  (4) second hinge means fastening the first spout floor outward edge to the first spout wing bottom edge to pivot between an assembled operable position extending outwardly from the bin wall and in generally normal relation to the first spout wing, and a stowed position wherein the first spout floor is in generally parallel relation to the first spout wing;

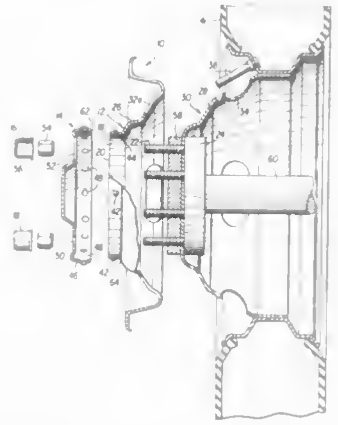


(b) first releasable means to retain the first spout wing and first spout floor in said stowed position;
(c) second spout means connected to the bin wall adjacent said second bin port side edge in position to confine the direction of flow of such material from said port; and
(d) means to support the inward edge of the first spout floor with respect to the second spout means in assembled operable position such that all such material flowing from said unloading port is confined by the second spout means and by the first spout wing and first spout floor of the first spout means to flow from the spout in a predetermined discharge configuration.

4,881,783

WHEEL LINER ASSEMBLY

Joe B. Campbell, 4724 Driver Ct., Virginia Beach, Va. 23462
Filed Jun. 22, 1988, Ser. No. 209,726
Int. Cl.⁴ B60B *7/06*
U.S. Cl. 301—37 S 8 Claims



1. A wheel liner assembly of a type for being mounted on a circular, axially-directed, surface of a rotatable wheel hub having a plurality of threaded studs arranged in a cluster thereon on which a load-bearing portion of a vehicle wheel is clamped by lug nuts which mesh with said threaded studs, said wheel cover assembly comprising:

an annularly-shaped cover member defining a hole in the middle thereof, said hole being larger than said cluster of threaded studs, said annularly-shaped cover member extending radially outwardly for covering a load-bearing portion of a wheel;

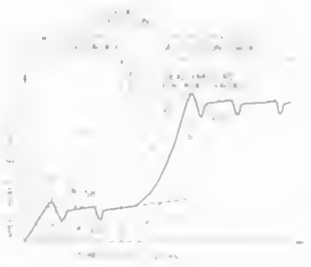
a cap member having a plurality of stud holes therein corresponding to the positions of said studs for being placed on said studs and clamped to said load-bearing portion of said vehicle wheel by said lug nuts, said cap member having an outer perimeter diameter that is larger than a diameter of said hole in said annularly-shaped cover member whereby when said annularly-shaped cover member is placed on said wheel hub and said cap member is clamped to said hub by said lug nuts it impinges on said annularly-shaped cover member and, in turn, clamps said annularly-shaped cover member to said load-bearing portion of said vehicle wheel;

wherein, is further included on said cap member, at said outer perimeter thereof, and on said annularly-shaped cover member, at said hole thereof, interlocking engaging means for enabling these two members to be snapped together in various rotative orientations one to the other so that these two members can be snapped together and mounted on the hub as one piece.

4,881,784

ABS PRESSURE APPLY ALGORITHM

Kevin G. Leppek, West Bloomfield, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Feb. 3, 1989, Ser. No. 305,574
Int. Cl.⁴ B60T *8/58*
U.S. Cl. 303—100 3 Claims



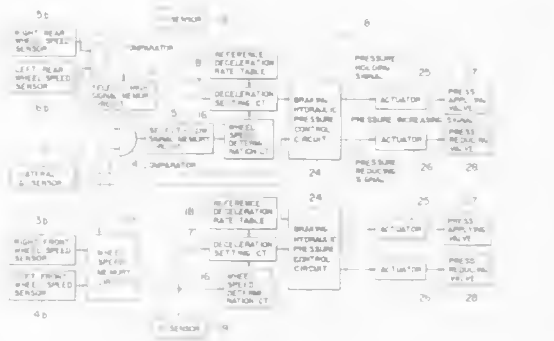
1. A method of limiting the brake pressure applied to the brake of a wheel traveling over a road surface to limit wheel slip between the wheel and the road surface, the method comprising the steps of:

(a) detecting an incipient wheel lock condition resulting from the value of slip between the wheel and road surface exceeding a critical slip value;
(b) storing a value representative of the brake pressure at which the incipient wheel lock condition is initiated;
(c) lowering the brake pressure in response to the detected incipient wheel lock condition to allow the wheel to recover from the incipient wheel lock condition;
(d) re-establishing brake pressure following wheel recovery to a value that is a predetermined fraction of the brake pressure represented by the stored value; and
(e) ramping the brake pressure until an incipient wheel lock condition is again sensed at step (a), the brake pressure being ramped (1) at a first rate when the brake pressure is less than the pressure represented by the stored value and (2) at a second rate greater than the first rate when the brake pressure is greater than the pressure represented by the stored value, the second rate providing for a rapid increase in the brake pressure from the pressure corresponding to the stored value in response to an increase in the friction coefficient between the wheel and the road surface.

4,881,785

ANTI-LOCK BRAKE CONTROL METHOD AND SYSTEM FOR MOTOR VEHICLES

Takayaki Ushijima; Katsumasa Igarashi, and Seiichi Ishizeki, all of Tokyo, Japan, assignors to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan
Filed Feb. 9, 1989, Ser. No. 308,135
Claims priority, application Japan, Feb. 9, 1988, 63-27946
Int. Cl.⁴ B60T *8/84*
U.S. Cl. 303—111 4 Claims



1. An anti-lock brake control method for a motor vehicle having an anti-lock brake control system which has a diagonally disposed dual hydraulic line system and which accomplishes the control of braking hydraulic pressure for braking the wheels of the vehicle, by repeating a control pattern in which during braking the lower one of the wheel speeds of the two wheels connected to the same hydraulic line is selected as a control speed and in which, in response to variations of said control speed, the braking hydraulic pressure in the same hydraulic line is reduced and then increased, said method comprising the steps of:

providing detection means for detecting a J-turn braking state of the vehicle;

selecting a higher one of the wheel speeds of left and right rear wheels when said detection means detects the J-turn braking;

selecting a lower one of the wheel speeds of two wheels connected to one hydraulic line to which the rear wheel having said selected higher wheel speed belongs, as a control speed to be applied to said one hydraulic line;

selecting the wheel speed of a front wheel connected to the other hydraulic line as a control speed to be applied to said other hydraulic line; and

controlling the braking hydraulic pressures in accordance with the selected speeds, when the detection means detects the J-turn braking state, in order to stop the vehicle without skidding in a predetermined pattern.

4,881,786

TENSIONING AND RECOIL SYSTEM FOR A TRACKED VEHICLE

Andrew J. Tonsor, East Peoria, Ill., assignor to Caterpillar Inc., Peoria, Ill.
Filed Jul. 21, 1988, Ser. No. 222,685
Int. Cl.⁴ B62D *55/30*
U.S. Cl. 305—10 9 Claims

1. A tensioning and recoil system for controllably resisting linear movement of a track guiding wheel of a track type vehicle comprising:

a frame member having a cylinder, said cylinder having a first open end portion and a second closed end portion having an end wall;

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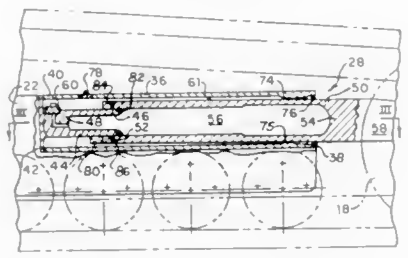
a piston having a first open end portion and a second closed end portion and being positioned within said cylinder, said second end portion being in contact with said cylinder end wall;

a recoil tube having a first open end portion and a second closed end portion, said recoil tube being positioned within said cylinder with said first open end portion telescopically receiving said piston first end portion and said second closed end portion extending outwardly of said frame cylinder, said piston and said recoil tube forming a single sealed and closed chamber, said chamber adapted to receive a compressible gas;



a wheel support member joined to said recoil tube second end portion and adapted to rotatably support said track guiding wheel; and

valve means for charging and discharging gas into and out of said closed chamber.

4,881,787

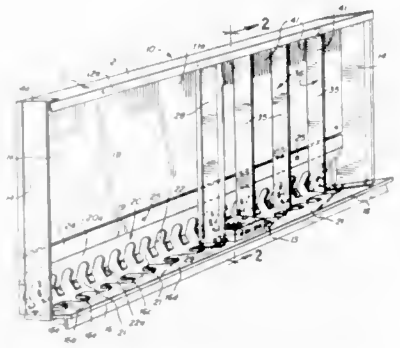
PACKAGE STORAGE, DISPLAY AND DISPENSING APPARATUS

Michael King, Glen Ellyn, and Homer F. King, Oakbrook, both of Ill., assignors to H. King and Associates, Bensenville, Ill.

Filed Aug. 5, 1987, Ser. No. 81,864

Int. Cl.⁴ A47F *1/00*

U.S. Cl. 312—42 **7 Claims**



1. An apparatus for storage, display and dispensing of regularly shaped packages which comprises a tray of generally box-like shape open at the top having generally rectangular front and rear walls and a pair of spaced apart parallel side walls each connected to and extending between the ends of said front and rear walls at essentially right angles thereto, said front wall being formed of transparent material having a plurality of U-shaped finger-way notches open toward the bottom formed therein, a partial bottom wall defining a package support surface extending between the side walls and from the rear wall to a front edge point spaced from the rear surface of said front wall to form a product removal aperture between the front edge of the bottom wall and the rear surface of said front wall, and means including a plurality of flexible finger means affixed to and extending from the front edge of the bottom wall and partially across said product removal aperture and towards said finger notches to contact and secure packages stored in said apparatus, said notches providing finger access to packages stored in said apparatus, which packages may be removed by deformation of the flexible finger means.

4,881,788

APPARATUS AND METHODS FOR PROCESSING OPTICAL SIGNAL WITH WAVEGUIDES EXHIBITING SOLITON EFFECTS

Nicholas J. Doran, Cambridge, England, assignor to British Telecommunications, plc, London, United Kingdom

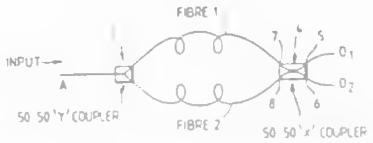
PCT No. PCT/GB87/00740, § 371 Date Jun. 20, 1988, § 102(e) Date Jun. 20, 1988, PCT Pub. No. WO88/02876, PCT Pub. Date Apr. 21, 1988

PCT Filed Oct. 20, 1987, Ser. No. 209,477

Claims priority, application United Kingdom, Oct. 20, 1986, 8625088; Oct. 22, 1986, 8625281; Jnl. 22, 1987, 8717376

Int. Cl.⁴ G02B *6/26*

U.S. Cl. 350—96.15 **11 Claims**



1. An optical device comprising first coupling means having at least one input port and two output ports and second coupling means having at least one output port and two input ports, each coupling means having a predetermined coupling ratio from input to output, and first and second optical waveguides connecting each output of the first coupling means with a corresponding input of the second coupling means, the waveguides comprising material which supports soliton effects when optical pulses at appropriate working intensities are injected into the waveguides, the first and second waveguides defining respective optical paths with substantially the same optical length, the length being sufficient for the intensity dependent phase of an injected pulse to be substantially uniform throughout the pulse, whereby portions of an optical pulse received at the input port of the first coupling means are coupled into the waveguides by the first coupling means and arrive synchronously but with an intensity dependent relative phase shift at the second coupling means after travelling along the waveguides.

4,881,789

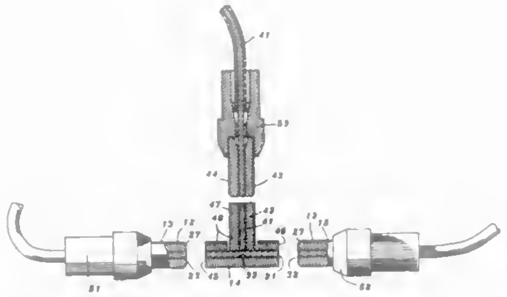
INTEGRATED OPTICAL COUPLER AND CONNECTOR

Frank H. Levinson, San Mateo County, Calif., assignor to Finisar Corporation, Menlo Park, Calif.

Filed May 26, 1988, Ser. No. 198,979

Int. Cl.⁴ G02B *6/26*

U.S. Cl. 350—96.15 **4 Claims**



1. An optical fiber coupler comprising:

three separate ferrules formed from a continuous glass capillary tube having a capillary bore of suitable diameter for receiving optical fibers; said three ferrules including first and second end ferrules and a middle ferrule, said middle ferrule having a removed window portion exposing a portion of its capillary bore and two ferrule coupling ends on both sides of said removed window portion;

an optical fiber mounted in the capillary bore of the middle ferrule;

beamsplitter means inserted in said optical fiber at a position exposed by said removed window portion of said middle ferrule;

an optical element coupled to the window portion of said middle ferrule so as to be in optical communication with said beamsplitter means; and

coupling alignment means for coupling and aligning said two ferrule coupling ends of said middle ferrule to said first and second end ferrules when optical fibers are mounted in said first and second end ferrules.

4,881,790

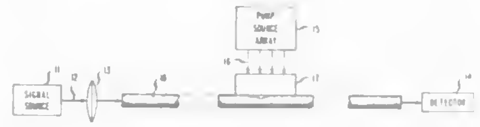
OPTICAL COMMUNICATIONS SYSTEM COMPRISING RAMAN AMPLIFICATION MEANS

Linn F. Mollenauer, Colts Neck, N.J., assignor to American Telephone and Telegraph Company, AT&T Bell Laboratories, Murray Hill, N.J.

Filed Apr. 25, 1988, Ser. No. 185,573

Int. Cl.⁴ G02B *6/28*

U.S. Cl. 350—96.16 **13 Claims**



1. An optical fiber communications system with Raman amplification, the system comprising

first means for generating first electromagnetic radiation of wavelength λ_O, a length of polarization maintaining optical fiber having a core and a cladding, detector means for detecting the first radiation, and means for coupling the first radiation into the optical fiber at a first fiber location, the coupled-in first radiation guided in the fiber to a second fiber location that is spaced apart from the first fiber location, at least some of the coupled-in first radiation emitted from the fiber at the second fiber location and detected by the detector means;

second means for generating second electromagnetic radiation in a predetermined polarization related to a desired signal polarization mode for the first radiation in the polarization maintaining optical fiber, associated with the second radiation being a second radiation spectrum;

means for coupling the second radiation into the polarization maintaining optical fiber at a third fiber location that is intermediate the first and the second fiber locations, said means for coupling causing said second radiation to propagate in a direction opposite to that of said first radiation in said polarization maintaining optical fiber; and

the second means comprises a second radiation source selected to result in a second radiation spectrum having a width greater than the Brillouin linewidth of the optical fiber, and further selected such that the intensity of second radiation in the fiber at any wavelength λ_p is less than a critical intensity I_c.

4,881,791

OPTICAL DEVICE

Stephen R. Mallinson, Ipswich, and Colin A. Millar, Felixstowe, both of England, assignors to British Telecommunications Public Limited Company, Great Britain

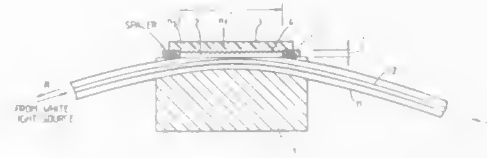
PCT No. PCT/GB88/00333, § 371 Date Dec. 19, 1988, § 102(e) Date Dec. 19, 1988, PCT Pub. No. WO88/08548, PCT Pub. Date Nov. 3, 1988

PCT Filed Apr. 28, 1988, Ser. No. 288,036

Claims priority, application United Kingdom, Apr. 28, 1987, 8710067

Int. Cl.⁴ G02B *6/34*

U.S. Cl. 350—96.19 **11 Claims**



1. An optical device comprising an optical waveguide underlying a first layer of material which has a refractive index higher than the effective refractive index of the waveguide and which forms a planar waveguide capable of supporting and guiding at least one propagation mode of a higher order than, but matching the phase velocity of, the propagation mode or modes in the underlying waveguide; and a diffraction grating provided on or adjacent to a least one surface of the first layer, the arrangement being such that an optical signal which is coupled from the waveguide into the first layer impinges on the diffraction grating and is coupled back to the waveguide.

4,881,792

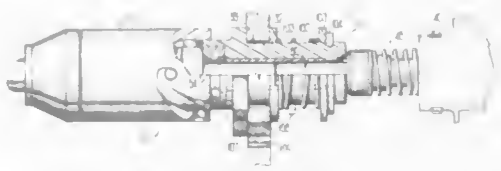
SELF-ADJUSTING OPTICAL FIBER CONNECTOR ASSEMBLY

George M. Alameel, Duluth, and Rodney W. Hammond, Norcross, both of Ga., assignors to American Telephone and Telegraph Company, AT&T Bell Laboratories, Murray Hill, N.J.

Filed Mar. 31, 1988, Ser. No. 175,719

Int. Cl.⁴ G02B *6/36*

U.S. Cl. 350—96.20 **13 Claims**



1. A coupling which is adapted to be mounted in a panel, said coupling comprising:

a housing comprising first and second end portions, each said end portion being adapted to receive a plug which terminates an optical fiber;

a sleeve which is disposed in said housing, recessed from at least the second end portion thereof and adapted to receive in each end portion thereof a plug which terminates an optical fiber, said housing having an entrance to said second end portion thereof which is tapered from a large diameter portion at the entrance to a small diameter portion adjacent to said sleeve with said small diameter portion having a transverse cross section which is equal at least to the transverse cross-section defined by an inner diameter of said sleeve; and

mounting means for supporting said housing in an opening of a panel in such a manner as to permit movement in any one or more of three dimensions as a plug is inserted into

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said second end portion of said housing, said mounting means cooperating with a diameter-to-length ratio of the small diameter portion of said housing which is adjacent to said sleeve to minimize any turning movement of said coupling about an axis transverse to its longitudinal axis and cause any movement of said coupling during insertion of a plug into said second end portion to be substantially translatory with respect to the longitudinal axis.

4,881,793

OPTICAL FIBRE ATTENUATORS AND METHOD FOR MAKING SAME

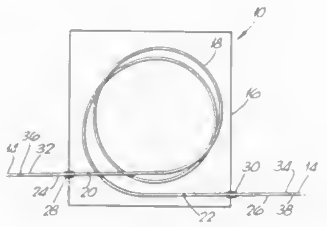
Eleanor J. Tarbox, Southampton, England, assignor to Pirelli General plc, London, England

Filed May 24, 1988, Ser. No. 198,145

Claims priority, application United Kingdom, Jnn. 4, 1987, 8713081

Int. Cl.^{4} G02B *6/38;* C03C *25/02*

U.S. Cl. 350—96.21 **16 Claims**



1. An attenuating device (**10.12**) for use with single mode signal carrying optical fibres (**14**), said device comprising a length (**18**) of single mode optical fibre having a core provided with a dopant comprising a vapour deposited variable valency element which is present for at least part of a lower valence state whereby said core of the optical fibre of the device is of higher attenuation per unit length than the signal carrying fibres with which the device is intended to be used, and means (**24,26; 44,46**) for optically connecting the opposite ends of said length of optical fibre to signal carrying optical fibres.

4,881,794

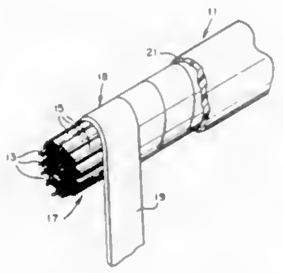
LOW SMOKE AND REDUCED FLAME FLUORINATED POLYMER COMPOSITIONS AND CABLE CONSTRUCTIONS

Edward J. Bartoszek, Jeffersonville, Pa., assignor to Pennwalt Corporation, Philadelphia, Pa.

Division of Ser. No. 847,351, Apr. 2, 1986, Pat. No. 4,804,702. This application Aug. 25, 1988, Ser. No. 236,564

Int. Cl.^{4} G02B *6/44*

U.S. Cl. 350—96.23 **5 Claims**



1. A low smoke and flame retardant cable comprising a bundle of electrical conductors or fiber optic strands encased in a polymer jacket which comprises a vinylidene fluoride polymer composition having dispersed therein from about 0.2 to about 1.2 percent by weight of said composition of aluminum silicate selected from calcined or hydrated aluminum silicate consisting essentially of Al_2O_3. $2SiO_2$. nH_2O wherein $n=0$ to 2.

4,881,795

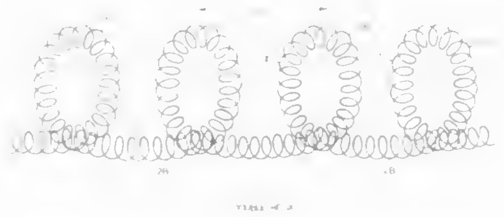
HIGH COUNT OPTICAL FIBER DISTRIBUTION CABLE

Susan M. Cooper, Newton, N.C., assignor to Siecor Corporation, Hickory, N.C.

Filed Feb. 3, 1989, Ser. No. 305,703

Int. Cl.^{4} G02B *6/44*

U.S. Cl. 350—96.23 **11 Claims**



1. A high count optical fiber distribution cable having optical fiber attenuation stability over a range of temperatures comprising:

- (a) A center sub-unit comprising a sub-unit center strength member and at least one buffer tube stranded about said center sub-unit forming a single helix, said center strength member having a tensile strength of at least 4,350,000 psi and a coefficient of thermal expansion of no more than 25×10^6 Cm/Cm/°C.;
- (b) one or more additional sub-units stranded about the center sub-unit each additional sub-unit comprising at least one buffer tube stranded in a double helix configuration and a sub-unit strength member, each buffer tube stranded about said sub-unit strength member and each sub-unit strength member having a tensile strength of at least 4,350,000 psi and a coefficient of thermal expansion of no more than 25×10^6 Cm/Cm/°C.; and,
- (c) 300 or more elongated optical fibers, in one or more of said buffer tubes, that vary no more than 0.2 db/km in attenuation when said high count optical fiber distribution cable is subjected to temperatures between −40° and 70° C. at wavelengths of 1310 nm and 1550 nm.

4,881,796

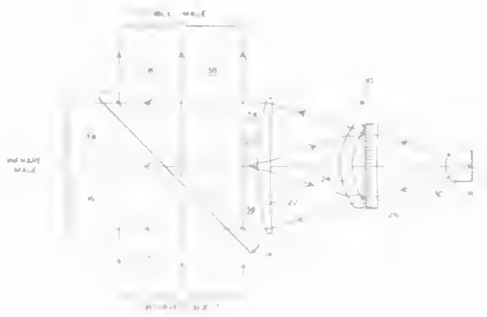
SINGLE-APERTURE MULTI-SPECTRAL RETICLE PROJECTOR

David Michika, Santa Ana, and Robert J. Brown, Tustin, both of Calif., assignors to Ford Aerospace Corporation, Newport Beach, Calif.

Filed Aug. 8, 1988, Ser. No. 229,592

Int. Cl.^{4} G02B *5/18*

U.S. Cl. 350—166 **4 Claims**



1. A single aperture multi-spectral reticle projector, comprising:

- (a) first and second reticles;
- (b) first illumination means for illuminating said first reticle with light of a first wavelength;
- (c) second illumination means for illuminating said second reticle with light of a second wavelength; and
- (d) a dichroic lens interposed between said reticles coaxially therewith, said dichroic lens being reflective at said first wavelength but transparent at said second wavelength;
- (e) collimating lens means interposed coaxially between said first reticle and said dichroic lens for refracting the image of said first reticle on a passage therethrough and collimating said image on a second passage therethrough;

whereby collimated images of said first and second reticles are projected coaxially in the same direction by said dichroic lens.

4,881,797

COLOR LIQUID CRYSTAL DISPLAY DEVICE

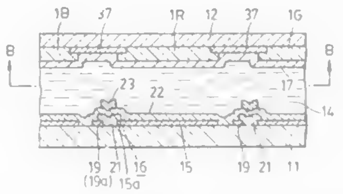
Shigeo Aoki, Habikino; Katsumi Miyake, Nara, and Yasuhiro Ugai, Yao, all of Japan, assignors to Hosiden Electronics Ltd., Osaka, Japan

Continuation of Ser. No. 812,887, Dec. 4, 1985, abandoned. This application Aug. 16, 1988, Ser. No. 232,514

Claims priority, application Japan, Apr. 20, 1984, 59-103

Int. Cl.^{4} G02F *1/133, 1/137*

U.S. Cl. 350—339 F **3 Claims**



1. A color liquid crystal display device comprising first and second transparent substrates spaced apart a small distance and facing each other, a liquid crystal sealed between said two transparent substrates, a plurality of transparent display electodes provided on the inner side surface of said first transparent substrate, thin film transistors formed on said first transparent substrate and each connected to each of said display electrodes, a transparent common electrode formed substantially on the entire inner side surface of said second transparent substrate, and color filters each facing each of said display electrodes, the improvement wherein:

said color filters are separated from one another by a gap which is defined between the opposing side edges of adjacent ones of said color filters, each gap between adjacent ones of said color filters being closed by a metal layer capable of blocking light, said light-blocking layers being formed on said second substrate and having marginal edges underlying the marginal edges of said color filters, and said common electrode extending over and in contact with said color filters and with portions of said light-blocking layers between said color filters.

4,881,798

THERMAL OPTICAL MODULATION METHOD AND DEVICE USING ALTERNATING CURRENT

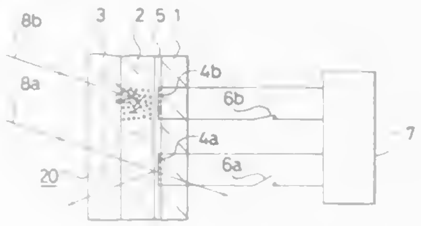
Satoshi Yuasa; Hirohide Munakata, both of Yokohama; Yoko Yoshinaga, Machida; Masahiro Haruta, Tokyo, and Yukuo Nishimura, Sagamihara, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 895,472, Aug. 11, 1986, abandoned. This application Apr. 14, 1989, Ser. No. 338,424

Claims priority, application Japan, Aug. 13, 1985, 60-176847; Aug. 13, 1985, 60-176848

Int. Cl.^{4} G02F *1/01, 1/17*

U.S. Cl. 350—353 **9 Claims**



1. An optical modulating device comprising a heat-sensitive medium containing a polymeric substance and a liquid;

a heat-generating resistor

a protecting layer provided between said heat-sensitive medium and said heat-generating resistor; and

means for supplying an alternating electric current with a frequency of 200 to 800 Hz to said heat-generating resistor for heating said heat-sensitive medium.

4,881,799

VARIFOCAL LENS DEVICE

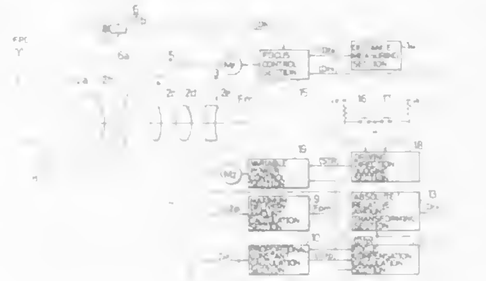
Yoshimi Ohno, Kawasaki; Takayuki Hatase, Yokohama, and Daisuke Hata, Funabashi, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Apr. 20, 1988, Ser. No. 184,023

Claims priority, application Japan, Apr. 20, 1987, 62-95047; May 23, 1987, 62-125021; May 30, 1987, 62-133402; May 30, 1987, 62-133404; May 30, 1987, 62-135696

Int. Cl.^{4} G02B *15/00*

U.S. Cl. 350—429 **14 Claims**



1. A varifocal lens device provided with a variable power optical system composed of a variable power lens group and a focusing lens group which is a part of said variable power lens group disposed on an optical axis for compensating a deviation produced in the image forming position for an object when said focusing lens group is set at a focusing position between the nearest possible position and the infinitely far position on the optical axis corresponding to an object distance falling between the shortest possible distance and the infinitely long distance and then an overall focal length of said variable power optical system is subsequently renewed from a first to a second

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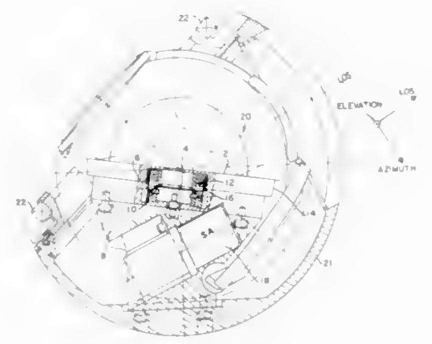
focal length selected freely between the shortest possible focal length and the longest possible focal length by means of said variable power lens group, said device comprising:

- a first driving means for driving said variable power lens group;
- a second driving means for driving said focusing lens group;
- a first detecting means for detecting the absolute positions of said variable power lens group on the optical axis;
- a calculating means for receiving the information on the focal length and the position of said focusing lens group from said first detecting means and, based on the received information, for calculating an absolute amount of compensation of focal length necessary for the elimination of the deviation in the image forming position;
- a transforming means for transforming a compensated focal position as an obsolete amount into the amount of movement as a relative amount;
- a second detecting means for detecting the amount of movement of said focusing lens group on the optical axis as a relative amount;
- a first controlling means for controlling said first driving means; and
- a second controlling means for receiving the data on distance measurement issued as an absolute amount from measuring means separately installed for measuring the distance to an object or for receiving the output of said transforming means and, based on the data or the output so received and in accordance with the output of second detecting means, for controlling said second driving means so as to drive said focusing lens group to an estimated focal position for the object or to the compensated focal position.

4,881,800
TWO-AXIS MIRROR STABILIZATION ASSEMBLY

Charles R. Fuchs, Wayne; David A. Haessig, Jr., Towaco; David L. Heckathorn, Wayne; Jordan S. Kass, Wayne; Peter Lindsay, Hardyston Township, Sussex County, and Joseph J. Volpe, Rockaway, all of N.J., assignors to Plessey Electronic Systems Corp., Wayne, N.J.

Filed May 16, 1988, Ser. No. 194,367
Int. Cl.⁴ G02B *27/64*
U.S. Cl. 350—500 17 Claims



1. In an optical stabilizing system having an assembly for tracking a command line of sight and rejecting environmental perturbations, the line of sight being chosen in accordance with an input command signal, the assembly comprising:

- a mirror;
- a rigid block;
- means flexibly coupling the mirror to the rigid block, the flexible coupling means providing two axes of freedom for the mirror;
- gyroscopic means mounted to the rigid block, the spin axis of the gyroscopic means being aligned along the line of sight, the gyroscopic means providing a gyro rate signal about two axes perpendicular to the line of sight;
- means for torquing the mirror;
- means for sensing the movement of the mirror and providing a feedback pickoff signal corresponding thereto; and
- control means for receiving the command signal, the gyro rate signal and the feedback pickoff signal and, based on these signals, providing a torquer signal to the torquing means for torquing the mirror; whereby the torquer signal is responsive for cancelling the environmental perturbations and torques the mirror only to track the command line of sight.

4,881,801
FAST, ABERRATION-FREE FLAT FIELD CATADIOPTRIC TELESCOPE

Rolin J. Gebelein, 291 Martin Rd., Santa Cruz, Calif. 95960
Continuation-in-part of Ser. No. 782,286, Sep. 30, 1985, Pat. No. 4,718,753, which is a continuation-in-part of Ser. No. 660,916, Oct. 15, 1984, Pat. No. 4,571,036, Division of Ser. No. 316,134, Nov. 22, 1981, Pat. No. 4,477,156. This application Jan. 11, 1988, Ser. No. 142,539

Int. Cl.⁴ G02B *17/08*
U.S. Cl. 350—503 10 Claims

1. A Catadioptric Telescope that is fast and has an aberration free flat field, comprising:

- a spherical primary mirror for an objective; and
- corrector means, proximate to the focus of the objective, wherein the corrector means is comprised of a plano concave first element, or near-plano concave first element, with its concavity facing converging light reflected from the objective and said first element being positioned such that the converging light will be collimated or nearly collimated upon existing the first element to impinge upon a plano convex second element, or near-plano convex second element, which has been reversed from a split meniscus type of configuration so that the collimated light first strikes the convex surface of this second element, such reversal resulting in a substantial reduction of negative spherical aberration due to this second element, but the significant optical power of this second element is not changed, said corrector arranged such that light exits the plano, or near-plano surface of the second element and is directed toward a focus.

4,881,802
COMBINED BRIGHT FIELD-DARK FIELD INCIDENT LIGHT ILLUMINATION APPARATUS

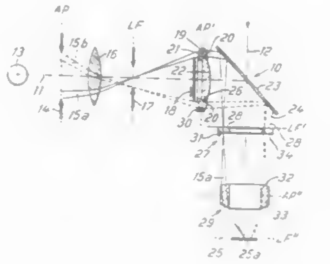
H. W. Stankewitz, Wetzlar, Fed. Rep. of Germany, assignor to Ernst Leitz Wetzlar GmbH, Wetzlar, Fed. Rep. of Germany

Filed May 3, 1988, Ser. No. 189,546
Claims priority, application Fed. Rep. of Germany, May 5, 1987, 3714830
Int. Cl.⁴ G02B *21/10, 26/02, 21/12*
U.S. Cl. 350—525 26 Claims

1. A combined bright field-dark field incident light illumination apparatus suitable for microscope instruments having an object plane, comprising:

- means, including a light source, for producing an illuminating beam including a bright field ray bundle and a generally annular dark field ray bundle, said illuminating beam having a uniformly illuminated area at a point along its axis;

- means for selectively suppressing the bright field ray bundle; and

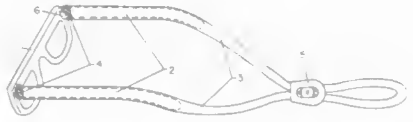


- means for projecting the uniformly illuminated area into the object plane via at least one intermediate image formed in the dark field ray bundle, said projecting means comprising at least three annular optical elements positioned in the dark field ray bundle.

4,881,803
ORNAMENTAL SUNGLASSES RETAINER

Conley W. Giles, 603 W. 13th, No. 292, Austin, Tex. 78701; Karen L. Teare, P.O. Box 1-A-157, 603 W. 13th, Austin, Tex. 78701, and R. Peyton Wimmer, 1930 West Rundberg, Austin, Tex. 78758
Continuation-in-part of Ser. No. 874,137, Jun. 13, 1986, abandoned. This application Apr. 22, 1988, Ser. No. 184,892

Int. Cl.⁴ G02C *3/02*
U.S. Cl. 351—156 9 Claims



1. A sunglasses retainer comprising:

A. a stretchable fabric tube to fit snugly over temple pieces of said sunglasses and to constrict into and be frictionally held by hinges of said temple pieces,

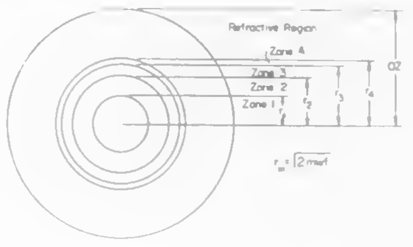
B. a resilient treating material in the interstices of the fibers in that portion of each end of said stretchable fabric tube that will constrict into said hinges,

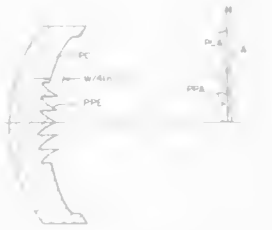
C. a manually adjustable friction catch holding means to slideably engage said stretchable fabric tube when each of said ends is threaded through said holdings means said manually adjustable friction catch holding means comprising a manually adjustable circular corrugated member, moveable in a housing that narrows at one end, thereby frictionally holding said stretchable fabric tube increasingly tighter when said manually adjustable friction catch holding means is adjusted to a desired position and tension is applied to said stretchable fabric tube extending from said one end of said housing.

4,881,804
MULTIFOCAL PHASE PLATE WITH A PURE REFRACTIVE PORTION

Allen L. Cohen, 10010 Walsham Ct., Richmond, Va. 23233

Filed Nov. 12, 1987, Ser. No. 120,265
Int. Cl.⁴ G02C *7/04;* G02B *5/18, 27/44*
U.S. Cl. 351—161 34 Claims



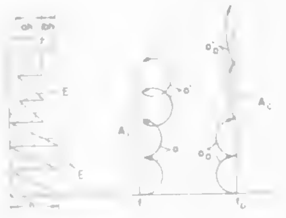


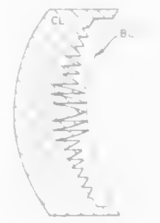
1. An ophthalmic contact lens with a phase plate and a pure refractive portion within its optic zone.

4,881,805
PROGRESSIVE INTENSITY PHASE BIFOCAL

Allen L. Cohen, 10010 Walsham Ct., Richmond, Va. 23233

Filed Nov. 12, 1987, Ser. No. 120,262
Int. Cl.⁴ G02C *7/04;* G02B *5/18, 27/44;* A61F *2/16*
U.S. Cl. 351—161 17 Claims





1. An ophthalmic contact or intraocular lens containing more than one phase plate within its optic zone.

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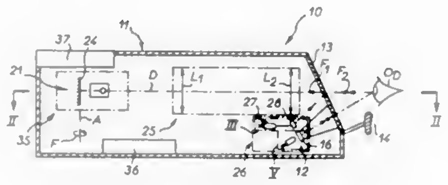
4,881,806

AUTOMATIC INTERPUPILLARY DISTANCE MEASURING DEVICE

Christian Bovet, Paris, France, assignor to Essilor International Cie Generale d'Optique, Creteil Cedex, France
Filed Jul. 26, 1988, Ser. No. 224,145
Claims priority, application France, Jul. 30, 1987, 87 10804
Int. Cl.⁴ A61B *3/10*
U.S. Cl. 351—204 26 Claims

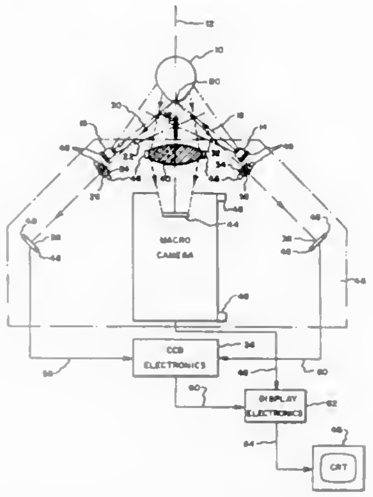


1. Automatic interpupillary distance measuring device, comprising a light source adapted to produce a reflection or reflections on the cornea of at least one eye of a person, a sensor receiver, a scanning device for scanning said sensor receiver transversely to a general direction of observation of the person so as to direct onto said receiver the light rays corresponding to said corneal reflection or reflections, a slit disposed optically between the scanning device and the sensor receiver and providing access to the sensor receiver, and means for producing in said sensor receiver a measurement reference mark relative to which the position of the corneal relection or reflections can be determined.

4,881,807

OPTICAL ALIGNMENT SYSTEM

David A. Luce, Clarence Center, and Srdjan Krstanovic, Kenmore, both of N.Y., assignors to Cambridge Instruments, Inc., Cheektowaga, N.Y.
Filed Aug. 5, 1988, Ser. No. 228,482
Int. Cl.⁴ A61B *3/14*
U.S. Cl. 351—208 27 Claims



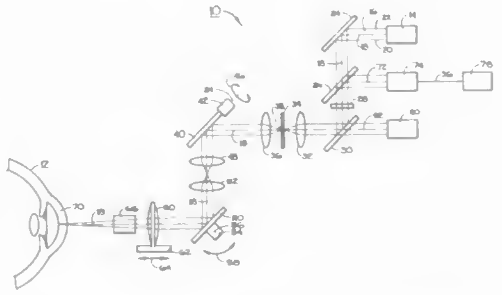
1. An alignment system for an ophthalmic instrument comprising,

(a) illuminating means for illuminating an eye with diverging rays from a light source,
(b) a first detecting means for defining a first light detecting area, said light detecting means including a first pinhole occluder to pass a small bundle of reflected rays producing a first signal identifying the XY location of reflected light on said first area,
(c) a second detecting means for defining a second light detecting area, said second detecting means including a second pinhole occluder to pass a small bundle of reflected rays and producing a second signal identifying the XY location of reflected light on said second area,
(d) means evaluating said first and second signals for providing a third signal, and
(e) means for selectively positioning the instrument relative to the eye responsive to said third signal.

4,881,808

IMAGING SYSTEM FOR SURGICAL LASERS

Josef F. Bille, Solana Beach, and Stuart I. Brown, La Jolla, both of Calif., assignors to Intelligent Surgical Lasers, La Jolla, Calif.
Filed Feb. 10, 1988, Ser. No. 154,966
Int. Cl.⁴ A61B *3/10*
U.S. Cl. 351—221 17 Claims



1. An ocular imaging system for determining the location of an interface between media having different indices of refraction which comprises:

a light source for radiating a beam;
a pin hole aperture positioned along said beam;
means for focusing said beam confocally with said aperture; and
monitoring means responsive to the intensity of light that is specularly reflected through said aperture to indicate when said beam is focused on said interface.

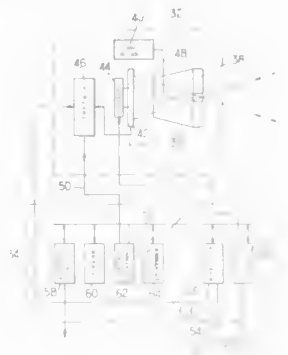
4,881,809

METHOD AND DEVICE FOR MEASURING DISTANCE OPTICALLY

Bomer Thierry, Paris, France, assignor to Matra, Paris, France
Filed Jul. 14, 1987, Ser. No. 73,187
Claims priority, application France, Jul. 22, 1986, 86 10621
Int. Cl.⁴ G01C *3/08*
U.S. Cl. 356—5 8 Claims

1. Optical process for measurement of a distance between a hunter and a target, comprising the steps of:

(a) sending substantially monochromatic light pulses from the hunter toward the target;
(b) collecting light echoed by the target on a matrix detector having photosensitive sites distributed in lines and columns with line-by-line transfer read-out
(c) carrying out said transfer read-out in the direction of the columns at a first predetermined frequency during the time of flight between sending and return of the reflected echo from said target;
(d) repeating the sequence of steps (a), (b) and (c) with another predetermined transfer frequency, different from the first frequency; and

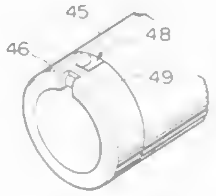


(e) deriving the distance from the distance between lines of the matrix having received the echo for the two different frequencies.

4,881,810

ENDOSCOPE WITH A REMOVABLE COVER MEMBER

Hiroshi Hasegawa, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan
Filed Nov. 9, 1987, Ser. No. 118,068
Claims priority, application Japan, Nov. 10, 1986, 61-267258
Int. Cl.⁴ G02B *23/26*
U.S. Cl. 356—241 14 Claims



1. An endoscope comprising:

an elongated tubular part for observing an object, said elongated tubular part having a rigid tip body at a tip part thereof;
at least one tubular outer cover slidably positioned around the outer periphery of said elongated tubular part; and
a removable cylindrical cover member firmly self-secured around said rigid tip body for retaining said at least one tubular outer cover, said cover member being provided with at least one substantially through slit along the longitudinal axis thereof, wherein said cover member is removed from said rigid tip body by forcibly expanding said slit in order to further remove said at least one tubular cover from said elongated tubular part.

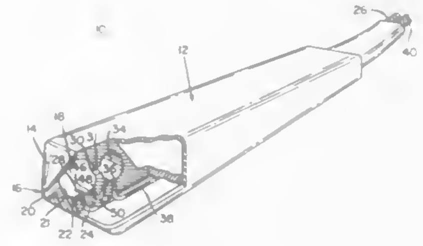
4,881,811

REMOTE COLOR MEASUREMENT DEVICE

John K. O'Brien, Sudbury, Mass., assignor to Colorgen, Inc., Billerica, Mass.
Filed Feb. 16, 1988, Ser. No. 156,471
Int. Cl.⁴ G01J *3/02, 3/08*
U.S. Cl. 356—323 22 Claims

1. A probe, for use with a spectrophotometer, for sensing the reflectance of a sample remote from the spectrophotometer, comprising:

A probe housing having a probe portion positionable proximate the sample;
an integrating chamber for diffusing radiation disposed within said probe housing and having a radiation input port for providing radiation to said integrating chamber, a sample port for passing diffused radiation to the sample and returning reflected radiation from the sample, a reference port for receiving diffused radiation directly from the chamber, and an exit port to receive radiation reflected from the sample through said sample port;
an output port for receiving reflected sample radiation from said sample and diffused radiation directly from the chamber and for transmitting the received radiation to the remote spectrophotometer;

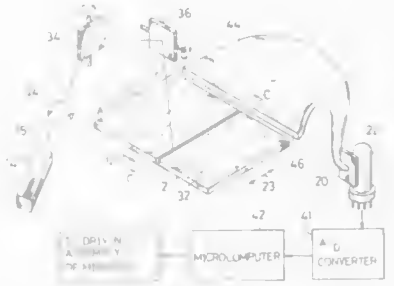


a guide for directing radiation to said radiation input port from a radiation source; and
means for selectively directing the diffused radiation from the chamber through said reference port and the radiation reflected from the sample through said exit port to said output port.

4,881,812

APPARATUS FOR DETERMINING BASE SEQUENCE

Kunihiko Ohkubo, Moriyama, and Hidehiko Fujii, Kyoto, both of Japan, assignors to Shimadzu Corporation, Kyoto, Japan
Filed Dec. 7, 1987, Ser. No. 129,295
Claims priority, application Japan, Mar. 31, 1987, 62-80390
Int. Cl.⁴ B01D *57/02;* **G01N** *27/26*
U.S. Cl. 356—344 10 Claims



1. An apparatus for determining a base sequence comprising an assembly for making an exciting beam incident on a surface of a slab of electrophoretic gel in a direction normal to said surface, the gel containing nucleic acid fragments labeled with a labeling pigment and developed or being developed therein by electrophoresis; means for concentrating said exciting beam on said gel; means for scanning said surface of said gel with said exciting beam; and a light receiving unit for receiving at an end face of said gel the luminescence emitted by said labeling pigment on the fragments developed in said gel.

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4,881,813

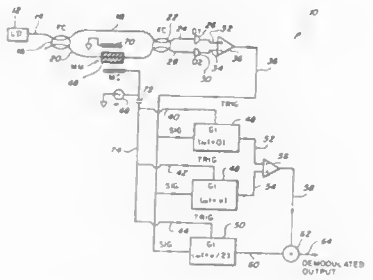
PASSIVE STABILIZATION OF A FIBER OPTIC NONLINEAR INTERFEROMETRIC SENSOR

Kee P. Koo, Alexandria, Va.; Frank Bucholtz, Crofton, Md., and Anthony Dandridge, Alexandria, Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 20, 1988, Ser. No. 196,705

Int. Cl.^{4} G01B *9/02*

U.S. Cl. 356—345 17 Claims



12. A technique for removing spurious modulation from an intended signal to passively stabilize an output signal from a nonlinear sensor to reduce spurious modulation from said output signal, comprising the steps of:

triggering gated integrators to sample the output signal at times $t=0$, π/ω, and $\pi/2\omega$during an oscillation signal applied to the sensor to obtain samples of the output signal;

subtracting the samples of the output signal taken when time $t=\pi/\omega$and when time $t=0$ to obtain a difference signal; and

dividing the difference signal by the sample of the output signal taken at time $t=\pi/2\omega$to produce a passively stabilized output signal.

4,881,814

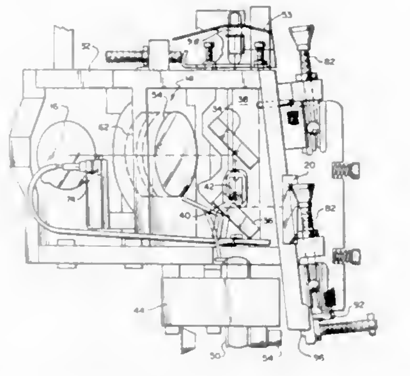
SCANNING MICHELSON INTERFEROMETER ASSEMBLY

Robert A. Hoult, Bethel, Conn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Sep. 2, 1988, Ser. No. 239,871

Int. Cl.^{4} G01B *9/02;* G01J *3/45*

U.S. Cl. 356—346 16 Claims



1. A scanning Michelson type interferometer assembly comprising, in combination: a beam splitter assembly for receiving a beam of radiation from a source, a stationary plane mirror for receiving and returning a first subbeam over a fixed length optical path from said beam splitter assembly, an adjustable plane mirror for receiving and returning a second subbeam over a variable length optical path from said beam splitter assembly, means for receiving a combined output beam from said beam splitter assembly for forming a spectrum of the input beam radiation, an optical path difference generator assembly mounted in said second subbeam path between said beam splitter assembly and said adjustable plane mirror, said optical path difference generator assembly having a pair of parallel spaced mirrors mounted so that said second subbeam is incident on one mirror and is reflected by both of said parallel mirrors to emerge from the generator assembly in a direction substantially parallel to the direction of incidence on the one mirror, drive means for rotating said generator assembly about an axis of rotation so as to change the angle of incidence of the second subbeam on said one mirror and thereby vary the optical path length of the second subbeam, said beam splitter assembly and said stationary plane mirror and said adjustable plane mirror and said optical path difference generator assembly being mounted on a monolithic structural frame, means for adjusting said adjustable plane mirror including means interposed between said monolithic structural frame and said adjustable plane mirror forming a tapered track therebetween, ball means mounted for sliding movement in said track, and differential screw means connected to said ball means for driving said ball in said track, thereby to adjust the tilt of said adjustable plane mirror to make it perpendicular to the second subbeam exiting the optical path difference generator assembly.

4,881,815

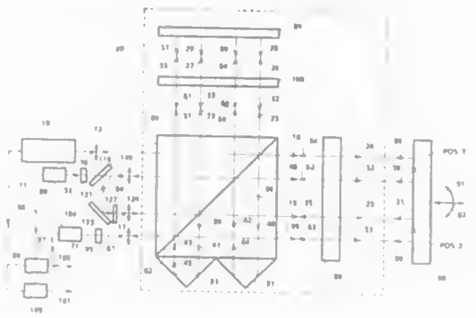
LINEAR AND ANGULAR DISPLACEMENT MEASURING INTERFEROMETER

Gary E. Sommargren, Santa Cruz, Calif., assignor to Zygo, Corporation, Middlefield, Conn.

Filed Jul. 8, 1988, Ser. No. 216,821

Int. Cl.^{4} G01B *9/02*

U.S. Cl. 356—349 40 Claims



1. An interferometer system capable of measuring linear displacement and angular displacement simultaneously of a movable plane mirror comprising a source of a frequency stabilized input beam with two linear orthogonally polarized components; an optical system means comprising a stationary plane reference mirror, said optical system means disposed to reflect one polarization component of said input beam twice from a first position on said movable plane mirror to produce a first output beam and to reflect the other polarization component of said input beam twice from said stationary plane mirror to produce a second output beam; means disposed for recombining said first and second output beam into a third output beam having two orthogonally polarized components in which the phase difference between the two components of the third output beam is related to four times the linear displacement of said movable plane mirror at said first position; means disposed to divide said third output beam into a fourth output beam and a fifth beam which is parallel to, spatially displaced from, traveling in the same direction as said input beam, and has its polarization components rotated from said third output beam; means disposed for mixing said orthogonal components of said fourth output beam; means disposed to produce a first electrical measurement signal; means associated with said first electrical measurement signal for indicating a first measured phase, said first measured phase being related to four times the linear displacement of said movable plane mirror at said first position; means disposed to reflect one polarization component of said fifth beam twice from a second position on said movable plane mirror to produce a sixth output beam and to reflect the other polarization component of said fifth beam twice from said stationary plane mirror to produce a seventh output beam; means disposed for recombing said sixth and seventh output beams into an eighth output beam having two orthogonally polarized components in which the phase difference between said two components of said eighth output beam is related to four times the difference of the linear displacements of said movable plane mirror at said first and second position; means disposed for mixing said orthogonal components of said eighth output beam; means disposed to produce a second electrical measurement signal; and means associated with such second electrical measurement signal for indicating a second measured phase, said second measured phase being related to the angular displacement of said movable plane mirror; whereby said linear and angular displacement of said movable plane mirror may be simultaneously accurately measured in a single interferometer system.

4,881,816

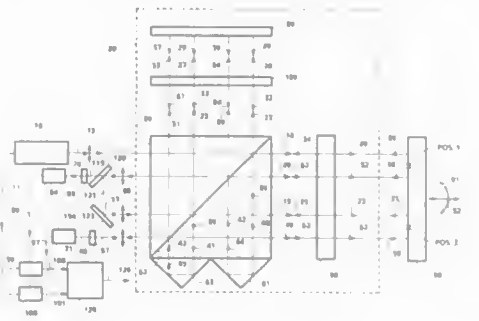
LINEAR AND ANGULAR DISPLACEMENT MEASURING INTERFEROMETER

Carl A. Zanoni, Middlefield, Conn., assignor to Zygo, Corporation, Middlefield, Conn.

Filed Jul. 8, 1988, Ser. No. 216,843

Int. Cl.^{4} G01B *9/02*

U.S. Cl. 356—349 38 Claims



1. An interferometer system capable of measuring linear displacement and angular displacement simultaneously of a movable plane mirror comprising a source of a frequency stabilized input beam with two linear orthogonally polarized components; optical system means comprising a stationary plane reference mirror, said optical system being disposed to reflect one polarization component of said input beam twice from a first position on said movable plane mirror to produce a first output beam and to reflect the other polarization component of said input beam twice from said stationary plane mirror to produce a second output beam; means disposed for recombining said first and second output beams into a third output beam having two orthogonally polarized components in which the phase difference between the two components of the third output beam is related to four times the linear displacement of said movable plane mirror at said first position; means to divide said third output beam into a fourth output beam and a fifth beam which is parallel to, spatially displaced from, and traveling in the same direction as said input beam; means disposed for mixing said orthogonal components of said fourth output beam; means disposed to produce a first electrical measurement signal; means associated with said first electrical measurement signal for indicating a first measured phase, said first measured phase being related to four times the linear displacement of said movable plane mirror at said first position; means disposed to reflect one polarization component of said fifth beam twice from a second position on said movable plane mirror to produce a sixth output beam and to reflect the other polarization component of said fifth beam twice from said stationary plane mirror to produce a seventh output beam; means disposed for recombining said sixth and seventh output beams into an eighth output beam having two orthogonally polarized components in which the phase difference between the two components of the eighth output beam is related to four times the sum of the linear displacements of said movable plane mirror at said first and second positions; means disposed for mixing said orthogonal components of said eighth output beam; means disposed to produce a second electrical measurement signal; means associated with said second electrical measurement signal for indicating a second measured phase, said second measured phase being related to four times the sum of the linear displacement of said movable plane mirror at said first and second positions; and means disposed to form the difference between one-half of said second measured phase and said first measured phase to produce a signal related to the angular displacement of said movable plane mirror; whereby said linear and angular displacement of said movable plane mirror may be accurately measured in a single interferometer system.

4,881,817

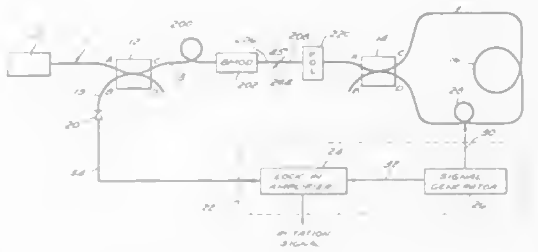
FIBER OPTIC ROTATION SENSOR UTILIZING HIGH BIREFRINGENCE FIBER AND HAVING REDUCED INTENSITY TYPE PHASE ERRORS

Byoung Y. Kim, Menlo Park; Sidney L. A. Carrara, and Herbert J. Shaw, both of Stanford, all of Calif., assignors to The Board of Trustees of the Leland Stanford Junior University, Stanford, Calif.

Filed Sep. 19, 1986, Ser. No. 909,741

Int. Cl.^{4} G01B *9/02*

U.S. Cl. 356—350 28 Claims



18. An interferometer, comprising:

a sensing loop;

a source of light;

a first coupler for coupling light to and from said loop;

a detector;

a second coupler for coupling light output from said loop to said detector;

a polarizer between said first and second couplers;

an intensity equalizer between said polarizer and said light source; and

an optical path comprised of birefringent optical fiber for guiding light propagating from said source to said first coupler, said fiber having an axis of birefringence aligned with an axis of polarization of said polarizer.

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4,881,818
DIFFERENTIAL IMAGING DEVICE

Carlos Bustamante; Frederick K. Husher, and David Beach, all of Albuquerque, N. Mex., assignors to The University of New Mexico, Albuquerque, N. Mex.
Filed Apr. 22, 1986, Ser. No. 855,006
Int. Cl.^{4} G01N *21/21*
U.S. Cl. 356—367 1 Claim

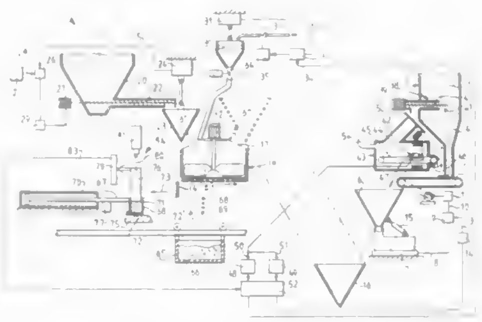
1. An apparatus for forming a differential image of a specimen comprising:
- means for illuminating said specimen with polarized light having a polarization which oscillates between a first preselected state of polarization and a second preselected state of polarization, said oscillation occurring at a predetermined frequency;
- means for detecting the intensity of light leaving a selected point on said specimen, said detecting means including means for generating an electrical signal having an amplitude related to the intensity of light leaving said selected point as a function of time, said generating means having a response time substantially less than the period of said predetermined frequency;
- differential means for measuring the amplitude of the component of said electrical signal in a selected frequency band including said predetermined frequency;
- integral means for measuring the amplitude of said electrical signal averaged over a time greater than one period of said predetermined frequency; and
- image generating means for causing said detecting means to select each of a plurality of preselected points and for displaying the ratio of the amplitudes measured by said differential and integral measuring means as a two dimensional image,
- wherein said detecting means includes:
- means for imaging the light leaving said specimen on a surface;
- means for detecting the intensity of light at the point on said surface corresponding to said selected point, and
- wherein said intensity detecting means includes an image dissector tube with its photocathode coincident with said surface.

4,881,819
METHOD AND APPARATUS FOR PREPARING CONCRETE MORTAR

Frederik C. Blees, Deventer, Netherlands, assignor to Deltracon Deventer B.V., Netherlands
Filed Jan. 20, 1988, Ser. No. 146,174
Claims priority, application Netherlands, Jan. 20, 1987, 8700131
Int. Cl.^{4} B28C *7/04*
U.S. Cl. 366—8 7 Claims

1. The method of making a batch of concrete mortar from which a useful concrete element may be formed, which comprises the steps of:

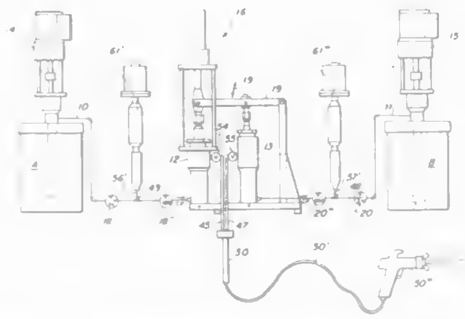
a. providing a supply of sand which has a variable moisture content,
b. providing a supply of binder,
c. metering a quantity of the sand to provide a formulated weight of dry sand plus a weight amount of contained water due to the moisture content of the quantity of sand,
d. drying a sample of the quantity of sand metered in step c and determining the difference in weight of the sample before and after drying,
e. metering a quantity of binder until the quantity of binder equals a formulated weight of binder,



f. metering a quantity of water in dependence upon the difference in weight determined in step d until the quantity of water plus the weight amount of contained water of step c equals a formulated weight of water, and
g. intensively admixing the formulated weights of steps c-e until a batch of the concrete mortar is formed.

4,881,820
METHOD OF AND DEVICE FOR PROPORTIONING AT LEAST ONE VISCOUS SUBSTANCE

Peter Lückhoff, Kierspe, Fed. Rep. of Germany, assignor to Reinhardt Technik GmbH & Co., Fed. Rep. of Germany
Continuation of Ser. No. 910,633, Sep. 23, 1986, abandoned. This application Feb. 11, 1988, Ser. No. 157,131
Claims priority, application Fed. Rep. of Germany, Jan. 24, 1985, 3502333; Aug. 16, 1985, 3529486; Oct. 14, 1985, 3536594
Int. Cl.^{4} B01F *15/02, 15/04*
U.S. Cl. 366—142 3 Claims

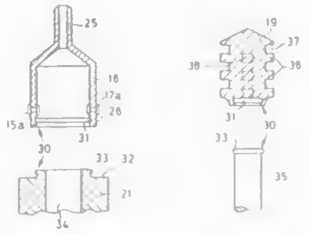


1. An apparatus for metering and mixing viscous components of a multicomponent mixture, said apparatus comprising:

(a) storage container means for storing respective components of said multicomponent mixture;
(b) extrusion means (**12, 13**) for metering and discharging respective components of said mixture, said extrusion means including an extrusion chamber and at least one extrusion valve associated with each component of said mixture;
(c) delivery pump means (**14, 15**) for pumping respective components of said mixture from said storage container means to said extrusion means via associated delivery lines (**10, 11**), each said delivery line including at least one check valve (**18‴, 20‴**) for preventing back-flow of said pumped components to said storage container means;
(d) mixing and delivery means connected with said extrusion means by way of extrusion delivery lines (**45, 47**) and extrusion delivery valves (**54, 55**) for mixing said respective components in a mixing chamber (**50**) and for delivering a resulting multicomponent mixture to a utilization device (**50″**);
(e) pressure equalizing means (**61′, 61‴**) for equalizing the pressure in said extrusion chamber and said mixing chamber prior to metering and discharging, said pressure equalizing means comprising respective piston cylinder units having a chamber in communication with said respective delivery lines of said storage container means of each said viscous component, said piston-cylinder units operable to fill upon supply of respective components to said delivery lines, and; said piston-units actuable by a pressure medium to maintain a predetermined pressure in the chamber thereof.

4,881,821
APPARATUS FOR MIXING AND DOSING SYNTHETIC RESIN COMPONENTS AND PROCESS FOR THE OPERATION OF THIS APPARATUS

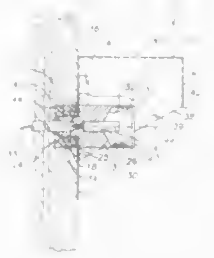
Jean Stutz, Tübach, Switzerland, assignor to Spritztechnik, AG., Tübach, Switzerland
Filed Oct. 21, 1987, Ser. No. 111,371
Claims priority, application Switzerland, Oct. 24, 1986, 4 236/86-8
Int. Cl.^{4} B01F *15/02, 15/04, 7/00*
U.S. Cl. 366—162 6 Claims



1. A mixing head for mixing and dosing at least two synthetic resin components together to produce a single product, said head comprising:
- a mixing head casing having an end port;
- a rotor drive shaft extending in the casing and having a drive end extending out of the end port;
- a hollow mixing chamber for receiving said components, the components being mixed together in the chamber to produce the product, the chamber having a discharge port through which the product is discharged, said chamber having a connection port adapted for detachable connection with the end port;
- first quick connecting-disconnecting means mounted partially at the end port of the casing and partially at the connection port of said chamber for detachably connecting the end port of the casing to and disconnecting the end port of the casing from the connection port of the chamber;
- rotor means including a mixing rotor disposed in the chamber and having an end facing said drive end of the shaft; and
- second quick connecting-disconnecting means mounted partially on the drive end of the shaft and partially on the end of the rotor facing said drive end of the shaft for detachably connecting the shaft to and disconnecting the shaft from the rotor,
- said rotor and said shaft having a common axis,
- said first means including a first outer circular convex coupling ring provided at one of the end and connection ports and a first inner circular concave groove provided at the other of the end and connection ports, said first ring and first groove being adapted for detachable mating engagement to connect said casing and said chamber to each other in an aligned position thereof,
- said second means including a second outer circular convex coupling ring at one of said end of the rotor and said drive end of the shaft and a second inner circular concave groove at the other of said end of the rotor and said drive end of the shaft, said second ring and second groove being adapted for detachable mating engagement to connect said shaft and said rotor to each other in an axially aligned position thereof whereby said mixing chamber and said mixing rotor can be replaced by a clean product-free chamber and a clean product-free rotor in the mixing head.

4,881,822
OUTDOOR TEMPERATURE SENSING ASSEMBLY

Ralph G. Ridenour, 626 Lexington-Ontario Rd., Mansfield, Ohio 44903
Filed Mar. 28, 1988, Ser. No. 175,991
Int. Cl.^{4} H05K *5/03*
U.S. Cl. 374—109 15 Claims



1. An outdoor temperature sensing assembly comprising in combination:
- a mount adapted to be mounted in an outdoor environment;
- a thermal mass of plastics material;
- means securing said thermal mass relative to said mount;
- a first recess extending into said thermal mass;
- a temperature sensor mounted in said first recess;
- a shield mounted on said mount and having wall means establishing an upper wall and side walls;
- said upper wall lying above said thermal mass and being a closed surface to shield the temperature sensor from sun, rain and wind; and
- said side walls being disposed laterally of said thermal mass, extending downwardly and encompassing a majority of said thermal mass, and with the lower end of said shield being open to the outdoor air environment.

4,881,823
RADIATION THERMOMETRY

Fumio Tanaka, Fukuoka, Japan, and David P. DeWitt, West Lafayette, Ind., assignors to Purdue Research Foundation, West Lafayette, Ind.
Filed Mar. 29, 1988, Ser. No. 175,051
Int. Cl.^{4} G01J *5/52*
U.S. Cl. 374—126 10 Claims

1. A method of determining true temperature of a heated target material by its radiation based on prior knowledge of a relationship between a first spectral emissivity and a second spectral emissivity for said target material, said relationship

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being defined by a curve or mathematical equation describing a plurality of said first and second spectral emissivities determined at different spectral conditions, comprising measuring two spectral radiances from the target material at spectral conditions corresponding to said first and second spectral emissivities, iterating the following steps of assuming a temperature of the target material, then calculating a pair of spectral emissivities by dividing said two spectral radiances by two spectral blackbody radiances at said assumed temperature, until said pair of calculated spectral emissivities satisfy said relationship whereat said assumed temperature is the true temperature of said target material.

4,881,824

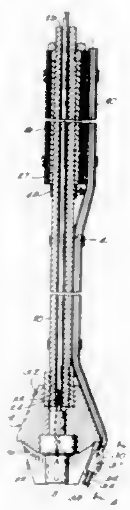
IMMERSIBLE PROBE

Richard A. Falk, Ft. Lauderdale, Fla., and James Colzani, Menomonee Falls, Wis., assignors to Midwest Instrument Co., Inc., Hartland, Wis.

Filed Dec. 23, 1988, Ser. No. 289,040

Int. Cl.⁴ G01K *7/02, 1/08*

U.S. Cl. 374—140 6 Claims



6. A molten metal probe for obtaining data from a molten metal bath comprising a first weight having a cavity, a sensor supported in said cavity and being exposed to the molten metal bath, a second weight in the form of an elongated tube which is connected to said first weight, said elongated tube having a portion above the upper surface of the molten metal to provide a downward counter force to offset the buoyant force and to provide an equilibrium of the probe with said sensor, said sensor being positioned at an appropriate depth in said molten metal to provide reliable readings.

4,881,825

CONTAINER AND A METHOD AS WELL AS AN ASSEMBLY FOR ITS MANUFACTURE

Ejvid H. B. Olesen, Mariager, Denmark, assignor to Unibag A/S, Roslev, Denmark

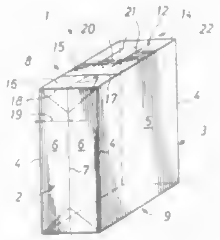
Filed Mar. 30, 1988, Ser. No. 175,260

Claims priority, application Denmark, Mar. 30, 1987, 1619/87

Int. Cl.⁴ F16C *32/06*

U.S. Cl. 383—906 19 Claims

1. A container, especially a bag, of flexible material, such as paper, plastic film, foil or similar materials comprising a tube-shaped blank of said material divided by means of gussets into two opposite side walls and two intermediate pairs of gusset walls, and having at least one bottom of the block bottom type including a folded end area of said side walls and said pairs of gusset walls, wherein said container (1) including a tightly sealed, outwardly folding discharge valve (11) in one of the said block bottoms (8, 9), said valve being resealable and provided with a gripping means (16), and its opening being provided by means of shortening at least a part of the folded end



areas of one pair of gusset walls (6) and adjacent side walls (5) to substantially the same length as the depth (19) of the gusset (2, 3).

4,881,826

UNDER-BASE GUIDING SYSTEM FOR A DRAWER

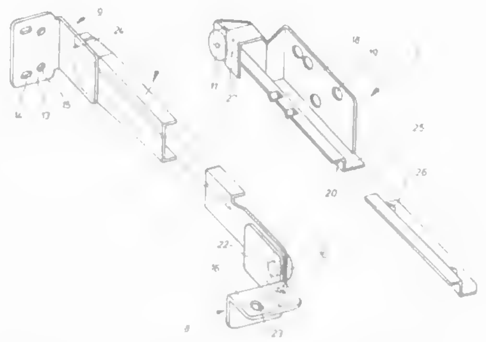
Alfred Grass, Höchst, Austria, assignor to Alfred Grass Ges.m.b.H. Metallwarenfabrik, Hochst/Blbg., Austria

Filed Jun. 14, 1988, Ser. No. 206,506

Claims priority, application Austria, Apr. 7, 1988, 906/88

Int. Cl.⁴ A47B *88/00*

U.S. Cl. 384—19 1 Claim



1. An under-base guiding system for a drawer of a piece of furniture, the piece of furniture having a body provided with side walls, a rear, a front, and rails having guide rollers, and the drawer being provided with a base, and rolls having guide rollers, wherein the body rails are situated beneath the drawer base, and are each fastened to the body adjacent by front connector means and to the body adjacent the rear by rear connector means, and the drawer rails engage the body rails under the drawer base via the guide rollers, the front connector means comprises plates to which the body rails are secured by spot welds, the front connector means also comprising angled plates which are fastened to a front batten of the body, the rear connector means comprising elongate plates to which the body rails are secured by spot welds, the rear connector means also comprising angled plates which are fastened to the rear of the body, the angled plates of the front and rear connector means are provided with slots for receiving means to adjustably anchor the front and rear connector means to the furniture body, each drawer rail has a generally vertical screw-on plate and a generally horizontal engagement surface for the lower extremity of the associated drawer sidewall, and the drawer rails have an overlapping lug proximate the vertical screw-on plate and rearward of the drawer base.

4,881,827

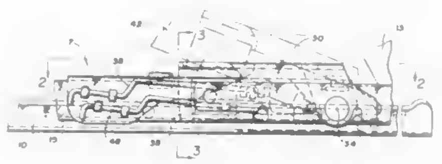
APPARATUS AND METHOD OF ANTI-RATCHETING VEHICLE SEAT ADJUSTER SLIDE

Hans J. Borlinghaus, Roseville; Michael G. Orlowsky, Sterlin Heights; Neil G. Goodbred, Royal Oak; Mladen Humer, East Detroit, all of Mich., and Steven J. Cooper, Breaston, England, assignors to General Motors Corporation, Detroit, Mich.

Filed Mar. 2, 1988, Ser. No. 162,736

Int. Cl.⁴ A47C *3/00*

U.S. Cl. 384—47 17 Claims



1. A manual vehicle seat adjuster slide, said adjuster slide in combination comprising:
a lower channel for connection with said vehicle, said lower channel having a series of longitudinally spaced notches;
an upper channel for connection with said seat slidably mounted on said lower channel;
a lift bar pivotally connected with said upper channel being sequentially manually operable from a first angular release position to a second angular positional range; and
a latch pivotally connected with said upper channel along a pivotal axis fixed with respect to said upper channel, said latch having a tab for selective engagement into one of said lower channel notches to fix the position of said upper channel with respect to said lower channel, and said latch being spring biased to engage said tab with said upper channel whereby said lift bar in said second angular positional range directly contacts said latch to disengage said latch from said lower channel notch to allow adjustment of said seat and whereby said lift bar can return to said first release angular position if said latch does not reengage with one of said notches upon manual release of said lift bar.

4,881,828

ROLLING CONTACT DEVICE

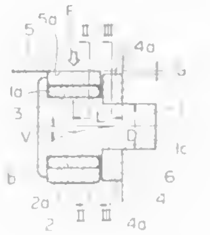
Heizaburo Kato, Shizuoka, Japan, assignor to Sankyo Manufacturing Company, Ltd., Tokyo, Japan

Filed Mar. 31, 1989, Ser. No. 331,127

Claims priority, application Japan, Mar. 31, 1988, 63-43329[U]

Int. Cl.⁴ F16C *21/00, 19/52, 41/04*

U.S. Cl. 384—127 5 Claims



1. A rolling contact device comprising:
a shaft having an outer track surface;
an outer ring surrounding said shaft and having an inner track surface;
rolling elements disposed between said shaft and said outer ring in a relationship spaced apart from each other circumferentially of said shaft, the outer peripheral surface of said outer ring being adapted to be in rolling contact with a track surface of an element of an apparatus; and
a projection provided on said shaft and having a load supporting portion opposing to said track surface of said element with a small gap defined therebetween;
said projection being arranged such that, when a radial load greater than a predetermined value acts on said outer ring, said track surface of said element may abut on said load supporting portion of said projection.

4,881,829

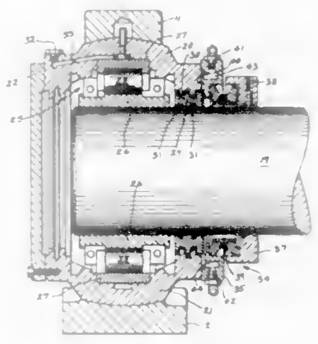
SUBMERSIBLE BEARING ASSEMBLY

Lester M. Koelsch, 175 Ridge Ct., Pewaukee, Wis. 53072

Continuation of Ser. No. 880,562, Jun. 30, 1986, abandoned. This application Jul. 15, 1987, Ser. No. 73,958

Int. Cl.⁴ F16C *33/72, 33/76, 33/80*

U.S. Cl. 384—448 11 Claims



1. A submersible shaft bearing assembly comprising:
a stationary housing defining a bearing chamber with an opening at one end;
a bearing mounted within the chamber in the housing;
a housing seal sealing the open end of the housing, the housing seal being adapted to be mounted on and to rotate with a shaft;
a seal chamber outside the housing and in communication with one side of the housing seal, said seal chamber including a cartridge seal ring attached to the housing at the open end and about the housing seal, a shaft seal ring spaced from the cartridge seal ring and adapted to be mounted on and to rotate and seal with the shaft, and a chamber seal disposed about and spaced from the shaft, said chamber seal sealing with both the stationary cartridge seal ring and the rotatable shaft seal ring;
a low viscosity lubricating fluid in the seal chamber; and
means for pumping the lubricating fluid into and out of said seal chamber and for visually inspecting the fluid for contamination as it is pumped.

4,881,830

SPLIT RING ROLLER BEARING CAGE

Richard W. Shepard, Torrington; Earle Corban, Winsted, both of Conn., and Peter Preston, Oshkosh, Wis., assignors to The Torrington Company, Torrington, Conn.

Filed Jan. 31, 1989, Ser. No. 304,137

Int. Cl.⁴ F16C *33/46*

U.S. Cl. 384—577 4 Claims

1. An annular split cage comprising: two semicircular parts, each semicircular part having a plurality of circumferentially separated crossbars interconnecting a pair of axially separated end rims to form a plurality of circumferentially separated pockets; each end rim having circumferential ends and a circumferential center portion located the same circumferential distance from each circumferential end, the cross-sectional areas of the end rims decreasing from the circumferential

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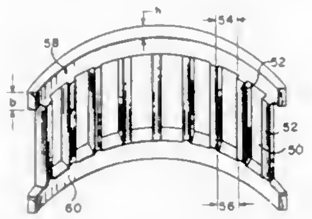
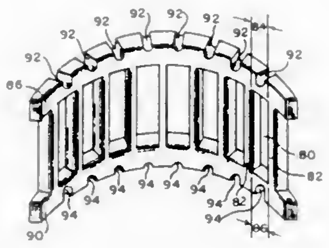
center portion of the end rims to each circumferential end of the end rims.

4. An annular split cage comprising: two semicircular parts, each semicircular part having a plurality of circumferentially separated crossbars interconnecting a pair of axially separated end rims to form a plurality of circumferentially separated pockets; each end rim having circumferential ends and a circumferential center portion located the same circumferential distance from each circumferential end, each end rim having a plurality of notches consisting of one notch adjacent each pocket, the depths of said notches increasing from the circumferential center portion of the end rims to each circumferential end of the end rims.





4,881,831

PRINTER

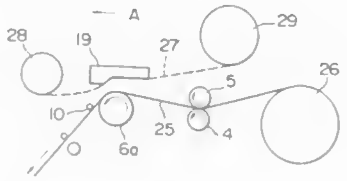
Masaaki Takita, Ibaraki; Yoshikazu Tsuru, Hirakata; Toshiharu Kitagawa, Katano, and Yoshikazu Nomura, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Feb. 11, 1988, Ser. No. 155,098

Claims priority, application Japan, Feb. 18, 1987, 62-35033; Feb. 18, 1987, 62-35036

Int. Cl.⁴ B41J *3/02*

U.S. Cl. 400—120 3 Claims



1. A printer for use with an ink film comprising:
a capstan roller;
a pinch roller provided in correspondence with said capstan roller;
a paper supply means arranged upstream of said capstan roller and said pinch roller;
a printing head for applying heat to an ink film to be interposed between said printing head and paper to be printed;
a platen roller provided with sliding friction,
said capstan roller and said pinch roller clamping therebetween a paper to be printed fed from said paper supply means and feeding it to said platen roller; and,
a paper feed roller disposed in correspondence with said platen roller,
wherein said pinch roller and said capstan roller are disposed upstream of said paper feed roller and said platen roller but downstream of said paper supply means so as to apply a back tension to the paper during printing, while the paper is fed by said pinch roller, said capstan roller, said platen roller and said paper feed roller so as to cause the paper to slip on said platen roller, relative to said platen roller during paper feeding.

4,881,832

PRINT WIRE DRIVING DEVICE FOR WIRE TYPE DOT PRINTER

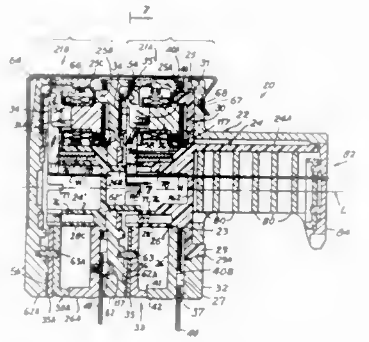
Akio Mitsuishi; Yasuhiko Nakazawa, and Takumi Sato, all of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Continuation of Ser. No. 823,167, Jan. 27, 1986, Pat. No. 4,767,227. This application Aug. 25, 1988, Ser. No. 236,391

Claims priority, application Japan, Jan. 25, 1985, 60-11854; Jan. 25, 1985, 60-11855; Jan. 25, 1985, 60-11856; Jan. 25, 1985, 60-11857; Jan. 25, 1985, 60-11858; Jan. 25, 1985, 60-8970; Jan. 25, 1985, 60-8971; Feb. 20, 1985, 60-31928; Feb. 20, 1985, 60-23356; Feb. 20, 1985, 60-23357

Int. Cl.⁴ B41J *3/12*

U.S. Cl. 400—124 12 Claims



1. A print wire driving apparatus for a wire dot printer comprising a plurality of printing wires each having a driving lever coupled to a first end thereof, magnetic actuation means for selectively actuating said driving levers to displace said printing wires, said magnetic actuation means including a through-hole extending essentially through the center thereof, said magnetic actuation means including a plurality of coil cores for selectively driving said respective driving levers, a first wire guide positioned in said through-hole of said magnetic actuation means, said wire guide having a plurality of narrow guide grooves formed around the periphery thereof for guiding the ends of said driving levers where said printing wires are coupled, said through-hole in said magnetic actuation means being circular, said wire guide being cylindrical and including a plurality of openings for guiding said printing wires along the longitudinal axis of said wire guide, said ends of said driving levers where said printing wires are coupled being essentially flat in the longitudinal direction of said printing wires to permit a plurality of such driving levers to be arranged around said wire guide and guided by said narrow guide grooves.

4,881,833

DRIVE MECHANISM FOR A SMALL-SIZED PRINTER

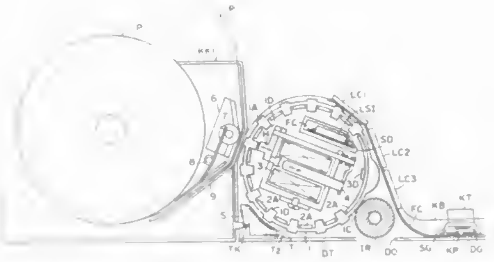
Mitsuaki Seki, Machida; Satoshi Watanabe, Chichibu, and Hideaki Miyakawa, Yokohama, all of Japan, assignors to Cannon Kabushiki Kaisha and Cannon Denshi Kabushiki Kaisha, both of Tokyo, Japan

Continuation of Ser. No. 85,327, Aug. 12, 1987, abandoned, which is a continuation of Ser. No. 831,593, Feb. 21, 1986, abandoned, which is a division of Ser. No. 779,316, Sep. 24, 1985, Pat. No. 4,589,787, which is a continuation of Ser. No. 732,799, May 10, 1985, abandoned, which is a continuation of Ser. No. 599,217, Apr. 13, 1984, abandoned, which is a continuation of Ser. No. 459,588, Jan. 20, 1983, abandoned, which is a continuation of Ser. No. 175,521, Aug. 5, 1980, abandoned. This application Apr. 21, 1988, Ser. No. 186,678

Claims priority, application Japan, Aug. 8, 1979, 54-101104; Aug. 9, 1979, 54-101660; Aug. 9, 1979, 54-101661; Nov. 16, 1979, 54-148660

Int. Cl.⁴ B41J *23/34*

U.S. Cl. 400—185 4 Claims



1. A printer comprising:
a type wheel unit including (1) a cylindrical supporting member having a plurality of holes therearound, (2) a type belt having a back surface thereof provided with a plurality of projections and a front surface having a plurality of types each corresponding to one of said projections, said type belt being disposed around said supporting member so that each said projection is engaged with one of said holes around said supporting member, and (3) power transmission means mounted on an end of said type wheel unit and surrounding said type wheel unit;
an ink roller for applying an ink to the types and disposed to avoid said power transmission means;
hammer means accommodated within said type wheel unit for striking said projections of said type belt to project the corresponding type away from said supporting member and toward a printing paper;
an outer-rotor type pulse motor mounted on a rotating axis of said type wheel unit at said type wheel end with a rotor of said motor fixed to said supporting member for rotation thereof;
a paper feed roller arranged to intermittently contact said power transmission means to provide a force for feeding a printing paper so that said outer-rotor type pulse motor can directly rotate said type wheel unit and said type wheel can rotate said paper feed roller;
wherein said power transmission means includes a resilient member having a projection formed on an outer circumferential portion thereof, and wherein said resilient member comprises a material having a frictional force sufficient to drive said paper feed roller.

4,881,834

PRINTING APPARATUS CAPABLE OF BACKLASH REGULATION

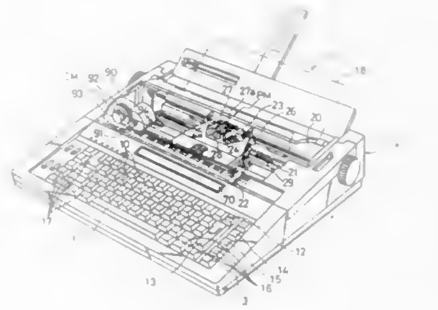
Yougi Sato, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Aichi, Japan

Filed May 16, 1988, Ser. No. 194,312

Claims priority, application Japan, May 14, 1987, 62-117582

Int. Cl.⁴ B41J *19/30, 25/30*

U.S. Cl. 400—279 4 Claims



1. A printing apparatus capable of backlash regulation having inputting means for inputting code data of characters and various command signals comprising:
printing means for printing characters on a print paper with a print head mounted on a carriage movable forward and backward along a print line by a carriage drive system;
store means for storing inputted data from said inputting means;
control means for controlling said printing means;
mode setting means for setting said control means at a specified mode in which, according to a command signal from said inputting means, each inputted data is stored in said store means successively while backspacing said carriage from a given reference position determined by the mode setting means to a predetermined print position determined by said inputted data stored in said store means without regulating a positional deviation in the carriage driving system, and then said inputted data in said store means are printed together in response to a print start command signal; and
regulating means for controlling said printing means to regulate said positional deviation in said carriage driving system in response to said print start command signal in said specified mode.

4,881,835

PRINTER HAVING ADJUSTABLE GAP BETWEEN PRINT HEAD AND RECORDING MEDIUM

Takeshi Niikawa, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Apr. 20, 1988, Ser. No. 184,056

Claims priority, application Japan, Apr. 23, 1987, 62-100990

Int. Cl.⁴ B41J *11/20*

U.S. Cl. 400—56 8 Claims

1. A printer for printing on a recording medium, comprising:
a platen for supporting the recording medium;
a print head disposed opposite to said platen, for effecting a printing operation on said recording medium supported by said platen;
a carriage movable in a direction parallel to said platen and supporting said print head;
gap changeover means for moving said print head and said platen relative to each other in a direction toward and away from each other, and thereby adjusting a head gap between said recording medium supported by said platen and said print head;
discriminating means for generating an output signal indicating that said recording medium includes a local portion

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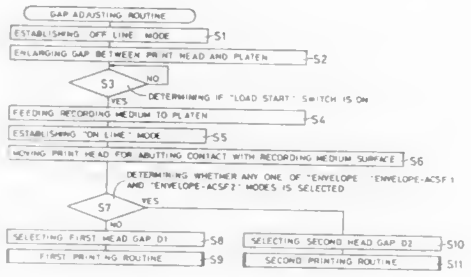
whose thickness is larger than that of a remaining portion thereof;

gap control means for controlling said gap changeover means such that said head gap is normally equal to a first head gap, said gap control means being responsive to said output signal of said discriminating means, for controlling said changeover means such that said head gap is changed to a second head gap which is greater than said first head gap; and


GAP ADJUSTING ROUTINE
ESTABLISHING "OFF LINE" MODE
S1
ENLARGING GAP BETWEEN PRINT HEAD AND PLATEN
S2
S3
NO
DETERMINING IF "LOAD START" SWITCH IS ON
YES
FEEDING RECORDING MEDIUM TO PLATEN
S4
ESTABLISHING "ON LINE" MODE
S5
MOVING PRINT HEAD FOR ABUTTING CONTACT WITH RECORDING MEDIUM SURFACE
S6
DETERMINING WHETHER ANY ONE OF "ENVELOPE", "ENVELOPE-ACSF1" AND "ENVELOPE-ACSF2" MODES IS SELECTED
S7
YES
NO
SELECTING FIRST HEAD GAP D1
S8
FIRST PRINTING ROUTINE
S9
SELECTING SECOND HEAD GAP D2
S10
SECOND PRINTING ROUTINE
S11

printing speed control means for normally selecting a first printing speed at which said print head effects said printing operation, said printing speed control means being responsive to said output signal of said discriminating means, for selecting a second printing speed which is lower than said first printing speed wherein said printing speed control means comprises means for moving said carriage at a rate lower than that used for said first printing speed, and means for activating said print head at a frequency lower than that for said first printing speed to established said second printing speed.

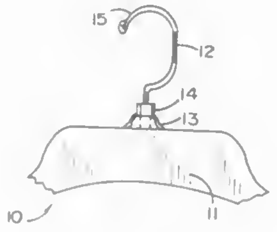
4,881,836
INFORMATION DISPLAY MEANS FOR GARMENT HANGER HOOKS

Russell O. Blanchard, Zeeland, Mich., assignor to Batts, Inc., Zeeland, Mich.

Flied Apr. 7, 1988, Ser. No. 179,023

Int. Cl.⁴ G09F *3/00*

U.S. Cl. 40—322 **17 Claims**



1. An information display means adapted to be mounted on and surround the base of a support hook of a garment hanger which base portion of said support hook has non-circular cross-sectional shape, said display means being a tubular body having a pair of ends, said tubular body being of rectangular cross section and providing a display panel adapted to face lengthwise of the hanger, said body having a web extending across the opening through said body, said web having an aperture, said aperture having an elongated primary portion having a pair of ends and a pair of slot-like end portions communicating with said ends of said primary portion and extending transversely of said primary portion, said primary portion midway between its ends having an enlarged somewhat circular central portion separated from each of said end portions by a narrow throat substantially closing said primary portion, said body and said web being molded of a plastic capable of resilient deflection whereby said web clamps against the base of the hook of the garment hanger and positively holds the display means against rotation about the hook.

4,881,837
AUTOMATIC SHEET FEEDER

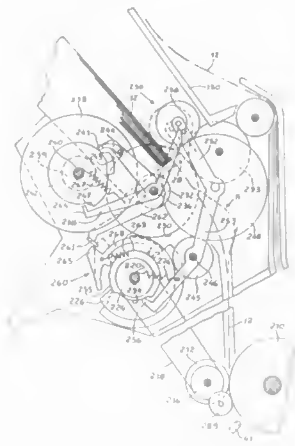
Remo Falconieri, S. Giorgio, and Sergio Uggetti, Ivrea, both of Italy, assignora to Ing. C. Olivetti & C., S.p.A., Ivrea, Italy

Filed Jun. 9, 1987, Ser. No. 60,066

Claims priority, application Italy, Jun. 16, 1986, 67491 A/86

Int. Cl.⁴ B41J *13/036*

U.S. Cl. 400—625 **4 Claims**



1. An automatic sheet feeding unit for a typewriter or like printing office machine having motor means for selectively rotating a platen roller in both a forward direction and a reverse direction with respect to the advancing movement of a sheet toward a printing position, said sheet feeding unit comprising a paper sheet magazine to hold said sheets to be fed to said platen, a separating roller rotatably connected with said platen through a mechanical motion transmission and mounted on a support member selectively rotatable from a rest position to an operating position to bring said separating roller into engagement with a first sheet to be fed to said platen roller, a first cam element cooperating with said support member for rotating the same in said operating position, an operable clutch device interposed between said platen roller and said first cam element for selectively connecting said first cam element with said motion transmission during a forward rotation of the platen roller subsequent to a first reverse platen rotation, a second cam element rotated by said motion transmission for actuating said clutch device when said platen roller rotates in said reverse direction, said second cam element being rotated in such a manner that one complete revolution of said second cam element corresponds to the maximum of the length of a sheet advanced by said platen roller during printing, said second cam element having a lobe and a stopping shoulder, said stopping shoulder stopping said second cam element in an angular reference position corresponding to the starting of said first reverse platen rotation,

a clutch control member cooperating with said lobe and responsive to said first reverse platen rotation to actuate said clutch device, whereby during said subsequent forward platen rotation a sheet is advanced from said magazine towards said platen roller and for disabling said clutch device when said sheet is engaged by said platen roller at the completion of one revolution of said first cam element, and a rotatable lever having a first end cooperating with said support member and a second end, said lever being rotated by said support member in said operating position from a rest position in which said second end engages said shoulder for stopping said second cam element in said reference position, to an active position in which said shoulder overcomes said second end during said forward platen rotation, whereby said first cam element remains stopped, preventing said separating roller from being further engaged with a second sheet in the magazine during both forward and reverse platen rotations occurring after a fed sheet has been engaged by said platen roller.

4,881,838
PRINTING PLATEN

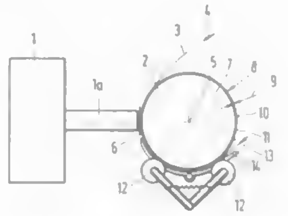
Gerhard Lohrmann, Thalfingen; Gnenter Engelhardt, Niederstotzingen, and Thomas Werner, Ulm, all of Fed. Rep. of Germany, assignors to Mannesmann AG, Duesseldorf, Fed. Rep. of Germany

Filed Aug. 12, 1985, Ser. No. 765,251

Claims priority, application Fed. Rep. of Germany, Aug. 16, 1984, 3430092

Int. Cl.⁴ B41J *11/057*

U.S. Cl. 400—662 **6 Claims**



1. Platen in matrix dot printers, the platen being provided for printing and for the transport of the print medium, comprising:

a basic body of cylindrical configuration and a coating thereon having been applied by plasma or flame spraying, being considerably harder than rubber and having a thickness of not less than 1/100 mm but not more than 5 mm and providing a frictional surface for abutment with the print medium.

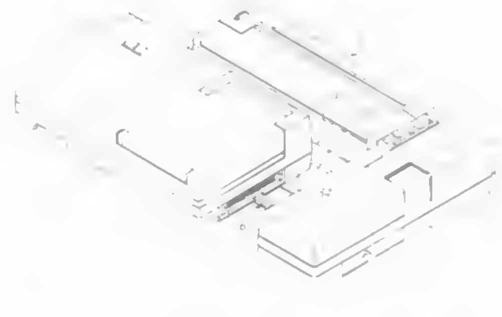
4,881,839
PORTABLE ELECTRONIC DATA HANDLING/DATA ENTRY SYSTEM

Thomas R. Grimm, Troy, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jun. 14, 1988, Ser. No. 206,640

Int. Cl.⁴ B41J *29/02*

U.S. Cl. 400—692 **15 Claims**



1. A portable data handling/data entry system comprising:

(a) an electronic data handling module;
(b) an electro-mechanical , data entry module; and
(c) means to releasably couple said modules together, said means including:
(d) a latch bar extending from one of said modules and latching means secured to the other of said modules for releasably latching said latch bar, said latching means including:
(e) a latch for mating with said latch bar;
(f) ejector bar means movable to simultaneously disengage said latch from said latch bar and urge said one of said modules away from said other of said modules; and
(g) means to move said ejector bar means to simultaneously disengage said latch from said latch bar and urge said one of said modules, said ejector bar means includes an ejector bar and a contact plate secured to said ejector bar, said contact plate urging said one of said modules away from said other of said modules away from said other of said modules.

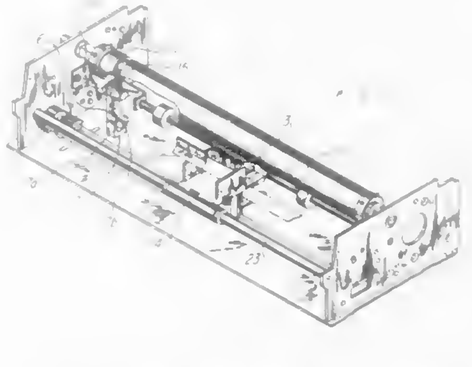
4,881,840
PRINTER HAVING PAPER-OUT AND COLUMN ZERO DETECTION MECHANISM

Mark A. Rendon, Belton; Erik A. Treszoks, and Thomas R. Grimm, both of Temple, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Sep. 30, 1988, Ser. No. 251,435

Int. Cl.⁴ B41J *29/42, 29/38*

U.S. Cl. 400—705.1 **19 Claims**



3. A printer for printing characters on paper having a carriage supporting a printhead that traverses the paper, and having a detection mechanism for detecting both the absence of paper and for detecting the end position of the carriage, comprising:

(a) a lever arm rotatable about a pivot and normally disposed in a first predetermined position to detect a first predetermined condition,
(b) means on said lever arm responsive to a second predetermined condition to provide rotation of said lever arm in a first direction from said first predetermined position to a second predetermined position, and
(c) means responsive to a third predetermined condition to provide rotation of said lever arm responsive to a third predetermined condition in a direction opposite to said first direction from said first predetermined position to a third predetermined position.

4,881,841
HAND STAMPING DEVICE OR WRITING IMPLEMENT

Larry F. Irwin, 12860 San Fernando Rd., Sylmar, Calif. 91342

Flied Sep. 12, 1988, Ser. No. 242,553

Int. Cl.⁴ B43K *29/00*

U.S. Cl. 401—195 **13 Claims**

1. A combination writing instrument and stamp, comprising:

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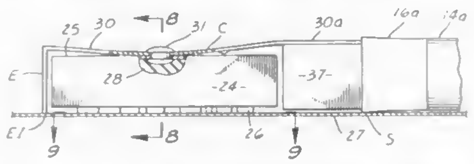
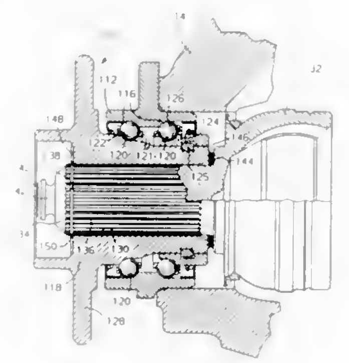
(a) a housing having a longitudinal axis disposed in a first plane;
(b) a writing element carried by said housing; and
(c) a stamp means carried by said housing for making an ink imprint on a surface, said stamp means comprising:
  (1) a supporting structure;
  (2) imprinting indicia carried by said supporting structure and disposed in a second plane substantially parallel to said first plane, said imprinting indicia being movable from a first at rest position to a second imprinting position wherein said imprinting indicia are disposed in a third plane substantially parallel to said first and second planes; and
  (3) biasing means for yieldably resisting movement of said imprinting indicia between said first and second positions.



4,881,842

WHEEL BEARING ASSEMBLY

Robert C. Farrell, Frankenmuth, and George A. Lundy, Saginaw, both of Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed Oct. 17, 1988, Ser. No. 259,020
Int. Cl.⁴ F16D *1/00*
U.S. Cl. 403—19 6 Claims

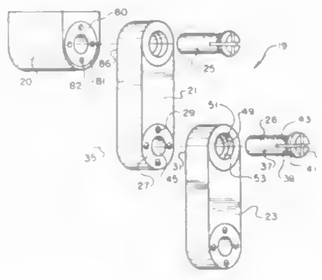


1. A wheel bearing assembly for a driven wheel of an automobile of the like comprising:
an outer bearing member which is adapted to be secured to support structure of an automobile or the like and which has outer raceway means,
an inner bearing member which is adapted for mounting a vehicle wheel and which has inner raceway means,
bearing balls which ride on the raceway means to rotatably support the inner bearing member in a fixed longitudinal relationship in the outer bearing member,
a drive member of a drive axle or the like, and
means for drivingly connecting the drive member to the inner bearing member in a lash free manner comprising
a splined bore of the inner bearing member, and
a stub shaft of the drive member which has an intermediate splined portion and a free end portion which has a pull groove for pulling the stub shaft through the splined bore of the inner bearing member.

4,881,843

JOINT STRUCTURE

Randy J. Randleman, Cleveland, Ohio, assignor to Those Characters From Cleveland, Inc., Independence, Ohio
Filed Mar. 25, 1988, Ser. No. 173,141
Int. Cl.⁴ F16D *3/00*
U.S. Cl. 403—92 20 Claims

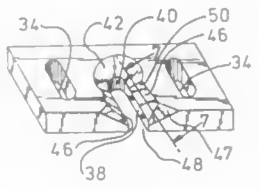


1. A joint structure comprising first and second joint members each having parallel juxtaposed surfaces and a common pivot axis extending perpendicular to said juxtaposed surfaces, one of said juxtaposed surfaces having detent means and the other of said juxtaposed surfaces having recess means, said detent and recess means having discrete angular positions in which they are engaged with each other and retain said joint members in discrete angular positions relative to said pivot axis, said second joint member having a recess, a pivot pin having a base portion connected with said first joint member and having an integral resilient portion extending into said recess of said second joint member, said pivot pin having a central axis defining the pivot axis for said joint members, the integral resilient portion of said pivot pin having two or more integral resilient fingers and a cam surface each of which circumscribe the pivot axis, the recess in said second joint member having a cam surface circumscribing the pivot axis, the cam surface of said resilient fingers and the cam surface of the recess cooperating to cause the resilient fingers resiliently to bend toward the pivot axis when said first and second joint members are urged apart, the profiles of the detent means and the recess means being designed to urge the detent and recess means out of engagement with each other and to also urge the joint members apart when a predetermined torque is applied to the joint members, and the resilient fingers exerting resilient biasing forces on the cam surface of the second joint member to urge the detent means and the recess means into engagement with each other when the applied torque is less than said predetermined amount.

4,881,844

CLIP DEVICE TO ATTACH A BACKSPLASH TO A COUNTERTOP

Robert L. Tremblay, 2890 Parkwood, Ann Arbor, Mich. 48104
Filed Jul. 30, 1987, Ser. No. 79,345
Int. Cl.⁴ F16B *5/06*
U.S. Cl. 403—407.1 11 Claims



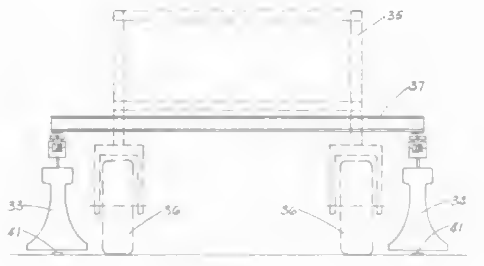
1. A backsplash clip comprising a generally oblong body having a top and bottom, ends and long sides extending therebetween, a pair of holes extending through the body from top

to bottom, said holes spaced apart and adjacent the ends of the body, a straight slot extending from top to bottom and having opposed slot sides and a slot entrance thereto through one long side of the body between said holes, said slot perpendicular to said long side and said slot terminating in a half-round hole through the body, at least a portion of said opposed slot sides parallel to each other, a half round countersink bevel extending about the half-round hole and extending upwardly from the bottom of the body, a pair of side bevels extending upwardly from the bottom of the body on the sides of the slot, said side bevels extending in an outward direction relative to the slot, said side bevels generally narrowing from the slot entrance to junctures with the half-round countersink bevel, and said junctures comprising a pair of shoulders formed by an abrupt change in slope from each side bevel to the half-round countersink bevel at each juncture.

4,881,845

MOVEABLE ROADWAY BARRIER SYSTEM

Alan R. McKay, 1126 Hilltop Dr., Lafayette, Calif. 94549
Continuation of Ser. No. 815,456, Jan. 2, 1986, abandoned. This application Jul. 18, 1988, Ser. No. 220,926
Int. Cl.⁴ E01F *13/00*
U.S. Cl. 404—6 13 Claims



1. A traffic barrier system which provides a safe separation between opposing lanes of vehicular traffic and is capable of being moved across lanes to change the direction of traffic lane flow comprising:
a plurality of barrier sections, having top, bottom and side surfaces, pivotably connected together adjacent the ends thereof, a vehicle capable of laterally transferring said barrier sections having thereon transfer beam means constructed to provide movement of said barrier sections from one side of said vehicle to the other side as the vehicle travels in one direction;
a pair of longitudinally spaced apart elements attached to said top surface of each barrier section only adjacent the barrier ends;
said transfer beam means and said longitudinally spaced apart elements including roller means rotatably fixed thereto for moving said barrier sections relative to said transfer beam means, the other of said transfer beam means and said longitudinally spaced apart elements including rail means engageable with said roller means;
whereby when said vehicle travels in said one direction, the transfer beam means engage the roller means consecutively for lateral displacement of the barrier sections.

4,881,846

BUILT-UP PLAYING COURT STRUCTURE AND METHOD FOR ITS CONSTRUCTION

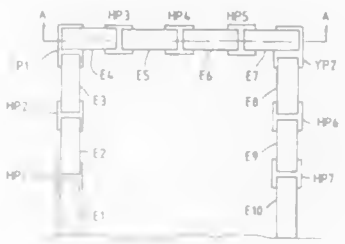
Herman F. Burkstaller, Box 67, Nogal, N. Mex. 88341, assignor to Herman F. Burkstaller, Nogal, N. Mex.
Filed Mar. 28, 1988, Ser. No. 174,118
Int. Cl.⁴ A01G *25/00;* E02B *11/00*
U.S. Cl. 405—37 27 Claims

1. A built-up, moisture content controlling playing court structure comprising:
a built-up court surface layer comprising fine aggregate material;
a barrier surface substantially impervious to moisture spaced beneath said built-up court surface layer;
a containment wall positioned essentially peripherally about said built-up court surface layer and said barrier surface and extending upwardly from said barrier surface to about the level of said built-up court surface layer disposed thereabove;
a subsurface bed of aggregate disposed atop said barrier surface and beneath said built-up court surface layer, said subsurface bed of aggregate being peripherally surrounded by said containment wall;
a stabilizing layer of adhesive material applied atop said subsurface bed of aggregate, said stabilizing layer providing supportive stability to said subsurface bed of aggregate, said layer of adhesive material comprising voids therein to provide adequate liquid conductivity between said subsurface bed of aggregate and said built-up court surface layer thereabove to substantially maintain the selected moisture content in said built-up court surface layer, said built-up court surface layer of fine aggregate material disposed atop and in said voids of said adhesive coated stabilizing layer; and
means for controllably introducing liquid to and draining liquid from said subsurface bed of aggregate and said built-up court surface layer to substantially maintain a selected moisture content in said built-up court surface layer.

4,881,847

ARTIFICIAL WATER LAGOONS

Claes M. C. Sandels, Sandhamnsgatan 21, S-115 40 Stockholm, Sweden
Filed Dec. 1, 1986, Ser. No. 937,023
Claims priority, application Sweden, Dec. 9, 1985, 8505812-1
Int. Cl.⁴ E02B *3/00, 5/04*
U.S. Cl. 405—52 11 Claims



1. An arrangement to increase or decrease the temperature in sea water within a limited water area, said arrangement being constituted by a basin-like construction built in the sea, the water temperature of which should be increased or decreased, said construction comprising a bottom part rigidly anchored in the bottom of the sea, column-like parts rigidly

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attached to and supported by said bottom part, said column-like parts to hold partitioning means in place in between, said column-like parts projecting in a vertical direction towards the water surface from said bottom part to form rigid corners of the basin-like construction, said partitioning means structure to hold wall elements which geographically separate the water inside and outside said basin-like construction, said wall elements being water-pervious to provide an exchange of the water inside and outside said basin-like construction.

4,881,848

METHOD OF FORMING AN IMMERSED DAM FOUNDATION AND A DAM STRUCTURE THEREON

Everald V. Wright, Pittsburgh, and Thomas L. Manley, Jr., Coraopolis, both of Pa., assignors to Davy McKee Corporation, Pittsburgh, Pa.

Filed Jul. 26, 1988, Ser. No. 224,140

Int. Cl.⁴ E02B *7/02*

U.S. Cl. 405—116 23 Claims

1. A method of constructing an immersed dam foundation, in a body of moving water having a floor, and of forming a dam structure thereon, without the requirement for large cofferdams that block large portions of the body of water for long time periods, comprising:

forming a plurality of laterally spaced support piers, having upstream and downstream ends, below the surface of the body of moving water, the piers having spaced stable anchor points thereon, and sheet piling about the perimeter thereof;

constructing a first temporary support post on the upstream end of each pier and a second temporary support post on the downstream end of each pier;

installing a temporary upstream current deflector between adjacent piers, whereby the current, and any carried sediments or debris in the body of moving water, are deflected around the area between said adjacent piers, said current deflector supported by adjacent said first temporary support posts;

driving sheet pile into the floor to form an upstream wall between said adjacent piers proximate said first temporary support posts;

driving sheet pile into the floor to form a downstream wall between said adjacent piers proximate said second temporary support posts;

the area surrounded by said adjacent spaced piers and said upstream and downstream walls forming a base in said floor;

at least partially covering the base with a tremie seal, such that said tremie seal and adjacent piers serve as an immersed dam foundation;

cutting off at least one of said upstream and downstream walls substantially flush with said adjacent piers;

floating a prefabricated dam structure to a location above said tremie seal and lowering said prefabricated dam structure such that the same rests on the stable anchor points of said adjacent piers; and

securing said prefabricated dam structure to said adjacent piers and tremie seal with structural tremie concrete to form said dam.

4,881,849

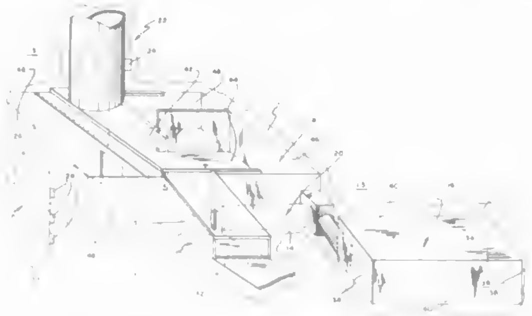
METHOD FOR STORING TOXIC WASTE MATERIAL

Harold C. Hoffine, Box 213, Waverly, Kans. 66871; John Forsythe, 802 W. 15th, and Leon Morgan, R.R. 5, Box 144, both of of, Emporia, Kans. 66801

Filed Oct. 27, 1988, Ser. No. 263,395

Int. Cl.⁴ G21F *9/24;* **R02D** *29/00*

U.S. Cl. 405—128 8 Claims



1. A method for the confinement and isolation of toxic waste material comprising the steps of:

(a) forming a first subterranean excavation;

(b) forming a second subterranean excavation;

(c) forming a subterranean tunnel between said first subterranean excavation and said second subterranean excavation;

(d) forming a first subterranean housing means within said first subterranean excavation, said first subterranean housing means having a silo means extending to a surface of the earth and said silo means has a silo door means that can slidably close and open to expose the silo means to the atmosphere;

(e) forming a second subterranean housing means in said second subterranean excavation;

(f) extending a tunnel housing means through said subterranean tunnel from said first subterranean housing means to said second subterranean housing means;

(g) opening the silo door means to expose the silo means and the first subterranean housing means to the atmosphere;

(h) passing toxic waste material through said silo means, through said first subterranean housing means, and through said tunnel housing and into said second subterranean housing; and

(i) closing said silo door means in order to enclose, confine, and isolate said toxic waste material.

4,881,850

SUBSEA GUIDEBASE

William A. Abreo, Jr., 6727 Grovewood La., Houston, Tex. 77008

Filed Sep. 1, 1988, Ser. No. 239,405

Int. Cl.⁴ E21B *33/038*

U.S. Cl. 405—169 6 Claims

1. A subsea landing base comprising:

a central annular housing support structure,

a plurality of guide posts, and

a frame connecting said guide posts to said housing support structure,

said support structure having:

a split seat ring,

means for actuating said split seat ring into a housing supporting position,

means for retaining said split seat ring in its housing supporting position, and

means for releasing said retaining means to allow retraction of said split seat ring,

wherein said retaining and releasing means includes:

an upper annular plate supported by said frame,

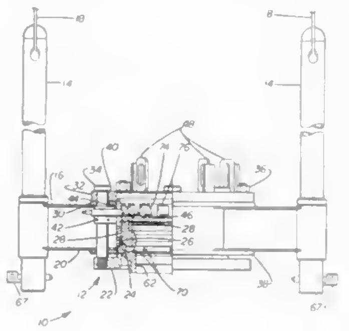
an annular control plate positioned above said upper plate,

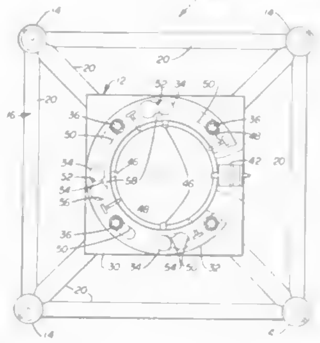
an annular lower plate spaced below said upper annular plate,

a plurality of carrier pins secured to said lower plate and extending upwardly through said upper plate and said control plate and having heads engaging the upper surface of said control plate when said split seat ring is in its housing supporting position,

means connecting said upper plate to said control plate to limit vertical movement of said upper plate and said control plate with respect to each other, and

a plurality of openings in said control plate through which said carrier pins extend allowing said control plate to be rotated relative to said upper plate and to be raised without raising said carrier pins, which raising withdraws the actuating means from its position retaining the split seat ring in its housing supporting position.





4,881,851

CONNECTING ELEMENT FOR OFFSHORE DRILLING RIG

Franz Gantke, Dortmund, Fed. Rep. of Germany, assignor to Georg Fischer AG, Schaffhausen, Switzerland

Filed Aug. 5, 1988, Ser. No. 229,017

Claims priority, application Fed. Rep. of Germany, Aug. 7, 1987, 3726247

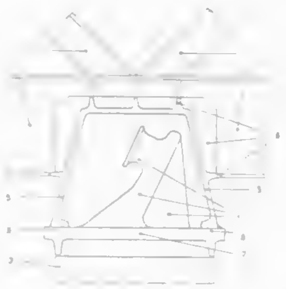
Int. Cl.⁴ E02B *17/08*

U.S. Cl. 405—204 13 Claims

1. A connecting element disposed between a pipe scaffolding and a drilling platform of an offshore drilling rig, comprising first and second interconnected parts,

said first part comprising a closing head for attachment to an upper portion of said pipe scaffolding, said closing head having a supporting surface, and lifting bitt extending upwardly from said closing head,

said second part comprising a hollow cover for attachment to a lower portion of said drilling platform, said cover including a hollow chamber for enveloping said lifting bitt, said cover being supported by said supporting surface and being interconnected to said closing head.



4,881,852

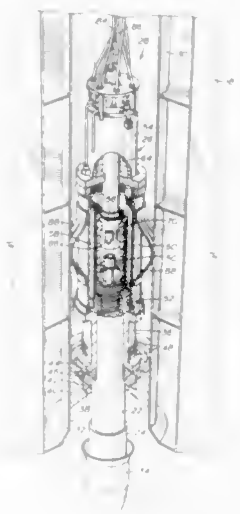
METHOD AND APPARATUS FOR TENSIONING THE TETHERS OF A TENSION LEG PLATFORM

Richard H. Gunderson, Houston, Tex., assignor to Exxon Production Research Company, Houston, Tex.

Filed Jan. 22, 1988, Ser. No. 146,989

Int. Cl.⁴ E02B *17/00;* **B63B** *35/44, 21/50*

U.S. Cl. 405—224 36 Claims



1. A tension leg platform, comprising:

a foundation element secured to an ocean bottom location;

a plurality of elongate, substantially vertical tethers, each of said tethers having a lower end secured to said foundation element and an upper end reaching a preselected distance below the ocean surface;

a buoyant hull positioned at the ocean surface above said tethers, said hull having a plurality of vertically extending columns, the upper end of each tether being secured to the lower portion of a corresponding column; and

a tether tensioning and securing system having:

at least one tether tensioning tool and means for lowering said tensioning tool to a position proximate the lower portion of at least one column and for releaseably securing said tensioning tool to any tether within the group of said tethers corresponding to said column, whereby a plurality of said tethers can be individually tensioned by a single tensioning tool without the need for any form of tether connector extending to the top of the column.

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30. A method for installing a tension leg platform at an offshore location, said method comprising the steps of:

a. establishing a foundation for said tension leg platform on the ocean floor at said offshore location;
b. securing a plurality of tethers in substantially vertical orientation to said foundation, said tethers each having a lower end secured to said foundation and an upper end situated a spaced distance below the ocean surface;
c. positioning a tension leg platform hull above said foundation, said hull having a draft which is less than the distance from the ocean surface to the upper ends of said tethers, whereby clearance exists between the upper ends of said tethers and the bottom of said hull;
d. securing a moveable tether tensioning tool to the upper end of a first rigid tether extender supported by said hull;
e. lowering said rigid tether extender from said hull to the upper end of a corresponding one of said tethers;
f. securing said rigid tether extender to the upper end of said corresponding tethers;
g. biasing said tether extender upward with said tensioning tool until the corresponding tether reaches a preselected tension level;
h. locking said tether extender against downward motion relative to said hull; and
i. moving said moveable tether tensioning tool to a secured tether extender and repeating steps e–h for a corresponding second tether.

4,881,853
SUPPORT SECTION FOR MINES AND TUNNELS

Günter Benning, Bruchweg 20, D 4350 Recklinghausen, Fed. Rep. of Germany

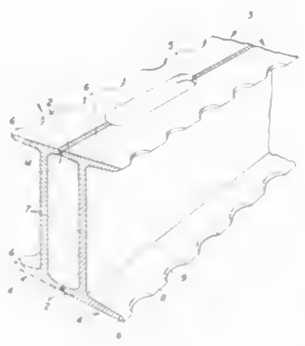
PCT No. PCT/EP87/00448, § 371 Date Jun. 27, 1988, § 102(e) Date Jun. 27, 1988, PCT Pub. No. WO88/01680, PCT Pub. Date Mar. 10, 1988

PCT Filed Aug. 14, 1987, Ser. No. 196,214

Claims priority, application Fed. Rep. of Germany, Aug. 28, 1986, 3629214

Int. Cl.⁴ E21D *17/00*

U.S. Cl. 405—288 12 Claims



1. A support section for a mine and tunnel support, comprising: two I-section portions, each I-section portion having abutting upper and lower inner I-flanges, each inner I-flange having an outer edge joined to a cooperating inner I-flange to form a box section, said box section having installation slots in both said upper inner I-flange and in said lower inner I-flange, said installation slots being arranged at spaced locations along a central longitudinal axis of said upper and lower inner I-flanges and the slots of said upper and lower inner I-flanges being arranged such that slots of adjacent upper inner I-flanges and slots of adjacent lower inner I-flanges coincide forming installation recesses.

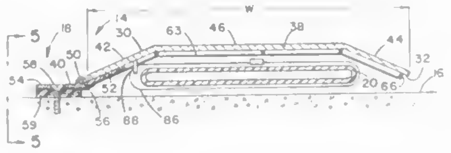
4,881,854
PRESSURE ACTIVATED FLUID RETAINING SYSTEM AND METHOD

Gerald J. Bowe, Eau Claire, Wis., assignor to JBI Corporation, Osseo, Wis.

Filed Aug. 17, 1988, Ser. No. 233,234

Int. Cl.⁴ E02B *7/00*

U.S. Cl. 405—303 26 Claims



1. A system for retaining liquids within an enclosure comprising:

(a) threshold means for retaining liquids within an enclosure, the threshold means being located on a base surface of the enclosure and comprising a rigid upper surface, a rigid lower surface, and two end sections, the threshold means being movable between a first horizontal position and a second vertical position;
(b) a flexible inflatable member in the form of hose means positioned beneath the threshold means; and
(c) means for pressurizing the hose means so that the pressurization and expansion of the hose means imparts movement to the threshold means and positions the threshold means to retain liquids within the enclosure.

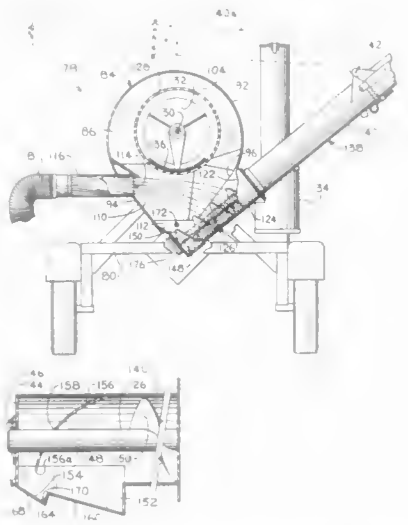
4,881,855
VACUUM PARTICULATE TRANSFER APPARATUS

Frank Rempel; Clarence M. Zacharias, and Linden G. Maxwell, all of Swift Current, Canada, assignors to Rem Manufacturing Ltd., Swift Current, Canada

Filed Aug. 9, 1988, Ser. No. 230,333

Int. Cl.⁴ B65G *53/48*

U.S. Cl. 406—53 17 Claims



1. A high-efficiency, pneumatic bulk loader for granular materials comprising:

a mobile chassis adapted to be positioned adjacent materials to be loaded;
a hollow body mounted on said chassis and defining an internal, air-materials separating chamber,
said body including a pair of oppositely disposed, generally upwardly projecting sidewalls presenting opposed extremities of said chamber;
an inlet in one of said sidewalls;
a pickup conduit coupled with said inlet through which materials may be directed into the chamber;
suction mechanism carried by the chassis and communicating with said chamber for drawing an air stream through the conduit to entrain the materials and propel them into the chamber through the inlet;
an outlet in the other sidewall of the body opposite said inlet;
means within said separating chamber for allowing the air stream to escape from the chamber while the momemtum of the materials carries the same across the width of the chamer and charges them into said outlet;
a discharge conveyor operably coupled with said outlet for transferring materials charged into the outlet to a remote location; and
means for sealing said discharge conveyor against the substantial entry of ambient air during operation of the discharge conveyor and said suction mechanism whereby to prevent significant diminution of the strength of the air stream created by said mechanism.

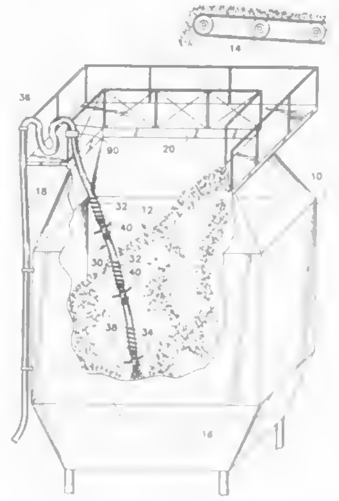
4,881,856
CHIP SNAKE

Randall K. Greig, 936 Cascade Dr., Longview, Wash. 98632

Filed Oct. 5, 1987, Ser. No. 104,426

Int. Cl.⁴ B65G *53/40*

U.S. Cl. 406—134 20 Claims



1. A device for dislodging impacted material comprising:

a flexible hose having a first end and a second end, the first end being adapted for coupling to a source of compressed air such that compressed air may be introduced into said hose at the first end and delivered at the second end thereof, wherein the hose comprises a plurality of hose segments disposed in end-to-end relationship and a plurality of interconnect pipes coupling ones of said plurality of hose segments, said interconnected pipes being joined to adjacent ends of said hose segments, and
air nozzle means attached to the second end of said hose for expelling compressed air therefrom causing said device to undulate under the influence of the expulsion of compressed air,
said undulation of said device being effective to cause said device to strike and dislodge said impacted material.

4,881,857
MACHINE FOR CHAMFERING THE CORNER OF AN OBJECT TO BE PROCESSED

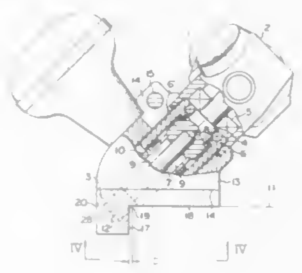
Yutaka Tanaka, and Kenji Fukuda, both of Tokyo, Japan, assignors to Nitto Kohki Co., Ltd., Tokyo, Japan

Filed Dec. 29, 1988, Ser. No. 291,598

Claims priority, application Japan, Jan. 14, 1988, 63-3639[U]

Int. Cl.⁴ B23C *3/12;* B27C *5/10*

U.S. Cl. 409—138 8 Claims



1. A machine for chamfering the corner of an object comprising:

a body having a bottom surface portion;
a rotating cutter arranged in the body, said rotating cutter being projected from and slanted relative to the bottom surface portion;
a slide guide rotatably supported on said bottom surface portion and having guide planes which are perpendicular to each other and slidable along the corner of the object, a space being formed between said guide planes, into which space at least a portion of cutting blades of the rotating cutter projects;
a slot formed in said body;
a stopper screw which is screwed through said slot into said slide guide; and
wherein adjustment means for moving a portion of the stopper screw are provided within said slot to thereby adjust the cutting blades projecting into the space.

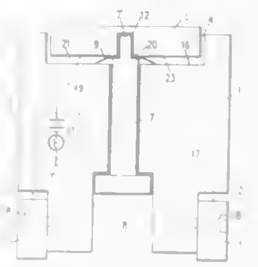
4,881,858
TOOL OFFSET INDICATOR

Karl G. Volk, and William J. Delisle, both of San Jose, Calif., assignors to Semprex Corporation, Campbell, Calif.

Filed Mar. 16, 1987, Ser. No. 25,969

Int. Cl.⁴ B23Q *15/22*

U.S. Cl. 409—218 13 Claims



1. A tool offset indicator comprising: a rigid, generally rectangular block having predetermined dimensions, said block having first and second opposing flat surfaces;

a rigid, generally flat electrically conductive movable plate;
first means for compressibly mounting said movable plate to said first flat surface;
a rigid, generally flat electrically conductive plate assembly;
second means for rigidly mounting said plate assembly to said second flat surface; and

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indicator means coupled to said movable plate and to said rigidly mounted plate assembly for providing an indication when a tool cutting edge contacts either said movable plate or said rigidly mounted plate assembly, said tool cutting edge completing an electrical circuit providing power to said indicator means when said tool cutting edge contacts either said movable plate or said rigidly mounted plate assembly.

4,881,859

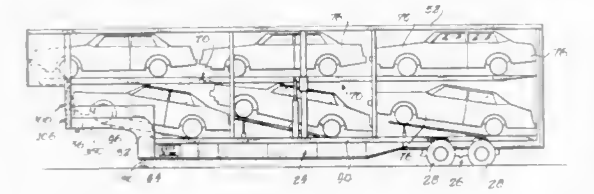
TRAILER FOR SELECTIVELY TRANSPORTING VEHICLES AND GENERAL FREIGHT

Rodney P. Ehrlich, Monticello, Ind., assignor to Wabash National Corporation, Lafayette, Ind.

Filed Oct. 6, 1988, Ser. No. 253,443

Int. Cl.^{4} B60P *3/08*

U.S. Cl. 410—29.1 **9 Claims**



6. A trailer comprising a continuous floor and means supporting said floor for selectively carrying general freight and a number of automobiles, said floor including an elevated forward floor section for overlying a tractor to be coupled to said trailer and a level lower rear floor section, selectively extendable and retractable ramps means on said floor for supporting said automobiles in lineally overlapping relationship and inclined with respect to said floor upon extensions of said ramp means, a forward endwall and sidewall means extending upwardly from said floor said forward endwall including a forwardly projecting bay spaced above said floor for accommodating an end portion of an automobile supported on said deck, wherein said trailer includes spaced apart rear wheels adjacent opposite sides thereof, and an elongate, unitary upper deck coextensive with said floor for supporting the same number of automobiles as on said floor and in an end to end array, said upper deck being selectively positionable between an inclined, automobile-loading position, and a horizontal and elevated automobile-transporting position, and being elevatable to a raised storage position, said means supporting said floor comprising longitudinally extending outside beam elements having an upper edge supporting said floor and extending below an upper reach of said rear wheels, and having a lower edge substantially below an upper reach of said rear wheels, longitudinally extending inside beam element having an upper edge supporting said rear floor section at a height above a top of said rear wheels, said inside beam elements including a portion extending inwardly of and directly between said rear wheels and having a lower edge substantially below an upper reach of said rear wheels.

4,881,860

COVER PLATE RETAINING STRUCTURE

Hideki Kanazawa, 880, Sekishi-cho, Hamamatsu-shi, Shizuoka, 431-31, Japan

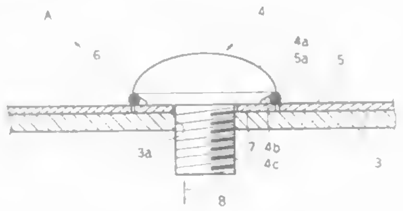
Filed Feb. 3, 1988, Ser. No. 152,014

Claims priority, application Japan, Feb. 10, 1987, 62-29125

Int. Cl.^{4} F16B *13/06, 21/18*

U.S. Cl. 411—55 **3 Claims**

1. A fixing structure of the type wherein a cover plate is retained on a fixed member by a screw engagement member which is screwed in a through hole formed in said cover plate and has a larger diameter than the outer diameter of said screw engagement member, said retaining structure being characterized in that comprising a ring-shaped engaging member having a circular sectional view which is formed by elastic material having a free size outer diameter nearly equal to or smaller than a diameter of said through hole of said cover plate and being expandable in a radial direction, said screw engagement member which is mounted beforehand on said fixed member and has an inclined surface on a bottom outer edge portion, and a washer having a thickness nearly equal to that of said cover plate which is coupled beforehand with said screw engagement member for supporting said engaging member, and said



bottom outer edge of said screw engagement member is brought into contact with an inner surface of said ring-shaped engaging member, and said screw engagement member is turned in a screw-in direction against said fixed member to cause said ring-shaped engaging member to be expanded in a radial direction so that said ring-shaped engaging member and upper edge portion of said through hole of said cover plate are engaged and said cover plate is securely fixed on said fixed member.

4,881,861

FASTENING ASSEMBLY

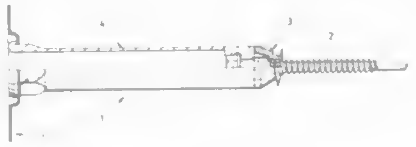
George D. Hewison, Aldershot, Hants, Great Britain, assignor to ITW Limited, England

Filed Aug. 25, 1988, Ser. No. 236,532

Claims priority, application United Kingdom, Sep. 8, 1987, 8721049

Int. Cl.^{4} F16B *35/02*

U.S. Cl. 411—383 **10 Claims**



1. A fastening assembly for fastening a waterproof membrane and thick insulation to a roof deck, said fastening assembly comprising a screw threaded fastener, a driving head located at one end of said screw threaded fastener, a screw thread located on said screw threaded fastener, a clamp plate for spreading a clamping load of said. fastening assembly over an area of said waterproof membrane, a clamp tube having a head and a foot, said foot of said clamp tube being arranged to be engaged and held by said head of said screw threaded fastener and said head of said clamp tube being arranged to engage and hold said clamp plate, and an expanding auger, said expanding auger being formed between said screw thread of said screw threaded fastener and said foot of said clamp tube, in use, said auger rotating with said fastener to expand a hole in said waterproof membrane through which said fastener is inserted whereby said hole accommodates said clamp tube of said fastening assembly.

4,881,862

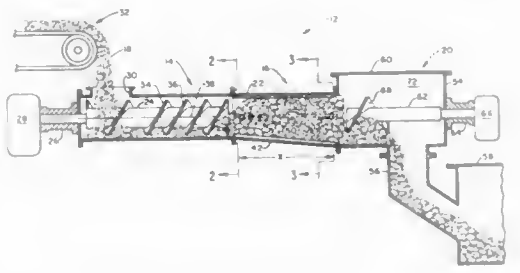
SCREW SEAL

David S. Dick, San Luis Obispo, Calif., assignor to Jenike & Johanson, Inc., No. Billerica, Mass.

Filed Sep. 30, 1987, Ser. No. 103,182

Int. Cl.^{4} B65G *53/48*

U.S. Cl. 414—218 **15 Claims**



1. A screw seal comprising, in combination,

a housing comprising an elongate tubular conveying section and an elongate tubular sealing section, one end of each section being joined to one end of the other, the conveying section having an inlet opening longitudinally spaced from its joined end for receiving a stream of bulk solids,

a discharge chamber connected to the other end of the sealing section,

feed screw means within the conveying section and extending between the inlet opening and said joined ends,

means to rotate the feed screw means to cause flow of the solids to and through the sealing section to said chamber, said flow being variable between predetermined highest and lowest operating solids flow rates,

means for producing and maintaining a gas pressure differential between said chamber and the inlet opening during said flow, the sealing section having a cross sectional area diverging toward said other end, said divergence being greater below than above a horizontal plane defined by diametrically opposed longitudinal lines in the sealing section, said divergence and the length of the sealing section being related so that during said flow the coefficient of friction between the solids and the wall of the sealing section causes compression of the solids, said compression forming a plug having a density limiting the flow of gas between the discharge chamber and the inlet opening to a predetermined maximum leakage rate during flow of the solids between said highest and lowest rates, and

means to break up the plug as it is discharged into said chamber.

4,881,863

APPARATUS FOR INSPECTING WAFERS

Sidney Braginsky, Dix Hills, N.Y., assignor to Primary Systems Corporation, Danbury, Conn.

Filed Dec. 17, 1987, Ser. No. 134,012

Int. Cl.^{4} B65H *5/12*

U.S. Cl. 414—225 **12 Claims**

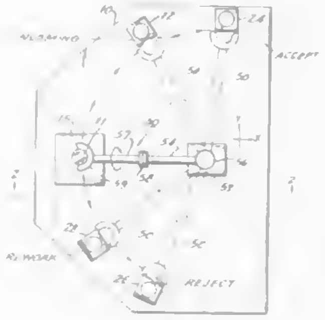
1. Apparatus for inspecting a wafer, comprising:

optical means for optically viewing a wafer, including an objective lens and a viewing device that are interconnected by an optical link;

robot arm means for receiving the wafer from an incoming location, laterally transporting the wafer to an inspection location for viewing by the objective lens, and then placing the wafer in an outgoing location after inspection;

the robot arm means including a gripping device for continually gripping the wafer during its transit from the incoming to the outgoing location;

the optical link including means for optically rotating as necessary a wafer image received by the objective lens so as to transmit to the viewing device a wafer image with a desired angular orientation; and



means for supporting the robot arms means and the optical means, including scanning means for scanning the objective lens across the wafer when the wafer is in the inspection location.

4,881,864

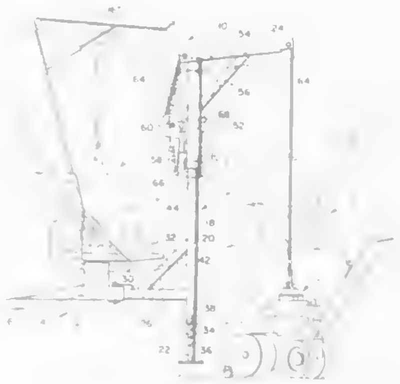
BOOM HOIST FOR ATTACHMENT TO A TRAILER HITCH DRAWBAR

Joseph G. Amato, Brighton, Colo., assignor to Hitch Lift, Inc., Brighton, Colo.

Filed Nov. 9, 1987, Ser. No. 118,563

Int. Cl.^{4} B60R *9/00*

U.S. Cl. 414—543 **9 Claims**



1. For use with a load-carrying vehicle equipped with a hollow rectangular drawbar extending rearwardly therefrom as part of a hitch, the boom-type hoist which comprises: a rigid tubular stanchion; a rectangular tongue projecting forwardly from said stanchion intermediate the ends thereof for telescopic engagement with the drawbar, said tongue when so engaged cooperating with the drawbar to maintain the stanchion in an upright position with the lower end thereof raised off the ground; means detachably interconnecting said tongue and drawbar in telescoped relation; means comprising a retractable foot telescoped into the lower end of the stanchion for movement between an extended ground-engaging position supporting the stanchion together with any load carried thereby and a retracted position elevated clear of the ground; a collar mounted on said stanchion, said collar having a top surface; a sleeve telescopingly receiving said stanchion and being movable axially of said stanchion, said sleeve having an upper end and a lower end with said sleeve lower end resting on top of said collar top surface to be supported thereby on the upper end of the stanchion for relative rotational movement; a rigid arm projecting from said sleeve upper end and cooperating therewith to define a rotatable boom having a remote end; and winch means having a cable wound thereon mounted on

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the sleeve for rotational movement therewith, said winch cable having a portion thereof reaved along the boom and over its remote end into position for attachment to a load, said elements cooperating with one another to define a hoist for raising a load off the ground and swinging it into the load-carrying vehicle, and said foot in retracted position permitting the load-carrying vehicle and any load carried therein to be transported from place to place while the hoist remains attached to the latter.

4,881,865
FOREST MACHINE WITH CRANE

Olof Herolf, Sundsvall, Sweden, assignor to OSA AB, Alfta, Sweden

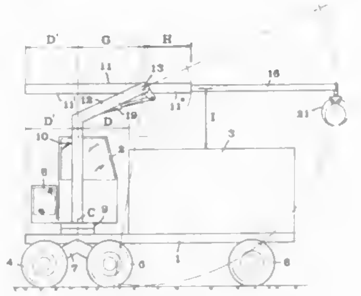
PCT No. PCT/SE87/00271, § 371 Date Apr. 7, 1988, § 102(e) Date Apr. 7, 1988, PCT Pub. No. WO87/07474, PCT Pub. Date Dec. 17, 1987

PCT Filed Jun. 9, 1987, Ser. No. 149,226

Claims priority, application Sweden, Jun. 12, 1986, 8602629-1

Int. Cl.⁴ A01G *23/08;* **B60P** *1/54*

U.S. Cl. 414—550 **19 Claims**



1. A crane-type forest machine comprising a crane and a wheeled chassis having width, length and depth dimensions, sides and a front, the chassis having at least a pair of opposed, spaced apart front wheels, a driver's cab mounted on said wheeled chassis over said front wheels; a load carrier having a length disposed behind said cab and on the chassis; a rotatable crane post mounted for rotation about a vertical axis, relative to said chassis; said crane post comprising a pair of spaced apart upwardly extending arms, one on each side of the cab, each of said arms including an inclined end portion, said end portions extending in spaced apart relationship; a rotatable shaft extending transversely between said inclined end portions and being rotatable about a horizontal axis; means for rotating said shaft about said horizontal axis; said shaft being spaced above and positioned a distance from said vertical axis greater than the minimum distance from said vertical axis to the sides and front of said chassis; a boom mounted intermediate its ends on said shaft whereby said boom is rotatable about said horizontal axis; an extension boom associated with said boom; and means for extending and retracting said extension boom; whereby said arms can be pivoted about said vertical axis and said boom pivoted about said horizontal axis to extend vertically at any position along said sides and front of the chassis to reach the ground level at the sides and front of the chassis.

4,881,866
GLASS HANDLING APPARATUS

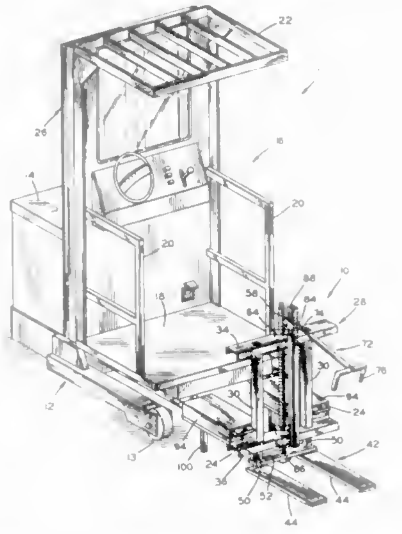
John R. Harmon, Genoa, Ohio, assignor to Libbey-Owens-Ford Co., Toledo, Ohio

Filed Jun. 21, 1988, Ser. No. 209,524

Int. Cl.⁴ B66F *9/18*

U.S. Cl. 414—607 **13 Claims**

1. Apparatus for handling fragile sheet material comprising:
a frame;
means for attaching said frame to a transport mechanism;
sheet support means for supporting a lower edge of the sheet material; and
adjusting means operatively connecting said sheet support means to said frame for effecting vertical adjustment of said sheet support means relative to said frame said adjusting means including an elongate screw having one end connected to said sheet support means and a nut affixed to said frame threadably receiving said elongate screw.



4,881,867
EXCAVATOR ATTACHMENT

Stuart A. Essex, and Wendy P. Essex, both of 3 Kambalda Place, Yarrawarrah, New South Wales, Australia (2232)

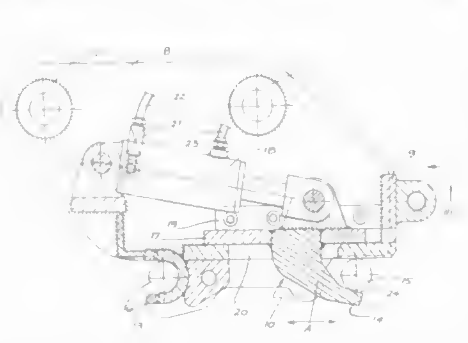
PCT No. PCT/AU87/00322, § 371 Date Jun. 10, 1988, § 102(e) Date Jun. 10, 1988, PCT Pub. No. WO88/02421, PCT Pub. Date Apr. 7, 1988

PCT Filed Sep. 22, 1987, Ser. No. 240,190

Claims priority, application Australia, Oct. 3, 1986, PH08317

Int. Cl.⁴ E02F *9/00*

U.S. Cl. 414—723 **4 Claims**



1. A hinge assembly for mounting onto the articulated arm of a hydraulic excavator, backhoe or other excavating machine, the assembly comprising a housing and a remotely operable pair of oppositely directed jaws which are adapted to releasably grip the transverse hinge pins of a bucket, rock hammer or other operating tool for the machine, one of said jaws being fixed and the other being movable between a withdrawn position in which said jaws can be fitted between said hinge pins and an extended position in which said pins are grasped by the jaws, the inner face of said movable jaw being inclined at an acute angle away from an opposite face to provide a wedging action against said opposite face which serves to lock the hitch assembly onto the pins as said movable jaw is

displaced to said extended position, both said jaws at all times protruding clear of said housing with said movable jaw being mounted on a slide plate within said housing and said movable jaw protruding clear of said housing through an aperture directly below the slide plate.

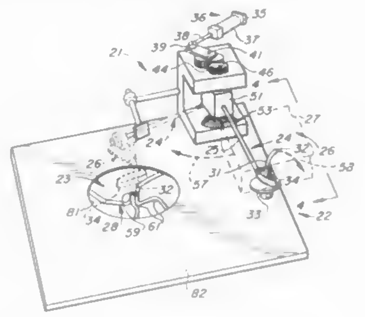
4,881,868
APPARATUS AND METHOD FOR RAPID TRANSPORT OF AN ELASTIC BAND

Daniel Alameda, Pacific Grove, and Scott Cooper, Salinas, both of Calif., assignors to Rubber Band Technology, Yakima, Wash.

Filed Sep. 19, 1988, Ser. No. 245,625

Int. Cl.⁴ B25J *18/00*

U.S. Cl. 414—773 **17 Claims**



1. An apparatus for rapid transport of an elastic band comprising:
- a movable arm assembly having finger means thereon dimensioned to loosely receive said band therearound;
- drive means coupled to move said arm assembly from a band loading station to a relatively spaced apart band unloading station;
- said arm assembly further being movable by said drive means from a first orientation of said finger means for gravity assisted mounting and support of said band on said finger means at said loading station to a second orientation of said finger means for gravity assisted demounting of said band therefrom at said unloading station; and
- said arm assembly being driven by said drive means between said first orientation and said second orientation along a path maintaining said band on said finger means against dynamic forces acting on said band during acceleration, transport and deceleration of said band and reorientation of said finger means.

4,881,869
FURNACE CHARGING THROAT CONSTRUCTION

Bernhard Henneken, Oberhausen; Burno Kämmerling, Dinslaken; Eckhard-K. Scholz, Bottrop; Wolfgang Schroeder, Oberhausen, and Hans Krause, Moers, all of Fed. Rep. of Germany, assignors to Man Gutehoffnungshuette GmbH, Fed. Rep. of Germany

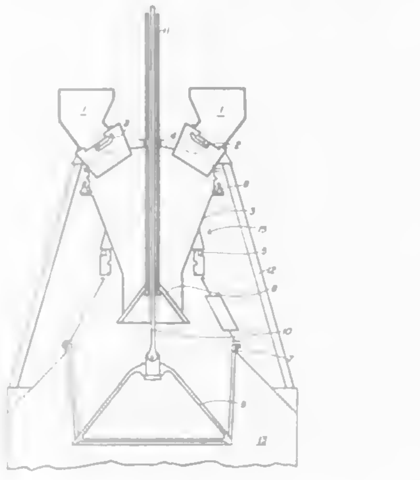
Division of Ser. No. 100,526, Sep. 24, 1987, abandoned. This application May 17, 1988, Ser. No. 195,116

Claims priority, application Fed. Rep. of Germany, Sep. 26, 1986, 3632724

Int. Cl.⁴ C21B *7/18;* **E27B** *1/20*

U.S. Cl. 414—786 **8 Claims**

1. A method for operating a throat stopper for charging a shaft-type furnace which throat stopper has a hood member supported in an uppermost stationary position and includes at least one charging container with a flap valve directed to an upper sluice hopper which is rotatably supported below said hood member and is releasably sealable therewith to provide a pressure tight vessel and which also includes a first distributor bell member suspended so as to open and close the lower end of said upper sluice hopper, comprising charging said upper sluice hopper with material through said at least one charging container by opening the flap valve, rotating the upper sluice hopper after charging has begun with the upper sluice hopper and hood member in unsealed condition, ceasing said rotation, closing the flap valve and sealing an upper portion of said upper sluice hopper with a bottom portion of said hood after said rotation has ceased and permitting said upper sluice hopper to act as a sluice chamber.



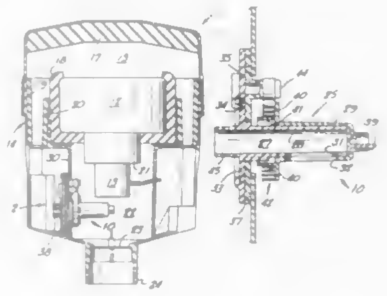
4,881,870
AIR BLOWER SAFETY CONTROL

Gregory A. Ritter, Leucadia; Graham Barton, Carlsbad, and Ronald J. Sargent, Escondido, all of Calif., assignors to Alopex Industries, Inc., San Marcos, Calif.

Filed Nov. 15, 1988, Ser. No. 271,611

Int. Cl.⁴ F04D *29/58*

U.S. Cl. 415—47 **7 Claims**



1. In an air blower assembly providing air under pressure to a spa, and including a blower having an air intake and an air outlet, and means defining an outlet passage for delivering air from said air outlet to a spa, the improvement comprising:
- a vent valve mounted in said outlet passage and including a first valve member having a first vent port therein for communicating with the outlet passage, and a second valve member having a second vent port therein, said first and second valve members being relatively rotatable from a normal position in which said first member overlies and closes said first vent port to an open position in which said second vent port is aligned with said first vent port, and second said valve member having a passage communicating between said second port and the outside of said outlet passage;
- and a bi-metallic coil disposed around said vent valve and having one end connected to said first valve member and an opposite end anchored in said blower assembly, said coil being set to hold said valve member with said second

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port spaced from said first port while the temperature is below a preselected opening temperature, and to rotate said valve member and bring said second port into overlapping relation with said first port when the temperature increases to said opening temperature, thereby to provide a vent for the escape of air from said outlet passage to release the pressure in the outlet passage, and to increase the air flow through the blower and past the motor.

4,881,871
PERIPHERAL PUMP

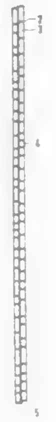
Erhard Wunderlich, Munich, Fed. Rep. of Germany, assignor to Speck-Pumpenfabrik, Walter Speck KG, Roth, Fed. Rep. of Germany

Filed Apr. 11, 1988, Ser. No. 180,330

Claims priority, application Fed. Rep. of Germany, Apr. 10, 1987, 3712165

Int. Cl.⁴ F01D *5/14*

U.S. Cl. 415—119 8 Claims



1. A peripheral pump with an impeller ring comprising two blade rings on each side of a central web, and further comprising a housing and a conveyance channel which extends from a suction aperture and passes through at least one flow duct and impeller blades in the housing to a discharge orifice, wherein the spacing between at least one adjacent pair of blades in each impeller ring is different than the spacing between at least one other pair of blades on the same ring, said impeller blades extending substantially radially in respect to the respective circumference of said rings.

4,881,872
STEAM TURBINE FOR PART LOAD OPERATION

Jürg Bütikofer, Niedererlinsbach, and Hans Meyer, Fislishach, both of Switzerland, assignors to BBC Brown Boveri AG, Baden, Switzerland

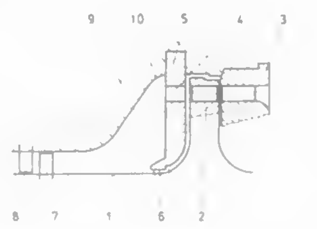
Filed Jun. 20, 1988, Ser. No. 208,502

Claims priority, application Switzerland, Jun. 26, 1987, 2426/87

Int. Cl.⁴ F01D *9/04*

U.S. Cl. 415—143 5 Claims

1. A steam turbine designed to maximize efficiency in a part load range, comprising:
a nozzle group for directing steam into the turbine;
a control wheel arranged in the path of steam directed into the turbine from the nozzle group;
a transition duct arranged downstream of the control wheel;
means arranged between the control wheel and the transition duct for imparting a swirl onto a flow from the control wheel into the duct so as to equalize the flow within the duct; and
reaction blading arranged downstream of the transition duct for extracting useful energy from the equalized flow.



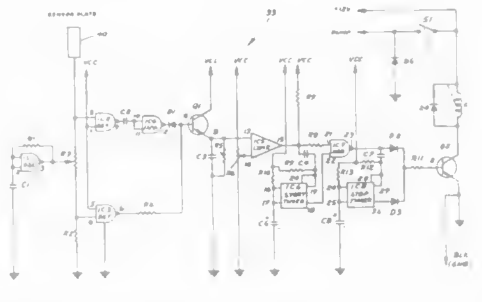
4,881,873
CAPACITANCE LEVEL SENSOR FOR A BILGE PUMP

Leonard S. Smith, Richfield, and Gary L. Cook, Bloomington, both of Minn., assignors to Altus Technology Corporation, Minnetonka, Minn.

Filed Dec. 14, 1988, Ser. No. 284,172

Int. Cl.⁴ F04B *49/02;* **F04D** *27/00;* **G01R** *27/26*

U.S. Cl. 417—12 9 Claims



1. An automatic bilge pump control device in connection with a bilge pump, having in combination
a sensor plate,
an oscillator injecting an alternating wave signal into a balanced voltage divider comprising a passive and active pair of detectors outputting identical square wave signals,
a resistor,
the passive one of said detectors being grounded through said resistor,
the active one of said detectors being in circuit with said sensor plate and its square wave signal being inverted 180° relative to said other detector,
a phase shift detecting integrating transistor in circuit with said voltage divider having said wave signals coupled thereto,
an integrating capacitor charged by said integrating transistor in direct proportion to any phase shifting detected,
said phase shifting being responsive to the presence of bilge water in sufficiently close proximity to said sensor, and
means responsive to said phase shifting detected causing said pump to operate.

4,881,874
TAIL ROTOR

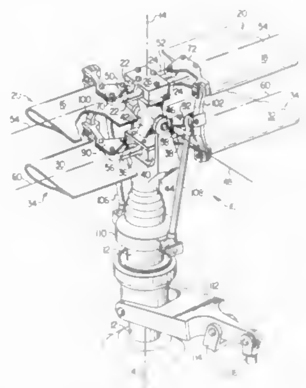
Billy P. White, Arlington, and Dwayne E. Morrison, Rowlett, both of Tex., assignors to Bell Helicopter Textron Inc., Fort Worth, Tex.

Filed Mar. 31, 1988, Ser. No. 175,770

Int. Cl.⁴ B64C *27/36*

U.S. Cl. 416—138 7 Claims

1. A helicopter tail rotor comprising:
a drive mast having an axis of rotation;
a first blade pair mounted for rotation about said drive mast axis of rotation, said first blade pair having a pitch change axis perpendicularly disposed to said drive mast axis of rotation; and
a second blade pair mounted for rotation about said drive mast axis of rotation and being spaced apart from and parallel disposed to said first blade pair, said second blade pair having a pitch change axis parallel to said pitch change axis of said first blade pair and being rotatable in the same direction as said first blade pair about said drive mast.



4,881,875
BOUNDARY LAYER CONTROL IN SUPERSONIC NOZZLE

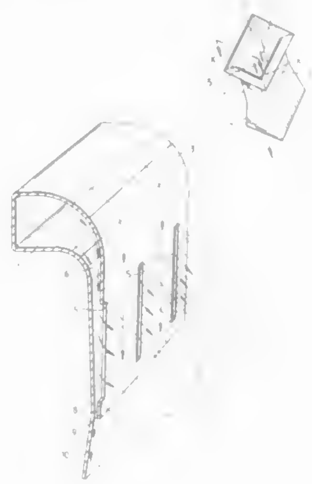
Richard C. Adkins, Milton Keynes, United Kingdom, assignor to British Aerospace PLC, London, England

Filed May 5, 1988, Ser. No. 190,654

Claims priority, application United Kingdom, May 6, 1987, 8710733

Int. Cl.⁴ F04F *5/46*

U.S. Cl. 417—54 8 Claims



8. A method of pumping a secondary gas through a duct having an inlet and an outlet by injecting primary gas into the duct to entrain the secondary gas and draw the secondary gas in through the inlet and expel it from the outlet, the method comprising injecting primary gas into the duct by passing it at supersonic speeds along a tapering passage that is divided from the duct by a wall having a plurality of elongate slots formed therein that extend in general direction of secondary gas flow, thereby forming a plurality of thin sheet-like jets of primary gas extending into the duct, wherein the direction of flow of primary gas within the said jets has a component in the said general direction of secondary gas flow through the duct and a component at right-angles thereto, and wherein the method further comprises injecting into the duct a minor proportion of primary gas through a peripheral opening at the end of the passage, the said minor proportion of primary gas passing over a part of the duct wall adjacent to the opening to energize the boundary layer of gas on the duct wall.

4,881,876
DEVICE FOR DETECTING THAT A MEMBRANE IN A MEMBRANE PUMP HAS BROKEN

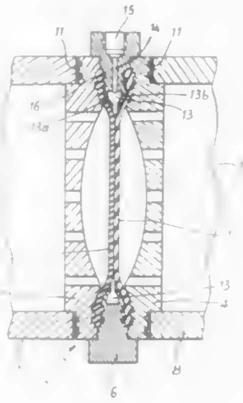
Alain Laziou, Romilly S/Andelle, France, assignor to Dosapro Milton Roy, France

Filed Dec. 14, 1988, Ser. No. 284,629

Claims priority, application France, Dec. 17, 1987, 87 17636

Int. Cl.⁴ F04B *43/06, 45/04*

U.S. Cl. 417—63 4 Claims



1. A device for detecting that a membrane in a hydraulically actuated membrane pump has broken, the device being constituted by an annular spacer sandwiched between the peripheral zones of at least two adjacent membranes, with the assembly being peripherally clamped between two pump body components, the annular spacer including at least one radial passage providing communication between the space delimited by the two membranes and the outside of the pump, wherein the radial passage opens out into a groove provided in the inside face of the annular spacer, with the walls of the groove converging towards each other.

4,881,877
RADIAL PISTON PUMP

Georg Liska, Zimmerbach, Fed. Rep. of Germany, assignor to Zahnradfabrik Friedrichshafen, AG., Friedrichshafen, Fed. Rep. of Germany

PCT No. PCT/EP87/00109, § 371 Date May 6, 1988, § 102(e) Date May 6, 1988, PCT Pub. No. WO87/05366, PCT Pub. Date Sep. 11, 1987

PCT Filed Feb. 25, 1987, Ser. No. 186,480

Claims priority, application Luxembourg, Apr. 7, 1986, 123

Int. Cl.⁴ F04B *1/14*

U.S. Cl. 417—270 9 Claims

1. In a multi-piston pump of the kind having a plurality of radially arrayed pistons having means for actuation in sequential order by a drive shaft (4) and including pressure limiting valve means (20) biased to closed position by spring means (21) wherein said pressure limiting valve means is intermediate a pressure-collecting chamber means (3) and an end surface of the drive shaft; with return means (24, 25) for return flow to a suction inlet (12) of the pump upon opening of said pressure limiting valve;
the improvement comprising kinetic to heat energy converting throttle means being disposed to throttle flow from said pressure limiting valve means to said return means

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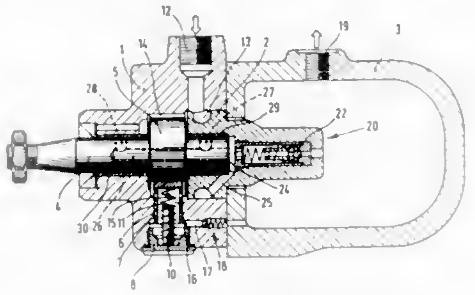
wherein said flow impinges on said end surface of said drive shaft upon opening of such pressure limiting valve means and wherein return flow through said throttle means of initially cold oil is thereby heated and rendered less viscous for recirculating to said suction inlet of said pump and also reducing impact of return oil against the end of said drive shaft for noise reduction in the operation of said pump.



4,881,878

GAS COMPRESSOR OF VARIABLE VOLUME

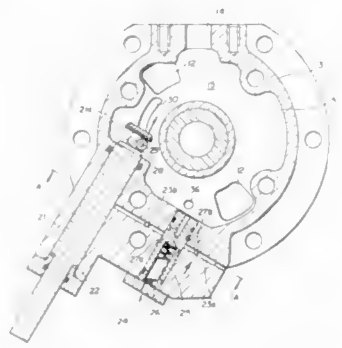
Takeshi Kobayashi, and Junichi Asai, both of Narashino, Japan, assignors to Seiko Seiki Kabushiki Kaisha, Japan

Filed Aug. 29, 1986, Ser. No. 902,419

Claims priority, application Japan, Sep. 3, 1985, 60-194061

Int. Cl.⁴ F04B *49/02;* **F04C** *29/08*

U.S. Cl. 417—295 22 Claims



1. A gas compressor of the variable volume type comprising:
a cylinder having a substantially elliptic inner peripheral surface;
a front side block fixed to one end of said cylinder and having communicating gas ports therethrough communicating with the interior of said cylinder, and a rear side block fixed to the other end of said cylinder, the front and rear side blocks cooperating with the cylinder to define a cylinder chamber;
a rotor rotatably mounted in the cylinder chamber and carrying a plurality of vanes mounted to slidably protrude and retract radially of said rotor, the rotor and cylinder chamber cooperating with the vanes to define a compression chamber;
a front head mounted to said front side block and defining therebetween a gas intake chamber;
a rotary plate having at least one gas passage recessed therein,s aid rotary plate being mounted between said front side block and said cylinder to undergo angular displacement within a predetermined angular range; and
driving means for angularly displacing said rotary plate in such a manner as to control the admission of gas to said compression chamber so that the volume of said compression chamber is made variable in accordance with the running speed of the gas compressor, said driving means comprising a hydraulic piston slidably disposed in the front head and having a rear end exposed to the outside atmosphere and a front end exposed to the gas intake chamber and engaged with the rotary plate, and valve means for controlling the flow of pressurized oil applied to the piston rear end by sensing the intake pressure in said intake chamber so as to angularly displace said rotary plate in response to the sensed pressure.

4,881,879

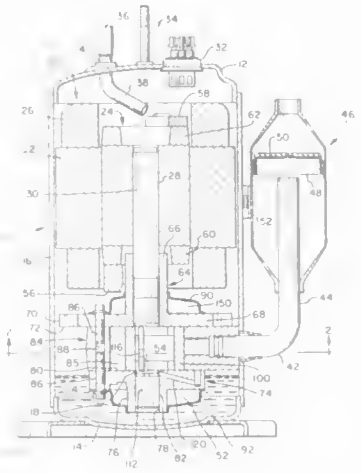
ROTARY COMPRESSOR GAS ROUTING FOR MUFFLER SYSTEM

Arturo L. Ortiz, Tecumseh, Mich., assignor to Tecumseh Products Company, Tecumseh, Mich.

Continuation of Ser. No. 138,365, Dec. 24, 1987, abandoned. This application Mar. 6, 1989, Ser. No. 319,924

Int. Cl.⁴ F04B *39/00*

U.S. Cl. 417—312 18 Claims



1. A rotary compressor, comprising:
a cylinder block defining a cylinder;
a main bearing and an outboard bearing located on respective ends of said cylinder block and closing said cylinder at each of its opposite ends;
an eccentrically mounted piston means rotationally mounted in said cylinder;
a rotatable crankshaft operably supported by said main and said outboard bearings and drivingly connected to said piston means, the rotation of said piston means in said cylinder resulting in compressed gas within said cylinder;
means for discharging the compressed gas from within said cylinder, comprising a first discharge port in communication with and extending from said cylinder through said main bearing and a second discharge port in communication with and extending from said cylinder through said outboard bearing;
a first discharge muffler and a second discharge muffler mounted on said main and said outboard bearings, respectively, said first and said second discharge mufflers being in fluid communication with said first and said second discharge ports, respectively, whereby compressed gas discharged through said main bearing is expanded upon entry into said first muffler and compressed gas discharged through said outboard bearing is expanded upon entry into said second muffler;
constricting gas passage means communicating between said first and said second mufflers for allowing expanded gas in one of said first and said second mufflers to be constricted and reexpanded upon flowing from said one muffler to the other muffler; and

gas discharge outlet means for providing fluid communication between said other muffler and the inside of said housing, said discharge outlet means comprising a plurality of discharge passages, each of said plurality of discharge passages being defined by substantially aligned holes through said main and said outboard bearings and said cylinder block.

4,881,880

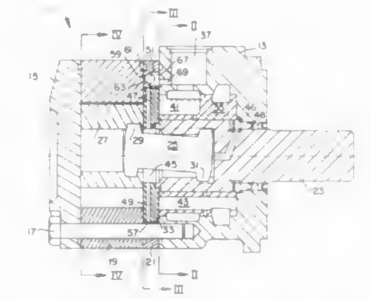
DRAIN FOR INTERNAL GEAR HYDRAULIC DEVICE

Andrew N. Dlugokecki, Bridgton, Me., assignor to Parker Hannifin Corporation, Cleveland, Ohio

Filed Apr. 19, 1988, Ser. No. 183,196

Int. Cl.⁴ F03C *2/08, 1/113*

U.S. Cl. 418—61.3 2 Claims



1. An improved internal gear hydraulic device of the type having a housing with a rotatable valve plate therein which selectively communicates inlet and outlet ports of a commutator with opening and closing fluid chambers between an internal and external gear, the internal gear of which is connected with a drive shaft; the improvement comprising:
a check valve disposed in said housing and having an inlet adjacent said valve plate and an outlet connected to a drain of said internal gear hydraulic device;
said valve plate having a radially inner surface in fluid communication with an area adjacent said shaft and a radially outer surface in communication with the inlet of said check .valve;
said valve-plate having at least one drain port extending from said radially inner surface to said radially outer surface to allow fluid to be drained from said area adjacent said drive shaft to and through said check valve.

4,881,881

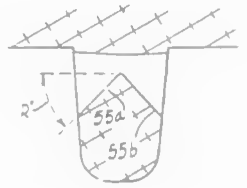
PLUG-RESISTANT ARCH-VENTS FOR A TIRE MOLD

Rene L. Rockarts, Northport, Ala., and Donald R. Bartley, Cuyahoga Falls, Ohio, assignors to The Uniroyal Goodrich Tire Company, Akron, Ohio

Filed Feb. 8, 1988, Ser. No. 153,179

Int. Cl.⁴ B29C *33/10*

U.S. Cl. 425—28.1 4 Claims



1. In a vented tire mold having a mold body provided with a tire receiving cavity, and with means for producing a preselected tread pattern with a tread ring having lateral and transverse ribs which are provided with arch-vents, each lateral rib having an ar-vent placing individual tread-block forming zones in open communication one with the other, the improvement comprising, each said arch-vent being double wedge-shaped and comprising opposed wedge-shaped passages connected at their apexes formed by downwardly inclined and upwardly inclined upper and lower surfaces, respectively, each lower surface of each wedge-shaped passage being upwardly inclined at from 30° to 50° relative to a longitudinal axis of said vent, so as to form, with said downwardly inclined upper surfaces, a throat having sufficient cross-sectional area to vent air trapped between the upper surface of the tire tread and the inner surface of the tread ring, in a preselected period of time sufficient to seat the outer surface of said tread against the inner surface of said tread ring, said arch-vent being in open communication with a horizontal parting line of the mold which is vented to the atmosphere.

4,881,882

HANDLING DEVICE FOR TIRES TO BE REMOLDED ON VULCANIZATION PRESSES WITH SELECTION FROM DIFFERENT STOCKS OF TIRES

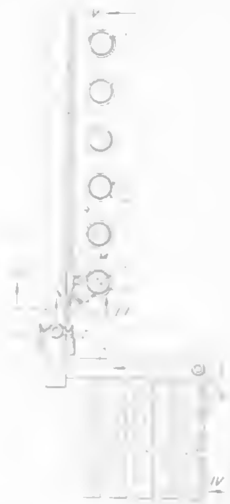
Tosco Fantacci, Pistoia, Italy, assignor to CISAP S.p.A., Pistoia, Italy

Filed May 26, 1988, Ser. No. 199,326

Claims priority, application Italy, May 27, 1987, 9396 A/87

Int. Cl.⁴ B29C *35/00, 43/58*

U.S. Cl. 425—38 13 Claims



1. A handling device according to claim 2, wherein said predetermined position is a centered position, said means for positioning the tire in a predetermined position includes a pair of stops against which the conveyed tire comes to rest and with respect to which it is centered, and at least one device for simultaneously releasing said stops to allow the centered tire to continue to pass.

4,881,883

SYSTEM FOR CONTINUOUSLY PRODUCING PLATE-SHAPED CATALYSTS

Takashi Michimoto; Saburo Kudo; Kazuhiko Kuwada, and Nobuyoshi Ishida, all of Kure, Japan, assignors to Babcock-Hitachi Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 8, 1988, Ser. No. 165,472

Claims priority, application Japan, Mar. 9, 1987, 62-53686

Int. Cl.⁴ B29C *43/58*

U.S. Cl. 425—89 10 Claims

1. An apparatus for continuously producing plate-shaped catalysts, comprising:
a mold press machine having a top die and a bottom die for press-molding a belt-shaped catalyst into a predetermined form, means for moving said top die vertically and recip-

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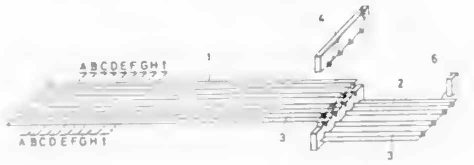
rocally including said top die being connected with a crank mechanism to make the vertical and reciprocal movement of said top die;

a pair of means for delivering the belt-shaped catalyst, provided at the downstream side of said mold press machine and each having means for gripping the belt-shaped catalyst;

grip-delivery control means for controlling said delivering means in accordance with the movement of said crank mechanism so that when one of said pair of delivering means is performing grip and delivery, the other prepares for subsequent grip and delivery so that after grip and delivery of said one pair is completed, a succeeding grip and delivery operation is carried out by the other pair of delivering means and the belt-shaped catalyst is delivered in response to a delivery signal generated cyclically in accordance with the movement of said crank mechanism;



a cutting device provided at the downstream side of said pair of delivering means for cutting said belt-shaped catalyst into plate-shaped catalysts;

means for detecting that the belt-shaped catalyst, after passing through said cutting device, has reached a predetermined position;

cutting control means for operating said cutting device in response to a signal from said detecting means; and

said grip-delivery control means including means for performing a pass of a signal for delivery of said belt-shaped catalyst and a release of the gripping means when the delivery signal is generated in the midst of operating said cutting device.

4,881,884

APPARATUS FOR INJECTION MOULDING

Roderick M. De'Ath, Oxfordshire, England, assignor to MB Group plc, Reading, England

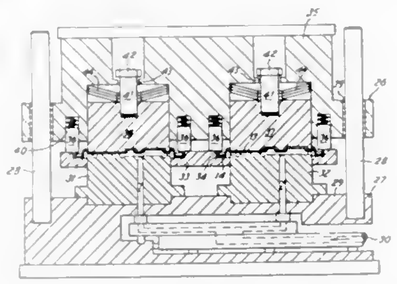
PCT No. PCT/GB87/00842, § 371 Date Aug. 1, 1988, § 102(e) Date Aug. 1, 1988, PCT Pub. No. WO88/04227, PCT Pub. Date Jun. 16, 1988

PCT Filed Nov. 25, 1987, Ser. No. 227,907

Claims priority, application United Kingdom, Dec. 5, 1986, 8629124

Int. Cl.⁴ B29C *45/40, 45/14, 33/44*

U.S. Cl. 425—117 9 Claims



1. Apparatus for injection moulding plastics closure elements into apertures in the central panels of a plurality of can ends, said apparatus comprising a first mould tool; a second mould tool; means effective to bring the mould tools together to clamp on opposed surfaces of each central panel and thereby define a mould cavity enclosing a margin of panel material around the aperture and spanning both sides of said aperture; and a passageway in at least one of the mould tools to permit injection of plastics material into each said mould cavity, wherein, the first mould tool includes a plurality of cavity defining mould portions each slidably guided in a respective bore in said first mould tool and resilient support means in each bore tourge each said mould portion towards the second mould tool; and the second mould tool includes a plurality of mould inserts each defining a cavity to cooperate with a cavity of a mould portion in the first tool, so that upon closing of the first mould tool to the second mould tool any mould portion closing upon a relatively thick can end panel will be urged, by the cooperating insert, to retract into its bore and permit clamping of a relatively thin can end panel between another mould portion and its cooperating mould insert, and sealing of all the moulds will be established before plastics material is injected into the mould cavity, each mould insert having a passageway through which the plastics material is injected into the mould cavities, the lower tool comprising a hollow block in which the mould inserts are seated and supported and in which a hot runner extends to convey plastics material to the passageways in the mould inserts.

4,881,885

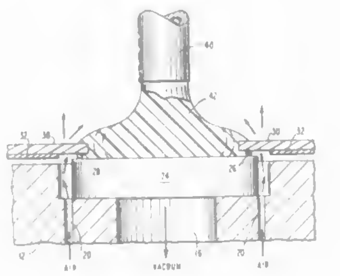
DAM FOR LEAD ENCAPSULATION

Caroline A. Kovac, Ridgefield, Conn.; Peter G. Ledermann, Pleasantville, N.Y., and Lun T. Nguyen, Hopewell Junction, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 15, 1988, Ser. No. 181,843

Int. Cl.⁴ H01L *21/56*

U.S. Cl. 425—121 6 Claims



1. Apparatus for encapsulating a surface and leads of an electronic device comprising:

a fixture for holding said device,

means to constrain said device to said fixture,

means in said fixture to provide an air dam around said device while it is constrained to said fixture,

means to deliver a metered amount of an encapsulating material to said surface on said device, and

means associated with said air dam to control the spread of said encapsulating material on said surface.

4,881,886

COMPRESSION HEAD FOR MACHINE FOR CONTINUOUSLY DENSIFYING VEGETABLE MATTER

Marcel Neuman, Eumbourg, Belgium, assignor to Biomass Development Europe SA, Brussels, Belgium

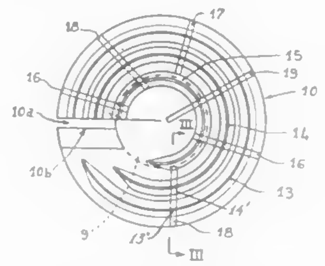
Filed May 17, 1988, Ser. No. 194,909

Claims priority, application France, May 26, 1987, 87 07608

Int. Cl.⁴ B28B *21/26*

U.S. Cl. 425—208 14 Claims

1. In a compression head for machines for continuously densifying vegetable matter and which is mounted by a rod to a conical Archimedean screw and which includes an end disc which is formed of a first material and has a helicoidal front face provided with a plurality of generally circular ribs extending from the leading edge of a slot in the disc and which terminate on the opposite edge of the slot, the improvement comprising friction increasing means formed in the front face of the disc, said friction increasing means being formed of a second material having a higher coefficient of friction than the first material of the disc whereby the friction increasing means will by friction increase the temperature of the vegetable matter acted on by the compression head.



4,881,887

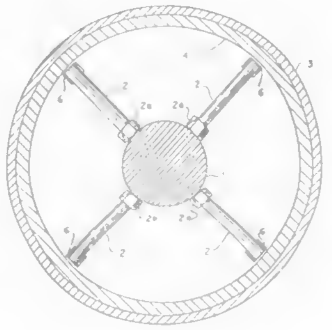
AGGLOMERATION DEVICE

Carl A. Holley, 14315 Tall Oaks, Riverview, Mich. 48192

Filed Jan. 27, 1989, Ser. No. 302,613

Int. Cl.⁴ B01J *2/10*

U.S. Cl. 425—222 5 Claims



1. In an agglomeration device having a driven shaft and a plurality of pins extending radially outwardly thereof of such length as to sweep closely to the inner surface of the casing of said device; the improvement comprising a layer of high density plastic material attached to the inner surface of said casing, each pin having a ceramic sleeve.

4,881,888

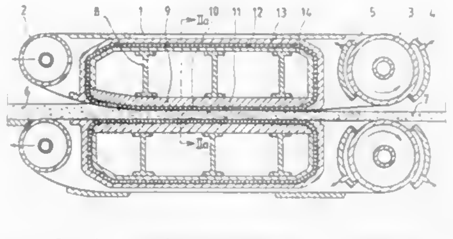
PRESS FOR THE CONTINUOUS PRODUCTION OF BOARDS

Bo Folkesson, Hasslegatan 33, S-542 32 Mariestad, Sweden

Filed Sep. 12, 1988, Ser. No. 242,576

Int. Cl.⁴ B30B *5/04*

U.S. Cl. 425—371 6 Claims



1. A press for the continuous production of boards, in which a board material (6) to be pressed is fed into a press slot between two movable surfaces of which at least one is provided by an endless press belt (1) at the press slot resting on a supporting surface (10) in such a manner that it cannot increase its distance from the opposed moving surface, wherein each press belt (1) and the supporting surface (10) associated therewith define between themselves a passage (11) filled to a maximum capacity thereof with bearing balls and merging into a return passage (12), the balls, when the press is operating, carrying out a complete orbital motion.

4,881,889

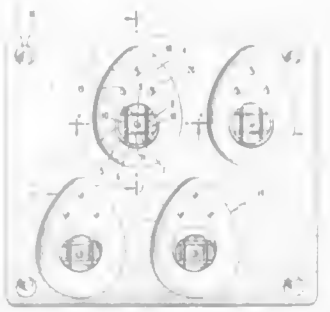
ARCUATE MOLD ELEMENT FOR ROTARY DOUGH MOLDER

Albert A. Spiel, Yonkers, N.Y.; James Roe, Wayne, and Henry C. Spanier, West Milford, both of N.J., assignors to Nabisco Brands, Inc., East Hanover, N.J.

Division of Ser. No. 235,059, Aug. 23, 1988, which is a continuation of Ser. No. 431, Jan. 5, 1987, Pat. No. 4,795,655, which is a continuation-in-part of Ser. No. 578,040, Feb. 2, 1984, Pat. No. 4,634,597, and a continuation-in-part of Ser. No. 898,187, Aug. 20, 1986, Pat. No. 4,711,425. This application Mar. 31, 1989, Ser. No. 331,354

Int. Cl.⁴ B29C *33/42*

U.S. Cl. 425—383 11 Claims



1. A mold for use in a rotary molder for dough, comprising: an arcuate element having a plurality of depressions formed therein, each of said depressions being bounded by a perimeter;

each of said perimeters forming the outline of a foodstuff;

each of said depressions having at least one generally arcuate surface forming the bottoms of said depressions;

at least one of said arcuate surfaces in each depression having at least one raised ridge thereon, each of said ridges lying entirely within said depression and positional to form corresponding grooves in dough which is received in said depressions;

whereby dough passing beneath said mold of said rotary molder is received by said depressions so as to be shaped thereby into a biscuit shape having the outline of said foodstuff and having at least one groove in the upper surface thereof.

4,881,890

MOULDED RESIN ARTICLE

Andrew S. Barry, P.O. Box 515, Hurstville, New South Wales, 2220, Australia

Continuation of Ser. No. 937,556, Dec. 3, 1986. This application Jun. 29, 1988, Ser. No. 212,970

Claims priority, application Australia, Jan. 12, 1985, PH3762

Int. Cl.⁴ B29F *1/00*

U.S. Cl. 425—543 28 Claims

1. Apparatus for moulding of articles from a reaction setting composition comprising:

means for de-aerating a main or predominating ingredient of said composition, said main ingredient comprising an abrasive filled material, .

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means for mixing said main ingredient with a minor ingredient to form a mixture,

means for intermittently flowing said mixture under air-less condition into the bottom of a vented but essentially closed mould cavity defined by a mould assembly, said means for flowing said mixture including a pump comprising:

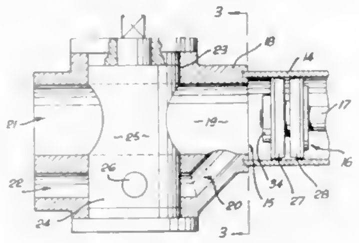
a metering cylinder having an open head-end,

a piston in said cylinder, screw operable for advancement towards and retraction from said head-end,

a cylinder bead on said head-end,

an intake port and a discharge port both opening to said head-end and both extending through said head,

a circularly sectioned valve chamber extending through said head and intersecting both said ports,



a plug valve rotatably housed in said chamber and having two angularly phased-apart passages through it respectively able to register with said ports,

means for actuation of said piston and rotation of said plug-valve under control such that when said piston is retracting from said head-end the intake port is open and the discharge port is closed, and when said piston is advancing towards said head-end the intake port is closed and the discharge port is open, said means for flowing providing intermittent flowing of said mixture for a predetermined time to allow for pressure equalization within said mould cavity, and

said mould assembly being adapted to be stripped away from the finished article once setting of said composition has finished.

4,881,891

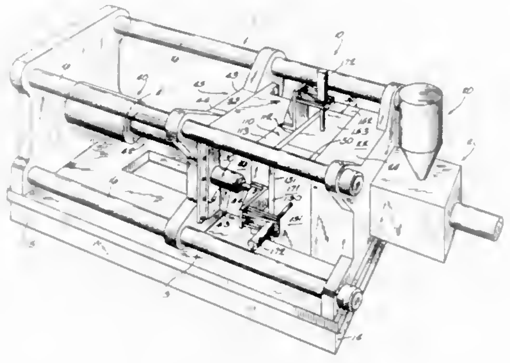
MOLD SIDE WALL LOCKING APPARATUS

LeRoy D. Luther, Brookfield, Wis., assignor to Triangle Tool Corporation, Milwaukee, Wis.

Filed Jan. 11, 1989, Ser. No. 296,184

Int. Cl.⁴ B29C *45/66*

U.S. Cl. 425—556 14 Claims



1. Apparatus for use in a mold assembly and for selectively restraining a mold side wall against movement away from a molding position, and the mold assembly including an end plate, the apparatus comprising:

a support member selectively moveable along a first path of travel toward and away from the end plate, said support member supporting the mold side wall for slideable movement along a second path of travel substantially perpendicular to the first path of travel and between a mold open position and a mold closed position;

means for moving the support member along the first path of travel toward and away from the end plate; and

a locking member carried by the support member, said locking member being supported for movement with respect to the support member between a retracted position wherein the mold side wall is movable along the second path of travel with respect to the support member and an extended position wherein said locking member is operable to restrain movement of the mold side wall away from the mold closed position when the support member is moved toward the end plate, and releasing the mold side wall for slideable movement toward the mold open position when the support member is moved away from the end plate.

4,881,892

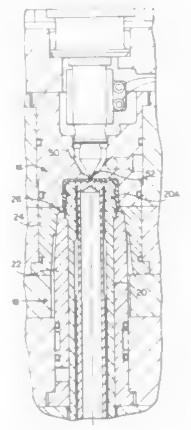
APPARATUS FOR MAKING TAMPER-EVIDENT CLOSURES

Charles A. Webster, Oak Lawn, and Christian J. John, Downers Grove, both of Ill., assignors to American National Can Company, Chicago, Ill.

Filed Oct. 11, 1988, Ser. No. 255,822

Int. Cl.⁴ B29C *45/34*

U.S. Cl. 425—577 2 Claims



1. A mold for forming a closure including a main body having a skirt which has a tamper-evident band secured to a lower edge by a plurality of frangible connections comprising:

first and second mold portions cooperating to define a closure cavity, said first mold portion defining an outer surface of said closure;

said second mold portion defining an inner surface of said closure; and,

said second mold portion including a hollow core having a knockout pin reciprocated therein and a sleeve surrounding said core, said sleeve and core having tapered portions adjacent said cavity and said core having an annular groove below said tapered portion with communication means between said annual groove and a lower edge of said cavity, said core having axially-extending recesses leading from said groove to accommodate air flow from said cavity.

4,881,893

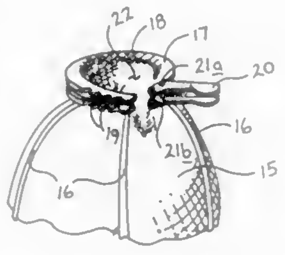
METALLIC LANTERN MANTLE

John D. Mellini, 304 Fall St., Seneca Falls, N.Y. 13148

Filed Dec. 27, 1988, Ser. No. 290,647

Int. Cl.⁴ F21H *1/00*

U.S. Cl. 431—100 5 Claims



1. A metallic mesh mantle for use with a portable fuel burning lantern wherein said lantern includes a gas outlet pipe for deliverance of said fuel, said mantle comprising,

a sack-shaped mantle formed with an open end, said mantle formed of an elongate configuration and of a fine metallic mesh, and

a metallic clamping means secured about the open end of the mantle for adjustable securement about the outlet pipe of said lantern wherein said metallic clamping means includes a securement ring wih a first terminal end formed with outwardly projecting parallel rows of engagement teeth arranged to receive and engage a second terminal end including a latch. and

wherein said sack-shaped mantle is defined by an ellipsoidal surface of revolution including a major elongate vertical axis and a minor horizontal axis, and

wherein the major axis is of a length equal to 1.25 inches, and said minor axis is of a length equal to 1 inch, and

wherein the mantle is formed of stainless steel wire of a gauge within a range of twenty to thirty-five gauge.

4,881,894

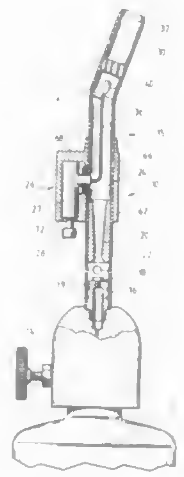
SELF-IGNITING PORTABLE TORCH ASSEMBLY

David S. Chapin, Raleigh, N.C.; Gil Farnham, and Al Burgin, both of Sycamore, Ill., assignors to Cooper Industries, Inc., Houston, Tex.

Filed Feb. 16, 1988, Ser. No. 155,783

Int. Cl.⁴ F23Q *7/12*

U.S. Cl. 431—255 10 Claims



1. A torch tip for connection to a source of pressurized flammable fluid comprising in operative combination:

mean for regulating the flow of the pressurized flammable fluid contained within the first portion of a tubular member;

means for drawing oxygen into the flow of the pressurized flammable fluid contained within a second portion of said tubular member;

a mixing chamber for combining the pressurized flammable fluid and oxygen contained within a third portion of said tubular member;

a flame holder located at one end of said mixing chamber;

means for producing an electrical potential mounted on the exterior of said tubular member downstream from said means for regulating the flow of the pressurized flammable fluid in a heat resistant housing;

a burn tube extending from said flame holder away from said mixing chamber;

means for producing a spark in said mixing chamber;

means for conducting electric current from said means for producing an electrical potential to said means for producing a spark, said means for conducting electrical current being contained entirely within said tubular member.

4,881,895

CERAMIC GAS BURNER FOR A COMBUSTION CHAMBER OF A HOT-BLAST STOVE

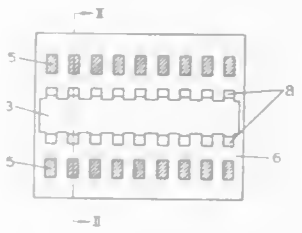
Jacob Felthuis, Alkmaar, and Ronald J. M. Stokman, Hillegom, both of Netherlands, assignors to Hoogovens Groep B.V., Ijmuiden, Netherlands

Filed Aug. 16, 1988, Ser. No. 232,670

Claims priority, application Netherlands, Aug. 31, 1987, 8702036

Int. Cl.⁴ F24H *1/00*

U.S. Cl. 432—181 4 Claims



1. A ceramic gas burner for a combustion chamber of a hot-blast stove having parallel vertical supply ducts for the two combustion components, a first one of said ducts having an upwardly opening first outlet opening which has in plan view a substantially rectnagular shape with two long sides and the second of said ducts opening at a plurality of second outlet openings which are located on both sides of and above said first outlet opening, the general discharge directions of the second outlet openings being oblique to that of the first outlet opening, wherein as seen in plan view the first outlet opening has, in its long sides, a plurality of recesses which extend outwardly towards the second outlets said recesses being arranged so that, with respect to each said recess in a first one of said long sides of the first outlet opening, there is correspondingly a said recess directly opposite in the second of said long sides of the first outlet opening.

4,881,896

MUSCULAR EXPANSION BUMPER AND HEAD-GEAR APPLIANCE

Earl O. Bergersen, 950 Green Bay Rd., Winnetka, Ill. 60093

Continuation-in-part of Ser. No. 109,938, Oct. 19, 1987, Pat. No. 4,797,093. This application Oct. 11, 1988, Ser. No. 255,963

Int. Cl.⁴ A61C *7/00*

U.S. Cl. 433—5 18 Claims

1. A muscular expansion bumper appliance for use in correcting human dentition comprising:

a wire form member having a generally U-shaped configura-

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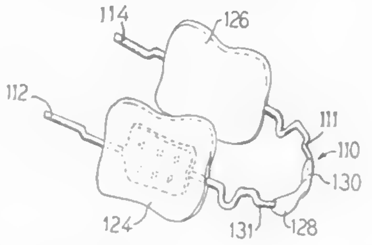
tion having a central bight portion with two free posterior ends;
at least one metallic plate member secured to said wire form member and extending vertically at least one of superior to or inferior to said wire form member;



said metallic plate member positioned on said wire form member between said free ends and said central bight portion; and
a plastic material covering said metallic plate member.

4,881,897

TOOTH-ROOT IMPLANT WITH LONG-TERM RESISTANCE TO REPETITIVE STRESSES

Henning Franek, Braunfels; Klaus-Konrad Deutscher, deceased, late of Wetzlar (by Anneliese Dentscher, executor); Heinz Broemer, Wetzlar; Volker Strunz, Berlin, and Wolfgang Rosenkranz, Schoeffengrund-Niederqnembach, all of Fed. Rep. of Germany, assignors to Ernst Leitz Wetzlar GmbH, Wetzlar, Fed. Rep. of Germany

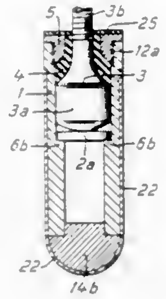
PCT No. PCT/DE87/00206, § 371 Date Jan. 7, 1988, § 102(e) Date Jan. 7, 1988, PCT Pub. No. WO87/06816, PCT Pub. Date Nov. 19, 1987

PCT Filed May 7, 1987, Ser. No. 154,349

Claims priority, application Fed. Rep. of Germany, May 9, 1986, 3615733

Int. Cl.^{4} A61C *13/28*

U.S. Cl. 433—169 32 Claims



1. A tooth-root implant of high fatigue strength, comprising;
a sleeve having a coating of a bioactive material;
a pressure plate situated within said sleeve which serves as a damping diaphragm and on which rests a superstructure bearing surrounded, at least partially, by a plastic casing, and wherein a screw plug is provided with closes off an upper part of the sleeve in such a way that positive contact is made with the plastic casing; and
retention means for supporting said pressure plate, said pressure plate resting loosely on said retention means; wherein
said pressure plate and said superstructure bearing are composed of high fatigue-strength metal.

4,881,898

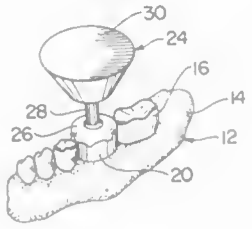
METHOD OF FORMING AN ANATOMICAL OCCLUSAL SURFACE CONFIGURATION ON A TOOTH-LIKE MEMBER AND STAMP FOR USE IN CONNECTION THEREWITH

Arthur E. Harvey, Sr., Davis Ave., Rd. #2, Pawcatuck, Conn. 06379; Thomas J. Harvey, 64 Floral Park Blvd., Pawtucket, R.I. 02861, and Donald H. Harvey, 233 Benham Rd., Apt. #4, Washington Bldg., Groton, Conn. 06340

Filed Apr. 14, 1988, Ser. No. 181,664

Int. Cl.^{4} A61C *5/00*

U.S. Cl. 433—215 9 Claims



1. A method of forming an anatomical occlusal surface in a formable tooth-like member comprising the steps of:
(a) establishing a partially formed occlusal surface in said tooth-like member by meshing it with an opposing tooth, said partially formed occlusal surface including a biting surface but not including an anatomical surface pattern;
(b) separating said tooth-like member with said partially formed occlusal surface thereon from said opposing tooth; and
(c) pressing an anatomical surface configuration into said partially formed occlusal surface utilizing a rigid anatomical stamp having a predetermined complimentary anatomical occlusal surface configuration thereon, said stamp being formed without complimentary buckle, lingual, mesial and distal side surface portions and being pressed onto said tooth-like member so as to impart an anatomical surface configuration to said partially formed occlusal surface without significantly altering the configurations of the buckle, lingual, mesial and distal side surface portions of said tooth-like member.

4,881,899

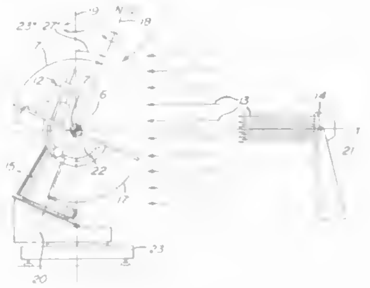
SUNSHINE SIMULATOR FOR SMALL SCALE MODELS

Jacqnes H. Derome, 168 dn Béarn, St-Lambert, Quebec, Canada (J4S 1L1)

Filed Oct. 6, 1988, Ser. No. 254,148

Int. Cl.^{4} G09B *9/00, 25/04*

U.S. Cl. 434—72 23 Claims



1. A sunshine simulator comprising model attaching support means pivotally attached to a support member for adjustable displacement on a transverse pivot axis relative to horizontal light rays emitted from a non-displaceable remote beam emitting source whereby to position said support means at a position relative to said rays and corresponding to a desired earth latitude, said support member being pivotable secured to a base for axial rotation thereof on an inclined axis corresponding to the earth's inclination and with its axis of rotation intersecting said transverse pivot axis at an intersecting point whereby to position said support means at a position corresponding to a desired hour of the day, said base being rotationally secured to an inclined support wall pivotally secured to a stationary platform for rotation relative thereto on a rotation axis which is normal to said rays and which intersects at said intersecting point whereby to position said support means at a position corresponding to a desired seasonal position of the earth with respect to the sun, and dial means disposed between said support member and an adjacent circumferential portion of said inclined support wall to position said support means at a desired hour of day, said dial means being stationary relative to a light source position reference marking on said stationary platform.

4,881,900

SENSING DISPLAY APPARATUS OF IMAGE PATTERN

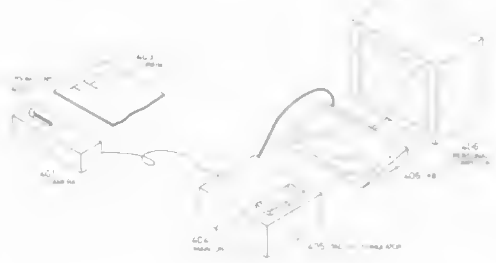
Mikiharu Matsuoka, Tokyo; Yasuhiro Yamada, Yokohama; Yasuko Miyazaki, Sagamihara; Takashi Kanemoto, Machida; Hirohiko Katayama, Kawasaki, and Tamao Ikuta, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 21, 1987, Ser. No. 76,180

Claims priority, application Japan, Jul. 23, 1986, 61-174052; Aug. 4, 1986, 61-183029; Aug. 4, 1986, 61-183077; Aug. 4, 1986, 61-183078; Nov. 20, 1986, 61-179619[U]

Int. Cl.^{4} G09B *21/00;* G06K *9/00*

U.S. Cl. 434—113 10 Claims



1. A sensing display apparatus of an image pattern comprising:
converting means for converting an optical image recorded on a recording medium into an electric signal;
memory means for storing the electrical signal output from said converting means;
sensing display means for converting the electric signal output either from said converting means or from said memory means into a mechanical vibration and for displaying it in a tactile manner; and
selecting means, arranged near said converting means, for selecting between a first mode in which the electric signal converted by said converting means is directly output to said sensing display means, a second mode in which the electric signal converted by said converting means is stored in said memory means, and a third mode in which the electric signal stored in said memory means is output to said sensing display means.

4,881,901

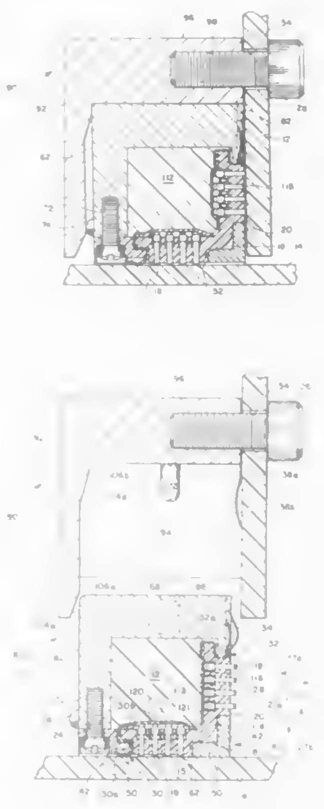
HIGH DENSITY BACKPLANE CONNECTOR

David W. Mendenhall, Greenville, R.I.; Steve P. Marian, Plainville, Mass.; Jay T. Goff, Cranston, R.I.; Neil J. Cotter, Marston Mills, Mass., and Steve R. Corbesero, Johnston, R.I., assignors to Augat Inc., Mansfield, Mass.

Filed Sep. 20, 1988, Ser. No. 246,777

Int. Cl.^{4} H01R *9/09, 23/70*

U.S. Cl. 439—65 10 Claims



1. A high density backplane connector for mating and electrically interconnecting first and second high density circuit boards having predetermined geometric conductive patterns, comprising:
compliant contact module means for electrically interconnecting the first and second high density circuit boards, said compliant contact module means including
compliant means for providing a conductive matrix and biasing forces to electrically interconnect the first and second high density circuit boards,
first contact means coacting with said compliant means for electrically interconnecting said conductive matrix to the predetermined geometric conductive pattern of the first high density circuit board, and
second contact means coacting with said compliant means for electrically interconnecting said conductive matrix to the predetermined geometric conductive pattern of the second high density circuit board, said second contact means including biasing means for mechanically and electrically engaging the predetermined geometric conductive pattern of the second high density circuit board and for exerting a biasing force against the second high density circuit board for displacement thereof away from said compliant contact module means during initial mating;
stiffener module means secured to the second high density circuit board for providing a camming force sufficient to overcome said biasing force exerted by said biasing means wherein said second contact means is mechanically and

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electrically engaged with the predetermined geometric conductive pattern of the second high density circuit board with a wiping action therebetween during mating; and

housing module means secured to the first high density circuit board for mounting said compliant contact module means therein and wherein said compliant means biases said first contact means into mechanical and electrical engagement with the predetermined geometric conductive pattern of the first high density circuit board, said housing module mean including camming means for coacting with said stiffener module means to provide said camming force during mating; and wherein

mating of the second high density circuit board to the first high density circuit board is effected by pressing said stiffener module means downwardly over said housing module means to sequentially cause said biasing means to engage the second high density circuit board, said stiffener module means cammingly coacts with said camming means of said housing module means to cause said second contact means to mechanically and electrically engage the predetermined geometric conductive pattern of the second high density circuit board, and said second contact means coacts with the predetermined geometric conductive pattern of the second high density circuit board to effect a wiping action therebetween.

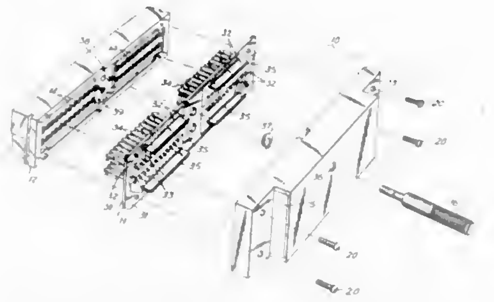
4,881,902
ELECTRICAL TERMINATOR DEVICE

Ralph A. Papa, Susquehanna Twp., Susquehanna County, and James R. Koser, Elizabethtown, both of Pa., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 914,551, Oct. 1, 1986, abandoned, which is a continuation of Ser. No. 727,918, Apr. 29, 1985, abandoned, which is a continuation-in-part of Ser. No. 653,381, Sep. 21, 1984, Pat. No. 4,585,284. This application Dec. 17, 1987, Ser. No. 135,532

Int. Cl.⁴ H01R *13/66*

U.S. Cl. 439—76 20 Claims



1. An electrical device for terminating an input/output port in electronic equipment, said electrical device comprising:

a circuit board having first and second sides and a plurality of through holes, and having signal leads on at least one side in electrical contact with said plurality of through holes;

a plurality of electrical terminals, each of said terminals being a hermaphroditic serpent terminal having first and second contact ends, each of said terminals being mounted on said first side of said circuit board in a respective one of said plurality of through holes in electrical contact therewith at said first contact end, said terminals extending substantially perpendicularly from said circuit board and substantially parallel to one another;

a plurality of impedance elements mounted on said second side of said circuit board, each of said impedance elements being mounted in electrical contact with at least two of said plurality of through holes;

a first dielectric housing having multiple terminal receiving channels, said first housing presenting a mating face to said input/output port, said mating face being parallel to said circuit board, each of said serpent terminals being free of means for latching into said channels, said plurality of serpent terminals being simultaneously insertable into, and simultaneously removable from, said channels;

a second dielectric housing for covering said impedance elements on said second side of said circuit board; and

means for retaining said first dielectric housing, said circuit board, and said second dielectric housing in assembled, sandwiched relationship;

whereby said second ends of said terminals project from said terminal receiving channels in said first dielectric housing for connection to said input/output port, a selected impedance being observable between any two selected ones of said terminals for altering the relationship between said port and said electronic equipment.

4,881,903
TERMINAL CONNECTOR OF SMALL ELECTRIC DEVICES

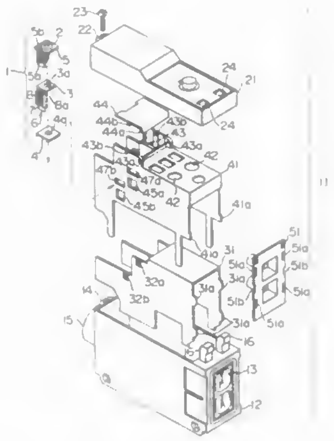
Yoshitaka Tsuji, Osaka, Japan, assignor to IDEC IZUMI Corporation, Osaka, Japan

Filed Aug. 25, 1988, Ser. No. 236,392

Claims priority, application Japan, Aug. 26, 1987, 62-129801[U]

Int. Cl.⁴ H01R *9/24*

U.S. Cl. 439—76 7 Claims



1. A terminal connector of a small electric device, comprising:

a printed substrate having electric circuitry arranged thereon and formed with at least one terminal at a predetermined location for electrically connecting the electric circuitry to external devices;

a holding member adapted to accommodate the substrate therein and including terminal sections for providing locations for connecting electric wires from the external devices to each of the terminals; and

at least one terminal connecting device for fastening the electric wires, each said terminal connecting device being arranged in a respective said terminal section of the holding member and each including a fastening screw, a movable member for supporting the fastening screw, a terminal spring for movably and undetachably supporting the movable member, and a terminal fitting;

wherein the location of each said terminal formed on the substrate and the location of each said terminal connecting device are selected such that when the substrate is accommodated within the holding member and each said terminal connecting device is arranged in the holding member, a positional relation is attained whereby each said terminal on the substrate and a portion of each said terminal connecting device are in contact and connected electrically with each other.

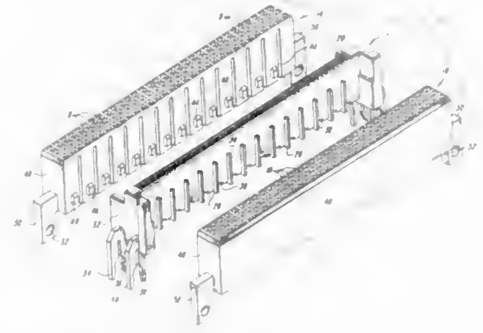
4,881,904
MODULAR ELECTRICAL CONNECTOR

J. Preston Ammon, Dallas, and Jerry Kendal, Lewisville, both of Tex., assignors to Augat Inc., Mansfield, Mass.

Filed Sep. 20, 1988, Ser. No. 246,874

Int. Cl.⁴ H01R *9/09, 4/58*

U.S. Cl. 439—78 17 Claims



1. A modular electrical connector for mounting a first and second plurality of electrical contacts in electrical connection with a printed circuit board, comprising:

a central module having a plurality of contact receptacles configured to receive the first plurality of electrical contacts;

a first contact module having a plurality of contact receptacles arranged in X rows, and wherein said plurality of contact receptacles are configured to receive electrical contacts of the second plurality;

a second contact module having a plurality of contact receptacles arranged in Y rows, and wherein said plurality of contact receptacles are configured to receive electrical contacts of the second plurality; and

means associated with said central module and said first and second contact modules for assembling said central module and said first and second modules in combination to form said modular electrical connector.

4,881,905
HIGH DENSITY CONTROLLED IMPEDANCE CONNECTOR

Henry W. Demler, Jr., Clearwater; Frank P. Dola, Hudson; David J. Kimmel, Clearwater; John H. Lauterbach, Hudson; Thomas J. Sotolongo, Clearwater Beach, and Grover A. Zwieg, Clearwater, all of Fla., assignors to AMP Incorporated, Harrisburg, Pa.

Continuation of Ser. No. 866,518, May 23, 1986, abandoned. This application Sep. 11, 1987, Ser. No. 96,792

Int. Cl.⁴ H01R *23/70*

U.S. Cl. 439—79 4 Claims

1. A multi-contact electrical connector assembly for interconnecting corresponding conductive traces on orthogonal printed circuit boards, comprising:

a first electrical connector having inner and outer terminals aligned in inner and outer rows respectively, the outer terminals being longer than the inner terminals;

inner and outer dielectric sleeves surrounding the inner and outer terminals, the inner and outer terminal ends extending beyond an upper face of the dielectric sleeves;

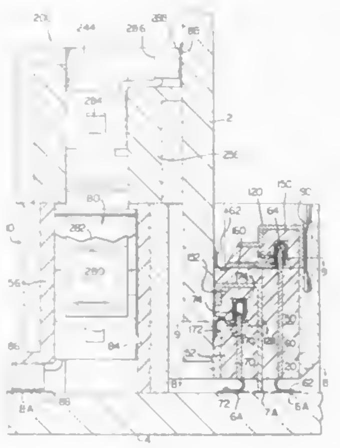
a first unitary housing formed of a conductive material surrounding and extending between the dielectric sleeves; the upper faces of the dielectric sleeves being exposed;

a second electrical connector having upper and lower terminals aligned in upper and lower rows respectively, each upper and lower terminal having a socket at one end thereof; the upper row being longer than the lower row;

upper and lower dielectric sleeves each one having a socket pocket in a lower face for receiving a corresponding one of said sockets;

a second unitary housing formed from a conductive material extending around the upper and lower dielectric sleeves; the lower faces of the dielectric sleeves being exposed;

the first and second connectors being mated with the inner and outer terminals extending at right angles to and being matable with the lower and upper terminals respectively, the sockets of the lower and upper terminals engaging ends of corresponding inner and outer terminals at the right angle intersections of the terminals; the lower faces of the upper and lower dielectric sleeves abutting the upper faces of the inner and outer dielectric sleeves, the first and second housings having interior and exterior walls individually surrounding each pair of mated terminals along substantially the entire length thereof with the dielectric sleeves forming an annular dielectric between the terminals and the housing walls.



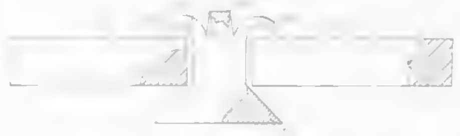
4,881,906
METHOD FOR OBTAINING ELECTRICAL INTERCONNECT USING A SOLDERABLE MECHANICAL FASTENER

James C. Mackanic, Rocklin; Dawn M. Lelko, Citrus Heights; Steven A. Shugart, and James K. Koch, both of Rocklin, all of Calif., assignors to Helwett-Packard Company, Palo Alto, Calif.

Filed Feb. 25, 1988, Ser. No. 160,390

Int. Cl.⁴ H01R *9/09*

U.S. Cl. 439—83 6 Claims



1. A method forproviding an electrical connection between a bottom and a top of a printed circuit board, the method comprsing the steps of:

(a) isolating a first portion of conductive layer on top of the printed circuit board and around a hole in he printed circuit board, so that when soldering, heat may be conserved in the first portion;

(b) inserting an eyelet through the hole;

(c) crimping the eyelet so that tabs of the eyelet cause the eyelet to be mechanically retained in the hole, so that

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capillary solder paths to the copper pad are formed, and so that the eyelet is crimped with such a tension that under its own weight the eyelet is able to non-resiliently move slightly in and out of the hole and the eyelet is able to move slightly in a horizontal motion across the first portion of the conductive layer;

(d) wave soldering the bottom of the printed circuit board.

4,881,907

CONDUCTOR STRIP FOR ELECTRICAL AND TELECOMMUNICATION CONDUCTORS

Nils-Åke Bergman, Junivägen 24; Harald Widell, Kalendervägen 25, and Jan Widell, Augustivägen 11, all of S-352 47 Växjö , Sweden

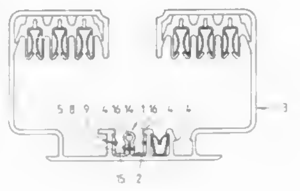
PCT No. PCT/SE86/00579, § 371 Date Jun. 23, 1988, § 102(e) Date Jun. 23, 1988, PCT Pub. No. WO87/03998, PCT Pub. Date Jul. 2, 1987

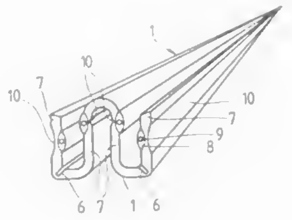
PCT Filed Dec. 18, 1986, Ser. No. 216,716

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1985, 8536122[U]

Int. Cl.⁴ H01R *13/60*

U.S. Cl. 439—111 10 Claims





1. A conductor strip (**1**, **1′**, **1″**) for electrical and telecommunication connectors, with at least one electrical conductor (**9**, **12**, **19**) arranged along substantially the entire length of the strip for electrical contact to be made therewith at any selected position, and said conductor is arranged on the surface of an electrically non-conductive strip base (**5**), characterized in that the strip base (**5**) has free edges, is made of a flat resilient material and is provide with notches (**6**) which extend the length of the strip base and which allow the strip base (**5**) to be bent at approximately ninety degree angles into a desired shape, and the conductor strip (**1**, **1′**, **1″**), because of the inherent resiliency of the strip base material, is automatically lockable by resilient expansion of the conductor strip when the free edges of the strip engage behind projections (**4**) of an installation channel (**3**).

4,881,908

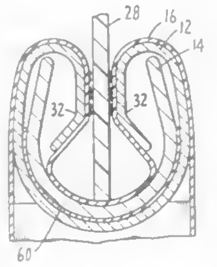
HIGH DENSITY AND HIGH SIGNAL INTEGRITY CONNECTOR

Michael Perry, Mountain View, and Gary Yasumnra, Santa Clara, both of Calif., assignors to Beta Phase, Inc., Menlo Park, Calif.

Filed Oct. 11, 1988, Ser. No. 255,500

Int. Cl.⁴ H01R *13/24*

U.S. Cl. 439—161 20 Claims



1. A high-performance connector comprising:

spring means, said spring means being an elongated hollow split tube having a longitudinal axis and an axially aligned split defining a generally C-shaped cross-section with end portions;

a heat-recoverable member, said heat-recoverable member being elongated and generally C-shaped and being concentrically positioned within the cross-section of said spring means and being biased by said spring means, said heat-recoverable member formed from shape-memory alloy having a deformable state below a transition temperature and a memory state above the transition temperature, said heat-recoverable member capable of being deformed by said spring means when said alloy is in its deformable state corresponding to one dimension of said split, a change from its deformable state to its memory state recovering said member to its non-deformed shape corresponding to another dimension of said split; and

first and second sets of parallel spaced conductors, each set terminating at one end of each set thereof in a first and a second matrix of contact pads, respectively, the contact pads of each matrix being spaced from each other in that matrix in two dimensions, said first and second sets of conductors at least partially surrounding said spring means and said matrices being positioned within the split of said spring means adjacent the end portions of said spring means, pads of the first matrix being positioned on one side of the split and the pads of the second matrix being positioned generally opposite thereto on the other side of the split, movement of said spring means causing the plurality of pads on each matrix to move toward each other to contact and electrically connect with a substrate that may be inserted within said split.

4,881,909

HOSE ASSEMBLY FOR CANISTER VACUUM CLEANER

Gordon R. Blackman, Lexington, Ky., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed Oct. 31, 1988, Ser. No. 264,550

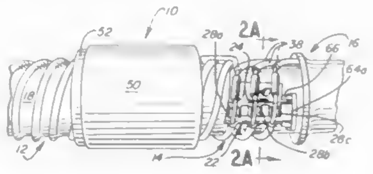
Int. Cl.⁴ H01R *4/60*

U.S. Cl. 439—191 28 Claims

1. An electrically conductive hose assembly for a vacuum cleaner, comprising:

a hose body having a plurality of resilient helical electrically conductive wires, said wires having end portions terminating along a line substantially axial with respect to said hose body;

a terminal assembly having a projecting hollow end portion received within said hose body, said hollow end portion having on its exterior a plurality of outwardly projecting wire termination blocks for removably securing said wire end portions; and



a removable sleeve disposed around the hose body receiving the terminal assembly end portion, said sleeve when so disposed preventing removal of the wire end portions from the termination blocks.

4,881,910

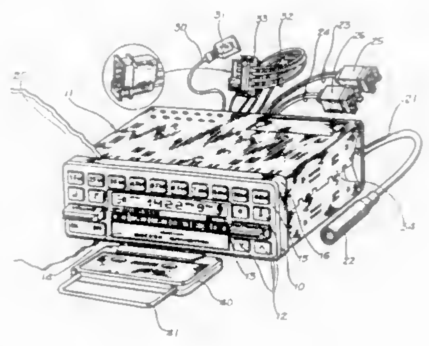
QUICK RELEASE MINIMUM PROFILE SHUTTLE FOR VEHICLE RADIOS AND TAPE PLAYERS

Walter Odemer, Burbank, Calif., assignor to Walter Odemer Co., Inc., Burbank, Calif.

Filed Sep. 21, 1987, Ser. No. 98,560

Int. Cl.⁴ H01R *13/00*

U.S. Cl. 439—476 4 Claims



1. A shuttle for retention and release of vehicle radio and/or recording player unit including a recess for receiving a tape cassette and electrical connectors from a vehicle dash or console recess wherein the vehicles provides electrical connectors to the radio and/or recording player unit comprising:

a thin walled enclosure configured to generally match the exterior dimensions of the radio and/or cassette player of said unit and including an opening for receiving said unit;

electrical connectors located within said enclosure and configured and positioned to mate with the matching electrical connectors of said unit upon insertion of said unit into the enclosure;

means for securing said enclosure within the dashboard or console recess; and

a tape cassette shaped handle member for insertion into the tape cassette receiving recess of said unit and for mechanical engagement therewith upon insertion;

whereby said tape cassette-shaped handle member causes the removal of said unit by a pull on the handle member.

4,881,911

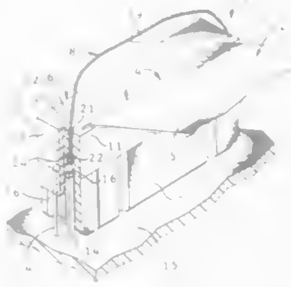
LANYARD FOR DISCONNECTING A CONNECTOR OF A CABLE ASSEMBLY

John T. Haddock, Lititz; Charles A. Miller, York New Salem; Stanford C. Moist, Jr., Hummelstown; Warren D. Nauman, Elizabethtown, and Ronald S. Pala, Mechanicsburg, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Mar. 21, 1989, Ser. No. 326,762

Int. Cl.⁴ H01R *13/46*

U.S. Cl. 439—484 15 Claims



1. An electrical connector comprises, an insulative housing block, spaced apart cavities in the housing block and conductive electrical contacts in corresponding cavities for connection with corresponding conductors of electrical wiring, and for disconnect coupling with corresponding multiple electrical terminals arranged in an array, wherein the improvement comprises;

the housing block includes at least one recess without an electrical contact therein, said recess is open for pluggable receipt of a corresponding said electrical terminal, a flexible lanyard extends in a loop, said loop is anchored to said housing block, and said loop extends into said recess and is anchored therein.

4,881,912

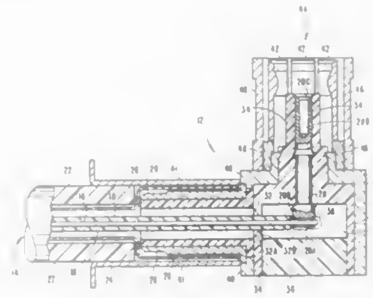
HIGH VOLTAGE COAXIAL CONNECTOR

Robert L. Thommen, Indianapolis, and Eric B. Parker, Greenwood, both of Ind., assignors to Specialty Connector Company, Inc., Franklin, Ind.

Filed Apr. 29, 1988, Ser. No. 188,035

Int. Cl.⁴ H01R *17/18*

U.S. Cl. 439—585 8 Claims



1. A coaxial cable connector comprising:

a conductive body having a hollow and a tubular portion communicating with the hollow interior, said body also having an access opening extending into the hollow interior;

insulation means completely lining the hollow interior of said conductive body, said insulation means having an opening therein coaxial with the tubular portion of said conductive body;

a coaxial mating connector attached to said conductive body

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and including a shield contact connected to said conductive body, said coaxial mating connector also including a coaxial insulator which is an extension of said insulation means, said coaxial mating connector further including a conductor pin one end of which acts as a contact for said coaxial connector and the other end of which extends into said hollow interior, said pin being fixed within said coaxial insulator and insulation means;

an insulating piece for insertion into said access opening; and

clamping means for securing a coaxial cable to the tubular portion of said conductive body and electrically connecting the shield of the coaxial cable to said conductive body, such that the center conductor of the coaxial cable extends into said hollow interior in contact with said conductor pin,

whereby the contact between said conductor pin and the center conductor of the coaxial cable is accessible through said access opening before said insulating piece is inserted into said access opening.

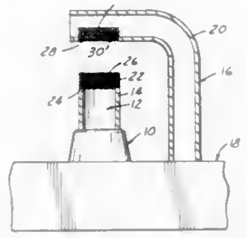
4,881,913
EXTENDED LIFE SPARK PLUG/IGNITER

Gamdur S. Mann, Grand Blanc, Mich., assignor to General Motors Corporation, Detroit, Mich.

Division of Ser. No. 207,586, Jun. 16, 1988. This application May 3, 1989, Ser. No. 346,968

Int. Cl.⁴ H01I *13/20, 13/39*

U.S. Cl. 445—7 8 Claims



1. A process for forming an extended life spark plug having center and side electrodes comprising the steps of:

providing center and side electrodes of base metal alloy including chromium;

heating the center and side electrodes in air at a temperature in the range of 500° C.–600° C. for a time period to form a precursor oxide coating thereon; and

reheating the precursor oxide layer at a temperature in the range of 900°–1000° C. to provide a continuous, pore free, smooth adherent protective oxide layer on said center and side electrodes thicker than said precursor coating.

4,881,914
GETTER ARRANGEMENT HAVING A GETTER DETECTOR AND A POST-HEATING TIMER

Ronald P. T. Kamp, and Johannes P. De Meij, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 1, 1988, Ser. No. 278,884

Claims priority, application Netherlands, Dec. 16, 1987, 8703042

Int. Cl.⁴ H01J *7/18*

U.S. Cl. 445—73 5 Claims

1. A getter arrangement for providing a getter spot on a getter surface within an evacuated space by evaporating getter material arranged near the getter surface, the getter arrangement including heating means situated outside the evacuated space for within this space in the region of the getter material generating a heating power for evaporating the getter material, the getter arrangement further including a control unit for controlling the heating power, the control unit having detection means for detecting the presence of the getter spot on the getter surface, characterized in that:

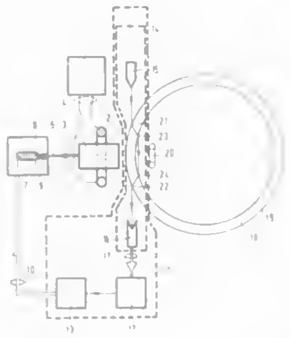
the heating means are arranged for producing a substantially constant heating power,

the control unit further includes:

a timer connected to the detection means for measuring a first time interval from the beginning of the transfer of the heating power to detection of the getter spot;

a time interval generator connected to the timer for generating a second time interval which is contiguous to the first time interval and whose length is determined by the first time interval, the time interval generator producing a switch-off signal at the end of the second time interval;

the getter arrangement includes switching means for switching-off the supply of power to the getter material in response to the switch-off signal.



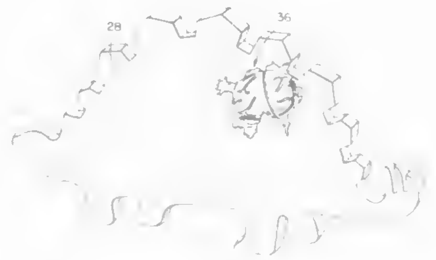
4,881,915
DINOSAUR EGG

J. Y. Liaw, Taipei, Taiwan, assignor to Li'l Mort Sales, Chicago, Ill.

Filed Apr. 4, 1988, Ser. No. 178,297

Int. Cl.⁴ A63H *23/00, 33/00, 3/00, 3/36*

U.S. Cl. 446—153 13 Claims



1. A dinosaur egg toy comprising:

an eggshell defining a hollow cavity,

weakened fracture lines randomly oriented across an exterior surface of said eggshell,

a compressed sponge located within said cavity, and

at least one opening formed in said eggshell to allow entry of water into said cavity for absorption by said sponge to cause said sponge to expand and rupture said eggshell at said fracture lines and emerge from said container at said fracture lines and at said at least one opening in an expanded condition.

4,881,916
DISPLAY BALLOON HOLDER

Dan B. Houser, Deerfield, Ill., assignor to RTC Industries, Inc., Chicago, Ill.

Filed Apr. 11, 1988, Ser. No. 180,181

Int. Cl.⁴ A63H *3/06*

U.S. Cl. 446—222 6 Claims

1. A display holder for an inflated balloon comprising: a two-member assembly, a first member including a tubular receptacle having a vertical wall and a bottom wall, and slot means for facilitating the entry of the balloon neck into said receptacle, constricting means on said first member comprising a cleat depending from said bottom wall for gripping and operationally retaining the neck of the balloon, and a second member being frictionally engageable with said first member for concealing said constricting means and the neck of the balloon operationally positioned thereon.

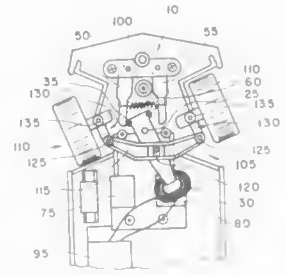
4,881,917
REMOTE CONTROL STEERING MECHANISM

Katsumi Suzuki, Tokyo, Japan, and Woo S. Yang, Seoul, Rep. of Korea, assignors to ITLA Corporation, Burbank, Calif.

Filed Dec. 30, 1987, Ser. No. 139,594

Int. Cl.⁴ A63H *17/36, 30/04, 29/22, 33/26*

U.S. Cl. 446—468 9 Claims



1. A steering mechanism for a radio control device including:

a mobile frame having a pivot point;

an annular shaped coil positioned in a first plane;

first and second spaced apart permanent magnets being positioned in a second plane and being mounted on said mobile frame, said first permanent magnet having a pole facing said coil and said second permanent magnet having a pole, opposing said pole of said first permanent magnet, facing said coil;

holding means, pivotable about said pivot point, for holding said coil adjacent to said first and second permanent magnets;

energizing means, operatively connected to said coil, for providing a current to said coil so as to pivot said holding means about said pivot point; and

biasing means, for positioning said coil substantially equidistant from at least two of said opposing poles.

4,881,918
COIN AND DISC SORTING

David Goh, Shropshire; Anthony M. Moran-Iturralde, Nottingham, and Geoffrey Howells, Hampshire, all of England, assignors to Scan Coin AB, Malmo, Sweden

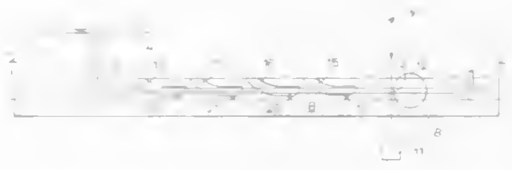
PCT No. PCT/GB87/00401, § 371 Date Mar. 21, 1988, § 102(e) Date Mar. 21, 1988, PCT Pub. No. WO87/07742, PCT Pub. Date Dec. 17, 1987

PCT Filed Jun. 10, 1987, Ser. No. 158,268

Claims priority, application United Kingdom, Jun. 12, 1986, 8614279; Jun. 12, 1986, 8614280

Int. Cl.⁴ G07D *3/14*

U.S. Cl. 453—4 10 Claims



10. A coin sorter comprising a belt which is arranged in proximity to a support surface, means for feeding coins to said belt in single file, the arrangement being such that when said belt is driven the coins are trapped between said belt and said support surface and are carried along said support surface by the frictional engagement between said belt and the coins, a coin measuring means for measuring coins as they are conveyed by said belt along said support surface, a coin receiving means positioned alongside said support surface, the support surface being provided with at least one recess of a depth such that a coin when in the recess is still driven by the belt, the recess being bounded by a deflection wall which is shaped to deflect a coin which is engaged with said deflection wall out of the path of said belt to said coin receiving means, selectively operable positioning means positioned downstream of said coin measuring means and upstream of said recess for selectively displacing said coins transversely of the belt in response to said coin measuring means, whereby selected coins are positioned transversely of said belt such that they are pressed into said recess by said belt for deflection by said deflection wall.

4,881,919
BULK COIN HOPPER

Stanley P. Dabrowski, Euclid, Ohio, assignor to Ardac, Inc., Eastlake, Ohio

Filed Mar. 14, 1988, Ser. No. 167,406

Int. Cl.⁴ G07D *1/00*

U.S. Cl. 453—57 10 Claims

5. A hopper for a changer, comprising:

a chamber for receiving coins in bulk, said chamber defined by a housing, said housing having a slot opening therein;

a first disk maintained at a bottom of said chamber and adapted for selective rotation, said first disk passing in juxtaposition to said slot opening in said housing; and

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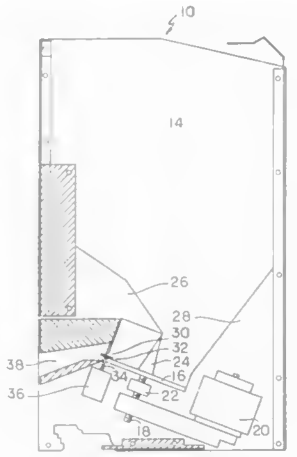
a second disk maintained at said slot opening and rotatable therein, said first and second disks being parallel to each other and rotating in the same direction about parallel axes.



4,881,920

SELF-PROPELLING HARVESTER THRESHER

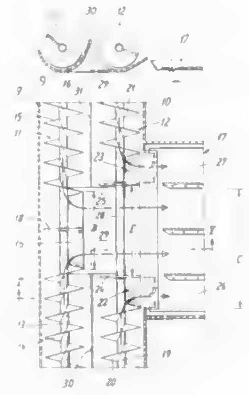
Franz Heidjann, Harsewinkel, Fed. Rep. of Germany, assignor to Claas OHG, Fed. Rep. of Germany

Filed Nov. 14, 1988, Ser. No. 271,092

Claims priority, application Fed. Rep. of Germany, Nov. 17, 1987, 3738991

Int. Cl.⁴ A01F *7/04, 12/10, 12/46*

U.S. Cl. 460—66 10 Claims



1. A self-propelling harvester thresher, particularly a caterpillar-driven small harvester thresher for rice or the like, comprising a threshing and separating mechanism operating in accordance with an axial flow system and extending transversely to a travelling direction; a sieve device for separating a grain-chaff mixture and having a transporting bottom; and a transporting device arranged to transport the grain-chaff mixture from said threshing and separating mechanism to said sieve device, said transporting device including a trough and at least one collecting and transferring screw which is supported in said trough and extends transversely to the travelling direction, said collecting and transferring screw having two oppositely running screw plates provided on its ends and a throwing scoop provided in its center, said collecting and transferring screw and said trough being arranged before said transporting bottom as considered in a product throughgoing direction and substantially in a same horizontal plane with said transporting bottom.

4,881,921

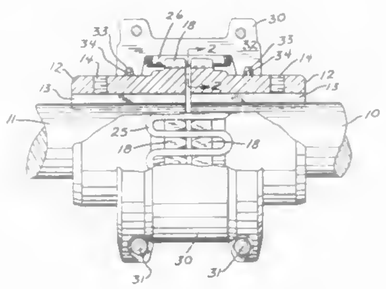
FLEXIBLE SHAFT COUPLING WITH COATED GRID

Glenn C. Pokrandt, Menomonee Falls; William F. Busser, Pewaukee; Donald N. Timmermann, Wauwatosa, and Thomas N. Kuliga, West Allis, all of Wis., assignors to The Falk Corporation, Milwaukee, Wis.

Filed Mar. 10, 1988, Ser. No. 166,432

Int. Cl.⁴ F16D *3/52*

U.S. Cl. 464—54 7 Claims



1. In a flexible coupling having a pair of hubs each including a plurality of axially extending metal teeth whose adjacent side faces define slots therebetween, and a metallic grid joining the hubs and which includes a plurality of stiff metal rungs received in the slot and spanning the space between the hubs and integral end loops connecting adjacent rungs in an area axially displaced from the hub teeth, the improvement wherein:

the sides of the rungs in contact with the teeth have a layer of a deformable material which deforms relative to the teeth and the rungs as the coupling is subjected to torque loads, said layer having a thickness in excess of the largest anticipated manufacturing error in the circumferential spacing between the teeth or the rungs.

4,881,922

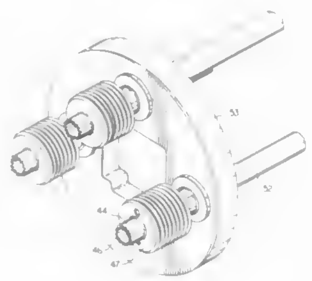
SEPARABLE DRIVE COUPLING USING METAL BELLOWS

Joe W. Ayers, Sherman, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 31, 1987, Ser. No. 91,188

Int. Cl.⁴ F16D *3/52*

U.S. Cl. 464—79 8 Claims



1. A separable drive coupling, comprising:

a drive shaft terminating in a first coupling portion;

a driven shaft originating in a second coupling portion;

said first coupling portion having protruding teeth engagable with matching protruding teeth on said second coupling portion, in order that said drive shaft may provide rotation to said driven shaft; and

said driven shaft having flexible means for accommodating any axial or radial misalignment between said drive shaft and said driven shaft while allowing rotation of said shafts,

wherein said drive shaft operates under atmospheric conditions and said driven shaft operates in a vacuum.

4,881,923

TELESCOPIC TRANSMISSION JOINT, IN PARTICULAR FOR A VEHICLE

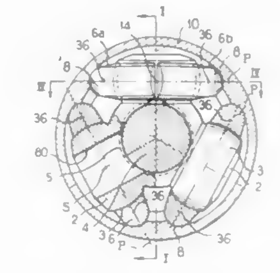
Michel Orain, Conflans Sainte Honorine, France, assignor to Glaenzer Spicer, Poissy, France

Filed Dec. 1, 1987, Ser. No. 127,504

Claims priority, application France, Dec. 5, 1986, 86 17044

Int. Cl.⁴ F16D *3/20*

U.S. Cl. 464—111 21 Claims



1. A telescopic transmission joint, in particular for a vehicle, comprising a first element having an axis of rotation and provided with three arms disposed substantially radially relative to said axis, a second element having an axis of rotation and carrying longitudinally extending rolling tracks, two roller segments which partly surround each arm having radially outer surfaces in the shape of sections of a torus, are in rolling contact with the longitudinal rolling tracks of the second element, which tracks have a cross section whose direction of curvature is complementary to the direction of curvature of the radially outer surfaces of the roller segments, the radial arms including at least one spherical surface, the roller segments defining a spherical surface which are complementary to the spherical surface of the arm with which they are respectively associated, said spherical surfaces and said complementary spherical surfaces being centered at a distance from said axis of the first element.

4,881,924

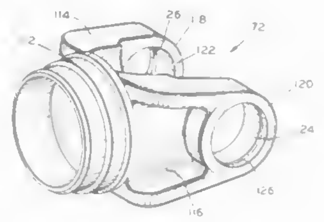
YOKE FOR HOOKES-TYPE UNIVERSAL JOINT

Ray A. Gall, Toledo, Ohio, assignor to Dana Corporation, Toledo, Ohio

Continuation-in-part of Ser. No. 129,765, Dec. 7, 1987, abandoned. This application Oct. 7, 1988, Ser. No. 255,710

Int. Cl.⁴ F16D *3/40*

U.S. Cl. 464—134 7 Claims



1. A universal joint comprising:

a journal cross, said journal cross having;

a first pair of opposed, coaxial arms lying along a first axis;

a second pair of opposed, coaxial arms, said second pair of opposed, coaxial arms lying along a second axis which extends perpendicular through said first axis at an intersection;

said journal cross further having a central axis of rotation which extends perpendicularly to each of said first axis and said second axis and through said intersection; and

a ferrous metal yoke, said yoke conprising;

a hub having a central axis and an end; and

first and second arms extending from said end of said hub on opposite sides of said central axis of said yoke, said first and second arms being spaced apart from one another, said yoke being formed integrally in a single piece;

each of said first and second arms having an opening therein pivotably receiving one of said first pair of opposed arms of said journal cross;

said each of said first and second arms having a portion between said end of said hub and the opening in said each of said first and second arms which is C-shaped in cross-section, said portion having a generally planar web portion and first and second flanges extending generally perpendicularly outwardly from said generally planar web portion and generally parallel to each other, said each of said first and second arms having a shear center which lies along an axis that is positioned between said central axis of said yoke and said generally planar web portion of said portion of said each of said first and second arms;

said each of said first and second arms and said one of said first pair of opposed arms of said journal cross that is pivotably received therein having substantially corresponding free deflection characteristics under a torsional load applied around one of said central axis of said journal cross and said central axis of said hub of said yoke; and

rotatable means which is rotatable about a central axis that intersects said central axis of said yoke pivotably receiving each of said second pair of opposed, coaxial arms of said journal cross, whereby torque may be transmitted from one of said yoke and said rotatable means through said journal cross to the other of said yoke and said rotatable means.

4,881,925

BELT TYPE CONTINUOUSLY VARIABLE TRANSMISSION FOR VEHICLE

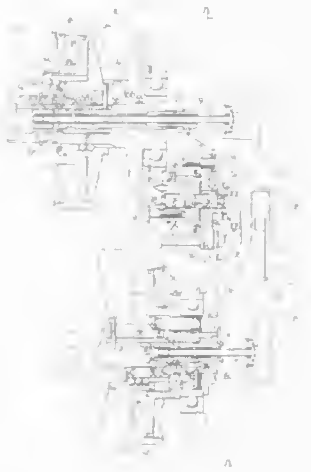
Torao Hattori, Saitama, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 25, 1988, Ser. No. 185,512

Claims priority, application Japan, Apr. 24, 1987, 62-100105; Apr. 24, 1987, 62-100106; Apr. 24, 1987, 62-100107

Int. Cl.⁴ F16H *11/02*

U.S. Cl. 474—18 17 Claims



1. A belt type continuously variable transmission comprising an input shaft driven from an engine, an output shaft for driv-

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ing a wheel, a drive V-pulley mounted on said input shaft and variable in effective radius, a driven V-pulley mounted on said output shaft and variable in effective radius, a V-belt stretched around both said pulleys, a hydraulic actuator for changing the effective radius of each of said V-pulleys, a hydraulic pressure controller for controlling the hydraulic pressure supplied to said hydraulic actuator, said controller being provided between said hydraulic actuator and a hydraulic pump driven by the engine to supply a hydraulic pressure to said hydraulic actuator, an input torque sensor for controlling said hydraulic pressure controller in such a manner that the hydraulic pressure supplied to said hydraulic actuator is proportional to the input torque of said input shaft, a speed change ratio sensor for controlling said hydraulic pressure controller in such a manner that the hydraulic pressure supplied to said hydraulic actuator is proportional to the speed change ratio between said input and output shafts, said sensors being connected to said hydraulic pressure controller, wherein said hydraulic pressure controller comprises a regulator valve for permitting and interrupting communication of a working oil passage connecting said hydraulic pump and said hydraulic actuator with a spill oil passage, said regulator valve including a single valve spool and first and second pressure-control springs for biasing said valve spool in a closing direction, said input torque sensor being connected to said first pressure-control spring so as to apply thereto an urging load proportional to said input torque, and said speed change ratio sensor being connected to said second pressure-control spring so as to apply thereto an urging load proportional to said speed change ratio.

4,881,926

STEPLESS SPEED VARIATOR OF A BELT TYPE

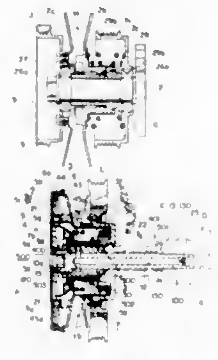
Hachiro Aoki; Tadashi Kobayashi; Junya Kuronuma, and Hideya Kikuchi, all of Saitama, Japan, assignors to Diesel Kiki Co., Ltd., Tokyo, Japan

Filed Nov. 29, 1988, Ser. No. 277,319

Claims priority, application Japan, Dec. 4, 1987, 62-184385[U]; Dec. 4, 1987, 62-184384[U]; Mar. 4, 1988, 63-28089[U]; Mar. 4, 1988, 63-28090[U]; Mar. 4, 1988, 63-28091[U]; Jun. 10, 1988, 63-141556

Int. Cl.^{4} F16H *9/12*

U.S. Cl. 474—25 16 Claims



1. A stepless speed variator of a belt type including a drive pulley A provided on a drive shaft D of an engine and a driven pulley B for an auxiliary machine communicating with said drive pulley A through a V-belt and for continuously changing diameters of pitch circles of both pulleys, comprising;

said driven pulley B providing a fixed pulley 2*a* having an auxiliary machine drive pulley b and a movable pulley 2*b* to be pulled to said fixed pulley side by a spring 2*c*,

said drive pulley A providing,

I. a rigid pulley 2 secured on said drive shaft D,

II. a mount bolt 10 coaxially connected to the drive shaft D,

III. a guide holder 5 fitted to said mount bolt 10 and having a cylindrical shaft 5*a* to be rotated together with said mount bolt and a flange 5*c* formed on the end of said shaft 5*a*,

IV. a slide pulley 4 to be axially moved by the flange 5*c* guiding the outer peripheral side and the rigid pulley 3 guiding the inner peripheral side thereof and to be rotated together with the rigid pulley 3 by a motion transmission means 9,

V. a centrifugal force offset cover 56 located at the back of said guide holder flange 5*c* and to be moved together with said slide pulley 4,

VI. said slide pulley being combined with a tube power piston 4*a* to be moved along said guide holder shaft 5*a*, said power piston 4*a* and slide pulley 4 being constantly pulled toward said rigid pulley 3 by a power spring 20, thereby forming a variable power piston chamber 5*f* defined by said power piston 4*a*, said slide pulley 4, and said guide holder flange 5*c*,

VII. a supply passage 12 within the mount bolt 10 for an engine oil supplied through said drive shaft D and an ejection passage 13 provided on the outer periphery of the mount bolt for returning the engine oil from said power piston chamber 5*f* to said drive shaft D,

VIII. said power piston 4*a* providing a cylindrical servo valve 7 for controlling conduction of the engine oil in or out of said power piston chamber 5*f*, said servo valve 7 being fitted to the outer periphery of said power piston 4*a* in such a manner as being relatively moved in the axial direction and being constantly pulled toward the rigid pulley by a governor spring 24, while said servo valve 7 being moved as opposed to said governor spring 24 depending on the displacement of a flyweight located in said power piston chamber 5*f* with the rotation of said drive shaft D,

IX. said centrifugal force offset cover 6 communicating with said engine oil ejection passage 13 in the interior thereof in such a manner as, when said slide pulley 4 is moved, conducting the engine oil through said engine oil ejection passage 13 and preventing shutting of said slide pulley 4 by the rotation oil pressure.

4,881,927

FLUIDIC TENSIONER

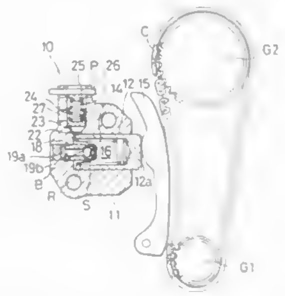
Tadasu Suzuki, Kawagoe, Japan, assignor to Tsubakimoto Chain Company, Japan

Division of Ser. No. 172,314, Mar. 23, 1988. This application May 19, 1989, Ser. No. 354,464

Claims priority, application Japan, Aug. 6, 1987, 62-119784; Oct. 9, 1987, 62-154131

Int. Cl.^{4} F16H *7/08*

U.S. Cl. 474—110 10 Claims



1. A hydraulic ball-type check valve tensioner including a plunger internally provided with a first fluid chamber and slidably fitted in a housing in association with a first spring biasing said plunger in a protruding direction, a ball-type check valve provided between said housing and said first chamber to permit fluid flow into said first chamber while blocking fluid flow in the reverse direction, characterized in that said tensioner comprises:

a relief valve having a sleeve slidably fitted in an auxiliary fluid chamber in communication with said first chamber, a second spring biasing said sleeve into a depressed position, and a discharge port to be opened when said sleeve is slided against the biasing action of said second spring.

4,881,928

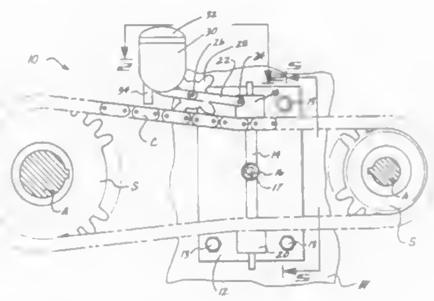
CHAIN TENSIONING DEVICE

Medardo P. Bernal, 655 Donna Beth Ave., #23, Azusa, Calif. 91702

Filed Oct. 7, 1988, Ser. No. 254,929

Int. Cl.^{4} F16H *7/08*

U.S. Cl. 474—111 6 Claims



1. A chain tensioning device, comprising:

a pair of spaced blocks;

said blocks having opposed surfaces configured for abutment with opposite sides of an endless loop chain;

aligned apertures formed through each of said blocks;

an elongated connecting bar extending between said blocks and through said aligned apertures;

means for independently adjustably securing each of said blocks along the length of said connecting bar;

a mounting standard perpendicularly attached at a central portion of said connecting bar;

a base connected to said mounting standard;

means for securing said base adjacent a chain to be tensioned.

a support link secured to one of said blocks;

a gear rotatably mounted on said link;

an oil reservoir on said link;

an output nozzle on said reservoir; and

valve means actuated upon rotation of said gear for opening and closing said output nozzle to lubricate a chain.

4,881,929

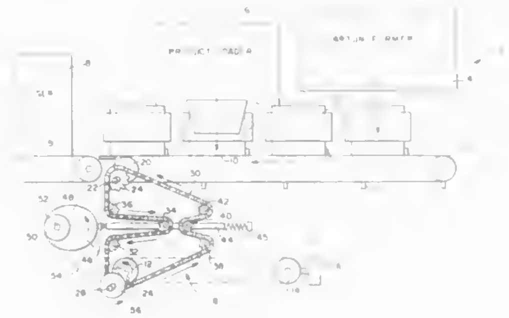
STOP AND GO CONVEYOR

Arthur E. Randles, 4617 S. Third Ave., Tucson, Ariz. 85714

Filed May 15, 1989, Ser. No. 352,156

Int. Cl.^{4} F16H *7/08*

U.S. Cl. 474—111 5 Claims



1. A stop and go conveyor comprising:

a driver sprocket;

rotary input means rotating said driver sprocket at a constant speed;

a driven sprocket;

a chain positively engaged over said driver and driven sprockets with slack therebetween;

a pair of movable idler sprockets positively engaging said chain between said driver and driven sprockets to take up said slack;

a reciprocable carrier rotatably supporting said movable idler sprockets; and

means for reciprocating said carrier through a complete cycle during each revolution of said driver sprocket so that, in one direction, more chain is received at the reciprocating idler sprocket from said driven sprocket than is taken from said driver sprocket and, in the other direction, more chain is taken from said driver sprocket at the reciprocating idler sprocket than is received from said driven sprocket.

4,881,930

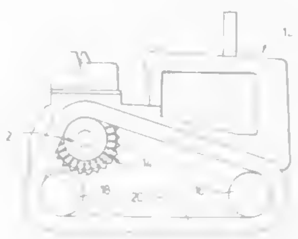
SPROCKET ASSEMBLY

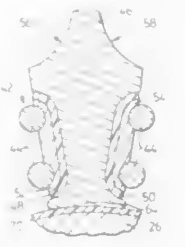
Thomas E. Oertley, Dunlap, Ill., assignor to Caterpillar Inc., Peoria, Ill.

Filed Feb. 23, 1989, Ser. No. 314,679

Int. Cl.^{4} F16H *55/12*

U.S. Cl. 474—162 16 Claims





1. A resilient drive sprocket assembly, comprising:

a housing having a mounting portion, a circular hub portion, and first and second circular flanges, said first flange being spaced from and substantially parallel to said second flange, said first and second flanges defining a space therebetween, said first flange having first and second arrays of equally spaced through holes, said second flange having third and fourth arrays of equally spaced through holes, each one of said first array of holes being in substantially axial alignment with one of said third array of holes, and each one of said second array of holes being in substantial axial alignment with one of said fourth array of holes;

a plurality of individually replaceable drive members, each member having first and second retaining portions and first and second driving portions, said drive members being positioned within said space between said first and second flanges and equally spaced around said hub portion;

a plurality of resilient pads, a respective pad being adapted to fit against the first and second retaining portion of each drive member;

a plurality of retaining members, one retaining member being adapted to fit against each resilient pad; and

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a plurality of retaining pins, each pin being adapted to penetrate one of said holes in said first flange and a corresponding aligned hole in said second flange.

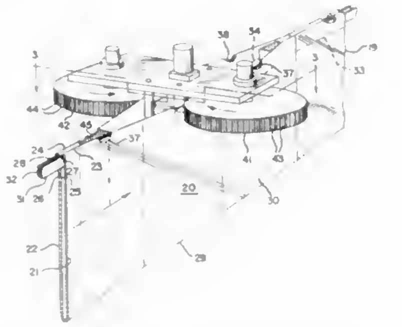
4,881,931
HEM SEAL FOR DRAW TAPE BAGS

James E. Buchman, Appleton, Wis., assignor to Presto Products, Incorporated, Appleton, Wis.

Filed Apr. 10, 1987, Ser. No. 36,896

Int. Cl.⁴ B31B *1/64*

U.S. Cl. 493—192 7 Claims



1. Apparatus used in the manufacture of draw tape plastic bags formed from a web of plastic material having a hem defining a channel for the draw tape comprising:

conveyor means for continuously moving said web, having a front sheet and a rear sheet, in C-folded condition;

first and second seal wheels disposed along said conveyor on opposite sides of said web;

heat application means, disposed along said first and second seal wheels between said front sheet and said rear sheet, having a first contoured surface facing said first seal wheel and a second contoured surface facing said second seal wheel; said heat application means defining a first plurality of outlets for directing hot air from said first contoured surface toward said first seal wheel and a second plurality of outlets for directing hot air from said second contoured surface toward said second seal wheel; and

guide means, disposed adjacent said web, for guiding a first hem portion between said first seal wheel and said first contoured surface, and for guiding a second hem portion between said second seal wheel and said second contoured surface, said first seal wheel urging said front sheet into contact with said first hem portion, and said second seal wheel urging said rear sheet into contact with said second hem portion.

4,881,932
METHOD AND APPARATUS FOR MANUFACTURING PLASTIC FILM BAG WITH SPECIAL FLAP ARRANGEMENT

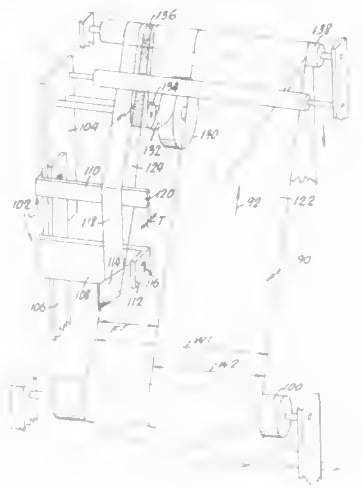
Eli Blatt, 6 Rolling Dr., Brookville, N.Y. 11545

Filed Mar. 1, 1988, Ser. No. 163,288

Int. Cl.⁴ B31B *1/90, 23/14*

U.S. Cl. 493—213 11 Claims

1. In a method of forming a bag from plastic film comprising forming a mouth and a flap to close said mouth, the improvement comprising separating the flap into separate sections spaced by a gap therebetween by continuously slitting the flap into said separate sections and controlling the size of the gap by interposing a spacer between said sections thereby displacing the sections from coplanar relationship, bring the sections into copolanar relationship, and connecting the sections with an adhesive bearing tape with the adhesive being exposed through the gap to adhere to said bag when the flap is folded over.



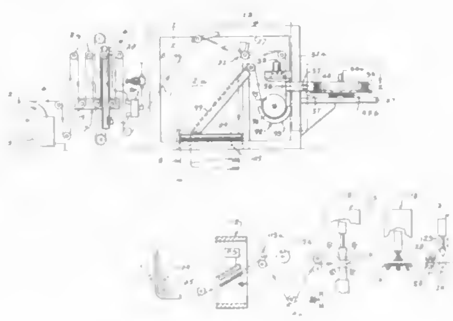
4,881,933
DRAW TAPE BAG FORMING METHOD AND APPARATUS

Robert J. Wech, Green Bay, Wis., assignor to Amplas, Inc., Green Bay, Wis.

Filed Feb. 22, 1988, Ser. No. 158,418

Int. Cl.⁴ B31B *1/90*

U.S. Cl. 493—225 27 Claims



1. A compact draw tape bag forming apparatus for forming bag members from a single integral plastic sheet folded along a longitudinal line to define two adjoining bag side walls which are joined along longitudinally spaced portions to define an open-top bag and wherein each of the free edges of said bag are folded inwardly to form a sealed hem with a draw tape therein, the improvement in the forming apparatus comprising,

a hem forming unit forming a double wall open hem in each edge of said web and of a depth corresponding to said hems, a tape inserting unit located downstream of said hem forming unit for inserting individual tapes into said hems, a heat sealing unit located downstream of said inserting unit and having means to simultaneously and continuously seal the inwardly folded web onto the web to form hems with said tapes therein, a web folding unit board means located downstream of said heat sealing means for folding said web along a center line of the web,

means supporting said hem forming unit, said tape inserting unit, said heating sealing unit and said folding units in a generally encircling vertical path, wherein said hem folding unit is secured to the top of said path, said web moving from a first vertical side upwardly and horizontally from a web source to said hem forming unit, a notching unit for forming notches in each of said hems, said notching unit and said tape inserting unit located to the discharge side of said hem folding unit and in a vertical portion of said path, means for turning of said web from said hem forming unit into said notching unit, said tape inserting unit having means for inserting individual tapes into said open hems, said heat sealing unit located beneath said inserting unit, said web folding unit located generally in alignment beneath said hem folding unit, and means turning said web from said heat sealing unit into said web folding unit.

4,881,934
ROTARY TRANSFER MECHANISM

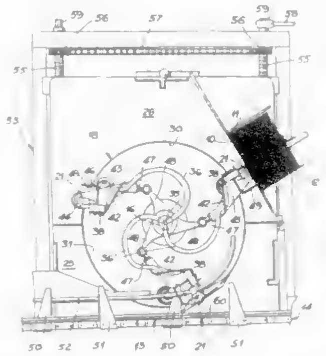
John C. Harston, Avon, and Colin P. Ford, Bristol, both of England, assignors to Kliklok Corporation, Decatur, Ga.

Filed Feb. 27, 1989, Ser. No. 316,505

Claims priority, application United Kingdom, Feb. 27, 1988, 8804637

Int. Cl.⁴ B65H *3/08;* B31B *1/80*

U.S. Cl. 493—315 11 Claims



1. A rotary transfer mechanism for transferring a flat article from a discharge opening of a magazine to a receiving station on a conveyor, comprising:

a support member;

a drive shaft rotatably mounted on said support member;

means for rotatably driving said drive shaft;

carrier means rotatable with said drive shaft;

at least one support shaft rotatable on said carrier means substantially parallel to said drive shaft whereby said support shaft orbits around said drive shaft;

vacuum means including a suction means connected to said support shaft for (1) positively engaging the article at the discharge opening of the magazine, (2) positively holding the article during transfer to the receiving station, and (3) releasing said article at said receiving station; and

means for controlling the rotational disposition of the support shaft with respect to said carrier means, said controlling means including a pinion secured coaxially to the support shaft, an arcuate rack secured to the support member, a cam follower on an arm extending laterally from the support shaft and a cam track secured to the support member;

said arcuate rack being in such a position so as to act upon the pinion to create a partial path of the suction means with a node point at the discharge opening of the magazine and said cam track being of such an extent as to act upon the cam follower when the arcuate rack is not acting on the pinion with the profile of the cam track being such as to cause the suction means to move past the receiving station in the same direction as the conveyor with the article generally parallel to the conveyor.

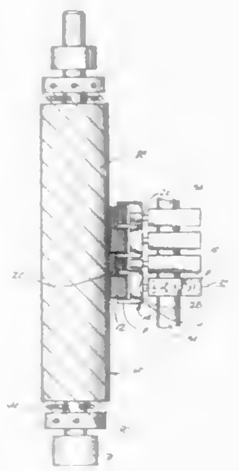
4,881,935
METHOD FOR CONSTANT PRESSURE DIAGONAL-WEB CRUSH-SCORING

Yefim Slobodkin, Lyndhurst, Ohio, assignor to Avery International Corporation, Pasadena, Calif.

Continuation of Ser. No. 096,904, Sep. 14, 1987, abandoned, which is a continuation of Ser. No. 804,817, Dec. 4, 1985, Pat. No. 4,698,052. This application Aug. 18, 1988, Ser. No. 233,945

Int. Cl.⁴ B05B *1/14*

U.S. Cl. 493—355 6 Claims



1. A method for crush-scoring a web of paper comprising the steps of:

(a) passing one side of a web of paper to be crush-scored in contact with the outer side surface of a crush-scoring cylinder having diagonal crush-scoring protrusions extending from the surface thereof and rotating in the direction of the paper travel;

(b) contacting the side of the web of paper opposite the side of the web of paper which is in contact with the crush-scoring cylinder with a plurality of cylindrical anvil roller rotating in the direction of paper travel, each cylindrical anvil roller being mounted to enable essentially frictionless movement to or from the point of contact with the web of paper and positioned to essentially contact no more than one protrusion at any time; and

(c) unidirectionally applying a preselected force to each cylindrical anvil roller against the web of paper, to form in cooperation with the protrusions diagonal crushscores of substantially constant depth.

4,881,936
APPARATUS FOR CONSTANT PRESSURE DIAGONAL WEB CRUSH-SCORING

Yefim Slobodkin, Lyndhurst, Ohio, assignor to Avery International Corporation, Pasadena, Calif.

Continuation of Ser. No. 96,903, Sep. 14, 1987, abandoned, which is a continuation of Ser. No. 804,817, Dec. 4, 1985, Pat. No. 4,698,052. This application Aug. 18, 1988, Ser. No. 233,946

Int. Cl.⁴ B05B *1/14*

U.S. Cl. 493—355 7 Claims

1. In an apparatus for crush-scoring a web of paper, which apparatus comprises a rotatable crush-scoring cylinder having an axis and providing one or more protrusions extending from the surface thereof and across the crush-scoring cylinder at an angle diagonal to the axis of the crush-scoring cylinder, and means to apply a force to a web of paper passed between said means and the crush-scoring cylinder to diagonally crush score the web of paper, the improvement which comprises employing, as the means to apply a crush score force to the web of paper, a plurality of rotatable cylindrical anvil roller assemblies adjacently positioned across the width of said crush-scoring

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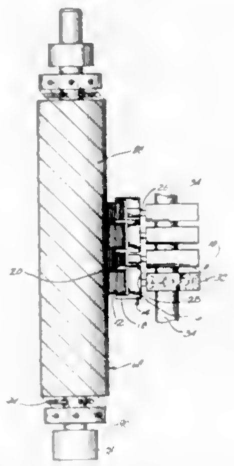
cylinder, each anvil roller independently adapted to apply a preselected constant crush-scoring force against a web of paper passing over a protrusion extending from the surface of the crush-scoring cylinder and to essentially contact no more than one protrusion at any time, the crush-scoring cylinder, through rotation and cooperation of rotating anvil rollers and the protrusions, causing a substantially constant force to be applied to the web of paper across the width of the crush-scoring cylinder such that each diagonal crush score formed will be of substantially constant depth.



4,881,937
METHOD OF TREATING A PART OF THE BODY WITH RADIOACTIVE MATERIAL AND A TROLLEY FOR USE THEREIN

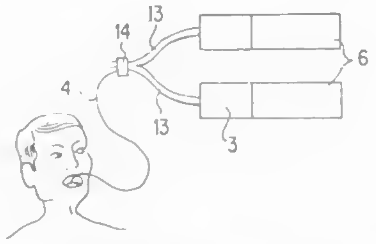
Eric van't Hooft, Gezichtslaan 16, 3956 BB Leersum, and Libbe van Zwol, Leersum, both of Netherlands, assignors to Eric van't Hooft, Netherlands

Filed Jul. 10, 1987, Ser. No. 71,835

Claims priority, application Netherlands, Jul. 10, 1986, 8601808

Int. Cl.⁴ A61M *37/04;* **A61N** *5/10;* **G21F** *5/20*

U.S. Cl. 600—3 19 Claims



1. In an apparatus for effecting radioactive therapy in an animal body wherein the apparatus has a radioactive source assembly disposed in a source channel, a guide tube connected at a first end to said source channel and a second end being disposable in the animal body for the intended therapy, a source assembly transport thread connected to the source assembly and to a source assembly drive means for driving the source assembly from the source channel and towards the said second end of the guide tube,

the improvement comprising a test assembly disposed in a test channel, a connector tube connected at a first end to said test channel and at a second end to a connector disposed in said guide tube, wherein a juncture is formed at said connector between said guide tube and said connector tube, a test assembly transport thread attached at one end to said test assembly and at the other end to a test assembly drive means for driving the test assembly from the test channel, through the connector tube and connector, and towards said second end of the said guide tube, whereby the source assembly and the test assembly are alternatingly drivable toward the second end of the guide tube, and a detector means for detecting the presence of the test assembly, or the source assembly in the guide tube between the juncture and the second end of the guide tube.

4,881,938
METHOD AND AN APPARATUS FOR TREATING A PART OF THE BODY WITH RADIOACTIVE MATERIAL

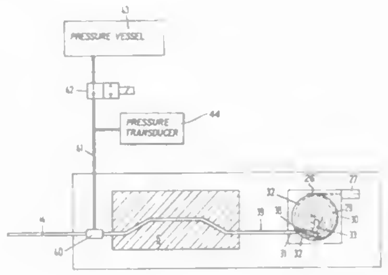
Eric van't Hooft, Gezichtslaan 16, 3956 BB Leersum, Netherlands

Continuation of Ser. No. 689,781, Jan. 8, 1985, abandoned. This application Feb. 18, 1987, Ser. No. 17,036

Claims priority, application Netherlands, Jan. 12, 1984, 8400108

Int. Cl.⁴ A61N *5/10;* **A61M** *37/04;* **G21F** *5/02*

U.S. Cl. 600—3 15 Claims



1. An apparatus for delivering at least one assembly of radioactive source material to a site in a human body for radioactive therapy, comprising:

(1) an applicator having a first end and an opposite end, said first end being at least in part disposable inside the human body at the site intended for therapy and capable of receiving an assembly of radioactive source material, and said opposite end being disposable outside of the human body;
(2) an applicator connector having a first end, a second end and a passageway extending therebetween and capable of passing a said assembly therethrough, said applicator connector being affixed at the first end thereof to the said opposite end of the applicator;
(3) a container for storing at least one said assembly and having at least one container passageway therethrough;
(4) a transfer tube means disposed between said container and said applicator connector with one end thereof connected to said second end of the applicator connector;
(5) coupling means for coupling the other end of the transfer tube means to said container passageway;
(6) transfer thread means attached at one end to an assembly of radioactive source material for transferring said assembly from the container to said applicator;
(7) drive means connected to the other end of the transfer thread means for driving said transfer thread means;
(8) control head means attached to said assembly that is capable of being sensed by a sensing means, and sensing means for sensing when the control head means is positioned such that said attached assembly is positioned in said applicator;
(9) control means responsive to said sensing means such that when the assembly is in said position in said applicator, said control means interrupts said drive means, and further driving of said transfer thread cases.

4,881,939
IMPLANTABLE HELICAL CUFF

Arnold L. Newman, Kensington, Md., assignor to The Johns Hopkins University, Baltimore, Md.

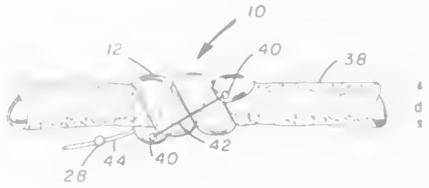
Filed Feb. 19, 1985, Ser. No. 702,570

Int. Cl.⁴ A61B *17/12*

U.S. Cl. 600—31 38 Claims

1. An implantable inflatable cuff which intimately engages the exterior of an elongated body member, the implantable inflatable cuff comprising:

a coil which follows a spiral axis and turns about a central axis, said coil having a cross sectional shape that remains constant throughout its length, an elastic inside wall facing said central axis, a lumen within said coil and eccentric to said spiral axis and a fluid contained within said lumen; and



a retaining means which is removably positioned about and extends across a plurality of turns of said coil for maintaining said coil in said spiral axis.

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CHEMICAL

4,881,940

GRANULATED MAGNESIUM MONOPEROXYPHTHALATE COATED WITH FATTY ACID FOR PREVENTION OF DYE DAMAGE OF BLEACH SENSITIVE FABRICS

Jean Massaux, Olne; Pierre Lambert, Cortil-Wodon, and Jacques Noiret, Vivegnis, all of Belgium, assignors to Colgate-Palmolive Co., Piscataway, N.J.

Continuation of Ser. No. 67,053, Jun. 25, 1987, abandoned. This application Jul. 25, 1988, Ser. No. 227,440

Int. Cl.⁴ D06L *3/02, 3/04*

U.S. Cl. 8—111 **17 Claims**

1. A bleaching agent particularly effective for low temperature bleaching of laundry while substantially avoiding concomitant dye damage of bleach-sensitive dyed fabrics comprising: particles of monoperoxyphthalic acid, said particles being at least partially coated with an effective amount of a substantially aliphatic fatty acid mixture comprised of at least about 16% and no more than about 40%, by weight, of fatty acids having a chain length of from 20 to 22 carbon atoms, said mixture being substantially free of fatty acids having less than 14 carbon atoms.

4,881,941

SUPPRESS DYEING METHOD

Michael W. Dixon, Dallas, N.C., assignor to Sandoz Ltd., Basel, Switzerland

Filed Jul. 12, 1988, Ser. No. 217,800

Int. Cl.⁴ D06P *5/00;* **C09B** *67/00*

U.S. Cl. 8—482 **18 Claims**

1. A method of coloring a textile substrate which comprises applying a dye from an oil medium to part but not all of the surface of the substrate by immersing the substrate in a gathered configuration into the oil medium containing a dye dissolved or dispersed therein for a time sufficient so that the dye-containing oil comes into contact with only part of the surface of the substrate, said dye being one which is capable of imparting a desired color to the substrate and said oil being of sufficient viscosity that it does not readily wick into the fibers of the textile substrate in those areas where it has not been applied.

4,881,942

COLORATION PROCESS FOR CELLULOSE POLYESTER TEXTILE BLENDS WITH A REACTIVE DYE CONTAINER A QUATERNARY NITROGEN SUBSTITUENT (E.G. NICOTINIC ACID) AND A DISPERSE DYE

Herbert G. Connor, Lancashire, England, assignor to Imperial Chemical Industries PLC, London, England

Continuation of Ser. No. 84,854, Aug. 13, 1987, abandoned. This application Jul. 7, 1988, Ser. No. 217,122

Claims priority, application United Kingdom, Sep. 10, 1986, 8621795

Int. Cl.⁴ C09B *62/04;* **D06P** *1/38, 3/87*

U.S. Cl. 8—532 **11 Claims**

1. A process for the coloration of a union of polyester and cellulose textile materials which comprises applying thereto a dye liquor or print paste containing a disperse dye and a dye containing a cellulose reactive group having a quaternary nitrogen substituent, or the precursors of such a dye, and thereafter heating the textile material at a temperature in the range from 160° to 250° C. to fix the dye on the textile material, the pH of the liquor or paste being in the range from 5.8 to 8.0 due to the presence of an alkaline agent therein.

4,881,943

DISPERSE DYES: NITRO-THIOPHENE AZO DYES FOR BRIGHT BLUE SHADES ON POLYESTER

David Brierley, Lancs; Ronald W. Kenyon, Manchester, and Denis R. A. Ridyard, Hazel Grove, all of England, assignors to Imperial Chemical Industries PLC, London, England

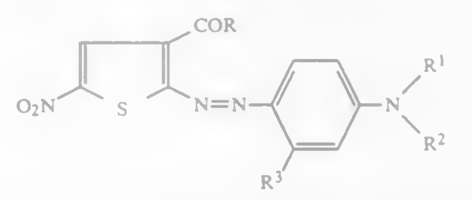
Filed Jun. 28, 1988, Ser. No. 212,679

Claims priority, application United Kingdom, Jun. 29, 1987, 8715192; Feb. 23, 1988, 8804172

Int. Cl.⁴ C09B *29/03;* **D06P** *1/18, 3/54*

U.S. Cl. 8—662 **11 Claims**

1. A disperse monoazo dye of the formula:



wherein each of R and R^3 represents a lower alkyl radical, R^1 represents a lower alkyl or C_3–C_6 alkenyl radical and R^2 represents a C_2–C_6 alkyl radical carrying a hydroxy or acyloxy substituent.

4,881,944

METHOD OF MAKING POSITIVE BATTERY PASTE

Richard H. Hammar, Utica, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 3, 1989, Ser. No. 318,396

Int. Cl.⁴ H01M *4/20*

U.S. Cl. 29—623.5 **3 Claims**

1. In the method of making positive electrode for a lead-acid storage battery comprising the principal steps of reacting an active material mixture of PbO and Pb with H_2SO_4 to form $PbSO_4$ throughout the mixture, applying the mixture to a conductive support and electrochemically forming the mixture to convert the active material into a microporous mass comprising principally PbO_2, the improvement comprising distributing a plurality of polyacetal resin particles substantially uniformly throughout said mixture prior to said applying and subsequently destroying said particles without a trace while electrochemically forming said active material so as to leave in their place a plurality of macropores distributed throughout the active material, said macropores being thousands of times larger than the micropores of said mass and sufficient to provide significant increased electrolyte-storage volume within the active material to improve the reserve capacity of the battery.

4,881,945

FUEL COMPOSITIONS CONTAINING VERY LONG CHAIN ALKYLPHENYL POLY(OXYALKYLENE) AMINOCARBONATES

Thomas F. Buckley, III, Hercules, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Oct. 23, 1987, Ser. No. 112,901

Int. Cl.⁴ C10L *1/22*

U.S. Cl. 44—72 **40 Claims**

1. A fuel composition comprising a hydrocarbon boiling in the gasoline or diesel range and from about 30 to about 5,000 parts per million of a fuel soluble alkylphenyl poly(oxyalkylene) aminocarbamate having at least one basic nitrogen and an average molecular weight of about 800 to 6,000 and wherein the alkyl group of said alkylphenyl poly(oxyalkylene) aminocarbamate contains at least 40 carbon atoms and the poly(oxyalkylene) polymer is derived from C_2 to C_5 oxyalkylene units with the proviso that if the poly(oxyalkylene) polymer is a homopolymer of oxyethylene then the poly(oxyethylene) polymer does not contain more than 25 oxyethylene units.

13. A fuel composition comprising a hydrocarbon boiling in

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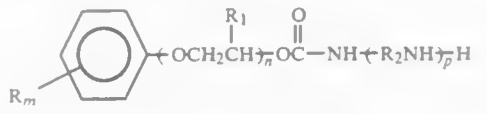
the gasoline or diesel range and from about 30 to about 5,000 parts per million of a fuel soluble compound of Formula V



$$R_m-C_6H_4-\left(OCH_2\overset{R_1}{\overset{|}{C}}H\right)_n-O\overset{O}{\overset{\|}{C}}-NH-\left(R_2NH\right)_p-H \qquad V$$

wherein R is an alkyl group of at least 40 carbon atoms; R_1 is hydrogen or alkyl of from 1 to 3 carbon atoms; R_2 is alkylene of from 2 to 6 carbon atoms; m is an integer from 1 to 2; n is an integer such that the molecular weight of the compound is from about 800 to 6,000; and p is an integer from 1 to 6 and with the proviso that if R_1 is hydrogen then n is an integer of from 1 to 25.

4,881,946
PROCESS FOR THE BENEFICIATION OF COAL BY SELECTIVE CAKING

Antonio Vettor, San Donato Milanese; Nello Passarini, Colturano, and Armando Marcotullio, San Donato Milanese, all of Italy, assignors to Eniricerche S.p.A., Milan, Italy

Filed Nov. 28, 1988, Ser. No. 276,680

Claims priority, application Italy, Dec. 16, 1987, 23037 A/87

Int. Cl.⁴ C10L *15/00*

U.S. Cl. 44—627 15 Claims

1. A process for the beneficiation of coal by selective caking, characterized in that a caking mixture is employed consisting of:

one or more solvents selected among light hydrocarbons having boiling points not higher than 70° C.;

a non-ionic oil soluble additive obtained by controlled propoxylation of phenolic cuts derived from coke-oven tars;

possibly, one or more heavy co-caking agents selected among coal-derived oils having boiling points between 200° and 400° C., or the residual products of petroleum refining or mixtures of the same.

2. A process according to claim **1**, wherein the solvent or the solvents is/are contained in amounts between 2% and 50% by weight with respect to coal, the additive is in amounts between 0.02 and 1% by weight with respect to coal, and the heavy co-caking agent or agents is/are in amounts between 0% and 3% by weight with respect to coal.

5. A process according to claim **1**, wherein the propoxylated phenolic fractions are also ethoxylated.

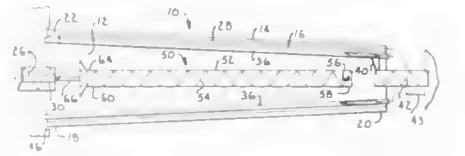
4,881,947
HIGH EFFICIENCY GASIFIER WITH RECYCLE SYSTEM

Thomas H. Parker, Depot St., P.O. Box 58, Richford, N.Y. 13835, and Virgil J. Flanigan, Route 5, Box 629, Rolla, Mo. 65401

Filed Jun. 28, 1988, Ser. No. 212,519

Int. Cl.⁴ C10B *1/10*

U.S. Cl. 48—89 3 Claims



1. A gasifier for converting an organic solid feed material to a product gas, said gasifier comprising:

a rotary kiln for providing an essentially oxygen-free gasifying chamber, and having a generally horizontally extending longitudinal axis, an outer wall means radially spaced from said axis and defining said chamber therewithin, a receiving end and an opposing outlet end;

means for feeding an organic solid feed material to said kiln into said receiving end thereof;

radiant heating means in said chamber radially spaced from said axis, and extending longitudinally of the gasifying chamber for transferring heat to the feed material to pyrolyze the material and convert it to char, a highly catalytic ash, and a product gas as the material advances toward said outlet end;

conduit structure in said chamber extending from said outlet end to said receiving end for recycling a portion of the char and ash and thereby augmenting the heating of an incoming feed material, magnifying the percent of highly catalytic components in the ash, and extending the residence time to thereby improve gasification;

means adjacent said outlet end for loading the portion of the char and ash into said conduit structure in response to rotation of said kiln;

means at said outlet and for unloading the remainder of the char and ash and discharging the product gas from the kiln; and

fan means in said conduit structure for drawing a portion of the product gas from said outlet end through said structure to said receiving end to augment the recycling of the char and ash and the heating of incoming feed material, thereby improving gasification efficiency.

3. A gasifier for converting an organic solid feed material to a product gas, said gasifier comprising:

a rotary kiln for providing an essentially oxygen-free gasifying chamber, and having a generally horizontally extending longitudinal axis, an outer wall radially spaced from said axis and defining said chamber therewithin, a receiving end and an opposing outlet end;

said outer wall of said kiln being of generally conical configuration to provide said chamber with a progressively smaller cross-sectional area as said outlet end is approached;

means for feeding an organic solid feed material to said kiln into said receiving end thereof;

radiant heating means in said chamber radially spaced from said axis, and extending longitudinally of the gasifying chamber for transferring heat to the feed material to pyrolyze the material and convert it to char, ash and a product gas as the material advances toward said outlet end;

said radiant heating means including a plurality of circumferentially spaced, radiant tubes extending generally parallel to said wall and converging as said outlet end is approached, whereby to focus the radiant energy toward a heat load of advancing feed material; and

means at said outlet end for unloading the remainder of the char and ash and discharging the product gas from said kiln.

4,881,948
GAS SHUTOFF APPARATUS

Shinichi Nakane, Yamatokouriyama; Takashi Uno, Nara; Hiroshi Horii; Shinzo Kato, both of Katsushika; Mitsuo Namba, Machida, and Reppei Uematsu, Yokohama, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma and The High Pressure Gas Safety Institute of Japan, Tokyo, both of, Japan

Filed Mar. 16, 1989, Ser. No. 324,055

Claims priority, application Japan, Mar. 17, 1988, 63-64011; Jun. 16, 1988, 63-148571

Int. Cl.⁴ F23K *5/00;* **G05D** *7/00*

U.S. Cl. 48—192 4 Claims

1. A gas shutoff apparatus comprising:

flow rate measurement means for generating a flow rate signal corresponding to a flow rate of gas in a gas supply line,

consumption state detection means for detecting a consumption state represented by flow rate and a consumption time of the gas on the basis of said flow rate signal,

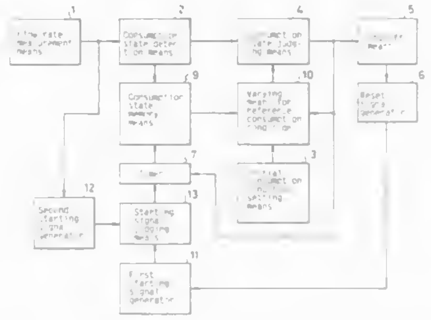
initial consumption condition setting means comprising a memory for storing a reference consumption condition as an initial condition,

consumption state judging means which compares said detected consumption state with said reference consumption condition and generates a gas shutoff signal in case that said consumption state exceeds from said reference consumption condition,

a timer for measuring a predetermined time period,

a first starting signal generator for generating a first starting signal,

a second starting signal generator for generating a second starting signal upon reception of a gas flow rate above a predetermined level,


1
Flow rate measurement means
2
Consumption state detection means
4
Consumption state judging means
5
9
Consumption state memory means
10
Varying means for reference consumption condition
6
Reset signal generator
7
Timer
3
Initial consumption condition setting means
12
Second starting signal generator
13
Starting signal judging means
11
First starting signal generator

a starting signal judging means which issues a timer-start signal to make said timer start counting when said second starting signal is received after reception of said first starting signal,

consumption state memory means for memorizing a consumption state during a time period given by operation of said timer and for producing a consumption condition on the basis of said memorized consumption state,

varying means for reference consumption condition for setting a varied reference consumption condition in said consumption state judging means,

shutoff means for interrupting said gas supply by reception of said shutoff signal, and

a reset signal generator for generating a reset signal to said first starting signal generator upon reception of signal of open-state from said shutoff means when it is opened.

4,881,949
METHOD OF STARTING A GASIFIER

Norbert Brüngel, Cologne, and Hermann-Josef Schumacher, Bedburg-West, both of Fed. Rep. of Germany, assignors to Rheinische Braunkohlenwerke AG., Cologne, Fed. Rep. of Germany

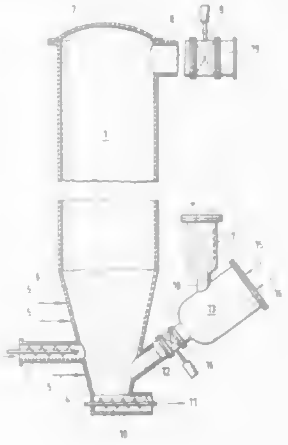
Filed Jul. 27, 1988, Ser. No. 224,855

Claims priority, application Fed. Rep. of Germany, Aug. 14, 1987, 3727146

Int. Cl.⁴ C10J *3/54*

U.S. Cl. 48—197 R 5 Claims

1. A method of starting a gasifier for the gasification of carbonaceous fuel by means of an oxygen-bearing gasification agent in a fluidised bed comprising filling the gasifier with an inert gas medium and putting it under an increased pressure, establishing gas-tight sealing integrity of the gasifier, and igniting a combustible gas mixture by means of an ignition device which operates under pressure, in a combustion chamber which communicates with the lower part of the gasifier, said mixture undergoing combustion substantially while maintaining the increased pressure at least until the temperature within the gasifier at least substantially corresponds to the gasification temperature.



4,881,950
SILICON NITRIDE CUTTING TOOL

Deepak Bhat, Troy, and Dhirajlal Shah, Sterling Heights, both of Mich., assignors to GTE Valenite Corporation, Troy, Mich.

Continuation-in-part of Ser. No. 868,466, May 30, 1986, abandoned. This application Oct. 5, 1987, Ser. No. 104,695

Int. Cl.⁴ B24D *3/04*

U.S. Cl. 51—307 6 Claims

1. A coated densified ceramic cutting tool comprising, a substrate body consisting essentially of a granular phase of alpha silicon nitride and silicon aluminum oxynitride, said granular phase being uniformly distributed in a matrix of a densification aid, selected from the group consisting of magnesium oxide, yttrium oxide, rare earth oxides, and mixture thereof, said matrix including uniformly distributed submicron particles consisting essentially of titanium nitride, said silicon aluminum oxynitride and said titanium nitride being formed during densification of said tool by reaction of titanium oxide with a portion of said silicon nitride to form titanium nitride and silicon oxide, a layer of refractory material, and an interfacial layer intermediate said substrate and said layer of refractory material, said interfacial layer comprising a titanium metal chemically reacted to form a reaction bonded titanium nitride for enhancing the adherence of said layer of refractory metal material to said substrate.

4,881,951
ABRASIVE GRITS FORMED OF CERAMIC CONTAINING OXIDES OF ALUMINUM AND RARE EARTH METAL, METHOD OF MAKING AND PRODUCTS MADE THEREWITH

Larry D. Monroe, Inver Grove Heights, and William P. Wood, Minneapolis, both of Minn., assignors to Minnesota Mining and Manufacturing Co., St. Paul, Minn.

Continuation-in-part of Ser. No. 54,619, May 27, 1987, abandoned. This application May 2, 1988, Ser. No. 188,744

Int. Cl.⁴ B24D *3/02*

U.S. Cl. 51—309 46 Claims

1. Alumina-based ceramic abrasive grits having a ceramic composition selected from the group consisting of

(a) a first composition consisting of (1) up to 30% by weight yttria, (2) a reaction product of aluminum oxide and at least about 0.5% by weight of the oxide of a rare earth metal selected from the group consisting of praseodymium, samarium, ytterbium, neodymium, lanthanum, gadolinium, cerium, dysprosium, erbium, and mixtures of two

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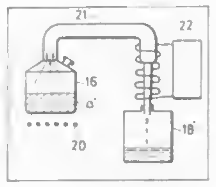
or more of such rare earth metals, and (3) alpha alumina making up the balance of 100% by weight; and
(b) a second composition comprising (1) up to 30% by weight of yttria, (2) a reaction product of aluminum oxide and at least about 0.5% by weight of the oxide of a rare earth metal selected from the group consisting of praseodymium, ytterbium, neodymium, lanthanum, gadolinium, dysprosium, erbium and mixtures of two or more of such rare earth metals, and (3) alpha alumina making up the balance of 100% by weight.

4,881,952
METHOD AND APPARATUS FOR DISPOSING DUST PRODUCED DURING AMORPHOUS SILICON FILM-FORMING PROCESS

Yasui Masaru, Yokohama, Japan, assignor to Stanley Electric Co., Ltd., Japan

Continuation of Ser. No. 897,157, Oct. 23, 1986, abandoned, which is a division of Ser. No. 733,948, May 14, 1985, Pat. No. 4,642,208. This application Sep. 22, 1988, Ser. No. 249,280
Claims priority, application Japan, May 16, 1984, 59-96653
Int. Cl.⁴ B01D *3/00*

U.S. Cl. 55—1 **11 Claims**



1. A system for disposing of dust produced during a process of forming an amorphous silicon film by decomposing a starting material gas containing silane gas as its principal component, comprising:
- a unit for collecting the dust including:
  - vacuum suction means coupled to a film-forming section to discharge the dust produced within said film-forming section to the outside of this section;
  - a dust-capturing section coupled to said vacuum suction means;
  - a dust hopper connected to said dust-capturing section to receive the captured dust; and
  - dumping means, provided at a bottom portion of said dust hopper, for dumping dust received in the dust hopper, said dumping means being adapted to receive a detachable mixing means; and
- heat-distilling means, adapted to receive a detachable mixing means, for heating said mixing means; and
- mixing means, adapted for detachably coupling to said dumping means and said heat-distilling means and including a heat-distillable liquid therein, for receiving dust from said dumping means when coupled to said dumping means and mixing said dust with said liquid to transform said dust to a slurry-form and for heating and distilling said liquid when coupled to said heating means to convert the slurry-form dust therein into a final disposal product comprising a solidified mass or pellets of dust.

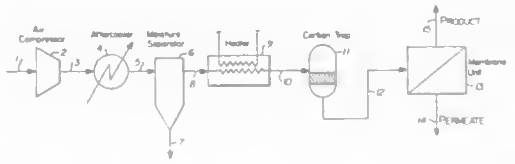
4,881,953
PREVENTION OF MEMBRANE DEGRADATION

K[illegible]i Prasad, East Amherst, and Oscar W. Haas, North Tonawanda, both of N.Y., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Sep. 15, 1988, Ser. No. 244,419
Int. Cl.⁴ B01D *53/22, 53/04*

U.S. Cl. 55—16 **32 Claims**

1. In a process for the separation of a feed gas mixture in a membrane system capable of selectively permeating a more readily permeable component of said feed gas mixture containing said component and a less readily permeable component, in which said feed gas mixture contains contaminants comprising hydrocarbons heavier than C_5 (pentane) and lighter hydrocarbons of C_5 or less, the improvement consisting essentially of:
(a) contacting the feed gas mixture containing said contaminants with a bed of adsorbent material prior to passage to said membrane system, the bed of adsorbent material serving to selectively adsorb the heavier hydrocarbons, with continued selective adsorption of said heavier hydrocarbons from additional quantities of said feed gas mixture resulting in the displacement of lighter hydrocarbons of C_5 or less initially adsorbed from the feed gas mixture by said bed, lighter hydrocarbons thus passing through the bed of adsorbent material with said feed gas mixture, the adsorbent bed size/life being determined by said selective adsorption of heavier hydrocarbons rather than the adsorption of both lighter and heavier hydrocarbon contaminants; and



(b) passing said feed gas mixture, together with said lighter hydrocarbons, removed from the bed of adsorbent material to the membrane system for the selective permeation of the more readily permeable component of the feed gas mixture, the presence of said lighter hydrocarbons not resulting in appreciable degradation of the permeability of the membrane,

whereby the significant degradation of membrane permeability otherwise caused by the presence of heavier hydrocarbons in the feed gas mixture is conveniently prevented, while the adsorbent material size/bed life are optimized for a given gas separation operation by the selective removal of only the heavier hydrocarbons detrimental to membrane permeability rather than the removal of both light and heavy hydrocarbons.

4,881,954
PERMEABLE MEMBRANES FOR ENHANCED GAS SEPARATION

Benjamin Bikson, Brookline; James E. Miller, Waltham, and Joyce K. Nelson, Lexington, all of Mass., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Jul. 31, 1987, Ser. No. 80,476
Int. Cl.⁴ B01D *53/22*

U.S. Cl. 55—16 **23 Claims**

1. In the process for the separation of a more readily permeable component of a feed gas mixture from a less readily permeable component thereof by contacting said feed gas mixture with the feed side of a composite membrane having gas separation characteristics, and separately withdrawing the more readily permeable component from the composite membrane as a permeate stream and said less readily permeable component as a non-permeate stream, the improvement comprising employing a composite membrane comprising:
(a) a porous polymeric support layer in asymmetric form, having a relatively thin, dense, semipermeable outer skin region and a less dense, porous non-selective support region that serves to preclude the collapse of the skin region under pressure, said skin region being capable of selectively permeating a more readily permeable component of the feed gas mixture to be separated at a desirably high permeation rate, wherein said porous support layer, after being produced in a desired porous form, washed and dried, is exposed in essentially dry form to an elevated temperature approaching the glass transition temperature of the material of the support layer under non-swelling conditions for a period of time sufficient to modify the porous support layer to form asymmetry therein, with increased compaction resistance and collapse pressure, said time being insufficient to cause the collapse of said support layer; and
(b) a separation layer deposited on the outer skin region of said support layer without alteration of the structure of said support layer, said separation layer having a selectivity for said more readily permeable component greater than that of the material of the asymmetric support layer, the resulting composite membrane exhibiting separation characteristics equal to or higher than the intrinsic separation characteristics of the material of the asymmetric support layer, whereby said composite membrane exhibits enhanced gas permeability and separation characteristics in desired gas separation operations.

4,881,955
METHOD FOR GAS SEPARATION USING HELICALLY WOUND HOLLOW FIBERS PERMEABLE MEMBRANE CARTRIDGE

Benjamin Bikson, Brookline, and Slavatore Giglia, Norwood, both of Mass., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Sep. 12, 1988, Ser. No. 242,602
Int. Cl.⁴ B01D *53/22*

U.S. Cl. 55—16 **11 Claims**

1. A gas separation process for the separation of at least one fast gas component from a feed gas mixture containing such fast gas component and at least one other gaseous component in a permeator module containing a helically wound hollow fiber cartridge, said process comprising:
(a) passing the feed gas mixture to the permeator module so as to pass through the bores of the hollow fibers in said helically wound hollow fiber cartridge from a first feed end thereof, all of the hollow fibers in said permeable membrane cartridge being essentially of uniform length;
(b) recovering said fast gas component that permeates the hollow fibers as a permeate stream on the outer, permeate side of said hollow fibers, said permeate stream being passed from the permeator module in a permeate flow direction that is countercurrent to the direction of the feed gas mixture flow within the bores of the hollow fibers; and
(c) recovering a raffinate stream from the permeator module, said raffinate stream leaving the bores of the hollow fibers through a second, exit end thereof opposite the feed end thereof, said raffinate stream passing in a flow direction that is cocurrent to the direction of feed gas mixture flow within the bores of the hollow fibers, thereby maintaining (i) significant radial mixing of the permeate stream on the outer, permeate side of the hollow fiber permeable membrane cartridge and (ii) essentially no axial mixing on either (a) the outer permeate side or (b) in the bores of said hollow fiber permeable membrane cartridge.

4,881,956
METHOD AND DEVICE FOR CLEANING PARTICULATE-LADEN GASES

Dale G. Jones, Visalia, Calif., assignor to J. Edwards Enterprises, Visalia, Calif.

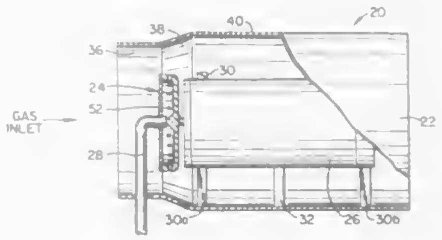
Continuation of Ser. No. 760,362, Jun. 28, 1985, abandoned. This application Mar. 6, 1987, Ser. No. 22,476
Int. Cl.⁴ B01D *47/00*

U.S. Cl. 55—84 **8 Claims**

1. A method for scrubbing particulates from an air stream, said method employing a rotary spray scrubber including:
- a substantially cylindrical duct which defines an axial flow path for the air stream;
- a rotating dispersion hub having a substantially solid radial face rotatably mounted in the duct, said hub including a circular periphery having a plurality of radial passages;

wherein the cylindrical duct and the hub together define an annular passage therebetween, and wherein the ratio of the hub diameter to the duct diameter at said annular passage is in the range from abut 0.55 to 0.75;

said method comprising:
- rotating the hub at a preselected rotational speed corresponding to a tangential hub velocity of at least about 500 ft/sec;



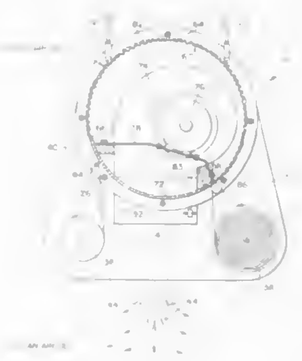
- supplying liquid scrubbing medium to the passages in the hub so that a radial spray of droplets having a diameter of from 10 to 50 microns is directed to the annular passage between the hub and the duct; and
- directing the air stream flow through the annular passage whereby the radial spray impacts the particulates to remove them from the air stream.

4,881,957
AIR FILTRATION UNITS AND METHODS EMPLOYING DUST AS FILTRATION MEDIA AND AIR FLOW RATE AS A DIRECTLY CONTROLLED PARAMETER

Frederick M. Shofner, Knoxville, Tenn., assignor to PPM, Inc., Knoxville, Tenn.

Filed Apr. 6, 1983, Ser. No. 482,604
Int. Cl.⁴ B01D *33/00, 41/00*

U.S. Cl. 55—97 **12 Claims**



1. An air filtration unit comprising:
- a unit housing formed at least in part of a rigid open mesh material defining an airflow inlet;
- a motor-driven blower for drawing air into said housing through said rigid open mesh material and for forcibly discharging the air from said housing through a blower outlet;
- a sheet of filter substrate media positioned on the outside of said rigid open mesh and supported thereby such that unfiltered air is drawn through said filter substrate media to thus expose said filter substrate media and form a mat thereon, and such that a mat thus formed serves as a filtration medium;
- a controllable media-replenishment device connected to said sheet of filter substrate media for drawing exposed filter substrate media across and off said rigid open mesh at one portion thereof and simultaneously supplying clean filter

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substrate media at another portion of said rigid open mesh; and

control system means connected to said media-replenishment device and responsive to the rate of airflow through said unit for substantially maintaining a predetermined rate of airflow through said media by activating said media replenishment device when sensed airflow decreases;

said control system means including means for maintaining an airflow rate such that the permeability of the mat filter is in the order of 200 CFM per ft^2 of open area at a static pressure drop of 2 inches WC.

8. A method for operating an air filtration unit including an opening defining an airflow passage, a motor-driven blower for drawing air through the opening and forcibly discharging the air, a sheet of filter substrate media supported over the opening such that unfiltered air is drawn through the filter substrate media to form a mat thereon and such that the mat thus formed serves as a filtration medium, and a controllable media-replenishment device for drawing exposed filter substrate media across and off the opening at one portion thereof and simultaneously supplying clean filter substrate media at another portion of the opening, said method comprising:

providing said air filtration unit;

sensing the rate of airflow through the opening; and

activating the media-replenishment device when sensed airflow decreases to substantially maintain a predetermined rate of airflow, and controlling the airflow rate such that the permeability of the mat filter is in the order of 200 CFM per ft^2 of open area at a static pressure drop of 2 inches WC.

4,881,958

ADSORPTION DEVICE FOR GAS SEPARATION

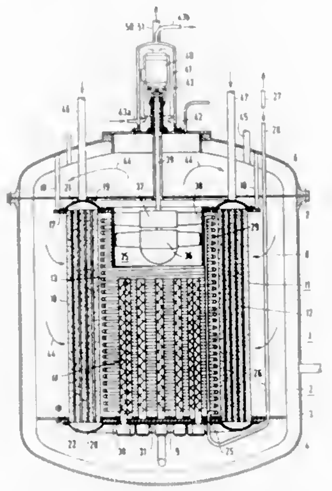
Bernd Eckardt, Bruchkoebel, and Thomas Burbach, Dietzenbach, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Sep. 6, 1988, Ser. No. 240,944

Claims priority, application Fed. Rep. of Germany, Sep. 3, 1987, 3729517; European Pat. Off., Jul. 18, 1988, 88111539.8

Int. Cl.^{4} B01D *53/04*

U.S. Cl. 55—179 18 Claims



1. Adsorption device for gas separation with an adsorbent, comprising a thermally insulated container, adsorber tubes with a given length being vertically disposed in said container, adsorbent disposed in said adsorber tubes, a heating device adjacent said adsorber tubes, cooling tubes disposed alongside said adsorber tubes and extending over substantially all of said given length for receiving coolant, and a gas circulation device in said container generating a gas flow encompassing said heating device, said cooling tubes and all of said given length of said adsorber tubes.

17. Adsorption system, comprising at least two parallel branches, and two adsorption devices each being connected in a respective one of said parallel branches, one of said adsorption devices functioning as an adsorber while the other of said adsorption devices is regenerated, each of said adsorption devices including a thermally insulated container, adsorber tubes with a given length being vertically disposed in said container, adsorbent disposed in said adsorber tubes, a heating device adjacent said adsorber tubes, cooling tubes disposed alongside said adsorber tubes and extending over substantially all of said given length for receiving coolant, and a gas circulation device in said container generating a gas flow encompassing said heating device, said cooling tubes and all of said given length of said adsorber tubes.

4,881,959

EXHAUST EMISSION PURIFIER FOR DIESEL ENGINES

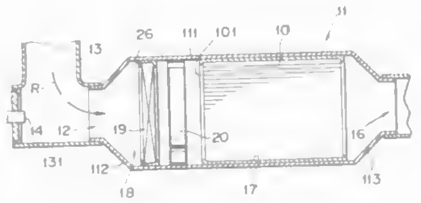
Yoichiro Kono, Tokyo; Yasuaki Kumagai, Yokohama; Nobuaki Takeda, Kawasaki, and Hiroshi Ogita, Yokohama, all of Japan, assignors to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 19, 1988, Ser. No. 221,091

Claims priority, application Japan, Jul. 20, 1987, 62-110991[U]; Oct. 20, 1987, 62-159272[U]; Oct. 20, 1987, 62-159273[U]

Int. Cl.^{4} B01D *46/10*

U.S. Cl. 55—267 15 Claims



1. An exhaust emission purifier for use with a diesel engine having an exhaust emission passage, said exhaust emission purifier comprising:

(a) a particulate trap adapted to be disposed in the exhaust emission passage for entrapping particulates contained in exhaust gases emitted from the diesel engine;

(b) a canning container housing said particulate trap;

(c) an electric heater disposed in said canning container upstream of said particulate trap for heating the exhaust gases to a temperature which is high enough to burn particulates entrapped by said particulate trap; and

(d) a heat conductor/converter device disposed in said canning container upstream of said electric heater for absorbing heat radiated from said electric heater and discharging the absorbed heat into air flowing from a position upstream of said canning container into said particulate trap,

wherein:

(e) said heat conductor/converter device comprises a cluster of exhaust gas passageways and

(f) said exhaust gas passageways have a passageway cross-sectional area greater in a lower portion of said heat conductor/converter device than in an upper portion of said heat conductor/converter device.

4,881,960

FRACTIONATION OF A HYDROCARBON MIXTURE

Gerhard Renke, Poecking, and Elmar Diehl, Munich, both of Fed. Rep. of Germany, assignors to Linde Aktiengesellschaft, Wiesbaden, Fed. Rep. of Germany

Continuation of Ser. No. 893,517, Aug. 5, 1986, abandoned. This application Apr. 25, 1988, Ser. No. 188,129

Claims priority, application Fed. Rep. of Germany, Aug. 5, 1985, 3528071

Int. Cl.^{4} F25J *3/00*

U.S. Cl. 62—20 30 Claims

1. In a process for the fractionation of a gas comprising a mixture of hydrocarbons and inerts in a distillation column having at least one feed point to produce a gaseous overhead fraction containing lighter hydrocarbons and a bottoms product fraction containing heavier hydrocarbons, the improvement comprising the step of passing a physical scrubbing agent into an upper section of the column to scrub out from said gaseous overhead fraction containing lighter hydrocarbons, a heavier hydrocarbon fraction thereof which would otherwise be withdrawn from the column in said gaseous overhead fraction, thereby producing a gaseous overhead fraction containing a lower concentration of heavier hydrocarbons than would be the case without said scrubbing step, and wherein said scrubbing agent introduced into said upper column section contains at least a portion of said heavy hydrocarbon bottoms fraction.

4,881,961

CONTROL MANIFOLD INSERTED IN THE FLOW ROUTE OF A SYSTEM FOR TRANSFERRING PRESSURE MEDIA IN A GASEOUS AND/OR LIQUID GASEOUS STATE

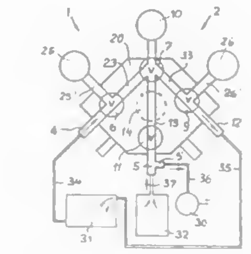
Bruno A. Mock, Buolterlistrasse 63, 6052 Hergiswil NW, Switzerland

Filed May 25, 1988, Ser. No. 198,328

Claims priority, application Switzerland, Jun. 4, 1987, 2121/87

Int. Cl.^{4} F25B *45/00*

U.S. Cl. 62—292 4 Claims



1. A control manifold comprising:

a casing of at least approximately a hexagonal shape having an upper and a lower narrow side parallel to one another, and a pair of sides each adjacent an end of said upper narrow side angled toward one another;

a closable low-pressure fitting extending into said casing at a low-pressure side thereof and connectable to a circulation system for a pressure medium;

a closable high-pressure fitting extending into said casing at a high-pressure side thereof and connectable to said circulation system;

a further closable fitting extending into said casing positioned between said low- and high-pressure fittings connectable to both a vacuum pump and a supply of said pressure medium;

respective shut-off valves in said casing connected to each of said fittings;

a further shut-off valve in said casing adjacent said upper narrow side;

respective conduit sections in said casing communication between said further shut-off valve and each of said shut-off valves connecting said low- and high-pressure fittings, each of said respective conduits running parallel to one of said angled sides of said casing; and

an approximately centrally positioned conduit section in said casing perpendicular to said upper narrow side communicating between said further shut-off valve and said shut-off valve connecting said further closable fitting.

4,881,962

METHOD OF AND APPARATUS FOR BENDING AND TEMPERING GLASS SHEETS

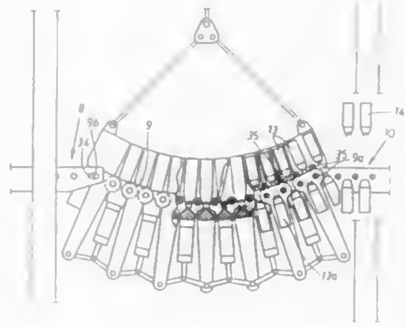
Pauli T. Reunamäki, and Järvinen, both of Tampere, Finland, assignors to O/Y Kyro A/B Tamglass, Tampere, Finland

Filed Sep. 22, 1987, Ser. No. 99,722

Claims priority, application Finland, Sep. 22, 1986, 863826

Int. Cl.^{4} C03B *23/023*

U.S. Cl. 65—104 20 Claims



1. A method of bending a glass sheet to be tempered, comprising the steps of:

carrying a glass sheet on horizontal rollers;

heating a glass sheet for bending and tempering;

curving a heated glass sheet around an axis of curvature transverse to a traveling direction of the glass sheet;

tempering a heated curve glass

sheet while reciprocating or oscillating said heated curved glass sheet in a longitudinal direction by the rollers carrying the glass sheet,

said step of curving a heated glass sheet around an axis of curvature transverse to the traveling direction being effected such that each point in a glass sheet is curved substantially at the same rate to provide a substantially constant radius of curvature at any given instant of time over the entire glass sheet area while moving said glass sheet by the rollers.

7. A bending and tempering apparatus for glass sheets, comprising a loading station, a heating furnace, a bending and tempering section, an unloading station, heating means in said heating furnace for heating glass sheets, chilling means in said bending and tempering section for tempering a bent glass

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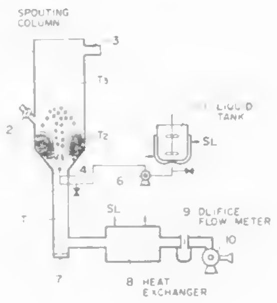
sheet, roller conveyors having horizontal rollers for carrying glass sheets from said loading station to said unloading station through said heating furnace and through said bending and tempering section, drive means for operating the roller conveyors, said drive means adapted to drive said roller conveyors in an oscillating fashion in at least a bending and tempering section roller conveyor, wherein rollers of said bending and tempering section roller conveyor are carried by first and second support members that are connected together to form support means, said support means extending in a traveling direction of a glass sheet and being curvable around an axis of curvature transverse to said traveling direction according to a variable angle between pairs of individual first and second support members of said support means, said variable angle being adjustable by lever arms and power units.

4,881,963
GRANULER FERTILIZER WITH A DEGRADATIVE COATING

Toshio Fujita; Yoshisato Yamashita; Shigemitsu Yoshida, and Katsutoshi Yamahira, all of Minamatashi, Japan, assignors to Chisso Corporation, Osaka, Japan

Filed Jun. 22, 1987, Ser. No. 64,576
Int. Cl.⁴ C05G *3/10*
U.S. Cl. 71—64.07 9 Claims



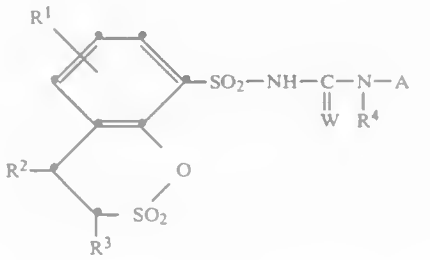
1. A granular fertilizer with a degradative coating comprising as its active ingredients an ethylene-carbon monoxide copolymer and at least one resin selected from the group consisting of rubbery resins and ethylene-vinyl acetate copolymer resins, the carbon monoxide content of the ethylene-carbon monoxide copolymer being within the range of 0.1 to 10% by weight, the mixing proportion of the ethylene-carbon monoxide copolymer being at least 3% by weight of the coating and the mixing proportion of the rubbery resin or ethylene-vinyl acetate copolymer being at least 2% by weight of the coating.

4,881,964
N-HETEROCYCLOSULFONYL-N'-PYRIMIDINYLUREAS

Werner Föry, and Willy Meyer, both of Riehen, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 872,799, Jun. 11, 1986, Pat. No. 4,759,791. This application May 24, 1988, Ser. No. 198,031
Claims priority, application Switzerland, Jun. 18, 1985, 2566/85; Mar. 5, 1986, 894/86
Int. Cl.⁴ C07D *411/12;* A01N *43/54*
U.S. Cl. 71—91 14 Claims

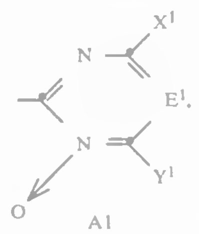
1. An N-(3,4-dihydro-2,2-dioxo-1,2-benzoxathiin-8-ylsulfonyl)-N'-pyrimidinylurea of formula 1



(1)

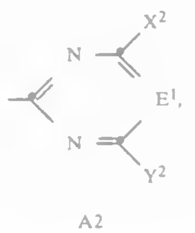
wherein

- R^1 is hydrogen, halogen, nitro, C_1–C_4alkyl, C_1–C_4haloalkyl, C_1–C_4alkoxy, C_1–C_4haloalkoxy, C_1–C_4alkoxycarbonyl, C_1–C_4alkylthio, C_1–C_4alkylsulfinyl, C_1–C_4alkylsulfonyl or C_2–C_5alkoxyalkoxy,
- R^2 and R^3 are each independently of the other hydrogen or C_1–C_4alkyl,
- R^4 is hydrogen, methyl or ethyl,
- W is oxygen or sulfur, and
- A is a radical



A1

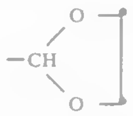
or



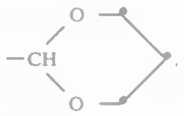
A2

in which formulae

- X^1, X^2 and Y^1 are each independently halogen, C_1–C_4-haloalkoxy, C_1–C_4haloalkyl, C_1–C_4alkoxy, C_1–C_4alkyl, dimethylamino, methylamino, ethylamino, amino or C_2–C_4alkoxyalkyl,
- E^1 is the methine bridge,
- Y^2 is cyclopropyol, dimethoxymethyl, diethoxymethyl,



or



or salt thereof, with the proviso that R^3 is C_1–C_4alkyl if A is A2.

9. A herbicidal and plant growth inhibiting composition which contains, as active ingredient, an effective amount of a substituted sulfonylurea of formula I according to claim I, together with a carrier or other adjuvant.

4,881,965
WHEAT GROWING PROCESS UTILIZING SELECTIVE HEREBICIDE

Susumu Yamamoto; Takuya Kakuta; Toshiaki Sato; Katsushi Morimoto, all of Funabashi; Eiichi Oya, Narashino; Takashi Ikai, Tokyo, and Tsutomu Nawamaki, Yono, all of Japan, assignors to Nissan Chemical Industries, Ltd., Tokyo, Japan

Division of Ser. No. 814,568, Dec. 30, 1985, abandoned. This application Jan. 25, 1988, Ser. No. 147,651
Claims priority, application Japan, Jan. 18, 1985, 60-6800; Apr. 13, 1985, 60-78784; Oct. 22, 1985, 60-236780
Int. Cl.⁴ A01N *43/54;* C07D *401/14*
U.S. Cl. 71—92 6 Claims

1. A process for growing wheat and selectively preventing or controlling the growth of wild oats in the same site in which the wheat is being cultivated which comprises applying to said site an amount of an active compound sufficient to control the

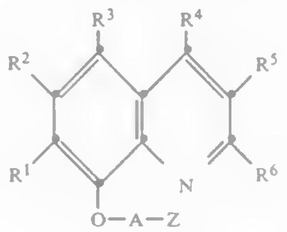
growth of wild oats without adversely affecting the growth of the wheat, said active compound being N-[(4,6-dimethylpyrimidin-2-yl)aminocarbonyl]-4-methoxycarbonyl-3-methyl-1-(2-pyridyl)pyrazole-5-sulfonamide or N-[(4,6-dimethylpyrimidin-2-yl)aminocarbonyl]-4-methoxycarbonyl-1-(2-pyridyl)pyrazole-5-sulfonamide.

4,881,966
USE OF QUINOLINE DERIVATIVES FOR THE PROTECTION OF CULTIVATED PLANTS

Andreas Nyffeler, and Adolf Hubele, both of Maden, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 829,600, Feb. 13, 1986, abandoned. This application Mar. 30, 1988, Ser. No. 178,805
Claims priority, application Switzerland, Feb. 14, 1985, 682/85; Dec. 2, 1985, 5132/85
Int. Cl.⁴ A01N *43/42*
U.S. Cl. 71—94 8 Claims

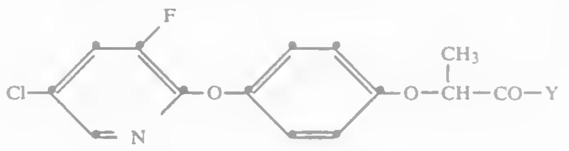
1. A process for selectively controlling *Avena ludoviciana*, and *Lolium perenne* in cereal crops, which process comprises treating the cereal crops, parts of the cereal crops or cultivated by for the cereal crops with an effective amount of an antidote of formula I



(1)

wherein R^1, R^2, R^4, R^5 and R^6 are hydrogen,

- R^3 is hydrogen or chlorine,
- A is —CH_2—,
- Z is $COOR^{12}$ and
- R^{12} is an alkyl group of 4 to 11 carbon atoms and an effective amount of a herbicide of formula II



(II)

wherein

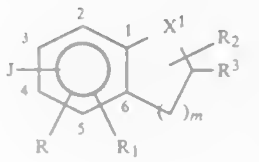
- Y is —OR^{18} and
- R^{18} is C_3–C_9 alkynyl.

4,881,967
HETEROCYCLIC 2,3-DIHYDROBENZOFURAN HERBICIDES

Joseph E. Semple, Wilmington, Del., assignor to E. I. Du Pont De Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 943,365, Dec. 10, 1986, abandoned. This application Jun. 2, 1988, Ser. No. 202,086
Int. Cl.⁴ C07D *407/04, 405/04;* A01N *43/707, 43/653, 43/38, 43/42*
U.S. Cl. 71—92 33 Claims

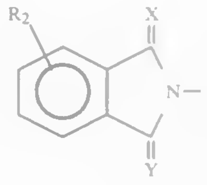
1. A compound of the formula



1

wherein,

- R is H, Cl, F, C_1–C_2 alkyl or C_1–C_3 alkoxy;
- R_1 is H, F, Cl, Br, CH_3, OCH_3, CN, CF_3, OCF_3 or OCF_2H;
- X^1 is O
- R_2 is H, CH_3 or CH_2CH_3;
- R_3 is H, C_1–C_4 haloalkyl, CR_2R_7CN, CN, $CR_2R_4R_7$, COCl, COR_4, $C(NOR_6)R_2$, CO_2R_4, $CONR_4R_2$, CHR_2OH, $CO_2(CH_2)_2Si(CH_3)_3$, $CONR_2SO_2CH_3$, $CHR_2CO_2R_4$, $CONHCH(CH_3)CONHCH(CH_3)CO_2CH_3$, CHR_2COR_4, $CHR_2OSO_2(C_1$–C_4 alkyl), $CHR_2OC(O)R_4$, $CHR_2OC(O)N(R_2)_2$, $CHR_2OC(O)N(R_2)OCH_3$, $CHR_2OC(O)N(R_2)Ph$, $HC{=}CH_2$ or $C{\equiv}CH$;
- R_4 is H, C_1–C_4 alkyl, C_1–C_4 haloalkyl, C_2–C_6 alkenyl, C_3–C_6 alkynyl, C_2–C_4 haloalkenyl, phenyl, C_1–C_4 alkylphenyl, C_3–C_6 alkoxycarbonylalkyl or $(CH_2CH_2O)_bR_2$;
- b is 1 to 6;
- m is 1; n is 1 or 2
- J is



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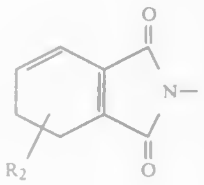

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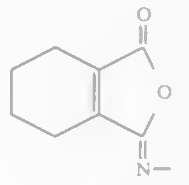

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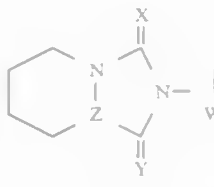

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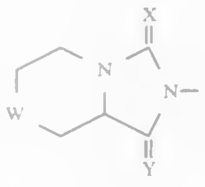

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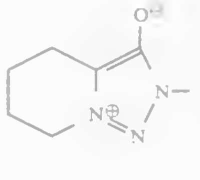

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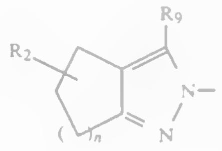

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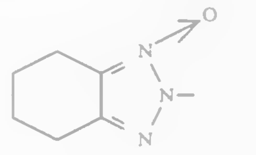

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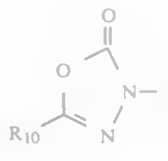

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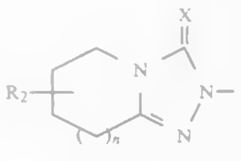

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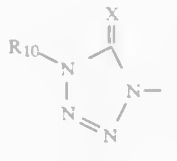

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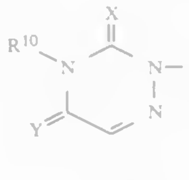

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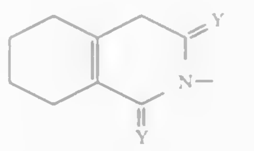

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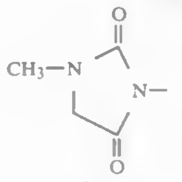
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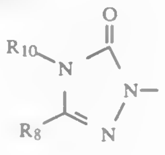

J-15

wherein

X and Y each is O or S;
Z is C or N;
W is S or SO_2;
R_6 is H, C_1–C_5 alkyl, allyl, propargyl, benzyl, $CH_2CO_2CH_3$ or $CH_2CO_2CH_2CH_3$;
R_7 is H or CH_3;
R_8 is Cl, C_1–C_4 alkyl or C_1–C_4 haloalkyl;
R_9 is Cl, F, Br, CH_3, CN, OCH_3, SCH_3 or SO_2CH_3; and
R_{10} is C_1–C_4 alkyl or C_1–C_4 haloalkyl.

17. A composition suitable for controlling the growth of undesired vegetation which comprises an effective amount of a compound of claim 1 and at least one of the following: surfactant, solid or liquid diluent.

4,881,968

HERBICIDAL SULFONAMIDES

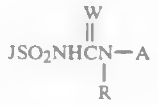
Mark E. Thompson, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 5, 1987, Ser. No. 117,769

Int. Cl.⁴ A01N *43/54;* C07D *239/64, 401/12, 403/12*

U.S. Cl. 71—92 **37 Claims**

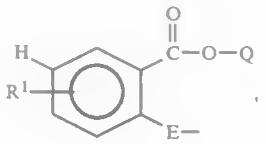
1. A compound selected from


$JSO_2NH\overset{W}{\overset{\|}{C}}\underset{\underset{R}{|}}{N}-A$

1

wherein

J is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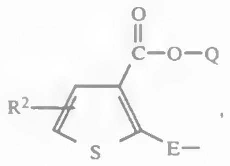
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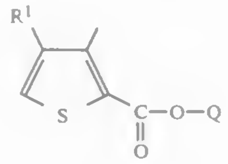
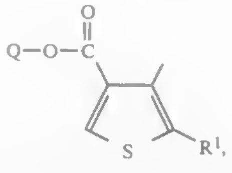

J-3


J-4

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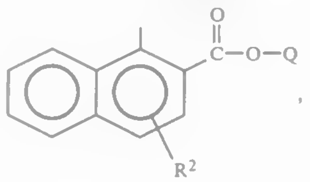
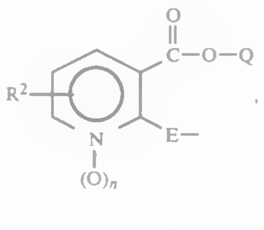
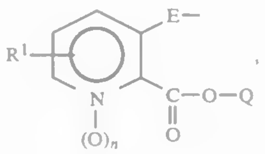
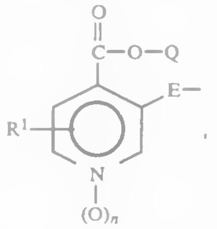

J-5


J-6


J-7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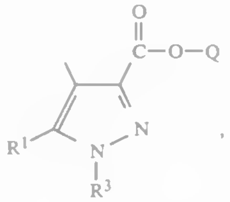
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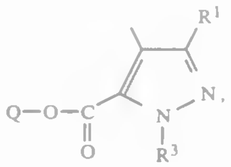
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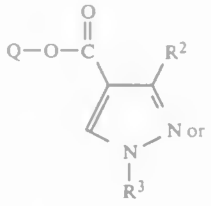
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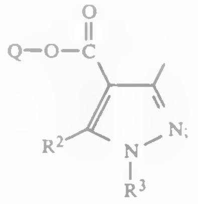
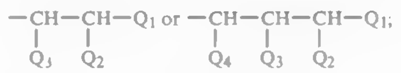
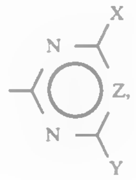

J-12

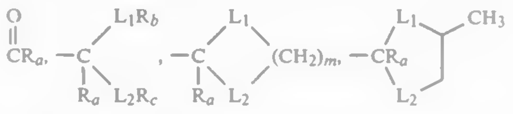
Q is


$-\underset{\underset{Q_3}{|}}{CH}-\underset{\underset{Q_2}{|}}{CH}-Q_1$ or $-\underset{\underset{Q_4}{|}}{CH}-\underset{\underset{Q_3}{|}}{CH}-\underset{\underset{Q_2}{|}}{CH}-Q_1$;

Q_1 is N_3, SCN or NO_2;
Q_2, Q_3 and Q_4 are independently H or CH_3;
E is a single bond or $—CH_2—$;
R is H or CH_3;
W is O or S;
R^1 is H, C_1–C_3 alkyl, C_1–C_3 haloalkyl, halogen, CN, nitro, C_1–C_3 alkoxy, C_1–C_3 haloalkoxy, $C_1$14 C_3 alkylthio, C_1–C_3 alkylsulfinyl, C_1–C_3 alkylsulfonyl, SCF_2H, NH_2, $NHCH_3$, $N(CH_3)_2$ or C_1–C_2 alkyl substituted with one C_1–C_2 alkoxy, C_1–C_2 haloalkoxy, SH, SCH_3, CN or OH;
R^2 is H, F, Cl, Br, C_1–C_2 alkyl, C_1–C_2 haloalkyl or C_1–C_2 alkoxy;
R^3 is H, C_1–C_3 alkyl, C_1–C_2 haloalkyl, C_3–C_4 alkenyl, C_3–C_4 alkynyl, CH_2CN, phenyl or phenyl substituted by F, Cl, CH_3 or OCH_3;
n is 0 or 1;
A is


A-1

X is H, C_1–C_4 alkyl, C_1–C_4 alkoxy, C_1–C_4 haloalkoxy, C_1–C_4 haloalkyl, C_1–C_4 haloalkylthio, C_1–C_4 alkylthio, halogen, C_2–C_5 alkoxyalkyl, C_2–C_5 alkoxyalkoxy, amino, C_1–C_3 alkylamino, di(C_1–C_3alkyl)amino or C_3–C_5 cycloalkyl;
Y is H, C_1–C_4 alkyl, C_1–C_4 alkoxy, C_1–C_4 haloalkoxy, C_1–C_4 haloalkylthio, C_1–C_4 alkylthio, C_2–C_5 alkoxyalkyl, C_2–C_5 alkoxyalkoxy, amino, C_1–C_3 alkylamino, di(C_1–C_3 alkyl)amino, C_3–C_4 alkenyloxy, C_3–C_4 alkynyloxy, C_2–C_5 alkylthioalkyl, C_1–C_4 haloalkyl, C_2–C_4 alkynyl, azido, cyano, C_2–C_5 alkylsulfinylalkyl, C_2–C_5 alkylsulfonylalkyl,



CH_2CN, $CH_2CO_2CH_3$, CH_2OH or $N(OCH_3)$ CH_3;
m is 2 or 3;
L_1 and L_2 are independently O or S;
R_a is H or C_1–C_3 alkyl;
R_b and R_c are independently C_1–C_3 alkyl;
Z is CH

and their agriculturally suitable salts; provided that

(a) when X is Cl, F, Br or I, then Y is OCH_3, OC_2H_5, $N(OCH_3)CH_3$, $NHCH_3$, $N(CH_3)_2$ or OCF_2H;
(b) when W is S, then R is H, A is A-1 and Y is CH_3, OCH_3, OC_2H_5, CH_2OCH_3, C_2H_5, CF_3, SCH_3, $OCH_2CH{=}CH_2$, $OCH_2C{\equiv}CH$, $OCH_2CH_2OCH_3$, $CH(OCH_3)_2$ or 1,3 -dioxolan-2-yl; and
(c) Q_2, Q_3 and Q_4 are not simultaneously methyl.

23. A composition suitable for controlling the growth of undesired vegetation which comprises an effective amount of a compound of claim 1 and at least one of the following: surfactant, solid or liquid diluent.

4,881,969

SULFONAMIDES

Thomas Saupe, Bammental; Gerhard Klebe; Ulrich Schirmer, both of Heidelberg; Gerhard Paul, Ludwigshafen; Reiner Kober, Fussgoenheim; Bruno Wnerzer, Otterstadt; Rainer Berghaus, Mutterstadt; Norbert Meyer, Ladenburg, and Karl-Otto Westphalen, Speyer, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

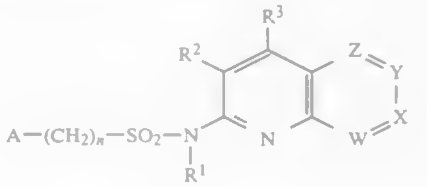
Filed Feb. 15, 1989, Ser. No. 310,753

Claims priority, application Fed. Rep. of Germany, Feb. 18, 1988, 3804990

Int. Cl.⁴ C07D *471/02*

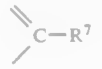
U.S. Cl. 71—94 7 Claims

1. Sulfonamides of the general formula I


1

where the substituents and indices are defined as follows:

R^1 is hydrogen, cyano,
  C_1–C_8-alkyl which may be substituted by one of the following radicals: C_1–C_2-alkoxy, C_1–C_2-alkylthio, aryl, aryloxy, arylthio, hetaryl, hetaryloxy and hetarylthio,
  C_2–C_5-alkenyl,
  C_2–C_4-alkynyl,
  COR^4, where R^4 is C_1–C_4-alkyl, C_1–C_4-alkoxy, C_1–C_4-alkylthio. aryl, aryloxy, arylthio, aryl-C_1–C_4-alkoxy, hetaryl, hetaryloxy, hetarylthio or hetaryl-C_1–C_4-alkoxy,
  $CONR^5R^6$, where R^5 and R^6 are identical or different and each denotes hydrogen, C_1–C_4-alkyl, C_3–C_6-cycloalkyl, C_2–C_5-alkenyl, aryl, hetaryl, aryl-C_1–C_4-alkyl, hetaryl-C_1–C_4-alkyl or C_1–C_4-alkylcarbonyl or together denote a C_2–C_6-alkylene chain,
  or SO_mR^4, where m is 1 or 2 and R^4 is as defined above;
R^2, R^3 are identical or different and each denotes nitro, hydroxy, carboxy, mercapto or halogen,
  C_1–C_4-alkyl, which may be monosubstituted by hydroxyl, mercapto, amino, aryloxy or hetaryloxy and/or monosubstituted, disubstituted or trisubstituted by halogen,
  C_3–C_6-cycloalkyl, which may be monosubstituted, disubstituted or trisubstituted by halogen, hydroxyl, mercapto and/or C_1–C_4-alkyl,
  C_3–C_6-cycloalkoxy,
  C_3–C_6-cycloalkylthio,
  C_2–C_5-haloalkenyl,
  C_2–C_4-haloalkynyl,
  C_1–C_4-alkoxy, which may be monosubstituted, disubstituted or trisubstituted by halogen and/or monosubstituted by aryl or hetaryl,
  C_1–C_4-alkylthio, which may be monosubstituted, disubstituted or trisubstituted by halogen and/or monosubstituted by aryl or hetaryl,
  C_2–C_5-alkenyloxy,
  C_2–C_4-alkynyloxy,
  $—NR^5R^6$, where R^5 and R^6 are each as defined above, or one of the groups mentioned under R^1,
W is N,
X, Y, Z each denote a group of the formula



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where R^7 is hydrazino or one of the groups mentioned under R^2

although X, Y, Z and W are not simultaneously nitrogen,

n is 0 or 1 and

A is aryl or hetaryl, which each may carry from one to five halogen atoms and/or from one to three of the following substituents:

—SO_2R^8, where R^8 is hydroxy, C_1–C_4-alkoxy, aryl-C_1–C_4-alkoxy, aryloxy, hetaryloxy, hetaryl-C_1–C_4-alkoxy or —NR^5R^6, where R^5 and R^6 are each as defined above, and/or

the groups mentioned under R^2,

and the salts and N-oxides thereof, except the compounds of the formula I where A is 4-aminophenyl, n is 0, R^1, R^2 and R^3 are each hydrogen, W is nitrogen, X, Y and Z are each carbon, and the R^4's on X and Z are each methyl and otherwise hydrogen, and the 4-aminophenyl reaction products thereof.

4,881,970

TETRAHYDROPTHALIMIDE COMPOUNDS, AND THEIR PRODUCTION AND USE AS HERBICIDES

Eiki Nagano, Hyogo; Shunichi Hashimoto, Osaka; Ryo Yoshida, Hyogo; Hiroshi Matsumoto, and Katsuzo Kamoshita, both of Osaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Continuation of Ser. No. 887,970, Jul. 21, 1986, Pat. No. 4,770,695, which is a continuation of Ser. No. 445,726, Nov. 30, 1982, abandoned. This application Sep. 30, 1987, Ser. No. 102,617

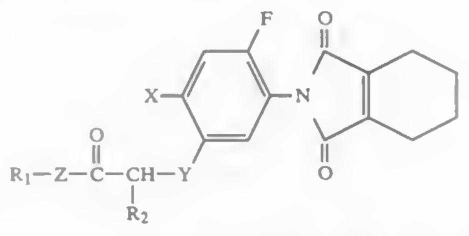
Claims priority, application Japan, Dec. 25, 1981, 56-212396; Jan. 29, 1982, 57-13845; Feb. 5, 1982, 57-17858; Mar. 23, 1982, 57-46940; May 6, 1982, 57-76306

The portion of the term of this patent subsequent to Sep. 13, 2005, has been disclaimed.

Int. Cl.⁴ A01N *43/38;* **C07D** *209/48*

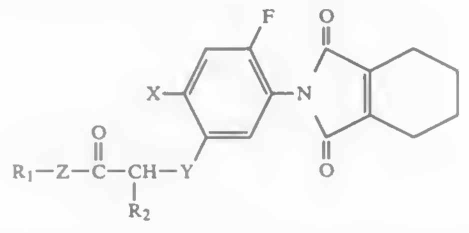
U.S. Cl. 71—96 53 Claims

1. A compound of the formula:



wherein R_1 is hydrogen, alkyl, lower cycloalkyl, lower alkyl(lower)cycloalkyl, lower cycloalkyl(lower)alkyl, lower alkoxy(lower)alkyl, lower alkenyl, lower cycloalkenyl, lower cycloalkenyl(lower)alkyl, phenyl, cyano(lower)alkyl, lower alkynyl, lower alkylideneamino, lower alkylthio(lower)alkyl, benzyl, halo(lower)alkyl or lower cycloalkylideneamino, R_2 is lower alkyl or lower alkoxy, X is chlorine or bromine, Y is oxygen or imino and Z is oxygen or sulfur.

2. A herbicidal composition which comprises a herbicidally effective amount of a compound of the formula:



wherein R_1 is hydrogen, alkyl, lower cycloalkyl, lower alkyl(lower)cycloalkyl, lower cycloalkyl(lower)alkyl, lower alkoxy(lower)alkyl, lower alkenyl, lower cycloalkenyl, lower cycloalkenyl(lower)alkyl, phenyl, cyano(lower)alkyl, lower alkynyl, lower alkylideneamino, lower alkylthio(lower)alkyl, benzyl, halo(lower)alkyl or lower cycloalkylideneamino, R_2 is lower alkyl or lower alkoxy, X is chlorine or bromine, Y is oxygen or imino and Z is oxygen or sulfur as an active ingredient and an inert carrier.

4,881,971

REFINING OF LEAD-DEBISMUTHIZING

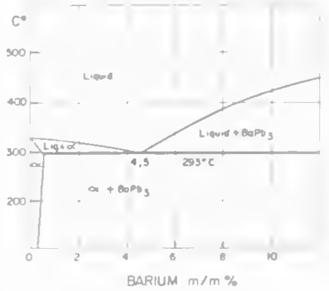
Michael J. Thom, 50 William Chadwick Drive, Eshowe, 3815, South Africa

Filed May 2, 1988, Ser. No. 189,125

Claims priority, application South Africa, Feb. 3, 1988, 88/0749

Int. Cl.⁴ C22B *13/08*

U.S. Cl. 75—78 6 Claims



1. A method of removing bismuth from lead which includes the steps of dissolving barium sulfide in a molten mixture of at least two of $BaCl_2$, BaF_2, $CaCl_2$, CaF_2, KCl and NaCl; electrolyzing the mixture using a molten lead cathode; collecting a barium alloy at the cathode, adding the barium alloy to a molten bath of the lead, cooling the melt, and removing bismuth-containing dross from the melt, or tapping molten lead from the melt, thereby leaving the dross behind.

4,881,972

PROCESS FOR FEEDING HEAT ENERGY INTO A MOLTEN METAL BATH

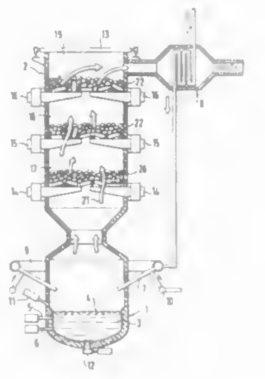
Ralph G. Weber, Rio de Janeiro, and William Wells, Sao Paulo, both of Brazil, assignors to Kortec AG, Switzerland

Filed Oct. 14, 1988, Ser. No. 578,477

Claims priority, application Fed. Rep. of Germany, Oct. 16, 1987, 3735150

Int. Cl.⁴ C22B *9/00*

U.S. Cl. 75—93 G 23 Claims



1. A process of feeding heat energy into a molten metal bath formed by melting solid metal pieces in a crucible, comprising the steps of: charging solid carbon inside a plurality of sheet metal containers into the metal bath in the crucible, the sheet metal of the containers being selected such that the melting point thereof is within a range in which the solid metal pieces melt down; and pressing the sheet metal container down into the metal bath by means of solid metal pieces lying thereabove, while injecting oxygen into the metal bath.

4,881,973

LIFE SILVER RECOVERY SYSTEM

James E. Williams, Fletcher, N.C., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 1, 1988, Ser. No. 151,302

The portion of the term of this patent subsequent to Apr. 26, 2005, has been disclaimed.

Int. Cl.⁴ C22B *11/04*

U.S. Cl. 75—118 P 9 Claims

1. A process for the recovery of silver from spent, waste acidic silver halide photographic processing fluid which comprises passing said waste processing fluid through finely divided iron and a metal salt of copper or cadmium wherein the weight ratio of iron to said metal salt is in a range from 25:1 to 4:1 and wherein the pH of said acidic silver halide processing fluid is raised prior to contact with the iron and the metal salt.

4,881,974

SILVER-GLASS PASTE

Thomas Herrington, Romona, Calif., assignor to Johnson Matthey, Inc., Valley Forge, Pa.

Filed Nov. 5, 1987, Ser. No. 116,949

Int. Cl.⁴ C09D *5/00;* **B22F** *1/00*

U.S. Cl. 106—1.14 4 Claims

1. A silver-glass paste consisting essentially of, on a weight basis, 55–75% silver flake, 0.5–2% silver oxide, 10–25% lead borate glass, 0.5–2% resin, 0.5–2% thixotrope and solvent, the thixotrope being hydrogenated castor oil.

4,881,975

PRODUCTS FOR TREATING SURFACES

John R. Collier, Hednesford, and Kenneth U. Holker, Kidderminster, both of England, assignors to Albright & Wilson Limited, Warley, England

Filed Dec. 21, 1987, Ser. No. 135,437

Claims priority, application United Kingdom, Dec. 23, 1986, 8630740; Feb. 17, 1987, 8703583; Jul. 21, 1987, 8717231

Int. Cl.⁴ C04B *9/02;* **B05D** *1/36*

U.S. Cl. 106—14.05 17 Claims

1. A process for coating a surface which comprises applying thereto an acidic aqueous dispersion consisting essentially of an acidic trivalent metal compound, in which the metal is iron or aluminium or a mixture thereof, and dispersed silica with a silicon to trivalent metal atom ratio of 5.5–30;1, or a reaction product of said compound and silica, and drying said dispersion on the surface to leave a coated surface with a coating weight of 20–5000 mg/m².

4,881,976

ANTIFOULING PAINTS CONTAINING MATRICES CROSS-LINKED WITH LANTHANIDES AND METHODS OF MAKING AND USE

Peter S. Gradeff, Pottersville, N.J., assignor to Rhone-Poulenc Inc., Princeton, N.J.

Continuation-in-part of Ser. No. 121,646, Nov. 17, 1987, abandoned. This application Oct. 18, 1988, Ser. No. 259,284

Int. Cl.⁴ C09D *5/14*

U.S. Cl. 106—15.05 20 Claims

1. An antifoulant additive composition comprising a matrix selected from the group consisting of finely divided wood fibers, or wood pulp, lignin, lignin derivatives, wood rosin, modified rosin, and combinations thereof, in combination with one or more numbers of the group consisting of lanthanide elements and lanthanide element derivatives bonded to said matrix.

4,881,977

WATER-SOLUBLE YELLOW MONOAZO DYESTUFFS

Wolfgang Bauer, Maintal; Willi Steckelberg, and Josef Ritter, both of Hofheim, all of Fed. Rep. of Germany, assignors to Cassella Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

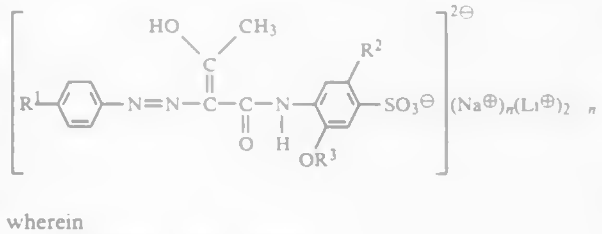
Filed Sep. 19, 1988, Ser. No. 245,897

Claims priority, application Fed. Rep. of Germany, Oct. 16, 1987, 3735078

Int. Cl.⁴ C09D *11/02;* **C09B** *29/00*

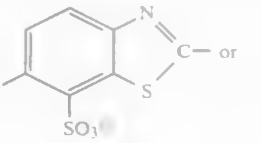
U.S. Cl. 106—22 10 Claims

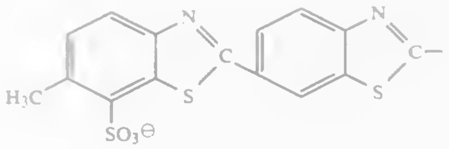
1. Water soluble yellow monoazo dyestuffs of the formula



wherein

R^1 is a moiety of the formula





R^2 is methyl, ethyl, methoxy or ethoxy,

R^3 is methyl or ethyl and

n is a number from 0.3 to 1.7.

4,881,978

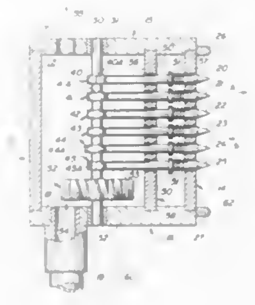
HAND HELD SWIMMING POOL TILE DESCALER

Charles A. Van Horssen, 9233 N. 12 Avenue, Phoenix, Ariz. 85021

Filed Jan. 4, 1988, Ser. No. 140,720

Int. Cl.⁴ C23G *3/00;* **B08B** *1/04*

U.S. Cl. 134—16 2 Claims



1. Hand-held apparatus for removing scale from the tile on a swimming pool, said apparatus including

(a) a housing;

(b) a plurality of pins mounted for reciprocation in said housing, each pin including a distal end which at the

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farthest extent of reciprocation of said pin extends outwardly from said housing;

(c) at least one blade operatively associated with a shaft rotatably mounted in said housing;

(d) first orifice means for directing fluid under pressure into said housing against said blade to displace said blade and rotate said shaft;

(e) transmission means operatively associated with said shaft for selectively sequentially applying motive power to said pins to force said pins against said scale; and,

(f) second orifice means permitting fluid entering said housing through said first orifice means to exit said housing.

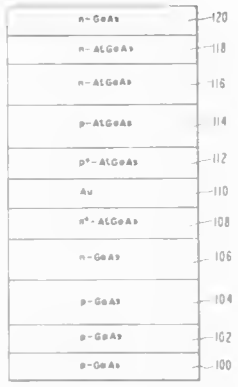
4,881,979
JUNCTIONS FOR MONOLITHIC CASCADE SOLAR CELLS AND METHODS

Carol L. R. Lewis, Palo Alto, Calif., assignor to Varian Associates, Inc., Palo Alto, Calif.

Continuation-in-part of Ser. No. 15,538, Feb. 13, 1987, Pat. No. 4,771,321, which is a continuation of Ser. No. 837,877, Mar. 5, 1986, abandoned, which is a continuation of Ser. No. 645,181, Aug. 29, 1984, abandoned. This application Mar. 22, 1988, Ser. No. 171,629

Int. Cl.^{4} H01L *35/34, 37/00*

U.S. Cl. 136—201 **20 Claims**



1. A method of forming a monolithic cascade solar cell including sub-cells of different radiation converting bandgaps comprising the steps of:

forming a first radiation converting solar sub-cell having a first bandgap on a substrate;

forming an interconnecting thin layer of gold over said first sub-cell, said thin layer of gold being substantially transparent to wavelengths of radiation having frequency matching the bandgap of said first radiation converting sub-cell; and

forming at least one more radiation converting solar sub-cell having a second bandgap over said interconnecting thin layer of gold.

4,881,980
PIGMENTS OF THE QUINACRIDONEQUINONE SERIES, PROCESSES FOR THEIR PREPARATION AND THEIR USE

Erwin Dietz, Kelkheim, and Frank Prokschy, Frankfurt am Main, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

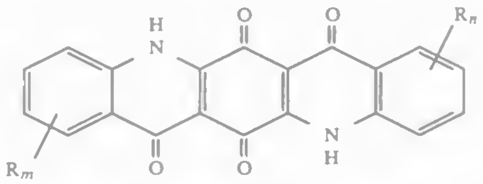
Filed Jul. 9, 1987, Ser. No. 71,750

Claims priority, application Fed. Rep. of Germany, Jul. 11, 1986, 3623336

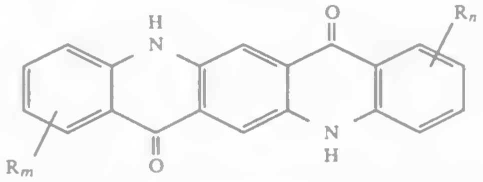
Int. Cl.^{4} C09B *48/00, 67/52*

U.S. Cl. 106—495 **12 Claims**

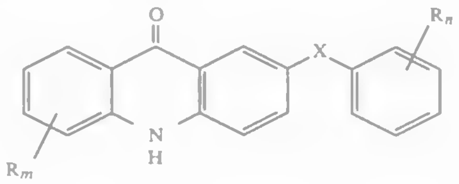
1. A substantially nickel free pigment of the quinacridonequinone series consisting essentially of 98-20 mol percent of a quinacridonequinone of the formula (1)

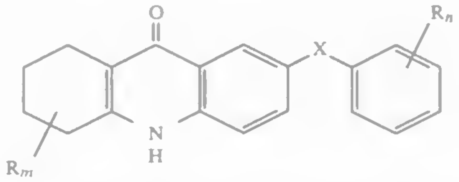

(1)

in which R denotes a hydrogen or chlorine atom or a methyl or carboxamide group and m and n are 1 or 2, and 1-65 mol percent of a quinacridone of the formula (2)


(2)

in which R, m and n have the abovementioned meaning, and 1-15 mol percent of one or two acridone derivatives of the formulae (3) and/or (4)


(3)


(4)

in which X denotes O or NH and the symbols R can be identical or different and, like m and n, have the abovementioned meaning, the added compounds of the formulae (2), (3) and/or (4) being predominantly incorporated into the crystal lattice of the quinacridonequinone of the formula (1).

4,881,981
METHOD FOR PRODUCING A SHAPE MEMORY ALLOY MEMBER HAVING SPECIFIC PHYSICAL AND MECHANICAL PROPERTIES

Paul E. Thoma, Wauwatosa; David N. AbuJodom, II, Brookfield, and Sepehr Fariabi, Shorewood, all of Wis., assignors to Johnson Service Company, Milwaukee, Wis.

Filed Apr. 20, 1988, Ser. No. 183,818

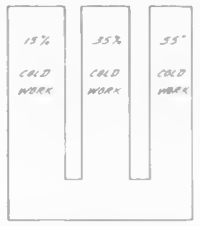
Int. Cl.^{4} C22F *1/10*

U.S. Cl. 148—11.5 R **25 Claims**

1. A process for adjusting the physical and mechanical properties of a shape memory alloy member of a known chemical composition, said process comprising the steps of

annealing said member to a reference internal stress level,

introducing a controlled amount of internal stress into said member, forming the said member into a desired configuration, fixturing said member in the final desired configuration, the shape said member reverts to upon heating,



and heat treating said member to obtain the desired physical and mechanical properties.

4,881,982
METHOD FOR GASEOUS CARBURIZATION OF STEEL

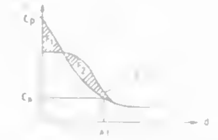
Bernd Edenhofer, Stuttgart, and Hans Pfau, Bedburg-Hau, both of Fed. Rep. of Germany, assignors to Ipsen Industries International Gesellschaft mit beschränkter Haftung, Kleve, Fed. Rep. of Germany

Filed Apr. 25, 1988, Ser. No. 185,862

Claims priority, application Fed. Rep. of Germany, Apr. 29, 1987, 3714283

Int. Cl.^{4} C23C *11/10*

U.S. Cl. 148—16.5 **15 Claims**



1. In a multi-step method for gaseous carburization of steel, where, in a carbon-rich gaseous atmosphere, an article that is to be carburized is, in a first carburization phase, exposed to a carbon charge that is as great as possible, at the carbon black limit, and, where a determination is made when to shift from the first carburization phase changing over in a subsequent diffusion phase, having a lower carbon charge that corresponds to the desired carbon content at the surface of the article is established, the improvement in combination therewith comprising the steps of:

regulating carburization in conformity with a first target value of carbon content at the surface, a second target value of depth of carburization, and at least one additional target value that is characteristic of the carbon content curve of said article, i.e. carbon distribution in said article graphically represented as carbon content plotted versus depth of carburization, with said regulating being executed in such a way that when said at least one additional target value is reached, automatically switching over to the subsequent diffusion phase wherein the carbon level that characterizes said carburization phase is reduced, and said diffusion phase is initiated.

4,881,983
MANUFACTURE OF CORROSION RESISTANT COMPONENTS

John D. Smith, Solihull, and Stephen E. Vanes, Hall Green, both of United Kingdom, assignors to Lucas Industries Public Limited Company, Birmingham, England

Filed Jul. 6, 1988, Ser. No. 215,563

Claims priority, application United Kingdom, Jul. 17, 1987, 8716928

Int. Cl.^{4} C23C *8/34, 11/08*

U.S. Cl. 148—16.6 **12 Claims**

1. A method of manufacturing a steel component having corrosion resistance, and a uniform dense, deep black color, comprising the steps of sequentially: (a) forming an epsilon iron nitride or carbonitride surface layer on the component, (b) oxidising the component by a gaseous medium at a gas oxidation temperature to form an oxide layer about 0.2 to 1.0 micron thick and comprising substantially Fe_3O_4 whereby the component has a uniform dense, deep black color which comprises Fe_3O_4, and then (c) carrying out a surface finish treatment, without affecting the uniform dense, deep black color.

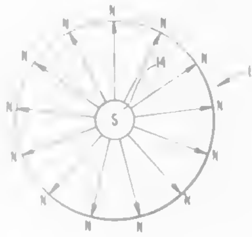
4,881,984
CONSOLIDATION OF MAGNET ALLOY POWDERS BY EXTRUSION AND PRODUCT THEREFROM

Vijay K. Chandhok, and Bao-Min Ma, both of Pittsburgh, Pa., assignors to Crucible Materials Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 889,760, Jul. 28, 1986, abandoned. This application Feb. 18, 1988, Ser. No. 159,455

Int. Cl.^{4} H01F *1/02*

U.S. Cl. 148—101 **2 Claims**



1. A method for producing a fully dense, arcuate or cylindrical permanent magnet alloy article, said method comprising producing by gas atomization a particle charge of a permament magnet alloy composition comprising a rare earth element, iron and boron from which said article is to be made, in the absence of comminution and magnetic alignment of said particles placing said particle charge in a container, evacuating and sealing said container, heating said container and said particle charge to an elevated temperature and extruding said container and particle charge at a temperature of 1400° to 2000° F. to achieve mechanical anisotropic radial crystal alignment and corresponding anisotropic radial magnetic alignment and to compact said charge to full density to produce said fully dense article.

4,881,985
METHOD FOR PRODUCING ANISOTROPIC RE-FE-B TYPE MAGNETICALLY ALIGNED MATERIAL

Earl G. Brewer, Warren; Robert W. Lee, Troy, both of Mich., and John J. Croat, Noblesville, Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Aug. 5, 1988, Ser. No. 228,435

Int. Cl.^{4} H01F *1/02*

U.S. Cl. 148—103 **14 Claims**

1. A method of making magnetically anisotropic powder of a composition comprising iron, neodymium/praseodymium and boron, said powder either having appreciable coercivity as

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processed or being heat treatable to acquire such coercivity, said method comprising:

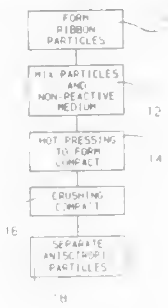
preparing a molten mixture comprising a transition metal (TM) taken from the group consisting of iron and mixtures of iron and cobalt, one or more rare earth metals (RE) including neodymium and praseodymium, and boron, the proportions of such constituents being sufficient to form a product that upon crystallization consists essentially of the tetragonal crystalline compound having the empirical formula $RE_2TM_{14}B$;

rapidly solidifying such mixture to form magnetically isotropic particles of an amorphous material or of a very finely crystalline material containing said compound and having small, generally spherical grains of an average size no greater than about 500 nm;

mixing the magnetically isotropic particles with a material that is substantially nonreactive with the isotropic particles and noncompressible at the temperature at which the particles are hot worked;

hot working the mixture of isotropic particles and nonreactive material to cause crystallites therein to be oriented along a crystallographically preferred magnetic axis to form anisotropic particles; and

separating the nonreactive material from the anisotropic particles to produce a resultant hot worked particle size and crystallographically oriented to be suitable for use in the manufacture of magnet products.


FORM RIBBON PARTICLES
MIX PARTICLES AND NON-REACTIVE MEDIUM
12
HOT PRESSING TO FORM COMPACT
14
CRUSHING COMPACT
16
SEPARATE ANISOTROPIC PARTICLES
18

4,881,986

METHOD FOR PRODUCING A RARE EARTH METAL-IRON-BORON ANISOTROPIC SINTERED MAGNET FROM RAPIDLY-QUENCHED RARE EARTH METAL-IRON-BORON ALLOY RIBBON-LIKE FLAKES

Tadakuni Sato, and Yuichi Tachiya, both of Miyagi, Japan, assignors to Tokin Corporation, Miyagi, Japan

Filed Nov. 25, 1987, Ser. No. 138,250

Claims priority, application Japan, Nov. 26, 1986, 61-279645; Nov. 29, 1986, 61-285757; Jan. 23, 1987, 62-12590; Jan. 28, 1987, 62-16040; Mar. 24, 1987, 62-67943; Mar. 31, 1987, 62-79016; Jun. 30, 1987, 62-160966; Jul. 24, 1987, 62-183597; Jul. 25, 1987, 62-184698; Sep. 5, 1987, 62-221219; Sep. 7, 1987, 62-222109

Int. Cl.⁴ B22F *3/12*

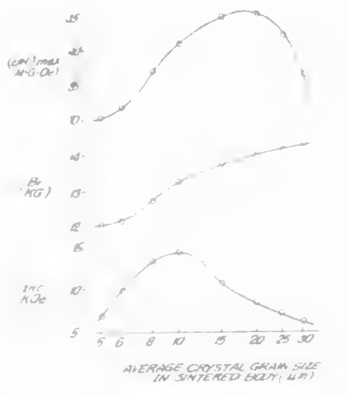
U.S. Cl. 148—103 18 Claims

1. In a method for producing a rare earth-transition metal-boron (R-T-B) anisotropic sintered magnet by preparing an R-T-B alloy powder containing $R_2T_{14}B$ crystal grains, subjecting the powder to a magnetic field, compacting the powder into a compact body of a desired shape, and inserting the compact body at a sintering temperature thereby to produce the sintered magnet, the improvement wherein said R-T-B alloy powder is a rapidly quenched alloy powder produced by:

preparing said R-T-B alloy in a molten state;

rapidly quenching said molten R-T-B alloy to form ribbons and/or ribbon-like flakes characterized by a main surface, each ribbon and/or flake having a predetermined thickness and containing said crystal grains uniformly dispersed in said ribbon and/or flake, said crystal grains having an average grain size less than said predetermined thickness and oriented in a direction parallel to the main surface of said ribbons or flakes; and

crushing and grinding said ribbons and/or flakes into a powder of an average particle size of a value less than said predetermined thickness but larger than said average grain size, each particle of said powder containing said crystal grains extending in said parallel direction, to thereby enable said powder to be magnetically aligned in said magnetic field.



4,881,987

PROCESS FOR DIRECT SOFTENING HEAT TREATMENT OF ROLLED WIRE RODS

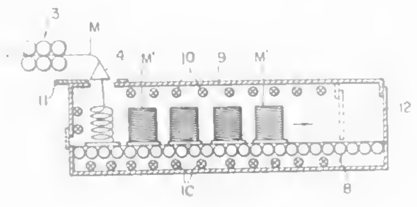
Susumu Kanbara; Kenji Aihara; Masato Tomiku; Yoshio Kawashima; Tadashi Sawada; Shinji Okuda, and Mitsuaki Ikeda, all of Kitakyusyu, Japan, assignors to Sumitomo Metal Industries, Ltd., Osaka, Japan

Division of Ser. No. 207,905, Jun. 16, 1988, Pat. No. 4,834,345, which is a continuation of Ser. No. 133,295, Dec. 15, 1987, abandoned, which is a continuation of Ser. No. 47,600, May 11, 1987, abandoned, which is a continuation of Ser. No. 728,218, Apr. 29, 1985, abandoned. This application Jan. 11, 1989, Ser. No. 295,773

Claims priority, application Japan, May 1, 1984, 59-89114; Mar. 28, 1985, 60-65848; Mar. 28, 1985, 60-65849; Mar. 28, 1985, 60-46246; Mar. 28, 1985, 60-46247; Mar. 28, 1985, 60-46248; Mar. 28, 1985, 60-46249

Int. Cl.⁴ C21D *9/52;* B21B *1/16, 9/00*

U.S. Cl. 148—12 B 19 Claims



1. A process for the direct softening heat treatment of rolled steel wire rodsd having an Ar_1 transformation point, comprising:

rolling steel wire rods on a rolling line at a temperature above the Ar_1 transformation point,

directly receiving and coiling the rolled wire rods at an end of said rolling line while maintaining said rolled wire rods above the Ar_1 transformation point during said coiling, and

subjecting the coiled wire rods to the Ar_1 transformation subsequent to said coiling.

4,881,988

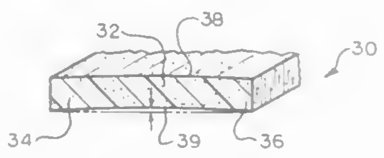
NOVEL FLEXIBLE MAGNET FOR USE IN SMALL DC MOTORS

John R. Bonser, Parkersburg, W. Va., assignor to RJF International Corporation, Akron, Ohio

Filed Nov. 16, 1987, Ser. No. 121,373

Int. Cl.⁴ H01F *1/09*

U.S. Cl. 148—300 11 Claims



2. An extrudate for use as a flexible, tubular magnet comprising an extruded strip of flexible, magnetic material comprising a polymeric binder and magnetic particles;

said strip having a flexibility which enables said strip to be curled into a tubular, cylindrical form;

said strip extending from a first end to a second end and being adapted so that upon being curled into said tubular, cylindrical form said first and second ends are adjacent each other;

said strip having first and second arcuate surfaces extending from said first end to said second end, said first and second arcuate surfaces being parallel to each other so that said strip has a bowed profile and a substantially uniform thickness;

said first and second arcuate surfaces defining concave and convex surfaces, respectively, on the exterior of said strip;

said strip having a longitudinal central axis extending from said first end to said second end, each of said first and second arcuate surfaces being parallel to said longitudinal surface and having a consistent curvature relative to said longitudinal central axis over the entire length of said longitudinal central axis;

the width of said strip being constant over the entire length of said longitudinal central axis;

said first and second arcuate surfaces being oriented such that said first surface defines the inner surface and said second surface defines the outer surface of said tubular cylindrical form, upon said strip being curled into said form;

the flexibility of said strip and the curvature of said first and second arcuate surfaces being such that said first and second arcuate surfaces are flexible into parallel, substantially cylindrical orientations as said strip is being curled into said tubular, cylindrical form; so that said tubular, cylindrical form has parallel cylindrical inner and outer surfaces and a substantially uniform thickness; and

said strip upon being curled into said tubular cylindrical form and incorporated into a surrounding cylindrical motor shell of a permanent magnet motor producing a substantially uniform contact with the surrounding cylindrical motor shell and a relatively constant air gap with a rotor or stator disposed therein, thereby maximizing the magnetic flux available from said strip when incorporated into said permanent magnet motor.

4,881,989

FE-BASE SOFT MAGNETIC ALLOY AND METHOD OF PRODUCING SAME

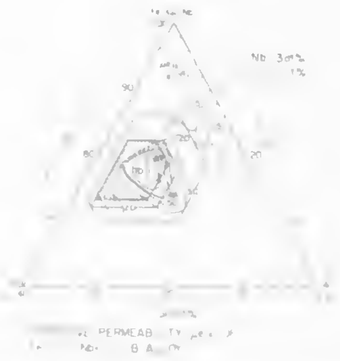
Yoshihito Yoshizawa; Kiyotaka Yamanchi, and Shigeru Oguma, all of Kumagaya, Japan, assignors to Hitachi Metals, Ltd., Tokyo, Japan

Filed Oct. 1, 1987, Ser. No. 103,250

Claims priority, application Japan, Dec. 15, 1986, 61-297938; Mar. 13, 1987, 62-58577; Jun. 1, 1987, 62-137995

Int. Cl.⁴ C22C *38/16;* **H01F** *1/02*

U.S. Cl. 148—302 27 Claims



16. An Fe-base soft magnetic alloy having the composition represented by the general formula:

$$(Fe_{1-a}M_a)_{100-x-y-z-\alpha-\beta-\gamma}Cu_xSi_yB_zM'_\alpha M''_\beta X_\gamma$$

wherein M is Co and/or Ni, M' is at least one element selected from the group consisting of Nb, W, Ta, Zr, Hf, Ti and Mo, M'' is at least one element selected from the group consisting of V, Cr, Mn, Al, elements in the platinum group, Sc, Y, rare earth elements, Au, Zn, Sn and Re, X is at least one element selected from the group consisting of C, Ge, P, Ga, Sb, In, Be and As and a x, y, z, α, β and γ respectively satisfy $0 \leqq a \leqq 0.5$, $0.1 \leqq x \leqq 3$, $0 \leqq z \leqq 25$, $5 \leqq y+z \leqq 30$, $0.1 \leqq \alpha 30$, $\beta \leqq 10$ and $\gamma \leqq 10$, at least 50% of the alloy structure being fine crystalline particles having an average particle size of 1000 Å or less.

4,881,990

STEEL PRODUCT WITH GLOBULAR MANGANESE SULFIDE INCLUSIONS

Howard M. Pielet, Munster; Larry A. Frank, Crown Point, both of Ind.; William Edgar, Glenwood, Ill., and Milan Alavanja, Crown Point, Ind., assignors to Inland Steel Company, Chicago, Ill.

Continuation of Ser. No. 127,163, Nov. 27, 1987, abandoned, which is a division of Ser. No. 34,331, Apr. 3, 1987, Pat. No. 4,746,361. This application Oct. 24, 1988, Ser. No. 262,037

Int. Cl.⁴ C22C *38/04*

U.S. Cl. 148—320 4 Claims

1. A free machining, deformed, solid steel product made from molten steel containing dissolved oxygen, said solid steel product comprising:

a microstructure including oxygen-containing, manganese sulfide inclusions;

said manganese sulfide inclusions having a relatively globular shape due to the presence of 60–150 mg/kg (ppm) dissolved oxygen in the molten steel from which said steel product was made;

said inclusions having a composition devoid of any other elements for imparting globularity to the inclusions.

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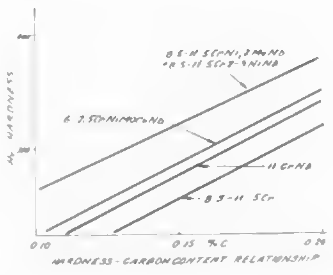
4,881,991
SPECIAL ROLLED STEELS

Thomas B. Beeton, 271 Cilliers Street, Muckleneuk, Pretoria, Transvaal; Roelof J. Mostert, Cormorant Circle 204, Wierda Park, Pretoria, Transvaal, both of South Africa; Emilia B. Navarro; Pierre R. Rosinger, both of 10 Rue Rose, 78990, Elancourt, France, and Rudolf P. Badenhorst, 80 van Wouw Street, Groenkloof, Pretoria 0181, Transvaal, South Africa
Continuation of Ser. No. 747,040, Jun. 20, 1985, abandoned. This application Jun. 26, 1987, Ser. No. 67,614
Int. Cl.⁴ C22C *38/44*
U.S. Cl. 148—325 16 Claims



1. A rolled steel product as herein defined which has substantially the following properties:
a hardness in the order of 500 HV (Vickers); a Charpy toughness value at 20° of 35 to 50 Joule; an excellent to fair corrosion resistance in simulated mild mine water as herein defined; and good to fair weldability; the steel having the following constitution on a percentage mass to mass basis:
C=0.13 to 0.19; Cr=8.5 to 12.0;
Ni=0 to 3.0; Si=0.10 to 0.5;
Mn=0.3 to 0.9; Mo=0 to 1.4;
Ti=0.01 to 0.04; Nb=0 to 0.06;
Al=0.02 to 0.06; P=0.035(max); and
S=0.02 (max); the balance being Fe.

4,881,992
ZIRCALOY 2 OR ZIRCALOY 4 STRIP HAVING SPECIFIED TENSILE AND ELASTIC PROPERTIES

Gerard Bunel, Rugles; Daniel Charquet, Albertville, and Max Dombre, Rugles, all of France, assignors to Compagnie Europeenne Du Zirconium Cezus, Courbevole, France
Division of Ser. No. 50,569, May 18, 1987, Pat. No. 4,775,428. This application Mar. 15, 1988, Ser. No. 168,451
Claims priority, application France, May 21, 1986, 86 07760
Int. Cl.⁴ C22F *1/18*
U.S. Cl. 148—421 2 Claims

1. A strip of Zircaloy 2 or 4, with an oxygen content of between 900 and 1600 ppm and with mechanical characteristics of $E_{0.2}$ at 315° C.≧250 MPa, elongation in the longitudinal direction at 20° C.≧4%, and elongation in the transverse direction at 20° C.≧4%, said strip having a structure of elongated grains comprising recrystallized sub-grains in a cold-worked matrix, said sub-grains having a finer grain than the index ASTM '11' and representing 20 to 40% of the total volume.

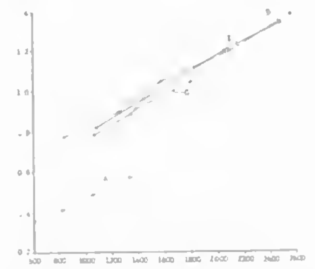
4,881,993
EXPLOSIVE AND PROPELLANT COMPOSITION AND METHOD OF PREPARATION

Claude Fürbringer, Riehen, and Horst Pauling, Bottmingen, both of Switzerland, assignors to Hoffman-LA Roche Inc., Nutley, N.J.
Filed Jun. 29, 1989, Ser. No. 373,851
Claims priority, application Switzerland, Jun. 30, 1988, 2496/88
Int. Cl.⁴ C06G *31/28*
U.S. Cl. 149—46 13 Claims

1. An explosive and propellant composition which comprises an admixture of 5,6-carbonyl-ascorbic acid or 5,6-carbonyl-erythorbic acid and a nitrate-containing oxidation agent.

4,881,994
IRON OXIDE CATALYST PROPELLANT, AND METHOD FOR MAKING SAME

Thomas P. Rudy, Saratoga; Forrest R. Goodson, and Mark E. Dudley, both of San Jose, all of Calif., assignors to United Technologies Corporation, Hartford, Conn.
Filed Apr. 30, 1987, Ser. No. 44,097
Int. Cl.⁴ D03D *23/00*
U.S. Cl. 149—109.4 7 Claims

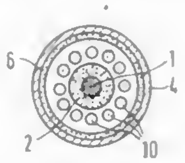


1. A method for making a ferric oxide burning rate enhancing catalyst particularly adapted for use in a rocket propellant comprising
(a) vaporizing an iron-containing compound at a temperature below about 500° C.; and
(b) combusting a mixture whereby ferric oxide particles are formed in suspension comprising
(i) said vaporized iron-containing compound; and
(ii) lower hydrocarbons, lower ethers or lower oxides of carbon;
whereby the product is a highly active finely divided burning rate catalyst.

4,881,995
METHOD AND ASSEMBLY KIT FOR FORMING DEFINED LONGITUDINALLY WATERTIGHT SECTIONS IN WIRINGS COMPRISING A PLURALITY OF INDIVIDUAL STRANDS AND/OR CABLE STRANDS

Helmut Arenz, Alfter-Impekoven, Fed. Rep. of Germany, assignor to DSG Schrumpfschlauch GmbH, Meckenheim, Fed. Rep. of Germany
Filed Sep. 3, 1987, Ser. No. 92,454
Claims priority, application Fed. Rep. of Germany, Sep. 18, 1986, 3631769
Int. Cl.⁴ H01B *13/06*
U.S. Cl. 156—52 24 Claims

1. A method for forming a defined longitudinally watertight section in a wiring system comprised of a plurality of individual strands, characterized by embedding at least one extruded plastic element formed of a thermoplastic melt adhesive between the individual strands of the wiring system, with the thermoplastic melt adhesive melting to a molten flowable state and swelling to an enlarged cross-sectional shape in response to being heated, and mounting a radially prestretched heat-shrinkable component around the outer periphery of said wiring system at the location of said section to be sealed, and subjecting the section to be sealed to a heat treatment for activating said thermoplastic melt adhesive to a molten flowable state and also swelling to an enlarged cross sectional shape, and also causing said heat-shrinkable component to shrink tightly about said wiring system.



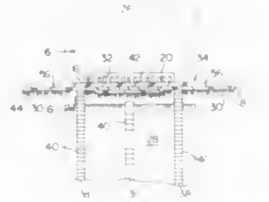
4,881,996
SPLICE ADHESIVE FOR EDPM ROOFING AND SPLICING METHOD EMPLOYING SAME

Stephanie Nussbaum, Orrville, and Roger L. Streets, Ashland, both of Ohio, assignors to Ashland Oil, Inc., Russell, Ky.
Filed Feb. 22, 1988, Ser. No. 158,416
Int. Cl.⁴ B31F *5/00;* **C09J** *5/00*
U.S. Cl. 156—157 8 Claims

5. A method of splicing unprimed, cured elastomeric substrates together comprising the steps of:
(I) applying to said elastomeric substrates an adhesive coating composition comprising:
(a) halogenated pre-crosslinked isobutylene-isoprene copolymer butyl rubber,
(b) thermoplastic copolymer selected from the group consisting of styrene-butadiene-styrene, styrene-isoprene-styrene, styrene-ethylene-butylene-styrene, and styrene-ethylene-propylene-styrene polymers
(c) a hydrocarbon resin selected from the group consisting of thermoplastic hydrocarbon resin, terpene phenol polymer resin and polymerized pentaerythritol rosin ester,
(d) quinoid cure mixture comprising a metal catalyst complex oxidizing agent and a quinoid crosslinking agent, and
(e) solvent, said adhesive composition being storage stable in a closed container for at least six months,
(II) drying said coated substrates, and
(III) joining said dried coated substrates.

4,881,997
METHOD FOR ADAPTING SEPARABLE FASTENERS FOR ATTACHMENT TO OTHER OBJECTS

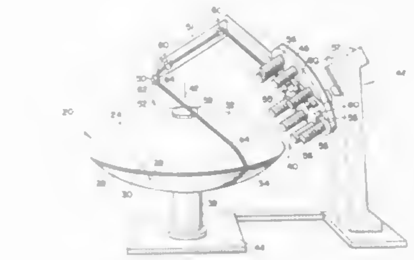
Richard N. Hatch, Hooksett, N.H., assignor to Velcro Industries. B.V., Amsterdam, Netherlands
Division of Ser. No. 129,883, Nov. 25, 1987, which is a continuation of Ser. No. 756,005, Jul. 17, 1985, abandoned. This application Jan. 24, 1989, Ser. No. 301,503
Int. Cl.⁴ A44B *21/00*
U.S. Cl. 156—66 17 Claims



1. A method of adapting a separable fastener member of the hook and loop-type for attachment to an object which comprises:
(a) taking a separable fastener member having a plurality of hook-type or loop-type engaging elements upstanding from one surface; and,
(b) attaching said separable fastener member to a second member positioned in back to back relation with the surface of said fastener member opposite the surface having said engaging elements, said second member having a plurality of elements upstanding from the opposite surface, which elements are capable of being surrounded and encapsulated by a material forming at least a part of the object.

4,881,998
RADIATION GATHERING REFLECTOR AND METHOD OF MANUFACTURE

Dean C. Youngkeit, Willard, Utah, assignor to Morton Thiokol, Inc., Chicago, Ill.
Filed Jan. 23, 1987, Ser. No. 6,518
Int. Cl.⁴ B65H *81/00*
U.S. Cl. 156—173 14 Claims



8. A method of making a radiation gathering reflector comprises:
a. providing a mandrel which has a pair of equatorially engaging opposing surfaces of revolution each of which has a shape corresponding to a predetermined shape of the reflector surface;
b. forming a reflective surface on the pair of opposing surfaces of revolution on the mandrel;
c. polar winding matrix impregnated fibrous material about the reflective surface and allowing the matrix to harden to form a composite of matrix impregnated fibrous material with the reflective surface bonded to the composite to form two integrally connected radiation gathering reflectors corresponding to the pair of opposing surfaces of revolution respectively whereby the thickness of each support member is smallest at the equator and uniformly increases as the distance from the equator increases; and
d. forming an equatorial cut through the composite and reflective surface after the matrix has hardened to separate the radiation gathering reflectors from each other and from the mandrel.

4,881,999
PROCESS FOR THE PREPARATION OF DECORATIVE SURFACE COVERINGS WITH DOT PATTERNS

Richard H. Balmer, Manheim, and Barbara A. Pfeiffer-Meshaw, Gordonville, both of Pa., assignors to Armstrong World Industries, Inc., Lancaster, Pa.
Division of Ser. No. 139,768, Dec. 30, 1987, Pat. No. 4,797,315, which is a continuation-in-part of Ser. No. 59,518, Jun. 8, 1987, abandoned. This application Aug. 11, 1988, Ser. No. 231,058
Int. Cl.⁴ B29B *1/17;* **B32B** *31/00;* **B05D** *5/06*
U.S. Cl. 156—231 1 Claim

1. A method for preparation of a surface covering product, which method comprises:
(a) providing a release carrier as an impervious coating;
(b) applying raised elements with a screen printer onto said release carrier, said raised elements, which comprise a thixotropic plastic, being spaced apart to provide de-

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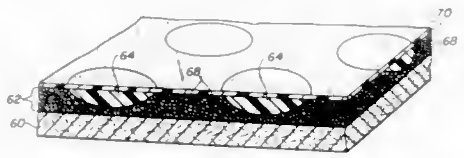
pressed areas therebetween and said raised elements being from 0.015 to 0.045 inches in height and having a geometric shape where the raised elements engage the release carrier;

(c) filling in the depressed areas between the raised elements and area above the raised elements with a granular material;



(d) placing a substrate above the raised elements and in contact with the granular material;

(e) fusing together the raised elements, the granular material and the substrate; and

(f) removing the release carrier, to form a surface covering product with the substrate being a base of the product and a surface contacted by the release carrier being the decorative surface of the product.

4,882,000

METHOD OF MANUFACTURING PRINTED CIRCUIT BOARDS

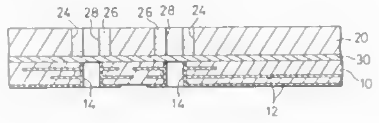
Risuke Ozaki, Kokubunji, Japan, assignor to O. Key Printed Wiring Co., Ltc., Tokyo, Japan

Continuation of Ser. No. 866,352, May 23, 1986, abandoned. This application Apr. 1, 1988, Ser. No. 177,896

Claims priority, application Japan, May 23, 1985, 60-109308; May 23, 1985, 60-109309

Int. Cl.⁴ B44C *1/16;* **B32B** *31/00;* **B21D** *1/00*

U.S. Cl. 156—239 1 Claim



1. A method of manufacturing printed circuit boards which comprises the steps of: preparing a metal board material having holes filled with resin provided therein,

attaching an adhesive sheet and a release paper to said metal board material by means of a prepreg,

providing lead wire holes at centers of said resin filled said holes, forming a metal board from said metal board material, finishing its outer configuration, detaching said release paper from said metal board, and properly positioning said metal board relative to a resin board having at least one circuit layer and at least either of through holes or lead wire holes, and fastening said metal board and said resin board together by means of said adhesive sheet by pressing without any heat being provided.

4,882,001

PHOTOINITIATOR CROSSLINKABLE MONOMER COMPOSITIONS AS ADHESIVES AND METHOD OF USING

RenéA. A. González, Duessledorf; Heinz-Christian Nicolaisen, and Lothar Kammer, both of Hanover, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

Filed Jul. 27, 1988, Ser. No. 225,323

Claims priority, application Fed. Rep. of Germany, Jul. 27, 1987, 3724838

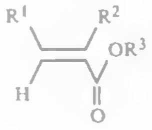
Int. Cl.⁴ C09J *3/00, 5/00*

U.S. Cl. 156—273.3 8 Claims

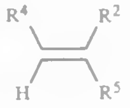
1. A method for bonding metal surfaces together comprising the steps of

1. coating one or both surfaces with an adhesive composition which consists of

A. from about 30 to about 90 parts by weight of at least one liquid polymerizable monomer of the formula



(I)



(II)

wherein R^1 and R^2 independently of one another are hydrogen or a methyl group, R^3 is a C_1–C_8 linear or branched chain alkyl radical, or a C_1–C_8 linear or branched chain alkyl group substituted by at least one hydroxy or amino group, R^4 and R^5 independently of one another are hydrogen, an alkylenecarboxy group containing 0 to 4 carbon atoms in the alkylene radical or an ester thereof with an R^3 group, an aryl radical, or an aryl radical substituted by at least one C_2–C_4 hydrocarbon group containing a double bond, with the proviso that R^4 and R^5 are not both hydrogen;

B. from about 0.01 to about 2 parts by weight of camphor quinone;

C. from about 0.01 to about 5 parts by weight of an aryl sulfinate;

D. from about 5 to about 60 parts by weight of a thickener which is polymethyl methacrylate, highly disperse silica, or a mixture of the foregoing;

E. from 0 to about 10 parts by weight of an adhesion promoter which is methacrylic acid, acrylic acid, hydroxyethyl (meth) acrylate, or a mixture of two or more of the foregoing; and

F. from 0 to about 5 parts by weight of an accelerator which is at least one of 4-dimethylaminobenzoic acid, 4-dimethylaminobenzoic acid ethyl ester, 4-dimethylaminobenzaldehyde, 2-mercaptobenzthiazole, 2-mercaptobenzoxazole, 2-mercaptobenzimidazole, p-tolylaldehyde, terephthaldehyde, and lauric aldehyde,

II. exposing the coated surfaces for from about 1 to about 30 minutes to daylight or to an artificial visible light source to initiate the polymerization of the adhesive composition,

III. joining the surfaces exposed to said daylight or to said artificial visible light source together, and

IV. subjecting the joined surfaces to a pressure of from about 1 to about 200 MPa for a period of from about 2 to about 24 hours.

4,882,002

PROCESS OF MANUFACTURING A COMPOSITE PANEL FOR SHOCK ABSORPTION

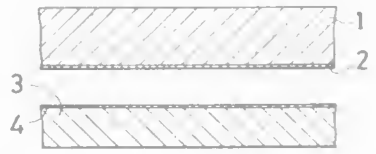
Yoshio Ando, Kawagoe; Yoshiki Ishige, Tokorozawa; Toshiyuki Kinugasa, Hidaka, and Shoji Sato, Tokorozawa, all of Japan, assignors to Honda Giken Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 13, 1988, Ser. No. 208,091

Claims priority, application Japan, Jun. 29, 1978, 53-78021; Jun. 29, 1978, 53-78022; Jun. 29, 1978, 53-78023

Int. Cl.⁴ B32B *7/00*

U.S. Cl. 156—310 1 Claim



1. A process of manufacturing a composite panel capable of shock absorption, said process comprising subjecting a surface of a polyolefin foam member to a primer treatment in which a polyester hot-melting bonding agent with an added isocyanate cross-linking agent is applied to said surface and is hardened by cross-linking thereof to form a primer treatment surface having no hot-melting adhesive properties, applying to one surface of a laminating member a cross-linking type hot-melting bonding agent, placing the treated surfaces of the foam member and laminating member in contact with one another, and bonding the two members together while treating and applying pressure thereto.

4,882,003

SEALANT PRIMER COMPOSITION AND METHOD

Brian J. Bugg, Wixom; Glenn E. Martin, Farmington Hills; David J. Oberg, Birmingham, and Adriana E. Ticu, Detroit, all of Mich., assignors to BASF Corporation, Clifton, N.J.

Filed Jul. 19, 1988, Ser. No. 221,075

Int. Cl.⁴ C09J *5/04*

U.S. Cl. 156—315 9 Claims

1. In a process for bonding a non-porous material to an enamel-coated substrate comprising the steps of:

1) applying a bead of polymeric sealant material to said enamel-coated substrate; and

2) contacting said non-porous material to said bead of polymeric material;

the improvement comprising:

3) prior to applying said bead of polymeric sealant material to said enamel-coated substrate, first applying to said enamel-coated substrate a sealant primer composition comprising:

a) from about 35 weight percent to about 55 weight percent of a sealant primer polymer base composition comprising the reaction product of

1) from about 2 weight percent to about 10 weight percent of 2-sulfoethyl methacrylate;

2) from about 35 weight percent to about 45 weight percent of methyl methacrylate;

3) from about 35 weight percent to about 45 weight percent butyl methacrylate; and

4) from about 10 weight percent to about 20 weight percent iso-butyl methacrylate;

b) from about 1 weight percent to about 10 weight percent of a pigment dispersion;

c) the balance comprising a solvent effective to interpenetrate the the substrate enamel coating selected from the group consisting of

i) chlorinated saturated hydrocarbons of from two to three carbon atoms;

ii) saturated alkanols of from one to six carbon atoms;

iii) saturated dialkyl ketones of from three to six carbon atoms;

iv) alkyklated benzene hydrocarbons of from seven to ten carbon atoms, and mixtures thereof.

4,882,004

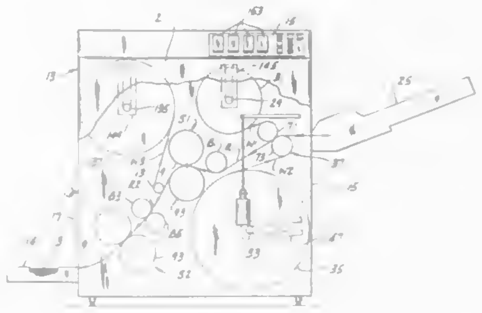
COMPACT TABLETOP MACHINE FOR MAKING LABELS AND OTHER LAMINATIONS

Douglas M. Watson, 3684 Forest Park Blvd., St. Louis, Mo. 63108

Filed Dec. 24, 1987, Ser. No. 137,770

Int. Cl.⁴ B32B *31/12*

U.S. Cl. 156—381 1 Claim



1. A tabletop machine for making laminations such as labels of the type comprising a central substrate layer and first and second outer layers having inside glue-bearing faces in face-to-face contact with opposite faces of the central layer, said machine comprising:

a housing having a front, a back and opposite side walls;

means for feeding individual sheets of printable substrate material about 8½ in. wide by about 11 in. long one after another for travel along a path extending generally in front-to-rear direction through the housing with the leading edge of one sheet closely adjacent the trailing edge of the sheet in front of it;

control means on the housing manually operable for controlling operation of the machine;

first roller means in the housing for mounting a first supply roll of web material corresponding to said first outer layer for rotation about an axis extending side-to-side with respect to the housing;

second roller means in the housing for mounting a second supply roll of web material corresponding to said second outer layer for rotation about an axis extending side-to-side with respect to the housing;

means in the housing for combining said sheets and said web materials as the sheets are fed forwardly and as the web materials are pulled from respective first and second supply rolls to form a laminated strip, said combining means being operable to press inside glue-bearing faces of web material pulled from said first and second supply rolls against opposite faces of each sheet of substrate material to form said outer layers;

die cutting means in the housing downstream from said combining means for cutting through said outer layers of the laminated strip to form individual labels or the like, said die cutting means comprising a first die cutting station and a second die cutting station downstream from the first station;

the length of said path through the housing from immediately upstream of said combining means to immediately downstream from said second die station being not substantially more than the combined lengths of two sheets, and the distance between the front and rear walls of the housing being less than about two feet for enabling placement and operation of the machine on a tabletop;

said first die cutting station comprising a die roll and an anvil

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roll, a pair of bearing mounting respective ends of said die and anvil rolls for rotation, and quick-release means for rapid mounting and demounting of the bearings from the housing;

said quick-release means comprising a quick-release assembly on each side wall of the housing, said quick-release assembly comprising means guiding a respective pair of bearings for movement relative to one another to vary the radial distance between said die and anvil rolls, stop means at one end of said guide means engageable by one bearing of the pair to limit movement of the bearing in one direction in said guide means, spring means urging the other bearing of the pair in the opposite direction away from said one bearing, and pusher means at the opposite end of said guide means movable between an operative position for pushing said other bearing against the urging of said spring means toward said one bearing and a release position enabling said bearings to be removed from said guide means;

said pusher means comprising a pivot bar about an axis extending in side-to-side direction with respect to the housing from said release position to said operative position in which the bar assumes a generally horizontal position above said other bearing, and a screw member on said pivot bar threadable into pressure engagement with said other bearing, said pivot bar being pivotable on its axis up away from said operative position toward said release position; and

a hold-down bar pivotable about an axis extending in side-to-side direction with respect to the housing from a generally upright position in which it is engageable with the outer free end of said pivot bar to hold it in said operative position toward an angled position in which it disengages the pivot bar for enabling the latter to pivot to its release position.

4,882,005

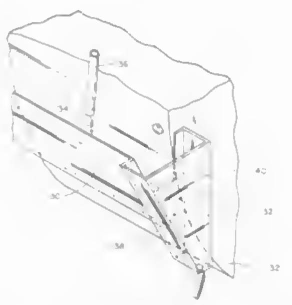
DEVICE FOR MAKING LAMINATED ARCH CORRUGATED STRUCTURES

Frederick H. Thompson, Marion, Ill., assignor to Thompson Corrugated Systems, Inc., Marion, Ill.

Continuation-in-part of Ser. No. 864,591, May 16, 1986, abandoned. This application Aug. 10, 1987, Ser. No. 85,274

Int. Cl.⁴ B32B *31/12*

U.S. Cl. 156—470 19 Claims



1. Apparatus for making corrugated panel structures having a laminated corrugated web formed by at least two connected together web members having peaks and valleys, and a facer member attached to the corrugation peaks on one side thereof, comprising:

a supply of separate web materials to be laminated and corrugated to form a corrugation medium and a supply of a web facer member to be attached to the corrugation peaks on one side of the corrugation medium;

a first applicator roller having a cylindrical surface formed by a plurality of spaced surface depressions distributed uniformly thereover, means to apply an adhesive substance in liquid from when applied to the surface of the first applicator roller including a container positioned adjacent to one side of the first applicator roller in position to directly expose a portion of the cylindrical surface thereof to the adhesive substance in the container whereby adhesive is transferred from the container to the first applicator roller to cover the cylindrical surface and fill the uniformly distributed surface depressions therein;

means to rotate the applicator roller;

said container being closed at both ends and along both sides and including means to limit the depth of adhesive that can be in said container so that the area of the applicator roller that is exposed to the adhesive in the container remains substantially constant and so that an excess of adhesive can be fed into the container without substantial change in the adhesive depth therein;

means forming a scraping edge on said container biased into engagement with and in opposition to the direction of rotation of the cylindrical surface of the applicator roller to positively bear against said surface substantially uniformly along the length thereof during rotation thereof to positively and uniformly scrape said surface and remove therefrom excessive adhesive substance except for the adhesive substance contained in the surface depressions, which scraped and removed adhesive remains in said container;

means to maintain a portion of one of the web members to form the corrugation medium engaged with the cylindrical surface of said applicator roller over a predetermined arcuate portion thereof and for a time period sufficient to permit transfer of the adhesive substance remaining in the depressions while in liquid form to the one web member;

means to bring the separate web members together with the adhesive substance therebetween to form a laminated medium therefrom;

means including a pair of cooperatively engaged corrugating rollers forming a corrugation nip therebetween;

means for feeding the laminated medium before the adhesive is fully cured into the nip between the corrugating rollers to corrugate the medium and form peaks and valleys therein;

means including a second applicator roller positioned adjacent to one of the corrugating rollers for applying an adhesive substance to the corrugation ridges on one side of the corrugated medium;

a pressure roller positioned adjacent to said one corrugating roller to form a nip therewith;

means to bring the web facer member into contact with the corrugation peaks of the corrugated medium to unite the facer material and the corrugated medium to form a single face corrugated member.

4,882,006

SYSTEM FOR STRETCHING AND SEVERING STRIP-LIKE RESIN SHEET

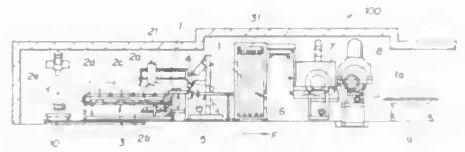
Shingo Seki, Osaka, Japan, assignor to Nippon Sheet Glass Co., Ltd., Japan

Filed Dec. 17, 1987, Ser. No. 134,291

Claims priority, application Japan, Dec. 23, 1986, 61-202222[U]; Dec. 23, 1986, 61-202223[U]

Int. Cl.⁴ B29C *43/24*

U.S. Cl. 156—504 8 Claims



1. An apparatus for stretching and severing a strip-like resin sheet unwound from a sheet roll in a first direction to produce a product of a prescribed shape, said apparatus comprising:

a support base movable in a second direction transverse to said first direction;

a stretching device mounted on said support base and having forming members for stretching said strip-like resin sheet into a fan-shaped resin sheet;

a severing device including cutting edges, the severing device mounted on said support base downstream of said stretching device in said first direction for severing said fan-shaped resin sheet on the cutting edges into said product, said severing device being angularly movable for aligning said cutting edges with a radial direction of said fan-shaped resin sheet in response to movement of said support base in said second direction; and

a rotatable feeding device mounted on said support base downstream of said severing device in said first direction for feeding said product to a prescribed area, said feeding device having an extensible and contractible arm supporting a chuck for gripping the leading end of said fan-shaped resin sheet.

4,882,007

ROBOT SYSTEM FOR FORMING A STRUCTURAL COMPONENT OF A PREIMPREGANTED FIBER REINFORCED TAPE

Wilhelm Lengen, Rosengarten; Rudolf Oberfranz, Buchholz, and Wolfgang Puritz, Buxtehude, all of Fed. Rep. of Germany, assignors to Messerschmitt-Boelkow-Blohm GmbH, Munich, Fed. Rep. of Germany

Continuation of Ser. No. 43,083, Apr. 27, 1987, abandoned. This application Jun. 8, 1988, Ser. No. 204,995

Claims priority, application Fed. Rep. of Germany, Apr. 28, 1986, 3614365

Int. Cl.⁴ B31D *1/00*

U.S. Cl. 156—523 5 Claims

1. A robot system for dispensing and laminating a preimpregnated tape onto a structural component, comprising a robot having a cantilevered arm with a free end and tiltable about a plurality of axes, carrier frame means (1) for carrying a tape supply roller, a work performing unit (5, 51) connected to said carrier frame means, adapter means (2, 54) connected to said carrier frame means for securing said work performing unit as an attachment to said free end of said arm of said robot, said work performing unit comprising feed roller means for advancing said tape, cutting means for cutting off portions of said tape, support means for supporting said feed roller means and said cutting means to form said work performing unit, said system further including guiding mounting means for mounting said support means relative to said carrier frame means in a support movement guiding manner, elastically yielding biasing means operatively interposed between said guiding mounting means and said support means for elastically opposing any movement of said work performing unit (5) toward said carrier frame means (1), whereby said biasing means maintain a defined spacing between the work performing unit (5, 51) and said carrier frame means (1), so that a contact pressure of said feed roller means on said tape is adjustably determined through said biasing means in response to a respective movement of said arm of said robot system, and control signal responsive drive means arranged for operating said robot system in response to a control program, and wherein said cutting means comprise a tiltably mounted knife carrier and a rotatable knife disk mounted to said knife carrier, said control signal responsive drive means comprising a tilting drive member connected to said knife carrier for tilting the knife carrier from a rest position into a working position and vice versa, whereby said knife disk is moved in a direction extending across a direction defined by said tape, said cutting means further comprising knife counter means arranged for cooperation with said knife disk when said knife disk is in said working position.

4,882,008

DRY DEVELOPMENT OF PHOTORESIST

Cesar M. Garza, Plano; Monte A. Douglas, Coppell; Lee M. Loewenstein, Plano, and Cecil J. Davis, Greenville, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jul. 8, 1988, Ser. No. 216,884

Int. Cl.⁴ B44C *1/22;* H01L *21/306;* C03C *15/00;* B29C *37/00*

U.S. Cl. 156—643 29 Claims

1. A process for developing a photolithographic pattern on the surface of a workpiece in a process chamber;

(a) disposing the workpiece in a process chamber;

(b) heating the workpiece and introducing a silylating agent to the process chamber and to a face of the workpiece to be processed;

(c) generating activated species froma source of oxygen; and

(d) introducing the activated species to the face of the workpiece.

4,882,009

APPARATUS FOR CONCENTRATING BRINE WATERS OR DEWATERING BRINES GENERATED IN WELL DRILLING OPERATION

Joseph J. Santoleri, Berwyn, Pa., and Richard D. Ross, Moorestown, N.J., assignors to Four Nines, Inc., Plymouth Meeting, Pa.

Filed Jul. 13, 1987, Ser. No. 72,518

Int. Cl.⁴ B01D *1/18, 1/14*

U.S. Cl. 159—4.2 6 Claims

1. A brine concentrator for concentrating dilute brine solution comprising:

means for providing a first source of heated water;

means for providing a second source of exhaust gases;

a concentrator tank having an inlet opening located at a top end for receiving dilute brine solution and an outlet opening located at a bottom end for discharging concentrated brine solution;

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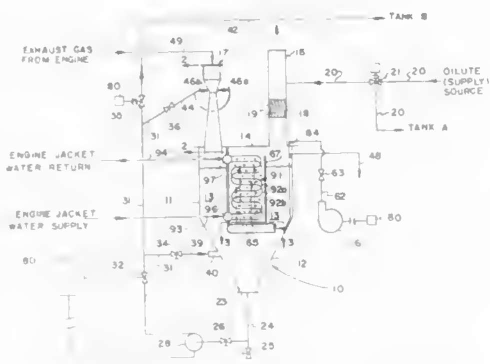
first concentration means interposed within said tank for receiving said heated water from said first source in order to provide a transfer of heat from said heated water to said dilute brine solution in said first concentration means;

air pressure means located within said tank below said first concentration means for generating air bubbles within said first concentration means in order to facilitate the transfer of heat from said heated water to said dilute brine solution within said first concentration means;

a recirculation conduit located below said air pressure means and connected to said outlet opening of said tank for permitting said concentrated brine solution to be recycled back into said tank;



second concentration means attached at said top end of the tank for receiving exhaust gases from said second source and concentrated brine solution recirculated from said outlet opening of said tank to provide a transfer of heat from said exhaust gases to said concentrated brine solution; and

venting means also attached at said top end of the tank to provide a passageway through which said exhaust gases from said second concentration means exit said tank, wherein said venting means comprises a stack having one end affixed to said top end of said tank and a second end open to the atmosphere; and means for introducing dilute brine solution into said inlet opening of said tank through said stack.

4,882,010
METHOD FOR BURNING EVAPORATED WASTE LIQUOR

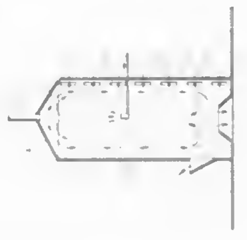
Tom O. M. Roos, Grankulla, Finland, assignor to Stiftelsen Cellulosa-Ocb Pappersforskning, Sweden

Continuation of Ser. No. 918,947, Sep. 22, 1986, abandoned. This application Jan. 15, 1988, Ser. No. 145,693

Claims priority, application Sweden, Jan. 22, 1985, 8500281

Int. Cl.⁴ D21C *11/12, 11/14;* **F23L** *1/00;* **F23G** *7/04*

U.S. Cl. 162—30.1 1 Claim



1. A method for recovering sodium carbonate and sodium sulphide values from waste liquor produced by sodium-based pulp production processes, said method consisting essentially of:

(a) feeding fuel and combustion air to a cylindrical reaction chamber having a conical first end wall and a second end wall at the end of the reaction chamber and a cylindrical wall therebetween, to heat said reaction chamber to a temperature sufficient to effect drying and pyrolysis of said waste liquor; and

(b) once said temperature is achieved, performing the following without feeding further fuel:

(i) feeding air to said reaction chamber through air inlets located along said cylindrical wall arranged along the entire length thereof to provide substantially tangential flow;

(ii) injecting said waste liquor into said reaction chamber through a nozzle located in the interior thereof, directed toward said first end wall where the fuel and air are fed to the reaction chamber, yet spaced apart therefrom; and

(iii) withdrawing product gases from a first outlet port at the center of said second end wall, and product solids from a second outlet port in the vicinity of said second end wall;

such that at least a portion of the gases in said reaction chamber flow in a circulating path extending sustantially the full length of said reaction chamber, said circulating path comprising air and fuel traveling along the conical first end wall toward said cylindrical wall wherein said portion of the gases flow in a spiral path along said cylindrical wall flowing from said first end wall to said second end wall, and an axial portion along the axis of said reaction chamber flowing from said second end wall to said first end wall; and such that said injected waste liquor is mixed with and sufficiently heated by said gases in said circulating path to maintain stable reaction conditions sufficient for substantially complete pyrolysis of said waste liquor without added fuel.

4,882,011
DEVICE FOR GENERATING NEGATIVE PRESSURE INSIDE A MANTLE OF A REVOLVING ROLL

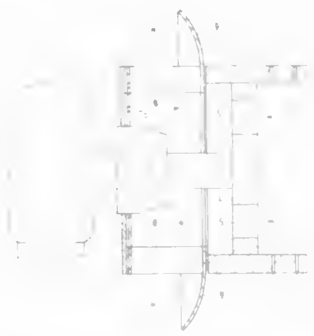
Pekka Eskelineo, Karbula; Vesa Vuorinen, Turku, and Seppo Rantanen, Merimasku, all of Finland, assignors to Valmet Paper Machinery Inc., Finland

Filed Oct. 27, 1988, Ser. No. 263,640

Claims priority, application Finland, Oct. 29, 1987, 874774

Int. Cl.⁴ D21F *3/10*

U.S. Cl. 162—368 12 Claims



1. Device for generating negative pressure inside a substantially cylindrical mantle of a revolving roll, comprising the combination of

through-holes, grooves, or equivalent apertures being provided in the roll mantle,

means defining a suction chamber within an interior of the roll in which a negative pressure can be generated by suctioning air out of the suction chamber,

with a suction flow being directed towards the suction chamber prevailing in the holes, grooves or equivalent apertures of the roll mantle,

at least one blower rotor attached to the roll and rotatable along with the roll,

an intake side of said rotor connected to or communicating with the suction chamber of the roll,

said blower rotor and roll being constructed and arranged such that rotary movement of the roll generates rotary movement of said rotor which generates the negative pressure in the suction chamber, and

openings provided in at least one end of the roll through which said rotor is arranged to suction air out of the suction chamber of the roll.

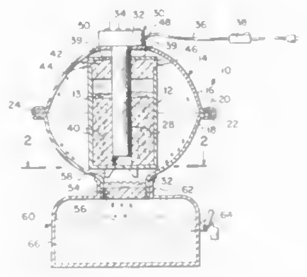
4,882,012
WATER DISTILLER

Kurt Wasserman, P.O. Box 77, Port Jervis, N.Y. 12771

Filed Dec. 10, 1987, Ser. No. 130,947

Int. Cl.⁴ B01D *3/00*

U.S. Cl. 202—176 23 Claims



1. Apparatus for distilling water comprising:

(a) a dome means for condensing water vapor on its interior surface;

(b) an inner cylindrical vessel under the center of said dome means for containing said water, said vessel having an opening at its upper end;

(c) heating means for boiling said water in said vessel to thereby drive water vapor to the opening of said vessel;

(d) means at the opening of said vessel for directing the water vapor radially of said vessel and toward the interior surface of said dome means, wherein said means comprises a cylindrical filtration means for removing particulates from said water vapor including a cylindrical sidewall upstanding from the opening of said vessel and means for sealing the top of said filtration means for directing outflow of water vapor through said cylindrical sidewall; and

(e) means under said vessel for catching a condensate which runs off the interior surface of said dome means.

18. Apparatus for distilling water comprising:

(a) dome means for condensing water vapor on its interior surface;

(b) a vessel under said dome means for containing said water;

(c) a passage means for permitting removal of the water vapor from said vessel;

(d) heating means for boiling said water in said vessel to thereby drive water vapor from said vessel via said passage means toward the interior surface of said dome means; and

(e) mans under said vessel for catching a condensate which runs off the dome means, said condensate catching means comprising a downwardly converging member below said vessel and supporting said vessel and supporting said dome means, for directing the condensate caught to the center of said member.

4,882,013
APPLICATION OF TETRATHIAFULVALENES IN BIOELECTROCHEMICAL PROCESSES

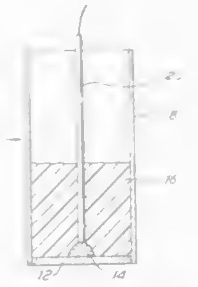
Anthony P. F. Turner; Stuart P. Hendry, and Marco F. Cardosi, all of Cranfield, England, assignors to Cranfield Institute of Technology, Cranfield, England

Filed Feb. 24, 1987, Ser. No. 18,046

Claims priority, application United Kingdom, Feb. 27, 1986, 8604830; Dec. 2, 1986, 8628721

Int. Cl.⁴ G01N *27/46*

U.S. Cl. 204—1 T 14 Claims



1. A bioelectrochemical system comprising:

a biological system comprising a redox system which requires electron transfer for its operation, wherein said redox system comprises an enzyme;

an electrode; and

a mediator for transferring electrons between said electrode and the enzyme of said redox system for operation of said redox system, characterized in that said mediator is tetrathiafulvalene, and is not complexed with an electron acceptor molecule.

4,882,014
ELECTROCHEMICAL SYNTHESIS OF CERAMIC FILMS AND POWDERS

R. Tom Coyle, Yorba Linda, Calif., and Jay A. Switzer, Pittsburgh, Pa., assignors to Union Oil Company of California, Los Angeles, Calif.

Filed Feb. 24, 1988, Ser. No. 159,759

Int. Cl.⁴ C25B *1/00*

U.S. Cl. 204—1.5 16 Claims

7. A method for producing a ceramic precursor composition, said method comprising the following steps: (1) electrochemically generating acid or base materials at an anode or at a cathode respectively, of a biased electrochemical cell containing an anode compartment separated from a cathode compartment, said acid or base materials reacting with starting materials contained in said compartments to produce an electrodeposited ceramic precursor composition and (2) said electrochemically deposited ceramic precursor composition obtained in step (1) is dispersed and dried.

16. A method for producing a ceramic precursor composition, said method comprising the following steps: (1) electrochemically depositing a ceramic precursor composition in a cathode compartment of a biased electrochemical cell which contains an anode and anode compartment separated from a cathode and cathode compartment, said electrochemical cell generating a base material at the cathode in the cathode compartment and said ceramic precursor composition containing a metal oxide or metal hydroxide, (2) said electrochemically deposited ceramic precursor composition obtained in step (1) is dispersed and dried, and (3) said dispersed and dried ceramic precursor composition obtained in step (2) is compressed to a green body and sintered to produce a ceramic composition containing a metal oxide.

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4,882,015

METHOD FOR MANUFACTURING A PERFORATED BODY, FRICTION SPINNING MEANS USING THE PERFORATED BODY AND A FRICTION SPINNING DEVICE USING THE FRICTION SPINNING MEANS

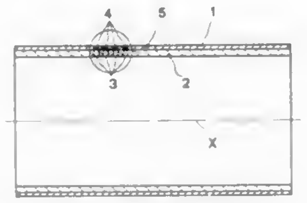
Werner Oeggerli, Winterthur, Switzerland, assignor to Rieter Machine Works Ltd., Winterthur, Switzerland

Filed Nov. 9, 1987, Ser. No. 117,841

Claims priority, application Switzerland, Nov. 13, 1986, 4543/86

Int. Cl.⁴ C25D *1/08*

U.S. Cl. 204—11 14 Claims



1. A method for the production of a perforated body for receiving textile fibers deposited on a fiber receiving surface of the perforated body by means of an airstream and containing perforations through which the airstream is passed and which widen in the direction of flow of the airstream, comprising the steps of:

providing a mold for the formation of the perforated body and containing inset electrical insulator fillings in holes at a predetermined number of locations corresponding to the locations of the perforations in the perforated body to be formed; and

electroforming on the mold of a perforated body containing perforations which widen in the direction of flow of the airstream.

4,882,016

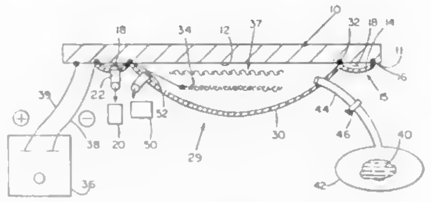
IN-SITU SURFACE TREATMENT CONTAINMENT APPARATUS AND METHOD

Everett A. Westerman Jr., Auburn, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed May 2, 1988, Ser. No. 189,423

Int. Cl.⁴ C25D *5/02*

U.S. Cl. 204—15 14 Claims



1. The method of providing a containment for treating a surface in-situ, comprising:

attaching a moldable, sealing material to said surface;

attaching a treating membrane to said moldable sealing material to form a treating chamber, said treating chamber including a conductive screen and an insulating member disposed between said conductive screen and said surface;

creating a vacuum within said treating chamber; and

providing a fluid within said treating chamber, said vacuum causing said fluid to be distributed between said conductive screen and said surface.

4,882,017

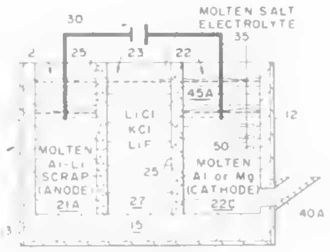
METHOD AND APPARATUS FOR MAKING LIGHT METAL-ALKALI METAL MASTER ALLOY USING ALKALI METAL-CONTAINING SCRAP

Mark L. Weaver, Allison Park, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Jun. 20, 1988, Ser. No. 208,466

Int. Cl.⁴ C25C *3/36, 3/24, 7/00, 7/04*

U.S. Cl. 204—71 43 Claims



1. A method for making a light metal-alkali metal master alloy using alkali metal-containing scrap, said method comprising:

(a) establishing an electrolytic cell divided into two or more substantially laterally adjacent areas by means for transporting alkali metal ions from a first cell area supplied with alkali metal-containing scrap to a second cell area consisting essentially of molten light metal;

(b) supplying current to the cell at a sufficient rate for transporting alkali metal ions from the first cell area to the second cell area;

(c) forming master alloy by combining alkali metal ions with said molten light metal in the second cell area; and

(d) withdrawing master alloy from the second cell area.

4,882,018

ELECTROLYTIC DEMETALLIZATION OF DILUTE SOLUTIONS USING ION EXCHANGE RESINS

Richard P. Tison, Pontiac, Mich., assignor to General Motors Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 28,387, Mar. 20, 1987, abandoned. This application Apr. 5, 1988, Ser. No. 178,032

Int. Cl.⁴ C25C *1/00*

U.S. Cl. 204—105 R 1 Claim

1. A method for the electrolytic scavenging of dissolved metal from a dilute, aqueous solution containing cationic species of said metal and depositing said metal onto a cathode contacting said solution comprising the steps of:

disposing said solution between said cathode and an anode in an electrochemical cell;

providing a packed bed consisting essentially of strongly acidic, cation exchange resin particles in said solution so as to contact said cathode, said particles being substantially saturated with said species so as to have an electrical conductance attributable to said species which is greater than the electrical conductance of said solution attributable to said species;

maintaining a substantially quiescent layer of said solution contiguous said cathode;

impressing a voltage between said anode and cathode of sufficient magnitude to deposit said metal onto said cathode; and

passing sufficient current between said anode and cathode to deposit said metal on said cathode;

whereby the deposition current efficiency, of the solution-bed mix exceeds that of said solution alone, the energy consumed per kilogram of said metal deposited is reduced, higher metal deposition rates are achieved, and improved deposit quality at said rates is obtained.

4,882,019

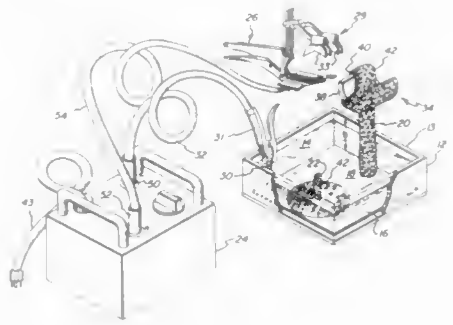
APPARATUS AND METHOD FOR POLISHING A PLUMBING OR ELECTRICAL FIXTURE

Michael M. Lewy, R.D. #1, Priddle Point, Gloversville, N.Y. 12078

Filed Nov. 21, 1988, Ser. No. 274,005

Int. Cl.⁴ C25F *3/16, 7/00*

U.S. Cl. 204—129.1 24 Claims



22. A method for polishing a metallic plumbing fixture having a circular cross-section and an elongate metallic electrical fixture, said polishing method comprising the steps of:

providing an electrochemically inert container with an electrolytic solution therein and a cathode member at least partially immersed within said solution, said cathode member having at least one column specially configured for receiving circular-shaped and elongate fixtures;

providing dc power supply means having a negative terminal and a positive terminal;

electrically connecting said negative power supply terminal to said cathode member;

electrically clamping the positive terminal of said power supply means to a metallic plumbing fixture having a circular cross-section or an elongate metallic electrical fixture to be polished; and

moving said fixture to a position in near engagement with said at least one specially designed cathode member column such that said fixture is electropolished.

4,882,020

PROCESS FOR TREATING EFFLUENT GAS

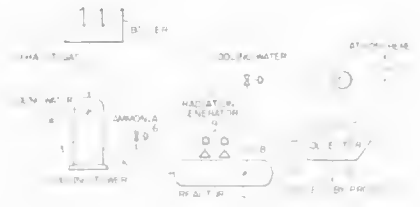
Akihiko Maezawa, Kanagawa; Yoshio Nakajima; Mitsuyoshi Kaneko, both of Tokyo, and Shinji Aoki, Tokyo, all of Japan, assignors to Ebara Corporation, Tokyo, Japan

Filed May 27, 1988, Ser. No. 199,859

Claims priority, application Japan, May 30, 1987, 62-136067; Dec. 7, 1987, 62-308887

Int. Cl.⁴ B01J *19/08*

U.S. Cl. 204—157.3 16 Claims



1. A process for treating an effluent gas including the steps of leading an effluent gas containing at least one harmful component selected From the group consisting of sulfur oxides (SO_x) and nitrogen oxides (NO_x) to a radiation irradiation zone, adding ammonia (NH_3) to the effluent gas before, during or after the irradiation, collecting resulting reaction products including ammonium sulfate and ammonium nitrate by means of a dust collector, and releasing the effluent gas into the atmosphere, wherein the improvement comprises using as said dust collector a bag filter alone or a combination of an electrostatic precipitator and a bag filter, and spraying cooling water upon the irradiated effluent gas on the downstream side of the irradiation zone in the reactor, thereby adjusting the effluent gas temperature at the outlet of said bag filter within the range of from a temperature at which the humidity of the effluent gas is saturated to 100° C.

4,882,021

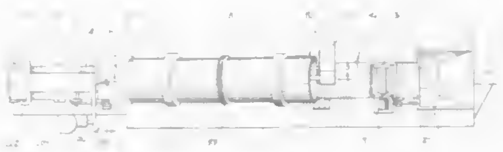
APPARATUS AND METHOD FOR SOIL DECONTAMINATION

Daniel H. Barnhart, 2043 E. Quartz, Mesa, Ariz. 85203

Filed Jan. 15, 1988, Ser. No. 144,928

Int. Cl.⁴ B01J *19/08*

U.S. Cl. 204—157.15 14 Claims



1. An apparatus for decontaminating soil, comprising:

a mixer;

a first conveyer having an output end connected to an input of said mixer;

first hopper means for holding said soil and distributing it onto an input end of said first conveyor;

second hopper means for holding a catalytic compound and adding it to said distributed soil;

introduction means for introducing an oxidant into said input end of said mixer, said mixer being operable to mix said soil, catalyst and oxidant and thereby provide mixed soil;

a second conveyer operable to collect said mixed soil from an output end of said mixer; and

means for radiating said collected mixed soil with ultraviolet light.

4,882,022

PROCESS AND APPARATUS FOR SPUTTER COATING A GOLD ALLOY ONTO A SUBSTRATE

Dieter Hoffman, Bruchköbel; Wolf-Dieter Münz; G. A. Horst Siewert, both of Freigericht, and Horst Dietrich, Biebergemünd, all of Fed. Rep. of Germany, assignors to Leybold Aktiengesellschaft and Demetron Gesellschaft Fuer Elektronik-Werkstoffe mbH, both of Hanau, Fed. Rep. of Germany

Division of Ser. No. 921,235, Oct. 20, 1986, Pat. No. 4,808,373. This application Aug. 9, 1988, Ser. No. 230,235

Claims priority, application Fed. Rep. of Germany, Sep. 19, 1986, 3631830

Int. Cl.⁴ C23C *14/34*

U.S. Cl. 204—192.15 12 Claims

1. A process for sputter coating a substrate in a cathode sputtering apparatus having an alloy target, said process comprising

selecting a target alloy having gold in a range of 90 to 98 percent by weight and aluminum in a range of 0.5 to 10 percent by weight, the balance comprising copper; and

sputter coating said substrate with said alloy.

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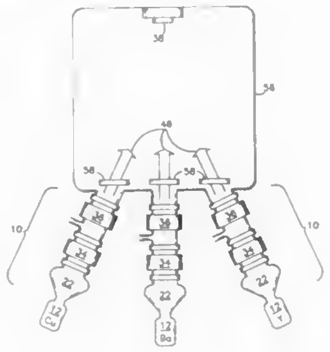
4,882,023
METHOD AND SYSTEM FOR PRODUCING THIN FILMS

Mark Wendman, Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 14, 1988, Ser. No. 168,055

Int. Cl.⁴ C23C *14/00*

U.S. Cl. 204—192.31 **4 Claims**



1. A method for forming multiple-component thin films on a substrate comprising the steps of:

for each of at least two of the components of a thin film:

generating a separate ion-cluster beam by separate vaporization of the components in an isolated, heated crucible, the crucible having a beam exit nozzle and a source controller for regulating the quantity of the component leaving the crucible;

directing the ion-cluster beam toward the substrate by accelerating the beam through an accelerating voltage;

measuring an extraction current across the accelerating voltage to obtain a real time signal for monitoring the stoichiometry of the film;

feeding back the real time signal to the source controller to increase or decrease the supply of the component to maintain the quantity of ionclusters distributed by the beam to the substrate within a predetermined stoichiometric proportion;

fracturing the ion-cluster beam into an atomic ion beam with microwave energy after the ion-cluster beam leaves the crucible;

generating an oxygen plasma with microwave energy, the oxygen plasma being confined in an isolated oxygenating chamber separated from a deposition chamber with differential pumping seals; and

passing the atomic ion beam through the oxygen plasma in the isolated oxygenating chamber to incorporate oxygen into the atomic ion beam.

4,882,024
HYDROGEN GENERATOR HAVING A LOW OXYGEN OVERPOTENTIAL ELECTRODE

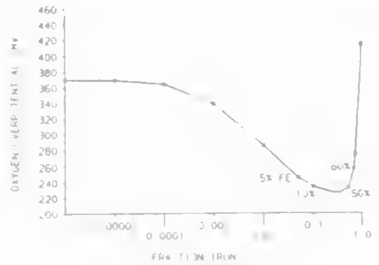
Dennis A. Corrigan, Troy, Mich., assignor to General Motors Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 36,193, Apr. 8, 1987, abandoned, which is a continuation of Ser. No. 834,281, Feb. 25, 1986, abandoned. This application Feb. 17, 1988, Ser. No. 157,516

Int. Cl.⁴ C25C *7/02;* **C25B** *11/06*

U.S. Cl. 204—242 **3 Claims**

1. In an alkaline, electrolytic hydrogen generator comprising an hydrogen-evolving cathode, an oxygen-evolving anode and an aqueous alkai metal hydroxide electrolyte between said anode and cathode, the improvement wherein said anode includes a catalyst supported on a conductive substrate and comprising a composite hydrous oxide of nickel and iron in which the nickel content varies from about 0.6 to about 19 parts nickel per part iron.



4,882,025
PVC WOVEN DIAPHRAGM FOR THE ELECTROLYSIS OF HYDROCHLORIC ACID

Patrice Hugues, Marcq en Baroeuil, and Jean-Maurice Perineau, Villiers sur Marne, both of France, assignors to Rhone-Poulenc Chimie, Courbevole, France

Filed Jul. 8, 1988, Ser. No. 216,334

Claims priority, application France, Jul. 9, 1987, 8710094

Int. Cl.⁴ C25B *9/00, 13/08*

U.S. Cl. 204—252 **15 Claims**

1. A heat-set woven diaphragm based on polyvinyl chloride and adapted for the electrolysis of hydrochloric acid, comprising:

(a) a combination of warp threads and weft threads woven into a cloth weave with a number of crossings per square centimeter ranging from 270 to 350;

(b) warp threads and weft threads which comprise a mixture of atactic polyvinyl chloride and superchlorinated polyvinyl chloride;

(c) an average thickness ranging from 0.5 to 0.7 mm; and

(d) high creasing resistance.

4,882,026
DIELECTRIC BLOCK PLATING APPARATUS

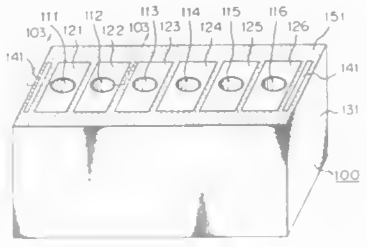
Osamu Yamato, and Tetsuji Takino, both of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed May 2, 1988, Ser. No. 189,165

Claims priority, application Japan, May 1, 1987, 62-106347

Int. Cl.⁴ C25D *17/00*

U.S. Cl. 204—275 **9 Claims**



1. A dielectric block plating apparatus for forming conductive layers by an electroplating process over surfaces of a dielectric block, having parallel through holes extending from a top surface of the block to a bottom surface thereof and coated with a ground conductive layer formed by an electroless plating process, in a plating tank filled with an electrolytic solution, said apparatus comprising:

holding means for holding the dielectric block within the electrolytic solution in an orientation with axes of the through holes of the block extending in a direction;

electrolytic solution circulating means for circulating the electrolytic solution under pressure through said plating tank;

means for controlling the flow of the electrolytic solution so as to flow through said plating tank in said direction and thereby parallel to the axes of the through holes;

voltage applying means for applying a negative voltage to the ground conductive layer formed on the dielectric block; and

voltage applying means for applying a positive voltage to the electrolytic solution, said positive voltage applying means being positioned within said plating tank to face and confront entrances of the through holes in the block when the block is held in said orientation by said holding means.

4,882,027
CATHODE HANGERS

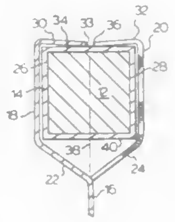
Nico Borst, Connaught; Marc D. Talbot, and James D. Scott, both of Timmins, all of Canada, assignors to Kidd Creek Mines Ltd., Toronto, Canada

Filed Feb. 6, 1987, Ser. No. 11,949

Claims priority, application Canada, Feb. 6, 1986, 501300

Int. Cl.⁴ C25C *7/02*

U.S. Cl. 204—286 **6 Claims**



1. A cathode for use in electrolytic refining or electrowinning of copper, comprising: a mild steel or iron hanger bar having a rectangular cross-section providing flat upper and lower surfaces and flat opposite side surfaces; a copper cladding enveloping said hanger bar; said hanger bar having end portions adapted to be seated on electrical contacts; a flat stainless steel starter sheet having an upper edge with a plurality of lugs formed along said upper edge, alternating lugs along said upper edge being bent in opposite directions to abut and engage opposite side faces of the copper-clad hanger bar, said stainless steel lugs being welded to the copper cladding by high silicon copper wire whereby said stainless steel starter sheet is rigidly secured to the hanger bar substantially perpendicular to and centrally aligned with the hanger bar lower surface.

4,882,028
R-F ELECTRODES FOR REMOVABLY PROVIDING ELECTRICAL ENERGY TO AN APPARATUS DURING R-F ENERGY REACTIVE TREATMENT PROCESSES

Navjot Chhabra, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.

Filed Jan. 22, 1988, Ser. No. 147,315

Int. Cl.⁴ B05C *13/00;* **C23F** *1/02;* **C23C** *16/00*

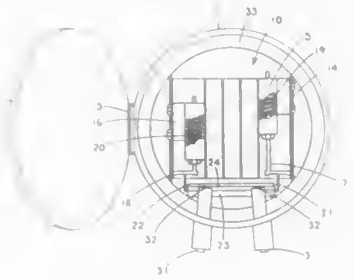
U.S. Cl. 204—298 **8 Claims**

1. A ratio frequency (R-F) electrode apparatus for removably providing electrical energy to a chemical vapor deposition and plasma etching system during R-F energy reactive treatment processes being carried out in an existing evacuable reaction chamber, the apparatus comprising:

a plurality of base electrode means removably attached to existing feed throughs fixedly mounted on said reaction chamber for transmitting R-F energy from outside the reaction chamber to inside the reaction chamber;

a plurality of upper electrode means oriented to permit controllable electrical and physical contact of said upper electrode means with said base electrode means and removably and electrically attached inside the reaction chamber to upper electrode holder means;

the electrode holder means electrically and removably attached to an existing workholder in a horizontally disposed reaction chamber, the workholder being for retaining substrates in the reaction chamber during substrate processing and the upper electrode holder means being for adjustably holding and controlling the mechanical and electrical relations of the upper electrode means with the base electrode means which oppose and are oriented to permit electrical and physical contact with said upper electrode means;



a ceramic insulator means for enclosing, insulating and supporting the base electrode means within the reaction chamber.

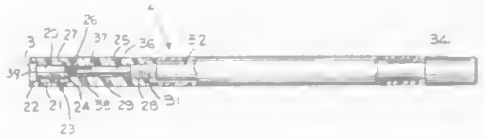
4,882,029
ELECTRODE SYSTEM

Guenter Eickmann, Grove City, Pa., assignor to Pine Instrument Company, Grove City, Pa.

Filed Feb. 10, 1987, Ser. No. 12,884

Int. Cl.⁴ G01N *27/46*

U.S. Cl. 204—400 **11 Claims**



1. An electrode for electrically sensing characteristics of electrolytic fluids being tested comprising an electrode disc core, a TFE fluorocarbon plastic liner receiving the electrode disc core assembled therein and sealed thereto, a PCTFE plastic shroud having a first bore portion, said first portion having the assembled electrode disc core and liner received and sealed therein, the PCTFE plastic shroud having a second bore portion receiving at least part of an electrode contact, and a spring extending in the second bore portion between the electrode contact and the electrode disc core to complete the conductive path from the disc selectively submerged in the fluid .

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4,882,030

AIR-FUEL RATIO DETECTION SYSTEM FOR ENGINE EXHAUST GAS

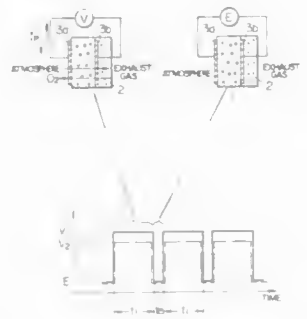
Seikoo Suzuki, Hitachiota; Masayuki Miki, Katsuta, both of Japan; Takao Sasayama, Tarrytown, N.Y.; Minoru Osuga, and Yoshishige Oyama, both of Katsuta, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 891,645, Aug. 1, 1986, abandoned. This application Aug. 30, 1988, Ser. No. 239,008

Claims priority, application Japan, Aug. 2, 1985, 60-169841

Int. Cl.^{4} G01N *27/46*

U.S. Cl. 204—406 21 Claims



1. An air-fuel ratio detection system for measuring the air-fuel ratio of a gas mixture burned to produce an exhaust gas, comprising:

a solid electrolyte;

first and second electrodes formed on the surface of said solid electrolyte;

means for passing jump currents through said solid electrolyte between said first and second electrodes;

said first electrode being exposed to atmospheric air and said second electrode being exposed to the exhaust gas;

a diffusion resistor formed on said second electrode for controlling exhaust gas diffusion toward said first electrode;

detector circuit means connected to said first and second electrodes for detecting the conditions of the engine exhaust gas and generating an air-fuel ratio signal therefrom, wherein said detector circuit means further controls said pump currents passing means for changing pump currents between said first and second electrodes to zero during a first period of time and measuring an electromotive force generated between said first and second electrodes during said first period of time; and

said detector circuit means further including means for controlling said pump currents passing means including means for apply a voltage between said first and second electrodes during a second period of time to keep the electromotive force constant, and means responsive to said pump currents for generating an output signal representing the air-fuel ratio.

4,882,031

GAS SENSOR

Nagakazu Furuya, No. 4-3-31, Obte 2-chome, Kofu-shi, Yamanashi, Japan, assignor to Nagakazu Furuya and Tanaka Kikinzoku Kogyo K.K., both of, Japan

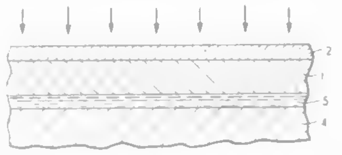
Filed Dec. 22, 1988, Ser. No. 288,304

Claims priority, application Japan, Dec. 22, 1987, 62-324285

Int. Cl.^{4} G01N *27/46*

U.S. Cl. 204—415 3 Claims

1. A gas sensor comprising a membrane for gas sensing which comprises a selective gas permeable membrane and a reaction layer attached thereto; and a counter electrode separated from the reaction layer of the membrane across an electrolyte; the reaction layer having the function of an electrode and comprising fine hydrophilic portions and fine hydrophobic portions.



4,882,032

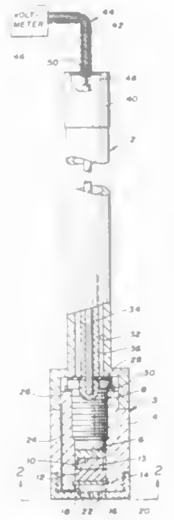
HYDROGEN PROBE

Basant L. Tiwari, Sterling Heights, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Jun. 27, 1987, Ser. No. 211,606

Int. Cl.^{4} G01N *27/46*

U.S. Cl. 204—422 4 Claims



1. A probe adapted for immersion into a melt of aluminum for responsively electrochemically determining the hydrogen concentration in said melt comprising:

a hydrogen electrode comprising a catalytic metal membrane selectively permeable to the passage of hydrogen therethrough;

a counterelectrode comprising a mixture of calcium and sufficient calcium hydride to provide a predetermined reference hydrogen partial pressure at the temperature of said melt;

a solid state electrolyte interjacent said electrode and said counterelectrode and selected from the group consisting of calcium hydride, calcium hydrochloride and strontium hydrochloride;

a hydrogen accumulation chamber adjacent said membrane for holding gaseous hydrogen at a partial pressure in substantial equilibrium with the hydrogen in said melt;

porous barrier means interjacent said chamber and said melt for separating said hydrogen electrode from deleterious contact with said melt and establishing a gas-liquid interface between said melt an said gaseous hydrogen in said chamber, said barrier means having pores sufficiently small as to prevent said melt from passing therethrough yet sufficiently large as to readily permit hydrogen to pass therethrough; and

electrical contact means extending from said electrode and counterelectrode for coupling to a hydrogen concentration indicator means responsive to the difference in electrical potential established between said electrode and said counterelectrode incident to the difference between said reference and equilibrium partial pressure.

4,882,033

ELECTROCHEMICAL DEVICE

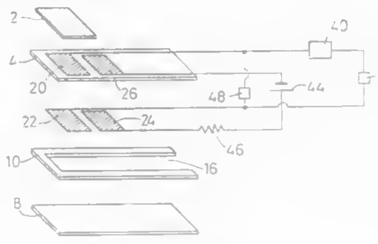
Kazuyoshi Shibata, and Yoshihiko Mizutani, both of Nagoya, Japan, assignors to NGK Insulators, Ltd., Nagoya, Japan

Continuation of Ser. No. 764,646, Aug. 12, 1985, abandoned. This application Jun. 8, 1987, Ser. No. 57,645

Claims priority, application Japan, Aug. 21, 1984, 59-174530

Int. Cl.^{4} G01N *27/46*

U.S. Cl. 204—425 12 Claims



1. An electrochemical device capable of detecting an amount of unburned components in a richburned measurement gas and the partial pressure of oxygen in a lean-burned measurement gas, comprising:

an electrochemical sensing cell which includes (a) a planar oxygen-ion conductive solid electrolyte structure, (b) first and second electrodes of a porous structure disposed on the planar solid electrolyte structure such that the first and second electrodes are spaced apart from each other, (c) diffusion resistance means which has a predetermined diffusion resistance to said rich-burned measurement gas, and diffusion resistance means covering the first electrode such that the first electrode is exposed to the rich-burned measurement gas via the diffusion resistance means, (d) means for introducing a reference gas having a predetermined oxygen partial pressure for exposure of the second electrode to the reference gas, said means for introducing a reference gas having a diffusion resistance that restricts a supply of oxygen to said second electrode during an operation of the device in the rich-burned measurement gas, (e) a DC power source for applying an electric current between said second electrode and said first electrode, said power source being adapted to pass current from said second electrode to said first electrode when the measurement gas is lean-burned for detecting oxygen partial pressure of the measurement gas, and being adapted to pass current from said first electrode to said second electrode when the measurement gas is rich-burned to move oxygen in said reference gas from the second electrode to the first electrode for burning said unburned components of said rich-burned measurement gas which has been diffused to said first electrode through said diffusion resistance means; and

an electrochemical pumping cell which includes (a) said planar oxygen-ion conductive solid electrolyte structure, (f) an inner and an outer electrode of a porous structure disposed on said planar solid electrolyte structure such that the inner and outer electrodes are spaced apart from each other, said inner electrode being exposed to an atmosphere that is substantially the same as said reference gas to which said second electrode is exposed, said outer electrode being exposed to said rich-burned measurement gas, and (g) means for inducing a flow of electric current from said inner electrode to said outer electrode and thereby supplying an oxygen component of said rich-burned measurement gas into said reference gas to which said second electrode is expressed, whereby shortage of oxygen in said reference gas is prevented when oxygen in the reference gas moves to said first electrode of the sensing cell, with the electric current flowing from said first electrode to said second electrode.

4,882,034

CRUDE OIL OR FUEL OIL COMPOSITIONS

Robert D. Tack, Oxford, and Kenneth Lewtas, Wantage, both of United Kingdom, assignors to Exxon Chemical Patents Inc., Linden, N.J.

Filed Mar. 11, 1988, Ser. No. 166,874

Claims priority, application United Kingdom, Mar. 18, 1987, 8706369

Int. Cl.^{4} C10L *1/22*

U.S. Cl. 208—15 25 Claims

1. A crude oil composition or a fuel oil composition comprising a major proportion by weight of a crude oil or a liquid hydrocarbon fuel and a minor porportion by weight of a polymer containing more than one amide group, the amide being an amide of a secondary mono amine and wherein the amide group of the polymer contains a hydrogen- and carbon-containing group of at least 14 carbon atoms, provided that if the polymer is derived from the polymerisation of an aliphatic olefin and maleic anhydride, the polymer must have both an amide group and an ester group each of which contains a hydrogen- and carbon-containing group of at least 14 carbon atoms.

4,882,035

PROCESS FOR IMPROVING THE DESHAFTING OF A HEAVY HYDROCARBON FEEDSTOCK

Roben Loutaty, Le Havre; Pierre Maroy, Versailles, and Gilles Trinquet, Le Havre, all of France, assignors to Compagnie de Raffinage et de Distribution Total France, France

Filed Aug. 12, 1987, Ser. No. 84,637

Claims priority, application France, Aug. 12, 1986, 86 11638

Int. Cl.^{4} C10C *1/18*

U.S. Cl. 208—45 21 Claims

1. A process for improving the deasphalting of a heavy hydrocarbon feedstock comprising a mixture of an oil phase and an asphaltic phase with a solvent, the process comprising subjecting the feedstock to a shearing at a rate of at least about $10^3 s^{-1}$ before or after the addition of at least a portion of the solvent to the feedstock and includes deasphalting the feedstock by solvent extraction.

4,882,036

COMBINATION COKING AND HYDROCONVERSION PROCESS

Clarence M. Eidt, Jr., Chatham, N.J.; Clyde L. Aldrige, and Roby Bearden, Jr., both of Baton Rouge, La., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Continuation of Ser. No. 97,121, Sep. 16, 1987, abandoned. This application Dec. 27, 1988, Ser. No. 291,390

Int. Cl.^{4} C10G *69/06, 69/10*

U.S. Cl. 208—50 19 Claims

1. An integrated coking and hydroconversion process which comprises the steps of:

(a) treating a hydrocarbonaceous feed having a Conradson carbon content of at least 5 weight percent in a coking zone maintained under fluidized coking conditions, including a pressure ranging from zero to about 100 psig, to produce coke and a vapor phase product, including hydrocarbonaceous comprising constituents boiling above 975° F.;

(b) passing the vapor phase product to a scrubbing zone;

(c) separating a heavy bottoms fraction in the scrubbing zone having a Conradson carbon content of at least about 5 weight percent, including said constituents boiling above 975° F., from said hydrocarbonaceous material;

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(d) passing the heavy bottoms fraction through a microfiltration system characterized as containing a filtering means comprised of a sintered porous ceramic or metal membrane and having a substantially uniform pore size capable of retaining at least 95 percent of the solids and capable of maintaining an effective flux, thereby resulting in a solidsladen fraction and a hydrocarbonaceous filtrate;
(e) recycling at least a portion of the solidsladen fraction to the coking zone;
(f) adding a hydroconversion catalyst or hydroconversion catalyst precursor to at least a portion of said hydrocarbonaceous filtrate to form a mixture;
(g) subjecting at least a portion of said mixture of step (f) to hydroconversion conditions, in the presence of hydrogen, in a slurry hydroconversion zone to produce a hydroconverted oil;
(h) passing the hydroconverted oil to a microfiltration system substantially the same as the microfiltration system in (d), above, wherein solids suspended in the hydroconverted oil are removed; and
(i) passing the filtrate resulting from the filtration of step (h) above to a liquid-liquid separation wherein the resulting heavy fraction is recycled to the coking zone.

4,882,037

PROCESS FOR TREATING A TEMPERATURE-SENSITIVE HYDROCARBONACEOUS STREAM CONTAINING A NON-DISTILLABLE COMPONENT TO PRODUCE A SELECTED HYDROGENATED DISTILLABLE LIGHT HYDROCARBONACEOUS PRODUCT

Tom N. Kalnes, La Grange, and Robert B. James, Jr., Northbrook, both of Ill., assignors to UOP, Des Plaines, Ill.

Filed Aug. 15, 1988, Ser. No. 232,261

Int. Cl.^{4} C10G *49/00, 65/04*

U.S. Cl. 208—85 **15 Claims**

1. A process for treating a temperature-sensitive hydrocarbonaceous stream containing a non-distillable component and a distillable, hydrogenatable hydrocarbonaceous fraction to produce a selected hydrogenated distillable light hydrocarbonaceous product, a distillable heavy hydrocarbonaceous product and a heavy product comprising said non-distillable component while minimizing thermal degradation of said temperature-sensitive hydrocarbonaceous stream which process comprises the steps of:
(a) contacting said temperature-sensitive hydrocarbonaceous stream with a hot first hydrogen-rich gaseous stream having a temperature greater than said hydrocarbonaceous stream in a flash zone at flash conditions thereby increasing the temperature of said hydrocarbonaceous stream and vaporizing at least a portion thereof to provide a first hydrocarbonaceous vapor stream comprising hydrogen and a first heavy product stream comprising said non-distillable component;
(b) condensing at least a portion of said first hydrocarbonaceous vapor stream to provide a distillable heavy hydrocarbonaceous liquid stream and a second hydrocarbonaceous vapor stream comprising hydrogen and said hydrogenatable, hydrocarbonaceous fraction;
(c) contacting said second hydrocarbonaceous vapor stream comprising hydrogen from step (b) with a hydrogenation catalyst in a hydrogenation reaction zone at hydrogenation conditions to increase the hydrogen content of said hydrogenatable hydrocarbonaceous fraction introduced into said hydrogenation reaction zone;
(d) condensing at least a portion of the resulting effluent from said hydrogenation zone to provide a second hydrogen-rich gaseous stream and a liquid stream comprising hydrogenated distillable hydrocarbonaceous compounds; and
(e) recovering said selected hydrogenated distillable light hydrocarbonaceous product from said liquid stream comprising hydrogenated distillable hydrocarbonaceous compounds.

4,882,038

PROCESS FOR THE USE OF MAGNESIUM-ALUMINUM-PHOSPHORUS-SILICON-OXIDE MOLECULAR SIEVE COMPOSITIONS

Brent M. T. Lok, New City; Lawrence D. Vail, New Rochelle, and Edith M. Flanigen, White Plains, all of N.Y., assignors to UOP, Des Plaines, Ill.

Division of Ser. No. 600,180, Apr. 18, 1984, Pat. No. 4,758,419. This application Feb. 16, 1988, Ser. No. 155,696

The portion of the term of this patent subsequent to Apr. 26, 2005, has been disclaimed.

Int. Cl.^{4} C10G *47/02*

U.S. Cl. 208—111 **5 Claims**

1. Process for converting a hydrocarbon which comprises contacting said hydrocarbon under hydrocarbon converting conditions with a molecular sieve, said molecular sieve being a crystalline molecular sieve having three-dimensional microporous framework structures of MgO_2, AlO_2, PO_2 and SiO_2 tetrahydral units having an empirical chemical composition on an anhydrous basis expressed by the formula:

$$mR:(Mg_wAl_xP_ySi_z)O_2$$

wherein "R" represents at least one organic templating agent present in the intracrystalline pore system; "m" represents the molar amount of "R" present per mole of $(Mg_wAl_xP_ySi_z)O_2$ and has a value between zero (0) and about 0.3; and "w", "y" and "z" represent the mole fractions of magnesium, aluminum, phosphorus and silicon, respectively, present as tetrahedral oxides, said mole fractions being such that they are within the pentagonal compositional area defined by points A, B, C, D, and E of FIG. 1 and each has a value of at least 0.01.

4,882,039

CATALYTIC CRACKING OF HYDROCARBONS WITH OXYGEN PROMOTED ALKALI METAL ZEOLITE CRACKING CATALYST

Nai Y. Chen, Titusville, N.J., and Thomas F. Degnan, Yardley, Pa., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 937,938, Dec. 4, 1986, abandoned. This application Jan. 3, 1989, Ser. No. 292,691

Int. Cl.^{4} C10G *11/02*

U.S. Cl. 208—120 **26 Claims**

1. A process for the catalytic cracking of a hydrocarbon oil which comprises contacting the oil with 0.001 to 0.1 weight parts of oxygen for each weight of oil at a temperature in excess of 1000° F. with a catalyst which is essentially free of shape selective combustion catalyst and comprising a large pore, alkali metal silicate zeolite cracking catalyst.

4,882,040

REFORMING PROCESS

Ralph M. Dessau, Edison, N.J., and Ernest W. Valyocsik, Yardley, Pa., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Jun. 24, 1988, Ser. No. 210,949

Int. Cl.^{4} C10G *35/06*

U.S. Cl. 208—138 **40 Claims**

1. A process for reforming a naphtha feedstock of low octane value comprising contacting the feedstock, under reforming conditions, with a non-acidic catalyst composition consisting essentially of
a reforming hydrogenation/dehydrogenation metal in combination with
a non-acidic microporous crystalline material containing thallium or lead, and
wherein said non-acidic microporous crystalline material is isostructural with a zeolite, selected from the group consisting of ZSM-5, ZSM-11, ZSM-12, ZSM-20, ZSM-23, ZSM-48, ZSM-50, and zeolite beta,

recovering a reformate having an octane value greater than that of the feedstock and having an aromatic content greater than that of the feed.

4,882,041

DILUENT SUBSTITUTION PROCESS

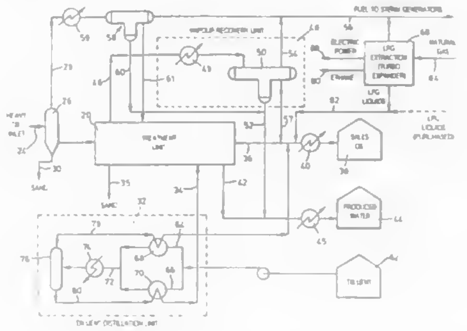
Jeffery E. Scott; David W. McDougall, and Ronald G. Holcek, all of Calgary, Canada, assignors to Delta Projects Inc., Calgary, Canada

Filed Jun. 9, 1987, Ser. No. 59,697

Claims priority, application Canada, Mar. 6, 1986, 503434

Int. Cl.^{4} C10G *31/06*

U.S. Cl. 208—177 **7 Claims**



1. A process for the treatment of a heavy oil production stream, comprising the steps of:
removing sand and water from said stream;
adding a hydrocarbon diluent to said stream to reduce the density and viscosity of the heavy oil;
removing from the heavy oil of reduced density and viscosity light components including methane and carbon dioxide and reduce the vapour pressure of the stream; and,
injecting into said stream after removal of said light components, a liquidified petroleum gas (LPG) diluent stream to lower the viscosity of the heavy oil production stream and form a sales oil stream.

4,882,042

FLOSS SEPARATING APPARATUS AND METHOD

Koichi Manabe, Chiba; Mitsumura Naka, and Mitsushi Futamura, both of Osaka, all of Japan, assignors to Sumitomo Chemical Company, Ltd. and The Nippon Aluminum Manufacturing Company, Ltd., both of Osaka, Japan

Continuation of Ser. No. 3,007, Jan. 13, 1987, abandoned. This application Nov. 25, 1988, Ser. No. 275,829

Claims priority, application Japan, Jan. 13, 1986, 61-6018

Int. Cl.^{4} B07B *3/00*

U.S. Cl. 209—138 **6 Claims**

1. A floss separating apparatus, comprising:
a hopper with a closure structure having an outer cylindrical wall arranged such that said hopper extends vertically;
a pipe-shaped structure arranged inside said hopper in such a manner that said pipe-shaped structure extends vertically and coaxially with said hopper so that a passageway space annular in section is formed between said hopper wall and said pipe-shaped structure, said passageway space providing a particle flow down section, a floss separating section and a particle discharging passageway which are arranged in the stated order from above;
a particle scattering section formed in a space at an upper end of said hopper, wherein an outlet of a particle conveying passageway for conveying particles with a primary gas is communicated with a central portion of said particle scattering section, a striking plate is provided at a position where said striking plate confronts with said outlet of said particle conveying passageway, and an upper end of said particle flow down section is communicated with the periphery of said particle scattering section;
a partition wall structure surrounding said particle discharge passageway;
an annular floss discharging passageway disposed around said partition wall structure, an upper end of said floss passageway communicated with an outer periphery of said floss separating section;
a secondary gas passageway formed inside said pipe-shaped structure;

a plurality of secondary gas jetting outlets formed in a part of said pipe-shaped structure which is surrounded by said floss separating section in such a manner that said secondary gas jetting outlets are distributed around said pipe-shaped structure; and
a particle discharging mechanism connected to a lower outlet of said particle discharging discharging passageway, said particle discharging mechanism discharging particles while substantially interrupting the flow of gas.

4,882,043

COMBINATION ROLL-TYPE MAGNETIC AND ELECTROSTATIC SEPARATOR AND METHOD

Lothar Jung, 1355 Plymouth Rd., Bridgewater, N.J. 08807

Filed Jan. 8, 1987, Ser. No. 1,384

Int. Cl.^{4} B03C *1/02*

U.S. Cl. 209—212 **22 Claims**

15. A method for separating a diamagnetic material from a dry admixture of particulate diamagnetic material and paramagnetic material, said method comprising:
providing a separator roll having a plurality of disc shaped

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magnetic elements and a plurality of spacer elements interposed between adjacent magnetic elements;

rotating said roll;

feeding discrete streams of said admixture onto spaced areas on the surface of said roll whereby said admixture in each of said streams separates laterally on the face of said roll to form alternating bands of paramagnetic material and bands of diamagnetic material;

separately collecting each band of said diamagnetic material into separate receptacles and collecting said paramagnetic material separate from said diamagnetic material, as said materials leave the rotating roll surface.

4,882,044

SCREENING ARRANGEMENT

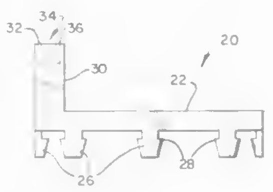
Manfred F. A. Freissle, Aschau-Chiemgau, Fed. Rep. of Germany, assignor to Polydeck Screen Corporation, Spartanburg, S.C.

Filed Jun. 16, 1988, Ser. No. 207,400

Claims priority, application United Kingdom, Sep. 26, 1987, 8722672; Mar. 19, 1988, 8806575

Int. Cl.⁴ B07B *1/46*

U.S. Cl. 209—319 14 Claims



1. A screening panel predominantly of a synthetic plastics material and having a screening surface in which screening apertures are provided and having securing means adapted to secure the panel releasably in a side-by-side relationship with similar panels, the panel including one spacer element along one peripheral edge of the panel and extending in a direction transverse to the screening surface of the panel and being integral and unitary with the panel so that in side view the panel is substantially L-shaped, the spacer element being adapted to space the screening surface of the panel from a second screening surface substantially parallel to the screening surface of the panel so that screened material passing through one of the screening surfaces can fall onto the other screening surface to be screened further by that screening surface.

4,882,045

DISPERSAL APPARATUS WITH ROTATION VALVING

Robert J. Bergh, Sr., and Robert J. Bergh, Jr., both of 923 N. Park St., Fergus Falls, Minn. 56537

Continuation of Ser. No. 894,683, Aug. 8, 1986, abandoned. This application Aug. 18, 1988, Ser. No. 233,559

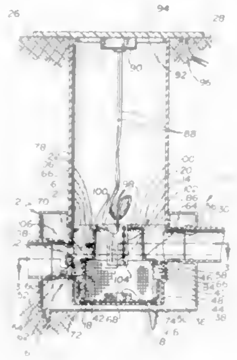
Int. Cl.⁴ B01D *35/02*

U.S. Cl. 210—86 7 Claims

1. Dispersal apparatus for filtering and valving effluent, having suspended solids entrained therein, discharged from a sewage tank through a generally horizontally-disposed, buried egress conduit, comprising:

(a) a housing, formed relative to an axis, defining a plane at an axial end thereof, said housing being positioned beneath the ground surface with said plane disposed generally horizontally, said housing having an enclosing wall with an inlet port formed therein, the inlet port being mated to the egress conduit, and said wall having a plurality of circumferentially spaced outlet ports, spaced axially downwardly from said inlet port, formed therein, each of said outlet ports being mated to a conduit leading to a discrete soil treatment system segment;

(b) a core received within said housing for rotation therewithin about a generally vertically extending axis generally coinciding with said axis with respect to which said housing is formed, said core having a side wall with a port, registrable with each of said outlet ports, formed therein, and an upper, apertured wall disposed at a location at least as low as a bottom lip of said inlet port;



(c) a filter medium overlying said side wall of said core and said port formed in said core side wall; and

(d) means, suspended within said housing, for sensing effluent level rising within said core to a height proximate said bottom lip of said inlet port.

4,882,046

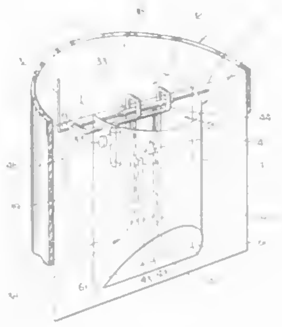
MULTI-CHAMBER SEPTIC TANK ASSEMBLY

Ian Waite, Avalon Beach, Australia, assignor to Biocycle Pty. Ltd., Avalon Beach, Australia

Filed Jan. 12, 1989, Ser. No. 296,505

Int. Cl.⁴ C02F *3/30*

U.S. Cl. 210—195.3 5 Claims



1. A septic tank assembly comprising:

a first vessel encompassing a space;

a second vessel nested with said first vessel and co-operating therewith to divide said space into two sub-spaces;

partition means co-operating with the two vessels to divide said sub-spaces into four treatment chambers which are generally vertically coextensive;

an inlet duct communicating with a first one of said chambers to deliver waste water thereto for anaerobic treatment;

a first transfer duct extending from an upper portion of said first chamber to said second chamber where the discharge from said first chamber is aerobically treated;

a second transfer duct extending from an upper portion of said second chamber to said third chamber where the discharge of said second chamber is subjected to a clarification treatment;

a third transfer duct extending from an upper portion of said third chamber to a fourth one of said chambers where the discharge of said third chamber is disinfected;

an outlet duct from said fourth chamber through which treated water exits from within said assembly;

an aeration device including an air pump and conduits to deliver air to a lower portion of said second chamber so that air passes upwardly through liquid contained within said second chamber;

a first conveyor means extending from a lower portion of said third chamber to said first chamber to transfer solid matter from said third chamber to said first chamber;

second conveyor means extending from an upper portion of said third chamber to said first chamber to transfer floating matter from said third chamber to said first chamber; and

a sterilizing agent dispenser to deliver a sterilizing agent into said fourth chamber.

4,882,047

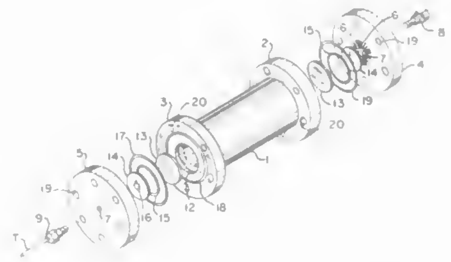
ZERO-VOID COLUMN END PLATE FOR CHROMATOGRAPHY

Yehuda Shalon, St. Louis, Mo., assignor to HT Chemicals, Inc., St. Louis, Mo.

Continuation of Ser. No. 67,553, Jun. 26, 1987, abandoned, which is a continuation-in-part of Ser. No. 5,641, Jan. 31, 1987, Pat. No. 4,719,011, which is a continuation of Ser. No. 714,730, Mar. 22, 1985, abandoned. This application Mar. 27, 1989, Ser. No. 328,781

Int. Cl.⁴ B01D *15/08*

U.S. Cl. 210—198.2 13 Claims



1. A high-pressure liquid chromatography column comprising:

(a) a column member, said column member having a first end and a second end, the interior of said column member being a chamber adapted to retain a media;

(b) a first flange member, said first flange member being positioned at said first end of said column member;

(c) a second flange member, said second flange member being located at said second end of said column member;

(d) a first end plate, said first end plate being adapted to be mounted at said first end of said column member and having an inlet port;

(e) a second end plate, said second end plate being adapted to be mounted at said second end of said column member and having an outlet port;

(f) a first frit means, said first frit means being adapted to be mounted at said first end of said column member, between said first end plate and the interior of said column member, said first frit means being porous and comprising means for providing fluid communication between said inlet port and the interior of said column member;

wherein at least said first end plate includes dispersion means, said dispersion means comprising radially extending grooves in a surface of said first end plate proximate said first frit means, said grooves extending radially toward the periphery of said plate and increasing in volume towards the periphery of said plate, wherein each groove increases in depth in a direction toward the periphery of said plate and wherein each groove also increases in width in a direction towards the periphery of said plate, whereby fluid is adapted to flow uniformly across the surface of said first frit means and consequently uniformly from said column member first end to said column member second end, thereby enhancing the separation attributes of the column during performance of a chromatography process, wherein said first end plate surface includes no other grooves thereon.

4,882,048

OPTICALLY ACTIVE ADSORBENTS

Gottfried Blaschke, Münster; Werner Fraenkel, Bad Rothenfelde; Werner Bröker, Münster, and Joachim Kinkel, Guidental, all of Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft Mit Beschränkter Haftung, Darmstadt, Fed. Rep. of Germany

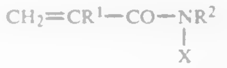
Continuation of Ser. No. 58,715, Jun. 5, 1987, abandoned. This application Feb. 21, 1989, Ser. No. 313,319

Claims priority, application Fed. Rep. of Germany, Jun. 7, 1986, 3619303

Int. Cl.⁴ B01D *15/08*

U.S. Cl. 210—198.2 12 Claims

1. An absorbent useful for chromatographic separation of enantiomeric compounds, comprising an optically active poly(meth)acrylamide bonded to a chromatographic support material, prepared by a process consisting essentially of reacting under polymerization conditions a chromatographic support material or a hydrophilically modified chromatographic support material, with an optically active monomer of the formula



$$CH_2{=}CR^1{-}CO{-}\underset{\displaystyle X}{\underset{|}{N}}R^2$$

wherein

R^1 is H or methyl,

R^2 is H or methyl, and

$-NR^2$ is (a) an optically active secondary or tertiary amine residue or

$$\underset{\displaystyle X}{\underset{|}{N}}R^2$$

is

(b) an optically active amino acid ester bonded via the nitrogen and having up to 15 C atoms in the main chain to yield an absorbent wherein the optically active poly(meth)acrylamide is attached to the chromatographic support material directly or via (meth)acryloxyl groups.

4,882,049

APPARATUS FOR SHIFTING AND WASHING FILTER PLATES IN A FILTER PRESS

Steven S. Davis, Bountiful, Conn., assignor to Baker Hughes, Incorporated, Salt Lake, Utah

Filed Mar. 15, 1988, Ser. No. 168,788

Int. Cl.⁴ B01D *25/12*

U.S. Cl. 210—225 10 Claims

8. A filter press comprising:

elongated frame;

a press head and follower mounted on an end of said elongated frame;

a fixed support mounted on an opposing end of said elongated frame;

a plurality of filter plates slidably supported on said elongated frame between said follower and said support, said filter plates becoming a plurality of sullied filter plates during a filtering operation;

a shifter carriage mounted on said elongated frame;

means mounted on said carriage for releasing one of a stack

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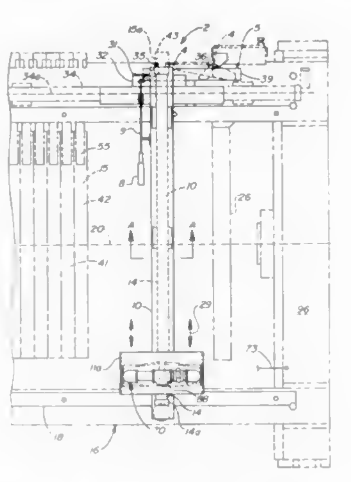
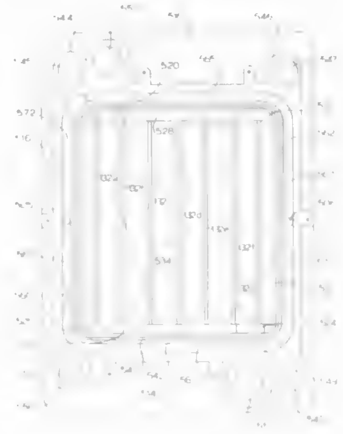
of said plurality of sullied filter plates and for moving said released one plate and carriage along said elongated frame;
a plate washer;
means for intermittently attaching said plate washer to said shifter carriage, such that said shifter carriage and said plate releasing means moves said sullied filter plates in seriatim to a plate washing position to be washed by said attached plate washer;
wherein said carriage comprises:
a pawl box;
a first pawl pivotable in said box and operable to engage and pick up a sullied plate;
a second pawl longitudinally spaced from said first pawl and pivotable in said box to engage and push a washed plate to a follower stack simultaneously with movement of said sullied plate by said first pawl to a washing position approximately mid-way between a next sullied plate in said plurality of sullied plates;
a third pawl pivotable in said box and longitudinally extending from said first pawl toward and past said second pawl, said third pawl having a sloped cam surface operable to engage a portion of a stacked group of washed plates to depress said third pawl so as to permit said third pawl to pass a plate at a wash position;
spring means for raising said first and second pawls into a raised position to engage, respectively, a sullied and washed plate; and
spring means for raising said third pawl to a raised position so as to impact a sullied plate in said plurality of stacked plates and prevent said first pawl from picking up other than a first sullied plate facing said wash position.



4,882,050
FILTER PLATE, FILTER PLATE ELEMENT, AND FILTER COMPRISING SAME

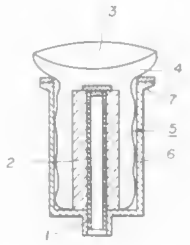
Henry B. Kopf, 108 Coatbridge Cir., Cary, N.C. 27551
Continuation-in-part of Ser. No. 104,177, Oct. 2, 1987. This application Aug. 22, 1988, Ser. No. 235,046
Int. Cl.⁴ B01D *25/12, 13/00*
U.S. Cl. 210—231 6 Claims

1. A filter plate having a generally rectangular and generally planar shape with a substantially flat bottom surface, a top surface with a first upwardly extending wall circumscribingly bounding a flow channel of generally rectangular shape, and a second upwardly extending wall interior to and of lesser height than the first bounding wall, the second wall being in spaced relation to the first wall along diagonally opposed L-shaped peripheral sections of the flow channel, said first and second walls defining an L-shaped channel there between in said diagonally opposed L-shaped peripheral sections each L-shaped channel comprising a leg extending transversely across the flow channel for a major portion of the width thereof, and a leg extending longitudinally for a portion of length of the flow channel and each longitudinal leg communicating at is extremity with an opening extending through the plate, ridges extending between the first and second bounding walls along peripheral portions of the flow channel not comprising said L-shaped peripheral sections; a liquid inlet port at a first side of the flow channel and a liquid outlet port at a second side of the flow channel opposite the first side thereof, the liquid inlet port being joined in liquid flow communication with a liquid flow feed trough located interior of said second wall and extending transversely across the first side of the flow channel, and the liquid outlet port being joined in liquid flow communication with a liquid collection trough located interior of said second wall and extending transversely across the second side of the flow channel, with a plurality of spaced-apart partitions extending upwardly from the floor of the flow channel between the liquid feed trough and the liquid collection trough, the partitions being of substantially the same height as the second bounding wall and substantially parallel to one another to define a series of sub-channels between the partitions, extending longitudinally between the liquid feed trough and the liquid collection trough.



4,882,051
CARTRIDGE FILTER INCORPORATING A BAG-LIKE BODY

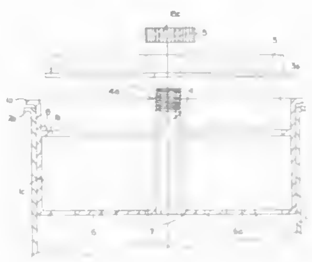
Mikio Itoh, Tokyo, Japan, assignor to Nippon Roki Co., Ltd., Tokyo, Japan
Filed Jul. 8, 1988, Ser. No. 216,306
Claims priority, application Japan, May 26, 1986, 63-68757[U]; Apr. 30, 1988, 63-57314[U]
Int. Cl.⁴ B01D *27/08, 35/16*
U.S. Cl. 210—248 4 Claims



1. A cartridge filter for filtering a liquid to produce a filtrate, which comprises:
a cartridge filter element contained in a bag-like body made of aqueous non-osmotic film and open at one end thereof, said bag-like body fixed at the other end thereof to the end of the cartridge filter element at the exhaust side for the filtrate, and a filter case about the bag-like body having an inlet for the liquid, said bag-like body covered at the open end with an inlet of the filter case, the bag-like body preventing the liquid from contacting interior walls of the filter case.

4,882,052
FILTER STRUCTURE FOR LIQUID PURIFICATION AND INCORPORATING DETENT ARRANGEMENT

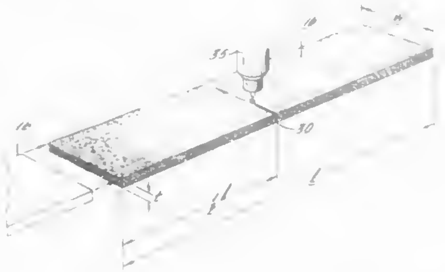
Anthony Peranio, Nyack, N.Y., assignor to Purewater Sciences International, Inc., New York, N.Y.
Filed Oct. 23, 1987, Ser. No. 111,869
Int. Cl.⁴ B01D *23/02, 23/14*
U.S. Cl. 210—282 19 Claims



1. Filter apparatus for directing the gravity-feed flow of liquid therethrough, comprising:
a filter medium;
inlet and outlet plates arranged respectively above and below said filter medium;
said inlet and outlet plates each having openings to respectively provide for the flow of liquid therethrough;
said inlet plate having openings arranged in a predetermined array;
said outlet plate having a plurality of arrays of openings each being substantially similar to the array of openings in said inlet plate whereby the number of arrays in said outlet plate is substantially equal to 2 more than the number of arrays in said inlet plate; and
said plates being movable relative to one another to adjustably position the array of said inlet plate substantially directly above one of the arrays in said outlet plate to guide the liquid flow through substantially that portion of the filter medium which is arranged between the aligned arrays of said inlet and outlet plates.

4,882,053
POROUS FILTER MEDIA SUPPORT PLATE

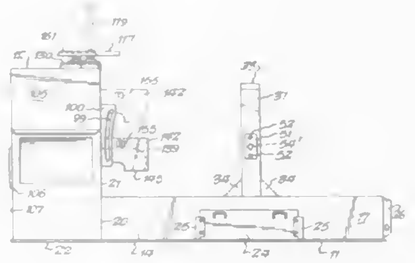
Joseph E. Ferri, 206 Lester Ave., Shillington, Pa. 19607
Filed Mar. 24, 1988, Ser. No. 152,519
Int. Cl.⁴ B01D *23/18*
U.S. Cl. 210—293 4 Claims



1. An elongated substantially rectangular filter media support plate comprised of a porous heat-fusible organic plastic material, said plate being exposed to a loading by a porous filter media, the pores in the support plate being sized to retain the filter media and waste particulate matter while permitting passage of water in a first direction first through the filter media and then through the support plate and in the reverse direction first through the support plate and then through the filter media, said plate comprising means forming at least one relatively narrow, non-porous heat-fused zone extending across the plate from one side edge to the other and from the upper surface to the lower in a plane extending substantially perpendicularly to said upper and lower surfaces and to said side edges, each said zone sub-dividing the plate into end-to-end abutting porous sub-sections, said plate being performed with each said heat-fused zone forming an integral part of said plate with the composition of the material in the said zone being homogeneous with the material outside of the zone and forming within the zone a substantially rigid, load-bearing beam extending from said one side edge to the other and from the said upper surface to the said lower surface.

4,882,054
VIBRATORY SCREENING MACHINE WITH TILTABLE SCREEN FRAME AND ADJUSTABLE DISCHARGE WEIR

William W. Derrick, East Amherst, and Robert G. Derrick, Buffalo, both of N.Y., assignors to Derrick Manufacturing Corporation, Buffalo, N.Y.
Filed Aug. 22, 1988, Ser. No. 235,038
Int. Cl.⁴ B01D *33/00*
U.S. Cl. 210—389 23 Claims



1. A vibratory screening machine comprising a main frame, a screen frame, mounting means mounting said screen frame on said main frame, a screen on said screen frame, means for vibrating said screen frame, a weir fixedly mounted directly on said main frame for containing a liquid-solid mixture, discharge means on said weir for discharging said liquid-solid mixture onto said screen, and adjusting means for adjusting the inclination of said screen relative to said main frame and for adjusting the elevation of said discharge means relative to said weir to thereby maintain the position of said discharge means in substantially the same relative position to said screen in adjusted positions thereof.

4,882,055
UNITARY INJECTION MOLDED FILTER

Robert E. Stamstad, Poynette, Wis., assignor to Suratco Products Company, Poynette, Wis.
Continuation-in-part of Ser. No. 905,661, Sep. 11, 1986, abandoned. This application Oct. 29, 1987, Ser. No. 117,881
Int. Cl.⁴ B01D *25/02*
U.S. Cl. 210—483 20 Claims

1. A unitary injection molded filter for separating small particulate matter from a fluid comprising:
(a) a rigid frame of synthetic resin material to provide a rigid shape to the filter; and
(b) at least one screen of non-woven sheet synthetic resin material with opposed smooth side surfaces made integral with the frame and having formed therethrough a plurality of holes extending between the opposed side surfaces

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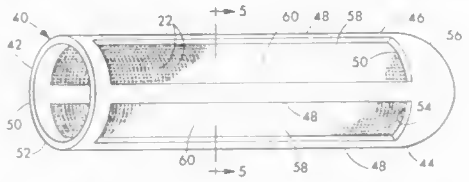
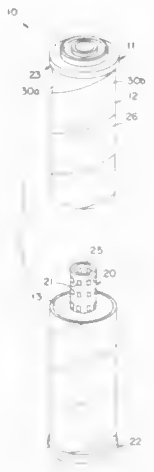
of the sheet so as to form fluid passages therethrough, each hole having a minimum transverse width within the range of approximately 0.0005 inches to 0.01 inches, wherein the filter is formed by a process comprising injecting a quantity of thermoplastic resin material into a mold to simultaneously form the frame and the screen of the filter.



4,882,056
FLUID FILTER ELEMENT WITH AN OVERLAPPED WRAP

Peter J. Degen, Huntington, and Colin F. Harwood, Glen Cove, both of N.Y., assignors to Pall Corporation, Glen Cove, N.Y.
Filed Apr. 1, 1988, Ser. No. 176,865
Int. Cl.⁴ B01D *27/04*
U.S. Cl. 210—490 21 Claims



1. A fluid treatment element comprising:
a permeable cartridge comprising a substantially rigid fluid permeable tubular core and disposed thereon a cylindrical, nonwoven mass of polymeric microfibers substantially free of fiber-to-fiber bonding and secured to each other by mechanical entanglement of the fibers, said cartridge having an external surface and an end;
a permeable wrap spirally wound about and completely covering the external surface of the cartridge and having inner and outer surfaces, first and second edge portions, and an end portion, the second edge portion of the wrap overlapping the outer surface of the wrap and the inner surface of the wrap having a section contiguous to the external surface of the cartridge;
first means for positively fastening the external surface of the cartridge to the contiguous section of the inner surface of the wrap;
second means for positively fastening the outer surface of the wrap and the overlapping second edge portion of the wrap; and
an end cap disposed at the end of the cartridge and including means for securing the end of the cartridge and the end portion of the wrap to the end cap.

4,882,057
COMPOSITION AND PROCESS FOR SEPARATING FLUID MIXTURES

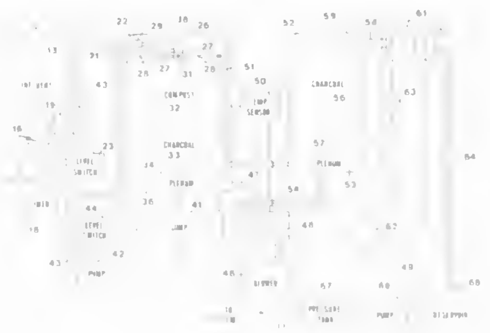
Charles R. Morgan, Brookeville; Cheng-Chi Chen; Thomas A. Blinka, both of Columbia, and Alan S. Obligin, Catonsville, all of Md., assignors to W. R. Grace & Co.-Conn., New York, N.Y.
Filed Nov. 3, 1988, Ser. No. 266,617
Int. Cl.⁴ B01D *13/00*
U.S. Cl. 210—500.23 9 Claims

1. A material comprising properties sufficient for use as a semipermeable fluid separation membrane including a composition of up to about 1,000 microns thick of a polyaromatic polymer including aromatic repeat units of which at least 5 mole percent are substituted by moieties having ethylenically unsaturated carbon bonds wherein the polymer is crosslinked by carbon bonds between the ethylenically unsaturated moieties.

5. A combination comprising a semipermeable fluid separation membrane including as a film of up to about 1,000 microns thick or a hollow fiber a polyaromatic polymer further including aromatic repeat units of which at least 5 mole percent are substituted by moieties having ethylenically unsaturated carbon bonds wherein the polymer is crosslinked through carbon bonds between the ethylenically unsaturated moieties and a mixture of fluids in contact with the membrane wherein at least one of the fluids is enriched on one side of the membrane.

4,882,058
ORGANIC WASTE RECYCLING SYSTEM AND METHOD

R. Edward Burton, Willits, Calif., assignor to Ramos-Thibault Corp., Willits, Calif.
Continuation-in-part of Ser. No. 192,487, May 11, 1988. This application Sep. 21, 1988, Ser. No. 247,245
Int. Cl.⁴ C02F *3/00;* **C12M** *1/04, 1/12*
U.S. Cl. 210—601 18 Claims

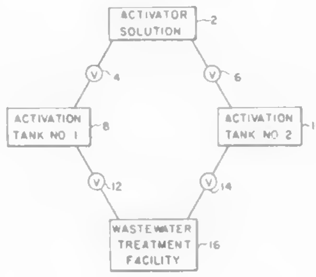


9. A system for treating a liquid borne organic waste material to recover a useful liquid comprising an influent tank for holding the waste material, a compost bed containing a fecal material for biological treatment of the organic waste material, means for transferring the waste material from the influent tank to the upper portion of the compost bed and permitting the waste material to pass in a downward direction through the compost bed to substantially convert the organic waste material to carbon dioxide and water, a first filter bed positioned beneath and in communication with the compost bed so that the waste material passes in a downward direction through the filter bed after passing through the compost bed, a second filter bed, means for passing air in an upward direction through the first filter bed and the compost bed and through the second filter bed, means for condensing the air to form a condensate after the air passes through the compost and filter beds, and means for discharging the condensate from the system.

15. A method for treating a liquid borne organic waste material to recover a useful liquid comprising the steps of: passing the waste material through a compost material to substantially convert the organic waste material to carbon dioxide and water, passing air through the compost material, thereafter passing the air through a filter bed, condensing water vapor in the air from the filter bed to form a condensate, and collecting the condensate.

4,882,059
SOLUBILIZATION OF ORGANIC MATERIALS IN WASTEWATER TREATMENT

John M. Wong, and Thomas J. Lowe, both of Lakewood, Ohio, assignors to General Environmental Science, Beachwood, Ohio
Filed Nov. 25, 1987, Ser. No. 125,388
Int. Cl.⁴ C02F *3/34*
U.S. Cl. 210—606 10 Claims

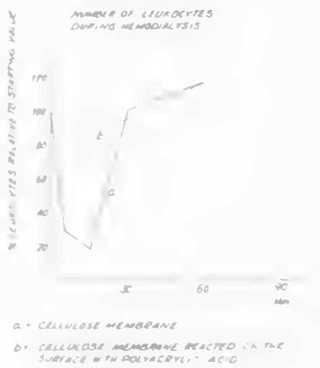


1. A method for solubilizing particulate or colloidal materials in wastewater treatment, comprising the steps of:
cultivating aerobic bacteria in the presence of oxygen in an activator solution containing a food source until the level of the food source drops low enough to cause said bacteria to begin producing increased amounts of enzymes which solubilize particulate or colloidal materials thereby producing activated bacteria; and
contacting said activated bacteria or said enzymes with said particulate or colloidal materials under conditions which solubilize said particulate or colloidal materials.

4,882,060
DIALYSIS MEMBRANES WITH IMPROVED COMPATIBILITY

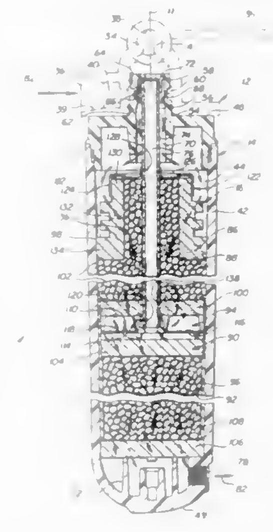
Gottfried Schmer, Seattle, Wash., assignor to Akzo NV, Arnhem, Netherlands
Filed Mar. 28, 1988, Ser. No. 174,093
Claims priority, application Fed. Rep. of Germany, Nov. 12, 1983, 3341113
Int. Cl.⁴ B01D *13/00*
U.S. Cl. 210—646 6 Claims

1. A process for decreasing a leukopenia effect to a patient undergoing a dialysis treatment, comprising the step of:
providing said patent with said treatment which includes use of a dialysis membrane which is formed as a flat foil, a tube foil or a hollow fiber of regenerated cellulose comprising a membrane surface having a polymeric acid chemically bound across a bridgeformer chemically bound to the cellulose, said bridgeformer being an alkylene diamine chemically bound with said polymeric acid across amide linkages, said polymeric acid being selected from the group consisting of a polyacrylic acid. polymethacrylic acid, polymaleic acid, a copolymer with more than 5 Mol% acrylic acid, methacrylic or maleic acid monomer building blocks, and a combination thereof, the average molecular weight of the regenerated cellulose amounting to between 80,000 and 150,000, the average molecular weight of said polymeric acid in said providing step amounting to between 50,000 and 500,000 and being 0.5 to 5 times the average molecular weight of the regenerated cellulose.



4,882,061
FILTER APPARATUS

Raymond M. Petrucci, Middlebury; Edward Giordano, Glastonbury; Bruce Hafner, Killingworth, and Bruce G. Taylor, Kensington, all of Conn., assignors to Cuno, Incorporated, Meriden, Conn.
Filed Jan. 23, 1989, Ser. No. 300,566
Int. Cl.⁴ B01D *13/00*
U.S. Cl. 210—652 15 Claims



1. A filter apparatus comprising:
a head having a forward flow inlet port and a reverse flow outlet port; and
a filter cartridge;
said filter cartridge comprising a first end portion secured to the head and a primary chamber in fluid communication with the forward flow inlet port, and a second end portion having a secondary chamber and a combination inlet and outlet port in fluid communication therewith;
a filter assembly disposed in the cartridge, wherein said filter assembly comprises:
  a primary filter unit disposed in the primary chamber;
  a secondary filter unit disposed in the secondary chamber;
  a tube having on one end a passage opening in fluid communication with the reverse flow outlet port and on the

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other end a passage opening disposed in the secondary chamber; and

a valve means disposed between the primary chamber and the secondary chamber for permitting forward flow from the primary chamber to the secondary chamber and for preventing reverse flow from the secondary chamber to the primary chamber;

the above providing means wherein forward fluid flow through the inlet port flows sequentially through the primary filter unit, the secondary filter unit and out through the combination inlet and outlet port, and reverse fluid flow through the combination inlet and outlet port flows through the secondary filter unit, through the tube and out through the reverse flow outlet port.

4,882,062

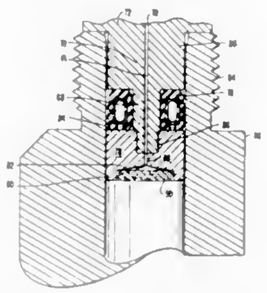
SOLVENT MIXING CHAMBER FOR A LIQUID CHROMATOGRAPHY SYSTEM

Roy P. Moeller, Hayward, and Carl L. Schackelford, San Pablo, both of Calif., assignors to Rainin Instrument Co., Inc., Emeryville, Calif.

Continuation of Ser. No. 902,255, Aug. 29, 1986, abandoned. This application Apr. 29, 1988, Ser. No. 188,680

Int. Cl.^{4} B01D *15/08;* B01F *13/08;* C02F *1/48*

U.S. Cl. 210—656 8 Claims



5. A method for simultaneously mixing solvents in a multicompartment mixer in a liquid chromatography system, each compartment containing a stirring magnet, the method comprising the steps of:

generating a rotating magnetic drive field external to the mixer by a single magnet on a single axis of rotation;

supporting each stirring magnet in it compartment for rotation in a plane transverse to the rotating drive field; and

locating the drive field so that it coupled substantially equally to each stirring magnet whereby rotation of the drive field produces stirring rotation by each stirring magnet in its plane of rotation transverse to the rotting drive field.

4,882,063

CHROMATOGRAPHIC SYSTEM

Robert W. Allington, and John N. Jones, both of Lincoln, Nebr., assignors to Isco, Inc., Lincoln, Nebr.

Filed Jul. 13, 1987, Ser. No. 73,079

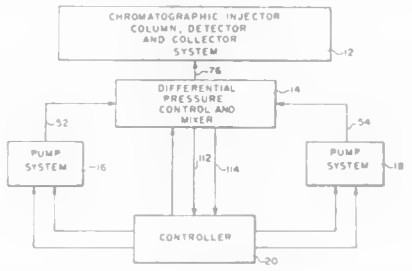
Int. Cl.^{4} B01D *15/08*

U.S. Cl. 210—659 22 Claims

1. A fluid composition gradient chromatograph comprising:

fluid control means connected in a flow stream between a pumping system comprising at least two pump means,a mixer means and a fixture adapted to receiver chromotographic columns gradient program means;

said control means including inlet means for receiving at least first and second fluids from at least first and second pump means of said pumping system directed to said mixer and signal means for supplying a signal to start a gradient flowing from the gradient program means by said control means in the direction of the chromatographic column when said first and second fluids are sensed to be at substantially the same pressure and preventing the gradient from flowing from the control means in the direction of the chromatographic column when said first and second fluids differ.


CHROMATOGRAPHIC INJECTOR COLUMN, DETECTOR AND COLLECTOR SYSTEM
12
76
DIFFERENTIAL PRESSURE CONTROL AND MIXER
14
52
54
PUMP SYSTEM
16
PUMP SYSTEM
18
112
114
CONTROLLER
20

4,882,064

METHOD OF REMOVING IMPURITIES FROM HARD WATERS OR WATERS WITH SIGNIFICANT CALCIUM/MAGNESIUM CONCENTRATIONS

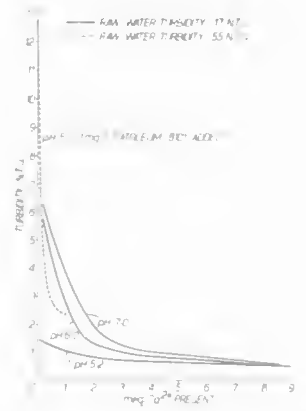
David R. Dixon, and Nevil J. Anderson, both of Victoria, Australia, assignors to Commonwealth Scientific and Research Organization, Campbell, Australia

Continuation of Ser. No. 567,150, Jan. 3, 1984, abandoned, which is a continuation of Ser. No. 363,527, Mar. 30, 1982, abandoned. This application Jun. 19, 1987, Ser. No. 65,153

Claims priority, application Australia, Apr. 6, 1981, PE8330

Int. Cl.^{4} B01D *15/04;* C02F *5/02*

U.S. Cl. 210—667 9 Claims



1. A method for removing suspended impurities and coloured substances from water which has a pH in excess of 5 and contains significant concentrations of calcium and/or magnesium ions which comprises the steps of:

contacting the water at its natural pH with a coagulant/adsorbent which comprises a finely divided particulate mineral material, the individual particles of which have a thin hydroxylated surface layer having a positive zeta potential at the adsorption pH;

separating the thus-treated water from the coagulant/adsorbent;

treating the coagulant/adsorbent with an acidic solution having a pH of not more than 6 to desorb the calcium and/or magnesium ions, washing the thus-treated coagulant/adsorbent with softened water;

treating the coagulant/adsorbent with a softened alkaline solution to raise the pH to at least 10.5, separating the coagulant/adsorbent from the alkaline solution; and

washing the coagulant/adsorbent with softened water;

the softened water used in the washing steps and in the alkaline solution treatment containing not more than 20 ppm of total Ca/Mg.

4,882,065

PURIFICATION OF STEROLS WITH ACTIVATED CARBON AS ADSORBENT AND CHLOROBENZENE AS DESORBENT

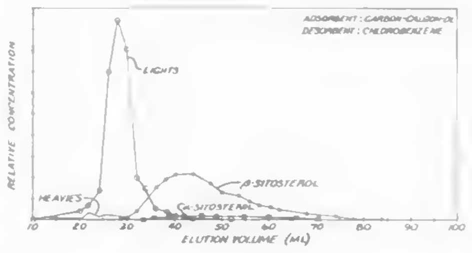
Timothy J. Barder, Addison, Ill., assignor to UOP, Des Plaines, Ill.

Filed Dec. 11, 1987, Ser. No. 131,611

The portion of the term of this patent subsequent to Jul. 18, 2006, has been disclaimed.

Int. Cl.^{4} B01D *15/00*

U.S. Cl. 210—674 14 Claims



1. A process for separating sterols from a tall oil feed mixture, which process comprises contacting at adsorption conditions said mixture with an adsorbent comprising an activated-type carbon sieve, selectively adsorbing said sterols onto said adsorbent, and treating said adsorbent containing said sterols with a desorbent material comprising an aromatic liquid hydrocarbon to desorb said sterols therefrom as a fluid extract stream.

4,882,066

DECONTAMINATION OF CONTAMINATED STREAMS

Ralph J. Portier, Baton Rouge, La., assignor to Louisiana State University, Baton Rouge, La.

Division of Ser. No. 3,019, Jan. 13, 1987, Pat. No. 4,775,650, which is a continuation-in-part of Ser. No. 918,840, Oct. 14, 1986. This application Jul. 18, 1988, Ser. No. 220,470

Int. Cl.^{4} B01D *15/00*

U.S. Cl. 210—679 10 Claims

1. A process for the decontamination and removal of a metal from a metal-contaminated liquid stream which comprises

contacting said metal-contaminated liquid stream with a porous solid substrate on which chitin is dispersed as a film of thickness sufficient to complex with and remove metal from said metal-contaminated liquid stream.

4,882,067

PROCESS FOR THE CHEMICAL BONDING OF HEAVY METALS FROM SLUDGE IN THE SILICATE STRUCTURE OF CLAYS AND SHALES AND THE MANUFACTURE OF BUILDING AND CONSTRUCTION MATERIALS THEREWITH

Barrett Johnson, Sunnyvale, and Charles B. Rubenstein, Los Gatos, both of Calif., assignors to Ceramic Bonding, Inc., Mountain View, Calif.

Filed Apr. 27, 1988, Ser. No. 186,562

Int. Cl.^{4} B01D *15/00;* C02F *1/28*

U.S. Cl. 210—688 14 Claims

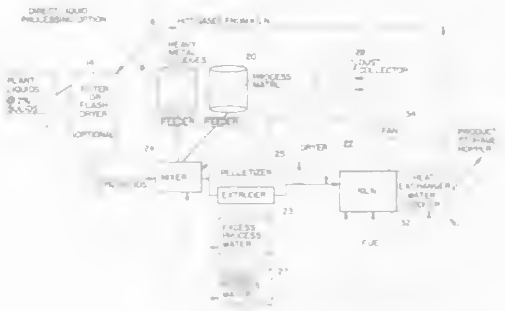
1. A process for removing contaminants from hazardous liquid waste containing heavy metal cations comprising the steps of:

providing natural clay or shale capable of adsorbing metal cations;

reducing said clay or shale to finely divided particles with high specific surface area to enhance adsorption of metal cations;

providing liquid waste having a solid content of less than 1% to 100% solids, said liquid waste containing said heavy metal cations;

mixing said liquid waste and said clay or shale together in a predetermined concentration of between 1:1 to 40:1 parts clay or shale to liquid waste;



extruding or pelletizing said mixed materials into nodules;

drying said mixed material and sintering in a kiln or calciner at a temperature in the range of 1500° Fahrenheit to 2700° Fahrenheit for at least 5 minutes;

cooling said sintered material; and

incorporating said sintered material in construction materials selected from the group consisting of bricks, cinder blocks, and concrete aggregate.

4,882,068

METHOD AND APPARATUS FOR REMOVING LIQUID FROM SUSPENSIONS

Kari B. Blom, Fort Lauderdale, Fla., assignor to Parkson Corporation, Fort Lauderdale, Fla.

Filed May 2, 1988, Ser. No. 189,139

Int. Cl.^{4} B01D *21/02*

U.S. Cl. 210—703 11 Claims

1. A method for removing liquid from a suspension comprising supplying suspension to a tank through an inlet region, providing an external tank wall including a movable porous member in communication with the liquid in the tank to permit liquid from the suspension in the tank to pass out of the tank through the porous member and to carry solid material from the suspension out of the tank, and producing bubbles near the bottom of the inlet region to separate solid particles from liquid passing through the lower portion of the porous member, thereby preventing blockage of the porous member.

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4,882,069

METHOD FOR THE TREATMENT OF SEWAGE AND OTHER IMPURE WATER

Anton P. Pohoreski, Saskatoon, Canada, assignor to Continental Manufacturing & Sales Inc., Saskatchewan, Canada

Continuation of Ser. No. 892,831, Aug. 4, 1986, abandoned, which is a continuation-in-part of Ser. No. 753,550, Jul. 10, 1985, Pat. No. 4,724,085, which is a division of Ser. No. 621,236, Jun. 15, 1984, Pat. No. 4,576,714. This application Aug. 5, 1988, Ser. No. 228,872

Int. Cl.^{4} C02F *1/56*

U.S. Cl. 210—713 31 Claims

1. A method for the treatment of sewage or other impure water which comprises:

(1) adding and with intimate mixing to said sewage or other impure water in a mixing zone components:

(a) an inorganic coagulant which comprises an aluminum salt or an iron salt in an amount of from about 10 to 300 ppm parts by weight,

(b) an anionic acrylamide polymer polyectrolyte in an amount of from about 0.1–10 ppm parts by weight, and

(c) a cationic amine or acrylamide polymer polyelectrolyte in an amount of from about 0.1–10 ppm parts by weights,

wherein all three components are individually mixed but no more than two of said components are premixed together;

with the proviso that

said inorganic coagulant either alone or with the anionic polyelectrolyte or the cationic polyelectrolyte cannot be added last; and

said anionic polyelectrolyte and said cationic polyelectrolyte cannot be intimately mixed and added together,

thereby to provide a chemically-treated liquid effluent having large, compact, firmly-bonded, substantially-shear resistant and rapidly-separable flocs therein;

(2) separating the flocs from the chemically-treated liquid effluent in a separating zone; and

(3) removing said chemically-treated liquid effluent from the separating zone.

4,882,070

WASTE WATER CLARIFICATION

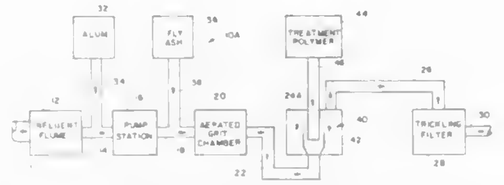
Harry H. Wardell, New Port Richey, Fla., assignor to Dellchem, Inc., New Port Richey, Fla.

Continuation of Ser. No. 399,951, Aug. 25, 1986, Pat. No. 4,761,239, which is a continuation-in-part of Ser. No. 850,238, Apr. 10, 1986, abandoned. This application Mar. 22, 1988, Ser. No. 171,658

The portion of the term of this patent subsequent to Aug. 2, 2005, has been disclaimed.

Int. Cl.^{4} C02F *1/56*

U.S. Cl. 210—727 11 Claims



1. A method of initiating a process for increasing the efficacy of a primary clarifier by removing about 80 to 90%, or more, of the suspended solids present in the raw waste water effluent and reducing the biological oxygen demand to below about 30 ml/l comprising:

adding to the raw waste water upstream from the primary clarifier a sufficient amount of a water soluble salt of bi- or tri-valent metal selected from the group consisting of: aluminum, iron or copper, mixtures or compositions thereof, until floccing begins;

adding a sufficient amount of a water soluble cationic, surface active polymeric polyether amine compound comprising the reaction product of (a) of a primary amine containing compound having a plurality of primary amino groups selected from the group consisting of: ethylene diamine, tetramethylene diamine, 1, 2 propylene diamine, 1, 3 propylene diamine, diethylene triamine, triethyleneamine tetramine, and tetraethylene pentamine or mixtures thereof; and (b) a reactant selected from the group consisting of:

(1) an epihalohydrin, an epihalohydrin oligomer, and an epihalohydrin polymer; and

(2) a halohydrin-terminated derivative of a polyol and an epihalohydrin selected from the group consisting of: epihalohydrin, an epihalohydrin oligomer and an epihalohydrin polymer, to prepare a water soluble, surface active, branched, polymeric polyether amine having a cationic charge;

to increase the sludge forming material settling rate at the primary clarifier until the water at the top of the primary clarifier is clarified to a depth of about 3 or 4 inches;

adding a sufficient amount of fly-ash to increase the dry solids content of the waste water by about 10–50% at a point downstream from the salt feed point and upstream from the amine feed point until the concentration of sludge increases while the clarity of the water in the primary clarifier is maintained;

allowing the sludge forming material to settle in the primary clarifier; and

recovering the reduced suspended solid and reduced biological oxygen demanding clarified waste water effluent from the primary clarifier.

4,882,071

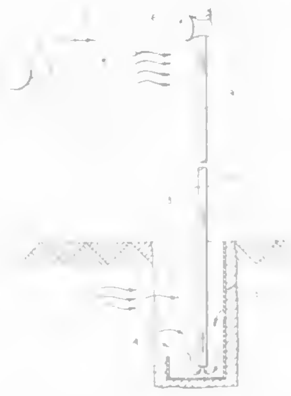
METHOD AND APPARATUS FOR THE IN SITU DECONTAMINATION OF UNDERGROUND WATER WITH THE AID OF SOLAR ENERGY

Thomas R. Bench, Pittsburgh, and Larry D. McCann, Elizabeth, both of Pa., assignors to The United States of America as represented by The Department of Energy, Washington, D.C.

Filed Jan. 21, 1988, Ser. No. 146,638

Int. Cl.^{4} F24J *3/02;* B01D *1/22*

U.S. Cl. 210—747 19 Claims



1. A method for the in situ decontamination of underground water containing non-volatile contaminants with the aid of the solar energy, said method comprising

continuously contacting in situ underground water containing non-volatile contaminants with a water-absorbent material possessing high capillary activity;

allowing the non-volatile contaminants to deposit in the absorbent material while the water moves upwardly through the material by capillary action;

allowing substantially decontaminated water to be volatilized by impinging solar radiation; and then

allowing the volatilized water to escape from the material into the atmosphere.

11. An apparatus for the in situ decontamination of underground water containing non-volatile contaminants with the aid of solar energy, said apparatus comprising

at least one water-impermeable elongated conduit having an upper portion and first and second open ends and containing a homogeneous water-absorbent material possessing high capillary action, said material being in contact with the groundwater;

means for supporting said conduit; and

means for accelerating the escape of the volatilized

decontaminated water from the material, said means including means for increasing the speed of the atmospheric air in the vicinity of the second end of the elongated conduit, wherein when underground water contaminated with non-volatile contaminants is continuously contacted in situ with the material contained in the first end of the conduit and the second end of the conduit is placed in contact with atmospheric air, non-volatile contaminants deposit in said material as the water moves upwardly through the material by capillary action, is then volatilized by impinging solar radiation and escapes to the atmosphere.

4,882,072

METHOD AND APPARATUS FOR TREATING BODIES OF WATER

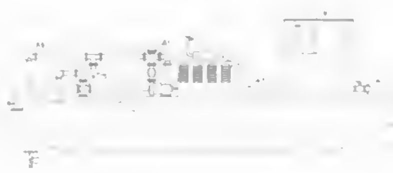
Thomas E. Eberhardt, 220 Blenheim Dr., Easton, Pa. 18042

Division of Ser. No. 199,314, May 26, 1988, Pat. No. 4,818,416, which is a continuation-in-part of Ser. No. 75,114, Jul. 20, 1987, Pat. No. 4,747,958. This application Jan. 3, 1989, Ser. No. 293,140

The portion of the term of this patent subsequent to May 31, 2005, has been disclaimed.

Int. Cl.^{4} B01D *21/01*

U.S. Cl. 210—752 34 Claims



1. A method comprising: treating an aquatic environment to redress a predetermined constituent imbalance by dispensing to said environment a fluent treatment agent by:

(a) directing a floating means across the surface of said body of water, said floating means having associated therewith transversely extended fluent material dispensing means and feed means for said dispensing means,

(b) determining the velocity of movement of such floating means,

(c) substantially continuously determining the depth of water under the floating means by on-board depth detection means,

(d) substantially continuously processing the velocity and depth data to determine the volume of water over which the floating means and associated fluent material dispensing means passes,

(e) adjusting the feed means to said fluent material dispensing means to dispense a predetermined amount of at least one fluent treatment agent into said body of water proportionally related to the volume of water over which the floating means passes to correct such imbalance.

24. Apparatus comprising: a means for providing precise dispensing of a fluent treatment agent to a body of water having a predetermined constituent imbalance, including:

(a) a directable floating means adapted for flotation in said body of water,

(b) associated transversely extended fluent material dispensing means for dispensing a treating agent into said body of water,

(c) means to propel said floating means over said water,

(d) means to determine:

(i) the velocity of said floating means across the body of water

(ii) the depth of said body of water under said floating means,

(e) means to control discharge of fluent treatment agent from said dispensing means proportionally related to:

(i) the velocity of said floating means, and

(ii) the depth of said body of water under the floating means for correcting said imbalance.

31. Apparatus comprising: a means for providing precise dispensing of at least one fluent treatment agent to a body of water having a predetermined constituent imbalance and to the bottom of said body of water including:

(a) a directable floating means adapted for flotation in said body of water,

(b) associated transversely extended fluent material dispensing means for dispensing a treating agent into said body of water,

(c) means to propel said floating means over said water,

(d) a plurality of detection means, including at least two depth detection means to determine:

(i) data regarding the velocity of said floating means across the body of water

(ii) data regarding the depth of said body of water under said floating means at least at two transversely and longitudinally spaced points,

(e) means to substantially continuously process the velocity and depth data to determine the slope of the bottom from the depth detected under each depth detection means at any given time and to determine from such slope substantially the actual bottom surface area over which the floating means and associated fluent material dispensing means passes,

(f) means to control discharge of fluent treatment agent from said dispensing means proportionally related to:

(i) the velocity of said floating means,

(ii) the depth of said body of water under the floating means, and

(iii) the actual surface area of the bottom over which the floating means passes taking into account any substantial slope of the bottom, to correct such predetermined constituent imbalance.

4,882,073

METHOD AND SYSTEM FOR RECOVERY OF PLASTICS FROM A SETTLING BASIN

Kenneth L. Griffith, Dickinson, Tex., assignor to T.D.K. Plastics, Inc., Dickinson, Tex.

Filed May 27, 1988, Ser. No. 199,852

Int. Cl.^{4} B01D *29/04*

U.S. Cl. 210—776 4 Claims

1 Method for recovery of plastic material floating near the

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surface of a body of water in a settling basin, said basin being defined by a surrounding shoreline, comprising the steps of:

- transporting a trailer having a support member to the shoreline adjacent to a defined pump area of a basin so that one end of the support member extends over the water in the basin;
- suspending a pumping means from the support member;
- positioning a first end of a plastic material moving flexible floating boom means at a first location on the shoreline;
- positioning a second end of the flexible floating boom means at a second location on the shoreline;
- moving one or both ends of the floating boom means along the shoreline to concentrate the floating plastic material in the defined pumping area in the basin, said pumping area being defined by the portion of the shoreline between the first and second ends of the floating boom means, and the floating boom means;
- positioning the inlet of the pumping means so that the upper most edge of an intake base means of the pumping means is greater than two inches below the surface of the water in the basin;
- pumping a portion of the water and the floating plastic material from within the pumping area to a transportable container positioned on the shoreline of the basin; and
- retaining the plastic material in the transportable container while allowing the water to pass through a screen in the container to return to the basin.

4,882,074

WASH-SOFTENER CONTAINING AMINE ON A CRYSTAL-GROWTH-MODIFIED CARBONATE CARRIER

Ian R. Kenyon, Merseyside, United Kingdom; Peter J. Russell, Yokohama, Japan, and Thomas Taylor, Cheshire, United Kingdom, assignors to Lever Brothers Company, New York, N.Y.

Filed Apr. 29, 1988, Ser. No. 187,758

Claims priority, application United Kingdom, Apr. 30, 1987, 8710292

Int. Cl.⁴ D06M *13/38;* **C11D** *3/10, 11/02, 17/06*

U.S. Cl. 252—8.8 12 Claims

2. A composition for softening textile fabrics in the wash, comprising:

(a) from 5 to 30% by weight of a primary, secondary or tertiary amine capable of softening fabrics, sorbed onto

(b) from 70 to 95% by weight of a particulate carrier comprising needle-shaped crystals of a porous crystal-growth-modified carbonate-based salt selected from the group consisting of hydrated carbonate/bicarbonate double salt, anhydrous carbonate/sulfate double salt and sodium carbonate monohydrate, wherein-carbonate-based said salt incorporates at least 0.1%, calculated on the total amount of carbonate, sulfate and bicarbonate, of a crystal-growth-modifier selected from the group consisting of homopolymers and copolymers of acrylic acid and maleic acid, and said salt has a pore size distribution of at least 300 cm³ of pores <3.5 μm per kg of carrier before absorption of said amine thereon.

9. A process for the preparation of a composition as claimed in claim 2, which comprises:

(i) preparing an aqueous slurry comprising a carrier forming material selected from the group consisting of sodium carbonate, sodium sulphate, sodium bicarbonate, and mixtures thereof, along with an effective amount of a crystal growth modifier selected from the group consisting of homopolymers and copolymers of acrylic acid and maleic acid, the crystal growth modifier being incorporated in the slurry not later than the sodium carbonate,

(ii) drying the aqueous slurry to form a particulate solid comprising a porous crystal-growth-modified carbonate-based carrier salt,

(iii) sorbing onto the particulate solid obtained in step (ii) a primary, secondary or tertiary amine capable of softening fabrics.

4,882,075

ACIDIC SURFACTANT SOLVENT COMPOSITION

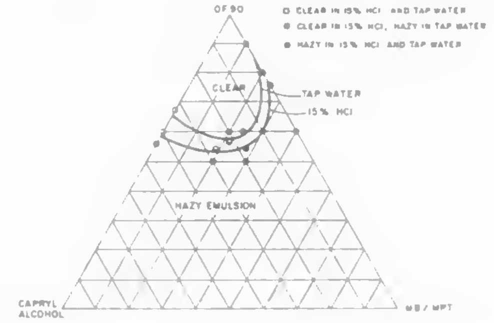
Loyd W. Jones, P.O. Box 9917, Tulsa, Okla. 74107

Continuation of Ser. No. 808,219, Dec. 12, 1985, Pat. No. 4,738,789, which is a continuation of Ser. No. 505,790, Jun. 20, 1983, abandoned. This application Feb. 23, 1988, Ser. No. 159,381

The portion of the term of this patent subsequent to Jul. 22, 2003, has been disclaimed.

Int. Cl.⁴ C23F *11/04;* **E21B** *43/28, 43/27*

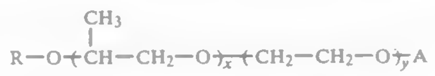
U.S. Cl. 252—8.553 6 Claims



1. An improved acidic surfactant composition comprising:

(a) An aqueous acid solution;

(b) a surfactant characterized by the chemical formula:



$$R-O\!\left(CH(CH_3)-CH_2-O\right)_x\!\left(CH_2-CH_2-O\right)_y A$$

where R is an alkyl or alkyl-aryl radical of about C_6 to C_{20} carbon atoms, A is a radical selected from the group consisting of:

$$-PO(OH)_2\text{, and}$$
$$-PO(OH)-OCH_2CH_2)_y(OCH_2CH(CH_3)_xOR$$

x is a number corresponding to the degree of propoxylation, and y is a number corresponding to the degree of ethoxylation wherein said aqueous solution is substantially acidified by an acid other than said surfactant; and

(c) an oil soluble, substantially water insoluble alcohol selected from the group consisting of a C_4 to C_{11} aliphatic alcohol and an alcohol of the formula:

$$R-CH_2-CH_2O)_zH$$

Where R is an alkyl substituted phenyl group, an aliphatic alcohol residue of up to 20 carbons or a fatty acid residue of 10 to 20 carbons, a polypropylene oxide chain or polybutylene oxide chain and z is an integer from about 2 to 8, wherein the relative quantity of said alcohol present is selected such that the molar ratio of said alcohol to said surfactant is essentially a linear function of the acidity starting at a molar ratio substantially equal to the average number of ether oxygens bonded to the propylene oxide units of said surfactant at low acidity of substantially zero weight percent acid and increasing essentially linearly in value with increasing acidity to a molar ratio approaching a numerical value essentially equal to the total number of ether oxygens bonded to the sum of the propylene oxide units and ethylene oxide units of the surfactant molecule at high acidity; and

(d) an oil solvent selected from the group consisting of aromatic hydrocarbons, alkyl substituted aromatic hydrocarbons, aromatic acid esters, alkyl substituted aromatic acid esters, ketones, terpenes, C_3 to C_{20} aliphatic hydrocarbons, polypropylene glycol, sulfolane, carbon disulfide, and mixtures thereof.

4,882,076

FABRIC SOFTENING AND ANTISTATIC PARTICULATE WASH CYCLE LAUNDRY ADDITIVE CONTAINING CATIONIC/ANIONIC SURFACTANT COMPLEX ON BENTONITE

Ronald D. Kern, Buttzville, N.J., assignor to Colgate-Palmolive Co., Piscataway, N.J.

Continuation of Ser. No. 916,068, Oct. 6, 1986, Pat. No. 4,786,422. This application Oct. 4, 1988, Ser. No. 253,012

The portion of the term of this patent subsequent to Nov. 22, 2005, has been disclaimed.

Int. Cl.⁴ D06M *13/44*

U.S. Cl. 252—8.8 18 Claims

1. A fabric softening and antistatic particulate wash cycle additive, for use in conjunction with anionic detergent(s) in wash waters of automatic washing machines, to wash, soften and render antistatic laundry washed in such machines and subsequently dried in an automatic laundry dryer, which comprises about 10 parts by weight of a complex of a cationic surfactant and an anionic surfactant, in which complex the molar proportion of cationic to anionic moieties is in the range of about 1:1 to 1:1.5, and 1 to 80 parts by weight of bentonite.

4,882,077

METALWORKING FLUID

Charles K. Cox, Lansing, Ill., assignor to W. R. Grace & Co.-Conn., Lexington, Mass.

Filed Mar. 9, 1988, Ser. No. 165,853

Int. Cl.⁴ C10M *173/00;* **B21B** *45/02*

U.S. Cl. 252—49.5 6 Claims

1. A method of metalworking comprising the steps of:

(a.) applying to a metal surface a metalworking fluid composition comprising from about 50 to about 300 parts by weight of a paraffin oil having a normal paraffin content of at least 98% by mass, an aromatic content of less than 1% and a flash point of from about 65° to about 120° C., from about 50 to about 300 parts by weight of one or more esters, and from about 70 to about 100 parts by weight of an emulsifier having an HLB number of from about 6 to about 10; and

(b.) performing a metalworking operation on the metal surface.

4,882,078

PIEZOELECTRIC CERAMIC COMPOSITION FOR ACTUATORS

Tetsuhiko Nishimura, Machida; Swapan K. Basu, Tokyo; Yukio Chida; Yasuo Oguri, both of Tokyo, and Shoko Inoue, Yokohama, all of Japan, assignors to Mitsubishi Kasei Corporation, Tokyo, Japan

Filed Dec. 2, 1988, Ser. No. 279,052

Claims priority, application Japan, Dec. 4, 1987, 62-307271

Int. Cl.⁴ C04B *35/49, 35/46*

U.S. Cl. 252—629 8 Claims

1. A piezoelectric ceramic composition for actuators, which consists essentially of a composite of perovskite compounds represented by the formula

$$Pb_{(1-x)}La_x[z\{(Zn_\alpha Mg_{(1-\alpha)})_{\frac{1}{3}}Nb_{\frac{2}{3}}\}+(1-z)\{[]Zr_yTi_{(1-y)}\}]_{(1-x/4)}O_3$$

wherein $0.03 \leqq x \leqq 0.07$, $0.50 \leqq y \leqq 0.65$, $0 < z < 0.20$, and $0 < \alpha < 1$.

4,882,079

PIEZOELECTRIC CERAMIC MATERIALS

Masahiro Tomita, Anjo, and Eturo Yasuda, Okazaki, Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Continuation of Ser. No. 834,513, Feb. 28, 1986, abandoned, which is a continuation of Ser. No. 678,162, Dec. 4, 1984, abandoned. This application Dec. 23, 1987, Ser. No. 139,086

Claims priority, application Japan, Dec. 6, 1983, 58-231165

Int. Cl.⁴ C04B *35/49*

U.S. Cl. 252—62.9 3 Claims

1. A piezoelectric ceramic material comprising a ternary fundamental solid solution of 0.5 to 5.0 mol% of $Pb(Y_{\frac{1}{3}}Nb_{\frac{2}{3}})O_3$, 40.0 to 50.0 mol% of $PbTiO_3$, and 45.0 to 59.5 mol% of $PbZrO_3$, in which part of the Pb in the solid solution is substituted with 10.0 to 15.0 mol% of Sr, Nb_2O_5 being further contained in the solid solution in an amount of 0.1 to 2.0 wt% of the solid solution.

4,882,080

CYCLIC-N-HYDROXYIMIDE DETERGENT ADDITIVES

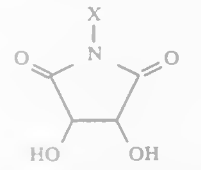
Stephen F. Donovan, Fairfield, Conn., assignor to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 84,241, Aug. 12, 1984, Pat. No. 4,792,611. This application Sep. 26, 1988, Ser. No. 249,029

Int. Cl.⁴ C11D *9/30*

U.S. Cl. 252—117 10 Claims

1. A detergent composition comprising one or more detersive surfactants and one or more cyclic N-hydroxyimide compounds having the formula



wherein X is —OH or —O⁻ M⁺, where M⁺ is an alkali metal or ammonium cation.

4,882,081

COMPOSITIONS OF WATER-DISPERSED CARBOXYL-CONTAINING LIQUID POLYMERS

Carl S. Nichols, Pineville, N.C., assignor to The BF Goodrich Company, Akron, Ohio

Filed Dec. 17, 1987, Ser. No. 134,412

Int. Cl.⁴ C09K *3/00*

U.S. Cl. 292—182.28 8 Claims

1. A water-dispersed toughening agent composition for castable elastomeric systems, said composition containing (1) 100 parts by weight of a carboxyl-containing liquid polymer, (2) at least 25 parts by weight of an organic solvent which is both water and organic soluble and has a normal boiling point above about 100° C., (3) at least about 0.8 equivalent of a base for each 1.0 carboxyl equivalent, said base having a pk_a value of greater than about 7, and (4) from about 50 to about 750 parts by weight of water.

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NITROGEN-CONTAINING HETERCYCLIC COMPOUNDS

Rudolf Eidenschink, Kornblumenstr.; Joachim Krause, Dieburg; Reinhard Hittich, Modautal; Eike Poetsch, Muehltal; Bernhard Scheuble, Alsbach; Georg Weber, Erzhausen, and Ludwig Pohl, Darmstadt, all of Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft Mit Beschränkter Haftung, Darmstadt, Fed. Rep. of Germany

Division of Ser. No. 884,349, Jul. 11, 1986, Pat. No. 4,752,414, which is a continuation-in-part of Ser. No. 699,054, Feb. 7, 1985, abandoned. This application Mar. 23, 1988, Ser. No. 172,424

Claims priority, application Fed. Rep. of Germany, Feb. 7, 1984, 3404116

Int. Cl.⁴ G02F *1/13;* **C09K** *19/34;* **C07D** *239/02*

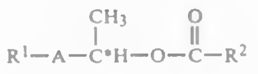
U.S. Cl. 252—299.61 6 Claims

1. In a liquid crystalline phase comprising at least two liquid crystalline compounds, the improvement wherein at least one compound is of the formula 1aa

$$R^1—Cy—Pyr—R^2 \qquad 1aa$$

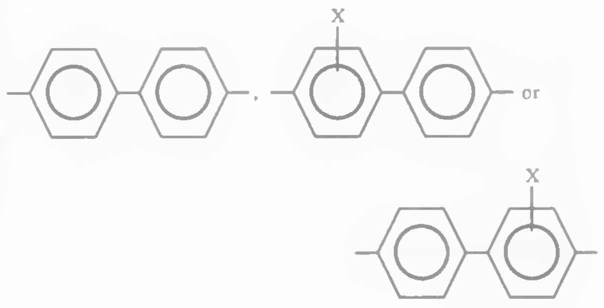
wherein

R^1 is straight chain alkyl with 1–15 C atoms,
R^2 is straight chain alkyl with 1–15 C atoms,
wherein one or two nonadjacent CH_2 groups are replaced by —O—,
Cy is a 1,4-cyclohexylene group and
Pyr is a pyrimidine-2,5-diyl group.



$$R^1-A-\overset{CH_3}{\overset{|}{C}}{}^{*}H-O-\overset{O}{\overset{\|}{C}}-R^2$$

wherein R^1 is an alkyl or alkyloxy group having a carbon number of 1–18, R^2 is an alkyl group having a carbon number of 1–18, a is



and X is a halogen atom or a cyano group.

4,882,083

SMECTIC LIQUID CRYSTAL MIXTURE

Kanetsugu Terashima; Mitsuyoshi Ichihashi; Fusayuki Takeshita, all of Ichiharashi; Makoto Kikuchi, Kisarazushi, and Kenji Furukawa, Yokosukashi, all of Japan, assignors to Chisso Corporation, Japan

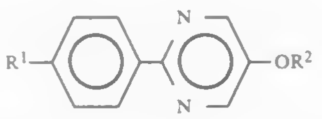
Filed May 27, 1988, Ser. No. 200,016

Claims priority, application Japan, Jun. 1, 1987, 62-137883

Int. Cl.⁴ C09K *19/34;* **G02F** *1/13*

U.S. Cl. 252—299.61 15 Claims

1. A smectic C liquid crystal mixture comprising at least two components at least one of which is a 5-alkoxy-2-(4-alkylphenyl)pyrimidine compound expressed by the formula



(I)

wherein R^1 represents a linear alkyl group of 4 to 20 carbon atoms and R^2 represents a linear alkyl group of 7 to 20 carbon atoms, and having a smectic C phase.

4,882,084

OPTICALLY ACTIVE SUBSTITUTED BIPHENYL COMPOUNDS

Kouji Ohno; Shinichi Saito; Kazutoshi Miyazawa, all of Yokohama; Makoto Ushioda, Kawasaki; Hiromichi Inoue, and Naoyuki Yoshida, both of Yokohama, all of Japan, assignors to Chisso Corporation, Osaka, Japan

Filed Oct. 28, 1987, Ser. No. 113,763

Claims priority, application Japan, Nov. 7, 1986, 61-263837; Nov. 17, 1986, 61-273589

Int. Cl.⁴ C09K *19/12, 19/52;* **G02F** *1/13;* **C07C** *67/02*

U.S. Cl. 252—299.66 5 Claims

4. A ferroelectric liquid crystal mixture comprising at least one smectic liquid crystal compound and at least one optically active compound of the general formula:

4,882,085

LACTIC ACID DERIVATIVE AND LIQUID CRYSTAL COMPOSITION CONTAINING SAME

Kazuo Yoshinaga, Machida; Kazuharu Katagiri, Tama; Akira Tsuboyama; Hiroyuki Kitayama, both of Tokyo; Kenji Shinjo, Yokohama, and Chieko Hioki, Hiratsuka, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

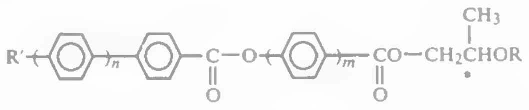
Continuation of Ser. No. 893,821, Aug. 6, 1986, abandoned. This application Dec. 28, 1988, Ser. No. 291,325

Claims priority, application Japan, Aug. 13, 1985, 60-176938; Nov. 7, 1985, 60-247994; Dec. 28, 1985, 60-299003; Jul. 25, 1986, 61-173921

Int. Cl.⁴ C09K *19/12, 19/34, 19/20;* **G02F** *1/13*

U.S. Cl. 252—299.61 20 Claims

1. An optically active lactic acid derivative represented by the following formula (V):



(V)

wherein R represents a linear, saturated hydrocarbon group having 1 to 18 carbon atoms; C* represents an asymmetric carbon atom; R' represents a linear alkyl group or alkoxy group having 5 to 16 carbon atoms; m is 1 or 2; n is 0 or 1 and m+n=1 or 2.

4,882,086

FERROELECTRIC LIQUID CRYSTAL COMPOSITION

Kanetsugu Terashima; Mitsuyoshi Ichihashi, both of Ichiharashi; Makoto Kikuchi, Kisarazushi; Fusayuki Takeshita, Ichiharashi, and Kenji Furukawa, Yokosukashi, all of Japan, assignors to Chisso Corporation, Osaka, Japan

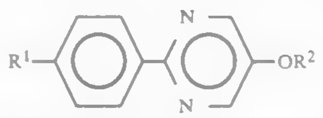
Filed Jan. 19, 1989, Ser. No. 298,989

Claims priority, application Japan, Feb. 9, 1988, 63-27940

Int. Cl.⁴ C09K *19/34;* **G02F** *1/13*

U.S. Cl. 252—299.61 4 Claims

1. A ferroelectric liquid crystal composition having a cholesteric comprising an achiral compound expressed by the formula



(I)

wherein R^1 and R^2 each represent the same or different linear or branched chain alkyl group of 1 to 18 carbon atoms, in 20 to 70% by weight, and an optically active compound causing a cholestric phase to appear.

4,882,087

AQUEOUS DISPERSED SOLUTION OF SUBSTITUTED SUCCINIC ANHYDRIDE AND PROCESS FOR PRODUCING THE SAME

Shigehiko Yoshioka; Hideto Yamada, both of Akashi; Hisatake Sato, Yokohama, and Motokazu Kamei, Nagaoka, all of Japan, assignors to Seiko Kagaku Kogyo Co., Ltd., Hyogo; Nippon Co., Ltd., Tokyo and Hoknetsu Paper Mills, Ltd., Niigata, all of, Japan

Continuation of Ser. No. 779,125, Sep. 23, 1985, abandoned. This application Jun. 30, 1988, Ser. No. 213,476

Claims priority, application Japan, Sep. 25, 1984, 59-200276

Int. Cl.⁴ B01J *13/00;* **C08L** *91/00;* **D21H** *3/10*

U.S. Cl. 252—312 **4 Claims**

1. An aqueous dispersed solution of a substituted succinic anhydride comprising:

i. an aqueous soluble copolymer having as monomer ingredients at least 50% by mol (meth) acrylamide, at least 1% by mol N,N-dialkylamino alkyl(meth)acrylamide, and 0 to 49% by mol of other copolymer monomers; and
ii. a polyoxyalkylene alkyl(aryl)ether phosphoric acid ester.

3. A process for producing an aqueous dispersed solution of a substituted succinic anhydride comprising:

mixing the substituted succinic anhydride and a polyoxyalkylene alkyl(aryl)ether phosphoric acid ester to produce a mixture; and then
dispersing the mixture in an aqueous solution containing an aqueous soluble copolymer having as monomer ingredients at least 50% by mol (meth)acrylamide, at least 1% by mol N,N-dialkylamino alkyl(meth)acrylamide, and 0 to 49% by mol of other copolymer monomers, to produce the aqueous dispersed solution.

4,882,088

SLURRY FOR CENTRIFUGAL CLASSIFICATION OF COLLOIDAL PARTICLES

Bruce E. Novich, Lexington, Mass., assignor to Ceramics Process Systems Corp., Milford, Mass.

Continuation-in-part of Ser. No. 28,891, Mar. 23, 1987, Pat. No. 4,781,671. This application Apr. 9, 1987, Ser. No. 36,325

Int. Cl.⁴ B01J *13/00;* **C08J** *3/22;* **C09C** *1/40*

U.S. Cl. 252—313.1 6 Claims

1. A slurry for the centrifugal classification of colloidal particles, comprising:

(a) particulate, non-clay, ceramic colloidal particles: and
(b) a dispersant present in substantial excess of that amount necessary for dispersion of the particles and in an amount effective to result in a plastic cake of classified particles when the slurry is centrifugally classified.

4,882,089

COMPOSITIONS CONVERTIBLE TO REINFORCED CONDUCTIVE COMPONENTS AND ARTICLES INCORPORATING SAME

Richard S. Iwaskow, Passaic, and Stephen M. Crum, Wharton, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 358,549, Mar. 16, 1982, Pat. No. 4,752,415. This application Nov. 18, 1987, Ser. No. 122,283

Int. Cl.⁴ B23B *5/16;* **H01B** *1/06*

U.S. Cl. 428—242 **14 Claims**

1. An article of manufacture comprising:

(i) a polymeric material with little or no conductivity; and
(ii) composite fibers, the majority of which have an electrically conductive non-metallic or semi-metallic core and at least one thin, uniform, firmly adherent, electrically conductive layer of at least one electrodepositable metal on said core, alone, or in combination with other fibers, the amount of component (ii) in said composition being at least effective to render said article of manufacture electrically and/or thermally conductive, and wherein said composite fibers of component (ii) are the sole electrically or thermally conductive component added to component (i), wherein said polymeric material (i) is present with a woven, knitted, or nonwoven fabric, sheet or mat comprising said composite fibers (ii) or with said composite fibers (ii) in comminuted form.

4,882,090

ELECTROPHORETICALLY OVERCOATABLE COATINGS APPLIED BY ELECTROCOATING

Wolfgang Batzill; Ulrich Heilmann; Hans J. Streitberger, all of Münster; Harald Guder, Wuppertal, and Fritz Beck, Duisburg, all of Fed. Rep. of Germany, assignors to BASF Lacke & Farben Aktiengesellschaft, Münster, Fed. Rep. of Germany

PCT No. PCT/EP86/00585, § 371 Date Aug. 17, 1987, § 102(e) Date Aug. 17, 1987, PCT Pub. No. WO87/02717, PCT Pub. Date May 7, 1987

PCT Filed Oct. 13, 1986, Ser. No. 72,269

Claims priority, application Fed. Rep. of Germany, Oct. 31, 1985, 3538792

Int. Cl.⁴ H01B *1/06*

U.S. Cl. 252—511 2 Claims

1. A cathodically depositable aqueous electropaint which contains a cationic amine-modified epoxy resin and is pigmented with electroconductive carbon black and which, on deposition and crosslinking, provides an electrophoretically overcoatable coating, which contains as electroconductive carbon black a carbon black having an iodine absorption of 870–930 mg/g, a specific surface area (BET/N_2) of 850–1,000 m^2/g, a pore volume (DBP) of 330–390 ml/100 g and an average particle size of 25 to 35 nm in an amount of 1.5 to 5.1% by weight—based on total solids.

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4,882,091
USE OF POLYHYDROXYALKYLAMINE-N-N-DICARBOXYLIC ACIDS AND THEIR SALTS AS BUILDERS IN DETERGENTS AND CLEANING AGENTS

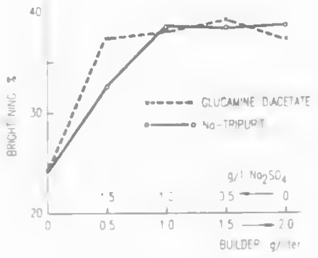
Heike Kelkenberg, Gladbeck, and Wulf Ruback, Recklinghausen, both of Fed. Rep. of Germany, assignors to Hüls Aktiengesellschaft, Marl, Fed. Rep. of Germany

Filed Feb. 24, 1988, Ser. No. 159,738

Claims priority, application Fed. Rep. of Germany, Mar. 27, 1987, 3710062

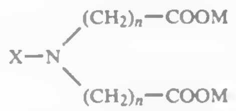
Int. Cl.⁴ C11D *3/33, 1/83*

U.S. Cl. 252—527 **7 Claims**



3. A detergent or cleansing composition, comprising:

a combination of at least one anionic or nonionic surfactant with from 2–60 wt.%, based on the weight of the composition, of a builder consisting of a polyhydroxyalkylamine-N,N-dialkylcarboxylic acid or a salt thereof of the formula:



$$X-N\begin{matrix}(CH_2)_n-COOM\\(CH_2)_n-COOM\end{matrix}$$

wherein X is a group containing a polyhydroxyalkyl group of 3 to 7 carbon atoms glycosidically bonded to a mono-, di- or oligosaccharide, M is hydrogen, ammonium or an alkali metal ion and n is an integer of from 1 to 3.

4,882,092
METHOD OF MAKING RADIATION SHIELDING ELEMENTS FOR USE IN NUCLEAR TECHNOLOGY

Manfred Sappok, Tonisvorst, Fed. Rep. of Germany, assignor to Siempelkamp Giesserei GmbH & Co., Krefeld, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 113,338, Oct. 22, 1987, Pat. No. 4,767,572, which is a continuation of Ser. No. 840,423, Mar. 17, 1986, abandoned. This application Jun. 3, 1988, Ser. No. 202,793

Claims priority, application Fed. Rep. of Germany, Jul. 13, 1985, 3527319

The portion of the term of this patent subsequent to Aug. 30, 2005, has been disclaimed.

Int. Cl.⁴ G21F *9/16, 5/00;* **G21C** *19/00, 9/00*

U.S. Cl. 252—628 **12 Claims**

1. A method of making a radiation shielding structure for a nuclear installation which comprises the steps of:

(a) deriving a radioactive residue having a cobalt 60 equivalent specific activity below 100 Bq/g from parts of a former nuclear reactor installation;

(b) incorporating said radioactive residue in a composition; and

(c) forming said composition into a radiation shielding solid structure.

4,882,093
PROCESS AND INSTALLATION FOR THE TREATMENT OF SOLID ORGANIC WASTE CONTAMINATED BY TRITIUM

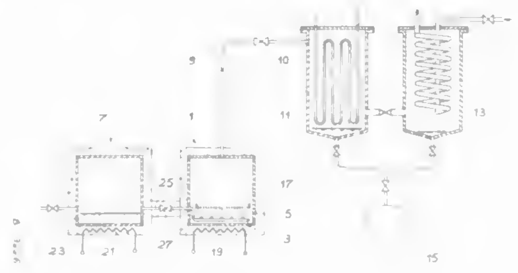
Pierre Giroux; Dominique Ochem, and Jean-Claude Durand, all of Dijon, France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Sep. 8, 1988, Ser. No. 241,622

Claims priority, application France, Sep. 9, 1987, 87 12510

Int. Cl.⁴ G21F *9/02, 9/08, 9/14;* **C01B** *5/00*

U.S. Cl. 252—632 **9 Claims**



1. Process for the treatment of solid organic waste contaminated with tritium, comprising the steps of:

contacting said waste with steam under conditions such that steam extraction of at least part of the tritium present in the waste occurs, and

condensing said steam to convert the tritium from the waste to tritiated water.

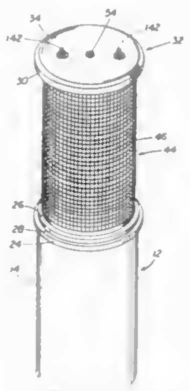
4,882,094
SEPARATION SYSTEM FOR DEWATERING RADIOACTIVE WASTE MATERIALS

Leslie S. Rubin, Newton, and Hans A. Hug, Weston, both of Mass., assignors to Foster-Miller, Inc., Waltham, Mass.

Filed Feb. 26, 1988, Ser. No. 160,920

Int. Cl.⁴ G21F *9/12, 9/24;* **B04B** *11/02, 5/10*

U.S. Cl. 252—633 **30 Claims**



21. A separation system for dewatering radioactive waste materials comprising

disposal container structure for use in disposal of radioactive materials comprising

inner container structure that includes filter structure defining a chamber volume of at least about five cubic feet, said filter structure including circumferential foraminous wall structure with filtering characteristics to retain solid material while passing liquid material, and lid structure secured to said filter structure, said lid structure including means defining an inlet port, and first annular seal structure of thermoplastic material at the periphery of said lid structure; and

outer container structure including base and side wall portions that conform essentially to and for receiving said filter structure of said inner container structure, and

second annular seal surface of thermoplastic material adjacent the top of said side wall structure for juxtaposition with said first annular seal surface,

said first and second annular seal surfaces having a first configuration providing liquid flow paths for flow of liquids from the chamber volume defined by said filter structure through said filter structure for flow externally of said container structure under the influence of centrifugal force, and a second configuration in which said seal surfaces are in sealing engagement to provide a sealed high integrity disposal container;

drive structure for receiving said container structure, said drive structure including drain passage structure for alignment with said liquid flow paths provided by said first and second seal surfaces for liquid passed through said filter structure under the influence of centrifugal force,

means for driving said drive structure in rotation to subject to said container to centrifugal forces in excess of fifty Gs, and

means for releasably attaching said container structure to said drive structure.

4,882,095
PREPARATION OF ALKOXY(ISO)VIOLANTHRENEDIONES

Reinhard Helwig, Gruenstadt, and Helmut Hoch, Weisenheim, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Sep. 19, 1988, Ser. No. 246,312

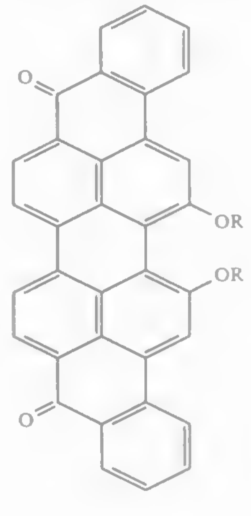
Claims priority, application Fed. Rep. of Germany, Sep. 22, 1987, 3731809

Int. Cl.⁴ C07C *3/22*

U.S. Cl. 552—279 **16 Claims**

1. A process for the preparation of a bisalkoxyviolanthrenediene or bisalkoxyisoviolanthrenedione of the formula

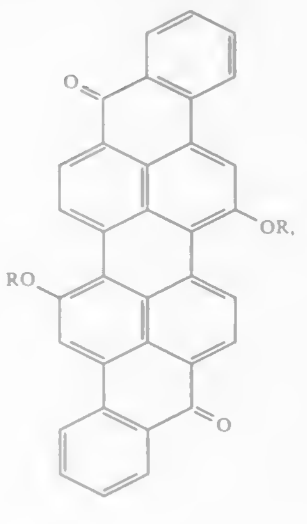
(I)



or

-continued

(II)



where R is C_1–C_4-alkyl, which comprises alkylating the corresponding bishydroxyl compound (R=H) in methyl benzoate as the reaction medium in the presence of an alkali metal salt of a weak acid and a tertiary aliphatic or tertiary aromatic amine, or a mixture of tertiary aliphatic and tertiary aromatic amines, at from 100° to 200° C.

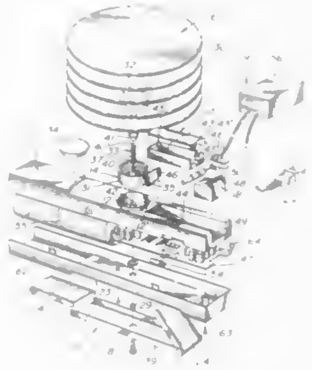
4,882,096
COMPACT HAND-PORTABLE HUMIDIFIER

Ronnie Rueben, c/o 555 Chabanel W., Montreal, Quebec, Canada

Filed Nov. 14, 1988, Ser. No. 270,666

Int. Cl.⁴ B01F *3/04*

U.S. Cl. 261—30 **11 Claims**



1. A compact hand-portable vapor dispenser device comprising a miniature support housing capable of being carried in an article of luggage, said support housing being an elongated substantially rectangular housing having a reservoir connector on a top wall thereof for connecting to a reservoir, valve means for dispensing water from said reservoir to a vaporizing chamber provided in said housing, an ultrasonic vibrating means in said vaporizing chamber for producing and releasing water particles, said vaporizing chamber having a nozzle through which said water particles are ejected into the atmosphere, transducer circuit means for driving said vibrating means, a fan in said housing to provide air under pressure to said vaporizing chamber and in communication with said vibrating means for releasing water vapors through said nozzle, a collapsible support frame secured to said housing and collapsible from a position of use where said frame supports said

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reservoir to a storage position where said frame is integrated with said housing, and a power supply connected to an electronic circuit located in said housing for driving said ultrasonic vibrating means and fan.

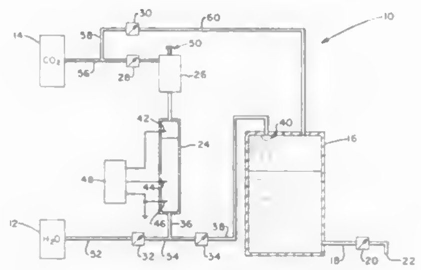
4,882,097
CARBONATION SYSTEM

Joseph W. Shannon, Kent, Ohio, assignor to ABC/Sebrn Tech Corp., Mogadore, Ohio

Filed Sep. 6, 1988, Ser. No. 240,690

Int. Cl.⁴ B01F *3/04*

U.S. Cl. 261—35 20 Claims



1. A carbonation system for generating soda, comprising:
a source of carbon dioxide maintained under pressure;
a source of water;
a reservoir in communication with said source of carbon dioxide and said source of water, said reservoir receiving a volume of water from said source of water and a first pressure head of carbon dioxide gas from said source of carbon dioxide; and
a carbonation tank in communication with said source of carbon dioxide and said reservoir, said carbonation tank receiving a second pressure head of carbon dioxide gas from said source of carbon dioxide and a flow of water from said reservoir, said flow of water increasing said second pressure head of said carbonation tank until said second pressure head equals said first pressure head, terminating said flow of water.

4,882,098
MASS TRANSFER MIXING SYSTEM ESPECIALLY FOR GAS DISPERSION IN LIQUIDS OR LIQUID SUSPENSIONS

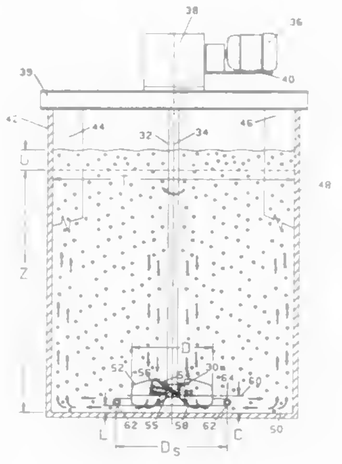
Ronald J. Weetman, Rochester, N.Y., assignor to General Signal Corporation, Rochester, N.Y.

Filed Jun. 20, 1988, Ser. No. 209,158

Int. Cl.⁴ B01F *3/04*

U.S. Cl. 261—93 18 Claims

1. A mixing system for dispersing a fluid into a liquid which can have solids suspended therein which comprises a tank having a bottom and side walls which extend axially of said tank, said tank containing the liquid to a level above the bottom of said tank, a drive to turn an impeller, impeller means for providing a recirculating, axial flow pattern having principally axial flow components upwardly and downwardly between the bottom of the tank and the level of the liquid therein and a radial flow component in the direction across the bottom of said tank toward the side walls thereof, the outlet flow from said impeller means being a predominately axial flow downwardly towards the bottom of said tank and a predominately radial flow towards the side walls of said tank, means for releasing said fluid in said outlet flow outside where said flow is axial and in said radial flow which is inside where said flow is radial, whereby said fluid is unable to oppose said axial outward flow, said releasing means being in a region of said tank which extends between the bottom of said tank and a plane through said impeller means which plane is perpendicular to the axial direction.



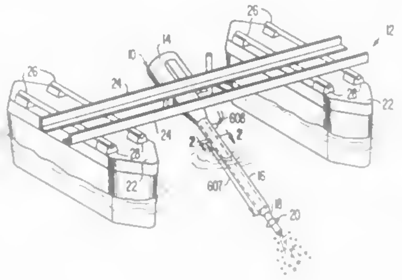
4,882,099
AERATION APPARATUS HAVINE A DEICING MECHANISM AND CONTROL CIRCUIT THEREFOR

Joseph A. Durda, Wazatta, and Thomas G. Giese, Edina, both of Minn., assignors to Aeration Industries, Inc., Chaska, Minn.

Filed Nov. 23, 1988, Ser. No. 275,522

Int. Cl.⁴ B01F *3/04*

U.S. Cl. 261—128 27 Claims



1. An aspirator aerator for inducing the flow of atmospheric air at high velocity below the surface of a substance so as to allow oxygen to freely and quickly transfer into the substance comprising:
an outer tubular housing having an inner rotary driven member disposed therein, one end of said housing being associated with aspiration means for inducing fluid flow through the aerator, the other end of said housing being associated with drive means for driving said rotary driven member and the aspiration means; and
deicing means disposed between said inner rotary driven member and said outer tubular housing for deicing the aerator.

4,882,100
UO2 PELLET FABRICATION PROCESS

Tadao Yato, Mito; Takeshi Onoue, Katsuta, and Hiroshi Tanaka, Omiya, all of Japan, assignors to Mitsubishi Kinzoku Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 13, 1989, Ser. No. 296,802

Claims priority, application Japan, May 25, 1988, 63-127934

Int. Cl.⁴ C09K *11/04;* **G21G** *4/00, 43/025;* **G21C** *21/00*

U.S. Cl. 264—0.5 4 Claims

1. A process for fabricating UO_2 pellets having large-grained UO_2 crystals therein, which comprises:
(a) filtering and drying a slurry of ammonium diuranate containing about 0.001 to 5 wt. % of ammonium fluoride to provide a powder of said ammonium diuranate and ammonium fluoride; and
(b) subjecting said powder to calcining, reducing, compacting and sintering, to thereby form UO_2 pellets containing crystals having an average grain-size in the range of about 20 to 100 μm.

4,882,101
METHOD OF PRODUCING A REINFORCED RUBBER HOSE BY USING A PLASTIC MANDREL

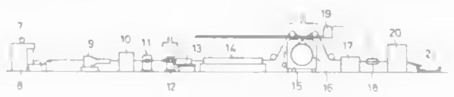
Katsuhiko Ohkita; Kazuhiro Ogata, and Ken Niwa, all of Komaki, Japan, assignors to Tokai Rubber Industries, Ltd., Aichi, Japan

Filed May 26, 1988, Ser. No. 199,147

Claims priority, application Japan, May 29, 1987, 62-134364

Int. Cl.⁴ B29C *33/44*

U.S. Cl. 264—26 9 Claims



1. A method of producing a reinforced rubber hose by using a plastic mandrel, comprising the steps of:
continuously extruding a long plastic mandrel from a plastic material and feeding the extruded plastic mandrel;
extruding an unvulcanized inner rubber tube on an outer surface of said long plastic mandrel;
forming a tubular reinforcing layer on an outer surface of said unvulcanized inner rubber tube;
extruding an unvulcanized outer rubber tube on an outer surface of said tubular reinforcing layer;
vulcanizing said unvulcanized inner and outer rubber tubes, thereby preparing a long rubber hose formed on said long plastic mandrel;
cutting the prepared long rubber hose into short rubber hoses having a predetermined length, and concurrently cutting said log plastic mandrel into short plastic mandrels having said predetermined length;
removing said short plastic mandrels from the respective short rubber hoses; and
crushing the removed short plastic mandrels into a starting form of said plastic material, and returning said starting form of the plastic material to an extruder for continuously extruding said long plastic mandrel, so that said short plastic mandrels are reclaimed as said plastic material.

4,882,102
PROCESS FOR PRODUCING HARD CARBONACEOUS SHEETS

Takamasa Kawakubo, Gunma; Mitsuru Yoshida, Fujioka, and Yoshihisa Suda, Maebashi, all of Japan, assignors to Mitsubishi Pencil Co., Ltd., Tokyo, Japan

Filed Nov. 2, 1987, Ser. No. 115,375

Int. Cl.⁴ B05D *31/02;* **C01B** *31.02*

U.S. Cl. 264—29.3 3 Claims

1. A process for producing hard carbonaceous sheets, comprising:
uniformly dispersing as a viscous binder in fine carbon powder a relatively readily polymerizable thermosetting resin exhibiting high residual carbon yield after calcining to form a mixture;
applying mechanical energy to the resultant mixture to induce mechanochemical phenomenon to produce a molding paste composition in which said binder is uniformly rigidly bonded physicochemically to surfaces of the fine powder,
molding the composition by a coating method into an article having a film or sheet shape;
infusibilizing the article; and
calcining the article in an inert gas atmosphere.

4,882,103
PROCESS FOR PRODUCING CARBON PRODUCT HAVING COARSE AND DENSE STRUCTURE

Takamasa Kawakubo, Gunma; Mitsuru Yoshida, Fujioka, and Yoshibisa Suda, Maebashi, all of Japan, assignors to Mitsubishi Pencil Co., Ltd., Tokyo, Japan

Filed Nov. 9, 1987, Ser. No. 118,162

Int. Cl.⁴ B05D *3/02;* **C01B** *31/02*

U.S. Cl. 264—29.5 8 Claims

1. A process for producing a carbon product having coarse and dense portions, the process comprising:
calcining in an inert gas atmosphere a composite of
(a) a composition of material selected from the group consisting of (1) a green molding, (2) a precarbonized material and (3) a carbide for producing a dense structure and
(b) chlorinated vinyl chloride resin particles, thereby forming an integrally shaped composite,
said integrally shaped composite being formed using at least one liquid composition positioned between a green molding and a precarbonized substance.

4,882,104
METHOD OF CONTROLLING THE THICKNESS OF AN EXTRUDED PLASTIC ARTICLE

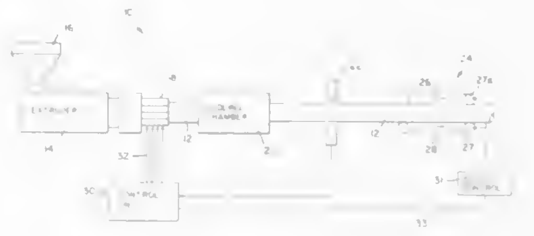
Josef Dobrowsky, Tullnerbach, Austria, assignor to Cincinnati Milacron, Inc., Cincinnati, Ohio

Filed Mar. 28, 1988, Ser. No. 173,933

Claims priority, application Austria, Apr. 3, 1987, 818/87

Int. Cl.⁴ B29C *47/92*

U.S. Cl. 264—40.1 11 Claims



1. A method for monitoring and controlling the wall thickness of an extruded profile of heated polymeric material that issues from an extrusion die, the die including a plurality of discrete sectors each having a temperature controllable heat

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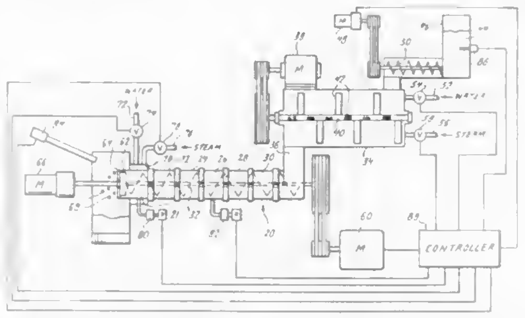
source and a temperature sensing device, said method comprising the following steps:

(a) extruding a polymeric material in an extrusion direction through an extrusion die at an extrusion speed to provide an article of predetermined cross-sectional shape from the extrusion die, the article having a periphery and a wall thickness dimension and having a longitudinal axis extending in the extrusion direction;
(b) measuring the wall thickness of the extruded article at a plurality of spaced measuring points on the periphery of the article, each of the measuring points spaced laterally outwardly of the longitudinal axis of the article, and calculating the overall average wall thickness of the extruded article from the measured wall thicknesses;
(c) providing a predetermined desired average wall thickness, a predeterined wall thickness distribution, and a predetermined wall thickness tolerance;
(d) providing data means indicative of a change in wall thickness of the article as a function of a change in the temperature of the extrusion die to permit a determination of a temperature change that is necessary to effect a desired wall thickness change;
(e) determining from the wall thickness measurements the maximum wall thickness value, the position on the article corresponding with the maximum wall thickness value, the minimum wall thickness value, and the position on the article corresponding with the minimum wall thickness value;
(f) determining from the data means the temperature change required at each sector of the die to change the measured wall thickness to correspond substantially with the calculated overall average wall thickness; and
(g) changing the temperatures of the respective heat sources at the respective extrusion die sectors to provide the desired die sector temperatures and the desired article wall thicknesses at corresponding points on the extruded article.

4,882,105
METHOD OF AUTOMATICALLY CONTROLLING AN EXTRUDER

Joseph A. Volk, Jr., Creve Coeur, Mo., assignor to Beta Raven Inc., Earth City, Mo.
Division of Ser. No. 118,434, Nov. 9, 1987, Pat. No. 4,767,301. This application Aug. 26, 1988, Ser. No. 237,159
Int. Cl.⁴ B29C *47/92*
U.S. Cl. 264—40.1 2 Claims

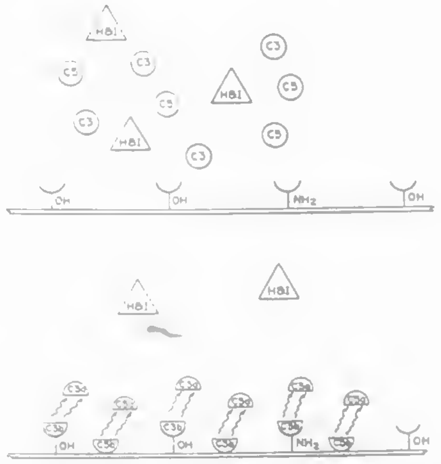


1. A method of controlling an extruder as it processes organic dry material and moisture into an extrudate comprising the steps of:

sensing the temperature of the extrudate immediately as it is separated from the extruder;
sensing the pressure inside the extruder at a plurality of locations along the path of the material as it traverses the extruder;
controlling the input of material, moisture, and heat into the extruder in response to said sensed temperature and pressure in order to maintain pre-determined values of temperature and pressure to thereby maximize throughput of desirable extrudate.

4,882,106
METHODS OF MANUFACTURING NUCLEOPHILIC MATERIAL MODIFIED FOR IMPROVED BIOCOMPATIBILITY

Richard J. Johnson, Mundelein; Dennis E. Chenoweth, Kildeer; Daniel R. Boggs, Vernon Hills, and Michael J. Lysaght, Barrington, all of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.
Continuation-in-part of Ser. No. 20,794, Feb. 27, 1987. This application Mar. 11, 1987, Ser. No. 24,652
Int. Cl.⁴ B01D *13/00*
U.S. Cl. 264—41 12 Claims

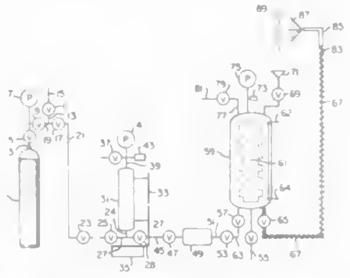


1. A method of forming a material having nucleophilic groups into hollow fiber form while selectively modifying the surface characteristics of the material along the interior bore of the hollow fiber to prevent complement activation and bind beta 2 microglobulin, said method comprising the steps of

forming the material into a tubular shape around a lumen fluid which serves as a central core around which said fiber is formed and which fluid includes a constituent having an activated carbonyl group which reacts chemically with the material in a predetermined fashion as the fiber is being formed.

4,882,107
MOLD RELEASE COATING PROCESS AND APPARATUS USING A SUPERCRITICAL FLUID

Keith D. Cavender; Edmond J. Derderian, both of Charleston; Eugene L. Jarrett, St. Albans, and Kenneth A. Nielsen, Charleston, all of W. Va., assignors to Union Carbide Chemicals and Plastics Company Inc., Danbury, Conn.
Filed Nov. 23, 1988, Ser. No. 276,162
Int. Cl.⁴ B29C *67/22, 33/58, 39/36, 45/40*
U.S. Cl. 264—51 50 Claims

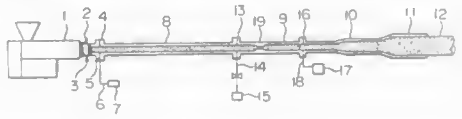


1. A process which comprises the steps of (i) forming a release surface by spray coating an area of a solid surface with a release agent obtained from a release agent formulation containing a solution, suspension or dispersion of a release agent and a supercritical fluid, (ii) depositing a mass of material onto the release surface, and (iii) separating the mass of material or

a product derived from the mass of material, from the release surface.

4,882,108
METHOD FOR PRODUCING POLYPROPYLENE FOAM

Yoshio Nakajima; Takao Kimura, and Yoshinobu Nagaoka, all of Yokkaichi, Japan, assignors to Mitsubishi Petrochemical Co., Ltd., Tokyo, Japan
Filed Apr. 7, 1988, Ser. No. 178,940
Claims priority, application Japan, Apr. 13, 1987, 62-88880
Int. Cl.⁴ B29C *67/22;* **C08J** *9/06*
U.S. Cl. 264—54 7 Claims



1. A method for producing a polypropylene foamed article, comprising the steps of:

uniformly melt-mixing a polypropylene resin with a crosslinking agent and a foaming agent;
extruding the thus-obtained melted resin into a long-land die provided with a choking die in an intermediate portion thereof so as to apply back pressure to the melted resin in a front stage of said long-land die;
supplying a lubricant to an interface between said long-land die and the melted resin from a portion near an inlet of said long-land die;
heating the resin to cause crosslinking by the resin by thermal decomposition of the crosslinking agent in said front stage of said long-land die;
heating the resin to a temperature above the decomposition temperature of the foaming agent in a rear stage of said long-land die;
foaming the resin by extruding it from said long-land die, wherein said polypropylene resin is an ethylene-propylene random copolymer which contains 2 to 10 wt % of ethylene with a melt flow rate of 5 g/10 minutes or more at 230° C. and a melt expansion ratio of 1.4 or less at 190° C.;
extracting the lubricant from a surface of the resin at an end of said front stage of said long-land die; and
supplying the extracted lubricant to an interface between said long-land die and the resin at an end of the intermediate portion.

4,882,109
PROCESS OF PREPARING ZIRCONIA-COATED SILICON NITRIDE SINTERED MEMBER

Minoru Matsui, Nagoya, and Tomonori Takahashi, Chita, both of Japan, assignors to NGK Insulators, Ltd., Nagoya, Japan
Division of Ser. No. 112,053, Oct. 22, 1987, Pat. No. 4,816,349, which is a continuation of Ser. No. 887,654, Jul. 21, 1986, abandoned. This application Sep. 19, 1988, Ser. No. 245,680
Claims priority, application Japan, Aug. 2, 1985, 169782; Sep. 26, 1985, 213493
Int. Cl.⁴ C04B *35/58*
U.S. Cl. 264—62 5 Claims

1. A method of producing a silicon nitride sintered member having reduced thermal conductivity, comprising:

providing a silicon nitride sintered body;
roughening or activating a surface of said body; and
providing a heat insulating layer on said surface, said layer consisting essentially of zirconia, and having a thickness of not greater than 100 microns.

4,882,110
CO_2 COPOLYMER BINDER FOR FORMING CERAMIC BODIES AND A SHAPING PROCESS USING THE SAME

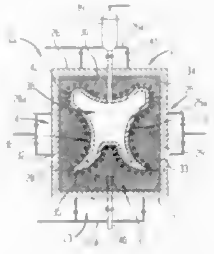
Daniel P. Kramer, Macungie; Joseph G. Santangelo, and James J. Weber, both of Allentown, all of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.
Filed Jan. 27, 1987, Ser. No. 7,233
Int. Cl.⁴ C04B *35/64*
U.S. Cl. 264—63 9 Claims

1. A method for producing a shaped ceramic body which comprises:

(a) admixing a ceramic powder with a binder comprising a polyalkylene carbonate to produce a ceramic-binder mixture;
(b) shaping the ceramic-binder mixture into a green body; and
(c) sintering the green body to form the shaped ceramic body.

4,882,111
METHOD FOR OBTAINING DRAIN-CAST HOLLOW ARTICLES

Kazushige Murata, Tokoname, Japan, assignor to INAX Corporation, Aichi, Japan
Filed Aug. 4, 1986, Ser. No. 894,497
Claims priority, application Japan, Aug. 6, 1985, 60-173922
Int. Cl.⁴ B28B *1/26, 7/12*
U.S. Cl. 264—87 21 Claims



1. A method for drain-casting a slip to very rapidly obtain a substantially hollow molded article automatically without substantial manual operations, by the use of an apparatus comprising a divisible mold including an upper mold portion, a lower mold portion, and at least two side mold portions to form a mold cavity, the mold portions being moveably supported by outer supporting members, each mold portion including a pressure-proof airtight vessel and a filter member inside the vessel, said filter member containing a water drainage means, said water-drainage means being communicated with the openings outside of the vessel, one of said lower or upper mold portion having a slip supply duct; which method comprises the steps of

filling the mold cavity with a slip supplied through the slip supply duct,
pressurizing the slip to facilitate deposition of the slip onto the filter members of the mold to a desired thickness, cohesion of the deposited slip onto the filter members being effected and water being drained from the mold,
adjusting the position of the slip supply duct downward and draining the undeposited slip remaining in the mold cavity through the slip supply duct,
thereafter in the presence of the cohesion, applying compressed air to the water-drainage means of the upper and lower mold portions to exude some water and from a water film between the filter members and the resulting hollow molded article cohered on the filter members,
removing the upper and lower mold portion in the presence of the water film, while firmly holding and supporting the cohesion without vacuum the freshly molded article between the filter members of the side mold portions in a

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suspended fashion to prevent the hollow article from cracking, breaking and deforming,

thereafter applying a receiving stand under the partly demolded article thus held and supported, removing the side mold portions by application of compressed air to the water-drainage means of the side mold portions to exude some water and form a water film between the filter members and the molded article cohered on the filter members, and demolding the molded article in the presence of the water film on the stand without deformation or damage of the molded article.

4,882,112

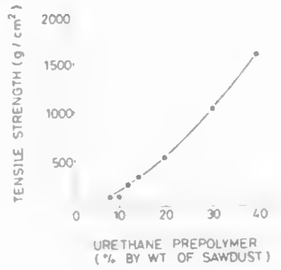
PROCESS FOR PRODUCING SHAPED ARTICLES FROM VEGETABLE PARTICULATE MATERIALS

Hirohisa Maki, Neyagawa, and Eiichiro Suzuki, Iwata, both of Japan, assignors to Dai-Ichi Kogyo Seiyaku Co., Ltd., Kyoto, Japan

Filed Dec. 31, 1986, Ser. No. 948,169

Int. Cl.⁴ B27N *3/08*

U.S. Cl. 264—109 10 Claims



1. In a process for preparing sheets or other shaped articles comprising the steps of applying a binder composition to vegetable particulate materials, shaping the resulting mass, and curing the resulting shaped articles, the improvement wherein said binder composition consists essentially of an aqueous mixture of (a) at least 8% by weight of said vegetable particulate materials of a urethane prepolymer having a plurality of terminal free isocyanato groups formed by reacting an excess of a polyisocyanate with a polyalkylene polyol having at least two terminal hydroxyl groups per molecule and an oxyethylene unit content of 10 to 90% by weight; (b) an aqueous solution or emulsion of an inert binder polymer selected from the group consisting of polyvinyl acetate, ethylene vinyl acetate copolymer and ethylene vinyl acetate vinyl versatate copolymer; and (c) at least equal parts by weight of the solid content of said binder composition of water; and wherein said shaped articles are subjected to drying to reduce their water content subsequent to said curing step.

4,882,113

HETEROGENEOUS ELASTOMERIC COMPOSITIONS CONTAINING A FLUOROELASTOMER AND PTFE AND METHODS FOR MANUFACTURING SAID COMPOSITIONS

Roger Tu, Lake Forrest, and Wilfred F. Mathewson, Dana Point, both of Calif., assignors to Baxter International Inc., Deerfield, Ill.

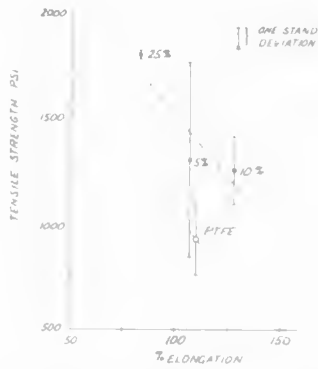
Filed Jan. 26, 1989, Ser. No. 303,520

Int. Cl.⁴ C08J *9/24;* B29C *67/20, 55/00*

U.S. Cl. 264—127 5 Claims

1. A process for manufacturing an article from a heterogeneous composition of unsintered porous polytetrafluoroethylene (PTFE) particles and a fluoroelastomer, comprising:

(a) mixing particulate unsintered porous PTFE particles and fluoroelastomer to form a heterogenous mixture wherein the unsintered porous PTFE particles have become substantially saturated with the tetrafluoroethylene/propylene copolymer fluoroelastomer;



(b) forming the article from the heterogenous mixture.

4,882,114

MOLDING OF FIBER REINFORCED PLASTIC ARTICLES

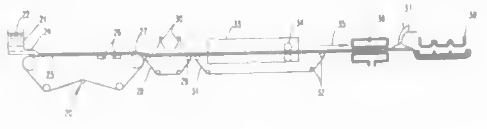
Bronislaw Radvan, Buckinghamshire, England, and Anthony J. Willis, Bergen-Op-Zoom, Netherlands, assignors to The Wiggins Teape Group Limited, Basingstoke, England

Continuation of Ser. No. 113,904, Oct. 29, 1987, abandoned, which is a continuation-in-part of Ser. No. 926,858, Nov. 4, 1986, abandoned, and Ser. No. 946,167, Dec. 23, 1986, Pat. No. 4,734,321, which is a continuation of Ser. No. 689,000, Jan. 4, 1986, abandoned, said Ser. No. 926,858, is a continuation of Ser. No. 688,712, Jan. 4, 1985, abandoned. This application Mar. 16, 1989, Ser. No. 325,051

Claims priority, application United Kingdom, Jan. 6, 1984, 8400290; Jan. 6, 1984, 8400292

Int. Cl.⁴ B29C *43/00*

U.S. Cl. 264—129 16 Claims



1. A process for making a shaped article of fiber reinforced synthetic plastics material comprising the steps of

forming a foamed aqueous dispersion comprising from 20% to 60% by weight of single discrete fibers having a modulus of elasticity higher than 10,000 mega pascals, and between 7 and 50 millimeters long, and from 40% to 80% by weight of unconsolidated particulate plastics material selected from the group consisting of a thermoplastic material and a thermosetting material, the particulate plastics material having a particle size of less than about 1.5 millimeters;

laying down and draining said dispersion on a foraminous support so as to form a web;

transferring said web to a heating oven;

heating said web first so as to remove residual moisture therefrom and then so as to bond the fibrous and plastics components together into a self-sustaining permeable sheet while substantially maintaining the particulate form of the plastics material;

transferring said self-sustaining sheet to a through air heating oven;

passing heated air through said sheet so as to cause substantially uniform and homogeneous heating of the components thereof to a temperature at which the viscosity of the thermoplastic constituting the particulate component is sufficiently low to permit the sheet to be molded into a shaped article;

transferring said heated permeable sheet to a compression mold; and

subjecting said sheet to a compression molding at a predetermined pressure so as to form a shaped fiber reinforced plastic article.

4,882,115

ELECTROLYTIC CAPACITOR AND METHOD FOR PRODUCING AN ELECTROLYTIC CAPACITOR

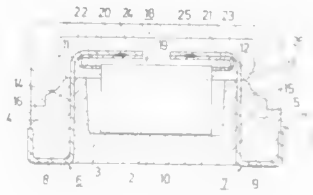
Helfried Schmickl, Maria Saal, Austria, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 7, 1988, Ser. No. 281,292

Claims priority, application Austria, Dec. 17, 1987, 3339/87

Int. Cl.⁴ H01G *9/00*

U.S. Cl. 361—538 14 Claims



1. Electrolytic capacitor having a synthetic resin housing which forms a receiving space for a capacitor cell and which consists of a dish-shaped housing section which essentially accommodates the capacitor cell having lateral electrode connections, and a lid-shaped housing section which hermetically seals said dish-shaped housing section, connecting leads, which originate from outside the dish-shaped housing section, emerge at one end into the receiving space for the capacitor cell and are connected at said end to the adjacent electrode connection of the capacitor cell, being embedded in the side walls of the dish-shaped housing section adjacent to the electrode connections of the capacitor cell, characterized in that the connecting leads embedded in the side walls of the dish-shaped housing section extend at least for a portion, in the direction away from the base of the dish-shaped housing section, essentially parallel to the capacitor cell and in that the ends of the connecting leads which emerge into the receiving space for the capacitor cell and are connected to the adjacent electrode connections of the capacitor cell are angled in an L shape towards the face of the capacitor cell facing away from the base of the dish-shaped housing section without making contact with each other.

4,882,116

METHOD OF MOLDING A LABEL ON AN ELECTRICAL CORD

Ronald R. McMillen, Minneapolis, and John J. Anderley, Anoka, both of Minn., assignors to Wagner Spray Tech Corporation, Minneapolis, Minn.

Filed Apr. 29, 1988, Ser. No. 188,442

Int. Cl.⁴ B29C *45/14*

U.S. Cl. 264—254 4 Claims

1. The method of forming a molded-in-place label on an electrical cord by molding comprising the steps of, disposing a portion of the electrical cord in a mold formed of two pieces formed with three dimensional type, injecting a suitable plastic into said mold to form a label with three dimensional type

which is bonded to said cord and removing said cord and molded in place label from said mold.

4,882,117

INJECTION MOLDING PROCESS FOR MOLTEN PLASTIC

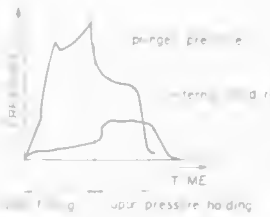
Yoshinobu Takeda, and Kunio Yamamoto, both of Niigata, Japan, assignors to Mitsubishi Kinzoku Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 53,537, May 26, 1987, abandoned, which is a continuation of Ser. No. 766,005, Aug. 15, 1985, abandoned. This application Jun. 28, 1988, Ser. No. 212,149

Claims priority, application Japan, Aug. 16, 1984, 59-170705

Int. Cl.⁴ B29C *45/70*

U.S. Cl. 264—328.9 1 Claim



1. An injection molding process comprising the steps of:

(a) providing an injection molding press comprising a male die, a female die for being clamped together with said male die to define at least one cavity having extrusion surface area A therebetween, a clamping means for clamping said male and female dies together with a prescribed clamping force F, means for injecting a molten resin into said cavity at a prescribed injecting pressure and holding said resin injected in said cavity with a prescribed holding pressure;

(b) clamping said male and female dies together with said clamping force F to provide said cavity therebetween;

(c) subsequently injecting the molten resin at said prescribed injection pressure into said cavity by said means to fill said cavity with said molten resin, the injection pressure being controlled so as to increase the pressure of the molten resin within said cavity gradually with the passage of time to prevent a pressure boost from occurring upon the termination of the injecting step, while moving said molten resin within said cavity at such a speed that the portion of said molten resin in contact with the surfaces of said cavity is solidified to form a thin hardened layer on the cavity surfaces; and

(d) subsequently holding said molten resin filled in said

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cavity at said prescribed holding pressure to solidify the resin within the cavity to produce a molded article, said holding pressure being controlled so as to increase the pressure of the resin within said cavity to a maximum initially during said holding step and to maintain said maximum level substantially throughout said holding step;

said clamping force F of said clamping means being set so as to satisfy the following relationship:

$$F<P\times A$$

where P is said maximum of said pressure of the resin within said cavity during the holding step so that no flash will result in the event a gap is open between said dies due to the existence of the thin hardened layer.

4,882,118
METHOD AND APPARATUS FOR MOLDING FIBER REINFORCED RESIN MATRIX COMPOSITE MATERIAL

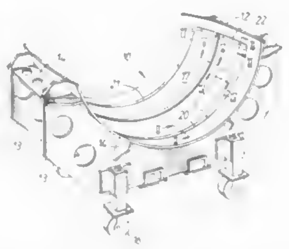
Thomas J. Megarry, Holywood, United Kingdom, assignor to Short Brothers PLC, Belfast, England

Continuation of Ser. No. 841,566, Mar. 20, 1986, abandoned. This application Dec. 1, 1987, Ser. No. 127,564

Claims priority, application United Kingdom, Apr. 1, 1985, 8508419

Int. Cl.^{4} B29C *51/10*

U.S. Cl. 264—510 15 Claims



1. A method of making a sheetform article from fibre-reinforced resin matrix composite material including the steps of arranging layers of fibres impregnated with uncured resin in tooling which defines a more or less flat moulding face corresponding to the shape which it is desired that a face of the article should assume, covering the fibres and resin with a gas-tight membrane, reducing the gas pressure around the fibres and resin between the tooling and the membrane, heating the tooling and the composite material to a temperature high enough to cure the resin, and cooling the cured article and the tooling to ambient temperature, wherein the method is a stage in the manufacture of a finished article which has an edge surface of a specified profile, and wherein the improvement comprises the steps of

securing on the moulding face of the tooling, prior to arranging the layers of resin-impregnated fibres, at least two periphery elements having a preselected edge profile corresponding to said specified edge profile to define a mould cavity periphery of a shape and size that is predetermined to establish an expanded desired finished shape and size of the article after curing, and also to establish during the moulding step, by virtue of said edge surface profile of each mould periphery element, the said edge surface of the moulded article and the specified profile thereon,

the step of arranging the layers of fibres includes placing layers of fibres impregnated with resin closely abutting the edge surfaces of the periphery elements, and

after arranging the layers of resin-impregnated fibres, allowing at least one of the periphery elements to slide on the moulding face during the heating and cooling steps in response to differential thermal expansion and contraction between the layers of resin impregnated fibres and the moulding face of the tooling without exerting significant compressive force on the edges of the sheet-form article.

10. Tooling apparatus for moulding and heat-curing a sheet-form article laid up from individual layers of fibre-reinforced resin matrix composite material, the tooling comprising:

a base member having a moulding face corresponding to a desired shape of a face of the finished article;

at least one mould periphery element having a first surface for sealingly engaging the surface of the moulding face at a predetermined location on the moulding face and an edge surface extending transversely to the first surface, the edge surface having a shape and a cross-sectional profile corresponding to a desired shape and profile of an edge portion of the finished article; and

means for securing the mould periphery element to the base member at said predetermined location with the first surface of the periphery element in substantially sealing engagement with the moulding face, such that the edge surface of the mould periphery element defines a portion of a continuous periphery of a mould cavity surrounding the moulding face of said base member, said securing means comprising means for selectively clamping the mould periphery element sufficiently firmly against the base member to maintain the element at said location during laying up of a composite material in said mould cavity and thereafter sufficiently loosely to allow the element to slide on the moulding face after the article has been moulded, in response to differential thermal expansion and contraction between the composite material and the base member during heating thereof to at least 177° C. to cure the resin in the composite material and during subsequent cooling to ambient temperature, without exerting significant compressive force on the edge portion of the moulded article.

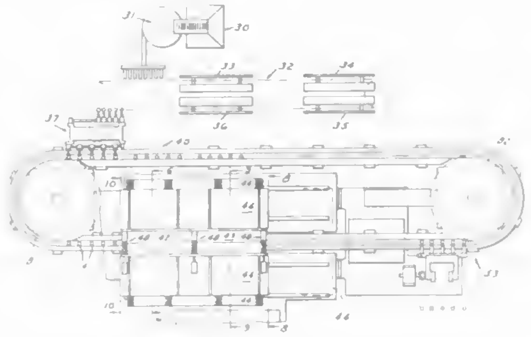
4,882,119
METHOD FOR MAKING PARTIALLY CRYSTALLINE BIAXIALLY ORIENTED HEAT SET HOLLOW PLASTIC CONTAINERS

Prakash R. Ajmera, Toledo, Ohio, assignor to Owens-Illinois Plastic Products Inc., Toledo, Ohio

Filed Jun. 22, 1987, Ser. No. 64,649

Int. Cl.^{4} B29C *49/12, 49/18*

U.S. Cl. 264—526 27 Claims



1. A method for making a partially crystalline, biaxially oriented heat set hollow plastic container from a hollow parison of crystallizable material having an open end and a closed end comprising

engaging the open end of a first plastic parison which is at a temperature within its molecular orientation temperature range,

enclosing a hot mold about the parison at a first position, said mold being at heat setting temperature,

simultaneously enclosing a cold mold at a second position about container previously blown in the hot mold to cool the previously blown container,

expanding said plastic parison within said hot mold by internal pressurization through the open end to induce biaxial orientation of the plastic parison and force the plastic parison into intimate contact and conformance with the hot mold and to maintain contact by such internal pressurization between the mold and biaxially oriented container for a time sufficient to induce partial crystallization in the biaxially oriented container and to heat set said container,

simultaneously moving the hold mold from said first position to said second position and the cold mold from said second position to a third position during the step of expanding the parison within the hot mold heat setting of the container in the hot mold and during the step of cooling of the previously blown container in the cold mold,

thereafter providing a lower internal pressurization of the container in the hot mold and exhausting the pressurization in the cold mold to atmospheric pressure,

substantially simultaneously opening the hot mold and cold mold,

simultaneously moving the open hot mold from the second position to the first position and open cold mold from the third position to the second position,

enclosing the to mold at the first position about a second plastic parison which is at a temperature within its molecular orientation temperature range, and

simultaneously enclosing the cold mold at the second position about the container previously blown from the first parison with the closing of the hot mold.

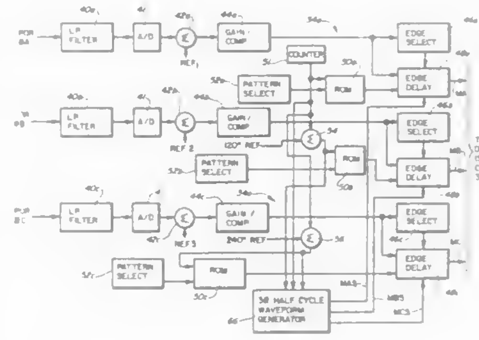
4,882,120
DC CONTENT CONTROL FOR AN INVERTER

Derrick I. Roe, Rockford, Ill.; Christopher J. Rozman, Delavan, Wis., and Bradley J. Recker, Rockford, Ill., assignors to Sundstrand Corporation, Rockford, Ill.

Filed Dec. 16, 1988, Ser. No. 285,119

Int. Cl.^{4} H02P *13/18;* H02M *5/458*

U.S. Cl. 363—98 7 Claims



1. A control for an inverter having a switch which is operated in accordance with a waveform having spaced rising and falling edges, comprising:

means for detecting the magnitude of a DC component in the inverter AC output power; and

means responsive to the detecting means for adjusting the time of selected rising or falling edges to reduce the magnitude of the DC component.

4,882,121
APPARATUS FOR THE DETECTION OF E. G. EXPLOSIVE SUBSTANCES

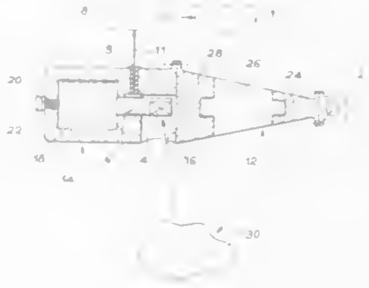
Gërard Grenier, Limeil-Brevannes, France, assignor to Commisseriat a l'Energie Atomlque, Paris, France

Division of Ser. No. 917,683, Oct. 10, 1986, abandoned. This application Mar. 31, 1988, Ser. No. 175,629

Claims priority, application France, Oct. 18, 1985, 8515474

Int. Cl.^{4} G21G *1/06;* G21H *5/00*

U.S. Cl. 376—159 7 Claims



1. A process for detecting an explosive which may be contained in an object, wherein it comprises irradiating the object by means of fast neutron pulses, said fast neutrons having an energy between 7 and 14 MeV, and detecting prompt gamma photons emitted in coincidence with said neutron pulses and having an energy of 5.106 MeV characterizing nitrogen, and prompt gamma photons emitted in coincidence with said neutron pulses and having an energy of 6.130 MeV characterizing oxygen, determining the relative atomic percentage of nitrogen and oxygen in the object by means of the detected 5.106 MeV and 6.130 MeV photons, and comparing said percentage to N/O ratios of known explosives.

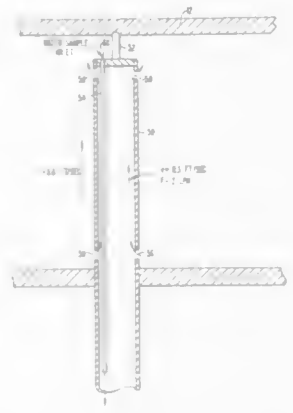
4,882,122
METHOD AND APPARATUS FOR OBTAINING A WATER SAMPLE FROM THE CORE OF A BOILING WATER REACTOR

Robert A. Head, San Jose; Robert L. Cowan, and Robert J. Law, both of Livermore, all of Calif., assignors to General Electric Company, San Jose, Calif.

Filed Feb. 10, 1988, Ser. No. 154,260

Int. Cl.^{4} G21C *17/00*

U.S. Cl. 376—245 3 Claims



3. A process for the evacuation of water sample from a boiling water reactor in the core bypass region at the vicinity of the top guide, said process comprising the steps of:

providing a tube having a first end for insertion to the vicinity of the top guide in the core bypass region of said

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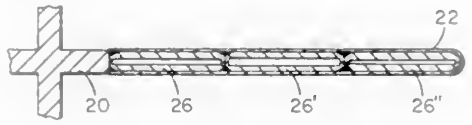
nuclear reactor and have a second end at a location remote from said reactor;
inserting said first end of said tube in a local power range monitor conduit in the core bypass region with the open end of said tube exposed to nearly saturated water adjacent the top guide;
reducing the pressure in said tube from the second end of said tube whereby the water adjacent the open end of said tube flashes to a steam water mixture of high specific volume and rapidly passes through said tube; and,
condensing said steam at said remote end for analyzing the contents of said water.

4,882,123
HAFNIUM CONTROL ROD FOR NUCLEAR REACTORS

James E. Cearley; David A. Salmon, and Paul Van Diemen, all of San Jose, Calif., assignors to General Electric Company, San Jose, Calif.

Filed Mar. 1, 1988, Ser. No. 162,449
Int. Cl.⁴ G21C *7/10*
U.S. Cl. 376—333 5 Claims



1. An improved control device for nuclear fission reactor having a core of fissionable fuel in an assembly composed of fuel units grouped into spaced apart bundles which are immersed in liquid coolant in operating service, and wherein said control device is provided with means for reciprocal movement into and out from the core of fuel intermediate the spaced apart bundles of the assembly, said control device having a frame including an upper and a lower support member connected by an elongated central spine support with the upper and lower support members each of a transverse cruciform configuration having four radially extending arms projecting outward from the central spine support and a sheath of blade-like configuration extending from each of the arms of the upper support to each of the arms of the lower support and each of said sheaths longitudinally adjoining the spine support, each sheath containing therein a neutron absorbing component consisting essentially of a plurality of parallel flattened hollow tubes of hafnium metal with their axis aligned with the spine support, and each sheath and each of the plurality of parallel flattened hollow tubes therein in their flattened portions being each provided with a multiplicity of openings along their length for entry and the presence of liquid coolant through the length of the flattened hollow tubes of hafnium.

4,882,124
ALLOYS HAVING EXCELLENT EROSION RESISTANCE

Toshihiro Uehara, and Rikizo Watanabe, both of Yasugi, Japan, assignors to Extra-Ministerial Bureau of Ministry of Trade & Industry Agency of Industrial Science & Technology, Tokyo, Japan

Continuation-in-part of Ser. No. 166,325, Mar. 11, 1988, abandoned. This application Oct. 11, 1988, Ser. No. 256,214

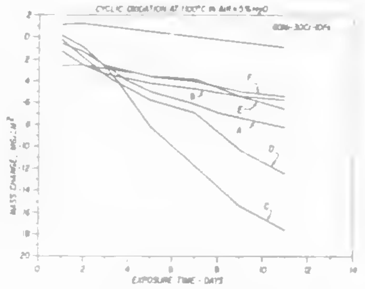
Claims priority, application Japan, Jun. 18, 1987, 62-150174; Fed. Rep. of Germany, Mar. 14, 1988, 3808451; France, Mar. 14, 1988, 88 03287; Sweden, Mar. 15, 1988, 8800919; United Kingdom, Mar. 15, 1988, 8806125
Int. Cl.⁴ C22C *38/38*
U.S. Cl. 420—74 2 Claims

1. An alloy having excellent erosion resistance which comprises more than 0.90 wt.% and less than 1.7 wt.% of carbon, not more than 2.5 wt.% of silicon, from 10 to 25 wt.% of manganese, from 6 to 20 wt.% of chromium, more than 4 wt.% and less than 7 wt.% of vanadium, not more than 0.1 wt.% of nitrogen and the balance essentially consisting of iron.

4,882,125
SULFIDATION/OXIDATION RESISTANT ALLOYS

Gaylord D. Smith, and Curtis S. Tassen, both of Huntington, W. Va., assignors to INCO Alloys International, Inc., Huntington, Va.

Filed Apr. 22, 1988, Ser. No. 184,771
Int. Cl.⁴ C22C *19/05*
U.S. Cl. 420—443 12 Claims



1. A nickel-base, high chromium alloy characterized by excellent resistance to (1) sulfidation and (ii) oxidation at elevated temperatures as high as 2000° F. (1093° C.) and higher, (iii) a stress-rupture life of about 200 hours or more at a temperature at least as high as 1800° F. (983° C.) and under a stress of 2000 psi, (iv) good tensile strength and (v) good ductility both at room and elevated temperature, said alloy consisting essentially of about 27 to 35% chromium, about 2.5 to 5% aluminum, about 2.5 to about 6% iron, 0.5 to 2.5% columbium, up to 0.1% carbon, up to 1% each of titanium and zirconium, up to 0.05% cerium, up to 0.05% yttrium, up to 1% silicon, up to 1% manganese, and the balance nickel.

4,882,126
HIGH-STRENGTH ZINC BASE ALLOY

Atsuyuki Okada, Tokyo; Kouhei Kobota; Tsutomu Satoh, both of Ageo; Hiroshi Gotoh, Ageo, and Takeshi Oziro, Ageo, all of Japan, assignors to Mitsui Mining & Smelting Co., Ltd., Tokyo, Japan

Filed Jun. 22, 1988, Ser. No. 209,977
Claims priority, application Japan, Jul. 1, 1987, 62-162220; Dec. 24, 1987, 62-329387; Apr. 20, 1988, 63-97934
Int. Cl.⁴ C22C *18/04*
U.S. Cl. 420—516 9 Claims

1. A high-strength zinc base alloy consisting of 5.2 to 8.6 wt.% of Al, 3.0 to 6.5 wt.% of Cu, 0.01 to 0.20 wt.% of Mg, 0.03 to 0.3 wt.% of a member selected from the group consisting of Co and a mixture of Co and Ni, and the balance being Zn.

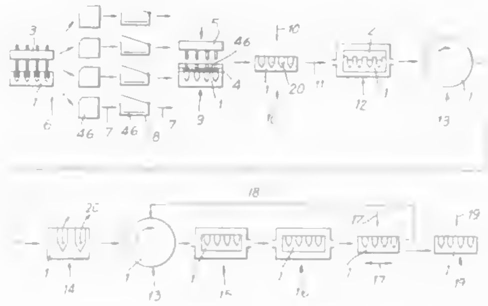
4,882,127
DEVICE FOR SOLID PHASE SEQUENCING OF NUCLEIC ACID FRAGMENTS

Andre Rosenthal, Berlin; Hans-Dieter Hunger; Horst Kagelmaker, both of Zepernick, and Monika Grätschus, Berlin, all of German Democratic Rep., assignors to Akademie Der Wissenschaften Der DDR, Berlin, German Democratic Rep.

Division of Ser. No. 761,107, Jul. 31, 1985, Pat. No. 4,849,077. This application Nov. 12, 1987, Ser. No. 120,092
Claims priority, application German Democratic Rep., Aug. 6, 1984, 2659974; Aug. 6, 1984, 2659982; May 14, 1985, 2763283
Int. Cl.⁴ C12M *1/16;* **B01L** *3/00, 9/00*
U.S. Cl. 422—50 12 Claims

1. A device for solid phase sequencing of nucleic acid sequents comprising

a plurality of sequencing blocks each storing and processing n nucleic acid fragments, said fragments being immoblized on individual carrier segments or in homogenous phase during a sequencing process, each of sequencing blocks including a base block and a plurality of reaction vessels inserted in said base block and corresponding to the number n of different nucleic acid fragments to be sequenced.
a plurality of lids for closing said sequencing blocks each having a plug-like elevations according to a number and a distribution pattern of the reaction vessels;
a sample dosing device for orienting n labeled nucelic acid samples from the sequencing blocks onto areas of a carrier matrix in a simultaneous fashion, said sample dosing device including a capillary holder and a plurality of capillaries with the number of the capillaries corresponding to the number n of different nucleic acid samples to be sequenced in each block, the capillaries being arranged in the capillary holder according to the distribution pattern of the reaction vessels and disposed on a flat plane with a distance between capillary orifices from the capillary holder greater than a depth of the reaction vessels;



a plurality of carrier holders for fixing said carrier matrix in a predetermined position during the immobilization of the nucleic acid samples with the sample dosing device, each of the carrier holders having a recess with dimensions in height, width and depth corresponding to carrier holders also having a plurality of bores with a number and distribution pattern corresponding to those of the reaction vessels and with a diameter which is somewhat larger than a diameter of the capillary;
a punch for simultaneous punching of n immobilized and chemically modified nucleic acid samples as said individual carrier segments out of the carrier matrix into the sequencing blocks, said punch including a punching plate and a plurality of punching pins corresponding to holes in the punch plate and arranged with a number and distribution pattern which also corresponds to those of the reaction vessels; and
means for combining the sequencing blocks with the lids, the sample dosing device, the carrier holders and the punch, respectively.

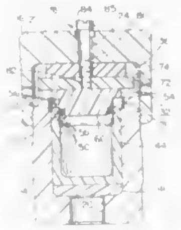
4,882,128
PRESSURE AND TEMPERATURE REACTION VESSEL, METHOD, AND APPARATUS

Istvan S. Hukvari; Henry J. Albert, both of Bettendorf, Iowa; Vernon G. Moon, Moline, Ill., and Michael R. Steffenson, Davenport, Iowa, assignors to Parr Instrument Company, Moline, Ill.

Filed Jul. 31, 1987, Ser. No. 80,037
Int. Cl.⁴ B01J *19/24*
U.S. Cl. 422—119 14 Claims

7. A pressure and temperature reaction vessel for chemical and physical reactions, comprising:
a containment housing constructed from substantially microwave-transmissible materials, having a base and a removable lid together defining a reaction chamber;
a sealing means mounted to move between different first and second sealing positions for sealing the reaction chamber; and
a substantially microwave-transmissible self-resetting visual indicator means, for indicating various different pressures within the reaction chamber.

9. A method for heating and reacting reactants in a pressure and temperature reaction vessel, comprising the steps of:
placing reactants in a substantially microwave-transmissive pressure and temperature reaction vessel, wherein the

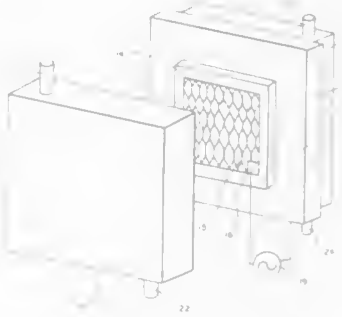


vessel has a seal mounted to move between at least two distinct sealing positions and an operably connected visual indicator for indicating various different pressures within the reaction chamber and means for venting the reaction chamber if pressure exceeds a preselected limit;
exposing the vessel to microwaves to heat the reactants and pressurize the reaction chamber; and
monitoring the visual indicator to determine various pressures within the vessel during and after the microwave exposure step.

4,882,129
OZONE GENERATOR CELL

Dana Andrews, Mountain View, and Hiroji Hanawa, Sunnyvale, both of Calif., assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Aug. 26, 1987, Ser. No. 89,576
Int. Cl.⁴ C01B *13/11*
U.S. Cl. 422—186.2 15 Claims



1. An ozone generator cell comprising
one or more combinations each including a thermally conductive solid metallic plate-like base forming a part of water cooling means and having a planar flat surface, a planar ceramic sheet separated from cooling water of said cooling system by said base and attached by a surface-to-surface contact to said flat surface of said base, and a discharge electrode attached to said cramic sheet distal from said base,
enclosure means with an inlet and outlet adapted to cause a gas to flow therein from said inlet to said outlet over said discharge electrode, and
means for causing a corona discharge between said discharge electrode and said base.

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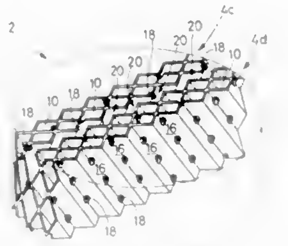
4,882,130

POROUS STRUCTURE OF FLUID CONTACT

Katsuya Asai, Nagoya, and Hideyuki Masaki, Gifu, both of Japan, assignors to NGK Insulators, Ltd., Nagoya, Japan
Filed Jun. 7, 1988, Ser. No. 203,133
Int. Cl.^{4} B32B *3/12*
U.S. Cl. 422—310 10 Claims



1. A porous structure through which at least one fluid flows in a nominal direction, comprising:

at least one packing having a predetermined thickness in said nominal direction, said at least one packing being disposed so as to extend in a plane perpendicular to said nominal direction;

each of said at least one packing consisting of a plurality of honeycomb blocks arranged in a first direction in said plane;

each of said plurality of honeycomb blocks including a plurality of partition walls which define a plurality of inclined channels which are inclined by a predetermined angle with respect to said nominal direction, each of said inclined channels having opposite open ends at respective upstream and downstream ends of said each honeycomb block as seen in said nominal direction, said plurality of inclined channels being provided in a plurality of parallel rows arranged in said first direction, said inclined channels of each of said rows being spaced apart from each other in a second direction in said plane, which second direction is perpendicular to said first direction;

said plurality of partition walls including intersections by which said inclined channels of said each row are spaced apart from each other in said second direction, said partition walls further defining a pair of voids between adjacent channels of said inclined channels of said each row, said pair of voids being disposed on opposite sides of each of said intersections as seen in said first direction, at least one of said pair of voids constituting part of the inclined channels of the rows adjacent to said each row, one of said pair of voids associated with the row which forms an outermost row forming an outer opening which is open outwardly of said each honeycomb block;

said partition walls having a plurality of perforations formed therethrough in a direction intersecting said rows of the inclined channels, so as to provide fluid communications between said adjacent channels of said each row, between the inclined channels of the adjacent rows, and between said inclined channels and said outer opening; and

said plurality of honeycomb blocks being positioned and connected to each other such that directions of inclination of said inclined channels of the adjacent honeycomb blocks are reversed to each other with respect to said nominal direction of flow of said at least one fluid, and such that said outer openings formed between said adjacent honeycomb blocks define a complex channel therebetween.

4,882,131

PROCESS FOR RECOVERING TUNGSTEN FROM ORGANIC SOLUTIONS

John A. Powers, New Albany; James C. Patton, and James N. Christini, both of Towanda, all of Pa., assignors to GTE Products Corporation, Stamford, Conn.
Filed Apr. 30, 1987, Ser. No. 44,169
Int. Cl.^{4} C01G *41/00*
U.S. Cl. 423—54 3 Claims

1. In a process wherein tungsten values are extracted from an aqueous alkali metal tungstate solution containing impurities by an organic solution containing an amine extractant wherein the organic solution consists essentially of from about 6% to about 10% by volume of said amine extractant, and the balance of said organic solution being an aromatic solvent consisting essentially of a mixture of alkyl benzenes wherein the alkyl benzenes have molecular weights of 120, 134, or 148, and the total number of carbon atoms in the alkyl chains attached to the benzene ring are either 3, 4, or 5, and thereafter the tungsten values are removed from the organic solution by contacting said organic solution with a stripping agent to form a tungsten containing strip solution, the improvement comprising carrying out the stripping step in an aqueous continuous mode, and having as the stripping agent, an aqueous solution formed from ammonium metatungstate, wherein said aqueous solution has a tungsten concentration which allows said tungsten containing strip solution to have a specific gravity of no greater than about 1.5, and sufficient ammonia to maintain the pH of said stripping agent at from about 5 to about 8, said stripping step being carried out with the temperature of said stripping agent being no greater than about 35° C. to produce a tungsten containing strip solution wherein the tungsten is in the form of a precurser of ammonium metatungstate.

4,882,132

SOLVENT EXTRACTION OF COBALT USING HYDROXAMIC ACIDS

Bruce F. Monzyk, Maryland Heights, and Arthur R. Heon, Creve Coeur, both of Mo., assignors to Monsanto Company, St. Louis, Mo.
Continuation of Ser. No. 566,015, Dec. 27, 1983, abandoned. This application Jan. 20, 1987, Ser. No. 4,929
Int. Cl.^{4} C01G *51/00*
U.S. Cl. 423—139 13 Claims

1. A process for extracting cobalt from a cobalt bearing aqueous solution which comprises:

(a) contacting the aqueous solution at an equilibrium pH of at least about 7 with a hydrocarbon solvent comprising at least 2% by weight of an N-alkylalkanohydroxamic acid having at least about 8 carbon atoms to extract cobalt from the aqueous solution;
(b) separating the hydrocarbon solvent cobalt loaded organic phase; and
(c) recovering the cobalt loaded organic phase.

4,882,133

METHOD FOR PRODUCING A FLAKY MATERIAL

Kunio Saegusa, Niibama, Japan, assignor to Sumitomo Chemical Company, Limited, Osaka, Japan
Continuation of Ser. No. 163,203, Feb. 26, 1988, abandoned, which is a continuation of Ser. No. 23,374, Mar. 9, 1987, abandoned. This application Jan. 26, 1989, Ser. No. 302,128
Claims priority, application Japan, Mar. 14, 1986, 61-57924
Int. Cl.^{4} C01G *23/04*
U.S. Cl. 423—335 2 Claims

1. A method for producing flaky materials which comprises coating a smooth surface with an aqueous liquid sol of compounds, in a dispersion medium wherein said compounds are selected from the group consisting of oxides and hydroxides of one or more metals having a valence of 2 or more and belonging to Group IIIa, IVa and IVb of the Periodic Table and silica to form a coated film; solidifying the film into gel by means of removal of the dispersion medium by vaporization or by means of adjusting the pH; shrinking the volume of the said gel by further vaporization of the dispersion medium from the gel to produce flaky material; and then scraping the flaky material off the smooth surface.

4,882,134

RECOVERY OF HYDROGEN FLUORIDE FROM AN AQUEOUS SOLUTION CONTAINING AMMONIUM FLUORIDE AND HYDROGEN FLUORIDE

Joseph Mizrahi, Haifa, Israel, assignor to IMC Fertilizer, Inc., Northbrook, Ill.
Filed Apr. 10, 1987, Ser. No. 37,160
Int. Cl.^{4} C01B *7/19, 21/087, 21/088*
U.S. Cl. 423—356 14 Claims

1. A method of recovering HF from an aqueous solution containing NH_4F and HF comprising:

contacting the solution with a water-immiscible, amine-containing extractant which extracts HF in preference to NH_4F;

adjusting one or more parameters selected from the group consisting of the HF:NH_4F molar ratio of the aqueous solution, the identity of the amine, the concentration of the amine in the extractant and the contact temperature to achieve an HF:amine molar ratio in the extractant of at least about 1.2;

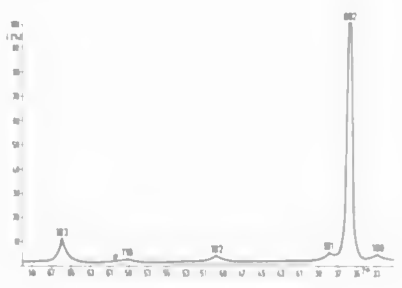
separating the HF-loaded amine extractant from the aqueous solution; and

stripping HF from the separated amine extractant in an amount sufficient to lower the HF:amine molar ratio in the extractant by at least about 0.2.

4,882,135

PROCESS FOR THE PRODUCTION OF TRANSPARENT ALUMINUM NITRIDE COATINGS FROM AMMINE SALTS OF ALUMINUM IODIDES

Dieter Peters, Hürth, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany
Filed Sep. 2, 1988, Ser. No. 240,095
Claims priority, application Fed. Rep. of Germany, Sep. 18, 1987, 3731455
Int. Cl.^{4} C01B *21/072*
U.S. Cl. 423—412 7 Claims

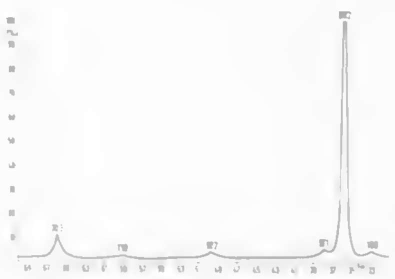


1. A process for the production of transparent aluminum nitride coatings, wherein the aluminum nitride coatings are obtained by evaporation of ammine salts of aluminum iodide in an evaporation zone and subsequent ammonolysis in a decomposition zone at temperatures above 550° and up to 1200° C.

4,882,136

PROCESS FOR THE PRODUCTION OF TRANSPARENT ALUMINUM NITRIDE FILMS

Dieter Peters, Hürth, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany
Filed Sep. 2, 1988, Ser. No. 240,139
Claims priority, application Fed. Rep. of Germany, Sep. 18, 1987, 3731455
Int. Cl.^{4} C01B *21/072*
U.S. Cl. 423—412 10 Claims



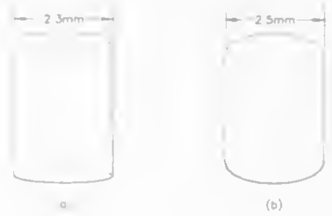
1. A process for the production of a transparent aluminum nitride film, wherein the aluminum nitride comprises a monocrystal and is obtained by evaporation of ammine salts of aluminum iodide in an evaporation zone and subsequent ammonolysis in a decomposition zone at 380 to 550° C.

8. A monocrystalline, transparent aluminum nitride film window having a thickness of up to 20 μm and a surface roughness of less than 0.3 μm and in which the crystallographic C axis is perpendicular to the film plane.

4,882,137

COATED VETERINARY IMPLANTS

Linton D. Staples, East Kew; Robert I. Norman, Dandenong; Robert B. Davey, East Doncaster; Catherine Hastings, Hawthorn; Jennifer Kidd, Camberwell, and Jatni Rachmat, South Yarra, all of Australia, assignors to Gene Link Australia Limited, South Melbourne, Australia
Filed May 20, 1987, Ser. No. 52,535
Claims priority, application Australia, May 23, 1986, PH 6077; Mar. 2, 1987, PH 604
Int. Cl.^{4} A61K *2/00*
U.S. Cl. 424—423 22 Claims



1. A coated veterinary implant comprising:
(a) a veterinary implant including an effective amount of:
  (i) an active ingredient selected from the group consisting of melatonin, melatonin analogues, and mixtures thereof, wherein said melatonin analogues and mixtures thereof exert substantially the same biological effect on seasonal breeding activity or other seasonal physiological responses of animals as said melatonin; and
(b) a coating for said veterinary implant (a) formed from a physiologically compatible polymeric coating composition comprising a water-insoluble film-forming high molecular weight polymer; which implant, in use, releases

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said active ingredient at a rate sufficient to maintain the blood level of said active ingredient at or above a level sufficient, and for a period sufficient, to regulate seasonal breeding activity or other seasonal physiological responses of an animal to be treated.

4,882,138
METHOD FOR PREPARATION OF DIAMOND CERAMICS

John M. Pinneo, Woodside, Calif., assignor to Crystallume, Menlo Park, Calif.

Continuation of Ser. No. 32,169, Mar. 30, 1987, abandoned. This application Jun. 7, 1988, Ser. No. 204,058

Int. Cl.^{4} B01J *3/06*

U.S. Cl. 423—446 7 Claims

1. A process for consolidating diamond particles into a mechanically stable diamond mass comprising the step of contacting a compacted aggregation of diamond particles with atomic hydrogen, a gaseous carbon source and an agent which improves carbon atom mobility upon surfaces of said particles, under conditions whereby diamond is epitaxially deposited onto said diamond particles, causing said particles to consolidate into a mechanically stable diamond mass substantially devoid of interstitial spaces.

4,882,139
IMPROVED PRODUCTION OF CARBON FIBERS

Herbert Beneke, Castro-Rauxel, and Siegfried Peter, Uttenreuth-Weiher, both of Fed. Rep. of Germany, assignors to Rutgerswerke AG, Fed. Rep. of Germany

Filed Nov. 30, 1988, Ser. No. 277,700

Claims priority, application Fed. Rep. of Germany, Dec. 8, 1987, 3741482

Int. Cl.^{4} C01B *31/02;* **C10C** *1/00, 1/20*

U.S. Cl. 423—447.4 7 Claims

1. In a process for the production of carbon fibers from high boiling bituminous substances in which a purified and polymerized concentrated carbon fiber precursor containing mesophase pitch is spun into fibers which are oxidized and then carbonized and optionally graphitized, the improvement consisting essentially of just before spinning a supercritical gas is dissolved in mesophase pitch at a pressure of 100 to 350 bars and a temperature up to 150° K. below the melting temperature of the mesophase pitch to form a low viscosity melt, separating the latter by settling into an isotropic phase and an anisotropic carbon fiber precursor and spinning the latter at the said temperature into fibers.

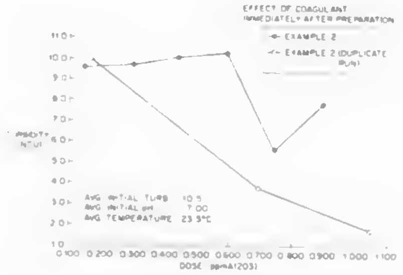
4,882,140
SOLID ALUMINUM HYDROXIDE COMPOSITIONS

Larry W. Becker, Marcellus, N.Y., assignor to General Chemical Corporation, Morristown, N.J.

Filed May 6, 1987, Ser. No. 47,423

Int. Cl.^{4} C01F *7/34, 7/56, 7/74*

U.S. Cl. 423—629 12 Claims



1. A method of preparing solid aluminum hydroxide having improved solubility, filterability and stability comprising:

(a) preparing a concentrated aqueous solution of aluminum ion and an anion by dissolving an aluminum salt;

(b) adding to the solution a stoichiometric amount of a solid base to form a mixture, wherein the base comprises an alkali metal, alkali earth metal or other metallic cation and wherein the base does not contribute an anion other than hydroxide to the solution; and

(c) stirring the mixture such that the aluminum salt and the base react completely to form a solid product comprising Al(OH)$_3$ and an adduct of the anion from the aluminum salt and the cation from the base, wherein the anion from the aluminum salt and the cation from the base are selected such that most of the water in the aqueous solution is bound to the adduct as water of hydration such that a substantially solid product is formed.

4,882,141
TISSUE IMAGING UTILIZING LABELLED STEROIDS

Richard J. Baranczuk, Overland Park, and Jay A. Spicer, Kansas City, both of Kans., assignors to Bio-Medical Research Laboratories, Inc., Overland Park, Kans.

Continuation-in-part of Ser. No. 663,572, Nov. 22, 1984, abandoned, and a continuation-in-part of Ser. No. 12,254, Feb. 9, 1987, which is a continuation-in-part of Ser. No. 663,600, Nov. 22, 1984, Pat. No. 4,659,517. This application Nov. 6, 1987, Ser. No. 118,237

The portion of the term of this patent subsequent to Apr. 21, 2004, has been disclaimed.

Int. Cl.^{4} A61K *49/02;* **C07J** *00/00*

U.S. Cl. 424—1.1 9 Claims

1. A method of imaging a tissue in vivo, said tissue having steroid receptors present therein; said method comprising the steps of:

(a) applying a labeled steroid material to said tissue; said material including 16-^{123}I-17-beta-estradiol; said material having a minimum specific activity of 5,000 curies per millimole and upon decay releasing radiation of sufficient energy to penetrate said body;

(b) allowing a portion of said labeled steroid material to substantially join with said receptors in said tissue; and

(c) thereafter obtaining an image of said labeled steroid material in said tissue by utilization of detection means appropriately positioned to detect said radiation from said radioactive component.

4,882,142
BONE MARROW SUPPRESSING AGENTS

Jaime Simon, Angleton; Joseph R. Garlich, Lake Jackson; David A. Wilson, and Kenneth McMillan, both of Richwood, all of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Dec. 19, 1988, Ser. No. 284,875

Int. Cl.^{4} A61K *43/00;* **C07F** *5/00*

U.S. Cl. 424—1.22 30 Claims

1. A method for suppressing bone marrow which comprises administering to a mammal in need of such treatment a bone marrow suppressing amount of at least one bone marrow suppressing composition comprising at least one radionuclide selected from the group consisting of Samarium-153, Gadolinium-159, and Holmium-166 complexed with 1,4,7, 10-tetraazacyclododecanetetramethylenephosphonic acid or a physiologically acceptable salt thereof.

4,882,143
LAMINA AND A COSMETIC COMPRISING THE SAME

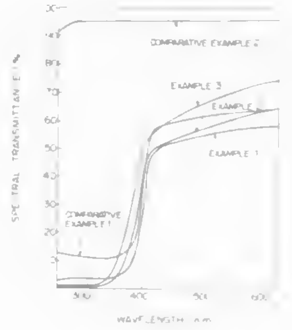
Hidekimi Kadokura, and Kunio Saegusa, both of Niihama, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Nov. 10, 1987, Ser. No. 119,092

Claims priority, application Japan, Nov. 17, 1986, 61-273396

Int. Cl.^{4} A61K *7/42*

U.S. Cl. 424—59 5 Claims



1. A cosmetic comprising a lamina having an average thickness of from about 0.1 um to about 5.0 um comprising a laminar substance as a matrix and a finely divided metal or metal compound dispersed therein, wherein the difference in refractive index between the laminar substance and the finely divided metal or metal compound is not less than 0.1.

4,882,144
SOLID, RAPIDLY RELEASED MEDICAMENT PREPARATIONS CONTAINING DIHYDROPYRIDINES, AND PROCESSES FOR THEIR PREPARATION

Ahmed Hegasy, Leverkusen, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 728,123, Apr. 29, 1985, abandoned, which is a continuation of Ser. No. 433,570, Oct. 8, 1982, abandoned. This application May 19, 1986, Ser. No. 864,677

Claims priority, application Fed. Rep. of Germany, Oct. 29, 1981, 3142853; Feb. 16, 1982, 3205399

Int. Cl.^{4} A61K *31/78, 31/44*

U.S. Cl. 424—80 8 Claims

1. A solid, rapidly absorbable preparation in unit dosage form comprising 1 part by weight of a dihydropyridine as an active compound, 0.2 to 6.0 parts by weight of PVP having a mean molecular weight of 15,000 to 50,000, and a mixture of absorptive excipients comprising 3.5 to 15 parts by weight of cellulose, 0.25 to 4.0 parts by weight of starch, 0.25 to 4.0 parts by weight of crosslinked insoluble PVPP, said preparation provided by (a) coprecipitation of the dihydropyridine and the PVP, (b) granulation of the resultant coprecipitation without removal of the parent solution and (c) admixture with the adsorptive excipients.

4,882,145
T CELL EPITOPES OF THE HEPATITIS B VIRUS NUCLEOCAPSID PROTEIN

George B. Thornton; Ann M. Moriarty; David R. Milich, and Alan McLachlan, all of San Diego, Calif., assignors to Scripps Clinic and Research Foundation, La Jolla, Calif.

Continuation-in-part of Ser. No. 939,617, Dec. 9, 1986, Pat. No. 4,818,527. This application Oct. 7, 1987, Ser. No. 106,538

The portion of the term of this patent subsequent to Apr. 4, 2006, has been disclaimed.

Int. Cl.^{4} A61K *39/00, 39/29;* **C07K** *7/00, 15/00*

U.S. Cl. 424—88 2 Claims

1. A T cell stimulating polypeptide consisting essentially of an amino acid residue sequence corresponding to a formula selected from the group consisting of:

(a) MDIDPYKEFGATVELLSFLP,
(b) RDLLDTASALYREALESPEHCSPHH,
(c) TWVGVNLEDPASRDLVVSYVNTNMG,
(d) VVSYVNTNMGLKFRQL,
(e) VVSYVNTNMGLK,
(f) LLWFHISCLTFGRETVIEYLV,
(g) LLWFHISCLTF,
(h) VSFGVWIRTPPAYRPPNAPIL,
(i) VSFGVWIRTPPA,
(j) PPAYRPPNAPIL, and
(k) WIRTPPAYRPPN.

4,882,146
PREVENTING ADP-RIBOSYLATION OF G-PROTEINS IN A LIVING SUBJECT

Richard A. Shiells, Barwick Near Ware, and Gertrude Falk, London, both of England, assignors to University College London, London, England

Filed Mar. 28, 1988, Ser. No. 174,407

Claims priority, application United Kingdom, Mar. 26, 1987, 8707293; Jun. 22, 1987, 8714544

Int. Cl.^{4} A61K *31/52, 31/44, 31/195*

U.S. Cl. 424—10 3 Claims

1. A method of reversing or blocking the adverse effects in a living subject of a microbial toxin which ADP-ribosylates G-group which comprises administering to said subject endangered by said microbial toxin an amount of nicotinamide effective to reverse or block said adverse effect.

4,882,147
NOVEL POLYNUCLEOTIDE ANALOGS, METHODS FOR INHIBITING NUCLEIC ACID POLYMERASES AND METHODS FOR INDUCING SYNTHESIS OF INTERFERON

Thomas J. Bardos, Snyder; Yau-Kwan Ho, Williamsville; Steven J. Kasper, Rochester, and Robert G. Hughes, Jr., Kenmore, all of N.Y., assignors to The Research Foundation of State University of New York, Albany, N.Y.

Filed Dec. 16, 1987, Ser. No. 133,524

Int. Cl.^{4} A61K *39/00, 45/02*

U.S. Cl. 424—85.4 22 Claims

1. A partially substituted 3'→5' polyribonucleotide or salts thereof comprising a polymeric chain derived from a pyrimidine base-containing mononucleotide selected from the group consisting of cytidine-5'-phosphoric acid (CMP) and a uridine-5'-phosphate (UMP) in which from about 5 to about 90 percent of the hydrogens in the 5-position of the pyrimidines in the polymer chains are substituted with fluorine and in addition from about 1 to about 30 percent of the hydrogens in the 5-position of the pyrimidines in the polymer chains are substituted with mercapto groups which may be present in their oxidized disulfide form.

4,882,148
CRACK PREVENTION AND IMPROVED THROMBOGENICITY OF IMPLANTED PROSTHESES BY SULFONATION

Leonard Pinchuk, Miami, Fla., assignor to Corvita Corporation, Miami, Fla.

Filed Jun. 18, 1987, Ser. No. 63,537

Int. Cl.^{4} A61K *2/00*

U.S. Cl. 424—423 30 Claims

1. A treatment method for substantially preventing in vivo cracking of biocompatible surfaces of implanted devices for medical use, consisting essentially of:

providing a shaped substrate of an implantable medical device having a biocompatible polymeric surface that is susceptible to cracking when subjected to subcutaneous implantation under in vivo conditions for substantial time periods, such in vivo conditions including those that promote crack-forming biodegradation of said biocompatible polymeric surface;

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applying a crack preventive composition to said biocompatible polymeric surface, said crack preventive composition including a sulfonating agent, said sulfonating agent is selected from the group consisting of fuming sulfuric acid, concentrated sulfuric acid, sulfur trioxide vapors, and blends thereof with an alcohol or a blend of alcohols;

reacting said sulfonating agent with said biocompatible polymeric surface in order to substantially prevent in vivo cracking of said surface without requiring any additional treatment of said surface; and

said providing step includes selecting said substrate to contain a polymeric structure which contains aromatic moieties.

4,882,149
PHARMACEUTICAL DEPOT PREPARATION

Myron Spector, Atlanta, Ga., assignor to Ed. Geistlich Sohne A.G. fur Chemische Industrie, Lucerne, Switzerland

Continuation of Ser. No. 6,557, Feb. 18, 1987, abandoned. This **application Sep. 21, 1988, Ser. No. 248,302**

Claims priority, application United Kingdom, Jun. 4, 1985, 8514055

Int. Cl.^{4} A01N *25/00*

U.S. Cl. 424—425 9 Claims

1. Pharmaceutical depot preparations for implantation into bone tissue comprising natural bone mineral from which the naturally associated fat and bone-proteins have been removed whereby said bone is sterile and non-allergenic, said bone mineral having adsorbed thereon and/or absorbed therein one or more physiologically active substances.

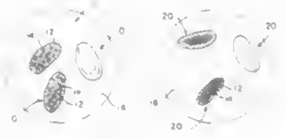
4,882,150
DRUG DELIVERY SYSTEM

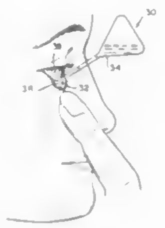
Herbert E. Kaufman, 300 Lake Marina Dr., Unit 18E, New Orleans, La. 70124

Division of Ser. No. 202,184, Jun. 3, 1988. This application May 1, 1989, Ser. No. 345,170

Int. Cl.^{4} A61K *9/22*

U.S. Cl. 424—428 10 Claims





1. Method of treating the eye, comprising:

applying directly to the eye a suspension of at least one particle of bioerodable material including an opthalmic drug in one of a liquid carrier and an ointment carrier containing at least the same opthalmic drug as in said at least one particle of bioerodable material in the same chemical form and having a pH acceptable to the eye.

4,882,151
CONFECTIONERY DELIVERY SYSTEM FOR ANTIHISTIMINES

Robert K. Yang, Randolph; Shri C. Sharma, Mendham; Shan-Shan Sheu, Parsippany, and James J. Shaw, Morristown, all of N.J., assignors to Warner Lambert Co., Morris Plains, N.J.

Division of Ser. No. 811,601, Dec. 20, 1985, Pat. No. 4,778,676. This application Oct. 14, 1988, Ser. No. 258,284

Int. Cl.^{4} A61K *9/20, 9/28*

U.S. Cl. 424—440 14 Claims

1. A chewable confectionery delivery system for antihistamines comprising:

(a) an antihistamine pre-coated with at least one material selected from the group consisting of lecithin, polyoxyalkylenes having chain lengths of about 4 carbons or less, glycerides having a melting point of 100° C. or less, polyalkyleneglycols having a molecular weight of 3,700 or less, synthetic and natural waxes and mixtures thereof; and

(b) a confectionery matrix comprising a binder system comprising from about 0.1% to about 5% by weight gelatin and a humectant material selected from the group consisting of glycerin and its lower alkyl (C_{2-7}) ester derivatives, a sweetener; and about 1% to about 30% by weight water, all weights are in percent of the final delivery system.

4,882,152
CONFECTIONERY DELIVERY SYSTEM FOR LAXATIVES, VITAMINS AND ANTACIDS

Robert K. Yang, 12 Roc Etam Rd., Randolph, N.J. 07869; Shri C. Sharma, 40 Oak Knoll Rd., Mendham, N.J. 07945; Shan-Shan Sheu, 20 Jean Ter., Parsippany, N.J. 07054, and James J. Shaw, 34 Valley View St., Morristown, N.J. 07960

Division of Ser. No. 811,601, Dec. 20, 1985, Pat. No. 4,778,676. This application Oct. 14, 1988, Ser. No. 258,285

Int. Cl.^{4} A61K *9/20, 9/28*

U.S. Cl. 424—440 13 Claims

1. A chewable confectionery delivery system for laxatives, vitamins and antacids comprising:

(a) a laxative, vitamin and antacid pre-coated with at least one material selected from the group consisting of lecithin, polyoxyalkylenes having chain lengths of about 4 carbons or less, glycerides having a melting point of 100° C. or less, polyalkyleneglycols having a molecular weight of 3,700 or less, synthetic and natural waxes and mixtures thereof; and

(b) a confectionery matrix comprising a binder system comprising from about 0.1% to about 5% by weight gelatin and a humectant material selected from the group consisting of glycerin and its lower alkyl (C_{2-7}) ester derivatives, a sweetener; and about 1% to about 30% by weight water, all weights are in percent of the final delivery system.

4,882,153
CONFECTIONERY DELIVERY SYSTEM FOR ANTITUSSIVES

Robert K. Yang, Randolph; Shri C. Sharma, Mendham; Shan-Shan Sheu, Parsippany, and James J. Shaw, Morristown, all of N.J., assignors to Warner Lambert Co., Morris Plains, N.J.

Division of Ser. No. 871,601, Dec. 20, 1985, Pat. No. 4,778,676. This application Oct. 13, 1988, Ser. No. 257,604

Int. Cl.^{4} A61K *9/20, 9/28*

U.S. Cl. 424—440 14 Claims

1. A chewable confectionery delivery system for antitussives comprising:

(a) an antitussive pre-coated with at least one material selected from the group consisting of lecithin, polyoxyalkylenes having chain lengths of about 4 carbons or less, glycerides having a melting point of 100° C. or less, polyalkyleneglycols having a molecular weight of 3,700 or less, synthetic and natural waxes and mixtures thereof; and

(b) a confectionery matrix comprising a binder system comprising from about 0.1% to about 5% by weight gelatin and a humectant material selected from the group consisting of glycerin and its lower alkyl (C_{2-7}) ester derivatives, a sweetener; and about 1% to about 30% by weight water, all weights are in percent of the final delivery system.

4,882,154
CONFECTIONERY DELIVERY SYSTEM FOR MINERAL SUPPLEMENTS

Robert K. Yang, Randolph; Shri C. Sharma, Mendham; Shan-Shan Sheu, Parsippany, and James J. Shaw, Morristown, all of N.J., assignors to Warner Lambert Co., Morris Plains, N.J.

Division of Ser. No. 811,601, Dec. 20, 1985, Pat. No. 4,778,676. This application Oct. 13, 1988, Ser. No. 257,497

Int. Cl.^{4} A61K *9/20, 9/28*

U.S. Cl. 424—440 14 Claims

1. A chewable confectionery delivery system for mineral supplements comprising:

(a) a mineral supplement pre-coated with at least one material selected from the group consisting of lecithin, polyoxyalkylenes having chain lengths of about 4 carbons or less, glycerides having a melting point of 100° C. or less, polyalkyleneglycols having a molecular weight of 3,700 or less, synthetic and natural waxes and mixtures thereof; and

(b) a confectionery matrix comprising a binder system comprising from about 0.1% to about 5% by weight gelatin and a humectant material selected from the group consisting of glycerin and its lower alkyl (C_{2-7}) ester derivatives, a sweetener; and about 1% to about 30% by weight water, all weights are in percent of the final delivery system.

4,882,155
CONFECTIONERY DELIVERY SYSTEM FOR ANTIARRHYTHMICS

Robert K. Yang, Randolph; Shri C. Sharma, Mendham; Shan-Shan Sheu, Parsippany, and James J. Shaw, Morristown, all of N.J., assignors to Warner Lambert Co., Morris Plains, N.J.

Division of Ser. No. 811,601, Dec. 20, 1985, Pat. No. 4,778,676. This application Oct. 14, 1988, Ser. No. 258,243

Int. Cl.^{4} A61K *9/20, 9/28*

U.S. Cl. 424—440 14 Claims

1. A chewable confectionery delivery system for antiarrhythmics comprising:

(a) an antiarrhythmics pre-coated with at least one material selected from the group consisting of lecithin, polyoxyalkylenes having chain lengths of about 4 carbons or less, glycerides having a melting point of 100° C. or less, polyalkyleneglycols having a molecular weight of 3,700 or less, synthetic and natural waxes and mixtures thereof; and

(b) a confectionery matrix comprising a binder system comprising from about 0.1% to about 5% by weight gelatin and a humectant material selected from the group consisting of glycerin and its lower alkyl (C_{2-7}) ester derivatives, a sweetener; and about 1% to about 30% by weight water, all weights are in percent of the final delivery system.

4,882,156
CONFECTIONERY DELIVERY SYSTEM FOR EXPECTORANTS

Robert K. Yang, Randolph; Shri C. Sharma, Mendham; Shan-Shan Sheu, Parsippany, and James J. Shaw, Morristown, all of N.J., assignors to Warner Lambert Co., Morris Plains, N.J.

Division of Ser. No. 811,601, Dec. 20, 1985, Pat. No. 4,778,676. This application Oct. 14, 1988, Ser. No. 258,248

Int. Cl.^{4} A61K *9/20, 9/28*

U.S. Cl. 424—440 14 Claims

1. A chewable confectionery delivery system for expectorants comprising:

(a) an expectorant pre-coated with at least one material selected from the group consisting of lecithin, polyoxyalkylenes having chain lengths of about 4 carbons or less, glycerides having a melting point of 100° C. or less, polyalkyleneglycols having a molecular weight of 3,700 or less, synthetic and natural waxes and mixtures thereof; and

(b) a confectionery matrix comprising a binder system comprising from about 0.1% to about 5% by weight gelatin and a humectant material selected from the group consisting of glycerin and its lower alkyl (C_{2-7}) ester derivatives, a sweetener; and about 1% to about 30% by weight water, all weights are in percent of the final delivery system.

4,882,157
CONFECTIONERY DELIVERY SYSTEM FOR ANTI-CHOLESTEROLEMICS

Robert K. Yang, 12 Roc Etam Rd., Randolph, N.J. 07869; Shri C. Sharma, 40 Oak Knoll Rd., Mendham, N.J. 07945; Shan-Shan Sheu, 20 Jean Ter., Parsippany, N.J. 07054, and James J. Shaw, 34 Valley View St., Morristown, N.J. 07960

Division of Ser. No. 811,601, Dec. 20, 1985, Pat. No. 4,778,676. This application Oct. 14, 1988, Ser. No. 258,246

Int. Cl.^{4} A61K *9/20, 9/28*

U.S. Cl. 424—440 14 Claims

1. A chewable confectionery delivery system for anti-cholesterolemics comprising:

(a) an anti-cholesterolemic pre-coated with at least one material selected from the group consisting of lecithin, polyoxyalkylenes having chain lengths of about 4 carbons or less, glycerides having a melting point of 100° C. or less, polyalkyleneglycols having a molecular weight of 3,700 or less, synthetic and natural waxes and mixtures thereof; and

(b) a confectionery matrix comprising a binder system comprising from about 0.1% to about 5% by weight gelatin and a humectant material selected from the group consisting of glycerin and its lower alkyl (C_{2-7}) ester derivatives, a sweetener; and about 1% to about 30% by weight water, all weights are in percent of the final delivery system.

4,882,158
CONFECTIONERY DELIVERY SYSTEM FOR DECONGESTANTS

Robert K. Yang, Randolph; Shri C. Sharma, Mendham; Shan-Shan Sheu, Parsippany, and James J. Shaw, Morristown, all of N.J., assignors to Warner Lambert Co., Morris Plains, N.J.

Division of Ser. No. 811,601, Dec. 20, 1985, Pat. No. 4,778,676. This application Oct. 14, 1988, Ser. No. 258,247

Int. Cl.^{4} A61K *9/20, 9/28*

U.S. Cl. 424—440 14 Claims

1. A chewable confectionery delivery system for decongestants comprising:

(a) a decongestant pre-coated with at least one material selected from the group consisting of lecithin, polyoxyalkylenes having chain lengths of about 4 carbons or less, glycerides having a melting point of 100° C. or less, polyalkyleneglycols having a molecular weight of 3,700 or less, synthetic and natural waxes and mixtures thereof; and

(b) a confectionery matrix comprising a binder system comprising from about 0.1% to about 5% by weight gelatin

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and a humectant material selected from the group consisting of glycerin and its lower alkyl $(C_{2\text{-}7})$ ester derivatives, a sweetener; and about 1% to about 30% by weight water, all weights are in percent of the final delivery system.

4,882,159
CONFECTIONERY DELIVERY SYSTEM FOR APPETITE SUPPRESSANTS

Robert K. Yang, Randolph; Shri C. Sharma, Mendham; Shan-Shan Sheu, Parsippany, and James J. Shaw, Morristown, all of N.J., assignors to Warner Lambert Co., Morris Plains, N.J.
Division of Ser. No. 811,601, Dec. 20, 1985, Pat. No. 4,778,676. This application Oct. 14, 1988, Ser. No. 258,244
Int. Cl.^{4} A61K *9/20, 9/28*
U.S. Cl. 424—440 14 Claims

1. A chewable confectionery delivery system for appetite suppressants comprising:
(a) an appetite suppressant pre-coated with at least one material selected from the group consisting of lecithin, polyoxyalkylenes having chain lengths of about 4 carbons or less, glycerides having a melting point of 100° C. or less, polyalkyleneglycols having a molecular weight of 3,700 or less, synthetic and natural waxes and mixtures thereof; and
(b) a confectionery matrix comprising a binder system comprising from about 0.1% to about 5% by weight gelatin and a humectant material selected from the group consisting of glycerin and its lower alkyl $(C_{2\text{-}7})$ ester derivatives, a sweetener; and about 1% to about 30% by weight water, all weights are in percent of the final delivery system.

4,882,160
CONFECTIONERY DELIVERY SYSTEM FOR DICTARY FIBER

Robert K. Yang, Randolph; Shri C. Sharma, Mendham; Shan-Shan Sheu, Parsippany, and James J. Shaw, Morristown, all of N.J., assignors to Warner Lambert Co., Morris Plains, N.J.
Division of Ser. No. 811,601, Dec. 20, 1985, Pat. No. 4,778,676. This application Oct. 13, 1988, Ser. No. 257,603
Int. Cl.^{4} A61K *9/20, 9/28*
U.S. Cl. 424—440 16 Claims

1. A chewable confectionery delivery system for dietary fiber comprising:
(a) a dietary fiber pre-coated with at least one material selected from the group consisting of lecithin, polyoxyalkylenes having chain lengths of about 4 carbons or less, glycerides having a melting point of 100° C. or less, polyalkyleneglycols having a molecular weight of 3,700 or less, synthetic and natural waxes and mixtures thereof; and
(b) a confectionery matrix comprising a binder syste comprising from about 0.1% to about 5% by weight gelatin and a humectant material selected from the group consisting of glycerin and its lower alkyl $(C_{2\text{-}7})$ ester derivatives, a sweetener; and about 1% to about 30% by weight water, all weights are in percent of the final delivery system.

4,882,161
CHEWABLE, NON-GRITTY CALCIUM CITRATE TABLET

Heinrich P. Scheurer, and Adrian G. McNamee, both of Scarborough, Canada, assignors to Warner-Lambert Company, Morris Plains, N.J.
Filed Dec. 31, 1987, Ser. No. 140,014
Int. Cl.^{4} A61K *9/28*
U.S. Cl. 424—441 15 Claims

1. A non-gritty, chewable, calcium tablet comprising a granulation having a bulk density of about 0.3 g/ml to about 1.5 g/ml, and 300 mg. of calcium said granulation comprising micronized calcium citrate having a particle size from about 0.1 micronmeters to about 10.0 micronmeters, a sweetener and a lubricant.

4,882,162
ARTIFICIAL SKIN

Yoshito Ikada; Shokyu Gen, both of Uji; Shigeo Ohi, Ayabe; Yosuke Urabe, Hiratsuka, and Hiroyuki Kawashima, Ayase, all of Japan, assignors to Dow Corning Kabushiki Kaisha, Tokyo, Japan
Filed Sep. 8, 1988, Ser. No. 242,085
Claims priority, application Japan, Jun. 27, 1987, 62-157500
Int. Cl.^{4} A61L *15/04*
U.S. Cl. 424—444 11 Claims

1. Artificial skin characteristically consisting of a polymer support film and a woven or knitted fabric formed of fibrous material fixed on said polymer support film, wherein the fabric is prepared from bioabsorbable substance which has an initial strength when formed into a fabric of 90 to 168 grams per fiber and the strength of said fibrous material has been reduced to approximately 30 to 67 grams per fiber of degradative treatment.

4,882,163
TRANSDERMAL THERAPEUTIC SYSTEM

Günter Guse, Hamburg; Michael Horstmann, Neuwied, and Axel Erler, Hamburg, all of Fed. Rep. of Germany, assignors to Beiersdorf Aktiengesellschaft, Hamburg, Fed. Rep. of Germany
Filed Aug. 1, 1988, Ser. No. 226,631
Claims priority, application Fed. Rep. of Germany, Sep. 2, 1987, 3729299
Int. Cl.^{4} A61F *13/02*
U.S. Cl. 424—448 8 Claims

1. A tansdermal therapeutic system for administration of moxonidine, comprising moxonidine and at least one higher n-alkane carboxylic acid with at least 12 C. atoms as a permeation accelerator.

4,882,164
PARENTERAL MICELLE SOLUTIONS

Alberto Ferro, Riehen, and Hans Steffen, Liestal, both of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.
Filed Jan. 19, 1988, Ser. No. 144,997
Claims priority, application Switzerland, Feb. 3, 1987, 380/87
Int. Cl.^{4} A61K *37/20;* **G01N** *33/92*
U.S. Cl. 424—450 9 Claims

1. Aqueous mixed micelle solutions consisting essentially of a salt of a cholanic acid, a lipid, an effective amount of a nonsteroidal anti-inflammatory compound which is a carboxylic acid derivative, wherein the molar ratio between the lipid and the cholanic acid is in the range of from 0.1:1 to 2:1.

4,882,165
LIGHT SENSITIVE LIPOSOMES

Anthony C. Hunt, and Charles Pidgeon, both of San Francisco, Calif., assignors to The Regents of the University of California, Oakland, Calif.
Continuation of Ser. No. 319,294, Nov. 9, 1981, abandoned. This application Nov. 5, 1986, Ser. No. 926,877
Int. Cl.^{4} A61K *37/22;* **A61J** *5/00;* **B01J** *13/02;* **B32B** *5/16*
U.S. Cl. 424—450 15 Claims

1. A light sensitive liposome comprising:
a lipid membrane, said lipid membrane encapsulating a fluid, said lipid membrane including a light sensitive lipid in an amount from about 50 wt.% to about 100 wt.% of the lipid membrane and having a polar head region and a nonpolar tail region, said light sensitive lipid including one retinoyl group or two retinoyl groups covalently bonded in the nonpolar tail region of said light sensitive lipid, said light sensitive lipid having an absorptive of light at a predetermined wavelength between about 300 nm to about 400 nm, said light sensitive lipid providing release of said fluid from said lipid membrane in response to an effective amount of irradiation at said predetermined wavelength.

4,882,166
COMPOSITIONS COMPRISING ENCAPSULATED PARTICLES AND THEIR PREPARATION

Neil B. Graham, Bearsden; Abdul Rashid, and Koritala P. Rao, both of Glasgow, all of Scotland, assignors to National Research Development Corporation, London, United Kingdom
Continuation of Ser. No. 840,540, Mar. 17, 1986, abandoned, which is a continuation of Ser. No. 430,360, Sep. 30, 1982, abandoned. This application Aug. 20, 1987, Ser. No. 88,539
Claims priority, application United Kingdom, Sep. 30, 1981, 8129575; Sep. 16, 1982, 8226355
Int. Cl.^{4} A61K *9/58;* **B01J** *13/02*
U.S. Cl. 424—462 40 Claims

1. A composition which comprises at least one particle, the or each particle comprising an active substance-containing solid or liquid core encapsulated by a (co)polymer, which composition is obtained by treating at least one solid or liquid active substance-containing particle by adsorbing thereon at least one amphipathic compound and, if the amphipathic compound is not itself capable of acting as an initiator in cationic polymerization, activating the amphipathic compound with a Bronsted or Lewis acid so that it can function as an initiator in cationic polymerization; and encapsulating the at least one treated particle by the in situ (co)polymerization thereon, in a non-aqueous medium, of at least one cationically polymerizable monomer or prepolymer.

4,882,167
DRY DIRECT COMPRESSION COMPOSITIONS FOR CONTROLLED RELEASE DOSAGE FORMS

Choong-Gook Jang, 12D Jules La., New Brunswick, N.J. 08901
Continuation of Ser. No. 846,579, Mar. 31, 1986, abandoned, which is a continuation-in-part of Ser. No. 600,472, Apr. 16, 1984, abandoned, which is a continuation of Ser. No. 535,604, Sep. 26, 1983, abandoned, which is a continuation-in-part of Ser. No. 499,221, May 31, 1983, abandoned, which is a continuation-in-part of Ser. No. 419,409, Sep. 17, 1982, abandoned, which is a continuation-in-part of Ser. No. 316,993, Nov. 2, 1981, abandoned, which is a continuation-in-part of Ser. No. 147,929, May 8, 1980, abandoned, which is a continuation-in-part of Ser. No. 54,856, Jul. 5, 1979, abandoned, which is a continuation-in-part of Ser. No. 34,580, Apr. 30, 1979, abandoned. This application Nov. 24, 1987, Ser. No. 124,887
Int. Cl.^{4} A61K *9/20, 9/22, 9/26*
U.S. Cl. 424—468 32 Claims

1. A dry, direct compressed product containing controlled release dosage forms of therapeutically active particulate agents produced without heat or solvents by the steps comprising: (a) dry blending blend particles, all of which have particle sizes smaller than 20 mesh, consisting essentially of from 0.01 to 95 weight parts of biologically active particulate solids with from 5 to 99.99 weight parts of a matrix blend combination consisting essentially of from 1 to 96 parts by weight of a hydrophobic carbohydrate polymer of the class of ethyl cellulose, propyl cellulose, cellulose acetate, cellulose propionate, cellulose acetatebutryate and cellulose acetate-propionate and from 4 to 99 parts by weight of a digestive-difficulty soluble component of the class consisting of a wax of the class consisting of carnauba wax, spermceti, beeswax, candelilla wax, esparto and paraffins; a fatty acid material of the class consisting of fatty acids having from 12 to 28 carbon atoms, fatty monoalchols having 12 to 28 carbon atoms, fatty amines and amides having from 12 to 28 carbon atoms; a neutral lipid of the class consisting of stearin, palmitin, castorwax, phospholipids, glycolipids, glycerides, hydrogenated cottonseed oil, hydrogenated cottonseed oil, hydrogenated tallow and metal and organic salts of C_{11}–C_{28} fatty acids: and, mixtures thereof; (b) compressing said blended solids and blend under a pressure of 1.5 to 20 tons per square inch; and (c) thereafter, recovering said compressed product having a hardness of 4 to 25 kg and excellent resistance to delamination when subjected to an external longitudinal force.

4,882,168
POLYESTERS CONTAINING ALKYLENE OXIDE BLOCKS AS DRUG DELIVERY SYSTEMS

Donald J. Casey, Ridgefield, and Louis Rosati, Norwalk, both of Conn., assignors to American Cyanamid Company, Stamford, Conn.
Filed Sep. 5, 1986, Ser. No. 903,801
The portion of the term of this patent subsequent to Dec. 29, 2004, has been disclaimed.
Int. Cl.^{4} A61K *31/74;* **C08G** *63/08*
U.S. Cl. 424—468 15 Claims

1. A slow release drug delivery system comprising
a drug and
an ABA or AB block polymer wherein the (B) block is a poly(alkylene oxide) having an average molecular weight in a range of about 5,000 to about 20,000 and the blocks (A) are comprised of degradable random copolymers of (1) the cyclic ester of an alpha-hydroxy acid and (2) trimethylene carbonate; wherein said block polymer has a glass transition temperature at or less than 16° C.

4,882,169
SWELLABLE PELLETS

Kimon Ventouras, Le Lignon, Switzerland, assignor to Zyma Sa, Nyon, Switzerland
Filed Feb. 2, 1988, Ser. No. 151,502
Claims priority, application United Kingdom, Feb. 3, 1987, 8702411
Int. Cl.^{4} A61K *9/16*
U.S. Cl. 424—493 14 Claims

1. Pellets comprising
(a) a core, containing microparticles of at least one pharmaceutically active substance,
(b) optionally one or more coating layer(s) and
(c) an outer layer which rapidly swells and rapidly becomes jellified in contact with water containing a rapidly swelling and rapidly jellifying material selected from the group consisting of xanthan gum and derivatives thereof, guar gum and derivatives thereof, alginates, polysaccharides,

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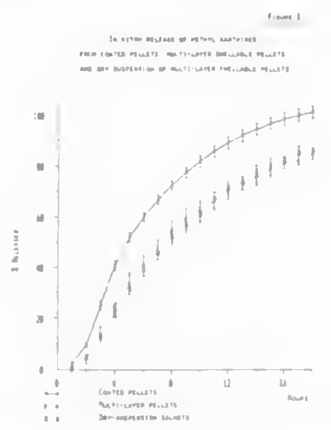
cellulose derivatives, polyvinyl alcohol, pregelatinized starches and swellable acrylic polymers,



which pellets, when contacted with water, are rapidly dispersed so as to generate a viscous, homogeneous suspension that can easily be swallowed.

4,882,170
METHOD OF TREATMENT

Rogelio Menendez, Nashua, N.H., and Kenneth J. Gorelick, Winchester, Mass., assignors to Fisons Corporation, Bedford, Mass.

Filed Mar. 20, 1987, Ser. No. 28,451

Int. Cl.⁴ A61K *33/00, 31/35*

U.S. Cl. 424—600 11 Claims

1. A method for the inhibition of an allergic reaction or tissue inflammation resulting from the placement of an endotracheal instrument or device, which method comprises the steps of

(a) administration by inhalation of cromolyn sodium to a patient, and

(b) placement of the endotracheal instrument or device, steps (a) and (b) being performed in any order or simultaneously.

4,882,171
VANADIUM-PEROXIDE COMPOSITIONS AS INSULIN MIMICKERS

Barry I. Posner, 125 Geneva Crescent, Town of Mount Royal, Quebec, Canada (H3R 2A7), and I. George Fantus, 4745 Meridian, Westmount, Canada (H3W 2C2)

Filed Oct. 7, 1987, Ser. No. 105,212

Claims priority, application Canada, Oct. 16, 1986, 520627

Int. Cl.⁴ A61K *33/24, 33/40*

U.S. Cl. 424—616 9 Claims

1. A method of augmenting protein synthesis comprising addition of an effective amount of a composition comprising vanadate in a concentration range of from 10^{-4} to 10 millimolar and of peroxide in a concentration range of from 10^{-1} to 10 millimolar to an environment in which protein synthesis takes place.

4,882,172
SYSTEM FOR PROCESSING CHEWING GUM

Terrance L. Van Alstine, Palatine Bridge, N.Y., assignor to Nabisco Brands, Inc., East Hanover, N.J.

Filed Apr. 8, 1988, Ser. No. 179,467

Int. Cl.⁴ B23G *3/30*

U.S. Cl. 425—113 12 Claims

1. A system for processing chewing gum composition, comprising:

segment forming means to form the chewing gum into a multitude of segments;

a plurality of extruders to extrude the gum segments into a plurality of ropes;

conveyor means extending from a position adjacent the segment forming means and over a predetermined path past each of the plurality of extruders, to transport the gum segments from said position adjacent the segment forming means and along said predetermined path;

means to feed the gum segments onto the conveyor means from the segment forming means;

means to feed the gum segments from the conveyor means and into the extruders; and

a plurality of wrapping means to receive the ropes from the extruders, to cut each rope into a multitude of pieces and to wrap the pieces.

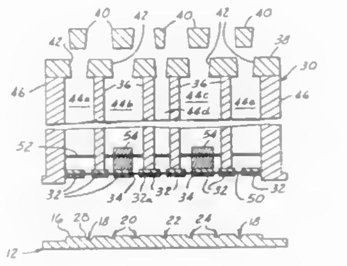
4,882,173
APPARATUS FOR MOLDING THERMOPLASTIC MATERIAL

Wayne D. LaRoche, Farmington, and John D. Gray, New Durham, both of N.H., assignors to Davidson Textron Inc., Dover, N.H.

Filed Jul. 24, 1987, Ser. No. 77,435

Int. Cl.⁴ B29C *31/10, 39/12, 41/18, 41/22*

U.S. Cl. 425—130 4 Claims



1. In apparatus for molding decorative features in a base layer of thermoplastic material which is formed by casting dry thermoplastic particles having a fusion temperature against a heated mold surface, the improvement comprising;

a casting mold having a mold surface with recesses formed therein having closed marginal edges defining a decorative feature;

a combined mask and container means connectable with respect to said casting mold; said combined mask and container means including heat resistant foot portions with sealing edges of a form to correspond to said closed marginal edges of said recesses and with end surfaces engageable with said mold to cover said mold surface in surrounding relationship to said recesses to as to prevent fusion of thermoplastic material thereon other than in said recesses;

first distribution means including said combined mask and container means operable to supply a plurality of different colored dry thermoplastic materials and to distribute different colored particles to preselected ones of said recesses when said sealing edges are in alignment with said marginal edges thereof while said end surfaces are masking thermoplastic material from other portions of said mold in surrounding relationship to said recesses;

means for heating said mold surface to a temperature less than said fusion temperature of said thermoplastic material to produce a semi-cured deposit of material in said recesses;

said first distribution means operable to return excess thermoplastic from said heated mold surface when said combined mask and container means is disconnected from said heated mold surface; and

second distribution means for distributing color contrasting base layer of thermoplastic material onto said semi-cured deposit of material for subsequent curing and bonding of said semi-cured deposit and base layer of thermoplastic material prior to cooling said and stripping said mold.

4,882,174
ARTIFICIALLY EXTENDED NATURAL SEAFOOD BAIT AND METHOD OF MAKING THE SAME

Jay B. Burreson, 1664 N.W. Midlake La., Beavertnn, Oreg. 97005; William B. Neels, 4481 S.E. Concord Rd., Milwaukie, Oreg. 97222; Theodore G. Plew, 8351 N.E. Union Ave., Portland, Oreg. 97211, and James H. Borger, 13260 N.W. Overton St., Portland, Oreg. 97229

Continuation-in-part of Ser. No. 852,083, Apr. 14, 1986, abandoned, and a continuation of Ser. No. 707,421, Mar. 1, 1985, abandoned, and a continuation-in-part of Ser. No. 521,617, Ang. 8, 1983, abandoned. This application Jul. 28, 1987, Ser. No. 79,203

Int. Cl.⁴ A23K *1/00*

U.S. Cl. 426—1 5 Claims

1. A method of making an artificially extended natural seafood bait for automatic hook baiting and hook cleaning, comprising dispersing throughout a liquified quantity of one or both of the natural bait extending materials gelatin and pectin, a quantity of natural solid fish or seafood bait ground to a particle size of not more than about ⅛ inch thick, and a mat of randomly crossed fibers of a fibrous material, and thereafter solidifying the liquid to form a fiber-reinforced artificially extended natural bait suitable for automatic hook baiting and hook cleaning.

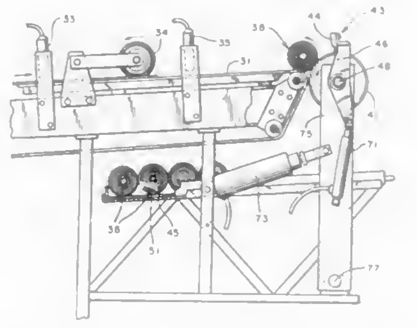
4,882,175
METHOD FOR FORMING A CONFECTIONARY PRODUCT INTO A ROLLED TAPE

Ronald L. Ream, North Aurora; Robert D. Riedy, Naperville, and Michael McHale, Aurora, all of Ill., assignors to Wm. Wrigley Jr. Company, Chicago, Ill.

Filed May 5, 1988, Ser. No. 190,664

Int. Cl.⁴ A23G *3/02, 3/30*

U.S. Cl. 426—5 9 Claims



1. A method of forming a confectionary product into a rolled tape comprising the steps of:

providing a mass of chewing gum;

forming said mass into a thin, flat, generally rectangular sheet having a leading edge;

rolling said flat sheet about said leading edge; and

cutting said rolled flat sheet in planes generally perpendicular to said leading edge to thereby produce a plurality of individual pieces of said chewing gum of a predetermined width in the form of a rolled tape.

4,882,176
METHOD FOR MOLDING CONFECTIONERY PRODUCTS

Kazuya Koyama, No. 6-26-16, Minami-Kasai; Edogana-ku, Tokyo, and Yoshimasa Yoknyama, No. 2-5-3-194, Sumiyoshi-Higashi-machi Higashi-Nada-ku, Kobe, Hyogo-ken, both of Japan

Filed May 2, 1988, Ser. No. 189,309

Claims priority, application Japan, May 2, 1987, 62-109472; Dec. 4, 1987, 62-308030

Int. Cl.⁴ A23G *3/30*

U.S. Cl. 426—5 5 Claims

1. In a method of injection molding chewing gum to provide a final product with a detailed molded outer surface, the improvement comprising the steps of:

supplying a mass of chewing gum at a temperature between 122° F. and 140° F. to an injection mold,

freezing the surface interface of the chewing gum contacting the mold, and

ejecting the molded chewing gum product while its surface is in a frozen state, whereby the separation of the chewing gum product from the mold, due to the frozen state of the chewing gum, ensures that the detailed outer surfaces of the chewing gum product are retained.

4,882,177
METHOD FOR THE PRODUCTION OF ALCOHOL-FREE BEER

Klaus Dziondziak, Pinneberg, Fed. Rep. of Germany, assignor to Holsten-Brauerei AG, Hamburg, Fed. Rep. of Germany

Filed May 11, 1987, Ser. No. 47,467

Claims priority, application Fed. Rep. of Germany, May 13, 1986, 3616093

Int. Cl.⁴ C12C *11/00*

U.S. Cl. 426—14 17 Claims

1. A method for the production of alcohol free beer which comprises:

(a) aerobically treating a yeast-containing alcoholic beer by leading a gas through said yeast-containing alcoholic beer which contains of from about 0.25 to 1.80% by weight of fermentable substances, in order to desorb said alcohol; and

(b) carrying out said aerobic treatment and said desorption of said alcohol at a temperature of 25° C. to 50° C. until said fermentable substances are present in a residual amount of from about 0.1 to 0.5% by weight;

wherein said fermentable substances partially metabolize producing aromatic substances which give beer its taste and which compensates for the deficit of taste as a result of the removal of said alcohol.

4,882,178
PROCESS FOR PREPARING YEAST RAISED DOUGHNUTS

Akira Shimamura, Kokubunji, Japan, assignor to Nisshin-DCA Foods, Inc., Tokyo, Japan

Filed May 25, 1988, Ser. No. 198,524

Claims priority, application Japan, Feb. 10, 1988, 58-29939

Int. Cl.⁴ A21D *2/02, 8/04*

U.S. Cl. 426—27 1 Claim

1. A process for preparing a yeast raised doughnut, comprising the steps of fermenting a doughnut dough containing yeast and a chemical leavening agent for a fermentation time in the range of 60–110 minutes, degassing the fermented dough,

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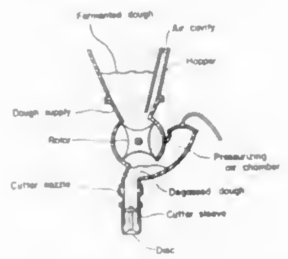
cutting and forming the degassed dough with a pressure cutter, and then not subjecting the cut dough to final proofing but



immediately frying the cut dough in oil to obtain a yeast raised doughnut.

4,882,179
METHOD OF MANUFACTURE OF CREAMY HAVARTI STYLE CHEESE

James D. Beyer, Gresham, and Mark E. Johnson, Madison, both of Wis., assignors to Wisconsin Milk Marketing Board, Madison, Wis.

Filed Sep. 15, 1988, Ser. No. 245,335
Int. Cl.^{4} A23C *19/00*

U.S. Cl. 426—36 **18 Claims**

1. In a method of manufacture of a Havarti cheese comprising the steps of: providing standardized and pasteurized milk; adding mesophilic culture comprising organisms having enzymatic activity; ripening the milk and adding rennet to form a curd; cutting the curd; healing the curd; stirring the curd; removing a volume of whey; adding hot water equal to the volume of whey remove and cooking the curd for a cooking time; second stirring the curd; hooping the curd; turning the hoops; and brining and curing the cheese, with the improvement comprising cooking the curd at a temperature in the range of 104° to 106° F. for a cooking time of about one hour for retarding the culture growth, to restrict the number of the cells, to reduce the bitterness in the cheese and for modifying the enzymatic activity of the organisms while still achieving acid production.

4,882,180
SOYBEAN HYDROLYZATE

Shoji Takao, Higashikurume; Hiroshi Nakashima, Inagi; Makoto Watanabe, Tama; Makoto Saitoh, Aichi; Kyoko Chiba, Musashino, and Kazuo Suzuki, Hachioji, all of Japan, assignors to Terumo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 22,538, Mar. 3, 1987, abandoned, which is a continuation of Ser. No. 843,597, Mar. 25, 1986, abandoned. This application Aug. 18, 1988, Ser. No. 233,900
Claims priority, application Japan, Mar. 26, 1985, 60-61449
Int. Cl.^{4} A23J *3/00*

U.S. Cl. 426—46 **2 Claims**

1. A process for preparing a soybean hydrolyzate, wherein a supernatant obtained by centrifugal separation of the hydrolyzate contains an amino nitrogen content in the amount in the range from 5 to 20% of an amount of total nitrogen contained in the supernatant, which consists of pulverizing soybean, adding water to the pulverized soybean to form a slurry of a solid content in the range of 1 to 20%, heating the slurry at a temperature from 60° to 100° C. for a period in the range from 5 to 180 minutes, homogenizing the heated slurry under a pressure from 100 to 800 kg/cm^2 and hydrolyzing the homogenate with a neutral protease enzyme produced by *Bacillus subtilis* in a sufficient amount of the enzyme to hydrolyze the homogenate.

4,882,181
COCOA BASED COMPOSITION FOR THE PREPARATION OF DRINKS BY DISSOLUTION IN WATER

Claude Giddey, Geneva, and Guy Bunter, Carouge, both of Switzerland, assignors to Battelle Memorial Institute, Geneva, Switzerland

Continuation of Ser. No. 882,522, Jul. 7, 1986, abandoned. This application Feb. 1, 1988, Ser. No. 151,185
Claims priority, application Switzerland, Jul. 9, 1985, 2974/85
Int. Cl.^{4} A23G *1/00*

U.S. Cl. 426—74 **9 Claims**

1. A dry power composition of water-soluble solid substances for the preparation of a hot or cold cocoa drink by adding water thereto so as to provide a cocoa drink approximating the taste of milk-based chocolate drinks said composition, comprising by weight 5 to 30 parts of soluble cocoa and 55 to 70 parts of sugar or other sweetening carbohydrates, with additional ingredients to make 100% by weight including a mixture of mineral salts which comprises the following salts; in % by weight: KCl 7-10; KH_2PO_4 18-24; K_2CO_3 3-5; K_2SO_4 2-3; tripotassium citrate 14-18; trisodium citrate 20-26; $CaCl_2$ 15-19; and $MgCl_2$ 7-11, this mixture providing a buffering action at pH 5.8-6.5 when the composition is dissolved for preparing the drink.

4,882,182
AEROSOL PRODUCT

Neil G. Halls, and Roderick P. J. Tomlinson, both of Glen Waverley, Australia, assignors to Soltec Research Pty. Ltd., Australia

Filed Jul. 6, 1987, Ser. No. 69,893
Claims priority, application Australia, Jan. 8, 1987, PH9795
Int. Cl.^{4} A23B *4/14;* **A23C** *3/08*

U.S. Cl. 426—116 **19 Claims**

1. An aerosol dispensable composition comprising in combination:
- (i) 0.05 to 5% w/w of a frothing agent;
- (ii) 0.05 to 75% w/w of a sweetener;
- (iii) 0.05 to 10% w/w of a thickener;
- (iv) at least one additive selected from the group consisting of an acidic flavouring agent and an acidic colourant;
- (v) a propellant;
- (vi) water; and
- (vii) a sufficient amount of a phosphate buffer system to maintain the pH of the composition in the range 8.0 to 8.5;

said composition having a shelf life of at least 12 months at ambient temperature in a corrosible metallic or metal lined container.

4,882,183
METHOD FOR PRODUCTION OF OXIDE FILM

Juichi Ino; Akihiro Hishinuma; Hirotsugu Nagayama, and Hideo Kawahara, all of Osaka, Japan, assignors to Nippon Sheet Glass Co., Ltd., Osaka, Japan

Filed Apr. 6, 1988, Ser. No. 178,154
Claims priority, application Japan, Aug. 27, 1987, 62-213624; Jan. 11, 1988, 63-3451
Int. Cl.^{4} B05D *5/12*

U.S. Cl. 427—126.6 **30 Claims**

1. A method for the production of an oxide film on a surface of a substrate, comprising:
- preparing a treating liquid containing fluorine and at least one metal member selected from the group consisting of Sn, Zr, Zn, In, V, Cr, Mn, Fe, Co, Ni and Cu, said treating liquid containing the oxide of said selected metal dissolved therein to supersaturation, and
- contacting the substrate with the treating liquid to form an oxide film on the surface of the substrate.

4,882,184
PROCESS FOR MICROWAVE BROWNING AND PRODUCT PRODUCED THEREBY

Lawrence Buckholz, Middletown; Brian Byrne, East Brunswick, and Marion Sudol, Boonton, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Filed Jan. 10, 1989, Ser. No. 295,450
Int. Cl.^{4} A21D *6/00;* **A23L** *1/272*

U.S. Cl. 426—243 **2 Claims**

1. A process for providing a cooked baked goods foodstuff comprising the steps of:
- (a) providing an uncooked baked goods composition having a continuous surface;
- (b) providing a mixture of:
  - (i) proline;
  - (ii) a sugar selected from the group consisting of rhamnose and ribose; and
  - (iii) a solvent which is a mixture of glycerine and ethyl alcohol;

  wherein the mixture of ethyl alcohol and glycerine is in an amount sufficient to be capable of raising the dielectric constant of the surface of the foodstuff to be cooked whereby the foodstuff to be cooked is completely cooked in a period of time under 120 seconds;
- (c) coating the mixture of (b) onto the surface of the uncooked foodstuff provided in (a); and
- (d) exposing the thus coated uncooked foodstuff to microwave radiation for a period of time between 40 seconds and 120 seconds,

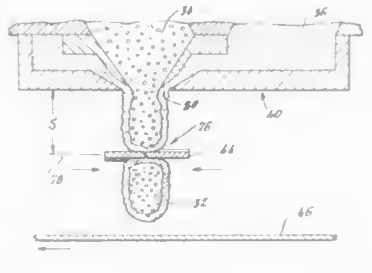
with the pH of the coating mixture being in the range of from about 9 up to about 13.

4,882,185
METHOD AND APPARATUS FOR SEVERING A COEXTRUSION FOR MAKING AN ENROBED FOOD PIECE

William J. Simelunas, Glen Rock; Nicholas R. Polifroni, Cliffside Park; Henry N. Shoiket, Rutherford, and Stefan M. Meyer, Lyndhurst, all of N.J., assignors to Nabisco Brands, Inc., East Hanover, N.J.

Continuation of Ser. No. 507,469, Jun. 24, 1983, abandoned. This application Oct. 13, 1987, Ser. No. 110,027
Int. Cl.^{4} A21C *11/10;* **A21D** *13/00*

U.S. Cl. 426—283 **10 Claims**



1. A method for the continuous production of individual food pieces of coextruded foods at a food station where the food pieces are transported away by a conveyor comprising the steps of:
- coextruding from a die said inner food with and inside said outer food in a downwardly direction so as to form a coextrusion below the die;
- horizontally severing the coextrusion while it is unsupported from below at a place which is a predetermined distance below the die with a pair of bluntly-shaped elements that move in a horizontal plane and overlap each other at the severing place so as to simultaneously draw the outer food both above and below the severing place over the inner food to form food pieces having the inner food enrobed by the outer food and dropping the severed food pieces from said place onto the conveyor;
- periodically varying the rate of flows of the inner and outer foods relative to each other so as to produce in said coextrusion at said predetermined distance below the die a relatively greater amount of outer food; and
- severing the coextrusion near said greater amount of food to enhance the enrobing of the inner food.

4,882,186
PROCESS FOR PRODUCING A MALT BEVERAGE HAVING IMPROVED FOAMING PROPERTIES AND PRODUCT PRODUCED THEREFROM

Joseph L. Owades, 2164 Hyde St., San Francisco, Calif. 94109

Filed Jan. 25, 1989, Ser. No. 301,619
Int. Cl.^{4} C12C *5/02*

U.S. Cl. 426—329 9 Claims

1. A method of improving the foaming properties of a brewed malt beverage during brewing which comprises adding to the malt beverage prior to or following fermentation about 0.01 to about 0.1 lb. of ginseng per bbl. of malt beverage.

4,882,187
EDIBLE SPREAD AND PROCESS FOR THE PREPARATION THEREOF

Henry J. Izzo, Bridgewater; Stephen M. Pincus, Marlboro; Jane B. Theiler, Harrington Park, and Michael C. Cirigliano, Bergenfield, all of N.J., assignors to Thomas J. Lipton Inc., Englewood Cliffs, N.J.

Filed Jul. 2, 1987, Ser. No. 69,058
Int. Cl.^{4} A23D *3/00*

U.S. Cl. 426—335 61 Claims

47. A method for preparing a low fat butter spread which comprises:
- (a) providing a butter of pumpable plastic consistency, the butter comprising a continuous phase of butter fat and having a discontinuous aqueous butter serum phase having a pH above 4.7;
- (b) combining a stream of the butter with a stream of aeons gelatin solution having a pH at or below 4.7 to provide a product stream of butter and gelatin solution, the product stream having a fat content, by weight, of 26% to 65%;
- (c) forming a stable dispersion of the gelatin solution as droplets in a continuous phase of the butter at of the butter, without substantial change to the discontinuous aqueous butter serum phase; and
- (d) allowing the dispersion to set to form a low fat butter spread.

4,882,188
PROCESS FOR PREPARING HEAT TREATED GRANULAR SOLID FOOD

Hiroshi Sawada, Osaka, Japan, and Richard L. Merson, Davis, Calif., assignors to Nakamura & Partners, Tokyo, Japan

Continuation of Ser. No. 767,528, Aug. 20, 1985, abandoned. This application May 2, 1988, Ser. No. 191,813
Claims priority, application Japan, Feb. 22, 1985, 60-33909
Int. Cl.^{4} A23L *1/00, 3/16*

U.S. Cl. 426—438 **8 Claims**

1. A process for preparing aseptically a heat treated granular solid food in a batch operation, comprising feeding a granular solid food having a granule diameter of from 3 to 45 mm through a charging port into a sealable processing vessel with a funnel-shaped bottom to form a bed of said granular solid food, then closing the charging port, while supplying aseptic air into the processing vessel to raise the pressure in the vessel, then supplying a liquid heating medium, which is separately heated in a heating tank, from the bottom of the processing vessel into said processing vessel at flow rate such that the void fraction of said bed of said granular solid food becomes 0.38 to 0.8 sufficient to subject said granular solid food to heat treatment at a temperature of more than 100° C. in a fluidized

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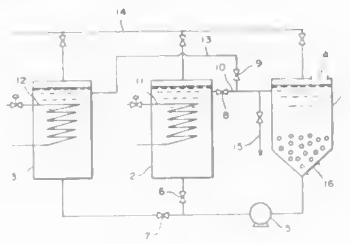
condition for a time sufficient to effect sterilization of said granular solid food uniformly at the center portion of each granule, and subsequently supplying a liquid cooling medium, which is separately cooled in a cooling tank, from the bottom of the processing vessel into said processing vessel at a flow rate such that the void fraction of said bed is held within 0.38 to 0.8 sufficient to cool said granular solid food in a fluidized condition.

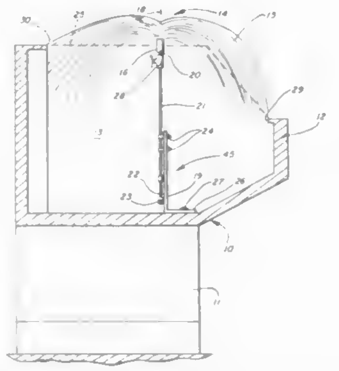


4,882,189
METHOD OF SPRAYING WATER MIST ONTO PRODUCE IN A DISPLAY CASE

John E. Corrigan, Glenview, Ill., assignor to Carrot Top Inc., Northbrook, Ill.

Filed Jul. 11, 1988, Ser. No. 217,317
Int. Cl.⁴ A23L *1/212*

U.S. Cl. 426—506 13 Claims



1. The method of providing mist onto produce provided in a display case comprising the steps of:

positioning an upwardly directed misting spray nozzle at a preselected portion of the case;

intermittently connecting said spray nozzle to a source of pressurized water; and

causing the spray nozzle to provide water mist onto produce in the case during a time when the spray nozzle is connected to the source of pressurized water in an expanding and contracting spray pattern extending upwardly from the nozzle to a preselected maximum vertical distance thereabove, and laterally from the nozzle to a preselected maximum horizontal distance therefrom at least approximately twice said vertical distance.

4,882,190
METHOD OF PRODUCING SULFITE-FREE SUGARBEET PULP

Roland F. Olson, Fargo, N. Dak., and Richard R. Fergle, Moorhead, Minn., assignors to American Crystal Sugar Company, Moorhead, Minn.

Filed Dec. 8, 1987, Ser. No. 130,086
Int. Cl.⁴ A23B *7/00, 7/10;* **A23J** *1/14*

U.S. Cl. 426—541 11 Claims

1. A method of producing sulfite-free sugarbeet pulp, said method comprising the steps of:

(a) slicing a sugarbeet into a plurality of pieces; and,

(b) contacting the sugarbeet pieces with an effective sugar extracting amount of a sulfite-free aqueous solution containing at least a food-grade non-sulfite antioxidant composition, so as to produce sugarbeet pulp suitable for human consumption;

(i) said non-sulfite antioxidant composition comprising a non-sulfite antioxidant compound selected from the group consisting of sodium erythorbate, araboascorbic acid, and mixtures thereof;

(ii) said non-sulfite antioxidant composition further comprising a non-sulfite additive selected from the group consisting of trisodium citrate, calcium chloride, citric acid, and mixtures thereof; and,

(iii) said non-sulfite antioxidant composition including about 72 to 78 wt-% sodium erythorbate, about 20 to 27 wt-% trisodium citrate, and about 1 to 5 wt-% calcium chloride.

4,882,191
METHOD OF MAKING LONG-TERM PRESERVATION COOKED PASTA PRODUCTS READY FOR CONSUMPTION

Giuseppe Bastetti, and Sergio Veronesi, both of Milan, Italy, assignors to Barilla G.E R. F.LLI - Societa per Azioni, Parma, Italy

Filed Dec. 24, 1987, Ser. No. 137,702
Claims priority, application Italy, Sep. 25, 1987, 22042 A/87
Int. Cl.⁴ A23L *1/16*

U.S. Cl. 426—557 8 Claims

1. A method of making long-term preservation cooked pasta products ready for consumption, comprises the following steps, to be all carried out in a sterile environment:

sterilizing a pasta product having a moisture content within the range of 20% to 30% by means of substantially dry steam;

cooking the thus sterilized pasta product in a suitable amount of cooking water;

removing all of the cooking water from the pasta product thus sterilized and cooked; and

packaging metered amounts of said sterilized and cooked pasta product inside sealed containers.

4,882,192
HARD BUTTER COMPOSITION

Hirokazu Maeda, Sakai; Mayumi Yamaguchi, Izumisano; Tetsuya Uchiyama; Hideki Baba, both of Sennan; Hidenobu Matsunami, Sennan; Yoshitaka Ebihara, Yao, and Junji Kanegae, Iwatsuki, all of Japan, assignors to Fuji Oil Company, Limited, Osaka, Japan

Filed Mar. 31, 1988, Ser. No. 176,181
Claims priority, application Japan, Apr. 3, 1987, 62-83501
Int. Cl.⁴ A23D *5/02*

U.S. Cl. 426—607 1 Claim

1. A hard butter composition which comprises at least 85% by weight of a triglyceride component and at most 15% by weight of a non-triglyceride component based on the total weight of said composition;

said triglyceride component containing

(a) at most 5% by weight of tri-saturated glycerides,

(b) 20 to 65% by weight of triglycerides having one unsaturated bond in one molecule,

(c) at most 30% by weight of triglycerides having two unsaturated bonds in one molecule, and

(d) 10 to 70% by weight of triglycerides having at least three unsaturated bonds in one molecule, based on the total amount of said triglyceride component;

said triglycerides having one unsaturated bond in one molecule (b) containing

(i) 50 to 95% by weight of 2-oleo-1,3-distearin,

(ii) at most 20% by weight of 2-oleo-1-palmito-3-stearin,

(iii) at most 30% by weight of 2-oleo-1,3-dipalmitin, and

(iv) at most 20% by weight of 1,2-saturated-3-unsaturated glycerides, based on the total amount of said triglycerides (b);

said triglycerides having two unsaturated bonds in one molecule (c) containing at most 40% by weight of 1-stearo-2,3-diolein based on the total amount of said triglycerides (c): and

SFI of said composition being

at most 65% at 5° C.,

20 to 55% at 30° C.,

2 to 35% at 35° C.,

at most 3% at 40° C., and

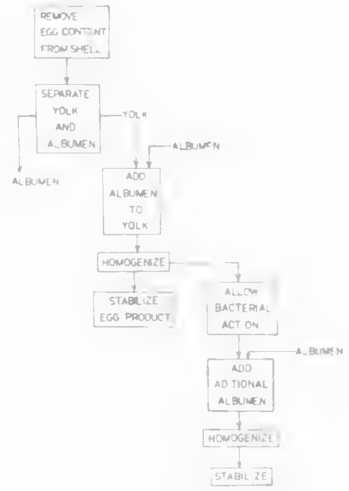
difference between SFI at 5° C. and that of 25° C. being at most 15%.

4,882,193
PROCESS FOR PRODUCING A LOW FAT CONTENT EGG PRODUCT

Richard F. Carrott, Moorpark, Calif., assignor to The Careau Group, Moorpark, Calif.

Filed Jul. 25, 1988, Ser. No. 221,965
Int. Cl.⁴ A23L *1/32*

U.S. Cl. 426—614 12 Claims



1. A process fro producing a low fat content egg product, said process comprising:

(a) producing eggs having an overly rich color which is darker than the normal egg color and an egg taste which is much stronger than a normal egg taste,

(b) removing the egg contents from the shells of the eggs,

(c) separating the egg yolks from the albumen,

(d) adding albumen from the same eggs or other eggs to the egg yolks and forming a blend thereof and which albumen is added in an amount to dilute the color to that of a normal yellow color of a normally produced egg and to dilute the taste to that of a normal egg, the albumen also being added in an amount to dilute the fat content such that the egg product thus produced has a substantially lesser fat content than a normal egg, and

(e) causing the egg product to remain in an environment of room temperature or greater than room temperature for a selected time to cause bacterial action on the egg product thereby further strengthening the taste and darkening the color, and

(f) addding additional albumen to the bacterial affected blend to further dilute the color and the taste to that of a normal egg.

4,882,194
LIQUID EGG COMPOSITIONS CONTAINING STORAGE-STABLE SOLIDS

Harold Rapp, Fairfield, Conn., assignor to Nabisco Brands, Inc., East Hanover, N.J.

Continuation of Ser. No. 846,473, Mar. 31, 1986, abandoned, which is a continuation of Ser. No. 568,365, Jan. 5, 1984, abandoned. This application Oct. 29, 1987, Ser. No. 115,552
Int. Cl.⁴ A23B *5/04;* **A23C** *23/00;* **A23L** *1/32*

U.S. Cl. 426—614 21 Claims

1. A method for preparing and storing in a stable condition a liquid egg composition containing a multiplicity of discrete solid cheese pieces, which composition provides after storage for a least one week, a liquid egg base containing discrete solid pieces of cheese comprising:

a. preparing a cookable, storage-stable liquid egg composition comprising about 20% to 100% by weight egg white, 0 to about 1% by weight gum, 0 to about 10% by weight nonfat dry milk solids, 0 to about 15% by weight oil, and 0 to about 5% by weight colorant;

b. adding a multiplicity of discrete solid cheese pieces to said liquid egg composition, said cheese pieces having a moisture index of about 3 or less and a melt index of about 1 or less and said cheese pieces comprising about 30–45% by weight water, about 15–25% by weight fat, about 15–25% by weight protein and about 0–5% by weight salt;

c. cooling said composition prepared in accordance with steps (a) and (b) to refrigerator temperatures and maintaining said composition at said temperature for at least about 7 days, and;

d. removing said egg and cheese composition from said refrigerator temperatures, to provide a liquid egg base containing discrete solid pieces of said cheese, wherein said liquid egg base is cookable to a food product comprised of cooked egg having discrete softened or melted cheese disposed therein.

4,882,195
METHOD FOR LABELING AN OBJECT FOR ITS VERIFICATION

Charles L. Butland, Marina Del Rey, Calif., assignor to Print-Lock Corp., Playa Del Rey, Calif.

Continuation-in-part of Ser. No. 857,929, Apr. 30, 1986, abandoned. This application May 30, 1986, Ser. No. 868,955
Int. Cl.⁴ A61B *5/10;* **B41M** *3/14*

U.S. Cl. 427—1 2 Claims

1. Method for labeling a work of art for its identification which comprises

applying a selected person's fingerprint to said work of art at a predetermined location upon said work of art.

exposing said pre-determined location to a vaporous agent comprising vapors of a cyanoacrylate ester, said selected person's fingerprint or said vapors of cyanoacrylate ester bearing a detectable amount of an ultra-violet radiation sensitive dye, said exposing thereby creating a permanent impression of said fingerprint on said work of art which impression is perceptible only in the presence of UV radiation.

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4,882,196

PROCESS FOR THE PRODUCTION OF A TITANIUM COMPOSITE MATERIALS COATED WITH CALCIUM PHOSPHATE COMPOUND

takayuki Shimamune, Tokyo; Masashi Hosonuma, and Yukiei Matsumoto, both of Kanagawa, all of Japan, assignors to Permelec Electrode Ltd., Kanagawa, Japan

Filed Mar. 24, 1987, Ser. No. 29,519

Claims priority, application Japan, Mar. 24, 1986, 61-64012; Mar. 24, 1986, 61-64013; Mar. 28, 1986, 61-70504

Int. Cl.^{4} C23C *22/00, 28/04*

U.S. Cl. 427—2 8 Claims

1. A process for producing a titanium composite material, which comprises activating the surface of a titanium or titanium alloy substrate, coating a hydrochloric or nitric acid aqueous solution of a calcium phosphate compound, said solution containing at least one substance selected from titanium, titanium compounds, tin, and tin comopunds, on the activated surface of the substrate, calcining the coating to form a base layer of the calcium phosphate compound on the substrate, thereafter coating a suspension of a calcium phosphate compound on the base layer, and sintering the coating to form a covering layer of the calcium phosphate compound.

4,882,197

METHOD FOR DEPOSITING A LUBRICANT LAYER TO MANUFACTURE A MAGNETIC RECORDING MEDIUM

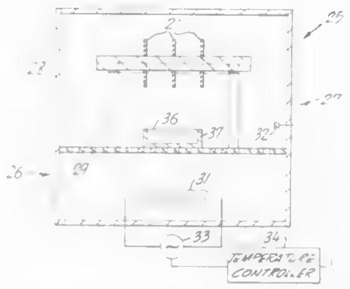
Takeo Matsudaira, and Hisanori Suzuki, both of Tokyo, Japan, assignors to Hoya Corporation, Tokyo, Japan

Filed Feb. 29, 1988, Ser. No. 162,023

Claims priority, application Japan, Feb. 28, 1987, 62-45471

Int. Cl.^{4} B05D *5/12*

U.S. Cl. 427—8 13 Claims



1. A method of manufacturing a magnetic recording medium by depositing a lubricant layer on a protection layer of a magnetic base, said method comprising the steps of:
- preparing a chamber which defines a hollow space therein;
- locating a temperature sensor in said hollow space;
- filling a vessel with a lubricant for forming said lubricant layer;
- introducing said vessel filled with lubricant together with said magnetic base into said hollow space;
- heating said lubricant to form a lubricant vapor which is deposited onto said protection layer;
- sensing, by said temperature sensor, the temperature outside said vessel in said hollow space, and
- maintaining the temperature in said hollow space substantially constant.

4,882,198

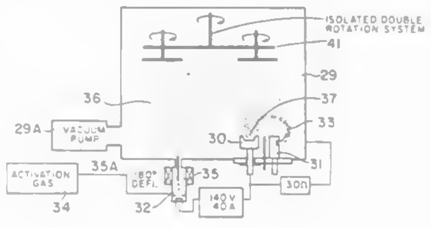
SYSTEM AND METHOD FOR VACUUM DEPOSITION OF THIN FILMS

Michael D. Temple; Richard I. Seddon, both of Santa Rosa, and Kim L. Johnson, Carlsbad, all of Calif., assignors to Optical Coating Laboratory, Inc., Santa Rosa, Calif.

Division of Ser. No. 935,292, Nov. 26, 1986, Pat. No. 4,777,908. This application Jun. 3, 1988, Ser. No. 202,830

Int. Cl.^{4} B05D *3/06, 3/14;* C23C *14/00*

U.S. Cl. 427—38 10 Claims



1. In a method for depositing thin film coatings, the steps of:
- disposing a substrate in a vacuum chamber;
- disposing in said vacuum chamber at least a first source of evaporant material within an electrically conducting container with line of sight from said material to said substrate;
- generating an intense plasma of a selected activation gas species in at least one separate chamber in communication with said vacuum chamber to fill said vacuum chamber with a generally distributed plasma;
- coupling said intense plasma and said container in an electrical circuit for current flow therebetween both through said distributed plasma within said chamber and directly through circuit connections outside said chamber;
- creating a magnetic field of preconfigured characteristics in the region above said container;
- heating said source of evaporant material to evaporate the same and thereby forming an intense second plasma region in said magnetic field above said container through which said evaporant material passes and is activated and then deposits on said substrate.

4,882,199

METHOD OF FORMING A METAL COATING ON A SUBSTRATE

Donald R. Sadoway, Belmont, Mass., and Rana P. Singh, White Fish Bay, Wis., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation-in-part of Ser. No. 897,116, Aug. 15, 1986, abandoned. This application Oct. 13, 1987, Ser. No. 108,166

Int. Cl.^{4} C23C *2/04*

U.S. Cl. 427—53.1 21 Claims

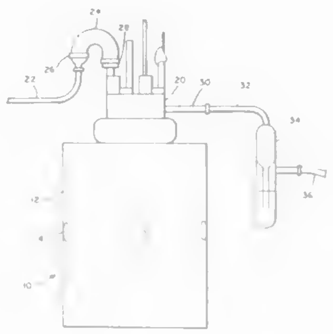
1. A method for producing a metal coating on a substrate comprising:

(a) selecting a first metal to be coated onto the substrate wherein said metal is soluble in a molten salt when heated to a first temperature, said metal and molten salt being selected from the group consisting of Mn-$MnCl_2$/NaCl, Ag-AgCl/NaCl, Mo-K_3MoCl_6/KCl, Mg-$MgCl_2$, Ca-$CaCl_2$, Al-Na_3AlF_6, Na-NaCl, Si-K_2SiF_6/KF, Ta-$TaCl_5$, Cd-$CdCl_2$, Cu-$CuCl_2$, Sr-$SrCl_2$, Ba-$BaCl_2$, Y-YF_3, Sc-ScF_3, Bi-$BiCl_3$, Al-$AlCl_3$/KCl, Au-$AuCl_3$, Au-$Au(CN)_2$, lanthanide series metals-lanthanide salts, and actinide series metals-actinide salts,

(b) heating a bath of said metal and molten salt to the first temperature to dissolve said metal,

(c) placing the substrate to be coated in the bath, and

(d) decreasing the temperature of the bath at the substrate to a second temperature, wherein the dissolved metal precipitates out of the molten salt onto the substrate at the second temperature.



4,882,200

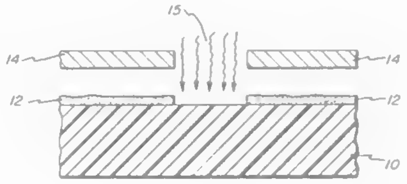
METHOD FOR PHOTOPATTERNING METALLIZATION VIA UV-LASER ABLATION OF THE ACTIVATOR

Yung S. Liu, Scotia, and Willard T. Grubb, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 52,295, May 21, 1987, abandoned. This application Aug. 23, 1988, Ser. No. 237,638

Int. Cl.^{4} B05D *3/06, 5/12, 3/04;* B44C *1/22*

U.S. Cl. 427—53.1 34 Claims



17. The method for forming conductive patterns on a polymer substrate, said method comprising the steps of:
- coating said substrate with an electroless plating activator material;
- selectively exposing said substrate and said electroless plating activator material thereon to an ultraviolet laser beam which is sufficiently powerful to ablate said activator material; and
- then immersing said substrate in an electroless plating bath for a time sufficient to deposit conductive material on the activator material which was not ablated.

4,882,201

NON-TOXIC ARYL ONIUM SALTS, UV CURABLE COATING COMPOSITIONS AND FOOD PACKAGING USE

James V. Crivello, Clifton Park, and Julia L. Lee, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Mar. 21, 1988, Ser. No. 171,063

Int. Cl.^{4} B05D *3/06*

U.S. Cl. 427—54.1 9 Claims

1. A non-toxic method for coating a substrate which comprises:

(1) treating the surface of the substrate with a solventless photocurable mixture comprising by weight

(A) A non-toxic oxirane containing silicone or organic resin

(B) An effective amount of a non-toxic arylonium salt selected from the class consisting of diaryliodonium salts and triarylsulfonium salts

(2) Irradiating the treated substrate of (1) with actinic or visible light, until a tack-free surface is obtained on the substrate,

where the arylonium salt is selected from the class consisting of hexafluorophosphates, hexafluoroarsenates and hexafluoroantimonates and at least one of the aryl radicals of the arylonium hexafluorometalloid salt has a nuclear bound —OR group attached to the aryl nucleus by a carbon-oxygen linkage, where R is an alkyl radical having at least 8 carbon atoms.

4,882,202

USE OF IMMERSION TIN AND TIN ALLOYS AS A BONDING MEDIUM FOR MULTILAYER CIRCUITS

Abraham M. Holtzman, Bat Yam, and Joseph Relis, Ramat Gan, both of Israel, assignors to Techno Instruments Investments 1983 Ltd., Bat-Yam, Israel

Division of Ser. No. 770,842, Aug. 29, 1985, Pat. No. 4,715,894. This application Oct. 21, 1987, Ser. No. 110,927

Int. Cl.^{4} B05D *5/12*

U.S. Cl. 427—98 18 Claims

1. A process for improving the adhesion properties of a metal layer of a circuit board to a non-conductive surface of a circuit board comprising coating said layer with an immersion metal composition, said immersion metal composition comprising:

(a) a thiourea compound

(b) a urea compound

(c) a metal salt

said metal salt being selected from the group of salts based on the Group IVA metals including tin, Group VIII metals, Group IB metals, Group IIB metals and Group IIIA metals, said urea compound and thiourea compound each being present in an amount sufficient to enable said composition to function as an immersion composition.

4,882,203

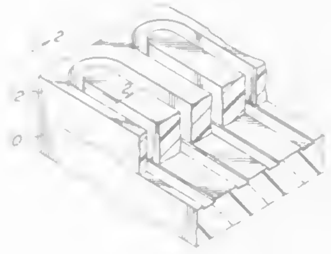
HEATING ELEMENT

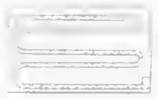
Warner H. Witmer, Bethlehem, Pa., assignor to CVD Systems & Services, Quakertown, Pa.

Filed Nov. 4, 1988, Ser. No. 267,538

Int. Cl.^{4} H01L *21/02*

U.S. Cl. 427—124 22 Claims





1. A process for fabricating a heating element comprising the following steps:

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- a. surface protecting a silicon object by forming a protective SiO_2 layer by means of thermal oxidation;
- b. etching away said protective layer so as to form wire-like regions for a desired heater pattern;
- c. exposing the silicon object to a tungsten halogen gas at a temperature of between 250° and 500° centigrade so as to form a layer of tungsten on the exposed silicon object by chemical reduction; and
- d. coating the composite structure with an amorphic silicon layer for corrosion and oxidation protection.

4,882,204

DIAPER SPRAY

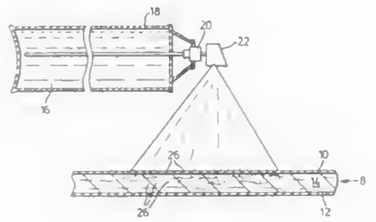
Harvey Tenenbaum, 305 Woodland Acres, Maple, Ontario, Canada

Filed Jul. 1, 1988, Ser. No. 195,668

Claims priority, application Canada, May 5, 1988, 566056

Int. Cl.⁴ B05D *1/12*

U.S. Cl. 427—180 **6 Claims**



1. A method of increasing the absorbency of a diaper, said diaper being of the kind having an inner porous skin-facing layer, a water resistant outer layer, and an absorbent layer therebetween, said method comprising:
   - (a) selecting a finely divided absorbent powder,
   - (b) spraying said powder onto said diaper,
   - (c) the speed imparted to said powder during said step (b) being sufficiently high that a portion of said powder penetrates said skin-facing layer of said diaper and lodges within said absorbent layer of said diaper.

4,882,205

PROCESS AND APPARATUS FOR THE MANUFACTURE OF FLOOR OR WALL COVERINGS INCORPORATING PEBBLES, AND THE PRODUCT OBTAINED THEREFROM

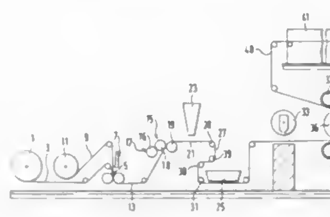
Gerard Valenduc, L-Wiltz, Luxembourg, assignor to Eurofloor S.A., Luxembourg

Filed Jul. 1, 1987, Ser. No. 69,369

Claims priority, application Luxembourg, Jul. 8, 1986, 86504

Int. Cl.⁴ B05D *1/36*

U.S. Cl. 427—204 **12 Claims**



1. Process for the manufacture of synthetic coverings including the steps of:

depositing a layer of plastisol onto a substrate; depositing a plurality of discrete particles into said plastisol layer;

depositing a powder containing fusible particles compatible with said plastisol coated substrate and said discrete particles;

heat treating said deposited layers at a temperature below the distortion temperature of said substrate to thereby set said deposited materials; and

heating said powder to melt said fusible particles.

4,882,206

CHEMICAL VAPOR DEPOSITION OF GROUP IIIB METALS

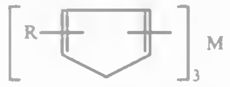
Ahmet Erbil, Atlanta, Ga., assignor to Georgia Tech Research Corporation, Atlanta, Ga.

Filed Jun. 22, 1988, Ser. No. 210,020

Int. Cl.⁴ B05D *3/02*

U.S. Cl. 427—229 **14 Claims**

1. A process for depositing a metallic coating on a heated substrate by chemical vapor decomposition of an organometallic compound, said process comprising contacting an organometallic compound of the formula (I)



where M is a Group IIIB metal or a mixture thereof and R is an alkyl or alkenyl radical containing from 2 to about 6 carbon atoms, with said heated substrate, said substrate being at a temperature above the decomposition temperature of said organometallic compound.

4,882,207

FERROELECTRIC LIQUID CRYSTAL CELLS

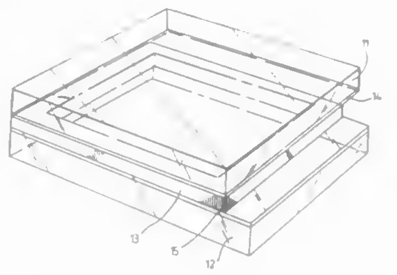
David Coates, Wimborne, and Matthew F. Bone, Bishop's Stortford, both of Great Britain, assignors to STC Plc, London, England

Filed Oct. 28, 1987, Ser. No. 114,298

Claims priority, application United Kingdom, Oct. 28, 1986, 8625771; Dec. 15, 1986, 8629904

Int. Cl.⁴ C09K *19/02*

U.S. Cl. 428—1 **3 Claims**



1. A ferroelectric liquid crystal cell having a liquid crystal layer contained within an envelope, in which cell, for the promotion of parallel alignment of the molecules of the liquid crystal layer at at least one of its two major surfaces, at least one of said major surfaces is in contact with an associated polymer layer having a molecular structure with flexible side chains of sufficient length and flexibility to provide no preferential azimuthal direction of alignment for the molecules of the liquid crystal layer in contact therewith.

4,882,208

MULTILAYER COMPOSITE SHEET, ESPECIALLY FOR USE AS A PADDING LAYER UNDER ARTIFICIAL GRASS

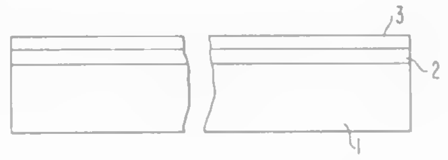
Hans-Ulrich Breitscheidel, Siegburg; Rudolf Kautz, Hennef, and Karl-Heinz Sandermann, Lemgo, all of Fed. Rep. of Germany, assignors to Huels Troisdorf AG, Troisdorf and Balsam Sportstattenbau & Co. KG, Steinhagen, both of, Fed. Rep. of Germany

Filed May 26, 1988, Ser. No. 199,144

Claims priority, application Fed. Rep. of Germany, May 27, 1987, 3717880

Int. Cl.⁴ B32B *3/02, 33/00*

U.S. Cl. 428—17 **10 Claims**



1. A multilayer composite sheet for use as a padding layer underneath an artificial grass layer which comprises a bottom layer of closed-cell crosslinked polyethylene foam material and an upper layer of a metallic layer; said upper layer being bonded to the bottom layer via an intermediate layer.

4,882,209

GLASS CAPILLARY TUBE AND METHOD FOR ITS PRODUCTION

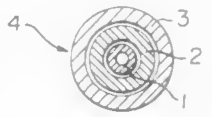
Tsutomu Maruyama; Hidetoshi Matsumoto, and Yoshiyuki Miyake, all of Yokohama, Japan, assignors to Asahi Glass Company, Ltd., Tokyo, Japan

Filed Sep. 1, 1987, Ser. No. 91,779

Claims priority, application Japan, Sep. 11, 1986, 61-212606

Int. Cl.⁴ B32B *17/06*

U.S. Cl. 428—34.1 **2 Claims**



1. A glass capillary tube obtained by drawing under heating a multiple tube assembly comprising a plurality of glass tubes having different diameters arranged coaxially one in another and simultaneously integrating the glass tubes by heat fusion, wherein the ratio of the outer diameter to the inner diameter of the capillary tube is at least about 5, and wherein the outermost glass tube in the multiple tube assembly has a thermal expansion coefficient smaller than the thermal expansion coefficient of the inner glass tube adjacent to the outermost glass tube.

4,882,210

GLASS CONTAINER

Val G. Romberg, Upper Darby; Patty H. Kiang, Collegeville; Wayne T. Curry, Pottstown, and Ralph E. Pfister, Wayne, all of Pa., assignors to The West Company, Phoenixville, Pa.

Filed Sep. 26, 1988, Ser. No. 248,935

Int. Cl.⁴ B65D *23/00;* **B32B** *17/06*

U.S. Cl. 428—34.7 **10 Claims**

1. A container for use with a closure, comprising a glass container having an access opening for a closure and a crush strength increasing polyparaxylylene coating on at least one side of said glass container at a thickness of at least 0.1 to about 5 microns.

4,882,211

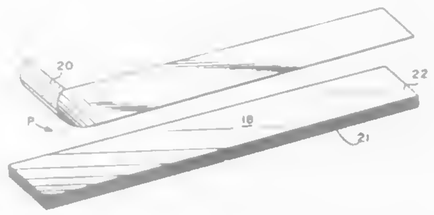
PAPER PRODUCTS WITH RECEPTIVE COATING FOR REPOSITIONABLE ADHESIVE AND METHODS OF MAKING THE PRODUCTS

Timothy J. McIntyre, Florissant, Mo., and Walter G. Greig, Lewiston, N.Y., assignors to Moore Business Forms, Inc., Grand Island, N.Y.

Filed Aug. 3, 1988, Ser. No. 227,552

Int. Cl.⁴ B32B *7/06, 7/10, 7/12, 7/14*

U.S. Cl. 428—40 **9 Claims**



1. A pad comprising

multiple sheets of material;

means adjacent one end of each sheet for releasably securing said sheets one to the other to form said pad including repositionable adhesive applied on one side of each sheet adjacent said one end thereof; and

a receptive coating applied on the opposite side of each sheet adjacent the opposite end thereof such that, upon removal of the individual sheets from the pad, each sheet may be flexed to locate its opposite ends in overlying relation with one another and with said adhesive and said receptive coating in contact one with the other thereby adhesively securing said opposite ends together.

4,882,212

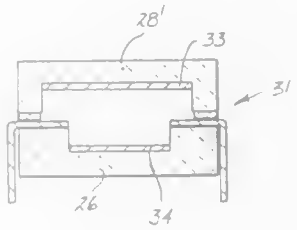
ELECTRONIC PACKAGING OF COMPONENTS INCORPORATING A CERAMIC-GLASS-METAL COMPOSITE

Narendra N. SinghDeo, New Haven; Deepak Mahulikar, Meriden, both of Conn., and Sheldon H. Butt, Godfrey, Ill., assignors to Olin Corporation, New Haven, Conn.

Filed Oct. 30, 1986, Ser. No. 924,970

Int. Cl.⁴ B32B *1/04;* **H01L** *23/28*

U.S. Cl. 428—76 **29 Claims**



1. A semiconductor casing, comprising:

a base component and a lid component both formed from a ceramic-glass-metal composite material, said composite material having a structure comprising substantially a matrix of said glass with said ceramic and metal particles dispersed therein, said composite material further having a composition of;

up to about 25 volume % ductile metallic particles for enhancing the flow characteristics of said composite;

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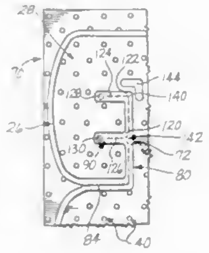
15 volume % to about 50 volume % glass for adhering said composite together;
the balance ceramic particles having a particle diameter greater than about 1 micron; and
said metal and ceramic particles selected so that each has a melting temperature greater than the melting temperature of said glass particles;
a metallic leadframe, said leadframe being embedded into said first component; and
a sealing glass bonding said second component to said lid component.

4,882,213
ABSORBENT ARTICLE WITH TEAR LINE GUIDE

Paul G. Gaddis, Rentoo, and Lee E. Perdelwitz, Jr., Tacoma, both of Wash., assignors to Weyerhaeuser Company, Tacoma, Wash.

Filed Apr. 29, 1988, Ser. No. 187,855
Int. Cl.⁴ B32B *9/00*

U.S. Cl. 428—136 20 Claims



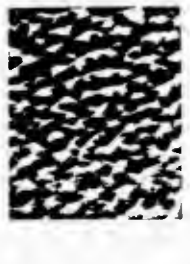
1. An absorbent article comprising:
a body comprised of fiber material;
the body having a densified first region of fiber material of a first density and a second region of fiber material contained in the first region and being of a second density lower than the first density;
a weakened area positioned within the densified first region to define at least one line in such first densified region, the line terminating in the second region, whereby the line comprises a tear line along which the article may be torn.

4,882,214
MATTED GLASS

André Hecq, Nalinnes, Belgium, assignor to Glaverbel, Brussels, Belgium

Filed Apr. 6, 1987, Ser. No. 35,266
Claims priority, application United Kingdom, Apr. 8, 1986, 8606496
Int. Cl.⁴ C03C *15/02;* **H01J** *29/24*

U.S. Cl. 428—141 14 Claims



1. A piece of light transmitting glass, comprising:
a flat sheet of glass having at least one surface area which is matted by surface pits and which has a population of merging or contiguous surface pits, the pits being of such a small area and and having bottom portions having a rounded profile so that clearly legible typed characters of 10-pitch size are still clearly legible when viewed through such matted surface area when that surface is held at a distance of 10 cm from the said characters.

4,882,215
PRECOATED METAL PLATE FOR HEAVY FORMING USE

Akira Ushio, Hirakata, and Tomotsu Sobata, Sakai, both of Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

Filed Apr. 4, 1988, Ser. No. 177,346
Claims priority, application Japan, Apr. 3, 1987, 62-082646
Int. Cl.⁴ C23C *22/24*

U.S. Cl. 428—143 5 Claims

1. A precoated metal plate for heavy forming use comprising a metal plate having on its surface a coating which has excellent adhesion to the metal plate under bending and processing conditions and which also has excellent scratch and corrosion resistant properties, said precoated metal plate prepared by applying to the surface of said metal plate an aqueous coating composition consisting essentially of a binder component (A) composed of an aqueous resin (A_1) and a water-soluble chromium compound (A_2) containing 30 to 90% by weight of hexavalent chromium and hard inorganic microparticles (B) having a Mohs' hardness of 3 to 9 and an average grain diameter of 0.1 to 20μ in a dry-film thickness of 0.05 to 5μ and which is characterized by having a percentage of horizontal sectional area of the inorganic microparticles protruded beyond the film surface of said binder component (A) at the film surface of 5% or more.

4,882,216
EPOXY RESIN FILM COVERED WITH METAL FOIL AND FLEXIBLE PRINTED WIRING BOARD

Hideo Takimoto; Katsuji Tokuda, and Koji Yamamoto, all of Kashima, Japan, assignors to Kashima Industries Co., Ibaraki, Japan

Filed Aug. 9, 1988, Ser. No. 230,310
Claims priority, application Japan, Aug. 10, 1987, 62-198271; Oct. 29, 1987, 62-271940
Int. Cl.⁴ B32B *9/00*

U.S. Cl. 428—209 2 Claims

1. A film comprising an electrically conductive metal foil and a flexible epoxy resin layer covered therewith, characterized in that the flexible epoxy resin layer is formed from a flexible epoxy resin composition containing 100 parts by weight of epoxy resins, 10 to 150 parts by weight of an ester of a mercaptocarboxylic acid with a polyhydric alcohol, and 0.01 to 20 parts by weight of amine.

4,882,217
NEEDLED PRESS FELT

Keith FitzPatrick, Dieren, Netherlands, assignor to Albany International Corp., Menands, N.Y.

Filed Nov. 9, 1988, Ser. No. 269,248
Int. Cl.⁴ B32B *7/02*

U.S. Cl. 428—212 6 Claims

1. A needled press felt for use in the press section of a papermaking machine, which comprises;
at least a first and a second kind of fiber in the batt part of the felt,
said first kind of fiber constituting at least part of the surface layer, which in position of use of said press felt, facing the paper web, is of considerably finer dimension than the other kinds of fiber and having a diameter of 0.010 mm or less and have low resistance to being essentially removed during the service of the felt of the papermaking machine,
said other kinds of fiber are essentially resistant during the removal of the first kind of fibers.

4,882,218
THERMAL TRANSFER RECORDING MEDIUM

Kunihiro Koshizuka, and Takao Abe, both of Hino, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Oct. 3, 1988, Ser. No. 252,879
Claims priority, application Japan, Oct. 13, 1987, 62-257885
Int. Cl.⁴ B41M *5/26*

U.S. Cl. 428—216 23 Claims

1. A thermal transfer recording medium comprising a support having thereon a first heat softening layer and a second heat softening layer in this order, wherein said first and second heat softening layers contain a polyethylene glycol derivative having an ester linkage or an ether linkage, and at least one of said layers contains a colorant.

4,882,219
CRACK RESISTANT COATING FOR MASONRY STRUCTURES

John D. Harvey, Versailles, and Andre V. Gindre, Gif S/Yvette, both of France, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 944,082, Dec. 22, 1986, Pat. No. 4,804,693, which is a continuation-in-part of Ser. No. 771,746, Sep. 3, 1985, Pat. No. 4,634,724, which is a division of Ser. No. 645,989, Aug. 31, 1984, Pat. No. 4,562,109. This application Dec. 12, 1988, Ser. No. 282,725

The portion of the term of this patent subsequent to Dec. 31, 2002, has been disclaimed.

Int. Cl.⁴ C08K *7/20, 7/28;* **B32B** *3/26, 5/16*

U.S. Cl. 428—220 8 Claims

1. A crack resistant coating for masonry structures subject to cracking comprising:
(1) a crack absorbing layer which is contiguous to the masonry structure which contains beads which are essentially spherical, which have an average diameter within the range of 0.5 mm to about 6 mm, and which are bound by a resin binder, and
(2) a conventional coating layer which is contiguous to and covers the crack absorbing layer wherein the resin binder exhibits sufficient flexibility to allow a degree of rolling action between the beads, thereby absorbing cracks forming in the masonry structure and preventing the transmission of the cracks to the conventional coating layer.

4,882,220
FIBROUS STRUCTURES HAVING A DURABLE FRAGRANCE

Akira Ono, Tokyo; Toshikazu Fuse, Nagahama; Osamu Miyamoto, Tottori; Shoso Makino, Hikone; Yoshihisa Yamato, Shiki; Hiroshi Kametani, Kurayoshi; Susumu Tokura, Osaka; Hiromi Tanaka, Hikone; Toru Ito; Hitomi Nakao, both of Nagahama; Shuji Toknoka, Takatsuki, and Toshihide Takeda, Hikone, all of Japan, assignors to Kanebo, Ltd., Tokyo, Japan

Filed Jan. 26, 1989, Ser. No. 302,435
Claims priority, application Japan, Feb. 2, 1988, 63-23444; Apr. 11, 1988, 63-88669; Apr. 27, 1988, 63-105766; May 12, 1988, 63-115617; May 18, 1988, 63-121140; May 19, 1988, 63-122299; Jun. 15, 1988, 63-145687
Int. Cl.⁴ B32B *5/16*

U.S. Cl. 428—240 11 Claims

1. A fragrant fibrous structure which has microcapsules encapsulating a perfume adhered thereto by a resinous binder, the weight ratio of said microcapsules to said resinous binder being between 2:1 and 1:5, and the sum of the amounts of said microcapsules and resinous binder being between 0.3 and 7.0%, based on the weight of the portion of the fibrous structure to which said microcapsules and resinous binder are adhered.

4,882,221
CHEMICALLY TREATED PAPER PRODUCTS - TOWEL AND TISSUE

Larry Bogart, Penn Valley; James J. Hipkins, Prospect Park, both of Pa., and Morris L. Smith, Lawnside, N.J., assignors to Scott Paper Company, Philadelphia, Pa.

Filed Aug. 6, 1987, Ser. No. 82,203
Int. Cl.⁴ D21H *3/08, 3/12, 3/20;* **A61K** *7/48*

U.S. Cl. 428—308.8 4 Claims

1. A web of cellulosic fibers treated with an emollient composition consisting essentially of a water-soluble emollient, said emollient comprising glucose glutamate in an amount from 0.1 to 2% by weight of the web.

4,882,222
CARPET FIBER BLENDS

Arthur Talley, Jr., Eva, Ala., and Arnold E. Wilkie, Satellite Beach, Fla., assignors to Monsanto Company, St. Louis, Mo.

Filed Mar. 31, 1988, Ser. No. 175,790
Int. Cl.⁴ D02G *3/00*

U.S. Cl. 428—362 17 Claims

1. A blend of fibers comprising carpet fibers and high shrinkage fibers, the carpet fibers being crimped fibers having deniers of at least 10 (dpf) and shrinkages of less than 12%, the high shrinkage fibers being fibers having shrinkages of at least 12%, the quantities and shrinkages of said carpet fibers and said high shrinkage fibers being such that when a saxony test carpet having a pile made from heatset yarn which prior to being heatset consists of said blend of fibers is subject to 40,000 traffics, the appearance thereof is better with respect to tuft endpoint definition and lack of matting, as determined by Test A, than corresponding test carpet having a pile made from heatset yarn which prior to being heatset consists entirely of said carpet fibers.

4,882,223
HOLLOW FIBERS PRODUCTION METHOD THEREOF AND THEIR APPLICATIONS PARTICULARLY IN THE FIELD OF MEMBRANE-TYPE SEPARATIONS

Philippe Aptel, and Jean-Michel Espenan, both of Toulouse, France, assignors to Institut National de Recherche Chimique Appliquee (IRCHA) and Centre National de la Recherche Scientifique, both of Paris, France

Continuation of Ser. No. 841,537, Jan. 30, 1986, abandoned. This application Oct. 30, 1987, Ser. No. 115,625
Claims priority, application France, Jun. 13, 1984, 84 09224; Jnn. 13, 1984, 84 09225
Int. Cl.⁴ D02G *3/00*

U.S. Cl. 428—398 8 Claims

1. Hollow fibers based on polymeric fibrogenic substances selected from the group consisting of vinylidene polyfluorides, polysulfones, polyacrylonitriles, cellulose and cellulosic esters, poly(vinyl chlorides), poly(vinyl acetates), polyamides, polyimides, polycarbonates, poly(phenylene oxides), polystyrenes,

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polyethers, polyesters, poly(arylene oxides), polysulfides, polyvinylic polymers, polyallylic polymers, polyazoles, polyimidazoles, polyphosphazines, polyhydrazides and copolymers or mixtures thereof of a structure which is asymmetrical in that they present a relatively dense outer layer having a thickness smaller than 0.1 μm on their outer periphery, which is bonded to an open structure, the porosity of which increases in the direction of the inner face, said open structure underlying said outer layer being composed of a microporous layer directly in contact with said outer layer, the hollow fibers being characterized by the presence of pores of dimensions higher than 0.1 μm and lower than 2 μm, and a macroporous layer presenting macrovoids therein substantially cylindrical, radially oriented and regularly spaced, with homogeneous porosity walls in the radial direction opening on the side of the inner face of the fiber and not opening on the side of the outer face, such macrovoids having a main dimension higher than 2 μm, the proportion of such macrovoids representing at least 10% of the wall bulk.

4,882,224

MAGNETIC PARTICLES, METHOD FOR MAKING AND ELECTROMAGNETIC CLUTCH USING SAME

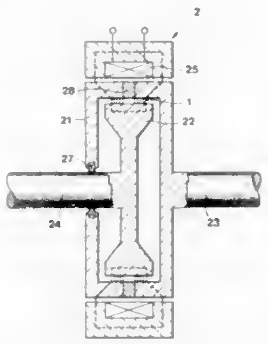
Hideharu Moro, and Yoshikazu Narumiya, both of Tokyo, Japan, assignors to TDK Corporation, Tokyo, Japan

Filed Apr. 28, 1988, Ser. No. 187,235

Claims priority, application Japan, Mar. 30, 1988, 63-77395

Int. Cl.⁴ B32B *5/16*

U.S. Cl. 428—403 9 Claims



1. A magnetic particle, comprising:
a magnetic core having a diameter of about 30 to about 80 μm and
a shell covering the core formed from at least one member selected from the group consisting of titanium nitride, titanium carbide, aluminum nitride, aluminum oxide, zirconium oxide, silicon nitride, and silicon carbide, and having a thickness of about 2 to about 7 μm sufficient to render the particle durable.

4,882,225

MODIFIED POWDER OR PARTICULATE MATERIAL

Hiroshi Fukui; Ryujiro Namba; Tsutomu Saito; Yutaka Ohtsu; Asa Kimura; Motokiyo Nakano; Okitsugu Nakata; Kenichi Tommita; Kazuo Tokubo; Kazuhisa Ohno; Toshio Yoneyama; Takashi Ogawa; Hideo Morohoshi; Junichi Koyama; Taketoshi Kanda; Kunihiro Kawaguchi, and Yuzo Shimizu, all of Yokohama, Japan, assignors to Shiseido Company Ltd., Tokyo, Japan

Division of Ser. No. 875,140, Jun. 17, 1986, Pat. No. 4,801,445. This application Apr. 26, 1988, Ser. No. 186,428

Claims priority, application Japan, Jul. 29, 1985, 60-165974; Jul. 29, 1985, 60-165974; Sep. 3, 1985, 60-194654; Sep. 3, 1985, 60-194654; Nov. 15, 1985, 60-256166; Nov. 15, 1985, 60-256166; Nov. 26, 1985, 60-265715; Nov. 26, 1985, 60-265715; Feb. 5, 1986, 61-23518; Feb. 5, 1986, 61-23518; Feb. 18, 1986, 61-33595; Feb. 18, 1986, 61-33595; Mar. 25, 1986, 61-66635; Mar. 25, 1986, 61-66635; Apr. 3, 1986, 61-77302; Apr. 3, 1986, 61-77301; Apr. 3, 1986, 61-77302; Apr. 3, 1986, 61-77301; Apr. 5, 1986, 61-78740; Apr. 5, 1986, 61-78741; Apr. 5, 1986, 61-78740; Apr. 5, 1986, 61-78741; May 9, 1986, 61-106175; May 23, 1986, 61-118901; May 28, 1986, 61-122821; May 31, 1986, 61-127047; Jun. 10, 1986, 61-134540; Jun. 13, 1986, 61-137839; Jun. 13, 1986, 61-137840; Jun. 13, 1986, 61-137841; Jun. 13, 1986, 61-137838

Int. Cl.⁴ B05D *7/26;* **B32B** *5/16, 5/18;* **C08J** *9/06*

U.S. Cl. 428—405 20 Claims

1. A modified powder having a silicone polymer film coated on substantially the entire surface thereof, said powder being produced by bringing at least one silicone compound, in the form of vapor, having the general formula (I):

$$(R^1HSiO)_a(R^2R^3SiO)_b(R^4R^5R^6SiO_{1/2})_c \qquad (I)$$

wherein R^1, R^2, and R^3 represent, independently, hydrogen, a hydrocarbon residue having 1 to 10 carbon atoms or a hydrocarbon residue having 1 to 10 carbon atoms and substituted with at least one halogen atom, provided that R^1, R^2, R^3 are not hydrogen at the same time, R^4, R^5, and R^6 represent, independently, hydrogen, a hydrocarbon residue having 1 to 10 carbon atoms or a hydrocarbon residue having 1 to 10 carbon atoms and substituted with at least one halogen atom, a is an integer of 1 or more, b is zero or an integer of 1 or more, and c is zero or 2, provided that a+b is an integer of 3 or more when c is zero, into contact with a powder having on the surface thereof an active site capable of catalytically polymerizing a silicone compound having a hydrosilyl group (Si—H), whereby the silicone compound is polymerized on substantially the entire surface of the powder.

4,882,226

CARRIER MATERIAL FOR USE IN CHROMATOGRAPHY OR CARRYING OUT ENZYMATIC REACTIONS

Jan A. J. Schutyser, Dieren, and Antonius J. W. Buser, Wehl, both of Netherlands, assignors to Akzo N.V., Arnhem, Netherlands

Filed Sep. 9, 1987, Ser. No. 94,742

Claims priority, application Netherlands, Sep. 23, 1986, 8602395

Int. Cl.⁴ C12N *11/08;* **G01N** *33/545;* **C08F** *110/00;* **B32B** *5/16*

U.S. Cl. 428—407 10 Claims

1. A carrier material usable as such in chromatographic separations or as a starting material which, upon linkage to it of compounds containing ionic groups, ligands or bio-active materials can be used as an ion exchanger, as a clinical selective adsorbent, as a medium in affinity chromatography or in enzymatic reactions and comprises granules of a core material obtained by addition polymerization of monomers of which at least 50 mole % comprise (meth)acrylic acid or an ester forming equivalent thereof other than an ester of glycidol and a hydrophilic coating material, which is covalently bonded to the core by complete or partial conversion of the carboxyl function with a compound containing at least three carbon atoms and epoxy group into an ester, characterized in that the compound containing at least three carbon atoms and an epoxy group is glycidol or glycidol etherified with a polyhydroxy compound having a molecular weight not higher than 1000 and that esters in which epoxy groups are still present are further reacted by etherification and/or hydrolysis to form a compound containing a hydroxyl group or an oligomer therof having a molecular weight not higher than 1000.

4,882,227

CONDUCTIVE RESIN COMPOSITION AND MOLDED PRODUCT USING THE SAME

Hidehiro Iwase, Tokyo, and Keiichi Habata, Kawaguchi, both of Japan, assignors to Toshiba Chemical Corporation, Tokyo, Japan

Filed Mar. 9, 1988, Ser. No. 165,905

Claims priority, application Japan, Mar. 9, 1987, 62-51998; Mar. 9, 1987, 62-51999; Mar. 16, 1987, 62-58880; Mar. 25, 1987, 62-68779; Mar. 27, 1987, 62-71568; Mar. 27, 1987, 62-71570; Apr. 7, 1987, 62-83917

Int. Cl.⁴ H05K *9/00;* **C08K** *3/08*

U.S. Cl. 428—407 30 Claims

1. A pelletized conductive resin composition comprising a thermoplastic resin layer formed on the surface of a conductive filler comprising conductive fibers and a low-melting point metal having a melting point higher than that of the thermoplastic resin and lower than the molding temperature of the conductive resin composition, and an effective amount of a phosphorus-based antioxidant to improve the wettability of the conductive fibers.

27. An electromagnetic wave shielding molded product prepared by molding the conductive resin composition of claim 1 at a temperature higher than the melting point of the low-melting point metal.

4,882,228

MULTILAYER COATED FILM STRUCTURES

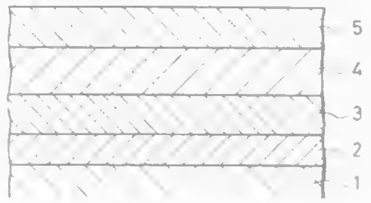
Tadamitsu Nakahama, Hiroshima, Japan, assignor to Mazda Motor Corporation, Hiroshima, Japan

Filed Apr. 22, 1988, Ser. No. 184,880

Claims priority, application Japan, Apr. 23, 1987, 62-100281

Int. Cl.⁴ B32B *15/08*

U.S. Cl. 428—421 8 Claims



1. A multilayer coated film structure comprising,
an undercoat layer provided on a predetermined surface,
a sprayed resin intermediate coat layer put on said undercoat layer,
a final coat layer of one of melamine alkyd resin coating and melamine acrylic resin coating including an antioxidant within the range of 1.0 to 5.0% by weight and put on said intermediate coat layer, and
a transparent glass-like or hyaline coating layer of fluorocarbon resin put on said final coat layer.

4,882,229

BLENDS OF HIGH MOLECULAR WEIGHT POLYBUTYLENE WITH LOW DENSITY POLYETHYLENE

Charles C. Hwo, Sugarland, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Apr. 29, 1988, Ser. No. 187,753

Int. Cl.⁴ B32B *15/08*

U.S. Cl. 428—461 21 Claims

1. A composition which is capable of forming peel seals, comprising:
from about 8 percent by weight to about 49 percent by weight of the butene-1 homopolymer or copolymer having an average molecular weight of at least 500,000; and
from about 92 percent by weight to about 51 percent by weight of a modified or non-modified low density polyethylene having a density of less than 0.930 g/cc.

4,882,230

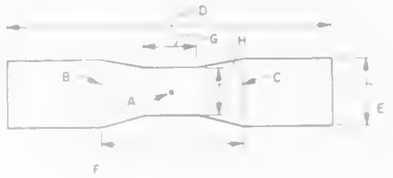
MULTILAYER POLYMERIC FILM HAVING DEAD BEND CHARACTERISTICS

Steven B. Warner, Acworth, Ga., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed Oct. 30, 1987, Ser. No. 115,132

Int. Cl.⁴ B32B *27/08*

U.S. Cl. 428—516 15 Claims



1. A multilayer polymeric film having dead bend characteristics which are substantially planar isotropic which comprises a laminate of at least two layer of one or more polymeric films, in which:
A. each polymer film layer is highly oriented in one direction, such that each polymeric film layer has dead bend properties with respect to bending deformations substantially normal to the direction of orientations; and
B. the directions of orientation of each polymeric film layer forms an angle of least about 30 degrees with the direction of orientation of each adjacent polymeric film layer; in which each polymeric film layer is composed substantially of polymer fibrils having an average length of at least about 5 micrometers and an average diameter of less than about 0.5 micrometers.

4,882,231

MAGNETO-OPTICAL RECORDING MEDIUM

Katsuhisa Aratani, Chiba, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Nov. 30, 1988, Ser. No. 278,022

Claims priority, application Japan, Dec. 4, 1987, 62-307070

Int. Cl.⁴ G11B *5/66, 7/24*

U.S. Cl. 428—611 4 Claims

1. A magneto-optical recording medium comprising a substrate, a first magnetic film, a second magnetic film and a third magnetic film sequentially formed on said substrate,
said first magnetic film having a larger rotation angle of a plane of polarization than said third magnetic film,
respective Curie temperature Tc1, Tc2, Tc3 of said first, second, and third magnetic films satisfying the relationhship with respect to room temperature T_{RT}, $Tc2>T_{RT}$, and $Tc2<Tc1$, $Tc2<Tc3$, and

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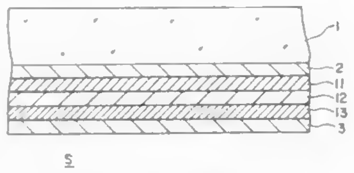
said second magnetic film magnetically coupling said first and third magnetic films and interrupting said magnetic coupling between said first and third magnetic films at a recording temperature higher than Tc2.



4,882,232
POROUS METAL STRUCTURE AND METHOD OF MANUFACTURING OF SAID STRUCTURE

Bernard Bognet, Champs sur Marne, and Denis Doniat, Le Perreux, both of France, assignors to Sorapec Societe de Researche et d'Applications Electrtochimiques, Fontenay sous Bois, France

Continuation of Ser. No. 78,055, Jul. 27, 1987, abandoned, which is a continuation of Ser. No. 693,040, Jan. 22, 1985, abandoned. This application Jun. 8, 1988, Ser. No. 204,118

Claims priority, application France, Jan. 25, 1984, 84 01110

Int. Cl.^{4} C25D *5/56;* **C23C** *14/34*

U.S. Cl. 428—613 **5 Claims**

1. A method of fabrication of a metallized porous structure from an organic porous support having a three-dimensional lattice network with an open pore volume higher than 80% which defines a plurality of pores substantially in communication with each other, which comprises the step of premetallizing said support under vacuo by cathode sputtering with a metal or alloy which is a member selected from the group consisting of platinum, platinum-base alloys, nickel, chromium, iron, copper, gold, silver, tin, aluminum, titanium, zinc, brass, bronze, a ferrochromium alloy and a mixture thereof, thereby depositing on said support a continuous layer of 0.05 micron to 1 micron of said metal or alloy and then applying at least one metal layer of copper or nickel by a chemical or electrochemical process.

5. An electrode support for a nickel, cadmium, iron or lead electrode made of the metallized porous structure produced by the method of claim 1.

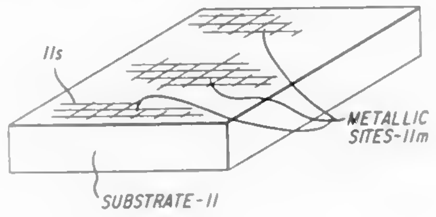
4,882,233
SELECTIVELY DEPOSITED ELECTRODES ONTO A SUBSTRATE

K. R. Ramaprasad, Princeton, N.J., assignor to Chronar Corp., Lawrenceville, N.J.

Continuation of Ser. No. 615,248, May 30, 1984, abandoned. This application Feb. 19, 1988, Ser. No. 157,843

Int. Cl.^{4} B23C *3/02*

U.S. Cl. 428—620 **8 Claims**



1. A conductive substrate for the deposition of material thereon, which comprises an insulating layer upon said substrate; and a plurality of apertures in said insulating layer containing conductive material formed from said substrate forming a plurality of metallic nucleating centers for the adherence of said material to said substrate.

4,882,234
STORAGE-STABLE PORPHIN COMPOSITIONS AND A METHOD FOR THEIR MANUFACTURE

Jan-Ji Lai, Sunnyvale; Kevin M. Smith, Davis, and Bruce W. McCaul, Palo Alto, all of Calif., assignors to Healux, Inc., Sunnyvale, Calif.

Filed Nov. 12, 1986, Ser. No. 930,160

Int. Cl.^{4} A61K *31/40;* **C07D** *437/22*

U.S. Cl. 514—185 **12 Claims**

1. A process for preparing a storage-stable carboxyhydroxyporphin-based product, said carboxyhydroxyporphin having from one to three inclusive carboxys and from one to three inclusive hydroxys per porphin ring, which process comprises the step of heat-treating a pH 5 to pH 9 buffered aqueous solution of said carboxyhydroxyporphin at a temperature of from 60° C. to 120° C. for a time in the range of from about 5 to about 100 hours sufficient to form a product in which at least about 80% of the carboxyhydroxyporphin is a storage-stable porphinbased oligomer.

7. The storage-stable carboxyhydroxyporphin oligomer product which is formed by the process of claim 1.

11. A storage-stable carboxyhydroxyporphin-based pharmaceutical preparation comprising the product of claim 7 in a pharmaceutically acceptable injectable liquid carrier.

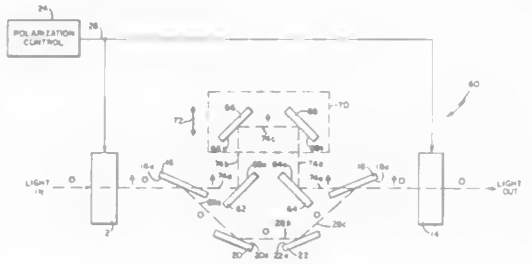
4,882,235
LIQUID CRYSTAL CELL WINDOW

Daniel P. Resler, Wilmington, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Mar. 2, 1988, Ser. No. 162,922

Int. Cl.^{4} G02F *1/13;* **B32B** *15/04*

U.S. Cl. 428—642 **3 Claims**



1. An optically transparent electrode comprising
a sheet of optically-transparent, semi-insulating crystalline material, said sheet having a region on a surface of said sheet implanted with ions, said ion-implanted region comprising less than the entire area of said surface of said sheet, said sheet having been annealed following ion implantation to electrically activate said implanted ions, wherein said sheet exhibits uniform transmission cha acteristics over said surface to radiant energy of a predetermined wavelength.

4,882,236
RIGID MAGNETIC RECORDING DISKS AND METHOD OF PRODUCING SAME

Charles W. Smith; Sheldon H. Butt, both of Godfrey, Ill., and Eugene Shapiro, Hamden, Conn., assignors to Olin Corporation, Cheshire, Conn.

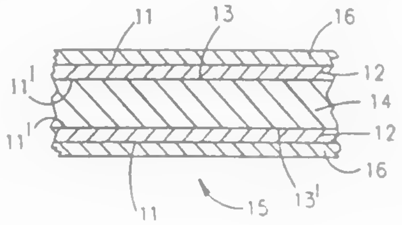
Filed Feb. 10, 1988, Ser. No. 154,557

Int. Cl.^{4} B32B *15/20*

U.S. Cl. 428—652 **6 Claims**

1. A substrate for a rigid magnetic recording disk, said substrate comprising:

a clad material having at least first and second layers, each of said layers having first and second opposing surfaces;
said first layer comprising a copper-based alloy containing nickel;
said second layer comprising a material selected from the group consisting of aluminum and aluminum alloys;
said first surface of said first layer being substantially asperity free;



said second surface of said first layer being metallurgically bonded to at least one of said surfaces of said second layer without any substantial intermetallic formation;
the thickness of said first layer being from about 0.2% to about 20% of the thickness of said second layer;
the hardness and the mechanical strength of said first layer being substantially greater than said second layer; and
said second layer being substantially less dense than said first layer.

4,882,237
ALUMINUM-CERAMIC COMPLEX MATERIAL

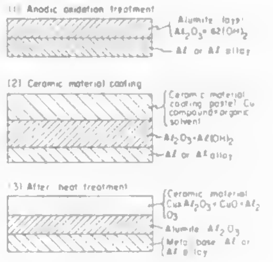
Mamoru Koyama, Fujiitera, Japan, assignor to Tokyo Metal Co., Ltd., Japan

Filed Mar. 14, 1988, Ser. No. 167,571

Claims priority, application Japan, Mar. 18, 1987, 62-65489

Int. Cl.^{4} B32B *15/04, 15/20;* **C04B** *35/10*

U.S. Cl. 428—699 **11 Claims**


(1) Anodic oxidation treatment
Alumite layer
Al or Al alloy
(2) Ceramic material coating
Ceramic material coating paste(Cu compound+organic solvent
Al or Al alloy
(3) After heat treatment
Ceramic material
Alumite Al2O3
Metal base Al or Al alloy

1. A layered aluminum-ceramic complex material comprising
a substrate layer containing aluminum,
an anodically induced aluminum oxidation layer covering said substrate layer,, and
a unified copper ceramic surface layer integrally bonded to and covering said aluminum oxidation layer,
said copper ceramic surface layer being formed by contacting said aluminum oxidation layer with an applied transition layer containing copper at a temperature sufficient to convert said applied transition layer to said ceramic surface layer.

4,882,238
DIE FOR USE IN FORMING LENS

Takashi Yoshioka, and Akira Doi, both of Itami, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 70,122, Jan. 6, 1987, abandoned, which is a continuation of Ser. No. 821,913, Jun. 23, 1986, abandoned. This application Oct. 3, 1988, Ser. No. 251,945

Claims priority, application Japan, Jan. 28, 1985, 60-14066

Int. Cl.^{4} B32B *9/00*

U.S. Cl. 428—698 **1 Claim**

1. A die having superior wear and corrosion resistance, a surface roughness R_{max} of 1000 Å or less, and which is a structure for forming optical lenses, wherein said die is coated at a temperature of 800° C. or lower with a single or multilayer amorphous film of silicon nitride, silicon carbide or a combination thereof, having a thickness of 5 μm or less, by a plasma-CVD coating method.

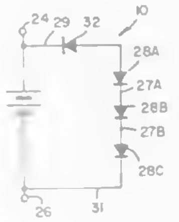
4,882,239
LIGHT-RECHARGEABLE BATTERY

Derrick P. Grimmer, St. Paul, and Robert P. Wenz, Cottage Grove, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 8, 1988, Ser. No. 165,488

Int. Cl.^{4} H01M *14/00*

U.S. Cl. 429—7 **9 Claims**



1. A light-rechargeable battery, including:
a tubular rechargeable cell;
a pair of terminals extending from the cell;
two or more solar cell units interconnected in a series circuit between the terminals, each solar cell unit substantially extending around a circumference of the rechargeable cell; and
fastener means for fastening the solar cell units to the rechargeable cell

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4,882,240
CLOSED CYCLE ELECTRICAL POWER SYSTEM

William G. Harris, Seattle, and Douglas J. Silva, Kent, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Division of Ser. No. 50,447, May 18, 1987, which is a division of Ser. No. 761,995, Aug. 2, 1985. This application Jan. 11, 1988, Ser. No. 142,099

Int. Cl.^{4} H01M *8/18;* **C01B** *3/02*

U.S. Cl. 429—17 **20 Claims**

1. A closed cycle electrical power system comprising:
(a) a hydrogen-halogen fuel cell in which hydrogen gas and halogen are converted catalytically to a haloacid with the generation of electrical energy;
(b) an accumulator for the haloacid leaving the fuel cell;
(c) a generator for generating hydrogen for recycling to the fuel cell from the holoacid by reacting the haloacid on

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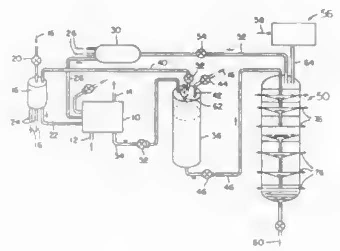
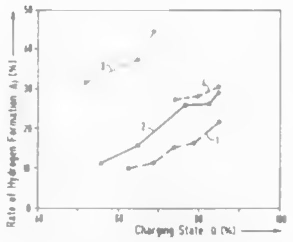
demand with a suitable metal in a controlled environment; and



(d) means for feeding the metal to the generator without introducing contaminants to the controlled environment.

4,882,241
REDOX BATTERY

Angelika Heinzel, Freiburg, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany
Filed Oct. 19, 1988, Ser. No. 259,924
Claims priority, application Fed. Rep. of Germany, Oct. 23, 1987, 3735992
Int. Cl.⁴ H01M *8/20*
U.S. Cl. 429—19 11 Claims

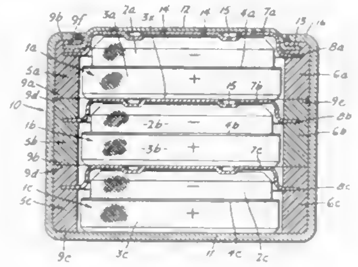


1. A battery comprising:
at least one "redox" cell, each cell having first and second chambers separated by a membrane;
a positive electrode disposed in the first chamber;
a negative electrode disposed in the second chamber;
a catholyte fluid in said first chamber, said positive electrode being inert to the catholyte fluid; and
an anolyte fluid in said second chamber, said negative electrode being inert to the anolyte fluid;
said negative electrode containing a combination of gold (Au), thallium (Tl), lead (Pb), and bismuth (Bi) as a catalyst for the acceleration of Cr^{3+}/Cr^{2+} "redox" processes.

4,882,242
CLOSED GASTIGHT BATTERY, IN PARTICULAR NICKEL-CADMIUM

Manfred Kilb, Frankfurt am Main, and Klaus D. Degen, Bad Homburg, both of Fed. Rep. of Germany, assignors to Christoph Emmerich GmbH & Co. KG, Frankfurt am Main, Fed. Rep. of Germany
Filed Aug. 8, 1988, Ser. No. 229,322
Claims priority, application Fed. Rep. of Germany, Sep. 2, 1987, 8711863[U]; Jul. 16, 1988, 3824222
Int. Cl.⁴ H01M *6/42*
U.S. Cl. 429—154 18 Claims

1. In a closed, gas-tight stacked, multiple-cell electric battery construction, in combination:
(a) a cell comprising a pair (*2a, 3a*) of cooperable negative and positive slab-like cell elements disposed in stacked relation, presenting one negative outward face and one opposite positive outward face,
(b) a circumferential electrically-insulating double-ended sealing housing (*6a*) surrounding both of said stacked cell elements (*2a, 3a*) and comprising a uniform-thickness annular wall having axially-aligned equal-area compression end faces,
(c) said housing having one end adapted to be closed, and having its other end open,
(d) an outwardly dished electrically conductive wall (*7a*) electrically connected to one outward face of said stacked cell elements (*2a, 3a*), said conductive wall having its peripheral edge portions axially inwardly offset and sealed in gas-tight and liquid-tight fashion to said one end of said housing,
(e) said other open housing end being substantially coplanar with the other outward face of said stacked cell elements, and
(f) substantially coplanar means (*7b, 6b*) directly engaging said coplanar other open housing end and said other element outward face, effecting a seal of said other open housing end, said substantially coplanar means comprising one end of a second double-ended sealing housing and a second outwardly dished conductive wall having an inwardly axially-offset periphery molded into and sealed to said second sealing housing and constituting an additional cell which has assembled negative and positive slab-like cell elements disposed in said housing,
(g) the other end of said second housing and the outer face of the assembled cell elements contained therein being. substantially coplanar to facilitate their being sealed.



4,882,243
PREPARATION OF METALLIC CATION CONDUCTING POLYMERS BASED ON STERICALLY HINDERED PHENOLS CONTAINING POLYMERIC SYSTEMS

Terje A. Skotheim, Shoreham, N.Y.; Yoshiyuki Okamoto, Fort Lee, N.J., and Hung S. Lee, Woodside, N.Y., assignors to Polytechnic University, Brooklyn, N.Y. and Associated Universities, Inc., Washington, D.C.
Filed Nov. 22, 1988, Ser. No. 275,013
Int. Cl.⁴ H01M *10/40*
U.S. Cl. 429—192 22 Claims

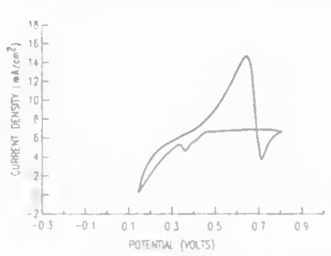
1. A solvent-free polymer electrolyte containing a sterically hindered phenol metal ion salt.

4,882,244
BATTERY CONTAINING A METAL ANODE AND AN ELECTROLYTE PROVIDING HIGH RATES OF METAL ELECTROLYSIS AT NEAR AMBIENT TEMPERATURES

Francis M. Donahue; Leif R. Simonsen, and Russell L. Moy, all of Ann Arbor, Mich., assignors to The University of Michigan-Ann Arbor, Ann Arbor, Mich.
Filed Apr. 2, 1987, Ser. No. 33,208
Int. Cl.⁴ H01M *6/14, 6/16*
U.S. Cl. 429—194 16 Claims

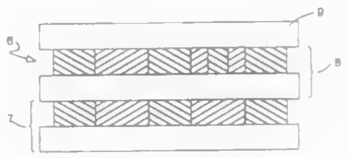
1. A battery comprising an anode, a cathode, and an electrolyte, wherein:
the anode comprises aluminum, zinc, magnesium, calcium, sodium, potassium, gallium, antimony, lead, or an alloy thereof;

the electrolyte comprises an acidic mixture of a cation component, a Lewis acid and a nitrile component; wherein
(1) the cation component is LiCl, NaCl, KCl or an organic cation which is a 1,3-dialkylimidazolium cation, a halide derivative of a 1,3-dialkylimidazolium cation, a N-alkyl pyridinium cation, an alkyl derivative of a N-alkyl pyridinium cation, a tetraalkyl ammonium cation, a halide derivative of a tetraalkyl ammonium cation, or a mixture thereof; and
(2) the nitrile component is an aliphatic or unsaturated organic compound containing from 1 to 6 carbon atoms and being substituted by at least one —CN substituent.



4,882,245
PHOTORESIST COMPOSITION AND PRINTED CIRCUIT BOARDS AND PACKAGES MADE THEREWITH

Jeffrey D. Gelorme, Binghamton, N.Y.; Robert J. Cox, Watsonville, and Sergio A. R. Gutierrez, San Jose, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.
Continuation of Ser. No. 791,886, Oct. 26, 1985, abandoned. This application Jun. 12, 1987, Ser. No. 62,360
Int. Cl.⁴ G03C *1/72;* **A01B** *9/00;* **H02B** *1/00*
U.S. Cl. 430—14 16 Claims

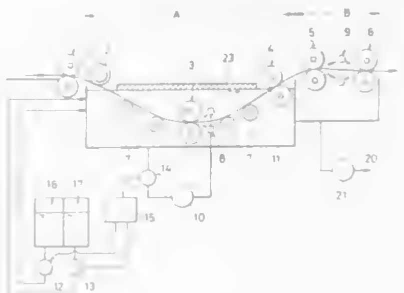


1. A printed circuit board comprising a fully cured epoxy-resin-containing substrate, a pattern of conductive material disposed on said substrate, and an imagewise pattern of a fully cured photocurable composition disposed on said substrate;
said fully cured photocurable composition resulting from a reaction between a photocurable composition and a cationic photoinitiator;
said photocurable composition comprising the product of:
(a) a polyepoxyfunctional novolak resin which is curable through the action of said cationic photoinitiator; and
(b) a diluent soluble in developing solvents for photoresists and reactive with the epoxy functional groups of said epoxy novolak resin by the action of said cationic photoinitiator to form said fully cured composition insoluble in said developing solvents;
wherein said epoxy novolak resin comprises at least approximately 65 weight percent of the resin solids of said photocurable composition, said diluent comprises from approximately 10 to approximately 35 weight percent of said resin solids, and said cationic photoinitiator comprises from approximately 2 to approximately 6 weight percent of said resin solids;
said fully curved photocurable composition being at least approximately 0.0015 inch in cross sectional height; and
said fully cured photocurable composition being substantially resistant to delamination from said substrate when temperature cycled.

2. A package comprising at least 2 printed circuit boards according to claim 1; said circuit boards having been fully cured in layered contact.

4,882,246
METHOD FOR SUPPLEMENTING REPLENISHER FOR DEVELOPER IN AUTOMATIC DEVELOPING MACHINE FOR PRESENSITIZED PLATE

Hisao Ohba; Tomoaki Takekoshi, and Kenji Kunichika, all of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Ashigara, Japan
Filed Jul. 14, 1988, Ser. No. 218,892
Claims priority, application Japan, Jul. 17, 1987, 62-178457
Int. Cl.⁴ G03C *5/00*
U.S. Cl. 430—30 14 Claims



1. A method for supplementing a replenisher for developer which comprises developing a large number of presensitized plates for use in making lithographic printing plates, which have been imagewise exposed to light, with a developer comprising an aqueous solution of sodium silicate or potassium silicate in an automatic developing machine, comprising the steps of determining an AC impedance of the developer contained in the automatic developing machine, obtaining a correction impedance from the measured impedance value and rate of replacement and supplementing a desired amount of the replenisher to the developer when the correction impedance reaches a predetermined value, wherein the correction impedance is determined by substituting the measured impedance and a rate of replacement into a predetermined calculation equation as follows:

$$Y=X-(-ax_n+b-c)$$

$$x_n=(x_{n-1}\cdot A+B)/(A+B)$$

$$x_0=0$$

wherein x_n represents the rate of replacement; Y is the correction impedance value; X is the measured impedance value; a denotes the slope of the rate of replacement to the impedance value (b−c); b is an initial impedance value of the developer; c is the final impedance value thereof; A is the initial amount of the developer; B is the amount of the replenisher per supplementation; and n is the number of supplementation.

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4,882,247
ELECTROPHOTOGRAPHIC IMAGE RECORDING METHOD

Kazuo Marugama; Kiyoshi Horie; Tsuneo Noami; Toshiro Yamamoto; Koji Adachi; Toru Okamoto; Takeshi Sumikawa, and Furuya Nobumasa, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Nov. 17, 1987, Ser. No. 121,807

Claims priority, application Japan, Nov. 18, 1986, 61-272790; Dec. 4, 1986, 61-287809; Jan. 23, 1987, 62-12234; Apr. 13, 1987, 62-88626; Apr. 13, 1987, 62-88628; Jun. 10, 1987, 62-143301

Int. Cl.⁴ G03G *13/01*

U.S. Cl. 430—45 7 Claims

1. An image recording method comprising:

- a first step of forming a first electrostatic latent image on a latent image carrier and developing the first electrostatic latent image with a first nonmagnetic toner charged to one polarity to form a first toner image;
- a second step of forming a second electrostatic latent image on the latent image carrier carrying said first toner image and developing the second electrostatic latent image with double-element developer formed from mixing a second toner charged to a polarity opposite that of the first toner and a magnetic carrier having a density of 4.0 g/cm^3 or less to form a second toner image, whereby said first toner image is not disturbed by formation of said second image; and
- a third step of transferring said first and second toner images to a transfer material.

4,882,248
ELECTROPHOTOGRAPHIC PLATE FOR MAKING PRINTING PLATE COMPRISING PHTHALOCYANINE PIGMENT AND THIOBARBITURIC ACID RESIDUE CONTAINING COMPOUND

Jun Yamada, and Hiromi Eguchi, both of Nagaokakyo, Japan, assignors to Mitsubishi Paper Mills, Ltd., Tokyo, Japan

Filed Mar. 14, 1988, Ser. No. 167,954

Claims priority, application Japan, Mar. 16, 1987, 62-61483

Int. Cl.⁴ G03G *13/26*

U.S. Cl. 430—49 13 Claims

1. An electrophotographic plate for making a printing plate therefrom which comprises an electrically conductive and hydrophilic base and a photoconductive layer provided thereon, said photoconductive layer containing an alkali and/or alcohol soluble polymer, a phthalocyanine pigment and a compound represented by the formula (I):

$$(X)_nY \qquad (I)$$

wherein X represents thiobarbituric acid residue from which one hydrogen atom at the 5-position has been eliminated and in which a nitrogen atom in a ring may have a substituent; Y represents an n-valent substituted or unsubstituted alkylene or aralkylene residue; and n represents an integer of 2 to 4.

4,882,249
TETRAKISAZO PHOTOCONDUCTIVE COMPOSITION AND ELECTROPHOTOGRAPHIC PHOTORECEPTOR USING THE SAME

Katsugi Kitatani, and Satoshi Hoshi, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

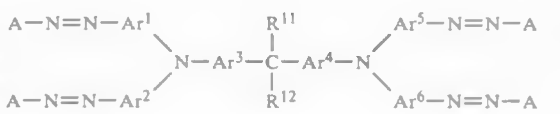
Filed Sep. 12, 1988, Ser. No. 243,358

Claims priority, application Japan, Sep. 11, 1987, 62-228029

Int. Cl.⁴ G03G *5/06;* **G09B** *35/64*

U.S. Cl. 430—56 17 Claims

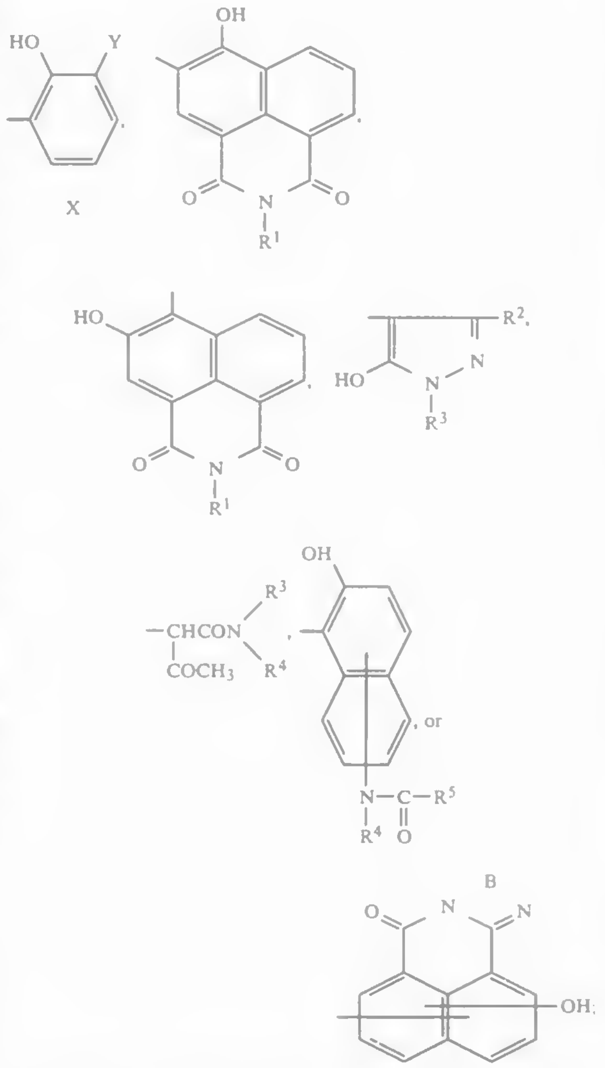
1. A photoconductive composition comprising at least one tetrakisazo represented by the following formula (1):



$$\left.\begin{matrix}A-N=N-Ar^1\\A-N=N-Ar^2\end{matrix}\right\rangle N-Ar^3-\underset{R^{12}}{\overset{R^{11}}{\overset{|}{\underset{|}{C}}}}-Ar^4-N\left\langle\begin{matrix}Ar^5-N=N-A\\Ar^6-N=N-A\end{matrix}\right. \qquad (1)$$

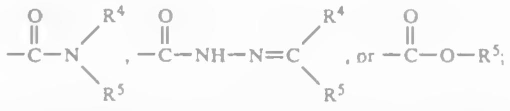
where R^{11} and R^{12} independently represent hydrogen atom or a substituted or unsubstituted alkyl, aryl or aralkyl group, and R^{11} and R^{12} may be the same or different or R^{11} and R^{12} may be taken together to form a ring; Ar^1, ar^2, Ar^3, Ar^4, Ar^5, and Ar^6 independently represent a substituted or unsubstituted arylene group;

A represents



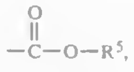
X represents a group that forms an aromatic ring or a heterocyclic ring, which is substituted or unsubstituted, by condensation with the benzene ring in the aforesaid formula having a hydroxyl group and Y on the ring;

Y represents



$$-\overset{O}{\overset{\|}{C}}-N\begin{matrix}\diagup R^4\\ \diagdown R^5\end{matrix},\quad -\overset{O}{\overset{\|}{C}}-NH-N=C\begin{matrix}\diagup R^4\\ \diagdown R^5\end{matrix},\ \text{or}\ -\overset{O}{\overset{\|}{C}}-O-R^5;$$

- R^1 represents an alkyl group, a phenyl group or a substituted group thereof;
- R^2 represents a hydrogen atom, a lower alkyl group, a carbamoyl group, a carboxyl group, an alkoxycarbonyl group, an aryloxycarbonyl group, or a substituted or unsubstituted amino group;
- R^3 represents an alkyl group, an aromatic group, a hetero-aromatic group, or a substituted group thereof;
- R^4 and R^5 independently represent a hydrogen atom, an alkyl group, an aromatic group, a hetero-aromatic group, or a substituted group thereof, provided that both R^4 and R^5 are not hydrogen atoms at the same time, and when Y represents



$$-\overset{O}{\overset{\|}{C}}-O-R^5,$$

R^5 is not a hydrogen atom; and

- B represents a divalent group that forms an aromatic hydrocarbon or a divalent group that forms a hetero ring which contains one or more nitrogen atoms in the ring, and the ring is unsubstituted or substituted.

4,882,250
COPPER PHTHALOCYANINE PHOTORECEPTOR AND METHOD FOR PRODUCING THE SAME

Jonq-Min Liu; Tai-Jun Chen, both of Hsinchu; Lii-Chyuan Tsai, Kaohsiung, and Li-Wen Pai, Changhwa, all of Taiwan, assignors to Industrial Technology Research Institute, Hsinchu, Taiwan

Filed Jul. 22, 1988, Ser. No. 222,774

Int. Cl.⁴ G03G *5/14*

U.S. Cl. 430—58 2 Claims

1. A photoreceptor have a substrate, a layer of charge generating material and a layer of charge transporting material, said charge generating layer being formed by applying a film forming composition comprising a binder and copper phthalocyanine, and then exposing said composition to iodine vapor at a temperature of 20–90 deg. C., said charge transporting material comprising a binder and a compound selected from hydrazones, pyrazolines, oxazoles, thiazoles and triaryl methane.

4,882,251
LIGHT RECEIVING MEMBER HAVING A MULTILAYERED LIGHT RECEIVING LAYER COMPOSED OF A LOWER LAYER MADE OF ALUMINUM-CONTAINING INORGANIC MATERIAL AND AN UPPER LAYER MADE OF NON-SINGLE-CRYSTAL SILICON MATERIAL

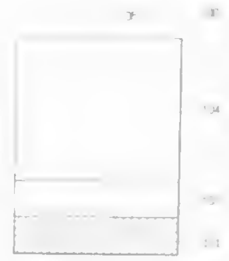
Tatsuyuki Aoike; Masafumi Sano; Takehito Yoshino; Toshimitsu Kariya, and Hiroaki Niino, all of Nagahama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 19, 1988, Ser. No. 183,701

Claims priority, application Japan, Apr. 22, 1987, 62-99547; Apr. 27, 1987, 62-104915; May 6, 1987, 62-111622; May 7, 1987, 62-112159; Jun. 29, 1987, 62-161538; Aug. 5, 1987, 62-196566; Aug. 6, 1987, 62-197829; Dec. 16, 1987, 62-316312

Int. Cl.⁴ G03G *5/082, 5/14*

U.S. Cl. 430—57 30 Claims



1. A light receiving member having an aluminum support and a multilayered light receiving layer exhibiting photoconductivity formed on said aluminum support, characterized in that said multilayered light receiving layer comprises: a lower layer (a) in contact with said support and an upper layer (b) having a free surface disposed on sid lower layer (a); said lower layer (a) being formed of an inorganic material composed of aluminum atoms, silicon atoms, hydrogen atoms and atoms of an element capable of contributing to the control of image quality selected from the group consisting of boron, gallium, indium, thallium, phosphorus, arsenic, antimony, bismuth, sulfur, selenium, tellurium and polonium; said lower layer (a) having a portion in which said aluminum, silicon and hydrogen atoms are unevenly distributed across the layer thickness; said aluminum atoms being contained in said lower layer (a) such that their content decreases across the layer thickness upward from the interface between said lower layer (a) and said aluminum support and wherein said content of said aluminum atoms is lower than 95 atomic % in the vicinity of the interface between said lower layer (a) and said aluminum support and higher than 5 atomic % in the vicinity of the interface between said lower layer (a) and said upper layer (b); said upper layer (b) comprising a plurality of layer regions, each said region comprising a non-single-crystal material composed of silicon atoms as the matrix, and wherein the layer region adjacent said lower layer (a) comprises (i) a non-single-crystal material containing silicon atoms as the matrix, (ii) at least one kind of atoms selected from the group consisting of hydrogen atoms and halogen atoms, and (iii) atoms of a conductivity controlling element selected from the group consisting of Group III atoms, Group V atoms, except nitrogen, and Group VI atoms, except oxygen, of the periodic table.

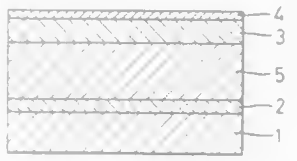
4,882,252
ELECTROPHOTOGRAPHIC SENSITIVE MEMBER WITH AMORPHOUS SILICON CARBIDE

Takao Kawamura, 17-11, 1-cho, Takakuradai, Sakai-shi, Osaka-fu; Naooki Miyamoto, Yohkaichi; Hiroshi Ito, Yohkaichi; Hitoshi Takemura, Yohkaichi; Kazumasa Ohkawa, Yohkaichi, and Kokichi Ishibitsu, Yohkaichi, all of Japan, assignors to Kyocera Corporation, Tokyo and Takao Kawamura, Sakai, both of, Japan

Filed May 23, 1988, Ser. No. 197,461

Int. Cl.⁴ G03G *5/082, 5/14*

U.S. Cl. 430—58 15 Claims



1. An electrophotographic sensitive member comprising: a substrate;

- a carrier transport layer having a thickness of between about 1 and about 50 μm, said carrier transport layer being formed of an amorphous silicon carbide with an atomic ratio of carbon to silicon set at 1:100 to 1:9; and
- a carrier generation layer formed of an amorphous silicon carbide with an atomic ratio of carbon to silicon set at 1:100 to 9:1,
- wherein said carrier transport layer and said carrier generation layer comprises a dopant selected from the group consisting of elements of Group Va of the Periodic Table and elements of Group IIIa of the Periodic Table and mixtures thereof, said dopant being present in said carrier transport layer in an amount greater than in said carrier generation layer; and
- wherein hydrogen or a mixture thereof with halogen is

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incorporated at a ratio of about 5 to about 50 atomic percent for terminating dangling bonds.

4,882,253
ORGANIC LAMINATED PHOTOSENSITIVE MATERIAL OF POSITIVE CHARGING TYPE

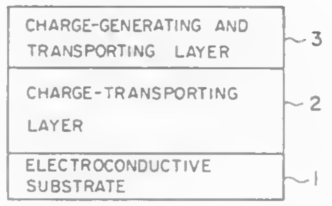
Yoshiaki Kato, Ikaruga; Masashi Tanaka, Izumi-Ohtsu; Mitsuji Tsujita, Osaka; Keizo Kimoto, Sakai; Hirotsugu Nishikawa, Osaka, and Mika Kawaguchi, Neyagawa, all of Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed Jul. 28, 1988, Ser. No. 225,522

Claims priority, application Japan, Jul. 29, 1987, 62-187646

Int. Cl.^{4} G03G *5/14*

U.S. Cl. 430—59 **10 Claims**


CHARGE-GENERATING AND TRANSPORTING LAYER
3
CHARGE-TRANSPORTING LAYER
2
ELECTROCONDUCTIVE SUBSTRATE
1

1. An organic laminated photosensitive material comprising an electroconductive substrate, a charge-transporting layer formed on the substrate and a charge-generating and transporting layer formed on the charge-transporting layer, wherein the charge-transporting layer is composed of a binder resin containing a hole-transporting substance, and the charge-generating and transporting layer contains a charge-generating substance and a hole-transporting substance at a weight ratio of from 1/3.5 to 1/40 and has a charge-generating substance content of 10 to 1% by weight based on the sum of the hole-transporting substance and binder and a thickness of 5 to 30 μm.

3. A photosensitive material as set forth in claim 1, wherein the hole-transporting substance is 1,1-diphenyl-4,4-di-N-diethyl-p-anilyl-1,3-butadiene, N-ethylcarbazole-3-carbaldehydo-diphenylhydrazone, diethylaminobenzaldehydo-diphenylhydrazone or N,N,N',N'-tetraphenylbenzidine.

4,882,254
PHOTOCONDUCTIVE IMAGING MEMBERS WITH MIXTURES OF PHOTOGENERATOR PIGMENT COMPOSITIONS

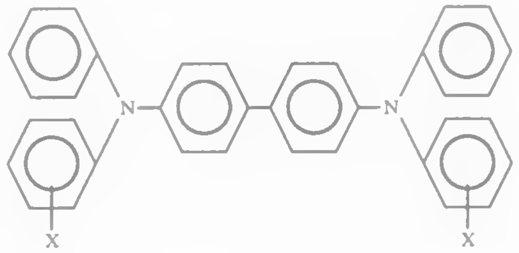
Rafik O. Loutfy, Willowdale; Ah-Mee Hor; George Liebermann, both of Mississauga; Alan J Toth, Burlington; Cheng-Kuo Hsiao, Mississauga, all of Canada; Kathleen M. Carmichael, Williamson, and Emery G. Tokoli, Rochester, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jul. 5, 1988, Ser. No. 214,990

Int. Cl.^{4} G03G *5/10*

U.S. Cl. 430—59 **36 Claims**

1. A layered photoresponsive imaging member comprised of a supporting substrate; a photogenerator layer comprised of a mixture of first and second pigments, said mixture being selected from the group consisting of perylenes and phthalocyanines; polycyclic quinones and phthalocyanines; and perinones and phthalocyanines; and a hole transport layer comprising molecules of the following formula



dispersed in a resinous binder, and wherein X is selected from the group consisting of halogen and alkyl, wherein the imaging member exhibits photosensitivity in the wavelength range of from about 400 to about 900 nanometers.

4,882,255
AZO PHOTOCONDUCTOR FOR ELECTROPHOTOGRAPHY

Yoshimasa Hattori, and Noboru Furushn, both of Kawasaki, Japan, assignors to Fuji Electric Co., Ltd., Kawasaki, Japan

Filed Dec. 21, 1988, Ser. No. 287,081

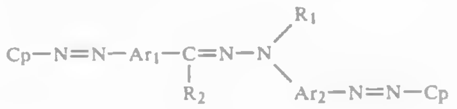
Claims priority, application Japan, Dec. 28, 1987, 62-332366

Int. Cl.^{4} G03G *5/06*

U.S. Cl. 430—73 **4 Claims**

1. A photoconductor for electrophotography comprising:

at least one disazo compound represented by the following general formula (1):



$$Cp-N=N-Ar_1-\underset{R_2}{\underset{|}{C}}=N-N\begin{matrix}\diagup R_1 \\ \diagdown Ar_2-N=N-Cp\end{matrix} \quad (1)$$

wherein,

each of Ar_1 and Ar_2 stands for an aromatic hydrocarbon group, an aromatic heterocyclic group, each of which may have a substituent(s);

each of R_1 and R_2 stands for a hydrogen atom or an alkyl group, an aryl group or a heterocyclic group, each of which may have a substituent(s); and

C_p stands for a coupler residual group.

4,882,256
PHOTOSENSITIVE MEMBER HAVING AN OVERCOAT LAYER COMPRISING AMORPHOUS CARBON

Izumi Osawa, Ikeda; Syuji Iino, Hirakata; Hideo Hotomi, Suita; Kenji Masaki, Osaka, and Isao Doi, Toyonaka, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Oct. 13, 1987, Ser. No. 107,541

Claims priority, application Japan, Oct. 14, 1986, 61-245080; Oct. 14, 1986, 61-245081; Oct. 14, 1986, 61-245082; Jul. 15, 1987, 62-178051; Jul. 15, 1987, 62-178052

Int. Cl.^{4} G03G *5/14*

U.S. Cl. 430—66 **22 Claims**

1. A photosensitive member comprising:

an electrically conductive substrate;

an organic photoconductive layer comprising an organic material as a matrix; and

an overcoat layer formed on said photoconductive layer by an organic plasma polymerization with said substrate heated to a temperature not exceeding 100° C. and comprising amorphous carbon containing hydrogen, said overcoat layer containing one or more atoms selected from the group consisting of halogen, oxygen and nitrogen, and said overcoat layer having a thickness of about 0.01 to about 5 microns.

4,882,257
ELECTROPHOTOGRAPHIC DEVICE

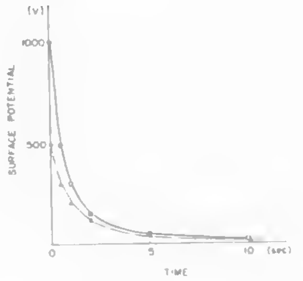
Akio Maruyama, Tokyo; Teigo Sakakibara, Yokohama, and Yuichi Hashimoto, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 24, 1988, Ser. No. 197,962

Claims priority, application Japan, May 27, 1987, 62-128064

Int. Cl.^{4} G03G *13/22*

U.S. Cl. 430—100 **6 Claims**



1. An electrophotographic process performing reversal development to develop the portion with lower absolute value of potential and performing at least primary charging imagewise exposure, developing and cleaning on a photosensitive member of the lamination type which uses a layer coated with a dispersed organic pigment as the charge generation layer, wherein the potential of the photosensitive member and process conditions are under constant conditions, said constant conditions being within the range as defined by the following formula of Vd, t and V_H, when the surface potential of the photosensitive member immediately after charged with a primary charger is defined as Vd (V), the time from primary charging to toner development as t (sec) and further the surface potential of the photosensitive member at which the toner developing density becomes the half value of the saturated density as V_H (V):

$$|V_H| \leqq (|Vd|^{-0.65} + 1.35\times 10^{-2}t)^{-1.54}$$

(Vd, V_H are of the same sign.).

4,882,258
TONER FOR DEVELOPMENT OF ELECTROSTATIC IMAGE AND ELECTROSTATIC LATENT IMAGE DEVELOPER

Satoru Ikeuchi; Mitutaka Arai; Yuki Okuyama, and Akitoshi Matsubara, all of Hino, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Feb. 29, 1988, Ser. No. 161,784

Claims priority, application Japan, Mar. 4, 1987, 62-49618; Mar. 5, 1987, 62-52427; Mar. 5, 1987, 62-52431

Int. Cl.^{4} G03G *9/10, 9/14, 9/08*

U.S. Cl. 430—108 **18 Claims**

1. A toner for developing an electrostatic image comprising a mixture of a lower molecular weight polymer component and a higher molecular weight polymer toner

said lower molecular weight polymer component being a resin obtained by reacting

a polymer comprising a styrene monomer, an acrylate or methacrylate monomer, and a half-ester compound obtained by esterification reaction of an acrylic acid derivative having a hydroxy group or a methacrylic acid derivative having a hydroxy group, with a dicarboxylic acid;

with a polyvalent metal compound to form cross-linking through the metal atom, a local maximum value of said lower molecular weight polymer component being 1×10^3 to 2×10^4, a local maximum value of said higher molecular weight polymer component being 1×10^5 to 2×10^6, said toner further containing an offset preventive agent.

10. An electrostatic image developer comprising toner particles containing a resin obtained by reacting a carboxy group of a polymer component with a polyvalent metal compound and,

magnetic carrier particles surface coated with a fluorine-containing resin, said toner particles having a molecular weight distribution into at least a lower molecular weight polymer component and a higher molecular weight polymer component, a local maximum value of said lower molecular weight polymer component being 1×10^3 to 2×10^4, a local maximum value of said higher molecular weight polymer component being 1×10^5 to 2×10^6, said lower molecular weight polymer component being a resin obtained by reacting a polymer comprising a stryene monomer, an acrylate or methacrylic monomer, and a half-ester compound obtained by esterification reaction of an acrylic acid derivative having a hydroxy group or methacrylic acid derivative having a hydroxy group, with a dicarboxylic acid.

4,882,259
PHOTOSENSITIVE IMAGING MATERIAL EMPLOYING PHOTOSENSITIVE MICROCAPSULES CONTAINING A SOLID DILUENT

Joseph G. O'Connor, and Paul C. Adair, both of Springboro, Ohio, assignors to The Mead Corporation, Dayton, Ohio

Continuation of Ser. No. 659,151, Oct. 9, 1984, abandoned, and a continuation of Ser. No. 814,521, Dec. 19, 1985, abandoned, which is a continuation of Ser. No. 643,569, Aug. 23, 1984, abandoned. This application Apr. 22, 1986, Ser. No. 855,032

Int. Cl.^{4} G03C *172;* **B41M** *5/12*

U.S. Cl. 430—138 **8 Claims**

1. An imaging material comprising a support having on the surface thereof a layer of photosensitive microcapsules having discrete capsule walls, said microcapsules containing an internal phase including a photohardenable composition, an image-forming agent, and a solid diluent, said image-forming agent being a substantially colorless electron donating compound, said photohardenable composition including an ethylenically unsaturated compound and a photoinitiator system, and said solid diluent being miscible, as a melt, with said ethylenically unsaturated compound and not substantially inhibiting reaction of said photohardenable composition and having a melting point in the range of 35° C. to 100° C., said solid diluent being present in an amount of about 2.5 to 50 parts per 100 parts by weight of said photohardenable composition.

4,882,260
POSITIVE-WORKING PHOTOSENSITIVE QUINONE DIAZIDE COMPOSITION WITH ALKALI INSOLUBLE DYE AND ALKALI SOLUBLE DYE

Hidekatsu Kohara, Chigasaki; Nobno Tokutake, Samukawa; Masanori Miyabe, Sagamihara; Toshimasa Nakayama, Hiratsuka; Shingo Asaumi, Fujisawa; Hatsuyuki Tanaka, Samukawa, and Yoshiaki Arai, Yokohama, all of Japan, assignors to Tokyo Ohka Kogyo Co., Ltd., Lamagawa, Japan

Filed Jun. 5, 1987, Ser. No. 59,556

Claims priority, application Japan, Jun. 16, 1986, 61-138143

Int. Cl.^{4} G03C *1/60*

U.S. Cl. 430—191 **5 Claims**

1. A positive-working photosensitive composition which is a mixture consisting essentially of:

(A) an alkali soluble film-forming polymeric resin;

(B) a photosensitizer which is a quinome diozide;

(C) an alkali-insoluble dye soluble in oils and organic solvents having absorptivity of light in the wavelength region from 230 to 500 nm having no phenolic hydroxy group; and

(D) an alkali-soluble dye soluble in oils and organic solvents having absorptivity of light in the wavelength region from 230 to 500 nm having at least one phenolic hydroxy group

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in a molecule; the total amount of the components (C) and (D) being in the range from 0.5 to 10% by weight based on the total amount of the components (A) and (B), and the components (C) and (D) are contained in a weight ratio in the range from 1:1 to 1:4.

4,882,261

HIGH CONTRAST DOT ENHANCING COMPOSITIONS AND PHOTOGRAPHIC PRODUCTS AND METHODS FOR THEIR USE

Yasuhiko Kojima, Fairlawn; John Pilot, Carteret, and Burton H. Waxman, Rockaway, all of N.J., assignors to Polychrome Corp., Yonkers, N.Y. and Dainippon Ink & Chemicals, Inc., Japan

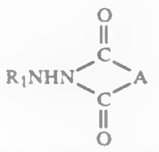
Filed Jun. 27, 1988, Ser. No. 211,980

Int. Cl.^{4} G03C *1/06*

U.S. Cl. 430—264 18 Claims

1. A photographic light sensitive material comprising a support having thereon at least one silver halide photographic emulsion layer, said photographic light sensitive material further comprising an effective amount of a dot enhancing agent of the general formula:

(I)



wherein R$_1$ is an aromatic group and A is a substituted or unsubstituted aromatic nucleus, and wherein each of the two carboxyl groups specifically depicted in said general formula (I) is bound to a different carbon atom of said aromatic nucleus.

4,882,262

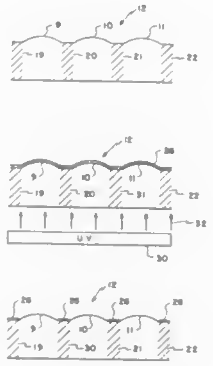
SELF-ALIGNING APERTURE

Dennis J. Wilwerding, Littleton, Colo., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Sep. 28, 1987, Ser. No. 102,059

Int. Cl.^{4} G03C *5/00*

U.S. Cl. 430—321 10 Claims



1. The method of applying a material between the lenslets of a lenslet array, which array includes a body of material with a first surface upon which the lenslets are formed in first areas with second areas therebetween and a second surface spaced from the first surface and with at least partly opaque portions in said body extending between the first and second surfaces under only the second areas comprising the steps of:

A. applying a photoresist over the first surface;

B. shining an ultraviolet light through the body of material from the second surface to the first surface, the at least partly opaque portion of the body blocking a portion of the light from reaching the second areas so that they are affected differently by the light than the first areas to facilitate photoresist removal in one of the first and second areas; and

C. removing the photoresist from one of the first and second areas.

4,882,263

METHOD OF TREATING PHOTORESISTS

Shinji Suzuki, Kawasaki; Tetsuji Arai, Yokohama; Kazuyoshi Ueki, Kawasaki; Yoshiki Mimura, Yokohama, and Hiroko Suzuki, Kawasaki, all of Japan, assignors to Usho Denki, Tokyo, Japan

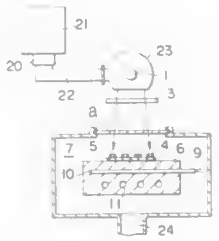
Filed Jan. 22, 1988, Ser. No. 146,927

Claims priority, application Japan, Mar. 24, 1987, 62-67890

The portion of the term of this patent subsequent to Feb. 1, 1989, has been disclaimed.

Int. Cl.^{4} G03C *5/16*

U.S. Cl. 430—328 2 Claims



1. A method of enhancing thermal stability of a developed positive photoresist image on a semiconductor wafer comprising the steps of:

energizing a microwave-excited electrodeless discharge lamp to provide a range of radiant energy including wavelengths of 300 nm to 500 nm,

selectively filtering wavelengths in the spectral response region of said photoresist image from said radiant energy,

placing the developed positive photoresist image in a chamber having a gas at a pressure lower than 1×10^{-1} torr atmospheric pressure, and exposing said photoresist image to the wavelengths remaining in said radiant energy after said filtering step.

4,882,264

COLOR DEVELOPER COMPOSITION

Hongzoon Kim, Boonton; Edward C. Saunders, Oakland, and Harris Miller, Fort Lee, all of N.J., assignors to Olin Hunt Specialty Products Inc., Cheshire, Conn.

Filed Jan. 20, 1984, Ser. No. 572,646

Int. Cl.^{4} G03C *5/30, 7/30*

U.S. Cl. 430—467 1 Claim

1. A color developer composition for use in developing color print paper, wherein the color developer composition comprises 4-amino-3-methyl-N-ethyl-N-beta-methanesulfonamidoethyl aniline or a salt thereof, 4-amino-3-methyl-N-ehtyl-N-beta hydroxyethyl aminline or a salt thereof, and 4-amino-3-methyl-N-diethyl aniline or a salt thereof.

4,882,265

INFRARED LASER RECORDING FILM

Evan D. Laganis, Wilmington, Del., and Alden D. West, Hendersonville, N.C., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

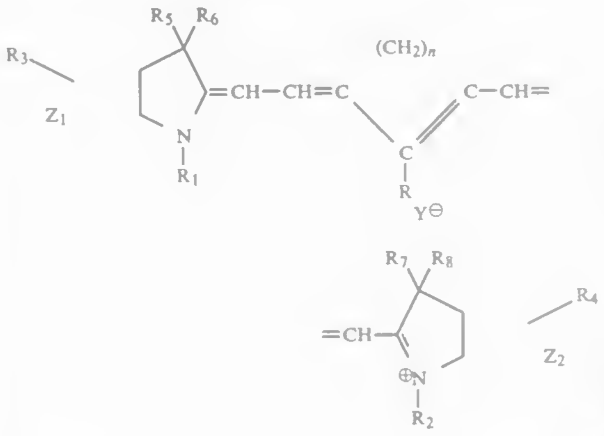
Filed May 18, 1988, Ser. No. 195,231

Int. Cl.^{4} G03C *1/84*

U.S. Cl. 430—522 6 Claims

1. A photographic recording element containing an infrared absorbing dye layer comprising a support, at least one silver halide layer coated on side of the support, and coated on the

other side of the support a hydrophilic binder layer containing an absorbing amount of a dye substantially water insoluble at ambient temperature with the following structure:



wherein R is hydrogen, alkyl, cycloalkyl, aryl, substituted aryl, F, Cl, or Br; R$_1$ and R$_2$ are independently —(CH$_2$)$_{n1}$—X wherein X is H, F, Cl, Br, phenyl, methyl, ethyl, cycloalkyl of 3 to 7 carbon atoms or alkoxy of 1 to 3 carbon atoms, and n$_1$ is an integer of 2 to 6; Z$_1$ and Z$_2$ independently represent the atoms necessary to complete an indole, benzindole or naphthindole nucleus or R3 and R4 independently represent methyl, ethyl, methoxy, ethoxy, hydroxy, F, Cl or Br substitutions on Z$_1$ and Z$_2$, respectively; R$_5$, R$_6$, R$_7$ and R$_8$ each independently represent methyl, ethyl, or R$_5$ and R$_6$ or R$_7$ and R$_8$, when taken together with the carbon atoms to which they are attached may form a 5- or 6-membered cycloalkyl group; n is an integer from 2 to 4; and y is a counter ion.

4,882,266

SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL CONTAINING A PYRAZOLOAZOLE MAGENTA COUPLER

Toshio Kawagishi, and Kiyoshl Nakazyo, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 224,245, Jul. 25, 1988, which is a continuation-in-part of Ser. No. 42,549, Apr. 27, 1987, abandoned, which is a continuation of Ser. No. 773,156, Sep. 6, 1985, abandoned. This application Feb. 7, 1989, Ser. No. 307,020

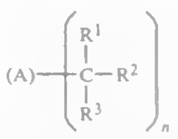
Claims priority, application Japan, Sep. 6, 1984, 59-187203

Int. Cl.^{4} G03C *7/38*

U.S. Cl. 430—546 9 Claims

1. A silver halide color photographic material comprising a support having coated thereon at least one silver halide emulsion layer, in which said silver halide emulsion layer or a layer adjacent thereto contains a magenta image-providing pyrazoloazole magenta coupler having substantially no dissolution in a developing solution and having at least one substituted alkyl group represented by the formula (I):

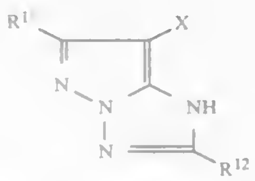
(I)



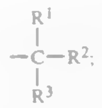
$$(A)-\left(\begin{array}{c} R^1 \\ | \\ C-R^2 \\ | \\ R^3 \end{array}\right)_n$$

wherein (A) represents a pyrazoloazole magenta coupler residual group; R^1 is an alkyl group; R^2 and R^3 each is a hydrogen atom or a substituent, provided that both R^2 and R^3 are not hydrogen atoms at the same time; and n is 1 or 2, wherein said coupler is a coupler represented by the formula (VI):

(VI)

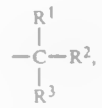


wherein at least one of R^{11} and R^{12} in formulae (VI) is an alkyl group of



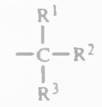
$$-\begin{array}{c} R^1 \\ | \\ C \\ | \\ R^3 \end{array}-R^2;$$

R^1 is a straight chain or branched chain or cyclic alkyl group; R^2 and R^3 each is a hydrogen atom or an alkyl group, provided that both R^2 and R^3 are not hydrogen atoms at the same time; when the substituents represented by R^{11} and R^{12} in formula (VI) are substituents other than the alkyl group of



$$-\begin{array}{c} R^1 \\ | \\ C \\ | \\ R^3 \end{array}-R^2,$$

said substituents each is a hydrogen atom, a halogen atom, an alkyl group, an aryl group, a heterocyclic group, a cyano group, an alkoxy group, an aryloxy group, an acyloxy group, a carbamoyloxy group, a silyloxy group, a sulfonyloxy group, an acylamino group, an anilino group, a ureido group, an imido group, a sulfamoylamino group, a carbamoylamino group, an alkylthio group, an arylthio group, an alkoxycarbonylamino group, an aryloxycarbonylamino group, a sulfonamido group, a carbamoyl group, an acyl group, a sulfamoyl group, a sulfonyl group, sulfinyl group, an alkoxycarbonyl group, an aryloxycarbonyl group, a hydroxy group, an amino group or a carboxyl group; X is a hydrogen atom, a halogen atom, a carboxyl group, a group bonded via an oxygen atom or a group bonded via a sulfur atom; when R^{11}, R^{12} or X is a divalent group, the coupler of the formula (VI) forms a di- or polymer; and when R^{11}, R^{12} or X is a linking group, the coupler of the formula (VI) constitutes a partial structure of a vinyl monomer, in which said partial structure and the vinyl group are bonded via said linking group and wherein a



$$-\begin{array}{c} R^1 \\ | \\ C \\ | \\ R^3 \end{array}-R^2$$

group is bonded directly to the pyrazoloazole nucleus at a position to which at least one of R^{11} and R^{12} is bonded.

6. A silver halide color photographic material as in claim 1, wherein said coupler is dissolved in droplets of a phosphoric or phosphonic ester as a high boiling organic solvent.

4,882,267

SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL WITH EXCELLENT COLOR REPRODUCIBILITY

Shigeto Hirabayashi, and Hirokazu Sato, both of Tokyo, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Dec. 2, 1987, Ser. No. 127,920

Claims priority, application Japan, Dec. 2, 1986, 61-287274

Int. Cl.^{4} G03C *7/34, 7/26*

U.S. Cl. 430—546 20 Claims

1. A silver halide photographic light-sensitive material com-

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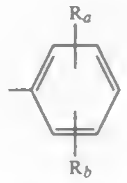
prising a support having thereon a blue-sensitive silver halide emulsion layer, a green-sensitive silver halide emulsion layer and a red-sensitive silver halide emulsion layer, wherein said red-sensitive silver halide emulsion layer contains a non-color-forming compound represented by the following Formula [I], a compound represented by the following Formula [II] and at least one cyan coupler represented by the following Formula [III] or [IV]:

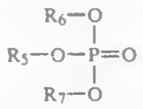
$R_1—NHSO_2—R_2$ Formula[I]

wherein R_1 is a group represented by the following Formula I_a and R_2 is an alkyl group, an aryl group or a dialklamino group, which is allowed to have a substituent;



Formula [1_a]

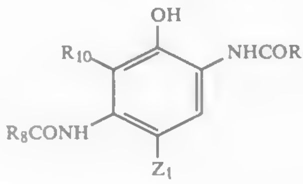
wherein R_a and R_b are individually hydrogen, halogen, alkyl, nitro, alkoxyl, cyano, dialylamino, acyl or alkoxylcarbonyl;



$$\begin{array}{l} \quad R_6—O \\ \qquad\quad | \\ R_5—O—P{=}O \\ \qquad\quad | \\ \quad R_7—O \end{array}$$

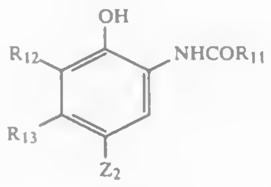
Formula [II]

wherein R_5, R_6 and R_7 are individually an alkyl group, a cycloalkyl group or an aryl group, and each group represented by R_5 through R_7 is allowed to have a substituent;



Formula [III]

wherein R_8 is an alkyl group or an aryl group; R_9 is an alkyl group, a cycloalkyl group, an aryl group or a heterocyclic group; R_{10} is a hydrogen atom, a halogen atom, an alkyl group or an alkoxy group, and R_{10} is allowed to bond with R_8 to form a ring; Z_1 is a hydrogen atom or a group capable of being released upon reaction with the oxidized product of an aromatic primary amine color developing agent; and each group represented by R_8 through R_{10} is allowed to have a substituent;



Formula [IV]

wherein R_{11} is a ballast group: R_{12} is a hydrogen atom, a halogen atom or an alkyl group; R_{13} is an alkyl group having two to six carbon atoms; Z_2 is a hydrogen atom or a group capable of being released upon reaction with the oxidized product of an aromatic primary amine color developing agent; and each group represented by R_{11} through R_{13} is allowed to have a substituent.

4,882,268

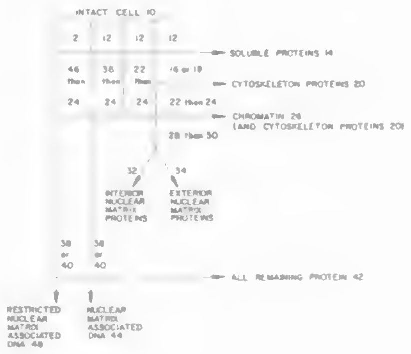
METHOD FOR DETERMINING TISSUE OF ORIGIN AND DEGREE OF MALIGNANCY OF TUMOR CELLS

Sheldon Penman, Brookline, and Edward G. Fey, Boston, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Dec. 24, 1985, Ser. No. 812,955

Int. Cl.^{4} C12Q *1/68, 1/02;* G01N *33/53;* C07G *15/00*

U.S. Cl. 435—5 29 Claims



1. A method for determining the tissue of origin of a cell and degree the presence of malignancy comprising:

(a) isolating interior nuclear matrix proteins from at least one type of cell of known origin;

(b) separating the isolated nuclear matrix proteins by two-dimensional gel electrophoresis and decting proteins specific to the type of cells;

(c) isolating interior nuclear matrix proteins from cells of unknown origin;

(d) separating the nuclear matrix proteins from cells of unknown origin by two-dimensional gel electrophoresis;

(e) comparing the separated interior nuclear matrix proteins from cells of unknown origin with the separated, identified interior nuclear matrix proteins of known origin; and

(f) determining the tissue of origin and the presence of malignancy of the cell of unknown origin.

2. The method of claim 1 wherein the interior nuclear matrix proteins are isolated from proteins soluble in a physiological detergent solution, cytoskeleton proteins, chromatin, and the exterior nuclear matrix proteins including the intermediate filaments by:

(a) extracting eucaryotic cells with a non-ionic detergent solution at physiological pH and ionic strength to extract the proteins in the nucleus and cytoskeleton which are soluble in the physiological detergent solution;

(b) separating the nuclear matrix proteins from the cytoskeleton proteins remaining in the extracted cells of step a by solubilizing the cytoskeleton proteins in a solution which does not dissolve the nuclear proteins;

(c) separating the chromatin from the nuclear matrix proteins by digesting the insoluble material from step b with DNAse and RNAase and dissolving the chromatin with a buffered ammonium sulfate solution;

(d) separating the interior and exterior proteins of the nuclear matrix by first dissolving the insoluble nuclear matrix proteins from step c in urea and then dialyzing the dissolved proteins back into a physiological buffer, wherein the interior nuclear matrix proteins, are soluble in the physiological buffer and the exterior nuclear matrix proteins are insoluble.

4,882,269

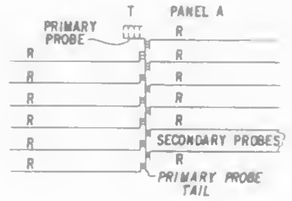
AMPLIFIED HYBRIDIZATION ASSAY

Robert J. Schneider, New York, N.Y., and Thomas E. Shenk, Princeton, N.J., assignors to Princeton University, Princeton, N.J.

Continuation-in-part of Ser. No. 808,695, Dec. 13, 1985. This application Dec. 11, 1986, Ser. No. 940,712

Int. Cl.^{4} C12Q *1/68, 1/42;* C07H *21/00*

U.S. Cl. 435—6 62 Claims



1. A method for the detection of a target nucleotide sequence, comprising:

(a) contacting the target nucleotide under conditions that permit hybridization with (i) a primary probe which comprises a polynucleotide sequence that is complementary to the target nucleotide sequence and a polymeric tail that has binding sites that are incapable of binding to the target sequence, and (ii) a plurality of secondary probes comprising a family of signal-generating probes each member of which comprises a signal generating component and a polymer capable of binding to a different portion of the tail of the primary probe; and

(b) detecting the amplified signal generated by a reaction product formed in step (a), in which the polynucleotide sequence of the primary probe is hybridized to the target nucleotide and a plurality of secondary probes are bound to different portions of the primary probe tail.

4,882,270

MONOCLONAL ANTIBODIES TO PLACENTAL ISOFERRITIN FOR USE IN DETECTING ONCOFETAL FERRITIN ASSOCIATED WITH BREAST CANCER AND HODGKINS DISEASE

Chaya Moroz, 40 Yebuda Hanassi Street, Tel Aviv, Israel

Continuation of Ser. No. 568,275, Jan. 4, 1984, abandoned, which is a continuation-in-part of Ser. No. 373,715, Apr. 30, 1982, abandoned. This application Jan. 22, 1988, Ser. No. 148,133

Claims priority, application Israel, May 15, 1981, 62879

Int. Cl.^{4} G01N *33/53, 33/577;* C12N *5/00;* C12P *21/00*

U.S. Cl. 435—7 35 Claims

1. Monoclonal antibodies which specifically bind to epitopes of human oncofetal ferritin antigens and which do not bind to epitopes of human spleen ferritin antigens or to epitopes of human liver ferritin antigens.

4,882,271

PROCESS FOR PREPARATION OF HIGH MOLECULAR WEIGHT CELL-ASSOCIATED PROTEIN OF CAMPYLOBACTER PYLORI AND USE FOR SEROLOGICAL DETECTION OF CAMPYLOBACTER PYLORI INFECTION

Dolores G. Evans; Doyle J. Evans, and David Y. Graham, all of Houston, Tex., assignors to Baylor College of Medicine, Houston, Tex.

Filed Mar. 10, 1988, Ser. No. 166,138

Int. Cl.^{4} G01N *33/53, 33/543;* C12Q *1/58;* C07K *15/00*

U.S. Cl. 435—7 9 Claims

1. A composition comprising substantially purified antigens from the high molecular weight cell-associated proteins of *Campylobacter pylori*, said antigens:

having a molecular weight of about 300,000 to 700,000 daltons as determined by agarose A-5 m column;

having a PI on isolectric focusing of about 5.9 to 6.3;

having urease activity

being soluble in PBS and Tris-chloride buffers;

being derived from the outer surface of the membrane of *Campylobacter pylori*; and

being solubilized from the outer surface of the membrane with n-octyl-glucoside.

4,882,272

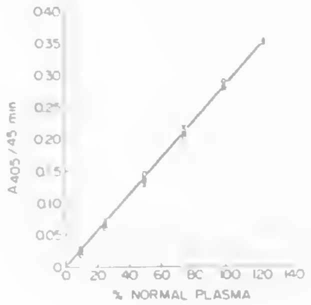
HIGH MOLECULAR WEIGHT KININOGEN ASSAY

Cheryl F. Scott, Bensalem, and Robert W. Colman, Moylan, both of Pa., assignors to Temple University - of the Commonwealth System of Higher Education, Philadelphia, Pa.

Continuation-in-part of Ser. No. 914,029, Oct. 1, 1989, abandoned. This application Feb. 6, 1987, Ser. No. 11,963

Int. Cl.^{4} C12Q *1/56*

U.S. Cl. 435—13 21 Claims



1. An assay method for functional high molecular weight kininogen (HMWK) in plasma comprising:

(a) substantially completely inactivating plasma protease inhibitors in a plasma specimen;

(b) substantially completely inhibiting prekallikrein activation and kallikrein activity in the specimen;

(c) forming a reaction mixture comprising said specimen, a contact-activating surface and selected amounts of factor XIIa and factor XI to initiate HMWK-dependent activation of factor XI in the reaction mixture, the amounts of factor XIIa and factor XI being selected such that at a predetermined temperature and predetermined reaction time the concentration of functional HMWK in the reaction mixture is rate-limiting in the HMWK-dependent activation of factor XI and directly proportional to the concentration of factor XIa generated in the reaction mixture;

(d) substantially completely inactivating factor XIIa in the reaction mixture at the predetermined reaction time; and

(e) assaying the amount of factor XIa formed in the reaction mixture by measuring the hydrolysis of a substrate for factor XIa, said amount of factor XIa being directly proportional to the amount of functional HMWK in the plasma specimen.

4,882,273

METHOD OF SCREENING MICROORGANISMS FOR THE PRODUCTION OF EXTRACELLULAR ENZYMES

Robert O. Horwath, Westport, Conn., assignor to Nabisco Brands, Inc., East Hanover, N.J.

Filed Dec. 6, 1982, Ser. No. 447,046

Int. Cl.^{4} C12Q *1/04, 1/34;* C12N *1/14, 1/00*

U.S. Cl. 435—34 20 Claims

9. A process for screening fungi for the increased production of extracellular enzyme which comprises the steps of:

(a) forming a screening plate comprising a suspension of fungi on a solid medium which promotes colonial, non-

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sporulating growth and inhibits normal levels of extracellular enzyme activity to provide an inoculate medium;
(b) incubating said inoculated medium under conditions that promote extracellular enzyme synthesis; and
(c) identifying those colonies of fungus capable of increased extracellular enzyme synthesis by reacting the enzyme surrounding each colony with an analytically indicatable reagent.

4,882,274
METHOD FOR SOLUBILIZATION OF LOW-RANK COAL USING A CELL-FREE ENZYMATIC SYSTEM

John Pyne, Jr., Kennewick; Dorothy L. Stewart, Richland; James K. Fredrickson, Kennewick, all of Wash., and Martin S. Cohen, West Hartford, Conn., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Jul. 6, 1987, Ser. No. 69,709

Int. Cl.⁴ C12P *21/00;* C12N *9/00*

U.S. Cl. 435—68 7 Claims

1. A method of isolating an extracellular product derived from a culture of white rot fungi comprising the steps of fermenting the culture of said fungi in a nutrient medium for a period of time sufficient to form extracellular fluid, separating the cells from said medium and filtering the resulting cell-free medium through a filtration means having a molecular weight cutoff of at least 10,000 molecular weight; subjecting the retentate of molecular weight greater than 10,000 to chromatographic separation to isolate a low-rank coal-degrading active fraction.

2. A method of degrading solid low-ranked coal to a water-soluble material by enzymatic action comprising the step of contacting said low-ranked coal with a cell-free extracellular material derived from fermentation of white rot fungi characterized by low-rank coal-degrading activity.

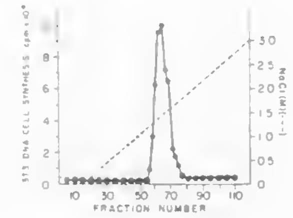
4,882,275
METHOD OF PURIFYING ENDOTHELIAL CELL GROWTH FACTORS USING IMMOBILIZED HEPARIN

Michael Klagsbrun, Newton, Mass., assignor to The Children's Medical Center Corporation, Boston, Mass.

Continuation-in-part of Ser. No. 584,604, Feb. 29, 1984, abandoned. This application Apr. 7, 1986, Ser. No. 849,045

Int. Cl.⁴ C12P *21/00;* C07K *3/20*

U.S. Cl. 435—68 15 Claims



1. A method for purifying a crude solution comprising endothelial cell growth factor (ECG) comprising:
contacting immobilized heparin with said crude solution to form a complex between said ECG and said heparin;
separating uncomplexed solution from said complex;
eluting said ECG from said immobilized heparin by contacting said complex with a salt solution of a salt concentration and pH effective to separate said ECG from said heparin.

4,882,276
PROCESS FOR PRODUCING PHYSIOLOGICALLY ACTIVE SUBSTANCE BY MULTIENZYME PROCESS

Kazutomo Imahori, Tokyo; Hitoshi Kondo, Kyoto; Hiroshi Nakajima, Kyoto, and Tatsuo Iwasaki, Kyoto, all of Japan, assignors to Kazutomo Imahori; Rikagaku Kenkyusho and Unitika Ltd., all of, Japan

Filed Jan. 26, 1983, Ser. No. 461,308

Claims priority, application Japan, May 27, 1982, 57-90424

Int. Cl.⁴ C12P *19/30, 19/40;* C12Q *3/00*

U.S. Cl. 435—89 2 Claims

1. A process for converting AMP into ATP comprising the steps of:
providing separately or together a first enzyme and a second enzyme into a reactor, the first enzyme being capable of converting AMP into ADP and having been produced from microorganisms having an optimum growth temperature of 50° C. to 85° C., and the second enzyme being capable of converting ADP to ATP and having been produced from microorganisms having an optimum growth temperature of 50° C. to 85° C.;
adding AMP into the reactor to form ATP;
removing ATP from the reactor in an amount such that the reaction will continue to proceed to completion in the conversion of AMP into ATP,and
mixing ATP as a phosphoric acid donor with AMP and adding the resulting mixture to the reactor,
wherein the reaction is carried out at a temperature which retains desired activity; and
wherein the mixing of AMP with ATP is carried out by controlling the concentration of ATP so as to satisfy the ·following formula (a):

$$0.15 \times \frac{5 + r^2}{r^2} \times AMP \geqq ATP \geqq 0.04 \times \frac{5 + r^2}{r^2} \times AMP \qquad \text{(a)}$$

wherein AMP represents the concentration of AMP (mM), ATP represents the concentration of ATP (mM), and r represents a ratio of immobilized enzyme activity of the enzyme which converts ADP into ATP to immobilize enzyme activity of the enzyme which converts AMP into ADP, which is a positive integer of 1 or more.

4,882,277
CONTINUOUS PROCESS FOR PREPARING ORGANIC ACIDS BY FERMENTATION

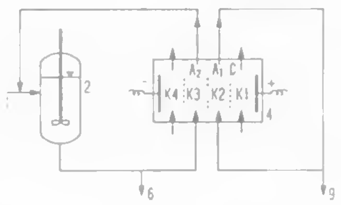
Michael Czytko, Bochum, Fed. Rep. of Germany; Kiyoshi Ishii, Himeji, and Kimitoshi Kawai, Hyogo, both of Japan, assignors to Hüls Aktiengesellschaft, Marl, Fed. Rep. of Germany

Filed Dec. 19, 1986, Ser. No. 943,698

Claims priority, application Japan, Dec. 20, 1985, 60-287521

Int. Cl.⁴ C12P *7/40, 7/56*

U.S. Cl. 435—136 8 Claims



1. A continuous process for the fermentative preparation of organic acids comprising passing a fermentation broth from a fermenter through an electrodialysis unit and back to the fermenter to recover a solution of organic acids wherein said electrodialysis is conducted in an electrodialysis unit having three compartments separated from each other by a cation exchange membrane and an anion exchange membrane in this order from the side of an anode.

4,882,278
NON-TOXINOGENIC VIBRIO CHOLERAE MUTANTS

John J. Mekalanos, Framingham, Mass., assignor to President and Fellows of Harvard College, Cambridge, Mass.

Filed Apr. 29, 1983, Ser. No. 489,958

Int. Cl.⁴ C12N *15/00, 1/20;* C12R *1/63*

U.S. Cl. 435—172.3 13 Claims

1. A nontoxinogenic genetically stable strain of *Vibrio cholerae* Ogawa 395 which is derived from a parent *V. cholerae* organism comprising at least two copies of a ctxA gene encoding a toxic A_1 peptide, said strain having a genetically engineered deletion mutation resulting in loss of at least a part of each copy of said ctxA gene required for expression of a toxic A_1 peptide.

4,882,279
SITE SELECTIVE GENOMIC MODIFICATION OF YEAST OF THE GENUS PICHIA

James M. Cregg, San Diego, Calif., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Oct. 25, 1985, Ser. No. 791,013

Int. Cl.⁴ C12N *05/00, 15/00;* C12P *19/34*

U.S. Cl. 435—172.3 16 Claims

1. A process for the site selected genomic modification of *Pichia pastoris* at a predetermined genomic site which comprises transforming a host strain of *Pichia pastoris* with a serially arranged linear DNA fragment comprising
a first insertable DNA fragment,
a selectable marker gene, and
a second insertable DNA fragment;
wherein said first and second insertable DNA fragments are each at least about 200 nucleotides in length and have nucleotide sequences which are homologous with separate portions of the native *Pichia pastoris* genomic site at which genomic modification is to occur; wherein said first and second insertable DNA fragments are oriented with respect to one another in said linear DNA fragment as they are so oriented in the genomic with *Pichia pastoris;* wherein said marker gene is positioned between the first DNA insertable fragment and the second insertable DNA fragment and wherein said first and second insertable DNA fragments are selected from the group consisting of fragments of:
the alcohol oxidase genes, and
the histidinol dehydrogenase gene.

4,882,280
URICASE AND A METHOD FOR THE PREPARATION THEREOF

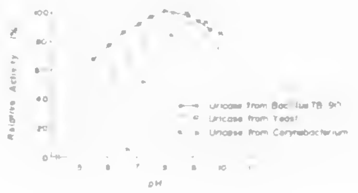
Masachika Takashio, Yaizu; Takahide Chikano, Shizuoka, and Minoru Kamimura, Yaizu, all of Japan, assignors to Sapporo Breweries Limited, Tokyo, Japan

Filed May 22, 1986, Ser. No. 866,572

Claims priority, application Japan, Jun. 5, 1985, 60-120399

Int. Cl.⁴ C12N *1/20, 9/80, 9/06, 1/22;* C12R *1/07;* C12Q *1/62*

U.S. Cl. 435—228 1 Claim



1. A method for the preparation of a uricase capable of oxidatively decomposing uric acid and having activity therefor in a range of pH from 5 to 10 which comprises culturing a thermophilic microorganism designated Bacillus Sp TB-90 (FERM BP-795) in a nutrient culture medium for a time sufficient to produce the uricase and recovering the uricase.

4,882,281
PROBE FOR ELECTROFUSION, ELECTROPORATION, OR LIKE PROCEDURE

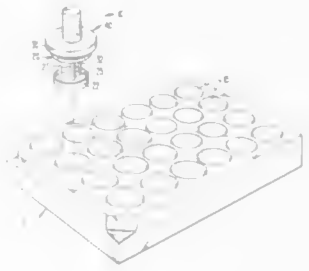
Jeffrey L. Hilliard, and Maurice M. Moloney, both of Davis, Calif., assignors to Jeffrey L. Hilliard, Davis, Calif.

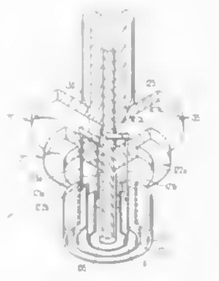
Continuation-in-part of Ser. No. 847,356, Apr. 2, 1986, Pat. No. 4,695,547. This application Aug. 26, 1986, Ser. No. 900,652

The portion of the term of this patent subsequent to Sep. 22, 2004, has been disclaimed.

Int. Cl.⁴ C12M *1/00*

U.S. Cl. 435—287 17 Claims





1. A probe for subjecting a sample to an electric field, comprising:
a plurality of conductive rings sized for nesting without contacting one another, said rings including a number of odd-numbered rings, the smallest inner diameter ring of which is designated the first ring, and a number of even-numbered rings;
a conductive rod having a diameter less than the inner diameter of said first ring;
means for holding said rings and said rod in coaxial alignment;
means for establishing a first electric terminal coupled to said rod and said number of evennumbered rings; and
means for establishing a second electrical terminal coupled to said number of odd-numbered rings.

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4,882,282
DNA SEQUENCES ENCODING BOVINE INTERLEUKIN-2

Dirk M. Anderson, Seattle; Paul E. Baker, Bainbridge Island; Michael A. Cantrell, Seattle; Douglas P. Cerretti, Seattle; David J. Cosman, Seattle; Steven D. Gimpel, Seattle; Kenneth H. Grabstein, Seattle; Alf D. Larsen, Seattle, and Kate N. McKereghan, Seattle, all of Wash., assignors to Immunex Corporation, Seattle, Wash.

Continuation-in-part of Ser. No. 766,643, Aug. 16, 1985, abandoned. This application Jul. 31, 1986, Ser. No. 888,994

Int. Cl.^{4} C12N *1/00, 15/00;* **C12P** *2/00, 17/34*

U.S. Cl. 435—252.3 6 Claims

1. A purified and isolated DNA sequence encoding the amino acid sequence of mature bovine interleukin 2 (IL-2).

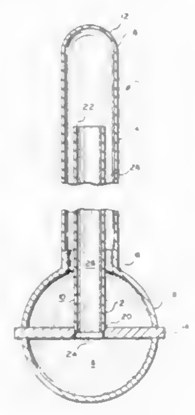
4,882,283
HEAT EXCHANGE APPARATUS

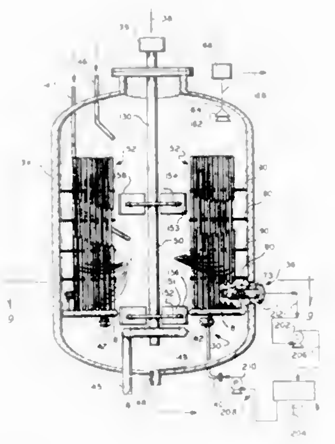
Cecil C. Gentry, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 17, 1987, Ser. No. 122,291

Int. Cl.^{4} C12M *1/02*

U.S. Cl. 435—316 15 Claims





1. An apparatus comprising,
(a) a vessel capable of containing a liquid and a gas, said vessel being partly defined by a sidewall which defines a generally cylindrical inside surface, said vessel having a longitudinal axis about which the sidewall is generally symmetrically positioned;
(b) a pipe mounted in said vessel, said pipe having a sidewall;
(c) a partition mounted in said pipe dividing the inside of the pipe into a first chamber and a second chamber;
(d) a first tubular member having a first end attached to the sidewall of the pipe and a second end having a closure thereon;
(e) a second tubular member having a first end attached to the partition and a second end spaced apart from the end closure of the first tubular member, the second tubular member extending inside of the first tubular member; wherein a flow path is formed from the first chamber, through the second tubular member, through an annulus between the second tubular member and the first tubular member, and into the second chamber;
(f) a fluid inlet means extending through the sidewall of the vessel and connected to the first chamber wherein the fluid inlet means comprises a feed pipe extending through the sidewall of the vessel and a curved supply pipe extending generally circumferentially around the inside of the vessel at a position spaced apart from the sidewall of the vessel and connected to the first chamber by a riser feed;
(g) a fluid outlet means extending through the sidewall of the first vessel and connected to the second chamber wherein the fluid outlet means comprises a first exhaust pipe extending through the sidewall of the vessel connected to a curved collection pipe extending generally circumferentially around the inside of the vessel at a position spaced apart from the sidewall of the vessel and a riser exhaust pipe connecting the second chamber to the curved collection pipe.

10. A process comprising
(a) introducing a heat exchange fluid into a vessel through an inlet means extending through the vessel wall;
(b) distributing the heat exchange fluid from the inlet means into a plurality of first heat exchange tubes each having a first end and a second end and connected by the first end to the inlet means;
(c) flowing the first heat exchange fluid from the first end to the second end of the plurality of first heat exchange tubes;
(d) emitting the first heat exchange fluid from the second end of the first plurality of heat exchange tubes and into the first end of a second plurality of heat exchange tubes each concentrically positioned around a heat exchange tube of the first plurality and flowing the heat exchange fluid from the first end of the second plurality of heat exchange tubes, along a plurality of annuli defined between the first heat exchange tubes and the second heat exchange tubes, to a second end of the second heat exchange tubes;
(e) discharging the heat exchange fluid from the second end of the second heat exchange tubes and collecting the discharged heat exchange fluid in an exhaust means which extends through the vessel wall; and
(f) withdrawing the heat exchange fluid from the vessel through the exhaust means.

4,882,284
METHOD FOR QUANTITATING AND DIFFERENTIATING WHITE BLOOD CELLS

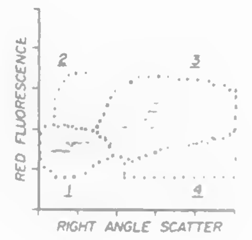
Stefan J. Kirchanski, Framingham, and Kathleen Wardwell, Roxbury, both of Mass., assignors to Ortho Pharmaceutical Corporation, Raritan, N.J.

Filed Apr. 13, 1987, Ser. No. 37,769

Int. Cl.^{4} G01N *15/10, 21/75, 33/50*

U.S. Cl. 436—63 24 Claims

1. A method for discriminating white blood cells from red blood cells and platelets in unlysed, whole blood comprising:
a. providing an aliquot of unlysed, whole blood to be studied;
b. diluting the aliquot in one step with a reagent consisting essentially of an isotonic solution of a red light absorbing, fluorescent dye, and permitting the aliquot to be in contact with the reagent for a time period sufficient for the dye to differentially stain cells in the aliquot;
c. passing at least a portion of the diluted aliquot, substantially a cell at a time, through an area and stimulating each cell passed through said area with red fluorescent optical stimulation;
d. detecting and measuring forward angle light scatter, right angle light scatter and red fluorescence from each stimulated cell; and



e. discriminating white blood cells from red blood cells and platelets in the aliquot on the basis that white blood cells have different forward angle scatter, right angle scatter and red fluorescent staning properties than red blood cells and platelets.

4,882,285
PROCESS FOR MONITORING THE QUANTITY OF DIMETHYL HYDANTOIN

John W. Ogleby, and Neville J. Charkley, both of Warrington, United Kingdom, assignors to Laporte Industries Limited, London, England

Filed Feb. 22, 1989, Ser. No. 313,752

Claims priority, application United Kingdom, Feb. 25, 1988, 8804460

Int. Cl.^{4} G01N *31/22, 33/00*

U.S. Cl. 436—98 4 Claims

1. A process for monitoring the quantity of dimethyl hydantoin in a water having a pH of about 7.4 to about 7.8 comprising contacting a volume of a base of known normality with a volume of the water and determining the quantity of dimethyl hydantoin therein according to the non-stoichiometric relationship 0.2×10^{-4} equivalents of base $= 3.33$ mg of dimethyl hydantoin by a procedure selected from:
(a) adding a sufficient volume of the base to a given volume of the water or adding a sufficient volume of the water to a given volume of the base to attain a pH of 9.3 in the water so as to determine the actual quantity of dimethyl hydantoin in the water, or
(b) adding a volume of the base corresponding to a preselected concentration level of dimethyl hydantoin to a given volume of the water and determining the deviation of the pH of the water above or below 9.3 to determine the deviation of the concentration of dimethyl hydantoin respectively below or above that level in the water

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4,882,286
DIGESTION APPARATUS USEFUL FOR A KJELDAHL METHOD

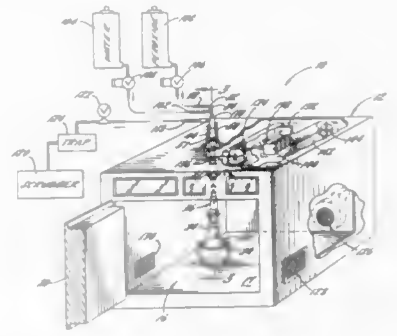
Edwin D. Neas, Indian Trail, N.C., and Terry S. Floyd, Clover, S.C., assignors to CEM Corporation, Matthews, N.C.

Continuation of Ser. No. 874,278, Jun. 13, 1986, abandoned. This application Oct. 2, 1987, Ser. No. 104,569

Int. Cl.^{4} G01N *1/00*

U.S. Cl. 436—175 10 Claims

1. Microwave-based apparatus useful for digestion, comprising
(a) a microwave system having a wall with means defining an aperture formed therethrough, said microwave system comprising an internal chamber formed in part by an interior surface of said wall;
(b) a reaction vessel disposed within said internal chamber, a portion of said reaction vessel being insulated;
(c) a connector tube slidably disposed in said aperture of said wall, said connector tube having a portion exterior to said internal chamber and a portion that extends into said internal chamber, an end of said slidably disposed connector tube being joined to a mouth of said reaction vessel by biasing means located outside said internal chamber; and
(d) external suction means connected to said connector tube.



4,882,287
PROCESS FOR INDICATING THE PRESENCE OF TOXIC SUBSTANCES IN AIR THAT IS SUPPLIED TO A PERSONNEL-OCCUPIED SPACE

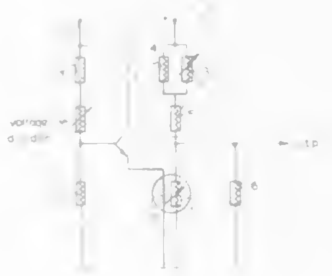
Heinz Hölter; Heinrich Igelbüscher, both of Gladbeck; Heinrich Gresch, Dortmund-Wickede; Heribert Dewert, Gladbeck, and Hanns Rump, Unna-Massen, all of Fed. Rep. of Germany, assignors to Heinz Holter, Gladbeck, Fed. Rep. of Germany

Continuation of Ser. No. 30,867, Mar. 13, 1987, abandoned. This application Oct. 5, 1988, Ser. No. 256,145

Claims priority, application Fed. Rep. of Germany, Jul. 19, 1985, 3525774; Apr. 28, 1986, 3614314; May 13, 1986, 3616052

Int. Cl.^{4} G01N *25/18, 31/00*

U.S. Cl. 436—149 5 Claims



1. A process for indicating a presence of a toxic component to be measured of an air stream supplied to a personnel-occupied space, comprising the steps of:
(a) dividing the air stream into two portions by passing said air stream through a barrier for the toxic component in the air stream thereby separating a first portion of the air stream comprising said toxic component to be measured from a second portion containing less of said component;
(b) passing said first portion with said toxic component to be measured of said air stream into contact with an electrical sensor for said component to be measured and detecting an electrical output across said sensor signalling the detection of said component;
(c) juxtaposing said sensor with an electrical heater and controlling a voltage applied to said heater with a first voltage divider in electrical circuit with said heater provided with a first temperature-compensating component connected to a voltage source in response to temperature of said air stream to provide a substantially constant heat output at said heater;
(d) electrically connecting said sensor in electrical series

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with an external electrical resistance to form a second voltage divider connected to a voltage source, including a second temperature-compensating component, and independent from said first voltage divider; and
(e) matching said temperature-compensating components so that said voltage dividers compensate each other with respect to a temperature response of the output across said sensor proportional with concentration of said toxic component to be measured to eliminate a temperature effect upon the detection of said toxic component.

4,882,288
ASSAY TECHNIQUE AND EQUIPMENT

John R. North, 2 Cockhall Close, Litlington, Royston, Herts. SG8 0RB; Satham Petty-Saphon, Blythburgh House, Wendens Ambo, Saffron Walden, Essex CB11 4JU, and Craig G. Sawyers, 196 Icknield Way, Letchworth, Herts. SG6 4AE, all of United Kiogdom

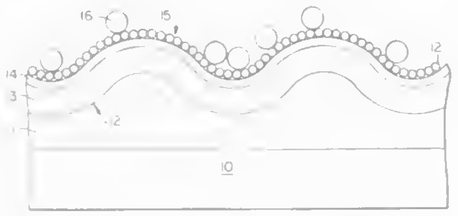
PCT No. PCT/GB85/00427, § 371 Date May 14, 1986, § 102(e) Date May 14, 1986, PCT Pub. No. WO86/01901, PCT Pub. Date Mar. 27, 1986

PCT Filed Sep. 16, 1985, Ser. No. 866,080

Claims priority, application United Kingdom, Sep. 14, 1984, 8423204

Int. Cl.⁴ G01N *33/553, 33/552, 33/545, 33/577*

U.S. Cl. 436—525 25 Claims



1. An article for use in an assay technique for qualitative and/or quantitative detection of a chemical, biochemical or biological species in a sample, which article comprises a substrate having a surface with a pre-formed relief profile which is optically active with respect to radiation at least over a predetermined band of wavelengths, and at least a predetermined part of which surface is coated with a thin film of a material capable of binding a predetermined chemical or biochemical or biological species, said thin film of material incorporating molecules of a fluorescent compound whose fluorescent properties show an observable dependence upon its molecular environment.

4,882,289
METHOD OF MAKING A SEMICONDUCTOR MEMORY DEVICE WITH RECESSED ARRAY REGION

Noboru Moriuchi; Yoshiki Yamaguchi; Toshihiko Tanaka, all of Tokyo; Norio Hasegawa, Hinode; Yoshifumi Kawamoto, Kanagawa; Shin-ichiro Kimura, Hachioji; Toru Kaga, Urawa, and Tokuo Kure, Kokubunji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

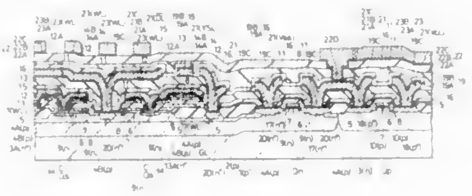
Filed Apr. 22, 1988, Ser. No. 184,786

Claims priority, application Japan, Apr. 24, 1987, 62-99741

Int. Cl.⁴ H01L *21/308, 24/78*

U.S. Cl. 437—52 7 Claims

1. A method of manufacturing a semiconductor memory comprising the steps of:
(a) selectively forming an oxidation-proof film to the first region of semiconductor substrate having the flat surface;
(b) forming an oxide film to the second region other than the first region of said semiconductor substrate with said oxidation-proof film used as the mask;
(c) forming a recessed part to the flat semiconductor substrate by removing an oxide film formed on said second region;
(d) forming a memory cell region comprising a plurality of memory cells to said second region; and



(e) forming a peripheral circuit region comprising a plurality of MISFETs to said first region.

4,882,290
SEMICONDUCTOR DEVICE AND A METHOD OF MANUFACTURING THE SAME

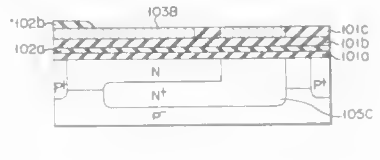
Shigeru Komatsu, Kitakyushu, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jan. 25, 1988, Ser. No. 148,351

Claims priority, application Japan, Jan. 26, 1987, 62-14152

Int. Cl.⁴ H01L *21/265, 21/225*

U.S. Cl. 437—31 1 Claim



PRIOR ART

1. A method of manufacturing a semiconductor device comprising the steps of:
forming an insulating layer in a semiconductor substrate, for defining a semiconductor region of a first conductivity type separated from other semiconductor regions;
forming a polysilicon semiconductor layer on said semiconductor substrate:
patterning said polysilicon semiconductor layer to form an emitter leading electrode and a base leading electrode;
implanting a second conductivity type impurity ion into said base leading electrode;
thermally heating the implanted ion to diffuse the ion into said semiconductor region to form a first region of the second condcutivity type;
implanting a second conductivity type impurity ion into said emitter leading electrode and that portion of said semiconductor region on which said emitter leading electrode or said base leading electrode are not formed;
thermally heating the last-recited ion to form a second region of the second conductivity type, which is in contact with and shallower than said first region of the second conductivity type, and at the same time diffusing the second conductivity type impurity from said emitter leading electrode into said semiconductor region, so that a third region of the second conductivity type is formed in said semiconductor region, and which is in contact with and shallower than said second region of the second conductivity type; and
implanting a first conductivity type impurity ion into said emitter leading electrode, and thermally heating the implanted ion to form a first conductivity type region constituting an emitter region in said third region of the second conductivity type.

4,882,291
PROCESS FOR THE PRODUCTION OF ELECTRICAL ISOLATION ZONES IN A CMOS INTEGRATED CIRCUIT

Pierre Jeuch, Seyssins, France, assignor to Commissiriat A l'Energie Atomique, Paris, France

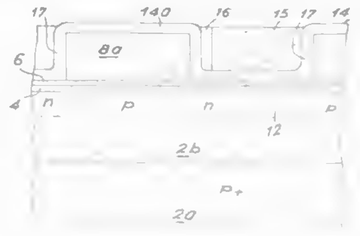
PCT No. PCT/FR88/00041, § 371 Date Aug. 16, 1988, § 102(e) Date Aug. 16, 1988, PCT Pub. No. WO88/05602, PCT Pub. Date Jul. 28, 1988

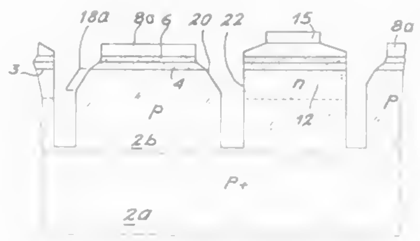
PCT Filed Jan. 26, 1988, Ser. No. 249,189

Claims priority, application France, Jan. 26, 1987, 87 00861

Int. Cl.⁴ H01L *21/76*

U.S. Cl. 437—34 15 Claims





1. A process for the production of electrical isolation zones for isolating the n regions from the p regions of a CMOS integrated circuit formed on a silicon substrate, comprising the steps of:
(a) producing a first mask on the surface of the silicon substrate, said first mask having first patterns which mask at least a part of the p regions;
(b) producing a second mask on the surface of the silicon substrate, said second mask having second patterns which mask at least a part of the n regions, steps (a) and (b) being interchangable in that either step may be performed before the other;
(c) etching the unmasked regions of the silicon substrate so as to form electrical isolation trenches;
(d) anisotropically etching the silicon substrate while simultaneously isotropically etching the patterns of the first mask and forming inclined sides in the upper part of the trenches so that the electrical isolation trenches become wider towards the upper surface of the silicon substrate; and
wherein the second mask can be selectively etched with respect to the first mask, the first and second patterns being spaced apart and defining between them the location and the width of the electrical iolation trenches produced between the n regions and the p regions.

4,882,292
PROCESS FOR MANUFACTURING A REFET OR A CHEMFET, AND THE MANUFACTURED REFET OR CHEMFET

Ernst J. Sndhölter, Losser; Maria D. Skowronska-Ptasinska, Enschede; Peter D. Van der Wal, Enschede; Albert Van den Berg, Enschede, and David N. Reinhoudt, Hengelo, all of Netherlands, assignors to Stichting Centrum voor Micro-Elektronics Twente, Enschede, Netherlands

Filed Sep. 4, 1987, Ser. No. 93,014

Claims priority, application Netherlands, Sep. 5, 1986, 8602242

Int. Cl.⁴ G01N *27/00;* H01L *29/28*

U.S. Cl. 437—42 21 Claims

1. Process for manufacturing a REFET or a CHEMFET, comprising:
(a) covalently bonding a hydrophilic polymer layer to an insulating layer applied to a semiconductor material;
(b) absorbing water or an aqueous solution into said hydrophilic polymer layer; and
(c) binding a hydrophobic polymer layer to the water containing hydrophilic polymer layer.

4,882,293
METHOD OF MAKING AN ELECTRICALLY PROGRAMMABLE INTEGRATED CIRCUIT CONTAINING MELTABLE CONTACT BRIDGES

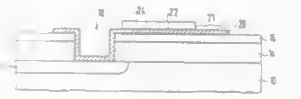
Jorg Naumann, Weinheim; Thomas Sharnagl, Freising, and Leo Stroth, Wolfersdorf, all of Fed. Rep. of Germany, assignors to Texas Instruments Deutschland GmbH, Dallas, Tex.

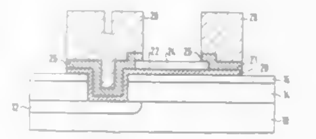
Continuation of Ser. No. 244,962, Sep. 15, 1988, abandoned. This application Feb. 15, 1989, Ser. No. 312,358

Claims priority, application Fed. Rep. of Germany, Sep. 19, 1987, 3731621

Int. Cl.⁴ H01L *21/283, 21/308*

U.S. Cl. 437—52 10 Claims





1. A method of making an electrically programmable integrated circuit comprising:
providing a substrate of semiconductor material having at least one circuit-function defining zone provided with electrical conductivity and opening onto the top surface thereof;
forming a first protective layer resistant to plasma etching on said semiconductor substrate and covering the top surface thereof;
selectively patterning said first protective layer resistant to plasma etching to form an aperture extending therethrough to at least a portion of said at least one zone exposing a contact area of said at least one zone of said semiconductor substrate;
depositing conductive material on said first protective layer and the exposed contact area of said at least one zone to provide a conductive layer on said first protective layer and said contact area of said at least one zone in overlying relation thereto;

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Forming a first etching-protective mask on said conductive layer covering only the portions of said conductive layer from which a contact bridge and an associated connecting end are to be formed and the portion of said conductive layer overlying said contact area of said at least one zone;

performing a first plasma etching procedure to selectively remove the exposed portions of said conductive layer, thereby defining a patterned conductive layer having a contact bridge and an associated connecting end formed thereon and including a portion overlying said contact area of said at least one zone;

forming a second etching-protective mask on the patterned conductive layer covering only the region of said patterned conductive layer forming the contact bridge;

depositing metallic material on the structure including the second etching-protective mask and the exposed portions of the patterned conductive layer to provide at least one metallic layer thereover; and

performing a second plasma etching procedure to selectively remove portions of said metallic layer on said patterned conductive layer while retaining portions of said metallic layer overlying said contact area of said at least one zone and the portion of said patterned conductive layer defining the connecting end associated with the contact bridge to provide a patterned metallic layer forming electrical contact members;

The second etching-protective mask shielding the region of said patterned conductive layer forming the contact bridge from etching during the second plasma etching procedure.

4,882,294

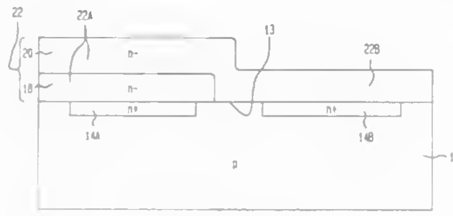
PROCESS FOR FORMING AN EPITAXIAL LAYER HAVING PORTIONS OF DIFFERENT THICKNESSES

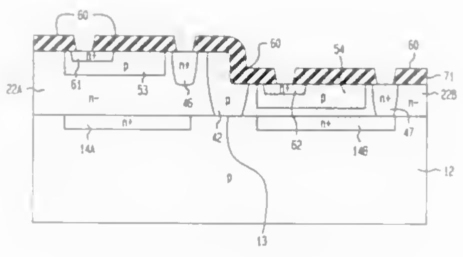
John C. Christenson, Kokomo, Ind., assignor to Delco Electronics Corporation, Kokomo, Ind.

Filed Aug. 17, 1988, Ser. No. 233,319

Int. Cl.^{4} H01L *21/00, 21/02, 21/72, 21/76*

U.S. Cl. 437—90 23 Claims





1. In the manufacture of an integrated circuit in a semiconductive wafer, the process of forming in the wafer an epitaxial layer having portions of at least two different thicknesses comprising the steps of:

preparing one surface of a monocrystalline semiconductive wafer for the growth thereon of epitaxial material;

forming over at least one region of said one surface of the wafer a sacrificial masking layer of a material that can serve as a barrier to the nucleation of epitaxial material thereover and that can be removed in situ, while leaving at least one other region of said one surface of the wafer free of the sacrificial masking layer;

heating the wafer in a furnace in which there is an ambient suitable for depositing the desired epitaxial material to a first thickness selectively over regions of the one surface free of the sacrificial masking layer;

treating the one surface of the wafer in situ in an ambient suitable for removing selectively the sacrificial masking layer at least at the other regions of the one surface for exposing the underlying regions of the one surface; and

heating the wafer in an ambient suitable for the deposition of epitaxial material both over the previously deposited epitaxial material and over the exposed regions of the one surface, thereby to form an epitaxial layer over said one surface having portions of different thickness.

4,882,295

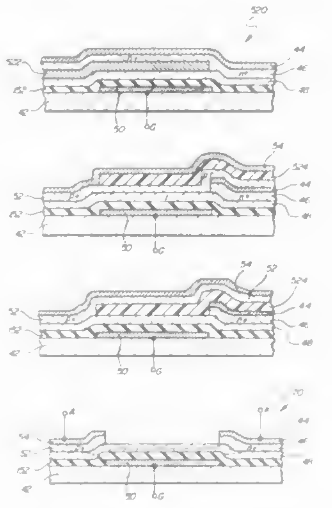
METHOD OF MAKING A DOUBLE INJECTION FIELD EFFECT TRANSISTOR

Wolodymyr Czubatyj, Warren; Michael G. Hack, Clawson, both of Mich., and Michael Shur, Golden Valley, Minn., assignors to Energy Conversion Devices, Inc., Troy, Mich.

Division of Ser. No. 852,686, Apr. 16, 1986, which is a continuation-in-part of Ser. No. 788,594, Oct. 17, 1985, abandoned, which is a continuation-in-part of Ser. No. 759,634, Jul. 26, 1985, abandoned. This application Mar. 27, 1989, Ser. No. 328,666

Int. Cl.^{4} H01L *29/78*

U.S. Cl. 437—101 2 Claims



1. A method of forming a thin film electronic device comprising the steps of:

forming a conductive gate on an insulating substrate;

forming an insulating layer over said gate;

depositing a layer of substantially intrinsic noncrystalline semiconductor material over said insulating layer;

forming a layer of etchable metal over said noncrystalline layer and patterning said metal, said metal being etchable by an etchant which does not readily adversely affect the electronic properties of said layer during etching;

depositing a first layer of doped noncrystalline semiconductor material over said patterned metal layer;

removing said metal layer by etching, and at the same time, removing that portion of said first doped layer which overlies said etchable metal layer.

4,882,296

HIGHLY BLOCKING THIN FILM DIODE HAVING A-SI:H FOR IMAGE SENSOR ROWS

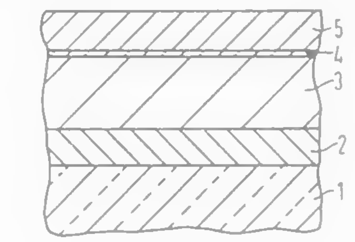
Martin Hobeisel; Gerhard Brunst, and Enno Holzenkaempfer, all of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich

Division of Ser. No. 890,113, Jul. 28, 1986, abandoned. This application Jun. 8, 1988, Ser. No. 204,962

Claims priority, application Fed. Rep. of Germany, Aug. 23, 1985, 3530235

Int. Cl.^{4} H01L *31/10, 31/18*

U.S. Cl. 437—184 10 Claims



1. A method for manufacturing a highly blocking diode structure disposed on an insulating substrate comprising in sequence the steps of:

generating a metallic base electrode on said substrate;

generating a layer of undoped a-Si:H on said base electrode by glow-discharge deposition;

generating a barrier layer consisting of silicon oxide disposed on said a-Si:H layer by plasma oxidizing the exposed a-Si:H layer; and

generating a transparent surface electrode over said barrier layer and selecting the material for said transparent surface electrode from the group consisting of conductive oxides and metal silicides.

4,882,297

METHOD OF MAKING A SELF-ALIGNED SILICIDE CONTACT USING POLYSILICON ELECTRODE AS AN ETCH MASK

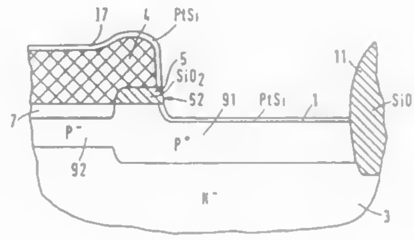
Lothar Blossfeid, Freiburg, Fed. Rep. of Germany, assignor to Deutsche ITT Industries GmbH, Freiburg, Fed. Rep. of Germany

Continuation of Ser. No. 905,757, Sep. 9, 1986, abandoned. This application Jun. 13, 1988, Ser. No. 205,589

Claims priority, application European Pat. Off., Sep. 21, 1985, 85111972.7

Int. Cl.^{4} H01L *21/225, 21/283, 21/302*

U.S. Cl. 437—200 16 Claims



1. In an integrated solid-state circuit an improvement in a method of attaching a contact to a contact area of a first active region in a substrate of semiconducting material in close direct proximity of an electrode layer of polycrystalline silicon in contact with a second active region in said substrate without danger of shorting therebetween, said contact area to be defined through an insulting layer, said contact to be bonded to the substrate on a surface of said contact area, the electrode layer having an edge portion disposed at least partially on a narrow frame-shaped layer portion of an insulating material which is disposed in turn on said substrate, said improvement comprising the steps of:

using said electrode layer for laterally delimiting an etching process to selectively expose at least one part of a vertical rim portion of the insulating frame-shaped layer portion and an adjoining contact area of the substrate, said frame-shaped layer portion having a predetermined thickness which defines said close direct proximity between said electrode layer and said contact area;

depositing a metal layer of a metal forming a metallic silicide onto all exposed surfaces, said metal layer having a thickness which is less than the predetermined thickness of said frame-shaped layer portion;

heating the metal layer with the underlying silicon of the electrode layer and of the substrate to form the metallic silicide in said contact areas and on said electrode layer, without chemically reacting with the insulating material including said insulating frame layer portion; and

removing the metal layer which has not reacted with the silicon with the aid of an etching agent which selectively dissolves the metal layer,

whereby said electrode layer and contact may be closely positioned on said substrate with a low capacitance therebetween without danger of being shortd together.

4,882,298

METHOD FOR ENCAPSULATING MICROELECTRONIC SEMICONDUCTOR AND THIN FILM DEVICES

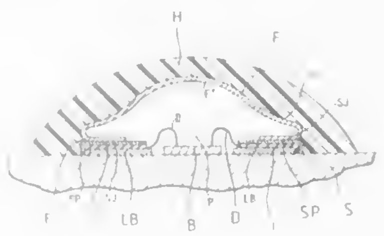
Werner Moeller, Ulm, and Andreas Ulmann, Lenningen, both of Fed. Rep. of Germany, assignors to Messerschmitt-Boelkow-Blohm GmbH, Munich, Fed. Rep. of Germany

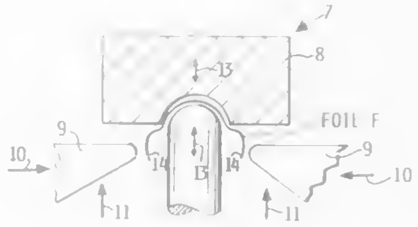
Filed Jul. 29, 1988, Ser. No. 226,426

Claims priority, application Fed. Rep. of Germany, Jul. 30, 1987, 3725269

Int. Cl.^{4} H01L *21/60*

U.S. Cl. 437—212 17 Claims





1. A method for encapsulating a microelectronic semiconductor device comprising the following steps:

(a) securing said semiconductor device on a substrate,

(b) electrically connecting said semiconductor device through bonded wires (D) to conducting strips (LB) on said substrate

(c) applying an insulating collar (I) on said conducting strips (LB) to cover said conducting strips at least in an area to be encapsulated,

(d) applying a soldering binder layer (SP) about 50 to 150 μm thick to cover said insulating collar (I),

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(e) coating a metal foil (F) on at least one side with an insulating coating (F'),
(f) cutting a capsule blank from said coated metal foil with a shape and size appropriate for said area to be encapsulated,
(g) forming said capsule blank into a domed capsule, said forming providing said domed capsule with a beaded soldering flange (**14**).
(h) placing said domed capsule over said semiconductor component at said area to be encapsulated, so that said beaded soldering flange contacts said soldering binder layer (SP), and
(i) stamp soldering said soldering flange by applying a pressure within the range of about 1 to 5 bar at a temperature within the range of about 220° C. to about 280° C. for forming a hermetic seal between said soldering binder layer (SP) and said soldering flange of said domed capsule.

4,882,299

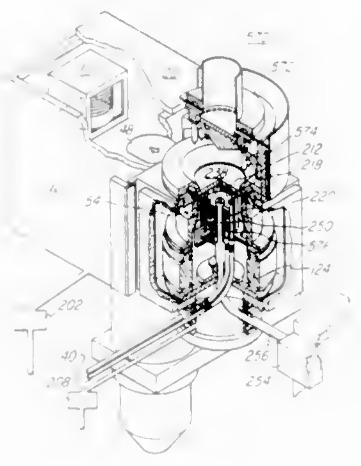
DEPOSITION OF POLYSILICON USING A REMOTE PLASMA AND IN SITU GENERATION OF UV LIGHT.

Dean W. Freeman, San Diego, Calif., and James B. Burris, Dallas, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation-in-part of Ser. No. 74,373, Jul. 16, 1987, abandoned. This application Nov. 5, 1987, Ser. No. 117,707

Int. Cl.⁴ H01L *21/302, 21/306*

U.S. Cl. 437—233 14 Claims



1. A method for depositing polysilicon on a wafer comprising;
(a) disposing a wafer into a process chamber of a process module;
(b) purging the process vacuum process chamber with an appropriate gas;
(c) applying a pressure to said chamber less than ambient to maintain said chamber at less than ambient;
(d) heating the chamber;
(e) generating a remote plasma from a silicon containing and a dopant gas;
(f) presenting said remote plasma to a face of said wafer in said chamber;
(g) providing a separate flow, within said chamber, of a gas suitable for the production of ultraviolet light;
(h) generating an RF power discharge within said separate flow to release ultraviolet energy; and
(i) illuminating said face of said wafer with said ultraviolet energy generated inside said module.

8. A method for depositing polysilicon on a wafer, comprising the steps of:
(a) generating free radicals from a silicon containing gas and a dopant gas in a plasma generating chamber remote from the process chamber;
(b) introducing the free radicals to a face of the wafer in the process chamber;
(c) providing a separate flow, within said process chamber, of a gas suitable for the production of ultraviolet light;
(d) generating an RF power discharge within said separate flow to release ultraviolet energy; and
(e) illuminating the face of the wafer with ultraviolet energy which is generated inside the module.

4,882,300

METHOD OF FORMING SINGLE CRYSTALLINE MAGNESIA SPINEL FILM

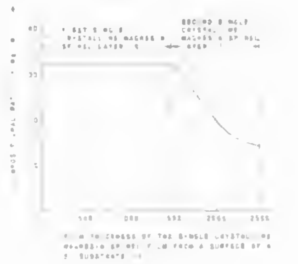
Yasunori Inoue, Osaka, and Hiroshi Hanafusa, Hirakata, both of Japan, assignors to Agency of Industrial Science and Technology, Tokyo, Japan

Filed Oct. 6, 1988, Ser. No. 254,430

Claims priority, application Japan, Oct. 12, 1987, 62-254615

Int. Cl.⁴ H01L *21/31*

U.S. Cl. 437—236 10 Claims



1. A method of forming a single crystalline magnesia spinel film on a single crystalline silicon substrate by the vapor-phase epitaxial growth method comprising;
epitaxially growing in a vapor-phase a first single crystalline magnesia spinel layer having a compositional ratio of magnesium being maintained at a nearly stoichiometric ratio on said single crystalline silicon substrate; and
epitaxially growing in a vapor-phase a second single crystalline magnesia spinel layer having a compositional ratio of magnesium which decreases from the stoichiometric compositional ratio according as being apart from said first single crystalline magnesia spinel layer on said first single crystalline magnesia spinel layer, and said single crystalline magnesia spinel film is made of said first single crystalline magnesia spinel layer and said second single crystalline magnesia spinel layer.

4,882,301

DECORATIVE AND PROTECTIVE BORDERS FOR AUTOMOBILE SIDE AND REAR LIGHTS

James R. Gettys, Mars, Pa.; Gordon H. Johnson, Olmsted Falls, Ohio; Temel Demiray, Hinckley, Ohio, and William D. Faust, Aurora, Ohio, assignors to Ferro Corporation, Cleveland, Ohio

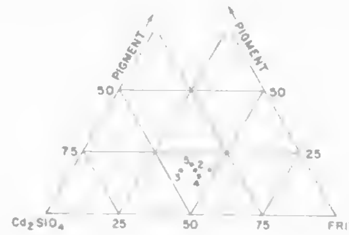
Continuation of Ser. No. 785,809, Oct. 9, 1985, abandoned. This application Feb. 2, 1988, Ser. No. 157,069

Int. Cl.⁴ C03C *8/14, 8/16, 14/00*

U.S. Cl. 501—17 6 Claims

1. A glass enamel system, the glass fraction of which is a lead borosilicate glass, wherein said system is adaptable to be fired and fused to a glass enamel on a glass substrate at from about

1000° F. to about 1350° F., comprising a crystallizing amount dispersed in said system of the precursors of the crystal



Cd_2SiO_4 in sufficient quantities to provide from about 25 to about 50 weight percent Cd_2SiO_4 in the resulting, fired enamel.

4,882,302

LATHANIDE SERIES OXIDE MODIFIED ALKALINE-RESISTANT GLASS

Tetsuro Horiuchi, Gardena; Arnold E. Goldman, Canoga Park, both of Calif., and Durai N. Raghavan, Plano, Tex., assignors to Ensci, Inc., Woodland Hills, Calif.

Continuation of Ser. No. 937,376, Dec. 3, 1986, abandoned, which is a continuation-in-part of Ser. No. 702,971, Feb. 19, 1985, abandoned. This application May 19, 1988, Ser. No. 203,518

Int. Cl.⁴ C03C *6/02, 13/00;* **C04B** *14/42*

U.S. Cl. 501—27 23 Claims

1. A glass composition comprising alkaline resistant glass fibers comprising: alumina in an amount of about 15.1% or less by weight, silica —about 30% to about 70% by weight, calcia —about 23% to about 60% by weight, magnesia —0% to less than about 6% by weight, at least one lanthanide series metal oxide —about 0.1% to about 20% by weight effective to enhance the alkali resistance of said glass fibers, zirconia plus thoria —0% to about 3% by weight, and alkali metal oxide —0% to less than about 3% by weight.

4,882,303

MODIFIED STEEL SLAG AND METHOD OF MANUFACTURING THE SAME

Kozo Sonobe; Takashi Fukuzawa; Kohsuke Takeuchi; Tatushi Tabata, all of Koriyama; Hiroshi Fukuoka; Kunio Hisamatsu, both of Tokyo, and Makoto Katamura, Kure, all of Japan, assignors to Nippon Chemical Industrial Co., Ltd., Japan

Filed Aug. 1, 1988, Ser. No. 226,628

Claims priority, application Japan, Aug. 4, 1987, 62-193719

Int. Cl.⁴ C03C *3/089;* **C21B** *5/04*

U.S. Cl. 501—28 8 Claims

1. A modified steel slag or iron slag comprising slag which is a by-product at the time of steel or iron metallurgy, said slag containing from 0.3 to 1.5 wt% boron component in the form of B_2O_3 and having resistance against degradation in a cooling-down process for fused slag and against generation of yellowish turbid water at the time of contact of said slag with rain water.

4. A method of manufacturing modified steel slag or iron slag comprising adding at least 10 wt% of a heat-treated material containing boron in the form of sintered or vitrified B_2O_3 to fused slag which is a by-product created at the time of steel or iron metallurgy during operation of blast furnaces, converters or steel furnaces, and then cooling said slag.

4,882,304

LIQUIFICATION OF HIGHLY LOADED COMPOSITE SYSTEMS

Bruce E. Novich, Lexington, and John W. Halloran, Hopkinton, both of Mass., assignors to Ceramics Process Systems Corp., Milford, Mass.

Continuation-in-part of Ser. No. 856,803, Apr. 25, 1986, Pat. No. 4,816,182. This application Apr. 9, 1987, Ser. No. 36,377

Int. Cl.⁴ B01F *3/12, 17/00;* **B22F** *3/22;* **C04B** *33/28*

U.S. Cl. 501—32 26 Claims

1. A process for the production of a densified article from a highly loaded, pourable composite suspension, the suspension provided by a process comprising:
(a) mixing solid, essentially colloidal, narrow size range matrix particles selected from the group consisting of ceramics and metals with water and an acrylic acid-based polymeric electrolyte dispersant to provide a colloidal suspension; and
(b) admixing solid dopant particles to the colloidal suspension of matrix particles to produce a high loaded pourable composite system, the dopant particles being geometrically and/or chemically diverse from the matrix particles, the total solids present in the system in an amount of at least 50% by volume.

4,882,305

DIELECTRIC CERAMIC COMPOSITION WITH HIGH DIELECTRIC CONSTANT AND FLAT TC CHARACTERISTICS

Mike S. H. Chu; Charles E. Hodgkins, both of Lewiston, and Terence C. Dean, Youngstown, all of N.Y., assignors to TAM Ceramics, Inc., Niagara Falls, N.Y.

Continuation of Ser. No. 730,711, May 3, 1985, abandoned. This application Oct. 9, 1987, Ser. No. 106,954

Int. Cl.⁴ C04B *35/46, 35/48, 35/49*

U.S. Cl. 501—138 6 Claims

1. A ceramic composition having a dielectric constant between about 3,000 and 4,700 at 25° C. consisting of
about 97.7–98.99% wt barium titanate;
about 0.85–1.69% wt of niobium pentoxide;
about 0.09–1.20% of cobalt oxide;
about a wt ratio of niobium pentoxide to cobalt oxide of about 3.30 to 18.00 and wherein
the barium titanate has a purity of about 99.0%, a BaO/TiO_2 stoichiometric ratio of about 0.950 to 0.995; and an average particle size of about 0.90 μm to 1.30 μm;
the niobium pentoxide has a purity of about 99.0% and a particle size of about 0.5 to 0.9 μm; and
the cobalt oxide has a purity of about 70% to 74% and a particle size of less than about 1.0 μm.

4,882,306

METHOD FOR PRODUCING SELF-SUPPORTING CERAMIC BODIES WITH GRADED PROPERTIES

Christopher R. Kennedy; Andrew W. Urquhart, both of Newark; Danny R. White, New Castle, and Marc S. Newkirk, Newark, all of Del., assignors to Lanxide Technology Company, LP, Newark, Del.

Filed Sep. 16, 1988, Ser. No. 907,928

Int. Cl.⁴ C04B *35/02*

U.S. Cl. 501—87 14 Claims

1. A method for producing a self-supporting ceramic body by oxidation of a parent metal, said ceramic body having a graded microstructure characterized by a plurality of zones differing from each other in at least one property, which method comprises the steps of:
(a) heating said parent metal in the presence of a vapor-phase oxidant to a temperature range above the melting point of the parent metal but below the melting point of any resulting oxidation reaction product of the parent metal and the vapor-phase oxidant, to form a body of molten parent metal and reacting said molten parent metal with said

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vapor-phase oxidant at said temperature range to said oxidation reaction product, which product is in contact with and extends between said body of molten metal and said vapor-phase oxidant;
(b) at said temperature, transporting said molten metal through said oxidation reaction product towards said vapor-phase oxidant so that fresh oxidation reaction product forms at an interface between said vapor-phase oxidant and previously formed oxidation reaction product thereby forming a progressively thicker first portion of said oxidation reaction product;
(c) altering at least one process condition during formation of said first portion of said oxidation reaction product such that at least a second portion of oxidation reaction product formed posterior to said altering has at least one property different from said first portion of oxidation reaction product formed anterior to said altering:
(d) continuing said reaction for a time sufficient to produce said first portion and said at least a second portion of said oxidation reaction product to form said ceramic body; and
(e) recovering said ceramic body.

4,882,307
PROCESS FOR PREPARING NOBLE METAL-CONTAINING ZEOLITES

Ying-Yen P. Tsao, Lahaska, Pa., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Sep. 2, 1987, Ser. No. 92,248
Int. Cl.⁴ B01J *29/12, 29/32*

U.S. Cl. 502—66 19 Claims

1. A process for preparing noble metal-containing zeolite material of enhanced noble metal dispersion which comprises:
(a) contacting a zeolite material with a cationic noble metal complex;
(b) calcining the resulting material in the presence of molecular oxygen at about 300° to 375° C. for a period of time sufficient to cause decomposition of the noble metal complex into a product containing cationic noble metal species;
(c) purging oxygen and water from the resulting material by exposing said material to an atmosphere of inert gas at 200° to 350° C. and
(d) reducing the resulting material with hydrogen at 200° to 350° C. for a period of time sufficient to reduce said cationic noble metal species to highly dispersed free metal.

3. The process of claim 1 wherein said zeolite is selected from the group consisting of zeolite beta, ZSM-5, ZSM-11, ZSM-12, ZSM-18, ZSM-20, ZSM-22, ZSM-23, ZSM-35 and ZSM-48.

6. The process of claim 1 wherein the noble metal is selected from the group consisting of platinum, palladium, rhodium, ruthenium, silver, rhenium, and iridium.

8. The process of claim 1 wherein said zeolite material comprises a binder selected from the group consisting of silica-alumina, silica, and alumina.

4,882,309
LIGNOSULFONATE-MODIFIED CALCIUM HYDROXIDE FOR SO2 CONTROL DURING FURNACE INJECTION

David A. Kirchgessner, Chapel Hill, and Jeffrey M. Lorrain, Raleigh, both of N.C., assignors to United States of America Environmental Protection Agency, Research Triangle Park, N.C.

Division of Ser. No. 930,689, Nov. 12, 1986, Pat. No. 4,786,485. This application Aug. 9, 1988, Ser. No. 230,585
Int. Cl.⁴ B01J *20/22, 20/28*

U.S. Cl. 502—401 6 Claims

1. A method for preparing particulate calcium hydroxide/-calcium lignosulfonate sorbent comprising the steps of contacting calcium oxide with water at a water to calcium oxide ratio of 2.6 with said water containing a sufficient amount of calcium lignosulfonate to result in the crystallization of calcium hydroxide/calcium lignosulfonate particles containing up to 5% by weight calcium lignosulfonate.

4,882,310
HEAT-SENSITIVE RECORDING MATERIAL WITH HEAT-SENSITIVE COLOR DEVELOPING LAYER CONTAINING PRISMATIC CALCIUM CARBONATE

Naoto Arai, Ikeda; Masaharu Nojima, Amagasaki, and Ritsuo Mandoh, Sakai, all of Japan, assignors to Kanzaki Paper Manufacturing Co., Ltd., Tokyo, Japan

Filed Oct. 5, 1988, Ser. No. 253,862
Claims priority, application Japan, Oct. 8, 1987, 62-255097
Int. Cl.⁴ B41M *5/18*

U.S. Cl. 503—207 5 Claims

1. An improved heat-sensitive recording material of the type having a substrate and a heat-sensitive recording layer formed thereon which contains a colorless or light-colored basic dye and a color developer to color said basic dye upon contact by heating, characterized in that the heat-sensitive recording layer is formed by applying a coating dispersion containing prismatic calcium carbonate comprising single particles each having such a particle size that the average length is 1 to 6 μm and the average breadth is 0.1 to 0.6 μm.

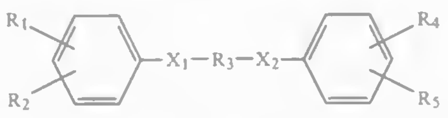
4,882,311
HEAT-SENSITIVE RECORDING MATERIAL

Kenji Ikeda; Ken Iwakura, and Masanobu Takashima, all of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Feb. 6, 1987, Ser. No. 11,806
Claims priority, application Japan, Feb. 6, 1986, 61-24493
Int. Cl.⁴ B41M *5/18*

U.S. Cl. 503—208 5 Claims

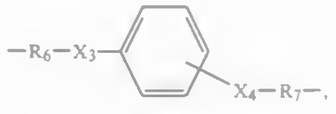
1. A heat-sensitive recording material comprising a support having provided thereon a heat-sensitive color forming layer containing an electron donating dye precursor and an electron accepting compound, said heat-sensitive color forming layer containing (1) at least one compound selected from the group consisting of an (a) aromatic polyether and (b) aromatic polyester, and (2) an aromatic ether, wherein said aromatic ether is other than said aromatic polyether, wherein said aromatic polyether and aromatic polyester is selected from the group consisting of compounds represented by formula (I):



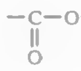
(I)

wherein R_1, R_2, R_4 and R_5 may be the same or different, and each represents hydrogen, alkyl, alkoxy, aryloxy, acyl, halogen, cyano, aryl alkyloxycarbonyl or aryloxycarbonyl, wherein the pair R_1 and R_2 and the pair R_4 and R_5 may each combine and form a ring structure.

R_3 represents an alkylene group having 1 to 5 ether bonds or ester bonds and having from 1 to 10 carbon atoms, or represents

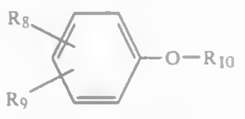


wherein R_6 and R_7 each represents an alkylene group having from 1 to 8 carbon atoms, X_3 and X_4 each represents -O-, or -S-, and X_1 and X_2 may be the same or different and each represents -O-, -S- or



$$-\underset{\underset{O}{\|}}{C}-O-;$$

and wherein said aromatic ether is an aromatic monoether represented by formula (II)



(II)

wherein R_8 and R_9 are each defined the same as R_1 above, wherein R_8 and R_9 can combine to form a ring structure, and R_{10} represents a substituted or unsubstituted alkyl, substituted or unsubstituted aralkyl, or substituted or unsubstituted aryl.

4,882,312
EVAPORATION OF HIGH TC Y-BA-CU-O SUPERCONDUCTING THIN FILM ON SI AND SIO_2 WITH A ZIRCONIA BUFFER LAYER

Antonio Mogro-Campero, and Larry G. Turner, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed May 9, 1988, Ser. No. 192,039
Int. Cl.⁴ B05D *5/12;* **C23C** *14/08, 14/24*

U.S. Cl. 505—1 31 Claims

11. A process for producing a composite consisting essentially of a substrate, a zirconium dioxide film and a superconductive film having a composition represented by the formula $YBa_xCu_yO_z$ where x ranges from about 1.7 to about 2.3, where y ranges from about 2.7 to about 3.3 and where z ranges from about 6.5 to about 7.0, said superconductive film having a zero resistance transition temperature of at least about 38 K, which consists essentially of providing a substrate selected from the group consisting of elemental silicon, oxidized elemental silicon, silicon dioxide and aluminum oxide, depositing a microscopically pore-free film ranging in thickness from about 2000 Angstroms to about 4000 Angstroms of zirconium dioxide on the substrate in a partial vacuum, heating the resulting film-carrying substrate in a partial vacuum to an annealing temperature ranging from about 450° C. to about 850° C, depositing by evaporation on the zirconium dioxide film Y, Ba, Cu and O in amounts required for the superconductive film, said heating being sufficient to produce the orthorhombic crystal structure in an amount sufficient to produce the superconductive film, and cooling the resulting structure in oxygen at about atmospheric pressure at a rate of less than about 5° C. per minute which produces the superconductive film, said zirconium dioxide film having a thickness at least sufficient to prevent interdiffusion between said precursor film and substrate during said heating, said superconductive film having a thickness ranging from about 0.3 micron to about 1 micron.

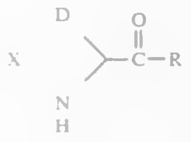
4,882,313
CARBOXAMIDE DERIVATIVES OF GLYCOPEPTIDES

Robert D. Sitrin, Lafayette Hill, Pa., assignor to SmithKline Beckman Corporation, Philadelphia, Pa.

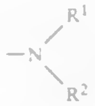
Filed Jul. 31, 1987, Ser. No. 80,025
Int. Cl.⁴ A61K *7/02;* **C07K** *9/00, 7/50*

U.S. Cl. 514—8 18 Claims

1. A compound of the formula:



wherein
X is the remaining portion of an Ardacin glcopeptide antibiotic or a hydrolysis product, N-acyl or glycosylated derivative thereof;
(D) is the D ring of Ardacin
R is NH_2 or $NH(CH_2)_nY$;
Y is



or OH,

R^1 and R^2 are independently hydrogen or C_1–C_3 alkyl,
n is 0 to 6 ;
and wherein the free carboxyl group of any sugar which is attached to the glycopeptide antiobitic may also be substituted by R as defined above; or a pharmaceutically acceptable salt thereof.

4,882,314
A COMPOSITION AND METHOD OF TREATING SELECTED MALIGNANT CONDITIONS

Setsuo Takeuchi, Higashiyamato; Mutsuyuki Kochi, No. 19 Matsudashinden, Matsudo-shi, Chiba-ken; Akira Kawarada, Tokyo; Shinichiro Esumi, Kunitachi; Kaguya Sasaki, Higashikurume; Shozo Kawabata, Kawagoe; Tsuneo Saita; Yukio Inoue, both of Tokyo; Makoto Yamamoto, Tokyo, and Keiji Sekine, Yono, all of Japan, assignors to Rikagaku Kenkyusho, Wako; Mutsuyuki Kochi, Matsudshi and Kaken Kagaku Kabushiki Kaisha, Tokyo, all of, Japan

Continuation of Ser. No. 803,412, Dec. 2, 1985, abanduned, which is a continuation of Ser. No. 567,961, Jan. 4, 1984, abandoned, which is a continuation of Ser. No. 424,401, Sep. 27, 1982, abandoned, which is a continuation of Ser. No. 275,369, Jun. 19, 1981, abandoned, which is a continuation of Ser. No. 155,401, Jun. 2, 1980, abandoned. This application Aug. 4, 1987, Ser. No. 81,480
Int. Cl.⁴ A61K *31/70*

U.S. Cl. 514—23 7 Claims

7. A method of causing at least temporary relief to humans and animals suffering from a malignant condition which is carcinoma of the colon, cancer of the stomach, cancer of the tongue, peritonitis carcinomatosa, cancer of the liver or malignancies induced by SV_{40} virus, which consists of administering to said humans and animals an amount effective to cause regression of the carcinoma of a composition comprising 4,6-O-benzylidene-D-glucopyranose as the active ingredient in the form of an enteric tablet or enteric granule or a capsule containing a dosage of about 1.5 to about 15000 mg per day of 4,6-O-benzylidene-D-glucopyranose.

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4,882,315
AMINOGLYCOSIDE STEROIDS, A PROCESS FOR THEIR PREPARATION, THEIR USE AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Laura Chiodini, Busto Arsizio; Mauro Gobbini, Sesto Calende; Sergio Mantegani, Milan; Daniel Ruggieri, Milan; Aldemio Temperilli, Milan; Gabriella Traquandi, Cornate d'Adda, and Patrizia Ferrari, Varese, all of Italy, assignors to Farmitalia Carlo Erba S.p.A., Milan, Italy

PCT No. PCT/EP87/00004, § 371 Date Oct. 29, 1987, § 102(e) Date Oct. 29, 1987, PCT Pub. No. WO87/04167, PCT Pub. Date Jul. 16, 1987

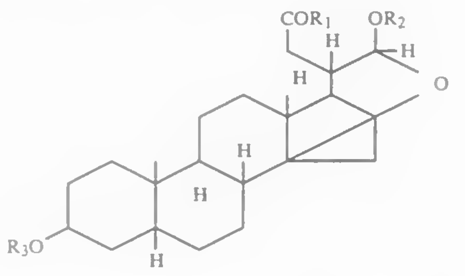
PCT Filed Jan. 7, 1987, Ser. No. 133,035

Claims priority, application United Kingdom, Jan. 9, 1986, 8600489

Int. Cl.^{4} A61K *31/58*

U.S. Cl. 514—26 7 Claims

1. A compound having the general formula I



I

wherein either R_1 represents a hydroxy group or an alkoxy group having from 1 to 4 carbon atoms and R_2 represents a hydrogen atom or an alkyl group having from 1 to 4 carbon atoms, or R_1 and R_2 taken together represent a chemical bond; and R_3 represents an aminodeoxy or aminodideoxy or aminotrideoxy sugar residue of the D or L series, or a pharmaceutically acceptable salt thereof.

4,882,316
PYRIMIDINE DERIVATIVES

Robert W. Lambert, Welwyn; Joseph A. Martin, Harpenden, and Gareth J. Thomas, Welwyn, all of England, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

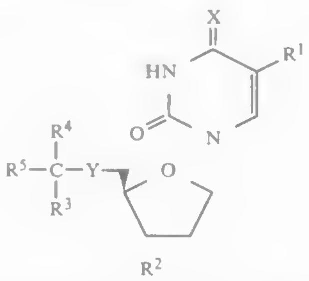
Filed Jul. 30, 1987, Ser. No. 79,741

Claims priority, application United Kingdom, Aug. 8, 1986, 8619424; May 7, 1987, 8710777

Int. Cl.^{4} A61K *31/70;* C07H *19/07;* C07D *405/04, 403/00*

U.S. Cl. 514—49 15 Claims

1. A compound of the formula



I

wherein R^1 is halogen, C_{1-4}-alkyl or halo-(C_{1-4}-alkyl), R^2 is hydrogen, hydroxy or cyclopentylpropionyloxy, phenylacetoxy, benzoyloxy or C_{1-4}-alkanoyloxy R^3 and R^4 each are hydrogen or C_{1-4}-alkyl, R^5 is unsubstituted phenyl or phenyl carrying one or more substituents selected from the group consisting of halogen, hydroxy, C_{1-4}-alkyl, C_{1-4}-alkoxy, trifluoromethyl, nitro and phenyl; or unsubstituted phenyloxy or phenyloxy carrying one or more substituents selected from the group consisting of halogen, hydroxy, C_{1-4}-alkyl, C_{1-4}-alkoxy, trifluoromethyl, nitro, and phenyl, X is O or NH and Y is —CO—CH_2—, —CH(OH)—CH_2—, —CH_2—CH_2—, —SO— or —SO_2—,

or a tautomer thereof.

4,882,317
COVALENTLY-MODIFIED BACTERIAL POLYSACCHARIDES, STABLE COVALENT CONJUGATES OF SUCH POLYSACCHARIDES AND IMMUNOGENIC PROTEINS WITH BIGENERIC SPACERS AND METHODS OF PREPARING SUCH POLYSACCHARIDES AND CONJUGATAES AND OF CONFIRMING COVALENCY

Stephen Marburg, Metuchen, N.J.; Peter J. Kniskern, Lansdale, Pa., and Richard L. Tolman, Warren, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 719,678, Apr. 4, 1985, Pat. No. 4,695,624, which is a continuation-in-part of Ser. No. 608,738, May 10, 1984, abandoned. This application Jun. 18, 1987, Ser. No. 63,607

Int. Cl.^{4} A61K *37/02, 39/02;* C07K *15/04*

U.S. Cl. 514—54 17 Claims

1. A process for solubilizing polyanionic polysaccharides having acid groups comprising
   (a) replacing the acid hydrogens of the polysaccharide with large hydrophobic cations selected from the group consisting of tri or tetra (C_1–C_5) alkylammonium, 1-azabicyclo [2.2.2.]octane and 11,8-diazabicyclo undec-7-ene, thereby creating the salt form of the polysaccharide, then
   (b) dissolving the salt form of the polysaccharide in a non-aqueous, polar, aprotic solvent.

4. A process for covalently-modifying a polyanionic polysaccharide to form a modified polysaccharide capable of covalent bonding to a functionalized protein comprising
   (a) solubilizing the polysaccharide in a non-aqueous, polar, aprotic solvent;
   (b) activating the polysaccharide with a bifunctional reagent; then
   (c) reacting this activated polysaccharide with a bis-nucleophile.

4,882,318
METHOD FOR DECREASING TUMOR METASTASIS

Israel Vlodavsky; Amiram Eldor; Yaakov Naparstek, all of Jerusalem, and Irun R. Cohen, Reheovot, all of Israel, assignors to Hadassa Medical Organization, Jerusalem and Yeda Research and Development Company Limited, Rehovot, both of, Israel

Filed Jun. 24, 1987, Ser. No. 67,582

Claims priority, application Israel, Jun. 26, 1986, 79255

Int. Cl.^{4} A61K *31/725;* C08B *37/10*

U.S. Cl. 514—56 3 Claims

1. A method for decreasing tumor metastasis in a mammal comprising the step of administering intact heparin or N-desulfated, N-deacetylated heparin at a dosage of about 0.05 mg/kg/day–0.5 mg/kg/day to a mammal having a malignant tumor.

4,882,319
PHOSPHONIC ACID SUBSTITUTED AROMATIC STEROIDS AS INHIBITORS OF STEROID 5-α-REDUCTASE

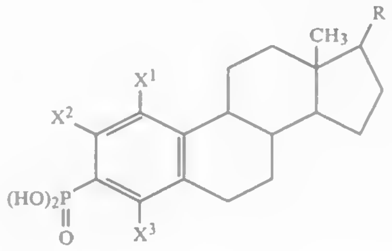
Dennis A. Holt, Downingtown; Mark A. Levy, Wayne, and Brian W. Metcalf, Radnor, all of Pa., assignors to SmithKline Beckman Corporation, Philadelphia, Pa.

Filed Dec. 23, 1988, Ser. No. 290,056

Int. Cl.^{4} A61K *31/66, 31/665, 31/675;* C07J *1/00*

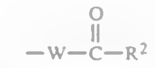
U.S. Cl. 514—119 24 Claims

1. A compound represented by the formula:



(I)

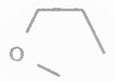
in which:
- the B, C, and D rings have optional double bonds where indicated by the broken lines, provided that the C ring does not have a double bond when the B ring has a C_8–C_9 double bond, and provided that the D ring does not have a C_{16}–C_{17} double bond when R represents two substituents or a divalent substituent;
- X^1, X^2, and X^3 are any accessible combination of H, Cl, F, Br, I, CF_3, or C_{1-6}alkyl, OH, C_{1-6}alkoxy, CN, NO_2, $N(R^1)_2$, CHO, or CO_2R^1;
- R^1 each independently is H or C_{1-8}alkyl; and
- R is
  - (1) α-hydrogen, α-hydroxyl, or α-acetoxy and/or
    - (a)



$$-W-\overset{\displaystyle O}{\overset{\|}{C}}-R^2$$

where W is a bond or C_{1-12}alkyl, and R^2 is
- (i) hydrogen,
- (ii) hydroxyl,
- (iii) C_{1-8}alkyl,
- (iv) hydroxy C_{1-8}alkyl,
- (v) C_{1-18}alkoxy,
- (vi) $N(R^3)_2$, where each R^3 is independently selected from hydrogen, C_{1-8}alkyl, C_{3-6}cycloalkyl, phenyl; or both R^3 taken together with the nitrogen to which they are attached represent a 5–6 member saturated ring comprising up to one other heteroatom selected from oxygen and nitrogen, or
- (vii) OR^4, where R^4 is alkali metal or benzyl, or

- (b) —Alk—OR^5, where Alk is C_{1-12}alkyl, and R^5 is
  - (i) phenyl C_{1-6}alkylcarbonyl,
  - (ii) C_{5-10}cycloalkylcarbonyl,
  - (iii) benzoyl,
  - (iv) C_{1-8}alkoxycarbonyl,
  - (v) aminocarbonyl or C_{1-8}alkyl substituted aminocarbonyl, or
  - (vi) C_{1-8}alkyl,
- (2) =CH—W—CO—R^2 or =H—W—OR^5, where W is a bond or C_{1-12}alkyl and R^2 and R^5 have the same meaning as above and R^5 also is C_{1-20}alkylcarbonyl;
- (3)



where the dashed bond replaces the 17-α-hydrogen,
- (4) α-hydrogen and β-$NHCOR^6$ where R^6 is C_{1-12}alkyl or β-$N(R^3)_2$ where R^3 has the same meaning as above,
- (5) α-hydrogen and β-cyano,
- (6) α-hydrogen and β-tetrazolyl, or
- (7) keto:

or a pharmaceutically acceptable salt thereof.

4,882,320
PESTICIDAL PYRIMIDINYL (THIONO)(THIO)-PHOSPHATES

Fritz Maurer, Wuppertal; Benedikt Becker, Mettmann, and Bernhard Homeyer, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

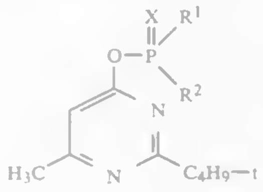
Filed Aug. 26, 1988, Ser. No. 237,242

Claims priority, application Fed. Rep. of Germany, Sep. 2, 1987, 3729264

Int. Cl.^{4} A01N *57/16;* C07F *9/65*

U.S. Cl. 514—86 12 Claims

1. A pyrimidinyl(thiono)(thio)-phosphate of the formula



(I)

in which
- R^1 stands for C_1–C_4 alkoxy,
- R^2 stands for alkoxy or C_1–C_4 alkylthio and
- X stands for oxygen or sulphur,

with the proviso that the two radicals R^1 *ll and R2* are identical when they stand for alkoxy.

10. An insecticidal, acaricidal or nematocidal composition comprising an insecticidally, acaricidally or nematicidally effective amount of a compound according to claim and a diluent.

11. A method of combating insects, acarids or nematodes which comprises applying to such insects, acarids, nematodes or habitat thereof an insecticidally, acaricidally or nematicidally effective amount of a compound according to claim 1.

4,882,321
THIONOPHOSPHONIC ACID ESTER ARTHROPODICIDES

Fritz Maurer, Wuppertal; Herbert Sommer, Remscheid; Wolfgang Behrenz, Overath; Bernhard Homeyer, Leverkusen, and Wilhelm Stendel, Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

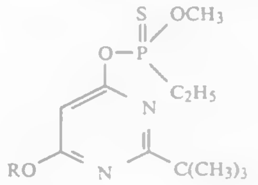
Filed Feb. 5, 1988, Ser. No. 152,521

Claims priority, application Fed. Rep. of Germany, Feb. 14, 1987, 3704689

Int. Cl.^{4} A01N *57/24;* C07F *9/65*

U.S. Cl. 514—86 8 Claims

1. An O-(6-alkoxy-2-tert-butyl-pyrimidin-4-yl)-O-methylthionoethanephosphonic acid diester of the formula



in which
- R represents alkyl with 1 to 4 carbon atoms or cycloalkyl with 3 or 4 carbon atoms.

5. An arthropodicidal composition comprising an arthropodicidally effective amount of a compound according to claim 1 and a diluent.

6. A method of combating arthropods which comprises applying to such arthropods or to an arthropod habitat an arthropodicidally effective amount of a compound according to claim 1.

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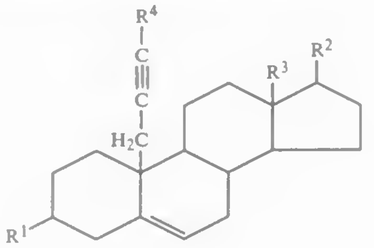
4,882,322
3β,17β-HYDROXY-SUBSTITUTED STEROIDS AND RELATED STEROIDAL COMPOUNDS

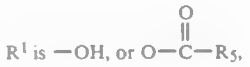
J. O'Neal Johnston, Milford, and Gene W. Holbert, Loveland, both of Ohio, assignors to Merrell Dow Pharmaceuticals Inc., Cincinnati, Ohio

Filed Oct. 27, 1988, Ser. No. 263,091
Int. Cl.⁴ A61K *31/56;* **C07J** *1/00*
U.S. Cl. 514—178 12 Claims

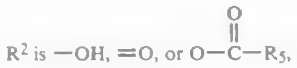
1. A compound having the following formula:



wherein:



$$R^1 \text{ is } -OH, \text{ or } O-\overset{O}{\overset{\|}{C}}-R_5,$$



$$R^2 \text{ is } -OH, =O, \text{ or } O-\overset{O}{\overset{\|}{C}}-R_5,$$

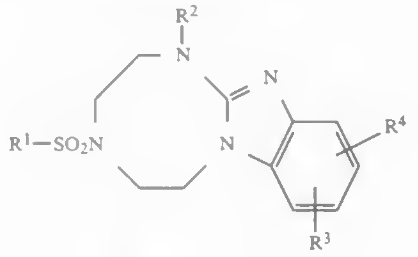
R^3 is $-CH_3$, or $-CH_2CH_3$,
R^4 is $-H$, or $C_{1\text{-}4}$ alkyl, and
R^5 is $C_{1\text{-}10}$ alkyl.

4,882,323
1,2,3,4,5,6-HEXAHYDRO[1,3,6]TRIAZOCINO[1,1-A]BENZIMIDAZOLES

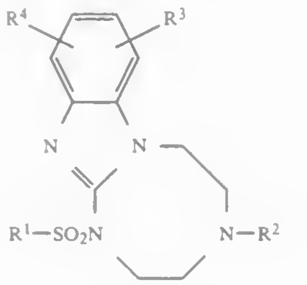
Michael W. Winkley, Malvern, and James L. Diebold, Norristown, both of Pa., assignors to American Home Products, New York, N.Y.

Filed Feb. 23, 1988, Ser. No. 159,623
Int. Cl.⁴ C07D *487/04;* **A61K** *31/395*
U.S. Cl. 514—183 25 Claims

14. A compound of formula I or II



Formula I



Formula II

wherein

R^1 is phenyl, m- or p-nitrophenyl, m- or p-methylsulfonylaminophenyl,naphthyl, naphthyl mono-substituted by nitro or methylsulfonylamino, benzofurazanyl, 2-pyrimidinyl, 2- or 4-pyridinyl, 2- or 4-naphthridinyl, pyrazinyl, isoquinolinyl, or quinolinyl;

R^2 is hydrogen, C_1–C_8 alkyl, phenyl(C_1–C_4)-alkyl, substituted-phenyl(C_1–C_4)alkyl in which phenyl may have one to three substituents selectd from C_1–C_4 alkyl, C_1-alkoxy, fluorine, chlorine, or bromine, 2- or 4-pyrimidinyl, pyrazinyl, halo- or dihalo-(C_1–C_4)alkanoyl in which halo is fluoro or chloro, benzoyl substituted on the phenyl ring by one or two C_1–C_4 alkyl groups, C_1–C_4 alkylmino(C_1–C_4)alkanoyl, phenyloxy or naphthyloxy(C_1–C_4)alkyl, C_1–C_4 alkylsulfonyl, N-(C_1–C_4)alkyl or N-di-(C_1–C_4alkyl)carboxamido(C_1–C_4)alkyl, N-phenyl or substituted-phenylcarboxamido(C_1–C_4)alkyl in which phenyl may be substituted as above for substituted phenyl, or C_1–C_4 alkylguanidino; and

R^3 and R^4 are, independently, hydrogen, C_1–C_4 alkyl, C_1–C_4 alkoxy, fluorine or chlorine, or non-toxic, pharmaceutically acceptable acid addition salts thereof.

25. A method of treating cardiac arrhythmias and myocardial ischemia in a mammal, including man, suffering from an arrhythmic or ischemic condition, comprising administering an amount of a compound of claim **14** effective to alleviate said arrhythmic or ischemic condition.

4,882,324
ESSENTIALLY PURE ACID HYDROXYL LIGAND ALUMINUM COMPLEXES AND THEIR PREPARATION

Arthur P. G. Wright, 98 Spragg Cir., Markham, Ontario, Canada (L3P 5C2); Betty P. L. Wen, 89 Bushmills Sq., Scarborough, Ontario, Canada (M1V 1K5); Terry G. Schenck, 74 Water Wheelway, Willowdale, Ontario, Canada (M2H 3E5), and Antonina Maron, 12 Willowmount Dr., Scarborough, Ontario, Canada (M1L 1Y1)

Division of Ser. No. 937,155, Dec. 2, 1986, Pat. No. 4,772,724. This application Jun. 2, 1988, Ser. No. 201,669
Claims priority, application Canada, Nov. 21, 1986, 523590
Int. Cl.⁴ A61K *31/33, 37/44*
U.S. Cl. 514—191 7 Claims

1. A method for treating a physiological condition in a mammalian body that is benefited from treatment with an antacid which comprises administering to said mammalian body an antacid effective quantity of at least one essentially pure complex of an acid hydroxyl ligand and aluminum having an acid neutralization capacity of at least 5 mEq/g and the formula:

$$Al(L)_x(OH)_y$$

wherein:
$X = 0.5$ or 1
$Y = 2$ and
L is an acid hydroxyl ligand wherein the acid hydroxyl ligand is selected from the group consisting of serine, homoserine, threonine, tyrosine, hydroxyproline, bicine, tricine and hydroxylysine when $x=1$ and pamoic acid when $x=0.5$.

4,882,325
CRYSTALLINE 1,1-DIOXOPENICILLANOYLOXYMETHYL 6-(D-AMINO-PHENYLACETAMIDO)PENICILLANATE NAPSYLATE AND METHOD OF USING THE SAME

Wagn O. Godtfredsen, Vaerlose, and Welf von Daehne, Rungsted Kyst, both of Denmark, assignors to Leo Pharmaceutical Products Ltd. A/S, Ballerup, Denmark

Continuation of Ser. No. 304,050, Sep. 21, 1981, abandoned. This application Oct. 21, 1988, Ser. No. 262,150
Claims priority, application United Kingdom, Oct. 6, 1980, 8032147
Int. Cl.⁴ A61K *31/43;* **C07D** *499/32, 499/22*
U.S. Cl. 514—195 3 Claims

1. Crystalline 1,1-dioxopenicillanoyloxymethyl 6-(D-α-amino-α-phenylacetamido)penicillanate napsylate monohydrate.

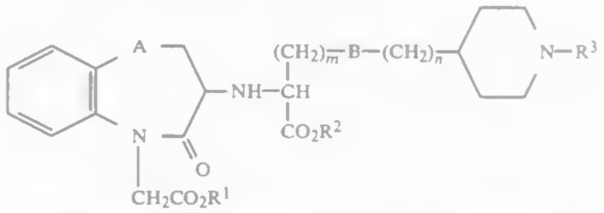
3. A method of treating patients suffering from bacterial infectious diseases which comprises the administration of an effective amount of a compound according to claim 1.

4,882,326
PIPERIDINE COMPOUNDS AND PHARMACEUTICAL USES THEREOF

Shu Murakami, Fukuoka; Tsuguo Ikebe, Oita; Ichiro Hakamada, Oita, and Osamu Yaoka, Oita, all of Japan, assignors to Yoshitomi Pharmaceutical Industries, Ltd., Osaka, Japan

Filed May 24, 1988, Ser. No. 197,877
Claims priority, application Japan, May 25, 1987, 62-129414; Oct. 14, 1987, 62-259379
Int. Cl.⁴ A61K *31/55;* **C07D** *281/02*
U.S. Cl. 514—211 3 Claims

1. A piperidine compound of the formula:



wherein A represents a methylene group, an oxygen atom or a sulfur atom; B represents an oxygen atom or a sulfur atom; R^1 and R^2 independently represent a hydrogen atom, a lower alkyl group or an aralkyl group; R^3 represents a hydrogen atom or an amino protective group; m represents 1 or 2; and n represents an integer of 0 to 3, or a pharmaceutically acceptable salt thereof.

3. A pharmaceutical composition which comprises a therapeutically effective amount of the piperidine compound as claimed in claim **1** or **2** with a pharmaceutically acceptable additive.

4,882,327
CERTAIN HETEROCYCLIC N-SUBSTITUTED CARBOXAMIDES

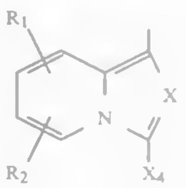
Francis D. King, Essex, England, assignor to Beecham Group p.l.c., Middlesex, England

Filed Apr. 22, 1988, Ser. No. 185,111
Claims priority, application United Kingdom, Apr. 25, 1987, 8709857; May 5, 1987, 8710570; Jul. 14, 1987, 8716530; Jan. 16, 1988, 8800982
Int. Cl.⁴ A61K *31/44;* **C07D** *471/04*
U.S. Cl. 514—219 9 Claims

1. A compound of formula (1), or a pharmaceutically acceptable salt thereof:

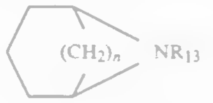
$$Y\text{-}CO\text{-}L\text{-}Z \qquad (1)$$

wherein
L is NH or O;
Y is a group of formula (a);

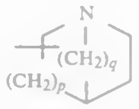


(a)

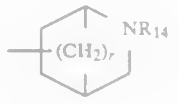
wherein
R_1 and R_2, are independently selected from hydrogen or halogen;
X is N or CR_3
wherein
R_3 is hydrogen or C_{1-6} alkoxy;
R_4 is hydrogen, halogen, CF_3, C_{1-6} alkyl, C_{1-6} alkoxy, C_{1-6} alkylthio, C_{1-6} alkylsulphonyl, C_{1-6} alkylsulphinyl, C_{1-7} acyl, cyano, C_{1-6} alkoxycarbonyl, C_{1-7} acylamino, hydroxy, nitro or amino, aminocarbonyl, or aminosulphonyl, optionally N-substituted by one or two groups selected from C_{1-6} alkyl, C_{3-8} cycloalkyl, and C_{3-8} cycloalkyl C_{1-4} alkyl or disubstituted by C_4 or C_5 polymethylene; phenyl or phenyl C_{1-4} alkyl group optionally substituted in the phenyl ring by one or two of halogen, C_{1-6} alkoxy or C_{1-6} alkyl groups;
Z is a group of formula (d), (e) or (f):



(d)



(e)



(f)

wherein
n is 2 or 3;
p is 1 or 2;
q is 1 to 3;
r is 1 to 3; and
R_{13} or R_{14} is C_{1-4} alkyl.

4,882,328
THIAZETIDINE DERIVATIVES

Masahiro Kise, Kyoto; Masakuni Ozaki, Joyo; Kenji Kazuno, Shiga; Yoshifumi Tomii, Katano; Jun Segawa, and Shoji Yasufuki, both of Kyoto, all of Japan, assignors to Nippon Shinyaku Co. Ltd., Japan

Filed Sep. 22, 1988, Ser. No. 247,959
Claims priority, application Japan, Sep. 22, 1987, 62/237729
Int. Cl.⁴ C07D *475/00;* **A61K** *31/495*
U.S. Cl. 514—236.2 27 Claims

1 A compound of the formula

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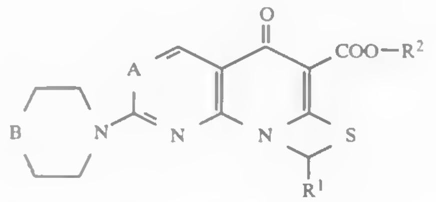


(I)

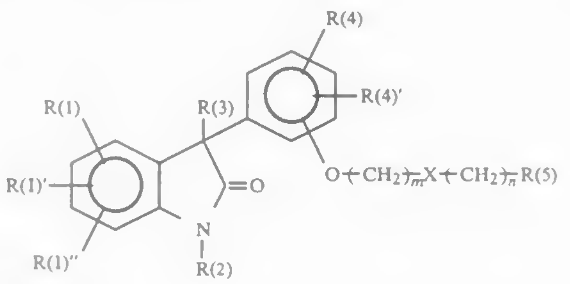
or a pharmaceutically acceptable salt thereof wherein R^1 is hydrogen, lower alkyl or phenyl unsubstituted or substituted by one or two halo moieties, R^2 is hydrogen or lower alkyl, A CX wherein X is halo, B is O or NR^3 wherein R^3 is hydrogen, lower alkyl, acyl, mono-, di- or tri-haloacyl, lower alkoxycarbonyl or (5-methyl-2-oxo-1,3-dioxolen-4-yl) methyl.

4,882,329
ALKOXYPHENYLINDOLINONE DERIVATIVES, MEDICAMENTS CONTAINING THEM AND THEIR USE

Ulrich Lerch, Hofheim am Taunus; Rainer Henning, Hattersheim am Main, and Joachim Kaiser, Frankfurt am Main, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 898,117, Aug. 20, 1986, abandoned.
This application Jan. 30, 1989, Ser. No. 303,996
Claims priority, application Fed. Rep. of Germany, Aug. 22, 1985, 3529994
Int. Cl.⁴ A61K *31/495;* **C07D** *403/12, 401/14*
U.S. Cl. 514—253 5 Claims

1. A compound of the formula I



(I)

in which

R(1), R(1)', and R(1)'' are identical or different and are independent of one another and are hydrogen, $(C_1–C_4)$-alkyl, $(C_1–C_3)$-alkoxy, F, Cl, Br, CF_3, nitro, hydroxyl, acetamido or amino,

R(2) is hydrogen, $(C_1–C_{10})$-alkyl, $(C_3–C_{10})$-alkenyl, phenyl-$(C_1–C_4)$-alkyl, the phenyl ring being unsubstituted or substituted by one, two or three substituents from the group consisting of $(C_1–C_4)$-alkyl, $(C_1–C_3)$-alkoxy, F, Cl, CF_3, $(C_1–C_2)$-alkylenedioxy and nitro,

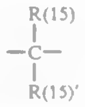
R(3) is hydrogen, $(C_1–C_{15})$-alkyl, $(C_3–C_{15})$-alkenyl, $(C_4–C_8)$-cycloalkyl, $(C_4–C_8)$-cycloalkyl-$(C_1–C_4)$-alkyl, phenyl or phenyl-$(C_1–C_4)$-alkyl, the phenyl radical being unsubstituted or substituted by one, two or three substituents from the group consisting of $(C_1–C_4)$-alkyl, $(C_1–C_3)$-alkoxy, F, Cl, CF_3, $(C_1–C_2)$-alkylenedioxy and nitro,

R(4) and R(4)' are, independently of, one another, identical or different hydrogen, $(C_1–C_4)$-alkyl, $(C_1–C_3)$-alkoxy, F, Cl, CF_3, nitro, hydroxyl, acetamido or amino,

m is 1, 2, 3, or 4,

n is 0, 1, 2 or 3, but where X is a heteroatom n is only 2 or 3

X is a CH_2 group, oxygen, sulfur, a carbonyl group, a CH(OH) group or a group

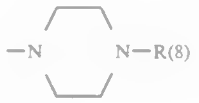


$$-\overset{\displaystyle R(15)}{\underset{\displaystyle R(15)'}{\mathrm{C}}}-$$

in which

R(15) and R(15)' are identical or different and are hydrogen or $(C_1–C_4)$-alkyl,

R(5) is



in which

R(8) is hydrogen, $(C_1–C_{10})$-alkyl, $(C_1–C_8)$-alkanoyl, pyridyl, phenyl, phenyl-$(C_1–C_4)$-alkyl, phenyl-$(C_3–C_5)$-alkenyl, benzhydryl or benzhydryl-$(C_1–C_4)$-alkyl, phenyl-$(C_1–C_4)$-alkanoyl or benzoyl, the phenyl radicals each being unsubstituted or substituted by one, two or three radicals from the group consisting of $(C_1–C_4)$-alkyl, $(C_1–C_4)$-alkoxy, $(C_1–C_2)$-alkylenedioxy, F, Cl, Br, CF_3 and hydroxyl,

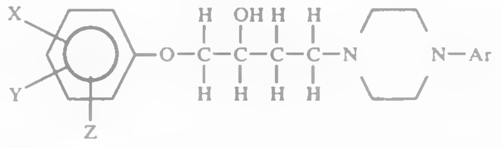
or a salt of the compound of the formula I with a pharmaceutically acceptable acid.

4,882,330
1-ARYLOXY-4-[((4-ARYL)-1-PIPERAZINYL]-2-BUTANOLS USEFUL AS ANTIALLERGY AGENTS

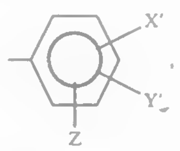
David A. Walsh, Richmond, and John M. Yanni, Chesterfield, both of Va., assignors to A. H. Robins Company, Incorporated, Richmond, Va.

Continuation of Ser. No. 933,180, Nov. 21, 1986, abandoned.
This application Apr. 6, 1989, Ser. No. 333,673
Int. Cl.⁴ A61K *31/495*
U.S. Cl. 514—255 51 Claims

1. A method of combatting Type I allergic response in a living animal body in need thereof which comprises administering to said animal an effective amount of a compound selected from the group having the formula:

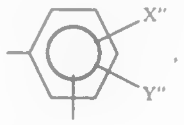


wherein Ar is selected from



or 2,3 or 4-pyridyl;

X and X' are selected from
hydrogen,
loweralkyl,
loweralkoxy,
halogen,
trifluoromethyl,
nitro,
amino,
acetylamino,
pheny, or



acetyl,
cyano,
aminocarbonyl,
carboxy, or
loweralkyl carboxylic acid ester;

Y,Y',Y'' and X'' are selected from the same group as X and X' except phenyl and substituted phenyl are excluded;

Z and Z' are selected from
hydrogen,
loweralkyl, or
loweralkoxy,

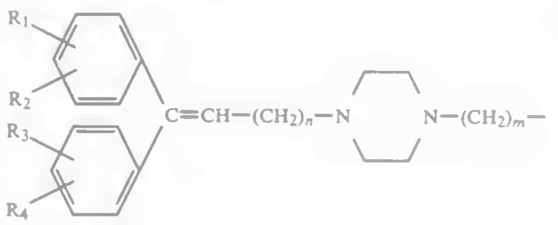
and the pharmaceutically acceptable salts and hydrates thereof.

4,882,331
1-[(1,1-DIPHENYL)-1-ALKENYL]PIPERAZINE DERIVATIVES, METHOD OF PREPARATION AND PHARMACEUTICAL COMPOSITIONS IN WHICH THEY ARE PRESENT

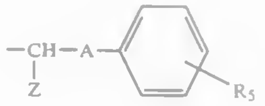
André Buzas, Bievres, and Roland Ollivier, Olivet, both of France, assignors to Les Laboratoires Meram, France

Filed Apr. 11, 1988, Ser. No. 179,750
Claims priority, application France, Apr. 14, 1987, 87 05311
Int. Cl.⁴ A61K *31/495;* **C07D** *295/08, 295/10*
U.S. Cl. 514—255 5 Claims

1. 1-[(1,1-Diphenyl)-1-alkenyl]piperazine derivatives corresponding to formula I:



(I)



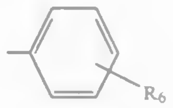
in which:

R_1, R_2, R_3, R_4 and R_5, which are identical or different, represent a hydrogen atom, a halogen atom, a lower alkyl group, a lower alkenyl group, a lower alkoxy group or the trifluoromethyl group;

n is an integer from 1 to 3;

m is an integer from 0 to 3;

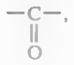
Z represents a hydrogen atom, a lower alkyl group or an aryl group of the formula:



in which

R_6 has the same meaning as R_1, R_2, R_3 or R_4; and

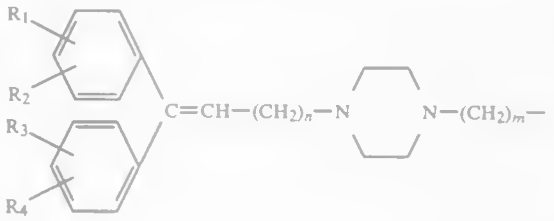
A is an oxygen atom or a group



$$-\underset{\displaystyle \mathrm{O}}{\underset{\|}{\mathrm{C}}}-,$$

and their pharmaceutically acceptable salts.

5. A method for treating depressant which comprises administrating an antidepressant effective amount of a piperazine derivative corresponding to formula I:



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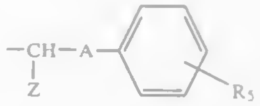


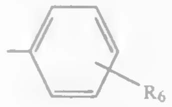
in which:

R_1, R_2, R_3, R_4 and R_5, which are identical or different represent a hydrogen atom, a halogen atom, a lower alkyl group, a lower alkenyl group, a lower alkoxy group or the trifluoromethyl group;

n is an integer from 1 to 3;

m is an integer from 0 to 3;

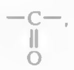
Z represents a hydrogen atom, a lower alkyl group or an aryl group of the formula:



in which

R_6 has the same meaning as R_1, R_2, R_3 or R_4; and

A is an oxygen atom or a group



$$-\underset{\displaystyle \mathrm{O}}{\underset{\|}{\mathrm{C}}}-,$$

and their pharmaceutically acceptable salts for the manufacture of drugs active on the central nervous system.

4,882,332
IMMUNE SUPPRESSION METHOD EMPLOYING ARLY-SUBSTITUTED NAPHTHYRIDINE AND PYRIDOPYRAZINE DERIVATIVES

Marvin I. Siegel, Woodbridge, and Sidney R. Smith, Ridgewood, both of N.J., assignors to Schering Corporation, Kenilworth, N.J.

Filed Oct. 20, 1986, Ser. No. 921,288
Int. Cl.⁴ A61K *31/495, 31/44*
U.S. Cl. 514—255 13 Claims

1. A method for suppressing T cell functions of the immune response in a mammal which comprises administering to a mammal in need of such treatment an immunosuppressing effective amount of a compound having the structural formula I

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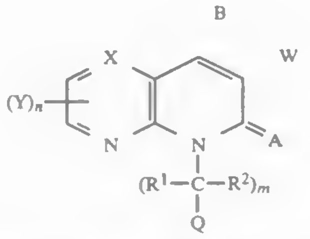


I

or a pharmaceutically acceptable salt or solvate thereof, wherein:

X represents CH or N;
A represents O or S,
m is an integer of from 0 to 2;
n is an integer of from 0 to 2;
R^1 and R^2 are the same or different and each is independently selected from H or alkyl containing 1 to 6 carbon atoms;
W represents —O— or —$S(O)_p$—, wherein p is an integer of from 0 to 2;
B represents alkylene having from 2 to 8 carbon atoms, which alkylene may be optionally substituted with a group selected from —OH, —F, alkyl having 1 to 4 carbon atoms, —CH_2OH, —CHO, —CO_2H, —COR^3 wherein R^3 is selected from —NHR^4, —$N(R^4)_2$ or —OR^4 wherein R^4 is alkyl of 1 to 6 carbon atoms or —CN, with the proviso that OH or F is not on the carbon atom adjacent to W;
Q represents an aryl group containing from 6 to 15 carbon atoms or an aromatic heterocyclic group containing from 3 to 14 carbon atoms and having at least one O, S or N in the ring, which aryl or aromatic heterocyclic group can optionally be substituted with up to 3 substituents Y as defined below; and
each Y substituent is independently selected from —OH, hydroxymethyl, alkyl containing from 1 to 6 carbon atoms, halo, —NO_2, alkoxy containing 1 to 6 carbon atoms, —CF_3, —CN, cycloalkyl containing 3 to 7 carbon atoms, alkenyloxy containing from 3 to 6 carbon atoms, alkynyloxy containing from 3 to 6 carbon atoms, —$S(O)_p$—R^4 wherein R^4 and p are as defind above, —CO—R^5 wherein R^5 represents —OH, —NH_2, —NHR^4, —$N(R^4)_2$ or —OR^4 in which R^4 is as defined above, —O—D—COR^5 wherein D represents alkylene having from 1 to 4 carbon atoms and R^5 is as defined above, —NH_2, —NHR^4, —$N(R^4)_2$ wherein R^4 is as defined above or —NHCOH.

4,882,333

N-(5,6,7,8-TETRAHYDROPYRIDO[2,3-D]PYRIMIDIN-6-YL-ALKANOYL)-GLUTAMIC ACID DERIVATIVES

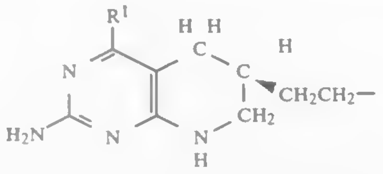
Chuan Shih, Indianapolis, Ind., and Edward C. Taylor, Princeton, N.J., assignors to The Trustess of Princeton University, Princeton, N.J. and Eli Lilly and Company, Indianapolis, Ind.

Filed May 25, 1988, Ser. No. 198,201

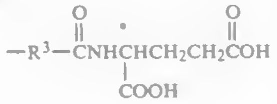
Int. Cl.⁴ A61K *31/505;* C07D *475/08*

U.S. Cl. 514—258 **13 Claims**

1. A compound selected from the group consisting of a glutamic acid derivative having the formula:



-continued



$$-R^3-\overset{\overset{O}{\|}}{C}NH\underset{\underset{COOH}{|}}{\overset{\bullet}{C}}HCH_2CH_2\overset{\overset{O}{\|}}{C}OH$$

in which:
R^1 is —OH or —NH_2;
R^3 is a carbon-carbon bond, alkylene of 1 to 4 carbon atoms, or cyclohexylene;
the configuration about the carbon atom designated * is S; and
the pharmaceutically acceptable salts thereof.

4,882,334

N-(5,6,7,8-TETRAHYDROPYRIDO]2,3-D]PYRIMIDIN-6-YLETHL-THINEYL-AND FURYLCARBONYL)-GLUTAMIC ACID DERIVATIVES

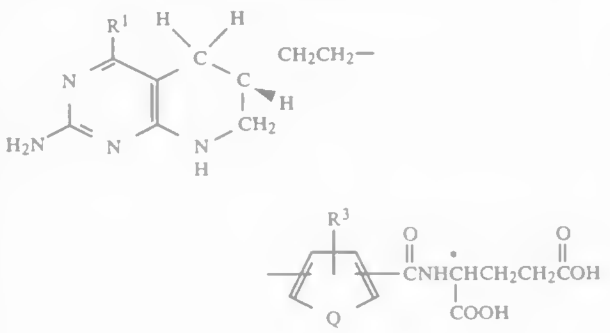
Chuan Shih, Indianapolis, Ind., and Edward C. Taylor, Princeton, N.J., assignors to The Trustees of Princeton University, Princeton, N.J. and Eli Lilly and Company, Indianapolis, Ind.

Filed May 25, 1988, Ser. No. 198,207

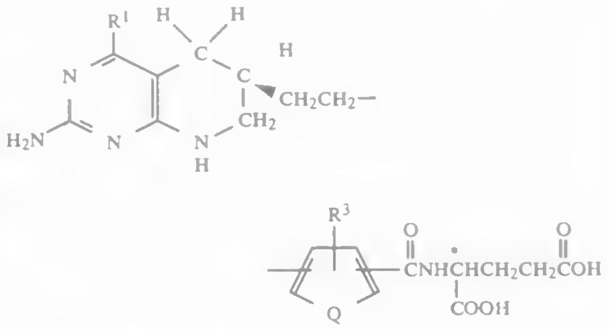
Int. Cl.⁴ A61K *31/505;* C07D *475/08*

U.S. Cl. 514—258 **9 Claims**

1. A compound selected from the group consisting of a glutamic acid derivative having the formula:



or



in which:
Q is —O— or —S—;
R^1 is —OH or —NH_2;
R^3 is hydrogen, chloro, or fluoro;
the configuration about the carbon atom designated * is S; and
the pharmaceutically acceptable salts thereof.

4,882,335

METHOD FOR TREATING ALCOHOL-DRINKING RESPONSE

John D. Sinclair, Espoo, Finland, assignor to Alko Limited, Helsinki, Finland

Filed Jun. 13, 1988, Ser. No. 205,758

Int. Cl.⁴ A61K *31/44*

U.S. Cl. 514—282 **8 Claims**

1. A method for treating alcoholism by extinguishing the alcohol-drinking response, comprising the steps of:
repeatedly administering to a subject suffering from alcoholism, an opiate antagonists selected from the group consisting of naloxone, naltrexone, cyclazocine, diprenorphine, etazocine, levalorphan, metazocine, nalorphine and salts thereof in a daily dosage sufficient to block the stimulatory effect of alcohol;
while the amount of antagonist in the subject's body is sufficient to block the stimulatory effect of alcohol, having the subject drink an alcoholic beverage; and
continuing the steps of administration of the opiate antagonist and drinking of an alcoholic beverage until the alcohol-drinking response is extinguished.

4,882,336

METHOD AND PHARMACEUTICAL COMPOSITION FOR TREATING LEUKOENCEPHALITIC DEMYELINIZATION CLINICAL PATTERNS OF AUTOIMMUNE ORIGIN, PARTICULARLY MULTIPLE SCLEROSIS

Gabor Tigyi, Irvine, Calif.; Bela Bozoky; Zsuzsanna Szegvari, both of Szeged, Hungary; Tibor Frank, Budapest, Hungary; Gyorgy Hajos, Budapest, Hungary; Laszlo Szporny, Budapest, Hungary, and Lilla Forgacs, Budapest, Hungary, assignors to Richter Gedeon Vegyeszeti Gyar Rt., Budapest, Hungary

Filed Aug. 17, 1988, Ser. No. 233,076

Claims priority, applicatioo Hungary, Aug. 26, 1987, 3753/87

Int. Cl.⁴ A61K *31/44*

U.S. Cl. 514—283 **4 Claims**

1. A method of treating demyelinization clinical patterns of autoimmune origin in an animal subject, which comprises administering to the subject a therapeutically effective amount of ethyl (+)-apovincaminate.

4,882,337

TETRAHYDROISOQUINOLINE ANTIARRHYTHMIC AGENTS

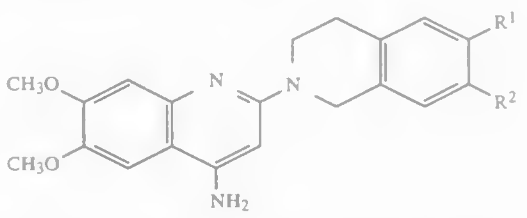
Nigel J. Cussans, New York, assignor to Pfizer Inc., New York, N.Y.

Filed Aug. 12, 1988, Ser. No. 232,345

Int. Cl.⁴ A61K *31/47;* C07D *401/04*

U.S. Cl. 514—307 **9 Claims**

1. A compound of the formula:



or a pharmaceutically acceptable salt thereof, wherein one of R^1 and R^2 is methoxy and the other of R^1 and R^2 is hydroxy, —$OCO(C_1–C_4$ alkyl), —OCOPh or —$OCOCH_2Ph$ where Ph is phenyl optionally substituted with up to two substituents each independently selected from halogen, trifluoromethyl, $C_1–C_4$ alkyl and $C_1–C_4$ alkoxy.

4,882,338

SUBSTITUTED ISOQUINOLINE DERIVATIVES AND ANTI-ULCER AGENTS

Kentaro Hirai, Kyoto, and Yukio Mizushima, Osaka, both of Japan, assignors to Shinnogi & Co., Ltd., Osaka, Japan

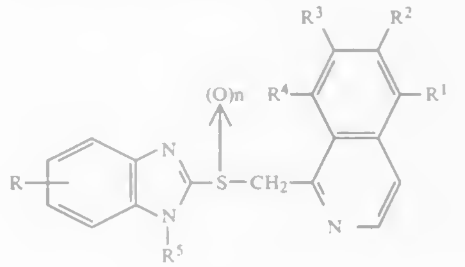
Filed Jul. 1, 1987, Ser. No. 68,934

Claims priority, applicatioo Japan, Jul. 1, 1986, 61-155412

Int. Cl.⁴ A61K *31/47;* C07D *401/12, 405/14*

U.S. Cl. 514—307 **21 Claims**

1. A compound of the formula:



(1)

(wherein R is hydrogen, hydroxy, methoxy, acetoxy, acetoxymethyl or trifluoromethyl;
R^1, R^2, R^3 and R^4 each is hydrogen, hydroxy, $C_1–C_5$ alkoxy which may be substituted by $C_3–C_6$ cycloalkyl or one or more halogens, acetoxy, propynyloxy, allyloxy or benzyloxy; or R^2 and R^3 taken together form methylenedioxy;
R^5 is hydrogen, hydroxymethyl, $C_2–C_4$ alkoxycarbonyl, $C_2–C_5$ acyloxymethyl or phthalidyl; and n is 0 or 1 except for the case in which R is methoxy and R^1, R^2, R^3, R^4 and R^5 each is hydrogen) or its pharmaceutically acceptable acid addition salt.

4. A method of treating a patient suffering from digestive ulcer which comprises administering to the patient a pharmaceutical composition according to claim 3.

4,882,339

4-AMINO-SUBSTITUTED 1,2-DIHYDROXYNAPHTHALENE DERIVATIVES USEFUL IN INHIBITING 5-LIPOXYGENASE ACTIVITY IN MAMMALS

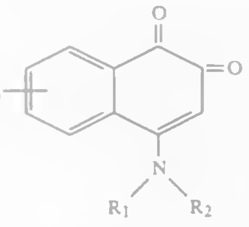
Jan W. F. Wasley, Chatham, N.J., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jul. 10, 1987, Ser. No. 71,956

Int. Cl.⁴ A61K *31/445*

U.S. Cl. 514—319 **11 Claims**

1. A method of inhibiting 5-lipoxygenase activity in mammals which comprises administering to a mammal in need thereof an effective 5-lipoxygenase inhibiting amount of a compound of the formula III



(III)

wherein R_1 represents unsubstituted or lower alkyl-substituted $C_3–C_7$-cycloalkyl, unsubstituted or lower alkyl substituted C_7- or C_8-bicycloalkyl, unsubstituted or lower alkyl-substituted adamantyl, 4-piperidinyl or N-lower alkyl or aryl-lower alkyl-substituted piperidinyl, 1- or 2-indanyl, 1- or 2-tetrahydronaphthyl, 1- or 2-perhydroindanyl, 1- or 2-perhydronaphthyl; R_2 represents hydrogen, lower alkyl, $C_3–C_7$-cycloalkyl, aryl-lower alkyl, $C_3–C_7$-cycloalkyl-lower alkyl, lower alkanoyl or aryl-lower alkanoyl; R_3 represents hydrogen, lower

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alkyl, halogen or lower alkoxy; aryl in the above definitions represents phenyl or phenyl mono- or di-substituted by one or two radicals selected from lower alkyl, lower alkoxy, halogen, cyano and trifluoromethyl, or aryl represents 1- or 2-naphthyl; or a pharmaceutically acceptable acid-addition salt of any said basic compound of formula III; or of a pharmaceutical composition comprising any said compound in combination with one or more pharmaceutically acceptable carriers.

4,882,340

BENZOFURAN DERIVATIVE AND PROCESSES FOR PREPARING THE SAME

Ikuo Iijima, Urawa; Masakatsu Ozeki, Wako; Yutaka Saiga, Ageo; Tohru Ishizuka, Kitamoto, and Kunio Nosaka, Kasukabe, all of Japan, assignors to Tanabe Seiyaku Co., Ltd., Osaka, Japan

Filed Sep. 2, 1988, Ser. No. 239,754

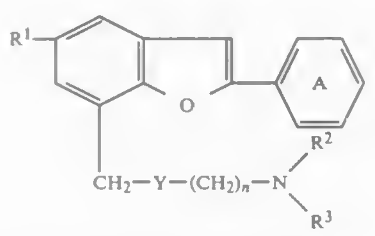
Claims priority, application Japan, Sep. 4, 1987, 62-222754

Int. Cl.^{4} C07D *307/78, 405/2;* A61K *31/34, 31/445*

U.S. Cl. 514—320 8 Claims

1. A benzofuran derivative of the formula:

(I)



wherein R^1 is hydrogen atom, a lower alkoxy group or a halogen atom, one of R^2 and R^3 is a lower alkyl group and the other is a lower alkyl group or a phenyl-lower alkyl group, or R^2 and R^3 combine together with adjacent nitrogen atom to form a pyrrolidino group, piperidino group or morpholine group, Ring A is a phenyl group or a phenyl group substituted with a lower alkyl group, a lower alkoxy group or a halogen atom, Y is oxygen atom or sulfur atom and n is an integer of 2 or 3, or a pharmaceutically acceptable salt thereof.

4,882,341

AMINO SUBSTITUTED PROPENOATES AND THEIR USE AS FUNGICIDES

John M. Clough, High Wycombe, and Ian T. Kay, Wokingham, both of England, assignors to Imperial Chemical Industries PLC, London, England

Continuation of Ser. No. 785,851, Oct. 9, 1985, abandoned. This application Sep. 9, 1988, Ser. No. 243,146

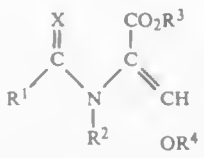
Claims priority, application United Kingdom, Oct. 19, 1984, 8426472; May 23, 1985, 8513105

Int. Cl.^{4} A61K *31/44, 31/335, 31/38, 31/21;* C07D *213/00, 413/00, 333/22, 307/02;* C07C *101/02, 101/44, 69/74, 101/30*

U.S. Cl. 514—332 9 Claims

1. Compounds having the formula (I):

(I)



and stereoisomers thereof, wherein X is an oxygen or a sulphur atom and R^1, R^2, R^3 and R^4, which may be the same or different, are alkyl; haloalkyl; cycloalkyl; cycloalkylalkyl; alkenyl which can be substituted by alkyl, cycloalkyl, alkenyl itself substituted by phenyl, naphthyl, phenyl or an aromatic heterocyclic group in which the phenyl and aromatic heterocyclic groups can be substituted by fluorine, chlorine, bromine, nitro, C_{1-4} alkyl, C_{1-4} alkoxy, methoxycarbonyl, carboxyl, acetyl or nitrile; alkynyl which can be substituted by phenyl; phenyl or naphthyl which can be substituted by chlorine or methoxy; benzyl; phenethyl or phenoxymethyl.

6. A process for combating fungi which comprises applying to a plant, to seed of a plant, or to the locus of a plant or seed, a fungicidally effective amount of a compound according to claim 1.

4,882,342

5-ALKYLBENZIMIDAZOLES, METHOD OF USE AND PHARMACEUTICAL COMPOSITIONS

Wolfgang von der Saal, Weinheim; Jens-Peter Hölck, Mannheim; Alfred Mertens, Schriesheim; Bernd Müller-Beckmann, Grünstadt, and Lothar Kling, Mannheim, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Fed. Rep. of Germany

Filed Oct. 6, 1987, Ser. No. 106,413

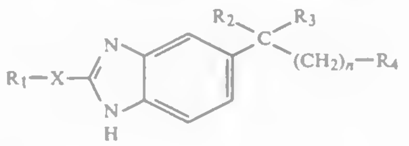
Claims priority, application Fed. Rep. of Germany, Oct. 7, 1986, 3634066

Int. Cl.^{4} C07D *401/04, 401/12;* A61K *31/415*

U.S. Cl. 514—338 17 Claims

1. A 5-alkylbenzimidazole of the formula:

I



wherein

- R_1 is a heterocyclic six-membered pyridyl or N-oxypyridyl ring optionally substituted by C_1–C_6 alkyl, C_1–C_6 alkoxy, C_1–C_6 alkylthio, hydroxyl, nitro, amino, halogen or cyano;
- R_2 and R_3, which can be the same or different, are hydrogen or C_1–C_6 alkyl or R_2 and R_3, together with the carbon atom to which they are attached, represent a C_3–C_7 carbocyclic ring;
- R_4 is cyano, aminocarbonyl, alkylaminocarbonyl, dialkylaminocarbonyl, hydrazinocarbonyl or amino wherein the hydrazinocarbonyl or the amino group may be substituted by a formyl, alkylcarbonyl, trifluoromethylcarbonyl, alkylsulphonyl, trifluoromethylsulphonyl, phenylsulphonyl, alkylaminocarbonyl or dialkylaminocarbonyl, wherein the alkyl moieties comprise up to 6 carbons;
- X is a valency bond, C_1–C_4 alkylene, vinylene or imino group —NH— or carbonylamino group —CONH—; and
- n is 0 or 1 to 5;

or the tautomer thereof or a physiologically acceptable salt thereof with an inorganic and organic acid.

4,882,343

BIARYLALKYLIMIDAZOLE DERIVATIVES AS ANTI-DEPRESSANTS

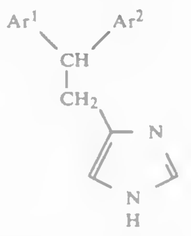
Alex A. Cordi, St. Louis, Mo., and Hugo J. Gorissen, Grez-Doiceau, Belgium, assignors to G. D. Searle & Co., Chicago, Ill.

Filed Aug. 28, 1987, Ser. No. 90,890

Int. Cl.^{4} A61K *31/44;* C07D *401/06*

U.S. Cl. 514—341 22 Claims

11. A method for treatment of depressive or degenerative diseases of the central nervous system, said method comprising administrating to a patient an effective dose of a compound of Formula 1:



or a tautomer thereof;

- wherein each of Ar^1 and Ar^2 independently represents an aromatic heterocyclic group selected from a furan group, a thiophene group, a pyrrole group, an N-alkyl-pyrrole group, an N-phenyl-pyrrole group, an imidazole group and a pyridyl group, any one of which groups may be unsubstituted or substituted by one or two linear or branched alkyl or alkoxy groups having one to three carbon atoms;
- and wherein at least one of Ar^1 and Ar^2, but not both, may represent a phenyl group or a phenyl group substituted by one or two groups selected from halogen atoms comprising fluorine, chlorine and bromine atoms, trifluoromethyl groups and linear or branched alkyl or alkoxy groups having one to three carbon atoms;
- with the proviso that at least one of Ar^1 and Ar^2 groups represents an aromatic heterocyclic group as defined above;
- or the corresponding optically pure isomers thereof or a racemic or non-racemic mixture of said isomers, or a non-toxic acid addition salt thereof formed with a pharmaceutically acceptable acid.

4,882,344

PYRIDYLMETHYL-4-THIAZOLINES

Kozo Shiokawa, Kawasaki; Shinichi Tsuboi; Shoko Sasaki, both of Hino; Koichi Moriya, Tokyo; Yumi Hattori, and Katsuhiko Shibuya, both of Hachioji, all of Japan, assignors to Nihon Tokushu Noyaku Seizo K.K., Tokyo, Japan

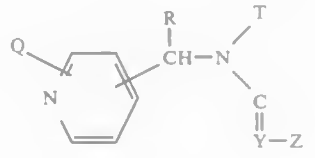
Division of Ser. No. 88,932, Aug. 24, 1987, Pat. No. 4,803,277. This application Sep. 13, 1988, Ser. No. 243,545

Claims priority, application Japan, Oct. 9, 1986, 61-211753

Int. Cl.^{4} C07D *417/06;* A61K *31/44*

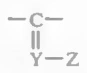
U.S. Cl. 514—342 4 Claims

1. A heterocyclic compound of the formula



wherein

- Q is at least one substituent selected from halogen atoms, C_1–C_4 alkyl groups optionally substituted by halogen, C_1–C_4 alkoxy groups optionally substituted by halogen, C_2–C_4 alkenyl groups optionally substituted by halogen, C_1–C_4 alkylsulfinyl groups, C_1–C_4 alkylsulfonyl groups and C_3–C_4 alkynyl groups,
- R represents a hydrogen atom or a methyl group,
- Y represents =N— or =CH—,
- Z represents a nitro group or a cyano group, and
- T represents —CH=CH—S—, wherein the S is attached to



$$-\underset{\underset{Y-Z}{\|}}{C}-$$

said 5-membered unsaturated heterocyclic ring being optionally substituted by at least one of halogen atoms and C_1–C_4 alkyl groups optionally substituted by halogen.

4,882,345

USE OF A COMPOUND FOR THE TREATMENT OF SCHIZOPHRENIA

Claude Gueremy, Houilles; Francoise Maillard, La Celle Saint Cloud, and Bruno Musch, Paris, all of France, assignors to Rhone-Poulenc Sante, Antony, France

Filed Aug. 22, 1988, Ser. No. 234,602

Claims priority, application France, Aug. 25, 1987, 87 11882

Int. Cl.^{4} A61K *31/425*

U.S. Cl. 514—367 4 Claims

1. Method of treatment of schizophrenia comprising administering to a subject suffering therefrom or liable thereto an effective amount of 2-amino-6-(trifluoromethoxy)-benzothiazole or pharmaceutically acceptable salt thereof.

4,882,346

CHEMICAL DIFFERENTIATING AGENTS

John S. Driscoll, Rockville; Alberto Haces, Frederick, and Theodore Breitman, Rockville, all of Md., assignors to The United States of America as reprsented by the Department of Health and Human Services, Washington, D.C.

Filed Jun. 16, 1987, Ser. No. 62,422

Int. Cl.^{4} A61K *31/415*

U.S. Cl. 514—389 4 Claims

1. A method for causing malignant cells to differentiate to a less malignant phenotype comprising treating said malignant cells with an effective amount of a pharmaceutical composition comprising an effective amount of 3,3'-(1,6-hexanediyl)-bis([5,5-dimethyl-2,4-imidazolinedione] in a pharmaceutical acceptable carrier.

4,882,347

"N-IMIDAZOLYL DERIVATIVES OF BICYCLIC COMPOUNDS AND PHARMACEUTICAL COMPOSITIONS CONTAINING THE SAME"

Paolo Cozzi, Milan; Corrado Ferti, Barlassina; Patricia Salvati, Arese; Germano Carganico, and Antonio Pillan, both of Milan, all of Italy, assignors to Farmitalia Carlo Erba, S.r.l., Milan, Italy

Filed Jun. 2, 1988, Ser. No. 201,909

Claims priority, application United Kingdom, Jun. 3, 1987, 8712994; Jun. 3, 1987, 8712995

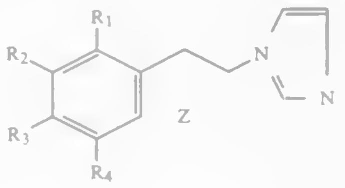
Int. Cl.^{4} A61K *31/415*

U.S. Cl. 514—396 5 Claims

1. A method of treating nephropathies in mammals, said nephropathies being selected from the group consisting of glumerulonephritis, nephropathy secondary to lupus erithematosus, and hyperlipidaemias secondary to nephrotic syndrome, which comprises administering to said mammals an effective amount of a pharmaceutical composition comprising:

(a) a therapeutically effective amount of a compound of the formula (I):

(I)



wherein

(I) —Z— is:

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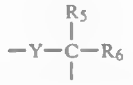
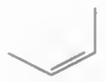


$$-Y-\overset{\overset{\displaystyle R_5}{|}}{\underset{|}{C}}-R_6$$

wherein Y completes a single bond or is oxygen or a —CH_2— group and the symbol:

—

represents a single or a double bond, or
(II) —Z— is:



and the symbol:

—

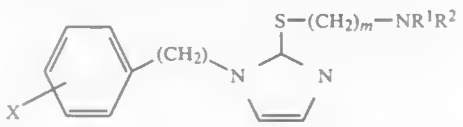
represents a double bond; one of R_1, R_2, R_3, R_4 is —CH_2OH, C_2-C_4 acyl, —$CONR_7R_8$, —$COOR_7$, —CH_2—$COOR_7$, —$CH_2CONR_7R_8$, —$CH{=}C(R_7)$—$COOR_8$ or —$CH{=}C(R_9)$—$CONR_7R_8$ in which each of R_7, R_8 and R_9 is independently hydrogen or C_1-C_4 alkyl and the others are independently selected from the group consisting of hydrogen, hydroxy, halogen, C_1-C_4 alkyl, C_1-C_4 alkoxy and —$COOR_7$, wherein R_7 is as defined above, and one of R_5 and R_6 is hydrogen and the other is hydrogen, C_1-C_6 alkyl or phenyl; and
(b) a pharmaceutically acceptable carrier.

4,882,348
2-(AMINOALKYLTHIO)IMIDAZOLES AS DOPAMINE-β-HYDROXYLASE INHIBITORS

Lawrence I. Kruse, Tewin, England; Stephen T. Ross, Berwyn, and Eliot H. Ohlstein, Plymouth Valley, both of Pa., assignors to SmithKline Beckman Corporation, Philadelphia, Pa.
Filed Dec. 29, 1987, Ser. No. 139,217
Int. Cl.⁴ A61K ***31/415;*** **C07D** ***233/84***

U.S. Cl. 514—398 9 Claims

1. Compound of the formula:



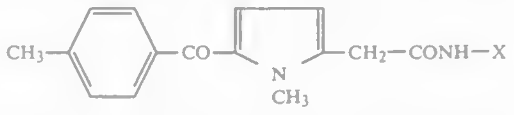
in which:
- X is H. F, Cl, Br. I, C_{1-4}alkyl, CN, NO_2, SO_2NH_2, COOH, OH, CHO, C_{1-4}alkoxy, CH_2OH, CH_2OC_{l-4}alkyl, CF_3, C_2F_5, C_3F_7, SO_2CH_3, SO_2CF_3, or $CO_2C_aH_{2a+1}$wherein a is 1-5, **or any accessible combination thereof of up to 5** substituents;
- n is 1-5;
- m is 2-5; and
- R^1 and R^2 are H or a pharmaceutically acceptable salt or hydrate thereof.

4,882,349
PYRROLACETIC AMIDES HAVING ANTIINFLAMMATORY ACTIVITY

Alessandro Baglioni, Rome, Italy, assignor to Sigma-Tau Industrie Farmaceutiche Riunite S.p.A, Rome, Italy
Division of Ser. No. 467,308, Feb. 17, 1983, abandoned. This application Feb. 11, 1985, Ser. No. 700,059
Claims priority, application Italy, Feb. 26, 1982, 47881 A/82
Int. Cl.⁴ A61K ***31/40;*** **C07D** ***207/323***

U.S. Cl. 514—423 11 Claims

6. A method of treating a patient in need of an analgesic, an anti-inflammatory or anti-pyretic comprising administering to the patient a pharmaceutical composition comprising a therapeutically effective amount of a compound of the formula:



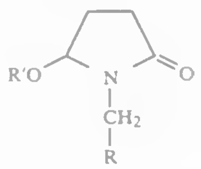
wherein X is selected from the group consisting of $CH_2COOC_2H_5$, CH_2COOH, CH_2CH_2SH and $CH(CH_2SH)COOCH_3$ and a pharmaceutically acceptable salt thereof.

4,882,350
DERIVATIVES OF 1-BENZYL-2-OXO-5-ALKOXY-PYRROLIDINE, AND MEDICAMENT COMPOSITIONS CONTAINING THEM

Emilio Toja; Carlo Gorini, both of Milan; Fernando Barzaghi, and Giulio Galliani, both of Monza, all of Italy, assignors to Roussel Uclaf, Paris, France
Filed Jun. 24, 1988, Ser. No. 211,288
Claims priority, application Italy, Jun. 25, 1987, 21046 A/87
Int. Cl.⁴ A61K ***31/40;*** **C07D** ***207/27***

U.S. Cl. 514—425 7 Claims

1. Compounds of the formula (I):



(1)

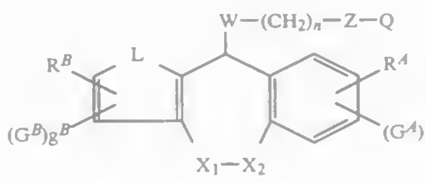
in which R' represents hydrogen, linear, branched or cyclic alkyl containing up to 12 carbon atoms, alkenyl containing from 2 to 8 carbon atoms, acetyl, propionyl, butynyl or aralkyl containing from 7 to 15 carbon atoms and R represents phenyl, possibly substituted by one or more substituents selected from the group consisting of a free, esterified or etherified hydroxy radical in which the ester or ether part contains from 1 to 18 carbon atoms, the ketone and oxime functions, a linear, branched or cyclic, alkyl or alkenyl having up to 18 carbon atoms, halogen atoms, CF_3, SCF_3, OCF_3, NO_2, NH_2, C≡N, phenyl, or alkoxycarbonyl containing from 2 to 8 carbon atoms and alkyl-sulphonyl containing from 1 to 6 carbon atoms, provided that if R is unsubstituted phenyl, R' does not represent methyl or ethyl.

4,882,351
TRICYCLIC COMPOUNDS

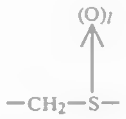
Etsuo Oshima, Shizuoka; Hiroyuki Obase, Mishima; Akira Karasawa; Kazuhiro Kubo, both of Shizuoka; Ichiro Miki, Wakabayashi, and Akio Ishii, Shizuoka, all of Japan, assignors to Roussel Uclaf, Paris, France
Filed Oct. 11, 1988, Ser. No. 255,485
Claims priority, application Japan, Oct. 14, 1987, 62-259145
Int. Cl.⁴ A61K ***31/335, 31/38;*** **C07D** ***313/12, 337/12***

U.S. Cl. 514—431 12 Claims

1. A tricycle compound represented by formula:



wherein X_1-X_2 represents —CH_2O or



$$-CH_2-\overset{\overset{\displaystyle (O)_l}{\uparrow}}{S}-$$

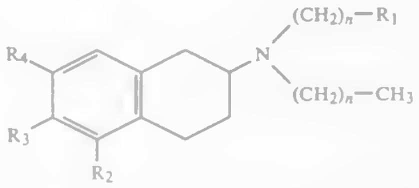
(wherein l represents 0, 1 or 2);
- L represents —CH=CH— or —S—;
- . . . . represents single bond or double bond;
- W represents —S—, —O—, —NH—, —CH_2—, —NHCO— or =CH— (wherein the left side of each formula is bound to the tricycle nucleus);
- n is 0, 1, 2 or 3;
- Z represents —NR^1CO—, —NR^1SO_2—, —NR^1CONH—, —NR^1CSNH—, —$NR^1NHCONH$—, —$NR^1NHCSNH$—, —NR^1COO— or —NR^1COS— (wherein R^1 represents hydrogen or lower alkyl, in which the right side of each formula is bound to Q);
- Q represents straight or branched alkyl having 1 to 18 carbon atoms, alicyclic alkyl having 3 to 6 carbon atoms, lower alkenyl having 2 to 6 carbon atoms, or optionally substituted aryl, optionally substituted aralkyl, optionally substituted aralkenyl, optionally substituted furyl or thienyl, or coumarinyl; wherein the substitution means 1 to 3 substituents on the aromatic ring and the substituents are independently selected from lower alkyl, phenyl, benzyl, halogen, trifluoromethyl, nitro, OR^2 and SR^2 (wherein R^2 represents hydrogen, lower alkyl, phenyl or benzyl);
- one of R^A and R^B represents hydrogen and the other represents —Y—M wherein Y represents single bond, —CR^3R^4—$(CH_2)_m$— or —$CR^3{=}CR^4$—$(CH_2)_m$)— (wherein each of R^3 and R^4 independently represents hydrogen or lower alkyl and m represents 0, 1, 2, 3 or 4, in which the left side of each formula is bound to the mother nucleus); M represents —$COOR^5$ (wherein R^5 represents hydrogen or lower alkyl), —$CONR^{5a}R^{5b}$ (wherein each of R^{5a} and R^{5b} independently has the same significance as previously described for R^5);
- each of G^A and G^B independently represents lower alkyl, halogen or OR^6 (wherein R^6 represents hydrogen, lower alkyl, phenyl or benzyl);
- each of g^A and g^B independently represents 0, 1, 2 or 3; or a pharmaceutically acceptable salt thereof.

4,882,352
METHOD FOR TREATING SCHIZOPHRENIA

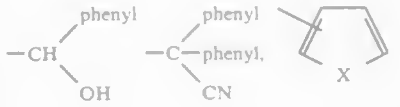
Alan S. Horn, Noordorn, Netherlands, assignor to Nelson Research & Development Co., Irvine, Calif.
Continuation-in-part of Ser. No. 891,223, Jul. 28, 1986, and a continuation-in-part of Ser. No. 891,262, Jul. 28, 1986, Pat. No. 4,743,618, which is a continuation-in-part of Ser. No. 811,768, Dec. 20, 1985, Pat. No. 4,657,925, which is a continuation-in-part of Ser. No. 640,685, Aug. 13, 1984, Pat. No. 4,564,628, which is a continuation-in-part of Ser. No. 455,144, Jan. 3, 1983, abandoned. This application May 8, 1987, Ser. No. 47,882
The portion of the term of **this patent subsequent** to Jan. 14, 2003, **has been disclaimed.**
Int. Cl.⁴ A61K *31/38, 31/34, 31/42, 31/45*

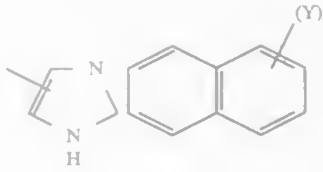
U.S. Cl. 514—438 31 Claims

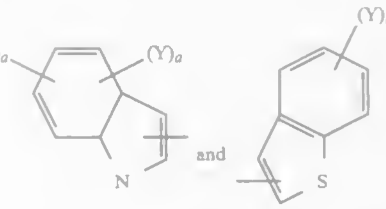
1. A method for treating the symptoms of schizophrenia comprising activating the presynaptic D_2 dopamine receptors without substantially activating the postsynaptic receptors by administering to a schizophrenic an effective amount of a compound consisting essentially of the dextro (plus) isomers of compounds selected from the group represented by the general formula:



wherein R_1 is selected from the group consisting of phenyl, pyridyl







X is oxygen or sulfur, Y, if present, is selected from the group consisting of hydroxy, nitro, cyano, azido, amino, acylamino, carboxyamido, trifluoromethyl, sulfate, sulfonamido, halogen, hydrocarbyl and hetero atom-substituted hydrocarbyl radicals, wherein said heteroatoms are selected from the group consisting of halogen, nitrogen, oxygen, sulfur and phosphorus and said hydrocarbyl radicals comprise from 1 to 12 carbon atoms, and a is an integer between zero and 3,
- R_2, R_3 and R_4 are each selected from the group consisting of H and OA, A is H or is selected from the group consisting of hydrocarbyl radicals, or

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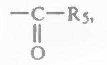


$$-\overset{\displaystyle O}{\underset{}{}}\!\!\!\!\!\! \quad -\underset{\underset{\displaystyle O}{\|}}{C}-R_5,$$

R_5 is selected from the group consisting of hydrocarbyl radicals and n is 2 or 3; with the proviso that at least one of R_2, R_3 and R_4 is H, that at least one of R_2, R_3 and R_4 is not H and that R_2 and R_4 are not both OA

4,882,353
CHROMAN DERIVATIVES FOR COMBATING THROMBOSIS AND ASTHMA

Ulrich Niewöhner, Wermelskirchen; Franz-Peter Hoever, Cologne; Folker Lieb, Leverkusen; Hermann Oediger, Cologne; Ulrich Rosentreter, Wuppertal; Horst Bösbagen, Haan; Elisabeth Perzborn, Wuppertal; Volker-Bernd Fiedler, Leverkusen, and Friedel Seuter, Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

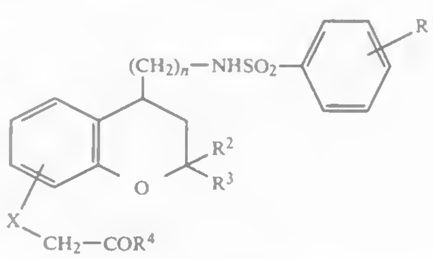
Filed Oct. 26, 1988, Ser. No. 263,143

Claims priority, application Fed. Rep. of Germany, Nov. 3, 1987, 3737195

Int. Cl.⁴ A61K *31/35;* C07D *311/04*

U.S. Cl. 514—456 **11 Claims**

1. A chroman derivative of the formula



(I)

ın which p1 R^1 stands for hydrogen, halogen, alkyl, hydroxyl, alkoxy, trifluoromethyl or cyano,

R^2 and R^3 are identical or different and stand for hydrogen, alkyl, cycloalkyl or aryl,

R^4 stands for hydroxyl, alkoxy, aryloxy, aralkoxy or for a group of the formula $—NR^5R^6$,where

R^5 and R^6 are identical or different and in each case denote hydrogen, alkyl, aryl or aralkyl,

X denotes a direct bond or an oxygen or sulphur atom, NH or N-alkyl, and

n denotes 0 or 1,

or a physiologically tolerable salt thereof.

7. A thrombocyte aggregation-inhibiting, vasodilating and bronchodilating composition comprising an amount effective therefor of a compound or salt thereof according to claim 1 and a physiologically tolerable diluent.

4,882,354
N-HYDROXY-5-PHENYL-2-FURANCARBOXIMIDAMIDES USEFUL AS CARDIOTONIC AGENTS

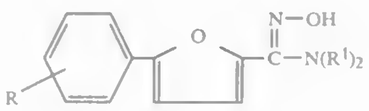
Chau-Ting Huang; Stanford S. Pelosi, Jr., and Allan V. Bayless, all of Norwich, N.Y., assignors to Norwich Eaton Pharmaceuticals, Inc., Norwich, N.Y.

Filed Dec. 16, 1987, Ser. No. 133,577

Int. Cl.⁴ C07D *307/66*

U.S. Cl. 514—461 **9 Claims**

1. A method for increasing the contractile force of cardiac muscle of a mammal which comprises systemically administering to said mammal an effective amount of a composition comprising a compound conforming to the following chemical structure:



wherein

R is nil or mono-, di- or tri-substituents comprising 2-halo, 3-halo, 4-halo, 3-trifluoromethyl, 4-trifluoromethyl, 3-methyl, 3-ethyl, 3-methoxy, 3-ethoxy, 3-methoxycarbonyl, 4-methoxycarbonyl, 3-ethoxycarbonyl or 4-ethoxycarbonyl; each R^1 is independently selected from hydrogen or lower alkyl; or pharmaceutically acceptable salts and hydrates thereof.

4,882,355
NOVEL DIETHANOLAMINE TRIACTIC ACID TRIAMIDES AND METHODS FOR IMPROVING FEED UTILIZATION AND LACTATION IN RUMINANT ANIMALS

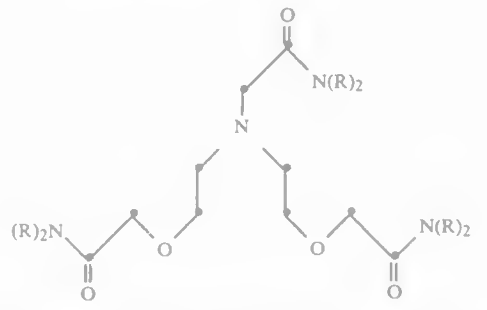
Alan W. White, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 81,064, Aug. 3, 1987, Pat. No. 4,800,213. This application Oct. 25, 1988, Ser. No. 262,375

Int. Cl.⁴ A61K *31/16;* C07C *103/50*

U.S. Cl. 514—616 **7 Claims**

1. A method for improving lactation in lactating ruminants which comprises administering to said lactating ruminants a lactation improving amount of one or more compounds of the formula:



wherein each R may be the same or different and represents a straight or branches chain alkyl group of one to six carbon atoms,

or the physiologically acceptable salts thereof.

4,882,356
STABLE INJECTABLE ANTIEMETIC COMPOSITIONS

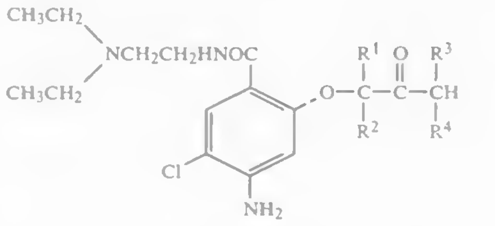
Munir N. Nassar, 5100 Highbridge St., #51F; Shreeram N. Agharkar, 7290 Wakefield Dr., both of Fayetteville, N.Y. 13066, and Joseph B. Bogardus, 8239 Penstock Way, Manlius, N.Y. 13104

Filed Mar. 10, 1987, Ser. No. 19,733

Int. Cl.⁴ A61K *31/165*

U.S. Cl. 514—619 **12 Claims**

1. A method for inhibiting degradation via an intramolecular cyclization reaction of an arithmetic compound of the formula



I

wherein R^1, R^2 and R^3 each are independently hydrogen or methyl, and R^4 is hydrogen, a straight or branched chain alkyl group containing from 1 to 4 carbon atoms or, when R^3 is hydrogen, R^4 may be phenyl, or a non-toxic, pharmaceutically acceptable acid addition salt thereof, which comprises mixing an aqueous solution of a therapeutically effective amount from about 0.1% to about 5% (w/v) of said compound with a stabilizing agent which is a pharmaceutically acceptable water-miscible hydroxylic organic solvent in an amount of from about 5% to about 75% (w/v) or a water-soluble polyhydric alcohol in an amount of from about 5% to about 35% (w/v).

4,882,357
NOVEL
N-(SUBSTITUTED-PHENYL)-5-(SUBSTITUTED-2,5-DIMETHYLPHENOXY)-2,2-DIMETHYLPENTANAMIDES

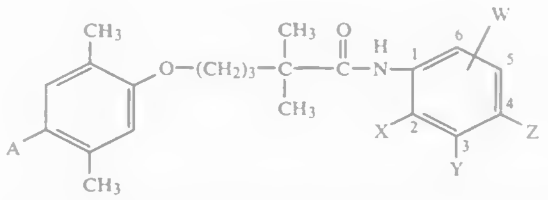
Paul L. Creger; Milton L. Hoefle, both of Ann Arbor, and Ann Holmes, Dexter, all of Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Jul. 15, 1988, Ser. No. 219,964

Int. Cl.⁴ A61K *31/165;* C07C *103/22*

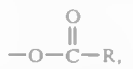
U.S. Cl. 514—622 **12 Claims**

1. A compound of Formula I



I

or a pharmaceutically acceptable acid addition salt thereof, wherein A is hydrogen, hydroxy, alkoxy of from one to six carbon atoms or



$$-O-\overset{\overset{\displaystyle O}{\|}}{C}-R,$$

in which R is an alkyl group of from one to six-carbon atoms; X and Y are each independently hydrogen, fluorine, nitro, $—NH_2$, NHR, in which R is as defined above, —NRR, in which R is as defined above, alkyl of from one to six carbon atoms, or alkoxy from one to six carbon atoms which may be substituted at the terminal carbon atom by $—CO_2R$, in which R is as defined above; Z and W are each independently hydrogen, fluorine, alkyl of from one to six carbon atoms, or alkoxy of from one to six carbon atoms which may be substituted at the terminal carbon atom by $—CO_2R$, in which R is as defined above, and at least one of X, Y, Z or W is not hydrogen.

4,882,358
CARBOCYCLIC DERIVATIVES

Kenneth W. Bair, Chapel Hill, N.C., assignor to Burroughs Wellcome Co., Research Triangle Park, N.C.

Continuation-in-part of Ser. No. 801,060, Nov. 22, 1985, abandoned, which is a continuation-in-part of Ser. No. 673,531, Nov. 20, 1984, abandoned. This application May 12, 1987, Ser. No. 48,763

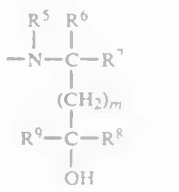
Int. Cl.⁴ A61K *31/015*

U.S. Cl. 514—654 **2 Claims**

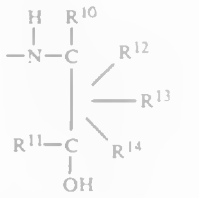
1. A method for reducing the number of cells of a solid or ascitic tumor susceptible to such reduction in a mammal bearing said tumor comprising the administration of an effective tumor cell number reducing amount of a compound of formula (I)

$$ArCH_2R^1 \qquad (I)$$

or a monomethyl or monoethyl ether thereof (the compound of formula (I) including these ethers may contain no more than 30 carbon atoms in total); acid addition salts thereof; wherein Ar naphthacenyl optionally substituted by one or two substituents, the substituents contain not more than four carbon atoms in total when taken together being the same or different and are selected from halogen; cyano; C_{1-4} alkyl or C_{1-4} alkoxy, each optionally substituted by hydroxy or C_{1-2} alkoxy; halogen-substituted C_{1-2} alkyl or C_{1-2} alkoxy; a group $S(O)_nR^2$ wherein n is an integer 0, 1 or 2 and R^2 is C_{1-2} alkyl optionally substituted by hydroxy or C_{1-2} alkoxy; or the ring system is optionally substituted by a group NR^3R^4 containing not more than 5 carbon atoms wherein R^3 and R^4 are the same or different and each is a C_{1-3} alkyl group or NR^3R^4 forms a five- or six-membered heterocyclic ring optionally containing one or two additional heteroatoms; R^1 contains not more than eight carbon atoms and is a group



or



wherein

m is 0 or 1;

R^5 is hydrogen;

R^6 and R^7 are the same or different and each is hydrogen or C_{1-5} alkyl optionally substituted by hydroxy;

R^8 and R^9 are the same or different and each is hydrogen or C_{1-3} alkyl;

—C—C— is five- or six-membered saturated carbocyclic ring;

R_{10} is hydrogen, methyl or hydroxymethyl;

R^{11}, R^{12} and R^{13} are the same or different and each is hydrogen or methyl;

R^{14} is hydrogen, methyl, hydroxy, or hydroxymethyl.

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4,882,359

AZACYCLOALKANE DERIVATIVES, ABSORPTION PROMOTERS CONTAINING THE DERIVATIVES AS THE EFFECTIVE INGREDIENT AND EXTERNAL PREPARATIONS CONTAINING THE ABSORPTION PROMOTERS

Akira Nakagawa, Tosu, and Michinori Sakai, Mizuma, both of Japan, assignors to Hisamitsu Pharmaceutical Co., Ltd., Tosu, Japan

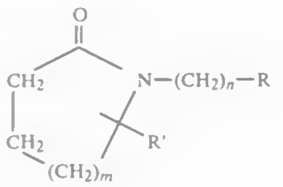
Filed Nov. 18, 1987, Ser. No. 131,193

Claims priority, application Japan, Apr. 8, 1986, 61-79174; PCT Int'l Appl., Feb. 10, 1987, PCT/JP87/00086

Int. Cl.^{4} A61K *31/40, 31/395, 47/00*

U.S. Cl. 514—947 10 Claims

8. An external preparation for application to live body membranes, comprising a pharmaceutially-active agent and an absorption promoting agent comprising 0.001–25% of at least one member as the effective ingredient for promoting absorption, selected from azacycloalkane derivatives represented by the following general formula (I)



(I)

wherein R is —SR" in which R" is alkyl of 1–15 carbon atoms or —OR" in which R" is alkyl of 1–15 carbon atoms, R' is hydrogen, alkyl or an alkyloxycarbonyl having 1–12 carbon atoms, m is 1 or 3 and n is an integer of 2–8 or 3–10 with the proviso that m is 1 or 3 respectively and inert excipients.

4,882,360

PROCESS FOR PRODUCING ALCOHOLS FROM SYNTHESIS GAS

Rex R. Stevens, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 903,878, Sep. 3, 1986, Pat. No. 4,752,622, which is a continuation of Ser. No. 636,000, Jul. 30, 1984, abandoned. This application Jun. 6, 1988, Ser. No. 202,755

The portion of the term of this patent subsequent to Jun. 21, 2005, has been disclaimed.

Int. Cl.^{4} C07L *27/06*

U.S. Cl. 518—714 10 Claims

1. A process for making alcohols comprising contacting a mixture of hydrogen and carbon monoxide with a catalyst comprising:

(1) as a first component, molybdenum sulfide;

(2) as a second component, iron sulfide;

(3) as a third component, a promoter comprising an alkali or alkaline earth element in free or combined form,

said catalyst excluding rhodium, copper and ruthenium; at a pressure of at least about 500 psig and at conditions sufficient to form an alcohol fraction boiling in the range of motor gasoline in at least 50 percent CO_2 free carbon selectivity, said alcohol fraction containing a C_1 to C_{2-5} alcohol weight ratio of less than about 1:1.

4,882,361

PROCESS FOR THE PRODUCTION OF POLYURETHANE UREA ELASTOMERS

Andreas Ruckes; Gerhard Grögler, both of Leverkusen, and Richard Kopp, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Sep. 16, 1988, Ser. No. 245,846

Claims priority, application Fed. Rep. of Germany, Sep. 29, 1987, 3732726

Int. Cl.^{4} C08G *18/14*

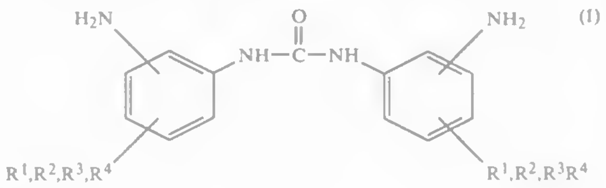
U.S. Cl. 521—51 14 Claims

1. A process for the production of a compact or cellular, elastomeric molding having a compact skin which comprises reacting as a one-shot system by the high-pressure or low-pressure reaction injection molding process

(a) an organic polyisocyanate,

(b) a polyhydroxyl or polyamine compound having a molecular weight of 600 to about 12,000 and containing at least two isocyanate-reactive hydrogen atoms and

(c) a chain-extending agent which comprises a diaminodiphenyl urea corresponding to the formula



(I)

wherein

R^1, R^2, R^3, and R^4 may be the same or different and represent hydrogen or a C_1–C_6-alkyl radical and

wherein the amino groups are in the m- and/or p-position to the urea group.

4,882,362

FOAMED MICROBEADS AND A PROCESS FOR THEIR PREPARATION

Norbert Weimann; Manfred Dahm; Ulrich Nehen, all of Leverkusen, and Walter Schäfer, Liechlingen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Division of Ser. No. 169,567, Mar. 17, 1988, Pat. No. 4,804,687. This application Oct. 7, 1988, Ser. No. 255,185

Claims priority, application Fed. Rep. of Germany, Mar. 31, 1987, 3710607

Int. Cl.^{4} C08V *9/22*

U.S. Cl. 521—54 9 Claims

1. Foamed microbeads with a shell and an encased core, in which

a. the shell is a crosslinking product of a polyamine and an NCO-containing carbodiimide,

b. the core is at least partly filled with a polymeric NCO-containing carbodiimide or its reaction product with a polyamine and

c. the foamed microbeads are self-supporting and are unladen.

4,882,363

PROCESS FOR THE PRODUCTION OF POLYURETHANE FOAM MOLDINGS

Alfred Neuhaus, Leverkusen; Otto Ganster, and Manfred Mengal, both of Odenthal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Dec. 6, 1988, Ser. No. 280,610

Claims priority, application Fed. Rep. of Germany, Dec. 11, 1987, 3742122

Int. Cl.^{4} C08J *9/00, 9/12*

U.S. Cl. 521—122 2 Claims

1. A process for the production of a fluorocarbon-free, rigid polyurethane foam molding having a gross density of at least 300 kg/m^3 by in-mold foaming a reaction mixture comprising

(a) a polyisocyanate component comprising at least one aromatic polyisocyanate,

(b) at least one organic polyhydroxyl compound having an (average) hydroxyl functionality of at least 2.2 and an average OH number of at least 300 mg KOH/g,

(c) a blowing agent comprising water and/or carbon dioxide,

(d) a catalyst for the reaction between isocyanates and hydroxyl groups and

(e) a zeolitic absorbent having a pore diameter of at least 0.7 nm.

4,882,364

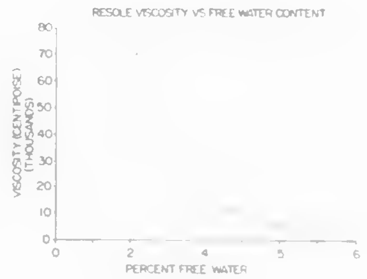
PROCESS FOR MANUFACTURING CLOSED CELL PHENOLIC FOAMS

Teresa M. Kyle, Burlington; Paul J. Meunier, and Edwin J. MacPherson, both of Sarnia, all of Canada, assignors to Fiberglas Canada Inc., Ontario, Canada

Continuation-in-part of Ser. No. 90,339, Aug. 28, 1987, abandoned. This application Apr. 25, 1988, Ser. No. 185,386

Int. Cl.^{4} C08J *9/14*

U.S. Cl. 521—136 10 Claims



1. A process for producing a closed cell phenolic foam comprising the step of mixing to form a foaming composition:

(a) a phenol formaldehyde resole resin having substantially no free formaldehyde and having a water content of 4 to 8% and a viscosity of approximately 2,000 cps to 12,000 cps at 40° C.;

(b) a surfactant comprising an ethylene oxide-propylene oxide block copolymer capable of forming a gel with the foaming composition;

(c) a catalyst; and

(d) a blowing agent;

and curing the resulting foam.

4,882,365

POLYMERIZABLE RADIOPAQUE DENTAL COMPOSITION

Oswald Gasser, Seefeld, and Klaus Ellrich, Wörthsee, both of Fed. Rep. of Germany, assignors to ESPE Stiftung & Co. Produktions- und Vertriebs KG, Seefeld, Fed. Rep. of Germany

Division of Ser. No. 27,326, Mar. 18, 1987, Pat. No. 4,767,798. This application Aug. 11, 1988, Ser. No. 231,190

Claims priority, application Fed. Rep. of Germany, Mar. 18, 1986, 3609038

Int. Cl.^{4} C08K *3/10;* **A61K** *6/08*

U.S. Cl. 523—117 8 Claims

1. A polymerizable, radiopaque dental composition comprising:

at least one ethylenically unsaturated, polymerizable substance up to 50% by weight selected from the group consisting of monomers and polymers; and

a heavy-metal fluoride with very low solubility and 1030% by weight of the total composition selected from the group consisting of complex heavy-metal fluorides having the general formula $M^{II}M^{IV}F_6$, where M^{II} is selected from the group consisting of calcium, strontium, and barium ions, and M^{IV} is selected from the group consisting of titanium, zirconium, and hafnium ions.

4,882,366

ENHANCING COLOR STABILITY TO STERILIZING RADIATION OF POLYMER COMPOSITIONS

Linda H. Nelson, Evansville, Ind.; Roger W. Avakian, Brasschaat, Belgium, and Arnold Factor, Scotia, N.Y., assignors to General Electric Company, Pittsfield, Mass.

Division of Ser. No. 769,277, Aug. 26, 1985, abandoned, which is a continuation-in-part of Ser. No. 579,103, Feb. 10, 1984, abandoned. This application Dec. 22, 1987, Ser. No. 136,683

Int. Cl.^{4} C08K *5/21, 5/20*

U.S. Cl. 523—136 13 Claims

1. A medical article sufficiently irradiated to achieve sterilization, said article comprising an extruded admixture of (a) an aromatic carbonate polymer and (b) an effective amount of a stabilizing compound to inhibit yellowing upon sterilizing radiation exposure, wherein said compound is 2,2'-oxamide bis-(ethyl-3-(3,5-di-t- butyl-4-hydroxyphenyl)) propionate.

4,882,367

ARTICLES OF FILLED SYNTHETIC POLYMERIC MATERIALS AND GLASS BEAD FILLER THEREFORE

Pierre Laroche, Nalinnes, Belgium, assignor to Glaverbel, Brussels, Belgium

Division of Ser. No. 41,667, Apr. 20, 1987, Pat. No. 4,761,440, which is a continuation of Ser. No. 754,452, Jul. 11, 1985. This application Mar. 30, 1988, Ser. No. 175,286

Claims priority, application United Kingdom, Jul. 12, 1984, 8417740

Int. Cl.^{4} B32B *1/00;* **C08F** *9/04*

U.S. Cl. 523—212 14 Claims

1. A polymeric article comprising a synthetic polymer matrix and a filler material, the synthetic polymer matrix being comprised of a synthetic polymer selected from the group consisting of polyamides, polystyrene, epoxy resins, and polyester resins, and the filler material being comprised of glass beads bearing at least one coating in a total coating amount ranging from 0.02 up to 1% by weight based on the weight of uncoated glass beads, which at least one coating comprises at least one coating agent comprising at least one silicon-functional silane selected from the group consisting of alkyl-silanes and aryl silanes and which at least one coating limits adhesion between the glass beads and the synthetic polymer matrix, and confers an increased impact resistance on the article as compared with an article which includes uncoated glass beads as filler material but is otherwise identical.

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4,882,368

LOW COMPRESSION SET FLUOROSILICONE RUBBER

Janet L. Elias, Clareville, Australia; Chi-Long Lee, and Myron T. Maxson, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

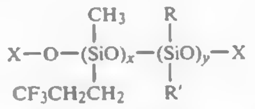
Filed Sep. 26, 1988, Ser. No. 249,055

Int. Cl.^{4} C08K *9/06*

U.S. Cl. 523—213 7 Claims

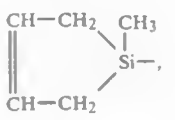
1. A fluorosilicone composition comprising

(A) 100 parts by weight of a polydiorganosiloxane having a general formula



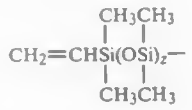
$$X-O-(\overset{CH_3}{\underset{CF_3CH_2CH_2}{SiO}})_x-(\overset{R}{\underset{R'}{SiO}})_y-X$$

in which x has a value of at least 800, y has a value of from 0 to 20 percent of the sum of x plus y, the sum of x and y is at least 1000, each R is methyl or phenyl, each R′ is vinyl or phenyl, where there is a maximum of 2 mol percent methylvinylsiloxane units in said polydiorganosiloxane, and each X is selected from the group consisting of hydrogen atom, methylphenylvinylsilyl, silyl of the formula



(I)

and a silyl group of the formula

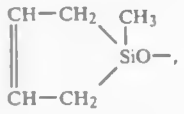


$$\overset{CH_3\,CH_3}{\underset{CH_3\,CH_3}{CH_2{=}CHSi(OSi)_z-}}$$

(II)

in which z has a value of from 0 to 10, at least 5 weight percent of the polydiorganosiloxane has endgroups which are endgroups of formula (I) or formula (11),

(B) 5 to 100 parts by weight of a reinforcing silica filler having a surface area of at least 100 m^2/g where the silica surface is hydrophobed as a result of being treated with symmetrical tetramethyldi(3,3,3-trifluoropropyl)disilazane, combinations of symmetrical tetramethyldivinyldisilazane and symmetrical tetramethyldi(3,3,3-trifluoropropyl)disilazane, or combinations of bis-Si-(1-methyl-1-silacyclopentenyl)amine and symmetrical tetramethyldi(3,3,3-trifluoropropyl)disilazane, such that the surface has siloxy units selected from the group consisting of dimethyl(3,3,3-trifluoropropyl)siloxy units, a combination of dimethyl(3,3,3-trifluoropropyl)siloxy units and dimethylvinylsiloxy units, and a combination of dimethyl(3,3,3-trifluoropropyl)siloxy units and units of the formula



where at least 80 mol percent of the siloxy units have at least one of the organic groups which is 3,3,3-trifluoropropyl, said siloxy units being present in amounts such that there is at least 2 parts by weight of silica per part by weight of siloxy unit, and

(C) a curing amount of a vinyl specific organic peroxide.

4,882,369

HIGH STRENGTH FLUOROSILICONE SEALANTS

Myron T. Maxson, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Apr. 15, 1988, Ser. No. 181,849

Int. Cl.^{4} C08K *9/06;* **C08L** *83/04*

U.S. Cl. 523—213 15 Claims

1. A method of producing a high strength, extrudable fluorosilicone sealant which cures upon exposure to moisture, said method comprising the steps of

(A) mixing

(i) from 30 to 50 parts by weight of hydroxyl endblocked fluorosilicone polymer of the formula $HO(RR'SiO)_nH$, where each R is individually a monovalent saturated or aromatic hydrocarbon radical containing from 1 to 20 carbon atoms, from 50 to 100 percent of the R′ radicals represent the radical $RfCh_2CH_2$— where Rf represents a perfluoroalkyl radical containing from 1 to 10 carbon atoms, any remaining R′ radicals being selected from the same group as R, and n represents an integer from 100 to 500,

(ii) from 15 to 50 parts by weight of a reinforcing silica having a surface area of greater than 50 m^2/g,

(iii) from 5 to 15 parts by weight of di(trifluoropropyl)tetramethyldisilazane, and

(iv) from 1.0 to 3.6 parts by weight of water, then

(B) heating the mixture to a temperature of from 150° to 175° C. for from ½ to 3 hours while mixing, under a nitrogen purge, then

(C) applying a vacuum to the heated mixture for a sufficient time to remove volatiles, then

(D) admixing 100, minus the parts of fluorosilicone polymer used in step (A), parts by weight of the fluorosilicone polymer of step A, then

(E) heating the devolatilized mixture to a temperature of from 150° to 175° C. for from ½ to 1 hour while mixing, then

(F) applying a vacuum to the heated mixture for a sufficient time to remove volatiles, and then cooling to room temperature, and then

(G) admixing, in the absence of moisture, a moisture activated curing system which reacts with the hydroxyl endblocked polymer, to give a fluorosilicone sealant containing an in situ treated filler, which sealant cures upon exposure to moisture to an elastomer having improved physical properties.

4,882,370

FIBER REINFORCED COMPOSITES WITH IMPROVED GLASS TRANSITION TEMPERATURES

Robert C. Jordan, and Gene B. Portelli, both of St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jan. 27, 1988, Ser. No. 149,101

Int. Cl.^{4} C08K *7/10, 7/04;* **C08L** *63/00*

U.S. Cl. 523—215 25 Claims

1. A fiber reinforced composite structure having when cured a glass transition temperature greater than 150° C comprised of:

(a) reinforcing fiber and

(b) a curable epoxy resin composition comprising

(i) one or more epoxides having more than one epoxide group per molecule, of which epoxides at least 10 percent by weight is a 9,9-bis[4-(2,3-epoxypropoxy)phenyl]fluorene, all of the fluorane epoxy present being free of ortho substitution; and

(ii) an effective amount of one or more epoxy curing agents, wherein said epoxy curing agent is selected from the group consisting of polybasic carboxylic acids and their anhydrides; aliphatic, cycloaliphatic, and aromatic amines; carboxylic acid amides; and melamines; said epoxy resin composition being free of fluorene-containing amine curing agents.

4,882,371

DURABLE EPOXY RESIN PAINT COMPOSITION

Yasushi Matsubara; Minoru Miyagawa, and Masanori Takahashi, all of Miyagi, Japan, assignors to Tohoku Dotetsu Kabushiki Kaisha, Miyagi, Japan

Filed Aug. 4, 1987, Ser. No. 81,327

Claims priority, application Japan, Nov. 12, 1986, 61-267688; Nov. 12, 1986, 61-267689

Int. Cl.^{4} C08K *3/20*

U.S. Cl. 523—406 5 Claims

1. A durable epoxy resin paint composition comprising from 0.5 to 10% of a vinylidene chloride-based resin emulsion and from 99.5 to 90% of an epoxy resin paint.

4,882,372

WATER-DISPERSED EPOXY/ACRYLIC COATINGS FOR PLASTIC SUBSTRATES

James T. K. Woo, Medina, and Richard M. Marcinko, North Royalton, both of Ohio, assignors to The Glidden Company, Cleveland, Ohio

Filed Aug. 8, 1988, Ser. No. 229,461

Int. Cl.^{4} C08L *63/00, 33/14*

U.S. Cl. 523—411 3 Claims

1. A water dispersed, ambient curable paint coating composition to be applied, the paint coating composition containing a thermosetting polymeric binder comprising on a polymer weight basis:

between 20% and 99% acrylic copolymer of copolymerized ethylenically unsaturated monomers comprising by weight 50% and 90% acrylic monomer, between 1% and 25% carboxyl functional monomer, between 1% and 30% of tertiary amine functional monomer, with the balance being other ethylenically unsaturated monomer, where said acrylic copolymer is self-neutralizing and dispersible into water due to the tertiary amino functional groups of the copolymerized tertiary amine functional monomer;

between 1% and 80% epoxy resin comprising the coreaction product of three to five molecules of epichlorohydrin reacted with one molecule of sorbitol, where said epoxy resin is adapted to crosslink with said acrylic copolymer upon curing, said epoxy resin coreacted with sufficient alkanolamine compound to render the epoxy resin water dispersible;

where said acrylic copolymer and said epoxy resin are dispersed into water; and

to a plastic substrate and said polymer binder is thermosetting at ambient temperatures.

4,882,373

ASPHALTIC COMPOSITION

Lyle E. Moran, Sarnia, Canada, assignor to Exxon Research and Engineering Company, Florham Park, N.J.

Continuation-in-part of Ser. No. 77,379, Jul. 24, 1987, abandoned. This application Aug. 15, 1988, Ser. No. 232,210

Int. Cl.^{4} C08K *3/24;* **C08L** *53/02, 95/00*

U.S. Cl. 524—68 36 Claims

1. An asphaltic composition having improved tensile properties that is produced by the method comprising:

(a) contacting asphalt with from about 0.25 to about 4 wt. % of a mineral acid to form an acid modified asphalt,

(b) contacting said acid modified asphalt with an oxygen-containing gas to form an acid/oxygen modified asphalt, the temperature of the asphalt during said contacting in (a) and (b) being maintained between about 200° C. and about 300° C.,

(c) contacting said acid/oxygen modified asphalt with from about 5 to about 25 wt. % of a thermoplastic elastomer at a temperature between about 160° C. to form a polymer modified asphalt, and

(d) contacting said polymer modified asphalt with from about 0.3 to about 15 wt. % of an unsaturated functional monomer selected from the group consisting of an unsaturated carboxylic acid, an unsaturated dicarboxylic acid, an unsaturated anhydride, an unsaturated ester, an unsaturated imide and mixtures thereof at a temperature above about 120° C. but not more than about 200° C.

4,882,374

DIOXAPHOSPHORINANE COMPOUNDS AND POLYOLEFIN COMPOSITIONS SABILIZED THEREWITH

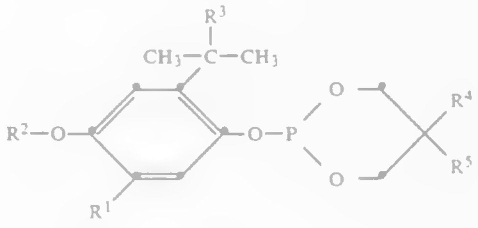
Richard H. S. Wang, and Garry L. Myers, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 6, 1989, Ser. No. 306,130

Int. Cl.^{4} C08K *5/49*

U.S. Cl. 524—117 6 Claims

1. A stabilized composition comprising a poly-α-olefin susceptible to degradation upon exposure to heat and/or radiation containing a stabilizing amount of a compound having the formula



wherein

R^1 is hydrogen, alkyl or aralkyl;

R^2 is hydrogen or alkyl;

R^3 is alkyl or aryl; and

R^4 and R^5 each is alkyl.

4,882,375

POLYESTERS WITH MODIFIED MELT VISCOSITY

John A. Tyrell, Dalton, Mass., and Lawrence R. Wallace, Evansville, Ill., assignors to General Electric Company, Mt. Vernon, Ind.

Filed Sep. 1, 1988, Ser. No. 239,601

Int. Cl.^{4} C08L *67/02*

U.S. Cl. 524—161 12 Claims

1. A polyester compostion comprising a polyester resin and a melt viscosity lowering amount of a sulfonate salt of a carboxylic acid which has the formula $R(COOH)_x$, wherein R is an alkyl group having from about 1 to about 20 carbon atoms or an aryl group, and x is 1 or 2.

4,882,376

PLASTISOLS BASED ON VINYL CHLORIDE POLYMERS, AND USE OF PLASTISOLS FOR COATING SHEET METAL

Serge Dusoleil, Brussels; Jean-Luc Preat, Grimbergen, and Odon Barthelemy, Brussels, all of Belgium, assignors to Solvay & Cie, Belgium

Continuation of Ser. No. 146,105, Jan. 20, 1988, abandoned. This application Apr. 18, 1989, Ser. No. 339,880

Claims priority, application France, Jan. 22, 1987, 8700836

Int. Cl.^{4} C08K *5/42*

U.S. Cl. 524—166 6 Claims

1. Plastisols based on vinyl chloride polymers, comprising vinyl chloride polymers resulting from the polymerization of vinyl chloride in aqueous medium with the aid of a sodium sulphosuccinamate of general formula:

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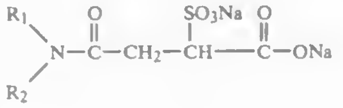


$$R_1R_2N-\overset{O}{\overset{\|}{C}}-CH_2-\overset{SO_3Na}{\overset{|}{CH}}-\overset{O}{\overset{\|}{C}}-ONa$$

(I)

in which:

R_1 denotes a C_{16}–C_{20} alkyl radical and R_2 denotes a sodium 1,2-dicarboxyethyl radical.

4,882,377

LOW-VISCOSITY PRESSURE-ADHERENT SILICONE ELASTOMER COMPOSITIONS

Randall P. Sweet; Patrick J. Miller, both of Midland, Mich., and Virgil L. Metevia, Chino, Calif., assignors to Dow Corning Corporation, Midland, Mich.

Filed Sep. 21, 1988, Ser. No. 247,184

Int. Cl.⁴ C08K *5/54*

U.S. Cl. 524—267 18 Claims

1. A pressure-adherent silicone elastomer composition comprising a homogeneous mixture of:

(I) a silicone pressure sensitive adhesive composition employed in an amount from about 15 to about 90 parts by weight, said silicone pressure sensitive adhesive composition comprising a homogeneous mixture of

(A) from about 35 to about 70 parts by weight of at least one benzene-soluble resinous copolymer containing silicon-bonded hydroxyl radicals and consisting essentially of triorganosiloxy units of the formula $R_3SiO_{\frac{1}{2}}$ and tetrafunctionalsiloxy units of the formula $SiO_{4/2}$ in a ratio of about 0.6 to 0.9 triorganosiloxy units for each tetrafunctionalsiloxy unit present in the copolymer and

(B) from about 30 to about 65 parts by weight of at least one polydiorganosiloxane consisting essentially of ARSiO units terminated with endblocking $TRASiO_{\frac{1}{2}}$ units, each said polydiorganosiloxane having a viscosity of from about 100 centipoise to about 50,000 centipoise at 25° C. where each T is —OH or —OR′,

where each R is a monovalent hydrocarbon radical having from 1 to 6 inclusive carbon atoms, each R′ is an alkyl radical of from 1 to 4 inclusive carbon atoms, and each A radical is selected from the group consisting of R and halohydrocarbon radicals of from 1 to 6 inclusive carbon atoms,

said silicone pressure sensitive adhesive composition having been reaction-condensed to a plasticity of not more than about 200 mils at 23° C. as measured after force is applied on a specimen weighing twice the specific gravity of the silicone pressure sensitive adhesive composition for 3 minutes ±5 seconds,

(II) a non-reacted crosslinkable silicone elastomer composition which is curable by a chemistry which does not cure said silicone pressure sensitive adhesive composition (I) to the point of eliminating tack or adhesive properties employed in an amount from about 10 to about 85 parts by weight, the total of silicone pressure sensitive adhesive composition (I) and crosslinkable silicone elastomer composition (II) being 100 parts by weight, and

(III) a non-volatile, nonflammable, compatible viscosity reducing agent for reducing the viscosity of said pressure-adherent silicone elastomer composition employed in an amount from 0 to about 40 weight percent based on the total weight of the silicone pressure sensitive adhesive composition (I) and the crosslinkable silicone elastomer composition (II), said viscosity reducing agent being generally nonreactive with said silicone pressure sensitive adhesive composition (I) and said crosslinkable silicone elastomer composition (II).

4,882,378

HIGH PERFORMANCE RUBBER COMPOSITIONS

Glenn R. Himes, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Continuation of Ser. No. 676,708, Nov. 30, 1989, abandoned. This application Jul. 21, 1988, Ser. No. 222,385

Int. Cl.⁴ C08K *3/36;* **C08L** *53/02*

U.S. Cl. 524—505 12 Claims

1. A polymeric composition having high abrasion resistance and freedom from weld lines in molded unit soles, said composition comprising:

(a) 100 parts by weight of a block copolymer portion comprising

(1) about 10% to 90% of one or more radial $(AB\text{-})_x\text{-}BA$ block copolymers where x is between 1 and 20, each block A being a monoalkenyl arene polymer having an average molecular weight between about 5,000 and 75,000, each block B being an elastomeric conjugated diene polymer having an average molecular weight between about 15,000 and about 300,000, and said blocks A comprise 8–50% by weight of each copolymer;

(2) about 10% to 90% by weight of one or more radial $(CD\text{-})_yDC$ block copolymers where y is between 1 and 20, each block C being a monoalkenyl arene polymer having an average molecular weight between about 5,000 and 75,000, each block D being an elastomeric conjugated diene polymer having an average molecular weight between about 8,000 and about 60,000, and said blocks C comprise 60–90% by weight of each copolymer,

(b) about 5 to about 200 parts by weight of a dyndiotactic 1,2-polybutadiene;

(c) about 9 to 50 parts by weight of a linear low density polyethylene;

(d) about 0 to about 200 parts byweight of a hydrocarbon rubber extending oil; and

(e) about 10 to about 50 parts by weight of a large agglomerate size filler.

4,882,379

ADHERABLE POLYESTER FILM

Richard P. Pankratz, Circleville, Ohio, assignor to E.I. Du Pont De Nemours and Company, Wilmington, Del.

Filed Jun. 14, 1988, Ser. No. 206,432

Int. Cl.⁴ C08G *18/83*

U.S. Cl. 524—590 6 Claims

1. A process for preparing an aqueous, film-forming coating emulsion of a carboxyl group-containing polyurethane composition consisting essentially of a polymer of at least one diol, the total amount of the diol component being 50 mole %, and 50 mole % of at least one diisocyanate, the polymer being modified by esterifying the terminal hydroxyl groups and amidizing any terminal amine groups of the polymer by treatment with the anhydride of a dicarboxylic acid, thus providing carboxyl groups, the acid number of the carboxyl group-containing polyurethane being about 3–20;

said process comprising the following sequential steps:

(a) dissolving the carboxyl group-containing polyurethane in an organic solvent selected from the group consisting of tetrahydrofuran and mixtures of tetrahydrofuran with at least one other organic cosolvent selected from the group consisting of methanol, acetone, dioxane, dimethoxyethane, and methyl ethyl ketone, the amount of cosolvent other than methyl ethyl ketone or total amount of such cosolvents being at most about 25 weight % of the solvent mixture, and the amount of methyl ethyl ketone being at most about 75 weight % of the solvent mixture, the balance in each case being tetrahydrofuran;

(b) neutralizing the carboxylic groups with an inorganic base, ammonia, or an organic amine;

(c) adding a sufficient amount of water with good agitation to cause emulsification; and

(d) evaporating the organic solvent.

4,882,380

PROCESS FOR THE PRODUCTION OF IMPACT POLYPROPYLENE COPOLYMERS

Harold K. Ficker, Wayne, N.J., and William G. Sheard, South Charleston, W. Va., assignors to Union Carbide Chemicals and Plastics Company Inc., Danbury, Conn.

Filed Jul. 7, 1987, Ser. No. 70,573

Int. Cl.⁴ C08F *297/08*

U.S. Cl. 525—53 12 Claims

1. A process for the production of a product comprising ethylene/propylene copolymer incorporated into a matrix of propylene homopolymer or copolymer comprising the following steps carried out in the gas phase:

(a) contacting propylene or propylene and at least one alpha-olefin having 2 to 8 carbon atoms, and hydrogen, wherein the alpha-olefin is present in a ratio of about 0.01 to about 0.06 mole of alpha-olefin per mole of propylene and the hydrogen is present in a ratio of about 0.001 to about 0.45 mole of hydrogen per mole of combined propylene and alpha-olefin, with a catalyst comprising (i) a catalyst precursor, which includes titanium, magnesium, chlorine, and an electron donor; (ii) a hydrocarbyaluminum cocatalyst; and (iii) a selectivity control agent, which is different from the electron donor, in a first reactor in such a manner that a mixture of a homopolymer of propylene or a copolymer of propylene and alpha-olefin together with active catalyst is produced;

(b) passing the mixture from step (a) into a second reactor; and

(c) adding to the second reactor:

(i) a sufficient amount of ethylene and propylene to provide ethylene/propylene copolymer in an amount of about 20 percent to about 45 percent by weight, based on the weight of the product, said ethylene and propylene being introduced in a ratio of about 10 to about 50 moles of ethylene per mole of propylene; and

(ii) hydrogen in a mole ratio of about 0.1 to about 1.0 mole of hydrogen per mole of combined ethylene and propylene; and

(d) effecting the copolymerization of ethylene and propylene in the second reactor in such a manner that the product is produced.

4,882,381

MOULDING COMPOUNDS OF AROMATIC POLYESTERS AND GRAFTED SILICONE RUBBER

Dieter Wittmann, Krefeld, Fed. Rep. of Germany; Hans-Jürgen Kress, Pittsburgh, Pa.; Ludwig Bottenbruch, Krefeld, Fed. Rep. of Germany; Edgar Leitz, Dormagen, Fed. Rep. of Germany, and Horst Peters, Leverkusen, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jul. 26, 1988, Ser. No. 224,299

Claims priority, application Fed. Rep. of Germany, Aug. 1, 1987, 3725576

Int. Cl.⁴ C08L *51/08*

U.S. Cl. 525—63 10 Claims

1. Thermoplastic moulding compounds based on:

A. from 5 to 99% by weight, based on the total weight of A and B, of an aromatic polyester, an aromatic polyester carbonate or a mixture thereof

B. from 1 to 95% by weight, based on the total weight of A and B, of a graft polymer of:

B.1 from 5 to 90 parts by weight of a mixture of

B.1.1 from 50 to 90 parts by weight of styrene, α-methylstyrene, styrene substituted with halogen or methyl in the ring, methylmethacrylate or mixture of these compounds and

B1.2 from 5 to 50 parts by weight of acrylonitrile, methacrylonitrile methylmethacry-late, maleic acid anhydride, C_1–C_4-alkyl-substituted or phenyl-N-substituted maleimide or mixtures of these compounds on

B.2 from 10 to 95 parts by weight of a silicone rubber having an average particle diameter d_{50} of from 0.09 to 1 m and a gel content of more than 50% by weight, based on B.2.

4,882,382

RUBBER MODIFIED REACTION MOLDED NYLON-6 BLOCK COPOLYMERS

Kishore Udipi, Longmeadow, Mass., assignor to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 808,782, Dec. 13, 1985, abandoned, which is a continuation-in-part of Ser. No. 808,790, Dec. 13, 1985, abandoned. This application Jun. 2, 1987, Ser. No. 57,583

Claims priority, application Canada, Dec. 12, 1986, 525170; European Pat. Off., Dec. 12, 1986, 86870 186.3; Japan, Dec. 12, 1986, 61-295063

Int. Cl.⁴ C08L *77/00*

U.S. Cl. 525—66 3 Claims

1. A process for the preparation of a substantially colloidal dispersion of a core-shell polymer in a solution of caprolactam containing a telechelic polymer the individual molecules of which are capped with at least two lactam polymerization initiator groups or precursors of lactam polymerization initiator groups, said process comprising

(A) adding an aqueous dispersion of a core-shell polymer to an aqueous solution of caprolactam to provide a dispersion of core-shell polymer in an aqueous solution of caprolactam, wherein said polymer comprises an elastomeric core and a rigid thermoplastic polymer shell,

(B) evaporating water from the dispersion to provide a dispersion of core-shell polymer in caprolactam, and

(C) adding to the dispersion of core-shell polymer in caprolactam (i) telechelic polymer the individual molecules of which are capped with at least two lactam polymerization initiator groups or precursors of lactam polymerization initiator groups, or (ii) telechelic polymer precursor consisting of polyol and lactam polymerization initiator.

4,882,383

IMPACT MODIFIED POLY(ALKENYL AROMATIC) RESIN COMPOSITIONS

Sai-Pei Ting, New York, N.Y., assignor to General Electric Co., Selkirk, N.Y.

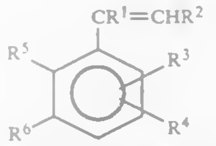
Filed Jul. 21, 1987, Ser. No. 76,118

Int. Cl.⁴ C08L *9/00, 13/00, 25/00, 51/04*

U.S. Cl. 525—71 20 Claims

1. A thermoplastic resin composition comprising:

(a) a base resin comprising a poly(alkenyl aromatic) resin combined with or grafted with natural rubber or synthetic rubber selected from diene rubber or acrylic rubber, comprising units of the formula



wherein R^1 and R^2 are selected from lower alkyl or alkenyl groups having from 1 to 6 carbon atoms or hydrogen; R^3 and R^4 are selected from chloro, bromo, hydrogen or lower alkyl of from 1 to 6 carbon atoms; R^5 and R^6 are selected from hydrogen, lower alkyl or alkenyl groups of from 1 to 6 carbon atoms, or R^5 and R^6 may be concatenated together with hydrocarbyl groups to form a naphthyl group; and

(b) from about 1 to about 40 parts by weight of a modifying agent comprised of a crosslinked (meth)acrylate core and an interpenetrating crosslinked polyalkenyl aromatic resin shell per 100 parts of the base resin.

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4,882,384
MODIFIED BLOCK COPOLYMERS

Carl L. Willis, and Steven S. Chin, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.
Filed Feb. 1, 1988, Ser. No. 150,579
Int. Cl.^{4} C08F *8/42;* **C08L** *53/02*

U.S. Cl. 525—105 **20 Claims**

1. A functionalized, selectively hydrogenated block copolymer said copolymer comprising:
   (a) at least one alkenyl arene polymer block A and
   (b) at least one substantially completely hydrogenated conjugated diene polymer block B,
   (c) wherein silicon or boron containing compounds containing at least one moisture curing functional group are grafted to said copolymer substantially on said A blocks.

4,882,385
1,3,5-TRIS(1-ISOCYANATOMETHYLETHYL)BENZENE IN POLYURETHANES

Singh Balwant, and Peter S. Forgione, Stamford, both of Conn., assignors to American Cyanamid Company, Stamford, Conn.
Division of Ser. No. 453,681, Dec. 27, 1982, Pat. No. 4,633,010. This application Sep. 19, 1986, Ser. No. 909,372
Int. Cl.^{4} C08G *18/62;* **C08F** *20/00*

U.S. Cl. 525—123 **3 Claims**

1. A coating composition comprising a resin having free hydroxyl functionality and a cross-linkingly effective amount of 1,3,5-tris(1-isocyanate-1-methyl-ethyl)benzene.

4,882,386
CURABLE RUBBER COMPOSITION

Giandomenico Stella, Brussels, Belgium, assignor to Exxon Chemical Patents Inc., Linden, N.J.
Filed Nov. 20, 1987, Ser. No. 123,329
Claims priority, application United Kingdom, Nov. 21, 1986, 8627905
Int. Cl.^{4} C08L *61/10*

U.S. Cl. 525—133 **15 Claims**

1. A curable rubber composition which in the cured state has improved adhesion to substrates through hydroxyl-reactive adhesives which composition comprises a blend of
   (a) a first elastomer having generally poor adhesion to such adhesives and comprising a copolymer of ethylene with at least one alpha-olefin and optionally a minor proportion of at least one copolymerisable polyene;
   (b) a second elastomer being a halogenated elastomeric polymer which is covulcanisable with the first elastomer and comprising a minor proportion of the combined weight of said first and second elastomers;
   (c) a phenol resin;
   (d) a curative system for said first and seocnd elastomers; and
   (e) an aminic substance capable of catalysing reaction between the phenolic groups of the phenol resin and isocyanate containing adhesives wherein said aminic substance is selected from those substances having high amine basicity and low steric hindrance of the amine moiety.

4,882,387
CO-CURING OF NR/EPDM RUBBER BANDS

Singa D. Tobing, 1212 Seventh St., Moline, Ill. 61265
Filed May 13, 1988, Ser. No. 193,803
Int. Cl.^{4} C08L *7/00, 23/16, 23/20, 7/00*

U.S. Cl. 525—194 **2 Claims**

1. The method of co-vulcanizing an NR/EPDM blend comprising uniformly dispersing EPDM into NR in a range of proportions of about 70–55 parts NR to about 30–45 parts EPDM, said EPDM being divided between high molecular weight (MW) EPDM and low molecular weight (MW) EPDM in the range of about 32–20 parts high MW and about 4–10 parts low MW EPDM, said high MW being defined as having an Mn>50,000 and said low MW being defined as having an Mn between 1,000 and 15,000; blending in a curing system containing 0.64–1.6 phr of sulfur, 0.6–1.2 phr of organic peroxide, 0.5–1.0 phr of mercaptobenzothiasole and 0.3–0.6 phr of diphenylguanidine; and curing the rubber blend with the curing system in an air environment in an autoclave.

4,882,388
RUBBER COMPOSITION

Takashi Nakagawa; Sigelu Yagisita, both of Yokohama, and Masahiro Fukuyama, Chiba, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan
Filed Oct. 5, 1988, Ser. No. 253,465
Claims priority, application Japan, Oct. 5, 1987, 62-249753
Int. Cl.^{4} C08L *37/00, 33/06, 33/14, 23/08*

U.S. Cl. 525—208 **16 Claims**

1. A rubber composition comprising a rubber component composed of an ethylenic copolymer rubber and an acrylic rubber, wherein said ethylenic copolymer rubber is a copolymer comprising (a) 50 to 85% by mole of ethylene, (b) 50 to 15% by mole of an acrylate and/or a methacrylate, and (c) 0.05 to 8% by mole, based on the total of said components (a) and (b), of a cross-linked point forming monomer; and said acrylic rubber contains at least 60% by mole of at least one monomer selected from among at least an alkyl acrylate, an alkyl methacrylate, and an alkoxyalkyl acrylate.

4,882,389
ELECTRICAL INSULATING RESIN

Makoto Doi; Hiroyukio Nakajima; Fumiyuki Miyamoto; Seiji Oka, and Mitsuhiro Nonogaki, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 18, 1987, Ser. No. 135,078
Claims priority, application Japan, Jan. 12, 1987, 62-4281; Jan. 12, 1987, 62-4282
Int. Cl.^{4} C08F *279/02, 265/06*

U.S. Cl. 525—310 **5 Claims**

1. A resin obtained by heat-curing 100 parts by weight of a butadiene polymer containing in its polymer chain at least 50 mol% of 1,2-butadiene units having a double bond in each unit in its side chain and from 10 to 100 parts by weight of a vinyl compound having at least 3 vinyl groups per molecule selected from the group consisting of trimethylolpropane triacrylate, trimethylolpropane trimethacrylate, triallyltrimellitate, trihydroxyethylisocyanuric acid triacrylate and trihydroxyethylisocyanuric acid trimethacrylate in the presence of an organic peroxide.

4,882,390
FLUOROELASTOMER COMPOSITION WITH ORGANO-ONIUM COMPOUNDS

Robert E. Kolb, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Continuation-in-part of Ser. No. 176,410, Apr. 1, 1988, abandoned. This application Feb. 15, 1989, Ser. No. 311,135
Int. Cl.^{4} C08F *8/00*

U.S. Cl. 525—326.3 **29 Claims**

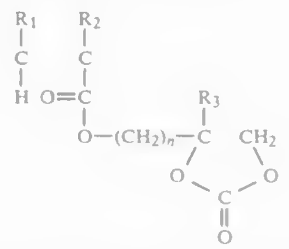
1. An elastomeric composition comprising saturated elastomer gum consisting essentially of repeating interpolymerized units derived from vinylidene fluoride, tetrafluoroethylene, and copolymerizable hydrocarbon olefin, and the combination of
   (A) 0.3 to 10 millimoles of polyhydroxy compound per one hundred grams of said gum, and
   (B) 0.2 to 10 millimoles of organo-onium compound per one hundred grams of said gum, except when said gum is derived from vinylidene fluoride, tetrafluoroethylene and propylene, and said polyhydroxy compound is hexafluoroisopropylidene-bis-(4-hydroxybenzene), and said organo-onium is a phosphonium compound, then said organo-onium compound is other than benzyltriphenylphosphonium chloride.

4,882,391
POLYMERS CONTAINING AMINO GROUPS, THEIR PREPARATION AND THEIR USE

Gerhard Brindöpke, Frankfurt am Main, and Michael Hönel, Mainz, both of Fed. Rep. of Germany, assignors to Hoechst AG, Fed. Rep. of Germany
Filed Dec. 22, 1987, Ser. No. 136,870
Claims priority, application Fed. Rep. of Germany, Dec. 24, 1986, 3644373
Int. Cl.^{4} C08F *8/32*

U.S. Cl. 525—327.2 **11 Claims**

1. A non-crosslinked reaction product of a compound (A) derived from ethylenically unsaturated monomers which contains in random distribution structural units (a) carrying 1,3-dioxolan-2-one groups of the formula 1



in which n is a number from 1 to 6, R_1 is H, alkyl or COOR″ (R″=alkyl), and R_2 is, independently thereof, H or alkyl and R_3 is H, methyl or ethyl and a compound (B) having at least one primary aliphatic or cycloaliphatic amino group and additionally, at least one further basic amino group, the amine numbers of the reaction product being between 1 and 120 and the molecular weight Mw is 1,000 to 50,000.

4,882,392
NOVEL RADIOPAQUE HEAVY METAL POLYMER COMPLEXES, COMPOSITIONS OF MATTER AND ARTICLES PREPARED THEREFROM

Johannes Smid, Lafayette; Israel Cabasso; Alan Obligin, both of Syracuse, all of N.Y., and H. Ralph Rawls, Boston, Mass., assignors to The Research Foundation of State University of New York, Albany, N.Y.
Continuation of Ser. No. 916,182, Oct. 7, 1986, abandoned. This application Nov. 18, 1988, Ser. No. 273,662
Int. Cl.^{4} C08F *16/36*

U.S. Cl. 525—328.6 **21 Claims**

1. A composition comprising a radiopaque polymer, said polymer derived from a heavy metal Lewis acid radiopacifying salt and at least one Lewis base monomer selected from the group consisting of alkyl and vinyl alkyl ketones, alkyl and aryl esters of unsaturated carboxylic acids, invyl esters of carboxylic acids, celulose esters of carboxylic acids, linear and cross-linked polyesters, said salt being molecularly bound to said polymer to form a clear, homogeneous, substantially nonleachable material, said composition being subsantially free of unbound radiopacifying salt.

4,882,393
IONOMER-MODIFIED POLYETHYLENE AS FILM MATERIAL

Jens Herwig, Cologne; Alois Kolwert, Roesrath; Hubert Sutter, Leverkusen, and Dieter Woltjes, Dormagen, all of Fed. Rep. of Germany, assignors to EC Erdoelchemie GmbH, Cologne, Fed. Rep. of Germany
Continuation of Ser. No. 927,906, Nov. 6, 1986, abandoned. This application Aug. 10, 1988, Ser. No. 230,559
Claims priority, application Fed. Rep. of Germany, Nov. 21, 1985, 3541096; Jun. 13, 1986, 3620034; Sep. 12, 1986, 3631005
Int. Cl.^{4} C08F *8/42*

U.S. Cl. 525—330.2 **3 Claims**

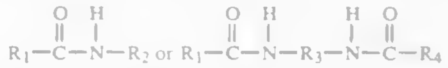
1. A film material prepared from a low density polyethylene (LDPE) which is an ionomer-modified copolymer wherein 30–95% of the carboxyl groups present in the copolymer are neutralized, and the neutralized carboxyl groups represent 0.1–0.6 mol %, of the total number of moles of all monomers in the copolymer said copolymer being an ethylene/carboxylic acid copolymer and wherein the copolymer contains acrylic acid or methacrylic acid as comonomers and wherein the cations of the metals sodium, zinc or magnesium are present in the copolymer.

4,882,394
METHOD FOR IMPROVING RUBBER CURE RATES

James G. Kreiner, Silver Lake, Ohio, assignor to Generai Tire, Inc., Akron, Ohio
Filed Sep. 8, 1987, Ser. No. 93,852
Int. Cl.^{4} C08C *19/20*

U.S. Cl. 525—332.7 **8 Claims**

1. A vulcanizable compounded rubber composition where the rubber of said composition comprises at least one rubber selected from the group consisting of natural rubber and solution or emulsion polymerized rubbers and contains as the vulcanizing agents sulfur in an amount of from about 2.0 to 5.0 phr (parts by weight per 100 parts of rubber in the composition), zinc oxide in an amount of about 5.0 phr, a sulfenamide accelerator in an amount of from about 0.5 to 1.5 phr and an amide having the formula:



$$R_1-\overset{\overset{O}{\|}}{C}-\overset{\overset{H}{|}}{N}-R_2 \text{ or } R_1-\overset{\overset{O}{\|}}{C}-\overset{\overset{H}{|}}{N}-R_3-\overset{\overset{H}{|}}{N}-\overset{\overset{O}{\|}}{C}-R_4$$

where R_1, R_3 and R_4 are linear, branched or cyclic C_1 to C_{25} saturated or unsaturated, aliphatic, hydrocarbon radicals and where R_2 is hydrogen or a linear, branched or cyclic C_1 to C_{25} saturated or unsaturated, aliphatic hydrocarbon radical and mixtures of the same, said amide being in an amount of from about 0.5 to 5.0 phr.

4,882,395
BRANCHED HYDROXY-TERMINATED ALIPHATIC POLYETHERS

Elie Ahad, Ste-Foy, Canada, assignor to Her Majesty the Queen in right of Canada, as represented by Minister of National Defence of Her Majesty's Canadian Government, Ottawa, Canada
Filed Oct. 20, 1988, Ser. No. 260,113
Claims priority, application Canada, Jul. 4, 1988, 571721
Int. Cl.^{4} C08G *65/24, 65/32*

U.S. Cl. 525—407 **41 Claims**

1. A process for the preparation of branched hydroxy-terminated aliphatic polyethers having alkyl azide substituents, having a structural formula

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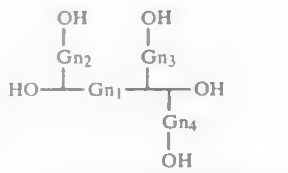
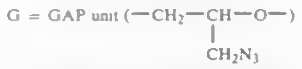




$$G = \text{GAP unit } (-CH_2-\underset{\displaystyle CH_2N_3}{\underset{|}{CH}}-O-)$$

n_1 = number of GAP units in segment 1
n_2 = number of GAP units in segment 2
n_s = number of GAP units in segment s
s = total number of segments in the molecule
n = total degree of polymerization (total number of GAP units)

$$n = (n_1 + n_2 + n_3 + n_4 \;..\; + n_s) = \sum_{i=1}^{s}$$

$$5 \leqq n \leqq 400,$$

and a molecular weight of 500 to 40,000, comprising the single step of reacting a solid rubbery polyepichlorohydrin (PECH) of molecular weight of about $0.5\text{-}5.0\times10^6$ with epichlorohydrin and an ionic azide selected from the group consisting of sodium azide, potassium azide and lithium azide, in a suitable organic solvent at elevated temperature, while agitating.

4,882,396

SILOXANE-AMIDE BLOCK COPOLYMER AND PROCESS FOR PRODUCING THE SAME

Hisayuki Nagaoka, and Michio Zenbayashi, both of Gunma, Japan, assignors to Toshiba Silicone Co., Ltd., Tokyo, Japan

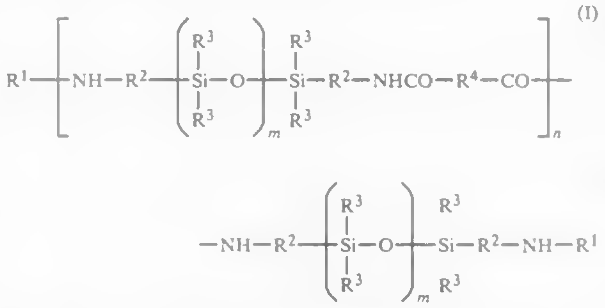
Filed Aug. 5, 1988, Ser. No. 228,642

Claims priority, application Japan, Aug. 7, 1987, 62-197505; Oct. 7, 1987, 62-253395

Int. Cl.⁴ C08F *283/04*

U.S. Cl. 525—426 **9 Claims**

1. A siloxane-amide block copolymer having an alkenyl group or a photopolymerizable organic group at both terminals thereof which is represented by formula (I):



(I)

$$R^1-\left[-NH-R^2-\left(\begin{matrix}R^3\\|\\Si-O\\|\\R^3\end{matrix}\right)_m-\begin{matrix}R^3\\|\\Si\\|\\R^3\end{matrix}-R^2-NHCO-R^4-CO-\right]_n-NH-R^2-\left(\begin{matrix}R^3\\|\\Si-O\\|\\R^3\end{matrix}\right)_m-\begin{matrix}R^3\\|\\Si\\|\\R^3\end{matrix}-R^2-NH-R^1$$

wherein R^1 represents a reaction residual group of an epoxy compound containing a photopolymerizable organic group formed by a ring-opening addition reaction between the amino group at both terminals of the block copolymer and the epoxy group of the epoxy compound and/or a substitution reaction product between said reaction residual group of the block copolymer and a silylating agent; R^2 represents a substituted or unsubstituted divalent hydrocarbon group; R^3 represents a substituted or unsubstituted monovalent hydrocarbon group; R^4 represents a substituted or unsubstituted divalent aromatic hydrocarbon group; and m and n each represents a number of 1 or more.

4,882,397

METHOD FOR CONVERTING POLYKETALS TO POLYARYLETHERKETONES IN THE PRESENCE OF A METAL SALT

Donald R. Kelsey, Houston, Tex., assignor to Amoco Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 938,424, Dec. 5, 1986, abandoned. This application Feb. 17, 1988, Ser. No. 156,844

Int. Cl.⁴ C08G *2/30, 65/32*

U.S. Cl. 525—471 **17 Claims**

1. A process for preparing a polyaryletherketone which comprises converting a polyketal to the corresponding polyaryletherketone in the presence of a catalyst comprising one or more of a Group IIA, IIB, IVA, VIIB, IIIA, IVB, IB or VIII metal salt.

4,882,398

OPTICALLY CLEAR REINFORCED ORGANOSILOXANE COMPOSITIONS

Godfrey C. Mbah, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Aug. 26, 1988, Ser. No. 236,862

Int. Cl.⁴ C08F *283/00*

U.S. Cl. 525—478 **6 Claims**

1. In a curable composition comprising
(1) a diorganovinylsiloxy-terminated polydiorganosiloxane,
(2) an amount of a resinous organosiloxane copolymer sufficient to improve the physical properties of the elastomer obtained by curing said composition.
(3) an amount of an organohydrogensiloxane sufficient to cure said composition, and
(4) an amount of a platinum-containing hydrosilation catalyst sufficient to promote curing of said composition.

the improvement comprising (a) selecting said polydiorganosiloxane from those exhibiting a viscosity of at least 12 Pa.s at 25 degrees C. and wherein at least 95% of the repeating units are dimethylsiloxane units and any remainder are diorganosiloxane units wherein the organic groups bonded to silicon are monovalent hydrocarbon radicals or monovalent halogenated hydrocarbon radicals (b) selecting said organosiloxane copolymer from those consisting essentially of SiO_2, trimethylsiloxy and dimethylvinylsiloxy units, where the molar ratio of the combination of trimethylsiloxy and dimethylvinylsiloxy units to SiO_2 units is from 0.6 to 1.1, inclusive and said copolymer contains from 1.5 to 3.5 weight percent of vinyl radicals, and (c) maintaining the concentration of said organosiloxane copolymer within the range of from 1 to about 45 weight %, based on the weight of said polydiorganosiloxane to achieve a reduction in the viscosity of said composition relative to the viscosity of the composition in the absence of said copolymer.

4,882,399

EPOXY RESINS HAVING REVERSIBLE CROSSLINKS

Giuliana C. Tesoro, Dobbs Ferry, and Vinod R. Sastri, Brooklyn, both of N.Y., assignors to Polytechnic University, Brooklyn, N.Y.

Filed Aug. 21, 1987, Ser. No. 88,179

Int. Cl.⁴ C08G *59/50*

U.S. Cl. 525—523 **56 Claims**

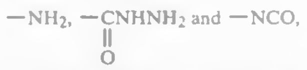
1. A method for the preparation of insoluble, infusible epoxy resins containing reversible crosslinks comprising the steps of:
(a) forming a reaction mixture of
  (i) an epoxy compound having two or more epoxy groups, and
  (ii) a crosslinking agent containing two or more epoxy-reactive groups and further containing a single disulfide bond, and
(b) curing said reaction mixture under conditions conducive to the formation of a crosslinked resin.

2. A method for the preparation of insoluble, infusible epoxy resins containing reversible crosslinks comprising the steps of:
(a) forming a reaction mixture of

  (i) an epoxy compound having two or more epoxy groups, and
  (ii) a crosslinking agent containing two or more epoxy-reactive groups and further containing a disulfide bond, said crosslinking agent being selected from compounds having the formula

Q—X—S—S—X—Q

where Q is an epoxy-reactive functional group selected from



$$-NH_2,\ -\underset{\displaystyle O}{\underset{\|}{C}}NHNH_2 \text{ and } -NCO,$$

and X is a divalent aromatic or aliphatic hydrocarbon radical of one to ten carbon atoms, and
(b) curing said reaction mixture under conditions conducive to the formation of a crosslinked resin.

13. A method for the preparation of insoluble, infusible epoxy resins containing reversible crosslinks and for the recovery of soluble polymers therefrom comprising the steps of:
(a) forming a reaction mixture of
  (i) an epoxy compound having two or more epoxy groups, and
  (ii) a crosslinking agent containing two or more epoxy-reactive groups and further containing a disulfide bond,
(b) curing said reaction mixture under conditions conducive to the formation of a crosslinked resin, and
(c) cleaving the disulfide bonds in said resin by reducing said resin in the presence of solvent and a reducing agent and thereby forming a soluble polymer.

4,882,400

PROCESS FOR GAS PHASE POLYMERIZATION OF OLEFINS IN A FLUIDIZED BED REACTOR

Andre Dumain, Martigues, and Charles Raufast, Saint Julien Les Martigues, both of France, assignors to BP Chemicals Limited, London, England

Filed Jul. 27, 1988, Ser. No. 224,997

Claims priority, application France, Jul. 31, 1987, 87 11036

Int. Cl.⁴ C08F *2/34*

U.S. Cl. 526—88 **9 Claims**

1. A process for gas phase polymerization of one or more olefins of formula CH2═CH—R in which R is hydrogen atom or an alkyl radical containing from 1 to 6 carbon atoms, in the presence of a solid catalyst based on chromium oxide, activated by heat treatment, or of a catalyst system of the Ziegler-Natta type comprising a solid catalyst consisting essentially of atoms of magnesium, of halogen and of at least one transition metal belonging to groups IV, V or VI of the Periodic Classification of the elements and a cocatalyst based on an organometallic compound of a metal belonging to groups II or III of this Classification, in which process a rising stream of a gas mixture containing the olefin(s) to be polymerized keeps the polyolefin particles being formed in the fluidized state in a fluidized bed reactor (1) comprising an upright reactor body (2) partially occupied by the fluidized bed and mounted under a disengagement chamber (3) of larger cross-sectional area than that of the reactor body (2), from which disengagement chamber there leaves a gas mixture entraining solid particles which are separated from the gas mixture in a dust separator and are reintroduced into the reactor body (2), the gas mixture being then cooled, compressed and recycled to the base of the reactor, and forming the recycle gas, the solid particles separated from the major part of the gas mixture leaving the reactor are put into contact with a carrier gas in a mixing device and are reintroduced mixed with this carrier gas into the reactor body, the process being characterized in that the particles mixed with the carrier gas are introduced into the reactor body through an opening in the side wall thereof at a position above the fluidized bed, but below the disengagement chamber and in that the velocity of the particles introduced into the reactor body is insufficient to cause them to be blown directly into the bed.

4,882,401

SLOW GEL/CURE SYSTEMS BASED ON DIALKYLZINC FOR DICYCLOPENTADIENE POLYMERIZATION

Andrew Bell, New Castle, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed Sep. 28, 1988, Ser. No. 250,209

Int. Cl.⁴ C08F *4/50, 32/00, 36/00*

U.S. Cl. 526—119 **10 Claims**

1. In a process for preparing molded objects wherein a liquid reaction mass comprised of a metathesis polymerizable cycloolefin, a metatheis polymerization catalyst, a catalyst activator and a reaction rate moderator are charged to a mold wherein polymerization will take place, the improvement wherein said catalyst activator is selected from the group consisting of dialkylzinc, alkylzinc halide and aromatic zinc compounds.

4,882,402

SIDE CHAIN LIQUID CRYSTALLINE POLYMERIC MEDIA EXHIBITING THIRD ORDER NONLINEAR OPTICAL RESPONSE

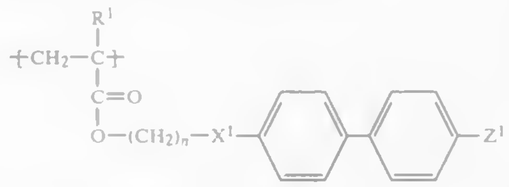
Thomas M. Leslie, Clinton Township, Hunterdon County; Hyun N. Yoon, New Providence; Ronald N. DeMartino, Wayne, and James B. Stamatoff, Westfield, all of N.J., assignors to Hoechst Celanese Corporation, Somerville, N.J.

Division of Ser. No. 915,180, Oct. 3, 1986. This application Oct. 15, 1987, Ser. No. 108,686

Int. Cl.⁴ C08F *20/38, 20/34, 20/24*

U.S. Cl. 526—243 **3 Claims**

1. A transparent nonlinear optical medium produced in accordance with a process which comprises heating a thermotropic liquid crystalline polymer above the mesophase temperature range to form an isotropic melt phase, and cooling the isotropic melt phase rapidly to below the glass transition temperature of the polymer to form a transparent solid medium; wherein the transparent nonlinear optical medium exhibits a third order nonlinear optical susceptibility $\chi^{(3)}$ of at least about 1×10^{-11} esu as measured at 1.91 μm excitation wavelength, and wherein the polymer is characterized by a recurring monomeric unit corresponding to the formula:



where n is an integer between about 4–20; X^1 is $-NR^1-$, $-O-$, or $-S-$; R^1 is hydrogen or methyl; Z^1 is $-NO_2$, $-CN$ or $-CF_3$; and where the polymer has a weight average molecular weight in the range between about 5000–200,000, and a glass transition temperature above about 40° C.; and wherein the optical medium exhibits less than about 5 percent scattering of transmitted incident light.

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4,882,403
NON-HYDROUS SOFT CONTACT LENS AND PROCESS FOR PRODUCING THE SAME

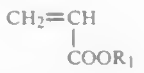
Tetsuo Itoh, Machida; Noboru Satoh; Kazuhiko Takahashi, both of Yokohama; Taro Suminoe, Tokyo, and Takao Shimizu, Toda, all of Japan, assignors to Japan Synthetic Rubber Co., Ltd. and Ricky Contact Lens, Inc., Tokyo, Japan
Filed May 27, 1988, Ser. No. 199,957
Claims priority, application Japan, May 29, 1987, 62-134115
The portion of the term of this patent subsequent to Apr. 12, 2005, has been disclaimed.
Int. Cl.⁴ C08F *18/20*

U.S. Cl. 526—245 16 Claims

1. A non-hydrous soft contact lens comprising a copolymer comprising, as monomer units,:

(a) from 33.9 to 89 mol % of an acrylate represented by the general formula (I) shown below;
(b) from 4.9 to 65 mol % of a methacrylate represented by the general formula (II) shown below;
(c) from 1 to 20 mol % of at least one monomer selected from the group consisting of an unsaturated carboxylic acid, an unsaturated carboxylic acid anhydride an unsaturated carboxylic acid alkyl ester having a branched or cyclic alkyl group which may have a substituent, and an unsaturated carboxylic acid fluoroalkyl ester having a branched or cyclic fluoroalkyl group which may have a substituent;
(d) from 0 to 20 mol % of at least one monomer selected from the group consisting of an acrylic acid lower alkyl ester having a straight-chain alkyl group containing 1 to 3 carbon atoms, and an acrylic acid lower fluoroalkyl ester having a straight-chain fluoroalkyl group containing 1 to 3 carbon atoms;
(e) from 0 to 20 mol % of a methacrylic acid alkyl ester having a straight-chain alkyl group containing 4 to 10 carbon atoms; and
(f) from 0.1 to 10 mol % of a crosslinking monomer.

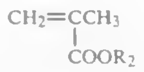
General formula (I):



$$\begin{array}{l}CH_2{=}CH\\ \qquad\;|\\ \qquad COOR_1\end{array}$$

wherein R_1 is at least one selected from the group consisting of a straight-chain fluoroalkyl group represented by the formula: $(CH_2)_l—C_mF_nH_p$, where l is an integer of 1 or 2, m is an integer of 3 to 8, n is an integer of 6 or more, p is an integer of 0 or more, and m , n and p have the relation of $n+p=2m+1$; and a straight-chain alkyl group represented by the formula: C_qH_{2q+1}, where q is an integer of 4 to 10.

General formula (II):



$$\begin{array}{l}CH_2{=}CCH_3\\ \qquad\;|\\ \qquad COOR_2\end{array}$$

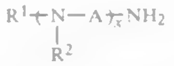
wherein R_2 is a straight-chain fluoroalkyl group represented by the formula: $(CH_2)_2—C_xF_yH_z$, where w is an integer of 1 or 2, x is an integer of 1 to 10, y is an integer of 3 or more, z is an integer of 0 or more, and x, y and z have the relation of $y+z=2x+1.1$

4,882,404
COPOLYMER COMPOSITIONS DERIVED FROM UNSATURATED TRIAZINES

Jacques Jarrin; Magali Robine, both of Rueil Malmaison, and Jean-Pierre Durand, Chatou, all of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France
Filed Jun. 12, 1987, Ser. No. 60,785
Claims priority, application France, Jun. 13, 1986, 86 08697
Int. Cl.⁴ C08F *226/06, 220/12*

U.S. Cl. 526—261 19 Claims

1. A copolymer composition, comprising (a) 55–99.8% b.w. of recurrent units derived from at least one acrylic or methacrylic ester and (b) 0.2–10% b.w. of recurrent units derived from at least one nitrogenous vinyl monomer obtained by reacting triallylcyanurate with at least one monoprimary or biprimary aliphatic amine, complying with the general formula:



$$R^1{+}\underset{\underset{R^2}{|}}{N}{-}A{+_x}NH_2$$

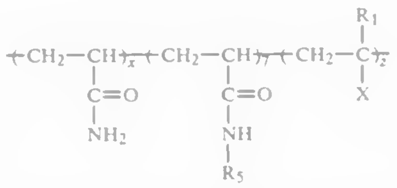
wherein R^1 is a hydrogen atom or an alkyl radical $—C_nH_{2n+1}$, in which n is an integer from 1 to 24, x ranges from 1 to 10 or may be a 0 when n is at least 4, R^2 is a hydrogen atom or an alkyl radical $—C_mH_{2m+1}$, m being an integer from 1 to 24, and A is an alkylene group of 2–6 carbon atoms, said nitrogenous vinyl monomer containing 1 or 2 triazine rings and comprising at least one allyl group.

4,882,405
TERPOLYMERS OF ACRYLAMIDE, ALKYLACRYLAMIDE AND BETAINE MONOMERS

Donald N. Schulz, Annandale; Ilan Duvdevani, Leonia; Jan Bock, Bridgewater, and Enock Berluche, Lopatcong Township, Warren County, all of N.J., assignors to Exxon Research and Engineering Company, Florham Park, N.J.
Continuation of Ser. No. 123,394, Nov. 26, 1987, abandoned, which is a continuation-in-part of Ser. No. 937,688, Dec. 4, 1986, Pat. No. 4,742,135, which is a continuation of Ser. No. 814,252, Dec. 30, 1985, Pat. No. 4,650,848. This application Oct. 19, 1988, Ser. No. 259,935
The portion of the term of this patent subsequent to Mar. 17, 2004, has been disclaimed.
Int. Cl.⁴ C08F *26/06*

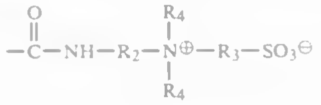
U.S. Cl. 526—265 2 Claims

1. A brine and water soluble terpolymer having the structure:

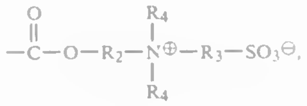


$$+CH_2-\underset{\underset{\underset{NH_2}{|}}{\underset{C=O}{|}}}{CH}+_x+CH_2-\underset{\underset{\underset{\underset{R_5}{|}}{\underset{NH}{|}}}{\underset{C=O}{|}}}{CH}+_y+CH_2-\underset{\underset{X}{|}}{\overset{\overset{R_1}{|}}{C}}+_z$$

wherein X is selected from the group consisting of

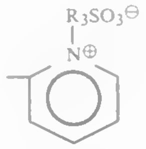


$$-\overset{\overset{O}{\|}}{C}-NH-R_2-\underset{\underset{R_4}{|}}{\overset{\overset{R_4}{|}}{N^{\oplus}}}-R_3-SO_3^{\ominus}$$



$$-\overset{\overset{O}{\|}}{C}-O-R_2-\underset{\underset{R_4}{|}}{\overset{\overset{R_4}{|}}{N^{\oplus}}}-R_3-SO_3^{\ominus},$$

and



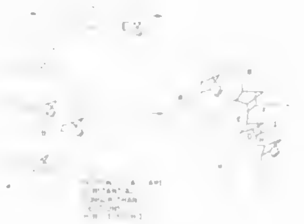
wherein x is about 70 to about 95 mole percent; y is about 0.1 to about 5 mole percent, R_1 is methyl or hydrogen; z is about 1.0 to about 29.0 mole percent; R_2 is an alkyl group of 1–5 carbon atoms; R_3 is an alkyl group of 3 to 4 carbon atoms; R_4

is an alkyl group of 1–5 carbon atoms; and R_5 is an alkyl group of 4–20 carbon atoms.

4,882,406
NODULAR COPOLYMERS FORMED OF ALPHA-OLEFIN COPOLYMERS COUPLED BY NON-CONJUGATED DIENES

Charles Cozewith, Westfield; Shiaw Ju, Edison, and Gary W. Verstrate, Matawan, all of N.J., assignors to Exxon Research & Engineering Company, Florham Park, N.J.
Continuation-in-part of Ser. No. 681,950, Dec. 14, 1984, abandoned, which is a continuation-in-part of Ser. No. 504,582, Jun. 15, 1983, Pat. No. 4,540,753. This application Mar. 5, 1986, Ser. No. 813,511
The portion of the term of this patent subsequent to Dec. 29, 2004, has been disclaimed.
Int. Cl.⁴ C08F *12/34, 36/20, 212/34*

U.S. Cl. 526—336 51 Claims



1. A nodular ethylene -alpha-olefin copolymer product of copolymer chains having at least one of $\overline{M}_w/\overline{M}_n$ less than 2 and $\overline{M}_z/\overline{M}_w$ less than 1.8, comprising a nodule region of substantial cross-linking of copolymer chain second segments, with substantially uncross-linked copolymer chain first segments extending therefrom.

17. A process of forming a nodular ethylene - alpha-olefin copolymer product comprising a nodule region of substantial cross-linking of chain second segments, with substantially uncross-linked chain first segments extending therefrom, comprising reacting copolymer chains containing:

(a) a first segment in the form of one contiguous segment or a plurality of discontinuous segments comprising a copolymer of ethylene and an alpha-olefin; and
(b) a second segment comprising a copolymer of ethylene, an alpha-olefin and a coupling agent, said second segment constituting less than 50 percent by weight of said copolymer chain, said second segment being in the form of one contiguous segment or a plurality of discontinuous segments;

said coupling agent being cross-linkable under conditions which do not cross-link said first segment to any substantial extent, to form said nodular copolymer, said copolymer chains having at least one of $\overline{M}_w/\overline{M}_n$ less than 2 and $\overline{M}_z/\overline{M}_w$ less than 1.8.

34. A polymerization process for producing a copolymer chain comprising:

(a) a first segment comprising one contiguous segment or a plurality of discontinuous segments of a copolymer of ethylene and an alpha-olefin; and
(b) a second segment comprising a copolymer of ethylene, an alphaolefin and a coupling agent, said second segment constituting less than 50% by weight of said copolymer chain, said second segment being in the form of one contiguous segment or a plurality of discontinuous segments on a given chain;

said coupling agent being cross-linkable under conditions which do not cross-link said first segment to any substantial extent, said process comprising:

polymerizing a reaction mixture of ethylene and alpha-olefin until the weight of said ethylene-alpha-olefin copolymer has reached at least 50% of the anticipated polymer weight at completion of polymerization so as to form said first segment, and then incorporating said coupling agent to form said second segment;

wherein said reaction mixture comprises a plurality of said copolymer chains, and said process further comprises cross-linking the second segments of said plurality of said copolymer chains to form a nodule.

4,882,407
THERMOPLASTIC ENDODONTIC COMPOSITION HAVING IMPROVED MELT FLOW INDEX

John Riazi, Akron, Ohio, assignor to The Hygenic Corporation, Akron, Ohio
Division of Ser. No. 945,784, Dec. 23, 1986, Pat. No. 4,766,200, which is a continuation-in-part of Ser. No. 616,053, Jun. 1, 1984, Pat. No. 4,632,977. This application Apr. 18, 1988, Ser. No. 182,346
Int. Cl.⁴ C08F *136/08*

U.S. Cl. 526—340.2 6 Claims

1. A novel endodontic thermoplastic polymer composition, consisting essentially of a thermoplastic polymer selected from the group consisting of synthetic and natural trans-polyisoprene having a melt flow index exceeding at least about 10 grams per 10 minutes at 105° C.

4,882,408
ONE-COMPONENT POLYURETHANE SYSTEMS CONTAINING VISCOSITY-REGULATING SUBSTANCES

Rainer Blum, Ludwigshafen, Fed. Rep. of Germany, assignor to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany
Filed Jul. 11, 1988, Ser. No. 217,609
Claims priority, application Fed. Rep. of Germany, Jul. 24, 1987, 3724555
Int. Cl.⁴ C08G *18/30*

U.S. Cl. 528—49 9 Claims

1. A mixture which contains, in a major amount, a one-component polyurethane system and, in an amount of 0.01 to 30 percent by weight based on the total weight of the one-component polyurethane system, a thixotropic and viscosity-regulating substance which is the reaction product prepared in the presence of the one-component polyurethane system of reactants

(A) monoamines and/or polyamines and/or polymeric substances having one or more amino groups and
(B) mono- and/or polyisocyanates and/or polymeric substances having one or more isocyanate groups,

wherein reactants (A) and (B) are reacted in a ratio such that there are one or more amino groups, per isocyanate group present, capable of reacting with the isocyanate groups and that all the isocyanate groups are reacted and 5–100% of the amino groups are reacted.

4,882,409
PROCESS FOR THE PRODUCTION OF HEAT-RESISTANT POLYURETHANE UREA ELASTOMERS

Gerhard Grögler; Andreas Ruckes, and Heinrich Hess, all of Leverkusen, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Bayerwerk, Fed. Rep. of Germany
Filed Sep. 16, 1988, Ser. No. 245,880
Claims priority, application Fed. Rep. of Germany, Sep. 29, 1987, 3732728
Int. Cl.⁴ C08G *18/10*

U.S. Cl. 528—64 18 Claims

1. A process for the production of a polyurethane urea elastomer from a heterogeneous mixture comprising

(a) a diaminodiphenylurea corresponding to the formula

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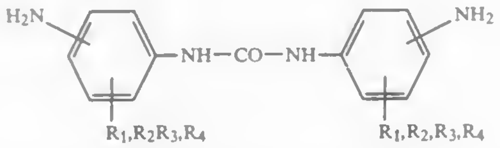


wherein R_1, R_2, R_3 and R_4, which may be the same or different, represent hydrogen or a C_1–C_6 alkyl radical and wherein the amino groups are in the meta and/or para position to the urea group and

(b) an NCO-terminated prepolymer based on a polyisocyanate and a polyhydroxyl compound having a molecular weight of 400 to about 10,000,

which comprises reacting the heterogeneous system to form a polyurethane urea elastomer by heating the mixture to a temperature of about 100 to 180 C.

4,882,410

MOLDING COMPOUNDS COMPRISING A THERMOPLASTICALLY PROCESSIBLE AROMATIC POLYESTER IMIDE

Wolfgang Neugebauer, Marl, and Heinz-Guenter Poll, Hilden, both of Fed. Rep. of Germany, assignors to Huels Aktiengesellschaft, Marl, Fed. Rep. of Germany

Filed Sep. 21, 1988, Ser. No. 247,267

Claims priority, application Fed. Rep. of Germany, Jan. 28, 1988, 3802511

Int. Cl.⁴ C08G *73/16*

U.S. Cl. 528—170 **14 Claims**

1. A molding compound, comprising:

a thermoplastically processible, aromatic polyester imide consisting essentially of monomer units corresponding to the following starting monomers:

(A) 10–70 mole % HO—Ar—COOH

(B) 0–44 mole % HOOC—Ar′—COOH

(C) 15–45 mole % HO—"Ar"—OH, and

(D) 1–45 mole % of a compound having the structure

wherein Ar, Ar′ and Ar″ are the same or different; and are 1,3- or 1,4-phenylene; 1,4-; 1,5-; 2,6- or 2,7-naphthylene or Y is —O—or —S—; X is —O—, —S—, $—SO_2—$, $—CR_2$- or —CO—; R is H, C_1–C_4-alkyl; and n is 0 or 1; and wherein all quantities relate to the sum of A–D, and said sum equals 100 mole %, whereby the molar ratio of (B + D) : C ranges from 0.9:1 to 1.1:1.

4,882,411

PROCESS FOR THE PRODUCTION OF COLD-SETTING POLYURETHANE UREA ELASTOMERS

Gerhard Grögler; Andreas Ruckes; Heinrich Hess, all of Leverkusen, and Richard Kopp, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Bayerwerk, Fed. Rep. of Germany

Filed Sep. 16, 1988, Ser. No. 245,877

Claims priority, application Fed. Rep. of Germany, Sep. 29, 1987, 3732727

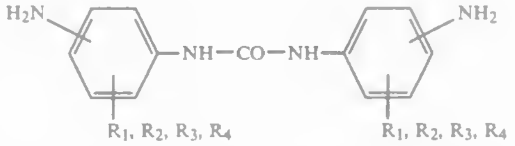
Int. Cl.⁴ C08G *18/10*

U.S. Cl. 528—54 **8 Claims**

1. A process for the preparation of a polyurethane urea elastomer from a mixture comprising

(a) an NCO-terminated prepolymer based on a polyisocyanate and a polyether polyol having a molecular weight of 400 to about 10,000 and an ethylene oxide content of about 10 to 60 mole-% and

(b) a solid diaminodiphenylurea corresponding to the formula



wherein R_1, R_2, R_3 and R_4 may be the same or different and represent hydrogen or a C_1-C_6 alkyl radical and wherein the amino groups are in the m- and/or p-position to the urea group,

which comprises reacting said NCO-terminated prepolymer with said diaminodiphenyl urea in a heterogeneous phase at a temperature of about 5° to 40° C.

4,882,412

POLYESTER POLYMER CONTAINING THE RESIDUE OF THE UV ABSORBING BENZOPYRAN COMPOUND AND SHAPED ARTICLES PRODUCED THEREFROM

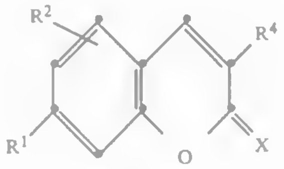
Max A. Weaver; Clarence A. Coates, Jr.; Wayne P. Pruett, all of Kingsport, and Samuel D. Hilbert, Jonesborough, all of Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 126,315, Nov. 30, 1987, abandoned. This application Dec. 21, 1988, Ser. No. 287,815

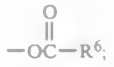
Int. Cl.⁴ C08G *5/15*

U.S. Cl. 528—190 **12 Claims**

1. A composition comprising molding grade polyester having copolymerized therein or reacted therewith the residue of a benzopyran compound having the formula



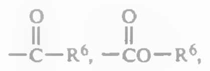
R^1 is hydroxy, $—O—R^5$ or



$$-\overset{O}{\overset{\|}{OC}}-R^6;$$

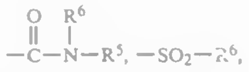
R^2 is hydrogen, alkyl, $—O—R^5$, or halogen;

R^4 is cyano,



$$-\overset{O}{\overset{\|}{C}}-R^6,\ -\overset{O}{\overset{\|}{C}}O-R^6,$$

carbamoyl,



$$-\overset{O}{\overset{\|}{C}}-\underset{}{\overset{R^6}{\overset{|}{N}}}-R^5,\ -SO_2-R^6,$$

or a carbocyclic or heterocyclic aryl radical; and

X is oxo or imino;

wherein

R^5 is alkenyl or an alkyl, cycloalkyl or aryl radical; and

R^6 is hydrogen or an alkyl, cycloalkyl or aryl radical; provided the benzopyran compound bears at least one substituent that is reactive with one of the monomers from which the polyester is derived, said residues absorbing radiation in the range of about 330 to 380 nm and being non-extractable from said polyester and stable under the polyester processing conditions.

4,882,413

NOVEL POLYMERS

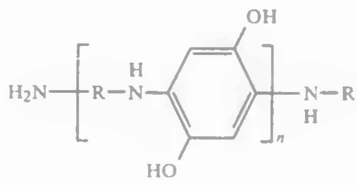
Semih Erhan, 2301 Cherry St., Apt. 12B, Philadelphia, Pa. 19103

Continuation-in-part of Ser. No. 890,904, Jul. 28, 1986, Pat. No. 4,831,107. This application May 24, 1988, Ser. No. 198,045

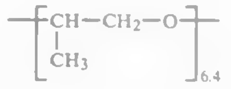
Int. Cl.⁴ C08G *12/00*

U.S. Cl. 528—229 **3 Claims**

1. A polymer of the formula



wherein R is



$$-\left[\underset{CH_3}{\underset{|}{CH}}-CH_2-O\right]_{6.4}-$$

and n is 70 to 700.

4,882,414

POLYAMIDE FROM POLYMERIC FATTY ACID AND LONG CHAIN DICARBOXYLIC ACID

Ronald J. Wroczynski, Pittsfield, Mass., assignor to Union Camp Corporation, Wayne, N.J.

Filed Nov. 29, 1984, Ser. No. 759,961

Int. Cl.⁴ C08G *69/34*

U.S. Cl. 528—339.3 **3 Claims**

1. A polyamide which comprises the polyamide product of the polymerization reaction of a mixture of polyacids which comprises

(a) from 40 to 95 equivalent percent of a polymeric fatty acid; and

(b) from 5 to 60 equivalent percent of a diacid selected from the group consisting of 1,18-octadecanedicarboxylic acid and 1,16-hexadecane-dicarboxylic acid; with a substantially equivalent proportion of a polyamine wherein the polyamine comprises a mixture of from 40 to 80 equivalent percent piperazine and from 20 to 60 equivalent percent ethylenediamine.

4,882,415

POLYARYLENE DISULFIDE

Max Hunziker, Düdingen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

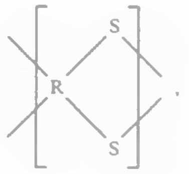
Filed Jun. 9, 1988, Ser. No. 205,261

Claims priority, application Switzerland, Jun. 17, 1987, 2276/87

Int. Cl.⁴ C08G *75/14;* **H01B** *1/02, 1/06*

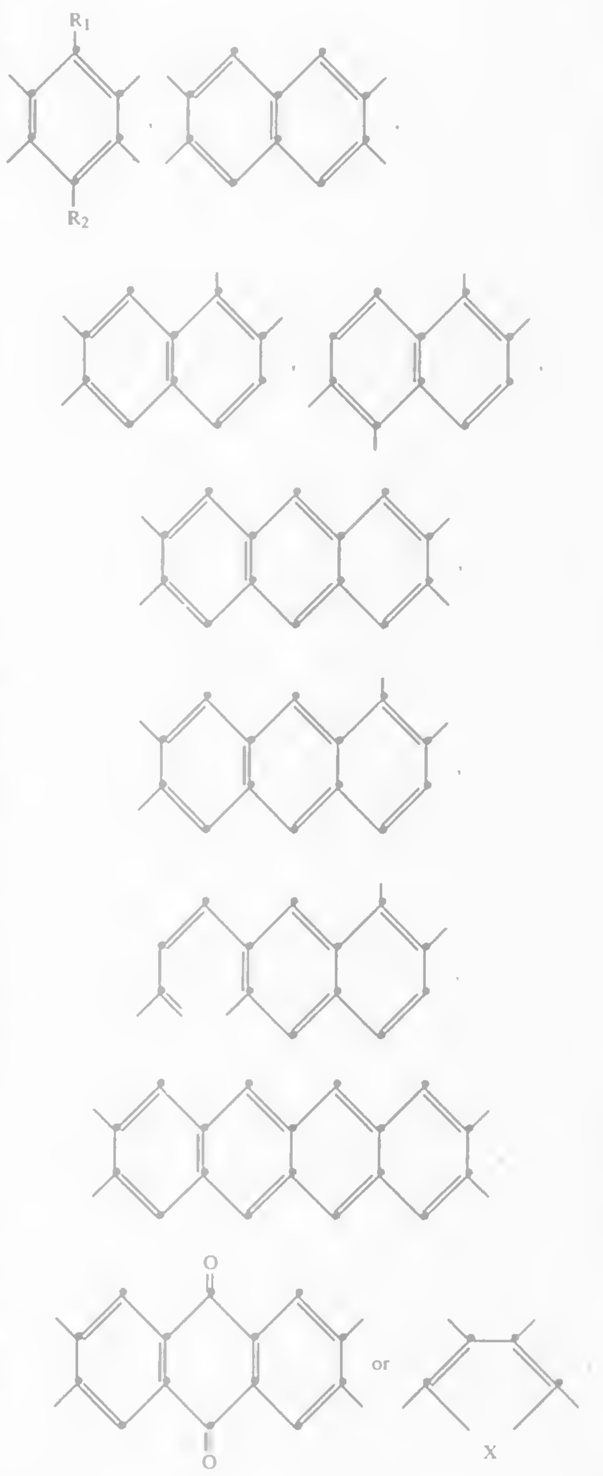
U.S. Cl. 528—374 **7 Claims**

1. A chlorine-free polyarylene sulfide which is insoluble in organic solvents and infusible, essentially consisting of structural elements of the formula I



(I)

these elements being present in the molecule more than five times and in which R is one of the following radicals



in which R_1 and R_2 independently of one another are each —H, C_1-C_{20}-alkyl, aryl having not more than 12 C atoms, aralkyl having not more than 20 C atoms, alkaryl having not more than 20 C atoms, —CN, $—OCOR_3$, —OH or $—SR_4$, in which R_3 and R_4 independently of one another are each a C_1-C_{20}alkyl or aryl having not more than 12 C atoms, X is NH, NR_5, S or O, in which R_5 is a C_1-C_{20}alkyl or an aryl having not more than 12 C atoms.

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4,882,416

PREPARATION OF POLY ARYLENE SULFIDE WITH SPECIFIED RATIO OF SULFUR SOURCE TO CYCLIC ORGANIC AMIDE

Guy Senatore, Borger, Tex.; Wei-Teh W. Shang, and Kenneth D. Goetz, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Continuation of Ser. No. 17,948, Feb. 24, 1987, abandoned. This application Jun. 20, 1988, Ser. No. 209,253

Int. Cl.⁴ C08G *75/16*

U.S. Cl. 528—388 **17 Claims**

1. A process for preparing arylene sulfide polymers comprising the steps of:

(a) admixing compounds comprising at least one sulfur source and at least one cyclic organic amide in the presence of water to form an aqueous admixture wherein the molar ratio of said sulfur source to said cyclic organic amide is above 0.55:1;
(b) dehydrating said aqueous admixture to form a dehydrated admixture;
(c) admixing with said dehydrated admixture at least one polymerizable halo-substituted aromatic compound selected from the group consisting of dihalo-substituted aromatic compounds and mixtures of dihalo-substituted aromatic compounds with polyhalo-substituted aromatic compounds having 3–6 halogen atoms per molecule to form a polymerization mixture;
(d) subjecting said polymerization mixture to polymerization conditions effective to produce a mixture comprising an arylene sulfide polymer; and
(e) recovering said arylene sulfide polymer.

4,882,417

PREPARATION OF OLEFIN/CO COPOLYMER WITH CONTROLLED ADDITION OF CATALYST COMPOSITION

Maarten M. Geuze, Amsterdam, Netherlands, assignor to Shell Oil Company, Houston, Tex.

Filed Feb. 9, 1989, Ser. No. 308,286

Claims priority, application Netherlands, Feb. 10, 1988, 8800324

Int. Cl.⁴ C08G *67/02*

U.S. Cl. 528—392 **4 Claims**

1. In the process of producing a linear alternating polymer of carbon monoxide and at least one ethylenically unsaturated hydrocarbon by contacting under polymerization conditions a reaction mixture of the carbon monoxide and hydrocarbon in the prsence of a catalyst composition formed from a palladium compound, the anion of a non-hydrohalogenic acid having a pKa below about 6 and a bidentate ligand of phosphorus and a polymerization diluent, the improvement which comprises providing to the reaction mixture from about 25% to about 85% of the catalyst composition at the outset of polymerization and subsequently providing the remainder of the catalyst composition when the concentration of polymer product has reached a value of at least 0.2 g per 100 g of the suspension of the polymer in the diluent.

4,882,418

WASHING ARYLENE SULFIDE POLYMERS WITH WATER PLUS A REDUCING AGENT

Guy Senatore, Borger, Tex.; Afif M. Nesheiwat, and Fred T. Sherk, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Dec. 13, 1988, Ser. No. 284,169

Int. Cl.⁴ C08G *75/16*

U.S. Cl. 528—499 **36 Claims**

1. A process comprising the steps of:

(a) preparing a first slurry, wherein the solid component of said first slurry comprises a particulate arylene sulfide polymer recovered from a polymerization reaction mixture slurry, and wherein the liquid component of said first slurry comprises water and a reducing agent;
(b) heating said first slurry to a temperature of at least about 185° C. but below the melting point of said particulate arylene sulfide polymer, to wash and said particulate arylene sulfide polymer;
(c) cooling said first slurry to a temperature below about 100° C. to form a second slurry, wherein the solid component of said second slurry comprises a washed particulate arylene sulfide polymer; and
(d) recovering said washed, particulate arylene sulfide polymer from said second slurry.

4,882,419

PROCESS FOR PREPARING ANTIBIOTIC L 17392 (DEGLUCOTEICOPLANIN)

Adriano Malabarba, Milan; Paolo Strazzolini, Fiume Veneto, and Bruno Cavalleri, Milan, all of Italy, assignors to Gruppo Lepetit S.p.A., Milan, Italy

PCT No. PCT/EP85/00267, § 371 Date Feb. 6, 1986, § 102(e) Date Feb. 6, 1986, PCT Pub. No. WO86/00076, PCT Pub. Date Jan. 3, 1986

PCT Filed Jun. 4, 1985, Ser. No. 845,268

Claims priority, application United Kingdom, Jun. 13, 1984, 8415093

Int. Cl.⁴ C07K *7/50, 1/00, 1/14*

U.S. Cl. 530—317 **11 Claims**

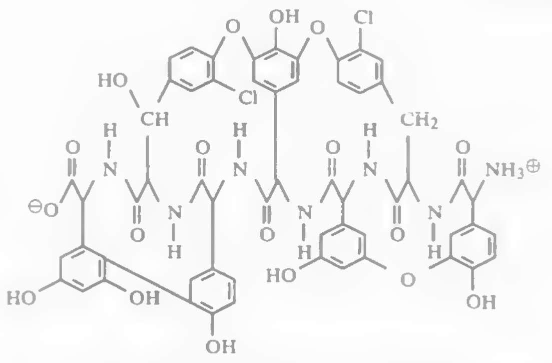
1. A process for preparing antibiotic L 17392 which has the following characteristics

(a) it is soluble in water at a pH higher than 9 and aqueous methanol, ethanol and acetone; slightly soluble in ethyl alcohol and dimethylformamide
(b) an ultraviolet absorption maxima which shows the following absorption maxima:
in 0.1N hydrochloric acid: λ_{max} 279 nm ($E_{1\,cm}^{1\%}=87.1$)
in 0.1N sodium hydroxide: λ_{max} 297 nm ($E_{1\,cm}^{1\%}=165.3$)
(c) an infrared absorption spectrum in nujol with the following mainly significant absorption maxima (cm^{-1}):
3250 (ν NH; and phenolic ν OH)
1645 (Amide I)
1610 (ν COO^-)
1595 (δ NH_3^+)
1520 (Amide II)
(d) Some of the ^1H NMR data obtained after D_2O exchange and selective decoupling experiments of the ^1H NMR spectrum registered at 270 MHz with a Bruker WH-270 Spectrometer, in DMSO-d_6 at 50° C. (internal standard TMS, $\delta=0.00$ ppm) are as follows (δ, multiplicity): 2.85–3.30, 2dd; 4.12, dd; 4.37, d; 4.45, d; 4.50, s; 5.00, ddd; 5.11, d; 5.14, d; 5.35, d; 5.56, d; 5.60, d; 6.3–7.9, m; 6.55, d; 7.37, d; 7.50, d; 7.61, d; 8.26; d; 8.28, d; 8.5–10.2, br;
d=doublet
dd=doublets of doublets
ddd=doublet of doublets of doublets
s=singlet
m=multiplet
br=broad
(e) an elemental analysis which indicates the following approximate percentage composition (average): carbon 58.05%; hydrogen 3.58%; nitrogen 8.23%; chlorine 5.85%; (after correction for a weight loss of 11%, measured by thermal gravimetric analysis)
(f) a molecular weight of 1199 confirmed also by FAB-MS analysis
(g) the following formula [calculated on the basis of the available data]:

$C_{58}H_{45}Cl_2N_7O_{18}$

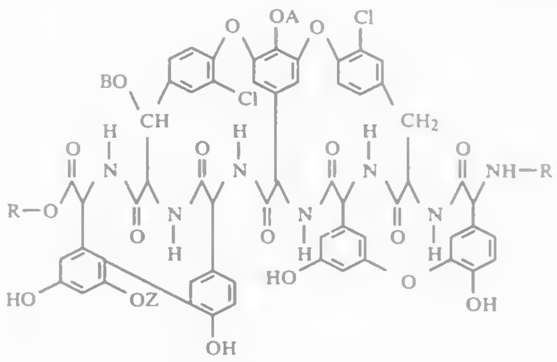
(h) a retention time (t_R) of 12.2 min when analyzed by HPLC using a pre-column (5 cm) packed with Perisorb RP-8 (30 μm; Merck) followed by a column Hibar RT 250-4 (Merck) prepacked with LiChrosorb RP-8 (10 μm) and eluting with a liner step-gradient ranging from 10% to 30% acetonitrile in 0.2% aqueous ammonium formate; flow rate: 2 ml/min. (internal standard: Teicoplanin A_2 component 2, $t_R=22.4$ min)
(i) an acidic function capable of forming salts
(l) a basic function capable of forming salts
(m) no sugar residue
(n) the following putative chemical formula:

(formula I)



which comprises submitting a deglucoteicoplanin ester of formula II

(formula II)



wherein A, B and Z represent hydrogen atoms, R represents benzyl or substituted benzyl, wherein the phenyl group is substituted with at least a substituent selected from chloro, bromo, fluoro, nitro, (C_1–C_3)alkyl and (C_1–C_3)alkoxy, with the exclusion of the tri-nitro phenyl group, R' is H, or acid addition salts thereof, to catalytic hydrogenolysis in the presence of a poisoned hydrogenation catalyst at a temperature from 10° C. to 40° C. and a pressure between ambient pressure and 5 atm, in an inert organic solvent in the presence of a mineral acid.

4,882,420

DIHALO-STATINE SUBSTITUTED RENIN INHIBITORS

Suvit Thaisrivongs, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

PCT No. PCT/US86/00713, § 371 Date Nov. 28, 1986, § 102(e) Date Nov. 28, 1986, PCT Pub. No. WO86/06379, PCT Pub. Date Nov. 6, 1986

Continuation-in-part of Ser. No. 828,407, Feb. 11, 1986, abandoned, which is a continuation-in-part of Ser. No. 725,190, Apr. 19, 1985, abandoned. This PCT application Apr. 7, 1986, Ser. No. 934,540

Int. Cl.⁴ C07K *5/08, 5/10, 7/06*

U.S. Cl. 530—330 **8 Claims**

1. A renin inhibitory peptide of the formula II, shown in relation to the renin substrate as follows:

Renin Substrate

II

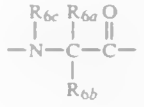
6 7 8 9 10 11 12 13
His—Pro—Phe—His—Leu—Val—Ile—His

X— A — B — C — D — E — F — G — H —Z

wherein X is

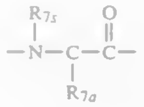
(a) hydrogen,
(b) R_{x1}—,
(c) R_{x1}—V_{x1}—C(R_{x2})(R_{x3})CO—,
(d) R_{x4}—N(R_{x4})$(CH_2)_{0\text{-}6}$—CO—,
(e) R_{x5}—O—CO—$(CH_2)_{1\text{-}6}$—CO—,
(f) R_{x5}—N—(R_{x5})—CO—$(CH_2)_{1\text{-}6}$—CO—,
(g) R_{x4}—SO_2—N(R_{x5})$(CH_2)_{1\text{-}6}$—CO—,
(h) R_{x4}—N(R_{x4})$(CH_2)_{0\text{-}6}$—SO_2—$(CH_2)_{1\text{-}6}$—CO—,
(i) Arg—,
(j) Arg—Arg—,
(k) R_{x6}—O—CH_2—CO—,
(l) R_{x6}—CH_2—O—CO—,
(m) R_{x6}—O—CO—, or
(n) R_{x6}—$(CH_2)_{0\text{-}6}$—CO—;

wherein —A— is absent or a divalent moiety of the formula IIA;



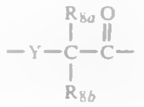
$$-\overset{R_{6c}}{\overset{|}{N}}-\underset{\underset{R_{6b}}{|}}{\overset{R_{6a}}{\overset{|}{C}}}-\overset{O}{\overset{\|}{C}}-$$

wherein —B— is absent or a divalent moiety of the formula IIB;



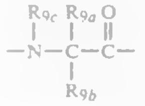
$$-\overset{R_{7s}}{\overset{|}{N}}-\underset{\underset{R_{7a}}{|}}{C}-\overset{O}{\overset{\|}{C}}-$$

wherein —C— is absent or a divalent moiety of the formula IIC;



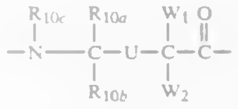
$$-Y-\underset{\underset{R_{8b}}{|}}{\overset{R_{8a}}{\overset{|}{C}}}-\overset{O}{\overset{\|}{C}}-$$

wherein —D— is a divalent moiety of the formula IID;



$$-\overset{R_{9c}}{\overset{|}{N}}-\underset{\underset{R_{9b}}{|}}{\overset{R_{9a}}{\overset{|}{C}}}-\overset{O}{\overset{\|}{C}}-$$

wherein —E—F— is a divalent moiety of the formula IIEF;



$$-\overset{R_{10c}}{\overset{|}{N}}-\underset{\underset{R_{10b}}{|}}{\overset{R_{10a}}{\overset{|}{C}}}-U-\underset{\underset{W_2}{|}}{\overset{W_1}{\overset{|}{C}}}-\overset{O}{\overset{\|}{C}}-$$

wherein —G— is absent or a divalent moiety of the formula IIG;

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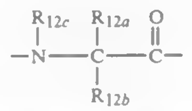
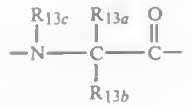
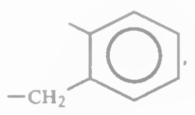
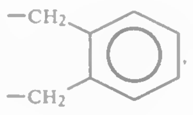

$-\overset{R_{12c}}{\overset{|}{N}}-\underset{R_{12b}}{\overset{R_{12a}}{C}}-\overset{O}{\overset{\|}{C}}-$

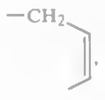
wherein —H— is absent or a divalent moiety of the formula IIH;

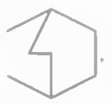

$-\overset{R_{13c}}{\overset{|}{N}}-\underset{R_{13b}}{\overset{R_{13a}}{C}}-\overset{O}{\overset{\|}{C}}-$

wherein Z is
  (a) $-V_{z1}-(CH_2)_{0-6}-R_{z1}$,
  (b) $-V_{z1}-CH_2-$(C_1-C_5hydroxyalkyl),
  (c) $-V_{z1}-CH_2-$(C_1-C_5aminoalkyl),
  (d) $-V_{z1}-CH_2-$((C_1-C_5alkyl)-(mono-, di-, or tri-C_{1-C}-$_5$alkyl)amino,
  (e) $-V_{z1}-CH_2-$((C_1-C_5alkyl)-guanidyl),
  (f) d or l—Lys—OH,
  (g) d or l—Lys—NH_2,
  (h) d or l—Ser—OH, or
  (i) d or l—Ser—NH_2;
wherein Y is $-N(R_{8c})-$, or divalent oxygen (—O—); with the provisos that
  (1) when Y is absent or $-N(R_{8c})-$, X is
    (a) hydrogen,
    (b) $R_{x1}-$,
    (c) $R_{x1}-V_{x1}-C(R_{x2})(R_{x3})CO-$,
    (d) $R_{x4}-N(R_{x4})(CH_2)_{0-6}-CO-$,
    (e) $R_{x5}-O-CO-(CH_2)_{1-6}-CO-$,
    (f) $R_{x5}-N-(R_{x5})-CO-(CH_2)_{1-6}-CO-$,
    (g) $R_{x4}-SO_2-N(R_{x5})(CH_2)_{1-6}-CO-$,
    (h) $R_{x4}-N(R_{x4})(CH_2)_{0-6}-SO_2-(CH_2)_{1-6}-CO-$,
    (i) Arg—, or
    (j) Arg—Arg—; and
  (2) when Y is —O—, A and B are both absent and X is
    (a) hydrogen,
    (b) $R_{x6}-O-CH_2-CO-$,
    (c) $R_{x6}-CH_2-O-CO-$,
    (d) $R_{x6}-O-CO-$,
    (e) $R_{x6}-(CH_2)_{0-6}-CO-$, or
    (f) $R_{x5}-N(R_{x5})-CH_2-CO-$;
  wherein —U— is
    (a) —C(O)—,
    (b) —CH(OH)—, or
    (c) $-CH(NH_2)-$;
  wherein W_1 and W_2 are the same or different and are
    (a) fluoro,
    (b) chloro,
    (c) bromo, or
    (d) hydrogen with the proviso that W_1 and W_2 are not hydrogen simultaneously;
  wherein R_{x1} is
    (a) $R_{x4}-(CH_2)_{0-2}-$,
    (b) $R_{x4}-CO-$,
    (c) $R_{x4}-(CH_2)_{0-5}-O-CO$, wherein R_{x4} is not hydrogen,
    (d) $R_{x4}-(CH_2)_{1-5}-CO-$,
    (e) $R_{x4}-(CH_2)_{0-4}-SO_2-$,
    (f) $R_{x4}-SO_2-(CH_2)_{0-4}-$, with the proviso that X_{x1} is other than oxygen for $(CH_2)_0$, or
    (g) $R_{x4}-SO_2-(CH_2)_{2-4}-O-CO-$;
  wherein R_{x2} is
    (a) hydrogen,
    (b) C_1-C_8alkyl,
    (c) C_3-C_7cycloalkyl,
    (d) aryl,
    (e) heterocycle,
    (f) $-CH(R_{x3})-$aryl,
    (g) $-CH(R_{x3})-$heterocycle;
    (h) $-CH_2CH_2-$aryl,
    (i) $-CH_2CH_2-$heterocycle,
    (j) —OH,
    (k) $-CH(R_{x3})-OH$,
    (l) $-CH(R_{x3})-SH$,
    (m) $-CH(R_{x3})-OCH_3$, or
    (n) $-CH(R_{x3})-SCH_3$;
  wherein R_{x3} is
    (a) hydrogen or
    (b) C_1-C_3alkyl;
  wherein R_{x4} is
    (a) hydrogen,
    (b) C_1-C_7alkyl,
    (c) C_3-C_7cycloalkyl,
    (d) $-CH_2-$(C_1-C_4hydroxyalkyl),
    (e) $-CH_2-$(C_1-C_4aminoalkyl),
    (f) aryl or
    (g) heterocycle;
  wherein R_{x5} is
    (a) hydrogen or
    (b) C_1-C_6alkyl;
  wherein R_{x6} is
    (a) C_1-C_6alkyl,
    (b) C_3-C_7alkyl,
    (c) aryl, or
    (d) heterocycle;
  wherein R_{6a} is
    (a) hydrogen, or
    (b) C_1-C_3alkyl;
  wherein R_{6b} is $-[CH(R_{6e})]_{0-3}-R_{6f}$,
  wherein R_{6c} is
    (a) hydrogen, or
    (b) C_1-C_3alkyl;
  wherein R_{6e} is
    (a) hydrogen, or
    (b) C_1-C_3alkyl;
  wherein R_{6f} is
    (a) hydroxy,
    (b) C_1-C_6alkyl,
    (c) C_3-C_{10}cycloalkyl,
    (d) aryl,
    (e) heterocycle,
    (f) $-(CH_2)_{0-3}-SH$,
    (g) C_7-C_{14}bi- or tricycloalkyl,
    (h) C_1-C_4hydroxyalkyl,
    (i) C_1-C_3alkyloxy,
    (j) C_1-C_3alkyloxy—(C_1-C_4alkyl)—,
    (k) aryl—O—,
    (l) aryl—O—(C_1-C_4alkyl)-,
    (m) aryl—CH_2—O—, or
    (n) aryl—CH_2—O—(C_1-C_4alkyl)—;
  wherein R_{7a} is
    (a) hydrogen, or
    (b) C_1-C_3alkyl;
  wherein R_{7s} is
    (a) $-(CH_2)_3-$, or
    (b) a divalent substituent of the formula 7A, 7B, 7C, 7D, 7E, 7F, or 7G;


7A


7B


7C


7D

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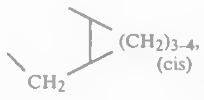
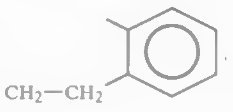
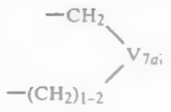

7E


7D



wherein R_{8a} is
  (a) hydrogen, or
  (b) C_1-C_3alkyl;
wherein R_{8b} is $-[CH(R_{6e})]_{0-3}-R_{6f}$,
wherein R_{8c} is
  (a) hydrogen, or
  (b) C_1-C_3alkyl;
wherein R_{9a} is
  (a) hydrogen, or
  (b) C_1-C_3alkyl;
wherein R_{9b} is $-[CH(R_{9e})]_{0-3}-R_{9f}$,
wherein R_{9c} is
  (a) hydrogen, or
  (b) C_1-C_3alkyl;
wherein R_{9e} is
  (a) hydrogen, or
  (b) C_1-C_3alkyl;
wherein R_{9f} is
  (a) hydrogen,
  (b) aryl,
  (c) heterocycle,
  (d) C_1-C_6alkyl,
  (e) C_3-C_{10}cycloalkyl,
  (f) C_7-C_{14}bi- or tricycloalkyl,
  (g) $-NH_2$,
  (h) —OH,
  (i) C_1-C_4aminoalkyl,
  (j) C_1-C_4hydroxyalkyl,
  (k) C_1-C_3alkyloxy—(C_1-C_4alkyl)—
  (l) $-(CH_2)_{1-6}-NHC(=NH)NH_2$,
  (m) $-CH_2SCH_3$,
  (n) $-(CH_2)_{0-4}CO-R_{9d}$,
  (o) —O—aryl,
  (p) —O—CH_2—aryl,
  (q) —(C_1-C_4alkyl)—O—aryl,
  (r) —(C_1-C_4alkyl)—O—CH_2—aryl,
  (s) —O—CH_2—heterocycle, or
  (t) —(C_1-C_4alkyl)—O—CH_2—heterocycle;
wherein R_{9d} is
  (a) hydrogen,
  (b) NH_2, or
  (c) C_1-C_3alkyloxy;
wherein R_{10a} is
  (a) hydrogen, or
  (b) C_1-C_3alkyl;
wherein R_{10b} is
  (a) C_1-C_7alkyl,
  (b) C_3-C_7cycloalkyl,
  (c) $-(CH_2)_{1-4}-$(C_3-C_7cycloalkyl),
  (d) $-(CH_2)_{1-4}-$aryl,
  (e) $-(CH_2)_{1-4}-$heterocycle,
  (f) C_5-C_7cycloalkenyl, or
  (g) $-(CH_2)_{1-4}-$(C_5-C_7cycloalkenyl);
wherein R_{10c} is
  (a) hydrogen, or
  (b) C_1-C_3alkyl;
wherein R_{12a} is
  (a) hydrogen, or
  (b) C_1-C_3alkyl;
wherein R_{12b} is
  (a) hydrogen, or
  (b) $-[CH(R_{12e})]_{0-4}-R_{12f}$,
wherein R_{12c} is
  (a) hydrogen, or
  (b) C_1-C_3alkyl;
wherein R_{12e} is
  (a) hydrogen, or
  (b) C_1-C_3alkyl;
wherein R_{12f} is
  (a) hydrogen,
  (b) aryl,
  (c) heterocycle,
  (d) C_1-C_6alkyl,
  (e) C_3-C_{10}cycloalkyl, or
  (f) C_7-C_{14}bi- or tricycloalkyl;
  (g) hydroxy,
  (h) C_1-C_4hydroxyalkyl,
  (i) C_1-C_3alkyloxy,
  (j) C_1-C_3alkyloxy—(C_1-C_4alkyl)—,
  (k) aryl—O—,
  (l) aryl—O—(C_1-C_4alkyl)—,
  (m) aryl—CH_2—O—, or
  (n) aryl—CH_2—O—(C_1-C_4alkyl)—;
wherein R_{13a} is
  (a) hydrogen, or
  (b) C_1-C_3alkyl;
wherein R_{13b} is $-[CH(R_{13e})]_{0-4}-R_{13f}$,
wherein R_{13c} is
  (a) hydrogen, or
  (b) C_1-C_3alkyl;
wherein R_{13e} is
  (a) hydrogen, or
  (b) C_1-C_3alkyl;
wherein R_{13f} is
  (a) hydrogen,
  (b) aryl,
  (c) heterocycle,
  (d) C_1-C_6alkyl
  (e) C_3-C_{10}cycloalkyl,
  (f) C_7-C_{14}bi- or tricycloalkyl,
  (g) hydroxy,
  (h) amino,
  (i) C_1-C_4aminoalkyl,
  (j) C_1-C_4hydroxyalkyl,
  (k) C_1-C_3alkyloxy,
  (l) C_1-C_3alkyloxy—(C_1-C_4alkyl)—,
  (m) $-(CH_2)_{1-6}-NHGC(=NH)NH_2$,
  (n) $-CH_2SCH_3$,
  (o) $-(CH_2)_{0-4}-CO-R_{13g}$,
  (p) aryl—O—,
  (q) aryl—O—(C_1-C_4alkyl)—
  (r) aryl—CH_2—O—,
  (s) aryl—CH_2—O—(C_1-C_4alkyl)—
  (t) heterocycle—CH_2—O—, or
  (u) heterocycle—CH_2—O—(C_1-C_4alkyl)—
wherein R_{13g} is
  (a) OH,
  (b) NH_2, or
  (c) C_1-C_3alkyloxy;
wherein R_{z1} is
  (a) hydrogen,
  (b) C_1-C_7 alkyl,
  (c) C_3-C_7cycloalkyl,
  (d) aryl, or
  (e) heterocycle; and
wherein R_{z2} is
  (a) hydrogen, or
  (b) C_1-C_3alkyl;
wherein V_{x1} is
  (a) $-CH_2-$,
  (b) $-CH(R_{x1})$,
  (c) $-N(R_{x5})-$,
  (d) —O—;
  (e) —S—,
  (f) —SO—, or
  (g) $-SO_2-$;
wherein V_{z1} is
  (a) —O—,
  (b) —S—, or

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(c) $—N(R_{z2})—$;
wherein V_{7a} is
(a) —O—,
(b) —S—, or
(c) —CH(OH)—.

4,882,421

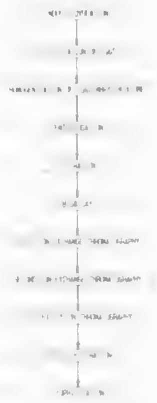
PHARMACEUTICAL FOR TREATING TUMORS AND METHOD FOR MAKING IT

Kuslima Shogen, Somerset; Stanislaw M. Mikulski, Essex Fells, and Wojciech J. Ardelt, Passaic, all of N.J., assignors to Alfacell Corporation, Bloomfield, N.J.

Continuation-in-part of Ser. No. 776,798, Sep. 17, 1985, which is a continuation-in-part of Ser. No. 643,808, Aug. 23, 1984, abandoned, which is a continuation of Ser. No. 422,034, Sep. 23, 1982, abandoned. This application Apr. 6, 1988, Ser. No. 178,118

Int. Cl.⁴ C07K *3/02, 3/12*

U.S. Cl. 530—350 21 Claims



1. A substantially pure protein having a molecular weight of approximately 14,000 to 16,000 Daltons and an amino acid composition approximately as follows:

AMINO ACID	APPROX. # OF RESIDUES PER MOLECULE OF MATERIAL
Aspartic acid/Asparagine	20
Threonine	13
Serine	11
Glutamic acid/Glutamine	9
Proline	6
Glycine	4
Alanine	4
Cystine/2	10
Valine	11
Methionine	1
Isoleucine	8
Leucine	7
Tyrosine	3
Phenylalanine	8
Histidine	4
Lysine	17
Arginine	4
Tryprophan	2
Approximate Total	142

4,882,422

PULMONARY SURFACTANT PROTEINS

H. William Taeusch, Redondo Beach, Calif.; Kenneth A. Jacobs, Newton, Mass.; D. Randall Steinbrink, Melrose, Mass.; Joanna Floros; David S. Phelps, both of West Roxbury, Mass., and Edward F. Fritsch, Concord, Mass., assignors to Genetics Institute, Inc., Cambridge, Mass.

Continuation-in-part of Ser. No. 791,120, Sep. 26, 1985, abandoned, and a continuation-in-part of Ser. No. 897,183, Sep. 26, 1985, abandoned. This application Sep. 24, 1987, Ser. No. 100,372

Int. Cl.⁴ C07K *13/00;* **A61K** *37/02*

U.S. Cl. 530—350 1 Claim

1. A purified human protein useful for enhancing pulmonary surfactant activity characterized by a molecular weight of about 35,000 daltons and a polypeptide sequence encoded by a DNA sequence selected from the group consisting of the cDNA insert in vector PSP35K-1A-10 (ATCC No. 40243) and the cDNA insert in vector PSP35K-68-A (ATCC No. 40244).

4,882,423

SUBSTANCE-CONJUGATED COMPLEMENT COMPONENT C1Q

Fumiaki Taguchi, 14-1, Yokodai 5-chome, Sagamihara-shi, Kanagawa-ken; Isamu Mitsui, Yokohama; Kinichi Hara, Yokohama; Masaro Hayashi, Yokohama; Kunio Ezawa, Tokyo; Kenichi Fukunaga, Tokyo, and Jun Kuranari, Tokyo, all of Japan, assignors to Calpis Food Industry and Fumiaki Taguchi, both of, Japan

Continuation-in-part of Ser. No. 779,671, Sep. 24, 1985, abandoned. This application Mar. 30, 1987, Ser. No. 32,025

Claims priority, application Japan, Oct. 2, 1984, 59-205686; Oct. 25, 1984, 59-223049; May 17, 1985, 60-103898; Jul. 24, 1985, 60-162012; Jul. 29, 1985, 60-166004; Mar. 31, 1986, 61-70936; Mar. 31, 1986, 61-70937; Mar. 31, 1986, 61-70938

Int. Cl.⁴ C07K *15/00*

U.S. Cl. 530—380 31 Claims

1. A complement component C1q wherein a substance is conjugated via a sulfur atom to at least one site of said component, said site not being involved in binding immunoglobulins,

said substance being selected from the group consisting of signal emitting substances and cell function regulating substances, said signal emitting substance being a member selected from the group consisting of enzymes, coenzymes, enzyme substrates, dyestuffs and pigments, magnetizable substances, donors and acceptors for electron transference, radioactive substances, metal compounds, metal compositions and agglutinating substances,

said cell function regulating substance being selected from the group consisting of antibiotics, growth factors, hormones, cell activation factors, cell division factors, anticancer agents and toxins.

4,882,424

ACTIVATION ANTIGEN

Stuart Schlossman, Newton Center; Chikao Morimoto, Needham, and Christopher Rudd, Somerville, all of Mass., assignors to Dana-Farber Cancer Institute, Inc., Boston, Mass.

Filed May 11, 1987, Ser. No. 49,348

Int. Cl.⁴ A61K *39/395, 39/00;* **C12P** *21/00*

U.S. Cl. 530—387 5 Claims

1. An antibody which specifically binds to a protein antigen present in the T-cells of *Aotus trivirgatus,* said antigen comprising two major polypeptides having molecular weights determined by SDS-PAGE analysis of 140 KD and 105 KD respectively under reducing conditions and 120 KD and 90 KD respectively under non-reducing conditions and having isoelectric points of pH 3-5 by non-equilibrium pH gradient gel electrophoresis/polyacrylamide gel electrophoresis analysis,

said antibody producing, in combination with phorbol myristate acetate or with anti-$T11_3$, proliferation of T-cells bound to said antibody.

4,882,425

RECEPTOR SPECIFIC PROTEINS AND THEIR USE IN RECEPTOR TYPING

Richard A. Hull; Sheila I. Hull, and Bogdan Nowicki, all of Houston, Tex., assignors to Baylor College of Medicine, Houston, Tex.

Filed Jul. 9, 1987, Ser. No. 72,197

Int. Cl.⁴ C07K *15/04, 15/14*

U.S. Cl. 530—396 4 Claims

1. As a composition of matter, a receptor specific protein selected from the group consisting of En, Dr, $DrCM^R$ and Pglobo, said receptor specific protein,

being isolated from bacteria,

having a polymerized fimbriae structure,

having the following antigenic specificity to erythrocyte antigens;

Receptor Specific Protein	Erythrocyte Antigen
En	$En(a^+)$, $En(a^-)$
Dr	Dr+, Dr−
$DrCM^R$	$DrCM^R$
Pglobo	Pglobo

having the following amino acid composition:

	En	Pglobo	Dr	$DrCM^R$
Amino Acid		% of total		
Ile	5.1	3.9	3.5	3.4
Gly	8.9	13.8	15.6	16.2
Leu	5.1	5.9	6.9	6.8
Val	10.8	11.2	6.1	6.0
Tyr	1.9	1.3	0.0	0.0
Thr	10.8	8.6	13.	12.8
Asn	6.4	6.6	*	*
Asp	5.1	7.2	12.1	12.8
Phe	4.5	5.3	1.7	1.7
Pro	1.9	3.3	1.7	1.7
Lys	3.8	7.9	3.5	3.4
Gln	6.4	4.6	*	*
Glu	1.9	3.9	8.6	8.5
Ala	13.4	11.8	5.2	5.1
Ser	8.3	1.3	1.5	9.4
Met	0.6	0.6	2.6	2.6
His	2.5	1.3	2.6	2.6
Lys	1.3	1.3	2.2	2.1
Arg	1.3	0.0	5.2	5.1
Trp	0.0	0.0	0.0	0.0

having the following molecular weight on SDS-PAGE electrophoresis: En=17,500, Dr=15,000, $Dr-CM^R=16,000$, and Pglobo=19,500; and

having the following N-terminal amino acid sequences:

En	Ala Thr Thr Val Asn Gly Gly Thr Val His Phe Lys Gly Glu Val Val Asn Ala Ala Cys Ala Val Asn Met
$DrCM^R$	Asn Phe Thr Ser Ser Gly Thr Asn Gly Lys Val Asp Leu Thr Ile Thr Glu Glu Lys Arg Val Thr Val Glu
Pglobo	Ala Pro Thr Ile Pro Gln Gly Gln Gly Lys Val Thr Phe Asn Gly Thr Val Val Asp Ala Pro Cys Ser Ile
Dr	Thr Phe Gln Ser Gly Thr Thr Gly Ile Thr Thr Leu Thr Val

4,882,426

BEADS OF CROSS-LINKED GLUCOMANNAN AND PRODUCTION THEREOF

Yoshiaki Motozato, Kumamoto, Japan, assignor to Kurita Water Industries, Ltd., Tokyo, Japan

Filed Jul. 8, 1987, Ser. No. 70,950

Int. Cl.⁴ A61K *29/02;* **C09K** *3/00*

U.S. Cl. 536—114 11 Claims

1. Glucomannan beads produced from glucomannan esters for use for gel filtration and gel chromatography, which are porous and have a cross-linked structure and exhibit a degree of swelling in the range from 2 to 8 ml of wet gel bed per g of dry gel, an exclusion limit molecular weight in the range from 1,000,000 to 100,000,000, and an average bead size in the range from 1 to 500 μm and a matrix volume proportion of at least 15% at an exclusion limit molecular weight of about 1,000,000, wherein matrix volume proportion is the proportion of true volume of glucomannan substrate to the apparent volume of the glucomannan bead.

4,882,427

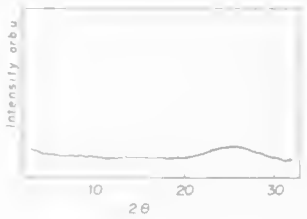
TITANIUM PHTHALOCYANINE OPTICAL SEMICONDUCTOR MATERIAL AND ELECTROPHOTOGRAPHIC PLATE USING SAME

Toshio Enokida, and Shigemasa Takano, both of Tokyo, Japan, assignors to Toyo Ink Manufacturing Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 120,840, Nov. 16, 1987, abandoned. This application Feb. 17, 1989, Ser. No. 312,425

Int. Cl.⁴ C09B *47/04*

U.S. Cl. 540—141 15 Claims



1. An optical semiconductor material comprising:
(1) a noncrystalline material comprising a titanium phthalocyanine compound selected from the group consisting of a titanium phthalocyanine compound having no substituents on the benzo moieties of the molecule, and a low halogenated titanium phthalocyanine compound having not more than 0.51 halogen substituents in the titanium phthalocyanine molecule, which does not substantially show X-ray diffraction peak in X-ray diffraction chart, or
(2) a pseudo-noncrystalline material comprising a titanium phthalocyanine compound selected from the group consisting of a titanium phthalocyanine compound having no substituents on the benzo moieties of the molecule, and a low halogenated titanium phthalocyanine compound having not more than 0.51 halogen substituents in the titanium phthalocyanine molecule which shows broad X-ray diffraction peaks at 6.0°, 15.5°, 23.4° and 25.5° of Bragg angle (20≅0.2°), or
(3) a mixture of said noncrystalline and said pseudononcrystalline materials.

4,882,428

AZAPORPHYRIN COMPOUNDS

Masahiro Irie, Sakai, Japan, assignor to Mitsubishi Chemical Industries Limited, Tokyo, Japan

Filed Mar. 11, 1988, Ser. No. 167,231

Claims priority, application Japan, Oct. 8, 1987, 62-254120; Jan. 22, 1988, 63-11895

Int. Cl.⁴ C07D *487/22*

U.S. Cl. 540—121 8 Claims

1. An azoporphyrin compound of the formula:

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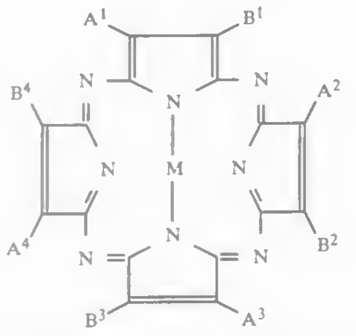
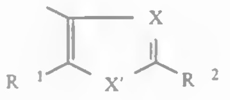


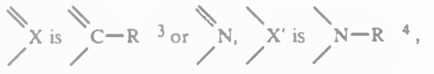
(I)

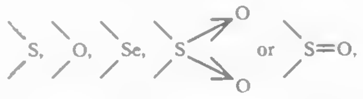
wherein M is 2H, or a metal atom of Group VIII, Ib, IIb, IIIb, IVa, Va, VIa or VIIa of the Periodic Table or its oxide or halide, and each of A^1, A^2, A^3, A^4, B^1, B^2, B^3 and B^4 is a group of the formula II or III:



(II)

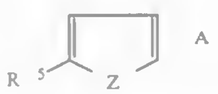
where



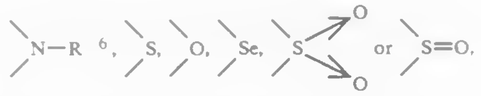


R^1 is an alkyl group, a halogen atom or a trifluoromethyl group, each of R^2 and R^3 is a hydrogen atom, an alkyl group, a halogen atom, a trifluoromethyl group or a substituted or unsubstituted phenyl group, and R^4 is a hydrogen atom or a substituted or unsubstituted alkyl, aryl or cycloalkyl group,

(III)



wherein ring A is a hydrocarbon ring or a hetero ring, Z is



and R^5 is an alkyl group, a halogen atom or a trifluoromethyl group, wherein R^6 is a hydrogen atom or a substituted or unsubstituted alkyl, aryl or cycloalkyl group, provided that A^1 and B^1, A^2 and B^2, A^3 and B^3, and A^4 and B^4 are, respectively, cyclizable by irradiation with light to form a cyclohexadiene ring and thereby change the optical properties.

4,882,429

STEREOSPECIFIC PREPARATION OF (3S,4R,5R)-3-(1-HYDROXYETHYL)-4-BENZOYLOXY-AZERIDINONES FROM L-(−)-THEONINE

Stuart W. McCombie, Caldwell; Michael P. Kirkup, Somerset, both of N.J., and Amy Sommese Boland, Pittsburgh, Pa., assignors to Schering Corporation, Kenilworth, N.J.

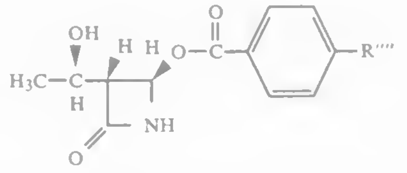
Filed Mar. 3, 1986, Ser. No. 835,392

Int. Cl.⁴ C07D *205/08;* C07B *41/12, 37/10;* A61K *301/24*

U.S. Cl. 540—357 9 Claims

1. A process for preparing a compound represented by the formula

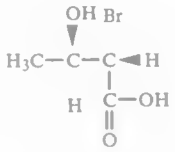
I



wherein R'''' is hydrogen, halogen or lower alkyl; comprising the steps

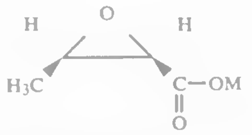
(a) reacting L-(−)-threonine with an alkali metal bromide and an alkali metal nitrite to produce a compound represented by the formula

2



(b) reacting the compound produced in step (a) with an alkali metal base, to produce a compound represented by the formula

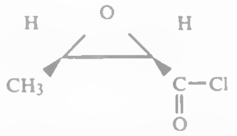
3



wherein M is an alkali metal

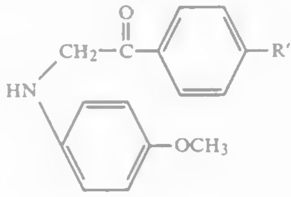
(c) reacting the compound produced in step (b) with oxalyl chloride to produce the compound represented by the formula

4



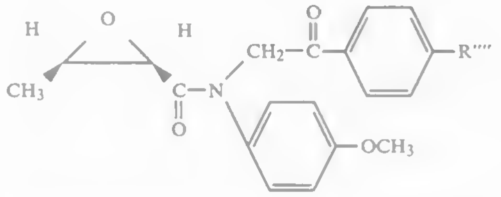
(d) reacting, without isolating, the compound produced in step (c) with a compound represented by the formula

7



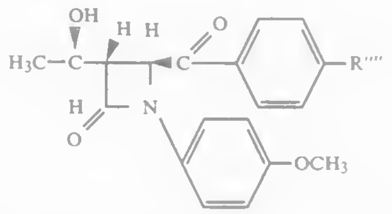
in the presence of an organic base to produce a compound represented by the formula

8



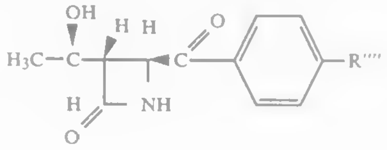
(e) reacting the compound produced in step (d) with a strong base to produce a compound represented by the formula

9

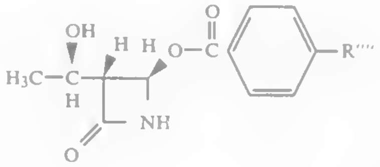


(f) reacting the compound produced in step (e) with aqueous ceric ammonium nitrate or ozone in a lower alkanol, lower alkyl ester of a lower alkanoic acid, or acetic acid to produce a compound represented by the formula

10



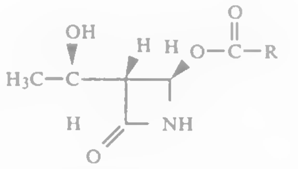
(g) reacting the compound produced in step (f) with a peracid to produce a compound represented by the formula



wherein R'''' is as defined hereinabove.

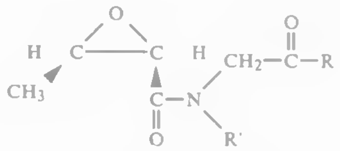
7. A process for preparing a compound represented by the formula

Ia



wherein R is phenyl or substituted phenyl wherein the substituents are lower alkyl or halogen; which comprises the steps

(a) reacting a compound represented by the formula



wherein R is as defined for formula Ia and R' is allyl or mono or dimethoxy phenyl with a strong base;

(b) reacting the product of step (a) with aqueous ceric ammonium nitrate or ozone in a lower alkanol, a lower alkyl ester of a lower alkanoic acid or acetic acid; and

(c) reacting the product of step (b) with a peracid to yield compound Ia.

4,882,430

RECOVERY OF CAPROLACTAM FROM CAPROLACTAM DISTILLATION LOW BOILERS OR HIGH BOILERS OR MIXTURES THEREOF

Gerald Neubauer, Weinheim, Fed. Rep. of Germany; Emile De Decker, Schoten, Belgium; Hugo Fuchs, Ludwigshaften, Fed. Rep. of Germany; Bernhard Holzknecht, Ellerstadt, Fed. Rep. of Germany, and Josef Ritz, Ludwigshafen, Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Oct. 13, 1988, Ser. No. 257,274

Int. Cl.⁴ C07D *201/16*

U.S. Cl. 540—540 8 Claims

1. A process for recovering caprolactam from a caprolactam distillation low boiler or high boiler or a mixture thereof, comprising the following steps:

(a) crystallizing a low or high boiler or a mixture thereof to form purified capro-lactam crystals and a mother liquor,

(b) separating off the purified caprolactam crystals to leave a mother liquor,

(c) recycling from 5 to 90% by weight of the mother liquor of stage (b) into stage (a) and transferring the remainder of the mother liquor into the subsequent stage (d),

(d) crystallizing the mother liquor portion from stage (c) to form caprolactam crystals and a mother liquor,

(e) separating off the caprolactam crystals of stage (d) and recycling the same into stage (a) to leave a mother liquor,

(f) recycling from 20 to 99% by weight of the mother liquor of stage (e) into stage (d) and channeling out the remainder of the impurity-containing mother liquor of stage (e).

4,882,431

OXA(THIA)ZOLIDINE DERIVATIVES

Keiichi Ishimitsu, Odawara; Hiroyuki Imagawa, Yokohama; Tomio Yamada, Hiratsuka; Michihiko Matsuda, and Yukio Kitagawa, both of Odawara, all of Japan, assignors to Nippon Soda Co., Ltd., Tokyo, Japan

PCT No. PCT/JP87/00552, § 371 Date Mar. 18, 1988, § 102(e) Date Mar. 18, 1988, PCT Pub. No. WO88/00943, PCT Pub. Date Feb. 11, 1988

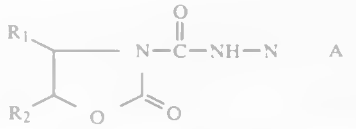
PCT Filed Jul. 28, 1987, Ser. No. 186,489

Claims priority, application Japan, Jul. 29, 1986, 61-176740

Int. Cl.⁴ C07D *263/16;* A01N *43/76*

U.S. Cl. 540—603 1 Claim

1. A compound having the formula



wherein R_1 denotes C_{1-6} alkyl radicals; R_2 denotes the phenyl radical which may be substituted by halogen atoms, C_{1-6} alkyl radicals, C_{1-6} haloalkyl radicals, C_{1-6} alkoxy radicals, C_{1-6} haloalkoxy radicals or methylenedioxy radicals;

—N A

denotes a heterocyclic radical selected from the group consisting of piperidino, morpholino, 1-piperazinyl, 1-pyrrolidinyl

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and l-perhydroazepinyl which may be substituted by C_{1-6} alkyl radicals.

4,882,432

POLYCYCLIC-CARBAMIC ACID PIPERAZINOALKYL ESTERS AND AMIDES

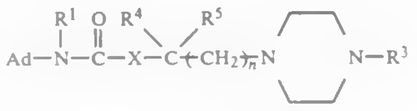
Magid A. Abou-Gharbia; John P. Yardley, both of Gulph Mills, and Wayne E. Childers, Jr., Yardley, all of Pa., assignors to American Home Products Corporation, New York, N.Y.

Filed Jan. 9, 1989, Ser. No. 294,853

Int. Cl.⁴ C07D *403/04, 241/04*

U.S. Cl. 544—295 **8 Claims**

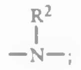
1. A compound of the formula:



wherein

Ad is 1-adamantyl, 2-adamantyl or 3-noradamantyl;

X is —O— or



$$-\overset{R^2}{\overset{|}{N}}-;$$

n is 1, 2, 3 or 4;

R^1 and R^2 are, independently, hydrogen, alkyl of 1 to 3 carbon atoms, phenyl, benzyl, or substituted phenyl or benzyl in which the substituent is alkyl of 1 to 3 carbon atoms, alkoxy of 1 to 3 carbon atoms, halo, cyano, nitro or trifluoromethyl;

R^3 is phenyl, benzyl or substituted phenyl or benzyl in which the substituent is alkyl of 1 to 3 carbon atoms, alkoxy of 1 to 3 carbon atoms, halo, nitro, cyano or perhalomethyl, 2-, 3-, or 4-pyridinyl, 2-, 4- or 5-pyrimidinyl or 2- or 3-pyrazinyl;

and

R^4 and R^5 are, independently, hydrogen, methyl, phenyl or benzyl; or a pharmaceutically acceptable salt thereof.

4,882,433

3'-PYRIDINYLALKYLINDEN- AND 3'-PYRIDINYLALKYLINDOL-2-CARBOXYLIC ACIDS AND ANALOGS

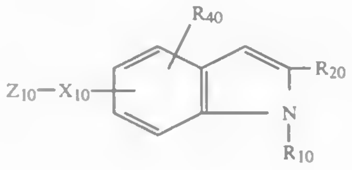
Roy A. Johnson, Kalamazoo, and Chiu-Hong Lin, Portage, both of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 85,103, Jun. 29, 1987, Pat. No. 4,767,865, which is a continuation of Ser. No. 792,903, Oct. 30, 1985, abandoned. This application Mar. 28, 1988, Ser. No. 174,265

Int. Cl.⁴ C07D *401/06, 401/12*

U.S. Cl. 546—273 **7 Claims**

1. A compound of the formula II



wherein Z_{10} is

(a) 4-pyridinyl, or

(b) 3-pyridinyl;

wherein X_{10} is:

(a) $—(CH_2)_n—$, or

(b) $—CH_2NH—$;

wherein R_{10} is:

(a) hydrogen,

(b) methyl, or

(c) benzyl;

wherein R_{20} is $COOR_3$;

wherein R_3 is:

(a) hydrogen,

(b) a pharmacologically acceptable cation, or

(c) $(C_1–C_4)$alkyl;

wherein R_{40} is:

(a) $(C_1–C_4)$alkyl,

(b) chloro,

(c) bromo,

(d) OCH_3, or

(e) hydrogen;

wherein R_{50} is:

(a) hydrogen, or

(b) $(C_1–C_4)$alkyl;

wherein n is an integer from 1 to 2; or a pharmacologically acceptable salt thereof.

4,882,434

GAMMA-LACTONECARBOXYLIC ACID DERIVATIVES AND THEIR USE AS ANTIBACTERIAL AGENTS OR INTERMEDIATES

Kouichi Yoshioka, Kyoto, Japan, assignor to Takeda Chemical Industries, Ltd., Osaka, Japan

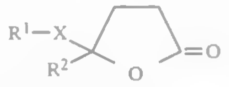
Filed Oct. 21, 1987, Ser. No. 111,514

Claims priority, application Japan, Oct. 29, 1986, 61-257629; Apr. 6, 1987, 62-84477

Int. Cl.⁴ C07D *405/12, 409/12, 413/14, 417/12*

U.S. Cl. 546—283 **5 Claims**

1. A compound of the formula



wherein R^1 is (1) C_{1-6}alkyl which is unsubstituted or is substituted by pyridyl, thienyl, furyl or phenyl, (2) C_{4-6}cycloalkyl, (3) phenyl which is unsubstituted or is substituted by halogen, nitro, cyano, C_{1-3} or C_{1-3} alkoxyl, (4) pyridyl which is unquaternized or quaternized and which is unsubstituted or is substituted by methyl, or (5) imidazolyl which is unsubstituted or is substituted by methyl; R^2 is a carboxyl group which is free or is esterified by C_{1-10}alkyl, benzyl, nitrobenzyl or benzhydryl; and X is an oxygen atom or a sulfur atom which is unoxidized or is oxidized, or a salt thereof.

4,882,435

PHARMACEUTICAL PREPARATIONS

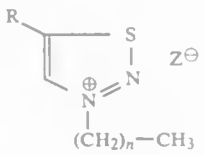
Heinrich H. Paradies, Iserlohn, Fed. Rep. of Germany, assignor to Medice Chem.-Pharm. Fabrik, Fed. Rep. of Germany

Division of Ser. No. 82,891, Aug. 6, 1987. This application Mar. 9, 1989, Ser. No. 321,436

Int. Cl.⁴ C07D *285/06*

U.S. Cl. 548—127 **2 Claims**

1. A compound having the formula



in which:

R is a member selected from the group consisting of H, CH_3, and OH;

Z is a member selected from the group consisting of chloride, bromide, iodide, maleate, formate, acetate, propionate, HSO_4HU-, malate, fumarate, salicylate, alginate, gluconate, glucoronate, galactoronate, ethylsulfate and $H_2PO_4^-$; and

n is 8 to 20.

4,882,436

SEMI-POLAR HYPERDISPERSANTS FOR PIGMENT BASES

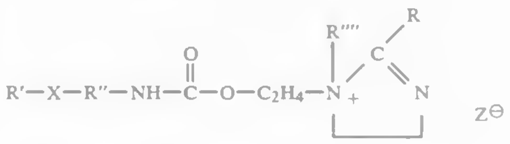
Albert A. Kveglis, Pine Brook, and Arnold H. Gruben, Cedar Grove, both of N.J., assignors to Sun Chemical Corporation, Fort Lee, N.J.

Continuation-in-part of Ser. No. 190,623, May 5, 1988, abandoned. This application Apr. 13, 1989, Ser. No. 337,509

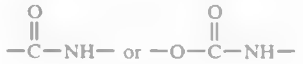
Int. Cl.⁴ C07D *233/14*

U.S. Cl. 548—354 **8 Claims**

1. A quaternized oligourethane having the formula:

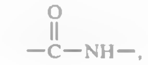


wherein X represents the radical



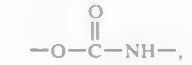
$$-\overset{O}{\overset{\|}{C}}-NH- \text{ or } -O-\overset{O}{\overset{\|}{C}}-NH-$$

such that when X is



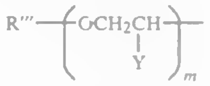
$$-\overset{O}{\overset{\|}{C}}-NH-,$$

R' is an ester resulting from the reaction of a $C_2–C_{18}$ hydroxyalkanoic acid or a $C_3–C_{18}$ hydroxyalkenoic acid and rosin, and when X is



$$-O-\overset{O}{\overset{\|}{C}}-NH-,$$

R' is a $C_3–C_{18}$ linear or branched alkyl, phenyl, alkaryl, aralkyl, cycloalkyl or the radical



$$R'''-\left(OCH_2\underset{Y}{\underset{|}{C}}H\right)_m-$$

wherein

Y is hydrogen or methyl, R''' is a $C_1–C_6$ alkyl and m is an integer of 1 to 20;

R is a $C_{11}–C_{17}$ linear or branched alkyl, alkenyl, alkynyl or cycloalkyl;

R'' is a $C_6–C_{14}$ linear or branched alkyl, phenyl, alkaryl, aralkyl or cycloalkyl or a dimer or trimer thereof;

R'''' is hydrogen or a $C_1–C_4$ linear or branched alkyl; and

Z is $R''''OSO_3$, Cl, Br, 1, $NO_3R'''''SO_3$, $(R'''')_{3-n}H_nPO_4$ or $(R'''')_{3-n}H_nPO_3$

wherein n is an integer of 0 to 3, and R''''' is phenyl, CF_3, $C_1–C_4$ linear or branched alkyl or $C_7–C_{12}$ aralkyl or alkaryl.

4,882,437

SUBSTITUTED 5-AMINO-1-PHENYLPYRAZOLES

Reinhold Gehring, Wuppertal; Erich Klauke, Odenthal; Otto Schallner, Monheim; Jörg Stetter, Wuppertal; Hans-Joachim Santel, Cologne, and Robert R. Schmidt, Bergisch-Gladbach, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

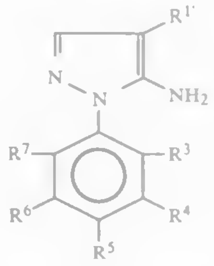
Continuation of Ser. No. 947,667, Dec. 30, 1986, Pat. No. 4,791,212, which is a division of Ser. No. 947,665, Dec. 30, 1986, Pat. No. 4,770,693, which is a division of Ser. No. 659,731, Oct. 11, 1984, Pat. No. 4,668,280. This application Sep. 23, 1988, Ser. No. 248,890

Claims priority, application Fed. Rep. of Germany, Oct. 15, 1983, 3337543; Jun. 6, 1984, 3420985

Int. Cl.⁴ C07D *231/38*

U.S. Cl. 548—362 **1 Claim**

1. A 5-aminopyrazole of the formula



in which

$R^{1'}$ represents alkoxycarbonyl, alkenyloxycarbonyl or alkinyloxycarbonyl with in each case up to 4 carbon atoms in the individual hydrocarbyl parts and

R^3, R^4, R^5, R^6 and R^7, which are identical or different, represent hydrogen, halogen, cyano, nitro, alkyl, alkoxy, alkylsulphonyl, alkoxycarbonyl with up to 4 carbon atoms in the particular alkyl parts or a radical —(X)—R^8, wherein

X represents sulphur, sulphinyl or sulphonyl,

R^8 represents halogenoalkyl with up to 4 carbon atoms and up to 9 halogen atoms,

with the proviso that at least one of the radicals R^3, R^4, R^5, R^6 or R^7 represents a radical —(X)—R^8.

4,882,438

PHOTOCHROMATIC COMPOUNDS

Takashi Tanaka, Shinnanyo; Satoshi Imura, Tokuyama, and Yasuji Kida, Kudamatsu, all of Japan, assignors to Tokuyama Soda Kabushiki Kaisha, Yamaguchi, Japan

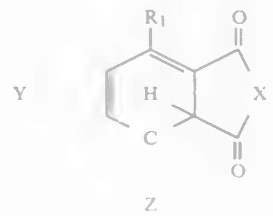
Filed Nov. 8, 1988, Ser. No. 268,497

Claims priority, application Japan, Nov. 10, 1987, 62-282131; Nov. 11, 1987, 62-283116; Apr. 2, 1988, 62-80250

Int. Cl.⁴ C07D *307/60, 405/06;* **C09K** *9/00*

U.S. Cl. 548—407 **15 Claims**

1. A compound represented by the following general formula [I]



[I]

wherein

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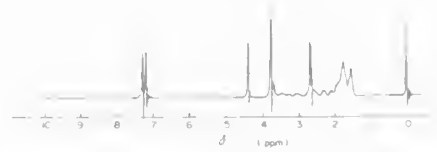
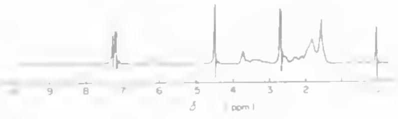
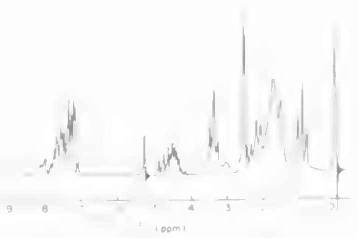
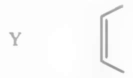


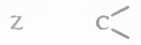






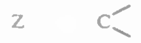
represents a divalent aromatic hydrocarbon group or a divalent unsaturated heterocyclic group each of which may have a substituent,

R_1 represents a monovalent hydrocarbon group or a monovalent heterocyclic group each of which may have a substituent,



represents a norbornylidene group or an adamantylidene group each of which may have a substituent, and

X represents an oxygen atom, the group $>N\text{-}R_2$, the group $>N\text{-}A_1\text{-}B_1\text{—}A_2\text{—}_m\text{—}B_2\text{—}_nR_3$, the group $>N\text{-}A_3\text{-}A_4$, or the group $>N\text{-}A_3\text{-}R_4$, provided that when

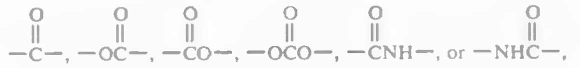


is an adamantylidene group, X is selected from the above groups excepting the oxygen atom and the group $>N\text{-}R_2$, in which

R_2 represents a hydrogen atom, an alkyl group having 1 to 20 carbon atoms, or an aryl group having 6 to 10 carbon atoms,

A_1 and A_2 are identical or different and each represents an alkylene group having 1 to 10 carbon atoms, an alkylidene group having 2 to 10 carbon atoms, a cycloalkylene group having 3 to 10 carbon atoms or an alkylcycloalkanediyl group having 6 to 10 carbon atoms,

B_1 and B_2 are identical or different, and each represents —O—,



$$-\overset{O}{\overset{\|}{C}}-,\ -O\overset{O}{\overset{\|}{C}}-,\ -\overset{O}{\overset{\|}{C}}O-,\ -O\overset{O}{\overset{\|}{C}}O-,\ -\overset{O}{\overset{\|}{C}}NH-,\ \text{or}\ -NH\overset{O}{\overset{\|}{C}}-,$$

m and n, independently from each other, represent 0 or 1, provided that when m is 0, n is also 0,

R_3 represents an alkyl group having 1 to 10 carbon atoms, a naphthyl group or a naphthylalkyl group having 1 to 4 carbon atoms in the alkyl moiety, the alkyl group having 1 to 10 carbon atoms being optionally substituted by 1 to 3 atoms or groups selected from the class consisting of halogen atoms, cyano groups and nitro groups, and the naphthyl or naphthylalkyl group being optionally substituted by 1 to 3 atoms or groups selected from the class consisting of halogen atoms, cyano groups, nitro groups, alkylamino groups having 1 to 3 carbon atoms, alkyl groups having 1 to 3 carbon atoms and alkoxy groups having 1 to 3 carbon atoms,

A_3 represents an alkylene group having 1 to 10 carbon atoms, an alkylidene group having 2 to 10 carbon atoms, a cycloalkylene group having 3 to 10 carbon atoms, or an alkylcycloalkanediyl group having 6 to 10 carbom atoms,

A_4 represents a naphthyl group which may be substituted by 1 to 3 atoms or groups selected from the class consisting of halogen atoms, cyano groups, nitro groups, alkylamino groups having 1 to 3 carbon atoms, alkyl groups having 1 to 3 carbon atoms and alkoxy groups having 1 to 3 carbon atoms, and

R_4 represents a halogen atom, a cyano group or a nitro group.

4,882,439
STEROID INTERMEDIATES

David N. Jones, Sheffield, United Kingdom, assignor to The **University of Sheffield, Sheffield, England**

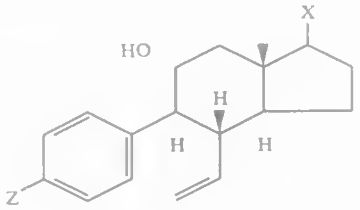
Filed Sep. 19, 1986, Ser. No. 910,526

Claims priority, application United Kingdom, Sep. 19, 1985, 8523184; Jun. 28, 1986, 8615850

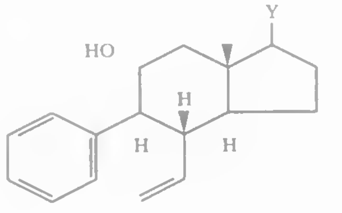
Int. Cl.⁴ C07D *317/12;* **C07C** *49/297, 33/12*

U.S. Cl. 549—336 **1 Claim**

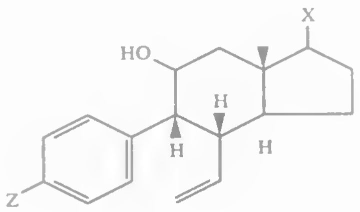
1. A compound having the formula



(2)



(2A)



(4)

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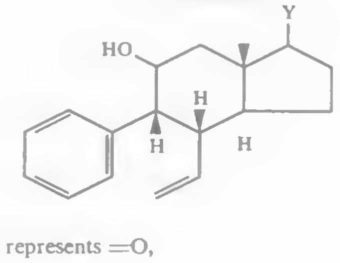
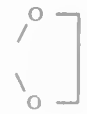
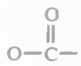


where X represents =O,

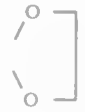


or beta orientated

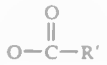


$$O-\overset{O}{\overset{\|}{C}}-R',$$

Y represents =O,



beta orientated



$$O-\overset{O}{\overset{\|}{C}}-R'$$

or beta orientated OH, Z represents alkoxy and R' represents alkyl.

4,882,440
FORSKOLIN INTERMEDIATES

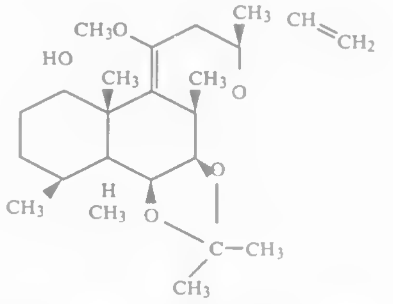
Nicholas J. Hrib, Somerville, N.J., assignor to Heochst-Roussel Pharmaceuticals, Inc., Somerville, N.J.

Division of Ser. No. 147,476, Jan. 25, 1988, Pat. No. 4,820,826, which is a division of Ser. No. 846,550, Mar. 31, 1986, Pat. No. 4,734,513. This application Jan. 25, 1989, Ser. No. 300,880

Int. Cl.⁴ C07D *311/78*

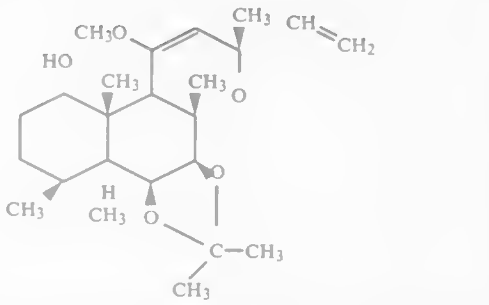
U.S. Cl. 549—383 **2 Claims**

1. The compound having the formula



which is 9,11-dehydro-8,13-epoxy-11-methoxy-1α,6β,7β-trihydroxylabd-14-ene-6,7-dimethyl acetal.

2. The compound having the formula



(4A)

which is 11,12-dehydro-8,13-epoxy-11-methoxy-1α,6β,7β,9α-tetrahydroxylabd-14-ene-6,7-dimethyl acetal.

4,882,441
LOWER-ALKYL OR ARYL-SULFONYL UNSATURATED TACOPHEROLS

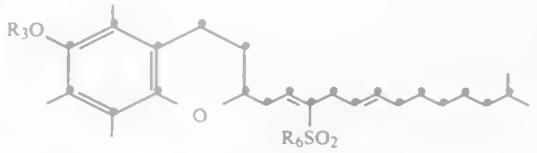
David L. Coffen, Glen Ridge, N.J.; Rudolf Schmid, Munchenstein, Switzerland, and Mark J. Sebastian, Plainfield, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 030,798, Mar. 27, 1987, Pat. No. 4,789,750. This application Sep. 9, 1988, Ser. No. 242,239

Int. Cl.⁴ C07D *311/72*

U.S. Cl. 549—407 **5 Claims**

1. A compound of the formula



wherein R_3 taken together with its attached oxygen atom forms an ether hydroxy protecting group; the dotted bond forms a double bond or is hydrogenated to form a single bond; and R_6 is lower alkyl or aryl.

4,882,442
PROCESS FOR THE PRODUCTION OF EPOXIDES

Wolfgang Edl, Grosshesselohe, and Günter R. Sienel, Ebenhausen, both of Fed. Rep. of Germany, assignors to Peroxid-Chemie GmbH, Munich, Fed. Rep. of Germany

Continuation of Ser. No. 790,796, Oct. 24, 1985, abandoned, which is a continuation of Ser. No. 580,787, Feb. 22, 1984, abandoned, which is a continuation of Ser. No. 330,985, Dec. 15, 1981, abandoned. This application Jan. 27, 1988, Ser. No. 150,004

Claims priority, application Fed. Rep. of Germany, Dec. 30, 1980, 3049434

Int. Cl.⁴ C07D *301/12*

U.S. Cl. 549—525 20 Claims

1. A process for the production of an acid labile epoxide by reaction of one mole equivalent of the corresponding olefin with 1 to 1.6 moles equivalent of an aliphatic percarboxylic acid mixture of an aliphatic percarboxylic acid selected from the group consisting of peracetic acid, perpropionic acid, and perbutyric acid with a carboxylic acid corresponding to the percarboxylic acid and at least one strong acid; the process comprising: neutralizing said strong acid in the percarboxylic acid mixture with 1.0 to 1.785 equivalents of an inorganic base or a basic alkali or alkaline earth salt of said carboxylic acid, and thereafter combining the percarboxylic acid mixture with a reaction mixture containing said olefin in solvent in an amount sufficient to insure that the reaction mixture can be stirred, and about 0.5 to about 0.74 equivalents acid-binding agent with reference to the amount of total carboxylic acid

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present in said percarboxylic acid mixture while maintaining the temperature at −20° to 60° C.

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ALKYLENE OXIDES PRODUCTION FROM C7 TO C22 OLEFINS USING MOLTEN NITRATE SALT CATALYST

B. Timothy Pennington, Sulphur, La., assignor to Olin Corporation, Cheshire, Conn.

Continuation-in-part of Ser. No. 929,552, Nov. 12, 1986, Pat. No. 4,785,123. This application Aug. 31, 1988, Ser. No. 238,654

The portion of the term of this patent subsequent to Nov. 15, 2005, has been disclaimed.

Int. Cl.⁴ C07D *301/06*

U.S. Cl. 549—532 15 Claims

1. A process for producing an alkylene oxide or mixture of alkylene oxides by a reaction which comprises reacting an olefin having from 7 to 22 carbon atoms per molecule, or mixture thereof, with an oxygen-containing gas, said olefin and said oxygen-containing gas being gaseous reactants, by contacting said gaseous reactants with a bath, stream, spray or mist of at least one molten nitrate salt catalyst, and optionally a co-catalyst, and said catalyst being present in an amount sufficient to absorb any heat generated during said reaction while maintaining an essentially constant reaction temperature, said reaction being conducted at a reaction temperature of between about 135° C. and about 600° C. and a reaction pressure of between about 1 and about 50 atmospheres.

4,882,444

CHEMICAL REACTOR AND PROCESS

Brian Dobson; Peter J. M. Whyman, both of Cleveland; Ralph J. Doy, Saltburn-by-the-Sea; Manfred O. Engel, and Raymond Davies, both ot Cleveland, all of England, assignors to Imperial Chemical Industries PLC, London, England

Continuation of Ser. No. 447,942, Dec. 8, 1982, abandoned. This application Aug. 12, 1985, Ser. No. 764,973

Claims priority, application United Kingdom, Dec. 14, 1981, 8137683

Int. Cl.⁴ C07D *301/10*

U.S. Cl. 549—534 7 Claims

1. A process for carrying out an exothermic chemical reaction between gaseous reactants in a fixed catalyst bed through which the reactants flow in a flow direction whereby the entering reactants are in a cooler portion of the bed relative to a hotter portion where the exothermic reaction occurs, said process comprising: heating the cooler portion of the bed with a heated heat exchange fluid passed through a first group of heat exchanger tubes extending through the cooler portion of the bed in a direction transverse to said flow direction; then passing the heat exchange fluid from said first group of heat exchanger tubes to a second group of heat exchanger tubes extending through the hotter portion of the bed in a direction transverse to said flow direction to cool said hotter portion and to heat the heat exchange fluid, thereby providing said heated heat exchange fluid which is passed through said first group of tubes.

4,882,445

ANTITUMOR CYCLOHEXANONE COMPOSITIONS AND DERIVATIVES THEREOF

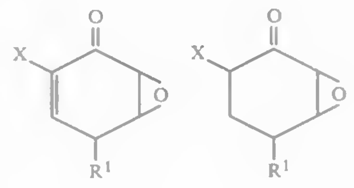
Tatsuo Higa, Okinawa, Japan, and Paul J. Scheuer, Honolulu, Hi., assignors to Harbor Branch Oceanographic Institution, Inc., Ft. Pierce, Fla.

Continuation of Ser. No. 817,136, Jan. 8, 1986, abandoned. This application Dec. 30, 1987, Ser. No. 139,773

Int. Cl.⁴ C07D *303/00*

U.S. Cl. 549—546 12 Claims

1. A compound according to one of the formulae:



wherein:
X is halogen
R^1 is —OH, —OCOR or —OR and
R is 1 to 4 carbon alkyl.

4,882,446

METAL DIHYDROCARBYL-DITHIOPHOSPHYL-DITHIOPHOSPHATES THEIR MANUFACTURE AND USE AS ADDITIVES FOR LUBRICANTS

Maurice Born, Nanterre; Jacques Lallement, Aubervilliers; Pierre Marchand, Orgeval; Guy Parc, Rneil Malmaison, and Nicole Thevenin, Paris, all of France, assignors to Institut Francais Du Petrole, Rueil Mailmaison, France

Continuation-in-part of Ser. No. 904,082, Sep. 4, 1986, Pat. No. 4,766,228. This application Mar. 3, 1988, Ser. No. 163,433

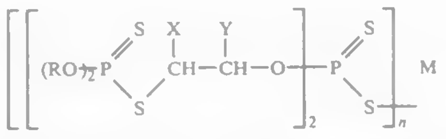
Claims priority, application France, Sep. 4, 1985, 85 13236

The portion of the term of this patent subsequent to Aug. 23, 2005, has been disclaimed.

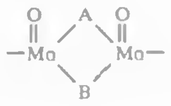
Int. Cl.⁴ C07F *11/00*

U.S. Cl. 556—25 9 Claims

1. A compound of metal dihydrocarbyl-dithiophosphyl-dithiophosphate type, represented by the general formula:



wherein R is at least one monovalent substantially hydrocarbon-containing radical of 1 to 30 carbon atoms; X and Y are each a hydrogen atom or a substantially hydrocarbon-containing radical of 1 to 30 carbon atoms and may be optionally interconnected to form a polymethylene chain, M is a molybdenum complex group of the formula:



wherein A and B are atoms selected from the group consisting of oxygen and sulfur; and n is 2.

4,882,447

NOVEL ORGANIC PLATINUM COMPLEX AND PROCESS FOR THE PREPARATION THEREOF

Kenji Tsujihara, Urawa; Yoshihisa Arai, Funabashi; Osamu Ohtsuki, Nagaokakyo, and Tadashi Nakatani, Takatsuki, all of Japan, assignors to Tanabe Seiyaku Co., Ltd., Osaka, Japan

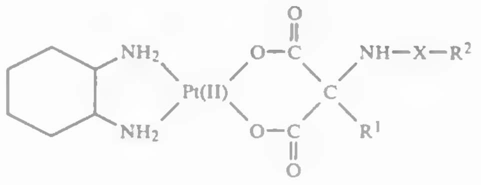
Filed Feb. 19, 1988, Ser. No. 157,969

Claims priority, application Japan, Feb. 20, 1987, 62-38240

Int. Cl.⁴ C07F *9/68*

U.S. Cl. 556—40 5 Claims

1. An organic platinum complex of the formula:



(1)

wherein
R^1 is selected from hydrogen and lower alkyl of 1 to 3 carbon atoms,
R^2 is selected from lower alkyl, lower hydroxyalkyl and a group of the formula: $—CH_2O(CH_2CH_2O)_mCH_3$,
X is carbonyl group,
m is an integer of 1.

4,882,448

SI,SI'DIORGANYL-N-ALKYL-TETRACHLORO-DISILAZANES AND A PROCESS FOR THEIR PREPARATION

Tilo Vaahs, Kelkheim, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Dec. 2, 1988, Ser. No. 279,414

Claims priority, application Fed. Rep. of Germany, Dec. 4, 1987, 3741060

Int. Cl.⁴ C07F *7/10*

U.S. Cl. 556—412 9 Claims

1. A process for the preparation of an Si,Si'-diorganyl-N-alkyl-tetrachloro-disilazane of the formula $RSiCl_2—NR'—SiCl_2R$, in which R is C_1–C_4-alkyl, vinyl or phenyl and R' is C_1–C_4-alkyl, which comprises reacting an organyltrichlorosilane $RSiCl_3$ and a monoalkylamine $R'NH_2$, in which R and R' have the meaning given, with one another in an aprotic solvent at a temperature of −10° C. to +70° C., the molar ratio of $RSiCl_3{:}R'NH_2$ being at least 0.3:1.

4,882,449

CALIXARENE DERIVATIVES, AND USE OF SUCH COMPOUNDS FOR SEQUESTRATION OF METALS

Stephen J. Harris, Dublin, Ireland, assignor to Loctite Corporation, Newington, Conn.

Continuatioo-in-part of Ser. No. 870,677, Jun. 4, 1986, Pat. No. 4,699,966, and a continuation-in-part of Ser. No. 825,012, Jan. 31, 1986, Pat. No. 4,695,615, which is a continuation of Ser. No. 717,251, Mar. 28, 1985, Pat. No. 4,642,362. This application Mar. 2, 1987, Ser. No. 20,918

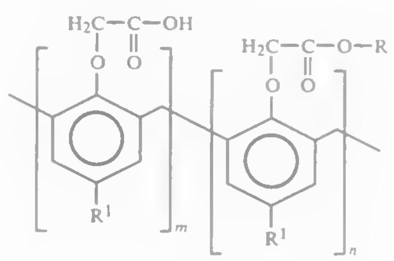
Claims priority, application Ireland, Mar. 7, 1986, 596/86; Aug. 29, 1986, 2319/86

Int. Cl.⁴ C07F *7/10*

U.S. Cl. 556—419 11 Claims

1. Nitrogen-containing calixarene derivatives selected from the group represented by the forumlae:

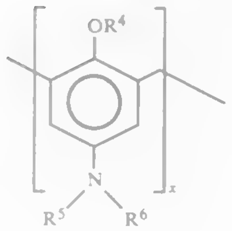
1



and

-continued

II



wherein
m+n=4, 6, or 8
n=an integer 1–8
m=an integer 0–7
x=4, 6 or 8
R^1 is H, alkyl, aralkyl, alkoxy, aroyl, or alkoyl,
R is aliphatic or aromatic, unsubstituted or substitied hydrocarbyl containing nitrogen,
R^4 is unsubstituted or substituted hydrocarbyl, carbonyl or aryl;
R^5 and R^6 (which may be the same or different) are hydrogen, or unsubstituted or substituted hydrocarbyl.

4,882,450

POLYSILANES

Roberto Bortolin, Brighton, United Kingdom, assignor to Dow Corning Limited, London, England

Filed Dec. 3, 1987, Ser. No. 128,243

Claims priority, application United Kingdom, Dec. 11, 1986, 8629593

Int. Cl.⁴ C07F *7/08*

U.S. Cl. 556—430 11 Claims

1. A polysilane of the general formula (RSi)n wherein each R is independently selected from the group consisting of alkyl, aryl, alkaryl and aralkyl groups having from 4 to 18 carbon atoms and n has a value of at least 8.

4,882,451

OPTICALLY ACTIVE COMPOUNDS AND PROCESS FOR PRODUCING THEREOF

Naoyuki Yoshida, Yokohama; Masakazu Kaneoya, and Manabu Uchida, both of Kawasaki, all of Japan, assignors to Chisso Corporation, Osaka, Japan

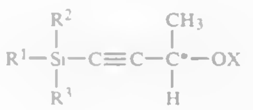
Filed May 2, 1988, Ser. No. 189,162

Claims priority, application Japan, May 15, 1987, 62-116776

Int. Cl.⁴ C07F *7/08, 7/18*

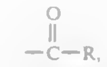
U.S. Cl. 556—440 4 Claims

1. An optically active R- or S-compound represented by the general formula:



$$R^1-\overset{R^2}{\underset{R^3}{Si}}-C\equiv C-\overset{CH_3}{\underset{H}{C^*}}-OX \qquad (1)$$

wherein R^1, R^2 and R^3 are selected from alkyl groups having 1–4 carbon atoms and phenyl groups, X is selected from a hydrogen atom and



$$-\overset{O}{\overset{\|}{C}}-R,$$

is selected from alkyl groups having 1–20 carbon atoms, and C* indicates an asymmetric carbon atom.

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4,882,452
PROCESS FOR THE PREPARATION OF IFOSFAMIDE HAVING IMPROVED PROPERTIES

Jürgen Engel, Alzenau; Siegfried Müller, Bad Homburg, and Werner Lauboer, Halle, all of Fed. Rep. of Germany, assignors to Asta Pharma Akteingesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Mar. 3, 1988, Ser. No. 163,586

Claims priority, application Fed. Rep. of Germany, Mar. 6, 1987, 3707154

Int. Cl.⁴ C07F *9/24*

U.S. Cl. 558—81 8 Claims

1. Needle-shaped prismatic crystalline ifosfamide characterized by the following properties:

(a) at least 70% of the crystals have a particle size between 150–550 μm, the individual crystals have a ratio of length to width of 3.5:1 to 8:1, and

(b) the crystals have a maximum average relative standard deviation or the deviation of the individual values from the desired value at filling tests between 0.90% and 2% of 1.4%.

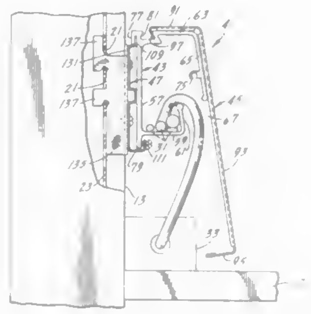
4,882,453
WIRE MANAGEMENT ASSEMBLY

Daniel B. Chelsea, New York, N.Y., assignor to The Shaw-Walker Company, Muskegon, Mich.

Filed Oct. 5, 1988, Ser. No. 253,572

Int. Cl.⁴ H02G *3/24*

U.S. Cl. 174—48 5 Claims



5. A wire management assembly for mounting on a vertical supporting surface at a defined distance above a horizontal work surface for supporting and concealing communication wires, power plug-in cords and extension cords of electrical equipment and devices, including:

a housing having a rear wall, a bottom wall with an upturned front lip, a top wall and a front wall forming an enclosure,

said front wall of said housing located outwardly of said bottom wall and expanding downwardly from said top wall to terminate adjacent the upturned lip of said bottom wall to define a downwardly-facing opening into said wire enclosure of said housing,

a cover adapted to be supported on said housing,

said cover being channel-shaped having a top which rests on the top wall of said housing and a front wall which engages and rests on the front wall of the housing and extends downwardly beyond the housing to terminate above said work surface, and

means formed on said housing and said cover to restrain said cover against downwardly and upwardly movement relative to the housing but to release the cover when its bottom is swung outwardly and lifted upwardly.

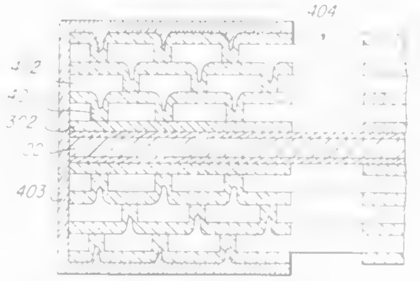
4,882,454
THERMAL INTERFACE FOR A PRINTED WIRING BOARD

Robert K. Peterson, Garland; Larry J. Mowatt, Allen, and Aaron D. Poteet, Austin, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Feb. 12, 1988, Ser. No. 155,462

Int. Cl.⁴ H05K *1/00*

U.S. Cl. 174—68.5 17 Claims



1. A printed wiring board for mounting components thereto, said printed wiring board including:

a thermally conductive core; and

a first thermal interface region having a first outer surface, said first thermal interface disposed over and in thermal contact with said core for conducting heat generated by said components to said core via said first thermal interface region;

said first thermal interface region having a plurality of interlaced thermally insulating and thermally conductive layers, one of said thermally conductive layers being disposed on said first outer surface, and plural thermally conductive vias, each said via coupled to an adjacent pair of said thermally conductive layers extending from said thermally conductive core to said thermally conductive layer on said first outer surface of said first thermal interface region.

4,882,455
ELECTRONIC CIRCUIT SUBSTRATES

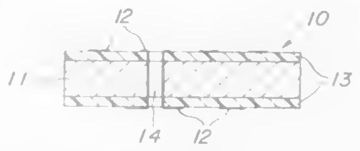
Yasuyuki Sato, Iwai; Shinji Saito, Hashima, and Hidetoshi Yamauchi, Anpachi, all of Japan, assignors to Ibiden Co., Ltd., Japan

Continuation of Ser. No. 106,903, Oct. 9, 1987, abandoned, which is a continuation of Ser. No. 841,825, Mar. 20, 1986, abandoned. This application Aug. 2, 1988, Ser. No. 229,733

Claims priority, application Japan, Mar. 27, 1985, 60-64598; Jul. 26, 1985, 60-166185

Int. Cl.⁴ H05K *01/03*

U.S. Cl. 174—68.5 15 Claims



1. An electronic circuit, comprising:

a porous ceramic sintered substrate consisting essentially of a crystal structure of a three-dimensional network, crystal grains having an average grain size of not greater than 10 microns, and an initial permeable porosity of 10–70 volume %;

a resin filled in the permeable pores of the porous ceramic sintered substrate; and

an electrically conducting circuit pattern printed on at least one surface of said substrate.

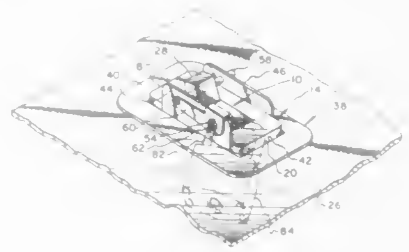
4,882,456
LOCKING DEVICE FOR ELECTRICAL SWITCH OR CIRCUIT BREAKER HANDLE

Steven F. Hovanic, Barboursville, and David W. Bryce, Charlottesville, both of Va., assignors to Cooper Industries, Inc., Houston, Tex.

Filed Nov. 4, 1985, Ser. No. 795,020

Int. Cl.⁴ H01H *9/28*

U.S. Cl. 200—43.15 9 Claims



1. A locking device for locking an electrical switch handle in

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a predetermined position relative to a switch panel, said switch panel including a surface forming an opening through which said switch handle projects, said switch handle being movable between working positions, said locking device comprising:

- a support member including means registrable with means projecting from said surface to substantially prevent movement of said support member in a direction generally parallel to said surface, said support member including means forming a pair of spaced apart flanges adapted to be disposed on opposite sides of said switch handle, said flanges each including openings formed therein;
- a locking member operable to extend into said openings in said flanges, respectively, and to be engaged with means on said switch handle to prevent movement of said switch handle relative to said flanges from one predetermined position to another; and
- means connected to said locking member and adapted to be secured to at least one of said flanges to secure said locking member in a position for locking said handle to prevent said movement from said one predetermined position to said another.

4,882,457

STEERING COLUMN SWITCH WITH INDIRECTLY GUIDED BRIDGING CONTACTS

Herbert Erdelitsch; Otto Machalitzky, and Horst Rachner, all of Bietigheim-Bissingen, Fed. Rep. of Germany, assignors to SWF Auto-Electric GmbH, Bietigheim-Bissingen, Fed. Rep. of Germany

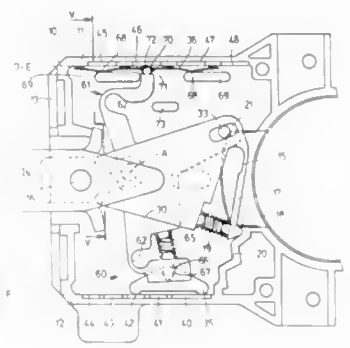
PCT No. PCT/EP87/00408, § 371 Date May 7, 1988, § 102(e) Date May 7, 1988, PCT Pub. No. WO88/01097, PCT Pub. Date Feb. 11, 1988

PCT Filed Jul. 29, 1987, Ser. No. 208,358

Claims priority, application Fed. Rep. of Germany, Aug. 2, 1986, 3626242

Int. Cl.⁴ H01H *3/16*

U.S. Cl. 200—61.54 12 Claims



1. An electric steering column switch for motor vehicles comprising a plurality of stationary contacts, a switch lever, a switch member swivellable by said switch lever around an axis of rotation into a plurality of switching positions, said switch member carrying a bridging contact guided by a switching arm and resiliently urged onto contact areas of different ones of said stationary contacts in different switching positions, wherein said switching arm is swivellably attached to the switch member for movement around an axis parallel to the axis of the rotation of the switch member.

4,882,458

SWITCH DEVICE FOR ACTIVATING AND DEACTIVATING AN ELECTRICALLY OPERATED DRIVING MEMBER OF AN APPLIANCE

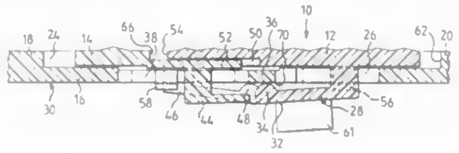
Anette Berg, Kronberg, and Günter Hoffmann, Hofhelm, both of Fed. Rep. of Germany, assignors to Braun Aktiengesellschaft, Kronberg, Fed. Rep. of Germany

Filed Aug. 2, 1988, Ser. No. 227,150

Claims priority, application Fed. Rep. of Germany, Aug. 21, 1987, 3727921

Int. Cl.⁴ H01H *3/20, 9/20*

U.S. Cl. 200—52 R 15 Claims



1. A switch device for an appliance for personal use, comprising an appliance switch actuator movable along a straight line path for activating and deactivating a driving member capable of being electrically operated in a housing of the appliance, as well as a locking device movable in a path parallel to said path of movement of said appliance switch actuator into the actuation path of the appliance switch actuator, said appliance switch actuator and said locking device including engagement means which are interengageable for securing said appliance switch actuator relative to said locking device in the off position.

4,882,459

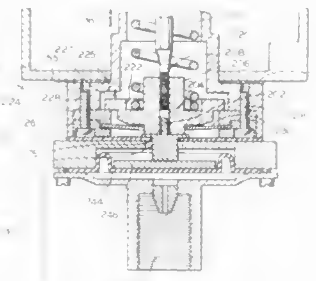
PRESSURE SENSITIVE SWITCH HAVING RUGGED CONSTRUCTION AND ACCURATE TRIP PRESSURE SETTINGS

Stanley H. Edwards, Jr., Asheville; Simon S. Smith, Jr., Fairview, and James B. Warren, Arden, all of N.C., assignors to Square D Company, Palatine, Ill.

Continuation of Ser. No. 132,616, Nov. 2, 1987, abandoned, which is a continuation of Ser. No. 850,312, Apr. 10, 1986, abandoned. This application Dec. 9, 1988, Ser. No. 282,883

Int. Cl.⁴ H01H *35/34*

U.S. Cl. 200—83 J 18 Claims



1. A fluid pressure sensitive switch comprising:

- first means for producing linear motion in response to fluid pressure;
- second means, including a spring and a spring seat, for springably resisting said linear motion;
- third means operating said switch after a predetermined linear motion; and
- a lifter pin means for decoupling rotational movement of said first means for said spring seat, and having a shoulder engaging said spring seat and a projection on said shoulder which loosely protrudes through, a hole in said spring seat said lifter pin means being mounted between said first means and said spring seat so as to transmit linear force from said first means to said second means without transmitting rotational forces.

4,882,460

HORN OPERATING MEANS FOR A MOTOR VEHICLE STEERING WHEEL HAVING TWO CONTACT PLATES SOLELY SEPARATED BY A FOAM SHEET AND CONTACTABLE AT SPACED POINTS WITH SUBSTANTIALLY UNIFORM PRESSURE

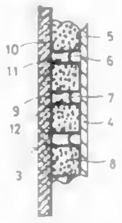
Theobald Mertens, Mainz, Fed. Rep. of Germany, assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 10, 1988, Ser. No. 167,280

Claims priority, application Fed. Rep. of Germany, Apr. 6, 1987, 3711822

Int. Cl.⁴ H01H *1/10*

U.S. Cl. 200—512 2 Claims



1. A horn operating mechanism for a steering wheel of a motor vehicle, comprising two contact plates which are separated from each other solely by a resilient perforated foam sheet at least substantially co-extensive therewith, one contact plate being provided with projections directed towards the other contact plate, apertures in the foam sheet exposing the projections to said other contact plate and said other contact plate being elastically deformable by human hand manipulated pressure applied to said other contact plate at points opposite said projections to effect contact of said projections respectively with said other contact plate, characterized by force reducing means located in a central region of and formed integral with one of said contact plates and foam sheet parts for reducing the pressure that would otherwise be required to act on said other plate in a central region thereof to effect contact with said projections in said central region, said force reducing means comprising apertures in the central region of said foam sheet that are larger than those apertures in an edge region of said foam sheet.

4,882,461

SUBMINIATURE PUSH-BUTTON SWITCH

Koji Kamisada, Tokyo, Japan, assignor to Nihon Kaiheiki Industrial Company Ltd., Tokyo, Japan

Continuation of Ser. No. 53,663, May 26, 1987, abandoned. This application Jul. 29, 1988, Ser. No. 227,418

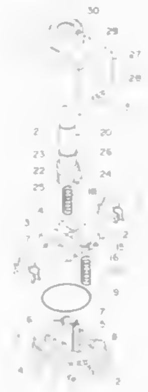
Claims priority, application Japan, Jun. 24, 1986, 61-095332

Int. Cl.⁴ H01H *13/52*

U.S. Cl. 200—536 12 Claims

1. A subminiature push-button switch comprising:

- a switch base having a plurality of fixed contacts secured thereto and a central portion;
- an upstanding bar-shape projection provided on said switch base at said central portion, said upstanding bar-shape projection having a distal end opposite to said switch base, said distal end having a first engagement section;
- a pivot block placed upon said upstanding bar-shape projection, said pivot block having a vertical through groove at a central portion thereof and a second engagement section positioned at an upper part of said vertical through groove, said pivot block being pivotally supported on said distal end of said projection by inserting said upstanding bar-shape projection into said vertical through groove until said first engagement section engages with said second engagement section such that a lower part of said pivot block opposite to said second engagement swings toward and away from said upstanding bar-shape projection;
- at least one movable contact attachable to said pivot block;
- a vertically movable plunger for rocking said pivot block from side to side, said at least one movable contact being rocked from side to side in response to a swing motion of said pivot block;



- a first spring means provided immediately under said plunger and above said second engagement section for urging said plunger away from said pivot block and for preventing said first and second engagement sections from disengaging from each other in a manner such that said first spring substantially does not swing along with the swing movement of said pivot block; and
- a second spring means for urging said pivot block to generate rocking motion, wherein said plunger, first spring means and said upstanding bar-shape projection are coaxially aligned.

4,882,462

CONTROL APPARATUS FOR HEATING, DEFROSTING AND/OR COOKING FOODS WITH MICROWAVE ENERGY

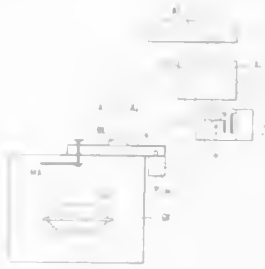
Julius Husslein, Vachendorf; Helmut Hess, and Wolfgang Beifuss, both of Traunreut, both of Fed. Rep. of Germany, assignors to Bosch-Siemens Hausgeräte GmbH, Munich, Fed. Rep. of Germany

Filed Dec. 22, 1988, Ser. No. 288,696

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1987, 3743921

Int. Cl.⁴ H05B *6/68*

U.S. Cl. 219—10.55 B 6 Claims



1. Microwave heating apparatus for heating foods to be heat-treated by exposure to microwave energy at a given location inside a closed cooking chamber, having a heating, defrosting and/or cooking mode comprising a microwave

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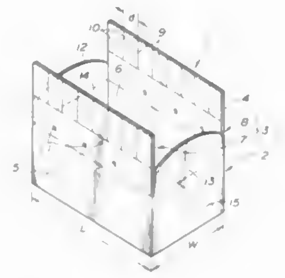
generator for beaming microwave energy into the cooking chamber, a sensor for detecting the state of the food and controlling the energy beamed into the cooking chamber, said sensor disposed in the cooking chamber between said microwave generator and the given location for food exposed to microwave energy, for detecting a value for microwave energy potential and for controlling the output of the microwave generator, a rotating microwave antenna in the cooking chamber, an output control device connected to said microwave generator for controlling said microwave generator output, and a logic control circuit connected between said sensor and said output control device for controlling said output control device in dependence on the state of the food as detected by said sensor, wherein said logic control circuit operates to reduce the microwave energy during the defrost mode for a limited period of time and subsequently switches it on again for a period of time as determined by said sensor in the course of change in the field intensity of the microwave energy during thawing of the surface of the food.

4,882,463
FOOD VESSEL USING HEATING ELEMENT FOR MICROWAVE OVEN

Nobuo Kyougoku, and Hitoshi Harada, both of Osaka, Japan, assignors to Suntory Limited, Osaka, Japan
Filed Oct. 26, 1988, Ser. No. 262,977
Claims priority, application Japan, Oct. 30, 1987, 62-275410
Int. Cl.^{4} H05B *6/80*
U.S. Cl. 219—10.55 E **32 Claims**



1. A food vessel for baking an expandable food in a microwave oven comprising:

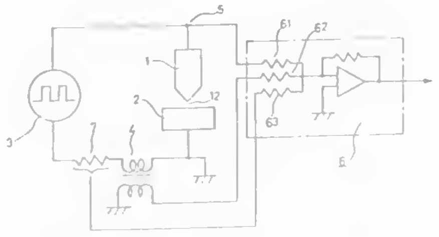
providing an expandable food product;

a heat resistant vessel body having an opening and a lid for covering said opening containing said expandable food, said body allowing said expandable food to expand therein; and

a heating means including heating element which is arranged on the inner surfaces of said vessel body and said lid, operative to maintain contact with the outer surface of said expandable food during expansion thereof to obtain a uniform browned surface, said heating means being responsive to irradiation of microwaves by said oven to generate heat for baking said expandable food in said vessel body.

4,882,464
ELECTRICAL DISCHARGE MACHINING EQUIPMENT

Haruki Obara, Kanagawa, Japan, assignor to Fanuc Ltd, Minamitsuru, Japan
PCT No. PCT/JP87/00892, § 371 Date Oct. 5, 1988, § 102(e) Date Oct. 5, 1988, PCT Pub. No. WO88/04211, PCT Pub. Date Jun. 16, 1988
PCT Filed Nov. 18, 1987, Ser. No. 251,216
Claims priority, application Japan, Dec. 11, 1986, 61-293551
Int. Cl.^{4} B23H *1/02*
U.S. Cl. 219—69.13 7 Claims



1. An electrical discharge machining apparatus for machining a workpiece, comprising:

a machining electrode;

electric discharge gap voltage sensing means for sensing a gap voltage across a machining gap between said machining electrode and the workpiece;

high frequency pulse voltage generating means for supplying high frequency voltage pulses across the machining gap;

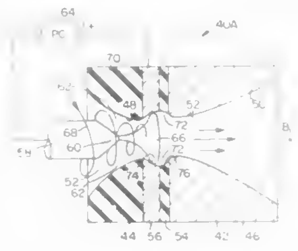
electric current variation rate sensing means for determining an inductance fall component by sensing an electric current variation rate across the machining gap;

machining current resistance fall component sensing means for determining a resistance fall component by sensing the intensity of the electric current flowing in the machining gap; and

correcting means for correcting the sensed gap voltage by compensating for the inductance fall component and the resistance fall component.

4,882,465
ARCJET THRUSTER WITH IMPROVED ARC ATTACHMENT FOR ENHANCEMENT OF EFFICIENCY

William W. Smith, and Steven C. Knowles, both of Seattle, Wash., assignors to Olin Corporation, Stamford, Conn.
Filed Oct. 1, 1987, Ser. No. 103,471
Int. Cl.^{4} B23K *9/00*
U.S. Cl. 219—121.48 **14 Claims**



1. In an arcjet thruster, the combination comprising:

(a) means forming an annular-shaped constrictor and an annular-shaped nozzle being tandemly-arranged and having respective interior surfaces which together define an arc chamber, said constrictor defining a subsonic-to-supersonic transition zone axially coextensive with its interior surfaces;

(b) a first annular-shaped portion of said constrictor being electrically insulative to define an insulator;

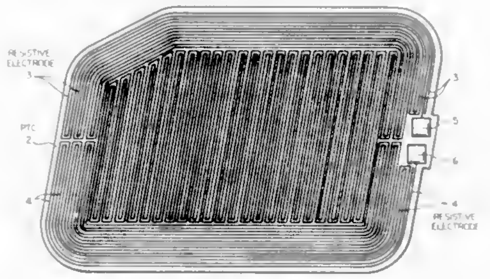
(c) a second annular-shaped portion of said constrictor being electrically conductive to define an anode being disposed side-by-side with said insulator and located upstream therefrom, said insulator and anode being axially coextensive with and disposed along said transition zone defined by said constrictor;

(d) an elongated member having a tip disposed adjacent to and spaced upstream from said constrictor anode, said member being electrically conductive to define a cathode spaced from said anode by a gap generally coextensive with said arc chamber; and

(e) means for applying an electrical potential to said anode and cathode so as to generate an electrical arc in said arc chamber from said cathode to said anode which produces thermal heating of propellant gases flowing through said transition zone of said constrictor and expansion thereof through said nozzle, the disposition of said insulator downstream from said anode causing diffusion and attachment of said electrical arc to occur at the region of said anode in said transition zone of said constrictor and preventing movement of said arc diffusion and attachment region downstream past said insulator to said nozzle in response to propellant gas mass flow variations through said constrictor.

4,882,466
ELECTRICAL DEVICES COMPRISING CONDUCTIVE POLYMERS

Kevin J. Friel, San Mateo, Calif., assignor to Raychem Corporation, Menlo Park, Calif.
Filed May 3, 1983, Ser. No. 189,938
Int. Cl.^{4} H05B *3/14*
U.S. Cl. 219—219 **20 Claims**



20. A heated mirror for use on vehicles, which comprises

(1) a mirror comprising a front mirrored surface and a back surface; and

(2) attached to the back surface of the mirror, a heater which comprises

  (a) a laminar resistive element which is composed of a conductive polymer composition which exhibits PTC behavior;

  (b) two electrodes which can be connected to a source of electrical power and which comprise a material which has a resistivity of 1×10^{-6} to 1×10^{-4} ohm-cm exhibits ZTC behavior, said electrodes

    (i) each having a length of 10 to 1000 inches and a width of 0.005 to 1 inch such that the length to width ratio is at least 1000:1,

    (ii) each having a thickness of 0.0005 to 0.005 inch,

    (iii) each having a resistance, R_e, of 0.1 to 1000 ohms,

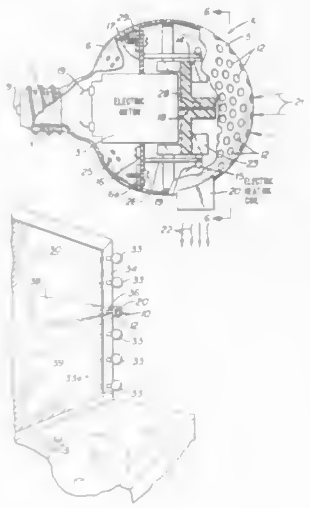
    (iv) each attached to a flat laminar surface of the resistive element, and

    (v) together covering 10 to 90% of the surface area of the resistive element,

  said resistive element having a resistance R_{cp} which is less than R_e and is from 0.1 to 1000 ohms when connected to a source of electrical power and the heater having a resistance R_h, the resistances R_e, R_{cp}, and R_h being measured when the electrodes are first connected to a source of electrical power with the whole device being at a uniform temperature of 23° C.

4,882,467
ELECTRIC WARM AIR MIRROR DEFOGGING DEVICE

Keene P. Dimick, 3076 Redwood Rd., Napa, Calif. 94558
Filed Jul. 16, 1987, Ser. No. 74,405
Int. Cl.^{4} H05B *1/00;* F24H *3/04;* F21V *33/00;* E06B *7/12*
U.S. Cl. 219—219 **16 Claims**



1. A mirror defogging device comprising:

a globular pseudo light bulb-type housing having a central axis;

an electrical plug base fixedly extending from said housing along said central axis for connection to an electrical lamp socket adjacent a mirror surface; and wherein

said globular housing includes an air inlet extending through a surface thereof, a resistance heater in said housing, a rotating fan within said housing, a motor in said housing for rotating said fan, said air inlet, heater, fan and motor being axially aligned along said central axis of said housing, and an air outlet laterally offset from said central axis, extending through said housing and in exit flow communication with said fan such that air entering said housing through said inlet is heated and directed by said fan to said outlet for discharge laterally to a mirror surface.

4,882,468
FOUR ELECTRIQUE NOTAMMENT POUR TRAITEMENT THERMIQUE

Jean C. M. Bouchon, Meylan, France, assignor to La Physique Appliquee Industrie, Pariset, France
Filed Sep. 2, 1988, Ser. No. 240,771
Claims priority, application France, Sep. 4, 1987, 87 1216
Int. Cl.^{4} H05B *3/62*
U.S. Cl. 219—400 **13 Claims**

1. An electric furnace for heat treatment of a workpiece constituting a charge, said furnace comprising:

an outer casing having two complementary parts adapted to be coupled and movable relative to each other between coupled and uncoupled positions;

at least one support for said charge, said support being carried by a first part of said casing;

the furnace having two parts, a first furnace part comprising said first part of said outer casing and the charge support carried thereon and a second furnace part comprising a second part of said outer casing;

and means for displacing said two parts of the furnace relative to each other in a horizontal direction laterally between said coupled and uncoupled positions;

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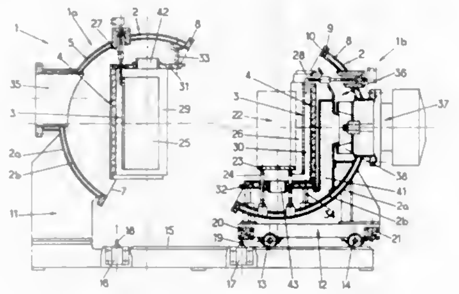
the coupling edges of the second part of the furnace being outside a path of the charge and the charge support of the first part of the furnace when the furnace parts are moved relative to each other;



said second part of the furnace in coupled position extending laterally above the charge support so that vertical access to the charge support in the first part of the furnace is free when the two furnace parts are uncoupled, whereby said workpiece can be vertically charged to and discharged from said furnace.

4,882,469

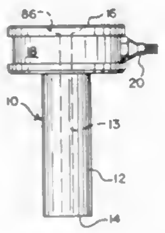
INTERNALLY HEATED SPRUE BUSHING ASSEMBLY WITH A UNITARY BUSHING CASING CORE ELEMENT

Panos Trakas, 21 W. Wrightwood, Glendale Heights, Ill. 60139

Filed Sep. 28, 1988, Ser. No. 250,769

Int. Cl.⁴ B29C *45/00*

U.S. Cl. 219—421 21 Claims



1. An internally heated sprue bushing assembly having an inlet for receiving pressurized melt and an outlet for the discharge of said pressurized melt, said sprue bushing assembly comprising:

a unitary bushing casing-core element having an integral outer side wall, an end wall and an elongate inner core, the outer surface of said elongate inner core and the inner surface of said side wall defining a generally annular compartment within said bushing casing core element;

heating means in surrounding relation to said elongate inner core, said heating means axially extending a preselected length within and occupying a portion of said annular compartment;

a compacted unified mass of particulate material occupying the remainder of said annular compartment; and

a melt runner passage in said elongate inner core interposed between and in flow communication with said inlet and outlet of said sprue bushing assembly.

4,882,470

BORING DEVICE FOR OPENING PASSAGES TO BRANCH PORTIONS OF A LINED MAIN PIPE LINE

Katsuaki Zenbayashi, Fujisawa; Hisao Otsuga, Yokohama; Akio Morinaga, Fujisawa; Osamu Toyoshima, Takatsuki, and Shinji Shimokawa, Osaka, all of Japan, assignors to Tokyo Gas Kabushiki Kaisha, Tokyo and Ashimori Kogyo Kabushiki Kaisha, Osaka, both of, Japan

PCT No. PCT/JP86/00428, § 371 Date Apr. 19, 1988, § 102(e) Date Apr. 19, 1988, PCT Pub. No. WO88/01222, PCT Pub. Date Feb. 25, 1988

PCT Filed Aug. 19, 1986, Ser. No. 184,489

Int. Cl.⁴ H05B *3/54*

U.S. Cl. 219—523 10 Claims

1. A boring device for a lining material for pipe lines which comprises in combination a tension coil spring, a compression coil spring being connected to a tip of said tension coil spring and having a spring constant smaller than that of said tension coil spring, a head element in the form of a circular truncated cone being connected to a tip of the compression coil spring and comprising an electric heat-generating means coated with a thermoplastic resin, a single or plural transmission wires being connected to said electric heat-generating means, passed in a loosened state through said tension coil spring and said compression coil spring, said transmission wires being fixed within said tension coil spring at plural points, and a means provided in a rear of said tension coil spring for rotatably extending said boring device.

4,882,471

ELECTRONIC EQUIPMENT USING A COVER

Tomoko Kai, Urawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 6, 1987, Ser. No. 82,133

Claims priority, application Japan, Aug. 18, 1986, 61-125748[U]

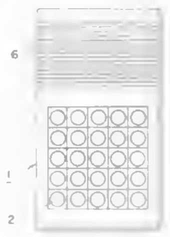
Int. Cl.⁴ G06C *5/02*

U.S. Cl. 235—1 D 13 Claims

1. Electronic equipment comprising:

input means arranged on an electronic equipment body for inputting data;

display means arranged on said electronic equipment body for displaying the data;



cover means pivotally arranged on said electronic equipment body for protecting said display means; and

a solar cell arranged on said cover means.

4,882,472

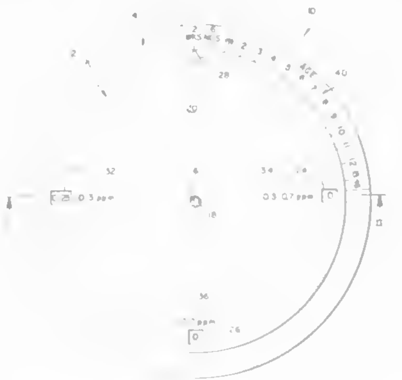
FLUORIDE SUPPLEMENT CALCULATOR

Susan J. Sigman, West Lafayette, and Paula A. Meade, Evansville, both of Ind., assignors to Bristol-Myers Company, New York, N.Y.

Filed Jan. 5, 1989, Ser. No. 293,289

Int. Cl.⁴ G06C *3/00*

U.S. Cl. 235—88 R 4 Claims



1. A fluoride supplement calculator useable to determine a daily fluoride supplement as a function of a person's age and a water supply fluoride level and further useable to depict fluoride uptake during tooth enamelization said fluoride supplement calculator comprising:

a first small disk having an obverse face and a reverse face and a second larger disk having an obverse face and a reverse face;

means for securing said first and second disks together in a concentric manner for relative rotation with respect to each other about a central axis;

a plurality of fluoride level apertures in said first disk and an age scale indicator formed on said obverse face of said first disk, said plurality of fluoride level apertures and said age scale indicator being generally evenly spaced about a peripheral portion of said obverse face of said first disk, each of said fluoride level apertures having a different, water supply fluoride legend associated with it;

an age scale and a plurality of groups of fluoride supplement dosage amounts on said obverse surface of said second disk, said plurality of fluoride level apertures and said plurality of said fluoride supplement dosage amounts being the same, said fluoride dosage amounts underlying and being visible through said fluoride level apertures and said age scale being visible and adjacent said age scale indicator when said first and second disks are secured together, said disks being rotatable relative to each other to align said age scale indicator with the person's age as set forth on said age scale so that an appropriate fluoride dosage amount will be depicted in the one of said plurality of fluoride level apertures which corresponds to the person's water supply fluoride level;

a single aperture in said second disk and a cooperating age indicating pointer on said reverse surface of said second disk; and

a plurality of arrays of teeth and age indicators on said reverse surface of said first disk, said single aperture being sized to facilitate viewing of a selected one of said plurality of arrays of teeth, said age indicating pointer being useable to indicate the age indicator for the selected array of teeth, each of said arrays of teeth depicting a location of fluoride uptake and tooth enamelization appropriate for the age identified by said associated age indicator.

4,882,473

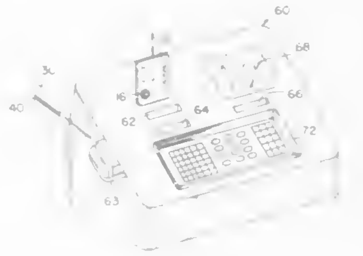
ON-LINE WAGERING SYSTEM WITH PROGRAMMABLE GAME ENTRY CARDS AND OPERATOR SECURITY CARDS

Daniel R. Bergeron, Pawtucket, and Clifton C. Dutton, Providence, both of R.I., assignors to GTECH Corporation, Providence, R.I.

Continuation-in-part of Ser. No. 98,544, Sep. 18, 1987, Pat. No. 4,764,666. This application Aug. 16, 1988, Ser. No. 232,790

Int. Cl.⁴ G06K *5/00*

U.S. Cl. 235—380 19 Claims



1. An on-line wagering system, comprising:

a central data processor having a central data memory;

a plurality of agent terminals in data communication with the central data processer, the agent terminals being operable to receive player entry data from players and to transmit the player entry data to the central data processor, the central data processor being operable to validate play entries upon receipt of the player entry data and to transmit a validation code to the agent terminals, the player entry data relating to an entry of an individual player in at least one game, the agent terminals having inputs for receiving the player entry data and input/output means for transmitting to the central data processor at least a portion of the player entry data and for receiving the validation data therefrom; and,

a player card issued to the player, the player card being connectable in data communication with at least one of the agent terminals, said at least one of the agent terminals having alternate inputs for receiving at least a portion of the player entry data directly from the card, the alternate inputs being adapted to interface with the player card, the player card having an on-card memory formed by one of: magnetic media; integrated circuit; and, laser optical memory, and operable to store data unique to said individual player and also to store at least one of the player entry data and the validation code.

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4,882,474

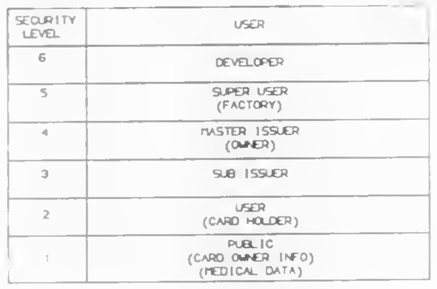
SECURITY FILE SYSTEM AND METHOD FOR SECURING DATA IN A PORTABLE DATA CARRIER

Ewald C. Anderl, Middletown; Oren Frankel, Ocean Township, Monmouth County, and Avi Zahavi, Highland Park, all of N.J., assignors to American Telephone and Telegraph Company, New York, N.Y. and AT&T Information Systems Inc., Morristown, N.J.

Division of Ser. No. 863,975, May 16, 1986, Pat. No. 4,816,653. This application Feb. 5, 1988, Ser. No. 153,294

Int. Cl.⁴ G06F *15/21;* G06K *19/06*

U.S. Cl. 235—380 13 Claims



SECURITY LEVEL	USER
6	DEVELOPER
5	SUPER USER (FACTORY)
4	MASTER ISSUER (OWNER)
3	SUB ISSUER
2	USER (CARD HOLDER)
1	PUBLIC (CARD OWNER INFO) (MEDICAL DATA)

1. In a portable data carrier, a security file system containing both a file header region and a file data segment region, the file header region including a unique access code for verifying the identity of an individual attempting to access the data in the portable data carrier, and the file data segment region including a plurality of files for storing alterable data, each of the plurality of files having alterable data associated therewith for storage in any of multiple locations throughout the file data segment region, the portable data carrier comprising:

- access means for inputting an externally provided code for accessing the data in the portable data carrier,
- counting means responsive to the access means for recording all access attempts, the counting means advancing a count each time the externally provided code is inputted to the portable data carrier,
- comparison means for comparing the unique access code with the externally provided code;
- verifying means for providing an indication when the externally provided code compares favorably with the unique access code stored in the portable data carrier;
- counting reset means for resetting the count advanced by the counting means to its previous count, the counting reset means being activated in response to the verifying means indicating a favorable comparison and data access is permitted, the counting reset means remaining inactive in the absence of the verifying means indicating a favorable comparison.

4,882,475

SYNTHESIZED SPEECH-FACILITATED PRODUCT PREPARATION AND/OR DELIVERY SYSTEM AND METHOD

Phillip Miller, Cedar Rapids; Richard P. Shindley, Marion; Kristi T. Feltz, Iowa City; George E. Hanson, and Jonathan R. White, both of Cedar Rapids, all of Iowa, assignors to PAR Microsystems, Inc., New Hartford, N.Y.

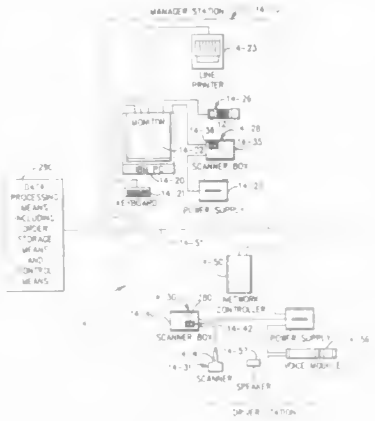
Continuation-in-part of Ser. No. 925,268, Oct. 31, 1986, abandoned. This application Jul. 31, 1987, Ser. No. 80,573

Int. Cl.⁴ G06F *15/24*

U.S. Cl. 235—383 52 Claims

2. In a method for processing orders for delivery,

(a) establishing customr files with respective customer addresses associated with respective customer telephone numbers;
(b) registering a telephone number for each telephone order;
(c) scanning the customer files for an address previously associated with a given telephone number;
(d) registering information concerning incoming telephone orders;
(e) associating an order number with each telephone order;
(f) printing out for each order a label with a machine readable order number and a customer address;



(g) affixing the label with the order;
(h) assigning an order for delivery; and
(i) contemporaneously with such assigning of an order for delivery reading the order number to identify such order as being assigned for delivery.

4,882,476

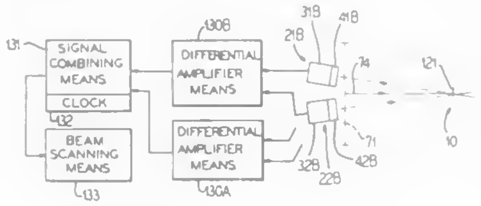
BAR CODE READER WITH ENHANCED SENSITIVITY

Jonathan R. White, Cedar Rapids, Iowa, assignor to Norand Corporation, Cedar Rapids, Iowa

Filed Sep. 10, 1986, Ser. No. 905,779

Int. Cl.⁴ G01J *3/34*

U.S. Cl. 235—462 35 Claims



2. A bar code reading system according to claim 1, said optical filter means comprising first and second optical filters interposed in the path for reflected light leading to the first and second light sensitive means, respectively, said first and second optical filters having respective offset bandpass spectral properties.

4,882,477

CARD-SHAPED ELECTRONIC APPARATUS WITH EMBOSSED SURFACE AND METHOD OF PRODUCING SAME

Yoshinori Gogita, and Katsuhide Shino, both of Nara, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 171,968, Mar. 23, 1988, abandoned. This application Oct. 26, 1988, Ser. No. 262,968

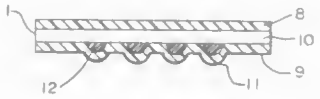
Claims priority, application Japan, Mar. 24, 1987, 62-44672[U]

Int. Cl.⁴ G06K *19/02*

U.S. Cl. 235—488 8 Claims

1. In a card-shaped electronic apparatus with an embossed

surface, the improvement wherein said apparatus comprises a planar circuit piece and a film member on said surface, said film member having protrusions formed thereon, and pasted onto said planar circuit piece, a filler being injected behind said protrusions between said film member and said planar circuit piece.



4,882,478

PHOTOELECTRIC CONVERSION SENSOR WITH SHIFTED ARCUATE ELEMENTS

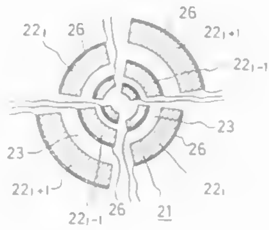
Shigeru Hayashi; Takasui Saito; Shoji Horiuchi, all of Chofu, and Tadashi Takahashi, Tokyo, all of Japan, assignors to Hideo Nagasu and Tohnichi Computer Applications Co., Ltd., Japan

Filed Mar. 2, 1988, Ser. No. 162,906

Claims priority, application Japan, Mar. 4, 1987, 62-49776

Int. Cl.⁴ H01J *40/14;* G01N *21/00*

U.S. Cl. 250—211 R 2 Claims



1. A photoelectric conversion sensor wherein 8 or more arcuate photoelectric conversion elements are each defined by two concentric arcs with different radii, with adjacent elements in the radial direction shifted in the circumferential direction so that the gaps in the radial direction between adjacent elements in the radial direction are substantially eliminated and there is no substantial overlap in the radial direction between radially adjacent elements.

4,882,479

OPTICAL ROTARY ENCODER USING DUAL FREQUENCY BEAT DIFFERENCE

Motohito Hino, Nagoya, and Yoshinori Bessho, Age, both of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Oct. 21, 1988, Ser. No. 260,569

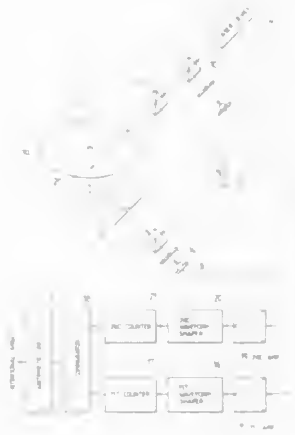
Claims priority, application Japan, Oct. 22, 1987, 62-266918

Int. Cl.⁴ G01D *5/34*

U.S. Cl. 250—231 SE 24 Claims

1. A rotary encoder comprising:

- a laser device for generating a laser light, the laser light being superposed with first and second laser light components of different frequencies from each other, thereby creating a beat of a first frequency on the laser light;
- a rotational member having a rotational axis for rotating thereabout at a rotating speed in which a rotational angle of said rotational member per a unitary period of time varies depending upon elapsing of time, said rotational member having a light scattering plane;
- a first detecting means for detecting the first frequency of the beat;
- a splitting/irradiating means for splitting the laser beam into the first and second laser light components and irradiating the first laser light onto the light scattering plane of said rotational member to scatter the first laser light component;
- a synthesizing means for synthesizing the scattered first laser light component and the second laser light component and providing a synthesized laser light, said synthesizing means outputting the synthesized laser light having a beat of a second frequency;



- a second detecting means for detecting the second frequency of the beat; and
- an arithmetic means for computing the rotational angle based on the first and second frequencies of the beats.

4,882,480

APPARATUS FOR DETECTING THE POSITION OF INCIDENCE OF PARTICLE BEAMS INCLUDING A MICROCHANNEL PLATE HAVING A STRIP CONDUCTOR WITH COMBED TEETH

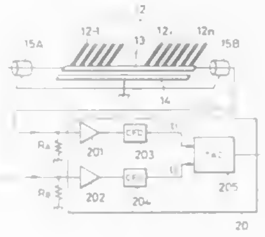
Koichiro Oba, Shizuoka, Japan; Wilfried Schoeps, Koblenz, and David Taqqu, Zurich, both of Switzerland, assignors to Hamamatsu Photonics Kabushiki Kaisha, Shizuoka, Japan

Filed Sep. 11, 1987, Ser. No. 95,262

Claims priority, application Japan, Sep. 12, 1986, 61-215400

Int. Cl.⁴ H01J *31/50, 40/14*

U.S. Cl. 250—213 VT 12 Claims



1. An apparatus for detecting the position of incidence of a particle beam, said apparatus comprising:

- a microchannel plate including an output electrode and a ground electrode, said output electrode including a strip conductor having first and second ends and a plurality of stripes extending from said strip conductor, a portion of said ground conductor being adjacent to and spaced from a portion of said strip conductor so that said ground conductor portion and said strip conductor portion form a microstrip line, the incidence of the particle beam on said output electrode generating a signal, a first portion of the signal being communicated to said first end of said strip conductor and a second portion of the signal being communicated to said second end of said strip conductor; and
- an incident position detector circuit operatively coupled to said first and second ends of said strip conductor for com-

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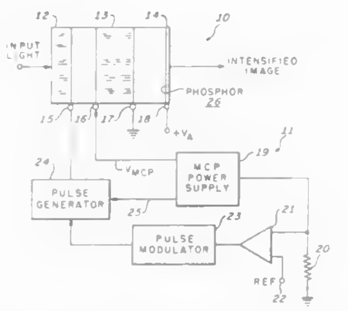
paring the arrival time of the first signal portion to the arrival time of the second signal portion to determine the position of incidence of the particle beam on said output electrode.

4,882,481

AUTOMATIC BRIGHTNESS CONTROL FOR IMAGE INTENSIFIERS

Lawrence H. Gilligan, and David W. Gerdt, both of Charlottesville, Va., assignors to Sperry Marine Inc., Charlottesville, Va.

Filed Oct. 19, 1988, Ser. No. 259,829
Int. Cl.^{4} H01J *31/50*
U.S. Cl. 250—213 VT 5 Claims



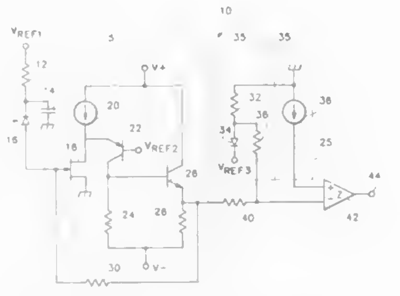
1. Brightness control apparatus for an image intensifier having a photocathode, a microchannel plate, and an anode, comprising:
  monitoring means for monitoring the current drawn by said microchannel plate in response to the light level impinging on said photocathode and for providing a pulse control signal in accordance therewith, and
  pulse generating means responsive to said pulse control signal for providing a pulse train to said photocathode so that said image intensifier is gated on and off with an on period proportional to said light level impinging on said photocathode.

4,882,482

THERMALLY STABILIZED OPTICAL PREAMPLIFIER

Kevin K. Smith, West Linn, Oreg.; Bryan E. Allsop, Hertfordshire, and Seb Naik, Hamow, both of England, assignors to Tektronix, Inc., Beaverton, Oreg.

Filed Oct. 26, 1988, Ser. No. 262,922
Int. Cl.^{4} H01J *40/14*; H03F *3/08*
U.S. Cl. 250—214 A 5 Claims



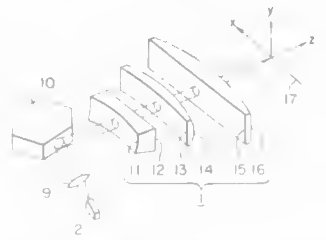
1. A thermally stabilized optical preamplifier comprising:
(a) means for producing a photosignal current in response to an external light source;
(b) a first transimpedance amplifier including an input GaAs device coupled to the producing means, the first transimpedance amplifier having a voltage output, the voltage output being the sum of the bias voltage of the GaAs device and a voltage proportional to the photosignal current;
(c) means for converting the voltage output of the first transimpedance amplifier to a signal current;
(d) a second transimpedance amplifier having a voltage output and a current summing input for receiving the signal current; and
(e) means for providing a compensation current to the current summing input of the second transimpedance amplifier, the compensation current substantially cancelling the portion of the signal current produced by the bias voltage of the GaAs device.

4,882,483

OPTICAL SCANNING APPARATUS WITH OPTICAL CORRECTION FOR SCAN MIRROR SURFACE TILT

Takeshi Mochizuki, Mito; Akira Arimoto, Kodaira, and Susumu Saito, Hachioji, all of Japan, assignors to Hitachi, Ltd. and Hitachi Koki Co., Ltd., both of Tokyo, Japan

Filed Apr. 8, 1988, Ser. No. 179,407
Claims priority, application Japan, Apr. 10, 1987, 62-86886
Int. Cl.^{4} H01J *3/14*
U.S. Cl. 250—236 4 Claims



1. An optical scanning apparatus having a rotary polygonal mirror for scanning and deflecting a flux of light from a light source, and a scanning lens having a function to compensate for and to decrease a nonuniformity in scanning spaces due to a surface tilt of said rotary polygonal mirror, said scanning lens focusing the flux of light at a position on a scanning plane in proportion to a deflection angle of the deflected light flux, comprising the improvement wherein said scanning lens is composed of three lens elements, and a refractive power, in a direction effecting the correction of the surface tilt, that is, an inverted number of a focal length, of a lens element located centrally in said scanning lens is changed in accordance with a scanning view angle.

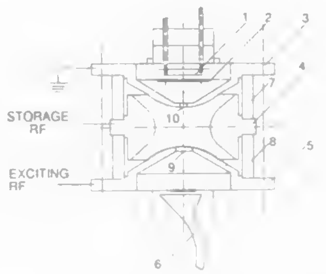
4,882,484

METHOD OF MASS ANALYZING A SAMPLE BY USE OF A QUISTOR

Jochen Franzen; Reemt-Holger Gabling, both of Bremen; Gerhard Heinen, Grasberg, and Gerhard Weiss, Weyhe, all of Fed. Rep. of Germany, assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 31, 1988, Ser. No. 265,108
Int. Cl.^{4} H01J *49/42*
U.S. Cl. 250—282 10 Claims

1. The method of mass analyzing a sample which comprises the steps of:
  defining a three-dimensional electrical quadrupole storage field in which sample ions over the entire mass range of interest can be simultaneously trapped;
  introducing or creating sample ions into the quadrupole field whereby ions within the mass range of interest are simultaneously trapped and perform ion-mass specific secular movements;
  superimposing an exciting RF field with a frequency different from that of the storage RF field;
  changing the superimposed fields so that simultaneously and stably trapped ions of consecutive masses encounter a resonance of their secular movements with the exciting RF field, take up energy, increase thereby the secular movement amplitudes, and leave the trapping field;



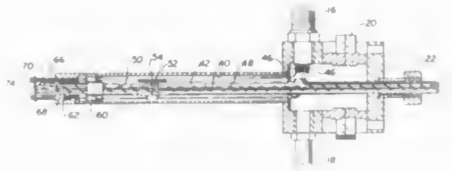
  detecting the ions of sequential masses as they leave the trapping field; and
  providing an output signal indicative of the ion mass.

4,882,485

ION DETECTOR AND ASSOCIATED REMOVABLE IONIZER INLET ASSEMBLY

Anthony N. Duryea, Cheswick, Pa., assignor to Tracor, Inc., Austin, Tex.

Continuation of Ser. No. 83,376, Aug. 10, 1987, which is a continuation of Ser. No. 898,839, Aug. 20, 1986, abandoned, which is a continuation of Ser. No. 676,068, Nov. 29, 1984. This application Oct. 7, 1988, Ser. No. 255,137
Int. Cl.^{4} H01J *49/04*
U.S. Cl. 250—288 29 Claims



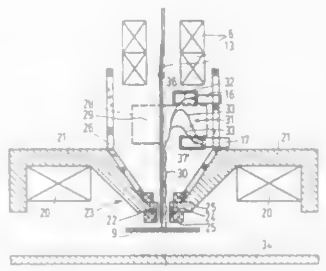
1. An ion detector comprising an ionizer inlet assembly, a high vacuum chamber partially receiving said ionizer inlet assembly, an analyzer assembly disposed within said high vacuum chamber and adapted to receive ions from said ionizer,
  detector means for receiving ions from said ionizer, and
  said ionizer inlet assembly having an inner tube and an outer tube spaced radially outwardly from said inner tube,
  said inner tube having a gap for discharge of a portion of the material transported therein, and said outer tube having a gap for discharge of the material discharged from said inner tube through said inner tube gap,
  means for adjusting the gap in said inner tube while said ion detector is operating to regulate the volume of material discharged therefrom whereby a portion of the said material will be discharged without entering said analyzer and the performance of said ionizer can be optimized, and
  valve means associated with said ionizer inlet assembly, whereby said ionizer inlet assembly may be removed from said high vacuum chamber without meaningful loss of of vacuum therein.

4,882,486

ELECTRON DETECTION WITH ENERGY DISCRIMINATION

Pieter Kruit, Delft, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 85,997, Aug. 14, 1987, abandoned. This application Apr. 21, 1989, Ser. No. 342,704
Claims priority, application Netherlands, Aug. 27, 1986, 8602177
Int. Cl.^{4} H01J *37/05*
U.S. Cl. 250—305 29 Claims



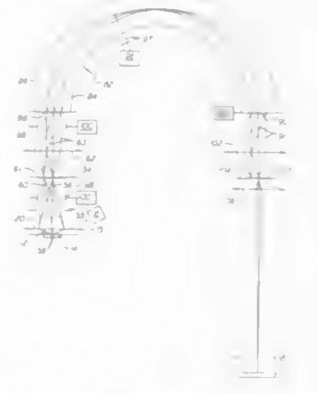
1. An apparatus for detecting electrons originating from a surface of an object being examined comprising
  a measuring space having means for holding the object,
  first means for directing an electron beam along an optical axis onto a surface of said object,
  electron-optical system means for generating a combined electrostatic and magnetic field in said measuring space, said combined field providing a spatially dispersive effect in an energy range for electrons of a return electron beam originating from said surface, and
  energy sensitive detection system means having two separated detectors for selectively detecting an entire spectrum of said electrons of said return beam within said energy range wherein each of said detectors detects a separate range of energies of said spectrum.

4,882,487

DIRECT IMAGING MONOCHROMATIC ELECTRON MICROSCOPE

Robert L. Gerlach, Minnetonka, Minn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Continuation-in-part of Ser. No. 58,437, Jun. 5, 1987, Pat. No. 4,810,880. This application Nov. 8, 1988, Ser. No. 268,440
Int. Cl.^{4} H01J *37/285*
U.S. Cl. 250—306 9 Claims



1. A direct imaging, monochromatic electron microscope comprising emitting means for emitting electrons from a plurality of spots on a sample surface, objective lens means for

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collecting a substantial portion of the emitted electrons and focusing the same at an image plane, collimating lens means for collimating the substantial portion of the emitted electrons into beams, an energy filter having an entrance aperture receptive of the beams to transit monochromatic beams having a selected energy, imaging means receptive of the monochromatic beams for focusing the same to effect an image of the spots, and detector means for detecting the image, the objective lens means having a first effective position plane, the collimating lens means having a second effective position plane and a focal length relative to the second plane, the second plane being positioned at a first distance from the image plane equal to the focal length and at a second distance from the first plane, and the entrance aperture being positioned from the second plane by approximately a third distance optically conjugate to the second distance with respect to the second plane of the collimating lens means.

4,882,488

RADIATION IMAGE READ-OUT AND REPRODUCING METHOD

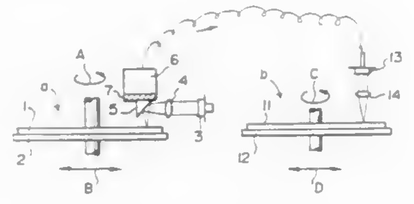
Masakazu Hashiue, Tokyo, Japan, assignor to Fuji Photo Film Co., Kanagawa, Japan

Filed Sep. 30, 1988, Ser. No. 251,481

Claims priority, application Japan, Sep. 30, 1987, 62-247316; Sep. 30, 1987, 62-247317; Oct. 19, 1987, 62-263226; Oct. 19, 1987, 62-263227

Int. Cl.⁴ G01T *1/20*

U.S. Cl. 250—327.2 32 Claims



1. A radiation image read-out and reproducing method characterized by steps of

- mounting at least one stimulable phosphor sheet carrying a radiation image stored thereon and at least one recording medium for reproducing a radiation image as a visible image respectively on first and second rotary plates,
- projecting a stimulating light beam onto the stimulable phosphor sheet while the first rotary plate is rotated, thereby effecting main scanning of the sheet by the stimulating light beam and the stimulating light beam is moved relative to the first rotary plate in a radial direction of the first rotary plate, thereby effecting sub-scanning of the sheet by the stimulating light beam,
- photoelectrically detecting light emitted by the stimulable phosphor sheet upon stimulation by the stimulating light beam by a photoelectric converter means, thereby obtaining an electric image signal representing the radiation image stored on the stimulable phosphor sheet,
- projecting a recording light beam modulated on the basis of the electric image signal onto the recording medium while the second rotary plate is rotated in synchronization with the main scanning of the recording medium by the stimulating light beam, thereby effecting main scanning of the recording medium by the recording light beam, moving the recording light beam relative to the second rotary plate in a radial direction of the second rotary in synchronization with the sub-scanning of the stimulable phosphor sheet by the stimulating light beam, thereby effecting sub-scanning of the recording medium by the recording light beam, and
- thus recording the radiation image on the recording medium simultaneously with read-out of the radiation image stored on the stimulable phosphor sheet.

4,882,489

RADIATION IMAGE RECORDING AND READ-OUT APPARATUS

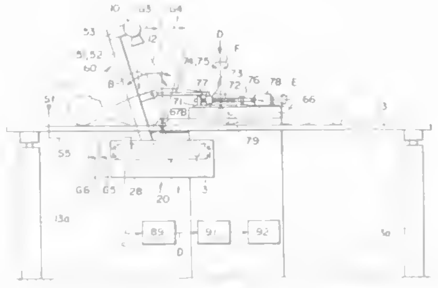
Shigeru Saotome, and Masamitsu Ishida, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 20, 1988, Ser. No. 183,806

Claims priority, application Japan, Apr. 20, 1987, 62-96715

Int. Cl.⁴ G03B *42/02*

U.S. Cl. 250—327.2 5 Claims



1. A radiation image recording and read-out apparatus which comprises:

- (i) a radiation source for irradiating a radiation toward an object,
- (ii) a recording and read-out unit provided with:
  - (a) a case for housing therein a stimulable phosphor sheet and having longitudinal and transverse dimensions approximately equal to the longitudinal and transverse dimensions of a single image recording area on said stimulable phosphor sheet,
  - (b) an image recording section for holding said stimulable phosphor sheet in said case at an image recording position exposed to the radiation passing through said object, and having a radiation image of said object stored on said stimulable phosphor sheet,
  - (c) an image read-out section provided in said case for exposing said stimulable phosphor sheet carrying said radiation image stored thereon to stimulating rays which cause said stimulable phosphor sheet to emit light in proportion to the stored radiation energy, and photoelectrically detecting the emitted light to obtain image signals, and
  - (d) an erasing section provided in said case for releasing the radiation energy remaining on said stimulable phosphor sheet, for which the detection of said emitted light has been carried out, before the image recording is carried out on said stimulable phosphor sheet, and
- (iii) a movement means for moving said recording and read-out unit and said radiation source so that said stimulable phosphor sheet at said image recording position approximately satisfies the linear rule and the geometric rule with respect to said radiation source around an arbitrary tomographic layer.

4,882,490

LIGHT BEAM SCANNING APPARATUS HAVING TWO DETECTORS WHOSE SIGNAL RATIO INDICATES MAIN SCANNING POSITION

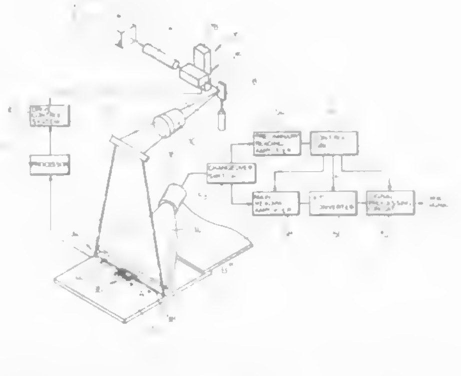
Yoshimi Takasaki; Akira Yamaguchi, and Ryoichi Yoshimura, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Sep. 22, 1988, Ser. No. 249,062

Claims priority, application Japan, Sep. 22, 1987, 62-239783; Oct. 1, 1987, 62-248512

Int. Cl.⁴ H01J *3/14, 5/16, 40/14*

U.S. Cl. 250—236 9 Claims



1. A light beam scanning apparatus for scanning an object by applying a light beam deflected in a main scanning direction to the object while moving said object in an auxiliary scanning direction substantially normal to said main scanning direction, said light beam scanning apparatus comprising first and second light detecting means juxtaposed in said main scanning direction and having respective light detecting surfaces extending in said auxiliary scanning direction such that said first and second light detecting means produce respective output signals at a predetermined ratio when the light beam for scanning he object in the main scanning direction is in a reference main scanning position, and produce respective output signals at a ratio varied from said predetermined ratio when the light beam is deviated from said reference main scanning position, whereby the main scanning position of the light beam with respect to said object can be detected from the ratio of the output signals of said first and second light detecting means.

4,882,491

INFRARED DETECTOR

Yukitoshi Tamura, Sakura, and Keiji Takamatsu, Ichikawa, both of Japan, assignors to Sumitomo Metal Mining Co., Ltd., Tokyo, Japan

Filed Oct. 27, 1988, Ser. No. 263,622

Claims priority, application Japan, Oct. 29, 1987, 62-274383

Int. Cl.⁴ G01J *5/10*

U.S. Cl. 250—338.3 10 Claims

1. An infrared detector comprising two light receiving elements connected in series in such directions as to oppose the orientations of polarization thereof to each other; a compensating element arranged in such a direction as to oppose the orientation of polarization thereof to those of said two light receiving elements respectively, and has sensitivities to outputs produced by vibration and temperature variation substantially equivalent to the sums of the sensitivities of said light receiving elements to outputs produced by vibration and temperature variation respectively; two windows of incidence arranged in correspondence to said two light receiving elements respectively for allowing rays to be incident on said two windows of incidence; and a light interrupting wall arranged between said two windows of incidence to prevent rays emitted from a single object from being incident simultaneously on said two light receiving elements, said compensating element being arranged at such a position as not to be irradiated with the incident light.

4,882,492

NON-INVASIVE NEAR INFRARED MEASUREMENT OF BLOOD ANALYTE CONCENTRATIONS

Kenneth J. Schlager, Elm Grove, Wis., assignor to Biotronics Associates, Inc., Wauwatosa, Wis.

Filed Jan. 19, 1988, Ser. No. 145,459

Int. Cl.⁴ G01N *33/50, 21/59, 21/47*

U.S. Cl. 250—346 21 Claims

1. A method for the non-invasive measurement of the concentration of a blood analyte comprising the steps of:

- (a) directing a beam of near infrared light to a source containing the blood analyte to be measured;
- (b) causing the beam to be transmitted or reflected by the source so as to provide a spectrally-modified beam;
- (c) directing the modified beam into two paths;
- (d) directing the modified beam of one path through a first optical filter having an absorption spectra of the analyte sufficient to block light for the maximum expected concentration of the analyte;
- (e) directing the modified beam of the other path through a second optical filter having an absorption spectra sufficient to block light equally at all wavelengths;
- (f) measuring the relative intensity of the beam from each path exiting its respective optical filter;
- (g) generating a signal representative of the difference in intensity between the beams; and,
- (h) converting the signal into an indication of analyte concentration.

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4,882,493

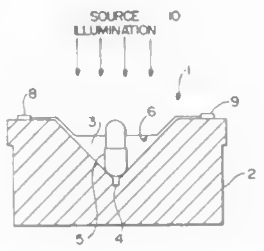
SAMPLE HOLDERS OR REFLECTORS FOR INTACT CAPSULES AND TABLETS AND FOR LIQUID MICROCELLS FOR USE IN NEAR-INFRARED REFLECTANCE SPECTROPHOTOMETERS

Robert A. Lodder, Bloomington, Ind., assignor to Indiana University Foundation, Bloomington, Ind.

Filed Mar. 9, 1988, Ser. No. 165,751

Int. Cl.⁴ G01N *21/84, 21/01*

U.S. Cl. 250—353 8 Claims



1. A sample holder for use in an infrared spectrophotometer comprising:

(a) a main body comprising a metal disc with a substantially 90° right-circular cone-shaped receptacle therein, said cone-shaped receptacle having a second smaller receptacle therein, located at the vertex of said cone-shaped receptacle:

(b) an insert, which may be inserted into said cone-shaped receptacle, comprising a cylindrical portion, which may be inserted into said second receptacle, and a substantially 90° right-circular insert cone portion oriented in an opposing direction to the cone-shaped receptacle of said main body:

(c) a wire, attached to said main body, which is suspended above and across said cone-shaped receptacle, said wire forming a loop directly above said insert cone portion for suspending a sample.

4,882,494

APPARATUS AND METHOD FOR FLOODING A NUCLEAR IMAGING DEVICE WITH RADIATION FROM AN IMAGING SOURCE

Roxanne R. Rogers, Houston, Tex.; Steven B. Kirby, Miami, Fla.; Theodore Simon, Dallas, and Sharon Matthiesen, Arlington, both of Tex., assignors to Michael D. Duncan, Dallas, Tex.

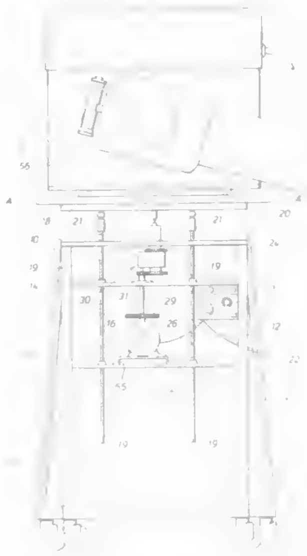
Filed Feb. 26, 1988, Ser. No. 160,839

Int. Cl.⁴ G01T *1/164*

U.S. Cl. 250—363.09 16 Claims

1. A method for flooding a nuclear imaging device with radiation from a radiation emitting calibration source, the device having a plurality of radiation sensors, the source having multiple radiation-emitting areas, the method comprising the steps of

positioning the source adjacent the device for reception of radiation from the source by the device's sensors, and



moving the source in a controlled motion so that individual sensors receive radiation from more than one radiation-emitting area of the source.

4,882,495

SCINTILLATION CAMERA

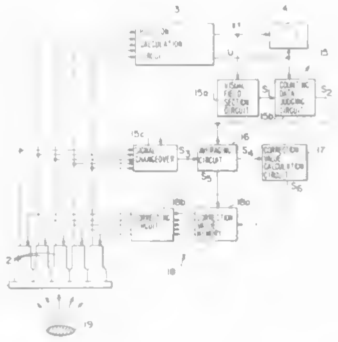
Masatoshi Tanaka, Chiba, Japan, assignor to Hitachi Medical Corporation, Tokyo, Japan

Continuation of Ser. No. 817,614, Jan. 10, 1986, abandoned. This application Apr. 26, 1988, Ser. No. 188,173

Claims priority, application Japan, Jan. 12, 1985, 60-2634

Int. Cl.⁴ G01T *1/208*

U.S. Cl. 250—363.09 6 Claims



1. In a scintillation camera for obtaining a distribution image of incident radioactive rays from a subject, having a scintillator for emitting flashes of light due to incident radioactive rays, a plurality of photomultiplier tubes where each is optically coupled with said scintillator for converting the light flashes into respective electric signals and a position calculating circuit for calculating an incident position of the radioactive rays on the scintillator in response to the output signals of each photomultiplier tube to produce a position signal indicative of an incident position of the radioactive rays on the scintillator and a display signal to a display unit, the improvement comprising:

a photomultiplier tube changeover circuit for determining in response to the position signal from said position calculating circuit which one of said photomultiplier tubes has just been irradiated with radiation rays and for outputting

output signals only from said selected one photomultiplier tube;

an averaging circuit for taking an arithmetical average of output signals from said photomultiplier tube changeover circuit with respect to a predetermined number of said output signals so as to average the magnitude of the output signals of each photomultiplier tube, said average being successfully and parallely calculated for respective output signals from said photomultiplier tube changeover circuit during detection of the incident radioactive rays from the subject;

a correction value calculating circuit for detecting a variation in the sensitivity of said photomultiplier tube by comparing the averaged magnitude of the output signals from said averaging circuit with a reference value determined by the energy of the incident radioactive rays so as to calculate a correction value for said each photomultiplier tube; and

a photomultiplier tube correcting circuit for controlling a voltage applied to said each photomultiplier tube so as to automatically adjust the sensitivity of each of said photomultiplier tubes.

4,882,496

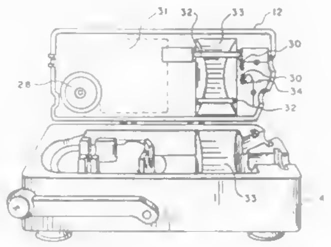
APPARATUS FOR EXCHANGING AND IRRADIATING TUBING CONNECTIONS

Marc Bellotti, Libertyville; Arthur Lueders, Mundelein; Daniel B. Granzow, Ingleside; Larry C. Taylor, and Mark Nauman, both of McHenry, all of Ill., assignors to Baxter International Inc., Deerfield, Ill.

Filed Apr. 29, 1988, Ser. No. 188,012

Int. Cl.⁴ A61L *2/10*

U.S. Cl. 250—455.1 5 Claims



1. In an improved electromechanical apparatus for breaking, forming and irradiating tubing connections for fluid flow for antimicrobial effect therein, the improvement comprising, in combination;

a housing having top and bottom portions removably attached to one another; u.v. irradiation means; and

electromechanical means in said housing for effecting said exchange and irradiation of said tubing connectors, said electromechanical means including means for forcing compliance with a predetermined sequence of steps to effect said exchange and irradiation by user of said apparatus.

4,882,497

METHOD AND APPARATUS OF MEASURING OUTER DIAMETER AND STRUCTURE OF OPTICAL FIBER

Akira Inoue, and Yasuji Hattori, both of Kanagawa, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Aug. 14, 1987, Ser. No. 85,598

Claims priority, application Japan, Aug. 15, 1986, 61-191534; Jan. 28, 1987, 62-17506; Mar. 3, 1987, 62-48519; May 12, 1987, 62-115333; May 14, 1987, 62-117488

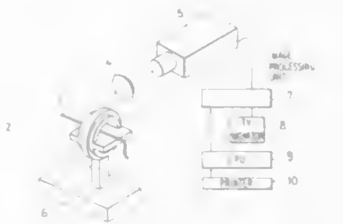
Int. Cl.⁴ G01N *21/86*

U.S. Cl. 250—560 16 Claims

1. An apparatus for examining the structure of an optical fiber having a core and a cladding surrounding said core, said core and said cladding having different refractive indices, said apparatus comprising:

optical measuring means comprising a light source for irradiating a side wall of said optical fiber with an observing light beam and a pickup system for detecting that part of said observing light beam which traverses said optical fiber;

means for mounting said optical fiber, one of said optical



fiber mounting means and said optical measuring means being rotatable relatively to the other such that an axis of said optical fiber and the optical axis of said optical measuring means are set perpendicular to each other; and

means coupled to said pickup system for correcting a luminance distribution as detected by said pickup system for a lens effect due to the different refractive indices of said core and said cladding of the optical fiber under observation.

4,882,498

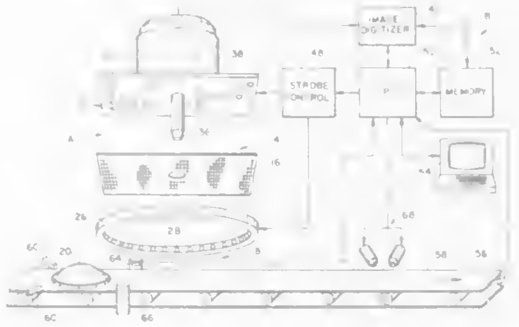
PULSED-ARRAY VIDEO INSPECTION LIGHTING SYSTEM

Don W. Cochran, Highland Heights, and James R. Austin, Mentor-on-the-Lake, both of Ohio, assignors to Pressco, Inc., Cleveland, Ohio

Continuation of Ser. No. 107,265, Oct. 9, 1987, abandoned. This application Apr. 7, 1989, Ser. No. 336,642

Int. Cl.⁴ G01N *21/86, 9/04*

U.S. Cl. 250—571 22 Claims



1. An engineered inspection lighting system comprising:

a plurality of directed primary light generating elements directed to a primary light field;

means for securing the primary light generating elements in a preselected array arrangement to form a primary lighting array;

means adapted for directing light from the primary light generating elements to the primary light field;

supply means for providing a single current pulse to selected light generating elements of the primary lighting array to illuminate an associated specimen within the primary light field; and

the primary light field including a plurality of sections, the primary light generating elements being positioned in the primary lighting array such that each primary light generating element thereof does not contribute light equally to

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each section of the primary light field and wherein light in the light field from at least a portion of the light generating elements of the array is overlapped with light from neighboring light generating elements of the array.

4,882,499

FIBER-OPTIC DETECTOR FOR OILS AND SOLVENTS

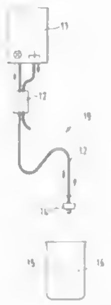
Mauri Luukkala, Espoo; Aarre Matilainen, Helsinki, and Jarmo Viirto, Nummela, all of Finland, assignors to Soundek Oy, Finland

Filed Mar. 10, 1988, Ser. No. 166,386

Claims priority, application Finland, Mar. 10, 1987, 871042

Int. Cl.⁴ G01N *15/06*

U.S. Cl. 250—577 6 Claims



1. A fiber optic detector for liquids, comprising

a fiber optic light transmitter/receiver for transmitting light and receiving light.

an optical fiber attached to said transmitter/receiver, and

a pick-up located on a free end of said fiber for sensing liquid, wherein

at least a portion of said pick-up is formed of material which, when coming into contact with liquid to be detected, absorbs the liquid by capillarity, and

said sensing pick-up is stained, at one end thereof, with a staining agent which, in dry condition, is positioned away from said fiber free end, and is arranged to migrate to said fiber free end with the contacted liquid,

whereby, when said pick-up contacts the liquid to be detected, said staining agent travels along with the liquid being absorbed, to an unstained end of said sensing pick-up at said free end of said fiber, and

an optical reflection coefficient of the pick-up material changes which is thereby observed by said detector.

4,882,500

METHOD FOR CONVERTING STANDING WAVE VIBRATIONS INTO MOTION AND STANDING WAVE MOTOR THEREFOR

Tamotsu Iijima, Kofu, Japan, assignor to Nippon Seimitsu Kogyo Kabushiki Kaisha, Kofu, Japan

Continuation of Ser. No. 58,100, Jun. 4, 1987, abandoned. This application Sep. 19, 1988, Ser. No. 245,944

Claims priority, application Japan, Jun. 4, 1986, 61-129809; Jun. 4, 1986, 61-129810; Jun. 4, 1986, 61-129811; Jun. 4, 1986, 61-129812; Jun. 4, 1986, 61-129813

Int. Cl.⁴ H01L *41/08*

U.S. Cl. 310—323 27 Claims

1. A standing wave motor which is driven by converting standing wave vibrations into motion, comprising an elastic vibration member; at least one vibrator disposed on said vibration member and adapted to generate a standing wave having a fixed wavelength in said vibration member by applying a periodic voltage of fixed frequency thereto, said vibration member having a length substantially equal to integral multiples of the half wavelength of the standing wave generated in said vibration member; at least one row of motion extracting means integrally formed on at least one surface of said vibration member in the shape of protrusions and located within at least one of the odd or even numbered sections of quarter wavelength sections defined by equally dividing each wavelength of the standing wave into four and at a portion substantially exclusive of a loop and a node of the standing wave, said motion extracting means each having a width less than quarter the wavelength of the standing wave generated in said vibration member in longitudinal direction relative to said vibration member; and at least one moving member being in contact with said motion extracting means on the vibration member thereby to cause relative motion of the vibration member and the moving member by transmitting amplitude motion of the standing wave generated in the vibration member to the moving member through the motion extracting means.

4,882,501

POWER SUPPLY ARRANGEMENT FOR ELECTRO-HYDRAULIC CONTROL SYSTEMS IN MINING AND CIVIL ENGINEERING

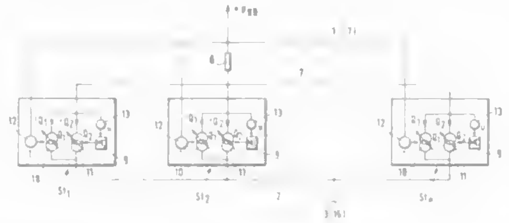
Johannes Konig, and Martin Reuter, both of Munich, Fed. Rep. of Germany, assignors to Gewerschaft Eisenhutte Westfalia GmbH, Fed. Rep. of Germany

Filed May 9, 1988, Ser. No. 191,549

Claims priority, application Fed. Rep. of Germany, May 9, 1987, 3715590

Int. Cl.⁴ H02J *1/00*

U.S. Cl. 307—11 12 Claims



1. A power supply arrangement for use in an electro-hydraulic support control system for mining and civil engineering, in which a group of control units utilize control means in the form of microprocessors, microcomputers or electronic evaluators to control temporary power supply of electrical loads from a constant voltage source common to the group, the voltage source being designed for a maximum current requirement of all electrical loads supplied by it; said arrangement comprising a current measuring device for each control unit for determining the effective dynamic current consumption of the unit and the loads controlled thereby, an adjustable current source for each control unit which is adjusted by the respective device to a current value dependent on the effective current consumption and a common potential line connected to all the adjustable current sources which carries a control voltage which varies according to a total of the current consumptions, of all the units, the control voltage being usable by the control means in the control units to determine the available current which the voltage source can deliver without overloading.

4,882,502

INTEGRATED CIRCUIT FOR CONTROLLING THE LOADS OF AUTOMOBILE CIRCUITRY

Yoshinobu Kobayashi, Osaka, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Jun. 17, 1988, Ser. No. 207,792

Claims priority, application Japan, Jun. 17, 1987, 62-149273

Int. Cl.⁴ H03K *17/56, 3/01;* H03L *5/00;* H03H *7/20*

U.S. Cl. 307—247.1 5 Claims

1. An integrated circuit for judging the on/off status of a control signal for switching a load, comprising:

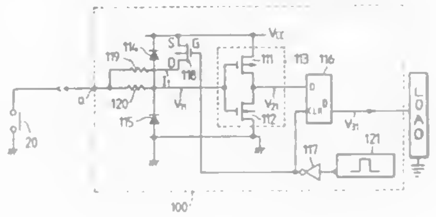
a switch which generates said control signal for switching said load;

a regulated power supply;

latch pulse generating means for generating an input latching pulse at an output thereof;

a p-channel type MOSFET whose source electrode is connected to said regulated power supply and whose gate electrode receives said input latching pulse from said output of said latch pulse generating means;

a pull-up resistor connected between a drain electrode of said p-channel type MOSFET and one side of said switch for receiving said control signal from said switch, said pull-up resistor only being operative when said p-channel type MOSFET is activated by said input latching pulse applied to said gate electrode; and



a register, which receives said control signal from said one side of said switch at a first input and said input latching pulse at a second input, for latching said control signal from said switch in response to said input latching pulse and for outputting said latched control signal to control switching of said load.

4,882,503

METHOD OF CORRECTING A DEAD TIME

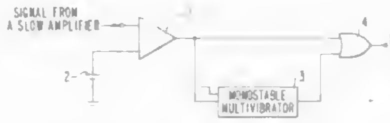
Yoshihiro Wakiyama; Takeshi Aoyama, and Yoshiro Ohnishi, all of Kyoto, Japan, assignors to Horiba, Ltd., Kyoto, Japan

Continuation-in-part of Ser. No. 22,873, Mar. 6, 1987, abandoned. This application Sep. 19, 1988, Ser. No. 248,248

Claims priority, application Japan, Mar. 17, 1986, 61-60436

Int. Cl.⁴ H03K *5/04, 5/153*

U.S. Cl. 307—267 3 Claims



1. A method of correcting a dead time in an analog/digital converter or a linear amplifier, wherein said dead time is obtained by the steps comprising;

determining a first time, wherein said first time represents the time elapsed from (a) a predetermined level of an output signal generated by a slow amplifier in response to an input pulse, to (b) a peak level of said output signal;

measuring a second time, wherein said second time is the time required for treating said input pulse;

adding said first time to said second time, thereby obtaining said dead time.

4,882,504

INTERRUPTER ARRANGEMENT FOR HIGH-FREQUENCY SIGNALS

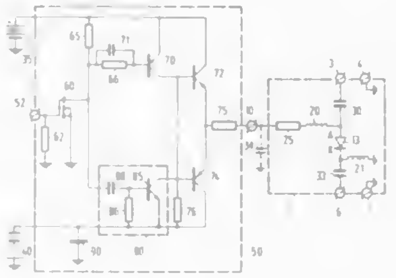
Gilbert Petitjean, Igny, and Michel Lebourg, Clamart, both of France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 19, 1988, Ser. No. 221,153

Claims priority, application France, Jul. 24, 1987, 87 10581

Int. Cl.⁴ H03K *17/74, 5/08;* H03B *1/04;* H02H *7/20*

U.S. Cl. 307—256 4 Claims



1. An interrupter circuit arrangement for high frequency signals, comprising:

a switching circuit having a high-frequency signal path which includes at least one diode, said switching circuit having a control terminal for receiving control signals for biasing said diode to either conductive state or non-conductive state, and a high-frequency bypass capacitance at said control terminal;

a control circuit having an output connected to said control terminal for supplying said control signals thereto in response to command voltages supplied to an input of said control circuit, said control circuit producing such a control signal from a first voltage source when a command voltage signifies that said signal path is to be rendered conductive and producing such a control signal from a second voltage source of opposite polarity from said first voltage source when a command voltage signifies that said signal path is to be rendered non-conductive; and

an overvoltage circuit comprised in said control circuit which produces a trigger pulse in response to a change-over from said first voltage source to said second voltage source, such trigger pulse causing said control circuit to produce a charging current trigger pulse at the output thereof for charging said bypass capacitance.

4,882,505

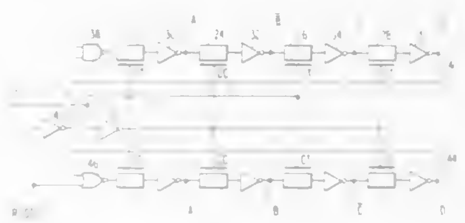
FULLY SYNCHRONOUS HALF-FREQUENCY CLOCK GENERATOR

Anatol Furman, Jericho, Vt., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 24, 1986, Ser. No. 843,348

Int. Cl.⁴ H03K *5/15, 23/44*

U.S. Cl. 307—269 7 Claims



1. A fully synchronized clock generator comprising:

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first and second synchronous counters, each comprising:
- a string of at least two serially connected shifting elements, said string having a string input terminal and a string output terminal, each of said shifting elements comprising a series connection of an inverter and a transistor having two current-carrying electrodes and a control electrode;
- control means having an output connected to said string input terminal, a first input terminal connected to said string output terminal, and a second input terminal connected for receiving a reset signal for placing said control means into one of two modes so that each of said first and second counters are synchronously reset with respect to one another, said control means resetting said counter in a first mode, and operating as an inverter in a second mode; and
- clock means for applying voltages of a given phase to the control electrode of the transistor of the first and any subsequent odd-numbered shifting element in said string, and for applying voltages of an opposite phase to the control electrode of the transistor of the second and any subsequent even-numbered shifting element in said string;
- wherein said control means of said first counter and said control means of said second counter are of different constructions such that said first and second counters can be reset to, and operate in, polarities opposite to one another.

4,882,506

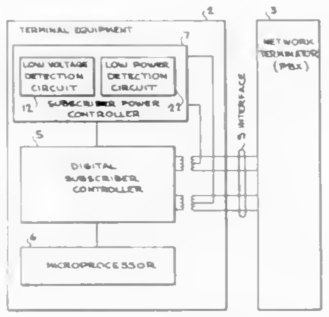
LOW VOLTAGE AND LOW POWER DETECTOR CIRCUITS

Jan H. Johansson, Balsta, Sweden, and Erik K. Lunderius, San Jose, Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Sep. 17, 1986, Ser. No. 908,536

Int. Cl.^{4} H03K *3/01, 19/086, 19/092;* **G06G** *7/12*

U.S. Cl. 307—296.1 15 Claims


TERMINAL EQUIPMENT
2
3
7
NETWORK TERMINATOR (PBX)
LOW VOLTAGE DETECTION CIRCUIT
LOW POWER DETECTION CIRCUIT
12
SUBSCRIBER POWER CONTROLLER
INTERFACE
5
DIGITAL SUBSCRIBER CONTROLLER
6
MICROPROCESSOR

1. Low voltage and low power circuits for use in a subscriber power controller comprising:
- low voltage detection means for generating a first output signal switching between ECL logic levels;
- said low voltage detection means being formed of a first comparator means and a first output stage;
- said first comparator means being formed of a first comparator with hysteresis for comparing a low voltage detection signal proportional to a primary input supply voltage with a first internal reference voltage to produce a first detected signal;
- said first output stage being responsive to said first detected signal to produce said first output signal;
- low power detection means for generating a second output signal switching between a high voltage level and a low voltage level;
- said power detection means being formed of a second comparator means and a second output stage;
- said second comparator means being formed of a second comparator with hysteresis for comparing a low power detection signal proportional to the primary input supply voltage with the second internal reference voltage to produce a second detected signal; and
- said second output stage being responsive to said second detected signal to produce said second output signal.

4,882,507

OUTPUT CIRCUIT OF SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE

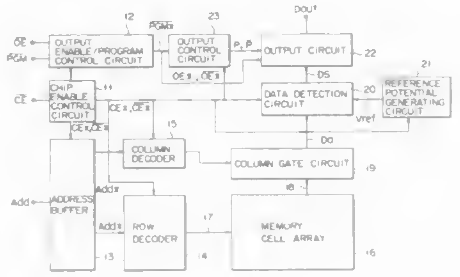
Yuuichi Tatsumi, Tokyo; Hidenobu Minagawa, Kawasaki; Hiroshi Iwahashi, Yokohama; Masamichi Asano, Tokyo, and Mizuho Imai, Annaka, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

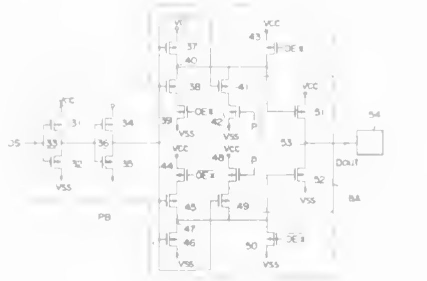
Filed Jul. 29, 1988, Ser. No. 226,307

Claims priority, application Japan, Jul. 31, 1987, 62-191602

Int. Cl.^{4} H03K *3/013, 17/06, 17/16, 17/284*

U.S. Cl. 307—443 24 Claims





1. A semiconductor integrated circuit comprising:
- an output circuit including a transistor whose conduction state is controlled according to an internal signal and charging and discharging a preset node by controlling the conduction state of said transistor, thus outputting a signal; and
- control means for increasing a rate of reduction in the conduction resistance of said transistor for a preset period of time after the control signal has changed in level.

4,882,508

DUAL FLUX PATH VOICE COIL MOTOR

Khalid A. Mawla, Monte Sereno, Calif., assignor to International Business Machines, Armonk, N.Y.

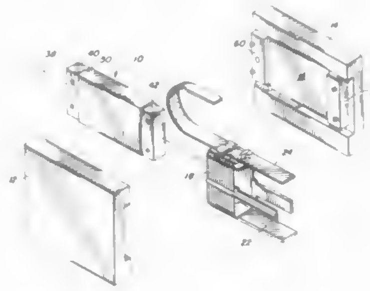
Filed Mar. 14, 1988, Ser. No. 168,057

Int. Cl.^{4} H02K *41/00*

U.S. Cl. 310—13 5 Claims

1. A linear voice coil motor actuator having a dual magnetic flux path for head positioning in a disk file comprising:
- a magnetically permeable center core having a central longitudinal axis generally parallel to the linear path of the actuator and two parallel faces on opposites sides of and generally parallel to the central longitudinal axis, the center core further comprising two generally like sections;
- means for supporting the two center core sections in a

spaced apart relationship along the center core longitudinal axis;
- a magnetically permeable outer core generally surrounding the center core and having parallel inner walls, each of said outer core inner walls being generally parallel to and spaced from a corresponding center core face;
- at least one generally flat permanent magnet attached to each of said center core faces;
- at least one generally flat permanent magnet attached to each of said outer core inner walls, the magnet on each inner wall having its magnetic polarity opposing the magnetic polarity of the corresponding center core magnet and being spaced therefrom so as to define a gap;
- an electrically conductive coil surrounding the center core and located within the gap; and
- means for supporting the coil within the gap and for providing linear movement of the coil through the gap in a direction generally parallel to the longitudinal axis of the center core.



4,882,509

MOTOR INCORPORATING A SUPERCONDUCTING SHIELD

James E. Wottlin, 88 Whispering Pines, Conroe, Tex. 77302

Filed Jul. 5, 1988, Ser. No. 215,325

Int. Cl.^{4} H02K *37/00*

U.S. Cl. 310—46 16 Claims

1. A motor which comprises:

(a) a stator formed of a plurality of magnetic poles the poles being arranged in alternate north and south poles at an instant wherein the stator positions stator poles in a circular arrangement;

(b) a rotor positioned within said and adapted to be rotated by motor action wherein said rotor is formed of alternating north and south magnetic poles;

(c) said rotor rotating as a result of attraction and repulsion between said rotor and stator poles and wherein said stator and rotor define a gap therebetween circumferentially about said rotor; and

(d) a rotating shield means having a window therein, said shield means and window blanking off selected attractive and repulsive pole combinations across said gap, wherein said shield prevents selected magnetic coupling across said gap.

4,882,510

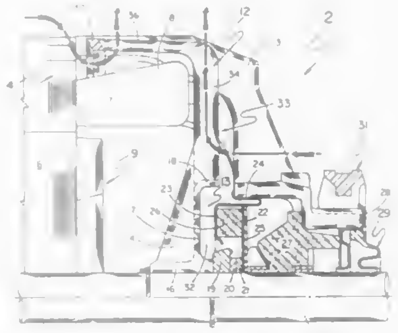
MOTOR COOLING AND PARTICULATE TRAPPING STRUCTURE

Barry M. Newberg, St. Louis County, Mo., assignor to Emerson Electric Co., St. Louis, Mo.

Filed Aug. 8, 1988, Ser. No. 229,923

Int. Cl.^{4} H02K *9/00, 9/06*

U.S. Cl. 310—63 7 Claims



1. In an electric motor frame structure containing a stator with a stack of laminated plates having a plurality of windings extending therethrough in looped fashion to form end turns on opposed faces thereof, a rotor mounted on a rotor shaft to extend through said stator for rotation within said stator, and a lubricating system upstream thereof, an improved motor cooling structure comprising:
- a separate, annular central hub member having a shaft mounting portion preselectively sized to be independently mounted on said rotor shaft adjacent one end of said stator; and,
- a plurality of spaced vane members arranged to form a separate cage-like fan circumferentially and rotatably surrounding said end turns of said stator along one face of said stator, each vane member including a first section extending in fixed radial fashion from said central hub member proximally spaced in direct, uninterrupted fashion from said end turns on said face of said stator and a second section extending substantially normal from said first section proximally spaced in direct, uninterrupted fashion from the outer peripheral surfaces of said end turns so that said first and second sections provide said separate cagelike fan rotatably and circumferentially surrounding said end turns of said stator to blow in laminar fashion a cooling air stream over the face and over the outer peripheral surfaces of said end turns.

4,882,511

BRUSHLESS THREE-PHASE D.C. MOTOR

Johann von der Heide, Schramberg, Fed. Rep. of Germany, assignor to Papst-Motoren GmbH & Co. KG, St. Georgen, Fed. Rep. of Germany

Filed May 10, 1985, Ser. No. 733,223

Claims priority, application Switzerland, Jun. 1, 1984, 2680/84; Jan. 9, 1985, 00078/85

Int. Cl.^{4} H02K *21/22, 29/08*

U.S. Cl. 310—67 R 18 Claims

1. Collectorless three-phase D.C. motor having a permanent-magnet arrangement and a three-phase winding, these being movable relative to each other, and having three position sensors which are stationary relative to the winding and controlled by the permanent-magnet arrangement, the winding

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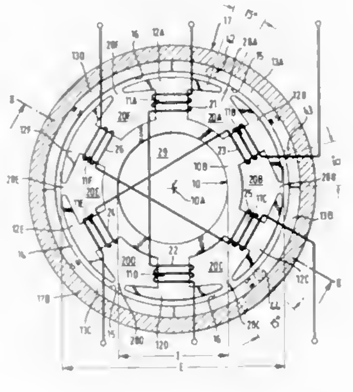
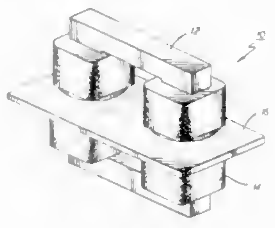
comprise coils which are Y-connected and energized by current in a cyclical sequence in dependence upon the sensors' output signals, which latter are offset by 120°-el. one to the next, there being induced in the individual coils of the winding coil voltages, measured relative to the Y's neutral terminal, which are offset by 120°-el.; the coil voltages, in passing through zero, being alternately positive for an interval of at most 180°-el. and negative for an interval of at most 180°-el.



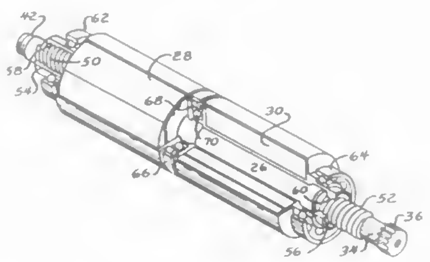
and their sum being equal to zero for every relative position as between the magnet arrangement and the winding, the improvement wherein the position sensors are so arranged relative to the winding's coils that the sensors' changes-of-state substantially coincide with the zero-crossovers of the associated coil voltages, and the winding's coils are energized via winding driver stages by means of driver voltages that directly correspond to the sensor output signals.

4,882,512
ELECTROMAGNETIC FORCE SENSOR
James H. Andrus, Glendale, Ariz., assignor to Honeywell, Inc., Minneapolis, Minn.
Filed Sep. 19, 1988, Ser. No. 246,129
Int. Cl.^{4} H02K *7/09*
U.S. Cl. 310—90.5 5 Claims



1. A flux sensor for use in a flux field for sensing flux density comprising:
- a first amplifier having a first input terminal for receiving a reference voltage and having a first output terminal;
- a first Hall generator unit having a first input terminal connected to the first output terminal of the first amplifier for receiving a reference-voltage controlled current and having a first output terminal;
- a second amplifier having a first input terminal connected to the first output terminal of the first Hall generator unit and having a first output terminal for supplying an output voltage;
- a third amplifier having a first input terminal connected to the first output terminal of the second amplifier and having a first ouput terminal;
- a second Hall generator unit having a first input terminal connected to the first output terminal of the third amplifier for receiving a flux-modulated current and having a first output terminal;
- a fourth amlifier having a first input terminal connected to the first output terminal of the second Hall generator unit and having a first output terminal for supplying an output voltage.

4,882,513
DUAL PERMANENT MAGNET GENERATOR
Wayne A. Flygare; Raymond N. Olson; Richard W. Reynolds, all of Rockford, and Mohd A. Aleem, Roscoe, all of Ill., assignors to Sundstrand Corporation, Rockford, Ill.
Filed Dec. 23, 1985, Ser. No. 812,840
Int. Cl.^{4} H02K *1/28, 7/116*
U.S. Cl. 310—114 4 Claims

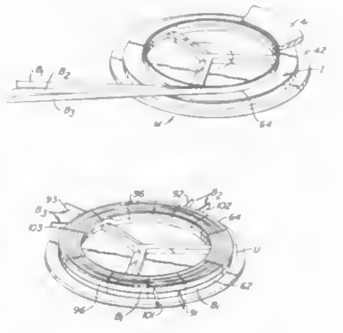


1. A permanent magnet generator comprising:
- an elongated shaft having opposed ends;
- first and second helical splines on said shaft adjacent respective ends thereof, said splines having opposite pitches;
- first and second permanent magnet assemblies located about said shaft and rotatable with respect thereto;
- a thrust and journal bearing for said permanent magnet assmblies;
- said first magnet assembly being to one side of said bearing and connected to said first spline;
- said second magnet assembly being on the other side of said bearing and connected to said second spline;
- a stator including an armature means coaxial with said shaft and having an axial extent encompassing said magnet assemblies, said armature means mounting said bearing intermediate the ends of said armature means; and
- means for axially moving said shaft relative to said bearing and said magnet assemblies to cause said magnet assemblies to simultaneously rotate in opposite directions on said shaft.

4,882,514
SUBMERSIBLE SODIUM PUMP
Glen V. Brynsvold, San Jose; John T. Lopez, Santa Clara; Eugene E. Olich, Aptos, and Calvin W. West, Livermore, all of Calif., assignors to General Electric Company, San Jose, Calif.
Filed Jun. 7, 1988, Ser. No. 203,179
Int. Cl.^{4} H02K *44/06;* H01F *27/28*
U.S. Cl. 310—208 7 Claims

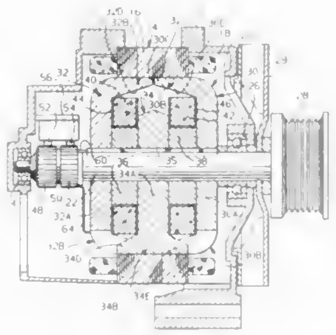
1. A pump construction for liquid sodium including a plurality of circular and discrete coil elements for being placed around a central and cylindrical central duct, a plurality of ring laminate constructions for placement to said central cylindrical duct, said plurality of ring laminate constructions for trapping and firmly engaging therebetween said coil elements, said laminate constructions comprising:
- a plurality of groups of laminates arrayed side-by-side, each laminate for extending in a plane parallel to the axis of said cylindrical duct, said laminates formed from a material for conducting a magnetic field;
- each group of laminates abutted to the central duct to form an arch about a segment of said central duct;

- said plurality of groups of laminates each having at least one laminate parallel to a radius of said central cylindrical duct and being abutted to said central cylindrical duct to form an endless arch adjacent said central cylindrical duct completely surrounding said duct;
- said groups of laminates each defining coil element receiving grooves for receiving and firmly clamping therebetween said coil elements of said pump;



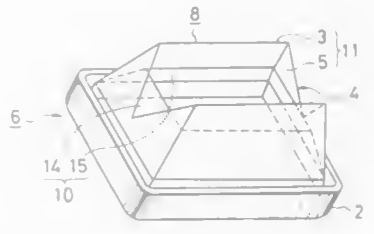
- means for binding said laminates radially to and towards said central duct to maintain said group of laminates as an endless arch whereby said laminate construction can be manipulated as a unitary construction with respect to said central duct; and
- means for compressing said ring laminates construction together along the length of said duct for trapping said coil elements therebetween.

4,882,515
ALTERNATING CURRENT GENERATOR
Thomas A. Radomski, Utica, Mich., assignor to General Motors Corporation, Detroit, Mich.
Continuation-in-part of Ser. No. 201,717, Jun. 3, 1988, abandoned. This application Oct. 28, 1988, Ser. No. 263,850
Int. Cl.^{4} H02K *19/22*
U.S. Cl. 310—263 4 Claims



1. A voltage regulated alternating current generator comprising, frame means, a stator supported by said frame means comprising a stator core formed of magnetic material that has slots, an output winding carried by said stator core including conductors disposed within said slots, a rotor supported for rotation by said frame means disposed within said stator core, said rotor comprising a shaft, first and second claw pole members formed of magnetic material carried by said shaft, each pole member having a plurality of circumferentially spaced and axially extending pole fingers, the number of fingers of said first pole member being equal to the number of fingers of said second pole member, said first and second pole members being so oriented on said shaft that the pole fingers of said first and second pole members are aligned with each other, said first and second pole fingers being connected in such a manner that they magnetically connect said first and second pole members through the magnetic material of said first and second pole fingers, the outer periphery of the pole fingers of said first and second pole members being aligned with portions of the inner surface of said stator core, a third pole member means formed of magnetic material carried by said shaft having circumferentially spaced pole projections, said third pole means having disk portion means disposed between said first and second pole members, the projections of said third pole member means being disposed between the fingers of said first and second pole members, a field coil located between said first pole member and said third pole member means, a permanent magnet having opposed end faces of opposite magnetic polarity located between said third pole member means and said second pole member, said field coil being so wound and electrically connected and the end faces of said permanent magnet being so magnetically poled that when said field coil is energized with direct current the pole fingers of said first and second pole members have the same magnetic polarity and the pole projections of said third pole member means has an opposite magnetic polarity whereby the fluxes developed respectively by said field coil and permanent magnet that traverses said stator core is additive, means including said disk portion means and said connected first and second pole fingers defining a closed magnetic circuit formed entirely of magnetic material that magnetically connects said opposed end faces of said permanent magnet, said magnetic circuit shunting the air gap between said rotor and stator core whereby the flux developed by said permanent magnet is diverted from said air gap by said magnetic circuit and only leakage flux developed by said permanent magnet traverses said stator core when said field coil is not energized, the magneto-motive-force developed by said field coil when energized causing the flux developed by said permanent magnet that is diverted through said magnetic circuit to be reduced whereby flux developed by said permanent magnet that traverses the air gap between said rotor and stator increases, and voltage regulating means for maintaining the output voltage of said generator at a desired regulated value, said regulating means applying direct field current to said field winding in only one direction through said field winding, said regulating means including means for varying the magnitude of said direct field current as an inverse function of the output voltage of said generator, the amount of flux developed by said permanent magnet that is diverted through said magnetic circuit decreasing as said field current increases and increasing as said field current decreases.

4,882,516
CATHODE RAY TUBE WITH INTERNAL DOUBLE-WALL MAGNETIC SHIELD
Tatsushiro Hirata, and Tomohisa Uba, both of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan
Filed Dec. 24, 1987, Ser. No. 137,740
Claims priority, application Japan, Dec. 26, 1986, 61-316155
Int. Cl.^{4} H01J *29/06*
U.S. Cl. 313—407 4 Claims



1. In a cathode ray tube having a face panel and an internal magnetic shield positioned adjacent said face panel, wherein

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the improvement comprises said magnetic shield having an inner shield portion of inner magnetic plates and an outer shield portion of outer magnetic plates, the outer magnetic plates of said outer shield portion being longer than the inner magnetic plates of the inner shield portion and intersecting the inner magnetic plates at an angle in a range of 5° to 30°, each of said inner and outer magnetic plates having an upper edge and said magnetic shield having the following relationship: $\frac{1}{3} \leqq Ha/Hb \leqq 4/5$, wherein Ha is the distance from the upper edge of said inner magnetic plate from said panel, and Hb is the distance from the upper edge of said outer magnetic plate from said panel, both distances being measured parallel to a vertical axis of said tube.

4,882,517

ELECTROLUMINESCENT COMPOSITION CONTAINING ORGANOPOLYSILOXANE AND ELECTROLUMINESCENT DEVICE USABLE AS A BACK-LIGHTING UNIT FOR LIQUID CRYSTAL DISPLAY

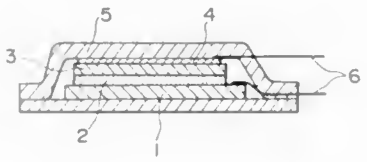
Kazumasa Maruyama; Tatsushi Kaneko, and Tohru Chiba, all of Niigata, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Feb. 7, 1989, Ser. No. 306,962

Claims priority, application Japan, Feb. 9, 1988, 63-28046

Int. Cl.⁴ B32B *9/00;* **G02F** *1/13;* **H01J** *1/63;* **G09G** *3/10*

U.S. Cl. 313—502 10 Claims



7. An electroluminescent device which comprises:

(A) a layer of an electroluminescent composition comprising
  (a) a dielectric material as a matrix mainly composed of a cyanoalkyl group-containing organopolysiloxane represented by the average unit formula

$$R^1_aR^2_bSiO_{(4-a-b)/2},$$

in which R^1 is a cyanoalkyl group having 3 to 5 carbon atoms, R^2 is a hydrogen atom or a monovalent hydrocarbon group, the subscript a is a positive number in the range from 0.8 to 1.8 and the subscript b is zero or a positive number not exceeding 1.0 with the proviso that $a+b$ is in the range from 1.1 to 1.98, and
  (b) a particulate electroluminescent material dispersed in the matrix; and

(B) two electrode plates sandwiching the layer of the electroluminescent composition.

4,882,518

BACK CAP FOR AN ELECTROLUMINESCENT DISPLAY

Walter L. Cherry, Waukegan, Ill., assignor to The Cherry Corporation, Waukegan, Ill.

Filed May 25, 1988, Ser. No. 198,233

Int. Cl.⁴ H05B *33/04*

U.S. Cl. 313—512 39 Claims

1. A display panel, comprising:

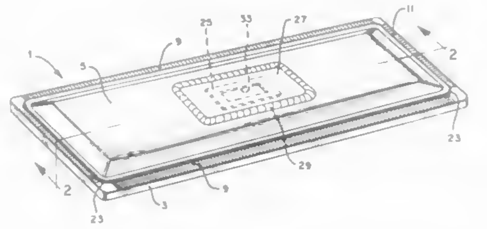
electroluminescent phosphor means for emitting light in response to electrical energization signals;

transparent substrate means for supporting said phosphor means and transmitting said emitted light;

back cap means for enclosing said phosphor means, said back cap means being made of a compliant substantially gas impermeable material for flexing without rupturing;

means for hermetically sealing said back cap means against said substrate means; and

means for maintaining said back cap means in a flexed relation to said substrate means, so that varying ambient air pressure is equally applied to the back cap means and the substrate means without affecting the hermetic seal.



4,882,519

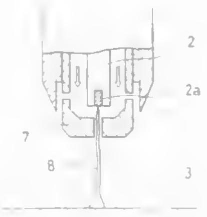
DISCHARGE ELECTRODE MATERIAL COMPOSED OF YTTRIUM AND RHENIUM OR RUTHENIUM

Yoshinori Maeno; Hiroshi Mikita; Sadao Umezu, all of Neyagawa; Fukuhisa Matsuda, Kawanishi, and Masao Ushio, Toyonaka, all of Japan, assignors to Toho Kinzoku Co., Ltd., Osaka, Japan

Filed Mar. 30, 1988, Ser. No. 175,431

Int. Cl.⁴ H01J *1/14*

U.S. Cl. 313—633 3 Claims



1. A discharge electrode material excellent in heat resistance and oxidation resistance consisting essentially of yttrium oxide, and rhenium or ruthenium.

4,882,520

RARE GAS ARC LAMP HAVING HOT CATHODE

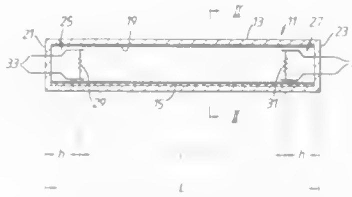
Shinichi Tsunekawa, Fujisawa, and Masami Takagi, Yokohama, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 31, 1988, Ser. No. 176,147

Claims priority, application Japan, Apr. 2, 1987, 62-79719

Int. Cl.⁴ H01J *17/20, 61/16*

U.S. Cl. 313—643 12 Claims



1. A rare-gas arc lamp which produces a positive column for radiating light in a predetermined luminance distribution, said rare-gas arc lamp comprising:

a tube having an axis;

a fluorescent layer formed on the inner surface of said tube;

a rare-gas mainly including xenon gas and having substantially no mercury sealed within said tube, said rare-gas being sealed within said tube at a pressure in the range of 20 Torr to 200 Torr;

a first electrode located at a first position within said tube;

a second electrode, constituted by a hot cathode, at a second position within said tube; and

means for providing a potential difference between the first and second electrodes so as to establish a positive column therebetween, said positive column having an area perpendicular to said axis, said area being larger than a corresponding area of an arc discharge lamp not using a hot cathode for controlling luminance distribution.

4,882,521

DEFLECTION YOKE FOR A COLOR CATHODE RAY TUBE

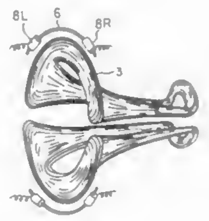
Nozomu Arimoto, Takatsuki, Japan, assignor to Matsushita Electronics Corporation, Kadoma, Japan

Filed May 18, 1988, Ser. No. 195,245

Claims priority, application Japan, May 19, 1987, 62-121956

Int. Cl.⁴ H01J *29/70*

U.S. Cl. 313—440 18 Claims



1. A deflection yoke for a color cathode ray tube comprising:

a pair of horizontal deflection coils;

a pair of vertical deflection coils;

an insulative bobbin for supporting said deflection coils, said bobbin having a flared end;

magnetic field correction means disposed at the flared end of the insulative bobbin, having ferro-magnetic cores of a long and slender shape and disposed along the end portion of either of said horizontal deflection coils or said vertical deflection coils; and

a pair of auxiliary coils which are wound at both end portions of said core and are connected to said horizontal or vertical deflection coils, respectively.

4,882,522

NEON CIRCUIT MALFUNCTION DETECTOR

Roger A. Brown, League City, Tex., assignor to Irin Paris, Houston, Tex., a part interest

Filed Mar. 25, 1988, Ser. No. 173,303

Int. Cl.⁴ H05B *37/00;* **H02H** *3/18*

U.S. Cl. 315—119 5 Claims

1. In a neon sign circuit having a neon tube forming the lighted portion of the sign, a source of electrical power, and a high voltage transformer between the electrical power source and the neon tube, the improvement comprising a neon sign circuit malfunction detector circuit including a ground fault detector connected in the circuit between the source of power and the transformer, to ground, and to the neutral load side of the primary windings of the transformer, a spark gap assembly connected to one of the secondary windings of the transformer between the transformer and the neon tube, said spark gap assembly including a spark gap, a neon light source connected between the spark gap and ground, and a light sensitive resistor positioned relative to the light source and connected between the ground connection of the ground fault detector and the neutral load connection between the transformer and the ground fault detector so that when a malfunction in the neon sign circuit occurs, a spark will jump the spark gap to energize the light source, increase the resistance of the light sensitive resistor and cause the ground fault detector to cut off power to the transformer, as if it was sensing a ground fault.

4,882,523

DIRECT CURRENT MOTOR COMMUTATION CONTROL

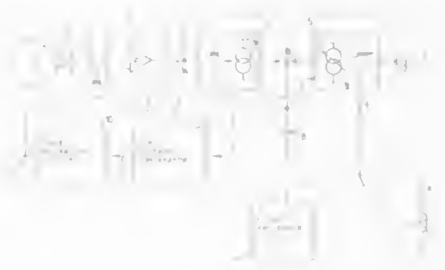
Mahr P. Denzlingen, Denslingen, Fed. Rep. of Germany, assignor to Deutsche Thomson-Brandt GmbH, Villingen-Schwenningen, Fed. Rep. of Germany

Filed Jul. 11, 1988, Ser. No. 217,401

Claims priority, application Fed. Rep. of Germany, Jul. 28, 1987, 3724895

Int. Cl.⁴ H02K *29/14*

U.S. Cl. 318—254 14 Claims



1. A method for controlling commutation of coil sets of a direct current motor with a fixed sensor, in which a sensor signal, S1, having a first period, T1, related to the speed of rotation of the motor rotor is generated during each revolution of the rotor, comprising the steps of: producing a control signal having a period equal to the sum of the first period, T1, and a second period, T2=K*T1, where K is a selected proportionality factor; and at the end of the period of the control signal, starting commutation of a first one of the coil sets.

8. An arrangement for controlling commutation of coil sets of a direct current motor with a fixed sensor, in which a sensor signal (S1) having a first period (T1) related to the speed of rotation of the motor rotor is generated during each revolution of the rotor, comprising: control signal producing means connected to the sensor for producing a control signal having a period equal to the sum of the first period (T1) and a second period (T2) proportional to the first period (T1); and commutation initiating means connected to said control signal producing means for starting commutation of a first one of the coil sets at the end of the period of the control signal.

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4,882,524

MULTI-PHASE BIPOLAR BRUSHLESS D.C. MOTOR

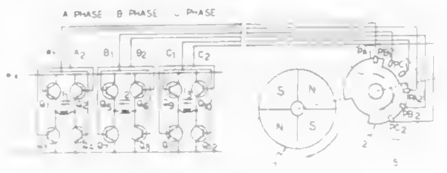
I Soo Lee, JangMi Apt. 9/B, 302-64, Ichon-Dong, YongSan-Ku, Seoul, Rep. of Korea

Filed Apr. 12, 1988, Ser. No. 180,373

Claims priority, application Rep. of Korea, Apr. 22, 1987, 87-3937[U]

Int. Cl.⁴ H02K *29/10*

U.S. Cl. 318—254 5 Claims



1. A multi-phase bipolar brushless D.C. motor comprising:
a stator constituted by M phases, each phase having a plurality of windings which are connected in series and being connected independently of the winding connection of the other phases;
a rotor rotatably coupled to said stator and having N permanent magnet poles;
a commutation encoder fixed at one end of the rotor shaft outside the motor and assuming a cylindrical form comprising a circular plate and an annular ring, said annular ring having light shielding portions and light detecting portions which function, respectively, as non-sensing and sensing area, and each of said light detecting portions having opposite inclined portions, which is inclined to the edge of said light shielding portions at a given angle;
a photo-sensor coupled operatively with said commutation encoder and being constituted so that two photo-transistors are provided with respect to each phase, each of said photo-transistors in said M phases being arranged, inturn, one by one at intervals of predetermined shaft angle so as to produce a positive pulse when registered with said sensing area of said commutation encoder;
an electronic commutator constituted in such a manner that four power transistors are connected across the windings of each phase of said stator, two of siad four power transistors of each phase being connected to one photo-transistor of said photo-sensor so that each phase is provided with two photo-transistors so as to perform the determination of the current direction according to said positive pulse of said photo-transistors, thereby flowing the alternating current through the windings to drive the motor; and an electric power source connected in parallel to each phase of said electronic commutator.

4,882,525

METHOD FOR CONTROLLING THE WORKING FREQUENCY OF AN ELECTRO-ACOUSTIC VIBRATING DEVICE

Eric Cordemans De Meulenaer, Wezembeek, and Baudoin Hannecart, Brussels, both of Belgium, assignors to Undatim Ultrasonics S.A., Brussels, Belgium

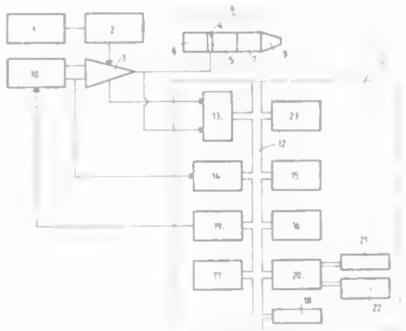
Filed Aug. 30, 1988, Ser. No. 238,277

Claims priority, application Switzerland, Sep. 14, 1987, 32542/87

Int. Cl.⁴ H01L *41/08*

U.S. Cl. 310—316 3 Claims

1. A method for controlling the working frequency of an ultrasonic device, comprising the steps of
(a) periodically determining the frequency of the vibrating element for which the ultrasonic device power consumption is one of a minimum and for which its efficiency is maximum;
(b) comparing said determined frequency to a previously measured frequency of said vibrating element for which its power consumption was a minimum;
(c) repeating said frequency comparison several times;
(d) measuring the value of the frequency difference at each comparison;
(e) counting the number of successive comparisons providing as a result a value over a preset, predetermined value; and



(f) modifying the working frequency of the ultrasonic device of one step of a given frequency amplitude when a predetermined number of successive comparisons have a result over said preset value to adapt said working frequency to new working conditions, whereby said ultrasonic device always works at or near a frequency for which its efficiency is maximum.

4,882,526

ADAPTIVE PROCESS CONTROL SYSTEM

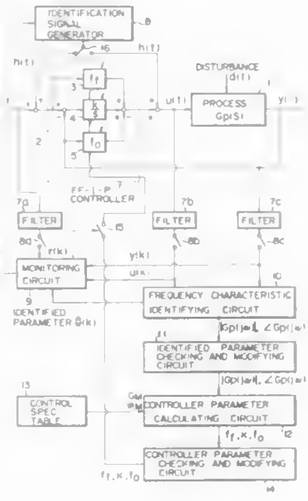
Yutaka Iino, and Takashl Shigemasa, both of Yokobama, Japan, asslgnors to Kabusbiki Kaisha Toshiba, Kawasaki, Japan

Filed Aug. 10, 1987, Ser. No. 85,726

Claims priority, application Japan, Aug. 12, 1986, 61-187750; Aug. 20, 1986, 61-194578; Nov. 5, 1986, 61-262952

Int. Cl.⁴ G05B *13/04*

U.S. Cl. 318—561 12 Claims


IDENTIFICATION SIGNAL GENERATOR
8
6
h(t)
h(t)
DISTURBANCE d(t)
1
PROCESS Gp(S)
u(t)
y(t)
r(t)
f_f
3
K/S
4
f_0
5
2
7
FF-I-P CONTROLLER
7a
FILTER
7b
FILTER
7c
FILTER
8a
15
8b
8c
r(k)
y(k)
u(k)
MONITORING CIRCUIT
9
IDENTIFIED PARAMETER θ(k)
10
FREQUENCY CHARACTERISTIC IDENTIFYING CIRCUIT
|Gp(jω)|, ∠Gp(jω)
11
IDENTIFIED PARAMETER CHECKING AND MODIFYING CIRCUIT
|Gp(jω)|, ∠Gp(jω)
13
CONTROL SPEC TABLE
CONTROLLER PARAMETER CALCULATING CIRCUIT
f_f, K, f_0
12
CONTROLLER PARAMETER CHECKING AND MODIFYING CIRCUIT
f_f, K, f_0
14

1. An adaptive process control system comprising:
set point means for generating a set-point signal which represents a target value of a process variable signal of a process to be controlled;
controller means for generating a manipulating signal which controls the process variable signal in accordance with the set-point signal, the process variable signal, and controller parameters;
tuning means for superposing a persistently exciting identification signal on at least one of the set-point signal and the manipulating signal;
frequency characteristic identifying means for estimating an autoregressive moving average model of the process from sampling data of the process variable signal and sampling data of the manipulating signal by using a least square method, during a period in which said tuning means outputs the identification signal, identifying a pulse transfer function of the process, and obtaining a frequency characteristic of gain and phase of the process based on the pulse transfer function; and
controller parameter calculating means for adjusting the controller parameters of the controller means so that the frequency characteristics of gain and phase satisfy predetermined gain and phase margins.

11. An adaptive process control system comprising:
first calculating means for receiving a characteristic coefficient of a reference model exhibiting a desired waveform of a response of the adaptive process control system, and calculating gain and phase margins of the reference model; and
second calculating means for receiving the calculated gain and phase margins from said first calculating means, a transfer function of the adaptive process control system, and a signal representing a compensation mode of the adaptive process control system, and for removing the difference so that the gain and phase margins of the adaptive process control system coincide with those calculated by said first calculating means.

4,882,527

THREE-DIMENSIONAL MEASURING ROBOT

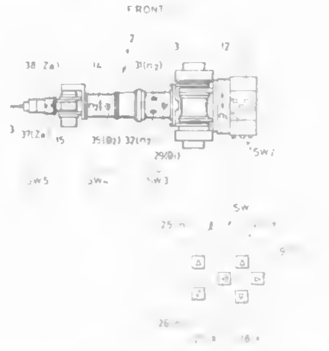
Takasbi Yakuyama, Atsugi, and Tosbiaki Ueda, Hiratsuka, both of Japan, assignors to Nissan Motor Co., Ltd., Yokobama and Tokyo Boeki Ltd., Tokyo, both of, Japan

Filed Oct. 17, 1988, Ser. No. 258,343

Claims priority, application Japan, Oct. 16, 1987, 62-259466; Oct. 16, 1987, 62-259468

Int. Cl.⁴ G05B *19/42*

U.S. Cl. 318—568.13 7 Claims



1. A three-dimensional measuring robot, comprising:
(a) an orthogonal three-axis actuating mechanism having a main arm, for moving the main arm in three orthogonal directions;
(b) a multijoint arm including at least one rotary arm and one pivotal arm and attached to an end of said orthogonal three-axis actuating mechanism;
(c) a probe attached to an end of said multijoint arm, for detecting an object to be measured when brought into contact with the object;
(d) a plurality of manipulation switches arranged on an end of the main arm of said orthogonal three-axis actuating mechanism and on outer surfaces of the rotary and pivotal arms of said multijoint arm; and
(e) control means for storing data indicative of positions of the main, rotary and pivotal arms in teaching operation, when said probe is brought into contact with the object by use of said manipulation switches, and controlling movement of the plural arms on the basis of the stored data in playback operation.

4,882,528

DIGITAL SERVO SYSTEM

Masatoyo Sogabe, Hachioji; Kanemasa Okuda, Hino; Keiji Sakamoto, Hachioji, and Shunsoke Matsubara, Tokyo, all of Japan, assignors to Fanuc Ltd., Yamanashi, Japan

PCT No. PCT/JP87/00860, § 371 Date Jul. 8, 1988, § 102(e) Date Jul. 8, 1988, PCT Pub. No. WO88/03677, PCT Pub. Date May 19, 1988

PCT Filed Nov. 6, 1987, Ser. No. 233,644

Claims priority, application Japan, Nov. 8, 1986, 61-264881

Int. Cl.⁴ G05B *19/29*

U.S. Cl. 318—600 2 Claims

1. A digital servo system comprising:
a position detecting means for detecting an actual position of an object;
a position deviation detecting means for detecting and for outputting a deviation of the actual position of the object from a predetermined position by a command;
a velocity command generating means for outputting a velocity command to move the object according to the output of the position deviation detecting means;
a velocity detecting means for detecting an actual velocity of the object;
a velocity deviation detecting means for detecting and for outputting a deviation of the actual velocity of the object from the velocity command;
a torque command generating means for outputting a torque command to drive a motor according to the output of the velocity deviation detecting means wherein the torque command increases according to a non-zero output of the velocity deviation detecting means up to a predetermined saturation value, and the torque command decreases swiftly down to zero at the time that the output of the velocity deviation detecting means becomes zero; and
a motor driving means for moving the object according to the torque command.

4,882,529

PULSE ENCODER

Katsuo Kobari, Tachikawa; Yosbitaka Takekoshi, Hachioji, and Mitsuyuki Taniguchi, Hino, all of Japan, assignors to Fanuc Ltd., Yamanasbi, Japan

PCT No. PCT/JP87/00845, § 371 Date Jul. 6, 1988, § 102(e) Date Jul. 6, 1988, PCT Pub. No. WO88/03641, PCT Pub. Date May 19, 1988

PCT Filed Nov. 2, 1987, Ser. No. 238,211

Claims priority, application Japan, Nov. 7, 1986, 61-263966

Int. Cl.⁴ G05B *19/28*

U.S. Cl. 318—602 3 Claims

1. A pulse encoder comprising:
a motion detecting portion which detects a motion of an

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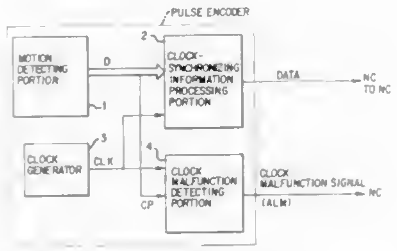
object whose position should be measured, and which outputs a signal having information regarding the motion;
a clock generator which outputs a clock pulse;
a clock-synchronizing information processing portion which receives the signal having information regarding the motion and the clock pulse, and processes the information regarding the motion synchronized by the clock pulse; and



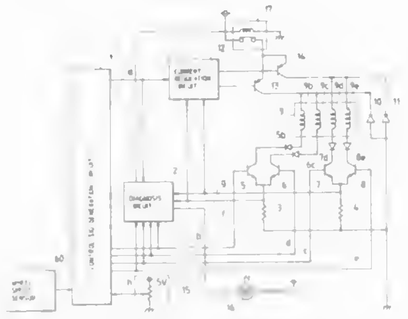
a clock malfunction detecting portion which receives the clock pulse and at least a part of the signal having information regarding the motion, said part of the signal having information showing whether or not the object, whose position should be measured, has moved or not, and said clock malfunction detecting portion outputs a clock malfunction signal when motion is detected by the part of the signal while the clock pulse is not output.

4,882,530

STEPPING MOTOR CONTROL APPARATUS

Hideki Kabune, Kariya; Kohji Kamiya, Chita; Kiyoshi Miyake, Kariya; Shigeru Saito, Kariya; Shinichi Yamada, Kariya, and Ken Asami, Nagoya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya and Toyota Jidosha Kabushiki Kaisha, Toyota, both of, Japan

Filed Aug. 25, 1988, Ser. No. 236,181
Claims priority, application Japan, Aug. 29, 1987, 62-216034
Int. Cl.⁴ G02P *8/00*
U.S. Cl. 318—696 6 Claims



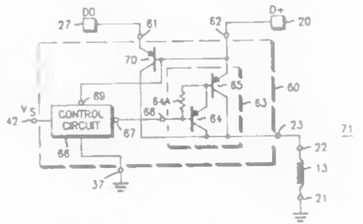
1. An apparatus for controlling a stepping motor driving a throttle valve in an internal combustion engine, the stepping motor having a plurality of windings in different phases respectively, the apparatus comprising:
(a) first detecting means for detecting an all-phase de-energized state of the stepping motor in which all of the motor windings are de-energized;
(b) means for, after said first detecting means detects the all-phase de-energized state, sequentially energizing the motor windings in accordance with predetermined phase energization patterns, wherein each of said energizations of the motor windings lasts for a given interval chosen to allow the stepping motor to generate a starting torque greater than a predetermined load torque;
(c) second detecting means for detecting when said energization means completes energizations of the motor windings corresponding to one cycle of said phase energization patterns; and
(d) means for, after said second detecting means detects that one cycle of the phase energization patterns is completed, gradually shortening a plurality of durations of the energizations of the motor windings to increase a rotational speed of the stepping motor.

4,882,531

INTEGRATED CIRCUIT VOLTAGE REGULATOR AND CHARGING SYSTEM

Arthur J. Edwards, Hoffman Estates, Ill., and Randall C. Gray, Tempe, Ariz., assignors to Motorola Inc., Schaumburg, Ill.

Filed Sep. 26, 1988, Ser. No. 249,033
Int. Cl.⁴ H02J *7/16;* H02P *9/10*
U.S. Cl. 322—60 23 Claims



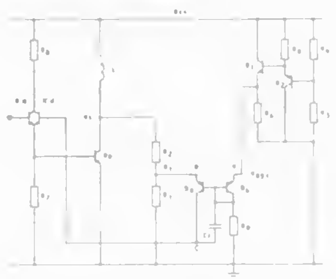
1. A voltage regulator comprising:
first means for receiving a battery-supplied voltage at a first input terminal and coupling said battery-supplied voltage to another terminal to be connected to a field coil of an alternator to provide a voltage source for initial field coil excitation current;
second means for receiving at a second input terminal an alternator-supplied voltage varying in accordance with power output of said alternator, said second means including an output stage means providing an output signal at an output terminal, selectively and in accordance with a sensed variable input voltage, to control subsequent field coil excitation current provided from said alternator-supplied voltage subsequent to said initial field coil excitation current, said output terminal to be connected to said field coil with said output stage means in series with said field coil and said alternator-supplied voltage provided across the series connection of said field coil and said output stage means such that said alternator-supplied voltage provides a voltage ource for said subsequent field coil excitation current;
said first means including a semiconductor device which passes said initial field coil excitation current from said first input terminal to said field coil and prevents current flow from the alternator-supplied voltage at said second input terminal to said first input terminal,
said second means being formed as part of a semiconductor integrated circuit (IC) with said second input terminal and said output terminal each corresponding to separate associated input and output external leads of said IC, respectively,
wherein the improvement comprises said semiconductor device comprising a transistor means for passing said initial field coil excitation current from said first input terminal through emitter and collector electrodes of said transistor means to one of said output and input external leads, a base electrode of said transistor means connected to circuitry means for turning said transistor on during the providing of said initial field coil excitation current and for turning said transistor off, and thereby preventing current flow between said emitter and collector electrodes, during the providing of said subsequent field coil excitation current.

4,882,532

ACTIVE OVERVOLTAGE CONTROL FOR INDUCTIVE LOAD DRIVING

Roberto Gariboldi, Lacchiarella, and Alberto Gola, Broni, both of Italy, assignors to SGS-Thomson Microelectronics, s.r.l., Italy

Filed Oct. 7, 1988, Ser. No. 254,763
Claims priority, application Italy, Oct. 9, 1987, 83662 A/87
Int. Cl.⁴ H02M *3/137;* H02H *3/20*
U.S. Cl. 323—222 1 Claim



1. A circuit for limiting the transient overvoltage with an inductive load between as supply rail and a ground rail of the circuit and operated to switch ON and OFF said inductive load as a function of a switching signal applied to a control terminal of said power transistor, comprising:
a first voltage divider connected across said power transistor;
a second voltage divider connected between said supply rail and said ground rail;
at least a unity gain buffer having an input terminal and an output terminal, the input terminal of which is connected to an intermediate node of said second voltage divider; and
a voltage comparator having first and second input terminals and an output terminal, the first input terminal being connected to an intermediate node of said first voltage divider and the second input terminal being connected to the output terminal of said buffer;
the output terminal of said comparator being connected to said control terminal of said power transistor;
the intermediate nodes of said two voltage dividers being chosen such that, when the overvoltage across said first voltage divider rises beyond a limit value set by said second voltage divider, the comparator changes state and the level of the signal at the output terminal thereof becomes sufficient to switch-ON said power transistor.

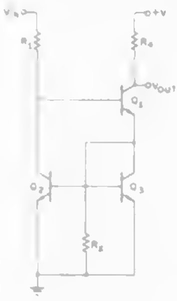
4,882,533

LINEAR INTEGRATED CIRCUIT VOLTAGE DROP GENERATOR HAVING A BASE-10-EMITTER VOLTAGE INDEPENDENT CURRENT SOURCE THEREIN

Mark Kelley, Nashua, N.H., assignor to Unitrode Corporation, Lexington, Mass.

Continuation of Ser. No. 90,336, Aug. 28, 1987, abandoned. This application Feb. 15, 1989, Ser. No. 312,373
Int. Cl.⁴ G05F *3/16*
U.S. Cl. 323—313 13 Claims

1. A voltage drop generator comprising
a first, second and third transistor each having an emitter, a base and a collector;
a first resistor having one end connected to a common connection and the other end connected to the emitter of the first transistor, the base of said second transistor, the base of the third transistor, and the collector of said third transistor;
a second resistor having one end connected to both the collector of said second transistor and to the base of the first transistor and the other end connected to a control signal relative to said common connection;
a third resistor having one end connected to a supply potential and the other end connected to the collector of the first transistor developing a voltage drop thereacross in response to a control voltage, wherein,
the emitter of said second and said third transistor is connected to said common connection providing a return for said supply potential connected to said third resistor, and
said voltage drop generator provides reduced sensitivity to variations of V_{BE} and temperature of said first, second and third transistors.

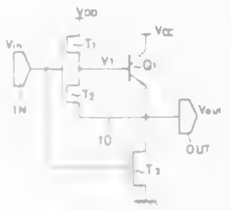


4,882,534

BIPOLAR-COMPLEMENTARY METAL OXIDE SEMICONDUCTOR INVERTER

Atsuo Koshizuka, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Aug. 31, 1988, Ser. No. 238,404
Claims priority, application Japan, Sep. 11, 1987, 62-228733
Int. Cl.⁴ G05F *1/10*
U.S. Cl. 323—351 6 Claims



1. A bipolar-complementary metal oxide semiconductor (Bi-CMOS) inverter comprising:
a complementary metal oxide semiconductor (CMOS) inverter including a p-channel MOS transistor and an n-channel MOS transistor each having a gate, a source and a drain, an input voltage being applied to the gates of the MOS transistors;
a bipolar transistor having a base, collector and emitter, the base of the bipolar transistor being connected to an output of the CMOS inverter, the emitter of the bipolar transistor being connected to the source of the n-channel MOS transistor, an output voltage of the Bi-CMOS inverter being obtained at the emitter of the bipolar transistor; and
means for discharging the output of the CMOS inverter and an output of the emitter of the bipolar transistor, when the input voltage is switched from a low level to a high level.

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4,882,535

DEVICE AND METHOD FOR MONITORING SMALL DESPLACEMENTS OF A PEAK IN A FREQUENCY SPECTRUM

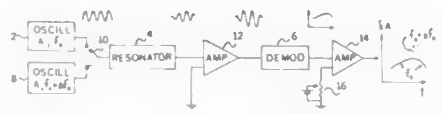
Benjamin Gavish, Jerusalem, Israel

Filed Nov. 24, 1986, Ser. No. 933,896

Claims priority, application Israel, Dec. 3, 1985, 77207

Int. Cl.⁴ G01R *27/26, 27/02*

U.S. Cl. 324—585 C 12 Claims



1. An electronic device for monitoring changes in characterizing properties of a tested sample by observing displacements of a selected point on a curve of aa frequency spectrum of a tested sample, which displacement results from a movement of all points on a frequency spectrum curve along a frequency axis, comprising

generator means for generating two continuous waves each of a predetermined constant frequency and of an identical constant amplitude;

resonating means applicable to a tested sample to form a resonating system, said system being connected in circuit to said generaator means and driven thereby when said continuous waves differs from the resonance frequency of said resonating system and being confined to a lower or higher frequency than the resonance frequency, and

circuit means for continuously demodulating the output signal of said resonating system to form an amplitude modulated waveform representative, of the instantaneous displacements of said selected point occuring when said continuous wave is passed through the tested sample, which waveform is capable of being displayed for real time monitoring of property changes of the tested sample expressed in terms of frequency shifts.

4,882,536

CAPACITIVE DETECTOR OF POSITION HAVING ELECTRODES AND CIRCUITRY FORMED ON A COMMON INTEGRATED CIRCUIT

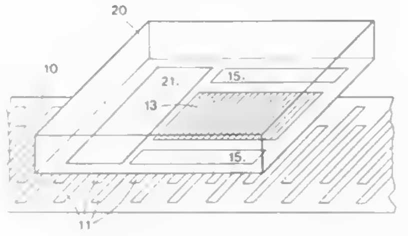
Hans U. Meyer, 42 rue de Lausanne, 1110, Morges, Switzerland

Continuation of Ser. No. 036,806, Apr. 10, 1987, abandoned. This application Dec. 12, 1988, Ser. No. 284,782

Claims priority, application Switzerland, Apr. 10, 1986, 0141286

Int. Cl.⁴ G01R *27/26*

U.S. Cl. 324—61 R 9 Claims



1. A capacitive detector of the relative position between two supports, one of these supports being displaceable along the other, one support comprising a series of electrodes, the second support being provided with electrodes and electronic circuitry making it possible to apply incremental potentials to the latter electrodes, the electrodes in one support facing those in the other support, characterized in that the electrodes on the second support and the electronic circuitry for applying the incremental potentials to the electrodes on the second support are formed in a common integrated circuit semiconductor substrate disposed facing the electrodes on the other support.

4,882,537

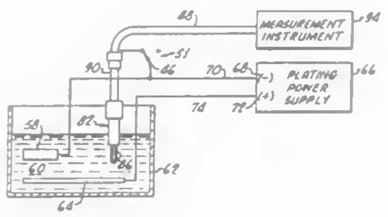
METHOD AND APPARATUS FOR REDUCING INTERFERENCE IN AN ELECTRICAL RESISTANCE PROBE DURING ELECTROLYTIC PLATING

Herbert P. Silverman, Yellow Springs, Ohio, assignor to Rohrback Cosasco Systems, Inc., Santa Fe Springs, Calif.

Filed May 9, 1988, Ser. No. 191,384

Int. Cl.⁴ G01R *27/00*

U.S. Cl. 324—65 R 15 Claims



1. A method of monitoring a process for plating a selected material upon an object immersed in an electrolytic bath comprising the steps of:

forming a monitoring sensor with an electrically conductive test element,

immersing the monitoring sensor in said electrolytic bath with the test element in contact with the bath,

starting the plating process to cause plating current to flow in current paths between a power supply and the monitoring sensor and between the power supply and the object to be plated, thereby to cause both the object and test element to be plated with said material,

momentarily interrupting flow of current between the power supply and the monitoring sensor, and

while said current is interrupted measuring the electrical resistance of said test element.

4,882,538

DEVICE FOR DETECTING CURRENT FLOWING IN AN ELECTRIC WIRE

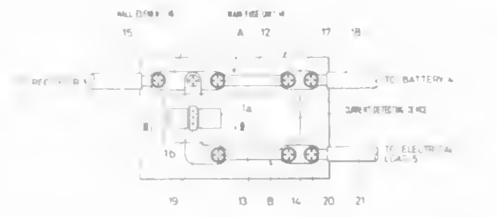
Hiromitsu Sato; Shinichi Kubota; Atsushi Totsune, and Masahiko Asakura, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 3, 1987, Ser. No. 92,459

Claims priority, application Japan, Sep. 4, 1986, 61-208480

Int. Cl.⁴ G01R *11/34, 19/00*

U.S. Cl. 324—127 5 Claims



1. A current detecting device for detecting current flowing in a first electric wire arranged close to a second electric wire having a portion extending in a predetermined direction, said second electric wire extending between a device of an automotive vehicle and a battery of said automotive vehicle, said first electric wire extending from a portion of said second electric wire located in a fuse unit to at least one electrical load, comprising:

a portion of said first electric wire extending at right angles to said portion of said second electric wire;

a magnetic core arranged around said portion of said first electric wire, said magnetic core having an axis thereof extending at right angles to said portion of said second electric wire; and

magnetic-to-electric transducer means associated with said magnetic core for generating an electric signal indicative of the intensity of a magnetic field generated around said portion of said first electric wire by current flowing in said first electric wire.

4,882,539

MONITORING SYSTEM FOR ELECTRODYNAMIC WALL-THICKNESS AND DEFECT TESTING USING A DELAY LINE

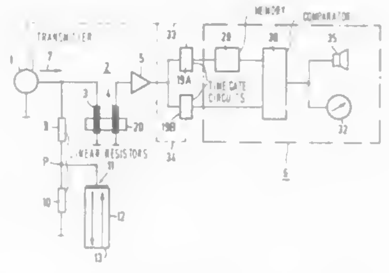
Joerg Quittkat, Neuberg, and Gerhard Thiel, Freigericht, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Mar. 7, 1988, Ser. No. 164,575

Claims priority, application Fed. Rep. of Germany, Mar. 5, 1987, 3707048

Int. Cl.⁴ G01B *7/02;* **G01N** *27/82*

U.S. Cl. 324—229 13 Claims



1. Monitoring system monitoring electrical components of an apparatus for electrodynamic wall-thickness and defect testing, comprising a transmitter generating brief signals, an electrodynamic converter having a transmitter coil connected to said transmitter for receiving the brief signals and feeding the brief signals into a workpiece to be tested in which the brief signals are reflected, said electrodynamic converter having a receiver coil receiving the reflected signals, an amplifier connected to said receiver coil for receiving the reflected signals, an evaluation unit connected to said amplifier for receiving the reflected signals, and at least one damping element and a delay line connected to said transmitter for delaying and damping the brief signals, said delay line being coupled through said electrodynamic converter to said evaluation unit so as to feed the delayed and damped signals into the transmitter coil of said electrodynamic converter.

4,882,540

MAGNETIC RESONANCE IMAGING (MRI)APPARATUS WITH QUADRATURE RADIO FREQUENCY (RF) COILS

Robert Domenick, Palo Alto; Phillip Foreman, Santa Clara; David M. Parish, Palo Alto, and Donald W. Pettibone, Cupertino, all of Calif., assignors to Resonex, Inc., Sunnyvale, Calif.

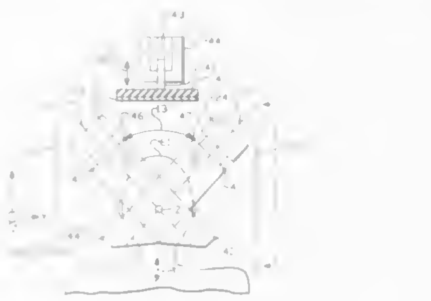
Filed Jun. 28, 1988, Ser. No. 213,576

Int. Cl.⁴ G01R *33/20*

U.S. Cl. 324—318 12 Claims

1. Magnetic resonance imaging (MRI) apparatus having a main magnetic field B_0, with a predetermined direction, and having a pair of radio frequency (RF) coils for picking up spin echo or free induction decay RF signals from a test specimen surrounded by said coils, which are in quadrature phase comprising:

first and second said RF coils surrounding a volume to be imaged in which a said test specimen would normally reside, each of said coils, including a foil band of conductive material forming a loop around an axis, said coils having a common diameter in said direction of B_0 perpendicular to said axis of each coil, said coils being positioned in said main magnetic field so that a plane defined by the intersection of the axes of the loops is perpendicular to said main magnetic field, said axes forming an angle with each other to provide said quadrature phase signals.



4,882,541

AUTOMATIC IMPEDANCE ADJUSTER FOR MRI SYSTEM

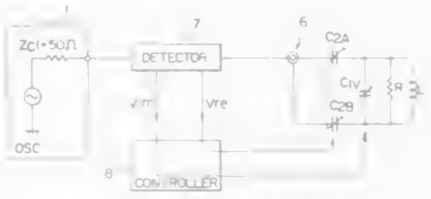
Motoji Haragashira, Ootawara, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed May 5, 1988, Ser. No. 190,451

Claims priority, application Japan, May 8, 1987, 62-111942

Int. Cl.⁴ **G01R** *33/20*

U.S. Cl. 324—322 7 Claims



1. An automatic impedance adjuster for adjusting an impedance of a probe head in an MRI (magnetic resonance imaging) system to be equal to characteristic impedance, comprising:

an impedance adjusting element, provided to said probe head, for allowing variable adjustment of real and imaginary parts of an impedance of said probe head;

oscillator means, having a predetermined output impedance, for supplying a signal to said probe head;

detection means, connected between said probe head and said oscillator means, for outputting detection signals respectively corresponding to the real and imaginary parts of the impedance of said probe head based on the output from said oscillator means supplied to said probe head; and

control means, responsive to the signals corresponding to the real and imaginary parts obtained from said detection means, for supplying, to said impedance adjusting element of said probe head, a control signal for adjusting the real and imaginary parts of the impedance of said probe head to coincide with a predetermined impedance,

said detection means comprising a series circuit of first to fourth λ/8 cables connected between said oscillator means and said probe head, a first variable resistor connected to two ends of a series circuit of said first and second λ/8 cables each through diodes of predetermined polarities, and a second variable resistor connected to two ends of a series circuit of said second and third λ/8 cables each

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through diodes of predetermined polarities, and outputs voltages corresponding to the real and imaginary parts of the impedance from slider terminals of said first and second variable resistors, respectively.

4,882,542

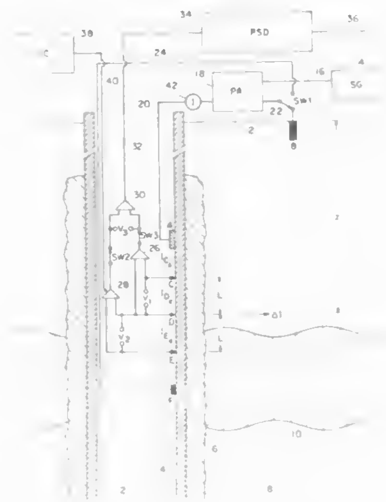
METHODS AND APPARATUS FOR MEASUREMENT OF ELECTRONIC PROPERTIES OF GEOLOGICAL FORMATIONS THROUGH BOREHOLE CASING

William B. Vail, III, Bothell, Wash., assignor to ParaMagnetic Logging, Inc., Bothell, Wash.

Continuation-in-part of Ser. No. 927,115, Nov. 4, 1986, Pat. No. 4,820,989. This application Aug. 26, 1987, Ser. No. 89,697

Int. Cl.⁴ G01V *3/02*

U.S. Cl. 324—368 80 Claims



29. An apparatus for measuring electrochemical phenomena of formations adjacent to a borehole casing including polarization effects, the skin effects of casing, dielectric constant effects, and the resistivity of formations, comprising:

introduction means for selectively causing a time varying measuring current to enter the casing at a point in the proximity of the specific portion of the formation of interest;

receiving means for receiving at least a portion of the current at a point sufficiently remote from the current entry point to insure that a majority of the current introduced by said current introduction means enters the formation from the casing;

voltage measuring means for detecting the magnitude and phase of the time varying voltage level at a multiplicity of at least three spaced apart voltage measuring points along the casing adjacent the specific portion of the formation of interest; and

differential means for simultaneously measuring the magnitudes and phases of the time varying differential voltages between a plurality of discrete pairs of said voltage measuring points to provide information about the specific formation of interest, said differential means producing a first differential voltage output indicative of the differential voltage between a first discrete pair of voltage measuring points and a second differential voltage output indicative of the differential voltage between a second discrete pair of voltage measuring points, said information including polarization effects, the skin effects of casing, dielectric constant effects, and the resistivity of formations.

4,882,543

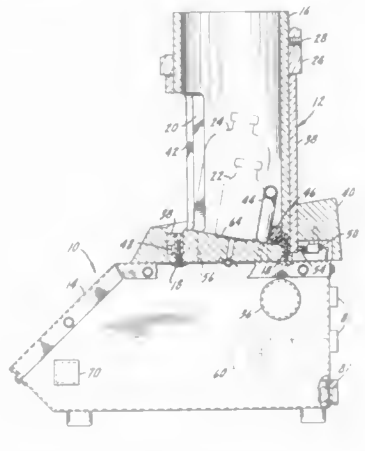
VACUUM TESTING APPARATUS HAVING A TEST ENCLOSURE WITH A ROTATABLE SLEEVE

Burton L. Siegal, Skokie, Ill., assignor to Electro-Technic Products, Inc., Chicago, Ill.

Filed Aug. 1, 1988, Ser. No. 226,872

Int. Cl.⁴ G01L *23/16, 21/30*

U.S. Cl. 324—460 16 Claims



1. An apparatus for testing the vacuum of an evacuated vial, comprising

a. a test enclosure of said vial, said enclosure having an access opening,

b. cover means connected to said enclosure and positionable in a first orientation to cover said access opening and in a second orientation to expose said access opening through said cover means,

c. means at said test enclosure for externally applying high voltage radio frequency power to said vial,

d. illumination means in said test enclosure for applying a momentary intense flash of light to the vial of sufficient magnitude to cause ignition of gas within the vial,

e. means to energize said illumination means only when said cover means is positioned in said first orientation after reposition of said cove means from said second orientation to said first orientation, and

f. means for sensing the ionization current of ionized gas within said vial and generating a signal if the sensed ionization current exceeds a predetermined minimum value indicative of a predetermined minimum value of the vacuum of the vial.

4,882,544

SIMPLE INSPECTION DEVICE FOR ANALYZER FOR IONIC ACTIVITY MEASURMENT

Tadashi Uekusa; Takashi Koizumi, and Nobubiko Amano, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 106,467, Oct. 9, 1987. This application Dec. 21, 1988, Ser. No. 287,379

Claims priority, application Japan, Oct. 9, 1986, 61-241010; Apr. 17, 1987, 62-94551

Int. Cl.⁴ G01R *31/02*

U.S. Cı. 324—511 5 Claims

1. A method for testing operability of an analyzer for ionic activity measurement by use of an inspection device, the analyzer having at least two potential difference measuring probes, the inspection device having first and second electrically non-conductive members supporting at least one electrically conductive member therebetween, one of the non-conductive members having apertures formed therein, the method comprising the steps of:

(i) positioning the inspection device so as to receive the probes through the apertures to electrically connect the probes; and

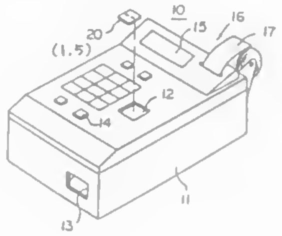
(ii) determining an electric potential difference between the probes.

2. An analyzer for ionic activity measurement and an inspection device for testing the functions of the analyzer, said analyzer comprising:

an ionic activity measuring device having at least one ion selective electrode pair for generating an electric potential corresponding to ionic activity of a predetermined ion, and a porous bridge connecting the electrodes of said ion selective electrode pair with each other;

a measurement device holder removably supporting said ionic activity measuring device; and

a plurality of potential difference measuring probes mounted for movement towards and away from respective electrodes of said ionic activity measuring device supported by said measuring device holder, to thereby measure a difference in potential between said electrodes,



wherein said inspection device is mountable on said holder in lieu of said ionic activity measuring device, and said inspection device comprises:

electrically non-conductive supporting means for being removably supported by said holder; and

an electrically conductive member supported on said supporting means for contacting said potential difference measuring probes to short-circuit said probes to thereby indicate one of operability and inoperability of said analyzer, said supporting means being formed with access means for allowing said electrically conductive member to be contacted by said probes.

4,882,545

CIRCUIT ARRANGEMENT FOR DETECTING A CRITICAL FREQUENCY OF INPUT PULSES

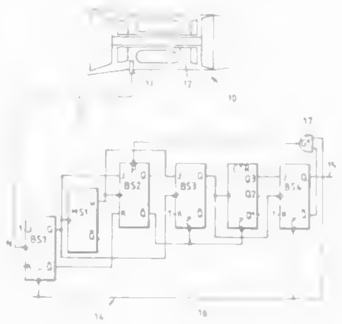
Anthony B. Plant, Birmingham, England, assignor to Lucas Industries Public Limited Company, Birmingham, England

Filed Feb. 8, 1988, Ser. No. 153,069

Claims priority, application United Kingdom, Feb. 26, 1987, 8704499

Int. Cl.⁴ H03K *9/06;* **H03D** *3/60*

U.S. Cl. 328—138 5 Claims



1. A circuit arrangement responsive to a train of input pulses for generating a critical speed signal at a critical frequency of said pulses, comprising a circuit for generating first clock signals at one edge of each recurring ones of said pulses, a monostable circuit responsive to said first clock signals for generating timed pulses whose duration is equal to that of a predetermined number of said input pulses at said critical frequency, a circuit responsive to an edge of said timed pulses and to one level of said first clock signals for generating an enabling signal, a bistable circuit responsive to said enabling signal, to said first clock signals and to said timed pulses for generating second clock signals, and a counting circuit responsive to said enabling signal and to said second clock signals for generating a critical speed signal after a predetermined number of said second clock signals.

4,882,546

DEMODULATION CLOCK GENERATOR CIRCUIT

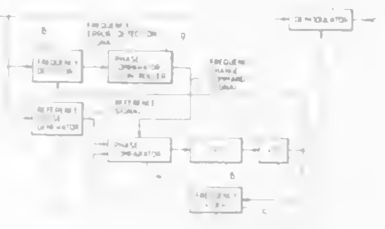
Yoshinobn Takamura, Tokyo; Norimichi Katsumura; Nebuhiko Osawa, both of Yamanashi, and Kazuo Watanabe, Yamanashi, all of Japan, assignors to Pioneer Electronic Corporation, Tokyo and Pioneer Video Corporation, Yamanashi, both of, Japan

Filed Jan. 19, 1989, Ser. No. 299,097

Claims priority, application Japan, Jnn. 30, 1988, 63-163425

Int. Cl.⁴ H03D *3/00*

U.S. Cl. 329—310 3 Claims



1. A demodulation clock generator circuit comprising:

signal generating means for supplying a reference signal synchronized with state transitions of a signal to be demodulated by modulating a digital data signal and adding a synchronized signal with a predetermined wave-form;

oscillating means oscillating at a frequency corresponding to a magnitude of a control signal;

comparison means for supplying a phase difference signal as said control signal to said oscillating means based on a difference between said reference signal and a signal output by said oscillating means;

frequency detection means for generating a frequency detection signal corresponding to the frequency of said signal output by said oscillating means according to the distance between state transitions in a synchronization signal portion of said signal to be demodulated; and

frequency changing means for changing the frequency of said signal output by said oscillating means according to said frequency detection signal.

4,882,547

LINEARIZER CONTROL SYSTEM

Allen Katz, West Windsor Township, Mercer County, N.J., assignor to General Electric Company, East Windsor, N.J.

Filed Nov. 15, 1988, Ser. No. 271,469

Int. Cl.⁴ H03F *1/32*

U.S. Cl. 330—149 18 Claims

1. An active device arrangement, comprising:

active signal translating means including input and output ports, said translating means being adapted to receive signals at said input port for translating said signals applied to said input port for producing translated signals at said

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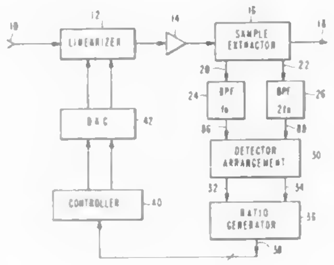
output port, the process of translation being accompanied by distortion;

controllable linearizer means coupled to at least one port of said signal translating means for controllably distorting signals applied thereto;

first filter means coupled at least to said output port of said signal translating means, said first filter means being tuned to pass the frequencies of said signal which said signal translating means is adapted to receive at said input port and to reject a particular harmonic thereof for producing first filtered signals;



second filter means coupled at least to said output port of said signal translating means, said second filter means being tuned to pass at least said particular harmonic for thereby producing second filtered signals;

signal processing means coupled to said first and second filtering means for forming a processed signal representative of the ratio of said first and second filtered signals; and

control means coupled to said signal processing means and to said controllable linearizer means for adjusting said controllable linearizer means in a manner which tends to minimize said processed signal.

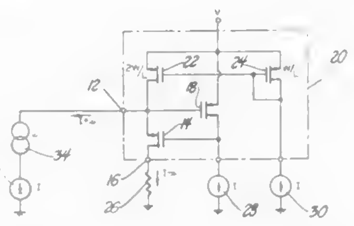
4,882,548
LOW DISTORTION CURRENT MIRROR

Jeffrey J. Marrah; Gregory J. Manlove, both of Kokomo, and Richard A. Kennedy, Russiaville, all of Ind., assignors to Delco Electronics Corporation, Kokomo, Ind.

Filed Dec. 22, 1988, Ser. No. 288,372

Int. Cl.⁴ H03F *3/16*

U.S. Cl. 330—288 — 7 Claims



1. A current mirror producing a low total harmonic distortion output signal, said current mirror comprising;

a first current path including an input terminal for carrying an input signal comprising a DC component modulated by an AC component,

a second current path comprising an output terminal and a transistor coupling the input terminal to the output terminal, said transistor including a control element,

a current source for coupling to the input terminal a constant current two times the DC component of the input signal, whereby the output signal is the difference of the input signal and the constant current, and

an amplifier having an input from the input terminal and its output connected to the control element of the transistor for providing a high gain feedback to maintain a constant voltage at the input terminal, thereby affording low harmonic distortion in the output signal.

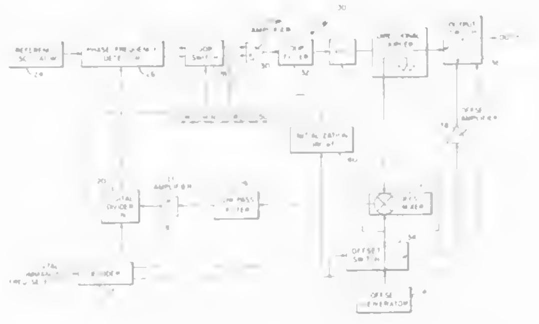
4,882,549
CENTER OFFSET MICROWAVE FREQUENCY SYNTHESIZER

Zvi Galani, 3 Birchwood Dr., Bedford, Mass. 01730; Malcolm E. Skinner, 67 Walnut Ave., Andover, Mass. 01810, and John A. Chiesa, 34 Locust St., Dracut, Mass. 01826

Filed Nov. 16, 1988, Ser. No. 272,044

Int. Cl.⁴ H03L *7/18*

U.S. Cl. 331—14 — 4 Claims



1. In the operation of an improved microwave frequency signal source using an indirect frequency synthesizer architecture including a voltage-controlled oscillator (VCO), responsive to a control signal having either one of two polarities which produces a microwave frequency output signal within a predetermined band of microwave frequencies, the method comprising the steps of:

(a) producing an offset frequency signal having a frequency approximately at the middle of a predetermined band of microwave frequencies and heterodyning the offset frequency signal with the output signal of the VCO, thereby forming an intermediate frequency (I.F.) signal having a frequency indicative of the magnitude of the difference between the frequency of the offset frequency signal and the output signal of the VCO;

(b) dividing the I.F. signal by a predetermined division ratio producing a frequency divider output signal having a frequency lower than the frequency of the I.F. signal;

(c) forming a first portion of the control signal with an amplitude in accordance with the frequency divider output signal; and

(d) changing the polarity of the first portion of the control signal in accordance with the frequency of the output signal of the VCO relative to the frequency of the offset frequency signal to produce the control signal to be applied to the VCO.

4,882,550
OSCILLATOR/AMPLIFIER CONNECTING STRUCTURE

Toshiki Baba, Odaka, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan

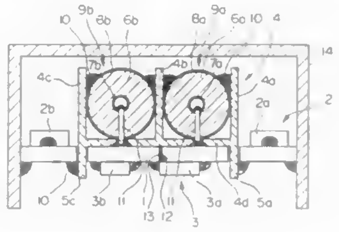
Filed Feb. 7, 1989, Ser. No. 307,439

Claims priority, application Japan, Apr. 12, 1988, 63-48850

Int. Cl.⁴ H03B *5/18;* **H04B** *1/50;* **H05K** *7/08*

U.S. Cl. 331—49 — 1 Claim

1. A connecting structure for an oscillator comprising a printed circuit board, two oscillator circuits provided on one surface of said printed circuit board and including dielectric resonators, an amplifier circuit provided on the other surface of said printed circuit board for selectively amplifying oscillatory outputs from said oscillator circuits, and a metal plate mounted on said printed circuit board, wherein said dielectric resonators are juxtaposed on said metal plate and fixed thereto,



and said amplifier circuit is located at a position opposite to said metal plate.

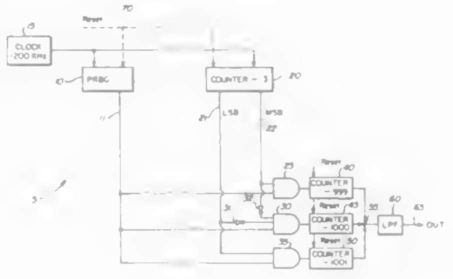
4,882,551
400 HERTZ HARMONIC GENERATOR

Paul A. Singer, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 11, 1989, Ser. No. 351,617

Int. Cl.⁴ H03B *29/00*

U.S. Cl. 331—78 — 8 Claims



1. An apparatus for simulating a range of fluctuating electronic signals comprising:

a clock having a predetermined clock signal;

a psuedo-random bit generator means coupled to the clock for generating a digital data stream of random zeros and ones;

divider means connected to said clock for providing gating signals at a predetermined rate of said clock signal;

means connected to said pseudo random bit generator means to receive said digital data stream and connected to said divider providing means to receive said gating signals for demultiplexing said ones of said digital data stream into a plurality of random ones signals in accordance with said predetermined rate of said gating signals;

means connected to said demultiplexing means for summing said plurality of said random ones signals;

means coupled to receive said plurality of said random ones signals for filtering thereof to provide said range of said fluctuating signals.

4,882,552
COHERENT FREQUENCY EXCHANGE KEYING MODULATOR

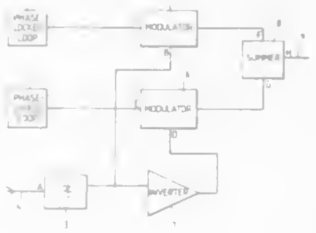
Robert M. Harris, Aldershot, England, assignor to The Secretary of State of or Defence in Her Britannic Majesty's Government of The United Kingdom of Great Britain and Northern Ireland, Loodon, England

Filed Jan. 12, 1989, Ser. No. 296,243

Claims priority, application United Kingdom, Jan. 20, 1988, 8801259

Int. Cl.⁴ H04L *27/12*

U.S. Cl. 332—100 — 5 Claims



1. Signal modulation apparatus for the transmission of a binary data signal consisting of means for filtering the binary data signal to produce a base-band signal, means for generating two carrier waves the difference between whose frequencies is substantially an integral multiple of the bit-rate of the binary data signal, means for amplitude modulating the two carrier waves by the base-band signal and an inverted version thereof respectively and means for adding the two amplitude-modulated carrier waves to produce a frequency-modulated waveform.

4,882,553
MICROWAVE BALUN

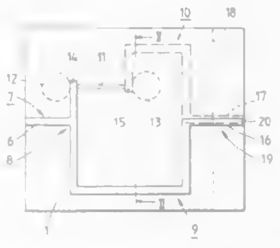
Robert Davies, Copthorne, England; Percy W. Hoare, Hussocks, United Kingdom, and Peter J. Gibson, Crawley, England, assignors to U.S. Philips Corp., New York, N.Y.

Filed Sep. 21, 1988, Ser. No. 247,139

Claims priority, application United Kingdom, Sep. 25, 1987, 8722638

Int. Cl.⁴ H01P *5/10*

U.S. Cl. 333—26 — 19 Claims



1. A balun having an unbalanced port comprising a first unbalanced transmission line and a balanced port comprising a balanced transmission line formed by two adjacent elongate strip conductors of substantially the same widths between which in operation of substantially the same widths between which in operation an electric field extends, wherein the two strip conductors are coupled to the unbalanced port by respective paths of substantially the same effective electrical lengths, wherein the paths comprise adjacent respective further unbalanced transmission lines which are strip transmission lines having a common ground conductor, wherein there is a transi-

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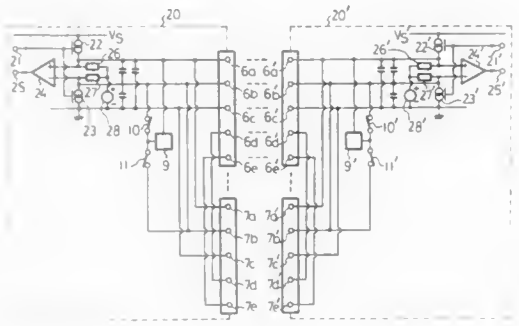
tion from the adjacent unbalanced lines to said balanced line in which transition the common ground conductor terminates, and wherein at least one of the paths comprise slot line means and strip transmission line-to-slot line coupling means so arranged. as in operation to provide in the two strip conductors from an RF signal in the first unbalanced line RF signals of mutually opposite phases with respect to the common ground conductor.

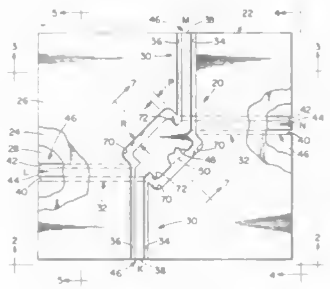
4,882,554
MULTI-DROP TYPE BUS LINE SYSTEM
Yukio Akaba, Chiba, and Akihiko Sakuramoto, Tokyo, both of Japan, assignors to Sony Corp. and SMK Co., Ltd., both of Tokyo, Japan
Filed May 24, 1988, Ser. No. 197,980
Claims priority, application Japan, May 29, 1987, 62-135541
Int. Cl.^{4} H03H *7/38*
U.S. Cl. 333—105 21 Claims



1. A multi-drop type bus line system comprising:
(a) a plurality of terminals, each of said terminals including at least first and second connectors, each of said first and second connectors including a plurality of connection pins arranged so that corresponding connection pins of said first and second connectors are electrically connected to each other and said connection pins are respectively electrically connected to a circuit provided within each of said plurality of terminals;
(b) connection cable means for coupling a connector of one terminal to a connector of another terminal so as to enable signal transmission between the terminals;
(c) switching means provided in said connector of each terminal and being operated each time said connection cable means is coupled to said connector;
(d) interline impedance means connected between predetermined connection pins of said first and second connectors; and
(e) means for removing said interline impedance means when said connection cable means is coupled to said connector by operation of said switching means, thereby impedance matching between a bus line and a terminal is improved.

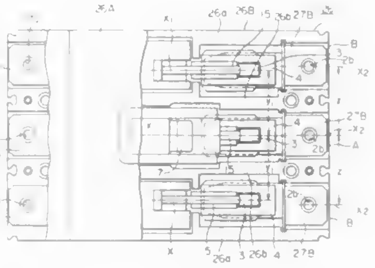
4,882,555
PLURAL PLANE WAVEGUIDE COUPLER
Mon N. Wong, Torrance, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.
Filed Aug. 12, 1988, Ser. No. 231,326
Int. Cl.^{4} H01P *5/18*
U.S. Cl. 333—116 9 Claims

9. A coupler of electromagnetic power comprising:
a first electrically-conductive sheet;
a second electrically-conductive sheet;
means for supporting said second sheet parallel to said first sheet and spaced apart therefrom;
a first coplanar waveguide disposed in said first sheet;
a second coplanar waveguide disposed in said second sheet, each of said coplanar waveguides being formed as a pair of slots within a conductive sheet, the pair of slots being spaced apart to define a central strip conductor; and wherein
in said first waveguide, there is a widened portion of each slot of said pair of slots and a widened portion of said strip conductor located within said widened slot portion, said widened portion of said strip conductor of said first waveguide being formed as a first elongated pad;



in said second waveguide, there is a widened portion of each slot of said pair of slots and a widened portion of said strip conductor located within said widened slot portion, said widened portion of said strip conductor of said second waveguide being formed as a second elongated pad; and
said first pad is disposed in registration with said second pad for coupling electromagnetic power between said first and said second waveguides.

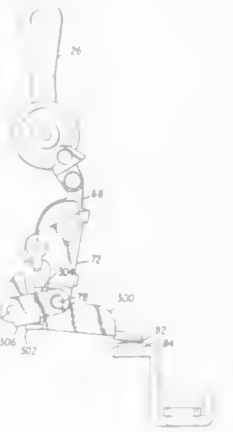
4,882,556
MULTI-POLE CIRCUIT INTERRUPTER
Hiroshi Fujii; Tsukasa Iio; Yasusi Genba; Hideaki Moriwaki, and Yoshinori Mochizuki, all of Midori, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Japan
Continuation of Ser. No. 92,945, Sep. 4, 1987, abandoned. This application Nov. 1, 1988, Ser. No. 267,617
Claims priority, application Japan, Sep. 9, 1986, 61-138780[U]
Int. Cl.^{4} H01H *71/00;* **H02B** *1/08*
U.S. Cl. 335—8 1 Claim

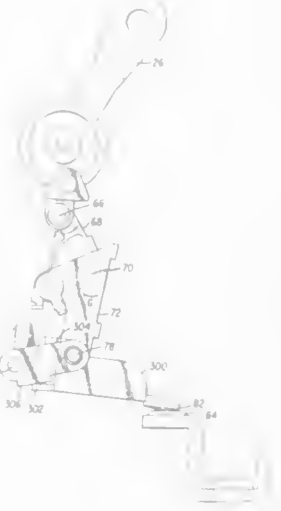


1. A multi-pole circuit interrupter comprising:
an electrically insulating housing having two side walls and at least two partition walls defining therebetween a central compartment and at least two side compartments, said side walls and partition walls all being substantially parallel and transverse to the width of said housing;
a central pole unit disposed within said central compartment and having a stationary contact element, a movable contact arm, an arc extinguisher, and a pair of terminals having a common center line with the central pole unit for external connections; and
a side pole unit disposed within each of said side compartments, each side pole unit having a stationary contact element, a movable contact arm, an arc extinguisher, and a pair of terminals having a common side pole terminal center line for external connections,
wherein the stationary contact element, the movable contact arm, and the arc extinguisher of each of the side pole units are offset with respect to the center lines of the terminals thereof in a direction toward the central pole unit and the distances from the center line of the central pole unit, the center line of the central pole unit passing through the centers of the stationary contact element, the movable contact arm, and the arc extinguisher of the central pole unit, to center lines passing through the centers of the stationary contact elements, the movable contact arms and the arc extinguishers of the side pole units are smaller than the distances from the center line of the central pole unit and the side pole terminal center lines, all of the center lines being generally parallel to each other and to said partition walls, whereby the spacing between the center pole unit and the respective side pole units may be increased without increasing the width of the housing.

4,882,557
MULTIPOLE CIRCUIT BREAKER SYSTEM WITH DIFFERENTIAL POLE OPERATION
George S. Harper, Cambridge, Md., assignor to Airpax Corporation, Cambridge, Md.
Filed Nov. 13, 1987, Ser. No. 120,479
Int. Cl.^{4} H01H *75/00*
U.S. Cl. 335—9 14 Claims

1. A multipole circuit breaker system comprising:
a handle movable to make or break contact;
a plurality of breaker assemblies of first and second types, each said breaker assembly comprising:
(a) movable contact means for electrically contacting a fixed contact means;
(b) a collapsible toggle, mechanically connected to said handle and to said movable contact means in such relation that collapse of said toggle permits said movable contact means to move away from said fixed contact means;
said assemblies of said second type, but not said assemblies of said first type, further comprising a contact bar means and a contact bar carrier means, wherein
(1) said contact bar carrier means is pivotably mounted at a first connection; and
(2) said contact bar means and said contact bar carrier means are pivotably connected together at a second connection, apart from said first connection such that overtravel in response to movement of said handle to make contact occur at said second connection.





4,882,558
SOLENOID ASSEMBLY
Makoto Takayanagi, Aichi, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Aichi, Japan
Filed Feb. 21, 1989, Ser. No. 312,154
Claims priority, application Japan, Feb. 18, 1988, 63-36186
Int. Cl.^{4} H01F *7/08*
U.S. Cl. 335—260 2 Claims

1. A solenoid assembly comprising:
a magnetic core;
a coil bobbin having a longitudinal axis and hook means thereon extending in the longitudinal direction of the bobbin axis from a flange formed on one end thereof with an end portion of said hook means projecting radially outwardly from said axis; said bobbin having a central bore with at least a portion of said core disposed therein and a coil wound around said bobbin;
a magnetic yoke connected to said core and partially surrounding said coil and having opening means through which said hook means extend;
a magnetic plunger movably disposed in said bore adjacent said core;
a grommet having a base portion disposed in contact with

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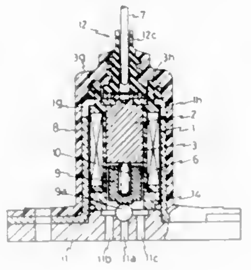
said yoke and engaged by said hook means and a neck portion extending along the axis of said bobbin away from said base portion and having an opening for a lead wire in said neck portion;



a lead wire extending through said opening of said neck portion and connected to one end of said coil; and

a casing made of plastic molded in situ and covering said grommet and an exterior portion of said yoke continuously.

4,882,559

PERMANENT MAGNET TYPE DEMAGNETIZING HEAD

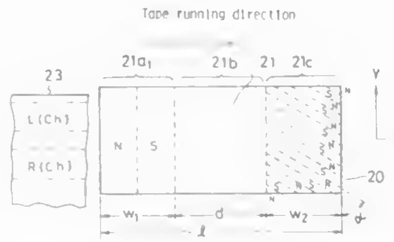
Noboru Koizumi, Hirakata, and Kazuya Yamazaki, Neyagawa, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Dec. 10, 1987, Ser. No. 131,392

Claims priority, application Japan, Dec. 10, 1986, 61-294042; Jul. 8, 1987, 62-170257

Int. Cl.⁴ H01F *13/00*

U.S. Cl. 335—284 6 Claims



1. A permanent magnet type demagnetizing head comprising:

a first magnetic part of a magnetic material which is disposed on a front part of a tape running surface in a tape running direction and magnetized in a magnetic pattern having at least one N-pole region and S-pole region,

a second magnetic part of said magnetic material which is disposed on a rear part of said tape running surface in the tape running direction and magnetized in a magnetic pattern having plural regions alternating N-pole and S-pole, the boundaries of said regions being inclined against a widthwise direction of a magnetic tape, and intensity of magnetization being gradually reduced in the tape running direction, and

one of a non-magnetic part and a feeble magnetic part being alternatively disposed between said first and second magnetic parts.

4,882,560

COIL ARRANGEMENTS IN MAGNETIC RESONANCE APPARATUS

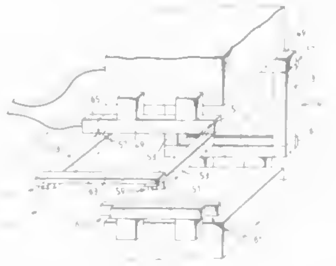
Ian R. Young, West Overton, Nr. Marlborough, and Alasdair S. Hall, Northwood, both of England, assignors to Picker International, Ltd., Wembley, England

Filed Nov. 22, 1988, Ser. No. 274,827

Claims priority, application United Kingdom, Nov. 25, 1987, 8727611

Int. Cl.⁴ H01F *5/00*

U.S. Cl. 335—299 11 Claims



1. An RF coil arrangement in a magnetic resonance apparatus including a pair of pole pieces which define a gap in which a static magnetic field for application to a body under examination is produced, the RF coil arrangement comprising at least one coil having a first part fixedly secured to a part of the magnetic resonance apparatus adjacent said gap and a further part which is detachably electrically connected with at least a portion of said first part.

4,882,561

ELECTRIC NOISE ABSORBER

Akio Fujioka, Ichikawa, Japan, assignor to Kitagawa Industries Co., Ltd., Japan

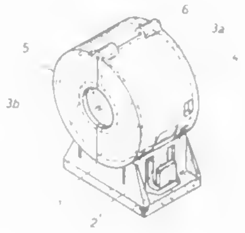
Filed Apr. 28, 1988, Ser. No. 187,515

Claims priority, application Japan, Jul. 13, 1987, 62-108144[U]

The portion of the term of this patent subsequent to Apr. 25, 2006, has been disclaimed.

Int. Cl.⁴ H01F *17/06, 27/02, 17/26*

U.S. Cl. 336—65 15 Claims



1. An electric noise absorber comprising:

a magnetic abutably divided into at least two portions, said magnetic body configured to receive an electric conductor;

a retaining case including two case pieces, said case pieces being movable with respect to each other between an open state and a closed state, said retaining case including means for holding said magnetic body about and adjacent to an electric conductor when in said closed state to absorb electronic noise;

a case fixing stand; and

a latching mechanism detachably holding said fixing stand to said retaining case, said mechanism having resilient pawl-type protrusions and means being detachably engaged by said protrusions.

4,882,562

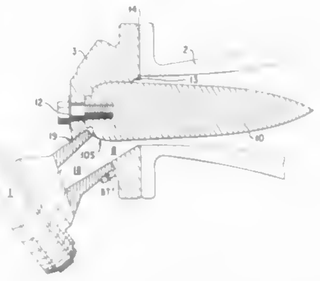
ADAPTOR FOR COUPLING PLURAL COMPRESSION DRIVERS TO A COMMON HORN

Anthony J. Andrews, Capel, and Toby C. Hunt, Rusper, both of England, assignors to Turbosound Limited, England

Continuation of Ser. No. 838,364, Mar. 11, 1986, abandoned. This application Jan. 25, 1988, Ser. No. 147,647

Int. Cl.⁴ G08B *3/00*

U.S. Cl. 340—388 22 Claims



10. An adaptor for combining the acoustic outputs of a plurality of sound transducers, said adaptor including an adaptor body having means for mounting the transducers thereon and a member projecting forwardly of the adaptor body, the member tapering in the direction away from the adaptor body, the adaptor body including a plurality of acoustically isolated passages each for directing the output of a respective one of said transducers from an inlet to an acoustically common annular region of space surrounding the forwardly projecting member, each of said passages being acoustically separate from a point adjacent said transducers to a point where said passages reach said annular region said inlet having a cross-sectional area, said cross-sectional area of said acoustically common annular region of space including a region of substantially reduced cross-sectional area relative to the sum of said cross-sectional areas of said inlets.

4,882,563

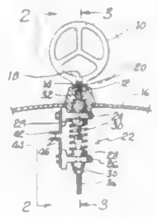
HOOD ORNAMENT THEFT ALARM

Marvin K. Perlman, 234 Morena Blvd., and Richard S. Perlman, 2311 Morena Blvd., both of San Diego, Calif. 92110

Filed Apr. 21, 1989, Ser. No. 341,632

Int. Cl.⁴ B60Q *1/00*

U.S. Cl. 340—426 7 Claims



1. A hood ornament alarm actuator for a hood ornament attached to a hood with a resilient means extending through a hole in said hood to retain said ornament in place, said actuator comprising;

(a) An upper plug having an axial bore therethrough;

(b) A lower plug having an axial bore therethrough substantially aligned with the axial bore of said upper plug;

(c) Spring means biasing said plugs apart;

(d) Elongated retainer means for engaging said hood ornament and extending down through the hole in the hood, passing through the axial bores in each of said plugs and engaging said lower plug; and

(e) A pair of electrical contacts mounted to said respective plugs and being adapted to connect to wires leading respectively to a vehicle power point (or ground) and a contact on the vehicle horn, such that an attempt to remove the hood ornament raises said retainer means, compressing said plugs towards one another against said spring means, and bringing said contacts into mutual contact to activate the vehicle horn.

4,882,564

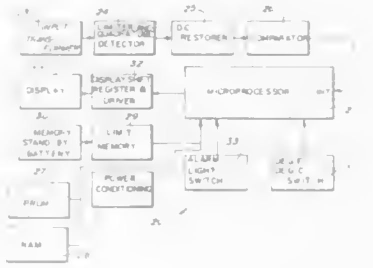
REMOTE TEMPERATURE MONITORING SYSTEM

Paul Monroe, Janesville, Wis., and James Kurth, Hopkins, Minn., assignors to Monitech Corporation, Minn.

Filed Jun. 6, 1988, Ser. No. 202,199

Int. Cl.⁴ B60Q *1/00; G01K 11/00*

U.S. Cl. 340—449 6 Claims



1. A remote temperature sensor and alarm system for a temperature controlled vehicle comprising:

a. a fixed rate oscillator;

b. means for sensing temperature said sensing means producing a temperature related electrical output;

c. means producing an analog repeating ramp voltage time frame synchronous with said oscillator;

d. a transmitter comparator receiving the output of the temperature sensing means as a first input and the analog ramp voltage as a second input said transmitter comparator producing a low output while the first input exceeds the second input and a high output while the second input exceeds the first input;

e. a programmable divider receiving a first input from the oscillator and a second input from the transmit comparator said programmable divider producing an output of a first frequency while the second input is low and an output of a second frequency while the second input is high;

f. a transmitter receiving the programmable divider output, said transmitter conditioning and transmitting said first and second frequencies;

g. a receiver receiving said first and second frequencies; said receiver conditioning said frequencies for transmission therefrom;

h. a processor unit receiving the said conditioned first and second frequencies from said receiver and decoding from each of the said transmitted time frames a temperature value;

i. a means for displaying said temperature value received from said processor unit.

4,882,565

INFORMATION DISPLAY FOR REARVIEW MIRRORS

William W. Gallmeyer, Holland, Mich., assignor to Donnelly Corporation, Holland, Mich.

Filed Mar. 2, 1988, Ser. No. 163,387

Int. Cl.⁴ B60Q *9/00*

U.S. Cl. 340—461 37 Claims

1. An improved rearview mirror assembly for vehicles of the type including a mirror element having a reflective surface

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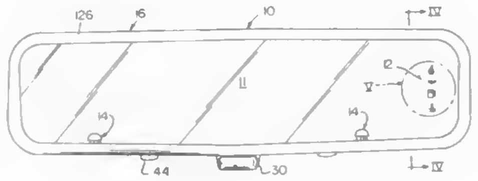
thereon and information means for providing information to a viewer of the mirror; the improvement comprising:

said information means including a narrow deletion area in said reflective surface in which said reflective surface is removed to form an opening of predetermined shape such as a symbol, word or other indicia in said reflective surface; and

light source means for illuminating said deletion area when lit/activated, said light source means positioned behind said reflective surface on the side of said mirror element opposite that from which said mirror element will be viewed in a vehicle;



said deletion area including at least one deletion line having a width which is sufficiently narrow to provide minimal contrast between the reflective surface and said line and thus be generally unnoticeable to the unaided eye of the viewer of the mirror element when viewing a rear vision image reflected by said reflective surface and said light source means is unlit/unactivated, but providing highly distinct, clear and precise lighted indicia visible to the mirror viewer when said light source means is lit/activated.

4,882,566

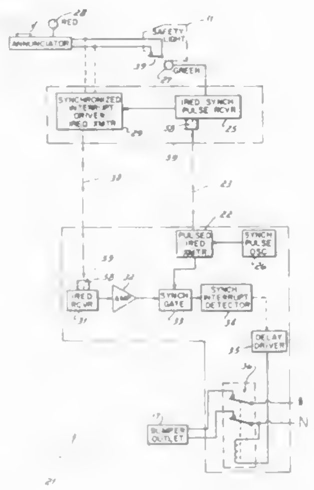
SAFETY CONTROL SYSTEM FOR A HOSPITAL BED

Clement J. Koerber, Sr., Batesville, Ind.; Dennis J. Gallant, Harrison, Ohio, and L. Dale Foster, Brookville, Ind., assignors to Hill-Rom Company, Inc., Batesville, Ind.

Filed Aug. 3, 1988, Ser. No. 227,863

Int. Cl.⁴ F21V *33/00, 23/04*

U.S. Cl. 340—825.690 12 Claims



1. In a hospital room safety control system for disconnecting electrical power to an electrically operated bed to interrupt vertical movement of the bed upon contact between a bed mounted structure and a safety light mounted to a head wall, said electrical power being supplied to said bed via an outlet below the light, the improvement comprising:

a first transmitter adjacent the outlet and adapted to transmit a first wireless signal to said safety light;

a first receiver mounted at said safety light adapted to receive said first wireless signal;

a second transmitter at said safety light operatively associated with said first receiver and adapted to transmit a second wireless signal upon reception of said first wireless signal;

a second receiver adjacent said outlet and adapted to receive said second wireless signal;

a power control circuit operatively associated with said second receiver and adapted to supply electrical power to said outlet upon reception of said second wireless signal;

a safety switch at said safety light adapted to detect contact with said light, said safety switch being operatively associated with said second transmitter to disable transmission of said second wireless signal upon detection of said contact, thereby to disconnect electrical power to said outlet when said light is contacted.

4,882,567

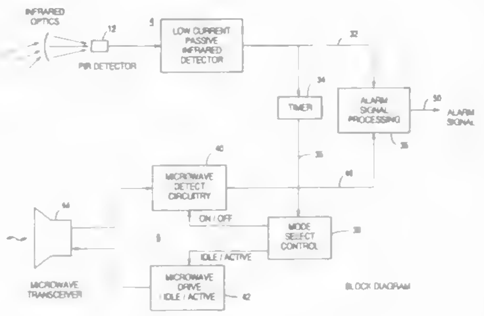
INTRUSION DETECTION SYSTEM AND A METHOD THEREFOR

Richard A. Johnson, Pleasanton, Calif., assignor to C & K Systems, Inc., San Jose, Calif.

Filed Sep. 29, 1988, Ser. No. 251,130

Int. Cl.⁴ G08B *19/00*

U.S. Cl. 340—522 11 Claims



3. An intrusion detection system comprising

a passive detecting means for detecting the presence of an intruder in a volume of space and for generating a first signal in response to the detection of said intruder;

a microwave detecting means having a ready state and an active state, for detecting the presence of said intruder in said volume of space and for generating a second signal in response to the detection of said intruder;

a means for maintaining said second detecting means in said ready state;

a switch means for activating said microwave detecting means by placing said microwave detecting means in said active state in response to said first signal; and

logic means for receiving said first and said second signals and for producing an alarm signal in response thereto, said alarm signal indicative of the detection of the presence of said intruder in said volume of space.

4,882,568

TOILET TISSUE ALERT SYSTEM

Jerry L. Kyser, 4410 Spring Hill, and David D. Mears, 4405 Spring Hill, both of, Inkster, Mich. 48141

Filed May 25, 1988, Ser. No. 198,505

Int. Cl.⁴ G08B *13/14*

U.S. Cl. 340—568 8 Claims

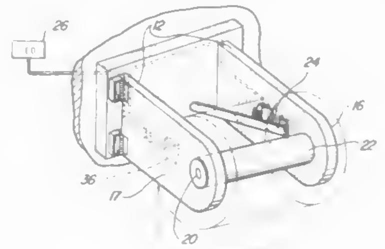
1. A paper roll holding device and alert system comprising:

a bracket having a back member and two side members, each side member having a notch formed therein;

an elongated tissue paper roll retaining member being re-

tained between the notches in each side member of the bracket;

means for detecting the end of a tissue roll, said means connected to one bracket side member and extending the



width of a tissue roll to contact the opposite bracket side member when the tissue roll is depleted; and

a signalling means indicating the end of the tissue roll, the signalling means being operably connected to the detecting means.

4,882,569

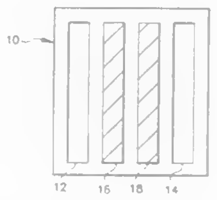
DEACTIVATABLE FEQUENCY-DIVIDING-TRANSPONDER TAG

Subrata Dey, St. Petersburg, Fla., assignor to Security Tag Systems, Inc., St. Petersburg, Fla.

Filed Jul. 26, 1988, Ser. No. 224,326

Int. Cl.⁴ G08B *13/26*

U.S. Cl. 340—572 11 Claims



1. A tag for attachment to an article to be detected within a surveillance zone, comprising

a frequency-dividing transponder including an active strip of magnetic material that, when magnetically biased to be within a predetermined magnetic field intensity range, responds to excitation by electromagnetic radiation of a first predetermined frequency by radiating electromagnetic radiation of a second predetermined frequency that is a frequency-divided quotient of the first predetermined frequency,

a first bias strip for magnetic material disposed in relation to the active strip of magnetic material for biasing the active strip of magnetic material to be within the predetermined magnetic field intensity range only when the first bias strip of magnetic material is magnetized; and

a second bias strip of magnetic material disposed in relation to the active strip of magnetic material for further biasing the active strip to be outside of the predetermined magnetic field intensity range to thereby prevent the active strip of magnetic material from radiating electromagnetic radiation of the second predetermined frequency in response to excitation by electromagnetic radiation of the first predetermined frequency when the first and second bias strip of magnetic material are both magnetized.

4,882,570

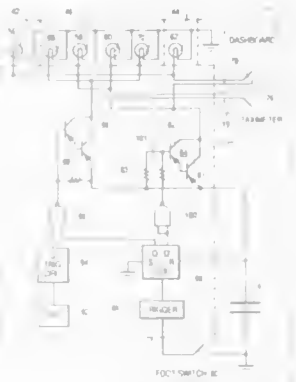
VEHICLE AND DISTRESS INDICATOR THEREFOR

Antonio Martinez, Bronx, N.Y., assignor to Argo Instruments Inc., Winchester, Va.

Filed May 25, 1988, Ser. No. 198,460

Int. Cl.⁴ G08B *5/38*

U.S. Cl. 340—574 8 Claims



1. A distress indicating system for a vehicle having a notification light arrangement including a plurality of normally operating notification lamps, said system comprising:

switch means responsive to a driver's actuation for producing a hazard indication,

circuit means responsive to said switch means for disabling the normally operating notification lamps,

flashing means responsive to said switch means for producing a flash signal.

4,882,571

SENSOR USED FOR ELECTRICAL HEATING MEASUREMENT

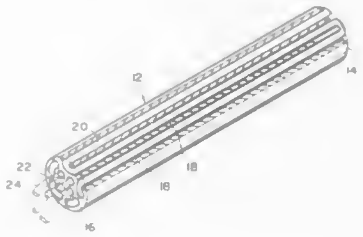
Tomoshige Hori, Kitamoto; Yasuhiko Shiinoki, Tokyo, and Kensuke Itoh, Kodaira, all of Japan, assignors to Snow Brand Milk Products Co., Ltd., Japan

Filed Jul. 26, 1988, Ser. No. 224,099

Claims priority, application Japan, Aug. 12, 1987, 62-201628

Int. Cl.⁴ H01C *7/00*

U.S. Cl. 338—28 11 Claims



1. In a sensor for determining physical properties of a fluid by electrically heating measurements in which an electrical current source and a voltmeter are connected to a plurality of thin metal wires associated with the sensor, the thin metal wires are heated by current from the current source and the voltage in the thin metal wires is measured while heat is transferred from the sensor to the fluid, the improvement comprising a sensor having:

(A) an elongated rod;

(B) a plurality of first holes disposed axially through said rod;

(C) a plurality of thin metal wires disposed through said first holes; and

(D) an electrically insulating member covering the sensor.

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4,882,572

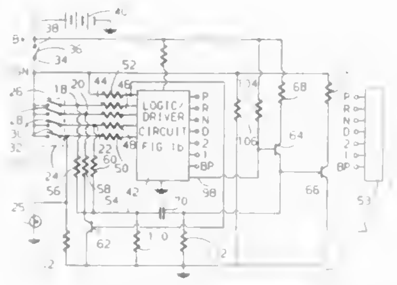
ELECTRONIC RANGE INDICATOR FOR A MOTOR VEHICLE

Raymond Lippmann, Ann Arbor, and Michael J. Schnars, Clarkston, both of Mich., assignors to Delco Electronics Corporation, Kokomo, Ind.

Filed Feb. 6, 1989, Ser. No. 306,122

Int. Cl.⁴ B60Q *1/00*

U.S. Cl. 340—456 7 Claims



1. In a motor vehicle having a selector mechanism adapted to be positioned by a vehicle operator for selecting a desired transmission range, and position detecting means including at least one limit switch having input and output terminals which are electrically connected or disconnected depending on the position of said selector mechanism, apparatus for providing a continuous electronic indication of the selector mechanism position, comprising:

- on state means operative during on periods of the vehicle to connect said input terminal to a relatively high potential system voltage which is present only during on periods of the vehicle, while biasing said output terminal toward a lower voltage which is overridden by said high potential system voltage when the limit switch is closed to connect said input and output terminals;
- off state means operative during off periods of the vehicle to intermittently connect said input terminal to said lower voltage, while biasing said output terminal toward a higher voltage which is overridden by said lower voltage when the limit switch is closed to connect said input and output terminals, thereby to logically invert the output terminal voltage as compared with that established during on periods of the vehicle;
- decoding means for developing output data which identifies the selector mechanism position as a function of said system voltage and the voltage at the output terminal of said limit switch;.and
- driver means effective (1) during on periods of the vehicle for activating a display device in accordance with the output data continuously generated by said decoder means, and (2) during off periods of the vehicle for activating said display device only in accordance with the output data generated by said decoder means during the intermittent periods of operation of said off state means.

4,882,573

APPARATUS AND METHOD FOR DETECTING THE PRESENCE OF A BURNER FLAME

John K. Leonard, Mississauga, and Roland Fabry, Montreal, both of Canada, assignors to Pullman Canada Ltd., St.Thomas, Canada

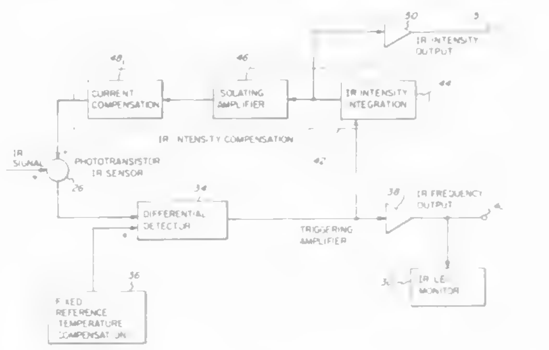
Filed Mar. 25, 1988, Ser. No. 173,120

Int. Cl.⁴ G08B *17/12*

U.S. Cl. 340—578 33 Claims

1. A flame detecting device for rendering an indication of the presence or absence of a flame, said device comprising:

- (a) means for sensing a first radiation spectrum from said flame, said first spectrum being characterized by a first wavelength range, said first radiation sensing means for producing a first signal that varies according with at least one characteristic of said first spectrum, said characteristic including at least the flicker frequency of said flame;
- (b) means for sensing a second radiation spectrum from said flame, said second spectrum being characterized by a second wavelength range, said second radiation sensing means for producing a second signal that varies according with at least one characteristic of said second spectrum, said later characteristic including at least the magnitude of at least one frequency component of said second spectrum;



- (c) means for storing information defining standards for said first and second signals in terms of said first and second spectrum characteristics respectively;
- (d) computer means for receiving said first and second signals and comparing said signals to said first and second standards respectively in accordance with at least one program for so comparing with first and second signals and generating an output signal representative of the presence or absence of said flame in accordance with said program; and
- (e) output means responsive to said output signal for registering an indication of the presence of absence of said flame.

4,882,574

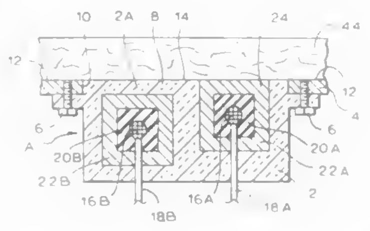
TWO-RESISTOR ICE DETECTOR

Boris Khurgin, 175 W. 87th St., New York, N.Y. 10024

Filed Jun. 20, 1988, Ser. No. 209,360

Int. Cl.⁴ G08B *21/00*

U.S. Cl. 340—581 15 Claims



1. An ice detector comprising first and second temperature-sensitive resistors, means for mounting said first resistor in good thermal conductivity with respect to a surface where the presence or absence of ice is to be detected, means for mounting said second resistor in good thermal insulation with respect to said surface, means for simultaneously electrically energizing said resistors, and means for detecting a difference in the resistance of said resistors after they have been energized and activating an indicator in response to a predetermined resistance difference, thereby indicating the presence of ice on said surface.

4,882,575

MONITOR FOR BLOCKED CONDITION IN TUBE FOR FLUID INFUSION PUMP

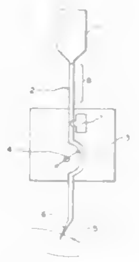
Masafumi Kawahara, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jan. 19, 1988, Ser. No. 145,141

Claims priority, application Japan, Jan. 28, 1987, 62-19054; Jan. 30, 1987, 62-20887; Feb. 4, 1987, 62-23969

Int. Cl.⁴ G08B *21/00*

U.S. Cl. 340—608 17 Claims



1. A monitor for a blocked condition in a tube for a fluid infusion pump having a fluid container connected to said tube and head means for operating on said tube to cause a fluid transportation through said tube, said monitor comprising

- detector means for detecting selectively at times separated by a constant interval or at times separated by uniformly increasing intervals a condition of said tube between said fluid container and said head means, and
- control means for monitoring for a blocked condition in said tube by comparing a most recently outputted value from said detector means selectively with a predetermined constant value or an earlier outputted value from said detector means.

4,882,576

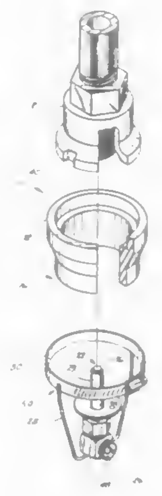
REMOTE COMBUSTIBLE GAS SENSOR

Monty Boyd, Rte. #2, Box 652, Muldrow, Okla. 74948

Continuation-in-part of Ser. No. 934,794, Nov. 25, 1986, abandoned. This application Feb. 9, 1988, Ser. No. 154,101

Int. Cl.⁴ G08B *17/10*

U.S. Cl. 340—632 16 Claims



1. A remote combustible gas sensor and calibrator therefor, comprising:

- a. a combustible gas sensor;
- b. a transmitter housing connected to said combustible gas sensor for transmitting signals indicating a predetermined level of combustible gas; and
- c. a calibration means attached to said combustible gas sensor, said calibration means comprising:
  - i. a main body portion;
  - ii. means attached to said main body portion for mounting said calibration means on said combustible gas sensor;
  - iii. means on said main body portion for receiving test gas; and
  - iv. test gas distribution means mounted on said main body portion, including a flexible bladder attached to said main body portion.

4,882,577

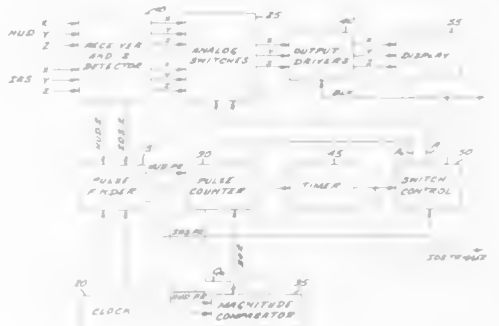
CALLIGRAPHIC CONTROL FOR IMAGE SUPERIMPOSITION

Douglas M. DeVore, Torrance, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Continuation of Ser. No. 745,031, Jun. 7, 1985, abandoned. This application Nov. 25, 1988, Ser. No. 277,425

Int. Cl.⁴ G09G *1/10*

U.S. Cl. 340—739 5 Claims



1. A system for superimposing images from two or more calligraphic image sources on a calligraphic monitor, comprising:

- a calligraphic monitor comprising a cathode ray tube (CRT), respective X axis and Y axis beam deflection circuitry for respectively deflecting the CRT beam along the X and Y axes in response to analog X and Y deflection signals, and beam intensity control circuitry for controlling the intensity of the CRT beam in response to a beam intensity control signal;
- a first calligraphic image source for providing a first set of periodic calligraphic image signals, comprising first analog X and Y deflection signals and a first analog beam intensity control signal, said image source having a first refresh rate of draw cycles, each draw cycle characterized by a first series of write signals, followed by a first temporal interval during which the source is not writing, in turn followed by a second series of write signals, in turn followed by a second temporal interval in which the source is not writing;
- a second calligraphic image source for providing a second set of periodic calligraphic image signals comprising second analog X and Y deflection signals and a second analog beam intensity control signal, said second source controlled to provide said signals in response to a trigger signal, said second image source having a second refresh rate of draw cycles;
- means for selectively coupling said first set or said second set of image signals to said calligraphic monitor in real time in dependence on a switch control signal, such that said respective first or second analog X and Y deflection signals control said X and Y beam deflection circuitry to directly deflect the CRT beam in accordance with said

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deflection signals, and said beam intensity control circuitry is controlled by said respective first or second analog beam intensity control signals so that the intensity of said beam is determined by said beam intensity control signal; and

a calligraphic controller for controlling the operation of said second calligraphic image source, the operation of said first calligraphic image source being independent of control by said controller, comprising:
- (i) means for monitoring said first set of calligraphic image signals to determine said first temporal intervals in the periodic cycle of said first set of image signals during which the first image source is not writing to the calligraphic monitor;
- (ii) means for locating said second temporal interval in the cycle of said first set of image signals in dependence on the detection of said first temporal interval, said locating means comprising a timer means for providing a trigger signal a predetermined delay after detection of said first temporal location;
- (iii) means responsive to said monitoring means and said locating means for generating clock trigger signals for causing said second source to generate said second set of image signals during selected ones of said first and second temporal intervals which are of duration and frequency corresponding to the cycle of the second set of calligraphic image signals; and
- (iv) means for generating switch control signals to couple said second set of image signals to said monitor during said selected first and second temporal intervals, and to couple said first set of image signals to said monitor when said first signal is providing image signals.

4,882,578

CHARACTER DISPLAY DEVICE

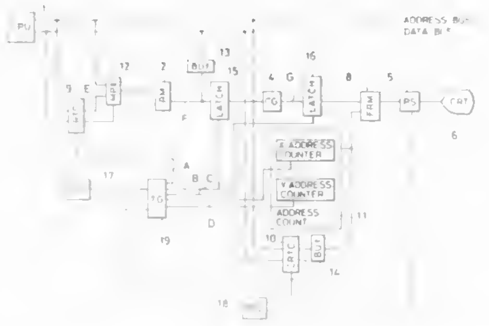
Akihiro Minakuchi, Tokyo, Japan, assignor to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Mar. 11, 1988, Ser. No. 167,157

Claims priority, application Japan, Mar. 16, 1987, 59075/87

Int. Cl.⁴ G09G *1/00*

U.S. Cl. 340—750 7 Claims



1. A character display device for displaying characters as pixels on a display screen of a display means operating in accordance with a synchronous signal, comprising:

a refresh memory for storing character codes in their respective display positions on the display screen;

a CPU for accessing said refresh memory and for writing character codes in said refresh memory;

first control means for sequentially supplying said refresh memory with addresses for reading the character codes stored therein, thereby causing said refresh memory to sequentially produce the character codes;

switching means for selectively connecting said refresh memory with one of said CPU and said first control means, so that the addresses for said refresh memory are supplied from said first control means during production of character codes by said refresh memory and are supplied from said CPU during writing of the character codes in said refresh memory;

a character generator responsive to said character codes produced by said refresh memory for producing pixel signals representing character patterns of said character codes;

a frame memory responsive to the pixel signals from said character generator for storing the pixel signals at corresponding write addresses for corresponding display positions for each of the respective pixels of said display screen;

second control means for sequentially supplying said frame memory with read addresses, thereby causing said frame memory to sequentially produce pixel signals; said second control means operating in accordance with said synchronous signal for said display means;

an address counter producing write addresses to said frame memory designating the memory locations of said frame memory at which the pixel signals from said character generator should be written; and

means for causing said display means to display the pixel signals produced by said frame memory as pixels on said display screen.

4,882,579

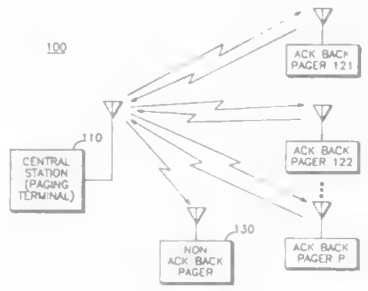
CODE DIVISION MULTIPLEXED ACKNOWLEDGE BACK PAGING SYSTEM

Kazimierz Siwiak, Coral Springs, Fla., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jan. 7, 1988, Ser. No. 141,656

Int. Cl.⁴ H04Q *9/00*

U.S. Cl. 340—825.44 21 Claims



1. An acknowledge back pager having a unique address associated therewith, said pager comprising;

receiving means for receiving paging signals from a central station, said paging signals including a batch of M pager addresses transmitted in a sequential order during a first time period, wherein M is the number of pager addresses in said batch;

decoding means, coupled to said receiving means, for detecting the presence of said pager's address within said batch of M addresses;

address order determining means, coupled to said decoding means, for determining the order of said pager's address within said batch of M addresses, and

pseudorandom code transmitting means for transmitting an acknowledge back signal at a selected frequency, said acknowledge back signal including a selected one of a plurality of M substantially orthogonal pseudorandom codes, said selected one of said codes exhibiting a predetermined relationship to the order of the address of said pager within said batch of M addresses.

4,882,580

COMMUNICATION SYSTEM

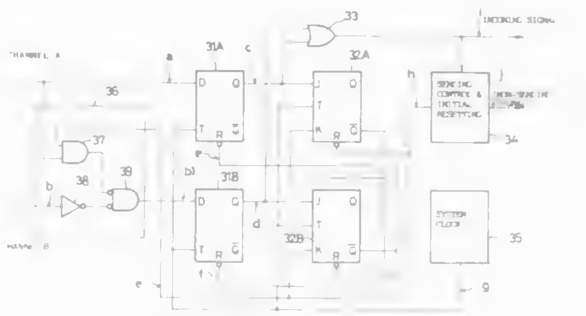
Mitsuji Teranishi, Yao; Yasuo Watanabe, and Akira Takeuchi, both of Ibaragi, all of Japan, assignors to Asics Corporation, Japan

Filed May 6, 1985, Ser. No. 731,147

Claims priority, application Japan, May 9, 1984, 59-93668; May 9, 1984, 59-93669

Int. Cl.⁴ H04Q *5/00, 5/22*

U.S. Cl. 340—825.51 7 Claims



1. A first arrival preference circuit, provided in an apparatus having a processing device for receiving input signals and transmitting an output signal to other apparatus, said first arrival preference circuit comprising:

two gate circuits connected respectively to each of two input terminals for receiving first and second input signals;

a first arrival discrimination circuit for discriminating which one of the first and second input signals has arrived first to one or the other of said two input terminals and for determining that the first and second input signals have arrived to the two input terminals at the same time;

a gate control circuit for causing the gate circuit connected to the input terminal where the first signal has arrived or to a predetermined one of said terminals when the two input signals have arrived at the same time to accept the input signal, and for causing the other gate circuit to be inhibited from accepting the input signal, and

a sending control circuit for producing a non-sending signal while one of the first and second input signals is being accepted, the non-sending signal controlling said processing device to inhibit transmission of said output signal to said other apparatus.

4,882,581

KEYBOARD FOR A PORTABLE DATA TERMINAL

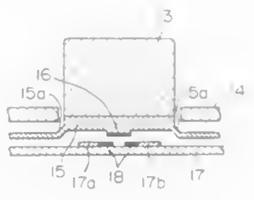
Kazuhiko Inobe, and Masami Kanzaki, both of Yokohama, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Feb. 18, 1988, Ser. No. 159,440

Claims priority, application Japan, Feb. 19, 1987, 62-36064

Int. Cl.⁴ H03M *9/00;* H03K *17/967*

U.S. Cl. 341—22 4 Claims



1. A portable terminal keyboard comprising a terminal main unit for collecting and storing data; a substrate having a plurality of pairs of electrical contacts; and a plurality of key tops, each of said plurality of key tops including (a) an upper portion formed of a mixture of silicone rubber and phosphorescent material and arranged to protrude through a case of said main unit, (b) a lower portion which is substantially free of phosphorescent material, and (c) switch means including an electrical contact disposed on said lower portion and operative to come in contact with a respective one of said plurality of pairs of electrical contacts so that said switch means electrically connects the contacted one of said plurality of pairs of electrical contacts in response to depression of the respective key top.

4,882,582

TOUCH PANEL INPUT DEVICE

Minoru Oka, Toyota, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 16, 1987, Ser. No. 120,880

Claims priority, application Japan, Nov. 18, 1986, 61-274426

Int. Cl.⁴ G09G *1/00;* H03K *17/968*

U.S. Cl. 341—23 13 Claims

1. A touch panel input device provided with means for displaying an image including letters and with input keys superposed on the means for displaying and made of a transparent material, in which the image including letters is displayed at a position on the screen of a CRT display corresponding to an arrangement of the input keys, comprising:

means for displaying a part of the image that is displayed at a position corresponding to a subset of the input keys in a manner different from the remaining part of the image corresponding to input keys other than the subset of input keys, said subset of input keys including a number of input keys from which an operator is to make a selection;

wherein the part of the image that is displayed at a position corresponding to the subset of input keys is displayed with greater emphasis, before an operator pushes down one of the keys, than a remaining part of the image corresponding to input keys which are not included in said subset, so that the operator can recognize the part of the image corresponding to the subset of input keys easier than said remaining part of the image.

4,882,583

MODIFIED SLIDING BLOCK CODE FOR LIMITING ERROR PROPAGATION

Kamal E. Dimitri, Tucson, Ariz.; Martin A. Hassner, Palo Alto, and Paul H. Siegel, San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 31, 1988, Ser. No. 200,322

Int. Cl.⁴ H03M *7/00*

U.S. Cl. 341—59 6 Claims

1. A code translation device for transferring data between two differently coded binary representations in respective

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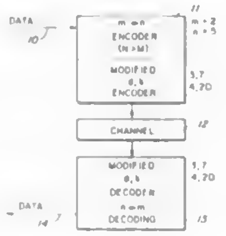
codes thereof, being a (d,k) constrained code, a first code being unconstrained, characterized in that the "d" constraint is violated by a bit inversion adjacent each naturally coded singleton bit of the opposite denomination to reduce error propogation.



4,882,584
TRANSDUCER FOR PROCESS CONTROL

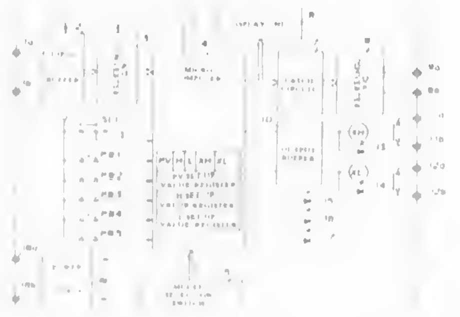
Hideaki Nakamura, Joyo; Tamotsu Shimamori, Nagaokakyo, and Shinichi Murashige, Kyoto, all of Japan, assignors to Omron Tateisi Electronics Co., Kyoto, Japan

Filed Sep. 5, 1986, Ser. No. 903,976

Claims priority, application Japan, Sep. 5, 1985, 60-196714; Sep. 27, 1985, 60-215645; Oct. 28, 1985, 60-241808; Oct. 28, 1985, 60-24180S

Int. Cl.⁴ H03M *1/18*

U.S. Cl. 341—139 16 Claims



1. A process control transducer, for converting an analog input signal having a range incompatible with a process controller into an analog output signal, compatible with said controller comprising:
   - (a) means for receiving and buffering said analog input signal;
   - (b) an A/D converter for converting said buffered signal into a digital signal;
   - (c) an input device for incrementing and decrementing a value to be adjusted;
   - (d) an upper limit setting means for setting an upper limit value according to the operation of said input device;
   - (e) a lower limit setting means for setting a lower limit value according to the operation of said input device;
   - (f) a comparison means for comparing a current value of said digital signal output by said A/D converter and said set upper limit value and said set lower limit value; and
   - (g) an output means for producing an output when a comparison executed by said comparison means indicates that a current value of said digital signal output by said A/D converter has exceeded said upper limit value, or has dropped below said lower limit value

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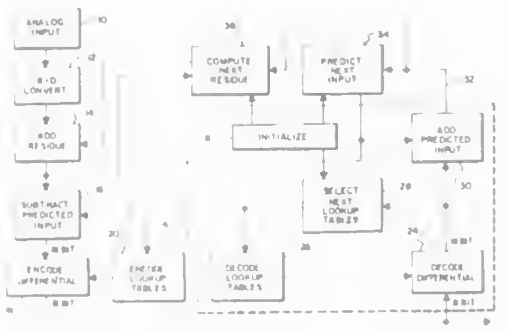
4,882,585
METHOD AND APPARATUS FOR HIGH RESOLUTION ANALOG-DIGITAL-ANALOG TRANSFORMATIONS

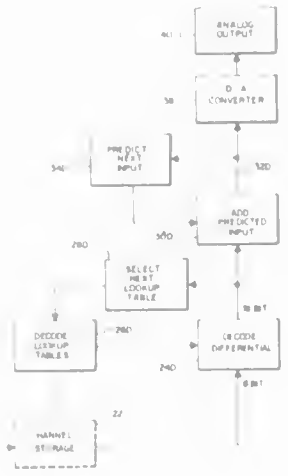
Terry D. Beard, 1407 North View Dr., Westlake Village, Calif. 91362

Filed Mar. 17, 1988, Ser. No. 169,865

Int. Cl.⁴ H03M *1/62*

U.S. Cl. 341—143 20 Claims





1. A method of encoding a series of input digital signals in a higher order digital format to a series of lower order digital signals and then recovering the original input digital signals from the lower order signals, comprising:
   - generating a predicted value for an input signal in said series,
   - comparing said predicted value with said input signal to obtain a differential quantity representing the difference between the two,
   - encoding said differential quantity to a lower order digital format with an encoding transformation,
   - decoding the encoded differential quantity to said higher order format with a decoding transformation that is complementary to said encoding transformation,
   - selecting an encoding transformation for the next input signal in the series, the resolution of said encoding transformation being a function of the absolute value of the differential quantity just decoded, and
   - combining said predicted value with the value of said decoded differential quantity to recover said original input signal.

4,882,586
ANALOG-TO-DIGITAL CONVERTER

Darrel A. Dolph, Big Rapids; Leonard W. Demski, Reed City; Robert E. Taylor, Cadillac, and Jean-Marie Loisel, Big Rapids, all of Mich., assignors to Nartron Corporation, Reed City, Mich.

Division of Ser. No. 620,188, Jun. 13, 1984, Pat. No. 4,621,327. This application Oct. 24, 1986, Ser. No. 922,519

Int. Cl.⁴ H03M *1/56*

U.S. Cl. 341—169 12 Claims

1. An analog to digital converter comprising:
   - a comparator having two inputs, one input coupled to an analog signal having a magnitude to be converted to a digital signal;
   - voltage means coupled to a second input of said comparator for producing a time varying voltage at said second input to said comparator to cause a comparator output to change output state when said analog signal and the time varying voltage are the same;
   - said voltage means comprising a positive constant current source having a current source output coupled to said second input of the comparator, a capacitor coupled between the constant current source output and a ground for producing said time varying voltage by storing charge from the constant current source, and a control switch for initiating the time varying voltage by initiating a charging of the capacitor; and
   - a microprocessor controller having a microprocessor output coupled to the control switch to initiate the time varying voltage, a microprocessor input for sensing the output from the comparator to determine when the time varying voltage and the analog signal are equal, and a microprocessor timer for determining how long after the control switch initiates said time varying voltage it takes for the microprocessor input to change state indicating that the time varying voltage and analog signal are equal.

4,882,587
ELECTRONICALLY ROLL STABILIZED AND RECONFIGURABLE ACTIVE ARRAY SYSTEM

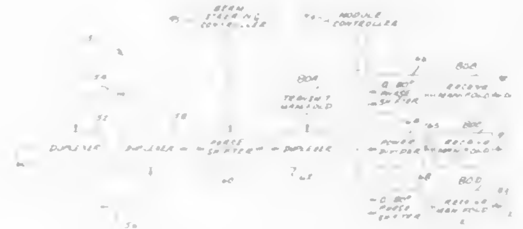
Samuel N. Vodopia, Santa Monica, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Apr. 29, 1987, Ser. No. 44,638

Int. Cl.⁴ H01Q *3/22*

U.S. Cl. 342—372 19 Claims

1. An active array system for providing electronically roll stabilized array difference patterns, comprising:
   - an array of spaced radiative elements forming a radiative aperture for receiving electromagnetic radiation;
   - a plurality of active modules respectively coupled one each to each radiative element, each module comprising a first means for selectively phase shifting the radiation received at the corresponding radiative element by relative phase shifts of substantially 0 degrees or 180 degrees in dependence on a first module control signal to provide a first module receive signal;
   - means for combining the respective first module receive signals to provide a first difference channel output signal;
   - means for providing attitude position signals representing the relative attitude position of the array in relation to a reference position; and



   - control means responsive to said attitude position signals for providing respective first module control signals to each of said plurality of modules for selectively controlling said first phase shifting means of each module to selectively and independently phase shift the radiation received at each radiative element so as to roll stabilize said first difference channel output signal in relation to said reference position

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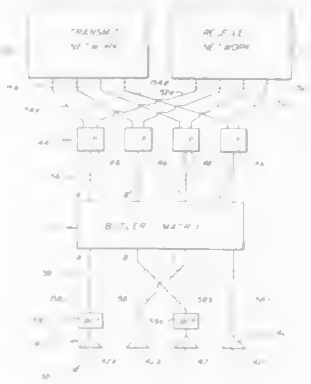
4,882,588
STEERABLE BEAM ANTENNA SYSTEM USING BUTLER MATRIX

Kenneth H. Renshaw, Manhattan Beach, and Timothy A. Murphy, Redondo Beach, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Continuation of Ser. No. 944,091, Dec. 22, 1986, abandoned. This application Nov. 14, 1988, Ser. No. 271,401

Int. Cl.⁴ H01Q *3/22, 3/24, 3/26*

U.S. Cl. 342—373 29 Claims



1. A method of operating a frequency addressable, steerable beam antenna system, comprising the steps of:
   - (a) providing a set of first signals having a predetermined phase relationship with respect to one another and containing information to be transmitted, each of said first signals having a carrier frequency related to its corresponding phase;
   - (b) generating a set of second signals from said set of first signals by at least approximately performing a spatial transformation on the amplitude and distribution of said set of first signals, including the step of feeding said first set of signals to the inputs of a Butler matrix such that the phase of the first signals varies from input-to-input of said matrix in a predetermined relationship, said Butler matrix

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including a plurality of outputs for delivering said second set of signals, the phase distribution of said second set of signals at said outputs being determined by the predetermined relationship of the phases of said first signals;

(c) feeding said second set of signals from the outputs of said Butler matrix to a plurality of feed elements of an antenna array in a manner such that the phases of the second set of signals vary from feed element to feed element in accordance with said predetermined phase relationship; and

(d) transmitting said set of second signals toward a reflector from said antenna array at a position located near a focal point of the reflector in a manner to from a plurality of beams of electromagnetic radiation where each of said beams is associated with a particular one of said carrier frequencies.

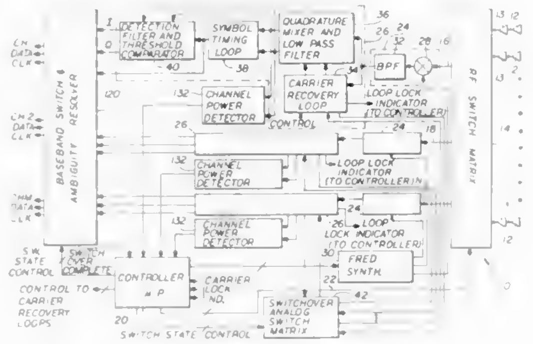
4,882,589
COHERENT SWITCHING SYSTEM FOR A MULTIPLE BEAM ANTENNA

Sam Reisenfeld, Playa del Rey, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Dec. 29, 1986, Ser. No. 947,459

Int. Cl.⁴ H01Q *3/02*

U.S. Cl. 342—374 6 Claims


DETECTION FILTER AND THRESHOLD COMPARATOR
SYMBOL TIMING LOOP
QUADRATURE MIXER AND LOW PASS FILTER
BPF
CARRIER RECOVERY LOOP
LOOP LOCK INDICATOR (TO CONTROLLER)
CHANNEL POWER DETECTOR
CONTROL
LOOP LOCK INDICATOR (TO CONTROLLER)
LOOP LOCK INDICATOR (TO CONTROLLER)
FRED SYNTH.
CONTROLLER μP
CARRIER LOCK IND.
SWITCHOVER ANALOG SWITCH MATRIX
SWITCH STATE CONTROL
SW STATE CONTROL
SWITCHOVER COMPLETE
CONTROL TO CARRIER RECOVERY LOOPS
BASEBAND SWITCH & AMBIGUITY RESOLVER
RF SWITCH MATRIX
CH DATA CLK
CH 2 DATA CLK
DATA CLK
I
Q
40
38
36
26
24
32
28
16
34
120
132
26
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2

1. A coherent switching system for a multiple beam antenna comprising:

first channel means connected to a first feed of said antenna, said first channel means having a first demodulator for providing a first baseband signal;

second channel means connected to a second feed of said antenna, said second channel means having a second demodulator for providing a second baseband signal;

power detection means for measuring the power of said first baseband signal;

coherent switching means responsive to said power detection means for switching from said first demodulator to said second demodulator in order to provide switching at baseband from said first baseband signal provided by said first channel to said second baseband signal provided by said second channel; and

linear predictive filter means for activating said switching means, said filter means communicatingly connected to said power detector for determining a time at which the switching will occur based on input from said power detector.

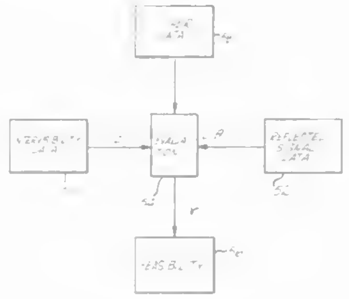
4,882,590
METHOD FOR LOCATING A RADIO FREQUENCY EMITTER

Ronald E. Huss, Los Angeles, Calif., and Ellis S. Feldman, Arlington, Va., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed May 18, 1988, Ser. No. 195,740

Int. Cl.⁴ G01S *3/02*

U.S. Cl. 342—453 4 Claims



1. A method for locating a radio frequency emitter that transmits pulses in a swept beam pattern comprising the steps of:

storing intervisibility data of terrain points in a region around an observation point;

measuring at the observation point the times of arrival of a plurality of terrain point reflections of a single pulse transmitted by the emitter;

repeating the measuring step for a plurality of pulses transmitted by the emitter; and

comparing terrain points of reflection calculated from the measured times of arrival for assumed emitter locations with the stored intervisibility data of terrain points.

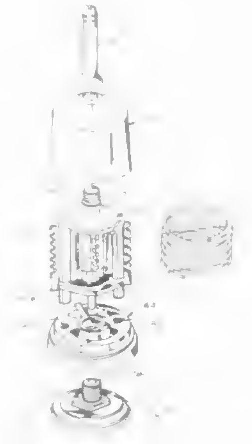
4,882,591
BASE LOADED ANTENNA

Richard W. Galvin, Riverside, Calif., and James W. Wilson, Las Vegas, Nev., assignors to Wilson Antenna Inc., Henderson, Nev.

Filed Oct. 3, 1988, Ser. No. 252,752

Int. Cl.⁴ H01Q *1/12, 1/32*

U.S. Cl. 343—715 5 Claims



5. In a base loaded antenna which includes a coil having a plurality of turns of electrically conductive wire and having upper and lower coil ends, conductors connected to said upper and lower coil ends, and a dielectric frame which includes a

coil support and a cover lying about the coil support and coil, the improvement wherein:

said coil support has upper and lower ends and includes a core and a plurality of fins radiating from said core, each fin engaging said wire turns and holding them at predetermined spacings from one another, said fins extending a short enough distance along the circumference of said wire turns to leave most of the circumferential length of the coil unsupported by said fins;

said frame includes a base coupled to said lower ends of said coil support and cover; and including

means coupled to said upper ends of said coil support and said cover, for pulling up said upper end of said coil support to load said coil support in tension, and for pressing down on said upper end of said cover to load it in compression.

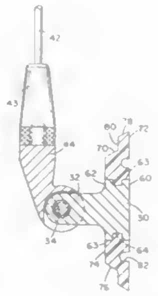
4,882,592
MOTOR VEHICLE ANTENNA MOUNT

S. Nicholas Studer, Jr., Manalapan, and Kevin J. Connolly, Freehold, both of N.J., assignors to Radio Frequency Systems, Inc., Marlboro, N.J.

Filed Feb. 3, 1989, Ser. No. 306,521

Int. Cl.⁴ H01Q *1/32*

U.S. Cl. 343—715 19 Claims



1. Apparatus for communicating signals through a motor vehicle window comprising:

(a) a base including:
  (i) a metal foot having an exposed antenna support portion for supporting an antenna in a signal receiving or transmitting orientation and an additional portion having a base surface conforming generally to a surface contour of an outer surface of the motor vehicle window; said additional portion also defining an outer periphery having a groove extending around at least a portion of said outer periphery;
  (ii) a non-metallic shield engaging the outer periphery of the metal foot and extending into the groove to engage and adhere to said metal foot, said shield having a window conforming surface generally co-planar with the base surface of the metal foot;

(b) an adhesive material having one adhesive surface dimensioned to engage both the base surface of said foot and the window conforming surface of the shield and having a second adhesive surface to engage the motor vehicle window to affix the shield and metal foot to the window; and

(c) an elongated communications antenna coupled to a swivel base that adjustably engages the antenna support portion of the metal foot to allow the antenna to be re-oriented.

4,882,593
METHOD AND APPARATUS FOR CARRYING OUT TRANSFERENCE RECORDING OF AN INK IMAGE

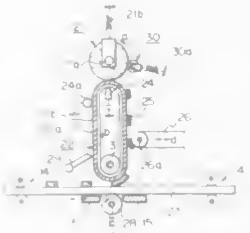
Kouichi Touma, Kawasaki; Tetsuo Hasegawa, Tokyo; Naoki Kushida, Yokohama; Hisao Yaegashi; Yasuyuki Tamura, both of Yokohama, and Sbuzo Kaneko, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 22, 1986, Ser. No. 942,810

Claims priority, application Japan, Dec. 23, 1985, 60-287840; Dec. 23, 1985, 60-287841

Int. Cl.⁴ G01D *15/10;* **B41J** *3/20*

U.S. Cl. 346—111 22 Claims



1. A method of recording an image on a recording medium by image transference comprising the steps of:

fusing or softening supercoolable heat-transferable ink,

selectively transferring the thus fused or softened supercoolable heat-transferable ink onto an intermediate transferring medium in accordance with image information to achieve a first transferring step,

transferring under pressure onto the recording medium the supercoolable heat-transferable ink which had been transferred onto the intermediate transferring medium to achieve a second transferring step, and

flattening the surface of the remaining supercoolable heat-transferable ink after completion of said first transferring step.

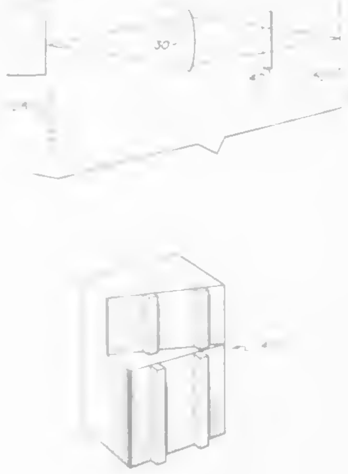
4,882,594
METHOD FOR MAKING A SMOOTH, UNIFORM IMAGE OF A LASER DIODE ARRAY

William T. Plummer, Concord, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Oct. 3, 1988, Ser. No. 252,658

Int. Cl.⁴ G01D *15/14;* **G02B** *5/30;* **G11B** *7/00*

U.S. Cl. 346—108 9 Claims



1. Phase array apparatus for use with a lens system to provide a substantially smooth, uniform image of a laser array

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comprised of a multiplicity of lasers wherein the phase of the radiation emitted by the lasers alternates by an amount which is substantially equal to 180°, said phase array comprising:

phase means, disposed substantially at a far-field image of the laser array formed by the lens system, which far-field image comprises two prominent lobes, for changing the phase of the radiation in said two prominent lobes by an amount which is substantially equal to an odd multiple of 90° with respect to the phase of the remaining radiation in the far-field image in order to convert the final near-field image of the laser array substantially into an oscillatory wave pattern; and

shifting means, disposed near a far-field image but not at a near-field image, for shifting one half of the phase shifted far-field image with respect to the other half to form a pair of near-field images which are shifted with respect to each other by an amount which is substantially equal to an odd multiple of one-half cycle of the oscillatory wave pattern, whereby a substantially smooth, uniform final image of the laser array is formed.

4,882,595

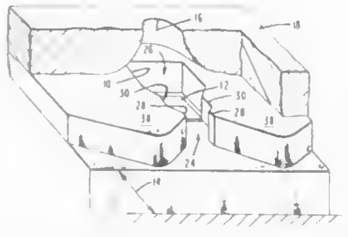
HYDRAULICALLY TUNED CHANNEL ARCHITECTURE

Kenneth E. Trueba; William R. Knight, and Niels J. Nielsen, all of Corvallis, Oreg., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation-in-part of Ser. No. 115,498, Oct. 30, 1987, abandoned. This application Jan. 25, 1989, Ser. No. 303,378

Int. Cl.⁴ G01D *15/16;* B41J *3/04*

U.S. Cl. 346—140 R 16 Claims



1. An improved ink-jet printhead including a plurality of ink-propelling elements (12), each ink-propelling element disposed in a separate firing chamber (26) defined by three barrier walls (36) and a fourth side open to a reservoir of ink common to at least some of said elements, and a plurality of nozzles (16) comprising orifices disposed in a cover plate above said elements, each orifice associated with an element for firing a quantity of ink (A) normal to the plane defined by each said element and through said orifices toward a print medium in defined patterns to form alphanumeric characters and graphics thereon, wherein ink is supplied to said element from a plenum chamber (14) by means of an ink feed channel (10), wherein the improvement comprises:

(a) a pair of opposed projections (28) formed in walls in said ink feed channel and separated by a first width (W_1) to cause a first constriction between said plenum and said channel; and

(b) a second constriction (30) along the length of said ink feed channel defined by a second width (W_2) between said walls of said ink feed channel, said second width narrow than the width of said firing chamber and wider than said first width between said opposed projections and sufficient to physically support said projections without adversely adding to resistance to ink refill of said channel.

4,882,596

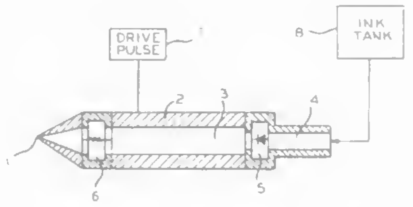
ON DEMAND TYPE INK-JET PRINT HEAD HAVING FLUID CONTROL MEANS

Mitsuo Tsuzuki, and Michihisa Suga, both of Tokyo, Japan, assignors to NEC Corporation, Japan

Continuation of Ser. No. 133,193, Dec. 15, 1987, abandoned, which is a continuation of Ser. No. 928,624, Nov. 4, 1986, abandoned, which is a continuation of Ser. No. 827,471, Feb. 5, 1986, abandoned, which is a continuation of Ser. No. 646,377, Aug. 29, 1984, abandoned. This application Sep. 2, 1988, Ser. No. 243,227

Int. Cl.⁴ G01D *15/16;* B41J *3/04*

U.S. Cl. 346—140 R 9 Claims



1. An on-demand ink-jet printing head comprising an ink supply coupled to z nozzle via an ink delivery path; said delivery path comprising in series an inlet from said ink supply, fluid rectifier means for enabling substantially a one-way flow of ink in said deliver path, said one way flow being in a direction from said supply toward said nozzle, transducer means, a pressure chamber controlled by said transducer means, said rectifier means comprising a check valve for passing ink from said ink supply through said inlet to said pressure chamber while blocking the flow of the ink from said pressure chamber through said inlet, bi-directional fluid resistance means comprising a wall member having a plurality of pinholes therein through which said ink must flow between said pressure chamber and said nozzle for impeding the free flow of said ink by substantially the same impedance in both a forward and a reverse direction of ink flow, a passageway leading to said nozzle; means for applying drive pulses to said transducer means for selectively pressurizing said chamber to eject an ink droplet from said nozzle, said pressure chamber having a normal volume when no drive pulse is applied thereto, said drive pulse applying means comprising a pulse generator for forming pulses having a high initial voltage level relative to a reference level in order to increase droplet velocity by squeezing said chamber to less than said normal volume for acceleration an ink droplet to a given velocity, said pulse thereafter dropping to an intermediate voltage level which is lower than said high level and higher than said reference level in order to reduce chamber pressure without decreasing droplet velocity, said intermediate level thereafter dropping to a low voltage level which is below said reference level in order to increase the volume of said pressure chamber to larger than a normal chamber volume, and said drive pulse terminating by returning from said low voltage level said reference lever in order to return the volume of said pressure chamber.

4,882,597

LIQUID JET RECORDING APPARATUS HAVING SEPARATE MOTORS FOR DRIVING A LIQUID HEAD AND A LIQUID RESERVOIR

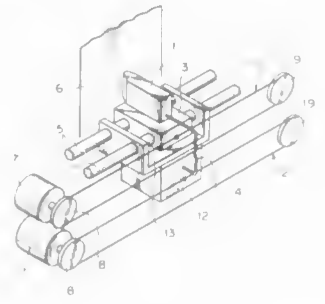
Hiroshi Sugiyama, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 233,955, Aug. 15, 1988, abandoned, which is a continuation of Ser. No. 26,177, Mar. 16, 1987, abandoned. This application Feb. 1, 1989, Ser. No. 304,897

Claims priority, application Japan, Mar. 20, 1986, 61-60861

Int. Cl.⁴ G01D *15/16;* B41J *3/04*

U.S. Cl. 346—140 R 20 Claims



1. A liquid jet recording apparatus comprising:

a recording head for discharging a liquid;

first moving means for moving said recording head along a recording medium;

storing means for storing the liquid to be supplied to said recording head; and

second moving means for moving said storing means independently from said first moving means in the same direction in which said first moving means moves said recording head.

4,882,598

METHOD AND AN APPARATUS FOR DETERMINING AN INDIVIDUAL'S ABILITY TO STAND EXPOSURE TO ULTRAVIOLET RADIATION

Hans C. Wulf, Charlottenlund, Denmark, assignor to Chromo-Light ApS, Charlottenlund, Denmark

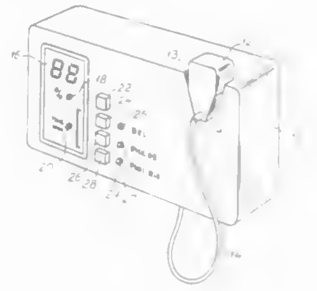
PCT No. PCT/DK86/00108, § 371 Date Jul. 24, 1987, § 102(e) Date Jul. 24, 1987, PCT Pub. No. WO87/01948, PCT Pub. Date Apr. 9, 1987

PCT Filed Sep. 26, 1986, Ser. No. 80,886

Claims priority, application Denmark, Sep. 26, 1985, 4370/85; Oct. 24, 1985, 4894/85

Int. Cl.⁴ G01J *1/00, 1/42*

U.S. Cl. 250—338.1 73 Claims



1. A method of determining an individual's ability to stand exposure to ultraviolet radiation without causing a skin reaction, such as skin cancer or erythema, comprising the following steps:

exposing at least part of said individual's skin surface to electromagnetic radiation of a predetermined spectral composition and of a predetermined intensity,

measuring the intensity of electromagnetic radiation reflected from said part of said individual's skin surface so as to determine the coefficient of reflection of said part to said electromagnetic radiation of said predetermined spectral composition, and

converting said coefficient of reflection into a measure representing said individual's ability to stand exposure to ultraviolet radiation without causing said skin reaction.

4,882,599

OVERHEAD PROJECTOR

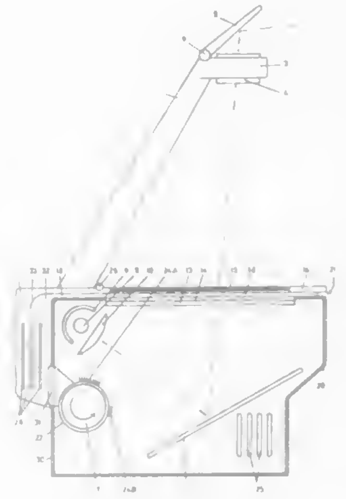
Peter-Hein Grunwald, Schlatt 215, FL 9491 Ruggell, Liechtenstein

Filed Mar. 29, 1988, Ser. No. 174,842

Claims priority, application Fed. Rep. of Germany, Mar. 31, 1987, 3710628

Int. Cl.⁴ G03B *21/00*

U.S. Cl. 353—60 15 Claims



1. An overhead projector comprising:

a housing having side walls, a bottom and a top comprising a Fresnel lens and a transparent writing plate overlying said Fresnel lens,

a light source in said housing and means in said housing for directing light from said light source up through said Fresnel lens and writing plate,

a support arm projecting up from one side of said housing and having an upper end overlying said writing plate,

an objective lens and deflection mirror mounted on said upper end of said support arm for projecting light from said writing plate onto a wall or screen,

a liquid crystal indicating device overlying said writing plate and comprising a frame, two transparent plates set in said frame with a space between them and provided on inner surfaces with electrodes and liquid crystals sandwiched between said plates, said liquid crystal lighting device being spaced over said writing plate to provide between said writing plate and said liquid crystal indicating device on air flow space having an air inlet at one side of said liquid crystal indicating device and an air outlet at an opposite side of said liquid crystal indicating device,

ventilation means in said housing for producing air flow over said light source and light directing means to cool them, said ventilator means also producing air flow through said air flow space between said writing plate and said liquid crystal indicating device from said air inlet to said air outlet to cool said liquid crystal indicating device, and

a housing for electronic elements, said electronic element

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housing being L-shaped with an upper portion on top of said projector housing and a rear part at the rear of said projector housing, said liquid crystal indicating device being connected by a hinge joint with said upper part of said electronic element housing.

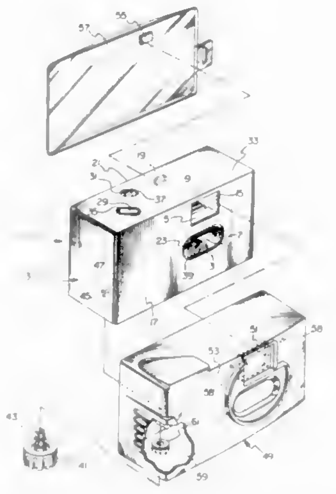
4,882,600
UNDERWATER DISPOSABLE SINGLE-USE CAMERA

Alan V. Van de Moere, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 7, 1989, Ser. No. 334,403

Int. Cl.⁴ G03B *17/08*

U.S. Cl. 354—64 5 Claims



1. An improved disposable single-use camera wherein (a) a plastic inner camera shell is pre-loaded with film and has a front viewfinder opening arranged in a front wall of said inner shell and a rear viewfinder opening arranged in a rear wall of the inner shell for viewing a subject to be photographed through said front and rear viewfinder openings and (b) a paper outer pack contains the inner shell and has a front opening arranged in a front wall of said outer pack and a rear opening arranged in a rear wall of the outer pack to be substantially aligned with the respective viewfinder openings in said inner shell, and wherein the improvement comprises:

a plastic transparent waterproof casing enclosing said outer pack and said inner shell, said transparent casing including a front plastic viewfinder lens element arranged on a front wall of the casing to be optically aligned with said front opening in the outer pack and said front viewfinder opening in the inner shell and a rear plastic viewfinder lens element arranged on a rear wall of said casing to be optically aligned with said rear opening in the outer pack and said rear viewfinder opening in the inner shell.

4,882,601
CAMERA WITH AN AUTOMATIC FOCUSING DEVICE

Nishinomiya Taniguchi, Nishinomiya; Tokuji Ishida, Daito; Toshio Norita, Sakai; Masataka Hamada, Minamikawachi, and Toshihiko Karasaki, Sakai, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 50,944, May 15, 1987, abandoned. This application Dec. 21, 1987, Ser. No. 136,811

Claims priority, application Japan, May 16, 1986, 61-113315

Int. Cl.⁴ G03B *3/10*

U.S. Cl. 354—407 12 Claims

1. A camera with an automatic focusing device comprising:

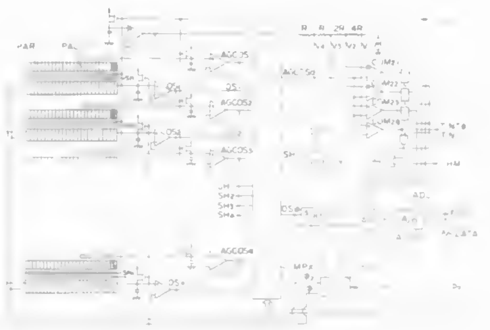
an objective lens mounted on a camera;

means for dividing an image formed by said objective lens into a plurality of zones;

means for obtaining a brightness distribution in each zone;

first means for detecting a rough defocus amount in each zone based on said brightness distribution of said zone so as to produce a plurality of rough defocus amount data;

means for selecting one zone based on the rough defocus amount data of the plurality of zones;



second means for detecting a precise defocus amount in a zone selected by said selecting means based on the brightness distribution contained in said selected zone, so as to produce a precise defocus amount data; and

means for driving said objective lens to an infocus condition based on said precise defocus amount data obtained from said selected zone.

4,882,602
PHOTOGRAPHIC CAMERA HAVING A PIEZO-ELECTRIC ACTUATING ELEMENT

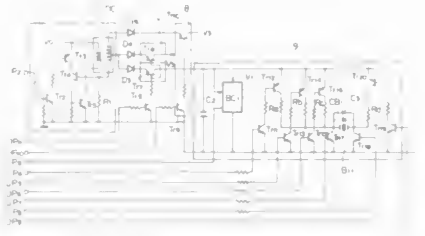
Yoshihiro Tanaka; Sadafusa Tsuji, both of Osaka; Yoshiaki Hata, Nishinomiya; Manabu Inoue, Kobe; Hiroshi Ootsuka, Sakai; Michihiro Iwata, Sakai; Fumiaki Ishito, Sakai, and Koh Hayama, Sakai, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaki, Japan

Division of Ser. No. 13,561, Feb. 11, 1987, abandoned. This application Jun. 8, 1988, Ser. No. 203,937

Claims priority, application Japan, Feb. 12, 1986, 61-29399

Int. Cl.⁴ G03B *3/00*

U.S. Cl. 354—457 4 Claims



1. A camera, comprising:

a power source;

boosting means for boosting a voltage of said power source;

charging means for accumulating therein energy boosted by said boosting means;

piezo-electric means;

driven means including a shutter connected to be actuated by said piezo-electric means;

driving and controlling means for driving and controlling said piezo-electric means by energy accumulated in said charging means; and

shutter opening speed controlling means having means for controlling a rate of current flow to be supplied to said piezo-electric means per unit time to control the actuating speed of said piezo-electric means and hence the opening speed of said shutter.

4,882,603
ORIGINAL DOCUMENT COVER DEVICE

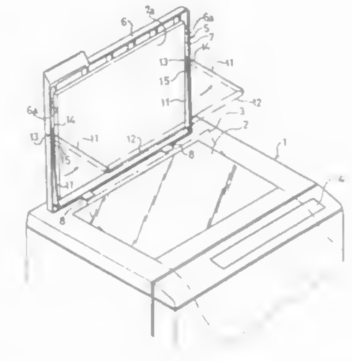
Toshio Sakata, Osaka, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed May 5, 1988, Ser. No. 190,675

Claims priority, application Japan, May 14, 1987, 62-72024[U]

Int. Cl.⁴ G03B *27/62*

U.S. Cl. 355—75 6 Claims



1. In an original document cover device for use in a copying apparatus which comprises:

(1) an original document platen defining a document placement region for placing an original document thereon, said document placement region having a perimeter;

(2) an original document cover which is to be opened and closed in relation to the document placement region of said original document platen;

(3) a pressing member rotatably movable over the original document against said original document platen for pressing the original document against said original document platen;

(4) a support member which is pivotably mounted on said original document cover and supporting said pressing member so as to move said pressing member from said document placement region to a region outside said perimeter of said document placement region during closing of said original document cover.

4,882,604
ELECTRONIC MACHINE HAVING TIME MEASURING FUNCTION

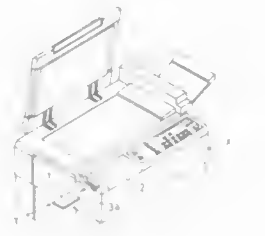
Akio Kato; Hiroaki Hamano, and Hideo Ito, all of Azuchi, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Aug. 11, 1988, Ser. No. 230,886

Claims priority, application Japan, Aug. 12, 1987, 62-202194

Int. Cl.⁴ G03G *15/00*

U.S. Cl. 355—201 15 Claims



1. An electronic machine having a main body and an auxiliary device removably attachable to the main body, comprising:

timepiece means disposed in said auxiliary device and including a timer for supplying current time information to said main body when mounted in said main body; and

control means for controlling said main body in response to said current time information.

4,882,605
ELECTROPHOTOGRAPHIC COPYING MACHINE

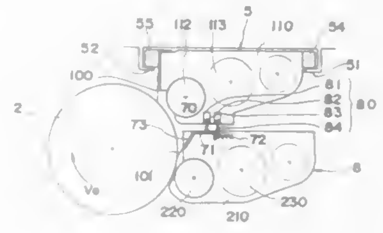
Masashi Sakamoto, Osaka, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Sep. 26, 1988, Ser. No. 249,336

Claims priority, application Japan, Sep. 25, 1987, 62-240337

Int. Cl.⁴ G03G *15/06*

U.S. Cl. 355—215 4 Claims



1. An electrophotographic copying machine which comprises:

rotatable photoreceptor;

developing means including a first removable unit and a second unit provided at downstream of said first removable unit with respect to the rotation of said photoreceptor;

first seal member arranged at said first unit for preventing toner from scattering;

second seal member which is arranged at said second unit for preventing toner from scattering and is movable to contact with said photoreceptor;

first moving means for moving said second seal member from a first state to be out of contact with the photoreceptor to a second state to be in contact therewith upon the removal of said first unit; and

second moving means for moving the second seal member from said second state to said first state upon the attachment of the first unit.

4,882,606
DEVICE FOR GUIDING PAPER TOWARD TRANSFER REGION

Hiroyuki Deguchi, Osaka, Japan, assignor to Mita Industrial Co., Ltd., Osaka, Japan

Filed Jul. 19, 1988, Ser. No. 221,419

Claims priority, application Japan, Jul. 21, 1987, 62-184306

Int. Cl.⁴ G03G *15/14, 15/16*

U.S. Cl. 355—274 9 Claims

1. A device for guiding paper toward a paper transfer region and a sensitive member, said device comprising:

an upper paper guide to be disposed adjacent the sensitive member;

a lower paper guide to be disposed below the upper paper guide, said lower paper guide comprising at least two elastic members, each said elastic member having a predetermined modulus of elasticity such that said lower paper guide adapts its overall elasticity according to the rigidity

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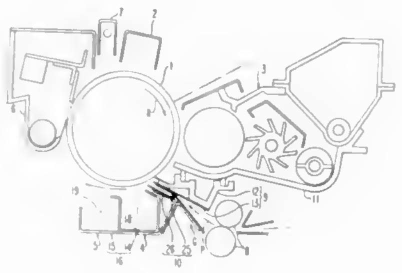
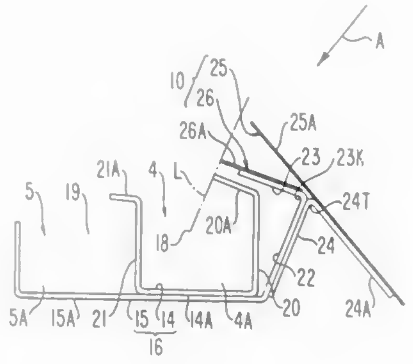
of a paper transferred toward said transfer member, and at least portions of said elastic members contacting the paper





when the paper is transferred having the properties of an electrical insulator.

4,882,607

OPTICAL SEMICONDUCTOR DEVICE

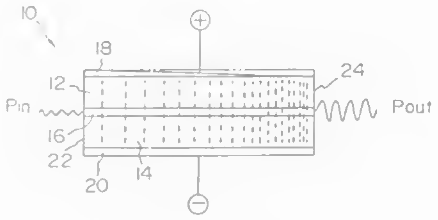
Hidetoshi Shinada, **Kanagawa, Japan**, assignor to Fuji Photo Film Co., Ltd., **Kanagawa, Japan**

Filed Oct. 28, 1988, Ser. No. 263,857

Claims priority, **application Japan**, Oct. 28, 1987, 62-272714

Int. Cl.⁴ H01L *31/12*

U.S. Cl. 357—19 12 Claims



1. An optical semiconductor device comprising a pair of semiconductor regions with electrodes provided on major surfaces of said semiconductor regions, and an active region having incident end and emission end faces and formed between said semiconductor regions, said optical semiconductor device amplifying light by increasing the photon density with carriers injected in said active region in response to the density of an electric current flowing through the region between said electrodes, wherein the injected carrier density distribution is continuously changed over the area between the light incident side and the light emission side.

4,882,608

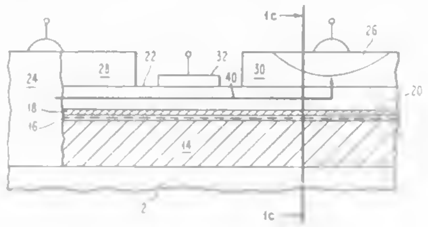
MULTILAYER SEMICONDUCTOR DEVICE HAVING MULTIPLE PATHS OF CURRENT FLOW

Theoren P. Smith, III, **Yorktown Heights, N.Y.**, assignor to International Business Machines Corporation, **Armonk, N.Y.**

Continuation-in-part of Ser. No. 12,575, Feb. 9, 1987, Pat. No. 4,812,886. This application Jul. 7, 1988, Ser. No. 216,590

Int. Cl.⁴ H01L *29/80*

U.S. Cl. 357—22 29 Claims



1. A multilayer semiconductor structure comprising:

a plurality of superimposed layers of semiconductor material disposed on a substrate essentially parallel to an exposed surface, at least two of said layers being conducting layers containing charge carriers, each of said at least two conducting layers being separated by a barrier region;

a first contact extending from said exposed surface through said plurality of layers to electrically contact each of said at least two conducting layers, a second contact separated from said first contact and extending from said exposed surface to electrically contact an uppermost of said at least two conducting layers, each of said at least two conducting layers defining an independent channel of current flow thereby providing at least two independent current paths between said first and second contacts; and

a carrier depletion control means disposed on said exposed surface between said first and second contacts and operable to selectively deplete charge carriers in the said at least two conducting layers sequentially.

4,882,609

SEMICONDUCTOR DEVICES WITH AT LEAST ONE MONOATOMIC LAYER OF DOPING ATOMS

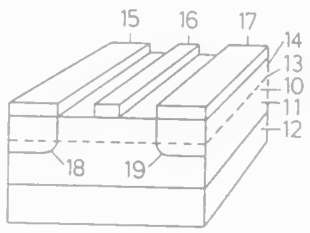
Erdmann Schubert; Klaus Ploog, both of **Stuttgart**; Albrecht Fischer, **Löchgau, all of Fed. Rep. of Germany**, and Yoshiji Horikoshi, **Tokyo, Japan, assignors** to Max-Planck Gesellschaft zur Forderung der Wissenschafter e.V., **Gottingen, Fed. Rep. of Germany**

Filed Nov. 14, 1985, Ser. No. 798,053

Claims priority, **application European Pat. Off.**, Nov. 19, 1984, 84113987.6

Int. Cl.⁴ H01L *29/80, 29/225, 45/00*

U.S. Cl. 357—22 4 Claims



1. A field effect transistor formed of compositional epitaxial material grown in layers on a planar substrate, comprising:

a first layer of a semiconductor material of a first composition, having a first bandgap, said first layer being substantially thickner than a monoatomic layer of the same material and being substantially undoped;

a second layer of a semiconductor material of a second composition having a second bandgap smaller than the first bandgap of the semiconductor material of the first composition, said second layer being substantially thicker than a monoatomic layer of the same material and being substantially undoped;

spaced apart source and drain regions extending through said second layer into said first layer;

a conductive channel extending between said source and drain regions; and

a gate region, disposed between said source and drain regions, overlying said conductive channel;

wherein said conductive channel is formed by at least one monoatomic layer of dopant material of only one conductivity type disposed in said first layer having the first bandgap, and having a doping atom concentration in the range from 10^{11} to 10^{14} cm^{-2}, whereby only some atomic positions of said atomic layer are occupied by doping atoms, and wherein said at least one monoatomic layer interconnects said source and drain regions and lies in a plane parallel to said planar substrate.

4,882,610

PROTECTIVE ARRANGEMENT FOR MOS CIRCUITS

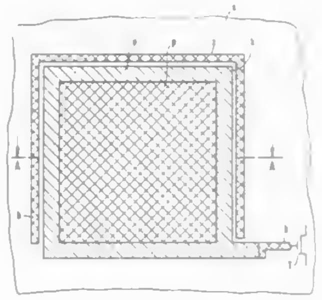
Ulrich Theus, **Gundelfingen, and** Burkhard Giebel, **Denzlingen, both of Fed. Rep. of Germany, assignors** to Deutsche ITT Industries GmbH, **Freiburg, Fed. Rep. of Germany**

Filed Oct. 6, 1988, Ser. No. 254,071

Claims priority, **application European Pat. Off.**, Oct. 29, 1987, 87115862; Mar. 29, 1988, 87105063

Int. Cl.⁴ H01L *29/78*

U.S. Cl. 357—23.13 6 Claims



1. An improvement in a protective arrangement for an insulated-gate field-effect transistor integrated circuit (MOS circuit) which lies between a pad (p) on an insulating layer (i) covering the substrate (s) of the MOS circuit and a transistor to be protected including a resistor of the opposite conductivity type which is incorporated in the substrate (s), said resistor connecting the pad to a terminal of the transistor:

wherein the resistor is comprised of a doped region (e) in said substrate (s) whose areal form is similar to that of the pad (p) and whose area supporting the pad, which is generally the central area of the region (e) and to which central area low-resistance contact is made via the pad, is greater than the pad area, and

wherein the edge of the region (e) is accompanied, at least in part, by an elongate region (z, z1, z2) of minimum width spaced a minimum distance from said region (e), which:

(1) is of the same conductivity type and has the same resistivity as the region (e); and

(2) is contacted at its surface by means of an interconnection track (b) connected to circuit ground, the connection between the surface and the interconnection track (b) having low resistance.

4,882,611

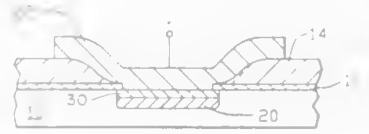
DOUBLE LAYER VOLTAGE-PROGRAMMABLE DEVICE AND METHOD OF MANUFACTURING SAME

Ilan A. Blech, **Sunnyvale**; Levy Gerzberg, **Pala Alto, all of Calif.**; Yosef Y. Shacham, **Haifa, Israel**; Alexander Sinar, **Cupertino, and** Eric R. Sirkin, **Palo Alto, both of Calif., assignors** to Zoran Corporation, **Santa Clara, Calif.**

Filed Jul. 21, 1988, Ser. No. 222,653

Int. Cl.⁴ H01L *45/00, 27/02, 29/34*

U.S. Cl. 357—51 6 Claims



1. A non-erasable voltage-programmable semiconductor device comprising

a semiconductor material having a doped region therein of one conductivity type,

an amorphized layer of said one conductivity type in said doped region abutting a surface, and

a surface layer on said amorphized layer, said surface layer having a resistivity higher than the resistivity of said amorphized layer prior to programming of said device and a permanently lower resistivity after programming.

4,882,612

POWER SEMICONDUCTOR DEVICE

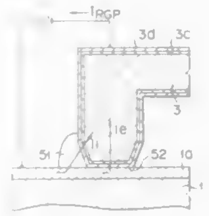
Yasunori Usui, **Yokohama**; Hiroshi Okamura, **Kawasaki**; Yoshinari Uetake, **Sagamihara, and** Takashi Fujiwara, **Yokohama, all of Japan, assignors** to Kabushiki Kaisha Toshiba, **Kawasaki, Japan**

Filed May 4, 1987, Ser. No. 45,468

Claims priority, **application Japan**, May 17, 1986, 61-111808

Int. Cl.⁴ H01L *23/42*

U.S. Cl. 357—79 6 Claims



6. A power semiconductor device according to claim 1, wherein the foil member is constructed such that it can be fitted around the control electrode.

4,882,613

METHOD OF AND APPARATUS FOR MOTION VECTOR COMPENSATION IN RECEIVING TELEVISION SIGNAL BASED ON MUSE SYSTEM

Takahiko Masumoto, **Toyonaka, Japan, assignor** to Sanyo Electric Co., Ltd., **Moriguchi, Japan**

Filed Oct. 19, 1988, Ser. No. 259,812

Claims priority, **application Japan**, Oct. 20, 1987, 62-264147

Int. Cl.⁴ H04N *9/64*

U.S. Cl. 358—37 19 Claims

11. An apparatus for horizontal motion vector compensation which carries out compensation for a chrominance signal included in a received television signal based on an MUSE system and time-compressed at a predetermined compression

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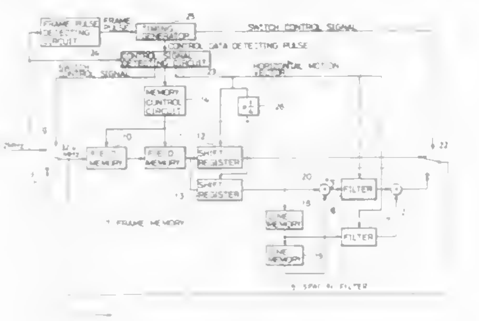
rate in response to a horizontal motion vector multiplexed on said television signal, comprising:

- horizontal motion vector detecting means (23) for detecting a horizontal motion vector signal indicating the amount of a horizontal motion vector from said television signal,
- interframe interpolating means (7) for carrying out interframe interpolation using a time compressed chrominance signal in the present frame and a time compressed chrominance signal in any of the previous frames,
- delay amount outputting means (26) responsive to an output of said horizontal motion vector detecting means (23) for outputting a value obtained by dividing said amount of the horizontal motion vector by the reciprocal of said compression predetermined rate as the amount of delay,



- delay providing means (13; 602) responsive to an output of said delay amount outputting means (26) for providing delay to said time compressed chrominance signal in any of the previous frames in said interframe interpolating means (7), and
- filter means (15; 603) for compensating for said time compressed chrominance signal in any of the previous frames in said interframe interpolating means (7) in accordance with predetermined processing corresponding to the remainder obtained by dividing said amount of the horizontal motion vector by the reciprocal of said predetermined compression rate when the remainder is not 0.

4,882,614
MULTIPLEX SIGNAL PROCESSING APPARATUS

Sadashi Kageyama, Hirakata; Yoshio Abe, Ibaraki; Yoshio Yasumoto, Nara; Shuji Inoue, Neyagewa; Hitoshi Takai, Hirakata; Mitsujiro Matsumoto, Shijyonawate; Kouji Aono, Saijyo; Kiyoshi Uchimura, Hirakata, and Eiji Iwasaki, Neyagawa, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

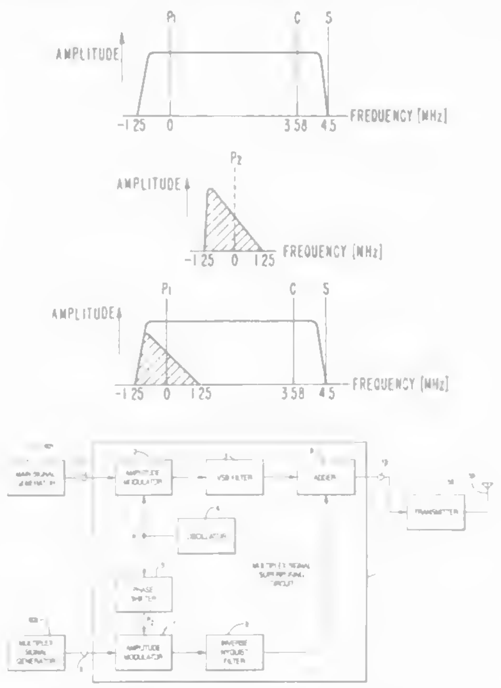
Filed Jul. 7, 1987, Ser. No. 70,804

Int. Cl.⁴ H04N *7/08, 11/12*

U.S. Cl. 358—12 33 Claims

1. A multiplex signal processing apparatus in a television signal transmitting system, comprising:

- a main signal generating means for generating a television signal as a main signal;
- a multiplex signal generating means for generating a multiplex signal;
- a carrier generating means for generating a first carrier;
- a first amplitude-modulating means for amplitude modulating said carrier by said main signal to obtain a first vestigial sideband, amplitude-modulated signal;
- a phase shifting means for shifting the phase of said first carrier by 90° to obtain a second carrier;
- a second amplitude-modulating means for amplitude-modulating said second carrier by said multiples signal to obtain a double sideband, amplitude-modulated signal;
- an inverse Nyquist filter having a Nyquist characteristic for filtering said double sideband, amplitude modulated signal to obtain a second vestigial sideband, amplitude-modulated signal, said inverse Nyquist filter having a frequency characteristic which is substantially symmetrical with respect to the frequency of said first carrier to a frequency characteristic of a Nyquist filter which is provided in a video detecting stages of a television receiver;



- an adding means for adding said first and second vestigial sideband, amplitude-modulated signals to obtain a multiplexed signal; and
- a transmitting means for transmitting said multiplexed signal. signal.

4,882,615
VIDEO SIGNAL PROCESSING SYSTEM

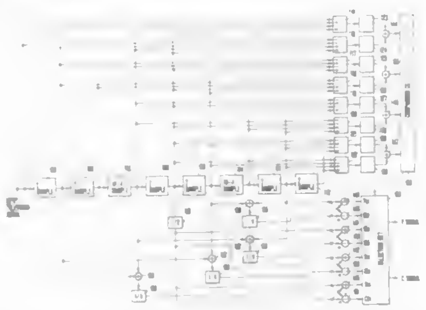
Katsuji Yoshimura; Tadayoshi Nakayama; Hisashi Ishikawa, and Chikara Sato, all of Kanagawa, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 11,515, Feb. 5, 1987, abandoned. This application Sep. 28, 1988, Ser. No. 252,024

Claims prinrity, application Japan, Feb. 10, 1986, 61-025749; Feb. 10, 1986, 61-025750; Feb. 10, 1986, 61-025751; Feb. 10, 1986, 61-025752; Feb. 10, 1986, 61-025753; Feb. 14, 1986, 61-028949

Int. Cl.⁴ H04N *9/78*

U.S. Cl. 358—31 18 Claims



1. A video processing system for use in an apparatus that receives a composite television signal having frequency-multiplexed luminance and chrominance signals, in which said composite color television signal is divided into a plurality of picture element signals by sampling it, and the luminance and chrominance signals frequency-multiplexed in each of said plurality of picture element signals are separated, comprising:

- (a) remark picture element signal extracting means for selecting an arbitrary one of said plurality of picture element signals as a remark picture element signal;
- (b) first reference picture element signal extracting means for selecting as first reference picture element signals a first plurality of said sampled picture element signals whose chrominance signal frequency-multiplexed therein is of the same phase as that of the chrominance signal frequency-multiplexed in said remark picture element signal;
- (c) second reference picture element signal extracting means for selecting as second picture element signals a second plurality of said sampled picture element signals whose chrominance signal frequency-multiplexed therein is of phase reverse to that of the chrominance signal frequency-multiplexed in said remark picture element signal;
- (d) computer picture element signal forming means for forming plural kinds of computed picture element signals by receiving said remark picture element signals extracted by said remark picture element signal extracting means and said plurality of second reference picture element signals extracted by said second reference picture element signal extracting means and computing said computed picture element signals by use of said remark picture element signal and part of said plurality of second reference picture element signals;
- (e) correlation state signal output means arranged to input said remark picture element signal extracted by said remark picture element signal extracting means, said plurality of first reference picture element signals extracted by said first reference picture element signal extracting means and said plurality of second reference element signals extracted by said second reference picture element signal extracting means, and to effect processing of said remark picture element signal, a part of said plurality of first reference picture element signals and a part of said plurality of second reference picture element signals, thereby outputting a plurality of correlation state signals representing correlation of the respective ones of said plurality of first reference picture element signals and the respective ones of said plurality of second reference picture element signals relative to said remark picture element signal; and
- (f) separation means for selecting part of said plurality of computed picture element signals formed by said computed picture element signal forming means on the basis of said plurality of correlation state signals provided by said correlation state signal output means and separating and providing luminance signals and chrominance signals frequency-multiplexed in said remark picture element signal by using said selected part of said computed picture element signals.

4,882,616
COLOR FILTER FOR A SOLID STATE IMAGING DEVICE

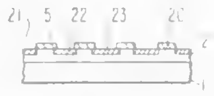
Daisuke Manabe, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 48,493, Apr. 24, 1987, abandoned, which is a continuation of Ser. No. 886,950, Jul. 23, 1986, which is a continuation of Ser. No. 796,689, Nov. 12, 1985, which is a continuation of Ser. No. 709,839, Mar. 8, 1985, which is a continuation of Ser. No. 393,252, Jun. 29, 1985, abandoned. This application Jun. 8, 1988, Ser. No. 205,591

Claims priority, application Japan, Jun. 29, 1981, 56-100808; Jun. 29, 1981, 56-100810

Int. Cl.⁴ H04N *9/07;* **G03C** *5/00*

U.S. Cl. 358—44 7 Claims



1. A color imaging device comprising:

- a solid state imaging device comprising a plurality of photosensitive portions and a plurality of non-photosensitive portions, surfaces of said photosensitive portions positioned lower than said non-photosensitive portions;
- a dyeable resin layer formed on said solid state imaging device to form a flat surface, said dyeable resin layer being in contact with both of said photosensitive portions and said non-photosensitive portions;
- a plurality of dyed areas formed in said dyeable resin layer positioned on said photosensitive portions, said dyed areas being dyed in a plurality of colors;
- a plurality of non-dyed areas in said dyeable resin layer positioned on said non-photosensitive portions, said dyed areas being separated from each other by said non-dyed areas; and
- a plurality of photo-interception areas on said non-dyed areas to define said dyed and said non-dyed areas.

4,882,617
PROJECTION DEVICE AND ASSOCIATED ELECTRO-OPTIC MONOCHROME DISPLAY DEVICE WITH PHOSPHOR LAYER AND INTERFERENCE FILTERS

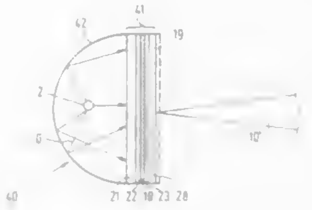
Leendert Vriens, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 17, 1987, Ser. No. 134,433

Claims priority, application Netherlands, Dec. 24, 1986, 8603299

Int. Cl.⁴ H04N *9/31*

U.S. Cl. 358—60 38 Claims



27. An illumination source comprising a space accommodating a radiation source and bounded by a first flat wall, and a second reflective wall,

- characterized in that the first wall is provided with at least one layer of a material luminescing in one colour, which layer can be excited by the radiation source,
- and in that a first interference filter is arranged between the radiation source and the layer of luminescent material, which filter substantially completely passes radiation suitable for excitation and substantially completely reflects radiation generated in the luminescent material,
- and in that a second interference filter is arranged on the other side of the layer of luminescent material, which second filter has a high transmission for light of the desired spectral characteristic which is emitted by the luminescent layer at small angles to the normal of the second filter, and in which the reflection considerably increases for light rays of the said spectral characteristic which extend at an angle of more than 20° to 35° to the normal on the second filter.

4,882,618
FM SIGNAL DEMODULATOR FOR VIDEO SIGNAL REPRODUCING APPARATUS

Masaki Tsuji, Fukaya, Japan, assignor to Kabushiki Kaisha Toshiba, Kanagawa, Japan

Continuation of Ser. No. 38,661, Apr. 15, 1987, abandoned. This application Jan. 27, 1989, Ser. No. 302,140

Int. Cl.⁴ H04N *5/213*

U.S. Cl. 358—167 11 Claims

1. An apparatus having means responsive to video input signals for generating FM luminance signals, comprising:

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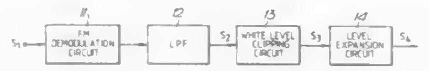
demodulation means for converting the FM luminance signals into base band luminance signals; and

noise removing means including clipping means and amplitude expanding means for clipping and amplitude expanding the base band luminance signals for substantially removing noise carrying portions therefrom while maintaining the amplitude of the base band luminance signals at a predetermined level.



4,882,619

HIGH RESOLUTION IMAGE PICKUP SYSTEM WITH COLOR DISPERSION MEANS

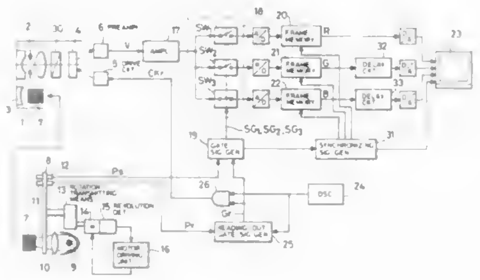
Akira Hasegawa; Susumu Takahashi, both of Hachiouji; Kiyoshi Tsuji, Tanashi; Kimihiko Nishioka, Hachiouji, and Hiroshi Matsui, Hino, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

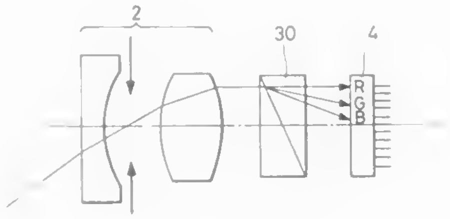
Filed Apr. 6, 1987, Ser. No. 35,013

Claims priority, application Japan, Apr. 7, 1986, 61-79421; Apr. 25, 1986, 61-96554

Int. Cl.⁴ H04N *9/077;* **A61B** *1/06;* **G02B** *1/24*

U.S. Cl. 358—55 5 Claims





1. A high resolution image pickup system with color dispersion means comprising:

illuminating means capable of sequentially irradiating at least three kinds of color lights different from each other in wavelength onto an object under observation;

an objective lens system forming images of said object with said color lights coming from said object irradiated by said illuminating means;

a single solid-state image sensor provided with a plurality of picture elements regularly arrayed on a light-receiving surface thereof and receiving said object images formed, by said objective lens system; and

signal processing means connected to said image sensor for producing an image signal representing a color image of said object based on a photo-electric signal supplied from said image sensor, wherein:

color dispersion means is provided to be disposed in an optical path through which respective color lights coming from said object reach said image sensor and to receive and separately emanate said three kinds of color lights entering through the same path so that they are incident on different positions of said image sensor in accordance with their wavelengths;

said object images with said respective color lights are formed at positions different from each other on the light receiving surface of said solid-state image sensor through said objective lens system and said color dispersion means;

a compound image signal representing said object is produced in said signal processing means by superposing said image signals of said respective color lights obtained on the basis of said photoelectric signals supplied from said image sensor in response to each of said object images with said respective color lights; and

a color object image is represented observably by supplying said compound image signal to display means.

4,882,620

COLOR IMAGE READING APPARATUS WITH DISTRIBUTING TYPE LENS ARRAY AND SCAN RESPONSIVE SHUTTERS

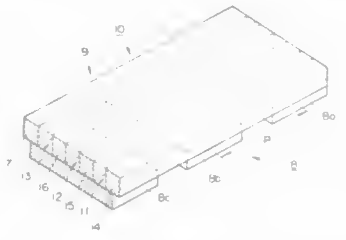
Norimltu Shimizu, and Chikaho Ikeda, both of Iwatsuki, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Apr. 27, 1988, Ser. No. 186,605

Claims priority, application Japan, Aug. 17, 1987, 62-203786

Int. Cl.⁴ H04N *1/078, 1/46*

U.S. Cl. 358—75 4 Claims



1. A color image reading apparatus for scanning an original comprising:

an image sensor having a plurality of sensor elements each being independently disposed and corresponding to each pixel in a main scanning direction of the original;

a refractive index distributing type lens array for simultaneously imaging three pixels neighboring one another along a sub-scanning direction of said original on three different positions of each of said sensors;

a red filter, a blue filter, and a green filter each being disposed on each of said three different positions of each of said sensors; and

first, second, and third shutters each being disposed between each of said filters and each of said sensors, said shutters being made to be independently and sequentially opened and closed in a predetermined timing in response to the movement of said original in said sub-scanning direction.

4,882,621

COLOR IMAGE RECORDING APPARATUS

Akio Suzuki, and Yoshlhiro Takada, both of Yokohama, Japan, asslgnors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 6, 1987, Ser. No. 117,528

Claims priority, application Japan, Nov. 10, 1986, 61-265587

Iot. Cl.⁴ G03F *3/08*

U.S. Cl. 358—80 6 Claims

1. A color image recording apparatus comprising:

input means for inputting color image information representing a color image;

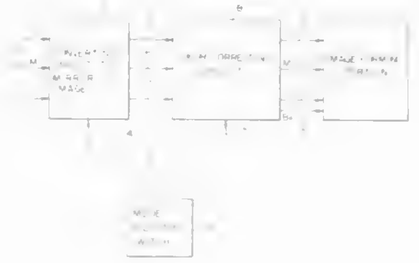
color correcting means for performing color correction of the color image information, and providing image signals

representing the color-corrected image information, using selectable correcting parameters;

selecting operable converting means for performing mirror-image conversion of the color image information;

image forming means for forming an image on a recording material based on the image signals from said color correcting means; and

mode selecting means for changing correcting parameters of said color correcting means and instructing a converting operation by said converting means, wherein said mode selecting means can select from between a first mode of operation, when a normal recording material is to be used to record the color image on a front surface of the recording material so that the color image will appear on the front surface, and a second mode of operation, when a mirror-image recording material is to be used to record the color image on a back surface of the mirror-image recording material so that the color image will appear o t he front surface, and wherein said mode selecting means, when the first mode is selected, selects correcting parameters of said color correcting means for recording on the normal recording material with no mirror-image conversion by said converting means and, when the second mode is selected, selects correcting parameters of said color correcting means for recording on the mirror-image recording material and operates said converting means to provide mirror-image conversion.



4,882,622

SILHOUETTE CUTTING APPARATUS

Tetsuji Uzuda, Kawagoe; Takashi Kuramoto, Oomiya; Takeo Ooga, Saitama; Teruo Suzuki, Kamifukuoka; Masaru Koizumi, Funabashi, and Takeo Kondo, Tokyo, all of Japan, assignors to Toppan Printing Co., Ltd., Tokyo, Japan

Filed Sep. 16, 1988, Ser. No. 245,214

Claims priority, application Japan, Sep. 18, 1987, 62-234153; Sep. 18, 1987, 62-234154; Mar. 8, 1988, 63-29859[U]

Int. Cl.⁴ H04N *9/11, 1/46*

U.S. Cl. 358—80 6 Claims

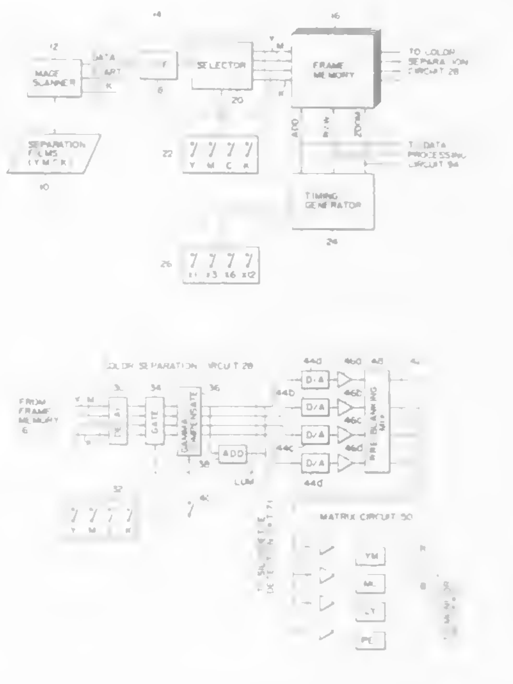
1. A silhouette cutting apparatus comprising:

input means for reading a separation film to obtain image information thereof;

display means for displaying the image information obtained by said input means;

means for designating a point in a desired figure of the displayed image;

detection means for comparing one of brightness and color of the designated point and that of other points of the displayed image so as to detect points of a boundary where their difference exceeds a predetermined value, thereby detecting silhouette image information of the desired image; and



an output section for forming a mask in accordance with the detected silhouette image information.

4,882,623

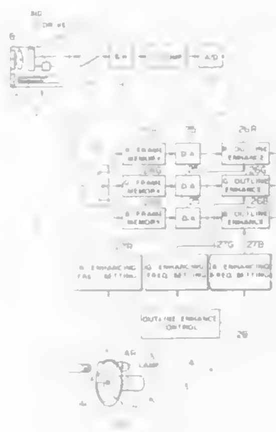
SIGNAL PROCESSING APPARATUS FOR ENDOSCOPE CAPABLE OF CHANGING OUTLINE ENHANCEMENT FREQUENCY

Akinobu Uchikubo, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Aug. 11, 1988, Ser. No. 230,816

Int. Cl.⁴ A61B *1/04;* **H04N** *7/18*

U.S. Cl. 358—98 18 Claims



1. A signal processor for processing signals obtained from an electronic endoscope having an image pickup device, said signal processor, comprising:

video signal processing means operably connected to said image pickup device for processing an output signal from said image pickup device so as to obtain desired video signals;

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outline enhancing means operably connected to said image pickup device including said video signal processing means for changing a frequency range and for processing an output signal from said image pickup device to thereby effect outline enhancement; and

means operably connected to said outline enhancing means for selecting and setting said frequency range relating to the operation of said outline enhancing means.

4,882,624

SYNCHRONIZING SIGNAL SEPARATION CIRCUIT FOR A TELEVISION RECEIVER

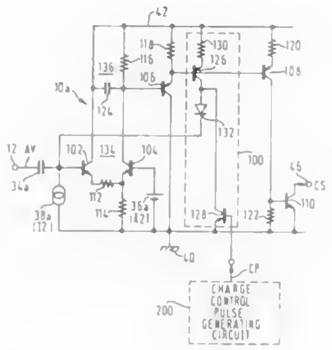
Hajime Sumiyoshi, Fukaya, Japan, assignor to Kabushiki Kaisha Toshiba, Kanagawa, Japan

Filed Mar. 11, 1988, Ser. No. 167,141

Claims priority, application Japan, Mar. 13, 1987, 62-56752

Int. Cl.⁴ H04N *5/08*

U.S. Cl. 358—153 9 Claims



1. A synchronizing signal separation circuit for separating a composite synchronizing signal having a variable peak voltage subject to changes from a composite video signal, the composite synchronizing signal including a vertical synchronizing signal having a predetermined level for controlling vertical scanning in a television receiver, comprising:

composite separation means, including a coupling capacitor having a relatively low capacitance, for separating the composite synchronizing signal from the composite video signal received from a source of video signals; and

charge control means including a timing circuit for controlling the charging and discharging of the coupling capacitor, for maintaining the stability and the predetermined level of the vertical synchronizing signal after changes in synchronizing signal peak voltage.

4,882,625

IMPROVED DEFINITION TELEVISION SET WITH EXTERNAL LUMINANCE AND CHROMINANCE SIGNAL INPUTS

Toru Akiyama, Tokorozawa, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Nov. 15, 1988, Ser. No. 271,580

Claims priority, application Japan, Feb. 19, 1988, 63-37044

Int. Cl.⁴ H04N *3/32*

U.S. Cl. 358—140 3 Claims

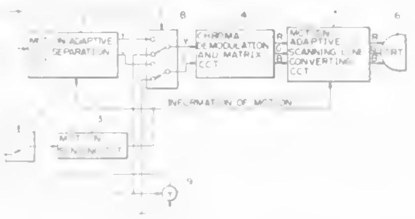
1. In an improved definition television (IDTV) set including,

a motion sensing means for sensing motion of images and generating a motion sensing signal,

a motion adaptive Y/C separating circuit separating a composite video signal into a luminance (Y) signal and a chrominance (C) signal on the basis of said motion sensing signal,

a chroma demodulation and matrix circuit generating three primary color signals of red (R), green (G), and blue (B) from separate luminance and chrominance signals separated at said Y/C separating circuit, and

a motion adaptive scanning line converting circuit for converting a line scanning method of said three primary color signals to a progressive line scanning, while effecting a field interpolation operation operation or a line interpolation operation to said three primary color signals on the basis of said motion sensing signal, wherein the improvement comprises: a first selecting means for alternatively supplying external luminance and chrominance signals or said separate luminance and chrominance signals to said chroma demodulation and matrix circuit; and a second selecting means for alternatively supplying at least said external luminance signal or said composite video signal to said motion sensing means.


8
4
6
MOTION ADAPTIVE SEPARATION
Y
CHROMA DEMODULATION AND MATRIX CCT
R
G
B
MOTION ADAPTIVE SCANNING LINE CONVERTING CCT
CRT
INFORMATION OF MOTION
3
9

4,882,626

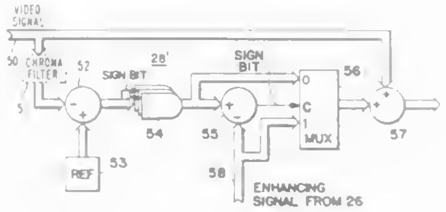
SIGNAL COMBINING CIRCUITRY

Russell T. Fling, Noblesville, and Donald H. Willis, Indianapolis, both of Ind., assignors to RCA Licensing Corporation, Princeton, N.J.

Continuation-in-part of Ser. No. 190,316, May 4, 1988, abandoned. This application Dec. 27, 1988, Ser. No. 290,859

Int. Cl.⁴ H04N *5/14*

U.S. Cl. 358—166 19 Claims



1. Signal combining means comprising:

first and second input terminals for receiving first and second input signals;

a source of a reference value;

first means, coupled to said source and said first input terminal, for offsetting the amplitude values of said first input signal and providing an offset signal;

second means, coupled to said first means and to said second input terminal, for providing said second input signal only when the combination of said first and second input signals will produce a combined signal having amplitude values which are not in a predetermined range of values; and

third means, coupled to said first input terminal and to said second means for combining said first input signal and signal provided by said second means.

4,882,627

NOISE REDUCTION SYSTEM

Heinz-Werner Keesen, and Hartmut Peters, both of Hanover, Fed. Rep. of Germany, assignors to Deutsche Thomson-Brandt GmbH, Villingen-Schwenningen, Fed. Rep. of Germany

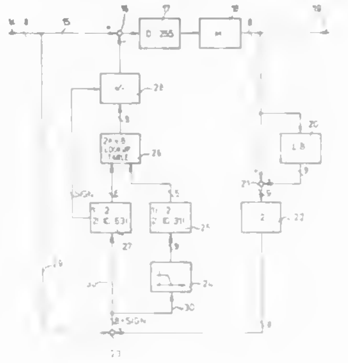
PCT No. PCT/EP87/00281, § 371 Date Feb. 8, 1988, § 102(e) Date Feb. 8, 1988, PCT Pub. No. WO87/07806, PCT Pub. Date Dec. 17, 1987

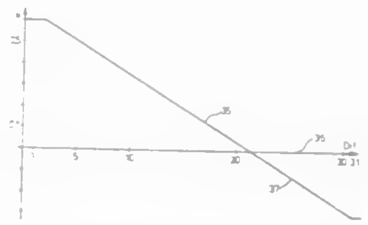
PCT Filed May 30, 1987, Ser. No. 163,827

Claims priority, application Fed. Rep. of Germany, Jun. 7, 1986, 3619222; Jun. 7, 1986, 3619223

Int. Cl.⁴ H04N *5/213*

U.S. Cl. 358—166 19 Claims





1. In a noise reduction system for a digitalized video signal, the video signal including at least one of a luminance signal and a chrominance signal, the system including at least one memory means for storing and outputting an enhanced video signal, a filter receiving the output of said at least one memory means and producing a filtered output signal, signal difference forming means for forming a difference signal between the filtered output signal and the input signal, a correction circuit receiving said difference signal, and an algebraic adder for adding a correction produced by said correction circuit to the input video signal to produce the enhanced video signal, the improvement wherein said correction circuit weights said difference signal with a factor k, and said factor k has positive and negative values.

4,882,628

AMPLITUDE CHARACTERISTICS OF TV VERTICAL FREQUENCY SIGNAL

Yoshio Sugimori; Yousai Araki; Tadao Kurosaki, and Joji Urano, all of Tokyo, Japan, assignors to Nippon Television Network Corporation, Tokyo, Japan

Filed Jan. 23, 1989, Ser. No. 299,377

Claims priority, application Japan, Oct. 31, 1988, 63-275382

Int. Cl.⁴ H04N *5/213, 5/208, 9/64*

U.S. Cl. 358—167 3 Claims

1. An amplitude characteristics improving system for vertical TV frequency signal, comprising first means for operating amplitudes of a luminance signal obtained by a matrix operation of an output signal of a TV camera, a first signal obtained by delaying said luminance signal by one horizontal scan time and a second signal obtained by delaying said luminance signal by two horizontal scan time, second means for operation said luminance signal, said first signal, said second signal, a third signal obtined by delaying said luminance signal by one field and one horizontal scan time and a fourth signal obtained by delaying said luminance signal by one field and two horizontal scan time and third means responsive to an output of either said first means or said second means to provide an improved vertical TV frequency signal.

4,882,629

ADAPTIVE EXPOSURE CONTROL SYSTEM

James L. Faulkerson, Woodside; Raymond L. Picard, Scotts Valley; Edward J. Menard, Sunnyvale; Sanford M. Bennett, Mountain View; Timothy J. McCarthy, San Jose; Edwin S. Foden, Sunnyvale; Michael A. Gipe, Cupertino; Allan A. Moluf, San Jose; Michael W. Jacobs, Sunnyvale, and Boatner Bruce E., San Jose, all of Calif., assignors to Everex Ti Corporation, Fremont, Calif.

Division of Ser. No. 48,100, May 8, 1987, which is a continuation-in-part of Ser. No. 912,834, Sep. 26, 1986. This application Dec. 9, 1988, Ser. No. 282,332

Int. Cl.⁴ H04N *1/04*

U.S. Cl. 358—464 10 Claims

1. Optical scanning apparatus employing adaptive scanner exposure control, comprising:

an image sensor array of photosensitive pixel elements;

means for exposing said pixel elements during sequential exposure intervals of selectable duration for capturing sequential images of the portion of said surface within the field of view of said array;

means for reading out from said imaging array after each exposure interval thereof resulting digital data values for said pixel elements and providing sequential frames of binary-valued image data wherein one possible value for each pixel indicates a white pixel and the other possible value indicates a black pixel;

means responsive to a scanner "initiate" signal for adaptively determining an exposure interval duration for said surface, said means comprising a means for measuring the reflectivity of a background portion of said surface, comprising:

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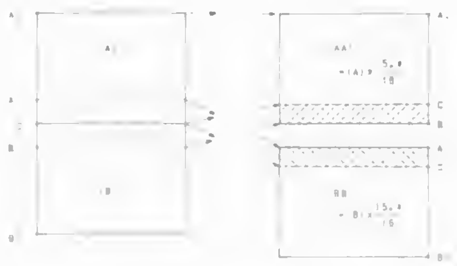
means for providing an initial exposure interval duration;
means for capturing an image of a background portion of said surface with said imaging array employing said initial exposure interval duration;
means for determining the number of black pixels in said resulting image;
means for repetitively adjusting said exposure interval duration, capturing an image of said background portion and determining the number of black pixels in said resulting image; and
means responsive to said black pixel number determinations for setting said exposure time to an exposure value which provides a substantially zero black pixel count in said image of said background portion.

4,882,630
PRINTING APPARATUS AND FACSIMILE EQUIPMENT

Hideya Yamaguchi, Hashima; Hiroyuki Hayasaki, Ogaki; Masamichi Kawakami, Hashima; Yuji Houjiyou, Hashima; Yoshihiro Hobo, Hashima; Youichirou Arimatsu, Anpachi; Yasunori Tsuji, Hashima; Masaaki Hasegawa, and Seiji Katou, both of Anpachi, all of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Filed May 16, 1988, Ser. No. 195,104
Claims priority, application Japan, Jun. 12, 1987, 62-147368
Int. Cl.⁴ H04N *1/393*
U.S. Cl. 358—451 28 Claims



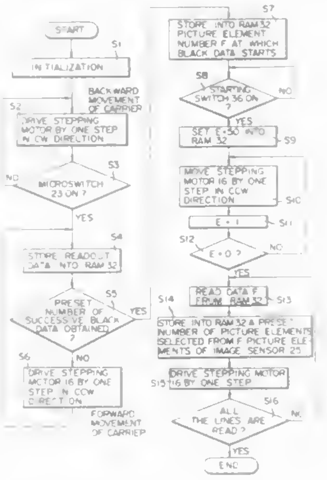
1. A printing apparatus comprising;
an image reading means which reads an original as dot data and outputs the dot data as image data;
an image memory which stores at least one sheet of image data read by said image reading means;
a printing means which prints the image data stored in said image memory as a dot image whose ratio of resolutions in the main scanning direction and subscanning direction is x:y; and
an image processing circuit which, when the ratio of resolutions of the data read out from said image memory as the data to be printed in the main scanning direction, and the data read out from said image memory as the data to be printed in the subscanning direction is X:Y (where $(x/X)\neq(y/Y)$), enlarges or reduces said data to be printed in the main scanning direction and said data to be in the subscanning direction to the ratio of $(x/X):(y/Y)$ to give them to said printing means.

4,882,631
IMAGE READING DEVICE

Kazunori Mine; Keisuke Murakami, and Hiromasa Urata, all of Shizuoka, Japan, assignors to Tokyo Electric Co., Ltd., Tokyo, Japan

Filed Nov. 8, 1988, Ser. No. 268,451
Claims priority, application Japan, Nov. 10, 1987, 62-283696
Int. Cl.⁴ H04N *1/12*
U.S. Cl. 358—471 6 Claims

1. An image reading device comprising:
an original table having a surface area defined as a reading section for reading the image of the original;
a mark positionedadjacent to one end of said original table in the lengthwise direction of the reading section and having a light reflection factor different from that of the surroundings, said mark having a first side extending in a sub-scanning direction which is substantially the same as the lengthwise direction of said reading section and a second side extending from the first side towards said reading section at an angle with respect to the first side smaller than an angle made between the first side and a main scanning direction which is substantially the same as the width direction of said reading section;
a carrier driven towards said reading section across the mark in the sub-scanning direction;
illumination means for illuminating the original and mark;


START
S1
INITIALIZATION
BACKWARD MOVEMENT OF CARRIER
S2
DRIVE STEPPING MOTOR BY ONE STEP IN CW DIRECTION
S3
MICROSWITCH 23 ON ?
NO
YES
S4
STORE READOUT DATA INTO RAM 32
S5
PRESET NUMBER OF SUCCESSIVE BLACK DATA OBTAINED ?
YES
NO
S6
DRIVE STEPPING MOTOR 16 BY ONE STEP IN CCW DIRECTION
FORWARD MOVEMENT OF CARRIER
S7
STORE INTO RAM 32 PICTURE ELEMENT NUMBER F AT WHICH BLACK DATA STARTS
S8
STARTING SWITCH 36 ON ?
NO
YES
SET E=50 INTO RAM 32
S9
MOVE STEPPING MOTOR 16 BY ONE STEP IN CCW DIRECTION
S10
E-1
S11
S12
E=0 ?
NO
YES
READ DATA F FROM RAM 32
S13
S14
STORE INTO RAM 32 A PRESET NUMBER OF PICTURE ELEMENTS SELECTED FROM F PICTURE ELEMENTS OF IMAGE SENSOR 25
DRIVE STEPPING MOTOR 16 BY ONE STEP
S15
S16
ALL THE LINES ARE READ ?
NO
YES
END

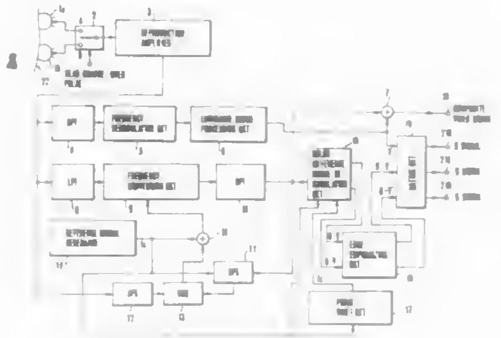
an image sensor fixed on said carrier and having a plurality of light receiving elements arranged in a line to read the image in the main scanning direction; and
reading control means for detecting that image data corresponding to the light reflection factor of said mark is output from at least a preset number of successive light receiving elements while said image sensor is being moved by the movement of said carrier to pass across said mark, and setting the reading starting position in the main scanning direction by using, as a reference position, the position of the light receiving element which corresponds to the second side of said mark and is included in said light receiving elements which output the image data.

4,882,632
COLOR VIDEO SIGNAL REPRODUCING APPARATUS USING FREQUENCY CONVERTED CHROMINANCE SIGNAL

Hiroto Yasumura; Masahide Hirasawa; Minoru Noji, all of Kanagawa; Susumu Kozuki, Tokyo; Koji Takahashi, and Katsuji Yoshimura, both of Kanagawa, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 21, 1987, Ser. No. 111,361
Claims priority, application Japan, Oct. 27, 1986, 61-255121
Int. Cl.⁴ H04N *9/83*
U.S. Cl. 358—330 5 Claims

1. A reproducing apparatus for reproducing a composite signal from a record bearing medium on which said composite signal is recorded, said composite signal being formed by frequency multiplexing a low-band converted carrier chrominance signal obtained by frequency-converting a carrier chrominance signal from a high frequency band to a low frequency band and a frequency-modulated luminance signal, comprising:
(A) reproducing means for reproducing said composite signal from said record bearing medium;
(B) separating means for separating the frequency-modulated luminance signal and the low-band converted carrier chrominance signal from the composite signal reproduced by said reproducing means and for outputting the separated signals;
(C) frequency-demodulating means for demodulating the frequency-modulated luminance signal outputted from said separating means and for outputting the demodulated signal;

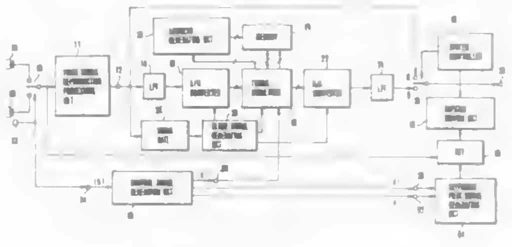


(D) conversion means for converting the low-band converted carrier chrominance signal outputted from said separating means into two kinds of color difference signals and for outputting the converted signals; and
(E) R, G and B signal generating means for generating R, G and B signals by using the luminance signal outputted from said frequency-demodulating means and the two kinds of difference signals outputted from said conversion means.

4,882,633
VIDEO SIGNAL REPRODUCING APPARATUS WITH MEMORY

Yoshihiro Nakatani, and Tsutomu Fukatsu, both of Kanagawa, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 30, 1987, Ser. No. 139,780
Claims priority, application Japan, Jan. 9, 1987, 62-002872; Jan. 9, 1987, 62-002873; Jan. 9, 1987, 62-002874
Int. Cl.⁴ H04N *5/95*
U.S. Cl. 358—339 22 Claims

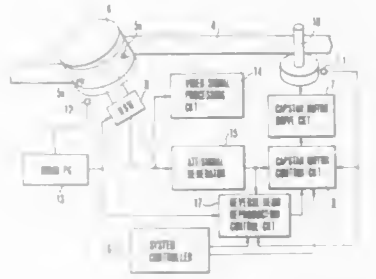


22. A video signal reproducing apparatus comprising:
(a) a reproducing head arranged to reproduce a video signal from a record bearing medium;
(b) storing means arranged to receive said video signal reproduced by said reproducing head and to be capable of storing one field portion of said video signal;
(c) switching means for changing the state of said storing means from a signal writing state over to a signal reading state and vice versa;
(d) detecting means for detecting a phase difference between a horizontal synchronizing signal included in a video signal read out from said storing means and a horizontal synchronizing signal included in a video signal written into said storing means; and
(e) control means for controlling signal writing into said storing means and signal reading from said storing means on the basis of said phase difference detected by said detecting means.

4,882,634
APPARATUS FOR REPRODUCING INFORMATION SIGNALS BY INTERMITTENTLY FEEDING TAPE-SHAPED RECORD BEARING MEDIUM

Keiji Satoh, and Susumu Kozuki, both of Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 17, 1987, Ser. No. 27,161
Claims priority, application Japan, Mar. 18, 1986, 61-058155; Mar. 18, 1986, 61-058156
Int. Cl.⁴ G11B *21/10*
U.S. Cl. 360—10.2 17 Claims



1. An information signal reproducing apparatus for reproducing information signals from a tape-shaped record bearing medium on which many tracks are formed, comprising:
(a) a rotary head arranged to trace said tape-shaped record bearing medium;
(b) moving means for moving said tape-shaped record bearing medium in longitudinal direction;
(c) control means for controlling said moving means in such a manner that said moving means is alternately in a first state and a second state, said moving means moving said tape-shaped record bearing medium at a predetermined speed in said first state, and said moving means not moving said medium in said second state;
(d) means for generating a tracking error signal which indicates the tracking error of said rotary head relative to one of said many tracks, by using a signal reproduced by said rotary head; and
(e) means for generating a first signal for indicating a first timing at which a level of said tracking error signal is a predetermined level while said moving means is in said second state;
said control means changing a state of said moving means between said first state and said second state at a timing as a predetermined period after said first timing.

4,882,635
ROTATING DRUM DEVICE FOR A VCR IN WHICH THE POSITION OF THE MAGNETIC HEAD IS CONTROLLED BY A MAGNETIC POSITIONING DEVICE

Yukiharu Sanai, Nagaokakyo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 14, 1987, Ser. No. 73,163
Claims priority, application Japan, Jul. 16, 1986, 61-168732; Jan. 10, 1987, 62-3713
Int. Cl.⁴ G11B *5/53, 5/588*
U.S. Cl. 360—10.2 30 Claims

19. A helical-scanning type rotating drum device which comprises:
(a) a rotating drum around which a magnetic tape is wrapped at a predetermined angle, said magnetic tape

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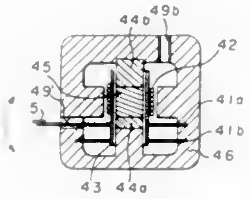
having a traveling speed during use of said rotating drum device;

(b) a magnetic head for reproducing electric signals recorded on said magnetic tape;

(c) a supporting member for supporting said magnetic head on said rotating drum so as to be movable along the axis of rotation of the same;

(d) a coil mounted on said supporting member, said coil having a control electric current flowing therein during use of said rotating drum device, said control electric current having a controllable intensity;

(e) a magnetic unit attached to said rotating drum and facing said coil so as to cause displacement of said supporting member depending on the intensity of said control electric current flowing in said coil; and



(f) a control means for producing said control electric current in response to the traveling speed of said magnetic tape,

wherein:

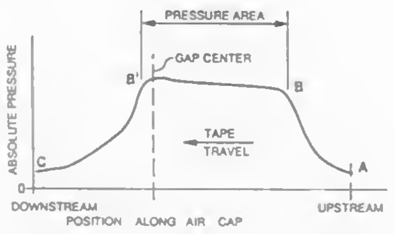
(g) said magnetic unit comprises a rod magnet which is inserted in said coil mounted on said supporting member;

(h) said magnetic unit further comprises a yoke;

(i) said yoke has a cylindrical shape so as to surround said supporting member; and

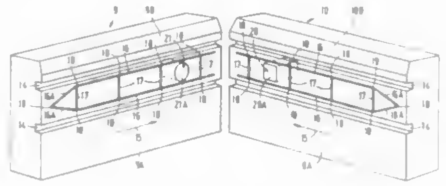
(j) said yoke is provided with a window through which a magnetic head fitting part of said supporting member is extended.

4,882,636
HIGH SPEED CONTACT PRINTING PROCESS FOR PRERECORDED MAGNETIC TAPE
Wayne E. Billings, New Castle, Del.; Robert F. Phillips, Landenberg, Pa., and John E. Gantzhorn, Jr., Hockessin, Del., assignors to Otari Electric Company, Ltd., Tokyo, Japan
Filed Oct. 6, 1987, Ser. No. 105,765
Int. Cl.⁴ G11B *5/86, 5/008*
U.S. Cl. 360—16 6 Claims



1. In a high speed contact printing process for the replication of a magnetic image on a copy tape wherein the magnetic surface of the copy is brought into intimate contact with a master tape in a print station comprising a stationary pressure cap and a rotating tape support surface, the improvement wherein slippage between the copy and master tapes is prevented by applying fluid pressure to the tapes in the area defined by the width of the tapes at the point where replication is initiated, and extending upstream along the length of the tapes, and not downstream of said point, the length of said area exceeding its width, said fluid pressure being sufficient to cause air to evacuate from between said master and copy tapes.

4,882,637
COPYING APPARATUS FOR COPYING A MAGNETIC PATTERN FROM A MASTER MAGNETIC TAPE ON A DUPLICATE MAGNETIC TAPE AND METHOD OF OPERATING SUCH A COPYING APPARATUS
Jozef M. Duurland, Leusden, and Johannes J. Roering, Soest, both of Netherlands, assignors to Polygram International Holding B.V., Baarn, Netherlands
Filed Jun. 17, 1988, Ser. No. 209,128
Claims priority, application Netherlands, Jun. 25, 1987, 8701477
Int. Cl.⁴ G11B *5/86*
U.S. Cl. 360—16 12 Claims



11. A copying apparatus for copying a magnetic pattern from a master magnetic tape on a duplicate magnetic tape, comprising:

two facing elongate platens having facing substantially parallel sides between which a gap is formed having an entrance end and an exit end and having at least first and second rows of passages in facing gap sides of the two platens said rows converging into a V-shape towards said entrance end, the axis of symmetry of said V-shape extending substantially parallel to the longitudinal direction of the platens;

transport means adapted to move the master magnetic tape and the duplicate magnetic tape through the gap in the longitudinal direction of the platens;

pressure means adapted to press the master magnetic tape and the duplicate magnetic tape against one another in the gap, by means of a pressurized fluid fed from the passages in the platens adjacent the two tapes into the gap, to ensure that as the tapes move through the gap the air initially present between the tapes is expelled at least substantially towards the tape edges in order to bring the tapes inside the gap in intimate contact with each other.

4,882,638
PCM RECORDING AND REPRODUCING APPARATUS HAVING COMMON DATA FRAME CONSTRUCTION FOR SIGNAL SOURCES OF VARYING QUANTIZATION BIT NUMBER
Ken Onishi, and Kazuhiro Sugiyama, both of Nagaokakyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Oct. 10, 1986, Ser. No. 917,617
Claims priority, application Japan, Oct. 11, 1985, 60-227187; Jan. 23, 1986, 61-12877; Jan. 23, 1986, 61-12878
Int. Cl.⁴ G11B *5/00, 5/09*
U.S. Cl. 360—32 8 Claims

1. A pulse code modulation (PCM) recording and reproducing apparatus, comprising:

means for sampling analog signals from N channels, N being an integer, at a predetermined sampling frequency;

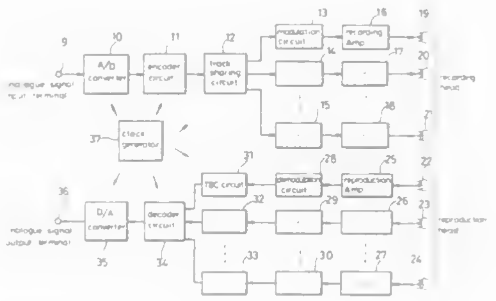
means for converting each sample into a digital signal of a specific number of bits Bi, Bi being a quantization bit number selectable from a plurality of quantization bit numbers Bi: i=1, . . . , k; k being an integer;

means for assembling frames of PCM data each comprising S samples;

means for assembling blocks of PCM data each comprising Tr tracks, each track corresponding to one frame;

means for setting the number of bits per frame to a value TA such that

$$TA=n\times LCM\ (\mathrm{Bi},\ \mathrm{i}=1,\ \ldots,\ \mathrm{k})+m$$



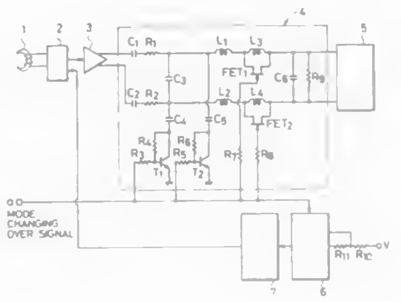
n: integer

LCM(Bi,i=1, . . . , k): least common multiple of all values Bi for i=1, . . . , k

m: an additional number of bits required for synchronization and control of said digital signals; and

means for setting the number of samples per block to a value TB such that TB=N×S×Tr, wherein the ratio of TA to TB is a simple integer.

4,882,639
CHANGEOVER WRITING CIRCUIT FOR MAGNETIC DISK APPARATUS OPERABLE AT PLURAL DENSITIES
Masahiro Nasu, and Kiyoto Abe, both of Furukawa, Japan, assignors to Alps Electric Co., Ltd., Tokyo, Japan
Continuation of Ser. No. 879,475, Jun. 27, 1986, abandoned. This application Nov. 22, 1988, Ser. No. 274,685
Claims priority, application Japan, Jul. 3, 1985, 60-147478
Int. Cl.⁴ G11B *5/09*
U.S. Cl. 360—65 2 Claims



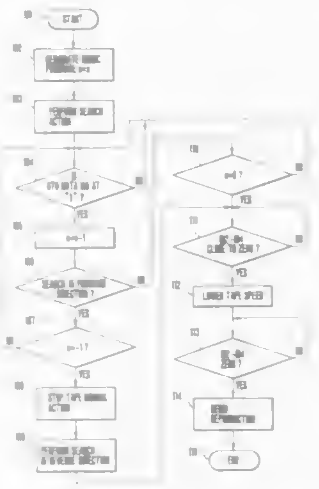
1. A changeover read-write circuit for a magnetic recording and reproducing apparatus including a magnetic head for reading and writing data on a magnetic medium, comprising:

a bias changeover circuit connected to a voltage source providing two different voltages to the bias changeover circuit, whereby the bias changeover circuit outputs two different voltages in response to a two level mode changing over signal provided by a host computer to the bias changeover circuit, the bias changeover circuit outputting a first voltage upon receiving a first level mode changing over signal, and outputting a second voltage upon receiving a second level mode changing over signal;

a write circuit connected to the bias changeover circuit so as to receive the two voltages output by the bias changeover circuit, and also connected to receive input data from the host computer to output in response thereto writing signals at two different current levels, the first current level writing signals being output proportionally to the first voltage output by the bias changeover circuit and the second current level writing signals being output proportionally to the second voltage output by the bias changeover circuit; and

a changeover circuit connected to receive the outputs of the write circuit and to provide same to the magnetic head for writing on the magnetic medium, and connected to receive read signals from the magnetic head for reading from the magnetic medium, the changeover circuit changing over from reading to writing and vice versa in response to signals from the host computer.

4,882,640
RECORDING AND REPRODUCING APPARATUS USING RECORDED NUMERAL INFORMATION SIGNALS FOR PROGRAM DETECTION
Tetsuya Wakui, Chiba, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Apr. 29, 1987, Ser. No. 43,936
Claims priority, application Japan, May 15, 1986, 61-109687
Int. Cl.⁴ G11B *15/52*
U.S. Cl. 360—73.05 9 Claims



1. A reproducing apparatus for reproducing main information signals from a tape-shaped record bearing medium on which numeral information signals indicative of positions on said medium are recorded, the numeral value of said numeral information signals successively varying along the longitudinal direction of said tape-shaped record bearing medium, comprising:

(a) moving means for moving said tape-shaped record bearing medium, in the longitudinal direction;

(b) reproducing means for reproducing from said recording medium said main information signals and said numeral information signals;

(c) manually operable means for instructing said apparatus to look up a desired position of said tape-shaped record bearing medium;

(d) a first control means for setting the medium moving speed of said moving means to a first speed in response to look-up instruction given by said manually operable means;

(e) a second control means for changing the medium moving speed of said moving means from said first speed to a second speed which is slower than said first speed in response to that a difference between a desired value corresponding to the desired position and the numeral value of said numeral information signals reproduced by

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said reproducing means becomes less than a predetermined value; and

(f) a third control means for changing the medium moving speed of said moving means from said second speed to a third speed which is slower than said second speed in response to that a difference between the desired value and the numeral value of said reproduced numeral information signals becomes zero, said tape-shaped record bearing medium being moved at the third speed while said main information signals are recorded.

4,882,641
METHOD FOR CONTROLLING MODE OF INFORMATION SIGNAL REPRODUCING APPARATUS

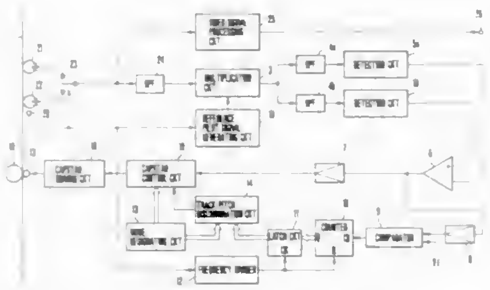
Junichi Sato, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 29, 1987, Ser. No. 43,879

Claims priority, application Japan, May 15, 1986, 61-109689

Int. Cl.^{4} G11B *5/52, 15/467*

U.S. Cl. 360—77.14 6 Claims



1. An information signal reproducing apparatus for reproducing an information signal from a recording medium having a plurality of different pilot signals recorded in a superimposed state upon said information signal in predetermined rotation, with recording tracks formed thereon at one of different selectable track pitches, comprising:

(a) moving means for moving said recording medium;

(b) a reproducing head arranged to reproduce said information signal and said plurality of different pilot signals from said recording medium;

(c) speed change-over means for changing over a recording medium moving speed of said moving means, said speed change-over means being arranged to set said recording medium moving speed to a plurality of different normal speeds at which said reproducing head traces said tracks in parallel therewith when said tracks are formed at the respective ones of said plurality of different track pitches and to a special speed at which said reproducing head does not trace said tracks in parallel therewith at any time when said tracks are formed at any one of said plurality of different track pitches;

(d) tracking error signal generating means for generating, using said plurality of different pilot signals reproduced by said reproducing head, a tracking error signal which indicates a positional deviation of said reproducing head from one of said tracks;

(e) detecting means for detecting that the positional deviation indicated by said tracking error signal is a predetermined degree, to generate a detection pulse signal;

(f) a counter for counting said detection pulse signal during every predetermined period of time;

(g) a latch for latching a value of count of said counter at every predetermined period of time as mentioned above;

(h) mode setting means for setting the apparatus to a normal mode where said moving means moves the recording medium at a normal speed and to a special mode where said moving means moves the recording medium at said special speed; and

(i) discriminating means for discriminating the track pitch of said track, on the basis of the mode set by said mode setting means and an output of said latch.

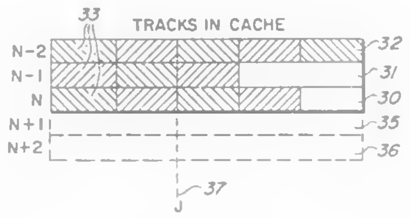
4,882,642
SEQUENTIALLY PROCESSING DATA IN A CACHED DATA STORAGE SYSTEM

Gerald E. Tayler, Berthoud, Colo., and Robert E. Wagner, Tucson, Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 2, 1987, Ser. No. 68,857

Int. Cl.^{4} G06F *9/00*

U.S. Cl. 360—78.11 19 Claims



1. In a method of operating a cache which is interposed between a host processor and a backing store, the cache and the backing store including addressable like-capacity data storing tracks, where a track of data is the amount of data storable on one track of a magnetic disk recorder the cache including means for addressing tracks in the cache using addresses of the backing store whenever the cache tracks are individually allocated for storing data with respect to a respective addressable track in the backing store;

the steps of:

measuring and storing the measurement of those portions of each of said allocated tracks that are accessed by the host processor during the current allocation of the cache track to one of the tracks in the backing store;

selecting a group of the cache tracks that are addressable by contiguous ones of the backing store addresses;

establishing first and second access extent thresholds;

in each of the selected groups, comparing, as at first comparison, the stored measurement for one of the tracks in the selected group with said first access extent threshold, if the first comparison shows that the stored measurement for the one track is less than the first access extent threshold, operating the cache for said one cache track in a random access mode, if the first comparison shows that the one cache track stored measurement is greater than the first access extent threshold, then combining the stored measurements for all cache tracks in the group having the one cache track; and

comparing, as a second comparison, said combined stored measurement with said second access extent threshold, if said second comparison shows that the combined measurement exceeds said second access extent threshold, preparing the cache for cache bypass operations, if said second comparison shows that the combined measurement is not greater than said second access extent threshold, then establishing for tracks in the backing store having addresses contiguous with the backing store address of the one cache track a predetermined requested data promotion and demotion algorithm.

4,882,643
DISC DRIVE MOTOR

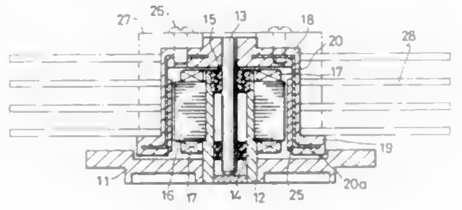
Yozo Shirotori, Nagano, Japan, assignor to Kabushiki Kaisha Sankyo Seiki Seisakusho, Nagano, Japan

Continuation of Ser. No. 89,802, Aug. 27, 1987, abandoned. This application Apr. 20, 1989, Ser. No. 341,274

Claims priority, application Japan, Aug. 27, 1986, 61-200975

Int. Cl.^{4} G11B *5/012*

U.S. Cl. 360—99.08 6 Claims



1. A disk drive motor, comprising:

a motor stator;

a unitary hub for supporting at least one disk at an external circumferential surface thereof, said unitary hub being formed of diecast aluminum in a shape of a cup so as to form a one-piece structure, said unitary hub having a hub flange at a side opposite a bottom of said cup of said unitary hub;

a yoke of magnetic material having a yoke flange embedded within said hub flange such that said yoke flange is surrounded by material of said unitary hub, said yoke being exposed at an exposed portion at an internal circumferential surface of said unitary hub; and

a rotor magnet disposed at an internal circumferential surface of said unitary hub in external opposition to said motor stator and being fixed to said exposed portion of said yoke.

4,882,644
MAGNETIC HEAD SUPPORTING MECHANISM

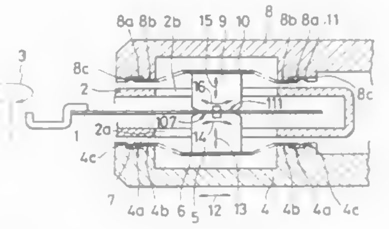
Ippo Kimura; Naoyuki Okumura; Tomoe Aruga, and Yoshio Arai, all of Nagano, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Filed Nov. 9, 1987, Ser. No. 118,788

Claims priority, application Japan, Nov. 12, 1986, 61-268956; Nov. 12, 1986, 61-268954; Nov. 13, 1986, 61-270754; Nov. 13, 1986, 61-270753; Nov. 25, 1986, 61-280313; Nov. 25, 1986, 61-280312; Jul. 13, 1987, 62-174218

Int. Cl.^{4} G11B *5/48*

U.S. Cl. 360—104 13 Claims



1. A magnetic head supporting mechanism for use with a flexible disk made of a medium suitable for magnetic recording and reproducing, comprising:

a first magnetic head for making contact with one side of said flexible disk;

a first supporting plate for supporting said first magnetic head in a manner to allow said first magnetic head to have freedom of pivotal movement in the radial and tangential directions of said flexible disk;

a first carriage for mounting and carrying said supporting plate;

a second magnetic head for making contact with the other side of flexible disk to hold said flexible disk between itself and said first magnetic head;

a second supporting plate for supporting said second magnetic head in a manner to allow said second magnetic head to have freedom of pivotal movement in the radial and tangential directions of said flexible disk;

a second carriage for mounting said second supporting plate and rotating said second supporting plate and said second magnetic head in a manner to face said first carriage, said second carriage being carried by said first carriage to follow the same; and

press means for pressing said first magnetic head and said second magnetic head to each other,

wherein said first and second supporting plates each comprise: a peripheral portion carried by a respective one of said carriages; a plurality of arms spaced from, and enclosed by, said peripheral portion; a central portion spaced from, and enclosed by, said arms and supporting a respective magnetic head; a first pair of tie bars extending along a first axis and connecting said arms to said peripheral portion; and a second pair of tie bars extending along a second axis and connecting said central portion to said pair of arms, said central portion being supported by said second pair of tie bars and said arms being supported by said first pair of tie bars, each said pair of tie bars being constructed to be allowed to twist about its respective axis, said arms being constructed to be allowed to warp when forces are applied thereto via the respective magnetic head, for permitting the respective magnetic head to pivot in a manner to follow the inclination of the flexible disk, said first and second axes normally lying in a plane parallel to the plane of the flexible disk, one of the axes extending in the radial direction of the disk and the other of the axes extending in the tangential direction of the disk, and said peripheral portion, said arms, said central portion and said tie bars being constructed to give said supporting plate a defined spring rate perpendicular to the plane of the flexible disk,

wherein the spring rate of said first and second supporting plate in said generally perpendicular direction is set at about 50 g/mm or more, and

wherein said first supporting plate and said second supporting plate support said first magnetic head and said second magnetic head, respectively, such that they can move in a generally perpendicular direction to the plane of said flexible disk in a manner constrained solely by the spring rates of said first supporting plate and said second supporting plate in the generally perpendicular direction.

4,882,645
MASK STRUCTURE FOR CASSETTES OF MAGNETIC TAPE

Abramo Bordignon, Senago, Italy, assignor to A.T.B. S.p.A., Senago, Italy

Filed Nov. 23, 1987, Ser. No. 124,192

Claims priority, application Italy, Dec. 4, 1986, 23924/86[U]

Int. Cl.^{4} G11B *23/02*

U.S. Cl. 360—132 2 Claims

1. In a magnetic tape cassette of the type comprising a box-like housing formed of two half-shells, a pair of hubs rotatably located within said housing, a magnetic tape wound on at least one of said hubs, a pair of through apertures formed on said housing coaxially with said hubs to allow passage of drive spindles of a cassette recorder or the like, said through apertures having annular folded edges at least partially projecting inwardly of said housing, said annular folded edges defining a substantially cylindrical outer surface having an outer diameter;

a mask structure to be arranged inside said housing and comprising a pair of sheet-like elements positionable be-

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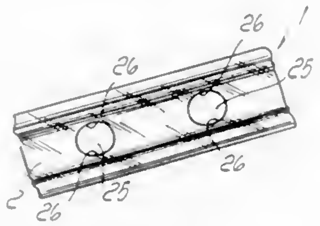
tween said hubs and said half-shells, said sheet-like element having a pair of holes located concentrically with said housing apertures to allow insertion of said annular folded edges therethrough, and further comprising means for removably fastening said sheet-like elements to said housing, wherein said fastening means comprise peripheral portions of said holes which project at least partially inwardly thereof to radially interfere with said outer

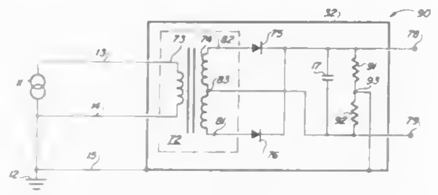


cylindrical surface of said annular folded edges and to thereby resiliently and frictionally engage therewith, whereby said sheet-like elements are at least temporarily secured to said half-shells during mutual coupling thereof, having a substantially elliptical configuration defining a major axis and a minor axis perpendicular therebetween, said major and said minor axes being respectively larger and smaller than said outer diameter of said annular folded edges.

4,882,646
PROTECTIVE GROUNDING AND REFERENCING ARRANGEMENT FOR HIGH VOLTAGE BULK SUPPLY

Luther L. Genuit, Scottsdale, Ariz., assignor to Honeywell Bull Inc., Phoenix, Ariz.

Filed Dec. 14, 1987, Ser. No. 132,838
Int. Cl.⁴ H02H *9/04*
U.S. Cl. 361—42 15 Claims



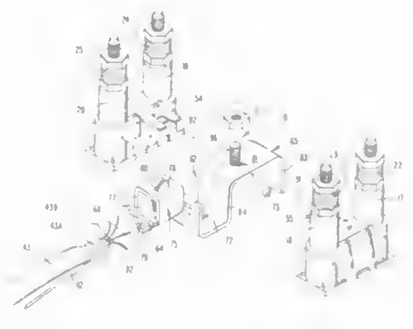
13. A bulk supply for converting electrical energy from an a-c source to high voltage d-c, said bulk supply comprising:
(A) a grounded, electrically conductive chassis;
(B) an isolation transformer having a primary winding and a secondary winding;
(C) means coupling the a-c source to said primary winding;
(D) first and second output terminals;
(E) rectifier means electrically positioned intermediate said secondary winding and said first and second output terminals, said rectifier means being configured and connected to convert a-c voltage appearing across said secondary winding to d-c voltage appearing across said first and second output terminals;
(F) a resistive divider network connected between said first and second output terminals, said resistive divider network including first and second resistors joined at a junction; and
(G) means electrically connecting said junction to said chassis;

whereby said resistive divider network causes the d-c voltage appearing across said output terminals to be floating with respect to said chassis, thereby limiting fault currents which result from short circuits between said output terminals and ground potential ton on-hazardous levels.

4,882,647
COMBINATION APPARATUS FOR CLAMPING GROUND CONDUCTOR AND FOR MOUNTING LIGHTNING PROTECTOR

Thomas J. Collins, Wall Township, Monmouth County, N.J., assignor to Keptel, Inc., Tinton Falls, N.J.

Filed Dec. 15, 1988, Ser. No. 284,671
Int. Cl.⁴ H01R *3/06*
U.S. Cl. 361—119 4 Claims



1. Combination apparatus for clamping ground conducting means and for mounting lightning protecting means, said combination apparatus for being mounted on apparatus to be grounded, comprising:
an integrally formed, electrically conductive ground bracket including an outwardly extending upwardly curved first end portion and an upwardly extending second end portion;
a clamping frame surrounding said outwardly extending upwardly curved first end portion of said ground bracket, said clamping frame including an upwardly extending top portion provided with a threaded aperture and a downwardly extending bottom portion which bottom portion in combination with said outwardly extending upwardly curved first end portion of said ground bracket provides an opening for receiving said ground conductor means;
a ground conductor means securing screw extending through said threaded aperture and for being screwed into said aperture to force said outwardly extending upwardly curved first end portion of said ground bracket and said downwardly extending bottom portion of said clamping frame in towards each other to clamp said ground conductor means therebetween;
first mounting means provided on said ground bracket for mounting said lighting protecting means on top of said ground bracket; and
second mounting means provided on said ground bracket for mounting said ground bracket on said structure to be grounded.

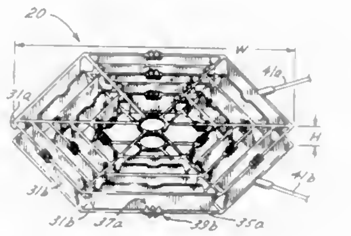
4,882,648
CAPACITANCE PROBE FOR USE IN ABSORBENT SYSTEMS

Marcel G. Verrando, III, Ocala, Fla., assignor to Pall Corporation, East Hills, N.Y.

Filed Oct. 11, 1988, Ser. No. 255,667
Int. Cl.⁴ H01G *5/00;* **G01R** *27/26;* **B01D** *53/04*
U.S. Cl. 361—286 11 Claims

1. A capacitor for use in sensing variations in the dielectric constant of a bed of particles comprising:
a first member having a plurality of flat plate elements interconnected by a network of strip elements;
the plate elements being oriented substantially parallel to a common axis;

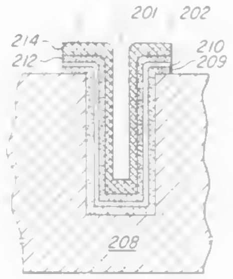
the strip elements being oriented substantially perpendicular to the common axis;
a second member of substantially the same configuration as the first member, the second member being inverted and rotated relative to the first member so that the plate elements of the first member are interposed between the plate elements of the second member and the plate elements of each member align with at least some of the strip elements of the other member; and
at least some of the plate elements of the first member interlocking with at least some of the strip elements of the second member in nonconducting electrical contact whereby a substantially rigid structure is formed.



4,882,649
NITRIDE/OXIDE/NITRIDE CAPACITOR DIELECTRIC

Ih-Chin Chen, Dallas; Bing W. Shen, Richardson, and Robert R. Doering, Plano, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Mar. 29, 1988, Ser. No. 174,751
Int. Cl.⁴ H01G *7/00, 4/06;* **H01L** *29/34*
U.S. Cl. 361—313 9 Claims



1. A method for forming a capacitor at a surface of a semiconductor body, comprising the steps of:
chemically vapor depositing a first layer of silicon nitride at said surface;
forming a layer of silicon dioxide completely overlying said first layer of silicon nitride;
forming a second layer of silicon nitride completely overlying said layer of silicon dioxide;
forming a conductive capacitor plate completely overlying said second layer of silicon nitride and in direct contact therewith.

4,882,650
MAGNESIUM TITANATE CERAMIC AND DUAL DIELECTRIC SUBSTRATE USING SAME

Galeb H. Maher, North Adams, Mass., and Susan E. Corah, Eagleville, Pa., assignors to Sprague Electric Company, North Adams, Mass.

Filed Dec. 5, 1988, Ser. No. 279,740
Int. Cl.⁴ H01G *4/10, 4/12*
U.S. Cl. 361—321 18 Claims

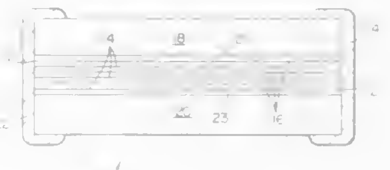
8. A ceramic substrate comprising a sintered ceramic body that is comprised of from 95 to 99 weight percent of a high-firing polycrystalline magnesium barium zinc titanate, wherein

by molar quantities said barium and said zinc amount to from 40 to 60% of said magnesium, and from 1 to 5 weight percent of a sintering flux.

4,882,651
MONOLITHIC COMPOUND-CERAMIC CAPACITOR

Galeb H. Maher, North Adams, Mass., assignor to Sprague Electric Company, North Adams, Mass.

Filed Dec. 5, 1988, Ser. No. 279,739
Int. Cl.⁴ H01G *4/10, 4/42, 7/00*
U.S. Cl. 361—321 12 Claims



1. A monolithic ceramic capacitor comprising:
(a) one layer comprising a mature polycrystalline ceramic having a narrow and homogenous distribution of grain sizes;
(b) a stack of at least two spaced-apart conductive film electrodes buried in said one layer; and
(c) two outer layers comprising a mature polycrystalline ceramic, each of said two layers located on opposite surfaces of said one layer and being co-reacted and bonded thereto, said ceramic of said two layers having a distinctly broader and less homogenous distribution of grain sizes than that of said one-layer ceramic.

4,882,652
HIGH DIELECTRIC CONSTANT TYPE CERAMIC COMPOSITION

Osamu Furukawa, Sagamihara; Mitsuo Harata; Takaaki Yasumoto, both of Kawasaki, and Motomasa Imai, Inagi, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation-in-part of Ser. No. 791,060, Oct. 24, 1985, abandoned. This application Nov. 2, 1987, Ser. No. 115,908
Claims priority, application Japan, Nov. 4, 1986, 61-260814
Int. Cl.⁴ C04B *35/46*
U.S. Cl. 361—321 11 Claims

1. A high dielectric constant ceramic composition, characterized in that said composition is represented by the general formula:

$$x\mathrm{Pb}(\mathrm{Zn}_{1/3}\mathrm{Nb}_{2/3})\mathrm{O}_3-$$

$$y\mathrm{Pb}(\mathrm{Mg}_{1/3}\mathrm{Nb}_{2/3})\mathrm{O}_3-z\mathrm{PbTiO}_3,$$

wherein a portion of Pb of the composition within lines connecting the following points a, b, c, d, e' and f' of a ternary composition diagram having the following apexes of respective components, is substituted by from 2 to 30 mole % of calcium:

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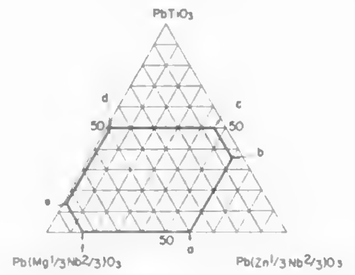


a:	(x = 0.60,	y = 0.40,	z = 0.00)
b:	(x = 0.60,	y = 0.05,	z = 0.35)
c:	(x = 0.45,	y = 0.05,	z = 0.50)
d:	(x = 0.01,	y = 0.49,	z = 0.50)
e'	(x = 0.01,	y = 0.8,	z = 0.19)
f'	(x = 0.5,	y = 0.5,	z = 0)

4,882,653

CAPACITOR

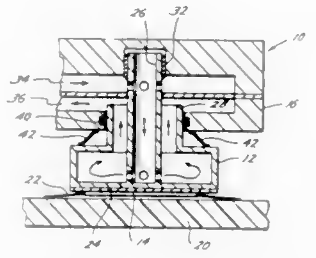
Motoyuki Suzuki, Kyoto, and Yukichi Deguchi, Otsu, both of Japan, assignors to Toray Industries, Tokyo, Japan
Filed Feb. 16, 1989, Ser. No. 312,004
Claims priority, application Japan, Feb. 18, 1988, 63-36374
Int. Cl.⁴ H01G *4/08*
U.S. Cl. 361—323 7 Claims

1. A capacitor comprising an aluminum thin layer as an electrode and a polyphenylene sulfide film as at least a portion of dielectric material, in which the ratio of the number of atoms of sulfur to the number of atoms of aluminum at the surface of the aluminum thin layer is not more than 0.14.

4,882,654

METHOD AND APPARATUS FOR ADJUSTABLY MOUNTING A HEAT EXCHANGER FOR AN ELECTRONIC COMPONENT

Richard D. Nelson, Austin, Tex.; Omkarnath R. Gupta, Englewood, Colo., and Dennis J. Herrell, Austin, Tex., assignors to Microelectronics and Computer Technology Corporation, Austin, Tex.
Filed Dec. 22, 1988, Ser. No. 288,363
Int. Cl.⁴ H01L *23/34*
U.S. Cl. 361—382 13 Claims

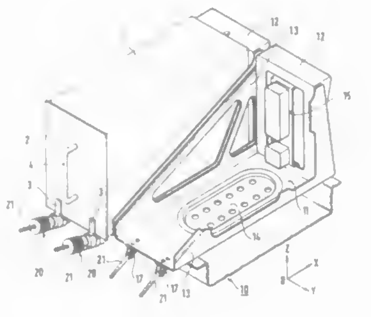


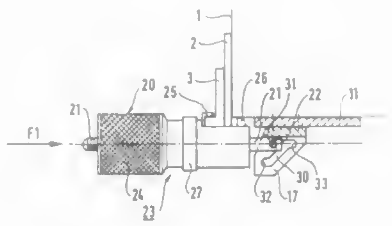
1. An adjustably mounted heat exchanger for mating with an electronic component comprising,
- a fluid heat exchanger for mating with an electronic component, said heat exchanger having a fluid inlet and fluid outlet,
- a fixed support,
- connecting support means between the fixed support and the heat exchanger for supporting the fluid heat exchanger from the fixed support, said connecting support means initially being flexible for adjusting the position of the heat exchanger relative to the electronic component and thereafter being rigid for fixedly supporting the heat exchanger.

4,882,655

DEVICE FOR LOCKING AN ELECTRONIC EQUIPMENT HOUSING ON A TRAY

Denis Pavie, Ballancourt Sur Essonne, France, assignor to Societe Anonyme dite: VIBRACHOC, Evry Cedex, France
Filed Apr. 20, 1988, Ser. No. 183,960
Claims priority, application France, Apr. 22, 1987, 87 05672
Int. Cl.⁴ H05K *7/16*
U.S. Cl. 361—391 7 Claims





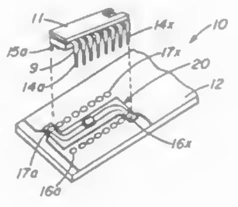
1. A device for locking an electronic equipment housing having a vertical front wall on a tray, said device comprising a moving carriage adapted to be connected to the front wall of the housing, a threaded shaft along which the carriage moves, a hinge pin fixed perpendicularly to one of the ends of the threaded shaft, and a fork disposed beneath the tray and provided with two parallel inclined slots which extend downwardly and forwardly towards said front wall, in which the hinge pin is displaced, wherein each slot includes at least one stop notch at at least one end thereof projecting at an angle to said slot and holding fast the hinge pin of the threaded shaft.

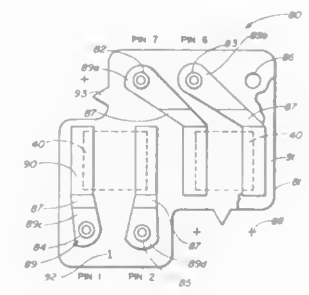
4,882,656

SURFACE MOUNTED DECOUPLING CAPACITOR

L. William Menzies, Jr., 938 Pleasant Hill Rd., Redwood City, Calif. 94061, and Stephen W. Menzies, 4906 Colusa St., Union City, Calif. 94587
Continuation-in-part of Ser. No. 941,454, Dec. 12, 1986, Pat. No. 4,779,164. This application Oct. 14, 1988, Ser. No. 258,242
The portion of the term of this patent subsequent to Oct. 18, 2005, has been disclaimed.
Int. Cl.⁴ H05K *7/10*
U.S. Cl. 361—393 6 Claims

1. In combination, a printed circuit board having a series of sockets, including at least one dedicated power socket and at least one dedicated ground socket and a surface mountable decoupling capacitor assembly, said assembly comprising:
- an insulative substrate;
- at least one pair of hollow insertable contacts connected to and extending through said substrate, each pair of said contacts being spaced being spaced from each other a distance representative of a distance between said at least one power socket and said at least one ground socket of said printed circuit board;
- at least one decoupling capacitor mounted on said substrate, each capacitor of said at least one capacitor having internal stacked interdigitated plates and opposed conductive sideplates connecting alternate ones of said stacked plates;
- a conductive pathway on a surface of said substrate extending from each one of said opposed conductive sideplates to one of said hollow insertable contacts of each of said at least one pair of contacts, and
- means connecting said pathways to said conductive sideplate, said assembly being insertable into said printed circuit board under a multi-lead pin integrated circuit package positioned on said printed circuit board or on a wave-solderable surface of said printed circuit board such that only one or more power lead pins and one or more ground lead pins of said integrated circuit package pass into electrical contact with respective ones of said at least one pair of contacts to interconnect with respective ones of said at least one power socket and said at least one ground socket of said printed circuit board, remaining ones of said lead pins being inserted into the remainder of said series of sockets of said printed circuit board without electrical connection with said conductive pathways.



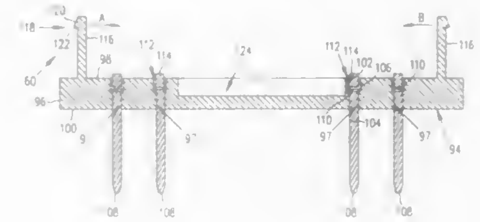


4,882,657

PIN GRID ARRAY ASSEMBLY

Randall E. Braun, Santa Cruz, Calif., assignor to ICI Array Technology, Inc., San Jose, Calif.
Filed Apr. 6, 1988, Ser. No. 178,109
Int. Cl.⁴ H05K *1/00*
U.S. Cl. 361—412 8 Claims

1. A pin grid array assembly comprising:
- a base on which an electrical component such as a semiconductor device may be mounted;
- a first conductive member fixed to said base and connectable to such a mounted electrical component;
- a pin grid array including a body having a plurality of pins therein, the body being mountable to the base; and

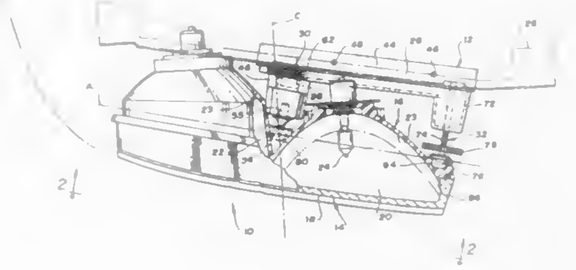


- a second conductive member which is resilient for providing connection between a pin and the first conductive member when the body is mounted to the base.

4,882,658

HEADLAMP ASSEMBLY

Alfred M. Allen, Palm Harbor, Fla., assignor to General Motors Corporation, Detroit, Mich.
Filed Aug. 29, 1988, Ser. No. 237,802
Int. Cl.⁴ B60Q *1/00*
U.S. Cl. 362—61 6 Claims



1. A headlamp assembly adapted to be mounted on the front end of a motor vehicle and having a lamp body for selective adjustment about an aim axis, said headlamp assembly including a mounting bracket adapted to be fixedly secured to said front end of said motor vehicle, said mounting bracket supporting a longitudinally adjustable ball pivot connected to said lamp body along said aim axis and movable along a first axis substantially perpendicular to a vertical plane passing through said aim axis, a fixed ball pivot supported by said bracket and connected to said lamp body and located above said longitudinally adjustable ball pivot, said longitudinally adjustable ball pivot having a threaded shaft fixed thereto, a drive spur gear mounted on said bracket to the rear of said fixed ball pivot for rotation about a second axis vertically spaced from and substantially parallel to said first axis, a driven spur gear connected to said shaft of said adjustable ball pivot so as to cause longitudinal movement of the latter along said first axis upon rotation of said driven gear, means connecting said drive gear to said driven gear so that rotation of said drive gear causes rotation of said driven gear with resultant movement of said lamp body about said aim axis.

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4,882,659

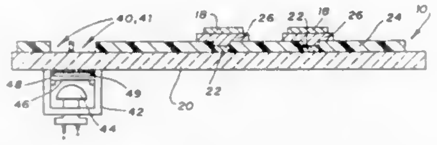
VACUUM FLUORESCENT DISPLAY HAVING INTEGRAL BACKLIT GRAPHIC PATTERNS

Jeffrey M. Gloudemans, Kokomo, Ind., assignor to Delco Electronics Corporation, Kokomo, Ind.

Filed Dec. 21, 1988, Ser. No. 287,208

Int. Cl.^{4} F21V *9/16;* **G01D** *11/28;* **B60Q** *1/54*

U.S. Cl. 362—61 **5 Claims**



5. A motor vehicle instrument panel housing including a vacuum fluorescent display mounted in the housing and adapted to be viewed by a vehicle occupant, the display having a transparent glass substrate, a phosphored anode conductor supported on a front surface between the substrate and the occupant for emitting light when bombarded with charged electrical particles, and a layer of substantially opaque insulating material covering the remainder of such front surface, the improvement wherein:

a patterned opening is provided in the insulation layer adjacent the phosphored anode conductor;

the housing includes an open-ended cavity engaging a back surface of the display substrate adjacent to said patterned opening to form a substantially closed backlighting cavity; and

the backlighting cavity is illuminated by a light source mounted therein such that the light of said source is transmitted through the substrate and patterned opening, thereby to define an emissive image in the shape of said patterned opening which image appears to the occupant in substantially the same plane as that of the phosphored anode.

4,882,660

HEADLAMP ASSEMBLY

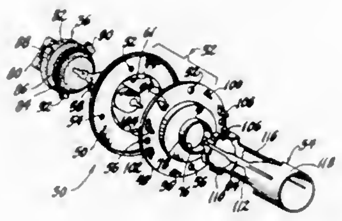
Martin K. Liverance, Royal Oak, Mich.; David R. McMahan, and Bartly A. Haydu, both of Anderson, Ind., assignors to General Motors Corporation, Detroit, Mich.

Continuation of Ser. No. 185,209, Apr. 18, 1988, abandoned, which is a continuation of Ser. No. 930,741, Nov. 13, 1986, Pat. No. 4,747,029. This application Nov. 28, 1988, Ser. No. 276,608

The portion of the term of this patent subsequent to May 24, 2005, has been disclaimed.

Int. Cl.^{4} H01R *33/00*

U.S. Cl. 362—226 **12 Claims**



1. In combination, a vehicle headlamp assembly including a reflector formed with a pair of side-by-side cavities each of which has a parabolic reflecting surface and a circular opening formed in each of said reflecting surfaces and adapted to receive the light bulb of a replaceable light bulb assembly from the rear of said reflector, a retainer located at the rear of said reflector and forming a permanent part thereof for positioning said light bulb assembly in a predetermined position relative to said opening, and a replaceable light bulb assembly having a lamp bulb smaller in diameter than said opening and having a collar formed with three circumferentially spaced retainer members projecting radially outwardly therefrom, said retainer having three access slots formed therein for selectively receiving said three retainer members of said replaceable bulb assembly, said retainer including an inner member and an outer member defining a ring-like cavity with an axial dimension sufficient to accommodate said retainer members on said light bulb assembly, one of said inner and outer members having a stop, said access slots upon receiving said retainer members of said light bulb assembly permitting said collar and said retainer members to move into said ring-like cavity from the rear thereof after which said light bulb assembly is rotatable into engagement with said stop to orient said light bulb assembly rotationally with respect to said reflector, and spring means in said ring-like cavity continuously engaging and pressing said retainer members inwardly towards said opening when said light bulb assembly is rotated to orient said light bulb axially with respect to said reflector.

4,882,661

PROCESS FOR THE ENHANCEMENT OF LIGHT STRUCTURES AND LIGHT INSTRUMENT

Annick Arnaud, 23, rue de Pontoise, F-95160 Montmorency, France

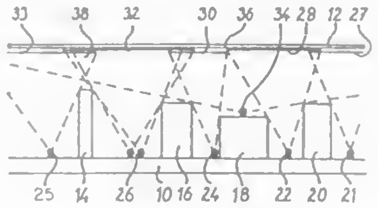
PCT No. PCT/FR87/00343, § 371 Date May 2, 1988, § 102(e) Date May 2, 1988, PCT Pub. No. WO88/01709, PCT Pub. Date Mar. 10, 1988

PCT Filed Sep. 3, 1987, Ser. No. 194,987

Claims priority, application France, Sep. 4, 1986, 86 12442

Int. Cl.^{4} F21V *13/00*

U.S. Cl. 362—242 **8 Claims**



1. A process for forming a changing light display to be viewed by an observer comprising the steps of:

providing a static composition having an extended surface and which is transparent or translucent;

projecting light onto respective effective zones of the extended surface from a plurality of extended light means, the light means all being mounted immovably relative to the static composition and on a side of the extended surface opposite to the observer,

said projecting step including projecting light onto a plurality of respective partial effective zones which are only respective small parts of the extended surface from respective partial light sources of the light means, and projecting light onto a background effective zone which is substantially all of the extended surface from a background light source of a single color of the light means, and

varying, progressively and independently, an intensity of each of the light means.

4,882,662

GRID OF LAMELLAE FOR A LAMP

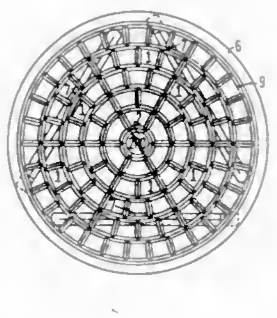
Peter Prodell, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Dec. 24, 1987, Ser. No. 137,603

Claims priority, application Fed. Rep. of Germany, Feb. 17, 1987, 3705020

Int. Cl.^{4} F21V *11/06*

U.S. Cl. 362—290 **14 Claims**



1. A lighting fixture for integration in ceilings, attachment to ceilings and suspended from ceilings, having a box-shaped housing, a grid of lamellae having at least approximately double-parabolic cross-section connected lattice-like to one another and inserted into alight exit opening and which, for the lowest possible masking losses of light of light bulbs arranged above the grid in the housing, produces the shielding desired in accord with the respective demands of a workplace comprising:

for a center-symmetrical light exit opening, a center-symmetrical grid composed of segments of identical size having a segment angle alpha of 360/n degrees, where n is a whole, positive number; and with reference to an annular center grid cell having a diameter 2 Ro which optimally meets the desired masking condition given the lowest possible masking losses, a framing-cell-like subdivision of the segments is provided such that, while preserving the center symmetry of the grid, the framing cells do not exceed the value 2 Ro in their dimensions either in a diagonal either in the largest, straight framing side, either, respectively, in the chord of the largest, arcuate framing side, the surface area dimensions of the framing cells being optimally large and optimally identical with reference to the value 2 Ro;

wherein the dimension of the light opening determines the framing-cell-like subdivision of the segments to produce framing cells whose diagonals and whose largest, straight framing side or, respectively, chord length of the largest, arcuate frame side significantly fall below the value 2 Ro, with reference to a segment of the grid having a lamellae union yielding a self-contained framing cell structure, a lamellae shortened in height is provided between two lamellae of identical height following one another which proceed perpendicular to the radial direction or perpendicular to the circumferential direction, leaving the principle radial lamellae out of consideration, whereby all intermediate lamellae proceeding in radial direction and adjacent to a shortened connecting lamellae connecting the two principle radial lamellae to one another are likewise shortened; these shortened lamellae having their free, narrow ends at a head side arranged above the plane that is defined by the free, narrow ends at the head side of the remaining lamellae of the lamella assembly.

4,882,663

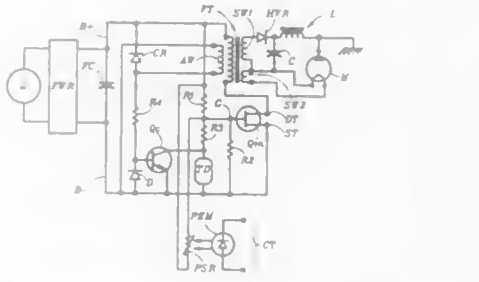
MOSFET FLYBACK CONVERTER

Ole K. Nilssen, Caesar Dr., Rte. 5, Barrington, Ill. 60010

Continuation of Ser. No. 812,721, Dec. 23, 1985, abandoned. This application Apr. 10, 1989, Ser. No. 338,513

Int. Cl.^{4} H02M *3/338*

U.S. Cl. 363—19 **12 Claims**



1. Converter means adapted to convert a DC voltage to an alternating voltage, comprising:

transformer means having a primary winding;

switch means having a pair of switched terminals and a pair of control terminals, the switch means being operative to permit relatively unimpeded flow of current between the switched terminals, but only as long as: (i) a control voltage is applied between its control terminals, and (ii) the magnitude of this control voltage exceeds a minimum level, this minimum level being approximately proportional to the magnitude of the current flowing between the switched terminals;

connect means operative to connect the primary winding and the switched terminals in circuit with the DC voltage in such manner that, as long as the switch means is operative to permit relatively unimpeded flow of current between its switched terminals, the DC voltage is effectively applied across this primary winding; and

control means connected with the control terminals and operative to provide a control voltage having a periodically varying magnitude that, whenever current is flowing between the switched terminals, is: (i) substantially proportional to the magnitude of this current, and (ii) in excess of said minimum level.

4,882,664

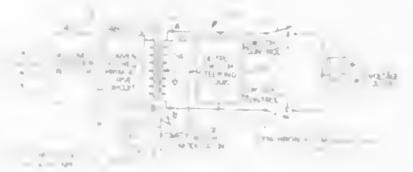
SYNCHRONOUS MODULATION CIRCUIT

Terris L. Pennington, Edmonds, Wash., assignor to Rane Corporation, Everett, Wash.

Filed Jun. 8, 1988, Ser. No. 204,033

Int. Cl.^{4} H02M *1/12*

U.S. Cl. 363—41 **7 Claims**



1. Synchronous modulation circuit, comprising:

input means for receiving an input signal;

output means for producing an electrical output signal;

alternating current source means having a transformer including first and second terminals at a secondary winding and producing opposite phase alternating current power signals at said terminals;

pulse width modulation means for producing a sequence of variable width pulses, said pulse width modulation means

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being connected to said input means for varying the width of said pulses in accordance with the input signal;

output switching means for selectively connecting said first and second terminals to said output means; and

steering logic means including logic gates having inputs connected to said first and second terminals of said alternating current source means and to said pulse width modulation means, and having a control output connected to said output switching means, said steering logic means being responsive to the combined instantaneous logic states of signals at said first and second terminals and to an instantaneous logic state of said variable width pulses from said pulse width modulation means to cause said output control to operate said output switching means to connect said first terminal to said output means when logic signals at said first terminal and at an output of said pulse width modulation means are of the same logic state, and to connect said second terminal to said output means when logic signals at said second terminal and at said output of said pulse width modulation means are of the same logic state so as to deliver a variable amount of power to said output means in accordance with variation of the input signal.

4,882,665

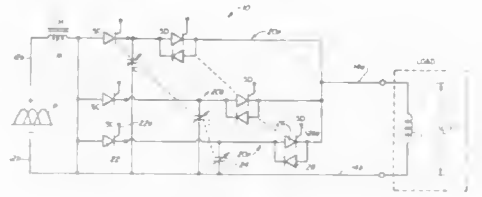
HIGH FREQUENCY, HIGH POWER, POWER SUPPLY

Keh-Kun Choi, 60-100 H01-K1-Dong, Tongdaemun-Gu Seoul, 131, Rep. of Korea, and Hyeong I. Choi, 5431 NE. River Rd., Chicago, Ill. 60656

Filed Jun. 10, 1988, Ser. No. 205,236

Int. Cl.^{4} H02M *7/00*

U.S. Cl. 363—60 36 Claims



1. A multi-branch power supply usable with an exterior source of electrical energy for supplying energy, substantially without a dc component to a load comprising:

a first power supplying branch with,

first branch charging means having a first state and a second state;

first means, coupled to said first branch charging means, for storing, with a first polarity, energy received from the source of electrical energy when said first charging means is in said first state;

first branch discharging means having a first state and a second state and coupled between said first storage means and the load for providing energy stored with said first polarity at said first storage means to the load when said first branch discharging means is in said first state;

a second power supplying branch with,

second branch charging means having a first state and a second state;

second means, coupled to said second branch charging means, for storing, with a second polarity, energy received from the source of electrical energy when said second charging means is in said first state;

second branch discharging means having a first state and a second state and coupled between said second storage means and the load for providing energy stored with said second polarity at said second storage means to the load when said second branch discharging means is in said first state; and

control means, coupled to said first branch charging and discharging means, for switching said first charging means to said first state, with said first discharging means in said second state, to store energy at said first storage means with said first polarity during a first time interval and including means for subsequently switching, during a second time interval, said first discharging means to said first state, with said charging means in said second state, to transfer a substantial portion of the stored energy from said first storage means to the load with said first polarity during said second time interval with said first time interval preceding said second time interval including means, coupled to said second branch charging and discharging means, for switching said second charging means to said first state, with said second discharging means in said second state to store energy at said second storage means with said second polarity during a third time interval and including means for subsequently switching, during a fourth time interval, said second discharging means to said first state, with said second charging means in said second state, to transfer a substantial portion of the stored energy from said second storage means to the load with said second polarity during said fourth time interval with said third time interval preceding said fourth time interval.

4,882,666

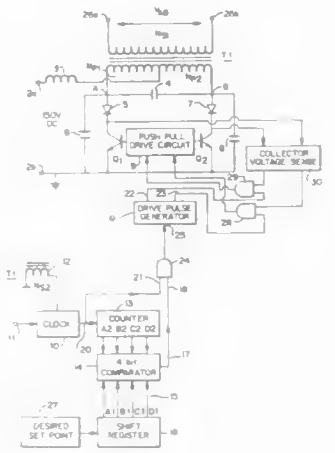
HIGH FREQUENCY HIGH VOLTAGE POWER SUPPLY WITH CONTROLLED OUTPUT POWER

Gert W. Bruning, Tuckahoe, and Edward H. Stupp, Spring Valley, both of N.Y., assignors to North American Philips Corporation, New York, N.Y.

Filed Mar. 23, 1989, Ser. No. 328,377

Int. Cl.^{4} H02P *13/18;* H02M *3/337*

U.S. Cl. 363—97 9 Claims



1. A power supply circuit with control of the output power comprising:

a push-pull oscillator circuit including first and second switching transistors coupled to a parallel resonant LC tank circuit comprising a primary winding of a transformer coupled in parallel with a capacitor,

a push-pull driver having first and second outputs coupled to respective control electrodes of the first and second switching transistors to supply thereto drive pulses approximately 180° out of phase, and

a drive circuit including a secondary winding of said transformer for supplying the drive pulses to said push-pull driver, said drive circuit further comprising; a source of clock pulses controlled by said secondary winding, a digital set point device for setting a desired output power level of the power supply circuit, and a comparison device coupled to said clock pulse source and said digital set point device for enabling and disabling the supply of drive pulses to the push-pull driver as a function of the setting of said digital set point device whereby in a given time interval the oscillator circuit is allowed to self-oscillate for a number of cycles of the output voltage as determined by said setting.

4,882,667

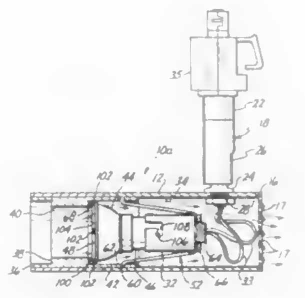
VENTILATED MINIATURE LIGHTING FIXTURES

Maer Skegin, 1411 N. Poinsettia Pl., #206, Los Angeles, Calif. 90046

Filed May 20, 1988, Ser. No. 196,287

Int. Cl.^{4} F21V *29/00*

U.S. Cl. 362—373 18 Claims



1. In a lighting fixture of the type having a housing, a lamp socket in said housing, a reflector supported on said socket for directing light emitted by a lamp fitted in said socket, and a front baffle on said housing in contact with said reflector, the improvement comprising:

spacer means interposed between said baffle and said reflector for maintaining an air flow gap therebetween for ventilating the interior of said housing.

4,882,668

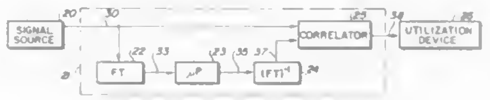
ADAPTIVE MATCHED FILTER

Hans-Peter Schmid, Upland, and Richard S. Schlunt, Loma Linda, all of Calif., assignors to General Dynamics Corp., Pomona Division, Pomona, Calif.

Filed Dec. 10, 1987, Ser. No. 131,065

Int. Cl.^{4} G06F *15/336*

U.S. Cl. 364—600 9 Claims



1. An adaptive matched filter which enhances the signal-to-noise power ratio of signals applied to, and processed by, the adaptive matched filter, said filter comprising:

first means responsive to signals applied to said adaptive matched filter, the signals comprising known signals and noise signals, where the first means functions to provide signals that represent the Fourier transform of the signals applied to the adaptive matched filter and where the first means also functions to provide first output signals which are indicative of the noise power spectral density of signals that represent the Fourier transform of the signals applied to the adaptive matched filter means;

second means coupled to said first means, where the second means functions to provide signals which are derived from said first output signals and stored signals which are indicative of said known signals and where the second means also functions to provide second output signals which are indicative of the transfer function of the adaptive matched filter;

third means coupled to said second means to receive said second output signals, where the third means functions to provide third output signals that represent the inverse Fourier transform of said second output signals; and

fourth means coupled to said third means, where the fourth means functions to combine the signals applied to the adaptive matched filter with said third output signals in a manner which filters the signals applied to the adaptive matched filter to substantially remove the noise signals therefrom, and where the fourth means also functions to provide output signals from the adaptive matched filter in which the signal-to-noise power ratio is enhanced.

4,882,669

MULTI COMPUTER FAIL SAFE CONTROL APPARATUS

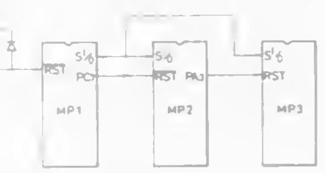
Makoto Miura, Hino; Kazuki Miyamoto, and Masato Ishida, both of Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 674,849, Nov. 26, 1984, abandoned. This application Dec. 9, 1987, Ser. No. 131,267

Claims priority, application Japan, Nov. 28, 1983, 58-223542; Nov. 28, 1983, 58-223543; Nov. 28, 1983, 58-223544; Nov. 28, 1983, 58-223545

Int. Cl.^{4} G06F *11/00*

U.S. Cl. 364—184 4 Claims



1. A control apparatus comprising:

a first microcomputer;

a second microcomputer; and

a third microcomputer;

wherein said first microcomputer is reset in response to power being supplied to said control apparatus, and then outputs a reset signal for resetting said second microcomputer while starting a control operation, and then during the control operation, when said first microcomputer detects an abnormality of said second microcomputer, said first microcomputer outputs a reset signal for resetting said second microcomputer while continuing the control operation, and

wherein said second microcomputer is reset in response to the reset signal from said first microcomputer, and then outputs a reset signal for resetting said third microcomputer while starting a control operation, and then during the control operation, when said second microcomputer detects an abnormality of said third microcomputer, said second microcomputer outputs a reset signal for resetting said third microcomputer while continuing the control operation.

4,882,670

NUMERICAL CONTROL SYSTEM

Shinichi Isobe; Mitsuto Miyata, and Takashi Yamauchi, all of Tokyo, Japan, assignors to Fanuc Ltd., Minamitsuru, Japan

PCT No. PCT/JP86/00432, § 371 Date Apr. 20, 1987, § 102(e) Date Apr. 20, 1987, PCT Pub. No. WO87/01215, PCT Pub. Date Feb. 26, 1987

PCT Filed Aug. 21, 1986, Ser. No. 49,692

Claims priority, application Japan, Aug. 21, 1985, 60-183563

Int. Cl.^{4} G06F *15/16, 15/46*

U.S. Cl. 364—188 2 Claims

1. A numerical control system, comprising:

an NC unit;

a programmable machine controller for executing at least sequence control based on signals from the NC unit and a machine tool;

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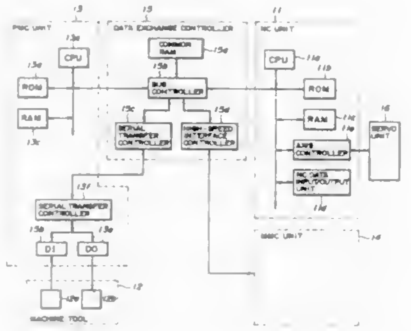
a computerized man-machine interface controller having at least a computer, a CRT connected to the computer and a keyboard connected to the computer; and

a data exchange controller connected to said NC unit, said machine controller and the computer of said interface controller, and data being exchanged among the NC unit, programmable machine contoller and man-machine interface controller under the control of said data exchange controller;

wherein both said NC unit and said programmable machine controller include computers; and



wherein said machine controller includes a bus, said NC unit includes a bus, and said data exchange controller has a common RAM, a high-speed interface controller, and a bus controller connected, for bidirectional data exchange with said common RA, said high-speed interface controller, the bus of said programmable machine controller, and the bus of said NC unit; and said man-machine interface controller having a high-speed interface controller connected to the high-speed interface controlier of the data exchange controller and connected to the computer of said interface controller.

4,882,671

MICROPROCESSOR CONTROLLED RIGID DISK FILE SUBSYSTEM

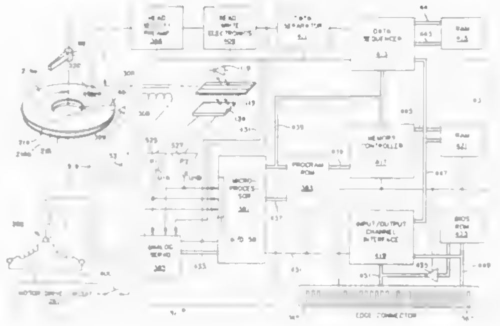
Randolph H. Graham, Fremont; Bruce R. Peterson, San Jose, and Richard J. Blackborow, Cupertino, all of Calif., assignors to Plus Development Corporation, Milpitas, Calif.

Continuation of Ser. No. 741,588, Jun. 4, 1985, Pat. No. 4,819,153. This application Mar. 27, 1989, Ser. No. 329,400

The portion of the term of this patent subsequent to Apr. 4, 2006, has been disclaimed.

Int. Cl.^{4} G06F *1/00;* **G11B** *5/012*

U.S. Cl. 364—200 17 Claims



1. An improved control system for a miniature disk file subsystem including a head and disk assembly for storing and retrieving user data, the subsystem having electrical connection paths to address, data, and control buses of a host computer, the control system being mechanically attached to the head and disk assembly and in electrical interconnection therewith, the control system comprising:

control means including at least one servo loop for controlling the position of a head positioning mechanism of said assembly relative to at least one rotating data storage disk of said assembly having a diameter not substantially greater than 95 millimeters in order to cause a data head of said mechanism to move to a commanded track of a multiplicity of available concentric data tracks formed on a data storage surface of said disk during track seeking operations and to cause said head to remain in substantial alignment with said commanded track during track following operations;

controller/interface means including interface means for receiving commands and data to be stored from said host computer directly via the connection paths to at least one of its said address, data and control buses and for sending the commands to a single microprocessor and for sending the data to be stored to a buffer memory and for returning subsystem status values from the single microprocessor and for returning the data retrieved from the disk to the host computer, further including memory controller means for generating byte addresses for the buffer memory to enable data to be written into the buffer memory and read out thereof, and data sequencer state machine means for controlling the sequencing of storage and retrieval of data between said surface and said buffer memory via said head,

the single programmed control microprocessor of the subsystem being operatively connected to said control means and to said controller/interface means for operatively controlling user data storage to disk and retrieval from disk operations of said subsystem via said control means and host to disk data transfer operations of said control-/interface means in response to said commands received from said host computer via said controller/interface and for generating and putting out said subsystem status values for said host computer via said controller/interface means.

4,882,672

SYSTEM FOR INITIALIZATION OF CHANNEL CONTROLLERS UTILIZING ADDRESS POINTERS CALCULATED FROM MULTIPLYING SIZES OF DATA FIELDS WITH DEVICE NUMBERS

Kenji Yahiro, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 99,719, Sep. 22, 1987, abandoned. This application Apr. 13, 1989, Ser. No. 338,380

Claims priority, application Japan, Sep. 22, 1986, 61-224637

Int. Cl.^{4} G06F *13/12, 9/34, 12/00, 12/10*

U.S. Cl. 364—200 2 Claims

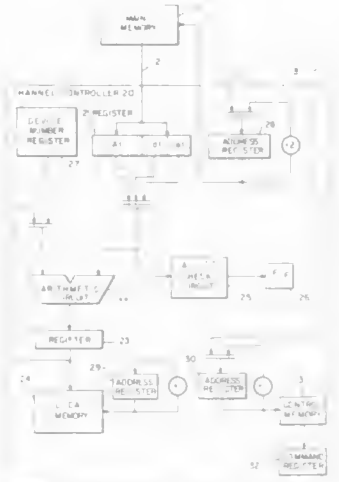
1. A method for initializing a set of channel controllers in an information processing system by writing address pointers of a particular one of a plurality of control data areas assigned to one of the channel controllers into a respective local memory of each of said channel controllers, the method including steps of:

i. storing in a main memory of said information processing system initialization data which is composed of base addresses of control data areas, sizes of data fields of said control data areas, offsets of data fields of said control data areas from said base addresses, and data indicating end of initialization;

ii. each of said channel controllers sequentially reading said initialization data stored in said main memory;

iii. calculating the address pointers assigned to one of the channel controllers by utilizing a predetermined procedure from said initialization data read by said one of the channel controllers and a device number relating to said one of the channel controllers, said predetermined procedure including multiplying said sizes of data fields of said control data areas by said device number;

iv. writing the address pointers assigned to said one of the channel controllers, based on a result of said calculating step, into said local memory of said one of the channel controllers;



v. accessing said main memory by utilizing the address pointers written into said local memory; and

vi. terminating the initialization of said one of the channel controllers upon reading said data indicating the end of the initialization in said sequential reading step.

4,882,673

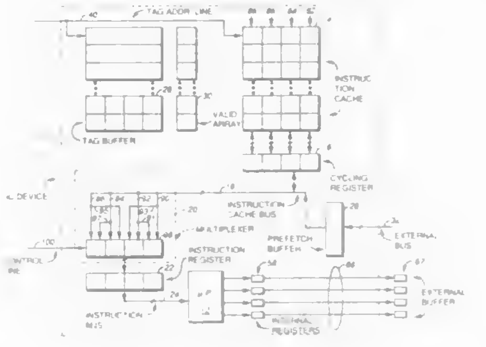
METHOD AND APPARATUS FOR TESTING AN INTEGRATED CIRCUIT INCLUDING A MICROPROCESSOR AND AN INSTRUCTION CACHE

David B. Witt, Austin, Tex., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Oct. 2, 1987, Ser. No. 104,314

Int. Cl.^{4} G11C *29/00;* **G01R** *31/28;* **G06F** *11/26. 1/00*

U.S. Cl. 364—200 16 Claims



13. An integrated electronic circuit comprising:

a microprocessor for executing respective instructions;

wherein at least one of the respective instructions includes at least one opcode byte in a first byte position and includes at least one data byte in a second byte position;

an instruction cache for storing at least one respective opcode byte and at least one respective data byte of the at least one instruction;

wherein said instruction cache, alternatively, can store the at least one opcode byte in the first byte position with the at least one data byte in the second byte position or can store the at least one opcode byte in the second byte position with the at least one data byte in the first byte position;

instruction bus means for transferring the at least one opcode byte and the at least one data byte between said microprocessor and said instruction cache; and

means for exchanging respective byte positions of the at least one opcode byte and the at least one data byte in the course of a transfer of the at least one opcode byte and the at least one data byte between said microprocessor and said instruction cache.

4,882,674

APPARATUS AND METHOD FOR CONTROL OF ONE COMPUTER SYSTEM BY ANOTHER COMPUTER SYSTEM

Jeanne M. Quint, Manchester, and Isabel B. Tomaszewski, Merrimack, both of N.H., assignors to Wang Laboratories, Inc., Lowell, Mass.

Continuation of Ser. No. 708,327, Mar. 5, 1985, abandoned. This application Mar. 9, 1988, Ser. No. 166,838

Int. Cl.^{4} G06F *15/16*

U.S. Cl. 364—200 10 Claims

1. In a digital data processing system which has a destination data processing means coupled by message transport means to a source data processing means and wherein the source data processing means has remote call providing means for providing a remote call to a callable program in the destination data processing means and the destination data processing means has remote call receiving means for receiving the remote call and performing a call to the callable program,

a call message which is produced by the remote call providing means in the source data processing means, transferred via the message transport means to the destination data processing means, and received by the remote call receiving means comprising: a callable program specifier for specifying the callable program; and

an optional data part containing one or more optional items representing parameter values, the parameter values not being required in every call to the callable program but being used by the remote call receiving means in making the call when the optional items representing the parameter values are present in the call message.

4,882,675

PAPERLESS SYSTEM FOR DISTRIBUTING, REDEEMING AND CLEARING MERCHANDISE COUPONS

Steven Nichtberger, New Rochelle; Kevin McGlynn, Yorktown Heights, both of N.Y., and Corey Snook, Huntington Beach, Calif., assignors to Steven Nichtberger, New Rochelle, N.Y.

Filed Nov. 26, 1984, Ser. No. 674,847

Int. Cl.^{4} G06F *7/04, 15/21;* **G07F** *7/00, 7/08*

U.S. Cl. 364—401 25 Claims

1. A paperless system for distributing and redeeming coupons and the like, said apparatus comprising

display, selection and recording means for presenting to a customer a display of coupons, for enabling the customer to make a selection of coupons from the display, and for recording the selection, said display, selection and recording means further including means for generating a first

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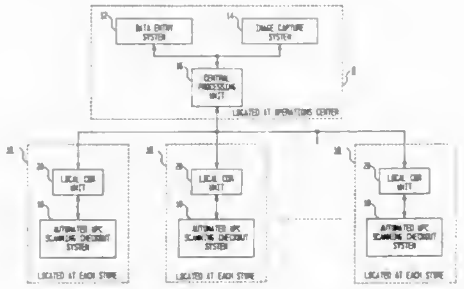
signal identifying the customer and his/her coupon selection,

identification and checkout means for identifying the customer at a store checkout station as the one who made the selection and for generating a second signal identifying items purchased in the store by the customer,



matching means coupled to said display, selection and recording means and responsive to said first and second signals for determining any matches between the coupons selected and the items purchased,

and means for crediting the customer in accordance with the terms of the matched coupons.

4,882,676

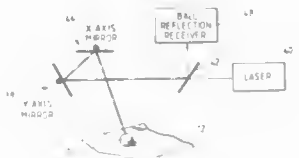
METHOD AND APPARATUS FOR RATING BILLIARD SHOTS AND DISPLAYING OPTIMAL PATHS

Andrew R. Van De Kop, and Franz Van De Kop, both of 925 Fulwar Skipwith, Rte. 3, Baton Rouge, La. 70808

Filed Sep. 9, 1988, Ser. No. 242,159

Int. Cl.⁴ G06F *15/44*

U.S. Cl. 364—410 8 Claims



1. A billiard ball tracking system, comprising:

a billiards table, cue ball, and object balls;

scanning means for scanning a playing surface of the table to determine positions of the cue ball and the object balls;

position indicating means for indicating an initial position of the cue ball and object balls on the table; and

shot indicating means for indicating a selected shot, the shot indicating means illustrating on the table an ideal path of the cue ball for striking an object ball during the shot.

4,882,677

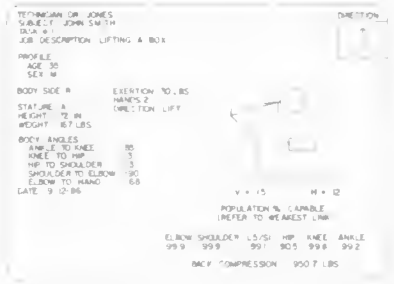
ISOMETRIC STRENGTH TESTING METHOD AND EQUIPMENT FOR DISABILITY EVALUATION

Thomas M. Curran, 464 Springbrook, Saline, Mich. 48176

Filed Sep. 3, 1987, Ser. No. 92,432

Int. Cl.⁴ A61B *5/10, 5/22*

U.S. Cl. 364—413.02 12 Claims



11. In a disability analysis isometric strength testing system which includes a computer program, an isometric strength testing unit comprising means to support a load sensor, a load sensor on the support means and grip means on the support means connected to the load sensor to enable a subject person to apply an isometric load to the load sensor, means to monitor the load sensor as a function of time and means to record the load applied to the load sensor as a function of time, the steps of, p1 measuring and recording a subject person's height, weight, and sex,

having an unrestrained subject person apply an isometric load to the grip means,

measuring and recording the subject person's actual load exerted, direction of exertion and number of hands from the application of the isometric load,

photographing the subject person during application of the load and digitizing the photograph to measure and record body angles,

calculating the subject person's anthropometric data including body link lengths, centers of gravity and weight from the subject person's height, weight, sex and digitized body angles,

calculating the joint compression for several selected joints of the subject person from the calculated anthropometric data, direction of exertion, number of hands, sex and actual load exerted,

reiteratively recalculating the joint compression at each selected joint by repeatedly adjusting the value of load exerted until the value of joint compression at one of the joints substantially equals a predetermined value to thereby determine an expected load exerted, and

comparing the subject person's expected load exerted to the subject person's actual load exerted to determine the subject person's disability.

4,882,678

DATA SENSING AND PROCESSING DEVICE FOR SCUBA DIVERS

Robert Hollis, San Leandro; John E. Lewis, Rancho Palos Verdes, and Marvin Ackerman, Sunnyvale, all of Calif., assignors to Oceanic USA, San Leandro, Calif.

Filed Jan. 14, 1987, Ser. No. 3,085

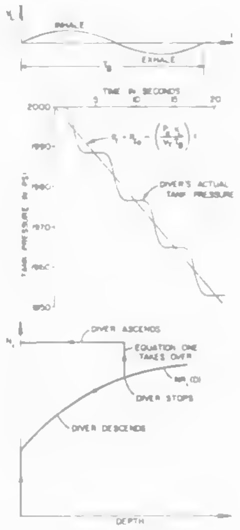
Int. Cl.⁴ G06G *7/60*

U.S. Cl. 364—413.31 4 Claims

1. A portable data sensor, processor, and display mounted in a waterproof case for use by a SCUBA diver using a tank of compressed air and for continuously determining during an underwater dive the allowable remaining dive time for the diver comprising

said data sensor including at least a means for measuring the air pressure in the tank, a means for measuring the ambient hydrostatic pressure, and a means for measuring time, all of said measuring means mounted in said case and producing data sensor output signals,

said processor including at least a first simulating means responsive to said data sensor output signals and arithmetically combining the same for predicting the dive time remaining at depth that provides for an air reserve following an ascent to the surface, and a second simulating means responsive to said data sensor output signals and for arithmetically combining the same and predicting the dive time remaining at depth that provides for a direct ascent to the surface without the need for decompression stops, said time predicted by said second simulating means being the no-decompression dive time limit,



said processor including a selection means for determining the allowable remaining dive time which is the lesser of the two dive times predicted by the first and second simulating means, and

means for displaying this allowable remaining dive time on said display.

4,882,679

SYSTEM TO REFORMAT IMAGES FOR THREE-DIMENSIONAL DISPLAY

Heang K. Tuy, Cleveland; Todd J. Krochta, Akron; Frederick C. Mailey, South Euclid, and Hsayjern Lin, Richmond Heights, all of Ohio, assignors to Picker International, Inc., Highland Hts., Ohio

Filed Nov. 27, 1987, Ser. No. 126,368

Int. Cl.⁴ G09G *1/06*

U.S. Cl. 364—413.22 48 Claims

1. A diagnostic imaging apparatus for forming a three-dimensional representation of a specimen comprising:

acquisition means for acquiring slice data indicative of a physical property of a plurality of generally planar regions of a specimen, each generally planar region being divided into a plurality of subregions represented by subregion data representative of that portion of the slice data unique thereto;

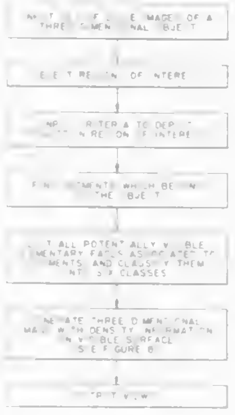
means for assigning a viewing value to subregions of at least one of the planar slices, the viewing value being assigned in accordance with subregion data thereof;

means for segregating at least a first one of the subregions to define a region of interest;

means for defining a boundary of interest within the region of interest;

means for assembling image data representative of subregions of the boundary of interest as a function of subregion data unique thereto;

scaling means for assigning a scaled value to at least a portion of the image data, such that the image data is representative of first, second, and third dimensions of an associated specimen; and



means for projecting the image data onto a viewing surface.

4,882,680

PROCESS AND DEVICE FOR TAKING INTO ACCOUNT LOCATING PULSES SUPPLIED BY A GAMMA CAMERA

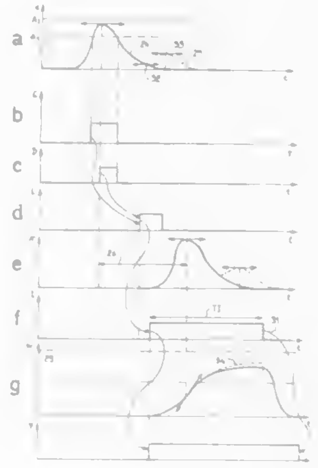
Jean-Paul Bonnefoy-Claudet, Grenoble, and Corinne Mestais, Le Prieure Bernin, both of France, assignors to Commissariat a L'Energie Atomique, Paris, France

Filed May 26, 1988, Ser. No. 199,102

Claims priority, application France, May 27, 1987, 87 07479

Int. Cl.⁴ G01T *1/164, 1/208*

U.S. Cl. 364—413.24 13 Claims



1. A process for taking into account locating pulses supplied by a gamma camera comprising the following steps:

producing scintillations in a scintillation crystal in response to gamma camera radiation,

amplifying said scintillations by means of a plurality of photomultiplier tubes to develop electrical contributions of said tubes,

weighting said electrical contributions successively in resistor arrays,

transmitting said weighted electrical contributions by means of transmission circuits if the maximum amplitude of said scintillations is in a predetermined range,

integrating said weighted and transmitted electrical contributions in integrators to produce integrated pulses,

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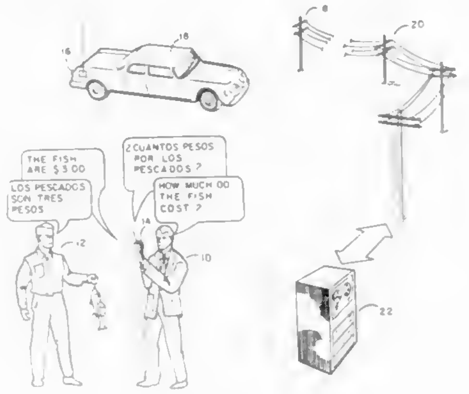
processing said integrated pulses for producing said locating pulses, and
measuring the energy of said scintillations and validating the taking into account of said locating pulses when the energy of said scintillations belongs in a predetermined energy band.

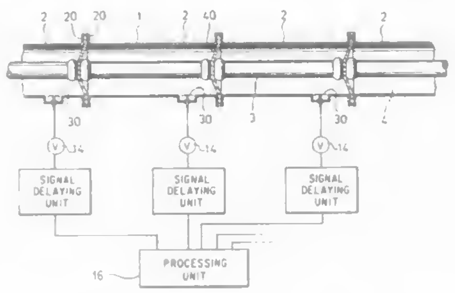
4,882,681
REMOTE LANGUAGE TRANSLATING DEVICE
Gregory R. Brotz, P.O. Box 1322, Sheboygan, Wis. 53081
Filed Sep. 2, 1987, Ser. No. 92,373
Int. Cl.⁴ G06F *15/38*
U.S. Cl. 364—419 4 Claims


16
18
8
20
THE FISH ARE $3.00
LOS PESCADOS SON TRES PESOS
¿CUANTOS PESOS POR LOS PESCADOS?
HOW MUCH DO THE FISH COST?
12
14
10
22

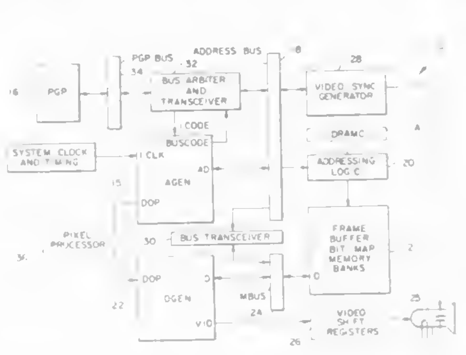
1. A method for contemporaneous language translation at the site of the user and another party comprising the steps of:
providing the user with a transmitter/receiver device;
transmitting a convectional segment of the user's speech by a voice signal through said transmitter/receiver to a speech translation computer;
translating the user's speech into a selected other spoken language form of the other party by said speech translation computer;
broadcasting said translated speech;
receiving back the translated speech by said transmitter/-receiver;
broadcasting in verbal form said translated speech to the other party for that other party to comprehend the translation of what the user had originally spoken in a different language;
said transmitter/receiver receiving a conversational segment of the speech of the other party in the other party's foreign language;
transmitting said foreign language over said transmitter/-receiver to said speech translation computer;
translating the other party'speech into the user's language;
receiving back of said transmitter/receiver the translation of the other party's foreign language; and
broadcasting in verbal form said translated foreign language to the user whereby the user can listen to the translation and carry on conversations with instantaneous translations at the site of the user and any other party.

4,882,682
APPARATUS FOR DETECTING POSITION OF INTERNAL FAULT OF GAS INSULATED BUS
Koji Takasuka, and Koji Ibuki, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 793,065, Oct. 18, 1985, abandoned. This application May 4, 1988, Ser. No. 190,095
Claims priority, application Japan, Nov. 1, 1984, 59-230840
Int. Cl.⁴ G01R *31/08*
U.S. Cl. 364—507 2 Claims

1. An apparatus for detecting the position of an internal fault of a gas insulated bus, comprising:
electrodes provided in a tubular-shaped housing of said gas insulated bus, said electrodes positioned at arbitrary intervals from neighboring electrodes along the axial direction of said tubular-shaped housing, said electrodes for detecting a voltage induced within said housing by flashovers and corona discharge within said housing, wherein said electrodes are disc shaped and are mounted in respective cylindrical, gas-tight enclosures extending radially outward from said tubular-shaped housing, sensing surfaces of said electrodes being flush with, but electrically insulated from, an inner surface of said tubular housing;
voltage measurement means which measure said electrode voltages thereat; and
a processing unit responsive to outputs of said measuring means for identifying the position of the fault by comparing outputs from said voltage measurement means.

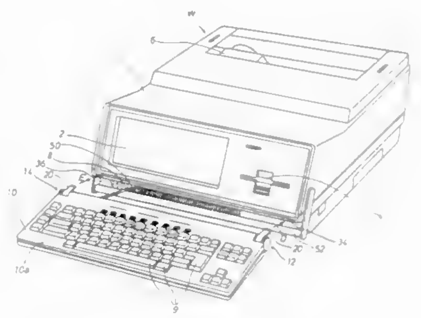


4,882,683
CELLULAR ADDRESSING PERMUTATION BIT MAP RASTER GRAPHICS ARCHITECTURE
Charle'3 R. Rupp, Bolton, and William R. Stronge, Tewksbury, both of Mass., assignors to Fairchild Semiconductor Corporation, Santa Clara, Calif.
Filed Mar. 16, 1987, Ser. No. 26,041
Int. Cl.⁴ G09G *1/16*; G06F *3/153*
U.S. Cl. 364—521 65 Claims



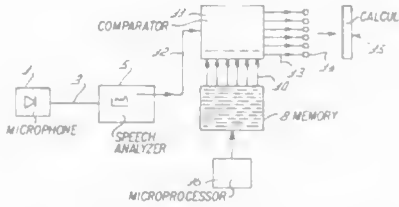
1. A frame buffer address circuit for raster graphics machines having a frame buffer memory comprising a bit map for storing graphics image data at frame buffer memory addresses correlated with pixel positions of a raster display surface, said frame buffer address circuit comprising:
linear permutation network (LPN) means for transformation and linear permutation of the graphics image data frame buffer memory addresses to form a linear permutation bit map in the frame buffer memory addressable by the frame buffer address circuit in at least two different addressing mode cell configurations, at least one of said addressing mode cell configurations corresponding to a two-dimensional cell.

4,882,684
ENGAGING DEVICE OF A KEYBOARD FOR A DATA PROCESSING UNIT
Michifumi Ishigami, and Toyonori Sasaki, both of Nagoya, Japan, assignors to Brother Kogyo Kabushiki Kaisha, Aichi, Japan
Filed Dec. 21, 1987, Ser. No. 135,274
Claims priority, application Japan, Dec. 25, 1986, 61-202229
Int. Cl.⁴ G06F *15/00*
U.S. Cl. 364—708 11 Claims



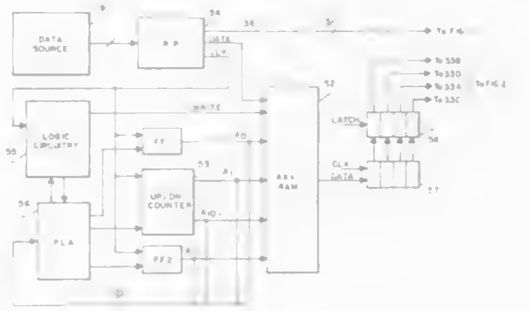
1. In combination with a data processing unit having a keyboard detachably mounted on a body of said data processing unit, an engaging device comprising:
engaging means for receiving and holding leg members, said engaging means being formed at a lower front portion of said body of said data processing unit and extending rearwardly into said body;
said leg members rotatably mounted relative to said keyboard and lockable into at least one predetermined position and selectively engageable with said engaging means; and
angle adjusting means, connected to said leg members, for rotating said leg members to a predetermined position for adjusting a declination angle between an upper surface of said keyboard and a level surface on which the keyboard rests, thereby allowing an operator to select a plurality of declination angles of the keyboard.

4,882,685
VOICE ACTIVATED COMPACT ELECTRONIC CALCULATOR
Cornelis van der Lely, 7, Brüschenrain, Zug, Switzerland
Continuation of Ser. No. 900,138, Aug. 25, 1986, abandoned. This application Oct. 17, 1988, Ser. No. 259,424
Claims priority, application Netherlands, Aug. 26, 1985, 8502336; Oct. 30, 1985, 8502959
Int. Cl.⁴ G06F *3/16*
U.S. Cl. 364—709.11 9 Claims



1. A compact electronic calculator comprising:
a display screen for displaying calculator inputs and outputs;
a microphone for receiving audible inputs consisting of numbers and operative words and converting said audible inputs to electrical signals;
a speech analyzer means coupled to said microphone for converting said electrical signals from said microphone into digital words;
an electronic memory, said electronic memory string digitized words representing said numbers and said operative words;
an electronic comparator means, said comparator means coupled to said speech analyzer for receiving said digital words and for comparing said digital words to digitized words stored in said electronic memory, said electronic memory also being coupled to said comparator means;
a processing means coupled with said electronic memory, said processing means controlling the comparison of each said digital word to said digitized words such that said comparator produces a digital number corresponding to an address location in said electronic memory for a digitized word that matches a digital word generated by said speech analyzer;
a plurality of simple comparators, said simple comparators being electronically coupled to said electronic comparator means to receive said digital numbers; and
execution means for executing said audible inputs and displaying the result on said display screen, each said simple comparator, upon recognition of a designated digital number actuating said execution means.

4,882,686
PRINTING APPARATUS WITH IMPROVED DATA FORMATTING CIRCUITRY
Steven R. Gretter, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Jun. 22, 1987, Ser. No. 64,739
Int. Cl.⁴ G06F *3/14*
U.S. Cl. 364—518 15 Claims



1. An image recording apparatus comprising:
memory means, including one or more, but less than a first predetermined plural number, N, of integrated circuit memory chips, having at least a second plural predetermined number, M, of memory sites for storing in said chip(s) as a buffer memory image signals representing a full line of image signals to be printed by said apparatus;
means for writing serially the image signals to said memory means in consecutive sequential order;
recording means having said second predetermined number of recording elements and driver means for activating same for recording an image on a recording material on a line by line basis;
shift register assemblage means having the first predetermined number of shift register assemblages, each for storing image signals that are serially inputted into each shift register assemblage and for outputting said image signals in parallel to said driver means;
intermediate register means for shifting image signals to each of said shift register assemblages; and
extracting means for extracting from said memory means image signals and for feeding said image signals to said intermediate register means.

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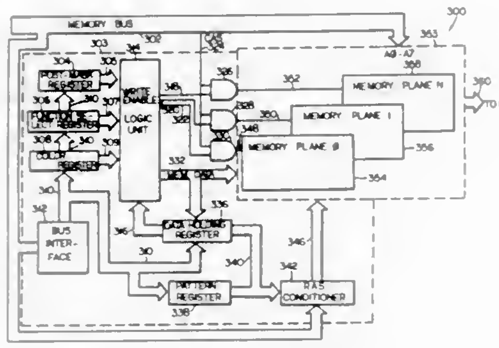
4,882,687
PIXEL PROCESSOR

Dorothy A. Gordon, Cambridge, Mass., assignor to Schlumberger Technology Corporation, Houston, Tex.
Filed Mar. 31, 1986, Ser. No. 846,657
Int. Cl.⁴ H03K *19/177;* **G06F** *7/50*
U.S. Cl. 364—518 16 Claims

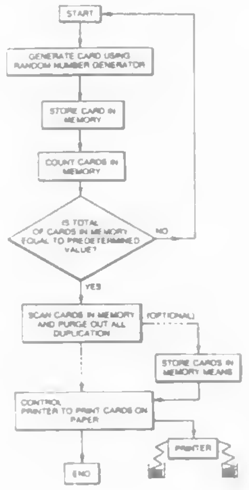


1. A method of performing a Boolean OR operation on a function of two independent variables, one of said variables being stored in a first digital storage device which will also contain the result of said Boolean OR operation, the other of said variables being stored in a second digital storage device, the method comprising:
- writing a digital "1" into said first digital storage device when the contents of said second digital storage device is a digital "1" without reading the contents of said first digital storage device; and
- inhibiting a write cycle of said first digital storage device when the contents of said second digital storage device is a digital "0".

4,882,688
COMPUTER-CONTROLLED METHOD AND APPARATUS FOR MAKING BINGO CARDS

Stanley F. Kondziolka, Markham, and Henry Klein, Thornhill, both of Canada, assignors to Demco Bingo Inc., Thornhill, Canada
Continuation-in-part of Ser. No. 823,187, Jan. 27, 1986, abandoned. This application Dec. 4, 1987, Ser. No. 128,920
Claims priority, application Canada, Dec. 5, 1986, 524687
Int. Cl.⁴ G06F *15/44;* **A63F** *3/06*
U.S. Cl. 364—519 13 Claims

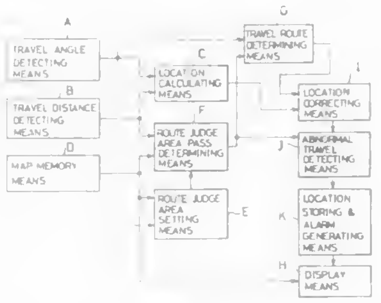
1. A method for making bingo cards, comprising the steps:
- (a) generating a first plurality of random numbers utilizing the random number generating capability of a computer,
- (b) formatting on the basis of said first plurality of random numbers a first number combination for a first bingo card, utilizing the electronic processing capability of the said computer and a formatting program,
- (c) storing the first number combination for the first bingo card in an electronic or magnetic memory means,
- (d) generating a further plurality of random numbers utilizing the said random number generating capability,
- (e) formatting on the basis of said further plurality of random numbers a further number combination for a further bingo card, utilizing the electronic processing capability of the said computer and said formatting program,
- (f) storing the further number combination for the further bingo card in the memory means,
- (g) repeated steps (d), (e) and (f) in that order until the total of stored number combinations in the memory reaches a predetermined level,
- (h) using said electronic processing capability to scan the number combinations in the memory means in order to detect duplicates,
- (i) if required, removing number combinations from the memory means in order to eliminate duplication, and


START
GENERATE CARD USING RANDOM NUMBER GENERATOR
STORE CARD IN MEMORY
COUNT CARDS IN MEMORY
IS TOTAL OF CARDS IN MEMORY EQUAL TO PREDETERMINED VALUE?
NO
YES
SCAN CARDS IN MEMORY AND PURGE OUT ALL DUPLICATION
(OPTIONAL)
STORE CARDS IN MEMORY MEANS
CONTROL PRINTER TO PRINT CARDS ON PAPER
PRINTER
END

- (j) using a computer-controlled, high-speed graphics printer to print bingo cards on paper, utilizing the number combinations remaining in the memory means.

4,882,689
NAVIGATION SYSTEM USING ANGULAR RATE SENSOR

Yoshihito Aoki, Shizuoka, Japan, assignor to Yazaki Corporation, Japan
Filed Feb. 9, 1988, Ser. No. 154,028
Claims priority, application Japan, Feb. 10, 1987, 62-27278
Int. Cl.⁴ G06F *15/50*
U.S. Cl. 364—449 4 Claims

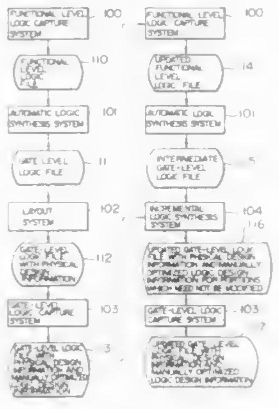

A
TRAVEL ANGLE DETECTING MEANS
B
TRAVEL DISTANCE DETECTING MEANS
D
MAP MEMORY MEANS
C
LOCATION CALCULATING MEANS
F
ROUTE JUDGE AREA PASS DETERMINING MEANS
ROUTE JUDGE AREA SETTING MEANS
E
G
TRAVEL ROUTE DETERMINING MEANS
I
LOCATION CORRECTING MEANS
J
ABNORMAL TRAVEL DETECTING MEANS
K
LOCATION STORING & ALARM GENERATING MEANS
H
DISPLAY MEANS

1. A navigation system for displaying travel locations of a vehicle on a displayed map, comprising:
- (a) means for detecting vehicle travel angle;
- (b) means for detecting vehicle travel distance;
- (c) means coupled to said vehicle travel angle detecting means and said vehicle travel distance detecting means for calculating vehicle locations on the basis of the detected vehicle travel angles and distances;
- (d) means for storing map information data including branch points;
- (e) means coupled to said map information data storing means for setting a route judge area at each branch point to determine a route along which the vehicle travels from a branch point;
- (f) means coupled to said vehicle distance detecting means said map storing means and said route judge area setting means, for determining vehicle passing into the set route judge area (JE) when a distance (Lc) between a current vehicle location (Pa) and a succeeding branch Point (P_1) becomes shorter than a first predetermined distance and vehicle passing through the set route judge area when a distance (MM) between a position (Pa), at which vehicle enters the set route judge area, and a current vehicle location (Pc) becomes longer than a second predetermined distance;

- (g) means coupled to said vehicle travel angle detecting means and said route judge area pass determining means for determining a travel route at each branch point by comparing a travel angle detected by said travel angle detecting means with map data stored in said map data storing means when the vehicle has passed through the set route judge area;
- (h) means coupled to said vehicle location calculating means and said travel route determining means, for correcting said calculated vehicle locations (Pn) so as to be located along a road on a displayed map in accordance with expressions;
- (i) means coupled to said vehicle location correcting means and said route judge area pass determining means for detecting an abnormal travel when a detected vehicle travel angle exceeds a predetermined angle under the condition that said route judge area pass determining means determines that the vehicle is out of the set route judge area;
- (j) means coupled to said abnormal travel detecting means for storing a current vehicle travel location and generating an alarm signal when said abnormal travel detecting means detects said abnormal travel; and
- (k) means coupled to said location storing and alarm generating means and said map data storing means for displaying a map stored in said map information data storing means, vehicle locations calculated by said calculating means and corrected by said location correcting means, the stored vehicle located at which the abnormal travel is detected and abnormal vehicle locations deviated from a map route.

4,882,690
INCREMENTAL LOGIC SYNTHESIS METHOD

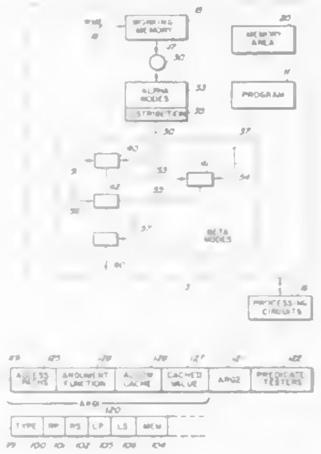
Takao Shinsha, Yokohama; Masato Morita; Yoshinori Sakataya, both of Hadano; Yoji Tsuchiya, Hiratsuka; Mitsuhiro Hikosaka, Kawasaki; Junji Koshishita, Yokohama, all of Japan; Keiho Akiyama, Madison, Wis., and Takashige Kubo, Hachioji, Japan, assignors to Hitachi, Ltd.; Hitachi Microcomputer Engineering, Ltd. and Hitachi Software Engineering Co., Ltd., all of Tokyo, Japan
Filed Sep. 25, 1986, Ser. No. 911,461
Claims priority, application Japan, Sep. 26, 1985, 60-210920
Int. Cl.⁴ G06F *15/60, 7/00*
U.S. Cl. 364—490 55 Claims


FUNCTIONAL LEVEL LOGIC CAPTURE SYSTEM
100
FUNCTIONAL LEVEL LOGIC FILE
110
AUTOMATIC LOGIC SYNTHESIS SYSTEM
101
GATE LEVEL LOGIC FILE
11
LAYOUT SYSTEM
102
GATE-LEVEL LOGIC FILE WITH PHYSICAL DESIGN INFORMATION
112
GATE-LEVEL LOGIC CAPTURE SYSTEM
103
3
FUNCTIONAL LEVEL LOGIC CAPTURE SYSTEM
100
UPDATED FUNCTIONAL LEVEL LOGIC FILE
14
AUTOMATIC LOGIC SYNTHESIS SYSTEM
101
INTERMEDIATE GATE-LEVEL LOGIC FILE
5
INCREMENTAL LOGIC SYNTHESIS SYSTEM
104
116
UPDATED GATE-LEVEL LOGIC FILE WITH PHYSICAL DESIGN INFORMATION AND MANUALLY OPTIMIZED LOGIC DESIGN INFORMATION FOR PORTIONS WHICH NEED NOT BE MODIFIED
GATE-LEVEL LOGIC CAPTURE SYSTEM
103
7
UPDATED GATE-LEVEL LOGIC FILE WITH PHYSICAL DESIGN INFORMATION AND MANUALLY OPTIMIZED LOGIC DESIGN INFORMATION

1. An incremental logic synthesis method executed by a computer, for synthesizing an up-dated gate-level logic circuit which performs up-dated functions of current functions which are performed by a current gate-level logic circuit so that part thereof is used in the up-dated circuit, wherein the current circuit may include a modification to an original gate-level logic circuit synthesized by a computer for performing the current functions, said method comprising the steps of:
- (a) synthesizing an intermediate gate-level logic circuit which performs the up-dated functions, in response to input data describing the up-dated functions;
- (b) synthesizing the up-dated circuit in response to data describing the synthesized intermediate circuit and to data describing the current circuit, wherein the synthesizing step includes the steps of
- (b1) identifying a corresponding-portion pair which includes a first portion within the current circuit and a second portion within the intermediate circuit, wherein the first and second portions are mutually equivalent, and
- (b2) combing the first portion within the current circuit with a portion other than the second portion, within the intermediate circuit, so as to obtain the up-dated circuit as a result of the combining.

4,882,691
CACHING ARGUMENT VALUES IN PATTERN-MATCHING NETWORKS

Marshall I. Schor, Katonah, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Sep. 7, 1988, Ser. No. 241,498
Int. Cl.⁴ G06F *15/18*
U.S. Cl. 364—513 15 Claims



1. In a machine-effected method of updating a pattern-matching network having a plurality of pattern-matching nodes which are logically interconnected in logic paths so that argument inputs to the nodes come from diverse predecessor ones of the nodes; including the machine-executed steps of:
- at a predetermined one of said nodes, passing a change token from a set of predecessor nodes to a first input of said one node for updating same;
- at a predecessor node logically connected to a second input of said predetermined one of said nodes, storing a plurality of pattern match tokens;
- for each test to be conducted, indicating whether or not the change token may result in changing values during test interation in a test to be conducted;
- examining the node for tests to be conducted between the change token and partial match tokens available to said second input, if no tests are to be conducted, then proceeding to other machine operations, otherwise;
- if the indication shows no changing values during said one test, computing the change token value for a first iteration of the test and caching the computed change token value for said one node and using the cached value for ensuing iterations of said one test, otherwise computing the

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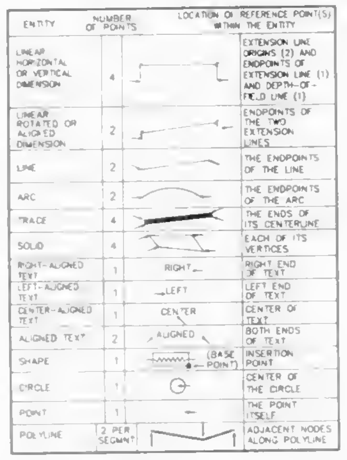
change token argument value at each iteration of said one test.

4,882,692
METHODS AND SYSTEMS FOR GENERATING PARAMETRIC DESIGNS

Jay R. Saxton; Andrew J. Sodt, and Dan J. Suslo, all of Bellingham, Wash., assignors to TransformerCAD, Inc., Bellingham, Wash.

Filed Oct. 30, 1986, Ser. No. 925,278
Int. Cl.⁴ G06F *3/14*
U.S. Cl. 364—518 75 Claims



1. A method of employing a general purpose interactive system which includes a computer, a monitor coupled to and adapted to display data outputted from said computer, and a data entry device coupled to and adapted to input data to said computer to create an accomplished design by first engineering said design and then portraying said design in the form of electronically storable data, said method comprising the steps of:

employing said data entry device to establish a master drawing with text and dimensions represented by variables;

continuously displaying the updated master drawing on said monitor as said master drawing is established, whereby the user can visually monitor the appearance of said master drawing as it is established;

thereafter displaying on said monitor a design plan with an array of cells;

employing said data entry device to input to said design plan by inputting to, or modifying in, each of one or more of said cells a statement which defines a numerical or text value, at least one of said statements including a solicitation for information;

employing said data entry device to input to said computer an instruction which will:

(i) prevent further editing of said design plan, and

(ii) result in said monitor displaying those solicitations for information contained in statements in cells of the edited design plan; and thereafter:

employing said data entry device to input to said computer information solicited pursuant to statements in cells of the edited design plan;

displaying the information inputted by the user on said monitor so that the user can check the responses inputted to the computer; and

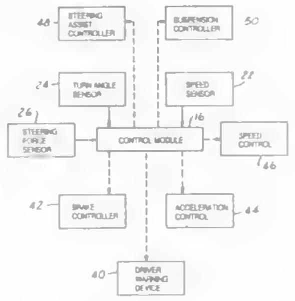
electronically storing in said computer data representing said accomplished design and generated by employing the computer to:

(i) resize elements of said master drawing represented by variables as necessary to conform to fixed dimensional values in cells of the edited design plan.

4,882,693
AUTOMOTIVE SYSTEM FOR DYNAMICALLY DETERMINING ROAD ADHESION

W. Trent Yopp, Canton, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 28, 1987, Ser. No. 137,908
Int. Cl.⁴ G06F *15/00*
U.S. Cl. 364—424.01 17 Claims



1. A system for determining the road adhesion of a tire installed on a road wheel of an automotive vehicle operating on a roadway, comprising;

road wheel turn angle measuring means comprising means for producing a first signal representing the turn angle at which the steering system of said vehicle is being operated;

vehicle speed measuring means comprising means for producing a second signal representing the speed at which said vehicle is being operated;

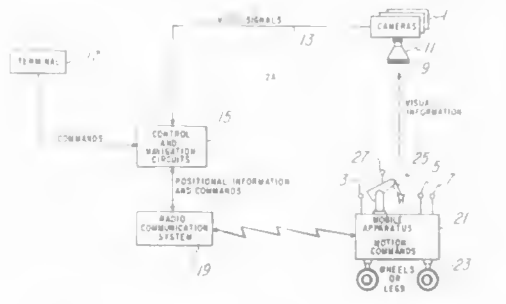
steering force measuring means comprising means for producing a third signal representing the steering force required to operate the steering system of said vehicle at said measured road wheel turn angle and said measured vehicle speed; and

processor means for determining the road adhesion of said tire, with said processor means comprising means for receiving said first, second, and third signals and means for deriving from said signals a fourth signal representing the magnitude of said road adhesion.

4,882,694
APPARATUS FOR VISUALLY LOCATING AND COMMUNICATING WITH MOBILE ROBOTS

William B. Brubaker, Dallas; John Slaughter; Donald J. Christian, both of Richardson, and Thomas J. Doty, Dallas, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 771,322, Aug. 30, 1985, abandoned. This application May 12, 1988, Ser. No. 195,345
Int. Cl.⁴ G06F *15/50*
U.S. Cl. 364—424.02 14 Claims



1. A combined communication and positioning system for a mobile apparatus, comprising:

an apparatus light source mounted on the mobile apparatus;

a modulator electrically connected to the apparatus light source, wherein the modulator is for generating modulating data to be sent to the apparatus light source to modulate the light output of the apparatus light source;

a fixed light receiver off board the mobile apparatus for receiving data in the form of the modulated light from the mobile apparatus light source;

a fixed demodulator electrically connected to the fixed light receiver, for demodulating the light received from the apparatus light source;

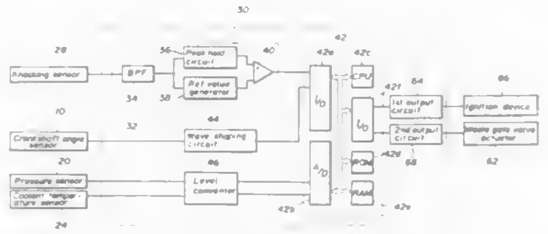
a camera off board the mobile apparatus for forming an image of the apparatus light source to locate the position of the mobile apparatus; and

means for correlating said position of the mobile apparatus with the said data in the form of the modulated light received from the mobile apparatus light source, and for generating and transmitting navigation commands to said mobile apparatus, based upon said correlation.

4,882,695
CONTROL SYSTEM FOR IGNITION TIMING AND BOOST PRESSURE IN INTERNAL COMBUSTION ENGINE

Toshiyuki Mieno; Toyohei Nakajima, and Akira Nagao, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 19, 1987, Ser. No. 109,363
Claims priority, application Japan, Oct. 20, 1986, 61-248890
Int. Cl.⁴ F02B *37/00;* **F02P** *5/15*
U.S. Cl. 364—431.08 2 Claims



1. A system for controlling ignition timing and boost pressure in a multi-cylindered internal combustion engine equipped with a turbocharger for applying boost pressure into combustion chambers of the engine, said system comprising:

angular position detecting means for detecting an angular position of an engine crankshaft to generate an output signal indicative of an engine speed;

engine load state detecting means for detecting a state of engine load to generate an output signal in response thereto;

knock detecting means for detecting a knock condition of an engine for respective cylinders to generate an output signal in response thereto;

ignition control means for determining a basic ignition timing for each cylinder in response to signals output by the angular position detecting means and engine load state detecting means, and said ignition control means for determining an actual ignition timing for each cylinder by retarding the basic ignition timing by an amount when the knock condition, output by said knocking detecting means, is determined for each cylinder;

ignition means for igniting an air/fuel mixture in the combustion chamber of each cylinder in response to the actual ignition timing from the ignition control means;

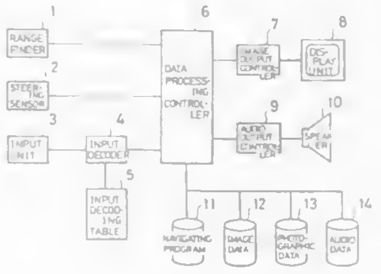
pressure control means for determining a reduction timing of the boost pressure applied to the combustion chamber of the engine, said pressure control means receiving the actual ignition timing from the ignition control means and calculating a mean value of the actual ignition timing for all cylinders, said pressure control means comparing the mean value with a reference ignition timing, which is determined based upon the detected engine speed and engine load, and when the mean value is found to exceed the reference ignition timing in a retard direction, said pressure control means determining reduction of the boost pressure; and

actuator means for reducing the boost pressure in response to a signal from the pressure control means.

4,882,696
NAVIGATION APPARATUS

Mitsuhiro Nimura, and Shoji Yokoyama, both of Anjo, Japan, assignors to Aisin Aw Co., Ltd. and Kabushiki Kaisha Shinsangyokaihatsu, both of Aichi, Japan

Filed Jul. 11, 1988, Ser. No. 217,532
Claims priority, application Japan, Oct. 7, 1987, 53-173613
Int. Cl.⁴ G06F *15/50*
U.S. Cl. 364—449 5 Claims



1. A navigation apparatus for navigating a vehicle in accordance with a preset course while measuring distance travelled and steering angle, comprising:

detecting means for detecting, immediately before a first intersection, whether distance from the first intersection to a second intersection at which the next turn is to be made is less than a predetermined value;

memory means for storing a voice track indication of lane information indicative of a lane into which the vehicle is to be steered after a turn is made at the first intersection; and

voice track indication output means for outputting the voice track indication of said lane information on the condition that said distance detected by said detecting means is less than said predetermined value.

4,882,697
STABILIZATION CONTROL CIRCUIT FOR VERTICAL POSITION IN AN INERTIAL NAVIGATOR

Hugh C. Ross, Clearwater, Fla., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Apr. 16, 1987, Ser. No. 39,497
Int. Cl.⁴ G06F *15/50*
U.S. Cl. 364—454 7 Claims

1. An apparatus for providing signals representative of vertical velocity and vertical position of an aircraft comprising:

first means for generating a first signal representative of vertical acceleration of said aircraft;

second means for generating a second signal representative of the altitude of said aircraft derived from a barometric altimeter;

third means for integrating the sum of said first signal and an acceleration correction signal to provide a vertical velocity output signal representative of the vertical velocity of said aircraft;

fourth means for integrating the sum of said vertical velocity output signal and a velocity correction signal to provide a vertical position output signal representative of the vertical position of said aircraft;

fifth means for time differentiating said second signal and

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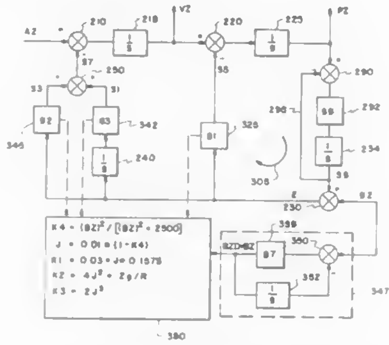
providing a third signal representative of said time differentiation of said second signal;

sixth means for generating an altitude error signal representative of the difference between said vertical position signal and said second signal;

seventh means for generating said velocity correction signal as a first function of said altitude error signal multiplied by a first variable gain value;

means for deriving said first variable gain value as a first selected function of said third signal, and in which said first variable gain value increases in value with increasing values of said third signal; and



eighth means for generating said acceleration correction signal as a second function of said altitude error signal, said second function including second and third variable gain values;

means for deriving said second and third variable gain values as second and third selected functions of said third signal, respectively, in which said second and third variable gain values decrease in value with increasing values of said third signal, such that said second function of said altitude error signal decreases in value for increasing values of said third signal.

4,882,698

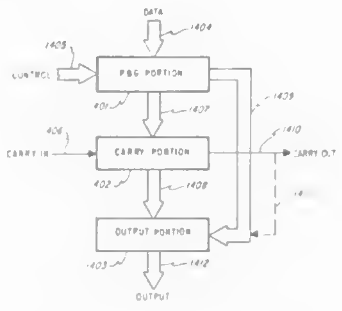
CELL BASED ALU WITH TREE STRUCTURED CARRY, INVERTING LOGIC AND BALANCED LOADING

William R. Young, Palm Bay, Fla., assignor to Harris Corporation, Melbourne, Fla.

Filed Oct. 7, 1987, Ser. No. 106,071

Int. Cl.⁴ G06F *7/50*

U.S. Cl. 364—736 31 Claims



1. An arithmetic logic unit for executing a selected arithmetic operation on first and second digital code signals comprising:

a front end portion having a first plurality of input terminals to which respective bit signals of said first digital code signal are applied and a second plurality of input terminals to which respective bit signals of said second digital code signal are applied, said front end portion including arithmetic operation defining control lines and means for generating propagate and generate term signals for the respective bit positions of said digital code signals in accordance with logic signals applied to said arithmetic function defining control lines;

a carry propagation portion having a plurality of inputs coupled to receive from said front end portion the propagate and generate term signals for said respective bit positions, said carry propagation portion comprising carry propagation logic circuits and inverter circuits interconnected in a tree structure between said plurality of inputs and a plurality of outputs and providing at said plurality of outputs respective carry propagation signals associated with said respective bit positions; and

an output portion, coupled to said carry propagation portion and to said front end portion, and including means for logically combining propagate and generate signals with carry propagation signals to derive an arithmetic operation output code representative of an arithmetic operation executed on said first and second digital code signals.

4,882,699

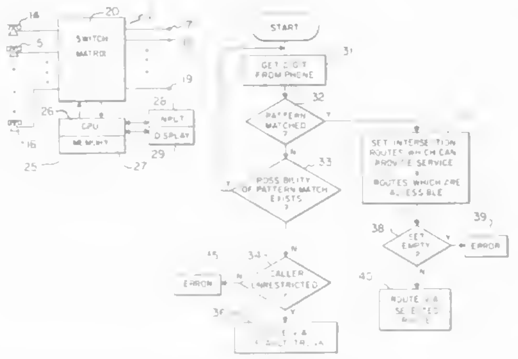
COMMUNICATIONS NETWORK ROUTING AND MANAGEMENT SYSTEM

Mark C. Evensen, Colorado Springs, Colo., assignor to International Business Machines Corp., Armonk, N.Y.

Filed Sep. 19, 1988, Ser. No. 246,477

Int. Cl.⁴ H04Q *3/42*

U.S. Cl. 379—284 16 Claims



12. In a telephone switching system having a plurality of input/output connections including communication lines and trunks and with a central processing unit coupled for sensing signals present on the lines or trunks and with a switching means connected for responding to the central processing unit by establishing appropriate interconnections between the connected lines and trunks, a process for configuring the system to provide predetermined responses to alphanumeric input signals comprising the steps of

composing a list of acceptable regular expressions of alphanumeric data which may appear in sequence on any given input connection,

ordering said list in a predetermined alphanumeric sequence,

inspecting each regular expression of said sequenced list for sequential states for constructing a transition graph with each transition graph trail ending in an action indicator,

forming a table of system actions with each said action specifically addressable by at least one said action indicator, and

responding to concurrence of a received regular expression and a selected system action from said table for selecting between completion of an input/output interconnection and provision of a signal that the received regular expression will not cause the system to complete an interconnection.

4,882,700

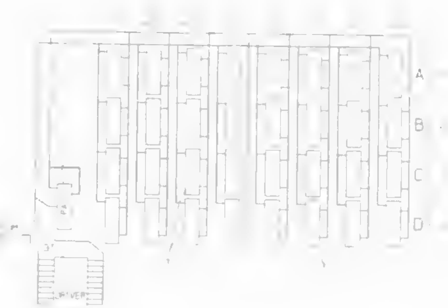
SWITCHED MEMORY MODULE

Karl H. Mauritz, Eagle; Geary L. Leger, Boise, both of Id.; Joseph B. Wicklund, Bothell, Wash.; James E. Herrud, and Steven H. Laney, both of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

Filed Jun. 8, 1988, Ser. No. 204,078

Int. Cl.⁴ G11C *13/00*

U.S. Cl. 365—51 22 Claims



1. Method of operating a memory array in which a plurality of memory circuit devices are arranged in a manner such that memory information is obtained by addressing bits of information from a selected number of the memory devices in the array in a format, the devices being addressed by using address enable signals to address each device, and the format of bits form a byte of memory data such that each byte includes bits from each memory device in the selected number of the circuit devices, and wherein the bits are addressed as rows and columns of information in a matrix on each memory device, characterized by:

(a) arranging the memory devices into a plurality of columns of memory devices, and a plurality of rows of memory devices;

(b) selectively enabling the addressing of the different rows of the memory devices by selectively providing said address enable signals to the respective rows of the devices, wherein each of a selected number of the memory devices in one row are addressed simultaneously as an address command response and a like number of memory devices in other rows are addressed at different times, the addressing of the different rows of the memory devices being accomplished in like sequences of rows and columns on a plurality of the devices;

(c) addressing each row of the memory devices while not enabling the memory devices in the other rows to be addressed.

4,882,701

LOOKAHEAD PROGRAM LOOP CONTROLLER WITH REGISTER AND MEMORY FOR STORING NUMBER OF LOOP TIMES FOR BRANCH ON COUNT INSTRUCTIONS

Hideshi Ishii, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 898,201, Aug. 20, 1986, abandoned. This application Sep. 23, 1988, Ser. No. 249,254

Claims priority, application Japan, Aug. 22, 1985, 60-185328

Int. Cl.⁴ G06F *9/00, 9/06, 9/38, 9/42*

U.S. Cl. 364—900 4 Claims

1. A branch instruction processing unit which executes branch-on-count instructions for loop control of a program by means of pipeline control, comprising:

memory means for storing a number of loop times designated by each of said branch-on-count instructions;

first control means for loading the number of loop times into said memory means from a loop times holding register;

first storing means for storing an output of said memory means;

detection means for detecting whether or not the output of said memory means is equivalent to a predetermined value while the output is being stored in said first storing means;

decrementing means for decrementing a count of said first storing means by a preselected value following said detecting by the detection means that said output of said memory means is equivalent to said predetermined value;

second storing means for storing an output of said decrementing means;

second control means for writing the output of said second storing means into said memory means; and

branch execution means responsive to an output of said detection means for transferring control to branch address when said detection means detects that an output of said memory means is equal to said predetermined value upon execution of said branch-on-count instruction and not branching to said branch address when said detection means detects that an output of said memory means is not equal to said predetermined value.

4,882,702

PROGRAMMABLE CONTROLLER WITH I/O EXPANSION MODULE LOCATED IN ONE OF I/O MODULE POSITIONS FOR COMMUNICATION WITH OUTSIDE I/O MODULES

Odo J. Struger, Chagrin Falls; Mark Luboski, Euclid, and Timothy J. Murphy, Hudson, all of Ohio, assignors to Allen-Bradley Company, Inc., Milwaukee, Wis.

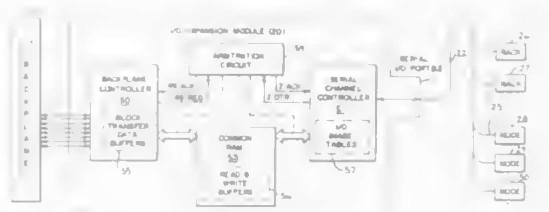
Continuation of Ser. No. 845,965, Mar. 31, 1986, abandoned. This application May 16, 1988, Ser. No. 195,407

Int. Cl.⁴ G06F *13/38, 13/28, 13/10*

U.S. Cl. 364—900 10 Claims

MICROFICHE APPENDIX INCLUDED

(2 Microfiche, 2 Pages)



4. An I/O expansion module for connection to a backplane in a primary equipment rack that is adapted to hold an in-rack

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processor and a plurality of first tier I/O modules and for communication with one or more second tier I/O modules residing outside the primary equipment rack, the I/O expansion module comprising:

backplane controller means for electronic communication with the in-rack processor through the backplane when the I/O expansion module is located in any one of a plurality of individually addressable I/O module positions corresponding to image table memory addresses existing within the in-rack processor prior to I/O expansion, the backplane controller means communicating during operation with the in-rack processor for transfer of bytes of parallel I/O status data through the rack backplane to the I/O expansion module residing at a single open of the addressable I/O module positions existing prior to I/O expansion as part of a routine in which modules in respective I/O module positions in the equipment rack are enabled for communication with the in-rack processor;

a serial I/O port for communication with one or more second tier I/O modules located outside the equipment rack;

serial channel controller means coupled to the serial I/O port, wherein the serial channel controller means includes a second image table for storing the bytes of I/O status data in locations associated with the one or more second tier I/O modules;

means for transferring I/O status data between the backplane controller means and the second image table in the serial channel controller means; and

wherein the serial channel controller means also includes means for controlling the serial communication of I/O status data between the second image table and the one or more second tier I/O modules.

4,882,703

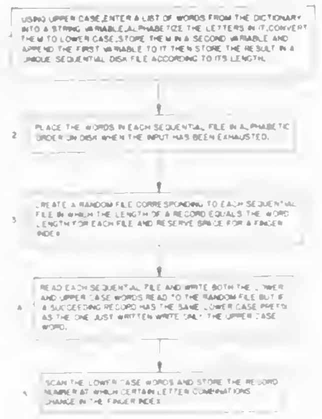
PROCEDURE FOR FINING ALL WORDS CONTAINED WITHIN ANY GIVEN WORD INCLUDING CREATION OF A DICTIONARY

Robert L. Nicolai, 4038 N. 9th St., St. Louis, Mo. 63147

Continuation-in-part of Ser. No. 651,583, Sep. 17, 1984, abandoned. This application Dec. 15, 1986, Ser. No. 941,773

Int. Cl.⁴ G06F *7/24*

U.S. Cl. 364—900 3 Claims


1
USING UPPER CASE,ENTER A LIST OF WORDS FROM THE DICTIONARY INTO A STRING VARIABLE,ALPHABETIZE THE LETTERS IN IT,CONVERT THEM TO LOWER CASE,STORE THEM IN A SECOND VARIABLE AND APPEND THE FIRST VARIABLE TO IT THEN STORE THE RESULT IN A UNIQUE SEQUENTIAL DISK FILE ACCORDING TO ITS LENGTH.
2
PLACE THE WORDS IN EACH SEQUENTIAL FILE IN ALPHABETIC ORDER ON DISK WHEN THE INPUT HAS BEEN EXHAUSTED.
3
CREATE A RANDOM FILE CORRESPONDING TO EACH SEQUENTIAL FILE IN WHICH THE LENGTH OF A RECORD EQUALS THE WORD LENGTH FOR EACH FILE AND RESERVE SPACE FOR A FINGER INDEX
4
READ EACH SEQUENTIAL FILE AND WRITE BOTH THE LOWER AND UPPER CASE WORDS READ TO THE RANDOM FILE BUT IF A SUCCEEDING RECORD HAS THE SAME LOWER CASE PREFIX AS THE ONE JUST WRITTEN WRITE ONLY THE UPPER CASE WORD.
5
SCAN THE LOWER CASE WORDS AND STORE THE RECORD NUMBER AT WHICH CERTAIN LETTER COMBINATIONS CHANGE IN THE FINGER INDEX

1. A computer implemented method for processing words from a standard dictionary into a special dictionary by using a programmable digital computer system comprising the following steps:

(a) inputting a word in upper case letters from the standard dictionary as a first of two string variables for use by the computer, creating a second such string variable from the first string variable by alphabetizing the letters in the first string variable and converting said letters to lower case, then appending the first string variable to the second string variable to provide a concatenated record and storing the result as one record in a different sequential disk file respectively created for each different length record,

(b) repeating step a) for each different word of said standard dictionary.

(c) placing the concatenated records in each sequential file in alphabetic order on disk media of the computer after input of such dictionary words is complete,

(d) creating a corresponding random file for each sequential file in which the length of a record is equal to the length of the word so input from the standard dictionary in the sequential file, then reserving the first two words in each such random file for a finger index,

(e) reading each sequential file, then writing both the lower and upper case words read to the corresponding random file, but if a succeeding record has the same lower case prefix as the one just written, then writing only the upper case word following the record just written, and

(f) scanning the lower case words in each random file and storing the record number at which certain preselected letter prefixes change in a predetermined location of said first two words of the random file as a pointer or finger index.

4,882,704

HAND-SHAKE TYPE DATA TRANSFER CONTROL CIRCUIT

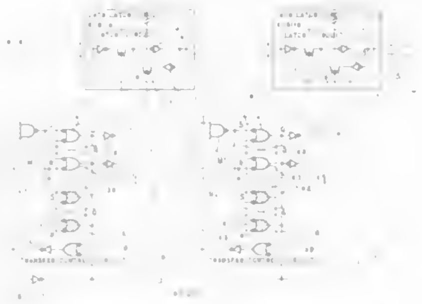
Shinji Komori; Hidehiro Takata; Toshiyuki Tamura, and Fumiyasu Asai, all of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed Feb. 17, 1988, Ser. No. 157,194

Claims priority, application Japan, Feb. 18, 1987, 62-36551

Int. Cl.⁴ G06F *1/00*

U.S. Cl. 364—900 25 Claims



1. A handshake type control circuit for controlling data transfer at a given stage in response to a send signal, said control circuit comprising:

a circuit, responsive to said send signal and an acknowledge signal fed back from a succeeding stage, for activating a transfer control signal a first time to activate data transfer at said given stage when said send signal is activated and for inactivating said transfer control signal to inactivate data transfer at said given stage when said acknowledge signal is activated, said circuit prevented from activating said transfer control signal a second time to prevent recurring data transfer at said given stage until said send signal has been reset, whereby parasitic oscillation is prevented.

4,882,705

DATA TRANSMISSION SYSTEM INCLUDING THE DOWNLOADING OF A FIRST PROGRAM FOR THE INTERRUPTION OF A SECOND PROGRAM

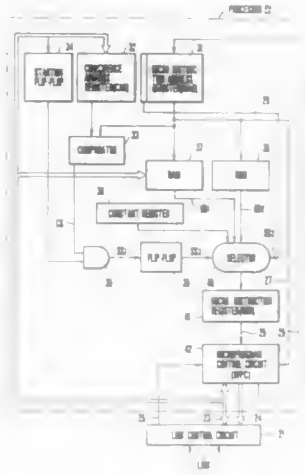
Kazuo Yasue, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 804,432, Dec. 4, 1985, abandoned. This application Aug. 2, 1988, Ser. No. 227,461

Claims priority, application Japan, Dec. 7, 1984, 59-257365

Int. Cl.⁴ G06F *9/00*

U.S. Cl. 364—900 1 Claim



1. A data transmission system comprising:

a transmission link;

at least one first station connected to said transmission link; and

a plurality of second stations connected to said transmission link;

said first station including means for transferring to a selected one or more of said second stations a first program and a first address representing a condition to start execution of the first program in said second station;

each of said second stations including first storage means for storing a second program prior to the transferring of the first program and first address,

second storage means for storing the first address transmitted from said first station,

third storage means for storing the first program transferred from said first station in a storage area starting from a third address,

address register means for sequentially storing second addresses for addressing said first storage means and said third storage means,

means for executing the programs stored in said first storage means and said third storage means in accordance with the second addresses sequentially stored in said address register means,

coincidence detecting means for detecting a coincidence between the first address stored in said second storage means and the second address stored in said address register means during execution of said second program, and

means for interrupting, after the first program and the first address are transferred from said first station to said second station, the execution of the second program to start execution of the first program stored in said third storage means by storing the third address into said address register means when said detecting means detects the coincidence during execution of said second program, the second program continuing to be executed if the coincidence is not detected during the execution thereof.

4,882,706

DATA STORAGE ELEMENT AND MEMORY STRUCTURES EMPLOYING SAME

Alan W. Sinclair, Cambridge, England, assignor to Anamartic Limited, London, England

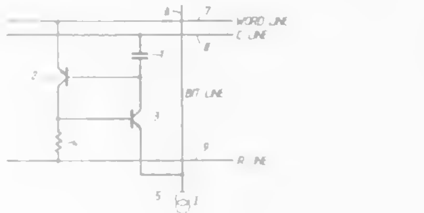
PCT No. PCT/GB86/00328, § 371 Date Feb. 5, 1987, § 102(e) Date Feb. 5, 1987, PCT Pub. No. WO86/07487, PCT Pub. Date Dec. 18, 1986

PCT Filed Jun. 9, 1986, Ser. No. 6,720

Claims priority, application United Kingdom, Jun. 7, 1985, 8514452

Int. Cl.⁴ G11C *11/34, 7/00, 8/00*

U.S. Cl. 365—180 29 Claims



1. A dynamic electrical data storage element which provides for alteration of its stored data, including:

switch means having first and second regions and first and second control ports, through which control ports the switch means is controllable to be set to a first or a second state corresponding to the regions being connected to each other or disconnected from each other,

electrical charge storage means connected to so control said switch means, by way of one of its control ports, that the switch means assumes one of its two possible states when the charge on the charge storage means lies within a first range and the switch means assumes a the other of its two states when the charge on the charge storage means lies within a second range which excludes the first range,

a first address line connected to the first region of the switch means,

a second address line connected to the charge storage means, and

a data line connected to the second region of the switch means,

so that, in operation, data is written into the data storage element as a charge set on the charge storage means by signals applied to the data storage element by way of the address lines and data line, and data held by the data storage element is read by sensing the state of the switch means by way of the first address line and the data line.

4,882,707

NON-VOLATILE SEMI-CONDUCTOR MEMORY DEVICE WITH DOUBLE GATE STRUCTURE

Yoshihisa Mizutani, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 111,717, Oct. 23, 1987, abandoned. This application Feb. 27, 1989, Ser. No. 316,534

Claims priority, application Japan, Oct. 27, 1986, 61-255149; Oct. 27, 1986, 61-255150; May 21, 1987, 62-122401

Int. Cl.⁴ G11C *11/34;* **H01L** *29/78, 27/02, 27/10*

U.S. Cl. 365—185 14 Claims

1. A non-volatile semiconductor memory device comprising:

(a) a semiconductive substrate of a first conductivity type;

(b) parallel bit lines provided above said substrate;

(c) parallel work lines provided above said substrate so as to insulatively cross said bit lines;

(d) a first semiconductive diffusion layer of a second conductivity type, provided in said substrate, for serving as a common wiring line;

(e) memory cells formed on said substrate in such a manner

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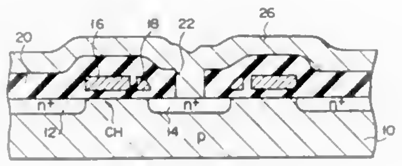
as to be connected to cross points between said bit lines and said word lines, each of said memory cells comprising,

second and third semiconductive diffusion layers of the second conductivity type, formed in said substrate spaced apart from each other, said second diffusion layer being connected to said common wiring line, said third diffusion layer being connected to one of said bit lines, said second and third diffusion layers respectively functioning as source and drain in a data write mode and respectively functioning as drain and source in a data read mode of said memory device,



a floating gate layer, insulatively provided above said substrate, for storing carriers representing information, and

a control gate layer insulatively provided above said substrate and connected to one of said word lines; and

(f) voltage applications means, connected to said memory cells, for initially applying a bias voltage to said bit lines and said common wiring line while said word lines are grounded in one of the data write mode and the data read mode of said memory device, and for selecting a desired memory cell by dropping the applied voltage to that bit line which is connected to the desired memory cell.

4,882,708
SEMICONDUCTOR MEMORY DEVICE

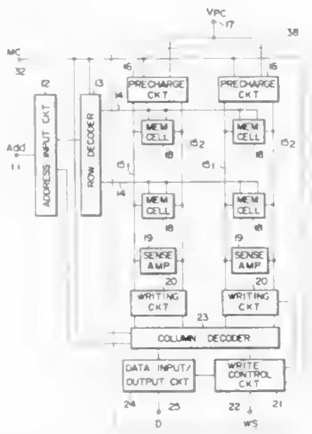
Shigeyuki Hayakawa; Mitsuo Isobe, both of Yokohama, and Takayuki Ohtani, Tokyo, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jan. 19, 1988, Ser. No. 145,411

Claims priority, application Japan, Jan. 19, 1987, 62-9281

Int. Cl.⁴ G11C *7/00*

U.S. Cl. 365—189.04 6 Claims



1. A semiconductor memory device for simultaneously writing same data into all memory cells by a writing circuit in a clear mode, said device comprising:

a plurality of memory cells for storing data;

bit lines for performing data transfer to and from the memory cells;

a sense amplifier for amplifying the data read out from the memory cells onto the bit lines;

a writing circuit for writing data into said memory cells via said bit lines;

word lines for selecting said memory cells;

a row decoder for selecting said word lines:

a column decoder for selecting said bit lines;

an address input circuit for supplying an address signal to the column decoder;

load means provided between said bit lines and a potential source, said load means being set in an off-state by the supply of a memory clear signal; and

control means for controlling said decoders when said memory clear signal is supplied so as to set all the word lines in a selective state.

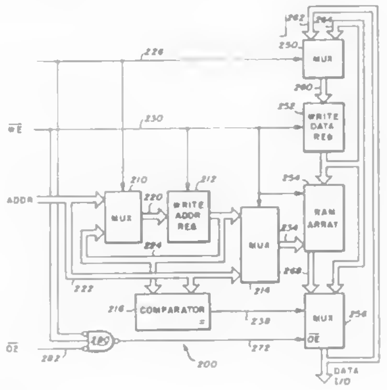
4,882,709
CONDITIONAL WRITE RAM

David C. Wyland, San Jose, Calif., assignor to Integrated Device Technology, Inc., Santa Clara, Calif.

Filed Aug. 25, 1988, Ser. No. 236,552

Int. Cl.⁴ G11C *7/00*

U.S. Cl. 365—189.02 8 Claims



1. A conditional write means random access memory circuit comprising in combination:

an external address bus for connection to receive a plurality of externally-generated signals representing an address;

an internal address bus;

a write address register including a plurality of data inputs, a clock input for connection to receive a predetermined one of at least two externally-generated control signals, and a plurality of data outputs connected to said internal address bus, said write address register for storing the state of each of said externally-generated address signals at each of a series of times marked by said write address register one of said externally-generated control signals and for developing on said internal address bus a plurality of signals each having a corresponding one of said stored externally-generated address signal states;

an address multiplexer including a plurality of A-inputs connected to said internal address bus, a plurality of B-inputs, a select input for connection to receive a predetermined one of said externally-generated control signals, and a plurality of outputs, said address multiplexer for developing at said address multiplexer outputs a plurality of signals each having the same state as a corresponding one of said internal address bus signals when said address multiplexer one of said externally-generated control signals has a predetermined state and having the same state as a corresponding one of said externally-generated address signals when said address multiplexer one of said externally-generated control signals has another predetermined state;

a comparator including a plurality of P-inputs connected to said internal address bus, a plurality of Q-inputs, and an output, said comparator for developing at said comparator output a signal having a predetermined state when the states of said internal address bus signals match those of said externally-generated address signals and having another predetermined state otherwise;

address coupling means connected to said external address bus, to said write address register data inputs, to said address multiplexer B-inputs, and to said comparator Q-inputs, said address coupling means for coupling each of said externally-generated address signals to said write address register data inputs, to said address multiplexer B-inputs, and to said comparator Q-inputs;

at least one external data line for connection to receive at least one externally-generated signal representing at least one bit of data;

at least one internal data line;

a write data register including at least one data input, a clock input for connection to receive a predetermined one of said externally-generated control signals, and at least one data output connected to said internal data line, said write data register for storing the state of said externally-generated data signal at each of a series of times marked by said write data register one of said externally-generated control signals and for developing on said internal data line at least one signal having said stored externally-generated data signal state;

data coupling means connected to said external data line and to said write data register data input, said data coupling means for coupling said externally-generated data signal to said write data register data input;

a random access memory array including a plurality of address inputs each connected to said address multiplexer outputs, at least one data input connected to said internal data line, a write-enable input for connection to receive a predetermined one of said externally-generated control signals, and at least one data output; and

a data multiplexer including at least one A-input connected to said internal data line, at least one B-input connected to said random access memory array data output, a select input connected to said comparator output, and at least one output, said data multiplexer for developing at said data multiplexer output at least one signal having the same state as said internal data line signal when said comparator output signal has a predetermined state and having the same state as a signal developed at said random access memory array data output when said comparator output signal has another predetermined state.

4,882,710
FIFO MEMORY INCLUDING DYNAMIC MEMORY ELEMENTS

Masashi Hashimoto, Ami; Sasaki Kenji, Kukizaki, and Masayoshi Nomura, Tsuchiura, all of Japan, assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Sep. 9, 1987, Ser. No. 94,943

Claims priority, application Japan, Sep. 18, 1986, 61-220270

Int. Cl.⁴ G11C *7/00; G09G 1/02*

U.S. Cl. 365—189.05 9 Claims

1. A memory device capable of FIFO data operation, said memory device comprising:

dynamic memory array means having a plurality of dynamic memory cells arranged in rows and columns;

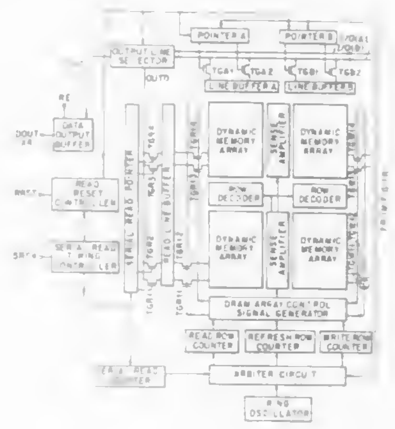
a write line buffer memory disposed on the input side and a read line buffer memory disposed on the output side of said dynamic memory array means for data transfer to and from said dynamic memory array means in a serial-parallel-serial arrangement to provide serial-parallel conversion of write data and parallel-serial conversion of read data;

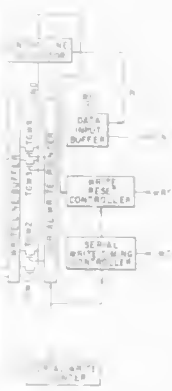
line buffer memory means;

data input means connected to said line buffer memory means and to said write line buffer memory for selectively providing input data as write data to either said line buffer memory means or said write line buffer memory;

data output means connected to said line buffer memory means and to said read line buffer memory for selectively receiving output data as readout data from either said line buffer memory means or said read line buffer memory; and

control circuit means operably connected to said dynamic memory array means, said write line buffer memory, said read line buffer memory, said line buffer memory means,





said data input means, and said data output means for regulating data transfer by connecting said line buffer memory means to said data input means and said data output means in tandem with connecting said write line buffer memory to said data input means and said read line buffer memory to said data output means.

4,882,711
NON-VOLATILE MEMORY SYSTEM

Pierre Guillot, Geneva, Switzerland, assignor to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 3, 1988, Ser. No. 151,864

Claims priority, application United Kingdom, Feb. 7, 1987, 8702784

Int. Cl.⁴ G11C *13/00*

U.S. Cl. 365—229 3 Claims

1. A memory system comprising:

a first volatile memory having a plurality of memory cells;

a plurality of second, non-volatile memories each having a plurality of memory cells;

a register for holding an indication of a predetermined one of the plurality of second memories;

power-down means fro sensing when power is withdrawn from the first memory and for transferring in response thereto contents of the cells of the first memory to the cells of the predetermined one of the plurality of second memories whose indication is held in the register; and

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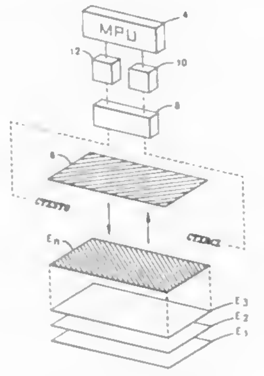
power-up means for sensing when power is applied to the first memory and for transferring in response thereto



contents of the cells of a second memory to the cells of a first memory.

4,882,712
SYNCHRONOUS SEMICONDUCTOR MEMORY DEVICE

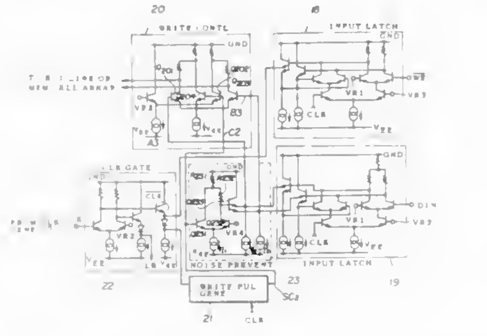
Chikai Ohno, and Michiyuki Hirata, both of Kasugai, Japan, assignors to Fujitsu Limited, Kawasaki and Fujitsu VLSI Limited, Kasugai, both of, Japan

Filed Sep. 26, 1988, Ser. No. 249,058

Claims priority, application Japan, Sep. 29, 1987, 62-244695

Int. Cl.⁴ G11C *11/40*

U.S. Cl. 365—206 9 Claims



1. A synchronous semiconductor memory device comprising:

first latch means for latching a write command in synchronism with a clock signal;

second latch means for latching a write data in synchronism with the clock signal and for outputting two write process signals based on the write data latched thereby;

pulse generating means for generating an internal write pulse signal based on the write command latched by said first latch means, said internal write pulse signal having a first logic level only in a write mode of the synchronous semiconductor memory device;

write control means supplied with said internal write pulse signal and said write process signals for controlling write and read operations of the synchronous semiconductor memory device;

memory means for storing the write data latched by said second latch means; and

noise preventing means coupled to said second latch means and said write control means for supplying said write process signals to said write control means only in the write mode responsive to said internal write pulse signal and for setting said write process signals to fixed potentials during a time other than the write mode.

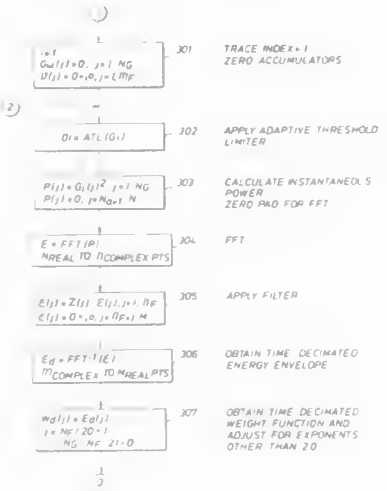
4,882,713
METHOD FOR NOISE SUPPRESSION IN THE STACKING OF SEISMIC TRACES

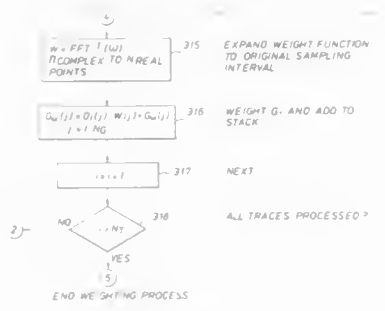
Philip A. Hughes, Houston, Tex., assignor to Exxon Production Research Company, Houston, Tex.

Filed Sep. 6, 1988, Ser. No. 240,956

Int. Cl.⁴ G01V *1/36*

U.S. Cl. 367—47 6 Claims


1
2
301 TRACE INDEX = 1 ZERO ACCUMULATORS
302 APPLY ADAPTIVE THRESHOLD LIMITER
303 CALCULATE INSTANTANEOUS POWER ZERO PAD FOR FFT
304 FFT
305 APPLY FILTER
306 OBTAIN TIME DECIMATED ENERGY ENVELOPE
307 OBTAIN TIME DECIMATED WEIGHT FUNCTION AND ADJUST FOR EXPONENTS OTHER THAN 20
3


3
315 EXPAND WEIGHT FUNCTION TO ORIGINAL SAMPLING INTERVAL
316 WEIGHT Gi AND ADD TO STACK
317 NEXT
318 ALL TRACES PROCESSED?
2
NO
YES
5
END WEIGHTING PROCESS

1. The method of optimizing signal-to-sporadic noise in a stack of related seismic traces where the individual seismic traces are acquired in an environment where noises of a time-

variant and of a time-invariant nature are present, which comprises

removing gross amplitude anomalies from each of said seismic traces to produce anomalies-reduced seismic traces,

establishing a plurality of weight functions, each one of said weight functions being in a one-to-one correspondence with one of a plurality of said anomalies-reduced seismic traces,

summing all of said weight functions to produce a weight stack,

applying each one of said weight functions to each corresponding one of said anomalies-reduced seismic traces to obtain a weighted seismic trace,

summing all of said weighted seismic traces to form a weighted trace stack, and

dividing said weighted trace stack by said weight stack to produce an optimized stack trace, to optimize the signal component and to reduce the noise component.

4,882,714
OBJECT DETECTING SYSTEM USING ULTRASONIC WAVES

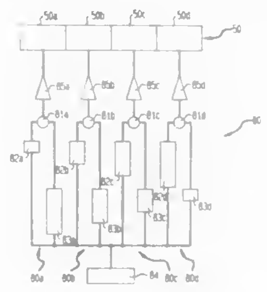
Hiroshi Tanigawa, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 15,523, Feb. 13, 1987, abandoned, which is a continuation of Ser. No. 699,200, Feb. 7, 1985, abandoned. This application Jan. 7, 1988, Ser. No. 143,289

Claims priority, application Japan, Feb. 7, 1984, 59-20290; Feb. 7, 1984, 59-20291; Feb. 7, 1984, 59-20292; Feb. 7, 1984, 59-20295; Feb. 7, 1984, 59-20296; Feb. 7, 1984, 59-20297

Int. Cl.⁴ G01S *15/06*

U.S. Cl. 367—103 1 Claim



1. An object detecting system comprising:

an ultrasonic element array comprising a plurality of ultrasonic transducer elements;

means for intermittently supplying burst driving pulses to said ultrasonic transducer elements at different times in each of successive intermittent periods, said means for intermittently supplying burst driving pulses comprising:

driving pulsers for said ultrasonic transducer elements, respectively, each driving pulser comprising first and second delay circuits in parallel, said first and second delay circuits having controllable delays;

means for supplying a sequence of pulse bursts to the first and the second delay circuits of said driving pulsers to make the first and the second delay circuits of said driving pulsers produce said burst driving pulses with said different times determined by the controllable delays of the first and the second delay circuits of said driving pulsers in each of said successive intermittent periods; and

means for delivering said burst driving pulses from the first and the second delay circuits of said driving pulsers to said ultrasonic transducer elements, said means for delivering said burst driving pulses comprising:

adding means for adding the burst driving pulses of the first and the second delay circuits of said driving pulsers with the burst driving pulses of the first and the second delay circuits of each driving pulser arranged as a driving burst succession of two driving bursts in response to each of said pulse bursts at a time interval dependent on said different times in each of said successive intermittent periods; and

means for supplying said ultrasonic transducer elements with the driving burst successions into which the burst driving pulses of the first and the second delay circuits of said driving pulsers are added in response to each of said pulse bursts in each of said successive intermittent periods; and

means for controlling time relationships between said different times in said successive intermittent periods,

said means for controlling time relationships controlling the controllable delays of the first and the second delay circuits of said driving pulsers in said successive intermittent periods.

4,882,715
SURFACE ACOUSTIC WAVE CONVOLVER WITH DIELECTRIC FILM OF HIGH NON-LINEAR EFFECT

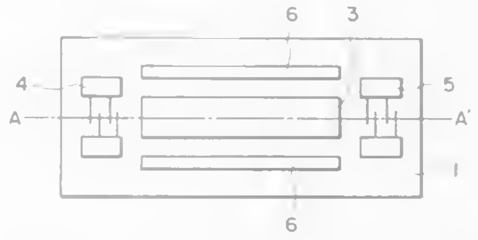
Koichi Egara, Tokyo; Norihiro Mochizuki, Yokohama; Kenji Nakamura, Hadano, and Kazuo Yoshinaga, Machida, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 11, 1988, Ser. No. 167,254

Claims priority, application Japan, Mar. 16, 1987, 62-60466; Sep. 4, 1987, 62-220489

Int. Cl.⁴ H04R *23/00;* H01L *41/08*

U.S. Cl. 367—140 8 Claims



1. A surface acoustic wave elastic convolver comprising:

a piezoelectric substrate;

plural input transducers formed on said substrate, for respectively generating surface acoustic waves corresponding to input signals;

an output transducer for obtaining a convolution signal of said input signals, from a surface acoustic wave generated by non-linear interaction, of the surface acoustic waves thus generated by said input transducers; and

a dielectric film of a non-linear effect larger than that of said substrate, formed on said substrate in at least the area wherein said output transducer is formed.

4,882,716
OPTIC FIBER HYDROPHONE AND ANTENNA ASSOCIATING A SERIES OF HYDROPHONES

Herve Lefevre, Paris; Dominique Rojas, Arcueil, and Marc Turpin, Bure sur Yvette, all of France, assignors to Thomson-CSF, Paris, France

Filed Jan. 24, 1989, Ser. No. 300,933

Claims priority, application France, Jan. 25, 1988, 88 00781

Int. Cl.⁴ H04R *1/02*

U.S. Cl. 367—149 5 Claims

1. An optic fiber hydrophone comprising:

a wide spectrum source of a linearly polarized, superluminescent diode type;

a first side-hole optic fiber, called a compensation fiber, not subjected to the field of pressure to be detected, followed by a first polarizer with an axis at 45° to the neutral axes of the fiber which are themselves at 45° to the polarization of the source, forming an interferometer;

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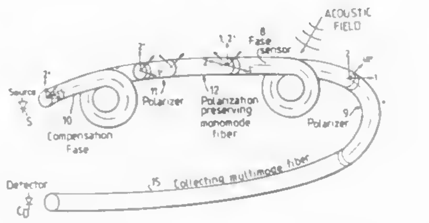
a passive sensor, subjected to the field of pressure, comprising a second side-hole optic fiber, having neutral axes reversed with respect to those of the compensation fiber, coupled to the first polarizer and followed by a second polarizer at 45° to the neutral axes of the fiber, forming a second interferometer at the output of which the working differences between the two polarizations, which are not due to the field of pressure, are compensated for;



a detector;

and a circuit for processing radiation detected by the detector.

4,882,717
CHARGING CIRCUIT FOR AN ANALOG ELECTRONIC TIMEPIECE

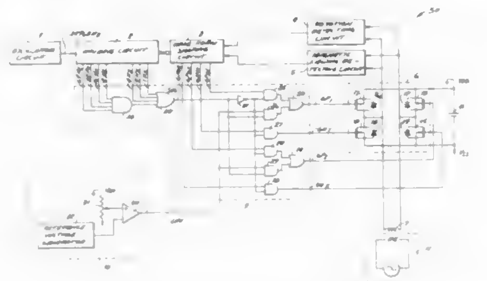
Motomu Hayakawa, and Masahito Yoshino, both of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Filed Sep. 20, 1988, Ser. No. 246,718

Claims priority, application Japan, Sep. 21, 1987, 62-236463; Sep. 21, 1987, 62-236464; Sep. 21, 1987, 62-236465

Int. Cl.⁴ G04B *1/00;* H01M *10/46*

U.S. Cl. 368—64 13 Claims



1. A chargeable analog electronic timepiece chargeable by an external A.C. voltage source comprising:

a step motor having a driving coil, the coil having a first terminal and a second terminal;

a chargeable battery;

motor driving means coupled to the first terminal of the coil and the second terminal of th coil for receiving A.C. voltage and selectively applying a charge to the coil for driving the motor and for selectively applying a charge to the coil for charging the chargeable battery;

charge control means for controlling the period in which the motor driving means charges the chargeable battery and drives the motor; and

rectifying means for rectifying the A.C. voltage prior to charging of the secondary battery, the rectifying means including at least one PN junction placed in parallel to the motor driving means.

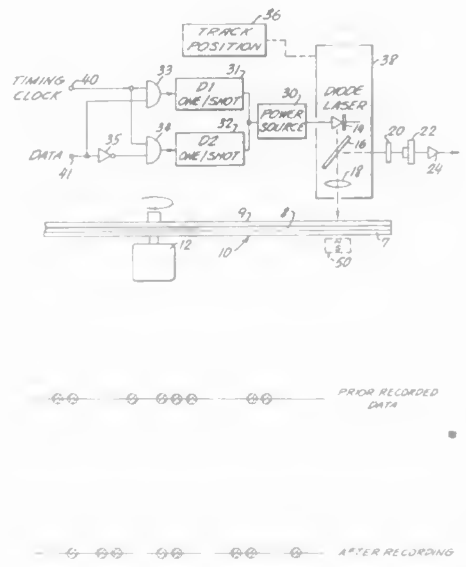
4,882,718
SINGLE-HEAD, DIRECT OVERWRITE MAGNETO-OPTIC SYSTEM AND METHOD

Mark H. Kryder, and Han-Ping D. Shieh, both of Pittsburgh, Pa., assignors to Movid Information Technology, Inc., Schenectady, N.Y.

Continuation-in-part of Ser. No. 33,931, Apr. 3, 1987, abandoned, which is a continuation of Ser. No. 837,130, Mar. 7, 1986, Pat. No. 4,679,180. This application Feb. 10, 1988, Ser. No. 154,240

Int. Cl.⁴ G11B *11/12, 13/04*

U.S. Cl. 369—13 22 Claims



1. A magneto-optic information storage system comprising:

a thin-film magneto-optic recording medium having its net magnetization perpendicular to a plane containing said thin film medium, said medium being formulated to exhibit self-inversion of the direction of net magnetization in at least a portion of a magnetic domain wall bounded region thereof at an elevated temperature above a compensation temperature of the medium and below the Curie temperature of the medium in the absence of an externally applied bias magnetic field;

irradiating means for temporarily irradiating at least portions of selected regions of the medium with electromagnetic radiation imparting sufficient energy to heat at least said portions from ambient temperature to said elevated temperature whereat the net magnetization of at least said portions is reversed without an externally applied bias magnetic field and whereby, following cooldown to ambient temperature, the net magnetization of at least said portions at ambient temperature is also reversed;

write means connected to control said irradiating means for temporarily impinging a first pulse of light having a first duration and a first power level upon selected areas of the medium to create magnetic domain wall bounded regions therein and to orient the net magnetization of said regions in a first direction; and

erase means connected to control said irradiating means for impinging a second pulse of light upon at least portions of selected ones of said regions to re-orient the net magnetization of at least said portions in a second direction opposite to said first direction, said second pulse of light energy having a second duration and second power level, and wherein the energy imparted by said second pulse is less than the energy imparted by said first pulse.

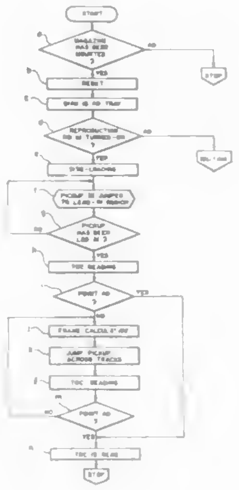
4,882,719
DISK PLAYING METHOD FOR DISK PLAYER

Toshiyuki Kimura; Yoshio Aoyagi, and Fumio Endo, all of Saitama, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Division of Ser. No. 164,353, Mar. 4, 1988, Pat. No. 4,855,979. This application Oct. 5, 1988, Ser. No. 253,472

Int. Cl.⁴ G11B *7/00, 27/10*

U.S. Cl. 369—32 2 Claims



1. A disk playing method for a disk player, comprising the steps of: reading an accumulated total time code in a lead-in area of a disk; detecting a predetermined code during said reading step; if said predetermined code is not detected in reading said accumulated total time code in said lead-in region of said disk carrying out frame calculation to jump a pickup of said disk player across tracks to read another accumulated total time code; and after said predetermined code has been read, reading necessary data from said lead-in region.

4,882,720
MEMORY DEVICE INCLUDING A ROTATING DISK AND MEANS FOR DETECTING CHANGE IN FRICTIONAL RESISTANCE BETWEEN THE DISK AND A READ/RECORD HEAD

Masaharu Sengoku, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 7,466, Jan. 28, 1987, Pat. No. 4,809,248. This application Aug. 26, 1988, Ser. No. 236,923

Claims priority, application Japan, Mar. 5, 1986, 61-47732; Mar. 5, 1986, 61-47733

The portion of the term of this patent subsequent to Feb. 28, 2006, has been disclaimed.

Int. Cl.⁴ G11B *15/52*

U.S. Cl. 369—47 4 Claims

1. A memory apparatus comprising:

a disk having an information recording surface,

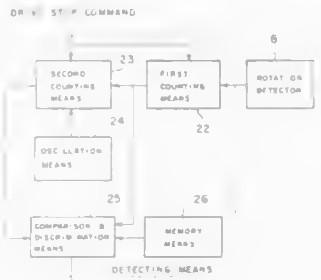
a rotary apparatus which rotates the disk,

a rotation detector which detects a rotating position of the disk to produce a rotary pulse signal,

a rotation control apparatus which produces a start rotation command and which controls rotation of the rotary apparatus based upon the detection result of the rotation detector,

a head which is arranged opposite to the information recording surface of the disk and which records information to be stored on the disk,

means which is responsive to the start rotation command from the rotation control apparatus for counting the number of rotary pulse signals during a predetermined period within a period from initiation of such start rotation command to normal completion of starting by the rotary apparatus, and



means for determined a defect in operation of the memory based upon the count of the counting means.

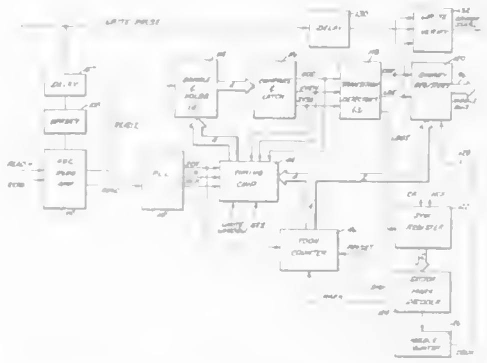
4,882,721
OFFSET FOR PROTECTION AGAINST AMORPHOUS PIPS

Roger R. Bracht, Colorado Springs, Colo., and Johannes J. Verboom, Bergeyk, Netherlands, assignors to Laser Magnetic Storage International Company, Colorado Springs, Colo.

Continuation of Ser. No. 578,150, Feb. 8, 1984, abandoned, and a continuation of Ser. No. 897,681, Aug. 18, 1986, abandoned. This application Feb. 24, 1988, Ser. No. 163,156

Int. Cl.⁴ G11B *27/36*

U.S. Cl. 369—54 6 Claims



1. In an optical recording system including optical means for writing information on an optical recording medium, an improvement for affecting an amorphous pip representative of a portion of an optical recording medium that is in an amorphous state, comprising:

first means for receiving a read signal representative of information provided on the optical recording medium, said read signal including a first portion representative of an unchanged portion of the optical recording medium and a second portion having a pip representative of at least one of the following: a hole and an amorphous portion of the optical recording medium; and

second means communicating with said first means for inputting an offset signal to said first means, said offset signal being representative o: a pip produced by an amorphous portion of the optical recording medium;

wherein said first means includes means, using said offset signal, for affecting said second portion of said read signal and not other portions of said read signal, in order to

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prevent said second portion from being detected as a pip due to a hole when it is a pip due to an amorphous portion.

4,882,722
FRONT LOADING DISK PLAYER

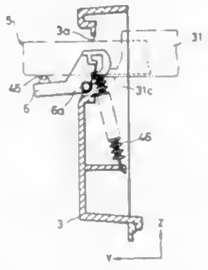
Ryo Matsuura; Nobuyuki Isobe, and Masao Kase, all of Saitama, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Continuation of Ser. No. 102,219, Sep. 29, 1987, abandoned. This application Apr. 10, 1989, Ser. No. 334,765

Claims priority, application Japan, Sep. 29, 1986, 61-230724; Sep. 29, 1986, 61-230725

Int. Cl.⁴ G11B *15/30, 15/44*

U.S. Cl. 369—75.2 3 Claims



1. A front loading disk player comprising:
a housing;
a unitary carrier for bearing a disk to be displayed;
carrier conveying means for conveying said carrier out of and into said housing through an opening formed in said housing, to permit the loading and unloading of said desk; and
a door swingably provided to open and close said opening, said door being spring biased in the closed direction,
said carrier conveying means comprising movable members having cammed grooves contained therein, said movable members being movably provided in said housing;
drive force applying means for applying a drive force to said movable members; and
carrier moving means slidably connected to said cammed grooves of said movable members for moving said carrier horizontally and vertically with movement of said movable members,
said door being opened and closed by said carrier conveying means wherein said door has a low friction member disposed thereon which abuts against said carrier such that when said carrier is conveyed into said housing said door being spring biased in the closing direction abuts against said carrier so as to be closed at the same rate of speed in which said carrier is conveyed such that said door is closed in a smooth manner.

4,882,723
DEVICE FOR OPTICALLY SCANNING A ROTATING DISC

Gerard E. Van Rosmalen, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

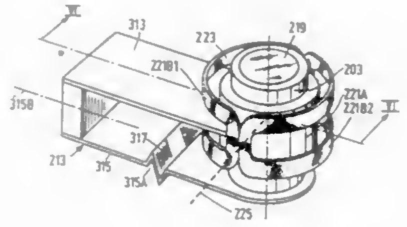
Filed Jun. 15, 1988, Ser. No. 209,454

Claims priority, application Netherlands, Jun. 30, 1987, 8701526

Int. Cl.⁴ G11B *3/10, 3/32;* **G02B** *7/04*

U.S. Cl. 369—256 10 Claims

1. A device for directing a radiation beam towards a recording surface of a rotating disc for recording and/or scanning a recording track without mechanical contact, comprising
a frame,
an objective holder comprising an objective with an optical axis,
two elongate leaf springs which are arranged one above the other viewed along the optical axis of the objective and which have their ends secured to the frame and to the objective holder, to allow movements of the objective along the optical axis, and
an electromagnetic acturator comprising first actuator means secured to the objective holder and second actuator means secured to the frame, which means cooperate electromagnetically with one another via an air gap for the controlled movement of the objective, characterized in that



at least one of the leaf springs is elastically extensible in its longitudinal direction to allow pivotal movements of the objective about a pivotal axis which is oriented transversely of a plane containing the optical axis and intersecting the leaf springs, and
the actuator is adapted to provide the driving force for said pivotal movements.

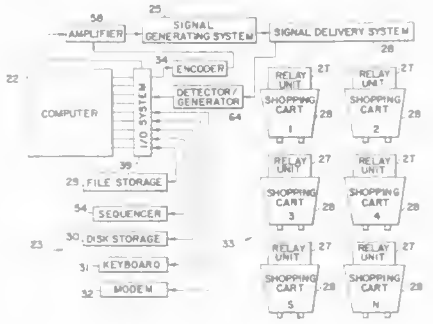
4,882,724
SHOPPERS COMMUNICATION SYSTEM AND PROCESSES RELATING THERETO

Leo Vela, III Grove Isle Dr., Suite 1610, Coconnt Grove, Fla. 33133; Thurman Sasser, 1826 Sarazan Dr., Orlando, Fla. 32808, and Roger L. Martin, 1456 Farmington Dr., Deltona, Fla. 32725

Filed Oct. 14, 1987, Ser. No. 108,437

Int. Cl.⁴ G06K *15/18*

U.S. Cl. 364—401 66 Claims



1. A communication system for communicating with shoppers in a marketing area that is provided with a plurality of shopping carts for use in carrying items selected for purchase comprising
(a) a plurality of message relay units that are supported on and movable with the respective shopping carts about the marketing area, and
(b) means located apart from said units for generating message bearing light signals which are receivable by said units;
each of said message relay units having
(1) a message transmission system for transmitting messages borne by said message bearing light signals and having a video display device for transmitting visually displayable messages borne by signals generated by said means,

(2) a computer connected with the video display device for controlling the operation of the video display device and
(3) a signal receiver system connected with the computer for receiving said message bearing light signals.

4,882,725
MULTIPLEX TRANSMISSION METHOD AND APPARATUS

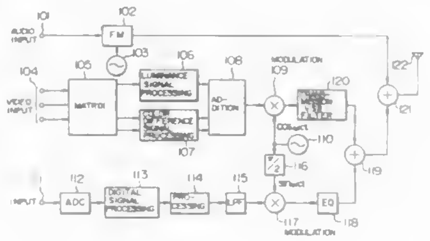
Tsutomu Noda; Takatoshi Shirosugi, both of Yokohama; Nobutaka Hotta, Kamakura, and Akihide Okuda, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo and Hitachi Video Engineering, Incorporated, Yokohama, both of, Japan

Filed Jan. 29, 1988, Ser. No. 150,203

Claims priority, application Japan, Jan. 30, 1987, 62-18359; Jan. 30, 1987, 62-18360; Jan. 30, 1987, 62-18398; Jan. 30, 1987, 62-18399; Jul. 29, 1987, 62-187510

Int. Cl.⁴ H04J *9/00*

U.S. Cl. 370—11 50 Claims



1. A multiplex transmission system comprising a carrier signal source; means for amplitude-modulating and transmitting the carrier signal from said carrier signal source; and a multiplex transmission system including a source of a quadrature signal having a quadrature phase with respect to the carrier signal, means for modulating the quadrature signal by a multiplex signal so as to perform spectrum suppression processing for suppressing at least multiplex signal components located near the carrier signal frequency, means for combining the quadrature signal with the amplitude-modulated carrier signal, means for transmitting the thus combined signal, and means for delaying the multiplex signal by a fixed time, said means for modulating including means for applying waveform computation processing to the delayed multiplex signal and to the non-delayed multiplex signal.

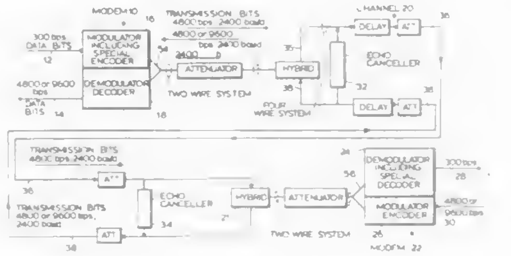
4,882,726
FULL DUPLEX MODEM SYSTEM FOR DIFFERING DATA BIT RATES

Gordon R. Lang, Bolton, and Fred M. Longstaff, Islington, both of Canada, assignors to Motorola Canada Limited, North York, Canada

Filed Nov. 23, 1987, Ser. No. 123,941

Int. Cl.⁴ H04B *1/56, 1/50;* **H04J** *3/22*

U.S. Cl. 370—24 18 Claims



1. In a communication system:
a pair of full duplex modems connected by a channel,
each modem being designed to transmit to the other at the same predetermined baud rate,
one of said modems being designed to receive a first series of data bits at a predetermined first rate for transmission over said channel and to transmit said received bits as first transmission bits over said channel as an integral number of first transmission bits per baud,
the other of said modems being designed to receive a second series of data bits at a data bit rate slower than the predetermined baud rate, for transmission over said channel,
means forming part of said other modem for sequentially encoding blocks of said second series of data bits in blocks into a larger number of second transmission bits for transmission over said channel at an integral number of second transmission bits per baud
means forming part of said one modem for decoding said second transmission bits into said second series of data bits.

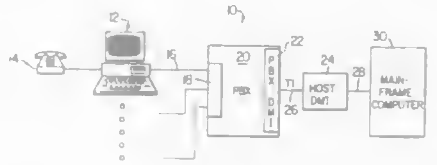
4,882,727
ADAPTIVE DIGITAL NETWORK INTERFACE

Stephen J. Williams, Denver, Colo., and Elden D. Traster, Richardson, Tex., assignors to Aristacom International, Inc., San Francisco, Calif.

Filed Mar. 11, 1987, Ser. No. 24,345

Int. Cl.⁴ H04J *3/00*

U.S. Cl. 370—79 55 Claims



1. A method for transmitting data units over a plurality of channels comprising:
storing a plurality of data bits of a data unit in a first memory, said first memory operable to output individual data bits;
accessing a first instruction stored in a program memory;
transmitting a data bit or a non-data bit;
counting the number of data bits output from said first memory on a first channel;
generating a first binary control signal when the number of data bits transmitted from said first memory equals a first predetermined value;
counting the number of bits transmitted on a first channel, said number of bits including data bits output from said first memory and non-data bit transmitted on said first channel;
generating a second binary control signal when the member of bits transmitted on said first channel equals a second predetermined value;
sensing the binary value of the next bit to be output from said first memory;
generating a third binary control signal corresponding to the value of said binary value of said next bit; and
accessing a second instruction in said program memory, said second instruction located at an address determined by combining predetermined address bits with said binary control signals in a predetermined pattern.

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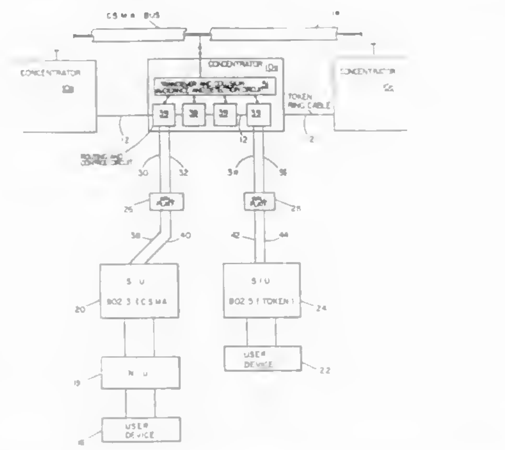
4,882,728
NETWORKING CIRCUITRY

Alexander Herman, Sharon, Mass., assignor to Codex Corporation, Mansfield, Mass.
Continuation of Ser. No. 634,400, Jul. 25, 1984, abandoned. This application Apr. 7, 1987, Ser. No. 35,505
Int. Cl.⁴ H04J *3/02*
U.S. Cl. 370—85 **24 Claims**

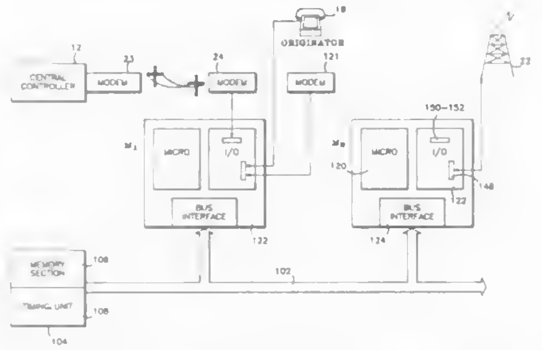


1. Apparatus for use in a data communication networking system of the kind in which messages are carried among a plurality of data handling devices over a plurality of different networks, different said devices being adapted for communicating on different said networks, each said device being arranged to communicate by means of electrical signals representative of digital message information, said apparatus comprising:

- control circuitry for determining, based on characteristics of said electrical signals but without reference to any said digital message information, the network on which said device is adapted to communicate, and
- connection circuitry responsive to said control circuitry for enabling said device to communicate on said network.

4,882,729
PAGING CONTROLLER HAVING A MULTIPLEX BUS ARRANGEMENT

Gary S. Lobel, Boynton Beach; Steven J. Goldberg, Coral Springs, and Gerald H. Johnson, Jr., Boynton Beach, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Aug. 7, 1988, Ser. No. 225,423
Int. Cl.⁴ H04J *3/02*
U.S. Cl. 370—85.1 **11 Claims**

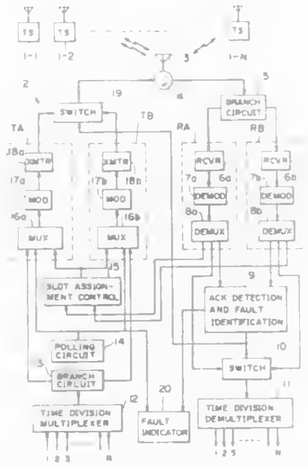


1. In a paging terminal, a system for controlling the processing of real time analog voice messages received from an external source said system comprising:

- means for generating a master synchronization signal including a periodic train of sync pulses;
- a bus including a plurality of conductors for carrying digital data in a parallel format, and said master synchronization signal;
- a plurality of processing modules coupled in parallel to said bus, each processing module operative to process real time analog voice messages in parallel with the other processing modules, each processing module including:
- a controller means;
- means operatively synchronized to said master synchronization signal to digitize samples of an analog voice message in real time to generate a stream of digital data samples which together represent a digital data replication of said analog voice message, a predetermined number of samples being digitized in an inter-pulse period of said master synchronization signal;
- a buffer memory for storing said predetermined number of digital data samples; and
- timer means governed by said master synchronization signal to generate an interrupt pulse at a unique time in each inter-pulse period of said master synchronization signal, said controller means responsive to said unique interrupt pulse to transfer within a unique time slot of said inter-pulse period the digital data samples stored in said buffer memory to the parallel digital data conductors of said bus.

4,882,730
TDMA COMMUNICATION SYSTEM HAVING COMMON TIME SLOTS FOR SYSTEM MAINTENANCE

Saburo Shinmyo, Tokyo, Japan, assignor to NEC Corporation, Japan
Filed Nov. 30, 1987, Ser. No. 126,561
Claims priority, application Japan, Nov. 28, 1986, 61-283694
Int. Cl.⁴ H04J *3/16*
U.S. Cl. 370—95.2 **5 Claims**

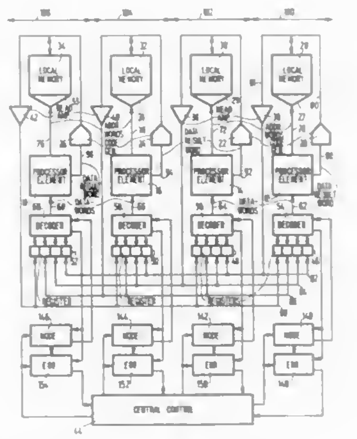


1. A demand assignment time division multiple access communication system having a plurality of terminal stations and a central station, comprising:

- a pair of first and second time division multiplexed (TDM) transmitting channels for establishing a broadcast channel from said central station to said terminal stations and a pair of first and second TDM receiving channels for establishing individual channels from said terminal stations to said central station on an as needed basis, said first and second TDM receiving channels having inputs coupled together so that when one of the outputs of said receiving channels is coupled to a demultiplexer the other receiving channel is in a hot-standby state;
- a polling circuit for transmitting a polling signal on a common time slot of the broadcast channel for sequentially polling said terminal stations to permit each of the terminal stations to send an acknowledgement to said central station on a common time slot of the individual channels in response to said polling signal;
- a fault identification circuit connected to the outputs of said first and second receiving channels for detecting the presence and absence of said acknowledgment at said central station and detecting acknowledgments received through said first and second receiving channels for determining therefrom which one of said first and second receiving channels is faulty; and
- switch means responsive to the output of said fault identification circuit for selectively coupling the outputs of said first and second receiving channels to said demultiplexer.

4,882,731
DATA PROCESSING DEVICE COMPOSED OF FOUR DATA PROCESSING MODULES OF SUBSTANTIALLY IDENTICAL CONSTRUCTION, WITH PROTECTION BOTH AGAINST SIMULTANEOUS SINGLE-BIT FAILURES IN A PLURALITY OF DATA PROCESSING MODULES AND AGAINST FAILURE OF A SINGLE DATA PROCESSIN

Willibrordus J. van Gils, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Aug. 19, 1987, Ser. No. 87,185
Claims priority, application United Kingdom, Sep. 5, 1986, 8621469
Int. Cl.⁴ G06F *11/10*
U.S. Cl. 371—37.6 **4 Claims**



1. A data processing device comprising:

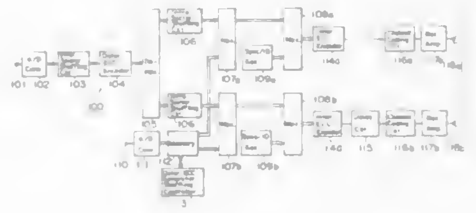
(a) four data processing modules (**100, 102, 104, 106**) which each include
  (i) corresponding data processing means (**12, 14, 16, 18**) having a data path width of at least 2n bytes, where n is an integer greater than or equal to one,
  (ii) a respective encoder module (**20, 22, 24, 26**) fed by the corresponding data processing means for bytewise encoding a processing result of 2n bytes to a respective encoding result of n bytes,
  (iii) a respective memory module (**28, 30, 32, 34**) fed by the respective encoder module for storing the respective encoding result, P2 (iv) respective input decoders (**54, 56, 58, 60**) for receiving said encoding results in groups of four bytes and therefrom reconstituting a two-byte data word representing said processing result for presentation to the corresponding data processing means,
(b) an interconnection network ((**82, 84, 86, 88**) fed by the respective data processing modules for applying encoding results between all data processing modules and the respective input decoders,
(c) mode register means for controlling said input decoders so that they assume respective first, second and third modes, so that
  (i) in the first mode, said input decoders accept and digest all bytes of one of said groups,
  (ii) in the second mode, the input decoders accept and digest three bytes of one of said groups but reject an associated fourth byte of said group, there being four possible modes designated the second mode, and
  (iii) in the third mode, the input decoders accept and digest two bytes of one of said groups but reject an associated combination of two remaining byes of said group, there being six possible modes designated the third mode, and

wherein

said encoder modules multiply each byte of a data word by a regular matrix and add the multiplication bytes to produce a code byte, the four code bytes thus generated by the respective encoder modules constituting a code word, of a code with a minimum Hamming distance over the bits of seven, the three code bytes accepted in any second mode constituting a partial code word with a minimum Hamming distance over the bits of four, the two bytes accepted in any third mode constituting a representation of all bits of the associated processing result.

4,882,732
METHOD AND APPARATUS FOR RECORDING AND/OR REPRODUCING DIGITAL DATA

Kouzon Kaminaga, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Nov. 3, 1987, Ser. No. 116,208
Claims priority, application Japan, Nov. 5, 1986, 61-263021
Int. Cl.⁴ G06F *11/10*
U.S. Cl. 371—2.2 **8 Claims**



1. A method of recording digital data comprising the steps of:

- receiving a series of digital data;
- dividing said series of digital data into a plurality of segments each including a first predetermined number of data symbols;
- alternately distributing the data symbols of each of said segments into two respective sectors;
- shuffling the data symbols in each sector according to a predetermined pattern;
- generating an outer error correction code block including a first predetermined number of redundancy symbols for each of said sectors;
- generating an inner error correction code block including a second predetermined number of redundancy symbols for each of said sectors; and
- recording said series of digital data with said redundancy symbols of said outer error correction code block and said inner error correction code block on slant tracks of a tape recording medium, said redundancy symbols of said outer error correction code block being recorded first, at the beginning of each of the slant tracks, and being followed by said data symbols and said redundancy symbols of said inner error correction code block on each of the slant tracks, whereby errors are more likely to affect said redundancy symbols of said outer error correction code block than other portions of said digital data and said

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other portions of said digital data have a reduced error rate.

4,882,733

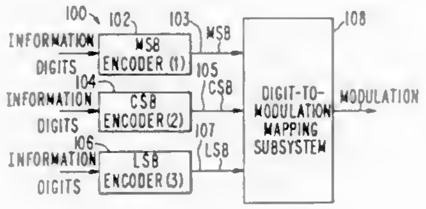
METHOD AND APPARATUS FOR COMBINING ENCODING AND MODULATION

Robert M. Tanner, Capitola, Calif., assignor to Ford Aerospace Corporation, Detroit, Mich.

Filed Mar. 13, 1987, Ser. No. 25,768

Int. Cl.⁴ G06F *11/10*

U.S. Cl. 371—43 **20 Claims**



1. In a digital signal communication system for communicating information through an information channel, a method for combined coding and modulation of digital information comprising the steps of:

indexing digital signals representative of elementary modulations by indexing vectors to create a decomposition of indexing vectors of an index vector space into a plurality of ordered subspaces, including binary and nonbinary subspaces;

associating with each said indexing vector a Euclidean distance in modulation space such that any two modulations whose indexing vectors differ only by a distance vector contained in a first subspace and any preceding (higher significant) subspaces of the series of ordered subspaces are separated in said modulation space by at least said Euclidean distance; and

encoding information signals by encoders employing error-correcting codes, each said encoder producing a symbol representative of an indexing vector of the same dimension as a corresponding one of said ordered subspaces for communication of said symbol through said information channel.

4,882,734

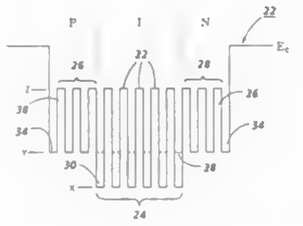
QUANTUM WELL HETEROSTRUCTURE LASERS WITH LOW CURRENT DENSITY THRESHOLD AND HIGHER T_O VALUES

Donald R. Scifres, Los Altos Hills, Calif., and Robert D. Burnham, Wheaton, Ill., assignors to Xerox Corporation, Stamford, Conn.

Filed Mar. 9, 1988, Ser. No. 165,862

Int. Cl.⁴ H01S *3/19*

U.S. Cl. 372—45 **16 Claims**



1. In a quantum well heterostructure laser exhibiting low current density threshold and high T_0 values, said laser comprising

a plurality of contiguous semiconductor layers formed on a substrate,

one or more said layers forming an active region capable of quantization of electron states,

said active region confined by a pair of outer superlattice regions providing optical confinement and low thermal resistance while preventing the development of antiwaveguiding properties.

4,882,735

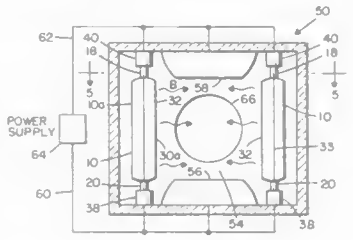
MODULAR UV PREIONIZATION PACKAGE FOR A CO_2 LASER

Michael P. Altman, Washington Mills, N.Y., assignor to United Technologies Corporation, East Hartford, Conn.

Filed Dec. 1, 1988, Ser. No. 279,126

Int. Cl.⁴ H01S *3/097*

U.S. Cl. 372—86 **19 Claims**



1. A CO_2 gas laser comprising:

means for defining a resonant cavity structure, said resonant cavity structure including a lasant gas comprised of CO_2, said lasant gas being substantially devoid of N_2 for substantially eliminating a generation of a parasitic optical tail pulse during an operation of said CO_2 gas laser;

means for generating an electrical discharge within said resonant cavity structure for ionizing said lasant gas such that said lasant gas emits electromagnetic radiation; and

means for preionizing said lasant gas with ultraviolet radiation, said preionizing means comprising at least one sealed module means containing a gas comprised of N_2, said sealed module means substantially isolating said N_2 gas from said lasant gas, said sealed module means comprising means for ionizing said N_2 gas such that said N_2 gas emits ultraviolet radiation, said ionizing means being coupled to electrical terminal means extending through an outer surface of said sealed module means, said preionizing means further comprising electrical coupling means adapted for conductively coupling to said electrical terminal means such that said sealed module means is removably coupled to said laser, and wherein

said module means further comprises window means comprised of a material substantially transparent to ultraviolet radiation for coupling ultraviolet radiation emitted by said N_2 gas to said lasant gas.

4,882,736

METHOD FOR EFFICIENTLY USING FLUE GAS ENERGY IN A GLASS FURNACE

Helmut Pieper, Lohr am Main, Fed. Rep. of Germany, assignor to Sorg GmbH & Co. KG, Lohr am Main, Fed. Rep. of Germany

Filed May 18, 1988, Ser. No. 195,514

Claims priority, application Fed. Rep. of Germany, May 30, 1987, 3718276

Int. Cl.⁴ C03B *5/027*

U.S. Cl. 373—32 **16 Claims**

1. A method for melting glass in a glass melting furnace comprising:

a. feeding a charge into a charging end of a melting section of the furnace;

b. clarifying melted charge in a clarifying section adjoining the melting section;

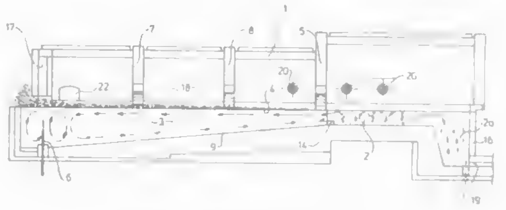
c. homogenizing the clarified melted charge in a homogenization section adjoining the clarifying section;

d. withdrawing the homogenized material from the homogenization section;

e. adding energy through electrodes under the charging end;

f. adding most of the input of melting energy by burners disposed above the melt in the clarifying section, the burners producing flue gases;

g. absorbing flame radiation from the clarifying section at its boundary with the melting section and above the melting section;



h. dividing the space above the melt into zones of different temperature in which the highest temperature is in the clarifying section;

i. preheating combustion air by heat exchange with the flue gases;

j. feeding the preheated combustion air into said burners;

k. passing the flue gases across the melting section countercurrently to the charge;

l. exhausting the flue gases from the furnace near the charging end.

4,882,737

SIGNAL TRANSMISSION METHOD

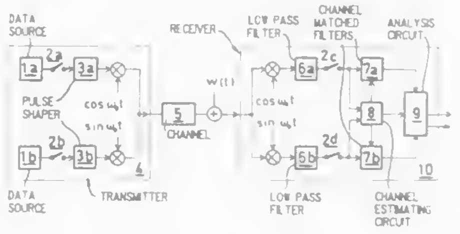
Dacfey Dzung, Würenlos, Switzerland, assignor to BBC Brown Boveri AG, Baden, Switzerland

Filed Jul. 15, 1988, Ser. No. 219,343

Claims priority, application Switzerland, Jul. 31, 1987, 2951/87

Int. Cl.⁴ H03H *17/00;* **H04J** *11/00;* **H04L** *23/02*

U.S. Cl. 375—15 **6 Claims**



1. Signal transmission method according to the principle of quadrature amplitude modulation, comprising the steps of:

in a transmitter

(a) sampling digital data in predetermined time intervals T;

(b) forming a transmit signal by feeding the digital data to a pulse shaper, said pulse shaper having a given unit pulse response r(t);

(c) amplitude-modulating a carrier oscillation by the transmit signal;

(d) transmitting said amplitude-modulated carrier oscillation via a channel, said channel having a unit pulse response h(t) and superimposing an additive white noise w(t);

in a receiver

(e) demodulating the transmitted carrier oscillation into a receive signal y(t);

(f) sampling said receive signal in time intervals ΔT which are small in relation to the time interval T;

(g) preprocessing said sampled receive signal in a transverse channel-matched filter, said channel-matched filter being matched to a filter cascade H(t) formed by said pulse shaper and said channel as a whole,

$$H(t)=h*r(t),$$

where "*" stands for the convolution product; and

(h) determining original digital data from the preprocessed sampled receive signal in an analysis circuit.

4,882,738

CLOCK CONTROL SYSTEM

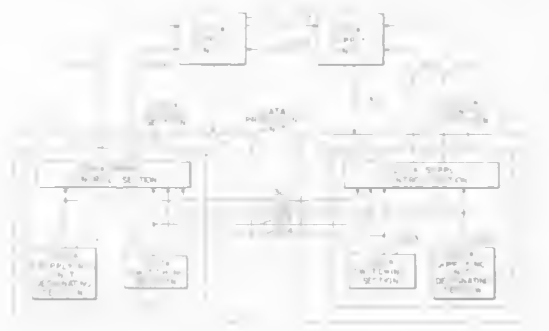
Takashi Suzuki, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jun. 24, 1988, Ser. No. 211,281

Claims priority, application Japan, Jun. 25, 1987, 62-156492

Int. Cl.⁴ H04L *1/00*

U.S. Cl. 375—108 **4 Claims**



1. A clock control system comprising:

a plurality of data processing units, and

a plurality of clock supplying units,

each of said clock supplying units comprising:

a plurality of clock generating means for generating a plurality of clock signals differing from one another in frequency, and

clock selecting means for selecting a clock signal from either said plurality of clock signals or from a second clock supplying unit; and

each of said data processing units comprising:

unit designating means for designating a clock supplying unit from which to receive a clock signal,

clock switchover ordering means for ordering a switchover from a clock signal currently in use to another of said plurality of clock signals, and

selecting/controlling means, responsive to instructions from said unit designating means and from said clock switchover ordering means, for selecting and controlling one of said plurality of clock generating means.

4,882,739

METHOD FOR ADJUSTING CLOCKS OF MULTIPLE DATA PROCESSORS TO A COMMON TIME BASE

Richard J. Potash, Dedham, Mass., and Steven K. Burns, Durham, N.H., assignors to Computer Sports Medicine, Inc., Cambridge, Mass.

Filed Jan. 26, 1988, Ser. No. 148,493

Int. Cl.⁴ H04L *7/00*

U.S. Cl. 375—109 **33 Claims**

1. A method for referencing at least one slave clock to a master clock, said master clock providing a master clock time

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signal, said slave clock providing a periodically incremented slave clock time signal, said method comprising the steps of:

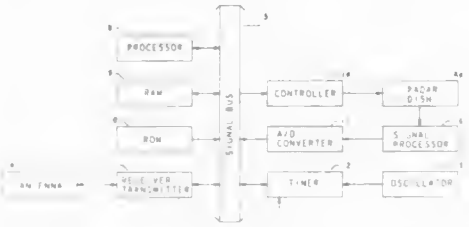
(1) transmitting from said slave clock to said master clock a first time signal having a value ST_0 corresponding to the value of said slave clock time signal when said first time signal is transmitted;

(2) determining a value MT_0 of said master clock time signal when said first time signal is received by said master clock;

(3) subsequently transmitting from said master clock to said slave clock a second time signal having the value MT_0;

(4) subsequently transmitting from said master clock to said slave clock a third time signal having a value MT_1 corresponding to the value of said master clock time signal when said third time signal is transmitted;

(5) determining a value ST_1 of said slave clock time signal when said third time signal is received by said slave clock;



(6) upon receipt of said second and third time signals at said slave clock, determining a virtual clock reference time t_{ref} given by

$$t_{ref}=[(MT_0+MT_1)-(ST_0+ST_1)^{*}\,k_{clkratio}]/2$$

where $k_{clkratio}=(MT_1-MT_0)/(ST_1-ST_0)$; and

(7) at said slave clock, generating a virtual clock time signal having a value T_{vc} synchronized to said master clock time signal, the value T_{vc} of said virtual clock time signal being given by

$$T_{vc}=t_{ref}+n_{pc}\,{}^{*}\,k_{clkratio}$$

where n_{pc} is the number of slave clock time signal increments.

4,882,740

FREQUENCY COUNTER FOR COUNTING A FREQUENCY AND PARTLY VARIED FREQUENCIES OF A SIGNAL IN REAL TIME

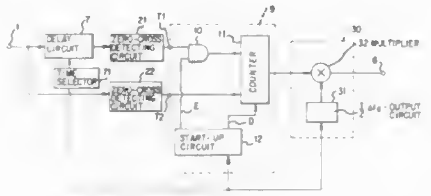
Yoshitaka Abe, and Keiichi Murakami, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Feb. 25, 1988, Ser. No. 160,227

Claims priority, application Japan, Mar. 16, 1987, 62-60417

Int. Cl.⁴ G01R *23/10*

U.S. Cl. 377—49 3 Claims



1. A frequency counter for counting a frequency of an input signal, said frequency counter, comprising:

delaying means for delaying the input signal as much as a predetermined time and for producing a delayed signal, said predetermined time being selectable so as to be longer than a half period of the frequency of the input signal;

first detecting means for detecting delayed zero-cross pulses from said delayed signal;

second detecting means for detecting zero-cross pulses from the input signal; and

difference detecting means for counting a first number of said delayed zero-cross pulses after said predetermined time is over and a second number of said zero-cross pulses during the predetermined time and after the predetermined time is over, and for detecting difference between said first and second numbers by subtracting said first number from said second number from moment to moment.

4,882,741

MULTILEAF COLLIMATOR AND RELATED APPARATUS

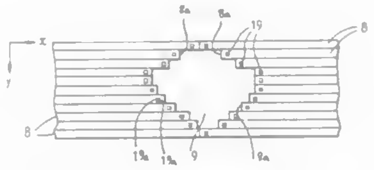
Kevin J. Brown, Crawley, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 26, 1988, Ser. No. 263,090

Claims priority, application United Kingdom, Oct. 28, 1987, 8725253

Int. Cl.⁴ G21K *1/04*

U.S. Cl. 378—152 10 Claims



1. A collimating arrangement for a beam of radiation, comprising a set of mutually contiguous members which substantially attenuate said radiation, means for adjusting the positions of the members so that edges thereof form an adjustable aperture for defining the cross-sectional shape of the beam, illuminating means for illuminating an area including the beam-defining edges of said members, and detecting means responsive to spatial variations in the intensity of illumination reaching the detecting means from said area for determining the positions of said beam-defining edges, wherein each of said members includes respective retroreflector means for reflecting illumination from the illuminating means into the detecting means substantially independently of the position in said area of said beam-defining edges of said members, and the detecting means are more responsive to the higher intensity of illumination reflected from the retroreflector means than reflected from adjacent regions in said area so as to detect the positions of the retroreflector means which are respectively representative of the positions of said edges of said members.

4,882,742

METHOD FOR MEASURING RESISTANCES, IN PARTICULAR RESISTANCES OF SUBSCRIBER'S LINES OF DIGITAL TIME DIVISION MULTIPLEX TELECOMMUNICATION NETWORKS

Wolfgang Kaiser, Munich, and Werner Schmutzler, Fuerstenfeldbruck, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Aug. 8, 1988, Ser. No. 229,575

Claims priority, application Fed. Rep. of Germany, Aug. 12, 1987, 3726882

Int. Cl.⁴ H04B *3/46;* H04M *1/24*

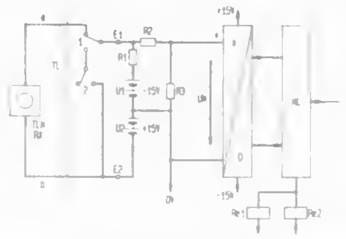
U.S. Cl. 379—30 2 Claims

1. A method for measuring resistances, in particular the resistance of a subscriber's line in a digital time division multiplex telecommunication network, using a measuring circuit and a signal processor, which drives the measuring circuit and

determines the corresponding resistance values from the values of the voltages supplied as measuring results by the measuring circuit, said method comprising the steps of:

carrying out a first and a second preliminary measurement before each actual resistance measurement with the measuring circuit input terminals operating at no-load and short-circuit respectively;

forming a weighting factor as the quotient of the difference between calculated voltage values corresponding to the first and second preliminary measurements, respectively,



and the difference between the first and second preliminary measurements;

carrying out an actual resistance measurement with the measuring circuit input terminals coupled to said subscriber's line; and

weighting the difference between the value of the voltage supplied by the measuring circuit in said actual resistance measurement and said second preliminary measurement with said weighting factor and converting the weighted value into the resistance value of the measured resistance.

4,882,743

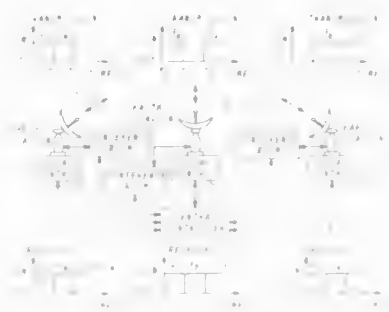
MULTI-LOCATION VIDEO CONFERENCE SYSTEM

M. Fatein Mahmond, Middletown, N.J., assignor to American Telephone and Telegraph, New York, N.Y. and AT&T Bell Laboratories, Murray Hill, N.J.

Filed Aug. 1, 1988, Ser. No. 226,491

Int. Cl.⁴ H04M *11/00;* H04N *7/14*

U.S. Cl. 379—53 8 Claims



1. A method for establishing video-audio communications between more than two remotely located conference rooms characterized by

designating one of the conference rooms to be the director's conference room,

assigning a broadcast satellite channel to broadcast from any one of the conference rooms to all other conference rooms,

assigning an auxiliary satellite channel to transmit from any one of the other conference rooms to the room assigned to the broadcast satellite channel,

using frequency division multiple access satellite transmission of the broadcast channel and the auxiliary channel, and

using public switch network lines to transmit control signals from the director's conference room to satellite modulators-demodulators (modems) located at earth stations via a video teleconferencing switching controller and a monitor and remote controller at each earth station coupled to selectively tune the modulators to said broadcast channel or said auxiliary channel, and to selectively tune the demodulators to one of the two channels, and to selectively turn the modulators on or off.

4,882,744

AUTOMATIC PAGING SYSTEM

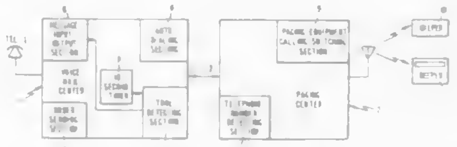
Kazuo Hashimoto, Tokyo, Japan, assignor to Hashimoto Corporation, Tokyo, Japan

Filed Aug. 17, 1988, Ser. No. 233,279

Claims priority, application Japan, Aug. 18, 1987, 62-204842

Int. Cl.⁴ H04Q *7/04*

U.S. Cl. 379—57 2 Claims



1. An automatic paging system which can handle calls for both subscribers of a first type beeper without message display capability and a second type beeper with message display capability, comprising:

means at a voice mail center which executes a paging service, for detecting (a) an outgoing message which is sent back to a calling party from a paging center when a number of the first type beeper is dialed by the voice mail center, and (b) a first accompanying specific signal;

means at the voice mail center, for detecting (a) an outgoing message which is sent back to the calling party when a number of the second type beeper with message display capability is dialed by the voice mail center, and (b) a second accompanying specific signal;

switching means in the voice mail center for switching to first and second states according to whether the outgoing message from the paging center is for said first or second type of beeper, respectively;

means for disengaging a line in a predetermined fixed time duration after dialing when said switching means is in said first state corresponding to the first type beeper; and

means for disengaging the line after the calling party sends out his telephone number or other message when the outgoing message for said second type beeper with message display capacility is delivered when the switching means is in the second state.

4,882,745

CORDLESS HEADSET TELEPHONE

Alan H. Silver, 130 NE. 41st St., Apt. #8, Ft. Lauderdale, Fla. 33334

Continuation of Ser. No. 50,700, May 8, 1987, abandoned. This application Mar. 20, 1989, Ser. No. 325,071

Int. Cl.⁴ H04Q *7/04*

U.S. Cl. 379—61 26 Claims

1. A cordless headset telephone system comprising: at least one headset and at least one base, each including transmitter means and receiver means for providing a two-way cordless transmission between the headset and the base, each headset being balanced and having a minimum inertial moment, and including a curved headband, a quick-disconnect battery pack attached to one end portion of the headband, a single earpiece attached to the other end portion of the headband, and a microphone respectively connected to a headset receiver and a

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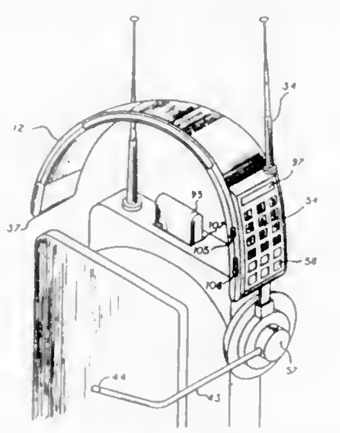
headset transmitter, a forwardly extendable microphone arm having the headset microphone mounted thereon, each base



having a base receiver and base transmitter respectively connected to an audio output and an audio input.

4,882,746

CORDLESS TELEPHONE SYSTEM

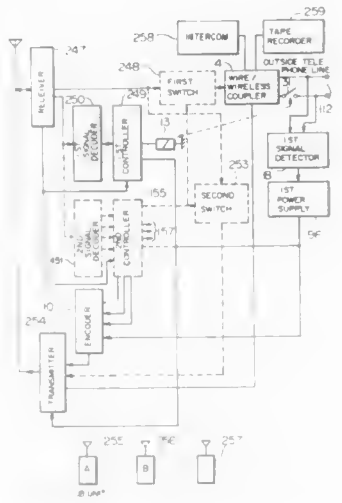
Masatoshi Shimada, 6-12, Todoroki-3-chome, Setagaya-ku, Tokyo, Japan

Filed Mar. 17, 1988, Ser. No. 169,466

Claims priority, application Japan, Mar. 22, 1987, 62-68772; May 1, 1987, 62-106266; May 29, 1987, 62-131487; Sep. 7, 1987, 62-221839

Int. Cl.⁴ H04M *11/00*

U.S. Cl. 379—61 **22 Claims**



1. A cordless telephone system comprising:
a master unit connected to a telephone line and having a radio transceiver;
at least one sub-unit having a radio transceiver and which is capable of transmitting and receiving speech to and from the telephone line through the master unit; and
control means responsive to a control signal from said sub-unit, said control means including at least one of: transfer control means for permitting transfer of speech on said telephone line from one sub-unit to another sub-unit, speech control means for permitting speech between sub-units through the master unit, and equipment control means for controlling equipment other than the telephone line by said sub-unit.

4,882,747

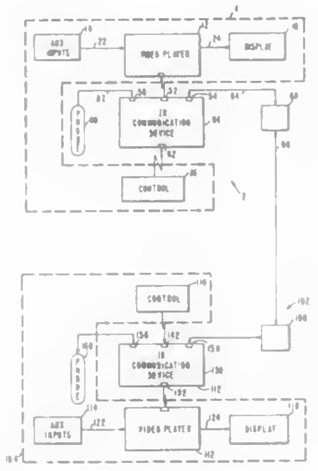
INFRARED COMMUNICATION APPARATUS FOR REMOTE SITE APPLICATIONS

Jerry Williams, 4087 Norton Ave., Oakland, Calif. 94602

Filed May 12, 1988, Ser. No. 193,016

Int. Cl.⁴ H04M *11/00*

U.S. Cl. 379—102 **7 Claims**



1. A communication system comprising:
a first infrared control unit at a first site;
a video display system under control of an infrared signal transmitted by said first control unit;
a second infrared control unit at a second site;
a second video display system under control of an infrared signal transmitted by said second control unit; and
a first infrared communication device at said first site and a second infrared communication device at said second site, each said infrared communication device comprising:
an infrared receiver for receiving an infrared control signal from the control unit at its site;
a microprocessor for decoding said received control signal to generate digitized control signals;
an infrared transmitter for retransmitting a regenerated infrared control signal to the display system at its site;
a modem for communicating and receiving digitized control signals over phone communication lines to the other site; and
a phone at each site for establishing a phone line communication link for said modem with said other site.

4,882,748

HOMOLOGATED PROTECTOR MODULES FOR TELEPHONE CONNECTOR BLOCKS

Carl Meyerhoefer, Dix Hills, N.Y., assignor to Porta Systems Corp., Syosset, Del.

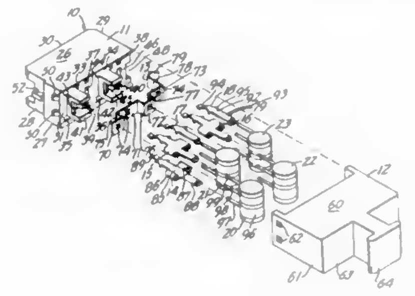
Filed Sep. 30, 1988, Ser. No. 251,231

Int. Cl.⁴ H02H *9/06*

U.S. Cl. 379—332 **6 Claims**

6. In a combination telephone subscriber circuit connector block and a protector module therefor, the improvement comprising: said conntector block having an exposed planar surface, a plurality of insulation displacing wire terminals thereon projecting from said surface, a grounding strip carried by said surface and extending medially thereon; said module comprising a base element, a hollow cover element engaged upon said base element to define an elongated cavity, a perforate grounding element supported transversely with respect to said base element and having a free end forming a terminal extending outwardly of said base element; a plurality of elongated axially oriented contacts positioned within said cavity, and having first ends penetrating said base element to contact said insulation displacement terminals on said block, and second ends

having socket forming means thereon; and a plurality of protective elements having means thereon engaging said socket



forming means; said free end of said grounding element extending outwardly of said base element and resiliently contacting said grounding strip.

4,882,749

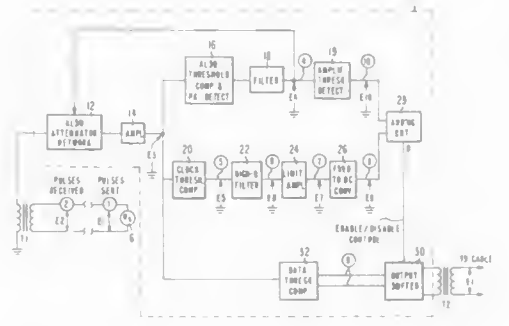
CONTROL OF SIGNAL TRANSMISSION

Borys Zuk, New Brunswick, N.J., assignor to Harris Semiconductor (Patents) Inc., Melbourne, Fla.

Filed Jan. 9, 1986, Ser. No. 817,489

Int. Cl.⁴ H04B *3/36*

U.S. Cl. 379—346 **4 Claims**



1. A telephone cable repeater comprising:
input means for receiving signals from one section of a telephone cable;
amplitude and frequency responsive means, coupled to said input means, including:
(a) a first means responsive to the amplitude of the signals received at said input means for producing a first signal having a first value when the amplitude of said received signals is above a preset level and having a second value when its amplitude is below said preset level; and
(b) a second means responsive to the frequency of the signals received at said input means for producing a second signal having a first value when the frequency of said signals received at said input means is within a predetermined range and having a second value when the frequency of said signals received at said input means is outside said predetermined range;
said amplitude and frequency responsive means also including means for producing an enabling signal when the amplitude of said signals is greater than said preset level and the frequency of said signals received at said input means is within said predetermined frequency range; and
selectively enabled output means responsive to said enabling signal and to the signals received at said input means for producing regenerated signals for transmission to a subsequent section of telephone cable.

4,882,750

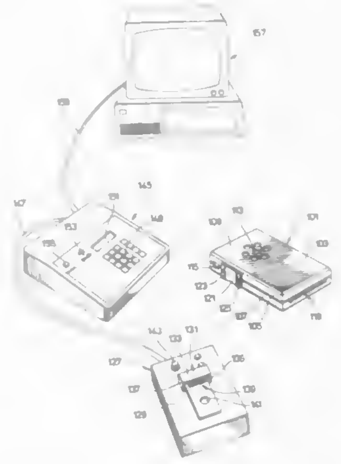
PROGRAMMABLE DIALER SYSTEM

Daniel A. Henderson, P.O. Box 110624, Arlington, Tex. 76094, and William T. Mostyn, Jr., P.O. Box 457, Waco, Tex. 76643

Filed Mar. 23, 1988, Ser. No. 172,137

Int. Cl.⁴ H04M *1/26*

U.S. Cl. 379—355 **22 Claims**



1. A portable telephone dialer for producing a sequence of dual tone modulated frequencies corresponding to a telephone number during a dialing mode adapted to be preprogrammed with a telephone number by a programming unit having a plurality of programming probes during a programming mode, comprising:
a case having at least one surface for substantially enclosing a small volume;
a dual tone modulated frequency generating integrated circuit, disposed within said case having last number redial capability and at least one redial input contact for actuating said last number redial capability, said dual tone modulated frequency generating integrated circuit including a reprogrammable memory of the type capable of storing a sequence of digits, and a signal generator for producing a sequence of dual tone modulated frequency signals corresponding to said sequence of digits stored in said memory;
a programming interface means, electrically coupled to said reprogrammable memory, for releasably electrically coupling said reprogrammable memory with said plurality of programming probes of said programming unit during said programming mode;
an audiofrequency output means coupled to said signal generator for producing a sequence of audible audiofrequency signals corresponding to said sequence of dual tone modulated frequency signals produced by said signal generator during said dialing mode;
at least one battery disposed within said case and electrically coupled to said reprogrammable memory means, said signal generator, and said audiofrequency output means, for providing power to said memory means, said signal generator, and said audiofrequency output means; and
a single bi-state, switch electrically coupled to said at least one redial input contact and operable from the exterior of said case for activating said last number redial capability and causing said signal generator to produce said sequence of dual tone modulated frequency signals corresponding to said digits stored in said preprogrammed memory wherein, subsequent to programming, said portable telephone dialer is operable exclusively through said last number redial capability, restricting said portable telephone dialer to dialing said sequence of digits stored in said reprogrammable memory.

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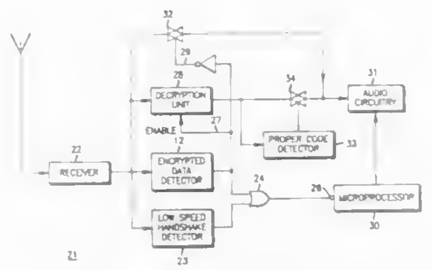
4,882,751
SECURE TRUNKED COMMUNICATIONS SYSTEM

Michael D. Kotzin, Buffalo Grove; Kenneth J. Zdunek, and Eric F. Ziolko, both of Schaumburg, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 31, 1986, Ser. No. 926,311
Int. Cl.⁴ H04K *1/00*

U.S. Cl. 380—9 13 Claims



10. A subscriber unit for use in a secure trunked communications system, wherein the secure trunked communications system includes:

at least one central controller having: means for allocating a limited number of communication channels in response to a channel acquisition request from said subscriber unit;

means for maintaining said channel allocation, at least so long as said subscriber unit alternatively provides both of:

a connect tone in conjunction with transmission of an unencrypted signal; and

an encrypted signal transmission comprised of a data stream;

means for terminating said channel allocation upon receiving either of:

a disconnect signal; and

an end of message signal transmitted by said subscriber unit as part of said data stream; and

means for transmitting a handshake signal when said subscriber unit transmits a signal that includes said connect tone; said subscriber unit comprising:

means for transmitting a channel allocation request to said central controller;

means for selectively transmitting a digitally encrypted message as a data stream;

means for automatically attempting to decrypt a received digitally encrypted message comprised of a data stream upon receiving such a signal, and further including means for automatically rendering a decrypted message audible following decryption;

means for automatically transmitting said connect tone in parallel with transmission of a non-encrypted message; and

means for receiving a non-encrypted signal and for automatically rendering said non-encrypted message audible following receipt thereof.

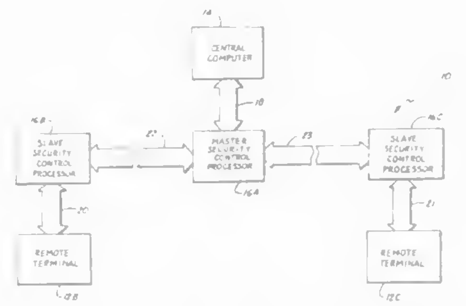
4,882,752
COMPUTER SECURITY SYSTEM

Richard S. Lindman, 3708 17th Ave. South, Minneapolis, Minn. 55407; Richard P. Lindman, 7625 18th Ave. South, Richfield, Minn. 55423, and Edward D. Myers, 4440 Denton Way, Inver Grove Heights, Minn. 55075

Filed Jun. 25, 1986, Ser. No. 878,291
Int. Cl.⁴ H04K *1/00*

U.S. Cl. 380—25 32 Claims

1. A multi-level computer security system of the type having a master access control unit having a master unit database memory for storing codes characteristic of authorized slave access control units and adapted to selectively interface a central computer to a data transmission path and at least one slave access control unit adapted to interface a peripheral unit to the data transmission path, for controlling communications between the peripheral unit and the central computer over the data transmission path and preventing unauthorized access to the central computer; wherein the system is characterized by a first security level procedure at which the slave access control unit transmits a slave unit identification code over the data transmission path to the master access control unit which, when received, is compared by the master access control unit to slave unit identification codes of authorized slave access control units stored in the master unit database memory, and a first security level clearance granted by the master access control unit upon a favorable comparison, and a second security level procedure at which the master access control unit requests from the slave access control unit over the data transmission path a slave unit sync code which must be received over the data transmission path by the master access control unit during a predetermined sync window and which, when received, is compared by the master access control unit to sync codes of authorized slave units stored in the master unit database memory, and a second security level clearance grated upon a favorable comparison of the received sync code and the sync codes stored in memory if the sync code was received during the sync window, the security system permitting data transmission between the peripheral unit and the central computer through the master and slave access control units and over the data transmission path only if the first and second security clearances are granted, and wherein the master access control unit periodically requests the slave unit sync code from the slave access control unit during data transmission after the first and second security clearance are granted, and terminates data transmission between the peripheral unit and the central computer unless a valid sync code is received during the sync window.

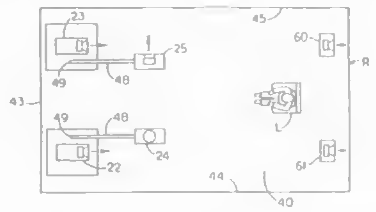

14
CENTRAL COMPUTER
18
10
SLAVE SECURITY CONTROL PROCESSOR
MASTER SECURITY CONTROL PROCESSOR
SLAVE SECURITY CONTROL PROCESSOR
REMOTE TERMINAL
REMOTE TERMINAL
12B
12C

4,882,753
PASSIVE AMBIENCE RECOVERY SYSTEM FOR THE REPRODUCTION OF SOUND

Clarence L. Shivers, 3055 Purgatory Dr., Colorado Springs, Colo. 80918

Continuation-in-part of Ser. No. 145,284, Jan. 19, 1988, Pat. No. 4,837,825, which is a continuation-in-part of Ser. No. 18,357, Feb. 28, 1987, abandoned. This application Jan. 12, 1989, Ser. No. 296,177
Int. Cl.⁴ H04R *5/02*

U.S. Cl. 381—24 8 Claims



1. A multi-channel audio system for producing L and R stereo signals from an audio source for reception by a listening site proximate the audio source, the system comprising:

first and second speakers arranged in horizontal spaced relation to one another and facing substantially toward the listening site, each speaker producing and directing one of said L and R signals toward the listening site;

third and fourth speakers positioned in front of said first and second speakers, first means for transmitting one of said L and R signals to one of said third and fourth speakers, and second means for transmitting the other of said L and R signals to the other of said third and fourth speakers, one of said L and R signals being transmitted in-phase relation to said third and fourth speakers and the other of said L and R signals being transmitted in out-of-phase relation to said third and fourth speakers to produce a first sound from an out-of-phase signal;

one of said third and fourth speakers directing the sound produced by said in-phase signals at right angles to the sound produced by said out-of-phase signals and directed by the other of said third and fourth speakers;

at least a fifth speaker, the fifth speaker being located behind the listening site and facing away from the listening site, the fifth speaker being connected out-of-phase with the first and second speakers to produce a second sound from an out-of-phase signal;

a first sound-reflective surface facing the first, second and fifth speakers for reflecting the sound produced therefrom;

a second sound-reflective surface oriented at right angles to said first sound-reflective surface and being faced by one of the third and fourth speakers for reflecting the sound produced by said first out-of-phase signal; and

a third sound-reflective surface, perpendicular to the first and second sound-reflective surfaces and being faced by the other of the third and fourth speakers for reflecting the sound produced therefrom;

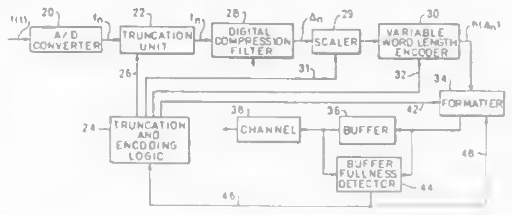
whereby at least five different signals are produced and directed by said first, second, third, fourth and fifth speakers from different locations and arrive at the listening site at spaced time intervals with respect to one another.

4,882,754
DATA COMPRESSION SYSTEM AND METHOD WITH BUFFER CONTROL

Charles S. Weaver, Palo Alto; Constance T. Chittenden, Los Altos, and Allen B. Conner, Jr., Sunnyvale, all of Calif., assignors to Digideck, Inc., Mountain View and Digital Recording Research Limited Partnership, Menlo Park, both of, Calif.

Continuation-in-part of Ser. No. 89,487, Aug. 25, 1987, Pat. No. 4,802,222. This application Jun. 9, 1988, Ser. No. 204,613
Int. Cl.⁴ G10L *5/00;* G11B *5/09*

U.S. Cl. 381—35 38 Claims



1. A signal compression system for processing a stream of fixed length digital sample signals comprising,

linear digital compression filter means for compression filtering the digital sample signals and generating a stream of equal length compression filtered signals.

means for truncating digital sample signals supplied to said compression filter means,

variable word length encoding means for encoding the compression filtered stream and generating a stream of encoded signals,

buffer means into which the encoded signal stream is written and from which bits are removed,

wherein the improvement comprises:

means for obtaining a measure of fullness of said buffer means, and

means for controlling the truncating means in response to said measure of fullness to substantially prevent overflow of said buffer means, truncation being increased and decreased with increased and decreased measures of fullness, respectively.

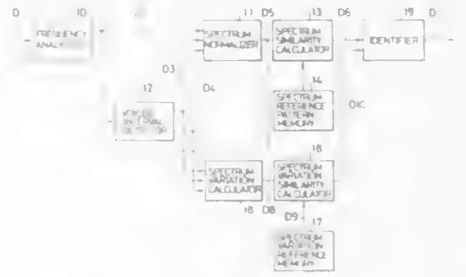
4,882,755
SPEECH RECOGNITION SYSTEM WHICH AVOIDS AMBIGUITY WHEN MATCHING FREQUENCY SPECTRA BY EMPLOYING AN ADDITIONAL VERBAL FEATURE

Youichi Yamada, and Keiko Takahashi, both of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Aug. 11, 1987, Ser. No. 84,107

Claims priority, application Japan, Aug. 21, 1986, 61-196272; Aug. 21, 1986, 61-196274; Sep. 5, 1986, 61-208978
Int. Cl.⁴ G10L *7/08*

U.S. Cl. 381—41 9 Claims


D
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D6
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D
SPECTRUM NORMALIZER
SPECTRUM SIMILARITY CALCULATOR
IDENTIFIER
D3
12
D4
14
SPECTRUM REFERENCE PATTERN MEMORY
D10
18
SPECTRUM VARIATION CALCULATOR
SPECTRUM VARIATION SIMILARITY CALCULATOR
16
D8
D9
17
SPECTRUM VARIATION REFERENCE MEMORY

1. A speech recognition system comprising

a frequency analyzer which performs frequency analysis of the input speech into a number of channels, performs logarithmic conversion and extracts a frequency spectrum,

a voiced interval detector which detects voiced intervals on the basis of the said frequency spectrum,

a spectrum normalizer which determines a least square fit line for the frequency spectrum and normalizes the frequency spectrum with reference to the least square fit line to provide a normalized frequency spectrum pattern,

a spectrum reference pattern memory in which spectrum reference patterns are stored in advance,

a spectrum similarity calculator which calculates the similarity between the said normalized spectrum pattern and a spectrum reference pattern for each of a plurality of recognition categories, and

an identifier which, as the result of the spectrum similarity calculation, outputs the name of the recognition category which has the highest similarity,

the speech recognition system further comprising:

(a) a second feature pattern calculator which calculates a second feature pattern, said second feature pattern calculator (a) including a spectrum variation pattern calculator which, for each frame in a voiced interval, calculates for each channel, as the second feature pattern, a spectrum variation pattern which quantifies the degree and the direction of the transition between channels of the normalized spectrum with the advance of time around the said frame, and

(b) a second feature reference pattern memory in which second feature reference patterns have previously been stored, said second feature reference pattern memory (b) including a spectrum variation reference pattern

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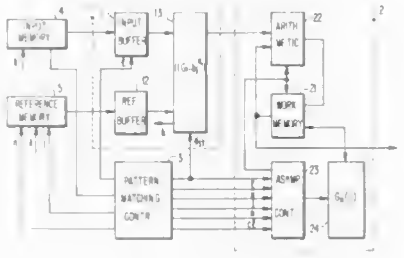
memory in which spectrum variation reference patterns, as said second feature reference patterns, have previously been stored, and

(c) a second feature similarity calculator which calculates the similarity between the said second feature pattern and the second feature reference patterns with respect to each recognition category, said second feature similarity calculator (c) including a spectrum variation similarity calculator which calculates the similarity between the said spectrum variation pattern and the spectrum variation reference patterns with respect to each of the recognition categories, and in that

(d) in the identifier, the overall similarity is calculated for each of the recognition categories by reference to both the similarity of the spectrum and the similarity of the second feature, and the category giving the largest overall similarity is output as the recognition result.

4,882,756
PATTERN MATCHING SYSTEM USING DYNAMIC PROGRAMMING

Masao Watari, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan
Continuation of Ser. No. 664,732, Oct. 25, 1984, abandoned. This application Feb. 10, 1989, Ser. No. 308,985
Claims priority, application Japan, Oct. 27, 1983, 58-201385
Int. Cl.⁴ G10L *5/06, 9/00*
U.S. Cl. 381—42 13 Claims



1. A pattern matching system for deriving the minimum of the dissimilarity defined by the sum of the inter-vector distances $d(a_i, b_j^n)$ of an input pattern $A = a_1, a_2, \cdots, a_I$ expressed by a sequence of feature vectors and an n-th reference pattern $B^n = b_1^n, b_2^n, \cdots$, and b_J^n of a number N of reference patterns stored beforehand on a time function j(i) for establishing correspondence between a time axis i of the input pattern A and a time axis j of the reference pattern B^n, said system comprising:

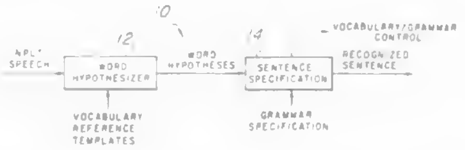
a pattern matching control unit for gathering a number L of time points i of said input pattern into a block of feature vectors, $1 < L < I$, incrementing a block number ii from 1 to I/L, incrementing a signal S_j, indicating the time point of said reference pattern for each block number ii, from a lower limit L(ii) to an upper limit U(ii) of a matching region, and incrementing a signal, indicating the time point in one block of said input pattern, from 1 to L;

a distance computation unit including: an input pattern buffer having its address specified by the signal of said control unit; and a reference pattern buffer for temporarily storing the vector b_j^n at the j-th frame of said reference pattern so that said input pattern a_i and said reference pattern b_j^n may be read out from said input pattern buffer and said reference pattern buffer to derive said inter-vector distance $d(a_i, b_j^n)$; and

an asymptotic equation computation unit including a dissimilarity memory $G_n(j)$, which has its address specified by said signal j and a signal n of said control unit, so that the asymptotic equation of a dynamic programming is computed for the time point j of each reference pattern and for each time point in one block of said input pattern with reference to said distance $d(a_i, b_j^n)$ under the connecting condition of the dissimilarity $G_n(j)$ at a time point $(ii-1)\cdot L$ for the block number ii of the time point i of said input pattern, thereby to derive the dissimilarity $G_n(j)$ at the time point $ii\cdot L$ of said input pattern.

4,882,757
SPEECH RECOGNITION SYSTEM

William M. Fisher; Michael L. McMahan, both of Plano; George Doddington, Richardson, and Enrico L. Bocchieri, Dallas, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.
Continuation of Ser. No. 856,534, Apr. 25, 1986, abandoned. This application Jan. 26, 1989, Ser. No. 302,998
Int. Cl.⁴ G10L *5/00*
U.S. Cl. 381—43 22 Claims



1. A method for selecting a sentence, formed from a sequence of hypothesized words, from a plurality of hypothesized sentences, comprising the steps of:

(a) determining beginning and end points for each hypothesized word in each hypothesized sentence;
(b) determining a word error for each hypothesized word in each hypothesized sentence which indicates a likelihood of the hypothesized word having been incorrectly hypothesized;
(c) determining whether any gaps occur between consecutive hypothesized words in each hypothesized sentence;
(d) assigning error values to any gaps determined in step (c);
(e) determining whether any overlap occurs between consecutive hypothesized words in each hypothesized sentence;
(f) assigning error values to any overlaps determined in step (e);
(g) summing the word errors, gap errors and overlap errors for each hypothesized sentence, and
(h) generating an indicator of the selected sentences as being the hypothesized sentence with the smallest sum as determined in step (g).

4,882,758
METHOD FOR EXTRACTING FORMANT FREQUENCIES

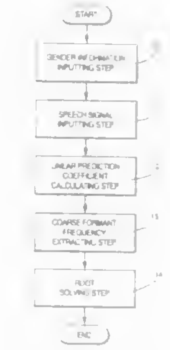
Yutaka Uekawa, Ashiya; Shuji Takata, Kadoma, and Michiyo Goto, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Oct. 22, 1987, Ser. No. 111,346
Claims priority, application Japan, Oct. 23, 1986, 61-252224; Oct. 23, 1986, 61-252220
Int. Cl.⁴ G10L *9/04*
U.S. Cl. 381—50 4 Claims

1. A method for extracting a formant frequency comprising the steps of:

calculating linear prediction coefficients by linear prediction analysis of an input speech signal;

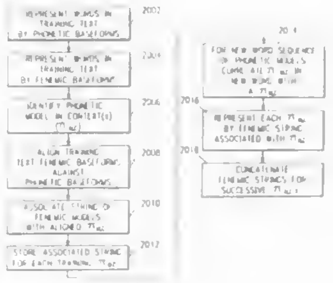
extracting a coarse formant frequency by a linear combination of feature parameters of speech obtained by calculation from the speech input signal and previously prepared coefficients; and

solving a root of an inverse filter formed of the linear prediction coefficients by an approximation method in which the coarse formant frequency is used as an initial value of a root of the inverse filter and an approximation of a root is recursively calculated until it converges to the root.


START
GENDER INFORMATION INPUTTING STEP
SPEECH SIGNAL INPUTTING STEP
LINEAR PREDICTION COEFFICIENT CALCULATING STEP
COARSE FORMANT FREQUENCY EXTRACTING STEP
ROOT SOLVING STEP
END

4,882,759
SYNTHESIZING WORD BASEFORMS USED IN SPEECH RECOGNITION

Lalit R. Bahl, Amawalk; Peter V. deSouza; Robert L. Mercer, both of Yorktown Heights, and Michael A. Picheny, White Plains, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Apr. 18, 1986, Ser. No. 853,525
Int. Cl.⁴ G10L *5/00*
U.S. Cl. 381—51 19 Claims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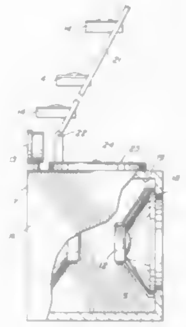
REPRESENT WORDS IN TRAINING TEXT BY PHONETIC BASEFORMS
REPRESENT WORDS IN TRAINING TEXT BY FENEMIC BASEFORMS
IDENTIFY PHONETIC MODEL IN CONTEXT(S)
ALIGN TRAINING TEXT FENEMIC BASEFORMS AGAINST PHONETIC BASEFORMS
ASSOCIATE STRING OF FENEMIC MODELS WITH ALIGNED
STORE ASSOCIATED STRING FOR EACH TRAINING
REPRESENT EACH BY FENEMIC STRING ASSOCIATED WITH
CONCATENATE FENEMIC STRINGS FOR SUCCESSIVE

1. A method of synthesizing word baseforms for words wherein each synthesized baseform represents a series of models from a first set of models, each model of the first set corresponding to an output-related model wherein each output-related model correlates to an output generable by an acoustic processor, the method comprising the steps of:

(a) forming words as respective sequences of models from a second set of models, each model of the second set corresponding to a phonetic model;
(b) for a second set model occurring in a given context of second set models in step (a), storing a respective string of first set models;
(c) performing step (b) for each of at least one second set model; and
(d) constructing a word baseform of first set models for a word formed in step (a), including the step of representing each piece of a word that corresponds to a second set model in a given context by the stored respective string of first set models, if any, corresponding thereto.

4,882,760
SOUND REPRODUCTION SYSTEM

Raymond M. Yee, 1716 Grand Ave., Phoenix, Ariz. 85007
Continuation of Ser. No. 557,531, Dec. 2, 1983, abandoned. This application May 26, 1987, Ser. No. 54,047
Int. Cl.⁴ H04R *1/02, 1/24*
U.S. Cl. 381—90 22 Claims



1. A sound reproduction system comprising:

(a) a closed walled cabinet having a base, a top and wall means including front and rear wall portions extending between said base and top, said front and rear wall portions facing in opposite directions, respectively, each of said front and rear wall portions having an opening therein;
(b) two high compliance, low frequency range speakers adjacent said openings in said front and rear wall portions, respectively, and having a concave surface at the front of the speaker and a convex surface at the rear of the speaker, the front of one of said low frequency range speakers facing said opening in said front wall portion and the front of the other of said low frequency range speakers facing said opening in said rear wall portion such that the front concave surfaces of said low frequency range speakers face in opposite directions;
(c) electrical driving means;
(d) circuit means connecting said driving means to said two low frequency range speakers, said driving means being adapted to cause said two low frequency range speakers to operate in a push-pull manner with outwardly urged excursion of said concave surface of one of said low frequency range speakers occurring with the simultaneous inwardly urged excursion of said concave surface of the other of said low frequency range speakers;
(e) said base being adapted to support said cabinet such that the projection axis of each of said two speakers is oriented in a substantially horizontal direction, and each of said two speakers being adapted to be directly coupled to an air propagating medium surrounding said cabinet without any intervening sound modifying means between each of said speakers and said air propagating medium whereby said two low frequency range speakers are caused to generate a sound field which radiates as an aura around the exterior of said cabinet with the sound perceived to be coming from the space surrounding said cabinet rather than from said speakers; and
(f) a plurality of high-frequency range speakers and means mounted on said closed walled cabinet for supporting said plurality of high-frequency range speakers in a stacked array, spaced from each other and in nonaxial alignment above said closed walled cabinet with each of said high-frequency range speakers arranged to direct sound upwardly, substantially orthogonally to the directions of radiation of said two low-frequency range speakers mounted within said closed walled cabinet.

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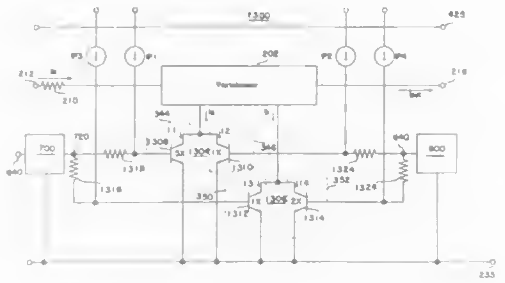
4,882,761
LOW VOLTAGE PROGRAMMABLE COMPRESSOR

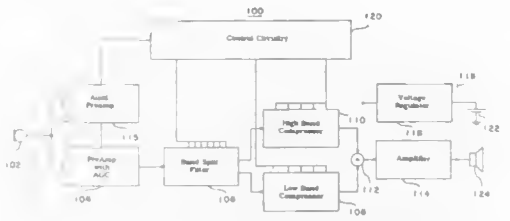
Fred D. Waldhauer, La Honda, Calif., assignor to Resound Corporation, Redwood City, Calif.
Filed Feb. 23, 1988, Ser. No. 159,949
Int. Cl.^{4} H04R *29/00, 1/64*
U.S. Cl. 381—106 13 Claims



1. An improved low voltage compressor or expander adapted for implementation on an integrated circuit comprising:
  (a) input means for inputting an audio signal;
  (b) output means for outputting a processed audio signal;
  (c) variolosser means having first and second control terminals, an input terminal coupled to said inputting means and an output terminal coupled to said outputting means, said variolosser further including means for generating said processed audio signal in a predetermined gain relationship with respect to said audio signal wherein the gain relationship of said audio signal and said processed audio signal is controlled by the ratio of the currents flowing in said first and second control terminals; and
  (d) control circuit means coupled to said variolosser means for independently controlling the current flowing in each of said first and second control terminals of said variolosser means wherein the ratio of said currents is controlled based on a predetermined relationship between said audio signal and said current flowing in each of said first and second control terminals.

4,882,762
MULTI-BAND PROGRAMMABLE COMPRESSION SYSTEM

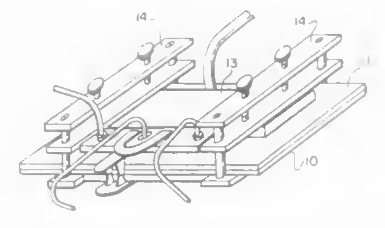
Fred D. Waldhauer, La Honda, Calif., assignor to Resound Corporation, Redwood City, Calif.
Filed Feb. 23, 1988, Ser. No. 160,023
Int. Cl.^{4} H04R *29/00;* **H04B** *1/64*
U.S. Cl. 381—106 14 Claims



1. A multi-band compression system comprising means for receiving an audio signal, band split filter means coupled to said receiving means for separating said received audio signal into a plurality of frequency bands, a plurality of compressor means, each of said compressor means being coupled to said band split filter means for compressing a respective one of said frequency bands, summing means coupled to the output of each of said compressor means for combining said respective compressed frequency bands and generating a composite audio signal, means responsive to a first set of control signals for setting the compression ratio of each of said compressor means to a preselected separate value, and means responsive to a second set of control signals for setting the average gain of each of said compressor means to a preselected level independently of the others of said compressor means, wherein said means responsive to said first and second control signals provides frequency response equalization of said composite audio signal.

4,882,763
METHOD OF MAKING A ROCK-PORE MICROMODEL INVOLVING GENERATION OF AN ACCURATE AND RELIABLE TEMPLATE IMAGE OF AN ACTUAL RESERVOIR ROCK PORE SYSTEM

Stuart H. Buchan, Mill Valley, Calif.; Robert Ehrlich, Columbia, S.C.; Joyce C. Trygstad, Walnut Creek, Calif., and Norman C. Wardlaw, Calgary, Canada, assignors to The Standard Oil Company, Cleveland, Ohio
Continuation of Ser. No. 688,034, Dec. 31, 1984, abandoned. This application Apr. 14, 1987, Ser. No. 38,295
Int. Cl.^{4} G06K *9/00*
U.S. Cl. 382—1 13 Claims



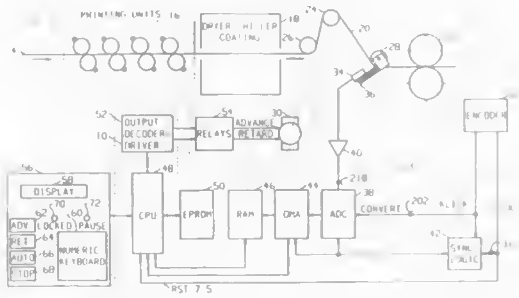
1. A method of making a micromodel of a rock pore system comprising:
  transmitting light through a thin section of a rock containing a pore system, said thin section having a dyes material disposed in said pore system to enhance the visibility of the pore system;
  projecting the transmitted light onto a surface to form a two-dimensional image of the pore system including representations of the three-dimensional pore connectedness and geometry within said section;
  digitizing the projected two-dimensional image to produce a two-dimensional binary template image of the pore system; and
  etching said binary template imge into a substrate, whereby a micromodel of said pore system including its three-dimensional aspects is produced.

4,882,764
CUTOFF CONTROL SYSTEM

Bruce A. Reynolds, Sussex, and Alexander Brengauz, Whitefish Bay, both of Wis., assignors to Quad/Tech, Inc., Pewaukee, Wis.
Division of Ser. No. 717,751, Mar. 29, 1985, Pat. No. 4,736,446. This application Jan. 21, 1988, Ser. No. 146,619
The portion of the term of this patent subsequent to Apr. 5, 2005, has been disclaimed.
Int. Cl.^{4} G06K *9/00*
U.S. Cl. 382—8 20 Claims

1. A system for relating a cyclical machine operation to the position of images on a web moving along a web path, by generating control signals to adjustment means for varying said machine operation relative to said moving web in accordance with said control signals, said system comprising:
  means for generating, for successive machine operation cycles, indicia of variations in density of the image at respective sampling intervals related to the machine operation cycle throughout a substantial portion of said image;

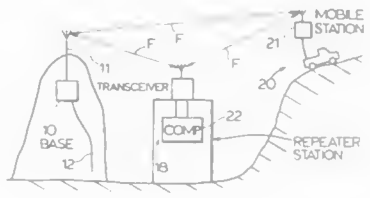
  means for selectively generating, from a first image indicia associated with a first machine operation cycle, reference pattern indicia;
  means for selectively generating, from a successive image indicia associated with a successive machine operation cycle, successive pattern indicia; and



  means for generating said control signals to said adjustment means to vary said machine operation relative to said moving web in accordance with differences between said reference pattern indicia and said successive pattern indicia.

4,882,765
DATA TRANSMISSION SYSTEM

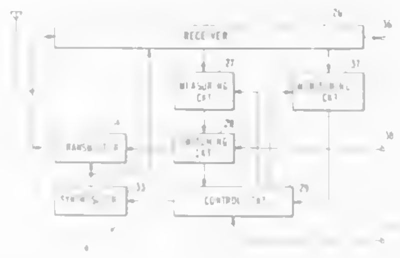
Ray F. Maxwell, 7021 Parkview Place, Delta, British Columbia, Canada (V4E 2N3), and Robert D. White, 72054 88th Avenue, Surrey, British Columbia, Canada (V3W 3J2)
Filed May 22, 1987, Ser. No. 52,880
Int. Cl.^{4} H04B *7/14*
U.S. Cl. 455—18 15 Claims



1. A data transmission system, comprising:
a base station;
at least one mobile station and a repeater station, each of said stations operating to transmit and to receive;
computer means associated with said repeater station,
said computer means determining, based on contents of a message transmitted by a transmitting station which is one of said base and mobile stations and received by said repeater station, how many times said message had been transmitted by said transmitting station; and
trigger means for causing said repeater station to retransmit said message solely when said computer means determines that said message has been retransmitted a preset number of times by said transmitting station.

4,882,766
TERMINAL STATION OF A RADIO COMMUNICATION NETWORK CAPABLE OF EFFECTIVELY USING RADIO CHANNELS ASSIGNED TO THE NETWORK

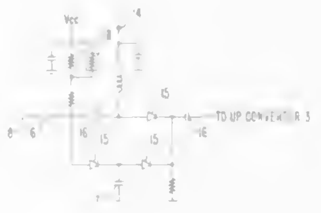
Yoshihiko Akaiwa, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan
Filed Aug. 25, 1987, Ser. No. 89,102
Claims priority, application Japan, Aug. 25, 1986, 61-198706
Int. Cl.^{4} H04B *7/00*
U.S. Cl. 455—58 7 Claims



1. A terminal station of a radio communication network for use in a common service area of a plurality of radio base stations comprising a main base station and a supplementary base station having a lower priority for said terminal station than said main base station, each base station being preassigned with a radio channel and for transmitting a channel status signal representative of whether said radio channel is idle or busy, wherein the improvement comprises:
  first monitoring means for monitoring the channel status signal of said main base station to produce an internal signal when the radio channel of said main base station is idle;
  second monitoring means for monitoring the channel status signal of said supplementary base station; and
  inhibiting means coupled to said first and said second monitoring means and responsive to said internal signal for inhibiting operation of said second monitoring means while the radio channel of said main base station is idle.

4,882,767
STABILIZED TRANSMITTER

Takashi Machida, Osaka; Kou Miyake, Takatsuki; Hirotaka Fujisaki, Neyagawa, and Hiroshi Mouri, Ibaraki, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Jul. 18, 1988, Ser. No. 220,670
Int. Cl.^{4} H01Q *11/12*
U.S. Cl. 455—117 5 Claims



1. A stabilized transmitter comprising;
a gain conversion means for passing an input signal and for varying its gain according to an electrical signal supplied thereto;
a power amplifier coupled to said gain conversion means for amplifying the power of an output signal from said gain conversion means; and
a compensation means having temperature detecting means that detects a temperature of said power amplifier for

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generating from an electrical signal outputted from said temperature detecting means said electrical signal supplied to said gain conversion means so as to thereby compensate for gain variations of said power amplifier with respect to temperature variations so that a total transmission gain of said transmitter is maintained at a constant value;

wherein said compensation means has an adjusting means for adjusting in advance said electrical signal supplied to said gain conversion means so that said total transmission gain of said transmitter at a reference temperature becomes a predetermined value.

4,882,768

FM COMMUNICATION DEVICE WITH AVOIDANCE OF INTERFERENCE BY SUBSTANTIALLY SAME CHANNEL FM SIGNAL

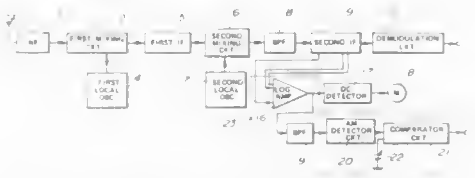
Bunichi Obana, and Kenichi Kanazawa, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Mar. 11, 1988, Ser. No. 167,138

Claims priority, application Japan, Mar. 18, 1987, 62-63587

Int. Cl.^{4} H04B *1/16*

U.S. Cl. 455—207 8 Claims



1. An FM communication device comprising:

an FM receiver circuit including an intermediate frequency amplifier;

a logarithmic amplifier connected to said intermediate frequency amplifier to receive outputs from various amplifier stages thereof, said logarithmic amplifier logarithmically amplifying an output of said intermediate frequency amplifier; and

means in communication with said logarithmic amplifier for detecting a ripple component contained in the output of said logarithmic amplifier, which ripple component is generated when a received FM signal is obstructed by another FM signal, to detect a signal obstruction, said detecting means further comprising a band pass filter interposed between said logarithmic amplifier and an AM detection circuit; and

means, responsive to said detecting means detecting said obstruction, for switching the communication channel for avoiding interference.

4,882,769

AM/FM RADIO WITH SUNGLASS HOUSING

Bruce A. Gallimore, 526 Marborough, Detroit, Mich. 48215

Filed Jul. 5, 1988, Ser. No. 214,936

Int. Cl.^{4} H04B *1/08*

U.S. Cl. 455—344 4 Claims

1. In combination, a housing in the form of sunglasses including a pair of rearwardly extending pivoted temples, the housing including a hollow top frame and a bottom frame;

an AM/FM radio with its electrical components mounted and enclosed within said top frame and including an output lead;

a pair of spaced jacks adjacent the ends of said housing and connected to said lead respectively;

right and left electric speakers slidably mounted upon said temples respectively, adapted for registry with the user's ears;

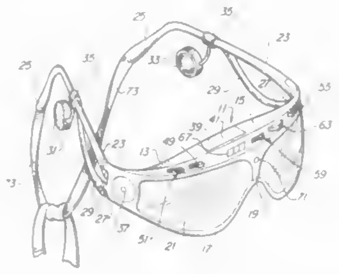
a flexible electrical lead interconnecting each speaker with one of said jacks;

said top frame including a battery compartment for storing an electrical power source connected to said radio;

a removable panel forming a part of said top frame normally closing said compartment;

an ON/OFF switch connected to said radio and having a movable control slidably projected through a slot in said top frame for manual access thereto;

an AM/FM switch connected to said radio and including a slidable selector projecting through a slot in said top frame;



an electrical tuner including a variable capacitor connected to said radio and having a rotative control projected through a slot in said top frame;

an stereo control switch connected to said radio output lead and including a movable control arm extending through a slot in said top frame;

a volume control switch including a variable potentiometer connected to said radio output lead and including a control arm projected through a slot in said top frame;

all of said slots being in longitudinal alignment along the length and upon the front of said top frame.

4,882,770

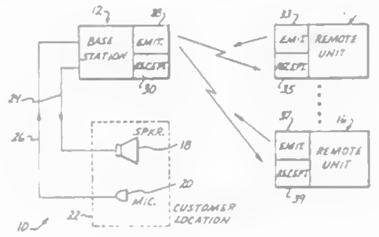
WIRELESS OPTICAL COMMUNICATION SYSTEM

Ronald T. Miyahira, Honolulu, Hi., and Kenneth Fasen, San Diego, Calif., assignors to H. M. Electronics, Inc., San Diego, Calif.

Filed Dec. 14, 1987, Ser. No. 132,345

Int. Cl.^{4} H04B *9/00*

U.S. Cl. 455—603 30 Claims



1. A wireless optical short range communication system utilizing a single optical carrier frequency comprising:

a base station;

a plurality of substantially similar spaced-apart remote units interconnected in optical communication with said base station;

each one of said remote units including an optical emitter for transmitting an optical message-carrying beam at a predetermined optical carrier frequency to said base station;

each one of said remote units further including an optical receptor for receiving an optical message-carrying beam from said base station;

said base station including an optical receptor for receiving the optical message-carrying beam transmitted by the optical emitter of any of said remote units;

said base station further including an optical emitter for repeating the message content of said optical message-carrying beam received from any one of said remote units to all of said remote units at said predetermined optical carrier frequency;

clock means for generating recurring time slot signals, said signals including inbound signals and outbound signals; and

said base station and said remote units including means responsive to said inbound and outbound signals for causing said station and said units to send and receive said beams during individual time slot signals.

4,882,771

SINGLE LASER OPTICAL COMMUNICATION SYSTEM AND METHOD

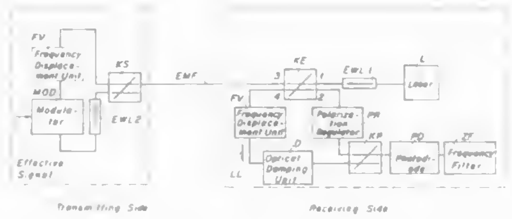
Manfred Rocks, Berlin, Fed. Rep. of Germany, assignor to Krone Aktiengesellschaft, Berlin, Fed. Rep. of Germany

Filed Apr. 21, 1988, Ser. No. 184,290

Claims priority, application Fed. Rep. of Germany, Apr. 21, 1987, 3713340

Int. Cl.^{4} H04B *9/00*

U.S. Cl. 455—605 17 Claims



10. A system for optical communication of information between a transmitting side and a receiving side spatially separated from each other comprising: a single laser for producing a non-modulated optical carrier arranged on the receiving side; at least one fiber-optical coupler for subdividing the non-modulated optical carrier of the single laser into a first optical carrier portion and a second optical carrier portion; a single-mode fiber transmission path connected to said fiber-optical coupler for receiving said first optical carrier portion, said second optical carrier portion forming a local laser wave at said receiving side; means for directing the first optical carrier portion through the single-mode fiber in the direction of the transmitting side; means for displacing in frequency one of the first optical carrier portion and the second optical carrier portion by an amount Δf; means for modulating the first optical carrier portion, said means for modulating being located on the transmitting side, said means for modulating receiving an effective signal providing information to form a modulated optical signal, said modulated optical signal being directed to the receiving side over said single-mode fiber means; mixing means for combining the modulated optical signal together with the local laser wave to form a combined optical signal; and, a photodiode for receiving the combined optical signal and a filter for converting the combined optical signal to a frequency band with a center frequency of Δf.

4,882,772

ELECTRO-OPTICAL LIGHT BEAM SIGNAL TRANSMISSION SYSTEM

Bruno A. Rist, Woodland Hills, and Alberto L. Casanova, Van Nuys, both of Calif., assignors to Telescript Industries, Inc., Van Nuys, Calif.

Continuation-in-part of Ser. No. 76,830, Jul. 23, 1987, abandoned. This application Jul. 30, 1987, Ser. No. 79,856

Int. Cl.^{4} H04B *9/00*

U.S. Cl. 455—617 21 Claims

1. A coherent light beam transmission system comprising; coherent light generating means;

modulating means for modulating said coherent light generating means over a wide bandwidth;

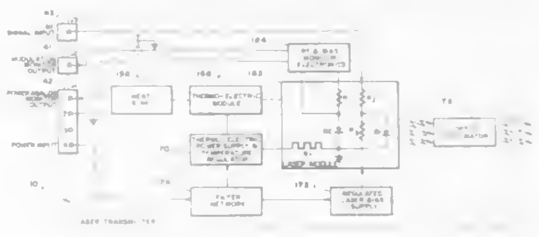
radiating means for radiating said modulated coherent light generated in a selected direction;

said radiating means including means for distributing said coherent light into a collimated beam having a safe energy level distribution;

a focussing lens mounted in the path of coherent light radiating from said coherent light generating means for focussing said coherent light on said radiating means;

means for preventing condensation of moisture on said focussing lens;

said means for preventing condensation of moisture on said focussing lens comprising a cap having a central aperture said focussing lens being mounted in said central aperture,



mounting means mounting said cap over said coherent light generating means, said cap enclosing a small volume of air between said coherent light generating means and said focussing lens; and heat sink means acting as a heat sink and warming means to warm said small volume of air to keep the focussing lens at at temperature greater than the outside air so that condensation of moisture on said focussing lens is prevented;

coherent light receiving means in alignment with signal coherent light radiating means;

decollimating means in said receiving means for decollimating said collimated beam, said decollimated means including means for focussing said coherent beam on light sensing means; and

distribution means connected to said light sensing means for distributing the communications signal received.

4,882,773

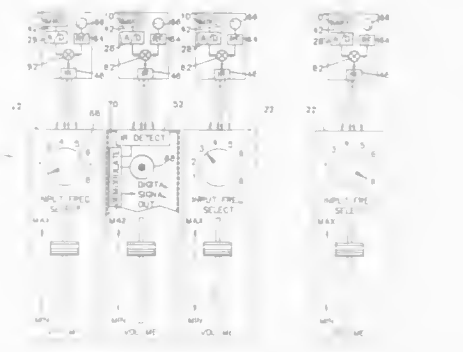
AUDIO MICROPHONE SYSTEM WITH DIGITAL OUTPUT AND VOLUME CONTROL FEEDBACK INPUT

Michael O. Maloney, Los Angeles, Calif., assignor to Donald A. Streck, Ventura, Calif., a part interest

Filed May 5, 1988, Ser. No. 190,346

Int. Cl.^{4} H04B *9/00*

U.S. Cl. 455—617 9 Claims



1. A microphone/pickup device providing a digital output therefrom comprising:

(a) microphone element means for sensing sound vibrations

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and for producing an analog electrical signal reflecting said sound vibrations at an output thereof;

(b) analog to digital converter means having an input connected to receive said analog electrical signal directly from said microphone element for producing a digital signal reflecting said sound vibrations at an output thereof, said output of said analog to digital converter means being the output of the microphone/pickup device;

(c) mixer means disposed in combination with said analog to digital converter means for producing an output therefrom comprising the combination of signals input to a pair of inputs thereof, said output of said analog to digital converter means being connected to one of said pair of inputs of said mixer means;

(d) radio frequency generator means having an output disposed in combination with said analog to digital converter means for generating an RF signal at said output thereof, said output of said radio frequency generator means being connected to the other of said pair of inputs of said mixer means;

(e) light emitting diode means disposed in combination with said analog to digital converter means and operably connected to be activated by said output of said mixer means whereby said light emitting diode means emits a beam of light modulated with said digital signal and an RF carrier; and,

(f) means disposed in combination with said analog to digital converter means connected for selectably adjusting the frequency of said output of said radio frequency generator means.

4,882,774

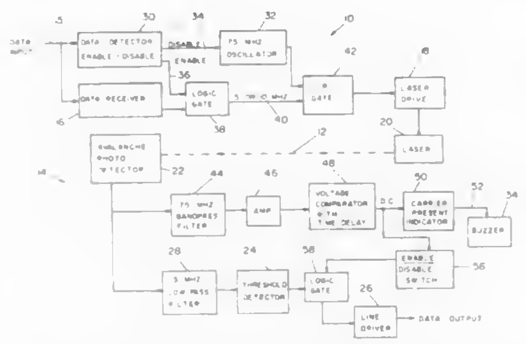
LASER BEAM DATA VERIFICATION SYSTEM

Timothy L. Grotzinger, Palmyra, Pa., assignor to Laser Communications, Inc., Lancaster, Pa.

Filed Aug. 25, 1988, Ser. No. 236,150

Int. Cl.⁴ H04B *9/00*

U.S. Cl. 455—617 7 Claims



1. An apparatus for verification of the presence of a laser beam in a laser communications link comprising:

an alternate signal generator;

a signal substitution means connected to the alternate signal generator and to a laser beam transmitter sending out a laser beam to cause the transmitter to transmit an alternate signal generated by the alternate signal generator when no other signal is available at the transmitter input for transmission by the laser beam transmitter;

a receiver receiving the laser beam and including a photodetector which converts the laser beam impinging upon it to a related electrical signal;

a signal filter means connected to the photodetector and passing through signals of the frequency of the alternate signal, but blocking other signal frequencies; and

a signal control means connected to the signal filter means, preventing any signal from being sent out from the receiver except for a specific time period after the last alternate signal which has been received.

4,882,775

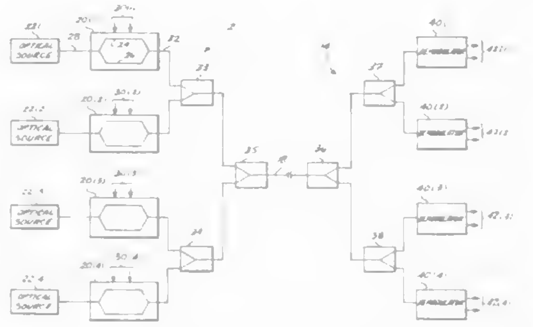
DEMODULATION TECHNIQUE FOR COHERENCE MULTIPLEXED OPTICAL DATA TRANSMISSION SYSTEM

Jeffrey O. Coleman, Medina, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Jul. 22, 1988, Ser. No. 222,960

Int. Cl.⁴ H04B *9/00*

U.S. Cl. 455—617 15 Claims



1. An improved demodulator for use in an optical data transmission system, the system including a modulator associated with the demodulator, the modulator including means for receiving an optical carrier signal having a coherence length, interferometer means including modulated and reference arms each having input and output ends, means for coupling the optical carrier signal into the input ends of the arms and means for coupling radiation from the output ends of the arms into an optical bus, means for modulating the optical path length of the modulated arm based upon an electrical modulation signal representing an input data channel such that for each of a plurality of modulation signal values, the modulator and reference arms have a modulator optical path length difference that exceeds the coherence length of the optical carrier signal, the demodulator comprising:

an interferometer having first and second arms each having first and second ends, and means for coupling radiation from the optical bus into the first ends of the first and second arms, the first and second arms having a demodulator optical path length difference selected such that for each of said modulation signal values, the difference between the modulator and demodulator optical path length differences is less than the coherence length of the optical carrier signal; and

signal processing means connected to receive optical first and second arm output signals emerging from the second ends of the first and second arms respectively, and the signal processing means including means for processing the arm output signals in combination so as to produce a pair of electrical output signals such that linearly independent pairs of electrical output signals are produced for any two modulation signals that do not produce modulator optical path length differences that differ from one another by an integral multiple of a half wavelength of the optical carrier.

4,882,776

IMAGE INFORMATION TRANSMITTING SYSTEM

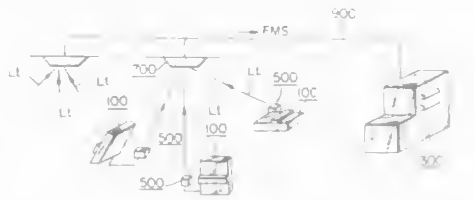
Shunichi Uzawa, Naka; Tetsuzo Mori, Kawasaki, and Noboru Koumura, Narashino, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 429,147, Sep. 30, 1982, abandoned. This application Feb. 24, 1986, Ser. No. 834,136

Claims priority, application Japan, Oct. 8, 1981, 56-159386; Oct. 9, 1981, 56-160155; Oct. 9, 1981, 56-160156; Oct. 9, 1981, 56-160157; Oct. 9, 1981, 56-160159; Oct. 9, 1981, 56-160160

Int. Cl.⁴ H04B *9/00*

U.S. Cl. 455—617 19 Claims



1. An image transmission system comprising:

a plurality of image output means each for generating image data, wherein each of said plurality of image output means comprises setting means for setting one of a plurality of image forming modes and for generating mode data representing the set image forming mode, and converting means for converting the image data and the mode data into pulse-frequency modulated light signals and transmitting the light signals through space;

a commong receiving means for receiving the light signals transmitted from said plurality of image output means and for converting the light signals into pulse-frequency modulated electrical signals, wherein said common receiving means comprises correction means for correcting distortion of the pulse-frequency modulated electrical signals, wherein said correction means corrects the distortion of the electrical signals on a time basis; and

a single image forming means for forming an image on a recording medium in accordance with electrical image data contained in the electrical signals, wherein said single image forming means is operable in a plurality of image forming modes, and

wherein said common receiving means is operable to extract the image data and the mode data from the corrected electrical signals, and said single image forming means is arranged for image formation in a one of said image forming modes determined by the extracted mode data.

4,882,777

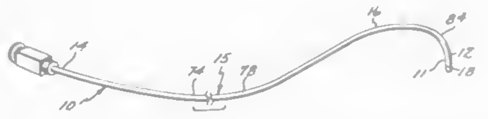
CATHETER

Onkar S. Narula, 5765 S.W. 117th St., Miami, Fla. 33156

Filed Apr. 17, 1987, Ser. No. 40,517

Int. Cl.⁴ A61M *25/00*

U.S. Cl. 604—281 11 Claims



1. A device for engaging a desired internal position within a biological subject lateral and oblique relative to the entry point, comprising:

a catheter having a substantially straight portion, a distal end, a proximal end, a longitudinal axis extending from said distal end to said proximal end and a complex curvature extending longitudinally forward and laterally outward, said complex curvature extending from said distal end so that said curvature will automatically position said distal end of said catheter at said desired internal position.

4,882,778

ELECTRONIC LOAD DRIVE CONTROL APPARATUS

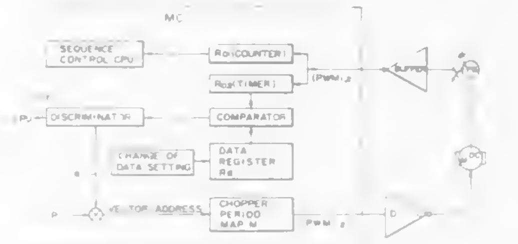
Masao Hosaka; Yoshitaka Ogino; Kazutoshi Shimada, all of Kanagawa, and Takashi Saito, Chiba, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 225,667, Jul. 29, 1988, abandoned, which is a continuation of Ser. No. 695,720, Jan. 28, 1985, abandoned. This application Feb. 27, 1989, Ser. No. 318,469

Claims priority, application Japan, Feb. 3, 1984, 59-19174

Int. Cl.⁴ G06F *15/46;* G05B *19/403*

U.S. Cl. 364—187 11 Claims



1. An electric load drive control apparatus comprising:

an electric load;

drive means for driving said load;

control means for controlling said drive means by means of hardware;

a central processing unit for executing programs for controlling said control means and processing a task different from the control of said control means, said central processing unit providing control data for controlling said drive means to said control means before starting of control of said drive means by said control means; and

detecting means for detecting a drive condition of said load;

wherein said control means controls said drive means, independently of said central processing unit, in response to the operation of said detecting means so that the drive direction of said load is regulated in a desired manner corresponding to the control data, and

wherein said control means produce a signal for requesting said central processing unit to control said control means when said detecting means detects that the drive condition of said load departs from a control range corresponding to the control data, and controls said drive means on the basis of new control data transmitted from said central processing unit in response to the signal produced by said control means.

4,882,779

APPARATUS FOR COMMUNICATING WITH DATA SYSTEMS AND A METHOD OF COMMUNICATING WITH DATA SYSTEMS

Preben Rahtgen, V rlose, Denmark, assignor to Pengeinstitutternes Kobe - og Kreditkortaktieselskab, Ballerup, Denmark

Continuation of Ser. No. 827,930, Jan. 16, 1986, abandoned. This application Oct. 11, 1988, Ser. No. 256,239

Claims priority, application Denmark, Apr. 12, 1984, 1907/84

Int. Cl.⁴ H04L *9/02*

U.S. Cl. 380—24 12 Claims

3. A financial transaction terminal for use with a data carrying card, comprising:

card data input means for receiving data originating from said data carrying card and for receiving a card identification signal positively identifying said card as a card belonging to said first data system or, alternatively, as a card belonging to said second data system;

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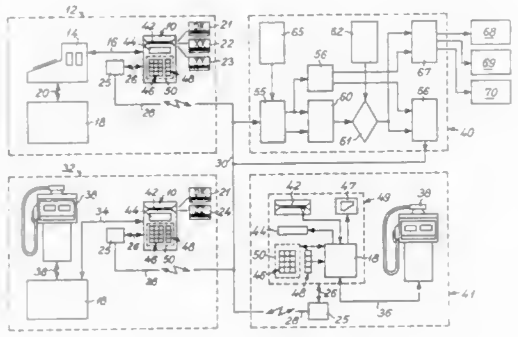
personal code input means for input of a personal authentication code;

first storage means for storing an encryption algorithm and a transmission protocol corresponding to said first data system;

first communication means for communication with a first data system;

encryption means, connected to said card data input means, said personal code input means, said first storage means and said first communication means, for encrypting said data and said code by employing said encryption algorithm stored in said first storage means, provided said card is positively identified as a card belonging to said first data system by employing said card identification signal, and for outputting said data and said code in encrypted form through said first communication means to said first data system controlled by said transmission protocol stored in said first storage means for on-line verification of said data relative to said code by said first data system;

second storage means for storing a verification algorithm corresponding to said second data system;



second communication means for communication with a second data system, said first and second data systems being mutually exclusive; and

comparator means, connected to said card data input means, said personal code input means, said second storage means and said second communication means, for comparing said data and said code by employing said verification algorithm stored in said second storage means, for off-line verification of the authenticity of a person in possession of said card relative to said second data system, provided said card is positively identified as a card belonging to said second data system by employing said card identification signal, and for outputting an authenticity code through said second communication means to said second data system in case said data are verified relative to said code by employing said verification algorithm stored in said second storage means or, alternatively, for outputting a non-authenticity code through said second communication means to said second data system in case said data are not verified relative to said code by employing said verification algorithm stored in said second storage means, such that said data and said code are not disclosed to said second data system.

4,882,780

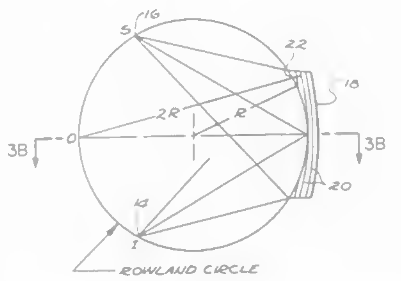
SCANNING MONOCHROMATOR CRYSTAL AND RELATED METHOD

David B. Wittry, Pasadena, Calif., assignor to University of Southern California, Los Angeles, Calif.

Division of Ser. No. 833,450, Feb. 26, 1986, Pat. No. 4,807,268, which is a continuation-in-part of Ser. No. 549,366, Nov. 4, 1983, Pat. No. 4,599,741. This application Jan. 3, 1989, Ser. No. 309,304

Int. Cl.^{4} C21K *1/06*

U.S. Cl. 378—84 10 Claims



1. A crystal arrangement in combination with a scanning monochromator which has a point source and a mechanism for producing relative movement between the point source and the crystal arrangement to vary the angle at which radiation emanating from the point source impinges upon the crystal arrangement, the crystal arrangement comprising:

a crystal positioned with respect to a first reference plane containing the point source, the crystal having concave planes of lattice points and a concave crystal surface which satisfy Johannson geometric conditions within the first reference plane for a Rowland circle of radius R;

the planes of lattice points being substantially spherically curved with a radius of 2R within a second reference plane which is perpendicular to the first reference plane and bisects the Rowland circle; and

the crystal surface being substantially toroidally curved with a radius of substantially 2R within the second reference plane.

4,882,781

METHOD FOR PREDICTING STEADY-STATE CONDITIONS

Robert W. Allington, Lincoln, Nebr., assignor to Isco, Inc., Lincoln, Nebr.

Division of Ser. No. 300,567, Sep. 9, 1981, Pat. No. 4,422,942. This application Sep. 7, 1982, Ser. No. 415,276

Int. Cl.^{4} G06F *15/46;* B01B *13/05*

U.S. Cl. 364—510 11 Claims

1. Apparatus for rapidly bringing a system from start-up to equilibrium comprising:

system means;

means for setting the rate of operation for said system means at a predetermined level;

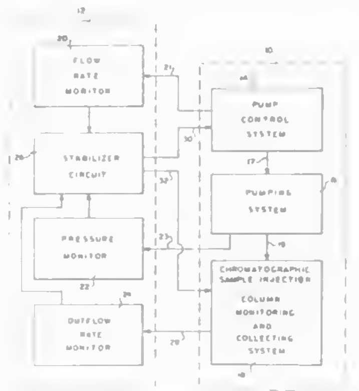
means for measuring, at a time of a low level of operation of said system means, a first characteristic of said system related to the rate of operation;

means for measuring the level of operation under the control of at least said measured first characteristic until the equilibrium value of operation is reached;

means for reducing said level of operation to said predetermined level;

said means for measuring a first characteristics including means for obtaining a second characteristic of the system that is inversely related to said first characteristic; and

means for setting up a proportion between the measured first characteristic and the range of said second characteristic, whereby any other value of the first characteristic may be calculated.



4,882,782

SAFETY APPARATUS FOR DETECTING AN ABNORMALITY OF POWER CONTROL ELEMENT

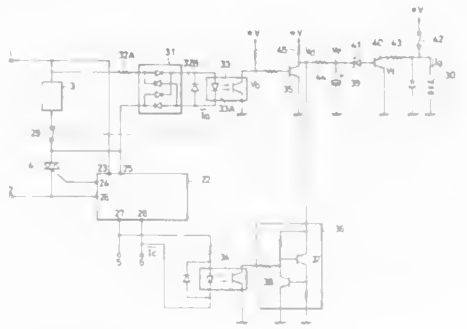
Junichi Kimizuka, Yokohama; Yukihide Ushio, Tokyo; Kaoru Seto, Chigasaki; Kenjiro Hori, Yokohama, and Toshihiko Inuyama, Fujisawa, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 690,941, Jan. 14, 1985, abandoned. This application Sep. 10, 1987, Ser. No. 96,806

Claims priority, application Japan, Jan. 23, 1984, 59-8504

Int. Cl.^{4} H02H *3/00*

U.S. Cl. 361—100 7 Claims



1. A safety apparatus in a circuit for controlling an alternating current flowing in a load responsive to a control signal, said safety apparatus comprising:

a power control element for controlling a supply of the alternating current to the load;

control signal input means for inputting the control signal to control said power control element;

first detecting means for detecting an operating condition of said power control element, said operating condition being one of the group consisting of ON and OFF conditions;

second detecting means for detecting whether the control signal has been input to said control signal input means, wherein said second detecting means includes self-hold means for setting a self-holding condition if the control signal has been input and resetting said self-holding condition of said self-hold circuit in synchronization with the alternating current supplied to the load;

third detecting means for detecting an abnormality of said power control element if said first detecting means is detecting said ON condition and said self-holding condition of said second detecting means is reset;

fourth detecting means for detecting and forming an output if said third detecting means detects said abnormality over a time period of a half cycle of the alternating current; and

cutting means for cutting off the alternating current to the load in response to the output of said fourth detecting means, wherein said cutting means includes a fuse and a switch, said fuse being arranged to be blown in response to the output from said fourth detecting means, and said switch being arranged to cut the alternating current to the load in response to said fuse being blown.

4,882,783

PRE-RECORDED MAGNETIC VIDEO TAPE HAVING AN INFORMATION CODE ON THE SYNCHRONIZATION TRACK

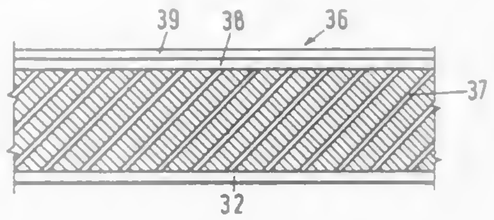
Peter Roggendorf, Mainz-Kostheim, Fed. Rep. of Germany, assignor to GSE Electronic Systems, Inc., Salt Lake City, Utah

Division of Ser. No. 3,932, Jan. 16, 1987, Pat. No. 4,703,311. This application Aug. 6, 1987, Ser. No. 82,790

Claims priority, application Fed. Rep. of Germany, Jun. 9, 1986, 3619359

Int. Cl.^{4} G11B *27/10*

U.S. Cl. 360—134 7 Claims



1. A pre-recorded magnetic video tape having a synchronization track, said synchronization track comprising a plurality of first magnetic recordings each corresponding to a synchronization signal; and a plurality of second magnetic recordings each corresponding to a code signal, each of said second recordings at least partially overlapping a respective first recording, and at least one pair of overlapping recordings having a dimensional characteristic different from another pair of overlapping recordings so that such dimensional characteristic can represent different coded parameters.

4,882,784

LOSS-IN-WEIGHT FEEDER SYSTEM

Ronald S. Tump, Whitewater, Wis., assignor to Moksnes Manufacturing Co., Inc., Whitewater, Wis.

Filed Nov. 4, 1987, Ser. No. 117,077

Int. Cl.^{4} G01G *11/08, 13/16;* G06F *15/20*

U.S. Cl. 364—567 19 Claims

1. A loss-in-weight feeder for discharging a flowable substance from a reservoir through a controllable discharge member under regulated conditions, comprising:

scale means for developing a weight signal representative of the weight of at least the material being discharged from said reservoir;

digital converting means in operative communication with said scale means for sampling said weight signal and developing digital weight signals representative thereof at a predetermined sampling rate;

storage means in operative communication with said digital converting means for accumulating said digital weight signals;

computing means in operative communication with said digital converting means for developing arithmetic aver-

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age weight signals from said digital weight signals representative of the actual feed rate from said reservoir;

input means, operatively associated with said storage means, for entering a signal representative of the desired feed rate from said reservoir into said storage means;

said computing means also being used for developing a correction signal based on a proportioned deviation signal determined as a time-weighted variable which is a function of any deviation between the actual feed rate and the desired feed rate; and

feedback means communicating with said computing means for applying said correction signal to said feeder to adjust the actual feed rate through said discharge member.

DESIGN PATENTS

GRANTED NOV. 21, 1989

ERRATA

For CLASS	See PATENT NO.
D14-168	304,730

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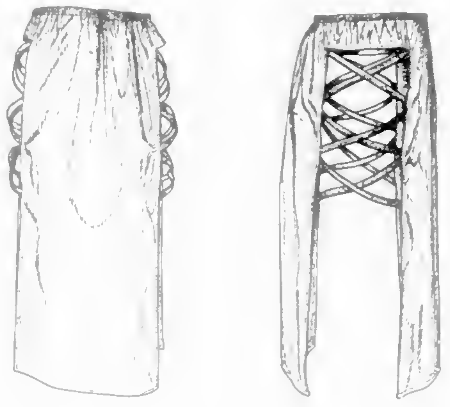
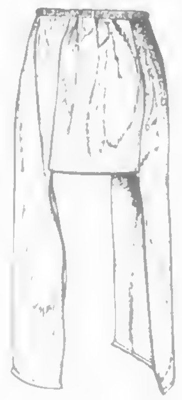
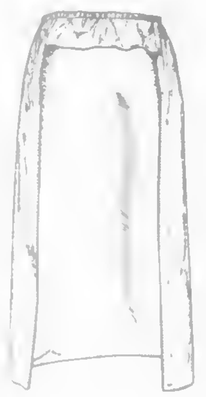
304,645
HALF-SLIP
Claire A. Rupert, 500 Park Ave., New York, N.Y. 10022
Filed Jul. 28, 1986, Ser. No. 889,870
Claims priority, application France, Dec. 19, 1985, 85 6083
Term of patent 14 years
U.S. Cl. D2—21



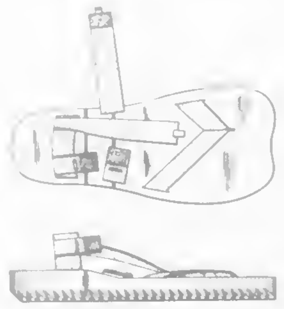
304,646
HALF-SLIP
Claire A. Rupert, 500 Park Ave., New York, N.Y. 10022
Filed Jul. 28, 1986, Ser. No. 889,967
Claims priority, application France, Dec. 19, 1985, 85 6083
Term of patent 14 years
U.S. Cl. D2—21



304,647
HALF-SLIP
Claire A. Rupert, 500 Park Ave., New York, N.Y. 10022
Filed Jul. 28, 1986, Ser. No. 889,871
Claims priority, application France, Dec. 19, 1985, 85 6083
Term of patent 14 years
U.S. Cl. D2—20



304,648
SWIMMING SANDAL
Pu G. Gwon, 5857 Arden, Highland, Calif. 92346
Filed Feb. 13, 1987, Ser. No. 14,676
Term of patent 14 years
U.S. Cl. D2—270



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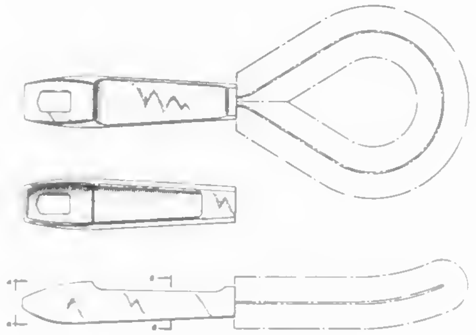
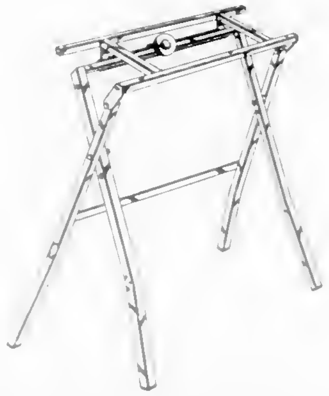
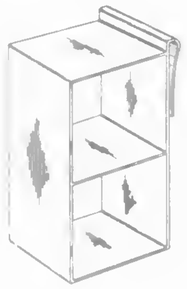
304,649
BRUSH HANDLE
Jolyon Saunders, Green Bay, New Zealand, assignor to Libman Broom Company, Arcola, Ill.
Filed Jun. 22, 1987, Ser. No. 64,447
Term of patent 14 years
U.S. Cl. D4—138



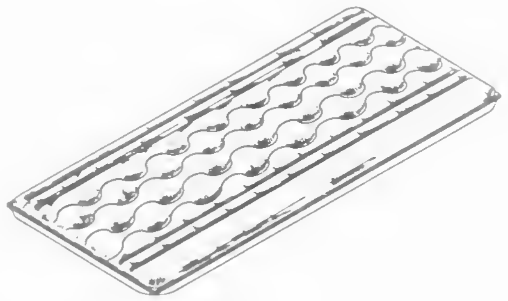
304,650
FOLDABLE POWER TOOL SUPPORT
T. David Price, 648 Turnin St., South St. Paul, Minn. 55075
Filed Mar. 13, 1987, Ser. No. 25,794
Term of patent 14 years
U.S. Cl. D6—429



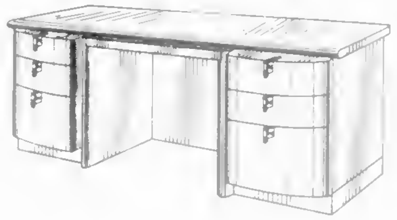
304,651
TOILET PAPER ROLL HOLDER FOR TOILET TANK ATTACHMENT
Loyle R. McKee, 11850 SW. Clifford St., Beaverton, Oreg. 97005
Filed Oct. 26, 1987, Ser. No. 112,436
Term of patent 14 years
U.S. Cl. D6—520

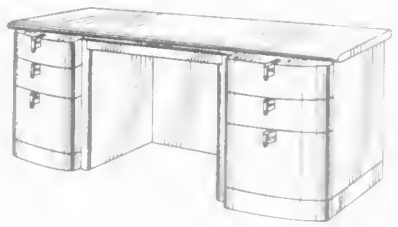


304,652
INFLATABLE MATTRESS
Eric Viesturs, 680-B Heritage Village, Southbury, Conn. 06488
Filed Jul. 27, 1988, Ser. No. 224,868
Term of patent 14 years
U.S. Cl. D6—604

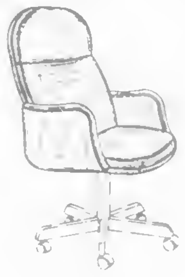


304,653
DESK
Norman J. Diekman, New York, N.Y., assignor to Stow & Davis Furniture Company, Grand Rapids, Mich.
Filed May 27, 1986, Ser. No. 867,876
Term of patent 14 years
U.S. Cl. D6—428

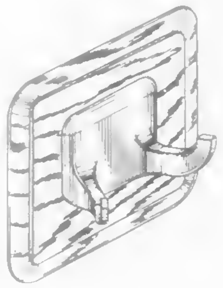




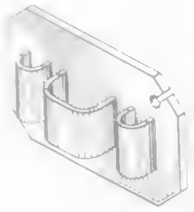
304,654
SEAT
John R. Stafford, Greensboro, N.C., assignor to Chromcraft Furniture Corp., Senatobia, Miss.
Filed Jun. 10, 1988, Ser. No. 205,240
The portion of the term of this patent subsequent to Oct. 10, 2003, has been disclaimed.
Term of patent 14 years
U.S. Cl. D6—502



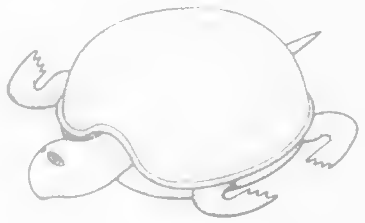
304,655
CLOTHES HOOK
Daniel L. Pool, Paradise Valley, Ariz., assignor to Designer Bathware, Inc., Phoenix, Ariz.
Division of Ser. No. 63,631, Jun. 17, 1987, Pat. No. D. 294,907, which is a division of Ser. No. 845,772, Mar. 24, 1986, Pat. No. 291,753, which is a division of Ser. No. 514,002, Jul. 17, 1983, Pat. No. 283,188. This application Dec. 28, 1987, Ser. No. 139,032
Term of patent 14 years
U.S. Cl. D6—323



304,656
MULTI-PURPOSE HOLDER
D. Richard Hancock, R.F.D. Rte. #1, Box 383, Morgan, Utah 84050
Filed Apr. 14, 1987, Ser. No. 38,523
Term of patent 14 years
U.S. Cl. D6—553



304,657
ADJUSTABLE PILLOW
Peggy Mason Hayes, 839-C Charles Allen Dr., NE., Atlanta, Ga. 30308
Filed Oct. 22, 1986, Ser. No. 922,130
Term of patent 14 years
U.S. Cl. D6—598



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304,658
COMBINED TRAY AND BOWL

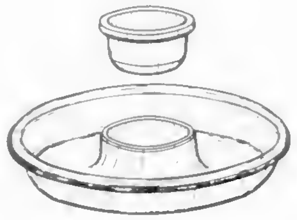
Maurizio Mattei, Macerata, Italy, assignor to Fratelli Guzzini S.p.A., Recanati, Italy

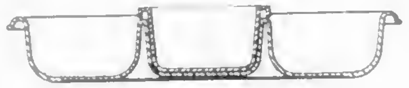
Filed Jan. 21, 1987, Ser. No. 5,877

Claims priority, application Italy, Jul. 29, 1986, 22671 B/86

Term of patent 14 years

U.S. Cl. D7—3





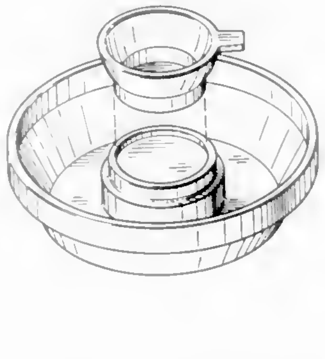
304,659
COMBINED CHIP AND SALSA SERVER

Jerome L. Asner, 2233 NW. 48th St., Oklahoma City, Okla. 73112

Filed May 4, 1987, Ser. No. 45,673

Term of patent 14 years

U.S. Cl. D7—3



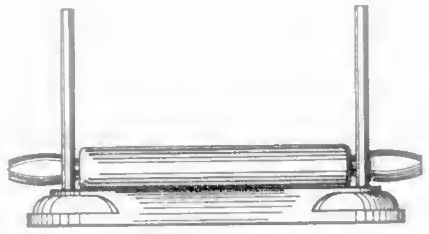
304,660
NAPKIN HOLDER

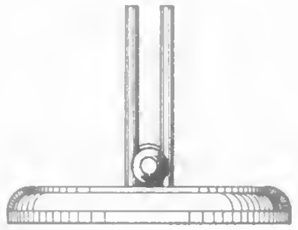
Lester C. Lynch, 8 River St., Cressona, Pa. 17929

Filed Oct. 26, 1987, Ser. No. 112,761

Term of patent 14 years

U.S. Cl. D7—72





304,661
TOASTER

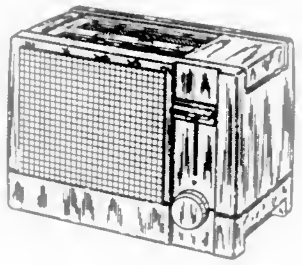
Jan F. Van Asten, Leek, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 869,077, May 29, 1986, abandoned. This application Jan. 17, 1989, Ser. No. 298,199

Claims priority, application Benelux, Dec. 6, 1985, 60628-02

Term of patent 14 years

U.S. Cl. D7—330



304,662
MICROWAVE OVEN

Seung H. Yoo, Buchon, Rep. of Korea, assignor to Gold Star Co., Ltd., Seoul, Rep. of Korea

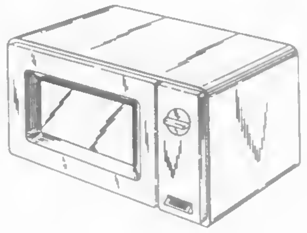
Filed Feb. 18, 1987, Ser. No. 16,178

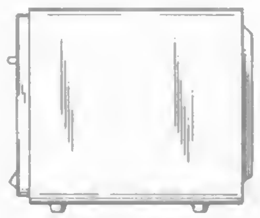
Claims priority, application Rep. of Korea, Aug. 27, 1986, Des.86-12208

The portion of the term of this patent subsequent to Aug. 30, 2002, has been disclaimed.

Term of patent 14 years

U.S. Cl. D7—351





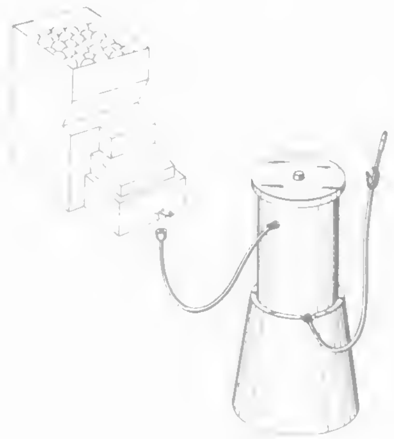
304,663
COMBINATION JUICE RESERVOIR AND DISPENSER

Robert F. Tunila, 22392 Rippling Brook, El Toro, Calif. 92647

Continuation-in-part of Ser. No. 551,952, Nov. 15, 1983, abandoned. This application Feb. 4, 1986, Ser. No. 825,858

Term of patent 14 years

U.S. Cl. D7—397



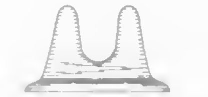
304,664
TACO HOLDER

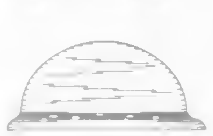
Bryan C. Wyant, 2214 E. Fountain Blvd., Colorado Springs, Colo. 80910

Filed Jan. 30, 1987, Ser. No. 9,139

Term of patent 14 years

U.S. Cl. D7—76





304,665
ALE FONT

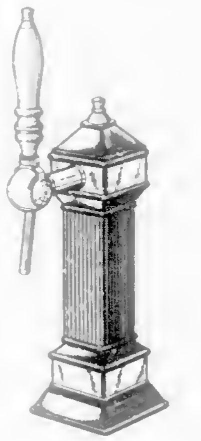
Michael J. Start, Poole, England, assignor to Homark Associates Limited, Dorset, England

Filed Dec. 5, 1986, Ser. No. 938,742

Claims priority, application United Kingdom, Jun. 11, 1986, 1034707

Term of patent 14 years

U.S. Cl. D7—313



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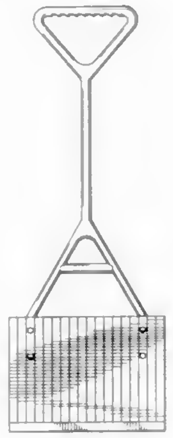
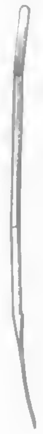
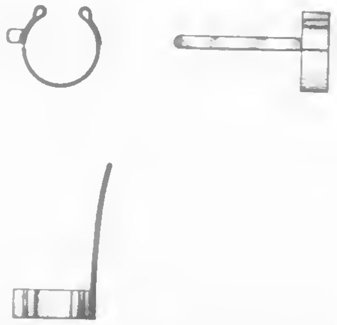
304,666
SNOWSHOVEL
Barbara A. Rogers, 1049 Evans Ave., Reno, Nev. 89512
Filed Mar. 14, 1988, Ser. No. 167,445
Term of patent 14 years
U.S. Cl. D8—10

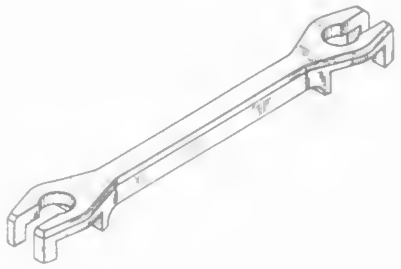




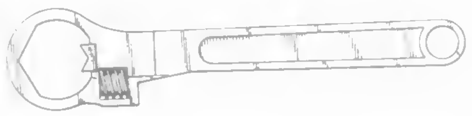
304,667
GRIPPING BAND FOR PLIERS
Robert A. Hutton, 10890 Galvin St., Ventura, Calif. 93004
Filed Jun. 19, 1986, Ser. No. 876,363
Term of patent 14 years
U.S. Cl. D8—18



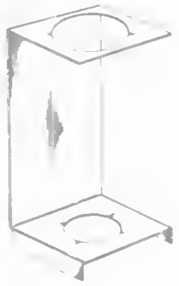
304,668
FORKED WRENCH
Bruce L. Strock, 3046 Camino Graciosa St., Thousand Oaks, Calif. 91360
Filed Mar. 10, 1987, Ser. No. 27,023
Term of patent 14 years
U.S. Cl. D8—17



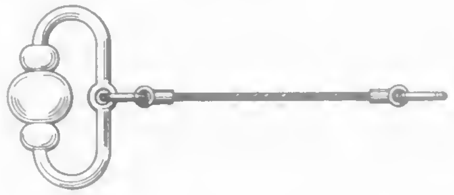
304,669
ADJUSTABLE WRENCH
William D. Boyd, 410 N. Vine St., Agency, Iowa 52530, and Bill E. Boyd, Rte. 4, Box 310, Ottumwa, Iowa 52501
Filed Mar. 13, 1987, Ser. No. 25,799
Term of patent 14 years
U.S. Cl. D8—22

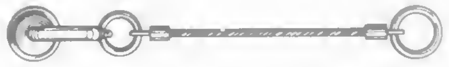


304,670
PAINT STRAINER HOLDER
Paul E. Johnson, 1115 Main St., Springfield, Oreg. 97477
Filed Aug. 1, 1986, Ser. No. 891,589
Term of patent 14 years
U.S. Cl. D8—71

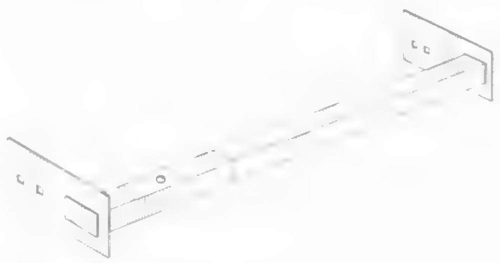


304,671
COMBINED GATE LATCH PULL AND CABLE
Robert W. Reaney, 5013 Stancliff St., Bakersfield, Calif. 93307
Filed Aug. 24, 1987, Ser. No. 88,899
Term of patent 14 years
U.S. Cl. D8—301



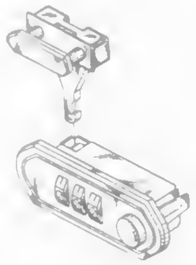


304,672
ADJUSTABLE SECURITY BAR
Stanley W. Pearson, 1601 Cambridge Dr., Kinston, N.C. 28501
Filed Mar. 31, 1987, Ser. No. 32,708
Term of patent 14 years
U.S. Cl. D8—331

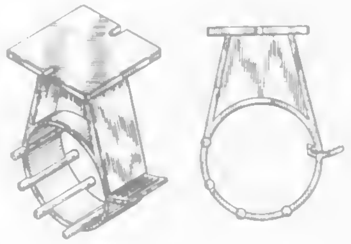


304,673
SCISSORS FOR HOLDING INTERCHANGEABLE BLADES
Anthony T. Rose, and Therezia M. Rose, both of 741 Lakefield Rd., Westlake Village, Calif. 91361
Filed Oct. 17, 1986, Ser. No. 919,812
Term of patent 14 years
U.S. Cl. D8—57

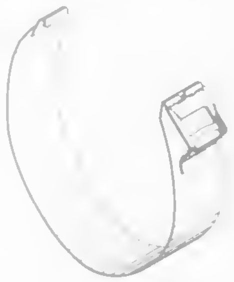
304,674
LUGGAGE LOCK
Urs Gisiger, Gaensbruehlweg 4, 2545 Zelzach, Switzerland
Filed Oct. 26, 1987, Ser. No. 113,723
Term of patent 14 years
U.S. Cl. D8—341



304,675
CEILING MOUNTABLE HOOK
Gordon E. Rogers, 600-217 E. Weddell, Sunnyvale, Calif. 94089
Filed Oct. 16, 1987, Ser. No. 108,978
Term of patent 14 years
U.S. Cl. D8—380



304,676
CLAMPING BAND FOR A GAS CYLINDER
Michael H. Glynn, Near Basingstoke, United Kingdom, assignor to Sabre Safety Limited, Aldershot, England
Filed Feb. 2, 1987, Ser. No. 10,111
Claims priority, application United Kingdom, Aug. 13, 1986, 1,036,064
Term of patent 14 years
U.S. Cl. D8—395



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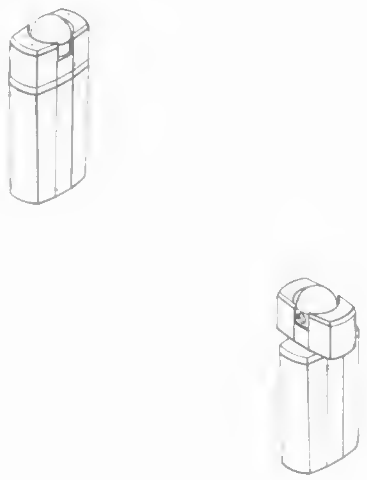
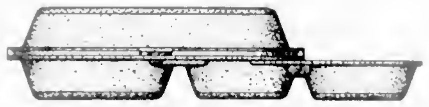
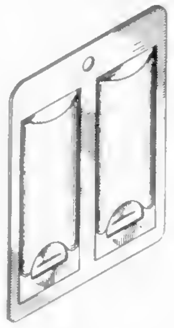
304,677
AEROSOL CONTAINER
Tomio Nitta, Yokohama, Japan, assignor to Tokai Corporation, Yokohama, Japan
Filed Nov. 3, 1986, Ser. No. 925,931
Claims priority, application Japan, May 9, 1986, 61-17092
Term of patent 14 years
U.S. Cl. D9—300



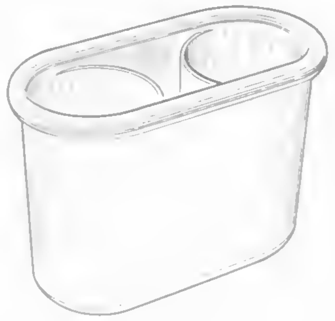
304,678
TRAY
Henry R. Vigue, Waterville, Me., assignor to Keyes Fibre, Waterville, Me.
Filed Jan. 9, 1987, Ser. No. 1,956
Term of patent 14 years
U.S. Cl. D9—341



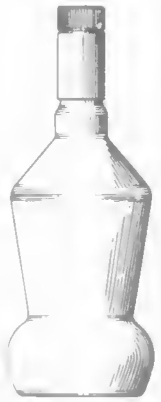
304,679
DUAL DISPENSING PACKAGE WITH FINGER SLOTS
Arthur P. Corella, 8166 Vanscoy Ave., North Hollywood, Calif. 91602
Filed Feb. 2, 1987, Ser. No. 10,152
Term of patent 14 years
U.S. Cl. D9—341



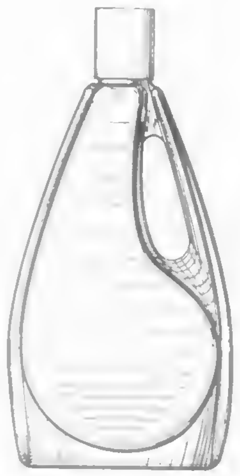
304,680
CONTAINER FOR BOTTLES
Arthur R. Carlson, 401A Waverley Road, East Malvern, Victoria, 3145, Australia
Filed Jun. 5, 1987, Ser. No. 58,533
Term of patent 14 years
U.S. Cl. D9—341



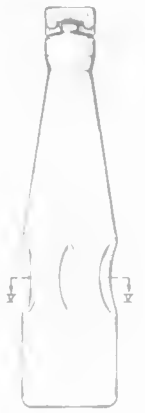
304,681
BOTTLE
Spyros Metaxa, Athens, Greece, assignor to S. & E. & A. Metaxa International S.A., Vaduz, Liechtenstein
Filed Jul. 21, 1986, Ser. No. 887,632
Claims priority, application Fed. Rep. of Germany, Jan. 21, 1986, URA 68/86
Term of patent 14 years
U.S. Cl. D9—352



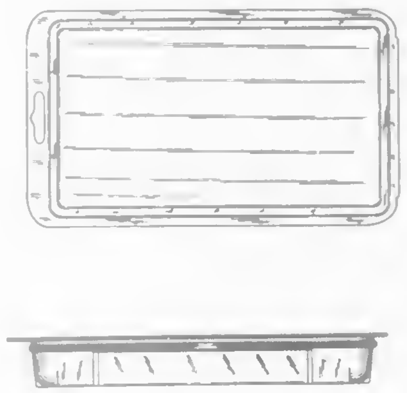
304,682
JUG
John Di Gianni, Pelham Manor, N.Y., assignor to Sunola Food Corporation, New Milford, Conn.
Filed Nov. 28, 1986, Ser. No. 937,525
Term of patent 14 years
U.S. Cl. D9—378



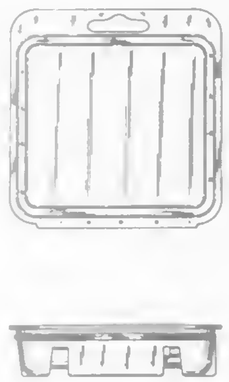
304,683
BOTTLE
Kurt Hofer, Kalbeckgasse 6, A-1180 Vienna, Austria
Filed Feb. 19, 1986, Ser. No. 834,068
Term of patent 14 years
U.S. Cl. D9—390



304,684
CONTAINER
Frederick B. Hadtke, New Providence, N.J., assignor to Champion Spark Plug Company, Toledo, Ohio
Filed Jul. 8, 1986, Ser. No. 883,481
The portion of the term of this patent subsequent to Nov. 21, 2003, has been disclaimed.
Term of patent 14 years
U.S. Cl. D9—415



304,685
CONTAINER
Frederick B. Hadtke, New Providence, N.J., assignor to Champion Spark Plug Company, Toledo, Ohio
Filed Jul. 8, 1986, Ser. No. 883,482
The portion of the term of this patent subsequent to Nov. 21, 2003, has been disclaimed.
Term of patent 14 years
U.S. Cl. D9—415



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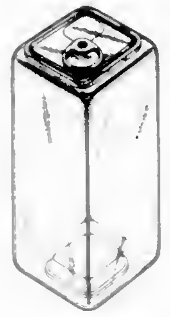
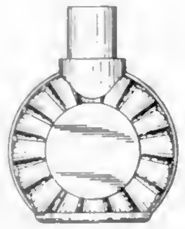
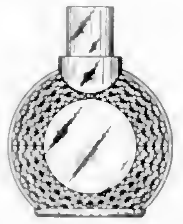
304,686
SOFT DRINK CONTAINER
Bud Jarrin, 259A Eastwoods Rd., Pound Ridge, N.Y. 10576
Filed Jul. 16, 1986, Ser. No. 886,113
Term of patent 14 years
U.S. Cl. D9—368



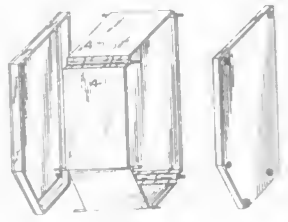
304,687
BOTTLE
James Miyakawa, 7 Asbury La., Aberdeen, N.J. 07747
Filed Sep. 30, 1986, Ser. No. 914,593
Term of patent 14 years
U.S. Cl. D9—403



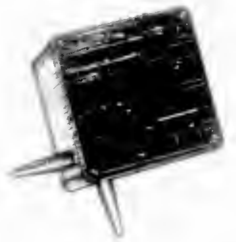
304,688
BOTTLE
James Miyakawa, Aberdeen, N.J., assignor to Guest Supply, Inc., New Brunswick, N.J.
Filed Sep. 30, 1986, Ser. No. 914,594
Term of patent 14 years
U.S. Cl. D9—403



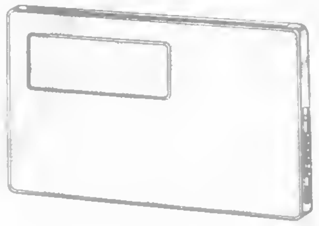
304,689
COLLAPSIBLE CARGO CONTAINER
Gerald A. Dixon, 101 Candelite Cir., McMurray, Pa. 15317
Filed Nov. 21, 1986, Ser. No. 933,599
Term of patent 14 years
U.S. Cl. D9—424



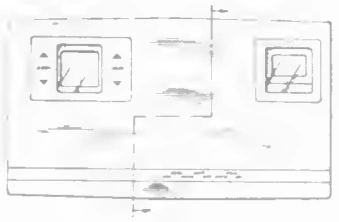
304,690
ELECTRONIC CLOCK
Klaus D. Zang, Bad Homburg, Fed. Rep. of Germany, assignor to Walter GmbH, Mettlach, Fed. Rep. of Germany
Filed Feb. 10, 1987, Ser. No. 12,706
Claims priority, application Fed. Rep. of Germany, Aug. 13, 1986, 3MR30
Term of patent 14 years
U.S. Cl. D10—15



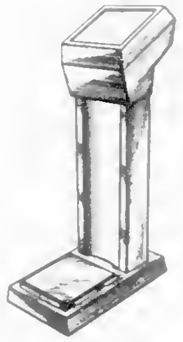
304,691
PORTABLE CLOCK
Tatsuya Kubo, Tokyo, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan
Filed Jun. 5, 1986, Ser. No. 871,582
Term of patent 14 years
U.S. Cl. D10—15



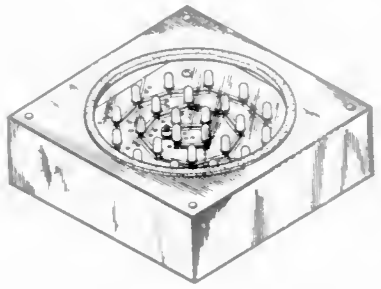
304,692
THERMOSTAT HOUSING OR THE LIKE
Jeffrey L. Parker, and Edward Parker, both of Jacksonville, Fla., assignors to Parker Electronics, Inc., Jacksonville, Fla.
Filed Feb. 12, 1987, Ser. No. 13,867
Term of patent 14 years
U.S. Cl. D10—60



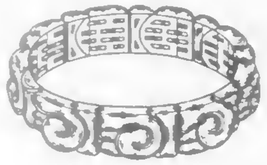
304,693
WEIGHING SCALE
Daniel Slater, 110 Heather Ct., Rolling Meadows, Ill. 60008
Filed Dec. 22, 1986, Ser. No. 944,610
Term of patent 14 years
U.S. Cl. D10—93



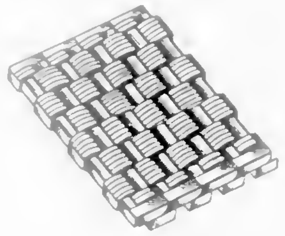
304,694
END-OF-TRAIN LED BEACON
Randall Goss, Fayetteville, assignor to American Railroad Technology, Inc., Fayetteville, Ark.
Filed Oct. 31, 1986, Ser. No. 925,671
Term of patent 14 years
U.S. Cl. D10—114



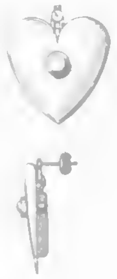
304,695
BRACELET
Paolo Bulgari, No. 11, Via dei Condotti, Rome 00187, Italy
Filed Dec. 14, 1987, Ser. No. 132,101
Claims priority, application Italy, Jun. 22, 1987, 35871-B/87
Term of patent 14 years
U.S. Cl. D11—15



304,696
EXPANSION BRACELET
Murray L. Cowan, Norwood, Mass., assignor to Textron Inc., Del.
Filed Jul. 20, 1987, Ser. No. 77,403
Term of patent 14 years
U.S. Cl. D11—25



304,697
FLASHING EARING
Timothy R. Crews, 10920 Borcus Ave., Alliance, Ohio 44601-8704
Filed Nov. 6, 1987, Ser. No. 117,654
Term of patent 14 years
U.S. Cl. D11—56



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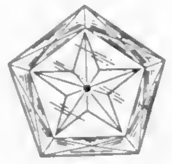
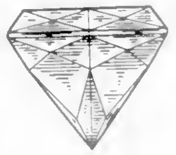
304,698
GEMSTONE

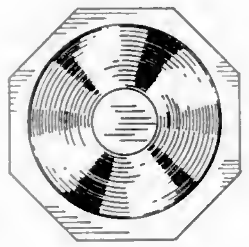
Harold Johnston, 8039 - 43rd Ave., NE., Seattle, Wash. 98115
Filed Sep. 22, 1986, Ser. No. 910,173
Term of patent 14 years
U.S. Cl. D11—90





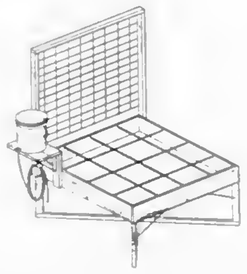
304,699
LAPEL BUTTON

Robert J. De brey, 4502 Browndale Ave., Edina, Minn. 55424
Filed Jul. 16, 1987, Ser. No. 74,015
Term of patent 14 years
U.S. Cl. D11—99



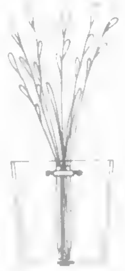
304,700
COMBINED PLANTER, TRELLIS AND IRRIGATION UNIT

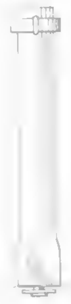
Newell A. Holman, 382 Pearson, Ferndale, Mich. 48220
Filed Jul. 24, 1987, Ser. No. 77,332
Term of patent 14 years
U.S. Cl. D11—155



304,701
PLANT STAND

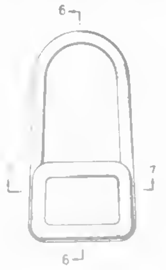
Ira Kleinberg, Great Neck, N.Y., assignor to Reliance Trading Corp. of America, Chicago, Ill.
Filed Apr. 23, 1987, Ser. No. 41,357
Term of patent 14 years
U.S. Cl. D11—146

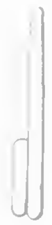




304,702
PULL TAB OF SLIDER FOR SLIDE FASTENER

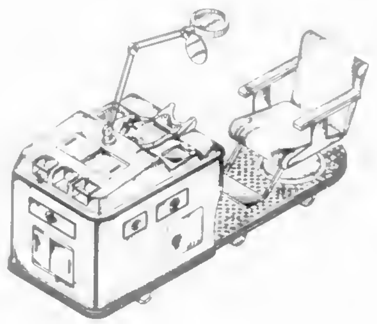
Sadaho Asahi, Uozu, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan
Filed Feb. 18, 1987, Ser. No. 15,967
Claims priority, application Japan, Mar. 11, 1986, D61-8674
Term of patent 14 years
U.S. Cl. D11—221





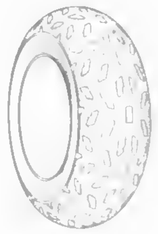
304,703
MOBILE SALON

Michael Phillips, P.O. Box 35393, Houston, Tex. 77235-5395
Filed Feb. 6, 1986, Ser. No. 826,724
Term of pateot 14 years
U.S. Cl. D12—1



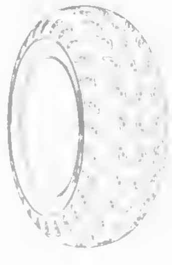
304,704
AUTOMOBILE TIRE

Tetsushi Fujiki, Hyogo, Japan, assignor to Sumitomo Rubber Industries, Ltd., Hyogo, Japan
Filed Mar. 17, 1987, Ser. No. 26,644
Claims priority, application Japan, Dec. 9, 1986, 61.48717
Term of patent 14 years
U.S. Cl. D12—146



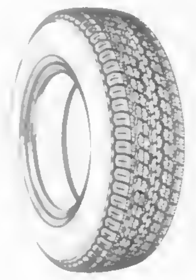
304,705
AUTOMOBILE TIRE

Akihito Monta, Hyogo, Japan, assignor to Sumitomo Rubber Industries, Ltd., Hyogo, Japan
Filed Mar. 17, 1987, Ser. No. 26,651
Claims priority, application Japan, Dec. 9, 1986, 61-48712
Term of patent 14 years
U.S. Cl. D12—146



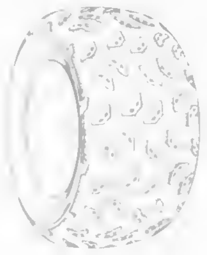
304,706
AUTOMOBILE TIRE

Akihiro Nakatani, Hyogo, Japan, assignor to Sumitomo Rubber Industries, Ltd., Hyogo, Japan
Filed Feb. 26, 1987, Ser. No. 19,075
Claims priority, application Japan, Oct. 16, 1986, 61-41220
Term of patent 14 years
U.S. Cl. D12—147



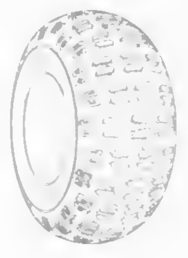
304,707
AUTOMOBILE TIRE

Akihito Monta, Hyogo, Japan, assignor to Sumitomo Rubber Industries, Ltd., Hyogo, Japan
Filed Mar. 17, 1987, Ser. No. 26,566
Claims priority, application Japan, Dec. 9, 1986, 61-48711
Term of patent 14 years
U.S. Cl. D12—149



304,708
AUTOMOBILE TIRE

Tetsushi Fujiki, Hyogo, Japan, assignor to Sumitomo Rubber Industries, Ltd., Hyogo, Japan
Filed Mar. 17, 1987, Ser. No. 26,645
Claims priority, application Japan, Dec. 9, 1986, 61-48718
Term of patent 14 years
U.S. Cl. D12—150



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304,709
BACKING SUPPORT FOR WINDSCREEN WIPER BLADES

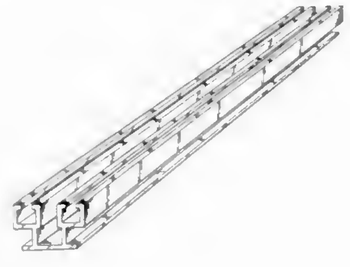
Marino R. Sussich, Altona North, Australia, assignor to Itemstay Limited, London, England

Filed Mar. 4, 1987, Ser. No. 21,422

Claims priority, application Australia, Sep. 24, 1986, 6839/86

Term of patent 14 years

U.S. Cl. D12—155



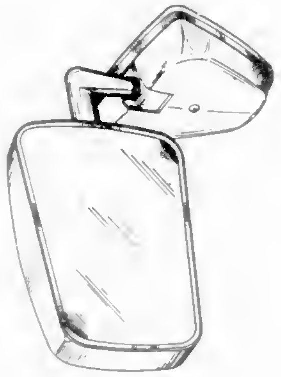
304,710
REAR VIEW MIRROR OR SIMILAR ARTICLE

Bernard C. Sharp, White Plains, N.Y., assignor to Parker Hannifin Corporation, Cleveland, Ohio

Filed Jun. 25, 1987, Ser. No. 66,871

Term of patent 14 years

U.S. Cl. D12—187



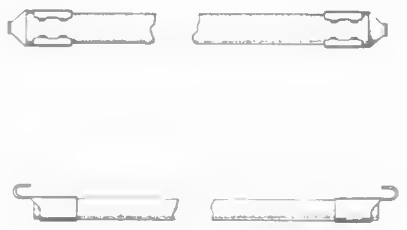
304,711
CLIP-ON AUTOMOBILE BODY SIDE MOLDING

Paul F. Clarke, 33 Hemlock Ct., Durham, Conn. 06422

Filed Jul. 31, 1987, Ser. No. 81,710

Term of patent 14 years

U.S. Cl. D12—190



304,712
LIGHTED VANITY MIRROR WITH HINGED DOORS FOR ATTACHMENT TO THE SUN VISOR OF AN AUTOMOBILE

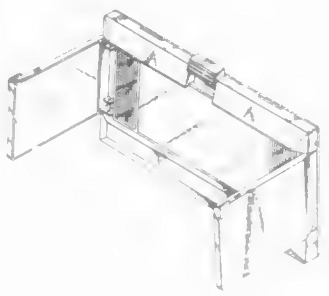
Kwok K. Cheung, Kwai Chung, N.T., Hong Kong, assignor to Chi Kuan Manufactory Limited, Hong Kong

Filed Jan. 2, 1987, Ser. No. 579

Claims priority, application United Kingdom, Jul. 1, 1986, 1035080

Term of patent 14 years

U.S. Cl. D12—191



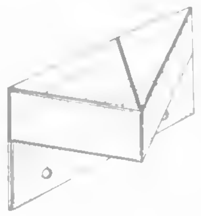
304,713
NOSE ORNAMENT FOR AN AUTOMOBILE

Ralph Perricelli, 313 Oradell Ave., Paramus, N.J. 07652

Filed Feb. 26, 1987, Ser. No. 19,328

Term of patent 14 years

U.S. Cl. D12—197



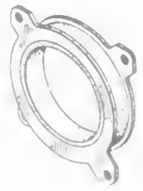
304,714
VIBRATION ISOLATOR FOR ELECTRIC MOTOR

Hiroshi Tanifuzi, Yokohama, and Tamotsu Nishimura, Kawasaki, both of Japan, assignors to Showa Electric Wire & Cable Co., Ltd., Japan

Filed Sep. 18, 1986, Ser. No. 908,637

Term of patent 14 years

U.S. Cl. D13—1



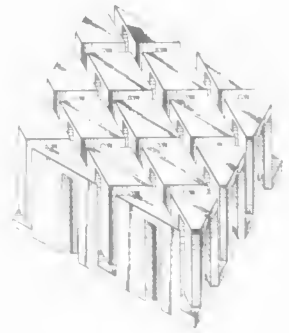
304,715
HEAT SINK OR SIMILAR ARTICLE

Joseph L. Horvath, Poughkeepsie, and Eric B. Hultmark, Wappingers Falls, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 16, 1987, Ser. No. 97,471

Term of patent 14 years

U.S. Cl. D13—23



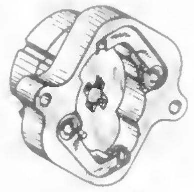
304,716
FLOURESCENT LAMP SOCKET

George E. Johnson, Bronxville, and Paul Endres, Glen Oaks, both of N.Y., assignors to Leviton Manufacturing Company, Inc., Little Neck, N.Y.

Filed Feb. 17, 1987, Ser. No. 15,768

Term of patent 14 years

U.S. Cl. D13—25



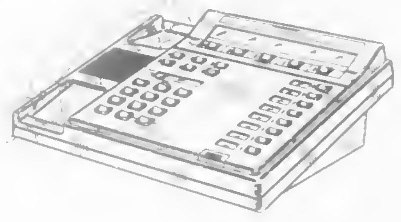
304,717
BASE HOUSING FOR A MULTI-FEATURE TELEPHONE CALL PROCESSOR

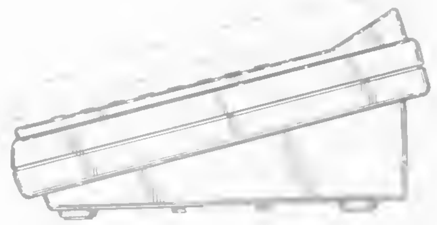
William C. Barker, Scottsdale; Pathukotta Desikan, Phoenix; Ross E. Fraser; Michael W. Pflueger, both of Glendale, and Kamal S. Sethia, Phoenix, all of Ariz., assignors to AG Communication Systems Corporation, Phoenix, Ariz.

Filed May 23, 1988, Ser. No. 197,798

Term of patent 14 years

U.S. Cl. D14—241





304,718
INPUT/OUTPUT DEVICE FOR ELECTRONIC MEMO

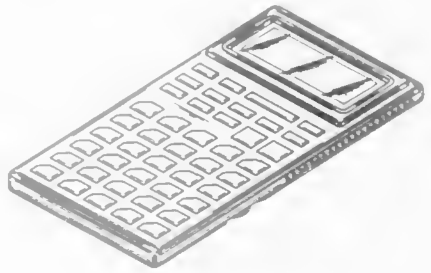
Hiroshi Sakaguchi, and Masaki Kawamura, both of Osaka, Japan, assignors to Sharp Kahushiki Kaisha, Osaka, Japan

Filed Nov. 26, 1986, Ser. No. 935,538

Claims priority, application Japan, May 29, 1986, 61-20965

Term of patent 14 years

U.S. Cl. D14—100



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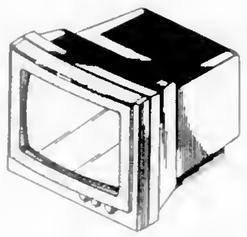
304,719
COMPUTER MONITOR OR SIMILAR ARTICLE

Chee-Chung Leung, Taipei, Taiwan, assignor to Cal-Comp Electronics Inc., Taipei, Taiwan

Filed Apr. 28, 1987, Ser. No. 43,413

Term of patent 14 years

U.S. Cl. D14—113



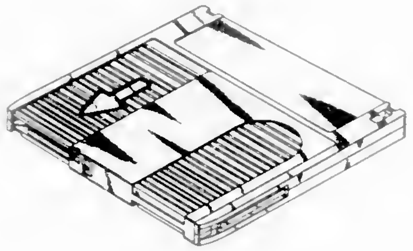
304,720
DISK CARTRIDGE

Philip R. Ashe, Hilton; James R. Carey, Rochester, both of N.Y.; Patrick J. Champagne, Cupertino, Calif., and David L. Rowden, Rochester, N.Y., assignors to Verbatim Corporation, Sunnyvale, Calif.

Filed Jun. 9, 1987, Ser. No. 60,581

Term of patent 14 years

U.S. Cl. D14—114



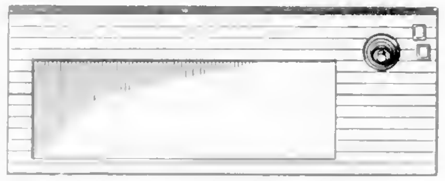
304,721
ENCLOSURE FOR A COMPUTER KEYBOARD WITH JOYSTICK

Peter J. Mikan, 31 Greenfield Rd., Milford, Conn. 06460

Filed Nov. 7, 1988, Ser. No. 267,773

Term of patent 14 years

U.S. Cl. D14—115



304,722
FACSIMILE TRANSCEIVER

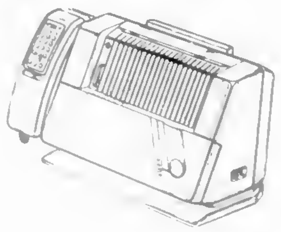
Kazunori Hashimoto, Tachikawa; Yoshihiro Kawakatsu, Sayama; Tooru Ebihara, Ichikawa; Hideyasu Shimizu, Yokohama; Shinichiro Tsunematsu, Yokohama, and Hirokazu Takeda, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 4, 1987, Ser. No. 22,263

Claims priority, application Japan, Sep. 22, 1986, 61-37155

Term of patent 14 years

U.S. Cl. D14—118



304,723
FACSIMILE

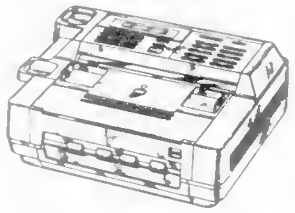
Yoshihara Tsutomu, Ayase, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 8, 1987, Ser. No. 71,044

Claims priority, application Japan, Jan. 30, 1987, 62-3398

Term of patent 14 years

U.S. Cl. D14—117



304,724
FACSIMILE TRANSCEIVER

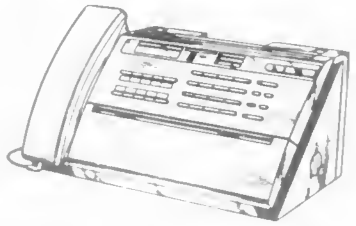
Kazunori Hashimoto, Tachikawa; Masahito Saegusa; Takashi Ohwada, both of Mitaka; Yoshihiro Kawakatsu, Sayama; Katsubumi Ohuchi, Chigasaki; Hiroshi Endo, Yokohama, and Kyoichi Yamashita, Fujisawa, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 28, 1987, Ser. No. 101,552

Claims priority, application Japan, Mar. 27, 1987, 62-11311

Term of patent 14 years

U.S. Cl. D14—118



304,725
PUBLIC PAY TELEPHONE STAND WITH ALTERNATIVE PAYMENT MEANS

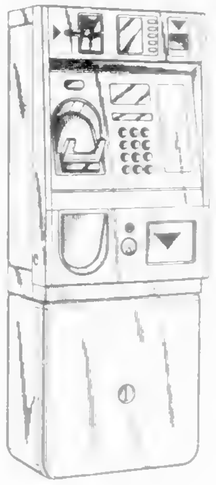
Martin S. Rose, Sudbury, England, assignor to GEC Plessy Telecommunications Ltd., Coventry, England

Filed Jun. 14, 1988, Ser. No. 210,105

Claims priority, application United Kingdom, Dec. 16, 1987, 1407136

Term of patent 14 years

U.S. Cl. D14—142



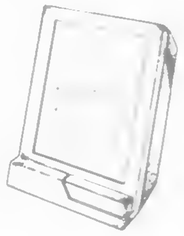
304,726
TELEPHONE DIALING APPARATUS

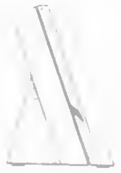
Richard R. Brooks, Greenwood, Ind., and John H. Schaffeld, Morristown, N.J., assignors to American Telephone and Telegraph Company, New York, N.Y. and AT&T Bell Laboratories, Murray Hill, N.J.

Filed Sep. 26, 1988, Ser. No. 249,461

Term of patent 14 years

U.S. Cl. D14—149





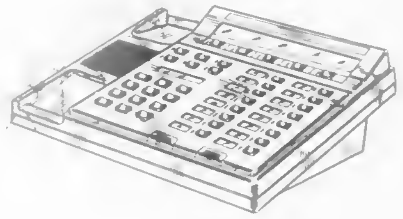
304,727
BASE HOUSING FOR A MULTI-FEATURE TELEPHONE CALL PROCESSOR

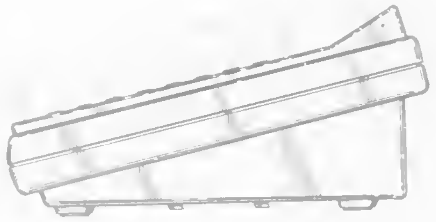
William C. Barker, Scottsdale; Pathukotta K. Desikan, Phoenix; Ross E. Fraser; Michael W. Pflneger, both of Glendale, and Kamal S. Sethia, Phoenix, all of Ariz., assignors to AG Communication Systems Corporation, Phoenix, Ariz.

Filed May 23, 1988, Ser. No. 197,799

Term of patent 14 years

U.S. Cl. D14—241





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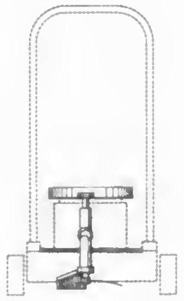
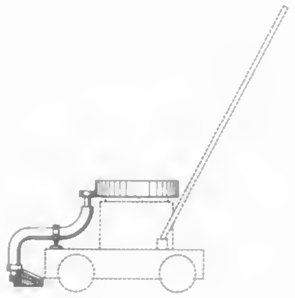
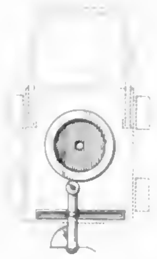
304,728

STRING TRIMMER ATTACHMENT FOR A LAWNMOWER

Peter V. Piorkowski, Box 402, Sorrento, Fla. 32776
Filed Nov. 30, 1987, Ser. No. 126,941
Term of patent 14 years
U.S. Cl. D15—16



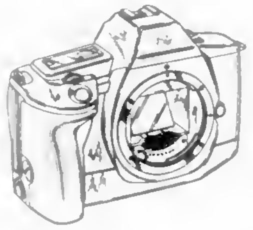




304,729

CAMERA

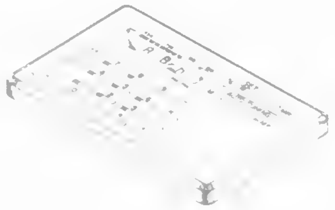
Yoshiaki Sugiyama, Zushi; Yoichi Tosaka, and Shosuke Haraguchi, both of Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Apr. 8, 1987, Ser. No. 35,708
Claims priority, application Japan, Oct. 14, 1986, 61-40846
Term of patent 14 years
U.S. Cl. D16—217



304,730

COMBINED RADIO RECEVIER AND CALCULATOR

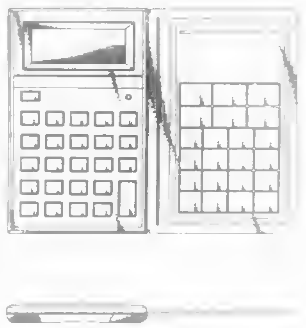
Akihiro Miyahara, Kunitachi, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan
Filed Jun. 4, 1987, Ser. No. 58,023
Claims priority, application Japan, Apr. 8, 1987, 62-13774
Term of patent 14 years
U.S. Cl. D14—168



304,731

ELECTRONIC CALCULATOR

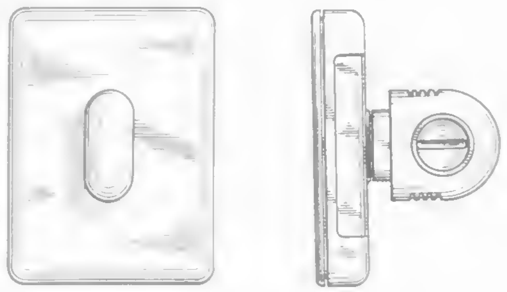
Yuichi Ohnumata, Kunitachi, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan
Filed Nov. 24, 1986, Ser. No. 934,320
Term of patent 14 years
U.S. Cl. D18—7



304,732

HAND STAMP

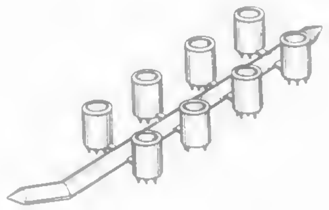
David M. Hines, 12452 Rosalind Dr., Orange, Calif. 92669
Filed Sep. 19, 1986, Ser. No. 909,452
Term of patent 14 years
U.S. Cl. D18—15



304,733

PLURAL-TOOL UNIT FOR USE BY AN ARTIST

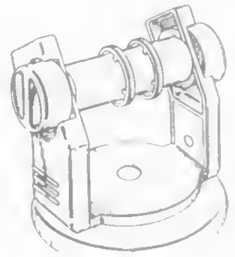
Charles W. Lehman, 608 Hawkeye La., and Michael Sanders, 504 W. Wilson St., both of Kentland, Ind. 47951
Filed Oct. 8, 1986, Ser. No. 916,853
Term of patent 14 years
U.S. Cl. D19—36



304,734

SWIVEL ROTARY FILE

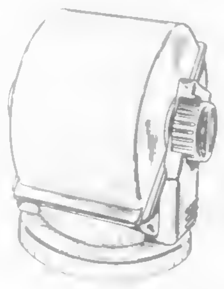
John Leszczak, Roselle Park, N.J., and Robert B. Staubitz, Avon, Conn., assignors to Bates Manufacturing Company, Hackettstown, N.J.
Filed Jan. 21, 1987, Ser. No. 5,739
Term of patent 14 years
U.S. Cl. D19—76



304,735

COVERED SWIVEL ROTARY FILE

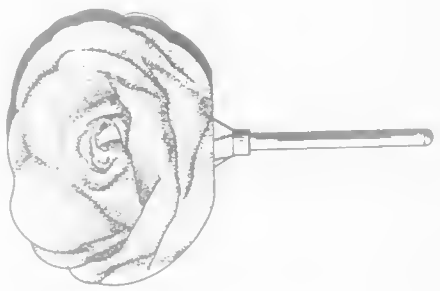
John Leszczak, Roselle Park, N.J., and Robert B. Staubitz, Avon, Conn., assignors to Bates Manufacturing Company, Hackettstown, N.J.
Filed Jan. 21, 1987, Ser. No. 6,091
Term of patent 14 years
U.S. Cl. D19—76



304,736

COMBINED WRITING PAD AND PEN

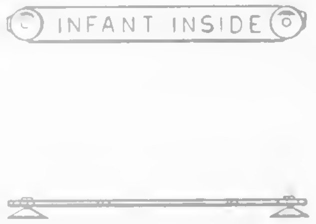
Daniel P. Leahan, 1420 S. Bayshore Dr., Apt. 402, Miami, Fla. 33131
Filed Aug. 21, 1986, Ser. No. 898,611
Term of patent 14 years
U.S. Cl. D19—78



304,737

SIGN FOR AN AUTOMOBILE WINDOW

Eugene Y. Mori, 5444 Via Campo, Los Angeles, Calif. 90022
Filed Apr. 17, 1987, Ser. No. 39,368
Term of patent 14 years
U.S. Cl. D20—42



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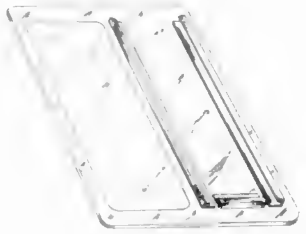
304,738

MESSAGE PANEL

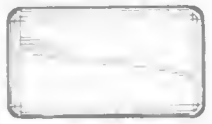
Maxie L. Jones, Savannah, Tenn., assignor to Tennessee Valley Authority, Muscle Shoals, Ala.
Filed Jul. 20, 1987, Ser. No. 75,918
Term of patent 14 years
U.S. Cl. D20—42



304,739

SIMULATIVE TOY BOX

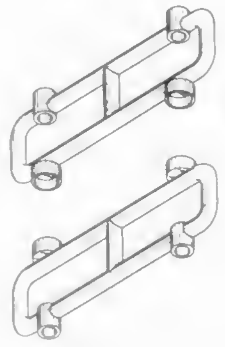
Hiroshi Ukisu, Matsudo, Japan, assignor to Epoch Company, Ltd., Tokyo, Japan
Filed May 20, 1988, Ser. No. 196,340
Term of patent 14 years
U.S. Cl. D21—59



304,740

TOY FENCE

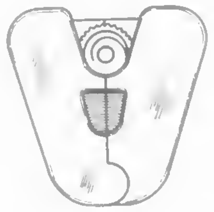
Erling T. Dideriksen, Billund, Denmark, assignor to Interlego A.G., Switzerland
Filed Dec. 2, 1987, Ser. No. 128,471
Term of patent 14 years
U.S. Cl. D21—109



304,741

SIMULATIVE TOY COMPASS

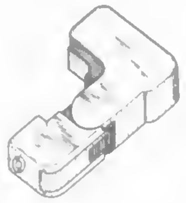
Hiroshi Ukisu, Matsudo, Japan, assignor to Epoch Company, Ltd., Tokyo, Japan
Filed May 20, 1988, Ser. No. 196,338
Term of patent 14 years
U.S. Cl. D21—109



304,742

SIMULATIVE TOY FLASHLIGHT

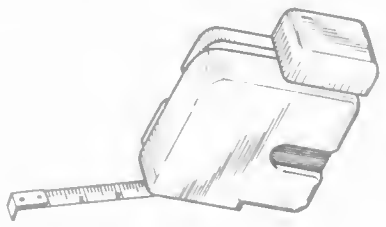
Hiroshi Ukisu, Matsudo, Japan, assignor to Epoch Company, Ltd., Tokyo, Japan
Filed May 20, 1988, Ser. No. 196,341
Term of patent 14 years
U.S. Cl. D21—109



304,743

SIMULATIVE TOY TAPE MEASURE

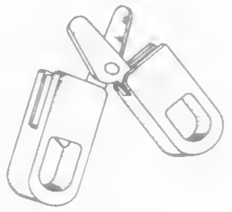
Hiroshi Ukisu, Matsudo, Japan, assignor to Epoch Company, Ltd., Tokyo, Japan
Filed May 20, 1988, Ser. No. 196,342
Term of patent 14 years
U.S. Cl. D21—109



304,744

SIMULATIVE TOY SCISSORS

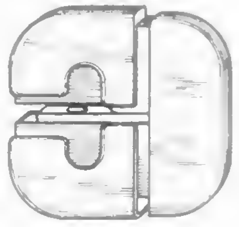
Hiroshi Ukisu, Matsudo, Japan, assignor to Epoch Company, Ltd., Tokyo, Japan
Filed May 20, 1988, Ser. No. 196,337
Term of patent 14 years
U.S. Cl. D21—120



304,745

SIMULATIVE TOY HOLE PUNCH

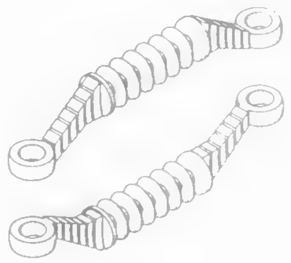
Hiroshi Ukisu, Matsudo, Japan, assignor to Epoch Company, Ltd., Tokyo, Japan
Filed May 20, 1988, Ser. No. 196,455
Term of patent 14 years
U.S. Cl. D21—120



304,746

STEERING ROD FOR A TOY VEHICLE

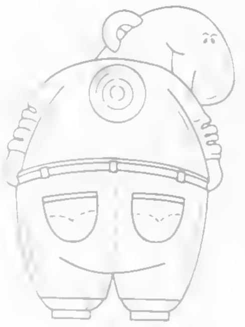
Ole V. Poulsen, Vejle, Denmark, assignor to Interlego A.G., Switzerland
Filed Dec. 2, 1987, Ser. No. 127,874
Term of patent 14 years
U.S. Cl. D21—141



304,747

DOLL

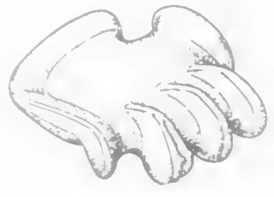
Steven K. Dunlap, and Richard A. Jurczyk, both of Memphis, Tenn., assignors to I.O.O.H., Inc., Memphis, Tenn.
Filed Jan. 26, 1989, Ser. No. 302,723
Term of patent 14 years
U.S. Cl. D21—171



304,748

HAND HELD EXERCISER

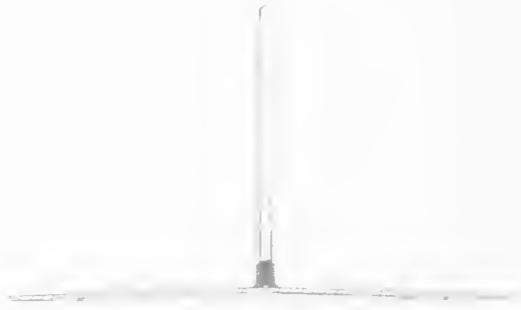
Michael Bowers, 1st Floor, No. 4, Lane 754, Chung Shan North Road, Section 6, Taipei, Taiwan
Filed Jan. 20, 1987, Ser. No. 4,693
Term of patent 14 years
U.S. Cl. D21—196



304,749

GOLF COURSE MARKER

Eloise A. K. Johnson; James W. Johnson, both of 1707 Robin Rd., Arlington, Tex. 76013, and Robert E. Johnson, 112 Lake Meadows Dr., Rockwall, Tex. 75087
Filed Nov. 14, 1985, Ser. No. 804,973
Term of patent 14 years
U.S. Cl. D21—234



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304,750

GOLF BALL DISPENSER

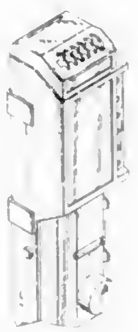
Gerald Fitton, Leeds, and Leonard Walker, Methley, both of England, assignors to Du Bois Public Limited Company, London, England

Filed Feb. 26, 1986, Ser. No. 836,182

Claims priority, application United Kingdom, Sep. 10, 1985, 1029135

Term of patent 14 years

U.S. Cl. D21—234



304,751

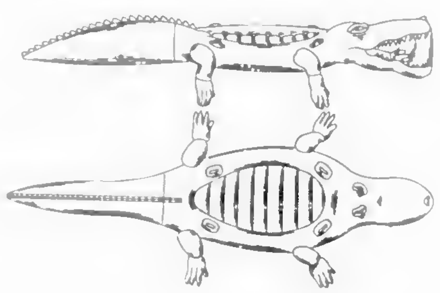
FLOAT

Henry S. Wolfe, Gulfport, Fla., assignor to The Frenry Company, Inc., Clearwater, Fla.

Filed Nov. 13, 1987, Ser. No. 121,761

Term of patent 14 years

U.S. Cl. D21—237



304,752

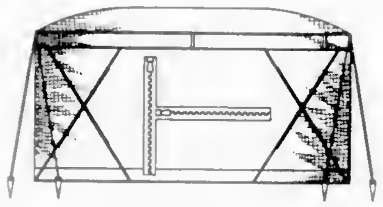
TENT

James V. Ward, 403 Buttonwood Dr., Kissimmee, Fla. 32743

Filed Nov. 19, 1987, Ser. No. 122,670

Term of patent 14 years

U.S. Cl. D21—253



304,753

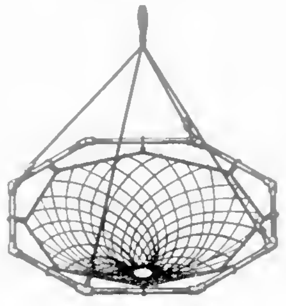
CRAB-CATCHING RING

Mark H. Whitesell, 922 NW. 61st St., Seattle, Wash. 98107

Filed May 1, 1987, Ser. No. 45,024

Term of patent 14 years

U.S. Cl. D22—121



304,754

FISHING HAND CASTER

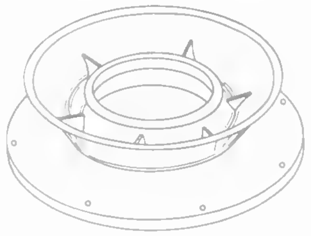
Alexander S. Corrie, 36 Manilla Street, East Brisbane, Australia (4169)

Filed Mar. 2, 1987, Ser. No. 20,679

Claims priority, application Australia, Nov. 14, 1986, 7475/86

Term of patent 14 years

U.S. Cl. D22—137



304,755

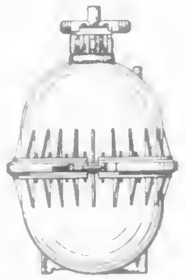
WATER RESERVOIR FOR A REVERSE OSMOSIS SYSTEM

Bruce D. Burrows, 25145 W. Avenue Standford, Valencia, Calif. 91355

Filed Jan. 23, 1987, Ser. No. 6,589

Term of patent 14 years

U.S. Cl. D23—205



304,756

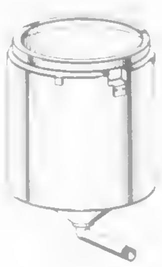
FLUID HOLDING TANK

Franklin C. Houser, 15520 Donmetz St., Mission Hills, Calif. 91345

Filed Apr. 29, 1987, Ser. No. 43,994

Term of patent 14 years

U.S. Cl. D23—205



304,757

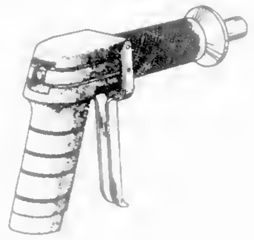
SPRAY GUN

Steven W. Post, Jonesboro, Ark., and Edward A. Bellandi, San Jose, Calif., assignors to FMC Corporation, Chicago, Ill.

Filed Jun. 1, 1987, Ser. No. 56,836

Term of patent 14 years

U.S. Cl. D23—226



304,758

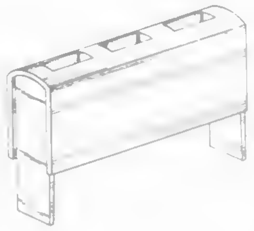
FRAGRANCE CARTRIDGE

Dov Z. Glucksman, Brookline, Mass., and Jorg Ratzlaff, New York, N.Y., assignors to Environmental Fragrance Technologies, Ltd., New York, N.Y.

Filed Sep. 15, 1987, Ser. No. 96,845

Term of patent 14 years

U.S. Cl. D23—366



304,759

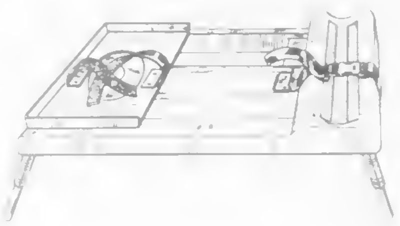
GURNEY AUXILIARY EQUIPMENT TRAY

Glenn McCloskey, 905 Brookwood Pl., Oceanside, Calif. 92056

Filed Jan. 12, 1987, Ser. No. 2,462

Term of patent 14 years

U.S. Cl. D24—7



304,760

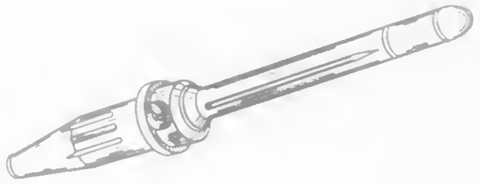
COMBINED PROSTATE AND VAGINAL ULTRASOUND PROBE

Bobby Curtis, Danville, and Richard A. Terwilliger, San Ramon, both of Calif., assignors to Diasonics, Inc., South San Francisco, Calif.

Filed Jan. 22, 1987, Ser. No. 6,098

Term of patent 14 years

U.S. Cl. D24—17



304,761

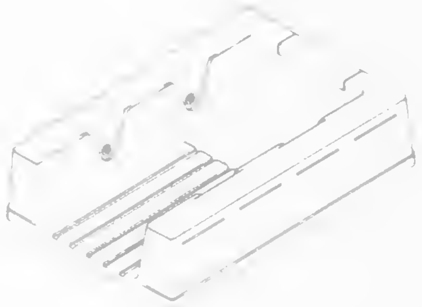
SINGLE OCCUPANT WHIRLPOOL LOUNGER FOR USE IN SWIMMING POOLS

E. Eugene Middleton, Rte 4, Box 1420, Haleyville, Ala. 35505

Filed Sep. 14, 1987, Ser. No. 97,071

Term of patent 14 years

U.S. Cl. D24—38



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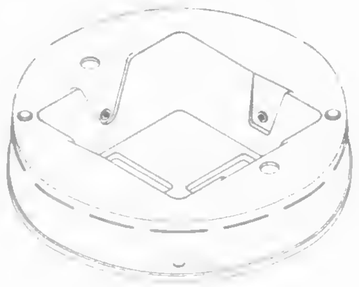
DOUBLE OCCUPANT WHIRLPOOL LOUNGER FOR USE IN SWIMMING POOLS

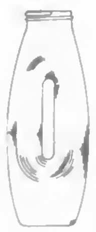
E. Eugene Middleton, Rte. 4, Box 1420, Haleyville, Ala. 35505
Filed Sep. 14, 1987, Ser. No. 97,073
Term of patent 14 years
U.S. Cl. D24—38



304,763

BABY BOTTLE

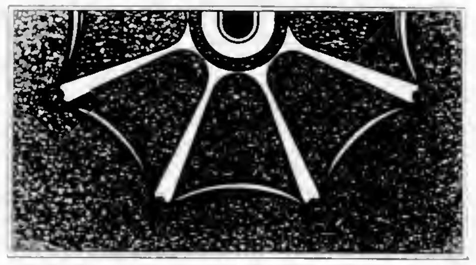
Arthur H. Yuan, Hudson, and John Kostantaras, Brecksville, both of Ohio, assignors to Spalding & Evenflo Companies, Tampa, Fla.
Filed Aug. 7, 1987, Ser. No. 82,768
Term of patent 14 years
U.S. Cl. D24—47



304,764

DECORATIVE GLASS PANEL

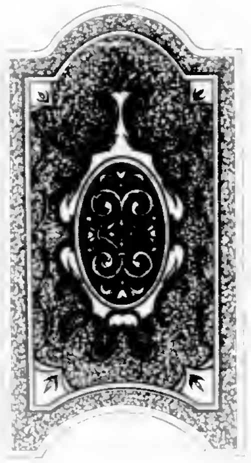
B. Jeremiah Shaffer, Worthington, Ohio, assignor to Pease Industries, Inc., Fairfield, Ohio
Filed Jul. 7, 1986, Ser. No. 882,815
Term of patent 14 years
U.S. Cl. D25—103



304,765

DECORATIVE GLASS PANEL

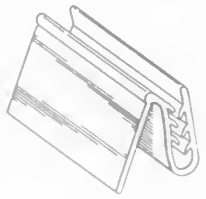
B. Jeremiah Shaffer, Worthington, Ohio, assignor to Pease Industries, Inc., Fairfield, Ohio
Filed Jul. 7, 1986, Ser. No. 882,817
Term of patent 14 years
U.S. Cl. D25—103



304,766

DAMPER SEALING STRIP

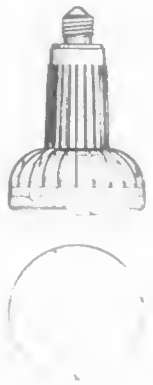
Milo Weaver, Box 26, U.S. Rte. 62, Winesburg, Ohio 44690, and Dean Miller, 1900 U.S. 62, Wilmot, Ohio 44689
Filed May 1, 1987, Ser. No. 44,565
Term of patent 14 years
U.S. Cl. D25—119



304,767

FLUORESCENT LIGHTING FIXTURE OR SIMILAR ARTICLE

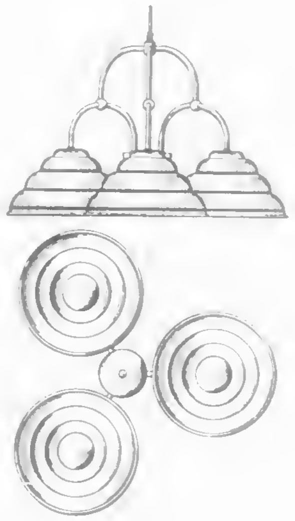
Kenneth Lim, Piedmont, Calif., assignor to Lumatech Corp., Emeryville, Calif.
Filed Aug. 12, 1988, Ser. No. 895,685
Term of patent 14 years
U.S. Cl. D26—26



304,768

CHANDELIER OR THE LIKE

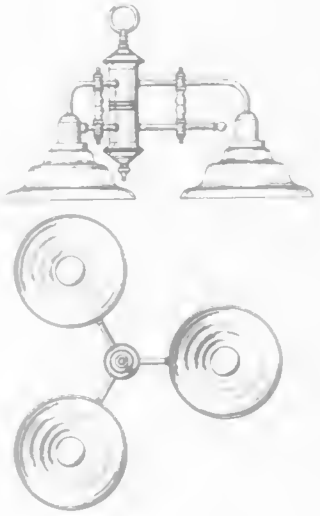
Vince Dicola, Louisville, Ky., assignor to Thomas Industries Inc., Louisville, Ky.
Filed Jul. 6, 1987, Ser. No. 69,955
Term of patent 14 years
U.S. Cl. D26—84



304,769

LIGHT FIXTURE OR THE LIKE

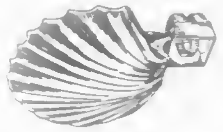
Robert De'Armond, Louisville, Ky., assignor to Thomas Industries Inc., Louisville, Ky.
Filed Jul. 6, 1987, Ser. No. 69,957
Term of patent 14 years
U.S. Cl. D26—84



304,770

DECORATIVE REFLECTOR FOR LOW-VOLTAGE, OUTDOOR ACCENT LIGHTS

Robert J. De brey, 4502 Browndale Ave., Edina, Minn. 55424, and Bruce W. Carlson, Minneapolis, Minn., assignors to Robert J. De brey, Edina, Minn.
Filed Apr. 24, 1986, Ser. No. 857,610
Term of patent 14 years
U.S. Cl. D26—118



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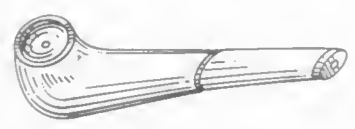
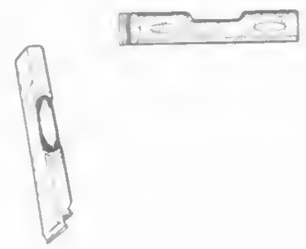
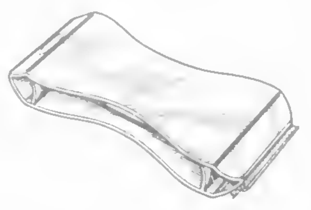
304,771
PIPE
Yutaka Katayama, Tokyo, Japan, assignor to Aruman Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 29, 1988, Ser. No. 176,811
Term of patent 14 years
U.S. Cl. D27—163



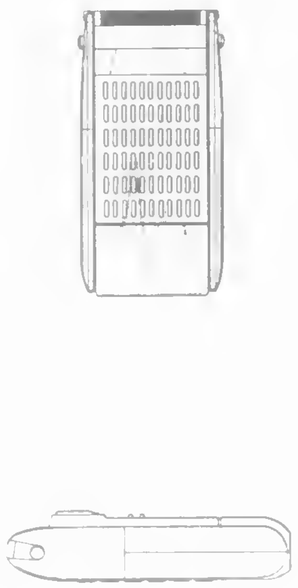
304,772
SAFETY RAZOR
Roland Beuchat, Cologny, Switzerland, assignor to Synertrade and Finance S.A., Carouge, Switzerland
Filed Oct. 10, 1986, Ser. No. 917,510
Claims priority, application Int'l Pat. Institute, Apr. 10, 1986, DMA/000 488
Term of patent 14 years
U.S. Cl. D28—46



304,773
SAFETY RAZOR
Roland Beuchat, Cologny, Switzerland, assignor to Synertrade and Finance S.A., Carouge, Switzerland
Filed Oct. 10, 1986, Ser. No. 917,511
Claims priority, application Int'l Pat. Institute, Apr. 10, 1986, DMA/000 488
Term of patent 14 years
U.S. Cl. D28—46



304,774
ELECTRIC SHAVER
Kazuyoshi Yonesawa; Yonosuke Iwai, both of Kadoma, Japan, and Florian Seiffert, Wiesbaden, Fed. Rep. of Germany, assignors to Matsushita Electric Works, Ltd., Osaka, Japan
Filed Sep. 4, 1987, Ser. No. 92,994
Claims priority, application Japan, Mar. 10, 1987, 62-9144
Term of patent 14 years
U.S. Cl. D28—49



LIST OF PATENTEES
TO WHOM
PATENTS WERE ISSUED ON THE 21ST DAY OF NOVEMBER, 1989

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

- *See—*
  - Isozumi, Shuzoo, 4,881,416, Cl. 74-7.00A.
- A. H. Robins Company, Incorporated: *See—*
  - Walsh, David A.; and Yanni, John M., 4,882,330, Cl. 514-255.000.
- A.T.B. S.p.A.: *See—*
  - Bordignon, Abramo, 4,882,645, Cl. 360-132.000.
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  - Shannon, Joseph W., 4,882,097, Cl. 261-35.000.
- Abe, Kiyoto: *See—*
  - Nasu, Masahiro; and Abe, Kiyoto, 4,882,639, Cl. 360-65.000.
- Abe, Kouji: *See—*
  - Sakurai, Yoshihiro; Fukuda, Yoshihide; and Abe, Kouji, 4,881,370, Cl. 60-310.000.
- Abe, Masaru: *See—*
  - Sano, Shoichi; Furukawa, Yoshimi; Ogura, Masami; Abe, Masaru; and Oyama, Yasuharu, 4,881,748, Cl. 280-91.000.
- Abe, Takao: *See—*
  - Koshizuka, Kunihiro; and Abe, Takao, 4,882,218, Cl. 428-216.000.
- Abe, Yoshio: *See—*
  - Kageyama, Sadashi; Abe, Yoshio; Yasumoto, Yoshio; Inoue, Shuji; Takai, Hitoshi; Matsumoto, Mitsujiro; Aono, Kouji; Uchimura, Kiyoshi; and Iwasaki, Eiji, 4,882,614, Cl. 358-12.000.
- Abe, Yoshitaka; and Murakami, Keiichi, to Fujitsu Limited. Frequency counter for counting a frequency and partly varied frequencies of a signal in real time. 4,882,740, Cl. 377-49.000.
- Abou-Gharbia, Magid A.; Yardley, John P.; and Childers, Wayne E., Jr., to American Home Products Corporation. Polycyclic-carbamic acid piperazinoalkyl esters and amides. 4,882,432, Cl. 544-295.000.
- Abreo, William A., Jr. Subsea guidebase. 4,881,850, Cl. 405-169.000.
- AbuJodom, David N., II: *See—*
  - Thoma, Paul E.; AbuJodom, David N., II; and Fariabi, Sepehr, 4,881,981, Cl. 148-11.50R.
- Ackerman, Marvin: *See—*
  - Hollis, Robert; Lewis, John E.; and Ackerman, Marvin, 4,882,678, Cl. 364-413.310.
- Adachi, Koji: *See—*
  - Marugama, Kazuo; Horie, Kiyoshi; Noami, Tsuneo; Yamamoto, Toshiro; Adachi, Koji; Okamoto, Toru; Sumikawa, Takeshi; and Nobumasa, Furuya, 4,882,247, Cl. 430-45.000.
- Adair, Paul C.: *See—*
  - O'Connor, Joseph G.; and Adair, Paul C., 4,882,259, Cl. 430-138.000.
- Adam, William D. Electrostatic charge dissipator and method of making. 4,881,642, Cl. 206-328.000.
- Adams, U.S.A., Inc.: *See—*
  - Orsatti, Louis A., 4,881,735, Cl. 273-25.000.
- Adkins, Richard C., to British Aerospace PLC. Boundary layer control in supersonic nozzle. 4,881,875, Cl. 417-54.000.
- Advanced Micro Devices, Inc.: *See—*
  - Johansson, Jan H.; and Lunderius, Erik K., 4,882,506, Cl. 307-296.100.
  - Witt, David B., 4,882,673, Cl. 364-200.000.
- Aeration Industries, Inc.: *See—*
  - Durda, Joseph A.; and Giese, Thomas G., 4,882,099, Cl. 261-128.000.
- Aeroquip Corporation: *See—*
  - Fournier, Paul J. E.; Kulikowski, Ernest F.; and Allread, Alan R., 4,881,569, Cl. 137-360.000.
- Affarsverket FFV: *See—*
  - Medin, Gunnar; Olsson, Erik; Sjoo , Lennart; and Lundgren, Roger, 4,881,448, Cl. 89-36.020.
- Agency of Industrial Science and Technology: *See—*
  - Inoue, Yasunori; and Hanafusa, Hiroshi, 4,882,300, Cl. 437-236.000.
- Agency of Industrial Science & Technology, Extra-Ministerial Bureau of Ministry of Trade & Industry: *See—*
  - Uehara, Toshihiro; and Watanabe, Rikizo, 4,882,124, Cl. 420-74.000.
- Agharkar, Shreeram N.: *See—*
  - Nassar, Munir N.; Agharkar, Shreeram N.; and Bogardus, Joseph B., 4,882,356, Cl. 514-619.000.
- Agostoni, Alberto; D'Agostino, Alfredo; Craighero, Enrico; and Marazza, Renzo, to Tecnomare S.p.A. Four-leg trestlework structure for supporting an off-shore platform. 4,881,620, Cl. 182-179.000.
- Ahad, Elie, to Canada, Her Majesty the Queen in right of, as represented by Minister of National Defence of Her Majesty's Canadian Government. Branched hydroxy-terminated aliphatic polyethers. 4,882,395, Cl. 525-407.000.
- Aihara, Kenji: *See—*
  - Kanbara, Susumu; Aihara, Kenji; Tomiku, Masato; Kawashima, Yoshio; Sawada, Tadashi; Okuda, Shinji; and Ikeda, Mitsuaki, 4,881,987, Cl. 148-12.00B.
- Air Products and Chemicals, Inc.: *See—*
  - Kramer, Daniel P.; Santangelo, Joseph G.; and Weber, James J., 4,882,110, Cl. 264-63.000.
  - Mattiola, Paul A.; and Van Ommeren, James, 4,881,374, Cl 62-50.600.
  - Mattiola, Paul A., and VanOmmeren, James, 4,881,375, Cl 62-50.600.
  - Schweighardt, Frank K.; and Bailey, Webb I., 4,881,682, Cl. 228-242.000.
- Airpax Corporation: *See—*
  - Harper, George S., 4,882,557, Cl. 335-9.000.
- Aisin Aw Co., Ltd.: *See—*
  - Nimura, Mitsuhiro; and Yokoyama, Shoji, 4,882,696, Cl. 364-449.000.
- Aisin Seiki Kabushiki Kaisha: *See—*
  - Kondo, Toshio, 4,881,623, Cl. 188-73.380.
  - Naito, Yoshihiro, 4,881,372, Cl. 60-521.000.
  - Takayanagi, Makoto, 4,882,558, Cl. 335-260.000.
- Aisin Seiki Kabushikikaisha: *See—*
  - Nakashima, Hiroshi; Sakakibara, Naoji; and Fushimi, Takehiko, 4,881,611, Cl. 180-79.100.
  - Yasuda, Tomio; Aoki, Kohji; and Mori, Kazuo, 4,881,456, Cl. 98-2.010.
- Ajmera, Prakash R., to Owens-Illinois Plastic Products Inc. Method for making partially crystalline biaxially oriented heat set hollow plastic containers. 4,882,119, Cl. 264-526.000.
- Akaba, Yukio; and Sakuramoto, Akihiko, to Sony Corp., and SMK Co., Ltd. Multi-drop type bus line system. 4,882,554, Cl. 333-105.000.
- Akademie Der Wissenschaften Der DDR: *See—*
  - Rosenthal, Andre; Hunger, Hans-Dieter; Kagelmaker, Horst, and Gratschus, Monika, 4,882,127, Cl. 422-50.000.
- Akaiwa, Yoshihiko, to NEC Corporation. Terminal station of a radio communication network capable of effectively using radio channels assigned to the network. 4,882,766, Cl. 455-58.000.
- Akiyama, Keiho: *See—*
  - Shinsha, Takao; Morita, Masato; Sakataya, Yoshinori; Tsuchiya, Yoji; Hikosaka, Mitsuhiro; Koshishita, Junji; Akiyama, Keiho; and Kubo, Takashige, 4,882,690, Cl. 364-490.000.
- Akiyama, Toru, to Pioneer Electronic Corporation. Improved definition television set with external luminance and chrominance signal inputs. 4,882,625, Cl. 358-140.000.
- Akzo NV: *See—*
  - Schmer, Gottfried, 4,882,060, Cl. 210-646.000.
  - Schutyser, Jan A. J.; and Buser, Antonius J. W., 4,882,226, Cl 428-407.000.
- Alameda, Daniel; and Cooper, Scott, to Rubber Band Technology Apparatus and method for rapid transport of an elastic band 4,881,868, Cl. 414-773.000.
- Alameel, George M.; and Hammond, Rodney W., to American Telephone and Telegraph Company, AT&T Bell Laboratories. Self-adjusting optical fiber connector assembly. 4,881,792, Cl. 350-96.200.
- Alavanja, Milan. *See—*
  - Pielet, Howard M.; Frank, Larry A.; Edgar, William; and Alavanja, Milan, 4,881,990, Cl. 148-320.000.
- Albany International Corp.: *See—*
  - FitzPatrick, Keith, 4,882,217, Cl. 428-212.000.
- Albert, Henry J.: *See—*
  - Hukvari, Istvan S.; Albert, Henry J.; Moon, Vernon G . and Steffenson, Michael R., 4,882,128, Cl. 422-119.000.
- Albright & Wilson Limited *See—*
  - Collier, John R.; and Holker, Kenneth U., 4,881,975, Cl. 106-14 050.
- Aldrige, Clyde L.: *See—*
  - Eidt, Clarence M., Jr.; Aldrige, Clyde L.; and Bearden, Roby, Jr., 4,882,036, Cl. 208-50.000.
- Aleem, Mohd A.: *See—*
  - Flygare, Wayne A ; Olson, Raymond N.; Reynolds, Richard W , and Aleem, Mohd A., 4,882,513, Cl. 310-114.000.
- Alfa Lancia Industriale S.p.A.: *See—*
  - Villa, Ezio; and Biazzi, Giuseppe, 4,881,391, Cl. 70-455.000
- Alfacell Corporation: *See—*
  - Shogen, Kuslima; Mikulski, Stanislaw M.; and Ardelt, Wojciech J., 4,882,421, Cl. 530-350.000.
- Alfon, Jose ; Martinez, Alberto; and Martinez, Abelardo. Anti-theft device for automobile vehicles. 4,881,389, Cl. 70-209.000.
- Alfred Grass Ges.m.b.H. Metallwarenfabrik: *See—*
  - Grass, Alfred, 4,881,826, Cl. 384-19.000.
- Alko Limited. *See—*
  - Sinclair, John D., 4,882,335, Cl. 514-282.000.
- Allen, Alfred M., to General Motors Corporation. Headlamp assembly 4,882,658, Cl. 362-61.000.

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Allen-Bradley Company, Inc.: *See—*
Struger, Odo J.; Luboski, Mark; and Murphy, Timothy J., 4,882,702, Cl. 364-900.000.

Allied Gator, Inc.: *See—*
Ramun, John R., 4,881,459, Cl. 100-95.000.

Allington, Robert W.; and Jones, John N., to Isco, Inc. Chromatographic system. 4,882,063, Cl. 210-659.000.

Allington, Robert W., to Isco, Inc. Method for predicting steady-state conditions. 4,882,781, Cl. 364-510.000.

Allread, Alan R.: *See—*
Fournier, Paul J. E.; Kulikowski, Ernest F.; and Allread, Alan R., 4,881,569, Cl. 137-360.000.

Allsop, Bryan E.: *See—*
Smith, Kevin K.; Allsop, Bryan E.; and Naik, Seb, 4,882,482, Cl. 250-214.00A.

Alopex Industries, Inc.: *See—*
Ritter, Gregory A.; Barton, Graham; and Sargent, Ronald J., 4,881,870, Cl. 415-47.000.

Alps Electric Co., Ltd.: *See—*
Baba, Toshiki, 4,882,550, Cl. 331-49.000.
Nasu, Masahiro; and Abe, Kiyoto, 4,882,639, Cl. 360-65.000.

Altman, Michael P., to United Technologies Corporation. Modular UV preionization package for a CO_2 laser. 4,882,735, Cl. 372-86.000.

Altus Technology Corporation: *See—*
Smith, Leonard S.; and Cook, Gary L., 4,881,873, Cl. 417-12.000.

Aluminum Company of America: *See—*
Weaver, Mark L., 4,882,017, Cl. 204-71.000.

Alvarez, Dennis A.: *See—*
Bosl, George F.; Kelly, Patrick M.; Alvarez, Dennis A.; Sauer, Gale; and Hocevar, Joseph A., 4,881,355, Cl. 52-738.000.

Amano, Kozo: *See—*
Kagawa, Junichi; Saiki, Yoshiaki; and Amano, Kozo, 4,881,403, Cl. 73-115.000.

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Zenbayashi, Katsuaki; Otsuga, Hisao; Morinaga, Akio; Toyoshima, Osamu; and Shimokawa, Shinji, to Tokyo Gas Kabushiki Kaisha; and Ashimori Kogyo Kabushiki Kaisha. Boring device for opening passages to branch portions of a lined main pipe line. 4,882,470, Cl. 219-523.000.

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TO WHOM

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- Chiavon, Ezio R. Tamper-proof threaded fastenings. Re. 33,114, Cl. 81-121.100.
- Hitachi, Ltd.: *See—*
  - Suzuki, Akira, Re. 33,116, Cl. 417-295.000.
- Lewis, Julie M. Accouchement apparatus. Re. 33,115, Cl. 269-328.000.
- Onda, Eiichi; and Watanabe, Masanori, to Seiko Koki Kabushiki Kaisha. Focal plane shutter for cameras. Re. 33,117, Cl. 354-246.000.
- Seiko Koki Kabushiki Kaisha: *See—*
  - Onda, Eiichi; and Watanabe, Masanori, Re. 33,117, Cl. 354-246.000.
- Suzuki, Akira, to Hitachi, Ltd. Single-stage oilless screw compressor system. Re. 33,116, Cl. 417-295.000.
- Watanabe, Masanori: *See—*
  - Onda, Eiichi; and Watanabe, Masanori, Re. 33,117, Cl. 354-246.000.

LIST OF REEXAMINATION PATENTEES

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  - Seto, Tadao; and Shimazaki, Yoshikazu, B1 4,503,095, Cl. 427-265.000.
- Seto, Tadao; and Shimazaki, Yoshikazu, to Fuji Kagakushi Kogyo Co., Ltd. Heat-sensitive color transfer recording media. B1 4,503,095, 11-21-89, Cl. 427-265.000.
- Shimazaki, Yoshikazu: *See—*
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  - Barker, William C.; Desikan, Pathukotta K.; Fraser, Ross E.; Pflueger, Michael W.; and Sethia, Kamal S., 304,727, Cl. D14-241.000.
- American Railroad Technology, Inc.: *See—*
  - Goss, Randall, 304,694, Cl. D10-114.000.
- American Telephone and Telegraph Company: *See—*
  - Brooks, Richard R.; and Schaffeld, John H., 304,726, Cl. D14-149.000.
- Aruman Kabushiki Kaisha: *See—*
  - Katayama, Yutaka, 304,771, Cl. D27-163.000.
- Asahi, Sadaho, to Yoshida Kogyo K.K. Pull tab of slider for slide fastener. 304,702, 11-21-89, Cl. D11-221.000.
- Ashe, Philip R.; Carey, James R.; Champagne, Patrick J.; and Rowden, David L., to Verbatim Corporation. Disk cartridge. 304,720, 11-21-89, Cl. D14-114.000.
- Asner, Jerome L. Combined chip and salsa server. 304,659, 11-21-89, Cl. D7-3.000.
- AT&T Bell Laboratories: *See—*
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- Barker, William C.; Desikan, Pathukotta; Fraser, Ross E.; Pflueger, Michael W.; and Sethia, Kamal S., to AG Communication Systems Corporation. Base housing for a multi-feature telephone call processor. 304,717, 11-21-89, Cl. D14-241.000.
- Barker, William C.; Desikan, Pathukotta K.; Fraser, Ross E.; Pflueger, Michael W.; and Sethia, Kamal S., to AG Communication Systems Corporation. Base housing for a multi-feature telephone call processor. 304,727, 11-21-89, Cl. D14-241.000.
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- Bellandi, Edward A.: *See—*
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- Bowers, Michael. Hand held exerciser. 304,748, 11-21-89, Cl. D21-196.000.
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- Bulgari, Paolo. Bracelet. 304,695, 11-21-89, Cl. D11-15.000.
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- Clarke, Paul F. Clip-on automobile body side molding. 304,711, 11-21-89, Cl. D12-190.000.
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19	4,881,386
39	4,881,387
175	4,881,388
209	4,881,389
219	4,881,390
455	4,881,391
CLASS 71	
64.07	4,881,963
91	4,881,964
92	4,881,965
	4,881,967
	4,881,968
94	4,881,966
	4,881,969
96	4,881,970
CLASS 72	
7	4,881,392
27	4,881,393
45	4,881,394
90	4,881,395
247	4,881,396
361	4,881,397
419	4,881,398
454	4,881,399
CLASS 73	
35	4,881,400
	4,881,401
61 R	4,881,402
115	4,881,403
119 A	4,881,404
146	4,881,405
154	4,881,406
204 16	4,881,407
517 AV	4,881,408
597	4,881,409
724	4,881,410
856	4,881,411
861.04	4,881,412
861.12	4,881,413
862.33	4,881,414
865.8	4,881,415
CLASS 74	
7 A	4,881,416
15.84	4,881,417
89.14	4,881,418
89.15	4,881,419
109	4,881,420
412 TA	4,881,421
440	4,881,422
501.6	4,881,423
523	4,881,424
538	4,881,425
574	4,881,426
603	4,881,427
859	4,881,428
867	4,881,429
CLASS 75	
78	4,881,971
93 G	4,881,972
118 P	4,881,973
CLASS 76	
104 R	4,881,430
108 R	4,881,431
CLASS 81	
3.36	4,881,432
55	4,881,433
121 1	Re.33,114
426	4,881,434
469	4,881,435
CLASS 83	
342	4,881,436
477.2	4,881,437
840	4,881,438
879	4,881,439
CLASS 84	
291	4,881,441
403	4,881,442
473	4,881,443
609	4,881,440
CLASS 87	
8	4,881,444
CLASS 89	
1.15	4,881,445
8	4,881,446
34	4,881,447
36.02	4,881,448
CLASS 91	
372	4,881,449
459	4,881,450
CLASS 92	
48	4,881,451
	4,881,452
84	4,881,453
88	4,881,454
248	4,881,455
CLASS 98	
2.01	4,881,456
CLASS 99	
323.5	4,881,457
533	4,881,458
CLASS 100	
95	4,881,459
CLASS 101	
91	4,881,460
235	4,881,461
292	4,881,462
CLASS 102	
202.2	4,881,463
336	4,881,464
501	4,881,465
522	4,881,466
CLASS 104	
7.2	4,881,467
103	4,881,468
138.1	4,881,469
CLASS 105	
165	4,881,470
CLASS 106	
1.14	4,881,974
14.05	4,881,975
15.05	4,881,976
22	4,881,977
495	4,881,980
CLASS 108	
144	4,881,471
CLASS 110	
186	4,881,472
244	4,881,473
263	4,881,474
346	4,881,475
347	4,881,476
CLASS 112	
121.15	4,881,477
259	4,881,478
262.3	4,881,479
CLASS 114	
103	4,881,480
204	4,881,481
256	4,881,482
294	4,881,483
361	4,881,484
CLASS 116	
28 R	4,881,485
227	4,881,486
	4,881,487
CLASS 118	
320	4,881,488
672	4,881,489
CLASS 119	
1	4,881,490
51.01	4,881,491
106	4,881,492
CLASS 122	
13 A	4,881,493
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41 12	4,881,494
41 31	4,881,495
90.33	4,881,496
90.34	4,881,497
90.39	4,881,498
90.52	4,881,499
188 AA	4,881,500
279	4,881,501
399	4,881,502
400	4,881,503
447	4,881,504
480	4,881,505
503	4,881,506
523	4,881,507
549	4,881,508
571	4,881,509
572	4 881,510
	4,881,511
628	4,881,512
664	4,881,513
CLASS 124	
23 R	4,881,514
24 R	4,881,515
35 A	4,881,516
65	4,881,517
CLASS 125	
14	4,881,518
CLASS 126	
21 A	4,881,519
44	4,881,520
438	4,881,521
540	4,881,522
CLASS 128	
4	4,881,523
6	4,881,524
20	4,881,525
24 5	4,881,526
30.2	4,881,527
75	4,881,528
	4,881,529
79	4,881,530
	4,881,531
80 A	4,881,532
87 R	4,881,533
201.15	4,881,538
201.27	4,881,539
202.28	4,881,540
203.25	4,881,541
207 14	4,881,542
303.1	4,881,543
335	4,881,546
344	4,881,547
376	4,881,548
660.07	4,881,549
752	4,881,550
754	4,881,551
774	4,881,552
844	4,881,553
CLASS 131	
335	4,881,555
359	4,881,556
365	4,881,557
CLASS 132	
112	4,881,558
226	4,881,559
324	4,881,560
CLASS 134	
16	4,881,978
76	4,881,561
110	4,881,562
166 C	4,881,563
CLASS 135	
82	4,881,564
101	4,881,565
CLASS 136	
201	4,881,979
CLASS 137	
13	4,881,566
203	4,881,567
268	4,881,568
270	4,881,554
360	4,881,569
454 2	4,881,570
488	4,881,571
	4,881,572
614.04	4,881,573
624 13	4,881,574
889	4,881,575
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125	4,881,576
CLASS 140	
71 R	4,881,577
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44	4,881,578
86	4,881,579
98	4,881,580
113	4,881,581
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3 D	4,881,582
3 R	4,881,583
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134 A	4,881,585
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11.5 R	4,881,981
12 B	4,881,987
16.5	4,881,982
16.6	4,881,983
101	4,881,984
103	4,881,985
	4,881,986
300	4,881,988
302	4,881,989
320	4,881,990
325	4,881,991
421	4,881,992
CLASS 149	
46	4,881,993
109 4	4,881,994
CLASS 152	
209 B	4,881,586
534	4,881,587
CLASS 156	
52	4,881,995
66	4,881,997
157	4,881,996
173	4,881,998
231	4,881,999
239	4,882,000
273.3	4,882,001
310	4,882,002
315	4,882,003
381	4,882,004
470	4,882,005
504	4,882,006
523	4,882,007
643	4,882,008
CLASS 159	
4 2	4,882,009
CLASS 160	
345	4,881.588
CLASS 162	
30.1	4,882,010
368	4,882,011
CLASS 164	
491	4.881,589
CLASS 165	
26	4,881,591
48.1	4,881,590
104 16	4,881,592
104 29	4,881,593
173	4,881,594
	4,881,595
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250	4,881,598

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CLASS 172
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CLASS 174
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68.5 4,882,454
4,882,455

CLASS 175
320 4,881,605

CLASS 177
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256 4,881,607

CLASS 178
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CLASS 180
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68 2 4,881,610
79 1 4,881,611
132 4,881,612
140 4,881,613
225 4,881,614
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CLASS 181
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CLASS 182
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179 4,881,620

CLASS 185
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CLASS 188
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82.2 4,881,624
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85 AA 4,881,628
98 4,881,629

CLASS 194
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CLASS 198
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CLASS 200
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536 4,882,461

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192.31 4,882,023
242 4,882,024
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275 4,882,026
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422 4,882,032
425 4,882,033

CLASS 206
37.1 4,881,636
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313 4,881,640
315.3 4,881,638
320 4,881,641
328 4,881,639
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363 4,881,644
387 4,881,645
460 4,881,646
510 4,881,647
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634 4,881,649

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293 4,882,053
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483 4,882,055
490 4,882,056
500.23 4,882,057
601 4,882,058
606 4,882,059
646 4,882,060
652 4,882,061
656 4,882,062
659 4,882,063
667 4,882,064
674 4,882,065
679 4,882,066
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727 4,882,070
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219 4,882,466
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400 4,882,468
421 4,882,469
523 4,882,470

CLASS 220
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18 4,881,651
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22.3 4,881,653
85 H 4,881,654
209 4,881,655
270 4,881,656
303 4,881,657
306 4,881,658
319 4,881,659

CLASS 221
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CLASS 222
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81 4,881,662
132 4,881,663
153 4,881,664
181 4,881,665
386.5 4,881,666
437 4,881,667
482 4,881,668
505 4,881,669
590 4,881,670

CLASS 224
222 4,881,671
264 4,881,672
311 4,881,673
4,881,674

CLASS 225
43 4,881,675

CLASS 227
63 4,881,676
178 4,881,544
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CLASS 228
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132 4,881,679
182 4,881,680
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242 4,881,682

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117.01 4,881,683

CLASS 235
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88 R 4,882,472
380 4,882,473
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383 4,882,475
462 4,882,476
488 4,882,477

CLASS 236
46 R 4,881,686

CLASS 239
332 4,881,687
691 4,881,688

CLASS 241
9 4,881,689
82.3 4,881,690
101.5 4,881,691
167 4,881,692

CLASS 242
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254 4,881,697
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221.4 4,881,707
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192 4,881,716

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214 A 4,882,482
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306 4,882,487
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455.1 4,882,496
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571 4,882,498
577 4,882,499

CLASS 251
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CLASS 252
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8 8 4,882,074
4,882,076
49.5 4,882,077
62.9 4,882,079
117 4,882,080
299.61 4,882,082
4,882,083
4,882,085
4,882,086
299.66 4,882,084
312 4,882,087
313.1 4,882,088
511 4,882,090
527 4,882,091
628 4,882,092
629 4,882,078
632 4,882,093
633 4,882,094

CLASS 254
358 4,881,720

CLASS 256
52 4,881,721

CLASS 261
30 4,882,096
35 4,882,097
93 4,882,098
128 4,882,099

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0.5 4,882,100
26 4,882,101
29.3 4,882,102
29.5 4,882,103
40.1 4,882,104
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41 4,882,106
51 4,882,107
54 4,882,108
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127 4,882,113
129 4,882,114
254 4,882,116
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510 4,882,118
526 4,882,119

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64.23 4,881,724
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CLASS 269
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CLASS 271
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315 4,881,731

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73 4,881,732

CLASS 273
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26 B 4,881,736
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248 4,881,740
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376 4,881,744
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418 4,881,743

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CLASS 280
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91 4,881,748
95 1 4,881,749
276 4,881,750
457 4,881,751
690 4,881,752
707 4,881,753
728 4,881,754
779 4,881,755
785 4,881,756
804 4,881,757

CLASS 283
102 4,881,758

CLASS 285
49 4,881,759
93 4,881,760
239 4,881,761
367 4,881,762
382 4,881,763

CLASS 292
13 4,881,764
92 4,881,765
182.28 4,882,081
201 4,881,766
224 4,881,767
251 4,881,768

CLASS 294
15 4,881,769
64 1 4,881,770
151 4,881,771

CLASS 296
180.1 4,881,772
216 4,881,773

CLASS 297
341 4,881,774
361 4,881,775
379 4,881,776
406 4,881,777
417 4,881,778
442 4,881,779
467 4,881,780
473 4,881,781

CLASS 298
7 4,881,782

CLASS 301
37 S 4,881,783

CLASS 303
100 4,881,784
111 4,881,785

CLASS 305
10 4,881,786

CLASS 307
11 4,882,501
247.1 4,882,502
256 4,882,504
267 4,882,503
269 4,882,505
296.1 4,882,506
443 4,882,507

CLASS 310
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46 4,882,509
63 4,882,510
67 R 4,882,511
90.5 4,882,512
114 4,882,513
208 4,882,514
263 4,882,515
316 4,882,525
323 4,882,500

CLASS 312
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CLASS 313
407 4,882,516
440 4,882,521
502 4,882,517
512 4,882,518
633 4,882,519
643 4,882,520

CLASS 315
119 4,882,522

CLASS 318
254 4,882,523
4,882,524
561 4,882,526
568.13 4,882,527
600 4,882,528
602 4,882,529
696 4,882,530

CLASS 322
60 4,882,531

CLASS 323
222 4,882,532
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351 4,882,534

CLASS 324
61 R 4,882,536
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127 4,882,538
229 4,882,539
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368 4,882,542
460 4,882,543
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585 C 4,882,535

CLASS 328
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CLASS 329
310 4,882,546

CLASS 330
149 4,882,547
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CLASS 331
14 4,882,549
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CLASS 332
100 4,882,552

CLASS 333
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116 4,882,555

CLASS 335
8 4,882,556
9 4,882,557
260 4,882,558
284 4,882,559
299 4,882,560

CLASS 336
65 4,882,561

CLASS 338
28 4,882,571

CLASS 340
388 4,882,562
426 4,882,563
449 4,882,564
456 4,882,572
461 4,882,565
522 4,882,567
568 4,882,568
572 4,882,569
574 4,882,570
578 4,882,573
581 4,882,574
608 4,882,575
632 4,882,576
739 4,882,577
750 4,882,578
825.44 4,882,579
825.51 4,882,580
825.690 4,882,566

CLASS 341
22 4,882,581
23 4,882,582
59 4,882,583
139 4,882,584
143 4,882,585
169 4,882,586

CLASS 342
372 4,882,587
373 4,882,588
374 4,882,589
453 4,882,590

CLASS 343
715 4,882,591
4,882,592

CLASS 346
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111 4,882,593
140 R 4,882,595
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CLASS 350
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96.19 4,881,791
96.20 4,881,792
96.21 4,881,793
96.23 4,881,794
4,881,795
166 4,881,796
339 F 4,881,797
353 4,881,798
429 4,881,799
500 4,881,800
503 4,881,801
525 4,881,802

CLASS 351
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161 4,881,804
4,881,805
204 4,881,806
208 4,881,807
221 4,881,808

CLASS 353
60 4,882,599

CLASS 354
64 4,882,600
246 Re.33,117
407 4,882,601
457 4,882,602

CLASS 355
75 4,882,603
201 4,882,604
215 4,882,605
274 4,882,606

CLASS 356
5 4,881,809
241 4,881,810
323 4,881,811
344 4,881,812
345 4,881,813
346 4,881,814
349 4,881,815
4,881,816
350 4,881,817
367 4,881,818

CLASS 357
19 4,882,607
22 4,882,608
4,882,609
23.13 4,882,610
51 4,882,611
79 4,882,612

CLASS 358
12 4,882,614
31 4,882,615
37 4,882,613
44 4,882,616
55 4,882,619
60 4,882,617
75 4,882,620
80 4,882,621
4,882,622
98 4,882,623
140 4,882,625
153 4,882,624
166 4,882,626
4,882,627
167 4,882,618
4,882,628
330 4,882,632
339 4,882,633
451 4,882,630
464 4,882,629
471 4,882,631

CLASS 360
10.2 4,882,634
4,882,635
16 4,882,636
4,882,637
32 4,882,638
65 4,882,639
73.05 4,882,640
77.14 4,882,641
78.11 4,882,642
99.08 4,882,643
104 4,882,644
132 4,882,645
134 4,882,783

CLASS 361
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100 4,882,782
119 4,882,647
286 4,882,648
313 4,882,649
321 4,882,650
4,882,651
4,882,652
323 4,882,653
382 4,882,654
391 4,882,655
393 4,882,656
412 4,882,657
538 4,882,115

CLASS 362
61 4,882,658
4,882,659
226 4,882,660
242 4,882,661
290 4,882,662
373 4,882,667

CLASS 363
19 4,882,663
41 4,882,664
60 4,882,665
97 4,882,666
98 4,882,120

CLASS 364
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187 4,882,778
188 4,882,670
200 4,882,671
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CLASS 365
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180 4,882,706
185 4,882,707
189.02 4,882,709
189.04 4,882,708
189.05 4,882,710
206 4,882,712
229 4,882,711

CLASS 366
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162 4,881,821

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	114	304,720
	115	304,721
	117	304,723
	118	304,722
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	149	304,726
	168	304,730
	241	304,717
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D16—	217	304,729
D18—	7	304,731
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D19—	36	304,733
	76	304,734
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D20—	42	304,737
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	120	304,744
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	366	304,758
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	4,881,541		4,882,234		4,882,721		4,882,698		4,882,513		4,882,346
	4,881,547		4,882,279		4,882,727		4,882,724		4,882,518		4,882,557
	4,881,568		4,882,281		4,882,753		4,882,729		4,882,531	25	4,881,304
	4,881,575		4,882,299	09	4,881,313		4,882,745		4,882,543		4,881,310
	4,881,577		4,882,302		4,881,430		4,882,777		4,882,663		4,881,446
	4,881,580		4,882,336		4,881,457	13	4,881,314		4,882,751		4,881,476
	4,881,642		4,882,422		4,881,461		4,881,556	18	4,881,315		4,881,529
	4,881,700		4,882,466		4,881,544		4,881,660		4,881,386		4,881,560
	4,881,703		4,882,467		4,881,545		4,881,792		4,881,519		4,881,698
	4,881,706		4,882,508		4,881,651		4,882,149		4,881,625		4,881,726
	4,881,707		4,882,514		4,881,761		4,882,206		4,881,859		4,881,811
	4,881,728		4,882,540		4,881,814		4,882,230		4,881,912		4,881,954
	4,881,735		4,882,551		4,881,816	15	4,882,770		4,881,990		4,881,955
	4,881,745		4,882,555		4,881,830	16	4,881,441		4,882,294		4,882,088
	4,881,750		4,882,563		4,881,885		4,881,487		4,882,333		4,882,094
	4,881,779		4,882,567		4,881,898		4,881,574		4,882,334		4,882,199

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	4,882,235		4,881,413		4,882,187		4,882,666		4,881,532		4,882,229
	4,882,268		4,881,490		4,882,233		4,882,675		4,881,564		4,882,271
	4,882,275		4,881,526		4,882,261		4,882,686		4,881,675		4,882,378
	4,882,278		4,881,531		4,882,264		4,882,691		4,881,682		4,882,384
	4,882,284		4,881,636		4,882,317		4,882,735		4,881,732		4,882,397
	4,882,304		4,881,645		4,882,332		4,882,748		4,881,740		4,882,416
	4,882,375		4,881,650		4,882,339		4,882,759		4,881,751		4,882,418
	4,882,382		4,881,769		4,882,380	37	4,881,383		4,881,762		4,882,425
	4,882,414		4,881,782		4,882,402		4,881,557		4,881,794		4,882,454
	4,882,424		4,881,873		4,882,405		4,881,765		4,881,848		4,882,494
	4,882,549		4,881,951		4,882,406		4,881,795		4,881,902		4,882,509
	4,882,594		4,882,045		4,882,421		4,881,894		4,881,911		4,882,522
	4,882,650		4,882,099		4,882,429		4,881,941		4,881,984		4,882,649
	4,882,651		4,882,116		4,882,436		4,881,973		4,881,999		4,882,654
	4,882,683		4,882,239		4,882,440		4,882,050		4,882,009		4,882,673
	4,882,687		4,882,370		4,882,441		4,882,081		4,882,017		4,882,694
	4,882,728		4,882,390		4,882,474		4,882,286		4,882,029		4,882,713
	4,882,739		4,882,487		4,882,547		4,882,309		4,882,053		4,882,750
26	4,881,298		4,882,752		4,882,592		4,882,358		4,882,071		4,882,757
	4,881,324	28	4,881,306		4,882,647		4,882,459		4,882,072	49	4,881,332
	4,881,348	29	4,881,471		4,882,743	38	4,881,371		4,882,110		4,881,734
	4,881,410		4,881,747		4,882,749		4,882,190		4,882,131		4,881,998
	4,881,422		4,882,004	35	4,881,818	39	4,881,355		4,882,203	50	4,881,466
	4,881,423		4,882,047		4,881,846		4,881,362		4,882,210		4,882,505
	4,881,424		4,882,105	36	Re.33,114		4,881,397		4,882,221	51	4,881,552
	4,881,453		4,882,132		4,881,288		4,881,451		4,882,272		4,881,701
	4,881,512		4,882,211		4,881,312		4,881,452		4,882,301		4,881,783
	4,881,514		4,882,343		4,881,334		4,881,459		4,882,307		4,881,804
	4,881,527		4,882,510		4,881,336		4,881,579		4,882,313		4,881,805
	4,881,563		4,882,703		4,881,502		4,881,656		4,882,319		4,881,813
	4,881,569	30	4,881,345		4,881,507		4,881,658		4,882,323		4,882,330
	4,881,578		4,881,662		4,881,567		4,881,664		4,882,413		4,882,456
	4,881,581	31	4,881,434		4,881,594		4,881,669		4,882,432		4,882,481
	4,881,633		4,881,602		4,881,632		4,881,677		4,882,485	53	4,881,408
	4,881,673		4,881,746		4,881,640		4,881,683		4,882,718		4,881,419
	4,881,676		4,882,063		4,881,653		4,881,712		4,882,774		4,881,472
	4,881,713		4,882,781		4,881,663		4,881,822	44	4,881,491		4,881,548
	4,881,774	32	4,881,276		4,881,674		4,881,843		4,881,511		4,881,584
	4,881,777	33	4,881,329		4,881,711		4,881,866		4,881,718		4,881,601
	4,881,778		4,881,543		4,881,727		4,881,919		4,881,901		4,881,702
	4,881,781		4,881,997		4,881,729		4,881,924		4,882,473		4,881,714
	4,881,784		4,882,170		4,881,742		4,881,935	45	4,881,308		4,881,856
	4,881,827		4,882,173		4,881,807		4,881,936		4,881,340		4,882,016
	4,881,836		4,882,533		4,881,863		4,881,996		4,881,359		4,882,060
	4,881,842		4,882,674		4,881,889		4,882,059		4,881,378		4,882,213
	4,881,844	34	4,881,309		4,881,893		4,882,097		4,881,648		4,882,274
	4,881,879		4,881,356		4,881,932		4,882,119	46	4,881,285		4,882,282
	4,881,887		4,881,439		4,881,947		4,882,259	47	4,881,686		4,882,465
	4,881,913		4,881,442		4,881,953		4,882,322		4,881,957		4,882,542
	4,881,944		4,881,534		4,882,012		4,882,372		4,882,355		4,882,664
	4,881,950		4,881,617		4,882,019		4,882,379		4,882,374		4,882,692
	4,881,985		4,881,622		4,882,038		4,882,394		4,882,412		4,882,775
	4,882,003		4,881,666		4,882,052		4,882,407	48	4,881,275	54	4,881,988
	4,882,018		4,881,743		4,882,054		4,882,498		4,881,305		4,882,107
	4,882,024		4,881,744		4,882,056		4,882,537		4,881,445		4,882,125
	4,882,032		4,881,790		4,882,098		4,882,679		4,881,465	55	4,881,360
	4,882,244		4,881,800		4,882,140		4,882,702		4,881,473		4,881,481
	4,882,295		4,881,976		4,882,147	40	4,881,483		4,881,536		4,881,496
	4,882,357		4,882,036		4,882,172		4,881,605		4,881,598		4,881,516
	4,882,360		4,882,039		4,882,200		4,881,616		4,881,654		4,881,530
	4,882,369		4,882,040		4,882,201		4,882,075		4,881,671		4,881,549
	4,882,377		4,882,043		4,882,243		4,882,283		4,881,710		4,881,649
	4,882,398		4,882,076		4,882,245	41	Re.33,115		4,881,737		4,881,829
	4,882,420		4,882,089		4,882,269		4,881,279		4,881,738		4,881,854
	4,882,433		4,882,151		4,882,305		4,881,438		4,881,759		4,881,891
	4,882,515		4,882,152		4,882,312		4,881,719		4,881,803		4,881,921
	4,882,565		4,882,153		4,882,337		4,881,766		4,881,839		4,881,931
	4,882,568		4,882,154		4,882,354		4,882,174		4,881,840		4,881,933
	4,882,572		4,882,155		4,882,356		4,882,482		4,881,850		4,881,981
	4,882,586		4,882,156		4,882,383		4,882,595		4,881,852		4,882,055
	4,882,660		4,882,157		4,882,392	42	4,881,361		4,881,874		4,882,179
	4,882,677		4,882,158		4,882,399		4,881,374		4,881,904		4,882,240
	4,882,693		4,882,159		4,882,453		4,881,375		4,881,922		4,882,492
	4,882,769		4,882,160		4,882,570		4,881,409		4,882,008		4,882,564
27	4,881,337		4,882,167		4,882,574		4,881,420		4,882,023		4,882,681
	4,881,339		4,882,184		4,882,600		4,881,447		4,882,073		4,882,764
	4,881,393		4,882,185		4,882,608		4,881,528		4,882,142		4,882,784

DESIGN PATENTS

01	304,657		304,675		304,728	27	304,650		304,653		304,766
	304,761		304,679		304,736		304,699		304,682	40	304,659
	304,762		304,732		304,751		304,770		304,686	41	304,651
04	304,655		304,737		304,752	32	304,666		304,701		304,670
	304,717		304,755	17	304,693	34	304,684		304,710	42	304,660
	304,727		304,756	18	304,726		304,685		304,715		304,689
05	304,694		304,759		304,733		304,687		304,716	47	304,738
	304,757		304,760	19	304,669		304,688		304,720		304,747
06	304,648		304,767	21	304,768		304,713	37	304,654	48	304,703
	304,663	08	304,664		304,769		304,734		304,672		304,749
	304,667	09	304,652	23	304,678		304,735	39	304,697	49	304,656
	304,668		304,711	25	304,696	36	304,645		304,763	53	304,698
	304,671		304,721		304,758		304,646		304,764		304,753
	304,673	12	304,692	26	304,700		304,647		304,765		

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25	7,058										

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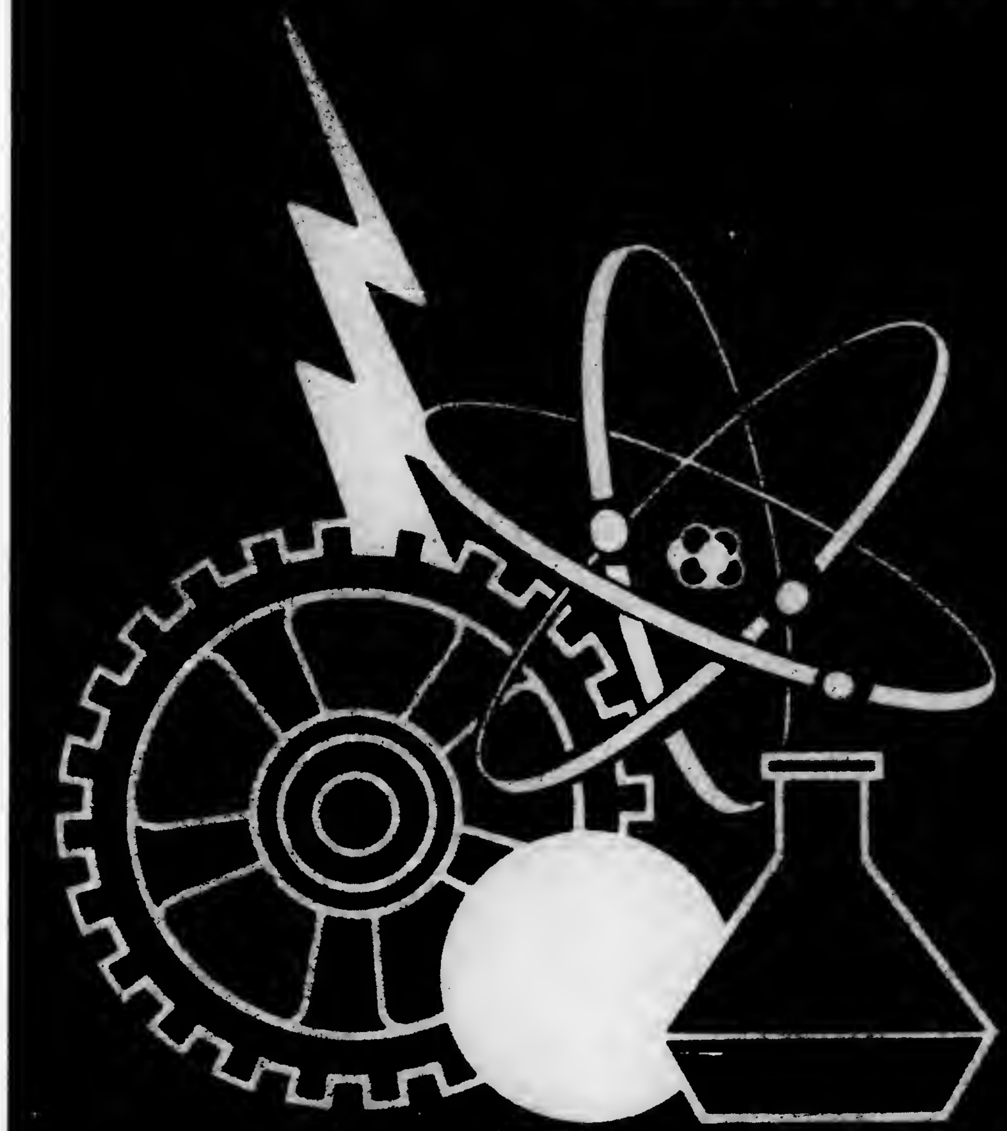
NOVEMBER 28, 1989



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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1107 O.G. 5 on Oct. 3, 1989.

For use of the European Patent Office as an International Searching Authority for international applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52 on Sept. 28, 1982.

For use of the European Patent Office as an International Preliminary Examining Authority for international applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2 on July 7, 1987 and at 1091 O.G. 2 on June 7, 1988.

The Search fee of the European Patent Office was changed due to a difference in the exchange rate of the U.S. dollar with regard to the German Mark as of Sept. 1, 1989, and was announced in the *Official Gazette* at 1105 O.G. 36 on Aug. 15, 1989.

International PCT fees were changed on June 1, 1989 due to a difference in the exchange rate of the U.S. dollar with regard to the Swiss Franc and were announced in the *Official Gazette* at 1102 O.G. 90 on May 30, 1989.

Certain domestic PCT fees and charges for International Search and Preliminary Examination have been changed effective Apr. 17, 1989 and were announced in the *Official Gazette* at 1100 O.G. 24 on Mar. 7, 1989.

The current schedule of PCT fees (in U.S. dollars) is as follows:

Transmittal fee:	170.00
Search Fee	
U.S. Patent and Trademark Office (USPTO) as International Searching Authority (ISA)	
—No corresponding prior U.S. national application filed	550.00
—Corresponding prior U.S. national application filed	380.00
—Supplemental search fee, per additional invention	150.00
European Patent Office as ISA	1040.00
Preliminary examination fee	
USPTO as International Preliminary Examining Authority (IPEA)	
—Search fee paid to USPTO as ISA	400.00
—Additional examination fee, per additional invention	130.00
—ISA not the USPTO	600.00
—Additional examination fee, per additional invention	200.00
International fees	
Basic fee	436.00
Basic Supplemental fee (for each page over 30)	9.00
Designation fee per country or region for the first 10 national or regional offices	106.00
Designation fee for 11th and subsequent designations :	No Charge
Handling fee	134.00

U.S National Stage fees

	Small Entity	Regular
USPTO was IPEA	165.00	330.00
USPTO was ISA but not IPEA	185.00	370.00
USPTO was neither ISA nor IPEA	250.00	500.00
USPTO was IPEA and all claims presented satisfied provisions of PCT Article 33(2) to (4)	25.00	50.00
—For each independent claim in excess of 3	18.00	36.00
—For each claim in excess of 20	6.00	12.00
—For each application containing a multiple dependent claim	60.00	120.00
—Surcharge for filing national fee or oath or declaration after the time limit applicable under PCT Article 22 or 39.1	60.00	120.00
—Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39.1	30.00	30.00

Sept. 12, 1989.

DONALD J. QUIGG,
Assistant Secretary and Commissioner of Patents and Trademarks.

Status of Appeal Cases

The Date of Examiner's Answer of Oldest Ex Parte Appeals Awaiting Assignment to Panel For A Decision Without a Hearing as of October 31 , 1989.

Chemical Discipline -	April 4, 1989
Mechanical Discipline -	July 8 1988
Electrical Discipline -	April 25, 1988

The Date of Examiner's Answer of Oldest Ex Parte Appeals Awaiting Hearing as of October 31, 1989.

Chemical -	October 1, 1987
Electrical -	December 1, 1987
Mechanical -	August 4, 1987

Board of Patent Appeals and Interferences Decisions Rendered in Ex Parte Appeals During the Month of October 1989.

Affirmed	178
Affirmed-in-Part	41
Reversed	125
Total Decided.	344

Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d), effective Nov. 1, 1984, provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on application filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(k) or (l), as amended effective Apr. 17, 1989. If the maintenance fee is not paid in a patent requiring such payment the patent will expire on the 4th, 8th or 12th anniversary of the patent.

Attention is drawn to the patents which were issued on November 25, 1986, for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,624,015 through 4,625,333
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on November 23, 1982 for which maintenance fees due at 7 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,359,783 through 4,360,929
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee. Washington, D.C. 20231."

The current amounts of the maintenance fees due at 3 years and six months and seven years and six months are set forth in 37 CFR 1.20(e), (f), (h) and (i), as amended effective Apr. 17, 1989, which are reproduced below:

37 CFR § 1.20 Post-issuance fees

"(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant .... $245.00"

"(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 8 years; the fee is due by seven years and six months after the original grant .... $495.00"

"(h) For maintaining an original or reissue patent except a design or plant patent, based on an application filed on or after Aug. 27,1982, in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§1.9(f)) $245.00
By other than a small entity .... $490.00"

"(i) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Aug. 27, 1982, in force beyond 8 years; the fee is due by seven years and six months after the original grant:

By a small entity (§1.9(f)) $495.00
By other than a small enttity .... $990.00"

The amounts of the surcharges as amended effective Apr. 17, 1989, are set forth in 37 CFR 1.20 (k), (l) and (m) which are reproduced below:

"(k) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months , seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980 and before Aug. 27,1982 .... $120.00"

"(l) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Aug. 27, 1982:

By a small entity(§1.9(f)) $60.00
By other than a small entity .... $120.00"

"(m) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay is shown to the satisfaction of the Commissioner to have been unavoidable .... $550.00"

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fees

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th, or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED SEPTEMBER 10, 1989 DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
4,539,714	06/521,219	09/10/85
4,539,719	06/578,066	09/10/85
4,539,720	06/520,308	09/10/85
4,539,721	06/598,500	09/10/85
4,539,724	06/646,310	09/10/85
4,539,725	06/428,421	09/10/85
4,539,727	06/571,956	09/10/85
4,539,732	06/575,304	09/10/85
4,539,747	06/522,305	09/10/85
4,539,749	06/589,424	09/10/85
4,539,750	06/497,700	09/10/85
4,539,751	06/545,096	09/10/85
4,539,753	06/485,897	09/10/85
4,539,754	06/542,893	09/10/85
4,539,755	06/617,664	09/10/85
4,539,757	06/557,344	09/10/85
4,539,769	06/500,417	09/10/85
4,539,770	06/502,711	09/10/85
4,539,773	06/636,952	09/10/85
4,539,774	06/595,426	09/10/85
4,539,784	06/580,348	09/10/85
4,539,785	06/519,980	09/10/85
4,539,808	06/476,255	09/10/85
4,539,811	06/346,986	09/10/85
4,539,826	06/506,283	09/10/85
4,539,829	06/477,788	09/10/85
4,539,833	06/568,118	09/10/85
4,539,837	06/641,688	09/10/85
4,539,843	06/558,383	09/10/85
4,539,844	06/577,022	09/10/85
4,539,845	06/534,028	09/10/85
4,539,851	06/612,708	09/10/85
4,539,863	06/553,018	09/10/85
4,539,879	06/397,881	09/10/85
4,539,887	06/574,151	09/10/85
4,539,892	06/588,430	09/10/85
4,539,896	06/541,779	09/10/85
4,539,899	06/304,981	09/10/85
4,539,901	06/526,885	09/10/85
4,539,909	06/525,695	09/10/85
4,539,910	06/533,167	09/10/85
4,539,913	06/502,623	09/10/85
4,539,914	06/424,590	09/10/85
4,539,926	06/558,781	09/10/85
4,539,936	06/600,412	09/10/85
4,539,937	06/638,128	09/10/85
4,539,941	06/566,209	09/10/85
4,539,954	06/665,712	09/10/85
4,539,959	06/583,709	09/10/85
4,539,965	06/597,084	09/10/85
4,539,969	06/469,365	09/10/85
4,539,970	06/517,332	09/10/85
4,539,975	06/546,262	09/10/85
4,539,976	06/578,037	09/10/85
4,539,979	06/489,076	09/10/85
4,539,990	06/532,702	09/10/85
4,540,001	06/652,203	09/10/85
4,540,010	06/569,904	09/10/85
4,540,014	06/573,607	09/10/85
4,540,016	06/403,707	09/10/85
4,540,022	06/383,550	09/10/85
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Patent Number	Serial Number	Issue Date
4,540,028	06/538,955	09/10/85
4,540,033	06/579,919	08/10/85
4,540,054	06/496,306	09/10/85
4,540,058	06/592,791	09/10/85
4,540,075	06/611,135	09/10/85
4,540,086	06/600,364	09/10/85
4,540,088	06/506,008	09/10/85
4,540,093	06/507,245	09/10/85
4,540,100	06/597,024	09/10/85
4,540,101	06/545,444	09/10/85
4,540,102	06/551,363	09/10/85
4,540,104	06/594,114	09/10/85
4,540,107	06/513,752	09/10/85
4,540,112	06/535,425	09/10/85
4,540,115	06/555,586	09/10/85
4,540,117	06/671,999	09/10/85
4,540,119	06/407,438	09/10/85
4,540,126	06/519,265	09/10/85
4,540,134	06/579,444	09/10/85
4,540,139	06/516,118	09/10/85
4,540,140	06/516,120	09/10/85
4,540,142	06/588,572	09/10/85
4,540,147	06/535,280	09/10/85
4,540,151	06/488,380	09/10/85
4,540,152	06/636,889	09/10/85
4,540,160	06/594,387	09/10/85
4,540,161	06/598,005	09/10/85
4,540,162	06/469,155	09/10/85
4,540,164	06/495,081	09/10/85
4,540,166	06/497,733	09/10/85
4,540,171	06/389,023	09/10/85
4,540,173	06/560,372	09/10/85
4,540,177	06/381,183	09/10/85
4,540,181	06/668,084	09/10/85
4,540,182	06/477,869	09/10/85
4,540,191	06/588,614	09/10/85
4,540,196	06/466,205	09/10/85
4,540,200	06/420,243	09/10/85
4,540,207	06/526,995	09/10/85
4,540,208	06/423,523	09/10/85
4,540,214	06/612,412	09/10/85
4,540,215	06/475,917	09/10/85
4,540,221	06/498,454	09/10/85
4,540,223	06/591,176	09/10/85
4,540,237	06/695,753	09/10/85
4,540,239	06/535,816	09/10/85
4,540,240	06/475,428	09/10/85
4,540,241	06/508,653	09/10/85
4,540,249	06/391,828	09/10/85
4,540,257	06/591,053	09/10/85
4,540,258	06/460,832	09/10/85
4,540,267	06/622,485	09/10/85
4,540,276	06/537,702	09/10/85
4,540,280	06/445,959	09/10/85
4,540,284	06/368,573	09/10/85
4,540,285	06/495,205	09/10/85
4,540,289	06/574,407	09/10/85
4,540,290	06/576,040	09/10/85
4,540,302	06/487,450	09/10/85
4,540,309	06/514,955	09/10/85
4,540,323	06/591,527	09/10/85
4,540,326	06/419,201	09/10/85
4,540,327	06/505,684	09/10/85
4,540,331	06/524,424	09/10/85
4,540,338	06/481,158	09/10/85
4,540,341	06/566,304	09/10/85
4,540,342	06/665,928	09/10/85
4,540,343	06/442,253	09/10/85
4,540,345	06/498,453	09/10/85
4,540,358	06/558,418	09/10/85
4,540,362	06/651,205	09/10/85
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4,540,377	06/575,790	09/10/85
4,540,378	06/676,305	09/10/85
4,540,379	06/524,870	09/10/85
4,540,381	06/643,689	09/10/85
4,540,386	06/579,660	09/10/85
4,540,387	06/584,783	09/10/85
4,540,388	06/614,660	09/10/85
4,540,402	06/486,680	09/10/85
4,540,433	06/538,498	09/10/85
4,540,436	06/626,634	09/10/85
4,540,448	06/591,512	09/10/85
4,540,455	06/592,712	09/10/85
4,540,459	06/572,208	09/10/85
4,540,463	06/668,434	09/10/85
4,540,474	06/617,078	09/10/85
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4,540,485	06/232,407	09/10/85
4,540,494	06/473,933	09/10/85
4,540,532	06/576,181	09/10/85
4,540,535	06/575,575	09/10/85
4,540,562	06/498,710	09/10/85
4,540,611	06/561,042	09/10/85
4,540,616	06/567,508	09/10/85
4,540,626	06/645,205	09/10/85
4,540,636	06/565,395	09/10/85
4,540,661	06/469,375	09/10/85
4,540,669	06/285,162	09/10/85
4,540,883	06/417,270	09/10/85
4,540,889	06/550,248	09/10/85
4,540,914	06/450,665	09/10/85
4,540,917	06/482,148	09/10/85
4,540,931	06/508,059	09/10/85
4,540,938	06/459,845	09/10/85
4,540,941	06/522,928	09/10/85
4,540,973	06/580,035	09/10/85
4,540,974	06/576,710	09/10/85
4,540,979	06/426,076	09/10/85
4,541,001	06/421,933	09/10/85
4,541,017	06/513,011	09/10/85
4,541,025	06/427,597	09/10/85
4,541,028	06/327,365	09/10/85
4,541,032	06/563,787	09/10/85
4,541,038	06/531,163	09/10/85
4,541,043	06/363,226	09/10/85
4,541,062	06/488,808	09/10/85
4,541,066	06/320,733	09/10/85
4,541,070	06/439,118	09/10/85
4,541,081	06/352,271	09/10/85
4,541,082	06/443,033	09/10/85
4,541,101	06/565,715	09/10/85
4,541,102	06/523,610	09/10/85
4,541,113	06/459,144	09/10/85

NOTIFICATION OF ACCEPTANCE OF DELAYED PAYMENT OF MAINTENANCE FEE

(35 U.S.C. 41(c); 37 CFR 1.378)

The patent(s) listed below is considered as not having expired but is subject to the conditions set forth in 35 U.S.C. 41(c)(2), in view of the Petition to Accept Late Payment of the maintenance fees which has been GRANTED BY THE COMMISSIONER OF PATENTS AND TRADEMARKS, as provided for under 35 U.S. C. 41(c)(1) and 37 CFR 1.378.

Patent No	Serial No.	Patent Date	Application Filing Date	Delayed Payment Acceptance Date
4,474,925	06/448,684	10/02/84	12/10/82	10/27/89

Erratum

Patents Which Expired June 25, 1989 Due to Failure to Pay Maintenance Fees

Patent Number		Patent Number	Issue Date
4,542,742	Should have read	4,524,742	06/25/85

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1,21(b)).

4,701,233, Re. S. N. 423,156, Filed Oct. 18, 1989, Cl. 156/217, METHOD AND DEVICE FOR FOLDING AND SEALING SHEETS, Christian A. Beck, et al., Owner of Record: *Pitney Bowes, Inc., Stamford, Conn.*, Attorney or Agent: Robert H. Whisker, Ex. Gp.: 131

4,702,827, Re. S. N. 424,344, Filed Oct. 19, 1989, Cl. 210/117, PORTABLE FILTER, Robert J. Wenzel, Owner of Record: *The Frymaster Corp., Shreveport, La.*, Attorney or Agent: E. Micky Hubbard, Ex. Gp.: 136

4,720,782, Re. S. N. 393,965, Filed Aug. 11, 1989, Cl. 364/200, CONSOLE UNIT FOR CLUSTERED DIGITAL DATA PROCESSING SYSTEM, David Kovaicin, Owner of Record: *Digital Equipment Corp., Maynard, Mass.*, Attorney or Agent: Richard A. Jordan, Ex. Gp.: 237

4,805,743, Re. S. N. 421,839, Filed Oct. 13, 1989, Cl. 188/47, HANDBRAKE OPERATING LINKAGE FOR MULTI-UNIT RAIL CARS, Marvin G. Rains, Owner of Record: *Gunderson, Inc., Portland, Ore.*, Attorney or Agent: Donald B. Haslett, Ex. Gp.: 314

4,813,472, Re. S. N. 406,590, Filed Sept. 13, 1989, Cl. 164/463, MELT OVERFLOW SYSTEM FOR PRODUCING FILAMENTARY AND FILM PRODUCTS DIRECTLY FROM MOLTEN MATERIALS, Lloyd E. Hackman, Owner of Record: *Ribbon Tecnology Corp., Gahanna, Ohio*, Attorney or Agent: Frank H. Foster, Ex. Gp.: 325

4,824,357, Re. S. N. 422,981, Filed Oct. 17, 1989, Cl. 425/417, APPARATUS FOR MANUFACTURING SEAL COMPONENTS, Keith W. Christiansen, Owner of Record: *Chicago Rawhide Manufacturing Corp., Elgin, Ill.*, Attorney or Agent: Angelo J. Bufalino, Ex. Gp.: 135

4,832,046, Re. S. N. 423,787, Filed Oct. 18, 1989, Cl. 128/771, URINE SPECIMEN COLLECTORS AND METHOD OF DETECTING SPURIOS URINE SPECIMENS, James M. Parrish, Owner of Record: *Inventor*, Attorney or Agent: Richard P. Matthews. Ex. Gp.: 335

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b).

4,510,479, Reexam. No. 90/001,875, Requested Oct. 31, 1989, Cl. 337/91, PC-BOARD MOUNTED THERMAL BREAKER, Donald K. Merchant, Owner of Record: *Airpax Corp., Cambridge, Md.*, Attorney or Agent: E. J. Kessler, Ex. Gp.: 210, Requester: Limbach, Limbach & Sutton, San Francisco, Calif.

4,708,696, Reexam. No. 90/001,874, Requested Oct. 30, 1989, Cl. 474/103, TENSIONER FOR TOOTHED DRIVE BELTS, Kazuo Kumura, et al., Owner of Record: *Tsubakimoto Chain Co., Osoka, Japan*, Attorney or Agent: Howson & Howson, Ex. Gp.: 350, Requester: Wenderoth, Lind & Ponack, Washington, D.C.

4,732,026, Reexam. No. 90,001,872, Requested Oct. 30, 1989, Cl. 75/52, METHOD OF LAP WELDING EVENTUAL CAN BLANK CONSISTING OF METAL SHEET OR THE LIKE, Kurikatsu Ban, Owner of Record: *N.P.W. Technical Laboratories, Tokyo, Japan*, Attorney or Agent: Sughrue, Mion, et al., Ex. Gp.: 320, Requester: Saudronic A.G. Bergietikon, Switzerland

4,760,248, Reexam. No. 90/001,873, Requested Oct. 30, 1989, Cl. 255/472, PORTABLE LASER DIODE SCANNING HEAD, Jerome Swartz, et al., Owner of Record: *Symbol, Technologies Inc., Bohemia, N.Y.*, Attorney or Agent: Daniel McGlynn, Ex. Gp.: 230, Requester: Metrological Instruments Inc., Bellmawr, N Y

4,764,961, Reexam No. 90/001,871, Requested Oct. 26, 1989, Cl. 381/24, CASSETTE TYPE STEREO SPEAKER SYSTEM, Cheng H. Hung, Owner of Record: *Cotron Corp., Taipei, China*, Attorney or Agent: Unknown, Ex. Gp.: 260, Requester: Owner

Errata

In the "Trademark Registrations Renewed" section of the Trademark Official Gazette of Oct. 4, 1988, the Registration Date for Registration No. 437,701 was incorrectly dated as Mar. 30, 1958.

The registration date as corrected is Mar. 30, 1948.

Oct. 27, 1989

PATRICIA M. DAVIS
Administrator for
Trademark Operations

In the "Trademark Registrations Renewed" section of the Trademark Official Gazette of Aug. 1, 1989, the International Class for Registration No. 510,413 was incorrectly classified in Class 17.

The classification as corrected is International Class 19.

Oct. 27, 1989

PATRICIA M. DAVIS
Adminstrator for
Trademark Operations

The Registrant of Registration No. 865,633 listed in the "Index of Registrants" section of the Trademark Official Gazette of June 20, 1989, at TMI 2, was incorrectly identified as "ARCTO, INC., THIEF RIVER FALLS, MINN."

The Registrant's name as corrected is "ARCTCO, INC., THIEF RIVER FALLS, MINN."

Oct. 31, 1989

PATRICIA M. DAVIS
Administrator for
Trademark Operations

The following registration number was inadvertently renewed in the "Trademark Registration Renewed" section of the Official Gazette listed below:

TM 240	883,325	Sept. 26, 1989

Consequently, the above-identified registration is not renewed.

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PATRICIA M. DAVIS
Administrator for
Trademark Operations

The following registration number, listed in the "Trademark Registrations Issued" section of the Trademark Official Gazette of Nov. 7, 1989, was listed inadvertently:

TM 224	1,564,919	Nov. 7, 1989

Consequently, the certificate of regisdtration bearing the above-identified registration number was not issued on the datte indicated, and the registration number has been vacated.

Oct. 31, 1989

PATRICIA M. DAVIS
Administrator for
Trademark Operations

Notice of Examination for Registration
Wednesday, April 4, 1990

Pursuant to the provisions of 37 CFR §§ 10.5, 10.6 and 10.7, an examination for persons seeking registration before the United States Patent and Trademark Office as patent attorneys and agents will be held on Wednesday, *Apr. 4, 1990.* The deadline for filing applications along with the $270.00 examination fee and all necessary showings required by 37 CFR §§10.7(a) and (b) is *Jan. 31, 1990.*

With the exception of those persons who actively served four years or more in the examining corps of the United States Patent and Trademark Office for whom the examination may be waived, all persons who wish to become recognized to practice fefore the Patent and Trademark Office in patent cases must, pursuant to the above noted rules, pass the examination. Note that passing the examination does not qualify one for recognition for practice before the Patent and Trademark Office in trademark cases. Such recognition is govemed by 37 CFR § 10.14 which does not require the passing of an examination.

There is no limit on the number of times the registration examination may be taken. The examination consists of two parts, a morning section and an afternoon section. To pass the examination, an applicant must pass both sections. An applicant who passes one section of any examination given on or after Apr. 7, 1987, but who fails the other section will not be required to retake the section passed, *provided* the applicant takes and passes the section failed in one of the next three examinations regularly scheduled by the Patent and Trademark Office. If the applicant does not pass the section failed within 18 months after failing the section, the applicant must retake both sections of the examination. No extensions of time will be granted except in extraordinary circumstances, e.g. an accident or hospitalization just prior to the examination which prevented the applicant from taking the examination.

Under 37 CFR §10.7(b), persons seeking registration must submit "satisfactory proof of ... sufficient basic training in scientific and technical matters...." The initial submissions of persons not having degrees in recognized subject areas, e.g. physics, chemistry, biology or engineering, are sometimes inadequate, and must be supplemented before such persons can be approved to take an examination. To afford adequate time to present any supplemental showing, it is recommended that such persons file their applications early, preferably *at least two months* before the Jan. 31, 1990 deadline.

The examination is adminitered under the supervision of the Office of Personnel Management and is given at specific locations throughout the United State where the Office of personnel Management conducts examintaion.

Application forms may be obtained from the Office of Enrollment and Discipline, Suite 810, Crystal Park One, 2011 Crystal Dr., Arlington, Va., or by mail addressed to U.S. Patent and Trademark Office, Box OED, Washington, D.C. 21231.

Oct. 25, 1989

CAMERON WEIFFENBACH
Director,
Office of Enrollment and Discipline

Status of PTO Services

The following is an update of the status of PTO services for October 1989:

Service Item	FY 1990 Goal (Calendar Days [1])	Monthly Average (Calendar Days [1])
Filing Receipts:		
Patents	22	15
Trademarks	30	18
Patent/Trademark Copies:		
Special Window Coupons	24 Hours	15 Hours
Window Coupons	5	2
Mail Coupons	12	5
Letter Orders	16	10
Electronic Ordering Services (EOS)	11	3
Certified Copies:		
Trademark Registrations	21	35
Applications-As-Filed	17	12*
File-Wrapper/Contents	N/A	15
Walk-up Certification	1	1
Trademark Search Library:		
Filing Pending Marks	21	26**
Filing Reg. Certificates	Issue Date+2 Days	+1 Day
Filing Temp. Drawings	6	7
Assignments:		
Recording Patent-New Applications	43	87***
Recording Patents-Mail Room Recpts.	20	125***
Receipt Date of Bulk Pat. Docs. Returned by End of Month		May 8-May 28, 1989***
Recording Trademarks	20	50***
Receipt Date of Bulk Trademark Documents Returned by End of Month		July 17-July 30, 1989***
Avg. Days from Issue Fee Payment to Issue Date	90-100	74
Issue Fee Receipts Mailed	4 weeks prior to Issue Date	+27 Days****
Patent Copies Available	95% on Issue Date	+66 Days****
Trademark Copies Available	95% on Issue Date	99% on Issue Date

[1] Unless otherwise noted.
* The 5% of orders for which fiche are not on site are not included in calculations.
** Staffing vacancies exist in TMSL. Overtime is being used to reduce the backlog.
*** Working on backlog; significant improvement should be seen next month.
**** Contractor difficulties in keeping up with the increase in the quantities of patents being issued.

Helpful Hints

•*Box Assignments*•Except for assignments submitted with a new patent application, it is strongly encouraged that assignment related documents be addressed to:

Box Assignments
Commissioner of Patents and Trademarks
Washington, D.C. 20231

Use of Box Assignments helps to expedite receipt in the Assignment Branch by reducing processing and routing time in other PTO offices. The total elapsed calendar days to record an assignment increases if the assignment is included as one of many actions to be reviewed by various PTO offices. Accordingly, whenever practical, assignment documents should be submitted alone.

•*Proper Identification of Drawings Submitted with New Applications*• During the pre-examination processing, drawings are temporarily separated from the rest of the application papers. To facilitate the matching of drawing with the application, it would be helpful if identifying information such as the applicant's/attorney's name, attorney's docket number, phone number, and title of the invention were placed on the sheets of drawings. This information may be placed on either the front of the drawings by writing lightly in pencil or using gummed labels on the back of the drawing in accordance with 37 CFR 1.84(1).

•*Proper Identification of Substitute Drawings*• When the Office receives substitute drawings, a cover letter identifying the application by serial number must accompany the drawings. Drawings will not be matched with the files when the application serial number is missing. (See 37 CFR 1.5). The application serial number should also be placed on the front of the sheet of drawings in accordance with 37 CFR 1.84(1).

Nov. 1, 1989

THERESA A. BRELSFORD
Assistant Commissioner for Administration

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PATENT NOTICES

Certificates of Correction For Week of November 28, 1989

D. 292,693
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Plt. 6,691
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Re. 32,796
4,449,585
4,485,868
4,498,535
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Erratum

In the Notice of Certificate of Correction Appearing at 1106 O. G. 82, of Sept. 26, 1989, Patent No. 4,712,761 should be Patent No. 4,812,761.

SPECIAL BOXES FOR MAIL

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JAMES E. DENNY, Acting Assistant Commissioner
STEPHEN G. KUNIN, Acting Deputy Assistant Commissioner
CONDITION OF PATENT APPLICATIONS AS OF October 21, 1989

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 110—D. E. TALBERT, Director	5-26-87
ORGANIC CHEMISTRY GROUP 120—S. N. ZAHARNA, Director	6-16-87
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 130—R. F. WHITE, Director	4-15-87
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 150—J. O. THOMAS, Director	5-14-87
BIOTECHNOLOGY, GROUP 180—J. E. KITTLE, Director	1-20-87
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—D. G. Kelly, Director	10-15-87
SPECIAL LAWS ADMINISTRATION, GROUP 220—K. L. CAGE, Director	2-27-87
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ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 250—EDWARD E. KUBASIEWICZ, Director	8-18-87
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 260 S. LEVY, Acting Director	9-21-87
DESIGN, GROUP 290—K. L. CAGE, Director	2-6-86
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director	10-21-88
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 320—N. GODICI, Acting Director	4-13-88
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SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 340—C. CROYLE, Acting Director	2-26-88
GENERAL CONSTRUCTIONS, PETROLEUM AND MINING ENGINEERING, GROUP 350—A. L. SMITH, Director	1-3-89

Expiration of patents: The patents within the range of numbers indicated below expire during October 1989, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents	Numbers 3,694,814 to 3,702,011 inclusive
Plant Patents	None

REEXAMINATIONS

NOVEMBER 28, 1989

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 4,555,415 (1160th)
VITREOUS ENAMELS

John L. Mumford, Saffron Walden, and Roger F. Price, Haverhill, both of England, assignors to TI (Group Services) Limited, Birmingham, England

Reexamination Request No. 90/001,480, Apr. 4, 1988.

Reexamination Certificate for Patent No. 4,555,415, issued Nov. 26, 1985, **Ser. No. 683,617, Dec. 19, 1984.**

Claims priority, application United Kingdom, Dec. 21, 1983, 8334118

Int. Cl.^{4} **B05D** *3/02*

U.S. Cl. 427—193

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **4** and **9** are cancelled.

Claims **1**, **5**, **6**, **7**, **8**, **10**, and **15** are determined to be patentable as amended.

Claims **2**, **3**, **11**, **12**, **13** and **14**, dependent on an amended claim, are determined to be patentable.

New claims **16–23** and **24** are added and determined to be patentable.

1. A process for applying a vitreous enamel comprising[;] applying [a powdered] *an aqueous slurry* vitreous frit to a metal, said vitreous frit having *a powdered metal admixed therewith and* a water content of up to 0.03% by weight; and then firing the coated metal at a temperature in excess of the melting point of the frit, in a furnace having an atmosphere with a dew point of up to 10° C.

B1 4,574,859 (1161st)
RIM ASSEMBLY

William T. Smith, Uniontown, Ohio, assignor to Motor Wheel Corporation

Reexamination Request No. 90/001,659, Dec. 5, 1988.

Reexamination Certificate for Patent No. 4,574,859, issued Mar. 11, 1986, **Ser. No. 734,241, May 14, 1985.**

Continuation of Ser. No. 458,240 Jan. 17, 1983, abandoned.

Int. Cl.^{4} **B60B** *25/18*

U.S. Cl. 152—410

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claim **3** is confirmed.

Claim **1** is determined to be patentable as amended.

Claim **2**, dependent on an amended claim, is determined to be patentable.

New claims **4**, **5**, and **6** are added and determined to be patentable.

1. A rim assembly for mounting a pneumatic tire thereon, said rim assembly comprising:

(a) a cylindrical rim base having first and second axial ends and a pair of annular grooves in an outer circumferential surface of said rim base near said first axial end, *said grooves being spaced apart from each other axially along said outer circumferential surface of said rim base and separated from each other by a portion of said rim base protruding between said grooves and defining that portion of said circumferential surface disposed between said grooves;*

(b) an annular sealing member, a first portion of said sealing member being located in the annular groove that is furthest away from the first axial end of said rim base and a second portion of said sealing member extending radially outwardly of the radially outer circumferential surface of said rim base;

(c) a split lock ring, said lock ring having a specified position such that a first portion of said lock ring is located in the annular groove that is closest to the first axial end of said rim base, a second portion of said lock ring extending radially outwardly of the annular groove that is closest to the first axial end of said rim base, said second portion having an axially inner surface for engaging a bead seat band and a radially outermost surface that has a predetermined radius when the lock ring is in said specified position; and

(d) a generally cylindrical bead seat band having first and second axial ends and radially inner and outer surfaces, said bead seat band being coaxial with and slidably mounted about *said outer circumferential surface of* said rim base such that the first axial end of the bead seat band is the nearest to the first axial end of said rim base, the radially inner surface of said bead seat band comprising:

(i) a first *surface* portion that is cylindrical *and circumferentially continuous*, said first portion having a radius that is slightly larger than the predetermined radius of the radially outermost surface of the second portion of said lock ring, said first portion extending from the first axial end of said bead seat band for a predetermined axial length, said first portion being located radially outwardly of the radially outermost surface of the second portion of said lock ring when said lock ring is in said specified position;

(ii) a second *surface* portion extending generally axially and radially inwardly from the axially inner end of said first portion and having a contour that is complementary to the axially inner surface of the second portion of said lock ring, said second portion engaging the axially inner surface of the second portion of said lock ring when said lock ring is in said specified position;

(iii) a third *surface* portion that is inclined generally axially and radially inwardly from the axially inner end of said second portion to a minimum radius, said minimum radius being only slightly larger than the radius of the outer circumferential surface of said rim base, said third portion engaging said sealing member to form an airtight seal when said lock ring is in said specified position; and

(iv) a fourth *surface* portion extending axially inwardly from the axially inner end of said third portion, said

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fourth portion being cylindrical and having said minimum radius;

the axial length of the first portion of the radially inner surface of said bead seat band [is] *being* measured from the first axial end of said bead seat band to an axially outer end of the second portion of the radially inner surface of the bead seat band, and when the bead seat band is slid axially inwardly so that the third portion of the radially inner surface of the bead seat band does not contact the sealing member, said axial length is at least as great as the axial distance from the axially outermost end of the second portion of the radially inner surface of said beat seat band to the axially innermost point where said lock ring intersects a cylinder that is coaxial with said assembly when any part of said lock ring is displaced radially outwardly from said specified position, said cylinder having the same radius as the radius of the first portion of the radially inner surface of said bead seat band.

REISSUES

NOVEMBER 28, 1989

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

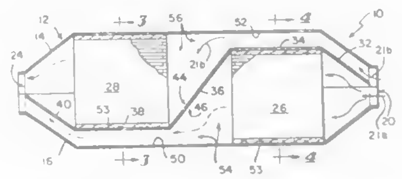
Re. 33,118
EXHAUST PROCESSOR

George E. Scheitlin; Mark A. Sickels, and Robert T. Usleman, all of Columbus, Ind., assignors to Arvin Industries, Inc., Columbus, Ind.

Original No. 4,625,511, dated Dec. 2, 1986, Ser. No. 639,803, Aug. 13, 1984. Application for reissue Jul. 5, 1988, Ser. No. 215,225

Int. Cl.⁴ F01N *3/24, 3/02*

U.S. Cl. 60—299 30 Claims



1. An exhaust processor assembly comprising

a housing including an interior wall, an inlet for introducing a combustion product into the housing and an outlet for exhausting combustion product from the housing,

first and second substrate means for treating combustion product introduced into the housing through the inlet, the first substrate means having an outer boundary, the interior wall of the housing and the outer boundary of the first substrate means cooperating to define a *first* passageway therebetween, *the second substrate means having an outer boundary, the interior wall of the housing and the outer boundary of the second substrate means cooperating to define a second passageway therebetween,* and *first* bypass means for [distibuting] *distributing* distributing a portion of the combustion product introduced into the housing through the inlet to the second substrate means for treatment therein through the *first* passageway such that said distributed portion bypasses the first substrate means without flowing inside the outer boundary of the first substrate means to reach the second substrate means*, and*

second bypass means for distributing combustion product exhausted from the first substrate means through the second passageway to the housing outlet for exhaustion therethrough without flowing inside the outer boundary of the second substrate means to reach the housing outlet.

Re. 33,119
SELECTIVE TEMPERATURE CONTROL SYSTEM

Daniel A. Baker, Minnetonka, Minn., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Original No. 44,888,238, dated Dec. 18, 1984, Ser. No. 317,333, Nov. 2, 1981. Continuation of Ser. No. 939,551, Dec. 9, 1986, abandoned, which is a division of Ser. No. 108,694, Dec. 31, 1979, Pat. No. 4,315,413. Application for reissue Mar. 7, 1988, Ser. No. 168,525

Int. Cl.⁴ G01K *3/00, 7/24;* G06F *15/20*

U.S. Cl. 374—102 19 Claims

6. A method of determining the temperature to which a temperature sensor is exposed, comprising the steps of:

providing a reference resistor;

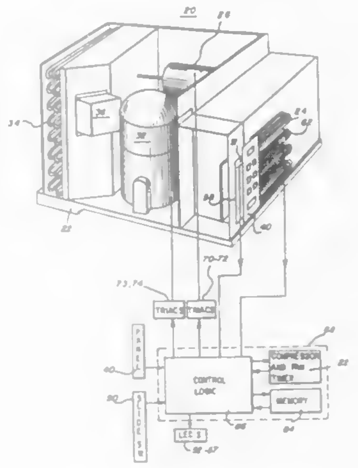
providing a capacitor;

providing means for charging the capacitor a predetermined amount sequentially through the reference resistor and the temperature sensor;

the capacitor by the predetermined amount a first time through the reference resistor to obtain a first indication of the time required to charge the capacitor by the predetermined amount;

charging the capacitor by the predetermined amount a second time through the temperature sensor to obtain a second indication of the time required to charge the capacitor by the predetermined amount; and

comparing the first indication to the second indication to determine the temperature to which the sensor is exposed.



Re. 33,120
METHOD FOR DRIVING LIQUID CRYSTAL ELEMENT EMPLOYING FERROELECTRIC LIQUID CRYSTAL

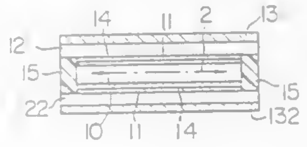
Yoshiharu Nagae; Masato Isogai, both of Hitachi; Hideaki Kawakami, Mito, and Fumio Nakano, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Original No. 4,508,429, dated Apr. 2, 1985, Ser. No. 484,462, Apr. 13, 1983. Application for reissue Apr. 1, 1987, Ser. No. 34,171

Claims priority, application Japan, Apr. 16, 1982, 57-62325

Int. Cl.⁴ G02F *1/13*

U.S. Cl. 350—350 S 42 Claims



10. A method for driving a liquid crystal element including a liquid crystal interposed between a pair of substrates which have electrodes on their confronting surfaces, said method comprising the steps of:

applying to said liquid crystal a first voltage signal of one polarity which defines a light transmitting state of said liquid crystal element; and

applying a second voltage signal to said liquid crystal before and/or after the application of said first voltage signal, said second voltage signal having an opposite polarity to that of said first voltage signal and enabling maintenance of the light transmitting state of said liquid crystal element defined by the application of said first voltage signal.

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Re. 33,121

METHOD AND COMPOSITION FOR TREATING WOOD WITH PENTACHLOROPHENOL

Roy P. Kirchner, Houston, Tex., assignor to Idacon, Inc., Houston, Tex.

Original No. 4,296,152, dated Oct. 20, 1981, Ser. No. 135,992, May 8, 1980. Application for reissue Nov. 5, 1982, Ser. No. 439,484

Int. Cl.^{4} B05D *1/18, 3/00;* **C09D** *5/16, 5/18*

U.S. Cl. 427—440 **19 Claims**

3. A method of preserving wood against decay and attack by insects and fungi by impregnation of the wood with pentachlorophenol, said method comprising the steps of preparing a solution of about 25 to about 55 percent by weight of pentachlorophenol in an organic solvent, preparing a finely divided dispersion of the solution in water in which the pentachlorophenol content is from 0.1 to 10 percent by weight, and impregnating wood with the dispersion.

PLANT PATENTS

GRANTED NOVEMBER 28, 1989

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

7,059

DUEROM

Guenter Duemmen, Dammweg 18-20, D-4134 Rheinberg 4, Fed. Rep. of Germany

Filed May 20, 1988, Ser. No. 196,279

Int. Cl.^{4} A01H *5/00*

U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct cultivar of geranium known as Duerom, as described and illustrated, and particularly characterized by a new color, dark foliage with zonation, very good durability under outdoor summer conditions, and a great number of large umbels with many flowers.

7,060

DUELEG

Guenter Duemmen, Dammweg 18-20, D-4134 Rheinberg 4, Fed. Rep. of Germany

Filed May 20, 1988, Ser. No. 196,280

Int. Cl.^{4} A01H *5/00*

U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct cultivar of geranium known as Dueleg, as described and illustrated, and particularly characterized by the combination of characteristics of robust foliage, early flowering, glossiness on the upper sides of the leaves, and red flowers with dark spots on the upper petals.

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PATENTS

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ERRATA

For CLASS	See PATENT NO.
029-857	4,882,842
192-045	4,882,941
122-383	4,883,036
606-096	4,883,048
206-534	4,883.182
222-073	4,883,268
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449-009	4,883,402
437-037	4,883,543
552-235	4,883,611
428-423	4,883,615
424-195	4,883,673
420-502	4,883,745
564-414	4,883,787
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524-098	4,883,860
310-040	4,883,981
310-062	4,883,982
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GENERAL AND MECHANICAL

4,882,785

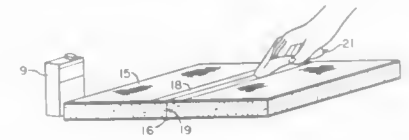
UNDERWATER DIVER'S DRY SUIT HAVING A PERMANENTLY COMPRESSED CELLULAR LAYER

Richard W. Long, and Robert T. Stinton, both of San Diego, Calif., assignors to Diving Unlimited International, Inc., San Diego, Calif.

Division of Ser. No. 694,703, Jan. 23, 1985, Pat. No. 4,778,643, which is a continuation of Ser. No. 476,472, May 25, 1983, abandoned, which is a division of Ser. No. 372,625, Apr. 28, 1982, Pat. No. 4,388,134. This application Apr. 18, 1988, Ser. No. 182,384

Int. Cl.⁴ B29C *43/20;* B32B *1/10, 31/00;* B63B *11/04*

U.S. Cl. 2—2.1 R 7 Claims



1. A substantially constant buoyancy, high strength dry suit for underwater divers, formed from a material comprising:
- an outer layer of waterproof material;
- an inner layer of material;
- a middle layer of permanently collapsed cellular material disposed between said outer layer and said inner layer, said cellular layer being permanently compressed such that it has very little compression and constant thermal conductivity and buoyancy with depth.

4,882,786

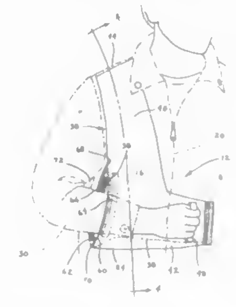
HUNTING JACKET INCLUDING ARM SUPPORT FOR USE WHILE CARRYING A GUN

Steven E. Gross, 1237 Nuttman Ave., Fort Wayne, Ind. 46807

Filed Nov. 10, 1988, Ser. No. 269,362

Int. Cl.⁴ A41B *1/00*

U.S. Cl. 2—94 7 Claims



1. In a power operator for a vehicular door said door mounted by frame means so as to be driven by said operator along a track between open and closed positions, the improvement comprising:
- a generally rectangular door having structural members, and structurally integrated surfaces;
- an edge defined by said door surfaces;
- means mounting a locking pawl to said frame for selectively abutting and clearing said edge;
- means in said mounting means for moving said pawl between a door unlocked position clearing said edge and a door locked position abutting said edge, so as to prevent opening of said door when said pawl and edge are in abutment; and,
- means sequentially actuating said operator and pawl moving means so as to positively lock said panel in a closed position.

4,882,787

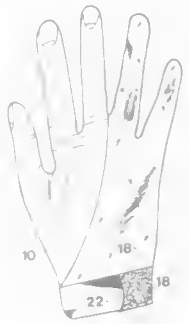
GOLF GLOVE

Harold L. Hull, 401 Canyon Way SP 43, Spanks, Nev. 89431, and Donald Metcalf, 1280 Landerwood, Reno, Nev. 89511

Filed Sep. 2, 1988, Ser. No. 239,671

Int. Cl.⁴ A41D *19/00*

U.S. Cl. 2—161 A 3 Claims



1. A left and right golf glove, each of said gloves comprising a main glove portion having a palm, a back side, a gloved ring finger, a gloved little finger, a wrist portion, a removably attaching and detaching means to close the said wrist portion, an uncovered hand portion, said uncovered portion including the thumb, first and middle fingers and substantially including that portion of palm and back side of the hand that is exposed by a boundary line drawn substantially from the V formed by the joining of said middle and said ring fingers to the said thumb side of said wrist portion.

4,882,788

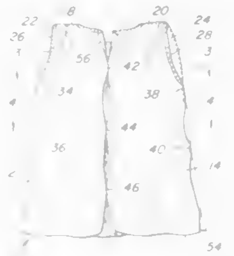
PRECUT AND PARTIALLY ASSEMBLED CLOTHING

Thelma Gray, West Chester, Pa., assignor to Made with Love, Inc., Philadelphia, Pa.

Filed Aug. 5, 1988, Ser. No. 229,079

Int. Cl.⁴ A41D *27/00, 1/00*

U.S. Cl. 2—243 R 5 Claims



1. An unfinished article of clothing comprising:
- a plurality of fabric panels adapted to be sewn together along a plurality of seams, said panels having at least one finished seam connecting said panels; and
- a plurality of tacks fastening said panels to each other along the remaining seams along which said panels are to be sewn together.

4,882,789

TRAP PRIMER TAIL PIECE

Robert Kraverath, 1311 SW. 83rd·Ave., No. Lauderdale, Fla. 33068

Continuation-in-part of Ser. No. 525,692, Aug. 23, 1983, abandoned. This application May 15, 1985, Ser. No. 735,282

Int. Cl.⁴ E03C *1/24*

U.S. Cl. 4—191 3 Claims

1. A plumbing system comprising a water supply means, a

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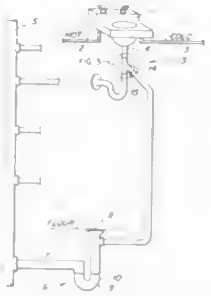
user station means for using the water supply, a first pipe means for delivering the water supply to the user station, second pipe means for draining water from the user station means, a water trap means for providing a water seal, and a primer means for delivery of water for the water seal to the water trap means, the primer means being located in the second pipe means downstream of the user station;

wherein the primer means comprises a first pipe section of the second pipe means for carrying a drain water flow, the primer means further comprising a bleed pipe section means for diverting water flowing in the first pipe section to the bleed pipe section means, the first pipe section and the bleed pipe section means being joined into a unitary member, there being an opening means for fluid communication between the interiors of the first pipe section and the bleed pipe section means where the first pipe section and the bleed pipe section means join, the bleed pipe section means being disposed at a downward angle to the horizontal along the entire vertical length of the bleed pipe section means, whereby to cause the flow of water in the bleed pipe section means to flow downhill;

wherein the means for diverting is effective to divert continuously a portion of the drain water flow into the bleed pipe section means as the flow of water passes the opening means while the flow of water travels downhill under gravity.



4,882,790

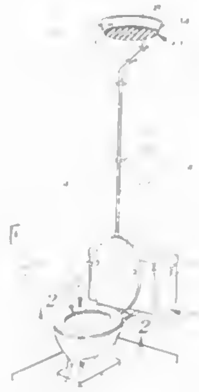
ODOR REMOVING DEVICE FOR TOILETS

Vernon F. Ricard, Rte. 2, Crookston, Minn. 56716

Filed Aug. 14, 1987, Ser. No. 85,135

Int. Cl.⁴ E03D *9/05*

U.S. Cl. 4—213 6 Claims



1. An odor removing attachment for use with a toilet positioned in a conventional bathroom having vertical walls and a ceiling, a conventional ceiling fan for exhausting air and gases from the bathroom mounted in an opening in the ceiling, a switch mounted on the bathroom wall for energizing the ceiling fan, the toilet having a generally oval-shaped seat hinged to a bowl, said device comprising

an elongate generally L-shaped member having a plurality of longitudinally spaced apart openings therein, means for securing the L-shaped member to the lower surface of the toilet seat so that the L-shaped member extends along one side and along the rear of the toilet seat, said L-shaped member, when secured to the toilet seat, defining a chamber with said openings facing inwardly,

a saucer-shaped auxiliary closure housing for the ceiling fan positioned against the ceiling and depending therefrom, said housing including a lower wall and an annular wall integral with the lower wall extending upwardly therefrom, said closure housing having a hollow interior and having a connector element secured thereto and communicating with the interior, means connecting the closure housing with the ceiling to cover and close the inlet of the ceiling fan with respect to the interior of the bathroom,

an elongate hose having one end thereof connected to said L-shaped member and having the other end thereof connected to said connector element whereby, when said fan is energized, odors and gases will be evacuated through said L-shaped member into said hose and then into said housing.

4,882,791

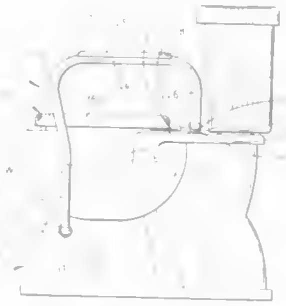
TOILET FOR DISABLED PERSONS

Robert H. Kimes, Hickory Hill, Freeport, Ill. 60132

Filed Apr. 5, 1989, Ser. No. 333,687

Int. Cl.⁴ E03D *11/00*

U.S. Cl. 4—254 8 Claims



1. A toilet assembly for the disabled, comprising:

a toilet bowl having an open top, means for supporting said bowl in an elevated use position;

a toilet seat supported over the top rim of said bowl; and

said bowl having two enlarged entryways through opposite side walls thereof above the water line of residual water in said bowl to permit manual entry for perineal cleaning purposes said entryways being of sufficient size and extent to permit easy insertion of a user's hand, wrist and forearm into said bowl without the necessity of raising from said toilet seat.

4,882,792

AUTO-DUMP FLOW CONTROLLER

Ray T. Vincent, 3832 Sunbeam Dr., Los Angeles, Calif. 90065

Filed Apr. 11, 1988, Ser. No. 179,875

Int. Cl.⁴ E03D *1/00*

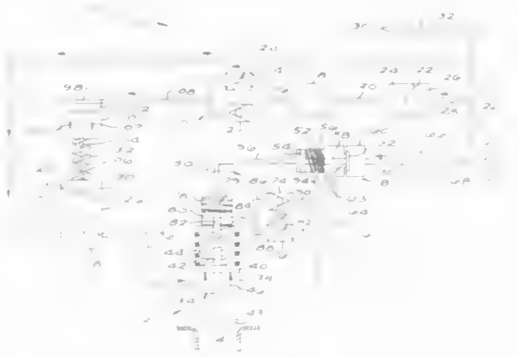
U.S. Cl. 4—323 13 Claims

1. An automatic hydraulic valve control apparatus for use in combination with a lavatory waste tank for use in a vehicle, the tank having a drain, means for rinsing the tank, a rinse valve for controlling the means for rinsing, a fluid pressure charging inlet for pressurizing and depressurizing said valve control apparatus, the apparatus comprising:

(a) drain valve control means in fluid communication with said pressure charging inlet, having an open position and a closed position, and biased to be in an open position;

(b) drain valve means in fluid communication with said drain valve control means operative to open said drain when fluid pressure is introduced through said pressure charging inlet and said drain valve control means is in the open position, said drain valve means having an open position and a closed position, and biased to be in a closed position;

(c) hydraulic rinse valve control means for opening and closing said rinse valve responsive to said drain valve means so as to open said rinse valve when said drain valve means is in the open position, said rinse valve control means biased to close said rinse valve when said drain valve means is in the closed position, and including hydraulic timing means to delay the closing of said rinse valve a predetermined period of time; and



(d) a drain valve control means actuator responsive to fluid pressure from said pressure charging inlet to close said drain valve control means a second predetermined period of time after charging of fluid pressure in said pressure charging inlet.

4,882,793

DUAL FLUSH CISTERN MECHANISM

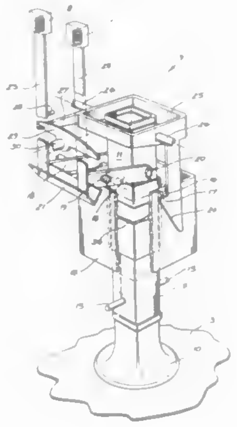
Bruce R. Thompson, Tranmere, Australia, assignor to Caroma Industries, Ltd., Norwood, Australia

Continuation of Ser. No. 109,559, Oct. 19, 1987, abandoned. This application Sep. 27, 1988, Ser. No. 249,669

Claims priority, application Australia, Oct. 20, 1986, PI18591; Jan. 8, 1987, PH9798

Int. Cl.⁴ E03D *1/14, 3/12*

U.S. Cl. 4—324 9 Claims



1. A dual flush cistern mechanism comprising a substantially vertical stem mounted for substantially vertical movement above a flush valve of said cistern and having a flush valve seal located at its lower end; a float slidably mounted on said stem intermediate the ends thereof; a first lever arm pivotably connected to said stem at a location spaced from a first pivot in said cistern for said first lever arm, and being pivotable by each of a first and a second operating mechanism to raise said stem to open said flush valve; a second lever arm pivotable by said second operating mechanism about a second pivot in said cistern and carrying a latch member releasably engageable with said float in a high operating position, and a projection extending from said stem to limit the travel of said float into a low operating position; wherein said first operating mechanism is operable to raise said stem with said float retained in said high operating position by said latch member to open said flush valve for a first duration; and wherein said second operating mechanism is operable to substantially simultaneously raise said stem to open said flush valve to drain water from said cistern and release said latch member whereby said float drops with the water level in said cistern until said float engages said stem projection to move said stem downwardly and close said flush valve before the expiration of said first duration, said float being buoyantly movable from said low to said high position to re-engage said latch member with said float when said cistern is re-filled with water, and said first and second pivots each having a longitudinal axis which is stationary with respect to said cistern.

4,882,794

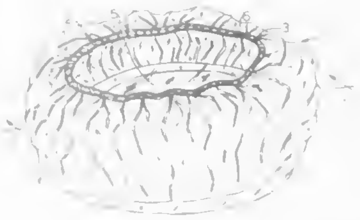
DISPOSABLE WASTE CONTAINMENT UNIT

Elijah E. Stewart, III, 117 Cameron Ct., Cary, N.C. 27511

Continuation-in-part of Ser. No. 160,523, Feb. 26, 1988, abandoned. This application Apr. 14, 1989, Ser. No. 338,531

Int. Cl.⁴ A47K *11/02;* **A61G** *9/00*

U.S. Cl. 4—451 12 Claims



1. A disposable waste containment unit, comprising:

(a) a liquid impermeable flexible bag layer formed from circle of co-extruded polyethylene, said bag layer having a gathered upper rim and a bottom;

(b) an absorbent cellulose element, said absorbent element being located at the bottom of the bag layer; and

(c) a thin absorbent liner within said bag layer, said liner extending beyond the edge of said absorbent element but not extending to the upper rim, said absorbent element disposed between said bag layer and said liner.

4,882,795

PARTITION, MORE PARTICULARLY FOR A CORNER SHOWER

Heinz G. Baus, Wartbodenstrasse 35, CH-3626 Hünibach-Thun, Switzerland

Filed Jan. 17, 1989, Ser. No. 297,284

Claims priority, application Fed. Rep. of Germany, Jan. 14, 1988, 3800828

Int. Cl.⁴ A47K *3/22, 7/00*

U.S. Cl. 4—607 20 Claims

1. In a partition for a shower tub, said partition including door-elements and two wall-elements defining an entrance into which said door-elements are slideable mounted to close and open said entrance, each of said wall-elements adapted to be arranged between said door-elements and a room-wall, the improvement comprising:

an upper curved guide-rail connected to said wall-elements, and in which said door elements are displaceably mounted, said guide-rail comprising curved end-parts located behind said wall-elements, each end-part having a

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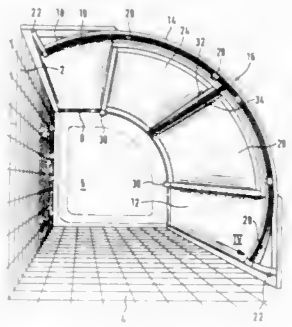
free end located at a predetermined distance from a corresponding wall-element, and



a guide-element for the lower edge of each door element, said guide-element being located laterally of said entrance.

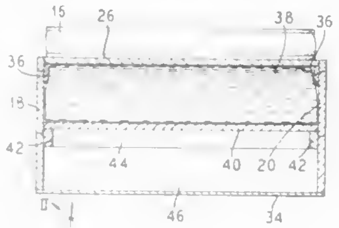
4,882,796
CONVERTIBLE BED FRAME

Ronald McNeal, and Ida T. McNeal, both of 45 N. Mason, Chicago, Ill. 60644

Filed Apr. 19, 1989, Ser. No. 340,508

Int. Cl.⁴ A47C *19/20, 19/22*

U.S. Cl. 5—8 9 Claims



1. A convertible bed frame, comprising:

a first compartment having a lower support plane and surrounding lateral walls, said first compartment adapted for holding a first mattress;

a second compartment disposed beneath said first compartment and adapted for holding a second mattress said second compartment having an external opening in one of its sides,

a platform being changeable from a fully extended supporting size that is adapted to cover said first compartment and support the second mattress when it is placed thereon, to a reduced storable size that permits said platform to be inserted through said external opening for storage in said second compartment.

4,882,797
OPHTHALMIC SURGERY STRETCHER

Raymond A. Failor; Gerald Peters, both of Seville, and Mark Reuter, Chippewa Lake, all of Ohio, assignors to Hausted, Inc., Medina, Ohio

Filed Jul. 15, 1987, Ser. No. 73,677

Int. Cl.⁴ A61G *7/06*

U.S. Cl. 5—66 20 Claims

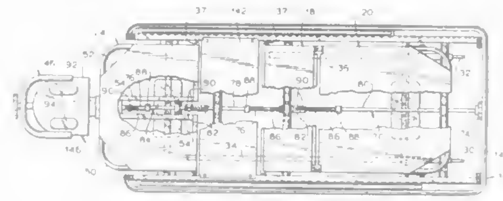
1. A stretcher comprising:

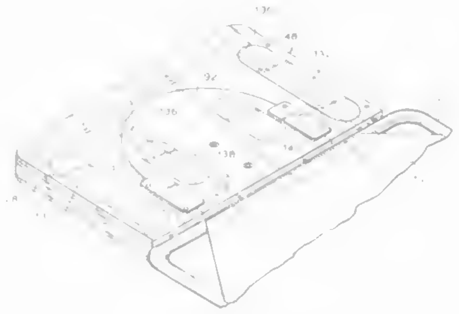
a frame;

a patient support assembly mounted to said frame, said patient support assembly including a backrest assembly;

means for moving aid backrest assembly with respect to said frame about a first pivot axis;

a headrest assembly pivotably mounted to said backrest assembly and movable about a second pivot axis which is substantially parallel to said first pivot axis, the width of said headrest assembly being substantially smaller than the width of said backrest assembly from said second pivot axis to an end of said headrest assembly opposite from said second pivot axis to facilitate a physician's access to a patient's head;





means for moving said headrest assembly with respect to said backrest assembly about said second pivot axis; and

means for mounting a wrist rest assembly to said headrest assembly.

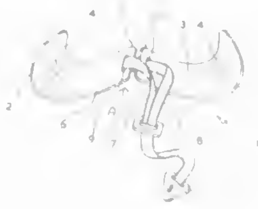
4,882,798
SLING FOR LIFTING A DISABLED PERSON

Jack Worsnop, 9 North View Barney NR21 ONE, Fakenham, Norfolk, England

Filed Jul. 15, 1988, Ser. No. 219,724

Int. Cl.⁴ A61G *1/00*

U.S. Cl. 5—89 20 Claims



1. A sling for lifting the thighs of a disabled person comprising

two rigid members substantially identical to one another;

each rigid member having a cross section in a first longitudinal direction which is substantially constant and of a J-shape,

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each J-shaped rigid member having an elongated portion with an arcuate portion at one end and connection means at the other end,

said arcuate portion having sufficient curvature to a point opposite said elongated portion to hook around the thigh of a person supported therein a distance sufficient to prevent the thigh from slipping sidewise out of the sling,

supporting means connecting said connection means closely together at said other end of said rigid members to form a single lifting point allowing pivotal movement of said rigid members relative to each other whereby the weight of the person being lifted maintains said arcuate portions hooked around and gripping the thighs of the person during lifting,

said sling supporting means including means for attaching the sling at said single lifting point to a lifting device in the region of said connection means.

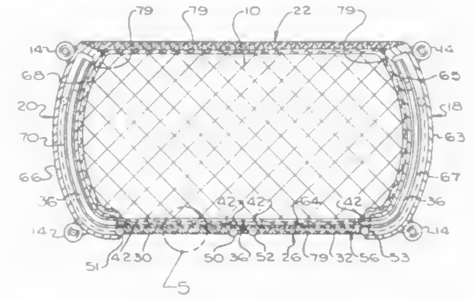
4,882,799
CRIB STRUCTURE

Kathy C. Shapiro, 3600 Embassy Dr., West Palm Beach, Fla. 33401

Filed Jun. 15, 1988, Ser. No. 207,299

Int. Cl.⁴ A47D *7/00, 15/00*

U.S. Cl. 5—100 18 Claims



1. A crib for a child, comprising:

a support surface for a child;

a plurality of side walls operatively connected to the support surface, at least one of said side walls comprising a door opening and having at least one door means laterally slidable substantially in the direction to and from a most adjacent side wall;

said crib further comprising track means substantially spanning the door opening, said track means being adapted to slidably engage said door means and to direct said door means laterally to and from said adjacent side walls, said door means further comprising flexible panels and means for slidably mounting said flexible panels to said track means, said adjacent side walls further comprising pockets, said track means extending into said pockets, whereby said door means can be moved along said track means into said pockets, and whereby the child can be placed quietly and easily into and taken from the crib through the door opening without substantial bending or reaching.

4,882,800
FLOTATION MATTRESS

Tyler E. Schueler, 30 Winchester Dr., Huntington, Conn. 06484

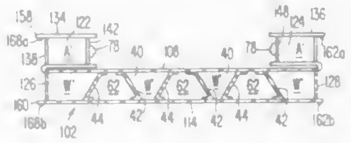
Continuation-in-part of Ser. No. 56,713, Jun. 2, 1987, Pat. No. 4,766,629. This application Aug. 29, 1988, Ser. No. 237,530

Int. Cl.⁴ A47C *27/10*

U.S. Cl. 5—451 **25 Claims**

1. A flotation mattress comprising a center section, a head section and a foot section, each such head, foot and center section including an outer cover means formed to define an enclosed inner area, said outer cover means including an upper panel and a lower panel extending in spaced relationship to said upper panel, and first and second sidewalls and first and second end walls extending between said upper and lower panels to form therewith said enclosed inner area, said center section having first and second center connection means formed thereon adjacent the first and second end walls respectively thereof, and said head and foot sections each having head and foot connection means respectively formed thereon adjacent to one of said first and second end walls thereof, the head connection means of said head section cooperating with said first center connection means to releasably connect said head section to said center section and said foot connection means of said foot section cooperating with said second center connection means to releasably connect said foot section to said center section,

wherein each said head, foot and center section includes spaced longitudinally extending first and second air baffles extending along either side of said enclosed inner area between the first and second end walls thereof and pivot



means connecting said air baffles to said head, foot and center sections for pivotal movement through a 180° arc upwardly and inwardly toward said enclosed inner area, and

wherein the top panel of each said center, head and foot section extends outwardly beyond the first and second sidewalls thereof to form said pivot means and a baffle top wall for said first and second air baffles, each of said air baffles including a baffle bottom wall spaced from the respective center, head or foot section, baffle end walls extending between said baffle bottom and top walls, and first and second baffle sidewalls extending between said baffle top, bottom and end walls, one of said first or second baffle sidewalls of each said air baffle being positioned adjacent to but in spaced relation to one of the first or second sidewalls of the respective head, center or foot section.

4,882,801
ELECTRIC TOOTHBRUSH

Dieter Benz, Hirschstrasse 21, 7900 Ulm, Fed. Rep. of Germany

Division of Ser. No. 948,051, Dec. 31, 1986, Pat. No. 4,796,323, which is a continuation-in-part of Ser. No. 716,235, Mar. 26, 1985, abandoned, Continuation of Ser. No. 379,575, May 17, 1982, abandoned. This application Apr. 12, 1988, Ser. No. 180,439

Claims priority, application Fed. Rep. of Germany, May 21, 1981, 3120300; Mar. 31, 1982, 3211984

The portion of the term of this patent subsequent to Jan. 10, 2006, has been disclaimed.

Int. Cl.⁴ A46B *13/02*

U.S. Cl. 15—23 9 Claims

1. A motor driven electric toothbrush comprising a housing serving as a grip and accommodating an electric motor having a drive shaft; a rotary brush operatively connected to said drive shaft; at least one gravity-induced movement-responsive first switch positioned in said housing and having a switching path formed between two end points serving as contacts of said first switch, and a second switch formed as a manually actuated hand switch having an actuating element, said housing having a side wall, said second switch being positioned on said side wall, each of said switches switching the direction of rotation of the brush, said switching path of said first gravity-induced switch lying in the region of a first central longitudinal plane of said housing, said second manually operating switch having a switching path which lies in the region of a second central longitudinal plane of said housing which is perpendicu-

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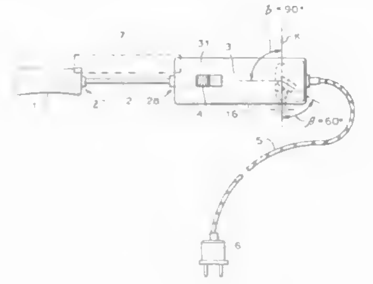
lar to said first central longitudinal plane of said housing, said switching path of said first gravity-induced switch forming with a central axis of elongation of said housing an angle between 60° and 90°.



4,882,802

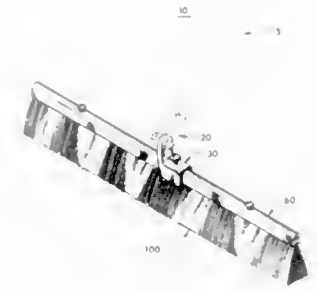
VERSATILE CONSTRUCTION BROOM HOLDER

Chester C. LeVere, Jr., 6391 W. 60th, #212, Arvada, Colo. 80003

Filed Jun. 15, 1988, Ser. No. 207,264

Int. Cl.⁴ A46B *7/04, 5/02;* **B25G** *3/02*

U.S. Cl. 15—144 R **24 Claims**



1. An improved broom holder for finishing newly laid concrete surfaces, comprising a collar, means on said collar capable of mounting handle adaptor attachments of differing sizes and shapes quickly and easily on said collar, said handle adaptor attachment means comprising an upstanding arm on the top of said collar perpendicular to said collar extending in a vertical plane with one end face of said collar, a broom head, means on said collar to adjustably secure said collar at various positions along the length of said broom head to said broom head, and interchangeable broom strips mountable in said head.

4,882,803

DENTAL APPARATUS

Nathan J. Rogers, and Barbara R. Rogers, both of 695 Goodhue,, Beaumont, Tex. 77706

Filed Dec. 19, 1988, Ser. No. 286,257

Int. Cl.⁴ A46B *9/04*

U.S. Cl. 15—167.1 **17 Claims**

1. A dental apparatus adapted for penetrating and cleaning the interstices and interproximal surfaces between the teeth, the surfaces at and below the gum margins, and the tooth-gum interfaces including the grooves and crevices thereof, comprising

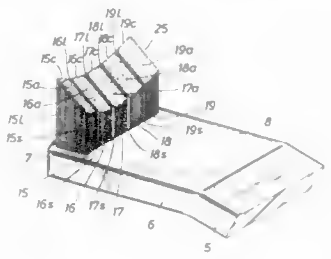
an elongated handle portion,

a head portion,

a neck portion interconnecting said handle portion and said head portion,

a plurality of tufts of bristles fixedly attached to the face of said head portion and disposed substantially perpendicularly thereof,

said plurality of tufts of bristles having wedge means, to enable penetration into said interstices, surfaces and interfaces, including the beveled free end of each of said plurality of tufts of bristles which are disposed at the longitudinal edge of said end of said head portion, said bevel sloping downwards from a vertex formed at said free end of the longest bristle in each of said tufts, and forming a substantially planar surface disposed about 40 to 50 degrees with respect to the horizontal plane of said head portion,



said plurality of tufts of bristles further having conforming means, to enable cleaning of said interstices, surfaces and interfaces, including said plurality of tufts of bristles having a plurality of bristles of varying lengths comprising a series of bristles in which the longer of said bristles disposed proximal to the sides of said face of said head portion being a first length, the shorter of said bristles disposed proximal to the longitudinal center of said face of said head portion being a second length, said second length being shorter than said first length, and the intervening bristles between said longer bristles and said shorter bristles being of corresponding varying length between said first length and said second length such that a concave surface to intimately contact the corresponding convex configuration of the surfaces of said teeth, and said tooth-gum interfaces and gum margins is formed by said free ends thereof.

4,882,804

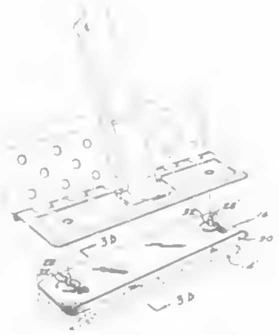
PROTECTIVE MOP ATTACHMENT PLATE

Stephen W. Lucas, Westfield, Mass., assignor to Standex International Corporation, Salem, N.H.

Filed Dec. 12, 1988, Ser. No. 282,580

Int. Cl.⁴ A47L *13/20*

U.S. Cl. 15—244.1 **4 Claims**



1. In a sponge mop having a metal frame, a sponge and an attachment plate affixed to said sponge for attaching said sponge to said frame, the improvement which comprises a lip disposed adjacent at least one edge of said attachment plate, said lip extending upwardly from the top surface of said plate in front of an edge of said frame so as to prevent said frame from contacting other objects, said attachment plate and said lip being integral and molded from a thermoplastic plastic.

4,882,805

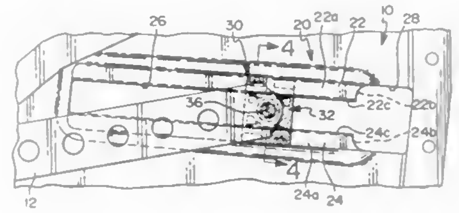
SLIDER FOR WINDOW REGULATOR ARM

Adrian D. Campbell, and William E. Rank, both of Dayton, Ohio, assignors to General Motor Corporation, Detroit, Mich.

Filed Dec. 12, 1988, Ser. No. 282,653

Int. Cl.⁴ A47H *15/00;* **E05D** *15/16;* **E06B** *7/16*

U.S. Cl. 16—93 R **5 Claims**



1. In combination,

a stationary guide member having opposed planar, spaced apart edge portions whose end faces define a linear slot therebetween,

a slider slidably connected to said guide member and which is adapted to be reciprocably moved along said slot of said guide member,

said slider having a main body portion which is adapted to be received within said slot, a first pair of integrally formed generally L-shaped portions whose free ends overlie and are adapted to engage a side of one of said edge portions, a second pair of integrally formed portions each including a deflectable ear for overlying and engaging an opposite side of said edge portion and which biases the free ends of said L-shaped portion into engagement with said one side of said edge portions of said guide member,

said main body portion having first and second integrally formed cantilevered deflectable fingers which biasingly engage said end faces of said edge portions when the main body portion is received within said slot of said guide member whereby said slider is at all times biased into engagement with said end faces and said opposite sides of said first and second edge portions so that rattling therebetween cannot occur.

4,882,806

COUNTERBALANCING TORSION SPRING MECHANISM FOR DEVICES WHICH MOVE UP AND DOWN AND METHOD OF SETTING THE TORSION SPRINGS THEREOF

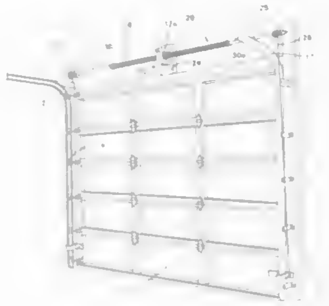
Thomas J. Davis, 629 Clifton Dr., NE., Warren, Ohio 44484

Filed Jul. 11, 1988, Ser. No. 217,321

Int. Cl.⁴ E05D *15/16*

U.S. Cl. 16—198 **36 Claims**

1. A torsion spring counterbalancing mechanism for a garage door or other device to be moved up and down comprising a torsion shaft rotatable about an axis, torsion spring means comparison a torsion spring to be wound as the device moves down and unwound as it moves up disposed about said shaft, means connecting the torsion shaft with said device to rotate the shaft in a direction to wind the spring as the device moves down and for rotation in the opposite direction as the device moves up, a respective end member connected to each end of the torsion spring, torsion spring winding and adjusting means comprising a support structure mounted against movement about or along the axis of said torsion shaft, said winding and adjusting means comprising an output drive shaft coaxial with and rotatable in said structure about said axis and self-locking drive means on said structure for rotating said drive shaft in different directions about said axis to respectively wind and unwind said torsion spring, end fixing means for said torsion spring means comprising first and second connecting means connecting a respective one of said end members to a respective associated one of said rotatable torsion and drive shafts to fix the corresponding end member against relative movement with respect to the respective rotatable shaft, one of said first and second connecting means comprising securing means for interchangeably fixing the respective end member for the connecting means to the associated shaft for rotation therewith while allowing longitudinal movement of the end member relative to its associated shaft during the winding of said spring by said winding and adjusting means or fixing the end member against movement longitudinally of its corresponding shaft and for rotation therewith for effecting the counterbalancing of said device.



4,882,807

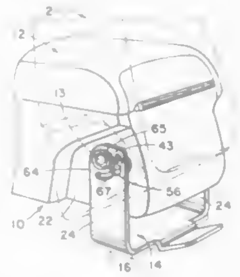
ARMREST TORQUE CONTROL

Dale J. Frye; Alan L. Kindig; Kenneth M. Lindberg, and Robert J. Stander, all of Holland, Mich., assignors to Prince Corporation, Holland, Mich.

Filed Jul. 11, 1988, Ser. No. 217,171

Int. Cl.⁴ E05D *11/10*

U.S. Cl. 16—225 **22 Claims**



1. A torque control for use in conjunction with a component pivotally mounted to a support structure for pivotal movement about a pivot pin, said torque control comprising:

a cylindrical resistance element adapted to be fixedly mounted to one of a component or structure in spaced relationship to the pivot pin, said resistance element having a predetermined diameter; and

a member composed of a resilient polymeric material for attachment to the other of the component or structure, said member having an arcuate slot spaced from the pivot pin and receiving therein said resistance element for movement longitudinally therethrough as the component pivots about the pivot pin; said slot having a width dimen-

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sion relatively smaller than said diameter of said resistance element, whereby a desired frictional resistance is obtained as the component is pivotally moved, and wherein the width of said slot varies continuously along substantially the entire arcuate length through which said resistance element travels to provide a variable frictional resistance.

4,882,808

FURNITURE HINGE INCLUDING HINGE ARM RELEASABLY CONNECTED TO MOUNTING PLATE

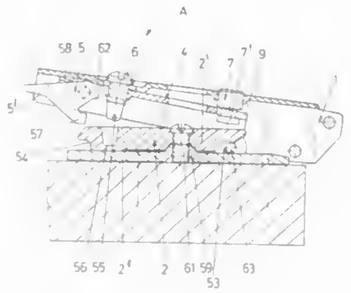
Erich Röck, Höchst; Helmut Rupprechter, Lauterach, and Klaus Brüstle, Lauterach, all of Austria, assignors to Julius Blum Gesellschaft M.B.H., Höchst, Austria

Division of Ser. No. 878,868, May 28, 1986, Pat. No. 4,800,622. This application Sep. 19, 1988, Ser. No. 246,074

Claims priority, application Austria, Oct. 19, 1984, A 3336/84; Oct. 19, 1984, A 3337/84; May 9, 1985, A 1393/85; Aug. 19, 1985, A 2404/85

Int. Cl.⁴ E05D *7/06*

U.S. Cl. 16—240 2 Claims



1. A hinge comprising:
a mounting plate;
a hinge arm;
an intermediate member adjustably supporting said hinge arm;
engaging means at respective first ends of said mounting plate and said intermediate member for defining a pivot axis about which said intermediate member and said hinge arm are pivotable with respect to said mounting plate;
a pivot member pivotally mounted adjacent a second end of said intermediate member and having holding means to engage a latching means at a second end of said mounting plate when said hinge arm and said intermediate member are pivoted about said pivot axis toward said mounting plate and thereby to fasten said intermediate member to said mounting plate;
spring means for urging said pivot member in a first direction such that said holding means and said latching means are in engagement; and
said pivot member having projection means for, upon pivoting said pivot member in a second direction opposite to said first direction to release engagement between said holding means and said latching means, pressing against said mounting plate and thereby facilitating said release.

4,882,809

HINGE

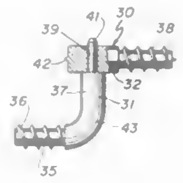
Russell E. Uppstrom, 17 Woodlawn St., Northboro, Mass. 01532

Continuation of Ser. No. 52,533, May 20, 1987, abandoned. This application Dec. 7, 1988, Ser. No. 281,091

Int. Cl.⁴ E05D *5/00*

U.S. Cl. 16—384 3 Claims

1. Hinge, comprising:
(a) an L-shaped pintle having a horizontal leg formed with a wood screw thread adapted to be secured in a fixed structure and having an integral vertical leg, and
(b) an elongated secondary element having a wood screw thread at one end adapted to be secured in a swingable structure and having a cylindrical bore adjacent the other end, the bore extending completely through the element and fitting snugly over the vertical leg of the pintle, the said vertical leg of the pintle having an upper portion of reduced diameter and the bore in the secondary element having a diameter somewhat greater than that of the said upper portion of the vertical leg of the pintle wherein said other end of secondary element has a scribing protuberance formed on and extending coaxially thereof.



4,882,810

APPARATUS FOR REMOVING MEAT FROM A BONE OF A POULTRY LIMB OR THE LIKE

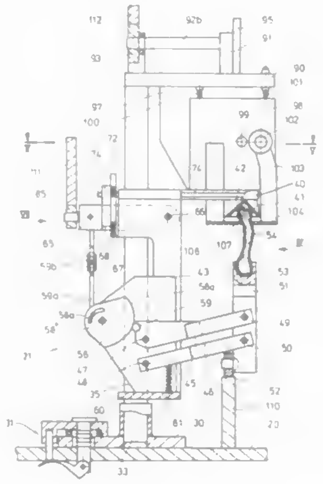
Rüdiger Ostholt, Wetter; Jörg Wahrmann, Sprockhövel, and Klaus Becker, Wetter, all of Fed. Rep. of Germany, assignors to Lohmann Anlagenbau GmbH, Fed. Rep. of Germany

Filed Dec. 5, 1988, Ser. No. 280,105

Claims priority, application Fed. Rep. of Germany, Dec. 4, 1987, 3741121; Nov. 11, 1988, 3838236

Int. Cl.⁴ A22C *17/04*

U.S. Cl. 17—11 24 Claims



1. An apparatus for removing a meat fillet from a bone of a poultry limb having at least one deboning unit, the deboning unit comprising:
retaining means for retaining the limb;
stripping diaphragm means for stripping the bone from the fillet including an aperture having a changeable area during the stripping process;
abutment means for engaging said bone and pushing it through the fillet and out of said fillet;
driving means to move said stripping diaphragm means and said abutment means relative to each other; and
wherein said aperture of said stripping diaphragm means has a diameter slightly larger than that of said bone, said stripping diaphragm being formed by two diaphragm plates non-movable in a deboning direction, one of said diaphragm plates being part of a movably supported diaphragm portion adapted to be actuated by a diaphragm actuating means in order to open said diaphragm and to change the area of said diaphragm aperture, said diaphragm plates being movable in unison to a limited extent in the plane of said diaphragm to follow curved portion of said bone.

4,882,811

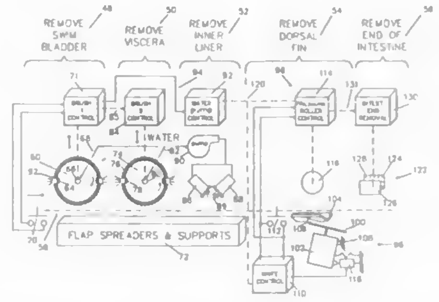
APPARATUS FOR PROCESSING FISH

Richard C. Ewing, Assonet, Mass., assignor to Baader North America Corporation, New Bedford, Mass.

Division of Ser. No. 920,364, Oct. 20, 1986, Pat. No. 4,761,856. This application Jun. 20, 1988, Ser. No. 208,661

Int. Cl.⁴ A22C *25/14*

U.S. Cl. 17—58 19 Claims



1. Apparatus for processing fish, said fish having had its head removed and its belly slit, comprising:
a conveyor;
said conveyor including means for moving said fish along a predetermined path with said belly uppermost;
at least one processing station;
said at least one processing station including a rotating brush;
means for spreading belly flap of said fish to reveal an interior of said belly; and
means for controlling a position of said rotating brush for bringing a perimeter thereof into contact and out of contact with a predetermined portion of said interior, wherein said means for controlling are capable to control said position during the operation of said apparatus, said means of controlling, comprising means for exerting a predetermined hold-down force of said brush, whereby at least a portion of viscera are removed from said interior.

4,882,812

OPENING ROLLER FOR AN OPENING DEVICE OF AN OPEN-END SPINNING MACHINE

Gerhard Fetzer, Süssen, and Eugen Bader, Birenbach, both of Fed. Rep. of Germany, assignors to Fritz Stahlecker and Hans Stahlecker, both of, Fed. Rep. of Germany

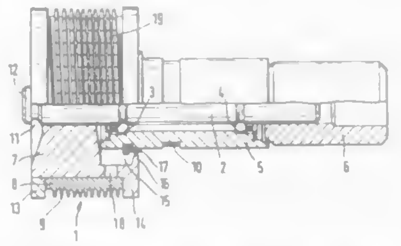
Continuation-in-part of Ser. No. 88,973, Aug. 24, 1987, which is a continuation of Ser. No. 731,272, May 7, 1985, abandoned. This application May 9, 1988, Ser. No. 191,688

Claims priority, application Fed. Rep. of Germany, May 12, 1984, 3417707

Int. Cl.⁴ D01B *1/00;* D01G *15/12;* D01H *7/882*

U.S. Cl. 19—112 2 Claims

1. An opening roller for an open-end spinning arrangement, comprising:
roller body means,
shaft means connected to said roller body means for rotating said roller body means,
ring mounting means arranged on said roller body means for combing sliver, said ring mounting means having a cylindrical outer surface, said surface of said ring mounting means having a plurality of combing teeth, said teeth being unitary with said outer surface, said teeth being formed by a plurality of circumferential grooves and a plurality of axially extending recesses in said outer surfaces, and
first and second roller collar means mounted on said roller body means at each end for protecting said teeth, said collar means extending radially at least as far as said outer surface of said ring mounting means, at least one of said circumferential grooves being contained in a first plane sloped in a direction toward said first collar means and at least one of said circumferential grooves being contained in a plane sloped in a direction toward said second collar means.



4,882,813

BANDING CLIP

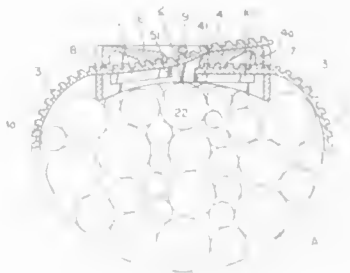
Toshinobu Nakamura, Tokyo, Japan, assignor to Shinagawa Shoko Co., Ltd., Tokyo, Japan

Filed Oct. 31, 1988, Ser. No. 265,095

Claims priority, application Japan, Nov. 18, 1987, 62-175063

Int. Cl.⁴ B65D *63/00*

U.S. Cl. 24—16 PB 11 Claims



1. A banding clip for holding an article with an elongated band having a plurality of teeth on substantially one entire surface thereof, comprising:
first and second side walls which are spaced apart and which extend substantially parallel to each other;
first band engaging means for engaging one end portion of the band, said first band engaging means having a first base portion which extends between the first and second side walls;
first guiding means for guiding said one end portion of the band into engagement with said first band engaging means, said first guiding means comprising at least one projection which projects from at least one of said first and second side walls;
second band engaging means for engaging any portion other than said one end portion of the band, said second band engaging means having a second base portion which extends between the first and second side walls;
second guiding means for guiding said any portion of the band into engagement with said second band engaging means, said second guiding means comprising at least one projection which projects from at least one of said first and second side walls.

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4,882,814
HOSE CLAMP FURNISHED WITH TACKING FUNCTION

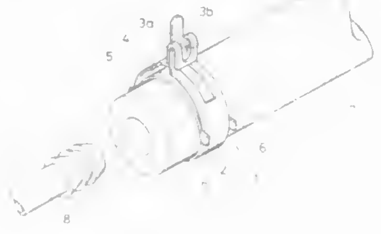
Yasuo Takahashi, Yokohama, Japan, assignor to Kato Hatsujo Kaisha, Ltd., Kanagawa, Japan

Filed May 3, 1989, Ser. No. 346,937

Claims priority, application Japan, May 20, 1988, 63-65783[U]; Aug. 8, 1988, 63-104125[U]

Int. Cl.⁴ F16L *33/22*

U.S. Cl. 24—20 R 3 Claims



1 A hose clamp furnished with a tacking function, comprising:

a clamp body including an annular clamping ring part for squeezing a hose and a pair of grip parts for filling the role of radially expanding said ring part;

a separately formed holder capable of retaining said pair of grip parts in a state of mutual approximation; and

displacement inhibiting means capable of coming into resilient contact with the peripheral surface of a hose and inhibiting said clamp body from being displaced on the peripheral surface of said hose when said hose is inserted inside said clamping ring part in a radially expanded state.

4,882,815
ARRANGEMENT IN A PURSE OR BAG SECURED AGAINST THEFT

Nilsen, Morten N., Bel Colles Allé 8A, DK-2960 Rungsted Kyst, Denmark

PCT No. PCT/NO87/00062, § 371 Date May 31, 1988, § 102(e) Date May 31, 1988, PCT Pub. No. WO88/02526, PCT Pub. Date Apr. 7, 1988

Continuation of Ser. No. 752,967, Jul. 5, 1985, abandoned. This PCT application Sep. 23, 1987, Ser. No. 201,139

Claims priority, application Norway, Sep. 30, 1986, 863893

Int. Cl.⁴ A44B *21/00;* E05C *19/16*

U.S. Cl. 24—303 3 Claims

1. In combination with a garment, a valuable article, and means for securing the valuable article inside the garment against theft, said securing means comprising a button-shaped projection secured to the article, and a cup so shaped as to receive and retain said projection, one of said cup and projection being a permanent magnet and the other of said cup and projection being a magnet-affected body, said projection being disposed within said cup with the material of the garment disposed between said projection and the interior of said cup.

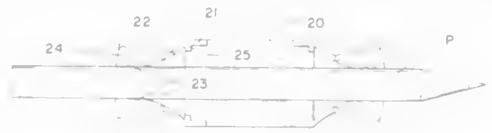
4,882,816
RESILIENT RETAINER FOR ELONGATE OBJECTS OF DIFFERENT DIAMETERS AND WIDTHS

Kent D. Murphy, 8 Windermere Gilford Road, Sandymount, Dublio 4, Ireland

Filed Nov. 30, 1988, Ser. No. 277,975

Int. Cl.⁴ B43K *23/00*

U.S. Cl. 24—555 11 Claims



1. A clip type holder device, comprising a back wall, a pair of holding members connected to said back wall and extending outwardly at right angles to said back wall, said pair of holding members spaced from each other and having facing holding surfaces, at least one of said members of said pair of holding members being a flexible resilient member having a free end biased toward the other member of said pair of members and adapted to flex about a connection axis at the opposite end at right angles to said back wall, a flare portion on said one member adjacent the free end thereof, said facing holding surface of said one member being convex and spaced from said back wall and operative to move apart from the facing holding surface of said other member against the biasing force in a directional plane parallel with said back wall when an elongated object having a longitudinal axis at right angles to the connection axis is pressed into the flare portion to a position between said facing holding surfaces to be held therebetween.

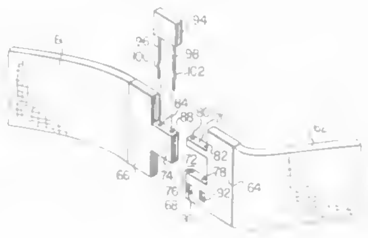
4,882,817
LOCKING MECHANISM

Jean-Phillipe Schmid, Chateau Crausaz, CH-1111 Gollion, Switzerland

Filed Apr. 11, 1988, Ser. No. 180,049

Int. Cl.⁴ A44B *9/00*

U.S. Cl. 24—707.6 4 Claims



1. A locking mechanism for securing two semi-resilient workpieces together, comprising:

first and second cylindrical rods each having a longitudinal axis with a predetermined diameter and each having first and second ends with the first end of each of the first and second cylindrical rods secured to one of the two work pieces;

first and second channels formed in the other of the two workpieces for receiving the second ends of each of said longitudinal rods, respectively, and the portion of the said first and second longitudinal rods not remaining exposed such that the two workpieces substantially abut;

first and second longitudinal members each shaped similar to said cylindrical rod and having a sepertine axis with first and second ends with said first and second ends in the same plane and intersecting said longitudinal axis of the respective one of said first and second cylindrical rods at a point removed a predetermined distance from the distal ends thereof and forming an integral part thereof;

the surface of each of said first and second longitudinal members forming an apex at the farthest most point from the respective longitudinal axis and each of the apexes lying in the plane of said first and second cylindrical rods and in diametrically opposite directions;

said first and second channels having a diameter that is slightly less than the distance between the surface of the respective one of said first and second longitudinal members farthest most from said respective longitudinal axis and the surface of said respective first and second cylindrical rods on the diametrically opposite side of said respective longitudinal axis;

first and second cavities in communication with said first and second channels, respectively, for receiving a respective one of said first and second longitudinal members when the second end of said respective first and second cylindrical rods is fully inserted into said channels, each of said cavities having a surface that is parallel with the axis of said respective first and second channels that is disposed a distance away from said respective longitudinal axis that is greater than the distance of the farthest most surface of said longitudinal member, each of said first and second cavities forming a longitudinal dimension that is slightly larger than the respective one of said first and second longitudinal members to provide relief for said first and second longitudinal members when in said respective first and second cavities.

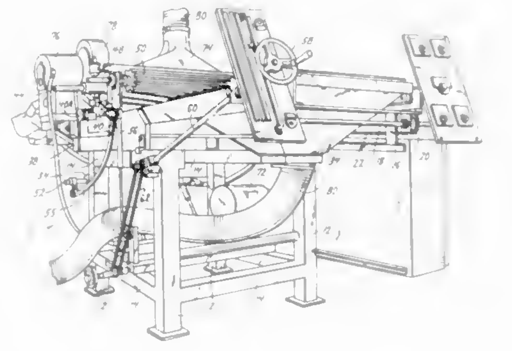
4,882,818
CARPET SHEARING APPARATUS

John B. Weathers, 544 Dawnville Rd., NE., Dalton, Ga. 30720; Paul B. Mitchell, Jr., 2003 Ravenwood Dr., Collinsville, Ill. 62234; Coy L. Sampson, 800 S. Hamilton St., Dalton, Ga. 30720, and Charles B. Hubbs, P.O. Box 1886, Dalton, Ga. 30722

Filed Nov. 4, 1988, Ser. No. 267,806

Int. Cl.⁴ D06C *13/00*

U.S. Cl. 26—15 R 6 Claims



1. A machine for shearing modular pile carpet comprising a frame having a table thereon which is movable between a first position and a second position, means for holding modular carpet on said table, shear means on said frame positioned a predetermined distance above said table whereby the carpet is sheared as the table moves from the first position to the second position, and said shear means including means for raising said shear when said table is moved from the second position to the first position.

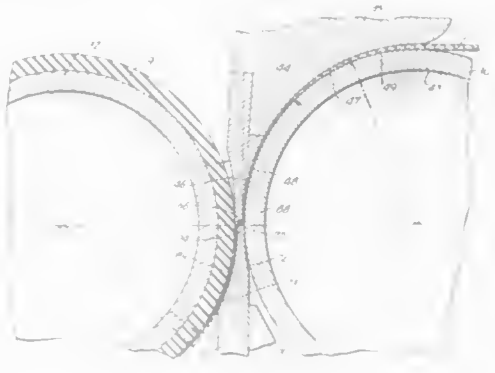
4,882,819
METHOD FOR COMPRESSIVELY SHRINKING OF TUBULAR KNITTED FABRICS AND THE LIKE

William D. Milligan, Matthews, N.C., and Andrew P. Cecere, Valley Stream, N.Y., assignors to Compax Corp., Woodside, N.Y.

Continuation of Ser. No. 107,953, Oct. 13, 1987, abandoned. This application Apr. 6, 1989, Ser. No. 334,785

Int. Cl.⁴ D06C *21/00*

U.S. Cl. 26—18.6 8 Claims



1. A single station process for imparting lengthwise compressive shrinkage to tubular knitted fabrics and the like, which comprises

(a) delivering the fabric in flat form and in moist condition,

(b) defining an arcuate entry path for said fabric, by means of a feeding roller and an arcuately contoured confining shoe,

(c) advancing the fabric through said entry path in a controlled manner by contacting one surface of said fabric with said feeding roller while closely confining the opposite surface of the fabric, under limited controlled pressure, by said confining shoe,

(d) yieldably urging said confining shoe towards said feeding roller under low pneumatic pressure during feeding of said fabric,

(e) defining a short confinement zone for said fabric by means of opposed surfaces of said confining shoe and an exit shoe,

(f) said confinement zone being of short length, in the order of a small fraction of an inch, while being of greater length than the thickness of the fabric,

(g) the entry end of the said zone being positioned closely adjacent the surface of said feeding roller and being disposed at angle to the exit end of said entry path of between 30 and 60 degrees,

(h) causing the fabric to be abruptly diverted from said entry path out of contact with said feeding roller and into said confinement zone and to travel through said confinement zone under limited confining pressure,

(i) adjustably controlling the confinement pressure in said zone by positioning said confining shoe with respect to said exit shoe such that the confinement pressure is not substantially greater than necessary to avoid creping of the fabric,

(j) defining an arcuate exit path for said fabric, offset from said entry path, by means of a retarding roller and an arcuately contoured surface of said exit shoe,

(k) the entry end of said arcuate exit path being joined with the exit end of said confinement path and being disposed at a sharp angle thereto,

(l) yieldably confining said fabric in said exit path by urging said retarding roller toward said exit shoe under controlled fluid pressure,

(m) causing said feeding and retarding rollers to be controllably driven in such manner that the surface speed of the

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feeding roller is controllably greater than the surface speed of the retarding roller.

4,882,820

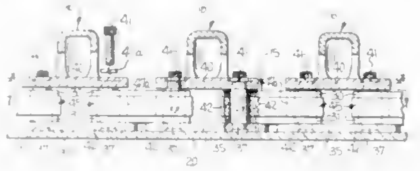
TENTER FRAME CHAIN WITH LOW FRICTION SLIDE BLOCK

Francis X. MacKinnon, N. Scituate; James F. Horn, Cranston, and John A. Pastina, Warwick, all of R.I., assignors to Gessner Industries, Inc., Charlotte, N.C.

Filed Mar. 21, 1989, Ser. No. 326,523

Int. Cl.⁴ D06C *3/02*

U.S. Cl. 26—93 17 Claims



1. A tenter frame for transporting sheet material under tension in an open width condition along a longitudinal path of travel, said tenter frame comprising a pair of elongate guide rails extending along opposite sides of the longitudinal path of travel of the sheet material, each of said guide rails having a vertically disposed bearing surface extending along the corresponding sides of the longitudinal path of travel of the sheet material, an endless tenter chain supported for movement in each of said guide rails with portions of the chain bearing against said vertically disposed bearing surface of said guide rail, and tenter clip means supported on said chain for engaging opposite sides of the sheet material, said tenter chain comprising a plurality of links, each link including upper and lower interconnected loadbearing plates and a slide block sandwiched between said loadbearing plates and having a vertically disposed bearing surface located laterally outwardly beyond the lateral extent of said loadbearing plates for contacting said vertically disposed bearing surface of said guide rail while maintaining other portions of the tenter chain spaced out of contact with the bearing surface of the said guide rail.

4,882,821

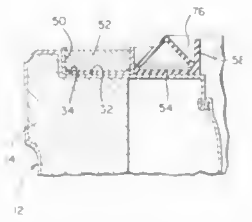
MAGNETIC CASKET SEAL ASSEMBLY

John W. Sims, Jr., San Antonio, Tex., assignor to Magna-Seal, Inc., San Antonio, Tex.

Filed May 18, 1988, Ser. No. 195,148

Int. Cl.⁴ A01N *1/00*

U.S. Cl. 27—17 9 Claims



1. A casket incorporating a horizontally elongated, upwardly opening base having upstanding opposite side and end walls terminating upwardly in a first peripherally continuous and upwardly facing surface including inner and outer marginal areas, a cover assembly for said base incorporating a pair of opposite head and foot end cover sections pivotally supported from said base for independent swinging movement relative thereto between open upwardly projecting positions and closed horizontal positions overlying said base and closing the latter from above, said cover sections, when in said closed positions, including second downwardly facing peripheral surfaces closely overlying and extending along said first surface and closely horizontally opposing marginal portions extending across said base between corresponding opposite side portions of said first surface, said first and second surfaces including first seal means disposed therebetween and extending thereabout operative to form a fluid tight seal between said first and second peripheral surfaces when said covers are in said closed positions, said opposing marginal portions including third vertically opposing seal surfaces extending therealong and second seal means disposed therebetween operative to form a fluid tight seal between said third surfaces when said covers are in said closed positions and also coacting with said first seal means to form a fluid tight seal therewith at the opposite ends of said third seal surfaces when said covers are in said closed positions, said first seal means extending along the inner marginal area of said first surface, said outer marginal area of said first surface including at least substantially peripherally continuous upwardly facing magnet means supported therefrom, said second downwardly facing peripheral surfaces being constructed of ferrous material for magnetic attraction thereof to said magnet means, said first seal means including inner and outer peripheral portions, one of said peripheral portions being defined by a hollow triangular resilient sealing strip portion including a horizontal base and an uppermost apex portion and the other peripheral portion is defined by an upstanding curb portion formed integrally with one end of said base portion, said apex portion projecting upwardly to an elevation spaced slightly above the uppermost extremity of said curb portion.

4,882,822

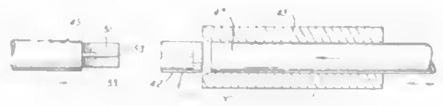
METHOD OF FABRICATION OF A BULLET HAVING SECTIONS SEPARABLE UPON IMPACT

Thomas J. Burczynski, P.O. Box 248, 107 Main St., Odessa, N.Y. 14869

Division of Ser. No. 140,587, Jan. 4, 1988. This application Nov. 18, 1988, Ser. No. 272,946

Int. Cl.⁴ B21K *21/06*

U.S. Cl. 29—1.22 8 Claims



1. The method of fabricating a bullet from a substantially cylindrical body of malleable material having front and back ends, said method comprising the steps of:

(a) placing said body within a cylindrical die cavity having a diameter substantially equal to, and a length at least as great as, the respective diameter and length of said body;

(b) relatively moving said body and a splitting punch to force said punch axially into said body while circumferentially restraining said body within said cavity, said punch including at least three, substantially planar arms extending outwardly from a common central axis and terminating at distances from said common axis less than the radius of said cylidnrical body, thereby forming a number of parting lines within said body, corresponding to the number of said arms, said punch central axis being aligned with the longitudinal axis of said body and said punch moving into said body from said front end thereof for a predetermined distance not exceeding $\frac{7}{8}$ of the axial length of said body;

(c) withdrawing said punch from said body, leaving a plurality of pairs of opposing surfaces within said body on opposite sides of each of said parting lines; and

(d) compressing said body radially inwardly over substantially its entire length, with said body remaining in the cylindrical configuration for a first portion of the axial length thereof forwardly from said back end and tapering inwardly for a second portion of said axial length from

said first portion to said front end, said predetermined distance being greater than said second portions axial length, said compressing substantially eliminating all air space from between said opposing surfaces and bringing each pair thereof into intimate contact along said parting lines while remaining physically unattached.

4,882,823

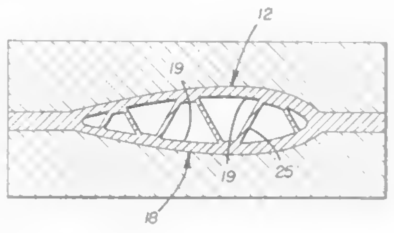
SUPERPLASTIC FORMING DIFFUSION BONDING PROCESS

Edward D. Weisert; John R. Fischer, both of San Carlos, and William L. McCauley, Dublin, all of Calif., assignors to Ontario Technologies Corp., Menlo Park, Calif.

Filed Jan. 27, 1988, Ser. No. 149,216

Int. Cl.⁴ B23K *31/02*

U.S. Cl. 29—6.1 20 Claims



1. A method of forming a hollow structure having a varying mass distribution, comprising:

forming a first unitary sheet of a diffusion bondable and superplastically formable material with one flat surface and an opposite surface contoured to have a first selected non-uniform mass distribution;

forming a second sheet of a superplastically formable material that is diffusion bondable to said first sheet with one flat surface and an opposite surface contoured to have a second selected mass distribution, said first and second mass distributions being such as to provide said varying mass distribution for said hollow structure;

positioning each of said flat surfaces in abutting relation to a respective one of one another and a respective one of a pair of oppositely facing flat surfaces of an intermediate flat core sheet formed of a material that is diffusion bondable to said first and second sheets and with a stop-off material between selected non-peripheral portions of each of abutting said flat surfaces whereat diffusion bonding is to be prevented and superplastic forming is to be required;

subjecting said sheets to diffusion bonding conditions to thereby bond said flat surfaces to one another or to said core sheet other than where said stop-off material was applied to form a diffusion bonded sandwich; and

subjecting said sheets to superplastic forming conditions and thereby expanding said sheets apart against a die.

4,882,824

APPARATUS FOR INSTALLING SLIDERS ON A GAPPED SLIDE FASTENER CHAIN

Walter H. Dziura, Bethlehem; Angelo Fusco, Waterbury, both of Conn., and Parviz Khosravi, Gainesville, Ga., assignors to Scovill Fasteners Inc., New York, N.Y.

Filed Jul. 5, 1988, Ser. No. 215,386

Int. Cl.⁴ B21D *53/67;* **A44B** *19/41*

U.S. Cl. 29—33.2 5 Claims

1. An apparatus for installing sliders on a gapped slide fastener chain drawn from a supply source along a work path comprising:

a. cutting means in the workpath adapted to cut off the chain in the gapped zone to form a new leading end,

b. slider clamping means adjusted to clampingly hold sliders one by one in the workpath after the cutting means,

c. fastener chain drive means for advancing the chain including a platform mounting two pairs of jaws, the pairs of jaws adapted to close on the new leading ends of the stringers of the chain respectively, spread them and feed them into the wider end of a slider clamped in the clamping means, and advance the slide fastener chain along the workpath,

d. a finger disposed on the workpath before the cutting means and when activated adapted to press against the teeth of the chain as the chain advanced and move into the

gap in the chain when the gap arrives at the location of the finger, the finger then engaging the trailing end of the gap and arresting the forward movement of the chain and activating the cutting means,

e. finger moving means for retracting the finger after the slide fastener has been cut by the cutting means,

f. force-reducing means for reducing the force with which the drive means advances the fastener chain, and

g. sensing means sensing the arrival of the new leading end of the chain at a given point on the workpath, the sensing means causing the finger to press against the teeth and activating the force-reducing means on the drive means.

4,882,825

METHOD OF CONNECTING A TUBULAR MEMBER WITH AN ANNULAR MEMBER

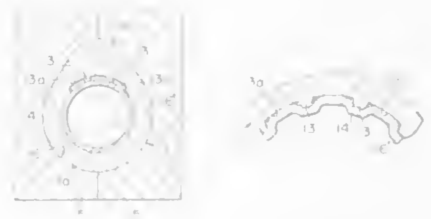
Masanobu Nakamura, Kamakura, Japan, assignor to Kokan Kako Co., Ltd., Yokohama, Japan

Continuation of Ser. No. 812,242, Dec. 23, 1985, abandoned, which is a continuation-in-part of Ser. No. 532.315, Sep. 15, 1983, abandoned. This application Oct. 28, 1987, Ser. No. 114,831

Claims priority, application Japan, Jan. 14, 1983, 58-3548; Feb. 8, 1983, 58-18180

Int. Cl.⁴ B23P *15/00*

U.S. Cl. 29—156.4 R 1 Claim



1. A method of connecting a tubular member with a cam member, for manufacturing a camshaft thereby comprising the steps of:

fitting said tubular member into a central bore in said cam member, the inner circumference of the cam member being provided with axially extending grooves defining substantially flat bottom ridges and substantially flat bottom valleys located only in the lobe part of the inner circumference of the cam member corresponding to the

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part of the inner circumference of the cam member corresponding to the part of the cam member with the greatest wall thickness, so that the inner circumference is not smooth, the width of the grooves being no less than 1.5 times the wall thickness of the tubular member and being substantially rectangular in cross section;

placing said cam member in a bulge mold; supplying a working fluid into the interior of said tubular member and applying sufficient pressure to the working fluid to forcibly expand the tubular member in an area adjacent the thickest lobe part of the wall of the cam member so that at the outer circumference of the tubular member is deformed in said area and engaged into said valleys so as to form corresponding blunt projections on the outer circumference of the tubular member, so that the outer circumference is not smooth, without substantially reducing its wall thickness; and

terminating said application of pressure to the working fluid when said projections on the outer circumference of the tubular member are sufficiently engaged into said grooves to mechanically lock both members together, such termination of pressure being before the tubular member is completely deformed along the shape of the grooves so as to leave some clearance between the inner wall of the grooves and the expanded outer circumference of the tubular member.

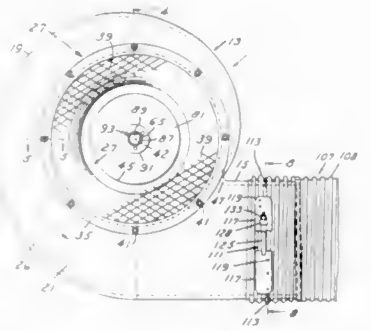
4,882,826
METHOD OF MAKING A UNIT BLOWER HOUSING

James A. Belanger; Robert J. Wentworth, both of Northville; Barry S. Turner, Livonia, and Graham J. Astley, Novi, all of Mich., assignors to Belanger, Inc., Northville, Mich.

Division of Ser. No. 45,331, May 4, 1987, Pat. No. 4,799,287. This application Oct. 31, 1988, Ser. No. 264,647

Int. Cl.⁴ B21B *1/46*

U.S. Cl. 29—527.1 5 Claims



1. The method of making a unit blower housing of molded plastic material having a tangential outlet comprising:
(a) taking a mold which when closed has an internal cavity corresponding to the outer configuration of the unit blower housing; and
(b) placing powdered or granular plastic material into said mold when open;
(c) closing the mold;
(d) subjecting the mold to heat to melt the plastic while rotationally rotating said mold to fill said cavity with the melted plastic material;
(e) and cooling the mold to solidify the plastic and to thereby form the unit blower housing with tangential outlet.

4,882,827
PROCESS FOR PRODUCING GLASS MOLD

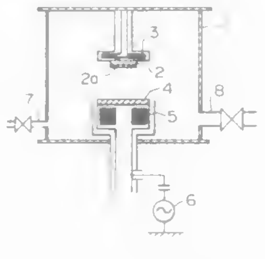
Yasuo Kusumi, Akishima; Ken Uno, Bunkyo, and Takuo Fujino, Akishima, all of Japan, assignors to Hoya Corporation, Tokyo, Japan

Filed Sep. 15, 1988, Ser. No. 244,499

Claims priority, application Japan, Sep. 28, 1987, 62-243009

Int. Cl.⁴ B23P *17/00*

U.S. Cl. 29—527.2 6 Claims



1. A process for producing a glass mold, said process comprising the steps of:
(a) processing a material for a base having a surface for a glass mold to be produced into a mold base having a shape corresponding to that of a molded glass article to be produced from the mold;
(b) forming a β-SiC having (111) plane orientation on the surface of the mold base according to a chemical vapor deposition (CVD) method; and
(c) forming a hard carbon film on the mold base according to a sputtering method using an inert gas and graphite as a target at a mold base temperature of 250°–450° C.

4,882,828
PROTECTION OF SENSITIVE MATERIAL

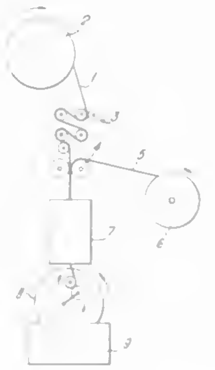
Robert H. McLoughlin; George B. Park, both of Swindon; John Cook, Faringdon, all of United Kingdom, and Stephen E. Myers, San Carlos, Calif., assignors to Scimat Limited, United Kingdom

Continuation of Ser. No. 210,142, Jun. 15, 1988, abandoned, which is a continuation of Ser. No. 618,092, Jun. 7, 1984, abandoned. This application May 5, 1989, Ser. No. 349,888

Claims priority, application United Kingdom, Nov. 2, 1983, 8329210; Dec. 15, 1983, 8333385

Int. Cl.⁴ H01M *4/04*

U.S. Cl. 29—623.1 5 Claims



1. A method of making a protected electrode, which comprises:
(a) providing a body of a reactive metal which is capable of functioning as an electrode in an electrochemical device, at least part of the body being protected by a layer of fluid impermeable polymeric material; and

(b) stretching the layer of polymeric material, and the body of reactive metal while protected by the polymeric material, so that (i) the thickness of the body of reactivated metal is reduced significantly, and (ii) the fluid permeability of the polymeric material is increased sufficiently to allow it to function as an electrode separator in an electrochemical device, without significant alteration of its composition.

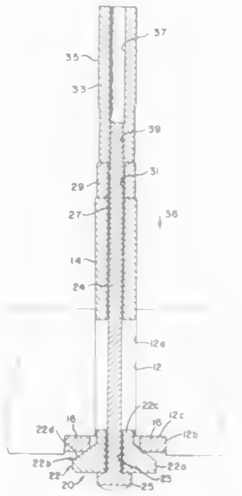
4,882,829
DEVICE FOR ACCURATELY POSITIONING AND ALIGNING A GUIDE SLEEVE INTO A BORE OF A CYLINDER HEAD

Peter H. Dawe, 215 Springbrook, Sparta, N.J. 07871

Continuation-in-part of Ser. No. 235,687, Aug. 23, 1988. This application Mar. 9, 1989, Ser. No. 320,977

Int. Cl.⁴ B23P *19/04*

U.S. Cl. 29—251 4 Claims



1. For use with a cylinder head having a plurality of bores, a guide sleeve received tightly in each bore, a valve having a valve head and a valve stem insertable through each guide sleeve, and a valve seat for seating each valve head, a device for accurately positioning and automatically aligning correctly each guide sleeve within a respective bore, comprising:
(a) a base having a lower surface and an upper inclined aligning surface for accurately and automatically aligning said valve seat thereon during forcible insertion of said guide sleeve into the respective bore, said base having a bore extending therethrough;
(b) a guide rod extending through said bore of said base for insertion into a bore of the cylinder head for automatically and accurately guiding said guide sleeve which is force fit into the respective bore of the cylinder head, said guide rod having an enlarged head at a lower end thereof with a non-circular outer gripping surface, and screw threads at an upper end thereof; and
(c) driver means for driving said guide sleeve into the respective bore of the cylinder head, said drive means including an internal bore with screw threads which threadedly engage the screw threads of the guide rod, and a non-circular outer gripping surface.

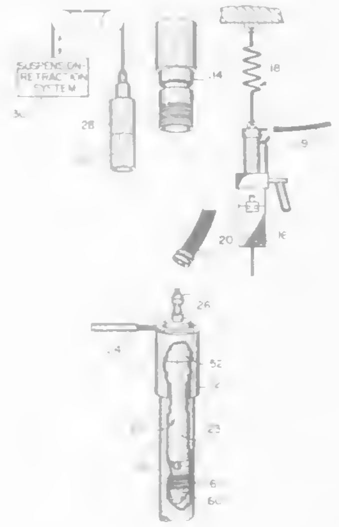
4,882,830
METHOD FOR IMPROVING THE INTEGRITY OF COUPLING SECTIONS IN HIGH PERFORMANCE TUBING AND CASING

Kenneth J. Carstensen, 4540 No. 44th St., No. 70, Phoenix, Ariz. 85018

Division of Ser. No. 105,339, Oct. 7, 1987. This application Feb. 3, 1989, Ser. No. 305,558

Int. Cl.⁴ B21D *39/00*

U.S. Cl. 29—421.1 6 Claims



1. The method of filling the area between opposed nose ends of tubing within a collar for oil field applications, comprising the steps of:

making up a connection with a collar threaded onto an upper end of a tubing section;

inserting a cylindrical member through the collar into the upper end of the tubing section;

retaining the member to an inner surface of the tubing section below the upper end thereof, the member having an outer diameter slightly less than an inner diameter of the tubing section and more than spanning a gap between opposed tubing sections in the collar;

filling the gap between an outer surface of the member and the inner surface of the collar with an amount of a catalyzed resin having a predetermined cure time;

threading a section of tubing section inwardly into the collar while the resin is still not cured, the amount of resin being sufficient to completely fill a volume within the collar between the nose ends of the opposed tubing sections; and

removing the member when the resin has sufficiently solidified.

4,882,831
METHOD OF PRODUCING AIRCRAFT PLATE AND SHEET

John E. Jacoby; Ho Yu, both of Murrysville, and Robert A. Ramser, New Kensington, all of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Continuation of Ser. No. 941,810, Dec. 15, 1986, Pat. No. 4,724,887, which is a continuation of Ser. No. 850,488, Apr. 11, 1986, Pat. No. 4,709,740, which is a continuation of Ser. No. 550,466, Nov. 10, 1983, Pat. No. 4,610,295. This application Dec. 28, 1987, Ser. No. 138,392

The portion of the term of this patent subsequent to Feb. 16, 2005, has been disclaimed.

Int. Cl.⁴ B23P *17/00*

U.S. Cl. 29—527.5 3 Claims

1. A method for producing aircraft plate or sheet comprising:

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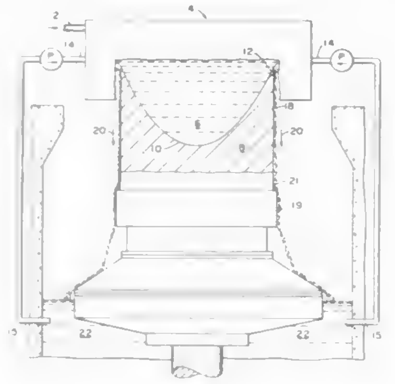
(a) producing lithium-containing light metal alloy ingot by continuous casting with organic coolant; and



(b) rolling, extruding, or forging said ingot into aircraft plate or sheet.

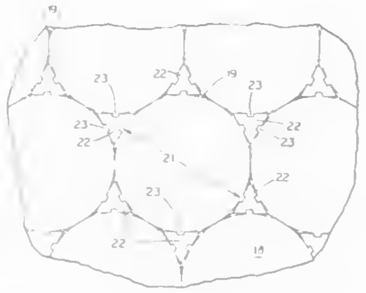
4,882,832
METHOD OF MANUFACTURING ELECTRIC MOTOR STATOR STRUCTURE

John G. Lewis, St. Louis, Mo., assignor to Emerson Electric Co., St. Louis, Mo.

Division of Ser. No. 10,180, Feb. 2, 1987, Pat. No. 4,801,831. This application Nov. 7, 1988, Ser. No. 268,008

Int. Cl.^{4} H02K *15/02*

U.S. Cl. 29—596 **6 Claims**



1. A method for manufacturing laminations of a stator core for an electric motor comprising:

forming a pattern on a sheet of preselected material from which stator core laminations are to be separated, said pattern including at least two abutting rows of abutting circles each preselectively sized to defined the active material diameter and confine the main body of a core lamination with adjacent rows of abutting circles being staggered so that peripheries of adjacent rows of circles substantially dovetail in spaces defined between opposed mirror image arcs of adjacent circles in an adjacent row with peripheries of circles of one row abutting peripheries of two adjacent circles of an adjacent row of circles to maximize material usage on said sheets with said abutting circles including peripheral tab portions integral therewith to extend from the peripheries thereof into the material between circles;

separating laminations of preselected shape form the confines of said circles and integral tab portions defining the active material diameter of said laminations; and,

stacking a preselected number of separated laminations with said integral tab portions in stacked alignment to provide tongues cooperatively insertable into opposed slotted support members to form the basic core of a stator.

4,882,833
METHOD AND APPARATUS FOR MOUNTING COILS INSIDE A HOLLOW CYLINDRICAL ARTICLE

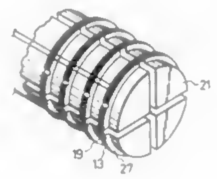
Hiromichi Hiramatsu; Hitoshi Odashima, both of Yokohama; Kuniaki Hirayama, Katsuta, and Toshio Ohji, Mito, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 13, 1988, Ser. No. 193,662

Claims priority, application Japan, May 13, 1987, 62-114565

Int. Cl.^{4} H02K *15/00*

U.S. Cl. 29—596 **18 Claims**



1. A method for mounting coils to the inner periphery of a hollow cylindrical article, comprising the steps of:

providing means for holding and expanding a coil, said holding and expanding means having a substantially circular outer surface and having means for opening and closing in a radial direction so as to increase the diameter of said circular outer surface;

winding a wire around said circular outer surface to form a coil of substantially circular shape having a first outer diameter;

inserting said coil bolding and expanding means into the hollow cylindrical article with the coil formed thereon; and

expanding the coil formed around the circular outer surface by opening said coil holding and expanding means in the radial direction so that the diameter of the coil holding and expanding means is increased to be substantially equivalent to the inner periphery of the hollow cylindrical article and the coil undergoes an elongation and a plastic deformation to expand the size of the coil to a second coil outer diameter that is greater in diameter than said first coil outer diameter, and mounting the expanded coil of the second coil outer diameter to the inner periphery of the hollow cylindrical article.

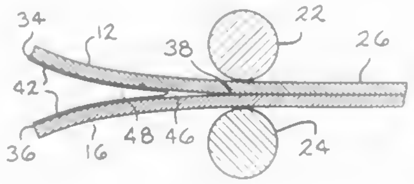
4,882,834
FORMING A LAMINATE BY APPLYING PRESSURE TO REMOVE EXCESS SEALING LIQUID BETWEEN FACING SURFACES LAMINATIONS

Jerry W. Schoen, Hamilton, Ohio, assignor to Armco Advanced Materials Corporation, Lydora, Pa.

Filed Apr. 27, 1987, Ser. No. 43,077

Int. Cl.^{4} H01F *7/06;* **B32B** *31/08, 31/12*

U.S. Cl. 29—605 **16 Claims**



1. A method of forming a laminate comprising the steps of:

providing at least two laminations,

each said lamination having a facing surface,

applying a liquid to one of said facing surfaces,

said liquid having a viscosity no greater than about 80 cP at 24° C.

applying pressure to said laminations to remove excess liquid between said surfaces as said surfaces are brought into contact with each other whereby air between said surfaces is displaced and said liquid forms a seal to prevent reentry of said air.

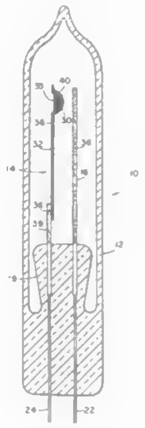
4,882,835
METHOD OF MAKING GLOW DISCHARGE STARTER

Nikolaos Barakitis, Salem, and Gregory Zaslavsky, Brookline, both of Mass., assignors to GTE Products Corporation, Danvers, Mass.

Division of Ser. No. 156,123, Feb. 16, 1988, Pat. No. 4,843,282. This application Jun. 19, 1989, Ser. No. 352,232

Int. Cl.^{4} H01J *7/30;* **H05B** *41/08*

U.S. Cl. 29—622 **3 Claims**



1. The method of making a glow discharge starter comprising the steps of providing an envelope, forming a bimetallic electrode with a bimetallic element, providing a counter electrode, completely covering said electrodes with a silver plating, sealing said bimetallic electrode and said counter electrode within said envelope, exhausting said envelope, filling said envelope with a gas at a predetermined pressure, and hermetically sealing said envelope.

4,882,836
PRECISION AUTOMATIC ASSEMBLY APPARATUS INCLUDING AIR CORE COILS AND CORRESPONDING MAGNETIC POLES

Toshiro Higuchi, Yokohama, Japan, assignor to Research Development Corporation, Tokyo, Japan

Division of Ser. No. 37,919, Apr. 13, 1987. This application Apr. 22, 1988, Ser. No. 184,744

Claims priority, application Japan, Feb. 20, 1987, 62-35901; Feb. 20, 1987, 62-35902

Int. Cl.^{4} B25J *11/00*

U.S. Cl. 29—719 **5 Claims**

1. A precision automatic assembly apparatus for inserting an insertable part into a hole formed in a member, comprising:

(a) a movable hand;

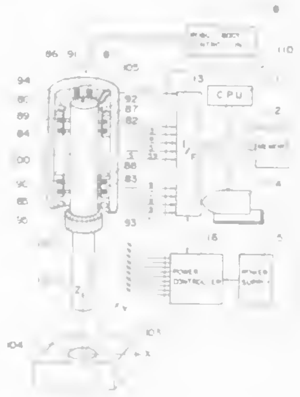
(b) a movable body incorporated in said hand;

(c) an electromagnetic-type wrist mechanism having a plurality of electromagnetic devices for supporting said movable body and controlling said movable body along a plurality of axes, each of said electromagnetic devices comprising a linear DC actuator having an air-core coil and a magnetic pole corresponding thereto;

(d) a position detector for detecting the position of said movable body;

(e) said insertable part being mounted on an end portion of said movable body;

(f) means for determining the external force which acts upon said insertable part in a position at which ssaid insertable part contacts said member based on an output signal from said position detector inputted to said determining means and current values of excitation coils of said electromagnetic devices inputted to said determining means and for determining the absence of said external force when said



insertable part is aligned with and inserted into said hole; and

(g) means for adjusting the position of said insertable part relative to said hole based on an output signal from said determining means until said insertable part and said hole are in alignment and said part is inserted in said hole.

4,882,837
PRECISION AUTOMATIC ASSEMBLY APPARATUS INCLUDING FACE TO FACE MAGNETS AND AN AIR CORE COIL THEREBETWEEN

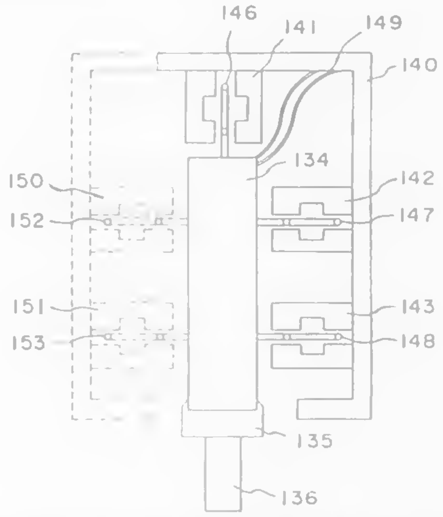
Toshiro Higuchi, Yokohama, Japan, assignor to Research Development Corporation, Tokyo, Japan

Division of Ser. No. 37,919, Apr. 13, 1987. This application Apr. 22, 1988, Ser. No. 185,019

Claims priority, application Japan, Feb. 20, 1987, 62-35901; Feb. 20, 1987, 62-35902

Int. Cl.^{4} B25J *11/00*

U.S. Cl. 29—719 **5 Claims**



1. A precision automatic assembly apparatus for inserting an insertable part into a hole formed in a member, comprising:

(a) a movable hand;

(b) a movable body incorporated in said hand;

(c) an electromagnetic-type wrist mechanism having a plurality of electromagnetic devices for supporting said movable body and controlling said movable body along a

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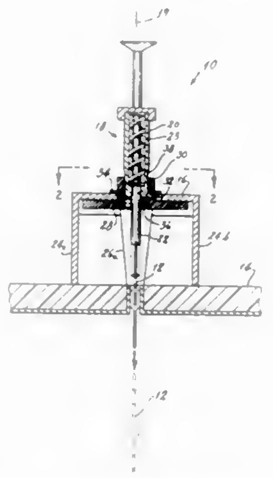
plurality of axes, each of said electromagnetic devices comprising a pair of fixed face-to-face magnets with a rectangular air-core coil therebetween;
(d) a position detector for detecting the position of said movable body;
(e) said insertable part being mounted on an end portion of said movable body;
(f) means for determining the external force which acts upon said insertable part in a position at which said insertable part contacts said member based on an output signal from said position detector inputted to said determining means and current values of excitation coils of said electromagnetic devices inputted to said determining means and for determining the absence of said external force when said insertable part is aligned with and inserted into said hole; and
(g) means for adjusting the position of said insertable part relative to said hole based on an output signal from said determining means until said insertable part and said hole are in alignment and said part is inserted in said hole.

4,882,838
COMPONENT REMOVAL METHOD

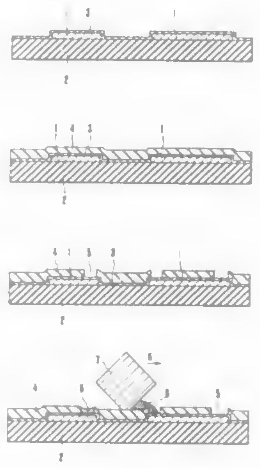
Gerald M. Jones, Titusville, and Rhonda L. Nemcovsky, Warren, both of Pa., assignors to GTE Products Corporation, Stamford, Conn.
Division of Ser. No. 319,388, Mar. 3, 1989, Pat. No. 4,872,259. This application Jun. 23, 1989, Ser. No. 370,489
Int. Cl.⁴ H05K *3/30*
U.S. Cl. 29—829 1 Claim



1. A method of removing friction-fitted, axially aligned electrical components from a printed circuit board comprising the steps of:
positioning on said board a component removal apparatus, said apparatus having a base, a component removal tool mounted on said base and first and second pairs of legs mounted with said base, one pair of which is rotatably adjustable relative to the other;
positioning said legs on said board in a manner to avoid interference with adjacent components while aligning said tool with said component to be removed, said aligning including rotating said one pair of legs relative to said other pair of legs; and
actuating said tool while so aligned to engage said component and drive it from said board.

4,882,839
METHOD OF MANUFACTURING MULTI-LAYERED WIRING SUBSTRATE

Yoshitsugu Okada, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan
Filed Apr. 18, 1989, Ser. No. 339,718
Claims priority, application Japan, Apr. 22, 1988, 63-100833
Int. Cl.⁴ H05K *3/06, 3/28, 3/46*
U.S. Cl. 29—853 1 Claim

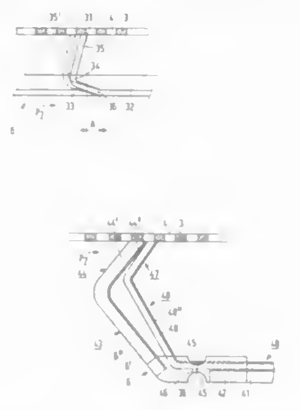


1. A method of manufacturing a multi-layered wiring substrate, comprising:
the first step of forming a palladium thin film on an entire surface of a substrate including a conductor wiring layer;
the second step of masking a portion except for a predetermined via formation portion on said palladium thin film by a first photoresist;
the third step of embedding a polyimide-based conductive resin in said via formation portion through said first photoresist;
the fourth step of removing said first photoresist;
the fifth step of masking said conductor wiring layer and said via formation portion by a second photoresist;
the sixth step of etching said exposed palladium thin film;
the seventh step of removing said second photoresist;
the eighth step of curing said conductive resin; and
the ninth step of applying a photosensitive polyimide resin to an entire surface of said substrate, forming a via-hole in said via formation portion, and thereafter curing the photosensitive polymide resin.

4,882,840
DRY-SHAVING APPARATUS

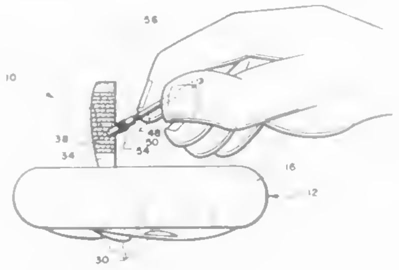
Eduard W. Tietjens, Eindhoven, Netherlands, assignor to U.S. Philips Corp., New York, N.Y.
Filed Aug. 1, 1988, Ser. No. 226,564
Claims priority, application Netherlands, Apr. 8, 1986, 8600878
The portion of the term of this patent subsequent to Nov. 24, 2004, has been disclaimed.
Int. Cl.⁴ B26B *19/04*
U.S. Cl. 30—43.6 13 Claims

10. A dry-shaving apparatus comprising an external shear member formed with hair-entry apertures and an associated internal shear member rotatably drivable relative to the external shear member; said internal shear member including at least one hair-severing cutter with a cutting edge effective to sever a hair in cooperation with the external shear member, a carrier having an upper side and an underside and with one or more openings in which one or more of said cutters are disposed, said cutters being loaded by parts of a resilient body secured to the underside of said carrier, and the upper side of said carrier having a resilient element which acts between the carrier and the cutter, at least a part of said cutter being movable against the action of said resilient element in a direction substantially opposed to the direction of driving the internal shear member.



4,882,841
SPARK PRODUCER IN CONJUNCTION WITH A KNIFE

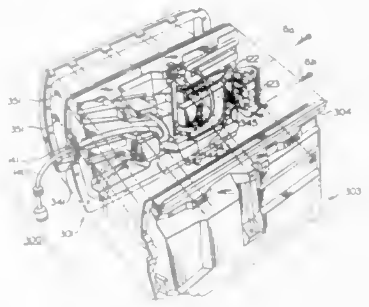
Peter I. Margolis, 1546 El Dorado Dr., Thousand Oaks, Calif. 91362
Filed Feb. 15, 1989, Ser. No. 310,856
Int. Cl.⁴ B25F *3/00*
U.S. Cl. 30—125 4 Claims



1. In combination with a knife, said knife having a housing, said housing being capable of functioning as a graspable handle, spark producing means mounted in conjunction with said handle, said spark producing means comprising:
a flint rod assembly, said flint rod assembly including a flint;
a storage chamber, said flint rod assembly being connectable with said storage chamber, said flint rod assembly being substantially totally confineable with said storage chamber, said flint rod assembly being removable from said storage chamber;
a striking surface carried by said handle, said flint to be manually moved against said striking surface to produce a spark which is utilized to start a fire;
said flint rod assembly including a carrier rod, said flint being mounted within said carrier rod; and
said carrier rod having an inner edge, said inner edge being threaded, said carrier rod to be threadably secured to said storage chamber when said carrier rod is totally confined within said storage chamber.

4,882,842
METHOD OF SIMPLIFYING ON-LINE ASSEMBLY OF VEHICULAR DOOR COMPONENTS

Rochford R. Basson, Ann Arbor; David V. Tinder, Dearborn, and George A. Wooldridge, Warren, all of Mich., assignors to United Technologies Automotive, Inc, Dearborn, Mich.
Filed Sep. 15, 1987, Ser. No. 97,555
Int. Cl.⁴ H01R *43/00*
U.S. Cl. 29—857 22 Claims



1. A method of simplifying an on-line assembly of door components of a motor vehicle to make a completely assembled door in a main assembly line at a main assembly site for the motor vehicle, comprising the following steps:
(a) manufacturing in a preassembly line operation a modular trim panel door assembly unit at at least one site removed from the main assembly line site for the motor vehicle, including the sub-steps of
molding at least one panel layer having an innermost side and an outermost side, forming therein on the innermost side of said panel layer a series of cavities and walls;
providing on the outermost side of said panel layer a finished, trim layer; and
mounting and attaching a number of electrical and mechanical elements for the door onto the molded panel layer within said molded cavities and adjacent to at least one of said walls, using said cavities and said walls to position and hold adjacent ones of said elements within said cavities and said walls; forming said modular trim panel door assembly unit; and
(b) thereafter, forwarding said modular trim panel door assembly unit to a different site for the unit to be attached to a vehicular door frame including an exterior door panel of a motor vehicle to make a completely assembled door for the vehicle in the main assembly line.

4,882,843
STRUCTURE OF A HEAD OF A FLEXIBLE FILAMENT TYPE GRASS TRIMMER

Toru Baba, Yokosuka, Japan, assignor to Kioritz Corporation, Tokyo, Japan
Filed Jun. 6, 1988, Ser. No. 203,478
Claims priority, application Japan, Jun. 11, 1987, 62-90258[U]
Int. Cl.⁴ A01D *50/00*
U.S. Cl. 30—276 4 Claims

1. A flexible cord grass trimmer having a head comprising a housing, a drive shaft fixed to said housing for conjoint rotation, a spool disposed about said shaft on the outer surface of which is wound at least one cord, and a spool support slidably mounted over said drive shaft and interposed between said drive shaft and the inner surface of said spool, said spool support comprising an inner cylindrical member slidably disposed about said drive shaft, an outer cylindrical member spaced concentrically therefrom and integrally connected thereto, at least one L-shaped slot uniformly arranged in the inner surface of said spool opening out of the upper edge thereof and radially extending projections on the exterior surface of said spool support adapted to be received in said slots respectively, spring means biasing said spool support into releasable engagement

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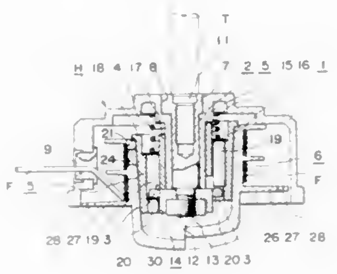
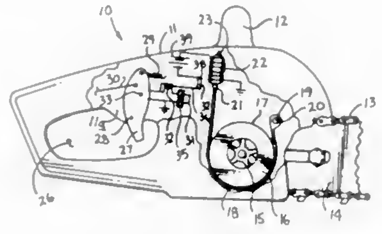
with said spool, and means cooperating to cause selective engagement of said spool support and said drive shaft to provide conjoint rotation of said spool support in response to the rotation of said drive shaft and for overcoming said bias and release said spool support from engagement with said spool on movement of said spool axially relative to the drive shaft to permit said flexible cords to be played out from said spool, said inner and outer cylindrical members of said spool support are connected by two sets of pawls and said drive shaft is provided with cooperating pawls which are engageable and disengageable in response to the movement of spool relative to said drive shaft.



4,882,844

CHAIN SAW SAFETY BRAKE APPARATUS

Michael Stokan, Star Route West, Anaconda, Mont. 58711
Filed Dec. 5, 1988, Ser. No. 279,491
Int. Cl.⁴ B27B *17/00*
U.S. Cl. 30—381 3 Claims



1. A chain saw safety brake apparatus comprising, in combination,

a chain saw including a housing and a cutting chain extending forwardly of said housing and rearwardly secured about a forwardly extending stationary bar, and

a rotatable rear sprocket contained within said housing, said rear sprocket fixedly secured to a brake drum, and

flaccid brake band overlying a substantial surface of said brake drum, said brake band secured to said housing at one end of said band and secured to an actuating means at a second end of said band wherein said actuating means is completely contained within said housing, and

wherein said actuating means comprises an electrically actuatable solenoid, and

wherein said housing is formed with an opening therethrough and a trigger switch is pivotally mounted within said housing extending downwardly into said opening, and said trigger switch includes an elongate link pivotally secured to said trigger switch, and said link includes a first contact portion secured to said link, and said first contact portion cooperates with a second contact portion wherein contiguous contact of said first contact portion with said second contact portion effects actuation of said solenoid means to tighten said band about said brake drum to arrest movement of said cutting chain, and

wherein said trigger switch includes a "U" shaped recess to accept said elongate link therein, and said elongate linke is pivotally connected within said "U" shaped recess including an elongate pivot pin extending through said trigger switch and said elongate link, and

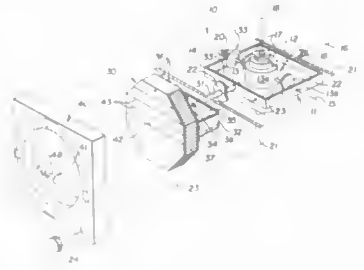
wherein said elongate link is secured to said trigger switch at one end, and is slidably mounted within a surrounding bushing adjacent its other end to maintain alignment of said elongate link and said first contact portion, and

wherein said elongate link includes a raised central portion, and said raised central portion has secured thereto a plurality of arms extending parallel to said elongate link forwardly thereof, and said first contact portion is secured at forwardmost ends of said arms.

4,882,845

GYROSCOPIC ARTIFICIAL HORIZON

Francis Boyer, Yvelines, France, assignor to Societe Francaise d'Equipements pour la Navigation Aerienne S.F.E.N.A., Villacoublay, France
Continuation of Ser. No. 77,679, Jul. 22, 1987, abandoned. This application Sep. 28, 1988, Ser. No. 251,374
Claims priority, application France, Jul. 25, 1986, 86 10804
Int. Cl.⁴ G01C *19/38*
U.S. Cl. 33—328 11 Claims



1. Gyroscopic artificial horizon comprising a gimbal mount mounted in a support structure, a gyroscope suspended in said gimbal mount, said gimbal mount having an outer frame adapted to rotate about a first axis and an inner frame adapted to rotate relative to said outer frame about a second axis orthogonal to said first axis, a luminous display screen rotationally coupled to said outer frame for displaying an angular position of said outer frame relative to said support structure, a sensor disposed either on the inner or the outer frame for sensing the angular position of said inner frame relative to said outer frame, and a processor adapted to drive said luminous display screen to show said angular position of said inner frame relative to said outer frame as an artificial horizon.

4,882,846

STAIR BUILDING TEMPLATE AND METHOD OF USE

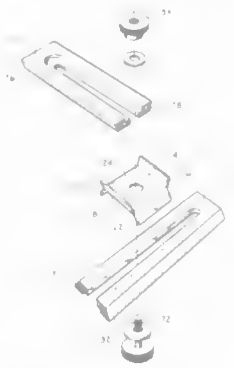
Philip Reed, 818 Ida Ave. #4, Solana Beach, Calif. 92075
Filed Jul. 12, 1988, Ser. No. 217,633
Int. Cl.⁴ B43L *7/00*
U.S. Cl. 33—464 3 Claims

1. A stair template which comprises:

a plurality of horizontal members;

a plurality of vertical members; and

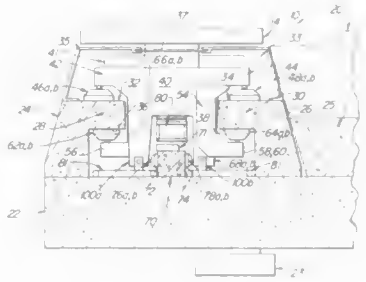
a connector, slidably engaged with a horizontal member and a vertical member and adjustable to hold said respective horizontal member in a right-angled relationship with said vertical member, said connector comprising a base plate, a pair of opposed sides upwardly extending from said base plate to receive one of said horizontal members therebetween, and a pair of opposed sides downwardly extending from said base plate to receive one of said vertical members therebetween.



4,882,847

COORDINATE MEASURING MACHINE WITH IMPROVED CARRIAGE WAY ARRANGEMENT

Thomas L. Hemmelgarn, Dayton, and Freddie L. Raleigh, Centerville, both of Ohio, assignors to The Warner and Swasey Company, Cleveland, Ohio
Filed Feb. 3, 1989, Ser. No. 305,598
Int. Cl.⁴ G01B *7/03*
U.S. Cl. 33—503 19 Claims



1. A coordinate measuring machine (**10**) having an improved carriage way arrangement, said coordinate measuring machine of the type including a base (**12**), a probe shaft (**16**) having a tip (**18**); mounting means (**14, 12**) mounting said probe (**16**) for movement along each of three orthogonal axes (X,Y,Z), said mounting means including a carriage (**40**) supporting said probe (**16**), a way arrangement including way surfaces (**32,34**) extending along one of said axes, supporting way bearing means (**46***a,b;* **48***a,b*) and guide bearing means (**72,74,76***a,b;* **78***a,b*) supporting and guiding said carriage (**40**) for linear movement along said way surface (**32,34**) (X), characterized by the improvement wherein said way arrangement comprises:

a pair of spaced apart angled elongated way members (**24, 26**) affixed to a member **22**, of said base (**12**) parallel to each other and to said one axis, each of said way members (**24, 26**) having an inwardly extending overhang portion (**28, 30**) defining an upper horizontal way surface (**32, 34**) each extending along said one (X) axis;

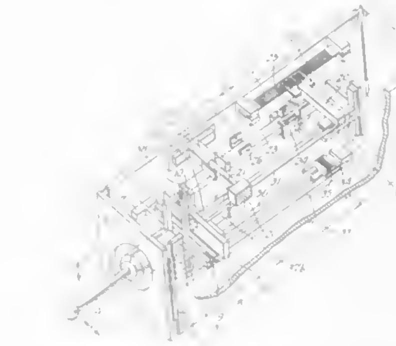
said carriage (**40**) disposed between said way members (**24, 26**) and having first portions (**42, 44**) each extending outwardly to overlie an upper horizontal way surface (**32, 34**) on a respective way member (**24, 26**);

said support way bearing means (**46***a,b;* **48***a,b*) interposed between each of said carriage first portions (**42, 44**) and a respective way surface (**32, 34**) enabling carriage movement therealong.

4,882,848

PROBE HEAD FOR A COORDINATE-MEASURING INSTRUMENT

Karl-Hermann Breyer, Heidenheim; Klaus Herzog, Oberkochen, and Franz Szenger, Königsbronn, all of Fed. Rep. of Germany, assignors to Carl-Zeiss-Stiftung, Heidenheim/Brenz, Oberkochen, Fed. Rep. of Germany
Filed Jul. 28, 1988, Ser. No. 225,162
Claims priority, application Fed. Rep. of Germany, Jul. 30, 1987, 3725205; Jul. 30, 1987, 3725206
Int. Cl.⁴ G01B *7/28*
U.S. Cl. 33—559 19 Claims



1. A probe head for a coordinate-measuring instrument having a probe-suspension system which defines a three dimensional coordinate system wherein a probe can be deflected in all three directions in space, characterized by combination of the following features:

(a) a displacement-measuring system (**34, 34; 24, 25; 19, 20**) is provided in the probe head (**40**) for each of the three coordinate directions (x, y, z), each of said systems producing signals which are proportional to the deflection in the corresponding coordinate direction;

(b) each displacement-measuring system includes means for recognizing the zero position of the involved system;

(c) deflectable means (**22, 32, 37**) are provided to retain the probe (**14**) in the zero position of the displacement-measuring system, in the absence of a deflection force on the probe; and

(d) selectively operable means (**52**) are provided for switching the probe head (**40**) between the switching mode of operation in which a trigger signal is produced and is used for a coordinate measurement, and a measuring mode of operation in which signals generated by one or more of the displacement measuring systems are used for the coordinate measurement.

4,882,849

POSITION-ADJUSTING AND DISTANCE-MEASURING DEVICES PARTICULARLY USEFUL WITH MACHINE TOOLS

Shlomo Amir, 106 Machanayim Street, Tel-Aviv, Israel
Filed Jul. 25, 1988, Ser. No. 225,101
Claims priority, application Israel, Aug. 6, 1987, 83471; Apr. 20, 1988, 86130
Int. Cl.⁴ G01B *3/20*
U.S. Cl. 33—567 13 Claims

1. A position adjusting device for adjusting the position of an adjustable member with respect to a housing to which the adjustable member is mounted, characterized in that the adjustable member is formed with two conical sockets having axes parallel to each other and spaced from each other in the direction of adjustment of the adjustable member; and in that said

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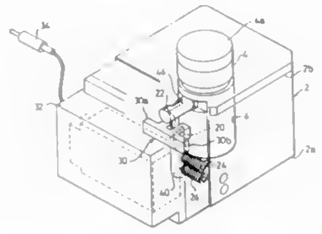
housing threadedly receives two pins eccentically disposed with respect to said sockets, such that threading one pin inwardly of its socket and the other pin outwardly of its socket



moves the adjustable member in one direction, and threading the one pin outwardly of its socket and the other pin inwardly of its socket moves the adjustable member in the opposite direction.

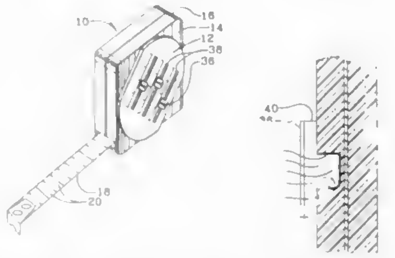
4,882,850
METHOD AND MEANS OF GENERATING DISTANCE MEASURING DATA AND RECORDING SAME

Warren M. Lindsey, 1120 Spring St., Apt. 603, Seattle, Wash. 98104

Filed Nov. 8, 1988, Ser. No. 268,706

Int. Cl.⁴ G01B *3/10*

U.S. Cl. 33—760 **13 Claims**



1. The method of generating distance measuring data and recording same comprising the steps of:
providing a measuring tape having a housing on which a manually, operable slide indicator recorder is provided, said recorder including a slide indicator movable along a visable distance measuring unit scale registrable with said slide indicator to indicate a measured distance;
extending the measuring tape over the area to be measured;
reading the measuring tape for the measured distance data; and
recording the measured distance data from the tape by moving the slide indicator opposite the corresponding measuring unit on the measuring units scale.

4,882,851
APPARATUS AND METHOD FOR BATCH DRYING USING A MICROWAVE VACUUM SYSTEM

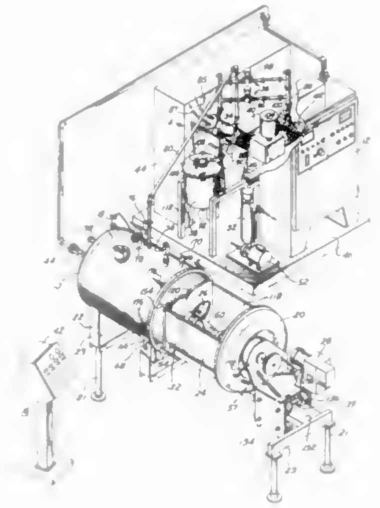
Scott Wennerstrum, Chicago, and Albert Kircher, Jr., Hinsdale, both of Ill., assignors to The Fitzpatrick Co., Elmhurst, Ill.

Filed Apr. 13, 1987, Ser. No. 37,610

Int. Cl.⁴ B01K *5/00*

U.S. Cl. 34—60 **39 Claims**

1. A mechanism for batch drying of a powdered or particulate product, comprising, in combination:
a chamber for drying the product;
a container for the product, rotatably mounted in the chamber to allow dumping thereof;
means for introducing microwaves into the chamber;
means for producing a vacuum in the chamber;
agitation means for agitating the product in the container



during drying, said agitation means including a plurality of paddles rotating about a shaft within the container; and
means for controlling the product's drying.

4,882,852
PROCEDURE AND MEANS FOR DRYING MOVING WEB MATERIAL

Jorma Kautto, Järvenpää , Finland, assignor to Imatran Voima Oy, Finland

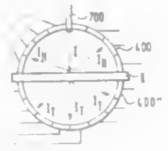
PCT No. PCT/FI87/00140, § 371 Date May 25, 1988, § 102(e) Date May 25, 1988, PCT Pub. No. WO88/03193, PCT Pub. Date May 5, 1988

PCT Filed Oct. 26, 1987, Ser. No. 199,262

Claims priority, application Finland, Oct. 31, 1986, 864449

Int. Cl.⁴ F26B *3/32*

U.S. Cl. 34—41 **18 Claims**



1. A procedure for drying a moving web material (E), wherein infrared radiation is directed on the material (E) to be dried, and the moving web material is transported through a radiation zone of an infrared radiator, the web material to be dried absorbing radiation, and wherein
on the moving web material to be dried, the radiation produced by at least one first infrared radiator (T_1) and the radiation produced by at least one second infrared radiator (T_2) are directed,
said radiators being disposed close to each other,
a maximum intensity wavelength ($\lambda_{maximum}$) (T_1) of the radiation from said first infrared radiator (T_1) being smaller than maximum intensity wavelenth ($\lambda_{maximum}$) (T_2) of the radiation from said second radiator (T_2),
whereby in the drying, a spectrum of total radiation is maximized in relation to absorption spectrum of the material to dried.

4,882,853
APPARATUS FOR CURING COATINGS APPLIED TO A MEMBER

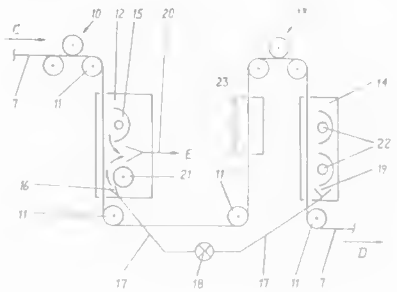
Volker Schaft, Barkénkoppel 38, 2000 Hamburg 65, Fed. Rep. of Germany

Filed Sep. 14, 1988, Ser. No. 244,127

Claims priority, application Fed. Rep. of Germany, Sep. 15, 1987, 3730879; Jan. 12, 1988, 3800628

Int. Cl.⁴ F26B *19/00*

U.S. Cl. 34—68 **17 Claims**



1. An apparatus for curing, by drying and/or hardening, layers or coatings, such as printing colors or inks, laminations, etc., that are continuously successively applied to a member, said apparatus comprising:
an IR drying mechanism that is disposed downstream of the last printing mechanism, of a printing press, for applying IR-reactive colors to said member;
a UV-radiation mechanism disposed downstream of a mechanism for applying a lacquer-like UV-reactive coating to said IR-treated printing colors on said member; and
means for introducing exhaust air from said UV-radiation mechanism into said IR drying mechanism.

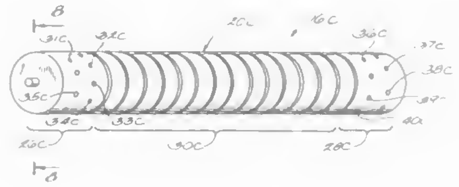
4,882,854
GUIDE ROLL APPARATUS FOR A DRYER OF A PAPER MACHINE DRYING SECTION

Gregory L. Wedel, Beloit, Wis., and J. Larry Chance, Rockton, Ill., assignors to Beloit Corporation, Beloit, Wis.

Filed May 26, 1987, Ser. No. 54,461

Int. Cl.⁴ F26B *13/00, 13/30*

U.S. Cl. 34—115 **13 Claims**



1. A guide roll apparatus disposed adjacent to a dryer of a paper machine drying section, said apparatus guiding a contiguous web and web supporting felt through said drying section, said apparatus comprising:
a rotatable guide roll having an outer cylindrical surface defining a first and second edge portion and a central imperforate portion disposed between said edge portions;
said first edge portion defining a first plurality of air flow channels such that in use of the apparatus, when the web and felt are guided around said rotatable guide roll, air entrapped between said first edge portion and the felt wrapped around said first edge portion is permitted to flow through said first plurality of channels away from the felt so that fluttering of the web during guidance around said first edge portion is inhibited; and
said second edge portion defining a second plurality of air flow channels such that in use of the apparatus, when the web and felt are guided around said rotatable guide roll, air entrapped between said second edge portion and the felt wrapped around said second edge portion is permitted to flow through said second plurality of channels away from the felt so that fluttering of the web during guidance around said second edge portion is inhibited.

4,882,855
DRYER SECTION FOR DRYING A RUNNING WEB IN A PAPER OR BOARD MAKING MACHINE

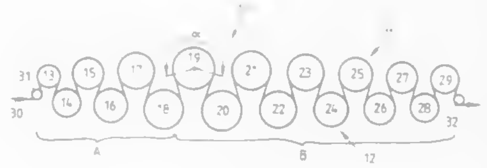
Hans Loser, Langenau; Tri Chau-Huu, and Albrecht Meinecke, both of Heidenheim, all of Fed. Rep. of Germany, assignors to J.M. Voith GmbH, Fed. Rep. of Germany

Filed Jun. 29, 1988, Ser. No. 213,094

Claims priority, application Fed. Rep. of Germany, Jul. 1, 1987, 3721734

Int. Cl.⁴ F26B *13/08*

U.S. Cl. 34—116 **18 Claims**



1. A dryer section of a paper or board making machine, the dryer section comprising:
a series of heated dryers, disposed such that a web to be dried having two sides can be wrapped at least partially around each of the dryers in series, such that the web is heated as it moves along the series of dryers;
said series of dryers comprising a first group of dryers having means to heat up the web after entering the dryer section to a level which is below a level of maximum evaporation rate;
a second group of dryers, following said first group of dryers, with each dryer of that second group having means to heat the web at least to the level of maximum evaporation rate;
said second group of dryers having a first dryer positioned substantially where the web enters the second group, and at least some of the dryers in series thereafter decreasing in diameter in the direction of web travel;
the number of dryers of said second group; being at least equal to the number of dryers of said first group and
at least said second group of dryers being arranged such that alternatingly both sides of the web contact said dryers.

4,882,856
CUSHION WEDGE FOR CUSTOM CONTROL OF IMPACT AND PRONATION UPON HEEL-STRIKE IN VARIOUS WEIGHTS OF WEARERS

John J. Glancy, 6280 Dean Rd., Indianapolis, Ind. 46220

Filed Apr. 25, 1988, Ser. No. 185,905

Int. Cl.⁴ A43B *13/38*

U.S. Cl. 36—43 **17 Claims**

1. A shoe having an elevating heel portion, comprising:
an upper having a foot opening, an anterior portion, a posterior portion, a lateral side and a medial side, said upper being designed and arranged to receive a foot and being open downwardly in the posterior portion;
a midsole connected to the anterior portion of said upper;
a form including a combination board last and heel counter, said form having a medial wall; a lateral wall, a bottom panel and heel wall defining an upwardly opening cavity

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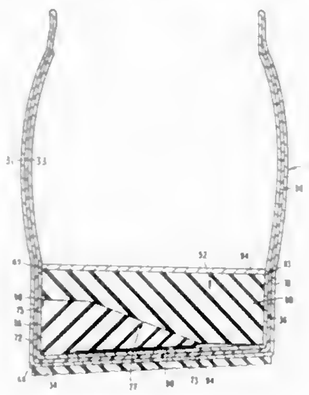
coextensive with the elevating heel portion of the shoe, said form being connected to the posterior portion of said upper and to said midsole;

an outsole connected to said midsole and said form and extending along said upper from said anterior portion to said posterior portion thereof; and

an insert means for reducing impact forces and controlling medio-lateral rotation at heel-strike, said means including

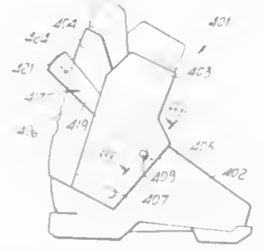


an interchangeable insert sized and arranged to be inserted in said upwardly opening cavity coextensive with the elevating heel portion of the shoe through said foot opening and to be removable therethrough, said insert having a cushion portion incorporated therein which is more compressible than the remainder of said insert.

4,882,857

CLOSURE AND ADJUSTMENT DEVICE, PARTICULARLY FOR SKI BOOTS

Mariano Sartor, Montebelluna, and Valerio Tonel, Barbisano, both of Italy, assignors to Nordica S.p.A., Montebelluna, Italy
Filed Jul. 29, 1987, Ser. No. 78,986
Claims priority, application Italy, Aug. 1, 1986, 82566 A/86; Oct. 29, 1986, 59462/86[U]; Oct. 29, 1986, 59464/86[U]
Int. Cl.⁴ A43B *5/04;* **A43C** *11/00*
U.S. Cl. 36—120 9 Claims

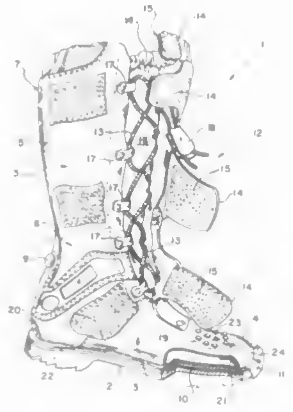


1. In a ski boot of the rear entry type comprising a shell, a front quarter including an instep portion and a rear quarter having a rear surface, attachment means for pivotally connecting said front and rear quarters to said shell, an adjustable closure device for releasably closing said rear quarter against said front quarter to secure a skier's foot therebetween, the improvement consisting in that said adjustable closure device comprises a substantially rigid and U-shaped bracket including a pair of rod-like elements extending along each side of said front and rear quarters, a transverse cross member rigidly connecting said rod-like elements approximately to the rear ends thereof and arranged to face the rear surface of said rear quarter, hinge means for hingedly fastening the front ends of said rod-like elements with at least said front quarter at locations proximate to said instep portion thereof, said rear quarter having a toothed formation protruding rearwardly from said rear surface thereof and having teeth extending substantially horizontally, said cross member being further rigidly associated with a rotatable cam means selectively cooperable with the teeth of said toothed formation and adjustably movable thereagainst, whereby raising of said cross member causes rotation of said bracket in a substantially vertical plane so as to provide engagement of said rotatable cam means with said toothed formation to thereby exert a clamping action on both said front and said rear quarter, and whereby adjustment of said rotatable cam means provides variation in both said clamping action and independent inclination angles of said front and rear quarters with respect to said shell.

4,882,858

BOOTS FOR MOTORCYCLE CROSS-COUNTRY RACING

Dino Signori, Maser, Italy, assignor to SIDI SPORT S.a.s. di Dino Signori & C., Maser, Italy
Filed May 10, 1988, Ser. No. 192,765
Claims priority, application Italy, Feb. 29, 1988, 20747/88[U]
Int. Cl.⁴ A43B *7/32, 5/14*
U.S. Cl. 36—131 6 Claims



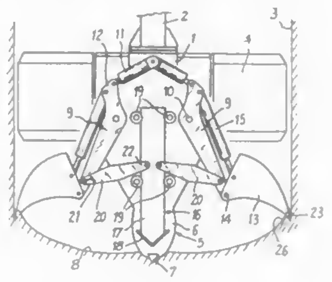
1. A boot for motorcycle cross-country racing comprising:
a sole portion;
an upper affixed to said sole portion, said upper including a toe portion;
a bootleg affixed to said upper, said bootleg including malleolus portions and calf portions disposed on both sides of said bootleg;
said toe, malleolus and calf portions being of a predetermined thickness;
a plurality of holes formed in discrete areas of said toe, malleolus and calf portions of said boot;
a plurality of protection plates mounted within the predetermined thickness of said toe, malleolus and calf portions of said boot and being disposed in the discrete areas adjacent to said plurality of holes; and
a plurality of button-like, hollow portions constructed of an elastically deformable material projecting outwardly from said plurality of protection plates and through the plurality of holes in said discrete areas of said toe, malleolus and calf portions of said boot for attenuating shock transmitted to said boot.

4,882,859

EXCAVATING BUCKET HAVING SCOOPS

Karl Bollinger, Rueil Malmaison, France, assignor to Soletanche, Nanterre, France
Filed Oct. 25, 1988, Ser. No. 262,443
Claims priority, application France, Nov. 5, 1987, 87 15355
Int. Cl.⁴ B66C *3/02*
U.S. Cl. 37—187 6 Claims

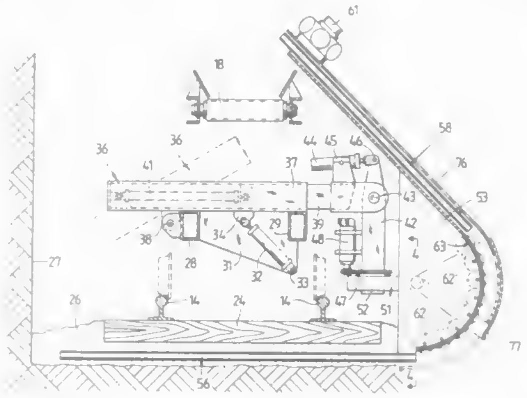
1. An excavating bucket apparatus including two scoops mounted for movement with respect to a frame from an open terrain-engaging position to a closed position in which said scoops enclose cuttings, characterized by the fact that said apparatus includes a central bucket body means integral with said frame and having at least two lateral walls, support levers associated with each scoop, for mounting said scoops pivotally on said frame; closing means being provided to cause, when the bucket apparatus is in said closed position, a rotation of the scoops with respect to their support levers during a first phase, and to cause during a second phase, a rotation of the levers with respect to the frame, said scoops being arranged so that, in said closed position, they approach the central body from both directions with their lateral walls extending from the lateral walls of the central body.



4,882,860

APPARATUS FOR REMOVING BALLAST FROM BENEATH RAILROAD TRACKS

John B. Whitaker, Jr., Wetumpka, Ala., assignor to Kershaw Manufacturing Company, Inc., Montgomery, Ala.
Filed Sep. 12, 1988, Ser. No. 242,555
Int. Cl.⁴ E01B *27/04*
U.S. Cl. 37—191 A 12 Claims

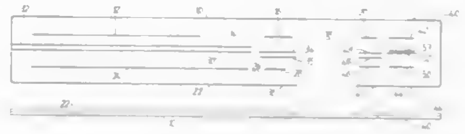


6. Apparatus supported on a track mounted carriage for removing ballast from beneath a railroad track comprising a continuous chain undercutter including a chain mounted for circuitous movement along the periphery of said undercutter such that said chain is constrained to move along a first peripheral portion extending beneath said railroad track from a first side thereof to an opposite side thereof, thence along a second peripheral portion beneath said railroad track from said opposite side to said first side, thence along a curvilinear third peripheral portion upwardly about the first side of said track, thence along a fourth peripheral portion inclined at an acute angle relative to said second peripheral portion and extending above said track mounted carriage; thence along a fifth peripheral portion parallel to and co-planar with said fourth peripheral portion, thence along a curvilinear sixth peripheral portion parallel to said curvilinear third peripheral portion to said first peripheral portion, whereby ballast is removed from beneath said track by said chain as it moves along said peripheral portions; and conveying means mounted atop said carriage for receiving and conveying ballast from said continuous chain undercutter proximal said fourth peripheral portion.

4,882,861

BAGGAGE AND SECURITY LABEL, PRIMARILY FOR USE BY AIRLINES

Peter G. Holmes, Tattershall Thorpe; Michael Lowe, Great Hale, and Christopher Donaghue, Boston, all of England, assignors to Norprint International Limited, Boston, England
Filed Oct. 15, 1987, Ser. No. 109,213
Claims priority, application United Kingdom, Oct. 15, 1986, 24714
Int. Cl.⁴ G09F *3/100*
U.S. Cl. 40—299 8 Claims



1. A labelling tag comprising four members initially detachably adhered together to form a whole assembly such that each member is adhered to at least one other such member, a first said member being elongate and having

a first pressure-sensitive adhesive layer covering a portion only of one face of the member such that when separated from the other members the first member can form a loop by a non-adhesive coated portion thereof becoming adhered to the first adhesive layer.

a second said member partially covering and being detachably adhesively secured to the first said member by said first adhesive layer,

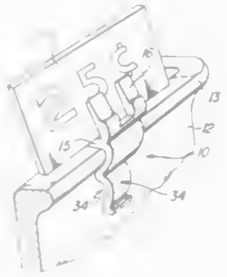
a third said member separate from the first member but initially lying in the same plane as and forming effectively a continuation of the first member, and

a fourth said member completely covering and being detachably adhesively secured to the third member and partly covering and being detachably adhesively secured to an end portion of the first member so that the fourth member effectively spans the first and third member and thus maintains the tag integral until the point of use.

4,882,862

CLIP FOR MOUNTING PRICE CARDS UPON CONTAINER EDGES

Robert J. Slavsky, Sr., Lathrup Village, Mich., assignor to Shaw & Slavsky, Inc., Detroit, Mich.
Filed Jan. 14, 1988, Ser. No. 143,723
Int. Cl.⁴ G09F *3/00*
U.S. Cl. 40—324 14 Claims



1. A clip for mounting a small size, price display type card

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upon different shaped edges of the walls of open top containers such as bowls and the like, comprising:

a generally horizontally, rectangularly shaped base having a pair of integral, resilient legs extending downwardly from opposite edges to form a downwardly opening, edge receiving channel for fitting over the upper edge of a wall of an open top container;

two pairs of upwardly extending, generally parallel legs, integrally formed on the upper surface of the base, with the legs spaced closely to each other to form an upwardly opening card receiving channel between the legs of each pair of legs, and a third, central upwardly opening channel formed by the space between the two pairs of legs;

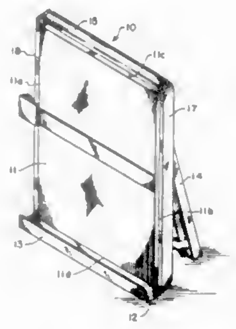
the adjacent surfaces of the two adjacent legs of each pair being sloped at an angle relative to the vertical to form angled, outermost card receiving channels that receive and hold the lower edges of cards with the cards tilted at an angle relative to the base, that is, tilted relative to vertical;

the central channel formed by the space between the two pairs of legs being about perpendicular to the base for holding the edge of a card about vertically;

whereby a card edge may be selectively inserted within one of the three card receiving channels for holding the card in a tilted or vertically directed position.

4,882,863
NONMAGNETIC COPYHOLDER AND CLIP

Richard L. Gross, Fox River Grove, Ill., assignor to Wilson Jones Company, Chicago, Ill.
Filed Sep. 24, 1987, Ser. No. 100,512
Int. Cl.⁴ B41J *11/64*
U.S. Cl. 40—352 7 Claims



4. A copyholder comprising

(a) plastic planar frame means capable of supporting a stack of sheets of paper with said frame means including a side piece;

(b) plastic block means including rail means movable along the side piece and in engagement with the side piece due to the compressibility and deflectability of the side piece or the block means and such side piece and block means being maintainable in selected relative plastic-to-plastic positions relative to one another by torque and friction;

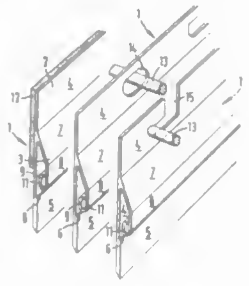
(c) extension means having a lower end and an upper end frictionally engageable in the block means and extending therefrom for movement substantially perpendicular to the plane of the frame means;

(d) pivotal plate means pivotally mounted on the upper end of the extension means; and

(e) arm means secured to the plate means whereby the arm means (1) may be moved along the side piece and held, through compression of the side piece or block means, in a selected position and (2) may be moved toward or away from the planar frame as the extension means moves in the block means.

4,882,864
DOCUMENT SUSPENSION APPARATUS

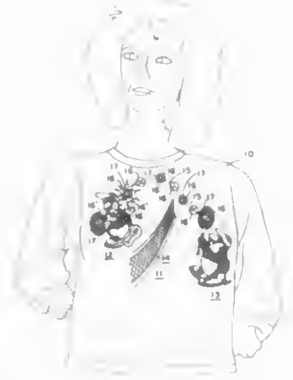
Clive Selwyn-Smith, Weston on the Green, United Kingdom, assignor to Locwyn Limited, Oxon, England
Filed Nov. 12, 1987, Ser. No. 119,682
Claims priority, application United Kingdom, Nov. 19, 1986, 8627643; Jun. 25, 1987, 8714914
Int. Cl.⁴ B65D *27/00*
U.S. Cl. 40—359 15 Claims



1. Suspension apparatus comprising a track having first and second walls dependent from a bridging portion and defining a channel, support means for the track, a step facing the bridging portion formed within the channel and on the first wall and, a suspendable article having a lamina edge portion defining an abutment; wherein said track further comprises a resiliently flexible guide member extending from the second wall, which guide member is arranged to guide the lamina edge portion into the channel from a direction transverse to the channel and, to co-operate with said step to positively engage said suspendable member, when said lamina edge portion thereof is within the channel and said abutment is in contact with said step, thereby supporting the suspendable article and preventing the release of the suspendable article in said transverse direction.

4,882,865
LIGHT-ANIMATED GRAPHICS DISPLAY

Frits J. Andeweg, 7737 Royal La., Dallas, Tex. 75230
Filed Jan. 21, 1988, Ser. No. 146,390
Int. Cl.⁴ G09F *13/00*
U.S. Cl. 40—442 2 Claims



1. In combination, a shirt and a light-animated graphics display system associated with said shirt, said graphics display system comprising:

(a) a graphic illustration disposed upon an outer face of said shirt;

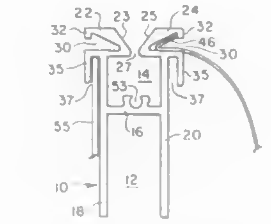
(b) discrete light sources comprising light-emitting diodes disposed along, and forming an integral part of, said graphic illustration, said diodes extending through openings in said shirt at selected locations along said illustration;

(c) pre-programmed timing circuit control means disposed at the interior surface of said shirt for sequentially illuminating said diodes in a manner which creates the illusion of movement from one location on said illustration toward a second spaced location on said illustration; and

(d) portable battery means for powering said timing circuit control means, said battery means being retained in a pocket fixed to said interior surface of said shirt.

4,882,866
SIGNAGE SYSTEM SUPPORT STRUCTURE

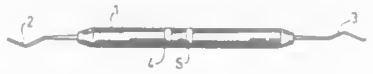
Roland Gebhardt, 67 Vestry St., New York, N.Y. 10013
Filed Dec. 15, 1986, Ser. No. 941,595
Int. Cl.⁴ G09F *7/02*
U.S. Cl. 40—611 17 Claims



1. A signage system suport structure comprising a pair of multigrooved channel members, each channel member having a pair of spaced parallel legs joined by a web to form oppositely facing medial grooves, which in conventional usage of the support structure will face upwardly and downwardly; an inwardly extending flange secured at one end of each of said legs to constrict one of said medial grooves; a lateral groove on at least one side of said medial grooves on each channel member, said lateral groove formed on the same side of each channel member when joined into said support structure; an outwardly facing groove in each flange; and a connecting element positioned to extend between said channel members and arranged within a medial groove of each connected channel member.

4,882,867
DENTAL INSTRUMENT HAVING IDENTIFICATION MARKINGS

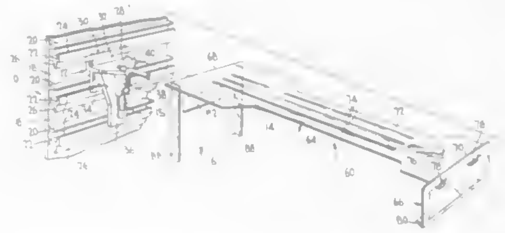
Sigurd R. Lindén, Teatergatan 4, S-582 22 Linköping, Sweden
PCT No. PCT/SE87/00114, § 371 Date Aug. 3, 1988, § 102(e) Date Aug. 3, 1988, PCT Pub. No. WO87/05487, PCT Pub. Date Sep. 24, 1987
PCT Filed Mar. 6, 1987, Ser. No. 228,914
Claims priority, application Sweden, Mar. 13, 1986, 8601188
Int. Cl.⁴ G09F *3/02*
U.S. Cl. 40—625 4 Claims



1. A dental instrument of the type comprising an elongate handle portion (1) which consists of a plastic material and which, at least at its one end, has an instrument (2, 3), the circumferential surface of the handle portion exhibiting annular zones (4, 5) which are of mutually different colours for the purpose of facilitating identification of an instrument to be selected by the dentist, namely in the way that instruments having different functions comprise annular zones in different numbers and/or in different colours, characterized in that each annular zone (4, 5) is constituted by the circumferential surface of a member (7) having a shape selected from the group comprising a ring, a sleeve and a disc, and is supported by a shaft-like extension (6) of the instrument portion extending inside the handle portion between the two ends thereof.

4,882,868
PRODUCT INFORMATION TAG WITH SPECIALIZED MOUNTING PORTION

Jacob Fast, 7561 NW. 9th St., Plantation, Fla. 33317
Filed Mar. 21, 1989, Ser. No. 326,792
Int. Cl.⁴ A47G *29/10*
U.S. Cl. 40—657 6 Claims



1. A product information and display tag for use with a substantially horizontal oriented product suspension hook, the hook having a proximal end bracket for releasably attaching same to a wall panel and the like, said bracket including a horizontal flange having a back edge and a front edge, a depending flange extending from the horizontal flange, a depending handle extending from the horizontal flange forwardly of the depending flange with a neck formed between the handle and the depending flange, and attachment means on the bracket for an elongate product support hook, the tag comprising an elongate flexible sheet having a proximal end mounting portion for attachment to the bracket, an elongate intermediate body portion for extending over the hook, and a distal end display portion for product information, the mounting portion having an opening for receiving the bracket by inserting the handle through the opening and twisting the bracket so that one edge of said opening is located between said depending flange and said handle adjacent the neck and an opposite edge of the opening is located above said horizontal flange, wherein the width of the opening between said edges is less than the distance between said neck and the front edge of said horizontal flange to preclude the mounting portion from working forwardly over the front edge of said horizontal portion when the tag is in use.

4,882,869
COMBINATION RIFLE REST AND ANIMAL CHOKE STICK

John R. Webster, 12219 Navajo St., Savannah, Ga. 31419
Filed Aug. 11, 1988, Ser. No. 231,029
Int. Cl.⁴ F41C *29/00*
U.S. Cl. 42—94 6 Claims

1. A portable device for permitting the resting of a rifle or other firearm at any position including prone, kneeling, sitting and standing, comprising:

inner and outer hollow cylindrical rigid tube members, each said tube member having a proximal end and a distal end, said inner tube member being telescopically received through the proximal end of said outer tube member, said tube members thereby providing support for a rifle or other firearm in a stable, balanced attitude;

an upper firearm supporting yoke provided at the proximal end of the inner tube member;

a lower firearm support coupled to the outer tube member: means for mounting a ground spike for insertion into the ground to the distal end of said outer tube member; and

means for adjusting a length of the inner tube member ex-

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tending proximally from the outer tube member and for locking said inner tube member relative to said outer tube member so that the upper firearm support means can be continuously adjusted in height and locked into place,

wherein said outer tube member further includes means for continuously adjusting the position of the lower firearm support along the outer tube member and for locking the lower firearm support in place.

4,882,870

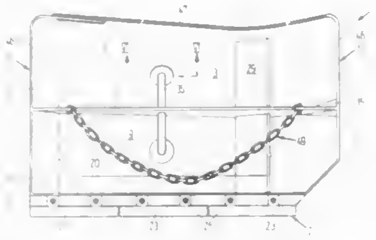
TRAWLER DOOR

Peter S. Andreasen, Sprogøvej 10 A, DK-7680 Thyboron, Denmark

Filed Nov. 3, 1988, Ser. No. 266,816

Int. Cl.⁴ A01K *73/04*

U.S. Cl. 43—9.1 **4 Claims**



1. A trawler door with relative dimensions in its functional position such that the height of the door is at most seventy five per cent of its length, comprising two longitudinally arcuate platelike body parts joined along a longitudinal edge with an obtuse angle between said body parts, the joint between said body parts being stiffened by a platelike reinforcing member extending substantially along the whole length of said joint, at least one of the said body parts being stiffened by at least one tubelike member of circular or elliptical cross section affixed at one end to the said reinforcing member and at the other end to a location on one said body parts.

4,882,871

HOOK-DISGORGING DEVICE

Paolicchi Marina, Lucca, Italy, assignor to Nedo Berutto, San Marco, Italy

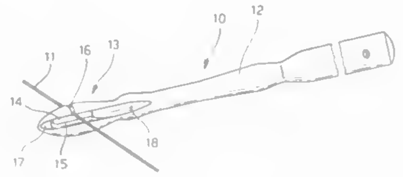
Filed Feb. 21, 1989, Ser. No. 312,974

Claims priority, application Italy, Feb. 22, 1988, 17704 A/88

Int. Cl.⁴ A01K *97/00*

U.S. Cl. 43—53.5 **8 Claims**

1. A disgorging device for removing hooks from the mouth and gullet of a fish comprising a stem portion having a longitudinal axis and a hook-disgorging head portion at at least one of said stem portion, to be guided along a fishing line connected to a hook to be removed, said head portion comprising an annular elongated aperture, having a transverse slit on a side for inserting the fishing line, said aperture being delimited internally by opposite guiding surfaces extending into a rear guiding groove on each side and along a longitudinal portion of the stem.



4,882,872

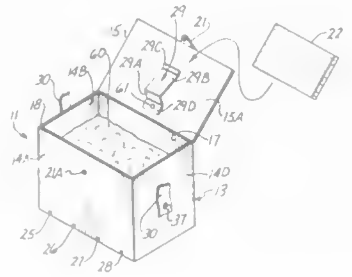
LIVE BAIT STORAGE CONTAINER AND METHOD OF USING SAME

Harry V. Todd, 2429 Windmill View, El Cajon, Calif. 92020

Filed Aug. 11, 1988, Ser. No. 231,195

Int. Cl.⁴ A01K *97/04*

U.S. Cl. 43—55 8 Claims



6. An apparatus for storage of live bait, comprising:

container means for storing live bait storage media;

means defining an access opening therein in the top portion thereof;

closure means movably mounted on said container means for moving between an opened position and a closed position over said opening;

means defining aeration apertures in the bottom portion of said container means;

carrying means pivotally attached to said container means for enabling it to be transported in an inverted position;

moisture reservoir means disposed near said access opening to attract live bait stored in said container means when stored in said inverted position; and

resilient clip means for retaining releasably said moisture reservoir means to said closure means.

4,882,873

INSECT ELIMINATION KIT AND METHODS FOR ITS USE

Gabriel L. Purnell, Rte. 2, Box 100C, Berlin, Md. 21811

Filed Apr. 2, 1987, Ser. No. 33,271

Int. Cl.⁴ A01M *7/00*

U.S. Cl. 43—132.1 **9 Claims**

1. A method for eliminating fleas and other crawling insects from a confined area comprising:

(a) thoroughly cleaning said area;

(b) spraying said area with an effective insecticidal amount of a residual insecticide:

(c) fogging said area with a flush and kill agent containing at least 1.07% pyrethrins or a synthetic pyrethroid;

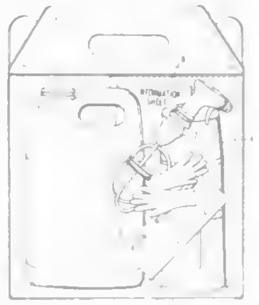
(d) after vacating said area to allow said residual insecticide to dry and said flush and kill agent to dissipate, strategically placing at least one white monitoring flea or insect trapping device having glue on at least one surface thereof in said area to detect the presence of any live fleas or other insects; and

(e) after a prior of about 3-14 days, selectively reapplying said flush and kill agent as necessary to portions of said area where said monitoring device or visual sightings have detected flea or insect life.

5. A kit for eliminating fleas and other crawling insects from a confined area for use in the method of claim 1 comprising:

(a) a container filled with a residual insecticide;

(b) an adjustable spray dispenser for said container;



(c) an aeorsol container filled with a flush and kill agent containing at least 1.07% pyrethrins or a synthetic pyrethroid;

(d) a standard fogging nozzle for dispensing said flush and kill agent from said aerosol container;

(e) a fogging nozzle having a long, thin, tubular extension for spraying said flush and kill agent in cracks, crevices and voids in said area where fleas and insects may live or hide;

(f) at least one white monitoring insect trapping device having glue on at least one surface thereof; and

(g) an information sheet explaining how to use the contents of said kit to achieve total flea and insect elimination from said area,

wherein the kit components are packaged within a secure, portable container.

4,882,874

PESTICIDE APPLICATOR

Peter O. Paulson, 320 Pumphill Gardens S.W., Calgary, Alberta, T2V 4M7, and James E. Paulson, 2021 Seventh Street S.W., Calgary, Alberta, T2T 2X1, both of Canada

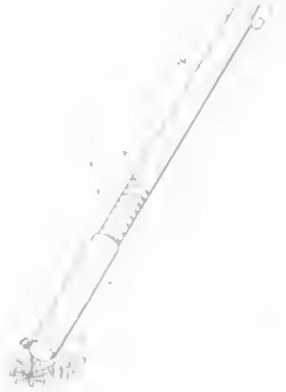
Filed Jul. 28, 1988, Ser. No. 225,499

Claims priority, application United Kingdom, Aug. 21, 1987, 8719814

Int. Cl.⁴ A01N *5/00*

U.S. Cl. 47—1.5 15 Claims

1. A pesticide applicator comprising an elongated tube, a telescopic sleeve mounted on said tube on one end thereof and projecting from said tube for axial movement for extension and retraction thereon, a pesticide-solid carrier composition disposed within the sleeve and extending into an adjacent end of the tube, and means for anchoring said pesticide-solid carrier composition within the said adjacent end of the tube, whereby retraction of the telescopic sleeve on the tube exposes the pesticide-solid carrier composition.



4,882,875

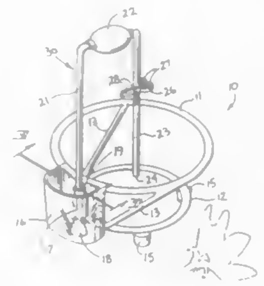
PLANT HOLDER APPARATUS

Kenneth P. Green, 2712 Pennsylvania, Wichita Falls, Tex. 76309

Filed Dec. 23, 1988, Ser. No. 289,263

Int. Cl.⁴ A01G *27/00*

U.S. Cl. 47—79 4 Claims



1. A plant holder apparatus comprising, in combination,

a pot, and a ring means for securement of said pot therewithin, and

a reservoir secured to said ring means including a siphon tube apparatus;

said siphon tube apparatus including a first conduit directed into said reservoir in fluid communication with a second directed into said pot, and

pump means for directing fluid from said first conduit into said second conduit, and

wherein said ring means includes an upper support ring of a first diameter axially aligned with and overlying a lower support ring of a second diameter less than said first diameter, and said pot is tapered downwardly for securement within said upper and lower rings, and

including a plurality of resilient friction pads integrally secured to and downwardly directed from said lower support ring, and

wherein said reservoir is transparent for visual observation of a fluid level within said reservoir, and

wherein said first conduit includes a pick-up tube with a screened first end, and said pick-up tube includes a dove-tail slidably received within a dove-tail slot formed within a wall of said reservoir for selective removal of said siphon tube apparatus with respect to said reservoir.

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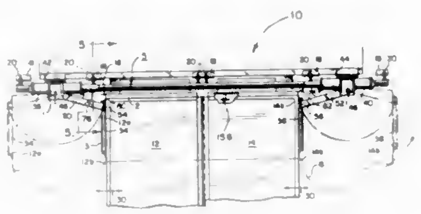
4,882,876
DOOR OPERATOR WITH LOCKING MECHANISM

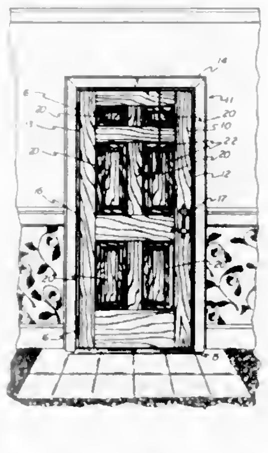
Kristupas Dangirdas, Wilmette, Ill., assignor to Vapor Corporation, Chicago, Ill.
Continuation of Ser. No. 209,464, Jun. 21, 1988. This application Mar. 23, 1989, Ser. No. 328,097
Int. Cl.⁴ E05B *65/10*
U.S. Cl. 49—141 5 Claims



1. In a power operator for a vehicular door said door mounted by frame means so as to be driven by said operator along a track between open and closed positions, the improvement comprising:
- a generally rectangular door having structural members, and structurally integrated surfaces;
- an edge defined by said door surfaces;
- means mounting a locking pawl to said frame for selectively abutting and clearing said edge;
- means in said mounting means for moving said pawl between a door unlocked position clearing said edge and a door locked position abutting said edge, so as to prevent opening of said door when said pawl and edge are in abutment; and,
- means sequentially actuating said operator and pawl moving means so as to positively lock said panel in a closed position.

4,882,877
RESIDENTIAL DOOR MANUFACTURE AND INSTALLATION

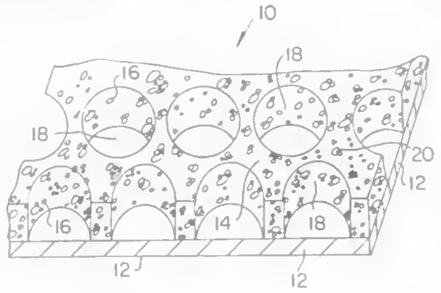
Norbert J. Guetle, Jr., Cincinnati, and Daniel J. Spencer, Hamilton, both of Ohio, assignors to Pease Industries, Inc., Fairfield, Ohio
Filed Jan. 23, 1989, Ser. No. 300,442
Int. Cl.⁴ E06B *3/00*
U.S. Cl. 49—506 18 Claims



1. The method of providing a completely finished residential door of wood at the site of the residence where it is to be installed in a door frame of predetermined dimensions and of protecting said door prior to installation thereof, comprising the steps of:
- (a) constructing a wood door blank of predetermined dimensions to fit said door frame,
- (b) providing in said door blank the cut-outs needed for the installation of hardware,
- (c) finishing said door blank including the interiors of all such cut-outs,
- (d) enclosing the resulting finished door in a protective package, and
- (e) shipping said package to and storing said door in said package at said site while said residence is being completed.

4,882,878
GRINDING WHEEL

Robert L. Benner, 4 Valley Dr., Chalfont, Pa. 18914
Filed Aug. 5, 1988, Ser. No. 228,890
Int. Cl.⁴ B24D *5/00*
U.S. Cl. 51—206 R 1 Claim



1. In a grinding wheel having
- (a) a rigid matrix containing a given predetermined amount of particulate diamond or cubic boron nitride abrasive uniformly dispersed therein; and
- (b) a wheel grinding surface exposing said abrasive continually as the matrix wears away in grinding;

an improvement which comprises:

said grinding wheel a plurality of spaced apertures extending into the wheel from said wheel grinding surface

wherein
- (1) each of said apertures has a generally circular area at the wheel grinding surface of about 0.07 to about 0.08 inches in diameter spaced apart about 0.110 inches from center to center and
- (2) the plurality of spaced apertures has a total area at the wheel grinding surface and a total volume in the wheel in the range of from about 40% to about 60% of that of a solid grinding wheel without apertures;

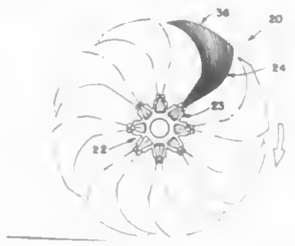
whereby

said abrasive is concentrated in the reduced volume of the matrix, and reduced area of the matrix at the wheel grinding surface, of said wheel with said apertures, thus increasing the effective concentration of said abrasive in said matrix at the grinding surface of said wheel with said apertures in the range of about 40% to about 60%, compared to a solid, rigid grinding wheel having a continuous grinding surface without apertures and having the same said given predetermined amount of particulate diamond or cubic boron abrasive uniformly dispersed therein.

4,882,879
FLEXIBLE ABRASIVE GRINDING TOOL

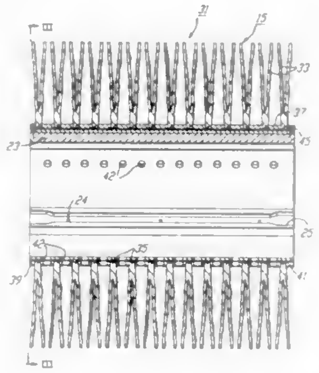
R. Brown Warner, Westlake, and Alfred F. Scheider, Orange, both of Ohio, assignors to Jason, Inc., Cleveland, Ohio
Filed Jul. 8, 1988, Ser. No. 216,709
Int. Cl.⁴ B24B *9/02*
U.S. Cl. 51—337 23 Claims

1. A flexible abrasive grinding tool comprising a hub, discrete bristle tufts of stiff yet flexible abrasive loaded plastic filaments secured to said hub and projecting radially outwardly and then curving circumferentially; said filaments being elastically shaped to form a predetermined curve which retains a curved shape.



4,882,880
GANGING OF BUFFING WHEELS

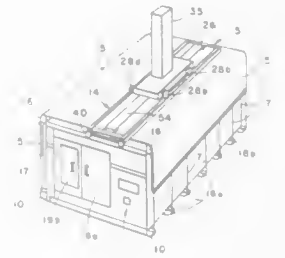
Paul E. Schaffner, II, Pittsburgh, and Gus J. Schaffner, III, Emsworth, both of Pa., assignors to Schaffner Manufacturing Company, Inc., Emsworth, Pa.
Filed May 17, 1988, Ser. No. 194,973
Int. Cl.⁴ B24D *13/04*
U.S. Cl. 51—358 17 Claims



1. A ganged buffing wheel assembly including a shaft, a plurality of driving components mounted spaced circumferentially on said shaft, and being continuous and extending substantially along the entire active length of said shaft, each of said driving components consisting of one of the set of components consisting of a key and a keyway, a plurality of elongated sleeves mounted abutted coaxially and coextensively on said shaft without interconnecting couplings between said abutted sleeves, each said sleeve having mounted on the inner surface thereof a plurality of driven components, each of said driven components consisting of the other of said set of components, said sleeves being oriented on said shaft so that said driven components are coextensive and are in engagement with said drive components on said shaft so that said abutted sleeves may be driven together, and a plurality of buff sections mounted on, and connected to, each said sleeve to be driven when each said sleeve is driven by said shaft, said driven components being continuous and mounted along substantially the entire axial length of said each said sleeve so that the stress exerted by said driven components on said sleeve is minimized, said sleeve and said driven components being composed of light-weight material having low resistance to stress and substantially lower thermal conductivity than metal such as steel.

4,882,881
ROBOT POSITIONER AND SEAL ARRANGEMENT FOR A CLOSED CHAMBER

Lewis L. VanKuiken, Jr., Grand Rapids, and Dale A. Hanson, Hudsonville, both of Mich., assignors to Progressive Blasting Systems, Inc., Grand Rapids, Mich.
Continuation of Ser. No. 17,537, Feb. 24, 1987, abandoned. This application Jun. 28, 1988, Ser. No. 212,658
Int. Cl.⁴ B24C *9/00*
U.S. Cl. 51—426 24 Claims



1. Apparatus for treating an object within an entirely enclosed compartment having enclosed sides and an enclosed ceiling covering the top of said compartment including an operative device manipulated by a robot manipulator means having an elongated mast extending downwardly through the ceiling of said compartment and supporting said device at its lower end for movement within said compartment and supporting said device at its lower end for movement within said compartment; said device being adapted to treat said object with a substance some of which is capable while said treatment is taking place of escaping through any opening in said compartment; the improvement comprising means for enclosing said ceiling in which said manipulator means adjusts the mast during such treatment and while it is extending through said ceiling such adjustment being in a direction along at least two horizontal orthogonal "X" and "Y" coordinates; said manipulator means comprising a carriage assembly extending in a direction along the "Y" coordinate and mounted over said top for movement in a direction along the "X" coordinate, said carriage assembly having an elongated opening extending in the direction of said "Y" coordinate and through which said mast extends; a cart assembly mounted on said carriage assembly and supporting said mast for moving said mast through and along the said opening; first motive means for causing said carriage to move in a direction along the "X" coordinate; second motive means for causing said cart assembly to move along said carriage assembly in a direction along said "Y" coordinate; a first belt cover means having first and second portions each attached respectively to and extending from each of the sides of such carriage and except for the portions occupied by said carriage assembly extending in a direction along the "X" coordinate over the open portions of the top of said compartment whereby said first belt cover means moves with said carriage in a direction along the "X" coordinate; means attached to each of the ends of said first and second portions and operatively connected together to take up the slack in one of said first and second portions while keeping said other portion taut as it moves with the carriage so as to continuously provide a ceiling for the compartment; a second belt cover means having first and second portions attached respectively to the ends of said cart assembly and extending in a direction along the said "Y" coordinate from such ends for covering the open portions of said elongated opening whereby said second cover means moves with said cart assembly in a direction along the "Y" coordinate; means attached to the ends of said first and second portions of said second belt cover means and operatively connected together to take up the slack in one of said first and second portions while keeping said other portion taut as it moves with said carriage so as to continuously cover said elongated opening whereby the open top of said

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compartment is completely covered by said carriage assembly, said cart assembly and said first and second cover means regardless of the position of the elongated mast as it is moved by said carriage and cart assemblies along the "X" and "Y" coordinates.

4,882,882

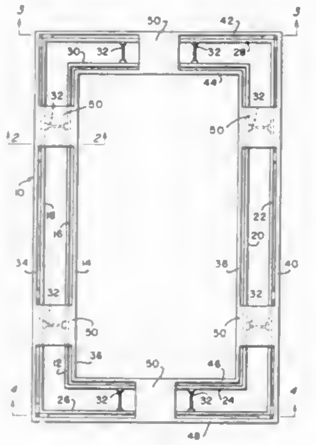
FORM FOR A MORTAR CAP

Ronald Werner, 12-204 Dell Pl., Stanhope, N.J. 07874

Filed Apr. 4, 1988, Ser. No. 177,086

Int. Cl.⁴ E02D *29/14*

U.S. Cl. 52—21 10 Claims



1. A form for a mortar cap, for receiving cementitious materials therewithin, such as cement, mortar, and the like, to define a footing for a catch basis grating, comprising:
  a base frame having parallel, spaced-apart walls; and
  an ancillary frame also having parallel, spaced-apart walls; wherein
  said base frame is set within said ancillary frame;
  said ancillary frame is slidably and vertically displaceable relative to said base frame;
  said base frame has a plurality of ligaments joining said walls thereof, and fixing said walls thereof in said spaced-apart disposition; and
  said ligaments have openings formed therein to accommodate a flow therethrough of cementitious materials.

4,882,883

ARCHITECTURAL MODULAR SYSTEM

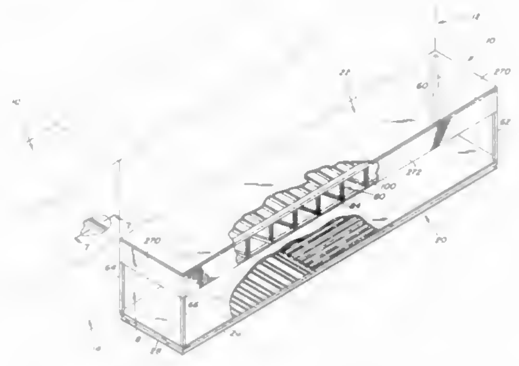
John J. Horn, El Toro, Calif., assignor to PBS Building Systems, Inc., Anaheim, Calif.

Filed Feb. 25, 1987, Ser. No. 18,916

Int. Cl.⁴ E04B *1/34*

U.S. Cl. 52—79.1 5 Claims

1. A building formed of a plurality of modular structures wherein each of said modular structures comprises:
  a base floor region
  a perimeter channel member in said base floor region of said structure;
  joists between said perimeter channel member;
  a metal corrugated decking secured to said joists;
  upright columns extending from said perimeter channel member;
  truss members having cords extending between said upright column members and wherein the cords of said truss members are secured to said column members;
  said cords of said truss members having an upper and lower cord portion;
  bracing members in the form of rafters extending between said trusses;
  plywood sheeting overlying said corrugated decking;
  diagonally oriented angle members extending between said cords of said trusses and secured thereto;
  a plurality of modular structures joined together by securement means extending between said perimeter channel members; and,
  plates between said columns in the form of column tie plates for securing one column of a modular structure to a second column of an adjacent modular structure.



4,882,884

BUILDING STRUCTURES

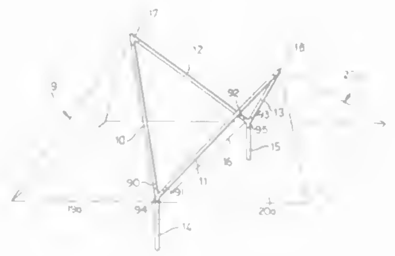
Antony N. Browne, Eastcombe, United Kingdom, assignor to Nomad Structures International, Ltd., Stroud, United Kingdom

Continuation of Ser. No. 26,762, Mar. 2, 1987, abandoned. This application Jan. 3, 1989, Ser. No. 292,909

Claims priority, application United Kingdom, Jul. 8, 1985, 8517237

Int. Cl.⁴ E04B *7/14*

U.S. Cl. 52—82 9 Claims



1. A portable building structure for use in tents, awnings, canopies and the like, the building structure comprising an assembly of collapsible framework modules, each module comprising a plurality of elongate frame members and means for assembling the frame members to form two inverted V-frames, a pair of legs for supporting said inverted V-frames thereon, the inverted V-frames lying in planes oppositely inclined to the vertical, each frame member having angularly spaced longitudinal grooves, and a connecting strip for interconnecting adjacent modules and having beaded edges and a flexible covering also having beaded edges, said longitudinal grooves slidably receiving respective beaded edges of said flexible covering and respective beaded edges of said connecting strip, said means for assembling the frame members including a first pair of joints each providing an apex junction for joining the frame members at apices of respective inverted V-frames, and a second pair of joints each forming a Y-junction for joining ends of the two inverted V-frames facing away from said apices to one another and to a respective leg, each of said joints comprising at least two hinge members pivotable between open and closed positions such that the building structure is erectable from a collapsed configuration in which the frame members lie substantially parallel with one another.

4,882,885

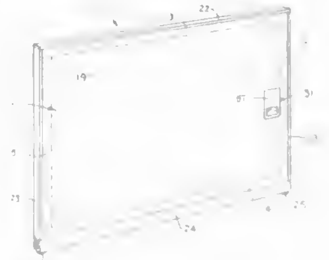
PANEL PORT RETENTION SYSTEM

Louis M. Chatterson, Kentwood, and Bruce Cutean, Holland, both of Mich., assignors to Haworth, Inc., Holland, Mich.

Filed Jan. 6, 1989, Ser. No. 295,082

Int. Cl.⁴ E04B *5/48*

U.S. Cl. 52—221 6 Claims



1. In an upright space-dividing wall panel having a generally rectangular ring-shaped interior framework, a pair of thin sheet-like side skins secured to opposite sides of said ring-shaped framework and extending across the interior thereof, a layer of a flexible sound-absorbing material coextensively overlying the exterior surface of a first said side skin, and a thin layer of flexible fabric directly and exteriorly overlying said layer of sound-absorbing material for defining an exterior side surface of the panel, the improvement comprising:
  said first skin having a generally rectangular opening formed therethrough for communication with a core region defined between said skins within said ring-shaped framework, said rectangular opening being spaced at least a small horizontal distance inwardly from one vertical edge of the panel, and being spaced downwardly a substantial distance from the upper edge of the panel and upwardly a substantial distance from the lower edge of the panel, whereby said rectangular opening is disposed approximately at worksurface height;
  said sound absorbing layer and said fabric layer also having generally rectangular openings therethrough substantially in alignment with and approximately corresponding to the opening through said first skin, the opening through said fabric layer being spaced inwardly from the vertical free edge of the fabric layer;
  an inner frame positioned between said skins in at least partial surrounding relationship to the opening formed in said first skin, said inner frame being removably positioned between said skins;
  an electrical power unit stationarily mounted on said inner frame and positioned substantially within the core region in alignment with the opening in said first skin, said electrical power unit having means which project outwardly of said opening and define a conventional electrical socket which is disposed approximately flush with the side surface of the panel;
  an outer ring-shaped frame of generally rectangular configuration positioned so as to directly overlie the outer surface of said first skin in surrounding relationship to the opening therethrough, said outer frame and said inner frame being fixedly fastened together so that said first skin, in the vicinity of the opening therethrough, is fixedly sandwiched therebetween;
  said ring-shaped outer frame having an inner generally rectangular-shaped edge defining a frame opening which is aligned with and approximately corresponds in size to the opening through said first skin, said fabric layer having edge parts in the vicinity of the rectangular opening therethrough which are wrapped around the inner edge of said outer frame;
  elongated resilient channel-shaped fabric retainers positioned over the inner edge of said outer frame for clamping the edge parts of the fabric layer therearound; and
  a cover assembly removably attached to said panel for closing off said openings, said cover assembly including a generally one-piece cover of generally planar configuration disposed approximately coplanar with the side surface of the panel, said cover assembly having inwardly projecting clips which create a snap-type releasable engagement with the outer frame, said cover having an opening therethrough for accommodating the electrical socket.

4,882,886

AUTOMATICALLY-RELEASABLE PIPE ATTACHMENT DEVICE

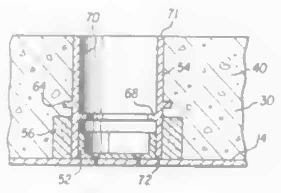
Gerold J. Harbeke, 2307 South Military Trail, West Palm Beach, Fla. 33415

Filed Sep. 1, 1987, Ser. No. 92,337

The portion of the term of this patent subsequent to Feb. 17, 2004, has been disclaimed.

Int. Cl.⁴ E04F *17/00;* F16L *3/00*

U.S. Cl. 52—232 2 Claims



1. Pipe attachment apparatus for producing a fire-spread prevention pipe coupler in a concrete form wall, said apparatus including:
  an elongated, cylindrical, female-at-both-ends, pipe coupler having a pipe-coupler wall with external and internal radially outwardly and inwardly directed surfaces for defining an axis of elongation, first and second ends, and an internal shoulder on the inwardly directed surface for contacting a male end of a pipe to be coupled with said pipe coupler;
  a pipe-attachment device comprising an axially-extending wall means for extending away from a concrete form wall, said axially-extending wall means defining a radially outwardly directed surface for tightly contacting said internal radially inwardly directed surface of said pipe-coupler wall and holding thereto by friction, but allowing said pipe coupler to be removed therefrom if sufficient axial force is applied thereto, said pipe-attachment device further comprising a floor means at a first end of said axially-extending wall means for being attached to said concrete form wall to thereby support said axially-extending wall means with a second end thereof extending away from said form wall; and
  an intumescent collar wrapped about the external radially outwardly directed surface of said pipe coupler at said first end for expanding in response to heat for closing off said first end of said pipe coupler;
  said radially outwardly directed surface of said pipe attachment device being sufficiently axially long and shaped and sized to tightly fit said internal radially inwardly directed surface of said pipe coupler such that said floor means of said pipe attachment device can be affixed to said form wall to become a part thereof and thereafter said first end of said pipe coupler can be pressed down on to said pipe attaching device to be held in place on said form wall during the pouring of concrete into said form wall and

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after the concrete is cured, the form wall can be removed while leaving the attachment device affixed to the form wall with an end of said intumescent collar being exposed.

4,882,887

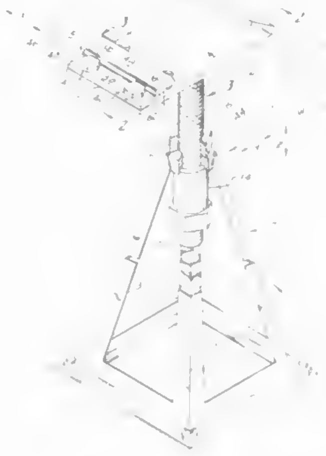
MOBILE HOME ANCHOR

Charles E. Giles, Grand Terrace, and Richard J. Clifton, Ontario, both of Calif., assignors to C & R Pier Manufacturing, Riverside, Calif.

Filed Jun. 30, 1988, Ser. No. 213,908

Int. Cl.⁴ E02D *27/48*

U.S. Cl. 52—126.6 21 Claims



1. An anchor apparatus for a mobile building structure having a body member rigidly supported on a frame member, the frame member having a flange member extending therefrom and spaced from the body member, the flange member having a first side edge, the apparatus comprising:

(a) a support member having a supporting surface for contacting the frame member;
(b) means for fixedly securing the support member to a grounded footing;
(c) a clamp member having at least one blade member; and
(d) fastener means for connecting the clamp member to the support member,

the blade member being adapted for locally deforming the flange member along a line intersecting the first side edge in response to tightening of the fastener means for preventing relative movement between the frame member and the support member in a direction parallel to the first side edge.

4,882,888

LAMINATED WALL CONSTRUCTION

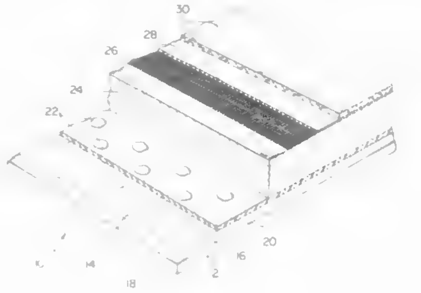
William C. Moore, Holliston, Mass., assignor to Dryvit System, Inc., Warwick, R.I.

Filed Nov. 14, 1988, Ser. No. 271,028

Int. Cl.⁴ E04C *2/00*

U.S. Cl. 52—309.9 3 Claims

1. A laminated wall construction for building exteriors comprising a gypsum substrate, one surface of which is adapted to be secured to a building structure, a non woven fiberglass matte substantially completely covering the opposite surfaces of said substrate, and an insulating layer secured to the fiberglass surface opposite to said one surface by a cementitious adhesive, the improvement comprising a water-based, water-resistant coating completely covering said opposite surface to effectively enhance the bond between said fiberglass matte with said substrate, to protect the fiberglass from alkali attack that would normally result from the cementitious adhesive, to enhance the bond between said insulating layer and said opposite surface, and to increase the water resistance of said bonds.



4,882,889

COMPOSITE STRUCTURES

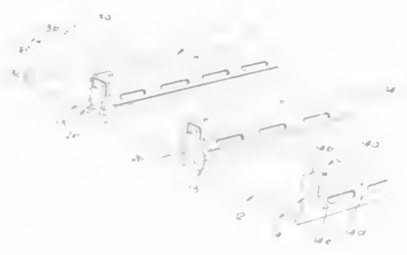
Christopher L. Healy, Seven Hills, and Ken Rankin, Kellyville, both of Australia, assignors to Monier Limited, Australia

Filed Feb. 26, 1988, Ser. No. 161,025

Claims priority, application Australia, Feb. 26, 1987, P10550

Int. Cl.⁴ E04B *5/40*

U.S. Cl. 52—336 13 Claims



1. A composite structure comprising a plurality of support members arranged to form a decking member within a concrete slab, said support members comprising a pair of flange members joined by an imperforate connecting web member, at least one flange member located above said web member, said flange member including a lip portion having a plurality of apertures positioned so that part of the concrete of the slab is retained within the apertures by the web member during setting of the concrete.

4,882,890

METHOD AND APPARATUS FOR SEALING EXPANDABLE ROOF JOINTS WITH OPTICAL INSULATION

Michael C. Rizza, 2863 Encina Camino, Walnut Creek, Calif. 94598

Filed May 27, 1988, Ser. No. 199,988

Int. Cl.⁴ E04B *1/62*

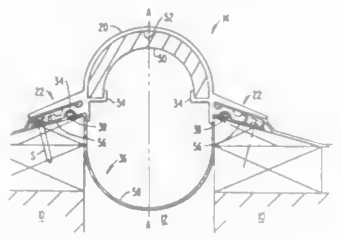
U.S. Cl. 52—396 17 Claims

1. A weather seal of the type used to seal an expandable joint between adjacent building sections secured to the building sections with the aid of a clamping bar or beam comprising:

an elastomeric outer seal;

first receiving means in said elastomeric outer seal for receiving a portion of said building sections;

second receiving means in said elastomeric outer seal for receiving a clamping bar; and



third receiving means in said elastomeric outer seal for receiving applied continuous sealant material.

4,882,891

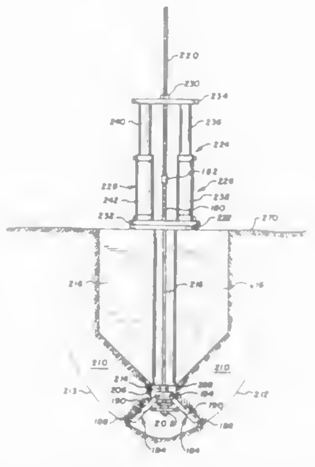
ANCHORING AND FOUNDATION SUPPORT APPARATUS HAVING MOMENT RESISTING VANES AND METHOD

Samuel J. Sero, Pittsburgh; James S. Collins, Monaca, and Victor Yates, Sewickley, all of Pa., assignors to S.A.F.E., Aliquippa, Pa.

Continuation-in-part of Ser. No. 878,859, Jun. 26, 1986, abandoned, which is a continuation-in-part of Ser. No. 647,172, Sep. 4, 1984, abandoned. This application Mar. 15, 1988, Ser. No. 168,261

Int. Cl.⁴ E04H *12/20*

U.S. Cl. 52—742 19 Claims



1. A method for installing an anchor or foundation device in the earth comprising preparing a hole in the earth, lowering into said hole an anchor or foundation device having swingable media facing plates, said plates having media facing surfaces with upper and lower edges and equipped with oppositely disposed rib means extending along said upper and lower edges, applying force to swing said plates and said rib means outwardly into the surrounding media, during said swing said rib means cooperating with the media facing surfaces of said plates to contain respective plugs of the surrounding media to consolidate said media, and forcing a hollow tube assembly having a plurality of moment resisting vanes extending radially outwardly therefrom into said media around said device.

4,882,892

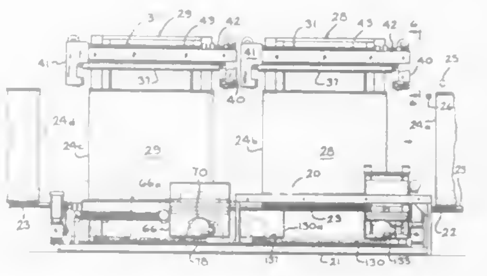
DUAL STATION WRAPPING MACHINE

David J. Pienta, Temperance, Mich., assignor to Automatic Handling, Inc., Erie, Mich.

Filed Apr. 24, 1989, Ser. No. 342,108

Int. Cl.⁴ B65B *11/04, 41/16*

U.S. Cl. 53—176 9 Claims



1. A dual station wrapping machine for serially wrapping a roll having a longitudinal axis of rotation and side edges, comprising, conveyor means for receiving a roll to be wrapped, such longitudinal axis of rotation lying in a generally horizontal plane, transfer means for moving such roll from the conveyor to predetermined positions, support and drive means for cooperating with said transfer means and for rotating such roll about its horizontally positioned axis, hold down means for engaging such roll at the approximate longitudinal centerline of such roll, a first station at a first of said predetermined positions including means fixedly mounted for feeding and wrapping a wrapping material layer around one end of such roll and means movable axially relative to such roll for feeding and wrapping a wrapping material layer around such roll and a second station at a second of said predetermined positions spaced from said first predetermined position including means movable axially relative to such roll for feeding and wrapping a material layer helically around such roll, table means for receiving a layer of wrapping material from one of said stations, said table means being pivotable from a generally horizontal position to a position adjacent the roll.

4,882,893

CONTAINER FOR THE TRANSPORT OF DIAGNOSTIC SPECIMENS

Herbert C. Spencer, R.R. #1, Millet, Alberta, Canada T0C 1Z0 , and James G. McKay, 2003, 11507 - 124 Street, Edmonton, Alberta, Canada T5M 0K5

Filed Aug. 29, 1988, Ser. No. 237,966

Claims priority, application Canada, Feb. 26, 1988, 559969

Int. Cl.⁴ B65B *23/22, 11/58, 5/10*

U.S. Cl. 53—449 15 Claims

1. A method of packaging vials containing diagnostic specimens for purposes of transport, comprising the steps of:

a. firstly, wrapping a vial in shock absorbing material;
b. secondly, inserting said vial wrapped in shock absorbing material in a pressure vessel, said pressure vessel having moisture absorbing material lining the bottom;
c. thirdly, wrapping the sides of said pressure vessel with a plurality of layers of cardboard;

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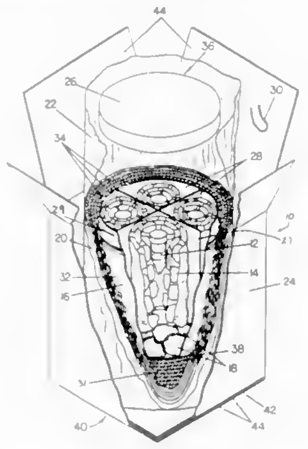
d. fourthly, shielding the top and bottom of said pressure vessel with a plurality of layers of cardboard; and



e. fifthly, sealing said pressure vessel with cardboard wrap and shielding in a cardboard box.

4,882,894

AGENT FOR IMPARTING ANTISTATIC CHARACTERISTICS TO A THERMOPLASTIC POLYMER AND A THERMOPLASTIC POLYMER COMPOSITION CONTAINING THE AGENT

Marvin R. Havens, and Joseph R. Lovin, both of Greer, S.C., assignors to W. R. Grace & Co.-Conn., Duncan, S.C.

Filed Oct. 14, 1986, Ser. No. 918,451

Int. Cl.⁴ B65B *29/00*

U.S. Cl. 53—461 12 Claims

1. A method for protecting wrapped static sensitive devices from electrostatic charges comprising:

a. providing a wrap comprising an antistatic film having one or more layers, wherein at least one layer comprises a composition of a thermoplastic polymer in admixture with an antistatic agent wherein said polymer comprises nylon and said antistatic agent comprises aromatic sulfonamide that is substantially non-hygroscopic and substantially non-migratable; and

b. enclosing said wrap about a selected device.

4,882,895

AUTOMATED APPARATUS FOR TRANSPORTING, LINING-UP AND STOWING CYLINDRICAL FRAGILE BODIES

Min-Lang Hsieb; Jan-Hong Huang; Lian Jan, and Gang-Shyr Guan, all of Hsinchu Hsien, Taiwan, assignors to Industrial Technology Research Institute, Hsinchu Hsien, Taiwan

Filed May 24, 1988, Ser. No. 198,121

Int. Cl.⁴ B65B *35/30*

U.S. Cl. 53—531 10 Claims

1. An automated apparatus for transportating, lining-up and stowing cylindrical fragile bodies comprising: a first receiving means for receiving a supply of cylindrical fragile bodies,

means for supplying receptacles;

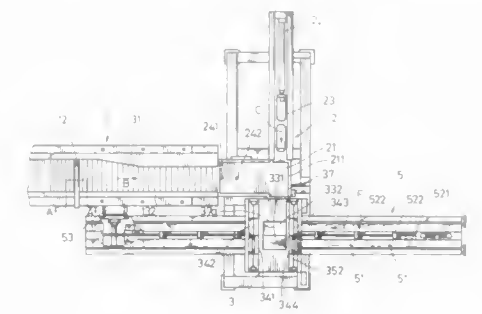
means for transporting cylindrical fragile bodies coming from said first receiving means;

means for accommodating cylindrical fragile bodies coming from said transporting means temporarily, and pushing them out in lots and in a predetermined sequence;

second receiving means for receiving cylindrical fragile bodies pushed out from said accommodating means and stowing them into receptacles coming from said supplying means;

means for elevating the receptacles coming from said supplying means and holding them temporarily near said second receiving means; and

means for controlling all the processes of the automated apparatus for transporting, lining-up and stowing cylindrical fragile bodies, said controlling means being coupled to said transporting, accommodating, receiving and elevating means.



4,882,896

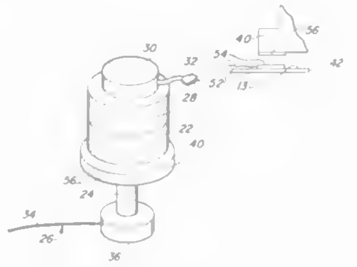
LAWN MOWER

Roy E. Wilcox, 7182 E. Carpenter, Davison, Mich. 48423

Filed Apr. 11, 1988, Ser. No. 179,673

Int. Cl.⁴ A01D *34/78*

U.S. Cl. 56—10.5 6 Claims



1. A lawn mowing device comprising

a housing having a top, a bottom, and a cutting chamber open to said bottom,

a plurality of wheels rotatably mounted to said housing for supporting said housing on a ground surface,

an electric motor having an output shaft,

an electric battery mounted to said electric motor and means for electrically connecting said battery to said motor,

a lawn cutting element secured to said output shaft,

means for detachably securing said motor to said housing so that said cutting element is positioned in said cutting chamber and

a battery charger mounted to said motor having means for electrically connecting said battery charger to household current, said battery charger being electrically connectable to household current when said motor is detached from said housing.

5. A lawn mowing device comprising

a housing having a top, a bottom, and a cutting chamber open to said bottom,

a plurality of wheels rotatably mounted to said housing for supporting said housing on a ground surface,

an electric motor having an output shaft,

an electric battery and means for electrically connecting said battery to said motor,

a lawn cutting element secured to said output shaft,

means for detachably securing said motor to said housing so that said cutting element is positioned in said cutting chamber,

a push bar mounted to said housing,

a switch mounted to said push bar, and

wherein said electrical connecting means having means for automatically electrically connecting said switch in series between said motor and said battery upon attachment of said motor to said housing.

4,882,897

CLUTCH CONTROL STRUCTURE FOR A WALKING OPERATOR TYPE LAWN MOWER

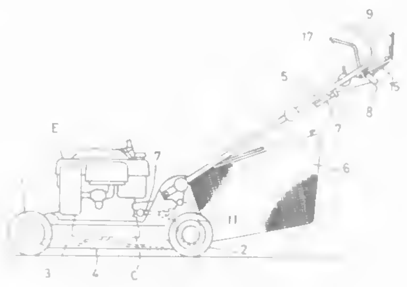
Hiroshi Oshima; Hirofumi Sadakane; Takao Katayama; Jinnosuke Takakura, and Hisatake Fujioka, all of Sakai, Japan, assignors to Kubota, Ltd., Osaka, Japan

Filed Nov. 21, 1988, Ser. No. 274,116

Claims priority, application Japan, Nov. 28, 1987, 62-301168; Nov. 30, 1987, 62-304318

Int. Cl.⁴ A01D *69/00*

U.S. Cl. 56—11.3 10 Claims



1. A clutch control structure for a walking operator type lawn mower comprising

a cutting blade clutch (C) for making and breaking drive transmission to a cutting blade (3),

a steering handle (5) including a grip portion (5a),

a clutch lever (9) pivotable between a first position and a second position,

a control device (8) operatively connected to said cutting blade clutch (C) and pivotable between a first corresponding position corresponding to said first position for engaging said cutting blade clutch (C) and a second corresponding position corresponding to said second position for disengaging said cutting blade clutch (C), said control device (8) being constantly urged to said second corresponding position for disengaging said cutting blade clutch (C), and

an interlocking member (14) manually switchable between a release position for breaking an engagement between said control device (8) and said clutch lever (9) to allow said control device (8) and said clutch lever (9) to be operable independently of each other, and an operative position for establishing the engagement between said control device (8) and said clutch lever (9) to allow said control device (8) and said clutch lever (9) to be operable together, said interlocking member (14) being constantly urged to said release position,

wherein said cutting blade clutch (C) is engaged by maintaining said interlocking member (14) in said operative position and moving said clutch lever (9) to said first position.

4,882,898

CONNECTING LINK STRUCTURE FOR A LAWN MOWER

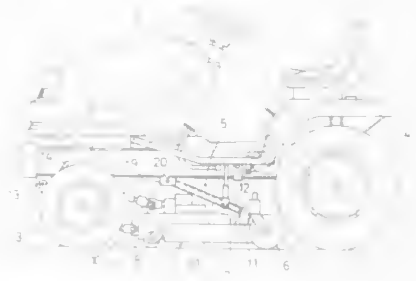
Kazuo Samejima; Hironori Tsuchihashi; Tsuyoshi Sato; Toshibiko Hamada; Hideo Kida, and Kiyoto Kasamatsu, all of Sakai, Japan, assignors to Kubota, Ltd., Osaka, Japan

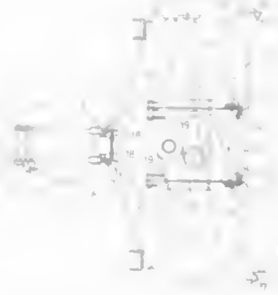
Filed Apr. 10, 1989, Ser. No. 335,912

Claims priority, application Japan, Jul. 20, 1988, 63-180605

Int. Cl.⁴ A01D *34/54*

U.S. Cl. 56—208 7 Claims





1. A connecting link structure for connecting a grass cutting unit to a vehicle body, comprising first and second link means each pivotally connected at one end thereof to said vehicle body and at the other end thereof to said grass cutting unit, and a bracing auxiliary link disposed between said first and second link means, said auxiliary link being secured at one end thereof to a pivotal axis region of the first link means adjacent said grass cutting unit and connected at the other end thereof to a pivotal axis of the second link means adjacent the vehicle body.

4,882,899

HARVESTER REEL TINE AND BAT ASSEMBLY

Edward P. Jasper, and Thomas G. Truckenbrod, both of Mendota, Ill., assignors to HCC, Inc., Mendota, Ill.

Filed Jun. 15, 1988, Ser. No. 206,828

Int. Cl.⁴ A01D *57/02*

U.S. Cl. 56—220 11 Claims

1. A one piece molded harvester reel tine for mounting on a support tube comprising:

a split ring section forming a ring with a single split and with an interior diameter approximately equal to the outside diameter of a support tube onto which it is to be mounted, the split ring section including a connector section at which two end sections of the split ring meet to form the split, each end section having a through hole, with the two through holes in alignment when the two end sections are adjacent to each other and a flexible band section of a cross sectional configuration such that the band section will flex sufficiently to permit the two end sections to separate a distance greater than the diameter of the split

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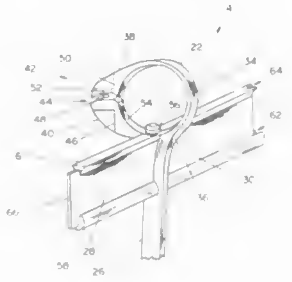
ring when closed without permanently deforming the flexible band section wherein the flexible band section comprises a smooth continuous section of at least one-half the circumference of the split ring section;

a finger section the base of which is protruding from the outside surface of the split ring section in an orientation approximately radial to the circle of the split ring section and in a location on the exterior of the split ring section approximately one quarter of the circumference of the split ring section away from the split in the split ring section; and

a protrusion from the inside surface of the circle of the split ring section, extending inward from the split ring section at the location of the finger section, the protrusion having a dimension inward toward the center of the split ring section which is at least as great as the wall thickness of a support tube onto which the split ring section is to be mounted.



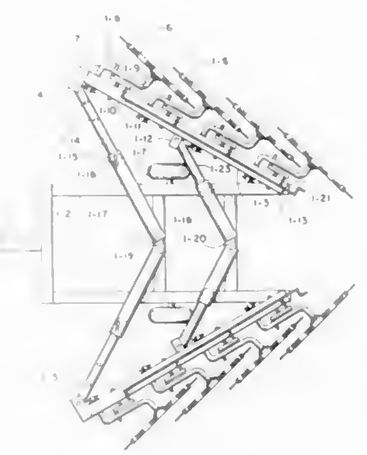
4,882,900
BI-FOLD HAY RAKE SYSTEM

Melvin C. Kuehn, Rte. 3, Box 272, Aitkin, Minn. 56431

Filed Feb. 24, 1988, Ser. No. 126,690

Int. Cl.⁴ A01D *78/08*

U.S. Cl. 56—377 **4 Claims**



1. A wheel rake system comprising, in combination, a wheeled transport frame and articulated wheel rake means mounted thereon, said rake system being characterized in that:

(a) said wheeled transport frame comprises a pair of longitudinally disposed side rails having a pair of cross members extending therebetween and axle shaft means with transport wheels journably mounted for rotation thereon coupled to and supporting said transport frame;

(b) said articulated wheel rake means includes a pair of individual wheel rake assemblies operatively mounted one on either side of said wheeled transport frame and with wheel rake assembly articulation means coupling each of said wheel rake assemblies to said transport frame and arranged to accommodate pivotal folding of each of said wheel rake assemblies outwardly to a working position and inwardly to a transport position;

(c) each of said wheel rake assemblies comprises an elongated support beam, a plurality of longitudinally spaced-apart tined wheel rakes coupled to said elongated support beam and including wheeled rake support means arranged for adjustably positioning the working height of said wheel rakes along said elongated supported beam;

(d) each of said elongated support beams being pivotally coupled to said wheeled transport frame at a rearward pivotal mounting point adjacent the rear ends of said elongated support beams and said wheeled transport frame respectively, and arranged for arcuate pivotal outward rotational movement about said pivotal mounting point, at least one laterally extending support arm assembly pivotally secured to said transport frame forwardly of said rearward pivotal mounting point between said wheeled transport frame and each of said elongated support beams for determining and controlling the outward pivotal rotational position of said elongated support beam relative to said wheeled transport frame;

(e) each of said lateral support arm assemblies comprising a pair of cooperating telescopically engaged length adjustable support braces with opposed ends of each of said support arm assemblies being pivotally secured to said elongated support beam and a cross member of said wheeled transport frame respectively, with the adjusted length of each of said support arm assemblies operating to determine the extent of outward angular rotational movement of said elongated support beam relative to said wheeled transport frame to thereby vary the working width of the wheel rake system;

(f) said wheel rake transport means further comprising:

(1) a wheel rake support crank shaft with an upper end segment, a lower end segment, and an intermediate segment therebetween, and with the said upper segment being pivotally engaged with said elongated support beam, and with said lower segment journably supporting one of said tined wheel rakes thereon; and

(2) a threaded wheel rake height control shaft, a tined rake height adjust actuating arm comprising first and second angularly disposed arm elements joined together at an apex and with the apex zone having pin means rotatably engaged with one of said elongated support beams for coupling each of said actuating arms thereto, and with the outer end of the first one of said angularly disposed arm elements of each height adjust actuating arm having a laterally outwardly extending support pin secured thereto for underlying, engaging and supporting the intermediate segment of said wheel rake support crank shaft thereover, and with the outer end of said second height adjust actuating arm being pivotally coupled to a threaded wheel rake height control shaft mounted for adjustable longitudinal positioning along said elongated support arm, the arrangement being such that the longitudinal position of said height control shaft along said elongated support arm determines the angular position of each of said height adjust actuating arm elements and thus the height of each of said tined wheel rakes from the ground surface.

4,882,901
DETACHABLE LINK CHAIN

James M. Lapeyre, New Orleans, La., assignor to The Laitram Corporation, New Orleans, La.

Division of Ser. No. 858,597, May 1, 1986, Pat. No. 4,815,271. This application Nov. 23, 1988, Ser. No. 276,361

Int. Cl.⁴ F16G *13/12*

U.S. Cl. 59—84 **6 Claims**

1. A module of integrally molded plastic for forming a conveyor belt by interconnecting a plurality of such modules, each of said modules comprising:

a plurality of link elements integrally molded side-by-side and extending longitudinally between first and second ends, each link element comprising:

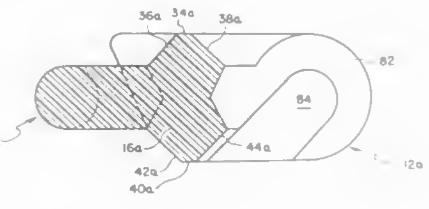
at least one intermediate portion extending transverse to said longitudinally extending link element;

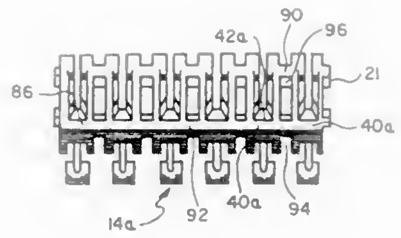
first and second spaced apart sidewalls integrally molded with and connected by said intermediate portion, and each sidewall extending to said first end and having an inside and outside surface;

a longitudinal portion extending toward said second end and having a preselected transverse width at said second end, said longitudinal portion integrally molded with said intermediate portion;

a transversely extending pivot member integrally molded with and disposed on said longitudinal portion and having a preselected length, said preselected length of said pivot member selected to be larger than said preselected transverse width of said longtudinal portion, said tranversely extending pivot member defining a first pivot axis;

said first and second sidewalls defining first and second pivot member receiving areas integrally formed on corresponding ones of said first and second sidewalls, said inside surface of said sidewalls defining therebetween a transversely extending gap having a preselected lateral dimension, said preselected lateral dimension of said transversely extending gap selected to be no smaller than said transverse width of said longitudinal portion integrally molded with said central portion, said pivot member receiving areas defined by said first and said second sidewalls further defining a second pivot axis;





said preselected length of said transversely extending pivot member selected to be larger than said preselected lateral dimension defined between the inside surfaces of said sidwalls such that said pivot member and said receiving areas cooperate to pivotally join a pair of said link elements;

at least one connecting member connecting adjacent ones of said plurality of link elements, said connecting member being integrally molded with said link elements; and

a tooth integrally formed with said intermediate portion for driving said plurality of link elements at multiple points as a conveyor belt.

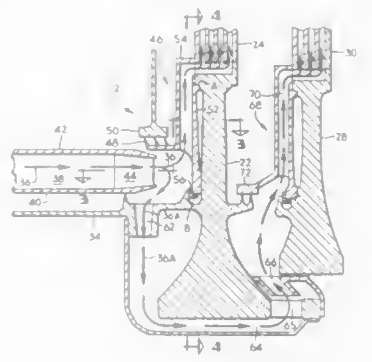
4,882,902
TURBINE COOLING AIR TRANSFERRING APPARATUS

James R. Reigel; Robert J. Corsmeier; James H. Bertke, and Dean T. Lenahan, all of Cincinnati, Ohio, assignors to General Electric Company, Cincinnati, Ohio

Continuation of Ser. No. 857,282, Apr. 30, 1986, abandoned. This application Mar. 7, 1988, Ser. No. 168,522

Int. Cl.⁴ F02C *3/00;* F01D *5/14*

U.S. Cl. 60—39.75 **4 Claims**



1. A gas turbine engine cooling air transferring means including a turbine disk from which blades project radially into a hot gas stream; a compressor effective for providing pressurized cooling air; and a cooling air transferring apparatus for transferring cooling air from the compressor to the turbine disk, separate from the hot gas stream, wherein the cooling air transferring means comprises in combination:

an inducer means effective for channeling the cooling air in a direction substantially tangential to said turbine disk;

a radial impeller means for receiving said cooling air and conveying it to said blades;

said impeller means comprising a plurality of radial passages enclosed within said impeller for receiving the cooling air and a mounting means for mounting said impeller to said turbine disk; and

wherein said impeller means includes an annular forward facing side and an annular rearward facing side wherein one side is mountable to the turbine disk and the other side includes an annular air seal.

4,882,903
COMBINED CYCLE WASTE-TO-ENERGY PLANT

William L. Lowry Jr., Yukon, Okla.; Maurice G. Woods, 4301 St. George Dr., Oklahoma City, Okla. 73120, and Charles A. Martin, Oklahoma City, Okla., assignors to CH Guernsey & Company, Oklahoma City; Maurice G. Woods, Oklahoma City; Teresa J. Woods, Oklahoma City and Applied Thermal Systems, Inc., Oklahoma City, all of, Okla.

Filed Apr. 1, 1988, Ser. No. 176,782

Int. Cl.⁴ F02C *6/18*

U.S. Cl. 60—39.182 **21 Claims**

1. A solid waste-to-energy conversion plant comprising:

a building enclosure having a receiving area for receiving and storing solid waste, a waste fuel processing area, a waste incineration area, and a waste combustion heat recovery area;

incinerator means, positioned in said waste incineration area, for receiving refuse derived fuel, and for receiving hot exhaust gas from a source thereof, utilizing the received hot exhaust gas to support combustion of the received refuse derived fuel, and responsively generating hot combustion gases;

fuel processing means, positioned in said waste fuel processing area, for converting solid waste received in said receiving area to refuse derived fuel;

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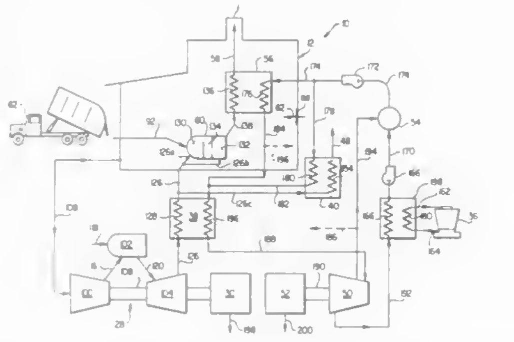
conveying means for conveying refuse derived fuel from said waste fuel processing area to said incinerator means;

incinerator heat recovery boiler means, positioned in said waste combustion heat recovery area, for receiving said hot combustion gases from said incinerator means and water from a source thereof and utilizing the hot combustion gases to convert the water to saturated steam;

waste heat recovery boiler means for receiving hot exhaust gas and utilizing the same to convert water received by said waste heat recovery boiler means to saturated steam;

steam superheater means for receiving hot exhaust gas, and saturated steam from said incinerator heat recovery boiler means and said waste heat recovery boiler means, and responsively generating superheated steam;



steam turbine and generator means for receiving said superheated steam and responsively generating electrical power and discharging saturated steam;

condensate/feedwater means for receiving saturated steam from said steam turbine and generator means and responsively flowing condensed water to said incinerator heat recovery boiler means and said waste heat recovery boiler means; and

combustion turbine and generator means for drawing air from the interior of said building enclosure in a manner maintaining it at a negative pressure, mixing the air with fuel from a source thereof, burning the air-fuel mixture, and responsively generating electrical power and flowing hot exhaust gas through said steam superheater means and into said incinerator means and said waste heat recovery boiler means.

4,882,904

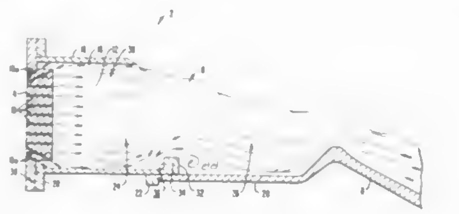
TWO STAGE ROCKET COMBUSTOR

Leonard Schoenman, Citrus Heights, Calif., assignor to Aerojet-General Corporation, La Jolla, Calif.

Filed Mar. 24, 1988, Ser. No. 172,622

Int. Cl.⁴ F02K *9/42*

U.S. Cl. 60—258 10 Claims



1. A rocket engine comprising:

a. a primary combustion chamber defined by a first peripheral wall constructed of a first material adapted to withstand a relatively lower temperature;

b. a secondary combustion chamber defined by a second peripheral wall constructed of a second material adapted to withstand a relatively higher temperature and joined axially to an end of the primary chamber;

c. a propellant injector joined to another end of the primary chamber having a plurality of orifices for directing a fuel and an oxidizer toward the secondary chamber so that a first portion of fuel and oxidizer forms a core flow through the primary chamber where they mix with each other and so that a second portion of at least one of the fuel and the oxidizer forms an unmixed curtain flow along the first wall; and

d. means for deflecting the curtain flow from a point on the first wall proximate the one end thereof toward the core flow for mixing the curtain flow with the core flow and causing the full combustion of the at least one of the fuel and the oxidizer in the curtain flow at a location radially inward of the second wall.

4,882,905

DEVICE FOR CONTROLLING TURBOCHARGER WITH ELECTRIC ROTARY MACHINE

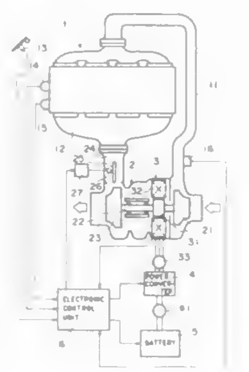
Hideo Kawamura, Samukawa, Japan, assignor to Isuzu Motors Limited, Tokyo, Japan

Filed Jul. 28, 1988, Ser. No. 225,255

Claims priority, application Japan, Jul. 29, 1987, 62-189740

Int. Cl.⁴ F02B *37/00*

U.S. Cl. 60—608 5 Claims



1. A device for controlling a turbocharger with an electric rotary machine, comprising:

a turbine mounted on an engine on a motor vehicle and drivable by exhaust gases emitted from the engine;

a rotatable shaft coupled to said turbine;

a compressor coupled to said rotatable shaft for delivering air under pressure to said engine;

an electric rotary machine coupled to said rotatable shaft;

an engine speed sensor for detecting the rotational speed of the engine;

an accelerator pedal movement sensor for detecting the amount of depression of an accelerator pedal which controls operation of said engine;

a boost pressure sensor for detecting the pressure of air supplied to said engine;

a turbine speed sensor for detecting the rotational speed of said turbine;

a battery mounted on said motor vehicle;

means for calculating a required boost pressure based on signals from said engine speed sensor and said accelerator pedal movement sensor;

means for comparing said required boost pressure and a boost pressure generated from the turbocharger by the energy of exhaust gases emitted from the engine and corresponding to the rotational speed of the engine; and

means for driving said electric rotary machine as a motor and supplying said electric rotary machine with electric power from said battery which corresponds to the difference between said required boost pressure and said boost pressure generated by the turbocharger if said required boost pressure is higher than said boost pressure generated by said turbocharger,

wherein said means for driving and supplying said electric rotary machine includes means for adding electric power corresponding to the rotational speed signal from said turbine speed of the turbine based on a signal from said turbine speed sensor and electric power having a value produced by subtracting the boost pressure, to calculate electric power which is required to be supplied to said electric rotary machine.

4,882,906

ENGINE BRAKING SYSTEM

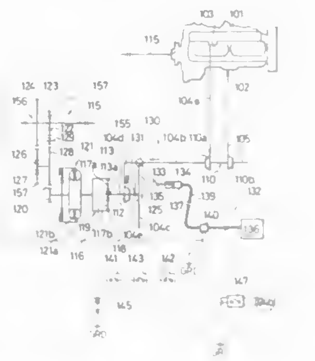
Shigeo Sekiyama, and Masaki Okada, both of Kawasaki, Japan, assignors to Isuzu Motors Limited, Tokyo, Japan

Filed May 20, 1988, Ser. No. 196,923

Claims priority, application Japan, May 22, 1987, 62-123941; May 30, 1987, 63-136474

Int. Cl.⁴ F02G *5/00*

U.S. Cl. 60—624 27 Claims



1. An engine braking system for use with an engine provided with a rotatable output shaft, an accelerator, an exhaust passage, and a clutch and transmission coupled with the engine, the system comprising:

nozzle means disposed in the exhaust passage of the engine and defining a nozzle throat area;

a power turbine disposed in the exhaust passage downstream of the nozzle means;

throttling means for changing the nozzle throat area of said nozzle means; and,

driving force transmitting means for connecting the output shaft of the engine to the power turbine so as to transmit rotative power of said output shaft to said power turbine when the accelerator is released to decelerate the engine, the clutch is engaged, the transmission is engaged and the nozzle throat area is reduced by the throttling means.

4,882,907

SOLAR POWER GENERATION

William G. Brown, II, 720 NW 31st St., Corvallis, Oreg. 97330

Continuation-in-part of Ser. No. 765,824, Aug. 14, 1985, abandoned, which is a division of Ser. No. 486,087, Apr. 18, 1983, Pat. No. 4,549,604, which is a continuation-in-part of Ser. No. 122,357, Feb. 14, 1980, abandoned, which is a continuation-in-part of Ser. No. 816,501, Jul. 17, 1977, abandoned, which is a continuation-in-part of Ser. No. 788,207, Apr. 18, 1977, abandoned. This application Apr. 27, 1988, Ser. No. 186,919

Int. Cl.⁴ F01K *25/06*

U.S. Cl. 60—649 8 Claims

1. An absorption process comprising:

injecting a stream of water into a flash chamber to evaporate a fraction of said stream of water to produce steam and to chill the remainder;

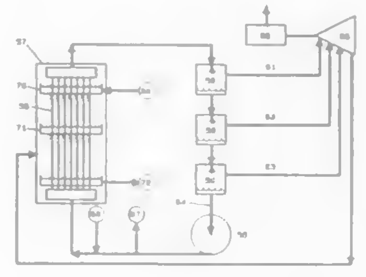
removing and discharging as blowdown a portion of said remainder of said water stream to reduce the accumulation of dissolved solids in said water;

passing at least a major portion of said steam into an absorber chamber;

injecting a rich desiccant into a first portion of said absorber chamber to absorb steam, release heat and produce an intermediate-strength desiccant;

passing said intermediate-strength desiccant into a second portion of said absorber chamber located downstream of said first portion to prevent significant backmixing of weakened desiccant from said second portion into said first portion of said absorber chamber;

absorbing at least a portion of said injected steam into said



intermediate-strength desiccant to release heat from said intermediate desiccant and to produce a weakened desiccant.

thermally contacting a stream of water with said desiccant in said second portion of said absorber chamber to transfer a major portion of said heat released from said second portion to said water to produce a warmer stream of water.

thermally contacting said warmer stream with said desiccant in said first portion of said absorber chamber to transfer a major portion of said released heat from said first portion to said warmer stream and to produce a still warmer stream of water.

removing at least a portion of said weaked desiccant from said absorber chamber.

4,882,908

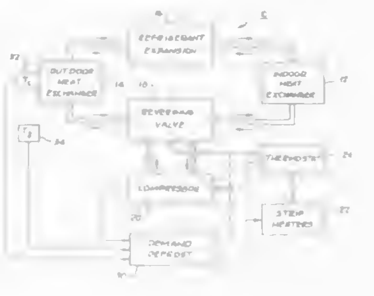
DEMAND DEFROST CONTROL METHOD AND APPARATUS

Lee A. White, Keller, Tex., assignor to Ranco Incorporated, Dublin, Ohio

Filed Jul. 17, 1987, Ser. No. 74,907

Int. Cl.⁴ F25D *21/06*

U.S. Cl. 62—155 22 Claims



1. A method of defrosting an outdoor heat exchanger of a compressor-condenser-evaporator type heat pump unit in accordance with sensed conditions indicative of the need to perform a defrost cycle comprising:

(a) sensing the temperature of the outdoor heat exchanger;

(b) sensing the outdoor air temperature;

(c) monitoring compressor running time until a predeter-

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mined accumulated running time that varies as a function of outdoor air temperature has elapsed;

(d) enabling defrosting of the outdoor heat exchanger when said running time has elapsed;

(e) detecting the extent of the temperature differential between the sensed outdoor heat exchanger temperature and the sensed outdoor air temperature;

(f) determining a value indicative of the frosting condition of the heat exchanger which valve varies as a function of outdoor air temperature;

(g) comparing the value with the sensed temperature differential;

(h) enabling a defrosting cycle when the sensed temperature differential and the value bear a predetermined relationship to each other; and,

(i) initiating a defrost cycle only when enabled by said compressor running time elapsing and enabled by said sensed temperature differential bearing a predetermined relationship to said value.

4,882,909

REFRIGERATING SYSTEM HAVING A COMPRESSOR WITH AN INTERNALLY AND EXTERNALLY CONTROLLED VARIABLE DISPLACEMENT MECHANISM

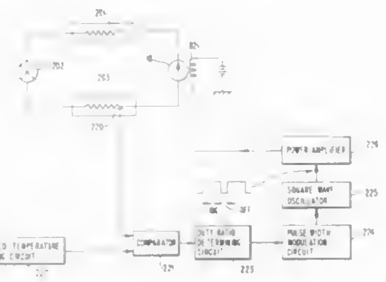
Kiyoshi Terauchi, Isesaki, Japan, assignor to Sanden Corporation, Gunma, Japan

Filed Sep. 22, 1988, Ser. No. 247,605

Claims priority, application Japan, Sep. 22, 1987, 62-236315

Int. Cl.⁴ F04B *1/00;* F25B *1/00*

U.S. Cl. 62—209 16 Claims


POWER AMPLIFIER
SQUARE WAVE OSCILLATOR
PULSE WIDTH MODULATION CIRCUIT
DUTY RATIO DETERMINING CIRCUIT
COMPARATOR
PREDETERMINED TEMPERATURE RANGE SETTING CIRCUIT

1. In a refrigerating system including a refrigerant circuit, comprising a condenser, evaporator and compressor, the compressor including a compressor housing having a central portion, a front end plate at one end and a rear end plate at its other end, said housing having a cylinder block, a piston slidably fitted within each of said cylinders, a drive mechanism coupled to said pistons to reciprocate said pistons within said cylinders, said drive mechanism including a drive shaft rotatably supported in said housing, a rotor coupled to said drive shaft and rotatable therewith, and coupling means for drivingly coupling said rotor to said pistons such that the rotary motion of said rotor is converted into reciprocating motion of said pistons, said coupling means including a member having a surface disposed at an incline angle relative to said drive shaft, said incline angle of said member being adjustable to vary the stroke length of said pistons and the capacity of said compressor, said rear end plate having a suction chamber and a discharge chamber, variable displacement control means for controlling angular displacement of said adjustable member, comprising first valve control means for controlling fluid communication between said crank chamber and said suction chamber in response to changes in refrigerant pressure in said compressor, said first valve control means comprising a first passageway providing fluid communication between said crank chamber and said suction chamber and first valve means for controlling the opening and closing of said first passageway to vary the capacity of the compressor by adjusting the incline angle, said first valve means comprising a first valve to directly open and close said first passageway, said variable displacement control means further comprising second valve control means for controlling fluid communication between said crank chamber and said suction chamber in response to a signal generated outside of the compressor, said second valve control means comprising a second passageway providing fluid communication between said crank chamber and said suction chamber and second valve means for controlling the opening and closing of said second passageway to vary the capacity of said compressor by adjusting the incline angle, said second valve means comprising a second valve to directly open and close said second passageway and override the operation of said first valve, the improvement comprising:

means for controlling the generation of said signal in response to at least one thermodynamic characteristic related to the evaporator as compared to two distinct boundary values, said signal generating control means comprising signal generating means for generating the signal, said signal generating means being responsive to predetermined range setting means for establishing a predetermined range of thermodynamic values in accordance with said two distinct boundary values, wherein the signal generating control means provides stepwise signal control within the predetermined range of the predetermined range setting means.

4,882,910

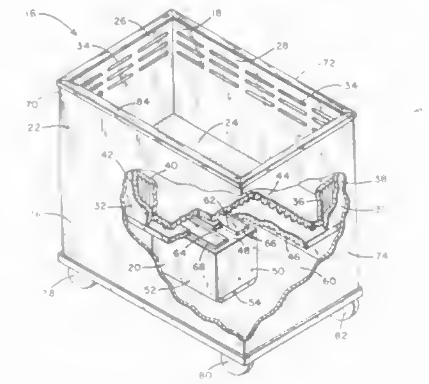
REFRIGERATION SYSTEM FOR PRODUCT DISPLAY ENCLOSURES

Kermit E. Meehan; William T. Nichols, both of Wayzata; Timothy S. Meehan, and Robert A. Essig, both of Minneapolis, all of Minn.

Filed Feb. 8, 1989, Ser. No. 308,142

Int. Cl.⁴ A47F *3/04*

U.S. Cl. 62—256 18 Claims



1. A portable refrigeration apparatus including:

a refrigeration enclosure having an upper deck, lower deck, and an upright enclosure side wall means joined to said upper and lower decks: an inlet opening formed in said upper deck for admitting a fluid into said enclosure, and an outlet opening in said upper deck for discharging said fluid out of the enclosure; and a cooling means within said enclosure for cooling said fluid;

a display container including a container floor and an upright container side wall means joined to said floor; first and second openings formed in said floor spaced apart from one another and open to the exterior of said container; a first fluid passageway in said container side wall means in fluid communication with said first opening and with the interior of said container, and a second fluid passageway in said container side wall means in fluid communication with said second opening and with the interior of the container; and

a means forming a removable connection of said container and said enclosure, wherein said floor is contiguous with said enclosure upper deck, and said first and second openings are in fluid communication with said inlet and outlet openings, respectively.

4,882,911

APPARATUS FOR REMOVING CONDENSATE WATER FROM A COMPRESSOR-OPERATED COOLING DEVICE

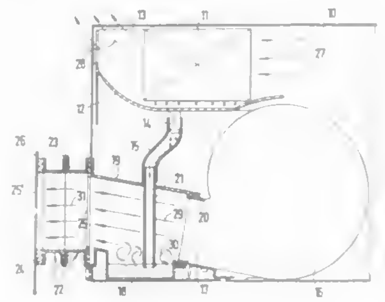
Manfred Immel, Mittenaar, Fed. Rep. of Germany, assignor to Rittal-Werk Rudolf Loh GmbH & Co. KG, Fed. Rep. of Germany

Filed Oct. 11, 1988, Ser. No. 255,762

Claims priority, application Fed. Rep. of Germany, Oct. 21, 1987, 3735551

Int. Cl.⁴ F25D *21/14*

U.S. Cl. 62—288 4 Claims



3. A device for removing condensate water from a compressor-operated cooling device having an evaporator and a condensate collecting pan mounted below the evaporator wherein condensate water accumulated during the condensation operation of said evaporator flows to a drip pan mounted below said condensate collecting pan on a base plate of the cooling device next to an outlet hole in one wall of the cooling device, a blower mounted on the side of said drip pan opposite the outlet hole, during the condensation operation, blows a warm air current in the direction of said outlet hole, over the surface of the condensate water collected in the drip pan, said device comprising: said drip pan (**18**) integrated as a pan-shaped curved concavity into a lower side of a closed air channel (**19**) which is tightly connected with an outlet connecting piece (**17**) of a blower (**16**) at one end and with an outlet hole (**25**) at an opposite end, said blower (**16**) being capable of supplying a warm air current (**29**) at a velocity sufficient to carry fluid droplets of the condensate water accumulated in said drip pan (**18**);

said condensate collecting pan (**12**) having an outlet connecting piece (**14**), said air channel (**19**) having an inlet pipe (**21**) transversely positioned through an internal space of said air channel (**19**) from an upper side of said air channel (**19**) to said drip pan (**18**) mounted on said lower side of said air channel (**19**), said drip pan (**18**) connected with said outlet connecting (**14**) of said condensate collecting pan (**12**) by a flexible tube (**15**); and

said air channel (**19**) and said inlet pipe (**21**) constructed as a single-piece plastic part which is connectable with said outlet connecting piece (**17**) of said blower (**16**) by a connecting mount (**20**).

4,882,912

TEMPERATURE CONTROLLABLE TANK CONTAINER

Robin E. Fossey, Redhills, Ireland, assignor to Container Design Limited, Monaghan, Ireland

Filed Oct. 12, 1988, Ser. No. 256,824

Int. Cl.⁴ F25D *19/00*

U.S. Cl. 62—297 18 Claims

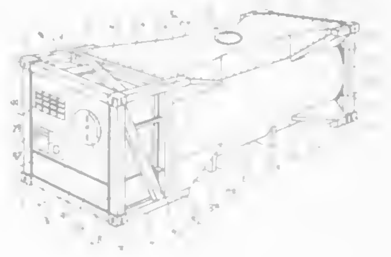
1. A temperature controllable tank container comprising:

a pair of end frames,

a tank mounted between the end frames,

an insulating shell extending round the tank and substantially enclosing the tank, and abutting the tank along a lower portion of the tank,

two elongated side ducts for carrying a heat transfer medium in one direction along the tank being provided between the insulating shell and the tank, and disposed longitudinally relative to the tank, one of the side ducts being provided on one side of the tank and the other side duct being provided on the opposite side of the tank, the side ducts being provided in substantially similar locations on their respective sides of the tank and being separated by the portion of the insulating shell abutting the lower portion of the tank,



at least one other duct extending longitudinally along the tank between the insulating shell and the tank for carrying the heat transfer medium in the other direction,

communicating means at one end of the tank to communicate the side ducts with the other duct, and

inlet and outlet means being provided to respective ducts at the other end of the tank for connecting the ducts to a heating or cooling means.

14. A tank container as claimed in claim **1** in which a cooling means provided by a refrigerating unit to cool the heat transfer medium is mounted in the end frame adjacent the inlet and outlet of the ducts, the refrigerating unit being connected to the inlet and outlet for circulation of the heat transfer medium through the side and top ducts, means to circulate the heat transfer medium being provided.

4,882,913

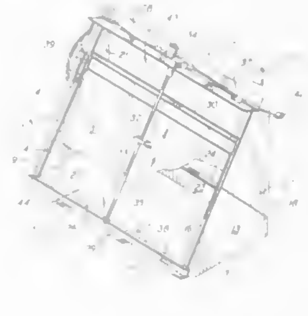
SLIDE PLATE ECONOMIZER

Nelon N. LaCount, II, Syracuse; Dilip Y. Vyavaharkar, Liverpool, and Rudy Bussjager, Chittenango, all of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Oct. 20, 1988, Ser. No. 260,228

Int. Cl.⁴ F25D *17/04;* G05D *23/13*

U.S. Cl. 62—409 24 Claims



11. In an air conditioning system of the type having an economizer for selectively providing respective outdoor air discharge and return air discharge openings through which outdoor air and/or return air can flow to an evaporator coil, an improved sliding door mechanism comprising:

a door slideably mounted on an economizer and being so positioned and sized that on one extreme position it covers

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the outdoor air discharge opening and uncovers the return air discharge opening and at its other extreme position it covers the return air discharge opening and uncovers the outdoor air discharge opening;

a threaded strut attached to said door and extending substantially normally therefrom;

a threaded shaft threadably engaging said threaded strut so as to cause linear movement thereof upon rotation of said shaft; and

drive means to selectively rotate said threaded shaft so as to selectively position said door with respect to said return air discharge and outdoor air discharge openings, respectively.

4,882,914

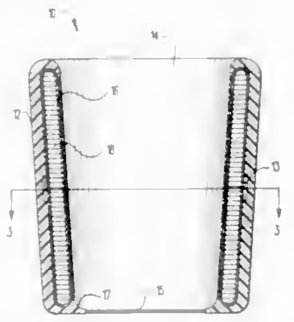
BEVERAGE COOLER

Susan M. Haines-Keeley, 8101 83rd Ave., SW., B-12, Tacoma, Wash. 98498, and Wanita E. Haines, P.O. Box 1104, Havre, Mont. 59501

Filed Mar. 8, 1989, Ser. No. 320,518

Int. Cl.^{4} F25D *3/08*

U.S. Cl. 62—457.4 1 Claim



1. A beverage cooler for holding and cooling a beverage container, comprising:

a frusto conical hollow body formed from an expandable resilient insulating material;

said body having an upper larger diameter open end and a smaller diameter bottom open end;

an annular rim formed adjacent said bottom end portion for supporting a bottom peripheral edge of a beverage container;

a plurality of discrete elongated generally axially extending receptacles spaced circumferentially in a frusto conical array and encapsulated within a side wall of said body, each of said receptacles filled with a freezable gel material;

each of said receptacles having an arcuate inner side wall for conformance with a cylindrical beverage container, said receptacles extending in a tapered frusto conical configuration tapering from a larger diameter adjacent said open upper end of said body and a smaller diameter adjacent said open bottom end of said body;

an elastic band secured around a mid portion of said receptacle, within said sidewall; and

a pair of perpendicular elastic straps secured across said open bottom end of said body, whereby insertion of a cylindrical beverage container into said larger diameter open end and causes said receptacles to move into a cylindrical configuration, in close conformance with an exterior sidewall of the inserted container.

4,882,915

COMBINED LOCKET AND PHOTO HOLDER

Eileen L. Porcaro, 13608 Valleyheart Dr., Sherman Oaks, Calif. 91423

Filed Jun. 9, 1988, Ser. No. 204,298

Int. Cl.^{4} A44C *15/00*

U.S. Cl. 63—19 3 Claims

1. An article of jewelry comprising:

a housing having a pair of identical half members;

a plurality of photo holders hingeably coupled together in end-to-end relationship;

said plurality of photo holders terminating at its opposite ends in end photo holders, each of which is hinged to a respective one of said housing half members;

said plurality of photo holders adapted to be folded over upon each other to form a stack between said housing half members constituting a storage position and to be extended in a line constituting an operative position exposing the opposite surfaces of each of said photo holders; and

means provided on each of said photo holders for mounting a photo so as to be visually exposed when said photo holders are in said operative position;

clasp means for releasably coupling said half members together separated by said stack of photo holders when in said storage position;

said clasp means includes a pair of pivotally mounted arcuate members extending about said stack of photo holders and having rounded ends in snap-lock engagement with receiving holes in said half members respectively.

4,882,916

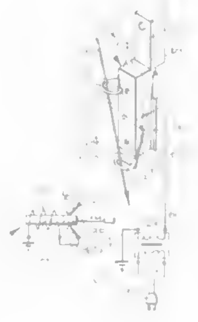
KNITTING MACHINE STOP MOTION ACTIVATOR

Robert E. Jones, Rte. 4, Box 509, Conover, N.C. 28613

Filed Mar. 2, 1989, Ser. No. 317,969

Int. Cl.^{4} D04B *35/12*

U.S. Cl. 66—163 7 Claims



1. In a knitting machine for forming knit fabric including detector switch means normally positioned in an open position and being movable to a closed position when a malfunction of the knitting machine occurs, and stop motion means operable to stop operation of the knitting machine upon detection of a malfunction, the combination therewith of activator means operable by movement of said detector switch means to said closed position to operate said stop motion means, said activator means comprising

a solenoid coil,

a source of electrical energy,

a wiring circuit connecting said source of electrical energy to said solenoid coil and through said detector switch means,

an elongate armature core supported for axial movement within said solenoid coil, said armature core being moved to a first position within said solenoid coil when said solenoid coil is energized, and said armature core being manually movable to a second position when said solenoid coil is deenergized,

connector means operatively connecting said armature core with said stop motion means for stopping said knitting machine upon movement of said armature core to said first position, and

control switch means interposed in said wiring circuit between said detector switch means and said solenoid coil, said control switch means being operatively associated with said armature core and being moved to a closed position when said armature core is in said second position, and to an open position when said armature core is in said first position so that said solenoid coil is energized when said detector switch means is moved to said closed position and deenergized as soon as said armature core is moved to said first position.

4,882,917

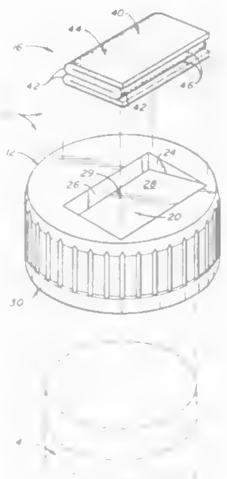
RINSE RELEASE LAUNDRY ADDITIVE AND DISPENSER

Eugene A. Mizusawa, Castro Valley; Donald J. Paone, Hayward; Tracey L. Casella, Martinez; Dorothy L. Flores, Livermore; Clement K. Choy; Jan Gerritsen, both of Walnut Creek; Ronald E. Heiskell, Tracy; Thomas G. Dewees, Pleasanton, and Jon L. Ellgen, Pleasant Hill, all of Calif., assignors to The Clorox Company, Oakland, Calif.

Filed May 11, 1988, Ser. No. 193,310

Int. Cl.^{4} D06F *39/02*

U.S. Cl. 68—17 A 19 Claims



1. A wash additive combination for the rinse release of wash additives, comprising

(a) a dispensing means, positioned about an upper surface of a washing machine agitator, the dispensing means being adapted to retain a wash additive packet and to position the packet such that a center of mass thereof is offset from a center of rotation of said agitator whereby the packet is retained during an initial, wash phase of a wash cycle and dispensed during a spin phase of said wash cycle; and

(b) a wash additive packet for placement onto the dispensing means, the packet comprising a flexible substrate material and possessing a first stable conformation of a first outer surface area, and a second stable conformation of a second outer surface area, said second outer surface area being greater than said first outer surface area, the substrate having deposited thereon a dispersible wash additive for dispersion in an aqueous rinse solution.

4,882,918

PADLOCK COVER

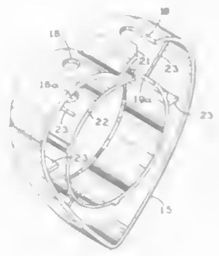
Judith A. Stanich, Pompano Beach, Fla., assignor to Hot Locks, Inc., Pompano Beach, Fla.

Continuation-in-part of Ser. No. 803,084, Nov. 27, 1985, Pat. No. 4,819,465, and a continuation-in-part of Ser. No. 802,767, Nov. 27, 1985, Pat. No. 4,744,229, which is a continuation of Ser. No. 618,685, Jun. 8, 1984, Pat. No. 4,555,920, which is a continuation-in-part of Ser. No. 554,903, Nov. 25, 1983, Pat. No. 4,534,190. This application Dec. 16, 1987, Ser. No. 133,553

The portion of the term of this patent subsequent to Dec. 3, 2002, has been disclaimed.

Int. Cl.^{4} E05B *67/38*

U.S. Cl. 70—54 20 Claims



1. A cover for attachment to a padlock of the type having a body portion and an inverted, U-shaped shackle extending from the body portion, said cover having front and rear portions and including:

retaining means comprising an inner wall portion which is generally complementary to the shape of the body portion of the padlock and is adapted to prevent of the body portion of the padlock within said cover in a first plane defined by the shackle, wherein said inner wall portion includes at least one aperture adapted to permit the shackle to pass therethrough and which captures the shackle therein;

securing means adapted to prevent movement of the body portion of the padlock within said cover in a second plane perpendicular to the first plane, wherein said securing means includes at least one aperture adapted to permit the shackle to pass therethrough; and

a face plate adapted to enclose the face of the padlock.

4,882,919

FLUSH MOUNTED PANEL LOCK CONSTRUCTION

Clark E. Craig, Inman, S.C., assignor to Valhi Inc., Dallas, Tex.

Filed Jul. 7, 1988, Ser. No. 216,324

Int. Cl.^{4} B60R *25/02*

U.S. Cl. 70—208 4 Claims

1. A panel lock adapted to be secured in a recess in a panel comprising, in combination:

an elongated panel lock housing, securing means on the panel lock housing for securing the panel lock housing to a panel, said panel lock housing having an elongate re-

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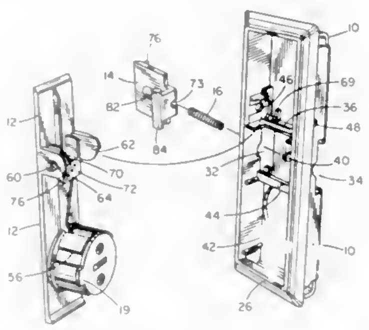
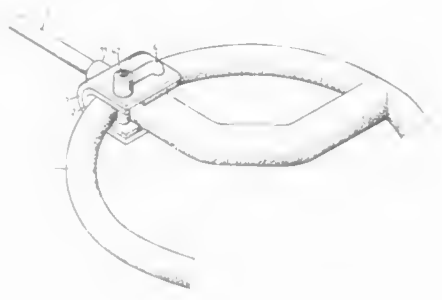
cessed cavity with an elongate or longitudinal dimension and a transverse dimension;
a slidable bolt mounted for transverse movement in the cavity, said bolt retained in the cavity by transverse rails which guide the bolt, said housing including at least one opening in a side for receipt of the bolt and for the bolt to project therefrom for engagement with an external strike, biasing means interposed between the bolt and housing for biasing the bolt through the side opening toward engagement with a strike;
a flush mounted push plate over the top of the cavity in the housing, said push plate pivotally attached to the transverse sides of the housing and pivotal about an axis parallel to the direction of bolt movement, said plate including a depending cam surface extending into the cavity, said bolt including a follower member engaged by the cam surface and imparting a biasing force from the biasing means against the cam surface to thereby bias the push plate flush with the housing, said push plate being manually pivotal against the biasing force to engage the cam surface against the follower and translate the bolt against the force of the biasing means to a position within the housing and out of engagement with a strike;
said push plate further including first and second generally parallel depending legs projecting into the cavity, said legs each including a pivot member on the pivot axis of the plate cooperative with a transverse side wall of the cavity to thereby define the pivot axis for the push plate, said axis adjacent one side of the bolt; and
at least one of said legs including a tab extension segment at the distal end of the leg, said tab extension segment cooperatively engaging with a groove inside the cavity to limit transverse movement of said leg.



4,882,920
STEERING LOCK FOR AUTOMOBILE

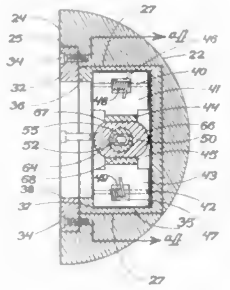
Jinn-Fu Wu, No. 127, Hai Huan Street, Tainan, Taiwan
Filed Apr. 21, 1989, Ser. No. 341,157
Int. Cl.⁴ B60R *25/02*
U.S. Cl. 70—209 1 Claim



1. A steering lock for an automobile comprising:
a U-shaped hook having an outer tubular member at one end, two holes at one side and two aligned holes at the other side;
a latch rod having a stop shoulder at one side and a handgrip at another end, said stop shoulder being placed between said sides and adjacent said outer tubular member of said U-shaped hook;
an engaging member having two actuating members, a lock core, a lock bolt and a slot; wherein, said engaging members being designed to clamp a rib of a steering wheel while said stop shoulder of said latch rod is abutted against a steering wheel.

4,882,921
KING PIN LOCK

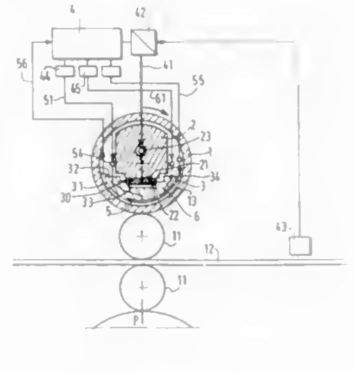
Frank Wopinski, 24320 Ave. 95, Terra Bella, Calif. 93270
Filed Dec. 1, 1988, Ser. No. 278,481
Int. Cl.⁴ F16B *41/00*
U.S. Cl. 70—232 4 Claims



1. A king pin lock for securement to a cylindrical king pin of a trailer having an exterior circumferential undercut groove, said lock comprising:
a generally hemispherical body member having a blind stepped diameter central bore;
an outer larger diameter portion of said central bore opening to a flat planar face of said hemispherical body member;
a hollow cylindrical locking shell received in an inner reduced diameter portion of said central bore;
said locking shell having an interior undercut groove;
a circular retaining plate secured in said outer larger diameter portion of said central bore and partially overlying an outer end face of said locking shell;
aligned circular bores dimensioned to receive a trailer king pin formed through said retaining plate and said outer end face of said locking shells;
aligned transverse apertures formed through a side wall of said hemispherical body member and said locking shell;
a key operated lock cylinder secured in said transverse aperture of said hemispherical shell;
an inner end of a rotary actuating shaft of said lock cylinder extending through said transverse aperture of said locking shell;
a cam, in said locking shell, having arcuate opposite end portions connected by straight side walls and secured for rotation with said actuating shaft;
a pair of arcuate locking arms disposed in said undercut groove in said locking shell, on opposite sides of said cam;
each of said locking arms having a first end portion abutting said cam, and a second end portion remote from said cam;
a pivot pin, extending parallel to a central longitudinal access of said cylindrical locking shell, adjacent the first end portion of each of said locking arms and mounting said locking arms for limited pivotal radial movement; and
a torsional coil spring received around each of said pivot pins, biasing said locking arms to radially outer positions, whereby a trailer king pin may be inserted into said locking shell and said locking arms may be moved radially inwardly into engagement with the exterior undercut groove of the king pin by rotating said cam by rotation of said actuating shaft of said key lock cylinder.

4,882,922
ROLLING MILL ROLL WITH ROTATING SHELL

Boulot Dominique, Boulogne, France, assignor to Clecim S. A., Courbevole Cedex, France
Filed Jun. 1, 1987, Ser. No. 55,961
Claims priority, application France, Jun. 4, 1986, 86 08074
Int. Cl.⁴ B21B *29/00, 37/00*
U.S. Cl. 72—243 11 Claims

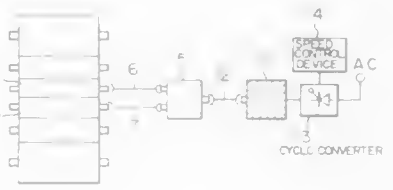


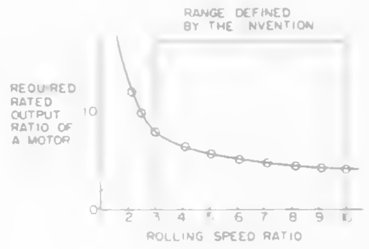
1. A rolling mill for rolling metal products with rolls mounted in a roll stand structure to transmit a rolling load, comprising at least roll with a deformable rotating shell, said roll comprising a fixed support (2) in the form of an elongated beam, a tubular shell (1) surrounding the support beam (2) and rotatably mounted about an axis, a plurality of means (3) for holding the shell, these means being distributed side by side along the length of the beam and in a screw-down plane (P) along which the rolling load is transmitted, each holding means comprising a shoe (3), essentially centered in the bearing plane (P), disposed between the shell (1) and the support beam (2) and slidably mounted on said support beam in a radial direction, essentially in the screw-down plane (P), and a means (30) for regulating the radial thrust of the shoe (3), which thrust bears on the shoe and on the beam, the shoe (3) being provided with a cylindrical bearing face (31) having a radius essentially equal to that of the internal face (13) of the shell (1) and connected to means (51, 55) for introducing continuously, in the direction of rotation of the shell, a lubricating fluid in the form of a film disposed in the gap (52) between the bearing face (31) of the shoe and the internal face (13) of the shell, wherein each shoe (3) is provided, on the part (36) of its bearing face (31) which is turned upstream with respect to the direction of rotation of the shell (1), with an auxiliary means (6) of lateral thrust against the internal face (13) of the shell in a radial direction (D) inclined upstream with respect to the screw-down plane (P) and under sufficient pressure to cause, during service, a slight angular shift in the shoe which is capable of bringing about, by a wedge effect, the relative centering of the shell (1) with respect to the shoe (3).

4,882,923
CONTINUOUS MILL PLANT FOR ROLLING STEEL PLATES

Kozaburo Ichida; Susumu Yamaguchi, and Bunichiro Chikazawa, all of Kitakyushu, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan
Continuation of Ser. No. 214,872, Jul. 5, 1988, abandoned, whicb is a continuation of Ser. No. 831,953, Feb. 24, 1986, abandoned.
This application Mar. 3, 1989, Ser. No. 319,828
Claims priority, application Japan, Feb. 25, 1985, 60-34533
Int. Cl.⁴ B21B *35/04*
U.S. Cl. 72—249 7 Claims

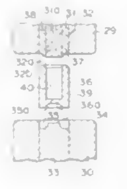
1. A continuous mill plant for producing steel plates having a ratio of maximum rolling speed to minimum rolling speed variable from at least 3.0 to no more than 10.0 at a continuous rated output of at least one alternating current electric motor for driving at least one rolling mill, and means for controlling the speed of said motor in accordance with said ratio such that the one rolling mill is adaptable to roll materials of different thicknesses.





4,882,924
METHOD AND APPARATUS FOR MANUFACTURING HOLLOW CYLINDRICAL GUIDE ROLLER FOR MAGNETIC RECORDING TAPE

Takayuki Kobama, and Hideo Kojima, both of Yokobama, Japan, assignors to Sansbin Industry Co., Ltd., Yokohama, Japan
Filed Sep. 22, 1987, Ser. No. 99,794
Int. Cl.⁴ B21C *23/14;* **B21D** *28/28, 45/06;* **B21K** *21/12*
U.S. Cl. 72—254 6 Claims



1. A method of manufacturing a hollow type guide made of non-magnetic ductile material for guiding magnetic recording tape, comprising the steps of:
shearing a blank of predetermined length, having a first end and a second end, from a round rod-like metal wire;
inserting the blank into a first bore in a first die containing a first punch;
moving a second die facing the first die and having a second punch aligned with the bore in the first die towards the first die to urge the second end of the blank against the

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first punch and forming a shallow cylindrical recess at said second end of the blank with the first punch;

inserting the blank having a shallow cylindrical recess into the bore of a third die containing an axially movable third punch such that the recess faces a fourth die which faces the third die, said fourth die having an annular cavity aligned with the bore of the third die and in which an axially movable annular die is arranged, a stationary punch being arranged at the center of the annular cavity and having a first vent slot extending axially along the stationary punch and communicating with said annular cavity;

moving the third die relative to the fourth die opposing the third die;

forming the blank into a cup-shaped blank closed at the first end and having a predetermined length and wall thickness by moving the third punch a predetermined distance relative to the fourth die to apply pressure on a first end of the blank to extrude it into the annular cavity in the fourth die while applying a lower pressure on the opposite end of the blank with the annular die;

supplying air into the cup-shaped blank via said vent slot from the atmosphere thereby preventing the blank from being deformed by negative pressure, and removing the cup-shaped blank from the annular cavity in the fourth die;

inserting said cup-shaped blank in a large diameter bore of a fixed fifth die with the closed end facing inwards, said fifth die having a small diameter bore communicating with the large diameter bore;

moving a sixth die arranged so as to face the fifth die, with respect to the fifth die, said sixth die having an axially movable punch and a vent slot formed in the movable punch;

punching out the closed end of the cup-shaped blank with the axially movable punch of the sixth die to form the hollow tape guide while exhausting the internal air of the cup-shaped blank to the atmosphere via the vent slot of said axially movable punch preventing deformation of the blank due to the air compression between the closed portion of the cup-shaped blank and the movable punch of the sixth die.

4,882,925
METHOD OF MAKING TERMINAL NUT FOR IGNITION PLUG BY PLASTIC WORKING

Tsuguml Ichle, and Minoru Ando, both of Nagoya, Japan, assignors to NGK Spark Plug Co., Ltd., Nagoya, Japan
Filed Dec. 8, 1988, Ser. No. 282,263
Claims priority, application Japan, Apr. 14, 1988, 63-92495
Int. Cl.^{4} B21K *21/10*

U.S. Cl. 72—356 9 Claims

1. A method of making terminal nut for ignition plug by plastic working, comprising;

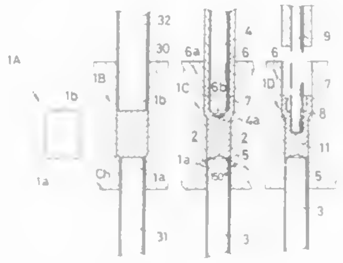
first step in which a column-shaped metallic blank is set into a cylindrical die, and struck at both end surfaces by plungers to flatten the end surfaces in perpendicular to axial direction of said blank;

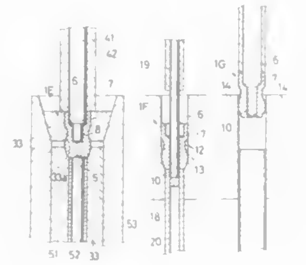
second step in which a punch rod is forcibly caved into one end surface of said blank with other end surface supported by a conical headed mandrel in order to form a central conical dent at one end surface of said blank, and at the same time, forming first bottom-ended hole at other end surface of said blank by means of reducing;

third step in which a punch rod is forcibly caved into said first bottom-ended hole to form second bottom-ended hole at said blank concentrically and continuously from said first bottom-ended hole to be diametrically lesser than said first bottom-ended hole;

fourth step in which said blank is enclosed into a cylindrical die having a constricted inner wall, and axially contracted to bulge a side surface of said blank diametrically outward by means of upsetting;

fifth step in which a perforation hole is axially formed at said blank by a punching means in concentrical relationship with said first bottom-ended hole, said perforation hole being diametrically corresponding to said second bottom-ended hole;





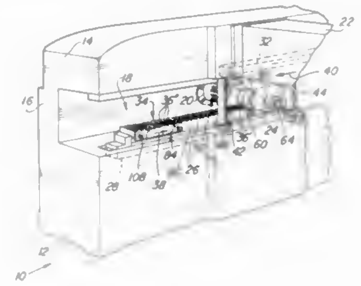
sixth step in which said blank is shaved at its bulged portion with the use of a cylindrical die means.

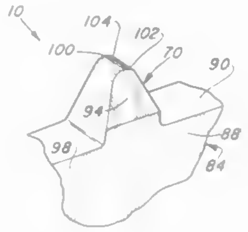
4,882,926
ROLL FORMING NOTCHES IN A THIN-WALL POWER TRANSMISSION MEMBER

Carl Anderson, Mt. Clemens, Mich., assignor to Anderson-Cook, Inc., Fraser, Mich.
Division of Ser. No. 88,696, Aug. 21, 1987, Pat. No. 4,819,468. This application Oct. 27, 1988, Ser. No. 263,396
Int. Cl.^{4} B21D *28/30;* B21H *5/00*

U.S. Cl. 72—469 6 Claims

1. A notch forming die member (**84**) for cooperating with a spline forming die member (**26,30**) to form a splined transmission member (**52**) including at least some notched splines (**68'**) from a thin-walled blank, said notch forming die member (**84**) comprising: an elongated body portion (**84**) for being mounted adjacent a body portion of a spline forming die member (**26,30**), notch forming means (**70**) extending from said body portion (**84**), and alignment means for aligning said body portion (**88**) with the body portion (**86**) of a spline forming die member (**26,30**) and aligning said notch forming means (**70**) with the troughs between the teeth (**36**) of the spline forming die member (**26,30**).

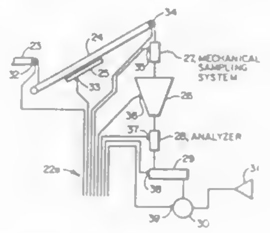




4,882,927
METHOD AND APPARATUS FOR AUDITING MEANS USED FOR MEASURING CHARACTERISTICS OF A BULK MATERIAL

Gregory Gould, 30 Clairmont Ave., Thornwood, N.Y. 10594
Filed Jan. 19, 1988, Ser. No. 144,995
Int. Cl.^{4} G01D *18/00, 21/02;* G01G *23/01*

U.S. Cl. 73—1 R 112 Claims

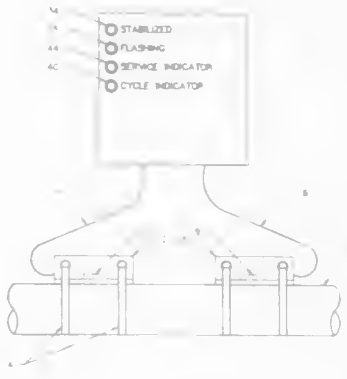


1. A method of auditing for accuracy or reliability of measurement a means used for measuring one or more characteristics of a bulk material which comprises the steps of measuring said one or more characteristics of said bulk material with said means, and concurrently measuring one or more variables, which variables are independent of said means for measuring said characteristics and which variables directly or indirectly affect the normal operation of said means and thereby affect the accuracy or the reliability of the results obtained by the means used to measure one or more characteristics of said bulk material.

4,882,928
REFRIGERATION EFFICIENCY MONITORING SYSTEM

William E. Lane, Jr., 2539 NE. 32nd Pl., Ocala, Fla. 32570; Clayton E. Leist, II, 4010 SE. 23rd Ave., Ocala, Fla. 32671, and Bradley L. Busch, 810 SW. 23rd Pl., Ocala, Fla. 32674
Continuation-in-part of Ser. No. 136,550, Dec. 22, 1987, abandoned, which is a continuation-in-part of Ser. No. 919,787, Oct. 16, 1986, abandoned. This application Oct. 11, 1988, Ser. No. 255,880
Int. Cl.^{4} G01N *29/02*

U.S. Cl. 73—19 20 Claims



1. A device useful for monitoring the thermodynamic state of a fluid flowing through a conduit, which comprises:

(a) a first electromechanical transducer,

(b) means to acoustically couple said first transducer to a conduit,

(c) a precision oscillator which provides a driving electrical signal characterized by an ultrasonic frequency to said first transducer,

(d) a second electromechanical transducer,

(e) means to acoustically couple said second transducer to said conduit in a spaced relationship to said first transducer,

(f) a receive amplifier tuned to the output frequency of said oscillator operating to receive and amplify the ultrasonic signal received from said second transducer,

(g) a tracking receiver-decoder operating to convert the ultrasonic signal received from said receive amplifier into a digital logic signal,

(h) an integrator circuit operating to average said digital logic signal from said tracking receiver-decoder, and

(i) a comparator connected to the output of said integrator operating to compare the averaged DC output from said integrator with a preset reference voltage and to provide first and second signals indicative of said comparison.

4,882,929
APPARATUS AND PROCESS FOR MEASURING CHANGES IN EFFECT OF TIDAL FORCES

Robert L. Brown, Buena Park, Calif., assignor to Total Environmental Services Technology, Inc., Huntingdon Beach, Calif.
Filed Jan. 29, 1988, Ser. No. 150,085
Int. Cl.^{4} G01M *3/26*

U.S. Cl. 73—49.2 28 Claims

1. In combination: a measuring device used in conjunction with leak detector system means which measures leakage of liquid into or out of liquid storage tanks, for providing a correction in said leak detector system means to account for liquid level changes caused by tidal forces, the combination comprising:

leak detector system means for monitoring the liquid level in a liquid storage tank;

a first container for a measuring liquid, and a second container for the measuring liquid, the first and second con-

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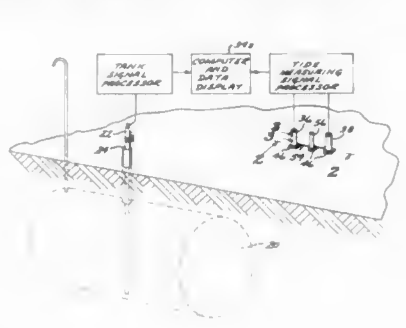
tainers being positioned at a predetermined distance from one another, each of the first and second containers being isolated from fluid-communication with the liquid storage tank;

a duct in fluid communication with the first container and with the second container, thereby placing the first and second containers in fluid communication with one another;

first means for monitoring the level of the measuring liquid in the first container, the first means providing a first output signal indicative of the level of the measuring liquid in the first container; and

second means for monitoring the level of the measuring liquid in the second container, the second means providing a second output signal indicative of the level of the measuring liquid in the second container, the difference between the first and second output signals being indicative of the difference in the heights of the measuring liquid columns in the first and second containers, and is thereby indicative of the tidal forces effects on the measuring liquid in the containers.



4,882,930

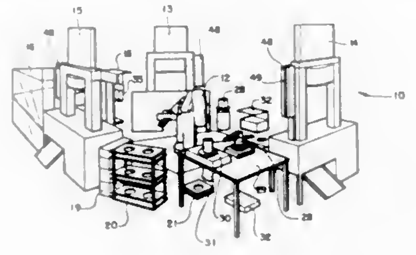
MELT INDEXER SYSTEM WITH ROBOT OPERATION

Gabor S. Nagy, Waxhaw, N.C.; Richard C. Akeson, Cedarberg, Wis.; Richard E. Sweenie, Watertown, Wis.; Mark E. Novak; Harry K. Malsch, both of Milwaukee, Wis.; Thomas J. Widule, Elm Grove, Wis.; Gustav L. P. Ding, Milwaukee, Wis., and Jared K. Jackson, Brookfield, Wis., assignors to Automatik Machinery Corporation, Charlotte, N.C.

Filed Jun. 17, 1988, Ser. No. 208,742

Int. Cl.^{4} G01N *11/04*

U.S. Cl. 73—56 **28 Claims**



1. In a melt indexer for determining the melt index of a plastic by testing, said melt indexer having a melt chamber in which a sample of plastic to be tested is placed, heating means for melting the sample to a predetermined temperature and a test piston for extruding the melted sample through a calibrated orifice of a removable die to determine the viscosity of the sample as a function of its temperature, the combination therewith of an automated test system which comprises:

(a) a robot and a computer programmable to control the movement of the robot;

(b) an infeed queue for holding a plurality of containers containing samples to be tested;

(c) identification means for identifying each sample to the tested;

(d) a test computer for associating a particular sample with a predetermined plan for testing the sample, recording and processing the melt index test results;

(e) extracting means for extracting a charge of the sample from the sample container and placing it in the melt chamber;

(f) cleaning means for cleaning the test piston and melt chamber after the test is complete and preparing the apparatus for the next test;

(g) means for detecting and processing exceptions to proper operation of the apparatus;

(g) said robot being operable to:
  - (i) select a container from the infeed queue;
  - (ii) hold the container while the sample container is identified;
  - (iii) open the container;
  - (iv) hold the container while operating said extracting means to extract a charge from the sample container and place it in the melt chamber; and
  - (v) manipulate said cleaning means.

4,882,931

METHOD AND AN APPARATUS FOR DETERMINING THE VELOCITY, DIRECTION AND OTHER MAGNITUDES OF A FLOW, IN PARTICULAR A GAS FLOW

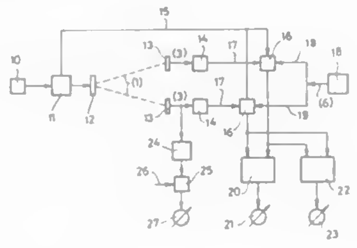
René Breeuwer, Delft, Netherlands, assignor to Ahrin BV, Netherlands

Continuation of Ser. No. 142,634, Jan. 11, 1988, abandoned, which is a continuation of Ser. No. 912,075, Sep. 25, 1986, abandoned. This application Oct. 5, 1988, Ser. No. 253,495

Claims priority, application Netherlands, Sep. 30, 1985, 8502673

Int. Cl.^{4} G01W *1/04;* G01F *1/66*

U.S. Cl. 73—189 **12 Claims**



1. Apparatus for determining the velocity and direction of a gas flow comprising:

first transducer means for emitting a strongly damped acoustic signal characterized by a waveform having one peak of amplitude substantially greater than all other peaks in said waveform;

second transducer means for receiving said acoustic signal;

threshold circuit means associated with said second transducer for setting a threshold level and deriving an output signal in response to reception of a peak exceeding said level;

energizing circuit means for driving said first transducer; and

timer means connected to said energizing circuit means and an output of said threshold circuit means for measuring the time lapse between said emission and said reception;

said threshold level being adjustable to a level lower than said one peak but higher than said all other peaks, whereby said output signal is normally triggered if at all only by said one peak to avoid erroneous time measurements.

4,882,932

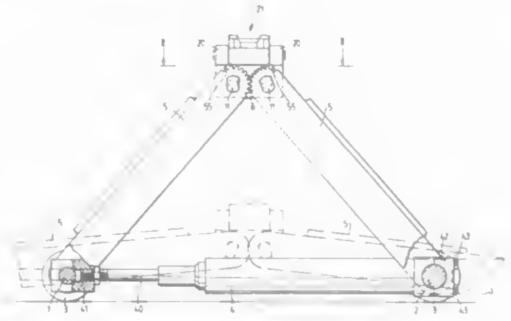
LIFT WITH TRANSDUCER FOR BALANCING TIRES ON A VEHICLE

Remo Corghi, 1, Piazza Carducci - I 42015, Correggio Emilia (Reggio Emilia), Italy

Continuation of Ser. No. 196,769, May 18, 1988, abandoned, which is a continuation of Ser. No. 860,875, May 8, 1986, abandoned. This application Nov. 22, 1988, Ser. No. 274,684

Int. Cl.^{4} G01M *1/28;* B66F *5/00*

U.S. Cl. 73—457 **13 Claims**



1. Wheel balancing apparatus comprising, a lifting unit and a piezoelectric transducer, said lifting unit comprising a trolley having a first arm and a second arm, each arm having an upper end and a lower end, means pivotally connecting said lower ends of said arms to supports spaced from each other for movement of said lower ends toward and away from each other, means pivotally connecting said upper ends of said arms to a horizontal housing containing said piezoelectric transducer, said arms converging toward each other from said lower ends toward said housing, means interconnecting said arms for simultaneous movement of said lower ends of said arms toward and away from each other, a lifting and support saddle above said housing, said support saddle extending transversely of said arms, means for driving said lower ends of said arms toward each other to lift said housing, and means supporting said saddle on said transducer so that vibrations from a wheel supported by said saddle are transmitted to said transducer.

4,882,933

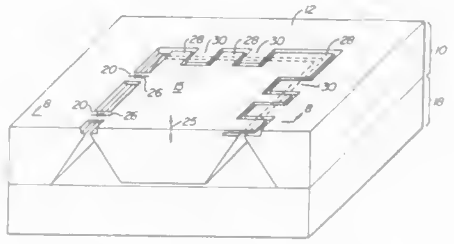
ACCELEROMETER WITH INTEGRAL BIDIRECTIONAL SHOCK PROTECTION AND CONTROLLABLE VISCOUS DAMPING

Kurt E. Petersen, San Jose, and Phillip W. Barth, Palo Alto, both of Calif., assignors to NovaSensor, Fremont, Calif.

Filed Jun. 3, 1988, Ser. No. 202,081

Int. Cl.^{4} G01P *15/08*

U.S. Cl. 73—517 R **34 Claims**



1. A sensing device comprising:

a supporting frame having an opening therein;

a mass disposed in the opening and movable along at least one axis;

a flexure coupled between the frame and the mass;

stop means integral to the supporting frame and the mass and mounted along the respective adjacent edges of the frame and the mass for restricting movement of the mass structure in at least one direction along the at least one axis; and

sensing means coupled to at least the flexure for detecting movement of the mass structure.

4,882,934

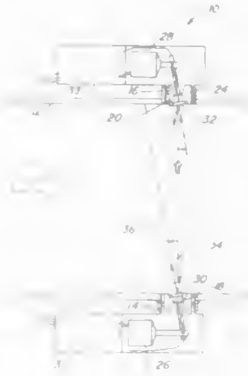
ULTRASONIC INSTRUMENT TO MEASURE THE GAS VELOCITY AND/OR THE SOLIDS LOADING IN A FLOWING GAS STREAM

Charles B. Leffert, 1302 Wrenwood Dr., Troy, Mich. 48084, and Leo H. Weisman, Warren, Mich., assignors to Charles B. Leffert, Troy, Mich.

Continuation-in-part of Ser. No. 839,033, Mar. 12, 1986, Pat. No. 4,726,235. This application Feb. 18, 1988, Ser. No. 157,413

Int. Cl.^{4} G01F *1/74*

U.S. Cl. 73—861.04 **27 Claims**



1. An instrument for measuring the velocity of a fluid being transported through a conduit comprising:

a first ultrasound transducer defining an aiming line,

first coupling means for mounting said first transducer to said conduit and for enabling the angle of said first transducer aiming line to be varied,

a second ultrasound transducer defining an aiming line;

second coupling means for mounting said second transducer to said conduit and for enabling the angle of said second transducer aiming line to be varied,

actuation means for controlling said aiming line angles of said first and second transducers such that said first transducer aiming line can be displaced upstream with respect to said fluid flow, and said second transducer aiming line is simultaneously displaced downstream with respect to said fluid flow, and

controlling and processing means for causing said first transducer to generate a packet of ultrasound energy which traverses said fluid flow and which is detected by said second transducer whereby the angular displacement of said first transducer aiming line is related to the downstream drift of said packet of ultrasound energy caused by said fluid velocity and said controller and processing means further for determining said velocity.

4,882,935

CONVECTIVE ATTENUATION FLOWMETER

Hyok S. Lew, 7890 Oak St., Arvada, Colo. 80005

Continuation-in-part of Ser. No. 71,777, Jul. 10, 1987, and a continuation-in-part of Ser. No. 163,855, Mar. 3, 1988. This application Jul. 5, 1988, Ser. No. 215,033

Int. Cl.^{4} G01F *1/84*

U.S. Cl. 73—861.38 **18 Claims**

1. An apparatus for measuring mass flow rate comprising in combination:

(a) a pair of conduits, each conduit connected to a first port leg at first extremities of the pair of conduits and to a third conduit at second extremities of the pair of conduits oppo-

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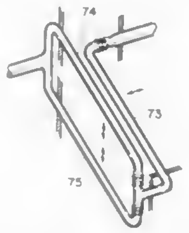
site to said first extremities, said third conduit connected to a second port leg, wherein at least one of the pair of conduits has one extremity disposed in an arrangement restraining lateral deflection thereof and the other extremity disposed in a laterally deflective arrangement, and the third conduit has one extremity disposed in an arrangement restraining lateral deflection thereof and the other extremity disposed in a laterally deflective arrangement;

(b) means for imposing flexural vibrations on said at least one of the pair of conduits and the third conduit;



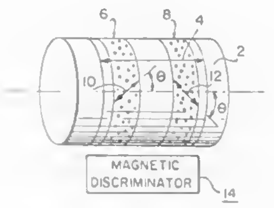
(c) first means for determining time rate of loss of momentum with the flexural vibration of said at least one of the pair of conduits; and

(d) second means for determining time rate of loss of momentum associated with the flexural vibration of the third conduit;

wherein mass flow rate of media moving through the apparatus is determined from the difference in the time rates of loss of momentums respectively determined by said first and second means for determining time rate of loss of momentum.

4,882,936
MAGNETOELASTIC TORQUE TOOL

Ivan J. Garsbelis, Cheshire, Mass., assignor to Mag Dev Inc., Pittsfield, Mass.
Continuation-in-part of Ser. No. 938,404, Dec. 5, 1986, Pat. No. 4,760,745. This application Sep. 14, 1987, Ser. No. 95,774
Int. Cl.⁴ G01L *3/10*
U.S. Cl. 73—862.36 30 Claims



1. A hand tool for applying torque to a fastener including fastener-engaging means, handle means to which torque is hand-applied and torque carrying means operatively coupled with said handle means and said fastener-engaging means for transmitting the hand-applied torque to the fastener, said torque carrying means including a magnetoelastic torque transducer, said torque carrying means comprising a member having a ferromagnetic and magnetostrictive region formed of nickel maraging steel, said transducer comprising:

a pair of axially spaced-apart annular bands defined within said region, said bands having respectively symmetrical right and left hand helically directed residual stress created magnetic anisotropy, each said band having at least one circumferential region which is free of residually unstressed areas over at least 50% of its circumferential length;

means for applying a cyclically time varying magnetic field to said bands;

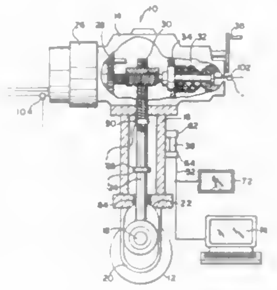
means for sensing the change in permeability of said bands caused by said applied torque;

means for converting said sensed change in permeability to an electrical signal indicative of the magnitude of the torque applied to said member; and

indicator means responsive to said electrical signal for providing an indication that a predetermined torque has been applied to said fastener.

4,882,937
STRAIN SENSOR FOR ATTACHMENT TO A STRUCTURAL MEMBER

Robert L. Leon, Roslyn, Pa., assignor to Liberty Technology Center, Inc., Conshohocken, Pa.
Continuation of Ser. No. 87,541, Aug. 20, 1987, Pat. No. 4,805,451. This application Nov. 14, 1988, Ser. No. 270,138
Int. Cl.⁴ G01L *1/22*
U.S. Cl. 73—862.67 6 Claims



1. A strain sensor device for attachment to a structural member for measuring compressive and tensile strains experienced by the member along a strain axis of the structural member, the strain sensor device comprising:

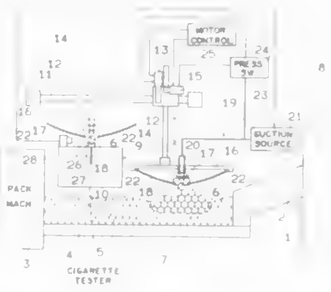
a strain member adhesively secured to the structural member generally parallel to but not in series with the structural member strain axis so that the strain sensor experiences only a portion of the load experienced by the structural member, the strain member being secured to the structural member under a predetermined tension to facilitate generally continuous sensing of both compressive and tensile strains experienced by the structural member; and

four strain gages secured to the strain, member, two of the strain gages being longitudinally oriented with respect to the strain member to experience longitudinal strain and two of the strain gages being transversely oriented with respect to the strain member to experience Poisson strain, the four strain gages forming a strain gage bridge circuit for generating electrical signals proportional to strains sensed in the structural member.

4,882,938
PICK-UP UNIT FOR WITHDRAWING CIGARETTE SAMPLES FROM A MASS OF CIGARETTES

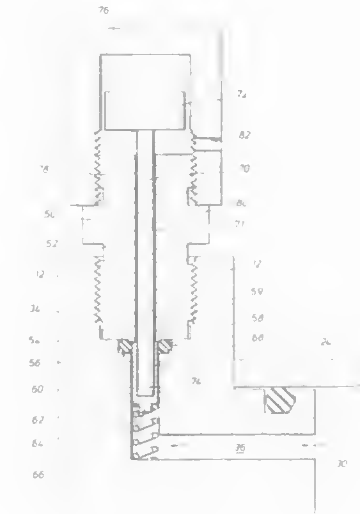
Armando Neri, Naples, Italy, assignor to G.D Societa' Per Azioni, Bologna, Italy
Filed Apr. 6, 1988, Ser. No. 178,200
Claims priority, application Italy, Apr. 15, 1987, 3433 A/87
Int. Cl.⁴ G01N *1/08*
U.S. Cl. 73—863.91 4 Claims

1. A pick-up unit for withdrawing sample cigarettes from a mass of cigarettes traveling perpendicularly in relation to the cigarette axes, each said cigarette occupying random positions within the said mass as the latter travels in the said direction; the pick-up unit comprising a mobile head (17) for withdrawing at least one cigarette (6) at a time from said mass (5), the mobile head (17), in turn, comprising at least one suction seat (18) for picking up a respective said cigarette (6); a pneumatic suction circuit (19) connected to said seat (18); reversible actuating means (13, 15 or 33, 35) connected to the mobile head (17), for moving the mobile head along a given route between a given release position and a pick-up position, which is located at a random point along the route of the mobile head (17); and sensor means (24) connected to the pneumatic suction circuit (19), for reversing the actuating means (13, 15 or 33, 35) in response to a sharp fall in pressure inside the pneumatic circuit (19).



4,882,939
PURGE VALVE

Brian H. Welker, Sugar Land, Tex., assignor to Welker Engineering Company, Sugar Land, Tex.
Filed Sep. 12, 1988, Ser. No. 243,261
Int. Cl.⁴ G01N *1/10*
U.S. Cl. 73—864.03 24 Claims



1. A purge valve assembly for use with an elongate constant pressure sample cylinder having a first end cap at one end of the cylinder and a second end cap at the opposite end and a slidable piston positioned inside the cylinder defining a first chamber and a second chamber, the assembly comprising:

(a) said first end cap of said cylinder forming a port and a passageway to allow fluid communication from said first chamber through said passageway, through said port, through said purge valve assembly and to atmosphere when said purge valve assembly is opened;

(b) a retainer removably engaging said port in said first end cap, said retainer having a central longitudinal bore in open communication with said port and the atmosphere;

(c) a valve element;

(d) a valve stem passing through said longitudinal bore of said retainer and removably engaging said valve element;

(e) a sealing element held in said port by said retainer, said sealing element establishing sealing engagement with said end cap and said retainer to prevent the escape of said fluid from said port past said retainer to the atmosphere, said sealing element establishing sealing engagement with said valve element to prevent fluid from passing from said port to said bore to said atmosphere when said purge valve assembly is closed; and

(f) a spring in said port urging said valve element into an engagement with said sealing element to prevent fluid from escaping from said first chamber when said purge valve assembly is closed.

4,882,940
POWER TRANSMISSION MECHANISM FOR TRACTOR

Kojiro Yamaoka, Nishinomiya; Toshiro Azuma, Minoo; Koichiro Fujisaki, Kobe, and Hideaki Okada, Takarazuka, all of Japan, assignors to Kanzaki Kokyukoki Mfg. Co. Ltd., Japan
Continuation of Ser. No. 872,478, Jun. 10, 1986, abandoned.
This application Feb. 3, 1989, Ser. No. 306,223
Claims priority, application Japan, Jun. 12, 1985, 60-12881; Jul. 30, 1985, 60-177646[U]; Aug. 20, 1985, 60-127488[U]
Int. Cl.⁴ F16H *37/00*
U.S. Cl. 74—15.166 6 Claims

1. A power transmission mechanism, comprising:

a hydrostatic transmission including an input shaft for driving said hydrostatic transmission, and an output shaft;

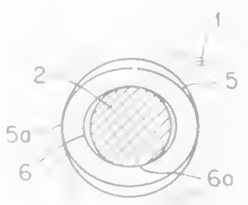
said input shaft having an upper driven portion and a lower portion which project through said hydrostatic transmission;

a transmission mechanism for transferring power from said output shaft;

a power take-off unit for driving a mechanical attachment about a substantially vertical axis, said power take-off unit being disposed on said lower portion of said input shaft, wherein said power take-off unit is directly driven by said input shaft.

4,882,941
RETAINER FOR ONE-WAY CLUTCH

Yoshio Kinoshita, Kanagawa, Japan, assignor to NSK-Warner K.K., Tokyo, Japan
Filed May 19, 1987, Ser. No. 51,320
Claims priority, application Japan, May 23, 1986, 61-76934
Int. Cl.⁴ F16D *15/00, 23/00, 41/06, 43/00*
U.S. Cl. 192—45.1 19 Claims



1. An annular retainer in a one-way clutch, said clutch comprising first and second rotary members arranged spacedly in a radial direction, rotatably relative to each other and concentrically with each other and having axially-extending annular surfaces respectively and torque-transmitting members arranged between the first and second rotary members to trans-

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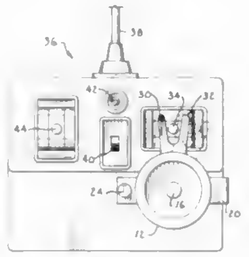
mit torques between the annular surfaces, said annular retainer being located between the first and second rotary members and adapted to hold the torque transmitting members at equal angular intervals, said annular retainer comprising a first retainer member provided adjacent the first rotary member and a second retainer member disposed adjacent the second rotary member, each of said retainer members circumscribing one of said rotary members wherein the retainer has such a specific shape so as to maintain at least a part of one of said retainer members in contact with the annular surface of the first or second rotary member, wherein said one retainer member is flexed in its entirety due to said contact and wherein the first retainer member has, at one axial end thereof, a flange bent at a right angle toward the first rotary member and the first retainer member is in contact with the first rotary member at an end portion of the flange, and wherein said first retainer member has the specific shape formed at the end of said flange.

4,882,942

STEERING WHEEL ATTACHMENT FOR RADIO CONTROL DEVICES

Hudson Hamilton, 2924 Eveningside, Topeka, Kans. 66614
Filed Jun. 13, 1988, Ser. No. 206,047
Int. Cl.⁴ G05G *1/00*; F16H *21/44*; A63H *17/39*
U.S. Cl. 74—104 4 Claims



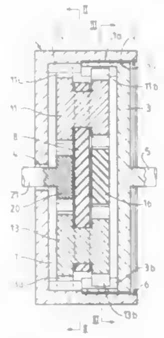
1. An actuating mechanism for attachment to radio control transmitters having a housing and a linearly moveable control stick protruding therefrom, comprising:
  a steering wheel apparatus actuatable by rotary motion;
  a fork-shaped operating member having two arms extending from said steering wheel apparatus for rotation therewith, and adapted to receive said control stick between said arms;
  means for detachably mounting said apparatus to the remote control transmitter in an operative position;
  whereby when said mechanism is in said operative position on the transmitter, said operating member receives the control stick between said arms and translates the rotary motion of said steering wheel apparatus into rectilinear motion to actuate the control stick; and
  said arms of said operating member diverging as they project from said steering wheel apparatus.

4,882,943

BACKLASH-FREE REDUCING MECHANISM, PARTICULARLY USABLE FOR SETTING VARIOUS PARTS OF A SEAT OF AN AUTOMOBILE VEHICLE

Yves Pipon, Saint Georges des Groseillers, and Bernard Chales, Aubusson, both of France, assignors to A&M Cousin, Orne, France
Filed Dec. 2, 1988, Ser. No. 278,822
Claims priority, application France, Dec. 3, 1987, 87 16777
Int. Cl.⁴ F16H *55/18*
U.S. Cl. 74—409 7 Claims

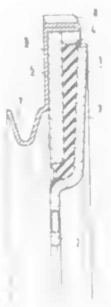
1. A backlash-free reducing mechanism, particularly usable for setting various parts of a seat of an automobile vehicle, including a fixed flange (**1**) rigidly connectable to a sitting portion frame of the seat and being insidely provided with a toothed ring (**1**c) with which meshes a first toothing of a double planet wheel (**10, 11, 12, 13**) having a first and a second toothing, then a mobile flange (**3**) rigidly connectable with a backing portion frame of the seat and having an inner toothed ring (**3***b*) intended for cooperating with a second toothing of the double planet wheels (**10, 11, 12, 13**), this mobile flange (**3**) being maintained free in rotation in the fixed flange (**1**) by a circular member (**6, 27**), and wherein the double planet wheels (**10, 11, 12, 13**) are maintained by a median cylindrical portion thereof in the reducing mechanism by a central planet wheel holding piece (**8**) having resilient means and are centered on a side of the toothed ring of one of the flanges (**1, 3**) by a resilient floating idle pinion (**16**), a pinion (**20**) driven by a control shaft (**21**) being additionally provided for driving the double planet wheels (**10, 11, 12, 13**), such a mounting permitting a radial displacement of the double planet wheels by application against the toothed rings of the flanges (**1, 3**), while maintaining the median cylindrical portions of the double planet wheel (**10, 11, 12, 13**) in respective angular positions.



4,882,944

TORSIONAL VIBRATION DAMPER

Hans-Jürgen Vohl, Maxsain, Fed. Rep. of Germany, assignor to Metzeler GmbH, Munich, Fed. Rep. of Germany
Filed Jul. 7, 1988, Ser. No. 216,139
Claims priority, application Fed. Rep. of Germany, Jul. 7, 1987, 3722352; May 13, 1988, 3816324
Int. Cl.⁴ F16F *15/10*
U.S. Cl. 74—574 19 Claims

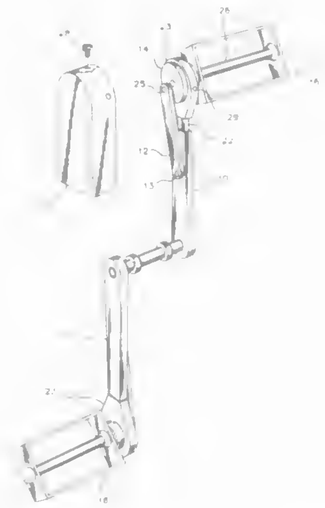


1. Torsional vibration damper, comprising a hub to be mounted on a crankshaft, a flywheel ring having an outer surface, said hub and said flywheel ring each being a shaped flat, annular, disk-shaped sheet metal blank, a substantially radially extending rubber layer connecting said hub to said flywheel ring, and a V-belt carrier molded from sheet metal as well as a transducer wheel both being secured at least on said outer surface of said flywheel ring.

4,882,945

PEDAL EXTENSION DEVICE

Jose Trevizo, 434 Auburn Ave., San Marcos, Calif. 92069
Filed Apr. 17, 1989, Ser. No. 339,522
Int. Cl.⁴ G05G *1/14*
U.S. Cl. 74—594.3 2 Claims



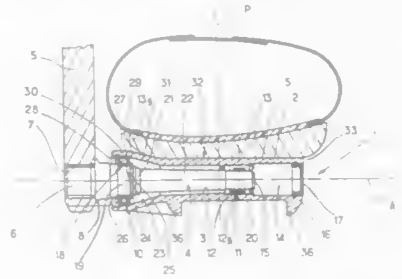
1. A crankshaft pedal arm assembly for increasing the length of a bicycle pedal support arm as a function of the rotary position of a drive sprocket wherein the improvement comprises:
  (a), the pedal support arms terminating in telescopically attached bearing hub;
  (b), a crank-disc with a first radially spaced crank-pin attached to an end of a pedal axel;
  (c), a connecting rod engaging said first crank-pin in the crank-disc rotatably connected to a second crank-pin mounted on the pedal support arm;
  (d), rotation of the crank-disc drives the connecting-rod which introduces reciprocating movement of the bearing hub sliding on a telescopic rod; and,
  (e), a protective covering fastened to the bearing hub extends over the crank shaft-pedal arm assembly.

4,882,946

PEDAL FOR A BICYCLE OR SIMILAR DEVICE

Jean J. Beyl, 10, boulevard Victor Hugo, 58000 Nevers, France
Continuation of Ser. No. 943,933, Dec. 19, 1986, which is a continuation-in-part of Ser. No. 48,533, May 5, 1987, Pat. No. 4,762,019, which is a continuation of Ser. No. 735,210, May 17, 1985, abandoned. This application Oct. 28, 1988, Ser. No. 265,353
Claims priority, application France, May 18, 1984, 8407786; Dec. 14, 1984, 8419173; Dec. 24, 1985, 8519135
Int. Cl.⁴ G05G *1/14*
U.S. Cl. 74—594.6 14 Claims

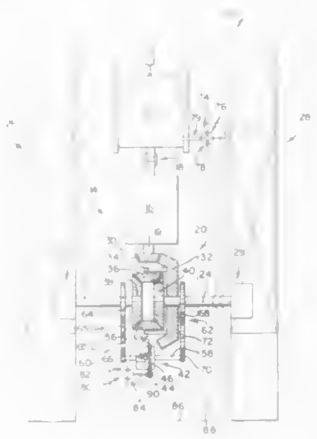
1. A bicycle pedal or the like comprising:
(a) pedal body means defining a housing;
(b) a transverse spindle defining an axis of rotation and having first and second ends with said first end projecting out of the housing and adapted to be fixed to a crank;
(c) first and second rotary bearings provided respectively near the first and second ends of said spindle, for rotatably mounting said pedal body means on said transverse spindle, said second rotary bearing having an external diameter which is smaller than the external diameter of the first rotary bearing, said housing including a barrel having an external radial dimension and surrounding said first bearing, said second rotary bearing being a needle bearing having an external diameter which is smaller than the external diameter of said first rotary bearing, said housing including a sleeve portion in which said spindle of the pedal extends; and
(d) means defining a bearing surface on the pedal body means for the sole of the user's foot, said bearing surface being constituted by a substantially flat surface which is parallel to the geometrical axis of the said spindle and extends as far as the external edge of the pedal body means without any unevenness or projection, said bearing surface extending over said second rotary bearing and being situated at a distance from said geometrical axis which is smaller than the external radial direction of the barrel in the vicinity of said first rotary bearing, and said bearing surface being situated outwardly of said first rotary bearing, said bearing surface including a rear edge which projects towards the rear with respect to said sleeve portion of the pedal and said rear edge including a hook portion for engaging a block of a user's shoe, said body of the pedal including a pair of side arms each extending rearwardly to define an opening between said arms for receiving the block of the shoe of the user, said side arms having ends carrying support means supporting automatic engaging means for holding the block of a user's shoe when inserted in said opening.



4,882,947

TRACK-LAYING DEVICE

Jan H. Barnard, Sec. 90 of Sec.77, Wildebeesthoek, 310 JR, Pretoria, South Africa
Continuation of Ser. No. 165,389, Feb. 29, 1988, abandoned, which is a continuation of Ser. No. 931,027, Nov. 17, 1986, abandoned. This application Feb. 6, 1989, Ser. No. 307,203
Claims priority, application South Africa, Jan. 29, 1986, 86/0678
Int. Cl.⁴ F16H *47/04*
U.S. Cl. 74—687 21 Claims



1. In combination, a transmission and direction control means suitable for use with a vehicle having laterally spaced drive elements and adapted to transmit drive from a drive from

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a drive motor of the vehicle to the drive elements of the vehicle, comprising:

a transmission differential gear substantially on a longitudinal vertical line of the vehicle, and having an input which is drivingly connectable to the drive motor, and a pair of half shafts which are respectively drivingly connectable to the drive elements;

a control differential gear substantially on said vertical plane and comprising
  a cage,
  an input spur gear wheel fast with the cage,
  a pair of co-axial, outwardly extending, half shafts providing control half shafts,
  a pair of half shaft spur gear wheels respectively fast with said control half shafts at their inner ends, and
  at least a first pair of spur pinions mounted for rotation on the cage at circumferentially spaced positions on a pitch circle about the axis of the half shaft spur gear wheels, the pitch circle diameter corresponding to the sum of the effective diameters of the half shaft spur gear wheels and the spur pinions, the circumferential spacing corresponding to the sum of the effective radii of the spur pinions, the arrangement being such that the spur pinions mesh respectively with the half shaft spur gears, and with each other;
  first connecting means interconnecting the half shafts of each of the differential gear and the control differential gear for rotation in opposite directions and at a predetermined ratio of speed of the half shaft of the control differential gear to speed of the half shaft of the transmission differential gear larger than 1:1;
  second connecting means connecting the other of the half shafts of each of the transmission differential gear and the control differential gear for rotation in the same direction and at a speed ratio similar to said predetermined speed ratio;
  a control input drivingly connected to the input spur gear wheel; and
  control drive means adapted selectively to hold the control input stationary and to drive the control input in a desired direction and a desired speed.

4,882,948

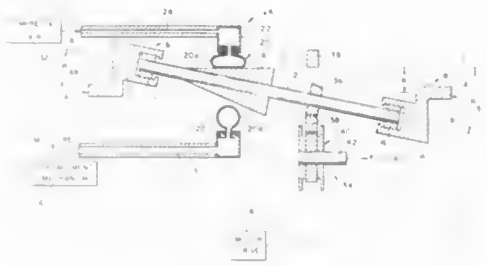
SPEED CONTROL ASSEMBLY FOR NUTATING CONE TRANSMISSION

Raymond A. Byrnes, Jr., 1064 Omar Dr., Crownsville, Md. 21032

Continuation-in-part of Ser. No. 59,406, Jun. 8, 1987, abandoned. This application Nov. 30, 1987, Ser. No. 125,934

Int. Cl.⁴ F16H *37/06, 15/20*

U.S. Cl. 74—690 5 Claims



1. In a nutating cone drive assembly including a driven input assembly having a first axis, an output assembly, and a nutating cone having an axis arranged at an angle relative to the first axis for transferring drive from the input assembly to the output assembly and the cone has a vertex and a base, the improvement which comprises

(a) flexible speed control ring means formed of synthetic rubber material and having a configuration of a reversely folded tire, said speed control ring means controlling rotational speed of the cone about its axis in response to the nutational drive of the cone imparted by the input assembly;

(b) means having a configuration of an annular wheel rim for mounting said speed control ring means about the cone with an inner surface of said speed control ring means in contact with and depressed by a surface of the cone;

(c) means for supplying pressurized gas to an interior of said speed control ring means, whereby said ring means returns to its normal configuration when out of contact with the cone, and further whereby the traction of said ring means relative to the cone is varied in accordance with the pressure within said ring means;

(d) means connected with said mounting means for removing condensation from the interior of said ring means; and

(e) means for laterally displacing said speed control ring means relative to the cone in a direction parallel with the first axis while preventing rotational movement of said ring means and slippage between said ring means and the cone, whereby when said ring means is displaced toward the vertex of the cone, the speed of rotation of the cone increases along with a ratio of a radius of said ring means to the radius of a conic circle of contact, thus reducing the drive at the output assembly and when said ring means is displaced toward the base of the cone, the speed of rotation of the cone decreases along with the ratio of the radius of said ring means to the radius of the conic circle of contact to increase the drive at the output assembly.

4,882,949

DIFFERENTIAL FOR A MOTOR VEHICLE

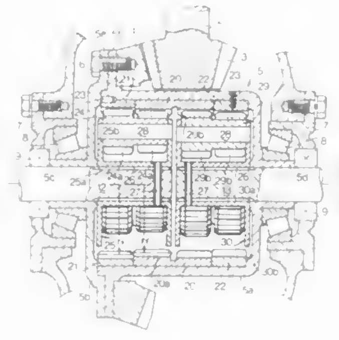
Takeo Inoue, Tokyo, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 13, 1988, Ser. No. 257,990

Claims priority, application Japan, Oct. 15, 1987, 62-260978

Int. Cl.⁴ F16H *1/44*

U.S. Cl. 74—714 8 Claims



1. A differential for a motor vehicle comprising:

a rotatably supported differential case;

a pair of output shafts rotatably supported and inserted into the differential case;

a pair of carriers provided in the differential case and operatively connected to the output shafts respectively;

a pair of annular side gears securely provided in the differential case;

an annular center gear rotatably mounted in the differential case;

a pair of planetary gears, each comprising a pair of planetary pinions and rotatably supported in a respective one of the carriers,

One of the planetary pinions of each planetary gear being engaged with a respective side gear and the other planetary pinions being engaged with the center gear.

4,882,950

DRIVE LINE FOR FOUR WHEEL DRIVE VEHICLES

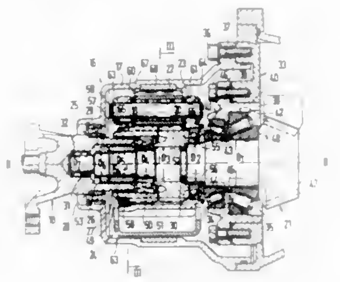
Klaus Gausrab, Ostfildern; Joachim Hauser, Weissach, and Robert Mueller, Mönsheim, all of Fed. Rep. of Germany, assignors to Dr. Ing, h.c.V. Porsch AG, Weissach, Fed. Rep. of Germany

Filed Jan. 25, 1988, Ser. No. 148,021

Claims priority, application Fed. Rep. of Germany, Jan. 23, 1987, 3701843

Int. Cl.⁴ F16H *1/42, 1/28*

U.S. Cl. 74—714 8 Claims



1. A drive line between two driven axles of a motor vehicle having an all-wheel drive, into which a planetary transmission is connected that has a housing and comprises an input shaft having a first sun gear and a second sun gear at an output shaft, said sun gears engaging with planet gears mounted at a planet carrier, the output shaft being arranged in a bore of the first sun gear by means of a ball bearing;

wherein the input shaft is disposed in an axle journal adjacent one end of the housing by means of a ball bearing, and projects with a shaft section into the housing, the input shaft being provided with a bore extending approximately to the axle journal;

wherein the output shaft is disposed approximately in the area of the axle journal inside the bore, preferably by means of a needle bearing;

wherein the output shaft, at an opposite end of the housing located away from the axle journal, is disposed at a supporting plate of the housing, preferably by means of two tapered roller bearings; and

wherein a web is attached to said supporting plate and is provided with two bearing receiving areas for the two tapered roller bearings with the web extending between the two receiving areas for supporting the two tapered roller bearings and wherein the supporting plate is attached to the housing by screws.

4,882,951

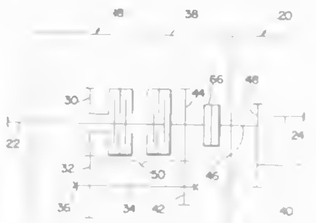
AUXILIARY TRANSMISSION INPUT SECTION

Eugene R. Braun, Royal Oak, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Mar. 14, 1988, Ser. No. 167,944

Int. Cl.⁴ F16H *3/02, 3/08*

U.S. Cl. 74—745 21 Claims



1. An input auxiliary transmission system (18) for a compound vehicular transmission (14) system comprising an auxiliary transmission section connected in series between a vehicular prime mover (12) and a change gear mechanical main transmission section (20), said auxiliary section characterized by:

an input shaft (22) non-disengagably mechanically drivingly connected to said vehicular prime mover, an auxiliary section output shaft (46) and a three position friction clutch (50) having a first position for coupling said auxiliary output shaft to said input shaft at a first speed ratio, or second position for coupling said input shaft to said auxiliary section output shaft at a second speed ratio and a third position allowing independent rotation of said input shaft and auxiliary section output shaft; and

a selectively engagable and disengagable disconnect coupling (66) drivingly interposed between said friction clutch and the main transmission section.

4,882,952

HYDRAULIC CONTROL SYSTEM FOR AUTOMATIC TRANSMISSION WITH SHIFTING SHOCK REDUCING MEANS

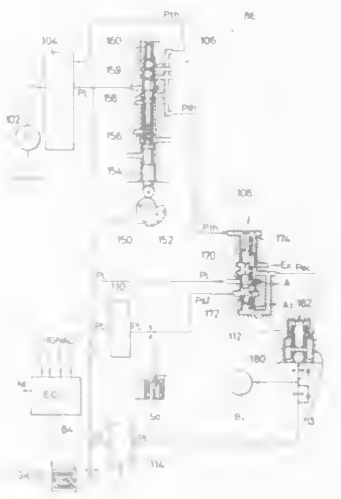
Yuji Kashihara, Toyota; Yutaka Taga, Aichi, and Seitoku Kubo, Toyota, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Japan

Filed Feb. 10, 1988, Ser. No. 154,380

Claims priority, application Japan, Feb. 19, 1987, 62-36629

Int. Cl.⁴ B60K *41/06*

U.S. Cl. 74—867 14 Claims



1. A hydraulic control system for an automatic transmission, comprising:

shifting shock reducing means, provided between a shift valve and a frictionally engaging device for changing a gear stage of said automatic transmission, for regulating transitional oil pressure applied to said frictionally engaging device to reduce shifting shock;

torque signal generating means for generating a torque signal representative of engine output torque;

transitional shift state signal generating means for generating a transitional shift state signal representative of a transitional state of shifting operation; and

control means for controlling said shifting shock reducing means on the basis of at least said torque signal and said transitional shift state signal.

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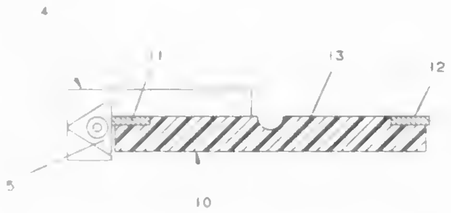
4,882,953
SKI SHARPENER

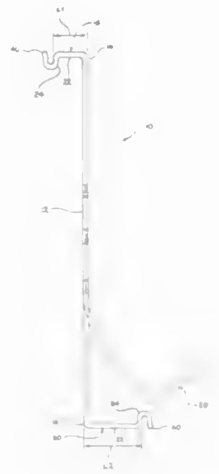
Donald M. Kalka, P.O. Box 94, Lakeview, Mich. 48850
Filed Dec. 22, 1988, Ser. No. 288,765
Int. Cl.^{4} B21K *17/00*
U.S. Cl. 76—83 3 Claims



1. An edge-sharpening device, comprising:
a unitary block forming an angular frame providing a guide surface and a wall disposed at an angle to said guide surface, said frame having a recess in an end of said wall adapted to receive a standard cutting insert providing at least one cutting edge, said recess positioning said insert so that said cutting edge intersects the plane of said guide surface.

4,882,954
UNLOCKING DEVICE FOR VEHICLE DOORS

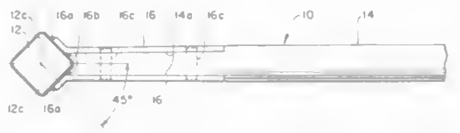
Douglas S. Selby, Rte. 5, Red Hill Dr., Unit R-2, Louisville, Tenn. 37777
Filed Mar. 21, 1988, Ser. No. 171,395
Int. Cl.^{4} E06G *19/20*
U.S. Cl. 81—15.9 11 Claims



1. An unlocking device for unlocking a vehicle door without a key, said vehicle door including a door lock linkage, the auctuation of which unlocks said vehicle door, said unlocking device comprising:
an elongated shank having a first end portion and a second end portion, said shank being provided with indicia means for marking the desired depth of insertion of said unlocking device into said vehicle door; and
a first linkage engaging means at said first end portion of said shank for selectively engaging and actuating said door lock linkage, said first engaging means including an arm defineing a first length, said arm having an outboard end provided with a U-shaped engaging member for releasably engaging said linkage.

4,882,955
ANGLED HEAD HAMMER

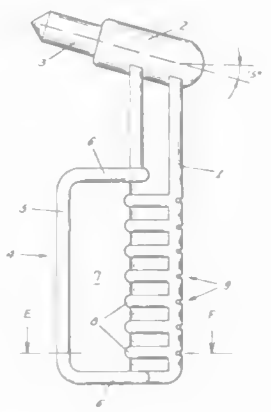
Davorin Savnik, Pod brasti 34, Yu-61,000 Ljubljana, Yugoslavia
Filed May 26, 1987, Ser. No. 53,820
Int. Cl.^{4} B25D *1/00*
U.S. Cl. 81—20 3 Claims



1. A hand-held hammer comprised of: a hammer head including a principal elongated body portion of square cross-sectional configuration having two pairs of diametrically opposed edges along the length thereof and having at least one nail striking surface of square shape at an end thereof; and an elongated hammer handle affixed at its forward end to the body portion of said hammer head, said hammer head being positioned with respect to said handle so that the pairs of said edges of said head extend in substantially perpendicular orientation to the long axis of said handle with the plane formed by a first pair of said edges oriented in alignment with said axis and the plane formed by the second pair of said edges oriented in perpendicular alignment with said axis whereby the square nail striking surface of said head provides right and left side corners of striking surface area for setting nails and the square shape of said nail striking surface oriented as determined by the aforesaid position of the hammer head with respect to said hammer handle improves the hammer user's nail driving accuracy during the rearward to forward and upward to downward swing movement of said hammer.

4,882,956
EMERGENCY HAMMER

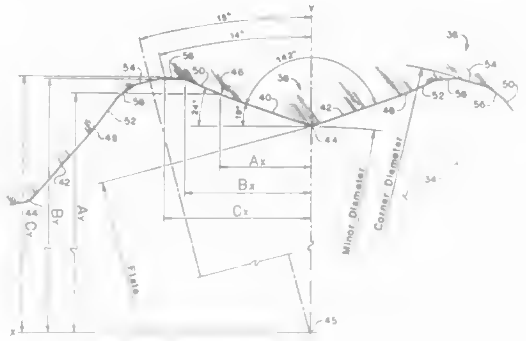
Manfred Lang, Wuppertal, Fed. Rep. of Germany, assignor to Gebr. Happlch GmbH, Fed. Rep. of Germany
Filed Aug. 16, 1984, Ser. No. 641,480
Claims priority, application Fed. Rep. of Germany, Aug. 29, 1983, 3331081
Int. Cl.^{4} B25D *1/00*
U.S. Cl. 81—20 6 Claims



1. An emergency hammer for smashing panes of glass, comprising:
a handle for being held by a hand, the handle having a head end;
a hammer head on the head end of the handle, the hammer head having a striking end for striking glass and a base end, opposite the striking end, the base end being connected to the head end of the handle, the hammer head extending a substantial length from the handle in one direction only; said hammer having a point at its striking end; and
a relatively rigid protective loop on the handle for covering the hand holding the handle, the protective loop extending from the handle in the same direction as the hammer head; and
in which the hammer head extends obliquely from the handle to the striking end, the striking end extending beyond the head end of the handle.

4,882,957
SOCKET WRENCH OPENING

Richard B. Wright, Akron; Theodore M. Vozenilek, Canton, and Brent P. Fleming, Copley, all of Ohio, assignors to Wright Tool Company, Barberton, Ohio
Filed Dec. 16, 1988, Ser. No. 286,604
Int. Cl.^{4} B25B *13/06*
U.S. Cl. 81—121.1 6 Claims

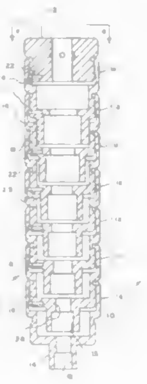


1. A wrench for turning a fastener nut having a central axis and an even-numbered plurality of flat bounding surfaces parallel to said axis with diametrically opposite pairs being parallel to each other, wherein said bounding surfaces intersect in adjacent pairs to form fastener corners, said wrench having a fastener nut engaging socket defining about a central socket axis, said socket defined by a plurality of uniformly spaced peripherally and radially disposed protuberances and plurality of uniformly spaced corner recesses disposed between said protuberances, each protuberance including side-by-side angularly related straight engaging surfaces at between 140°-150° outside obtuse angles to each other for registry with said flat surfaces on said fastener nut and complementary side surfaces outwardly diverging from said engagement surfaces, each engaging surface having a length substantially equal to 0.0867 times (×) the minor diameter of the fastener nut to be driven and said side surfaces diverging at least 3° outwardly from said engaging surface, each recess comprised of an arcuate surface defined by a circle about the central axis of said socket and lateral surface converging from said side surfaces of adjacent protuberances outwardly toward said arcuate surface.

4,882,958
STACKING SOCKET WRENCH SET

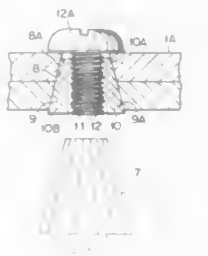
Richard L. McNeeley, 3088 W. 5825 South, Roy, Utah 84067
Filed Dec. 5, 1988, Ser. No. 283,077
Int. Cl.^{4} B25B *13/06*
U.S. Cl. 81—124.4 9 Claims

1. A socket wrench set comprising:
a plurality of individual sockets each having a working end with a cavity sized and shaped to fit one of a series of bolt heads and nuts of various sizes; wherein
said sockets include means permitting the assembly of any number thereof together end to end in any desired order, irrotationally with respect to each other, without regard to the relative positions of the individual sockets within the stack, to form a torque transmitting stack of said sockets.



4,882,959
HAND TOOL

Yuichi Sakai, Sanjo, Japan, assignor to Top Kogyo Co., Ltd., Sanjo, Japan
Filed Oct. 31, 1988, Ser. No. 265,825
Int. Cl.^{4} B25B *7/06*
U.S. Cl. 81—416 10 Claims



1. A hand tool with two pivoted arms comprising.
a pair of arm members having respective handles at the rear ends thereof, pivoting through-holes formed in said arm members, each said through-hole having a large-diameter portion and a smaller-diameter portion, the large-diameter portion of a first said through-hole adjoining the smaller-diameter portion of a second said through-hole so that together said through-holes form a continuous tapered surface extending through both of said arm members;
a frusto-conical tapered pin inserted into the large-diameter end of said second pivoting through-hole and having an axis common to that of said through-holes; and
a fixing member inserted into the smaller-diameter portion of said first pivoting through-hole engaged with the tapered pin.

4,882,960
LAWN MOWER BLADE LOCK

Jack L. Kugler, 746 NE. 43rd St., Topeka, Kans. 66617
Filed Dec. 5, 1988, Ser. No. 279,993
Int. Cl.^{4} B23Q *3/00;* B23P *19/04*
U.S. Cl. 81—488 15 Claims

1. A lawn mower blade lock for securing a blade against rotation relative to a deck of a rotary lawn mower, comprising:
a handle;
a blade-constraining barrier coupled with the handle; and

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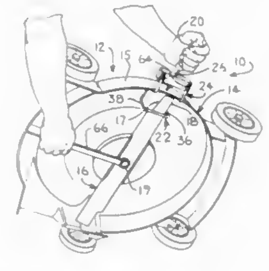
means for securing the barrier and the handle to the deck as a unit with the blade constrained by the barrier whereby to fix both the blade and the lock against rotation relative to the deck.



4,882,961

CUTTING PORTAL OF AN ULTRA-HIGH PRESSURE FLUID JET CUTTING SYSTEM

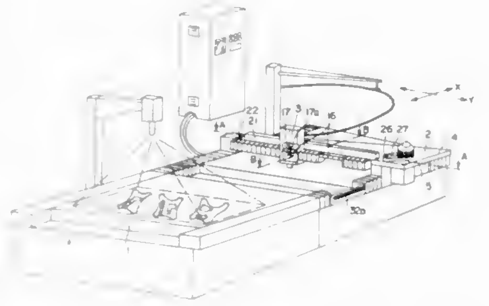
Siegfried Zabinski, Bielefeld; Klaus Biervert, Spenge, and Gerd Küpper, Bad Salzuflen, all of Fed. Rep. of Germany, assignors to Durkopp Systemtechnik GmbH, Fed. Rep. of Germany

Filed Oct. 30, 1987, Ser. No. 115,430

Claims priority, application Fed. Rep. of Germany, Nov. 5, 1986, 3637617

Int. Cl.⁴ B26F *3/00*

U.S. Cl. 83—177 **9 Claims**



1. A cutting portal for a high-pressure fluid jet cutting system, comprising:

a cutting table; the cutting portal being disposed on the cutting table and being movable along the cutting table transversely to a lengthwise direction of extension of the cutting portal;

the cutting portal comprising two thin plates spaced apart from each other and having a lengthwise dimension extending in the lengthwise direction of extension of the cutting portal; a honeycomb material being disposed between the thin plates for defining the cutting portal together with the plates;

a first bearing shell and a second bearing shell disposed in the cutting portal and spaced apart from each other along the cutting portal; the bearing shells being introduced perpendicular to the surface of the thin plates into the honeycomb material, and the bearing shells being connected to the honeycomb material; a first bearing shaft and a second bearing shaft each being supported in a respective one of the bearing shells;

a guide rail extending along the lengthwise direction of extension of the cutting portal, and means extending from the guide rail into the honeycomb material for supporting the guide rail to the honeycomb material;

a cutting head support for supporting the fluid jet; the cutting head support being supported to move along the guide rail along the length dimension of the cutting portal and the plates;

means supported on the bearing shafts and connected with the cutting head support for moving across the space between the bearing shafts and thereby moving the cutting head support along the length of the cutting portal.

4,882,962

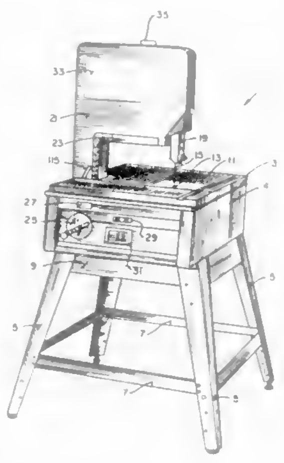
ANGULARLY ADJUSTABLE BAND SAW

Daniel A. Terpstra, St. Louis County, and Steven H. Plume, St. Charles County, both of Mo., assignors to Emerson Electric Co., St. Louis, Mo.

Filed Aug. 19, 1988, Ser. No. 234,156

Int. Cl.⁴ B23D *55/02;* B27B *13/04*

U.S. Cl. 83—812 **17 Claims**



1. A band saw comprising:

a supporting worktable having a worktable surface on which a workpiece rests and a saw blade slot extending through the worktable surface;

a frame support fixed to the worktable below the worktable surface and having an elongated channel in said frame support extending generally parallel to said worktable surface;

a movable generally C-shaped frame having upper and lower generally parallel legs with corresponding upper and lower band saw supporting wheels rotatably mounted on said upper and lower legs, said upper leg and upper band saw supporting wheels being positioned above said worktable surface, said lower leg and lower band saw supporting wheel extending below said worktable surface and having a complementary shaped element slidably supported within the elongated channel of said frame support;

said lower band saw supporting wheel having a rotatable shaft in alignment with and extending through the complementary shaped element of said C-shaped frame lower leg;

motor means mounted to said C-shaped frame on an opposite side of said frame support from said lower rotating band saw supporting wheel and being connected to the rotatable shaft of said lower band saw supporting wheel;

an endless band saw blade mounted for movement about said upper and lower band saw supporting wheels including through the saw blade slot in the worktable surface; and

adjustment means for tilting said C-shaped frame including the band saw blade mounted on said upper and lower band saw supporting wheels relative to said worktable surface, said adjustment means during tilting movement thereof causing the complementary shaped slidable supporting element on the lower leg of said C-shaped frame to move in the elongated channel of said frame support to provide the desired angular adjustment of the saw blade relative to the worktable surface without changing the point of intersection of the saw blade relative to the worktable surface.

4,882,963

ELECTRONIC MUSICAL INSTRUMENT WITH EDITING OF TONE DATA

Tetsuji Ichiki, Hamamatsu, Japan, assignor to Yamaha Corporation, Shizuoka, Japan

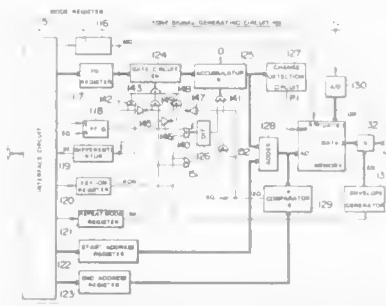
Division of Ser. No. 917,909, Oct. 10, 1986, Pat. No. 4,696,214. This application Jul. 9, 1987, Ser. No. 71,645

Claims priority, application Japan, Oct. 15, 1985, 60-229081

The portion of the term of this patent subsequent to Sep. 29, 1987, has been disclaimed.

Int. Cl.⁴ G10H *7/00*

U.S. Cl. 84—1.01 **6 Claims**



1. An electronic musical instrument comprising:

mode selection means for selecting one of a plurality of modes including first and second modes, said mode selection means outputting a mode signal representative of the selected mode;

transducer means for converting a tone into a tone signal representative of said tone;

memory means comprising a plurality of storage areas each having a plurality of addresses;

read/write rate designation means for outputting a first rate signal designating a first rate of access to the addresses of said memory means when said mode signal represents said first mode, and for outputting a second rate signal designating a second rate of access to the addresses of said memory means when said mode signal represents said second mode;

storage area designation means for designating one of said plurality of storage areas and for outputting an area signal indicative of the designated storage area;

read/write control means responsive to said mode signal, said first rate signal and said area signal for storing data representing said tone signal into the addresses in said designated storage area only at said first rate when said mode signal represents said first mode, and responsive to said mode signal and said second rate signal for reading data from the addresses in said plurality of storage areas at said second rate when said mode signal represents said second mode; and

tone generating means for generating a tone based on the data read from said memory means.

4,882,964

PERCUSSIVE MUSICAL TONE GENERATOR SYSTEM

Eisaku Okamoto, and Ikuo Komatsu, both of Shizuoka, Japan, assignors to Yamaha Corporation, Hamamatsu, Japan

Filed May 26, 1988, Ser. No. 199,321

Claims priority, application Japan, May 27, 1987, 62-130240; May 27, 1987, 62-130241; May 27, 1987, 62-130242

Int. Cl.⁴ G10H *1/42, 7/00*

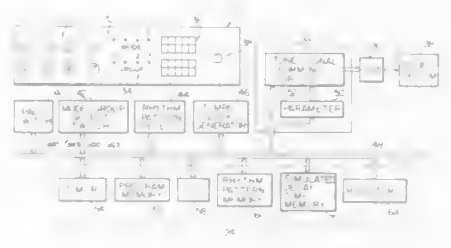
U.S. Cl. 84—611 **18 Claims**

4. A musical tone generator system comprising

(a) tone generator instructing means operable for instructing selective generation of a plurality of different kinds of musical tones,

(b) tone signal forming means having a plurality of tone signal forming channels, said tone signal forming means being operative to form in and output from each of said tone signal forming channels a tone signal which corresponds to the tone designated by said tone generation instructing means,

(c) tone signal allocating means for controlling the formation of the tone signal corresponding to the tone designated by said tone generation instructing means by allocating said tone signal to one of said tone signal forming channels,



(d) time measuring means respectively corresponding to said tone signal forming channels for measuring the residual time duration for which the generation of the tone being generated under the control of said tone signal is to be continued, said residual time duration being measured for each of said different kinds of musical tones, and

(e) allocation control means for controlling the allocation of the tone signal corresponding to the tone designated by said tone generation instructing means, the allocation of the tone signal being controlled on the basis of the residual time duration measured by said time measuring means.

4,882,965

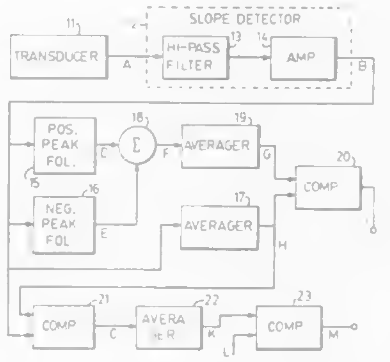
DIRECTION OF BOWING DETECTION METHOD AND APPARATUS

Richard E. D. McClish, 2200 Chapdelaine apt. 1203, Ste-Foy, Quebec, Canada G1V-4G8

Continuation of Ser. No. 92,086, Sep. 2, 1987, abandoned. This application Apr. 4, 1989, Ser. No. 333,852

Int. Cl.⁴ G09B *15/00;* G10G *1/00;* G10H *3/18*

U.S. Cl. 84—1.16 **6 Claims**



1. A device to produce an indication of the direction of bowing of a vibrating element of a musical instrument which is bowed in more than one direction of bowing, said device comprising:

transducer means responsive to audio-frequency vibrations of said vibrating element in a plane determined by a direction of said bowing and producing an audio-frequency tone signal composed of audio-frequency cycles corre-

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sponding in amplitude and in frequency to said audio-frequency vibrations, each said audio-frequency cycle minimally comprising a first change in magnitude occurring at a first rate and having a first polarity, and a second change in magnitude occurring at a second rate different from said first rate and having a second polarity opposite said first polarity,

means to produce a signal indicative of said first rate of said first change in magnitude of a said audio-frequency cycle of said audio-frequency tone signal,

means to produce a signal indicative of said second rate of said second change in magnitude of said audio-frequency cycle of said audio-frequency tone signal, and

means to produce a signal indicative of the polarity of one of said changes in magnitude of said audio-frequency cycle of said audio-frequency tone signal in response to said signals indicative of said first and of said second rates, whereby said signal indicative of said polarity is indicative of the direction of said bowing of said vibrating element.

4,882,966

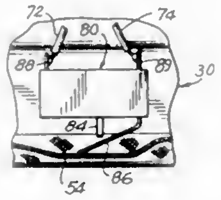
MUSICAL JEWELRY BOX

Barry Silverman, 3 Melrose Ln., West Nyack, N.Y. 10994

Filed Apr. 18, 1989, Ser. No. 339,730

Int. Cl.⁴ G10F *1/06*

U.S. Cl. 84—94.2 **11 Claims**



1. A musical jewelry box comprising:

a box for containing jewelry including first and second sections joined by a hinge and having a pair of opposed open cavities and a pair of opposed, corresponding rims defining openings to said cavities, said sections contacting one another when said box is closed, and separated from one another, when said section are opened in clam shell fashion along the hinge;

actuatable music means, located within said cavity of said first section, capable of generating a melody;

switch means, having pressure activated means for deactivating said music means when pressure is applied and for activating said music means when pressure is released, said switch means connected to said first section, within said cavity, with its said pressure activated means located adjacent to said rim of said first section;

connection means, located within said cavity of said first section, for connecting said switch means to said music means;

essentially rigid liner means inserted within said cavity and providing a compartment within said cavity for containing and thereby hiding said music means, switch and connection means from view when said box is open, and including deformable means, covering said pressure activated means, for transmitting pressure to said pressure activated means; and

pressure applying means, associated with said second section and acting against said deformable means, for applying pressure to said pressure activated means when said box is closed in order to deactivate said music means.

4,882,967

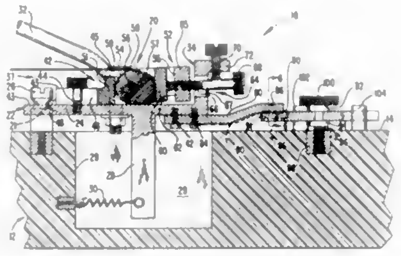
TREMOLO APPARATUS HAVING BROKEN STRING COMPENSATION FEATURE

Floyd D. Rose, 5610 145th Ave., SE., Bellevue, Wash. 98006

Filed Apr. 21, 1988, Ser. No. 184,292

Int. Cl.⁴ G10D *3/14*

U.S. Cl. 84—313 **8 Claims**



1. In a guitar comprising a tremolo base plate to which the strings of the guitar may be secured, tremolo means for moving the tremolo base plate in a first direction from a tuned position toward the guitar body and in a second direction from the tuned position away from the guitar body to produce tremolo sounds, and a locking member for selectively preventing the tremolo base plate from moving in said first direction, the improvement that said guitar comprises elevation adjusting means for adjusting the elevation of said locking member relative to the said guitar body.

4,882,968

TRILL MECHANISM FOR WIND INSTRUMENT

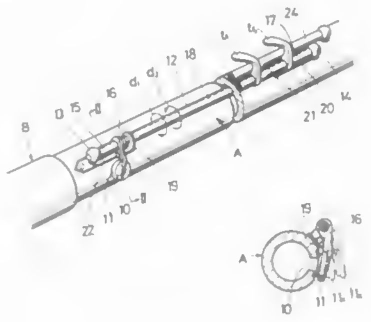
Masayuki Yamada, Minami 2-23, Nangodori 2-Chome, Shiroishi-ku, Sapporo-Shi, Hokkaido, Japan

Filed Jan. 23, 1989, Ser. No. 299,388

Claims priority, application Japan, Jun. 27, 1988, 63-156975

Int. Cl.⁴ G10D *7/02*

U.S. Cl. 84—384 **7 Claims**



1. A trill mechanism for a musical instrument such as a flute or a piccolo, comprising a middle joint in the form of a hollow tube having a single trill tone hole bored at a particular location thereof, a trill cup mounted on said middle joint for movement from and to a closing position in which said trill cup closes said trill tone hole of said middle joint, a spring for urging said trill cup to the closing position, and manually operable means for alternatively moving said trill cup to a first open position in which said trill tone hole of said middle joint is open with a first opening or to a second open position in which said trill tone hole is open with a second opening which is greater than the first opening.

4,882,969

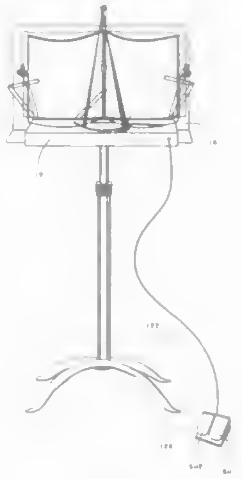
PAGE TURNING DEVICE

Tom L. Ricca, 1413 Wyandotte Rd., Columbus, Ohio 43212

Filed Sep. 12, 1988, Ser. No. 242,628

Int. Cl.⁴ G10G *7/00*

U.S. Cl. 84—487 **20 Claims**



1. A page turning device for a book, comprising:

a. a securing means to adjustably fix a book into an operative position which would allow material to be suitably exposed for reading;

b. a plurality of rods rotatably hanging at their top ends around an adjustably fixed hanger;

c. each of said rods being programmably positioned in sequence behind a group of at least one leaf of said book;

d. guiding means for the lower ends of said rods to travel in a predetermined path;

e. said guiding means allowing the lower end of each of said rods to travel freely between the two extremes of said predetermined path, maintaining said rods in their sequence when they are to travel in groups or when they are lined up to wait for operations;

f. a first limiting stop means located near one of said extremes of said path to provide a firm and spatially precise stopping to the lower end of one of said rods that is made ready to act in the operation of the invention;

g. a second limiting stop means adjustably located near the second of said extremes of said path to provide a firm and spatially precise stopping to the last one of said rods which was made to travel from said first limiting stop means toward said second limiting stop means within the allowance of said guiding means;

h. pushing means to push the group of said rods which crowd near said first limiting stop toward the rod that is firmly and precisely stopped by said first limiting stop, and to push the group of rods which crowd near said second limiting stop toward the rod that is stopped by said second limiting stop means;

i. selecting means to choose a present active rod, defined as the one of said rods that is firmly and precisely stopped by said first limiting stop means, and to isolate said present active rod from the rods that are pushed toward it;

j. driving means to act on said selecting means to cause said present active rod to overcome momentarily said firm and spatially precise stopping by said first limiting stop means and to travel along said guiding means, in the direction from the first stopping means area to the second stopping means area, defined as the forward direction, pushing along with it a group of at least one leaf behind which said present active rod is positioned, and thus causing, by proper design of said predetermined path, the turning of said group of at least one leaf and exposing the next set of pages for reading;

k. updating means to cause the rod positioned next to said present active rod to take the position of the next active rod by causing said first limiting stop means to provide again, after being overcome by said present active rod, immediately said firm and precise stopping to the lower end of said next active rod;

l. said driving means causing said present active rod to overcome said firm stopping by said second limiting stop means and to make said present active rod into said last one of said rods which is made to travel in said forward direction, within the allowance of said guiding means;

m. returning means to relocate said selecting means to a spatially precise stand-by position near said first limiting stop means, completing the process of making said next active rod into a new present active rod;

n. control means to activate on cue the actuation of said selecting means, driving means and returning means;

o. whereby, after a book has been adjustably fixed by said securing means and said plurality of rods has been programmably positioned in sequence each behind each group of at least one leaf of said book and said plurality of rods has been pushed toward the very first present active rod which has been made to be confined by said firm and spatially precise stopping of said first limiting stop means, and the sequentially first set of pages has been exposed for reading, the cue for a forward page turning would start said control means to activate said selecting means to choose said present active rod, then to activate said driving means to act on said selecting means to cause said present active rod to overcome momentarily said firm and spatially precise stopping by said first limiting stop means and to travel along said guiding means, turning a group of at least a leaf of said book and at the end of the course of said present active rod, locking open the next set of pages of said book for reading by virtue of said firm stopping by said second limiting stop means, then to activate said returning means to relocate said selecting means to said spatially precise stand-by location while said pushing means and updating means complete the making of said next active rod into a new present active rod, thus making the invention ready, in a repetitive manner, for the next cue for page turning again, until all the turnings are exhausted.

4,882,970

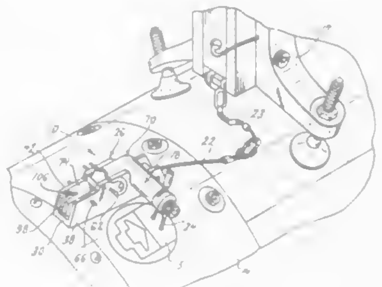
MOTION TRANSLATOR

Jay R. Kovar, Ridgecrest, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 4, 1989, Ser. No. 295,085

Int. Cl.⁴ B64D *1/04;* F42C *5/00, 15/12*

U.S. Cl. 89—1.55 **15 Claims**



1. A motion translation device that converts an applied horizontal force to a generally vertical force, comprising:

a means for translating an applied horizontal force to a generally vertical force by a combination of confined sliding and rotational action, said means having a free end and slidably and rotationally confined end;

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a means for slidably and rotationally confining said translating means between a first generally horizontal position and a second generally vertical position relative to said confining means;

a means for mounting said means for slidably and rotationally confining to another object;

and a means connected to said slidably and rotationally confined end of said translating means for communicating a generally horizontal force to said translating means.

4,882,971

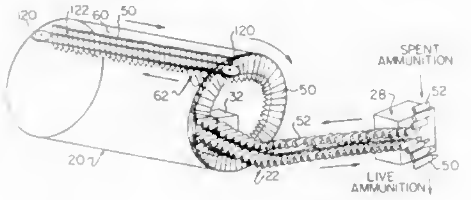
LINKLESS AMMUNITION TRANSPORTER

David P. Yanusko, Pottstown, Pa.; Harold C. McMillan, Cherry Hill, N.J., and Edmund G. Kline, West Chester, Pa., assignors to Teleflex, Incorporated, King of Prussia, Pa.

Filed May 27, 1988, Ser. No. 200,014

Int. Cl.⁴ F41D *10/02, 10/26;* **F41F** *9/02, 9/06*

U.S. Cl. 89—33.02 **13 Claims**



1. A transporter for storing and feeding linkless rounds of ammunition, the ammunition being at least one of live rounds and spent cartridge casings, the transporter comprising:

a generally cylindrical drum frame assembly defining an axis and having a plurality of longitudinally aligned rails facing inwardly toward the axis, the rails having means for engaging bases of the rounds for retaining the rounds between adjacent ones of the rails in rows receiving a plurality of said rounds;

an internal conveyor operable for one of loading and unloading the rounds along successive ones of the rows, the internal conveyor having means engaging at least one of the rounds in successive ones of the rows, said means being movable longitudinally of the axis; and,

drive means operatively connecting the drum frame assembly and the internal conveyor, the drive means operating the internal conveyor to move said rounds and the drive means also stepwise advancing the internal conveyor from one row to a next successive row upon completion of said one row.

4,882,972

DUAL CALIBER AMMUNITION HANDLING SYSTEM

Eugene B. Raymond, Essex Junction, Vt., assignor to General Electric Company, Burlington, Vt.

Filed Aug. 15, 1988, Ser. No. 232,410

Int. Cl.⁴ F41D *10/22;* **F41F** *9/02;* **B65G** *37/00*

U.S. Cl. 89—34 **34 Claims**

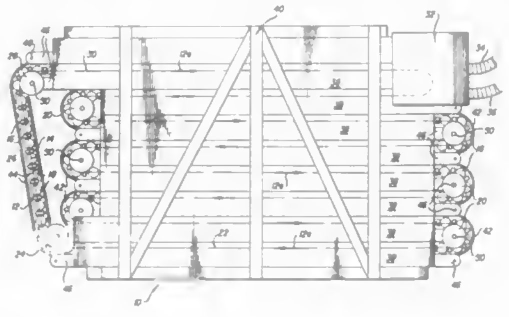
1. An article handling system comprising, in combination:

A. a pair of conveyor chains;

B. spaced sets of opposed sprockets about which said conveyor chains are engaged and trained in parallel spaced relation through a predetermined conveyor path;

C. a succession of transverse article carrier elements interconnecting said conveyor chains at regularly spaced intervals along the lengths thereof, each adjacent pair of said carrier elements providing first opposed surface formations defining therebetween a first position for accepting an article of one configuration and providing second opposed surface formations defining therebetween a second position for accepting an article of a different configuration; and

D. guide means stationed along said conveyor path for maintaining articles of either configuration in their accepted positions between adjacent pairs of said carrier elements during article conveyance.



4,882,973

MULTIPLE FUNCTION COMBINED WEAPON

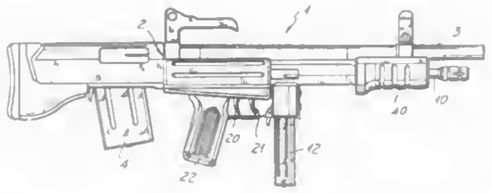
Armando Piscetta, Via delle Fornaci, 4 -- 17025, Loano (Savona), Italy

Filed Jun. 1, 1988, Ser. No. 200,835

Claims priority, application Italy, Jun. 2, 1987, 20762 A/87

Int. Cl.⁴ F41C *21/06*

U.S. Cl. 89—1.41 6 Claims



1. A multiple function combined weapon for firing different types of ammunition, said multiple function combined weapon comprising a body supporting a first shot gun barrel, a first magazine for loading said first shot gun barrel arranged at a central portion of said body, under said first barrel there being arranged a second barrel for an automatic weapon, a second magazine for loading said second barrel, said second magazine being arranged at a front portion of said body, between said first and second magazines there being provided two triggers selectively actuated for firing said first barrel by one trigger of said two triggers and for firing said second barrel by another trigger of said two triggers.

4,882,974

METHOD FOR INCREASING THE HITTING PROBABILITY OF MULTI-BARREL MACHINE WEAPONS

Ingolf Reuter, Dornhan; Dietrich Hoffmann, Schramberg, and Harald Weisser, Oberndorf, all of Fed. Rep. of Germany, assignors to Mauser-Werke Oberndorf GmbH, Oberndorf, Fed. Rep. of Germany

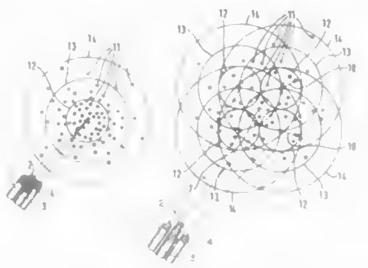
Continuation of Ser. No. 68,431, Jun. 30, 1987, abandoned. This application Dec. 14, 1988, Ser. No. 285,332

Claims priority, application Fed. Rep. of Germany, Jul. 12, 1986, 3623650

Int. Cl.⁴ F41G *3/04*

U.S. Cl. 89—41.16 1 Claim

1. In a method for increasing the probability of hits from multi-barreled machine weapons, including effectuating an adjustment of the weapon barrels to achieve a predetermined spread for the hits from said weapons over target areas; the improvement comprising: associating a target area having its own middle hitting point location with each said weapon barrel; measuring a distance from a middle hitting point location for each barrel where an enclosing circle formed at said distance encloses one standard deviation of hits for each associated barrel, taking an average of said distances for the total number of barrels; orienting the hitting point locations of all of said weapon barrels at the same distance from each other and additionally at the same distance in a vertical and lateral spacing relative to the middle hitting point location of all of said weapon barrels; and then spreading the middle hitting point location of all of said weapon barrels by said average whereby the density of hits at a limited increasing deviation from the middle hitting point location of all of said weapon barrels remains at least substantially constant.



4,882,975

PARKING MAINTAINING APPARATUS FOR BRAKE BOOSTER

Morihiko Shimamura; Satoru Satoh, and Michio Kobayashi, all of Saitama, Japan, assignors to Jidosha Kiki Co., Ltd., Tokyo, Japan

Filed Dec. 9, 1988, Ser. No. 283,061

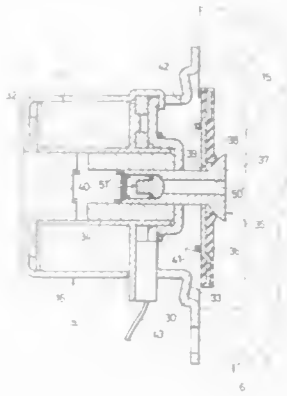
Claims priority, application Japan, Dec. 25, 1987, 62-328927

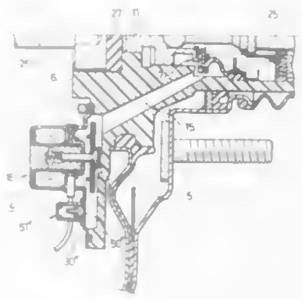
Int. Cl.⁴ F15B *9/00*

U.S. Cl. 91—376 R 5 Claims

1. A parking maintaining apparatus for brake booster which comprises a power piston slidably disposed within a shell, a valve mechanism received in a valve body formed by an axial portion of the power piston, a constant pressure chamber defined forwardly of the power piston as viewed in the direction of operation thereof and communicating with a source of negative pressure, a variable pressure chamber defined rearwardly of the power piston as viewed in the direction of operation thereof, a plurality of passages formed in the valve body and including a constant pressure passage providing a communication between the valve mechanism and the constant pressure chamber, a variable pressure passage providing a communication between the valve mechanism and the variable pressure chamber and a pressure passage providing a communication between the valve mechanism and a source of high pressure, an input shaft for operating a valve plunger, which forms part of the valve mechanism, to switch the communication of the respective passages, and a solenoid-operated open/close valve for opening and closing the constant pressure passage;

the parking maintaining apparatus being characterized by a relief valve for relieving a pressure within the constant pressure passage extending between the valve mechanism and the solenoid-operated valve into the constant pressure chamber whenever such pressure reaches or exceeds a given value.





4,882,976

BRAKE BOOSTER

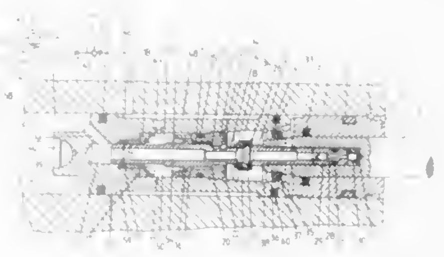
Andreas Abbing, Ludwigsburg; Hannes Bertling, Vaihingen/-Enz; George Kehl, Stuttgart; Robert Mergenthaler, Markgroningen; Dietmar Rischen, Korntal-Munchingen; Ernst-Dieter Schäfer, Pliezhausen; Edgar Schmitt, Vaihingen/Enz, and Heinz Siegel, Stuttgart, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed May 3, 1988, Ser. No. 189,893

Claims priority, application Fed. Rep. of Germany, May 9, 1987, 3715564

Int. Cl.⁴ **F15B** *9/10*

U.S. Cl. 91—376 R 29 Claims



1. A brake booster in a housing for a master cylinder which comprises a guide bushing (3) in a face end of said housing, a piston rod (2) supported by said guide bushing protruding into the housing for transmitting a brake force, a servo piston slidably supported in the housing in alignment with said guide bushing, a work chamber provided in said servo piston for

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receiving brake fluid derived from a brake fluid supply, a first valve that controls brake fluid flow to said work chamber, a second valve that controls fluid flow from said work chamber to a return line to a supply container (**41**), said first valve for controlling brake fluid flow to said work chamber being embodied by a valve cone (**12**) operative relative to a first valve seat formed in a valve bushing (**13**), said valve cone extending axially in a blind bore (**11**) of said servo piston (**8**) in axial alignment with said valve bushing (**13**), a chamber (**50**) formed between said valve cone (**12**) and said servo piston (**8**), said chamber (**50**) communicates via a radial bore (**49**), an annular chamber (**48**) formed between the servo piston (**8**) and the housing (**1**), an inlet bore (**47**) connected with said brake fluid supply, said first valve controls brake fluid flow from said chamber (**50**) to said work chamber, said valve cone (**12**) includes a collar (**16**) thereon within said chamber (**50**), said collar being guided with radial play in said valve bushing (**13**), and said second valve for controlling the outflow of the brake fluid from said work chamber (**33**) is formed by a first element (**24**, **25**, **62**, **71**, **79**) connected to said valve cone (**12**) which cooperates with a second element (**28**, **78**, **83**, **100**) connected to said piston rod (**2**).

4,882,977
ROTARY ACTUATOR

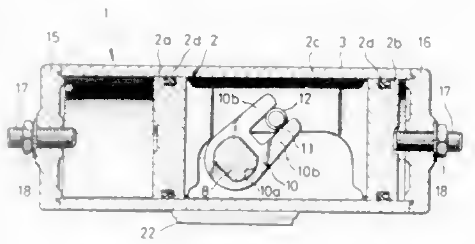
Toshio Himeno, Ashiya; Hitoshi Shimizu, Takarazuka, and Satoshi Shinkai, Nishinomiya, all of Japan, assignors to Konan Electric Co., Ltd., Nishinomiya, Japan

Continuation of Ser. No. 841,394, Mar. 19, 1986, abandoned. This application Aug. 24, 1988, Ser. No. 236,323

Claims priority, application Japan, Mar. 23, 1985, 60-057553; Mar. 23, 1985, 60-057554; Dec. 13, 1985, 60-191010; Mar. 13, 1986, 61-053753

Int. Cl.⁴ F01B *31/12, 9/04*

U.S. Cl. 92—5 R 6 Claims



1. A rotary actuator comprising

a piston;

a cylinder case having a center axis for containing said piston for reciprocatory sliding movement;

an output shaft having a center axis rotatably supported by said cylinder case and extending in a direction perpendicular to the center axis of the cylinder case; and

a connecting member connecting said piston to said output shaft for converting a reciprocatory linear movement of the piston into a reciprocatory rotary movement of the output shaft;

wherein the improvement comprises:

a pedestal extending outwardly from support portions of the cylinder case for supporting the output shaft at a free end thereof, said pedestal being formed with a substantially square elevated portion defining a depressed portion, and a plurality of projections constituting dividing lines of a scale which are formed integrally with the pedestal at the depressed portion, said projections being spaced apart from each other by a predetermined angle and located symmetrically on the left and right with respect to a plane extending through the center axis of the output shaft and perpendicular to the center axis of the cylinder case, a pointer being attached to the output shaft and an attaching position of said pointer relative to said output shaft being able to be changed by a predetermined angle.

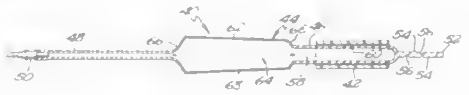
4,882,978
BELLOWS PNEUMATIC SYSTEM

Jon Bruggeman, North Oaks, and Dallas W. Simonette, Stacy, both of Minn., assignors to Power Flo Products Corp., Minneapolis, Minn.

Division of Ser. No. 180,217, Apr. 11, 1988, Pat. No. 4,824,340. This application Mar. 20, 1989, Ser. No. 325,992

Int. Cl.⁴ F01B *19/00;* **F16J** *3/04;* **B29C** *43/00*

U.S. Cl. 92—34 10 Claims



1. Pneumatic system comprising, in combination: a bellows having a generally rectangular cross section, with the bellows comprising, in combination: a generally flat top, a generally flat bottom, first and second accordion sides having longitudinal fold lines, and first and second ends; a first tube integrally formed with and extending from the first end of the bellows generally parallel to the longitudinal fold lines of the accordion sides; and a second tube integrally formed with and extending from the second end of the bellows generally parallel to the longitudinal fold lines of the accordion sides and in line with the first tube, with the bellows and first and second tubes being formed of homogeneous material.

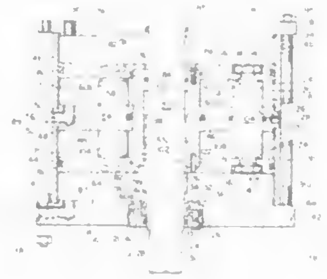
4,882,979
DUAL-PISTON ACUATOR

Paul P. Weyer, 48811-284th Avenue S. E., Enumclaw, Wash. 98022

Filed Oct. 7, 1988, Ser. No. 255,067

Int. Cl.⁴ F01B *7/16;* **F16H** *55/02;* **F16K** *31/124, 31/53*

U.S. Cl. 92—33 39 Claims



1. A fluid-powered actuator comprising:

a body having first and second axially spaced-apart end walls, and first and second end circumferential sidewalls, said first end sidewall extending axially from said first body end wall and terminating in a first circumferential free end portion and said second end sidewall extending axially from said second body end wall and terminating in a second circumferential free end portion axially spaced apart from said first circumferential free end portion to define an annular space therebetween;

an axially transverse bulkhead positioned between said first and second body end walls and having a perimeter portion extending into said annular space, said bulkhead being adjustably rotatable in said space to angularly position said bulkhead in a desired stationary position relative to said body for fluid-powered operation of the actuator, said bulkhead having a central aperture therethrough;

clamping means for selectively clamping said bulkhead perimeter portion in said annular space between said first and second circumferential free end portions to hold said bulkhead stationary with respect to said body during fluid-powered operation of the actuator, and for selectively unclamping said bulkhead to permit adjustable rotation of said bulkhead with respect to the body;

a first piston head disposed in said body for axial reciprocating movement, said first piston head being positioned between said bulkhead and said first body end wall and defining a first fluid-tight chamber between said first body end wall and said first piston head and a second fluid-tight chamber between said first piston head and said bulkhead, said first piston head having a central aperture therethrough;

a second piston head disposed in said body for axial reciprocating movement, said second piston head being positioned between said bulkhead and said second body end wall and defining a third fluid-tight chamber between said bulkhead and said second piston head and a fourth fluid-tight chamber between said second piston head and said second body end wall, said second piston head having a central aperture therethrough;

connector means for fixedly interconnecting said first and second piston heads together against axial and rotational movement relative to each other such that said first and second piston heads form a piston assembly for reciprocating movement within said body in unison;

an axially entending, rotatable shaft positioned within said body and supported for rotation relative to said body, said shaft extending through said first piston head aperture, said bulkhead central aperture and said second piston head aperture;

first torque-transmitting means for transmitting torque between said piston assembly and said bulkhead in response to reciprocating movement of said piston assembly;

second torque-transmitting means for transmitting torque between said piston assembly and said shaft in response to reciprocating movement of said piston assembly;

first seal means for providing a fluid-tight seal between said first piston head and said body;

second seal means for providing a fluid-tight seal between said second piston head and said body;

third seal means for providing a fluid-tight seal between said shaft and said piston assembly; and

fourth seal means for providing a fluid-tight seal between said connector means and said bulkhead.

4,882,980
TANDEM BRAKE BOOSTER

Masao Arino, and Jinki Takase, both of Saitama, Japan, assignors to Jidosha Kiki Co., Ltd., Tokyo, Japan

Filed Sep. 9, 1988, Ser. No. 243,057

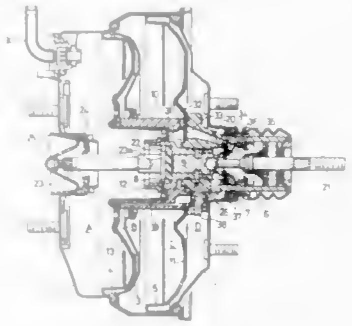
Claims priority, application Japan, Oct. 28, 1987, 62-164861[U]

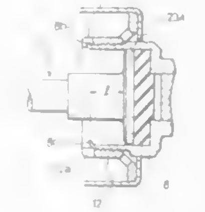
Int. Cl.⁴ F01B *19/02;* **F15B** *9/10*

U.S. Cl. 92—48 6 Claims

4. A tandem brake booster including a hub fitted over an axial portion of a valve body in a manner to prevent its withdrawal in the forward direction therefrom, a nut threadably engaged with the outer periphery of the hub at its front end for securing the hub to the valve body, and a push rod slidably fitted into the front end of the hub, the nut being formed with a plurality of recesses at given positions therein; and

means formed on said hub for preventing both (1) withdrawal of said push rod forwardly from said hub and (2) rotation and corresponding unthreading of said nut with respect to said hub, said preventing means formed on said hub comprising stops extending radially inward for abutment against an end of the push rod and further comprising anti-rotation locks extending radially outward for engagement with the recesses to provide an integral connection between the hub and the nut, both the stops and the anti-rotation locks being radially aligned with corresponding ones of said recesses in said nut.





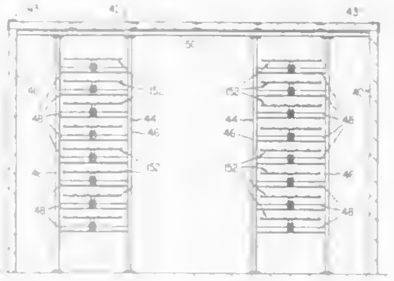
4,882,981
CONTINUOUS PROOF AND BAKE APPARATUS HAVING IMPROVED CONVEYOR SYSTEM

Carlos Bacigalupe, The Colony, and Michael J. Dobie, Plano, both of Tex., assignors to Stewart Systems, Inc., Plano, Tex.

Division of Ser. No. 127,372, Dec. 2, 1987. This application May 12, 1988, Ser. No. 192,914

Int. Cl.⁴ A21B *1/42;* **A21D** *6/00*

U.S. Cl. 99—479 1 Claim



1. In a system for processing bakery products, an enclosure comprising;

a plurality of vertically disposed sidewalls;

a concrete curb for supporting the side walls above the floor of the enclosure to prevent damage to the sidewalls due to accumulations of condensation on the floor of the enclosure;

a horizontally disposed top wall extending between the upper ends of the side walls;

means for supporting the top wall for movement along a vertical axis thereby facilitating the release of pressure from the interior of the enclosure in the event of an internal explosion;

a spiral conveyor system for transporting the bakery goods through the enclosure; and

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a plurality of ladders, each comprising internal and external vertical members adjacent to the interior and exterior perimeters of the spiral conveyor connected by a plurality of horizontal cross members, each of said cross members corresponding to, and supporting a tier of said spiral conveyors.

4,882,982

PERCOLATOR HOLDING PAN FOR ESPRESSO COFFEE MAKING MACHINES

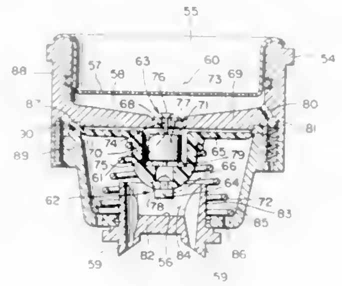
Mario Muttoni, Frazione Cima, Italy, assignor to Spidem S.r.L., Milan, Italy

Filed Oct. 6, 1987, Ser. No. 105,130

Claims priority, application Italy, Oct. 8, 1986, 21942 A/86

Int. Cl.⁴ A47J *31/00*

U.S. Cl. 99—295 17 Claims



1. A percolator holding pan for "espresso" coffee making machines comprising: a body adapted for fitting to a delivery assembly of an "espresso" coffee making machine, said body including a cavity formed therein having a bottom; a cupped percolator for holding coffee powder and housed within said cavity; at least one "espresso" coffee dispensing spout; a liquid flow path extending through said body between the cupped percolator and said at least one spout, said cupped percolator and said bottom of said cavity forming a compartment therebetween; pressure control means placed in said path for controlling the pressure downstream of the cupped percolator, said pressure control means comprising a restrictor effective to bring about a pilot backpressure, and a normally open shut-off valve interposed between the cupped percolator and the restrictor and being piloted by said backpressure.

4,882,983

APPLIANCE FOR BREWING COFFEE/TEA

John J. Pastrick, Parma, Ohio, assignor to Mr. Coffee, Inc., Beford Heights, Ohio

Filed Jan. 17, 1989, Ser. No. 297,307

Int. Cl.⁴ A47J *31/00*

U.S. Cl. 99—295 17 Claims

1. An appliance for making iced coffee/tea comprising:

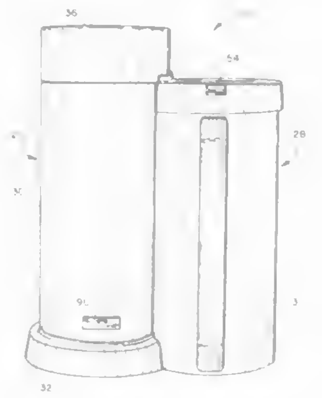
a housing,

a reservoir within said housing for holding a predetermined amount of water,

a heating system for heating said water,

a receptacle for receiving brewed heated water,

a container dimensioned to be supported in said receptacle, said container having a chamber adapted to receive coffee, tea or the like and having dispensing means for dispensing brewed, heated water into said receptacle, said dispensing means including overflow means for dispensing said brewed, heated water into said receptacle after said water reaches a certain height in said chamber, and,



means for transferring heated water to said container, said means having orifice means for dispensing heated water into said chamber.

4,882,984

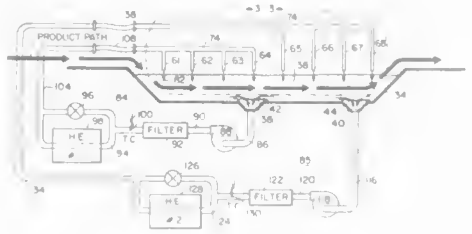
CONSTANT TEMPERATURE FRYER ASSEMBLY

E. Eugene Eves, II, Westford, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Oct. 7, 1988, Ser. No. 255,084

Int. Cl.⁴ A47J *37/12*

U.S. Cl. 99—404 26 Claims



1. A fryer assembly comprising:

a tank containing cooking oil, said tank having a bottom;

means for draining oil from the bottom of said tank;

heat exchanger means for heating said oil drained from said tank to a predetermined temperature;

means for directing said heated oil downward into said tank from above said food and above said drain wherein the flow of oil in said tank is substantially downwardly from said directing means to said drain;

conveyer means for transporting food through said oil in said tank between said directing means and said draining means; and

means for submerging said food in said cooking oil when said food is being transported.

4,882,985

ROLL AND LOAD ROTISSERIE ASSEMBLY

Frank W. Beller, Aurora, Ill., assignor to Belson Manufacturing Co., Inc., North Aurora, Ill.

Filed May 19, 1988, Ser. No. 195,847

Int. Cl.⁴ A47J *43/18*

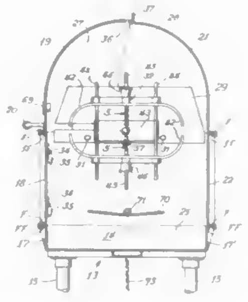
U.S. Cl. 99—426 20 Claims

1. A rotisserie assembly for attachment to the firebox of a grill comprising:

a cabinet housing including walls having means for mounting onto a firebox of a grill and including one wall thereof being removable from the other walls,

a hood means covering said cabinet housing and having two pivotally arranged hood members capable of pivoting relative to one another to open and close over said cabinet housing, spit means for holding food items to be cooked and including axle shaft means,

support means pivotally supporting said hood members and



including means for loading and unloading said spit means from said rotisserie assembly, and

a pair of opposing support panels arranged at opposite end walls of said cabinet housing and wherein said hood members include opposing end walls, said opposing end walls of the hood members being pivotally engaged to said support panels.

4,882,986

PITTING PIERCER FOR FRUIT PITTING MACHINES

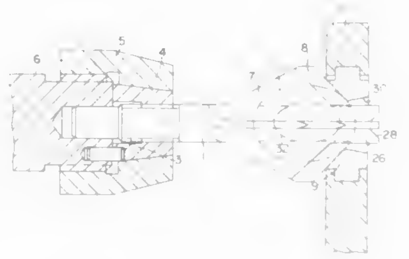
Antonio G. Diaz, Sevilla, Spain, assignor to Sociedad Anomina De Racionalcion Y Mecanizacion (Sadrym), Dos Hermanas Sevilla, Spain

Continuation-in-part of Ser. No. 24,326, Mar. 10, 1987, abandoned. This application Aug. 1, 1988, Ser. No. 226,764

Claims priority, application Spain, Nov. 11, 1986, 8601171

Int. Cl.⁴ A23N *4/00*

U.S. Cl. 99—494 4 Claims



1. Apparatus for depitting and cutting olives into slices in an olive pitting machine, said apparatus comprising:

an elongated driving rod which is actuated in reciprocating motion to be moved backwardly and forwardly along its axis between an extreme rear position and an extreme forward position, said rod having a free end designated as a driving end;

an elongated generally cylindrical body having first and second opposite ends and having an axis coincident with the rod axis, the first end of the cylinder being connected to the driving end of the rod whereby the body is moved backwardly and forwardly along the axis by the corresponding movement of the rod;

first means for depitting and cutting an olive into slices, said means being constituted by a plurality of spaced thin elongated fins which are integral with the second end of the body and extend forwardly of the body in the axial direction, each fin having a first rear section with a triangular shape, one triangular side of the first section extending along the axis, a second triangular side extending forwardly and radially outward to an apex, a third triangular side extending forwardly and radially inward from the apex to a second forward section which extends forwardly and parallel to the axis, the third side having an exposed cutting blade, the second section having a forward edge which extends inclinedly rearwardly and radially inwardly toward the axis; and

second means including an olive holder provided with a bore axially aligned with the axis lying in a plane perpendicular to the axis for supporting an olive having a major axis aligned with the axis, the olive having a rear end disposed in the bore and a front end, the front end of the olive being spaced from the front edges of the second sections when the rod is in its extreme rear position, the front edges of the second sections penetrating the olive to engage the pit to depit the olive as the rod moves into its extreme forward position, the cutting blades of the third sides of the first sections slice the depitted olive into a like plurality of separate slices disconnected for each other.

4,882,987

ATTACHING DEVICE IN A SPRING-CHARGED DOT PRINTER

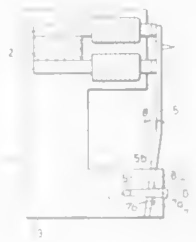
Yasuo Sakai, and Moribito Wada, both of Osaka, Japan, assignors to NEC Home Electronics Ltd., Osaka, Japan

Continuation of Ser. No. 942,032, Dec. 15, 1986, abandoned, which is a continuation of Ser. No. 727,830, Apr. 26, 1985, abandoned. This application Apr. 6, 1988, Ser. No. 180,635

Claims priority, application Japan, Apr. 27, 1984, 59-62522; May 31, 1984, 59-111620; Jun. 29, 1984, 59-134405

Int. Cl.⁴ B41J *3/10*

U.S. Cl. 101—13.04 7 Claims



1. A retaining plate assembly for use in a spring-charged dot impact printing head which comprises an attracting mechanism including a magnet, yokes and demagnetizing coils, a magnetic force of the magnet being used to attract upper end portions of leaf springs, which carry printing hammers, to the front ends of the yokes against elastic forces of the leaf springs; and a support having an inclined mounting surface on which lower end portions of the leaf springs are mounted, the lower end portions of the leaf spring and the retaining plate assembly being stacked on the inclined mounting surface in the stated order, said retaining plate assembly comprising

pressure applying means for applying substantially equal pressure of the leaf springs along the lower end portions thereof, including a member having at least one surface that is inclined with respect to a bottom surface of said support and which defines a recessed portion, said inclined surface of said member mating with said inclined mounting surface of said support, said lower end portions of the leaf spring and said member being stacked on the inclined surface of the support, said member having a second surface opposite said at least one surface, said second surface being perpendicular to the bottom surface of said support, and wherein said member has mounting holes which align with mounting holes in the lower end portions of the leaf springs; and

mounting means inserted through said mounting holes substantially in parallel with the bottom of the support, whereby even pressure may be applied by said member to the lower end portions of the leaf springs.

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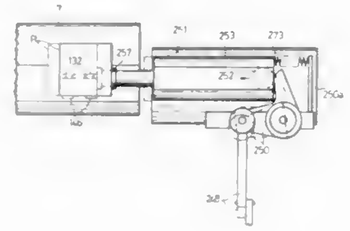
4,882,988
SHEET POSITIONING APPARATUS FOR SHEET-FED ROTARY PRINTING MACHINE

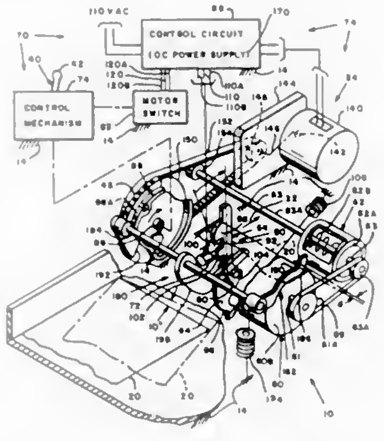
Yuji Yamaguchi, Mino, Japan, assignor to Sakurai Machine Trading Co., Ltd., Tokyo, Japan
Filed Oct. 29, 1987, Ser. No. 115,077
Claims priority, application Japan, Nov. 1, 1986, 61-261514; Feb. 5, 1987, 62-25391
Int. Cl.⁴ B65H *9/00;* **B41F** *21/12, 21/14*
U.S. Cl. 101—232 5 Claims



1. A sheet-fed rotary printing machine comprising:
- (a) a printing cylinder;
- (b) an impression cylinder rotating in engagement with said printing cylinder;
- (c) means to feed a sheet of printing paper to said rotating impression cylinder;
- (d) means to hold said sheet on said impression cylinder for travel therewith; and
- (e) first position limiting means for laterally positioning the printing paper in the direction perpendicular to the direction of feed of said printing paper while said paper is held on said impression cylinder and before the printing paper reaches a print point between said printing cylinder and said impression cylinder.

4,882,989
MAILING MACHINE INCLUDING IMPROVED SHEET ALIGNING MEANS

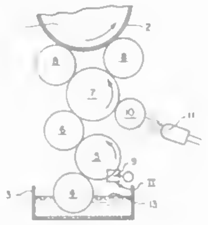
John R. Nobile, Fairfield, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.
Filed Feb. 8, 1989, Ser. No. 307,793
Int. Cl.⁴ B41F *13/24*
U.S. Cl. 101—235 12 Claims



1. In a mailing machine including a postage meter, wherein the postage meter includes rotary means for printing indicia on a sheet fed to the machine, wherein the machine includes means for driving the printing means, wherein the machine includes means for feeding a sheet fed thereto downstream in a path of travel through the machine, wherein the sheet feeding means includes an impression roller rotatably mounted beneath the rotary printing means, and wherein the impression roller has an inner end and an outer end, an improvement comprising:
- a. means for aligning a sheet fed to the machine with the path of travel, the aligning means including a registration fence aligned with the path of travel, the aligning means including an elongate stop lever and a shaft on which the lever is pivotally mounted outboard of the outer end of the impression roller, the stop lever extending into the path of travel for pivoting a sheet fed thereto toward the registration fence, the aligning means including a cam rotatable with the printing means, the aligning means including a cam follower secured to the shaft and disposed in engagement with the cam; and
- b. means for starting operation of the driving means in response to a sheet being fed to the machine, the driving means rotating the cam when the driving means is started, the stop lever located relative to the starting means for pivoting a sheet fed thereto before the driving means is started, and the cam dimensioned for rotating the cam shaft for lowering the stop lever out of the path of travel after the driving means is started.

4,882,990
INK ROLLER FOR ROTARY PRESS

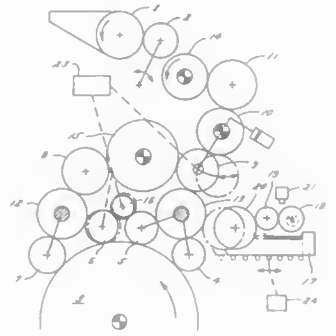
Yuji Ijichi, Hidaka, Japan, assignor to Rockwell International Corporation, Pittsburgh, Pa.
Filed Aug. 8, 1988, Ser. No. 229,385
Claims priority, application Japan, Aug. 18, 1987, 62-126228[U]; Jan. 26, 1988, 63-7647[U]
Int. Cl.⁴ B41F *1/46;* **B21H** *1/14*
U.S. Cl. 101—348 5 Claims



1. An ink metering roller for use in a lithographic rotary printing press in conjunction with a doctor blade that contacts the surface of the roller to remove excess ink therefrom, said roller comprising:
- (a) a metal core of preselected strength and dimensions; and
- (b) means providing a surface on said metal core having recesses to hold ink, said means including an outer ink metering layer covering said metal core, said outer layer consisting of:
  - (i) a matrix material constructed of an organic substance presenting an outer surface having oleophilic and hydrophobic properties, which material is worn away during contact with the doctor blade; and
  - (ii) a quantity of highly wear resistant particulate material dispersed throughout said matrix material, the wear of said matrix material caused by the doctor blade leaving some of said particulate matter protruding outwardly beyond the outer surface of said matrix material to define recesses holding quantities of ink and supporting the doctor blade.

4,882,991
CHANGE-OVER INKING UNIT OF A SHEET-FED ROTARY PRESS

Claus Simeth, Offenbach am Main, Fed. Rep. of Germany, assignor to M.A.N. Roland Druckmaschinen Aktiengesellschaft, Offenbach am Main, Fed. Rep. of Germany
Continuation of Ser. No. 90,117, Aug. 27, 1987, abandoned. This application Jan. 10, 1989, Ser. No. 296,356
Claims priority, application Fed. Rep. of Germany, Aug. 27, 1986, 3629081
Int. Cl.⁴ B41F *31/10, 31/30*
U.S. Cl. 101—350 5 Claims



1. A sheet-fed rotary press comprising
- main ink feed means,
- a plate cylinder,
- a plurality of transfer and applicator rolls coupled between said main ink feed means and said plate cylinder for defining an ink flow path for transferring ink in a downstream direction from said main ink feed means to said plate cylinder during printing operations, means mounting at least one of said transfer rolls which define said flow path for movement between an operative position in said flow path and an inoperative position out of engagement with said transfer and applicator rolls downstream thereof, means for selectively moving said at least one transfer roll from said operative position to said inoperative position for interrupting the transfer of ink from said main ink feed means to said plate cylinder and for isolating a short length roll group comprising only a portion of said plurality of transfer and applicator rolls, and
- additional ink feed means, and means for selectively moving said additional ink feed means from an inoperative position out of engagement with said short length roll group to an operative position engaging said short length roll group for supplying ink to said plate cylinder through a shortened flow path via said short length roll group.

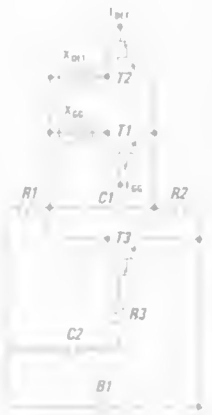
4,882,992
COMBINATION POWDER APPLYING AND/OR INFRARED DRYING ATTACHMENT FOR PRINTING PRESSES

Duane A. Schmoeger, Raleigh, N.C., assignor to Airtech Company, Inc., Cary, N.C.
Continuation of Ser. No. 225,802, Jul. 29, 1988, abandoned. This application Apr. 28, 1989, Ser. No. 344,809
Int. Cl.⁴ B41F *35/00*
U.S. Cl. 101—424.1 20 Claims

1. In combination with a printing press having a frame, sheet delivery means carried by said frame for conducting freshly printed sheets along a path of travel from a printing station to a sheet collection station, and anti-offset means for preventing ink offset between the sheets during collection thereof; the improvement in said anti-offset means comprising;
- radiant heating means for, during operation thereof, directing radiant heat energy onto the sheets at a location along said path of travel spaced in an upstream direction from said collection station;
- sheet spraying means disposed closely adjacent said radiant heating means for, during operation thereof, spraying anti-offset material upon the sheets at a location along said path of travel downstream from said first-mentioned location and upstream from said collection station;
- and selector switch means usable by a press operator for enabling operation of either one or both of said heating means and said spraying means.

4,882,993
ELECTRONIC BACK-UP SAFETY MECHANISM FOR HAND-EMPLACED LAND MINES

Alvin Schwartzman, Kinnelon, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Aug. 5, 1988, Ser. No. 229,514
Int. Cl.⁴ F42C *11/00*
U.S. Cl. 102—218 1 Claim



1. A munition device having means for insuring expiration of a predetermined time delay until arming of said munition, including circuit means which comprises:
- a first N-P-N Darlington transistor pair (T3) with grounded emitter; an input series resistor-capacitor (R3-C2) timing delay circuit in series with an input to the base of said first transistor pair; an output from the collector side of said first transistor pair connected to a firing capacitor C1, said C1 capacitor connected to ground through a first bias resistor R2 and negatively biased from a battery (B1) through a second bias resistor R1; and second N-P-N Darlington transistor pair (T2) in parallel to said firing capacitor C1 feeding a detonator through the collector path of said second transistor pair, and; a third N-P-N Darlington transistor pair (T1) also in parallel with said

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firing capacitor C1, feeding Gas Generator Means through the collector path of said third transistor pair, said second and third transistor pairs (T1 and T2) receiving respective Gas Generator Means and detonator inputs from a timer logic included in said munition device.

4,882,994

PARTICULATE FUEL COMPONENTS FOR SOLID PROPELLANT SYSTEMS

Preston L. Veltman, 212 Old Country Rd., Severna Park, Md. 21146, and Ove Hansen, 6560 Walnut Grove, Columbia, Md. 21045

Filed Jan. 28, 1988, Ser. No. 149,300

Int. Cl.⁴ C06B *45/10;* **C06D** *5/06*

U.S. Cl. 102—290 **16 Claims**

1. A method for preparing a free-flowing, particulate fuel component for use in solid propellant systems, which comprises: dispersing particles of a fuel for a solid propellant having a particle size in the range 2-100 microns in a latex of a polymer, and spray drying the resultant dispersion.

4,882,995

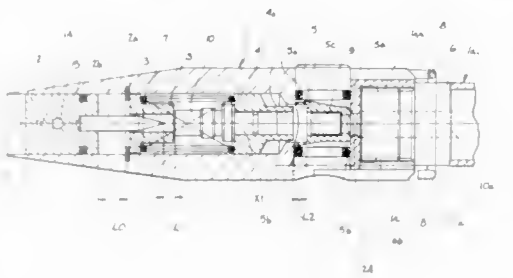
PROJECTILE FOR DARTING GUN

Henrik M. Henriksen, Holmenveien 1, N-3130 Teie, and Egil O. Oen, Vestbyvelen 46, N-1440 Drobak, both of Norway

Continuation-in-part of Ser. No. 96,339, Sep. 11, 1987, abandoned. This application Jan. 23, 1989, Ser. No. 300,321

Int. Cl.⁴ F42B *13/54*

U.S. Cl. 102—371 **13 Claims**



10. Projectile for a darting gun, comprising:

a front head housing a front ignition plunger arranged for axial rearward movement (L0) into a front head housing, and carrying a rearwardly extending striker means;

an ignition time delay element communicating with an urging means and a detonator housing carrying a detonator, said detonator housing being arranged for rotation about an axis transverse to the longitudinal axis of said front head housing;

a safeguarding means attached to said detonator housing and being arranged to take two positions:

a first position for holding said detonator housing in a position preventing the travel of said ignition time delay element, and a second position for allowing said ignition time delay element to travel into said detonator housing through a recess formed therein;

and a tubular body releasably attached to said front head housing and carrying explosive charges.

4,882,996

EXPLOSIVE PROJECTILE ASSEMBLY WITH A PROJECTILE BODY

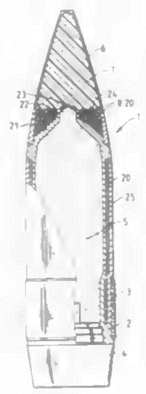
Erich Bock, Nurnberg, and Rainer Himmert, Lauf, both of Fed. Rep. of Germany, assignors to Diehl GmbH & Co., Nurnberg, Fed. Rep. of Germany

Filed Oct. 28, 1988, Ser. No. 263,725

Claims priority, application Fed. Rep. of Germany, Oct. 30, 1987, 3736842

Int. Cl.⁴ F42B *13/18*

U.S. Cl. 102—496 **12 Claims**



1. Explosive projectile assembly including a projectile body and a hollow ballistic hood mounted in front of the projectile body; a head end portion of the projectile body being encompassed by said hood; said head end portion having a forwardly extending conical configuration protruding into the interior of said hood; an explosive charge being arranged within said projectile body; a base detonator attached to a tail end of said projectile body; a multiplicity of first preformed fragments embedded in a matrix of a polyurethane foam material being arranged intermediate the head end portion of said projectile body and the ballistic hood so as to at least fill an annulus in the interior of said hood formed intermediate the outer surface of the conical head end portion of the projectile body and the inner wall surface of said hood; and further preformed fragments being embedded in a peripheral wall surface of said projectile body.

4,882,997

TUBULAR PROJECTILES

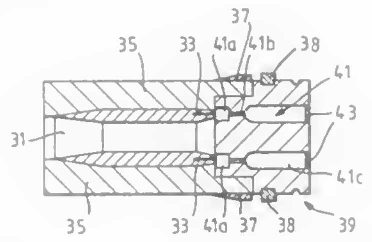
James E. Baxter, Cheshire, and Robert D. Poole, Stoke-on Trent, both of England, assignors to Royal Ordnance plc, London, England

Filed Nov. 27, 1987, Ser. No. 126,010

Claims priority, application United Kingdom, Nov. 28, 1986, 8628514

Int. Cl.⁴ F42B *11/00, 11/16*

U.S. Cl. 102—503 **16 Claims**



1. A tubular projectile comprising a hollow tube and having formed in a rear end of a wall of the tube a recess of annular cross-section having inner and outer lateral extremities, the

annulus constituting the said recess being substantially coaxial with the portion of the projectile in which it is formed, the recess being filled with a tracer material which comprises a flexible cylindrical sleeve of a polymer-bonded pyrotechnic composition.

4,882,998

CAR FOR TRAVELING ALONG A SHEATHED CABLE

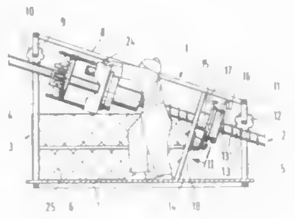
Xaver Lipp, Hohenstaufenstrasse 30, 7090 Ellwangen, Fed. Rep. of Germany

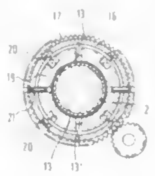
Filed Apr. 26, 1988, Ser. No. 186,464

Claims priority, application Fed. Rep. of Germany, May 13, 1987, 3715904

Int. Cl.⁴ B61B *7/06*

U.S. Cl. 104—112 **18 Claims**





1. A car for traveling along a sheathed cable having a metal sheathing forming a rib projecting radially outwardly and extending axially along the cable in a helical path, said car comprising:

at least one drive member having coupling means for engaging the rib laterally and at least two relatively movable parts arranged one behind the other along the helical path of the rib, said parts trapping the cable therebetween and having biasing means for urging said parts against the cable; and

drive means, coupled to said drive member, for moving said drive member along a track concentric with a longitudinal axis of the cable, said drive means being stationary in axial directions of the cable relative to the car.

4,882,999

TRANSPORTATION SYSTEM OF A FLOATED-CARRIER TYPE

Teruo Azukizawa; Mimpei Morishita, both of Tokyo; Toyohiko Yokoyama, Urawa; Shigeo Takaki, Tokyo; Yoshio Yuyama, Tokyo, and Akitaka Noda, Tokyo, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 18, 1987, Ser. No. 135,084

Claims priority, application Japan, Dec. 19, 1986, 61-303442

Int. Cl.⁴ B65G *54/02;* **H02N** *15/00*

U.S. Cl. 104—281 **6 Claims**

1. A transportation system of a floated-carrier type for transporting a cargo between predetermined positions, comprising:

a guide rail means formed of a ferromagnetic material and including a first rail, a second rail, and a third rail intersecting the first rail, each rail extending longitudinally;

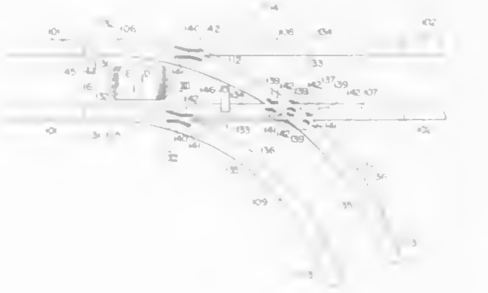
a carrier for carrying the cargo;

a magnetic unit provided on the carrier, said magnetic unit having at least a pair of yokes which have an air gap with respect to said guide rail means, and magnetic coils provided to said yokes, said yokes, said air gap, and said guide rail means constituting a magnetic circuit, and said carrier being adapted to be suspended from said guide rail means in a non-contact manner, by means of a magnetic attractive force acting between said magnetic unit and said guide rail means, so that the air gap of a predetermined size is maintained between the yokes and said guide rail means;

a coupling section for connecting the first to third rails to one another, said coupling section including a coupling rail formed of a ferromagnetic material and connecting the first to third rails to one another, said coupling rail formed of a ferromagnetic material and having a pair of first and second ridges respectively facing said yokes, and each of said ridges having a width substantially the same as that of each of said yokes in a traverse direction of the rail;

propelling means for providing a propelling force to said carrier so as to cause said carrier to travel along said guide rail means; and

transfer means provided at the coupling section, and adapted so that, at the coupling section, said carrier, having so far been running along the first rail, is transferred from the first rail to the coupling rail, and is then transferred to the second or third rail therefrom, all in a non-contact manner,



whereby when said carrier enters the coupling rail, magnetic flux leakage from said yokes is concentrated on only said ridges without being biased to other portions, so that a force for preventing said magnetic unit from being shifted in a traverse direction of the rail with respect to said ridges is generated, and said carrier is reliably transferred from the first rail to either the second or third rail;

wherein the coupling rail consists of a first coupling rail, a second coupling rail, and a third coupling rail, one end of each of the first to third coupling rails is connected to corresponding one of the first to third rails, the other end of the first coupling rail is connected to the other end of each of the second and third coupling rails, and each of said first to third coupling rails has the first and second ridges;

wherein said coupling section has a rail joining section at which the first to third coupling rails are joined,

said rail joining section has a ridge intersection at which the first ridge of the second coupling rail intersects the second ridge of the third coupling rail, and

the ridge intersection has, on a side surface thereof, a projection formed of a ferromagnetic material,

whereby magnetic flux leakage from the yoke is flowed to both the ridge intersection and the projection, the yoke can be prevented from being attracted toward the ridge intersection, and swinging motion of said carrier can be prevented.

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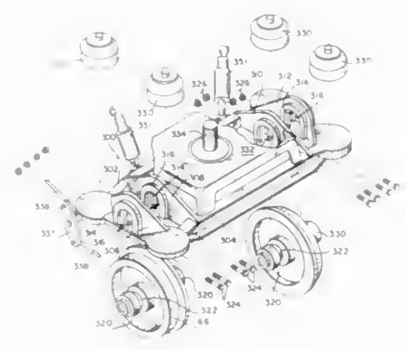
4,883,000
STUB AXLE TRUCK

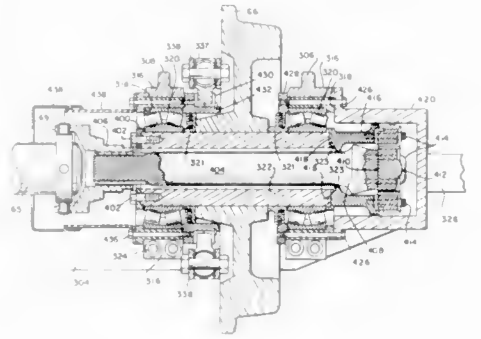
Thomas H. Engle, Cape Vincent, N.Y., assignor to General Signal Corp., Stamford, Conn.

Continuation-in-part of Ser. No. 776,764, Sep. 16, 1985, abandoned, and a continuation-in-part of Ser. No. 853,562, Apr. 18, 1986, Pat. No. 4,718,351. This application Nov. 5, 1987, Ser. No. 116,775

Int. Cl.^{4} B61F *3/16*

U.S. Cl. 105—4.4 15 Claims





1. A stub axle truck comprising:
a frame;
a pair of wheels each being mounted to a hollow stub axle;
bearing means for rotatably mounting each end of said axles to said frame;
a sleeve extending through a respective axle and including a radial flange extending from each end of said sleeve adjacent an end of said axle for mounting said bearing means to said axle, one of said radial flanges being removably mounted to said sleeve; and
locking means interconnecting said sleeve and said axle for preventing rotational movement therebetween, said locking means including a plurality of axially extending and mating recess and lugs on an end of said axle and on said flange which is not removable.

4,883,001
PICNIC TABLE COVER

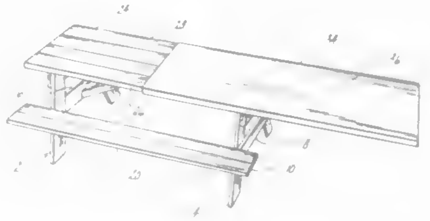
Alfred C. Roth, 2388 Yost Blvd., Ann Arbor, Mich. 48154

Filed Dec. 18, 1987, Ser. No. 135,008

Int. Cl.^{4} A47B *13/08*

U.S. Cl. 108—90 2 Claims

1. An outdoor picnic table comprising:
a plurality of elongated wooden planks arranged in edge-to-edge relationship to define a nominally flat, generally continuous top surface, parallel side edges, and transverse end edges;
protective cover means comprising a stiff, thin sheet of impervious plastic material having a face area commensurate with the area of said top surface, integral edge walls (40, 42) extending downwardly from opposite edges of said sheet for positionment in close proximity to edge areas of said top surface, and integral lip walls (44, 46) extending inwardly from said edge walls for positionment in close proximity to undersurface areas of said wooden planks at the parallel side edges;
said edge walls and lip walls being formed from the same plastic material as the stiff thin sheet, such that the cover means is a one-piece seamless structure;
said one-piece seamless structure having permanent bend lines where the edge walls are connected to the stiff sheet and lip walls, whereby the cover means can be slidably installed on the wooden planks to maintain a grip on said top surface in spite of wind forces tending to uncurl the lip walls from engagement with the undersurface areas of said planks;



two sealing caps dimensioned to correspond to the shape of the surface of the plank end edges, said sealing caps being applied against the plank end edges to seal against entry of rain into the planks;
said caps having sealed connections with the thin sheet to prevent wind from getting between the sheet and the top surface of said planks;
at least one elongated spacer member insertable between an inner face of an edge wall (40 or 42) and a side edge of the wooden planks, to enable the cover means to maintain a firm stable position on the top surface in spite of tolerance variations in plank width dimensions; and
means for attaching the cover means and the end caps to the wooden planks in a permanently fixed position thereto.

4,883,002
FURNACE CLOSING MECHANISM FOR INDUSTRIAL FURNACES

Rolf Schuster, Hanau, Fed. Rep. of Germany, assignor to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

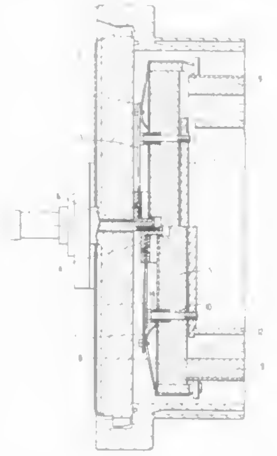
Filed Oct. 24, 1988, Ser. No. 261,403

Claims priority, application Fed. Rep. of Germany, Oct. 31, 1987, 8714544[U]

Int. Cl.^{4} F23M *7/00*

U.S. Cl. 110—173 R 4 Claims

1. A furnace closing mechanism for attachment to industrial furnaces having a furnace shell and thermal insulation on the furnace interim, said closing mechanism comprising a furnace door that can be latched to the furnace shell and having an inner and an outer face, a heat-insulating door made of a thermal insulating material and attached to the inner face of the furnace door, which heat-insulating door seals in gastight manner with the thermal insulating of the furnace interior, the outer face of the heat-insulating door (5), having in contact therewith on the outer boundary, a plurality of leaf springs (3,3') that are attached to and converge concentrically with a central threaded hub (4), the threaded hub being screwed onto a threaded spindle (6) attached to the inner face of the furnace door (2).



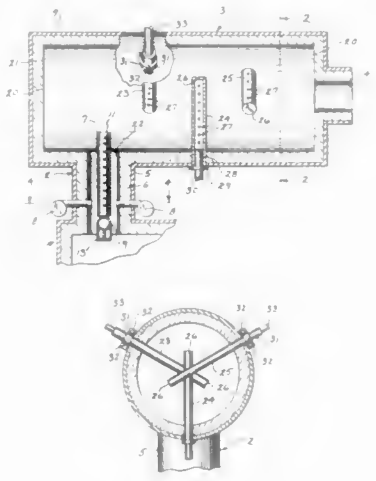
4,883,003
SECONDARY COMBUSTION CHAMBER FOR AN INCINERATOR

Gordon H. Hoskinson, 186 Mayfair Rd., Floral Park, N.Y. 11001

Filed Sep. 26, 1988, Ser. No. 249,333

Int. Cl.^{4} F23G *7/06*

U.S. Cl. 110—212 9 Claims



1. In an incinerator apparatus, an incinerator to burn waste material, a stack connected to the incinerator for discharging waste gases of combustion, a housing defining a secondary combustion chamber having an inlet connected to the upper end of said stack and having an outlet, at least one tube formed of ceramic material extending transversely of said chamber, said tube having an outer end connected to said housing and having a closed inner end, said tube extending more than one half the cross sectional dimension of said chamber, means for supplying air to the outer end of said tube, said tube having a plurality of outlet ports with the axes of said ports disposed generally normal to the flow of waste gases through said chamber, air introduced into said tube being discharged through said ports to provide an air curtain extending, generally transversely across said chamber.

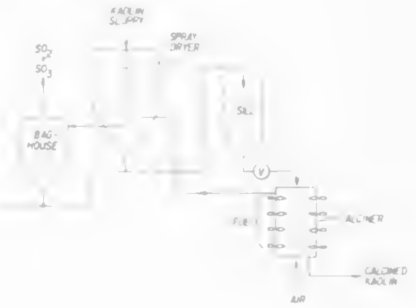
4,883,004
METHOD FOR INHIBITING CORROSION IN INTEGRATED SPRAY DRYING-CALCINING PROCESS

Ove Hansen, Columbia, Md., assignor to Niro Atomizer Inc., Columbia, Md.

Filed Aug. 31, 1988, Ser. No. 238,422

Int. Cl.^{4} F23J *1/00*

U.S. Cl. 110—343 4 Claims



1. A method for inhibiting spray drier and calciner corrosion in an integrated spray drying and calcining process in which the hot exit gas from the calciner are used to supply heat to the spray drier, which comprises passing a kaolin slurry to the spray drier, spray drying the kaolin slurry in the spray drier, passing the spray dried kaolin to the calciner, calcining the spray dried kaolin in the calciner, and passing the hot exit gases from the calciner to the spray drier, while maintaining said hot exit gases from the calciner at a temperature of 700°-800° C.

4,883,005
SEWING MACHINE WITH A TENSIONING DEVICE HAVING A PLURALITY OF TENSIONING ROLLERS

Bodo Wehmeyer, Bielefeld, Fed. Rep. of Germany, assignor to Durkoppwerke GmbH, Fed. Rep. of Germany

Filed Feb. 21, 1989, Ser. No. 313,099

Claims priority, application Fed. Rep. of Germany, Feb. 18, 1988, 3805029

Int. Cl.^{4} D05B *35/06, 35/10*

U.S. Cl. 112—63 19 Claims

1. A sewing machine having a tensioning device including a plurality of tensioning rollers disposed to receive and align tubular workpieces, and at least one sensor which is disposed to scan an edge of an opening of the workpiece; at least one tensioning roller having alignment members which are movable transverse to the direction of rotation thereof; said alignment members cooperating with said sensor and with a control unit for the automatically controlled alignment of the opening edge with respect to a sewing point;

wherein each tensioning roller has at least three alignment

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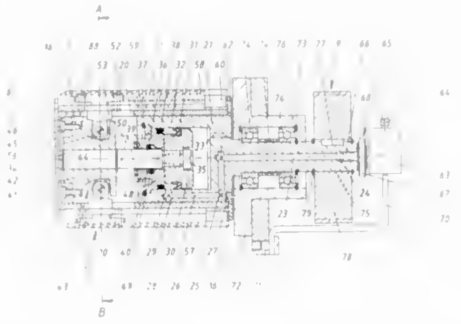
members distributed about its periphery for engaging said workpieces, said alignment members being displaceable both radially and axially with respect to the periphery of the tensioning roller.



4,883,006

AUTOMATIC SEWING MACHINE

Satoshi Marii, Nagoya; Kunihiko Murata, Tsushima, and Hiroyuki Mitsui, Kasugai, all of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Japan

Filed Apr. 14, 1988, Ser. No. 181,531

Claims priority, application Japan, Apr. 24, 1987, 62-102755

Int. Cl.⁴ D05B *21/00*

U.S. Cl. 112—121.12 7 Claims

1. An automatic sewing machine comprising:

a frame having a workpiece supporting surface thereon;

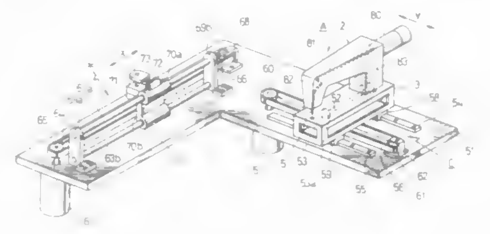
clamp means movably supported on said frame in a first predetermined direction for clamping a workpiece;

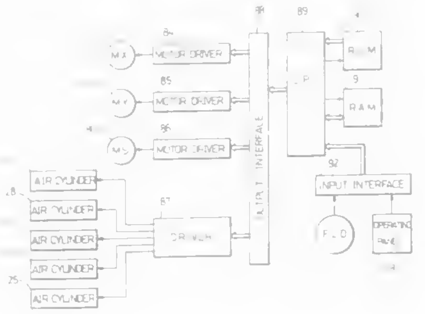
a clamp moving motor for moving said clamp means in said first direction;

a sewing head movably supported on said frame in a second direction intersecting said first direction and having a needle and a loop taker cooperating therewith;

a sewing head moving motor for continuously moving said sewing head in said second direction without a stoppage interval during reciprocal movement of said needle; and

control means for controlling said clamp moving motor and said sewing head moving motor to cause two-dimensional relative movement between said needle and said workpiece clamped by said clamp means and to form a two-dimensional stitch pattern.





4,883,007

NEEDLE CLAMP FOR SEWING MACHINE

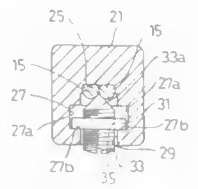
Nobusuke Nagasaka, Haguri, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Feb. 10, 1989, Ser. No. 308,444

Claims priority, application Japan, Mar. 1, 1988, 63-27064[U]

Int. Cl.⁴ D05B *55/02*

U.S. Cl. 112—226 8 Claims



1. A needle clamp for attaching plural needles to a needle bar of a sewing machine, comprising:

a clamp body secured to a lower end portion of said needle bar and having a first hole for receiving said plural needles in side-by-side relationship in a first direction within a predetermined plane and a second hole communicating with said first hole in a second direction substantially perpendicular to said predetermined plane;

a clamp screw positioned within said second hole and having a threaded shaft portion and a conical end portion engageable with peripheral surfaces of two adjacent needles of said plural needles, a diameter of said threaded shaft portion being smaller than a dimension of said second hole in said first direction so that said clamp screw moves in said first direction;

a nut member threaded to engage with said threaded shaft portion of said clamp screw and disposed in said clamp body so as to move in said first direction;

means for preventing said nut member from rotating about an axis of said clamp screw; and

means for preventing said nut member from moving in said second direction away from said plural needles received in said first hole.

4,883,008

METHOD OF AND APPARATUS FOR CONTROLLING SEWING RATE IN SEWING MACHINE

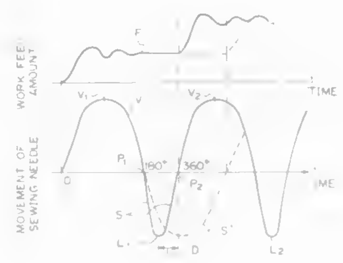
Tohru Hiramatsu, Tokyo, Japan, assignor to Juki Corporation, Tokyo, Japan

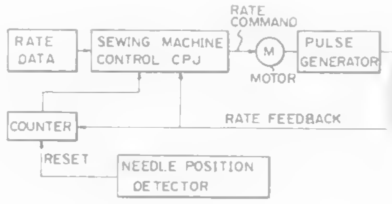
Filed Oct. 27, 1988, Ser. No. 263,531

Claims priority, application Japan, Oct. 30, 1987, 62-275413

Int. Cl.⁴ D05B *69/18*

U.S. Cl. 112—262.1 5 Claims





1. In a method of controlling the sewing rate in a sewing machine comprising a reciprocally and vertically movable needle, a motor for driving said needle and a throat plate on which a workpiece is adapted to be placed having a needle hole through which said needle moves, said sewing machine being adapted to repeatedly perform a cycle wherein the needle moves downwardly from the upper dead center to the bottom dead center passing through said needle hole and then upwardly from the bottom dead center to the upper dead center passing through the needle hole, the improvement wherein while said needle is below said throat plate the needle is moved at a rate higher than that at which the needle is moved while the needle is above the throat plate.

4,883,009

METHOD OF AND APPARATUS FOR PROCESSING TEXTILE MATERIAL WEBS, ESPECIALLY FOR THE MANUFACTURE OF QUILTS AND THE LIKE

Franz Haselberger, Hard, Austria, and Peter Vogel, Platz-Walzenhausen, Switzerland, assignors to Fritz Gegauf AG, Steckborn, Switzerland

Filed Oct. 3, 1988, Ser. No. 252,601

Claims priority, application Switzerland, Oct. 6, 1987, 3919/87

Int. Cl.⁴ D05B *21/00, 11/00;* **D05C** *3/00*

U.S. Cl. 112—266.1 9 Claims

1. A method of processing textile material webs, especially for the manufacture of quilts and the like in a quilting machine, comprising the steps of:

clamping the textile material webs by means of a first clamping device disposed upstream of a tenter frame and a second clamping device disposed downstream of the tenter frame; for processing a workpiece;

stretching the textile material webs between the first clamping device and the second clamping device;

clamping the textile material webs by means of toothed segments which are laterally arranged at the tenter frame;

stretching the textile material webs in a transverse direction relative to a predetermined direction of travel of the textile material webs by shifting first tenter means so as to rest against a stop, thus positioning the workpiece, holding the workpiece under tension by second tenter means, and subsequently closing clamping devices disposed at rear and front ends of the tenter frame and extending transversely relative to the now stretched workpiece;

releasing the first clamping device disposed upstream of the tenter frame;

guiding the tenter frame with the stretched workpiece to be processed towards a receiving end of the quilting machine and simultaneously withdrawing new cover material webs and at least one filler material web from a feed station;

joining marginal portions of the textile material webs during the step of withdrawing the new cover material webs and the at least one filler material web;

quilting the workpiece stretched in the tenter frame by means of a sewing device, thus a quilted workpiece;

said step of quilting comprising moving the tenter frame and the sewing device relative to one another; and

guiding the quilted workpiece out of the quilting machine.

4,883,010

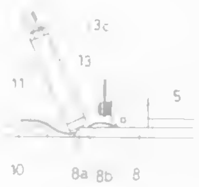
THREAD CHAIN CUTTING DEVICE

Takeshi Matsumoto, Osaka, Japan, assignor to Yamato Mishin Seizo Kabushiki Kaisha, Osaka, Japan

Filed May 16, 1988, Ser. No. 194,263

Int. Cl.⁴ D05B *65/00*

U.S. Cl. 112—288 1 Claim



1. A thread chain cutting device for use in a sewing machine which produces a thread chain, comprising:

an upper knife having a bottom surface in the shape of a flat plane;

a machine arm having a driving mechanism on which said upper knife is mounted for movement up and down in a direction substantially transverse to said flat plane, said

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driving mechanism being operable elevating and lowering said upper knife; and

a lower knife having an obtuse angled cutting edge and being fixed in position beneath said upper knife for having said bottom surface of said upper knife engage said cutting edge during the lowering of said upper knife, whereby if said driving mechanism is accidentally actuated while fabric or an operators finger or the like is beneath said upper knife, there is no risk of cutting the fabric or the operator's finger.

4,883,011
HYDROFOIL KEEL

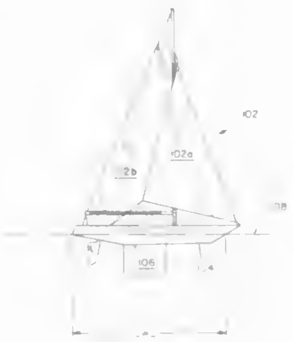
Merrick L. Sims, 7 Ilya Avenue, Bayview, New South Wales 2103, Australia

Continuation-in-part of Ser. No. 647,140, Sep. 4, 1984, abandoned. This application Jan. 27, 1987, Ser. No. 9,646

Claims priority, application Australia, Sep. 5, 1983, PG1210; Sep. 5, 1983, PG1211; Sep. 19, 1983, PG1459; Dec. 5, 1983, PG2681; Jan. 2, 1984, PG3415; Jul. 26, 1984, PG6226

Int. Cl.^{4} B63B *3/38*

U.S. Cl. 114—39.1 14 Claims



1. In a high performance sailing boat having a sail rig designed to operate in a range of wind speeds up to an upper designed wind speed and a displacement hull with a hull speed being the maximum theoretical speed of the hull when heating, a keel having hydrofoil shape and a lifting surface area aproximately equal to the sail area of the sail rig multiplied by the square of the ratio of the upper designed wind speed to the hull speed, and further multiplied by the ratio of the lift coefficient of the sail rig at its setting giving the highest lift/drag ratio at the upper designed wind speed to the lift coefficient of the keel at the angle of attack giving its highest lift/drag ratio all divided by 800.

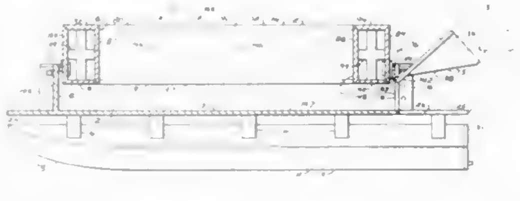
4,883,012
DUAL-PURPOSE WATER CRAFT

George D. Kennedy, Rte. 2, Box 109-B, Reliance, Tenn. 37369

Filed Sep. 30, 1988, Ser. No. 253,192

Int. Cl.^{4} B63B *1/10, 3/08*

U.S. Cl. 114—61 8 Claims



1. A water craft adapted and arranged to float on the surface of a water body comprising:

(a) a first floatable structure having a deck,

(b) controllable means connected with the first floatable structure and controllable to vertically move the first floatable structure between a first position at which said deck is located above the surface of the water and a second position at which said deck is submerged below the surface of the water,

(c) a second floatable structure which is moveable relative to the first floatable structure and has a floatable section with a vertical opening that overlies said deck and which is supported by said first floatable structure when said first floatable structure is at said first position therefor, and

(d) means mounted on the second floatable structure for propelling the craft through the water;

said second structure being arranged to float on the water surface when said first structure is at said second position and to thereat define the surface area of a swimming pool within said vertical opening,

said deck being arranged to provide a bottom portion of the swimming pool when said first structure is at said second position and to provide a passenger area when said first structure is at said first position, and

said first and second structures being arranged to cooperate in providing side wall portions of said swimming pool when said first structure is at said second position.

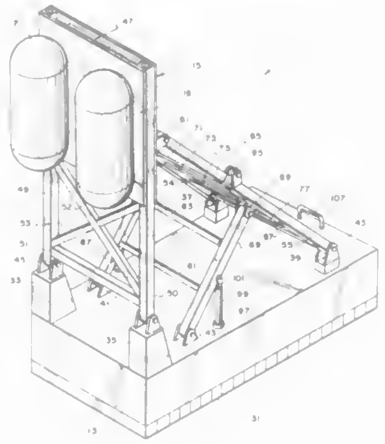
4,883,013
PORTABLE, RAPID INSTALLABLE DOLPHIN SYSTEM

Sheng S. Lin, Camarillo, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 1, 1989, Ser. No. 345,339

Int. Cl.^{4} E02B *3/22*

U.S. Cl. 114—219 14 Claims



1. A portable rapidly installable dolphin system for absorbing forces of impact from a moored floating vessel comprising:

a. a hollow rectangular shaped gravity base having an upper and bottom surface;

b. a skirt having an upper surface attached to the bottom surface of said gravity base;

c. a rectangular shaped plate having a front and a back surface and a pair of vertical legs extending from the bottom edge thereof, each of said legs being connected in rotational engagement to the upper surface of said gravity base near the front end thereof;

d. means mounted on the front surface of said plate for absorbing forces of impact from said moored floating vessel;

e. a plate support structure having one end thereof connected in rotational engagement to the back surface of said plate and the opposite end thereof connected in rotational engagement to the upper surface of said gravity base near the rear end thereof;

f. actuating means mounted within the upper surface of said gravity base, said actuating means having a drive member connected in rotational engagement to said plate support structure near the center thereof; and

g. said actuating means adapted to effectuate the movement of said plate support structure so as to raise said plate from a first position which is above and approximately parallel to the upper surface of said gravity base to a second position which is above and approximately perpendicular to the upper surface of said gravity base.

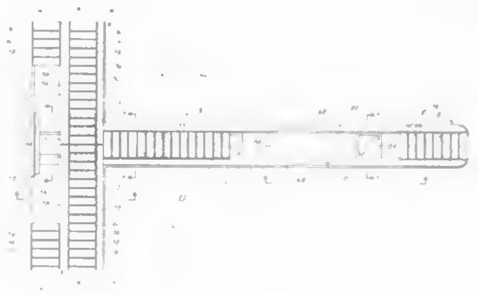
4,883,014
MARINA

Roger W. Otis, 308 Bluebird Dr., and Stephen H. Otis, Rte. 2, both of McAlester, Okla. 74501

Continuation of Ser. No. 925,726, Oct. 31, 1986, abandoned. This applicatioo Jan. 24, 1989, Ser. No. 302,099

Int. Cl.^{4} B63B *35/72*

U.S. Cl. 114—263 12 Claims



1. A marina comprising a main walk, at least one finger walk fixedly connected thereto and angularly disposed therefrom, and floatation means for buoyantly supporting the main walk and finger walk above a body of water;

a unitary structure consisting of a plurality of spaced parallel elongate main frame plates, and a plurality of spaced parallel elongate finger frame plates in underlying relationship with the main frame plates and angularly displaced therefrom;

the main walk comprising a plurality of elongate main frame members each engaging a corresponding main frame plate;

the finger walk comprising a plurality of elongate finger frame members each engaging a corresponding finger frame plate;

means for securing each main frame plate to its corresponding spaced main frame member and in parallel relationship thereto;

means for securing each finger frame plate to its corresponding spaced finger frame member and in parallel relationship thereto;

at least one main walk surface surported by at least two of the main frame members; and at least one finger walk surface surported by at least two finger frame members.

4,883,015
END PLATE FOR A RAM-WING BOAT

Günther W. Jörg, Odeowaldring 24, 6101, Gross-Bieberau, FRG, Fed. Rep. of Germany

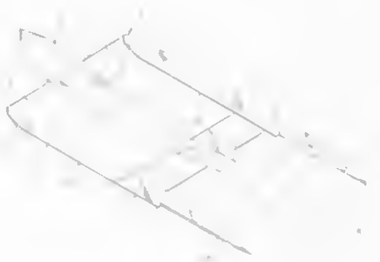
Filed Jul. 8, 1988, Ser. No. 216,603

Claims priority, application Fed. Rep. of Germany, Jul. 16, 1987, 3723487

Int. Cl.^{4} B63B *1/16*

U.S. Cl. 114—272 6 Claims

1. An end plate for a ram-wing boat, the ram-wing boat having a hull and two airfoils in the form of ailettes disposed on each side of the hull, said end plate being connected to an outer surface of the two airfoils located on one side of the hull and comprising an upper chord, a lower chord, inner and outer flat side plankings which connect together the upper and lower chords, said upper and lower chords and inner and outer plankings together defining a substantially hollow body having a longitudinal axis, and a plurality of ribs spaced along the longitudinal axis within said hollow body, said ribs being perpendicular to said longitudinal axis, wherein said inner planking is connected to the two airfoils and said upper and lower chords each includes a surface at an acute with respect to the inner planking so that said end plate is essentially trapzoidal in cross section.



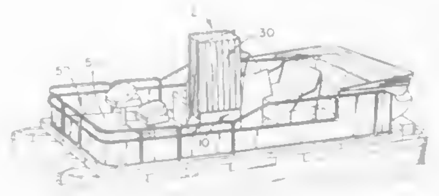
4,883,016
COLLAPSIBLE MARINE PRIVACY CHAMBER

Thomas A. Larson, 1217 Phelps St., Red Wing, Minn. 55066

Filed May 20, 1988, Ser. No. 196,981

Int. Cl.^{4} B63B *17/00*

U.S. Cl. 114—363 18 Claims



1. A privacy chamber, comprising:

(a) an openable enclosure having an openable top;

(b) a sectional support member including a plurality of elongated cooperating segments, wherein the cooperating segments can cooperate to form the sectional support member, said cooperating segments having male and female ends such that the cooperating segments can be assembled by inserting one into another in an end-to-end relationship;

(c) means for anchoring said sectional support member inside of said openable enclosure, said anchoring means cooperating with said cooperating segments such that the cooperating segments cooperate with said anchoring means such that the support member can extend vertically from the openable enclosure when said enclosure is open;

(d) an upper support frame attachable to an upper portion of said support member;

(e) a flexible sheet attachable to the upper support frame such that the flexible sheet can hang from the upper support frame thereby providing a partial enclosure such that one can obtain a measure of privacy, said flexible sheet being a curtain which can be drawn substantially around an individual to form said partial enclosure such that the image of the individual inside is not clearly visible to a person outside;

(f) a lower support frame, said flexible sheet being attached to said lower support frame, said lower support frame

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being attached to inside walls of said openable enclosure; and

(g) upper support means for supporting said upper support frame such that said upper support frame can support the flexible sheet when the sheet is attached to the upper support frame.

4,883,017

DEVELOPING DEVICE

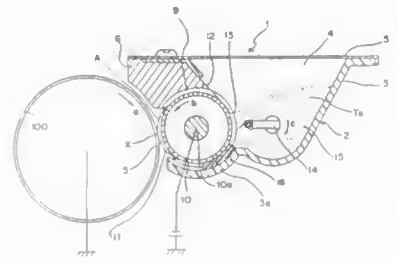
Enoguchi Yuji; Natsuhara Toshiya, and Yamamoto Masashi, all of Osaka, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Sep. 1, 1988, Ser. No. 239,224

Claims priority, application Japan, Sep. 4, 1987, 62-222587

Int. Cl.^{4} G03G *15/08*

U.S. Cl. 118—653 11 Claims



1. A developing device disposed adjacently to a rotatably arranged electrostatic latent image support member, which comprises:

a rotatably disposed developing roller confronting said electrostatic latent image support member;

a cylindrically formed flexible filmy member having a peripheral length being slightly longer than that of said developing roller and loosely mounted therearound;

first means for bringing said filmy member partly into close contact with said developing roller so as to protrude an extra peripheral length portion of said filmy member toward said developing roller so that said extra portion of an external peripheral surface of said filmy member may be brought into contact with said electrostatic latent image support member; and

second means for forming a thin layer of charged toner on the external surface of said filmy member brought into contact with said developing roller, dimensions and a physical property of said filmy member being satisfied with following equations:

$$0.05 \leqq E \cdot t^3 \leqq 10,$$

$$2.5 \leqq R \leqq 50;$$

wherein, E (kg/mm^2) is a modulus of longitudinal elasticity and t (mm) is a thickness and R (mm) is a radius.

4,883,018

LIQUID INK DEVELOPMENT SYSTEM

Oded Sagiv, Rehovot, Israel, assignor to Xerox Corporation, Stamford, Conn.

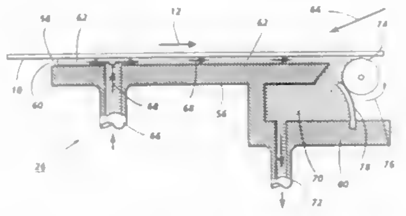
Filed Oct. 28, 1988, Ser. No. 263,941

Int. Cl.^{4} G03G *13/10*

U.S. Cl. 118—660 33 Claims

1. An apparatus for developing with a liquid developer material a latent image recorded on a generally planar member moving in a direction at least partially opposed to the direction of the gravitational force exerted thereon, including:

means, defining an extended development zone substantially parallel to the generally planar member, for developing the latent image recorded on the planar member, said developing means cooperating with the generally planar member to pump the liquid developer material in at least a partially upwardly direction from the lowermost region of the development zone to the uppermost region thereof to form a pressure barrier preventing the escape of liquid developer material from the lowermost region of the development zone; and



means for sealing the uppermost region of the development zone to prevent the escape of liquid developer material thereat.

4,883,019

IMAGE FORMING APPARATUS HAVING DEVELOPER CONTENT DETECTOR

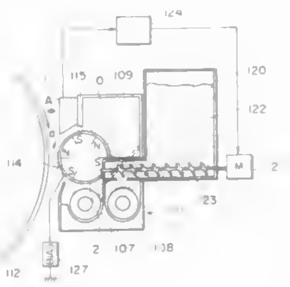
Takeshi Menjo, Tokyo; Masahiro Inoue, Yokohama, and Koji Amemiya, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 19, 1988, Ser. No. 145,815

Claims priority, application Japan, Jan. 19, 1987, 62-009432; Jan. 19, 1987, 62-009433; Jan. 19, 1987, 62-009435; Jan. 19, 1987, 62-009436

Int. Cl.^{4} G03G *15/08;* B05C *11/00*

U.S. Cl. 118—691 17 Claims



1. An image forming apparatus, comprising:

an image bearing member;

developing means for developing a latent image formed on said image bearing member, containing a two component developer containing toner and carrier and including a developer carrying member for carrying the developer toward said image bearing member;

a toner content detecting means including a reflecting member for receiving light and reflecting a quantity of light corresponding to a reference toner content, a light emitting element for applying light to the reflecting member and to the developer carrying member and a light receiving element for receiving the light reflected by the developer carried on said developer carrying member and the light reflected by the reflecting member to produce an electric signal in accordance with a quantity of light received thereby; and

toner content control means for controlling toner supply to said developing means in accordance with a signal produced by said toner content detecting means;

said toner content control means including:

means for storing a ratio of a reference toner content signal from the light receiving element corresponding to a quantity of light from the developer at an initial reference toner content state to a reference reflection density signal from the light receiving element corresponding to a quantity of light reflected by said reflecting member, as an initial reference ratio signal; and

toner supply control means for producing a ratio signal representative of a ratio of a toner content signal from the light receiving element corresponding to a quantity of light reflected by the developer upon toner content detection to a reflection density signal from said light receiving element corresponding to a quantity of light reflected by said reflecting member, and for comparing the ratio signals, and for controlling toner supply to said developing means on the basis of a result of the comparison.

4,883,020

APPARATUS OF METAL ORGANIC CHEMICAL VAPOR DEPOSITION FOR GROWING EPITAXIAL LAYER OF COMPOUND SEMICONDUCTOR

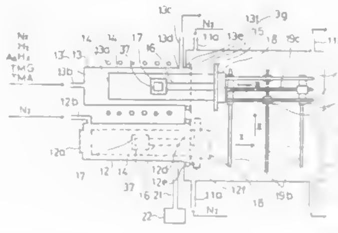
Kazumi Kasai, Atsugi; Hiromi Itoh, Kawasaki; Hitoshi Tanaka; Tatsuya Oh-hori, both of Sagamihara, and Junji Komeno, Fujisawa, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 887,339, Jul. 21, 1986, abandoned. This application Mar. 8, 1989, Ser. No. 320,922

Claims priority, application Japan, Jul. 19, 1985, 60-159849

Int. Cl.^{4} C23C *16/00*

U.S. Cl. 118—719 23 Claims



1. Apparatus of metal organic chemical vapor deposition for growing an epitaxial layer of compound semiconductor on a semiconductor wafer, comprising:

support means for supporting the wafer, including:

a susceptor receiving the wafer;

a connecting rod, having first and second ends, the first end being connected to said susceptor; and

a lid connected to the second end of said connecting rod;

a reaction chamber effecting said MOCVD process therein including:

a first gas inlet introducing gases for MOCVD processing into said reaction chamber; and

a first gas outlet draining said gases;

load lock chamber means for loading and unloading the wafer into and from said reaction chamber, respectively, said load lock chamber means including;

a second gas inlet allowing introduction of an inert gas into said load lock chamber means,

a second gas outlet allowing evacuation of said load lock chamber means;

an evacuation pump evacuating said load lock chamber means through said second gas outlet; and

a doorway through which said wafer is input or output, said doorway being vacuum-sealable; and

a transfer chamber provided between said reaction chamber and said load lock chamber means and including:

a third gas inlet allowing introduction of an inert gas into said transfer chamber;

a third gas outlet allowing drainage of the inert gas from said transfer chamber so that said transfer chamber is continuously replenished by the inert gas introduced through said third gas inlet and drained through said third gas outlet;

a first opening connecting said transfer chamber to said load lock chamber means, through which said wafer is input to or output from said transfer chamber and being vacuum-sealable by said lid;

a second opening connecting said transfer chamber to said reaction chamber, through which said wafer is input to or output from said reaction chamber and being vacuum-sealable; and

transfer means for transferring said supporting means from said load lock chamber into said reaction chamber and from said reaction chamber into said load lock chamber, said transfer chamber being fed and filled with an inert gas, preventing the invasion of foreign gas from the outside into said reaction chamber.

4,883,021

ABSORBENT COMPOSITION

Cyril L. Ducharme, Long Lake; Ralph C. Eickhof, Erskine; David A. Heider, St. Paul; Denny W. Neiberger, Minnetonka, all of Minn., and Fred Maass, Oak Park, Ill., assignors to Personal Pet Products Partnership, Minneapolis, Minn.

Continuation-in-part of Ser. No. 909,966, Sep. 22, 1986, Pat. No. 4,727,824. This application Feb. 19, 1988, Ser. No. 157,915

The portion of the term of this patent subsequent to Mar. 3, 2005, has been disclaimed.

Int. Cl.^{4} A01K *1/015*

U.S. Cl. 119—1 16 Claims

1. An absorbent composition comprising

(i) a major amount of a cellulosic component,

(ii) a minor amount of about 2–25% by weight of a binder based on the total weight of cellulosic material and binder, and

(iii) a nitrogenous compound absorber, said binder consisting essentially of a material selected from the group consisting of carbohydrate, protein and mixtures thereof; said cellulosic component comprising:

(a) from 50–100% by weight of a cellulosic hull material selected from the group consisting of cereal grain hulls, peanut hulls, soybean, rapeseed, sunflower and cottonseed hulls, and mixtures thereof and

(b) up to 50% by weight of plant pulp; said nitrogenous compound absorber being selected from the group consisting of polymerized cyclodextrin, cyclodextrin derivatives and polyacrylate compounds having a matrix system similar to cyclodextrin.

4,883,022

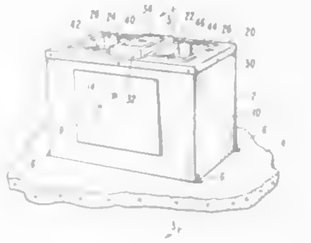
ANIMAL WATERER

B. A. Barker, 339 South Cedar, Monticello, Iowa 52310

Filed May 9, 1988, Ser. No. 192,417

Int. Cl.^{4} A01K *7/00*

U.S. Cl. 119—73 24 Claims



1. Apparatus for watering animals, the invention comprising

a container to hold water,

a cover overlying said container,

said cover having at least one polygonal basin depending downward therefrom,

said basin having at least one port in a wall thereof,

said basin being open at its intersection with said cover,

said basin communicating at its interior with water contained within said container,

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a float positioned within said basin,
said float being sufficiently buoyant to float upon water contained within said basin,
said float slideably engaging at least one guide member mounted to said basin,
said guide member being generally vertically disposed within said basin,
said float substantially covering the water positioned within said basin,

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4,883,023

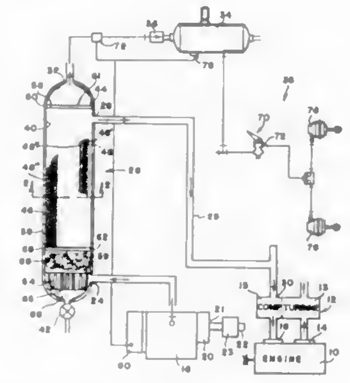
POLYMERIC MEMBRANE AIR SEPARATOR FOR A TURBOCHARGER AND BRAKE SYSTEM IN A VEHICLE

Peter Tsang, Union Lake; Seong Rhee, Northville; Michael Jacko, Southfield, all of Mich., and James Kubik, Avon Lake, Ohio, assignors to Allied-Signal Inc., Morristown, N.J.

Filed Dec. 14, 1988, Ser. No. 284,266

Int. Cl.⁴ F02D *19/00*

U.S. Cl. 123—25 A 15 Claims



1. In a vehicle having a turbocharger for supplying an engine with pressurized air and a storage reservoir for supplying a brake system with pressurized dry nitrogen enriched air through the operation of an air compressor, the improvement comprising:
a housing having a chamber with an inlet port connected to receive pressurized air from said air compressor, a first outlet port connected to said turbocharger and a second outlet port connected to said storage reservoir;
a polymeric fiber membrane located in said chamber, said fiber membrane having a bundle of tubular members, each tubular member having a first end and a second end; and
mounting means that engage said housing and the first and second ends of each tubular member in said bundle to define a sealed barrier between said inlet port and first outlet port and said first and second outlet ports, said pressurized air being presented to said inlet port and flowing through said tubular members from said first end toward said second end, said polymeric fiber membrane having an affinity for oxygen and water such that oxygen and water permeate through said polymeric membrane to create moist oxygen enriched pressurized air which flows from said first outlet port while dry nitrogen enriched pressurized air flows from said second end of said tubular members to said second outlet port for distribution to said storage reservoir, said moist oxygen enriched pressurized air being combined with the pressurized air from the turbocharger to enhance combustion of fuel in the engine, said dry nitrogen enriched pressurized air presented to said brake system reducing the possibility of corrosion of the components within the brake system.

4,883,024

WATER-COOLING SYSTEM FOR A WATER-COOLED HORIZONTAL CYLINDER ENGINE

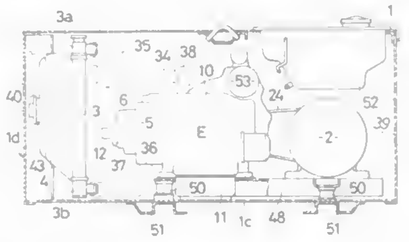
Ryoichi Ito; Koji Iwai; Tsuyoshi Nishida, and Junji Kimura, all of Sakaishi, Japan, assignors to Kubota Limited, Osaka, Japan

Filed Dec. 30, 1987, Ser. No. 139,753

Claims priority, application Japan, Jan. 23, 1987, 62-15001

Int. Cl.⁴ F01P *1/02*

U.S. Cl. 123—41.7 9 Claims



1. A water-cooling system for a water-cooled horizontal cylinder engine, comprising:
(a) a cylinder head arranged foreside of a cylinder block of a water-cooled horizontal cylinder engine;
(b) a radiator, having an inlet and an outlet, mounted in a space foreside of the cylinder head so as to face forward of said engine;
(c) a water jacket formed in the cylinder head and the cylinder block and having inlet and outlet ports;
(d) a hot water pipe connecting the outlet port of the water jacket to the water inlet of the radiator;
(e) a cold water pipe connecting the water outlet of the radiator to the inlet port of the water jacket;
(f) a radiator fan disposed against the radiator to flow air therethrough; and
(g) a cooling air passage through which cooling air is forced to pass at least from the space over the cylinder head to the radiator by operation of the radiator fan.

4,883,025

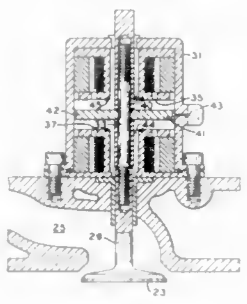
POTENTIAL-MAGNETIC ENERGY DRIVEN VALVE MECHANISM

William E. Richeson, Jr., Fort Wayne, Ind., assignor to Magnavox Government and Industrial Electronics Company, Fort Wayne, Ind.

Filed Feb. 8, 1988, Ser. No. 153,262

Int. Cl.⁴ F01L *9/06*

U.S. Cl. 123—90.11 3 Claims



1. An electronically controllable valve mechanism for use in an internal combustion engine comprising:
an engine valve having an elongated valve stem;
motive means comprising a housing, a piston coupled to the valve and air compressed by the piston within the housing for causing the valves to move in the direction of stem elongation between valve-open and valve-closed positions;
magnetic latching means including said piston for holding the valve in each of the valve-open and valve-closed positions; and
means for releasing the magnetic latching means allowing the motive means to move the valve.

4,883,026

MEANS FOR ADJUSTING THE TIMING OF A VALVE

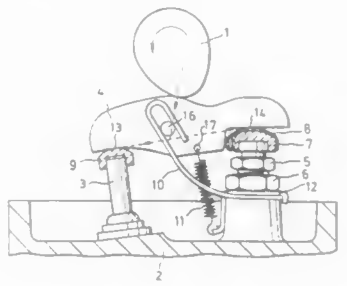
Wilfred P. Mansfield, late of Eastleigh; Jill Mansfield, Poole; John R. Mansfield, Kingswood, and Jeremy H. Grice, Southhampton, all of United Kingdom, assignors to British Internal Combustion Engine Research Institute, Ltd., United Kingdom

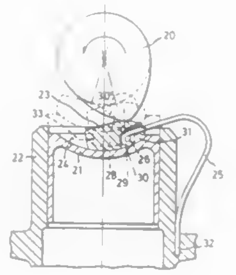
Filed Apr. 6, 1988, Ser. No. 178,150

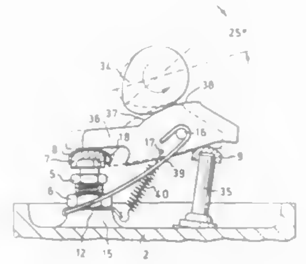
Claims priority, application United Kingdom, Apr. 7, 1987, 8708210; Jul. 17, 1987, 8716862

Int. Cl.⁴ F01L *1/18*

U.S. Cl. 123—90.16 19 Claims







1. Apparatus for adjusting the timing of a valve mechanism, said apparatus comprising:
a cam rotatable about an axis of rotation;
a cam follower arranged to actuate a valve mechanism in response to the rotation of said cam and moveable in translation relative to said axis of rotation of said cam and in lateral translation relative to the direction of actuation of said valve mechanism to vary the extent of actuation, said cam follower having a cam following surface engaged by said cam and a valve actuation surface engaging said valve mechanism, said cam following and valve actuation surfaces providing different extents of actuation, of the valve mechanism for a given cam position, for different translational positions of said cam follower and wherein said cam follower surface is shaped so that for a part of the cycle of rotation of said cam, the force generated by said cam on said cam follower urges said cam follower to move in said lateral translation relative to the direction of actuation of said valve mechanism.

4,883,027

VALVE OPERATING SYSTEM FOR INTERNAL COMBUSTION ENGINES

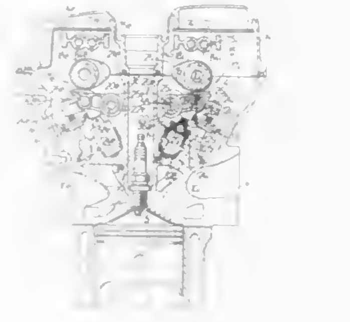
Toshihiro Oikawa; Tsuneo Tanai; Noriyuki Yamada; Tsutomu Saka, and Toshiki Kobayashi, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

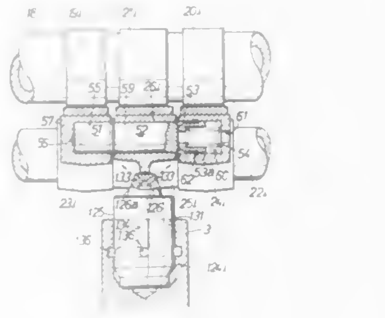
Filed Nov. 23, 1988, Ser. No. 276,403

Claims priority, application Japan, Nov. 25, 1987, 62-178966; Oct. 11, 1988, 63-132442; Oct. 11, 1988, 63-132443; Nov. 7, 1988, 63-145108

Int. Cl.⁴ F01L *1/34*; F01M *9/10*

U.S. Cl. 123—90.16 16 Claims





1. A valve operating system for internal combustion engines, comprising a drive cam follower operatively connected to an engine valve, a free cam follower capable of operation independent of said drive cam follower, said cam followers being adjacently disposed for operation in mutually different modes in response to rotation of a cam shaft, a connection changeover mechanism provided between said cam followers and capable of changing-over connection and disconnection between the followers, and resilient biasing means provided between said free cam follower and an engine body for resiliently urging said free cam follower toward said cam shaft, wherein said resilient biasing means comprises an urging piston slidably received in the engine body for abutment against the free cam follower, and a spring interposed between the urging piston and the engine body to resiliently bias the urging piston in a direction to abut against the free cam follower, the urging piston being provided at an end of the free cam follower in

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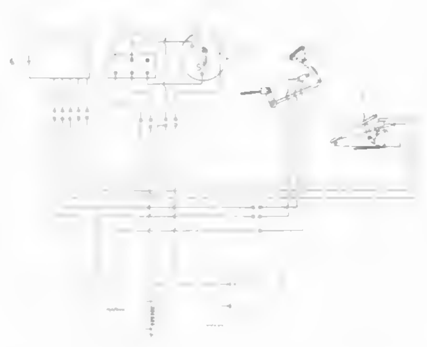
close proximity to the pivot end thereof, with an abutment having a smaller diameter to abut against the free cam follower.

4,883,028

FOOT CONTROLLING ENGINE START, STOP AND BRAKE SYSTEM

Gerald P. Wu, Hsiochu, Taiwan, assignor to Wu's Agriculture Machinery Mfg. Co., Ltd., Hsinchu, Taiwan, Taiwan
Filed Apr. 5, 1988, Ser. No. 177,996
Int. Cl.^{4} F02N *11/08*
U.S. Cl. 123—179 B 2 Claims



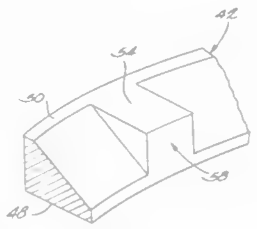
1. A brake pedal activated engine controlling means comprising:
- a control circuit associated with an ignition switch;
- a starter motor;
- a brake;
- an accelerator;
- and a generator for controlling the automatic stopping of said starter motor by feeding back the output voltage of said generator, said control circuit comprising an automatic and manual switch for automatically or manually controlling said starter motor and said engine;
- a regulator for providing a regulated voltage by means of an IC1;
- a trigger having an IC2 for effecting discharge-triggering by means of a first transistor and rendering an IC3 providing a first desirable voltage to control activation of said starter motor and, in turn, said engine, so that said generator outputs a second desirable voltage to said IC2 to make a second transistor non-conductive and therefore said starter motor cannot be activated by pushing said accelerator when said engine is in operation;
- a timer for automatically stopping said starter motor within 3 seconds from triggering;
- a feedback controller having a plurality of ICs for stopping said starter motor when said engine is shown by said second voltage picked up from said generator to be running; and
- a stop circuit for grounding a stop wire, said stop circuit being activated by the application of pressure on said brake pedal so as to stop said engine and cut off power to said ICs.

4,883,029

PISTON AND PISTON RING CONSTRUCTION

John H. Winston, Menomonee Falls, Wis., assignor to Outboard Marine Corporation, Waukegan, Ill.
Filed Apr. 7, 1987, Ser. No. 35,596
Int. Cl.^{4} F16J *9/20, 9/24;* F02F *5/00*
U.S. Cl. 123—193 P 10 Claims

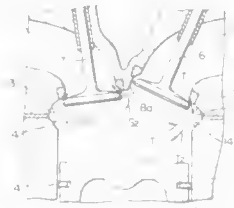
5. A piston assembly comprising a piston reciprocally movable along an axis and including a generally cylindrical outer surface having therein a circumferentially extending groove, said groove being partially defined by a surface extending transversely to said axis and having therein a recess extending axially of said piston, and a piston ring located in said groove and including a first arcuate segment having upper and lower radially extending surfaces which radially outwardly diverge and having an inner periphery with an axial thickness, and a second arcuate segment connected to said first segment, extending into said recess and having an inner periphery with an axial thickness, said axial thickness of said second segment being greater than said axial thickness of said first segment.



4,883,030

COMBUSTION CHAMBER OF A TWO-STROKE ENGINE

Toshio Tanahashi; Masanobu Kanamaru; Toshio Itoh, and Kazuhiro Itoh, all of Susono, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Japan
Filed Nov. 4, 1988, Ser. No. 267,272
Claims priority, application Japan, Nov. 26, 1987, 62-295981; Nov. 26, 1987, 62-295982
Int. Cl.^{4} F02B *19/04*
U.S. Cl. 123—193 CH 19 Claims



1. A two-stroke engine comprising:
- a cylinder block having therein a cylinder bore having an inner wall with a top portion and a lower portion;
- a cylinder head having an inner wall;
- a piston reciprocally movable in said cylinder bore, the inner wall of said cylinder head and a top face of said piston defining a combustion chamber therebetween;
- at least one intake valve arranged on the inner wall of said cylinder head;
- at least one exhaust valve arranged on the inner wall of said cylinder head;
- the inner wall of said cylinder head having a peripheral cut away portion which extends radially beyond an extension of the lower portion of the inner wall of said cylinder bore at a position at least around said intake valve, the top portion of the inner wall of said cylinder having a peripheral cut away portion radially extending beyond the extension of the lower portion of the inner wall of said cylinder bore at a position at least around said intake valve; and
- masking means arranged between said intake valve and said exhaust valve to mask a valve opening formed between a valve seat and a peripheral portion of said intake valve, which is located on said exhaust valve side, for the entire time for which said intake valve is open.

4,883,031

INTERNAL COMBUSTION ENGINE

Herbert Ampferer, Sachsenheim, and Klaus Groeger, Hemmingen, both of Fed. Rep. of Germany, assignors to Dr. Ing. h.c.F. Porsche AG, Weissach, Fed. Rep. of Germany
Filed Aug. 9, 1988, Ser. No. 230,019
Claims priority, application Fed. Rep. of Germany, Aug. 25, 1987, 3728268
Int. Cl.^{4} F02B *77/00*
U.S. Cl. 123—195 C 25 Claims

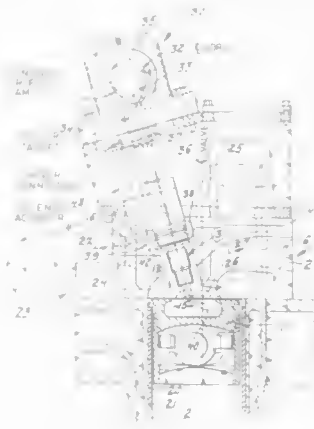
1. An internal combustion engine comprising cylinder means and a crankshaft rotatably supported in a crankcase which adjacent an end face of the crankcase is constructed for the drive of at least one of auxiliary aggregates and endless elements housed in an accessory housing secured at the end face of the crankcase, cover means at least partly covering the at least one of auxiliary aggregates and endless members, said cover means extending at least over a partial area of the end face of the crankcase and being detachable, the cover means being a sheet metal part including at least two relatively thin-walled layers which contact one another and having a pot-shaped cross section, said cover means being secured at the end face of the crankcase by means of a circumferential edge flange and by means of bolts, and the cover means being supported with a section of a convexly curved base wall of the cover means at the housing by a sealing member.

4,883,032

IN-CYLINDER CONTROL OF PARTICULATES AND NITRIC OXIDE FOR DIESEL ENGINE

Charles E. Hunter, Belleville, and Harry A. Cikanek, Northville, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.
Filed Jan. 23, 1989, Ser. No. 299,853
Int. Cl.^{4} F02B *3/00*
U.S. Cl. 123—276 12 Claims

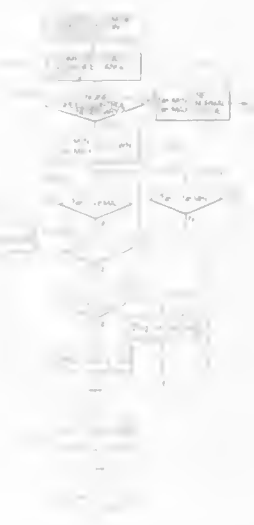
1. A method of providing simultaneous and concurrent in-cylinder control of the formation of particulates and nitric oxide during the combustion cycle of direct-injected diesel fuel and pressure charged air in a combustion chamber of a heavy duty diesel engine, the combustion chamber being (i) defined in part by a piston crown separated by a supply of lubricating oil by piston rings and (ii) employing accepted advanced combustion techniques for introducing, distributing and compressing said fuel and air comprising the steps of:
- (a) injecting said diesel fuel at a pressure equal to or greater than 16×10^3 psi through injector ports having a diameter of less than 0.22 mm;
- (b) retarding the start of fuel injection from TDC by 2°-5°, and
- (c) limiting ingress of lubricating oil into said combustion chamber by increasing the piston ring to cylinder bore concentricity through the use of noncompressed cylinder sleeves defining said cylinder bore



4,883,033

IGNITION TIMING CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINES

Katsuharu Hosoe; Teruyoshi Itoh, both of Kariya; Ryosuke Tachi, Aichi, and Takao Nojiri, Chiryu, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan
Filed May 3, 1988, Ser. No. 189,824
Claims priority, application Japan, May 13, 1987, 62-116432; May 28, 1987, 62-132683
Int. Cl.^{4} F02P *5/145*
U.S. Cl. 123—335 17 Claims



1. An ignition timing control system for an internal combustion engine for controlling ignition timing electronically in accordance with operating conditions of the internal combustion engines, comprising:
- means for stopping an ignition operation;
- means for retarding an ignition timing; and
- engine speed-responsive control means for controlling said ignition stopping means and said ignition retarding means, such that (a) said ignition stopping means stops ignitions successively as many times as a number of cylinders in said engine, and (b) then said ignition retarding means retards the ignition timing successively at least as many times as said number of cylinders when an engine speed is in a set range.

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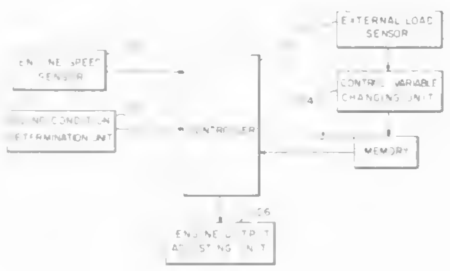
4,883,034
ENGINE IDLING SPEED CONTROL SYSTEM

Seiji Yashiki, Hiroshima; Hiroshi Hirano, Hatsukaichi, and Kazutomo Sasaki, Hiroshima, all of Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan
Filed Jul. 29, 1988, Ser. No. 226,024
Claims priority, application Japan, Jul. 31, 1987, 62-192438
Int. Cl.⁴ F02D *9/02, 41/16*
U.S. Cl. 123—339 11 Claims


EXTERNAL LOAD SENSOR
ENGINE SPEED SENSOR
CONTROL VARIABLE CHANGING UNIT
4
ENGINE CONDITION DETERMINATION UNIT
CONTROLLER
MEMORY
6
ENGINE OUTPUT ADJUSTING UNIT

1. A system for controlling idling speed of an internal combustion engine, comprising;

speed sensing means for sensing rotational speed of the engine;

determination means for determining whether the engine is in an idling state;

output adjusting means for adjusting engine output when the engine is determined to be in the idling state by said determination means;

memory means for storing a control variable of said output adjusting means in the form of a characteristic in which engine output rises approximately in proportion to a difference between a predetermined target idling speed and an actual idling speed with engine speed serving as a parameter;

control means responsive to outputs from said determination means and said speed sensing means for obtaining from said memory means a control variable corresponding to engine speed at idling, and for controlling said output adjusting means on the basis of said control variable;

load detecting means for detecting whether an external load is connected with the engine in operational relation; and

control variable characteristic changing means for changing characteristic of said control variable from said memory means responsive to output from said load detecting means.

4,883,035
METHOD AND DEVICE FOR CONTROLLING THE OPERATION OF AN ENGINE FOR A VEHICLE

Setsuhiro Shimomura, and Yukinobu Nishimura, both of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Japan
PCT No. PCT/JP88/00133, § 371 Date Oct. 11, 1988, § 102(e) Date Oct. 11, 1988, PCT Pub. No. WO88/06235, PCT Pub. Date Aug. 25, 1988
PCT Filed Feb. 10, 1988, Ser. No. 265,803
Claims priority, application Japan, Feb. 12, 1987, 62-30019
Int. Cl.⁴ F02D *9/08, 41/14*
U.S. Cl. 123—361 13 Claims

1. An engine control method for a vehicle in which a throttle valve in an engine intake passage is operatively associated with an accelerator pedal such that the opening degree of said throttle valve is changed by operation of said accelerator pedal so as to control the amount of intake air sucked into an engine, said method comprising:

sensing the amount of operation of said accelerator pedal imparted by an operator;

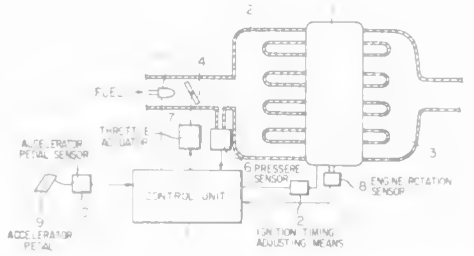
sensing the load condition of said engine;

sensing the number of revolutions per minute of said engine;

setting a target degree of opening of said throttle valve based on at least one of the sensed amount of accelerator pedal operation, the sensed engine load condition and the sensed number of revolutions per minute of said engine;

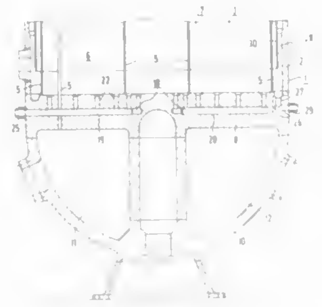
sensing intake strokes of said engine; and

controlling said throttle valve in such a manner that, when said accelerator pedal is operated by the operator, said throttle valve is operated to move to the target degree of opening in synchronization with the intake stroke of said engine as sensed.



4,883,036
STEAM GENERATOR

Zvonimir Sterk, Erlangen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany
Filed Nov. 9, 1988, Ser. No. 269,236
Claims priority, application Fed. Rep. of Germany, Nov. 11, 1987, 3738347
Int. Cl.⁴ F22B *37/48*
U.S. Cl. 122—383 6 Claims



1. Steam generator, comprising a vertically elongated housing, a horizontal tube plate in said housing, and a U-shaped tube bundle in said housing, said tube bundle having mutually spaced apart legs defining an intermediate space therebetween and tube ends disposed in said tube plate, said tube plate having a horizontal blow-down line formed therein over the width of said tube bundle, and said tube plate having vertical bores formed therein leading from said blow-down line into said intermediate space.

4,883,037
THROTTLE CONTROL SYSTEM

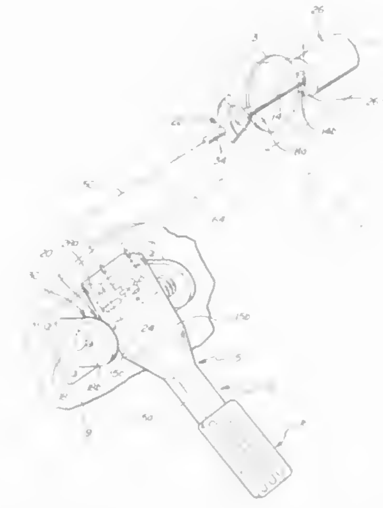
Brian D. Mabee, Warren, and Keith V. Leigh-Monstevens, Troy, both of Mich., assignors to Automotive Products plc, Warwickshire, England
Continuation-in-part of Ser. No. 156,850, Feb. 17, 1988. This application Jul. 5, 1988, Ser. No. 214,751
Int. Cl.⁴ F02D *41/10*
U.S. Cl. 123—399 39 Claims

1. In a motor vehicle throttle control system of the type including a throttle valve member position sensing means operative to generate a first electrical signal representing the position of the throttle valve member, accelerator member

position sensing means operative to generate a second electrical signal representing the position of the accelerator member, control means receiving the first and second signals and operative to generate a control signal based on a comparison of the first and second signals, and actuator means receiving the control signal and operative to position the throttle valve control member in proportion to the control signal, the improvement wherein:

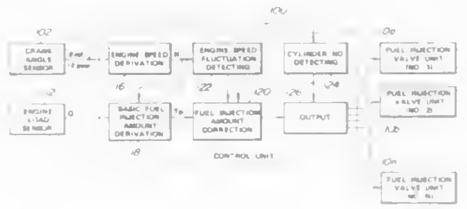
(A) at least one of said position sensing means comprises a sensor device and a target device; and

(B) said sensor device and said target device are moved relative to each other in response to movement of the associated control member.



4,883,038
FUEL SUPPLY CONTROL SYSTEM FOR MULTI-CYLINDER INTERNAL COMBUSTION ENGINE WITH FEATURE OF SUPPRESSION OF OUTPUT FLUCTUATION BETWEEN INDIVIDUAL ENGINE CYLINDERS

Shinpei Nakaniwa, Isezaki, Japan, assignor to Japan Electronic Control Systems Co., Ltd., Isezaki, Japan
Filed Nov. 2, 1987, Ser. No. 115,371
Claims priority, application Japan, Oct. 31, 1986, 61-258488; Dec. 23, 1986, 61-305350; Aug. 12, 1987, 62-200047
Int. Cl.⁴ F02D *41/26*
U.S. Cl. 123—436 34 Claims


100
102
CRANK ANGLE SENSOR
ENGINE SPEED DERIVATION
ENGINE SPEED FLUCTUATION DETECTING
CYLINDER NO DETECTING
10a
FUEL INJECTION VALVE UNIT (NO. 1)
16
22
20
26
24
FUEL INJECTION VALVE UNIT (NO. 2)
ENGINE LOAD SENSOR
BASIC FUEL INJECTION AMOUNT DERIVATION
FUEL INJECTION AMOUNT CORRECTION
OUTPUT
18
CONTROL UNIT
10n
FUEL INJECTION VALVE UNIT

10. A fuel supply control system for an internal combustion engine which has a plurality of engine cylinders, comprising:

first means for delivering a controlled amount of fuel for respective engine cylinders at mutually independent and controlled timing;

second means for monitoring a preselected engine driving condition and producing an engine driving condition indicative signal;

third means for deriving a fuel delivery amount for respective engine cylinders on the basis of the value of said engine driving condition indicative signal;

fourth means for monitoring engine speed variation for detecting fluctuation of combustioning conditions between respective engine cylinders;

fifth means, responsive to the fluctuation of the combustioning condition in excess of a predetermined magnitude, to derive a correction value for correcting said fuel delivery amount based thereon; and

sixth means for controlling said first means at said controlled timing for delivering the fuel in the controlled amount corresponding to the fuel delivery amount corrected by said fifth means.

4,883,039
FUEL SUPPLY CONTROL METHOD FOR INTERNAL COMBUSTION ENGINES

Kazushige Toshimitsu; Masayuki Ueno, and Hisashi Igarashi, all of Wako, Japan, assignors to Hooda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Division of Ser. No. 130,635, Dec. 9, 1987, Pat. No. 4,825,834. This application Sep. 30, 1988, Ser. No. 252,378
Claims priority, application Japan, Dec. 10, 1986, 61-294283; Dec. 10, 1986, 61-294286; Dec. 10, 1986, 61-294287
Int. Cl.⁴ F02M *69/00*
U.S. Cl. 123—463 6 Claims

1. A method of controlling the supply of fuel to an internal combustion engine having a plurality of cylinders, an intake passage having an intake manifold connected to said cylinders, a throttle valve arranged in said intake passage at a location upstream of said intake manifold, at least one first fuel injection valve arranged in said intake passage at a location upstream of said intake manifold and downstream of said throttle valve, at least one second fuel injection valve arranged in said intake passage at a location upstream of said throttle valve, and pressure regulating means for regulating the pressure of fuel supplied to both said first and second fuel injection valves, wherein said first and second fuel injection valves are selectively operated to supply fuel to said cylinders in dependence on operating conditions of said engine, the method comprising the steps of:

(a) detecting pressure within said intake passage at a location downstream of said throttle valve;

(b) regulating the pressure of fuel supplied to both said first and second fuel injection valves by means of said pressure regulating means in response to the detected pressure within said intake passage in a manner such that said first fuel injection valve has a discharge pressure thereof maintained constant and said second fuel injection valve has a discharge pressure thereof variable with the pressure within said intake passage;

(c) detecting whether said engine is operating in a predetermined low load condition;

(d) operating said first fuel injection valve to supply fuel to said cylinders when it is detected that said engine is operating in said predetermined low load condition; and

(e) operating at least said second fuel injection valve for a fuel injection period which is determined based at least in

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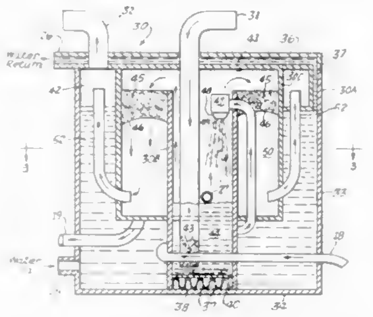
part on a value of said discharge pressure of said second fuel injection valve determined from the detected pressure within said intake passage, to supply fuel to said cylinders when it is detected that said engine is operating in an operating condition other than said predetermined low load condition.

4,883,040

FUEL VAPORIZER

William C. Rocky, 3242 Lennard St., Ft. Pierce, Fla. 34984
Filed Feb. 5, 1988, Ser. No. 152,818
Int. Cl.⁴ F02M *31/00, 31/08, 31/10*
U.S. Cl. 123—557 9 Claims



1. A fuel system for an internal combustion engine, comprising:

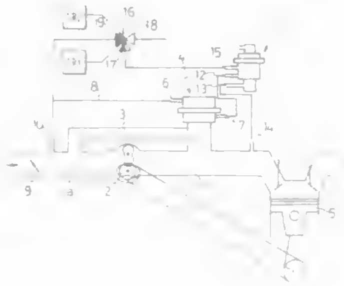
in combination: fuel supply means connected to a fuel source; selector valve connected to said fuel supply means for directing fuel into one of two possible flow paths; vaporizer means selectively connected to one of said two possible flow paths; carburetor means selectively connected to the other of said two possible flow paths; first and second heating means operatively connected to said vaporizer means for imparing heat to fuel in said vaporizer means and vapor collecting means positioned within said vaporizer means whereby said liquid fuel is converted into vapors and conduit means connecting said vapor collecting means to said carburetor means permits said internal combustion engine to operate on fuel vapors when said selector valve means directs said liquid fuel to said vaporizer means;

wherein said vaporizer means comprises a first cylindrical member sealed at its top and bottom; a second cylindrical member centrally positioned relative to said first cylindrical member and a third cylindrical member concentrically positioned between said first and second cylindrical members; said second cylindrical member being open at its uppermost end and closed at its bottom end, said third cylindrical member being closed at its upper and lower ends, a cylindrical chamber formed between said second and third cylindrical members; said first heating means in fluid contact with each of said first; second and third cylindrical members, fuel spray head means positioned in said second cylindrical member for directing fuel toward the bottom of of said second cylindrical member; said second heating means comprising a downwardly directed tube having a perforated end portion for conducting and releasing exhaust gases into said second cylindrical member below the level of fuel contained therein; said second cylindrical memer forming a first vapor generating chamber for fuel vapors and vapor collecting means in said vaporizer means.

4,883,041

SUPERCHARGING PRESSURE CONTROL DEVICE

Masahiro Mochizuki, Chiryu, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan
Filed Jul. 26, 1988, Ser. No. 224,327
Claims priority, application Japan, Jul. 31, 1987, 62-191917
Int. Cl.⁴ F02D *23/00*
U.S. Cl. 123—564 3 Claims



1. A supercharging pressure control apparatus for an internal combustion engine comprising:

an intake passage communicating with said engine,

a supercharger disposed in said intake passage,

a throttle valve disposed in said intake passage upstream of said supercharger,

a by-pass passage for by-passing said supercharger, said by-pass passage having an entrance communicating with said intake passage at a location between said throttle valve and said supercharger, and an exit communicating with said intake passage downstream of said supercharger,

supercharging pressure control means disposed in said by-pass passage for controlling the opening and closing thereof, and

main control means operably connected to said supercharging pressure control means for controlling said supercharging pressure control means, said main control means including:

sensing means for sensing engine speed and a degree of opening of said throttle valve, and

actuating means operably interconnecting said sensing means and said supercharging pressure control means to:

selectively close and open said by-pass passage in response to the pressure difference between the pressure in said intake passage upstream of said supercharger on the one hand, and on the other hand, either atmospheric pressure or the pressure in said intake passage downstream of said supercharger, when the engine speed is below a first predetermined value or when the degree of opening of said throttle valve is below a second predetermined value, and

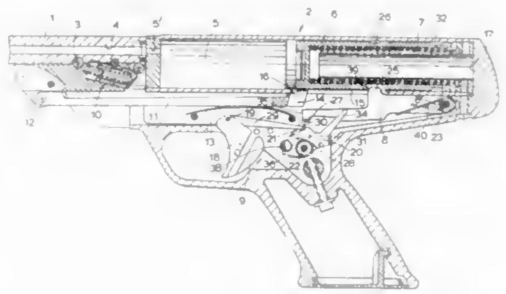
open said by-pass passage in accordance with engine speed when the engine speed is above said first predetermined value and when the degree of opening of said throttle valve is above said second predetermined value.

4,883,042

AIR GUNS

Roger D. Wackrow, Redditch, England, assignor to BSA Guns (UK) Limited, United Kingdom
Filed Mar. 10, 1988, Ser. No. 166,392
Claims priority, application United Kingdom, Mar. 13, 1987, 8705994
Int. Cl.⁴ F41B *11/00*
U.S. Cl. 124—67 7 Claims

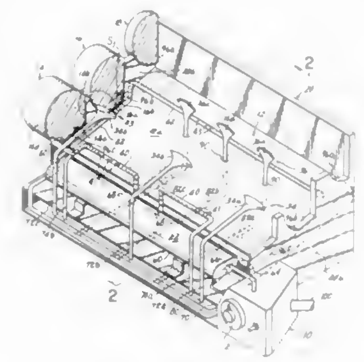
1. An air gun having a barrel and comprising a piston which is engaged by a cocking bar during a cocking stroke to force the piston back within a cylinder having a bore and a main spring acting against the piston therein, the piston being held against the compressed main spring by a sear and a trigger mechanism retaining the sear in engagement with the piston until the gun is fired, upon which the sear becomes displaced by the piston permitting the piston to fly forwards in the cylinder and so compressing air within the cylinder to expel a pellet from the barrel of the gun, the piston having at least first and second axially spaced positions in the bore at which it can be held in the bore by the sear and in which positions the spring is at least partially compressed, the gun including interengeable means for enabling the cocking bar to engage the piston so as to move the piston during a first cocking stroke in a first stage along the cylinder to the first position at which it is retained by the s ar while the cocking bar is returned to enable the cocking bar to re-engage the piston so as to enable a second cocking stroke to move the piston in a second stage from the first position to the second position, the sear comprising at least one latching stepped portion which is engageable in turn with at least a pair of axially spaced, forward and rearward, complementary recesses provided on the piston, and the piston forming a rearwardly rising ramp at a location between said forward and rearward recesses and adjacent to the rearward recess, whereby when the gun is fired from a cocked condition in which the piston is held at least by the engagement between the latching portion and the forward recess the latching portion is displaced from its engagement with the forward recess and slidingly engages the piston, sliding up the ramp as the piston flies past and, being so deflected outwardly past the rearward recess.



4,883,043

GAS-FIRED ARTIFICIAL LOG FIREPLACE ASSEMBLY

Ian Thow, Merseyside, England, and Ajay K. Gupta, Cincinnati, Ohio, assignors to Yale and Valor p.l.c., London, England
Filed Dec. 27, 1988, Ser. No. 290,294
Int. Cl.⁴ F24C *3/00*
U.S. Cl. 126—512 19 Claims



1. A fireplace assembly for a fireplace having an opening, comprising:

a support structure;

a base plate of a refractory material that glows visibly above approximately 1470° F., said base plate having a generally planar upper surface and being supported by said support structure;

a front artificial log of refractory material having front, rear, top and bottom surfaces, said front log being supported by said support structure such that said bottom surface of said front log is spaced above said base plate to define a first elongated generally horizontal chamber section;

a second artificial log of refractory material having front, rear, top and bottom surfaces, said second log being supported by said support structure such that said bottom surface of said second log is proximal said base plate and said front surface of said second log is spaced from said rear surface of said front log to define a second elongated generally vertical chamber section, said first and second chamber sections collectively defining an elongated heat chamber having an angled cross-section;

said logs disposed generally horizontally and parallel to each other and to the plane of the opening of the fireplace; and

gas burner means supported by said support structure extending along and in front of said front log for directing blue flame jets into said first elongated chamber section toward said second log for heating to a visible glow said bottom and rear surfaces of said front log, said front surface of said second log, and said base plate, whereby substantial heat is radiated to the surroundings and an appearance of glowing logs and underlying embers is provided to enhance the aesthetics of the artificial log fireplace.

4,883,044

FIREPLACE ASSEMBLY

Thomas A. Levesque, 37 Riverview Ave., Mashpee, Mass. 02649
Filed Oct. 28, 1988, Ser. No. 263,866
Int. Cl.⁴ F24B *5/00*
U.S. Cl. 126—515 3 Claims

1. A fireplace assembly, for installation as a freestanding unit or within a standard fireplace requiring no blowers, doors or catalytic converters, comprising:

means defining a primary chamber for burning combustible products;

said chamber having an angled grate located within for supporting said combustible products;

side walls and a rear wall partially surrounding said grate;

said walls defining a substantially vertical combustion enclosure having a center portion above said angled grate and adjacent to said rear wall of said enclosure;

an upper portion of said chamber for directing rising smoke and gasses;

secondary combustion means located behind said rear wall for inducing a secondary source of combustion;

damper means above said primary chamber means for forcing forward horizontal motion for said rising smoke and gasses;

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a collection chamber;
said collection chamber being located above said primary chamber and said secondary combustion means for receiving said rising smoke and gasses from said primary chamber and said gasses from said secondary combustion means to initiate tertiary combustion;
a base manifold supply means;
said base manifold supply means provides outside air to said angle grates;
said base supply manifold further provides outside air around the outside perimeter of said primary combustion chamber and into said secondary combustion means;
a rear air channel;
said rear air channel being located behind said secondary combustion means for superheating outside air and connected to duct means having air openings at the upper front of the combustion chamber
said rear channel receives outside air from said base supply manifold.

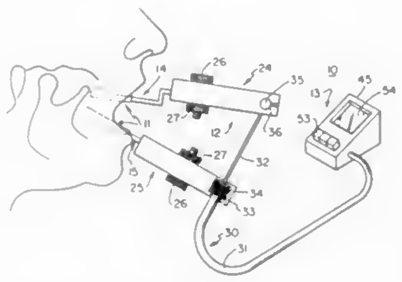
4,883,045
METHOD FOR CONTROLLING GROWTH OF TISSUE CELLS

Erwin Theisz, 127 Randolph Rd., White Plains, N.Y. 10607
Continuation of Ser. No. 780,414, Sep. 26, 1985, abandoned. This application Nov. 19, 1987, Ser. No. 122,627
Int. Cl.⁴ A61H *1/00*
U.S. Cl. 128—24 A 4 Claims

1. A method for inhibiting the growth of tumorous tissue in a mammal, comprising:
(a) exposing the mammal to an atmosphere of increased negative ion concentration of about 10,000 ions/cm^3 for a treatment period sufficient for causing the cell potential to be restored to healthy levels and
(b) simultaneously exposing the afflicted tissue to ultrasonic vibrations at a frequency of about 1,000 KHz for at least a portion of the treatment period, for about 25 minutes per day during said treatment period.

4,883,046
INVOLUNTARY OSCILLATOR SYSTEM FOR THE MANDIBLE

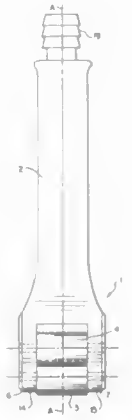
Mark G. Fontenot, Lafayette, La., assignor to Vitek, Inc., Houston, Tex.
Filed Apr. 12, 1988, Ser. No. 180,464
Int. Cl.⁴ A61H *1/02*
U.S. Cl. 128—25 R 18 Claims



1. A mandible oscillator system, comprising:
an appliance having upper and lower intraoral portions for respectively mounting onto the upper and lower arches of a user, said upper and lower intraoral portions having, respectively, upper and lower extraoral extensions which coincide approximately with the midlines of said upper and lower arches;
upper and lower motor arms respectively releasably secured to said upper and lower extraoral extensions;
extraoral oscillating means including:
(a) motor means, including a linear stepper motor coupled between the outer ends of said motor arms for forcibly imparting oscillating motion to the outer end of said lower motor arm relative to the upper end of said upper motor arm, between predetermined start and end positions, within a predetermined angular range, and at a predetermined frequency and average velocity, whereby during one-half cycle of oscillation said lower arch is forced to move away from said upper arch, and during the other one-half cycle said lower arch is forced to move toward said upper arch, thereby forcefully imposing on said user rhythmic mandibular movements;
(b) programmable digital computer driver means for driving said motor; and
(c) electronic control means coupled to said driver means for adjusting said frequency, angular range, and average velocity of said oscillating motion.

4,883,047
APPARATUS FOR MASSAGING THE HUMAN BODY

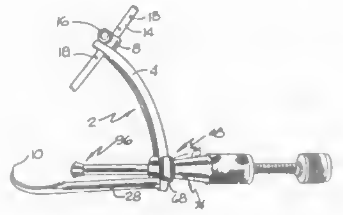
Louis P. Guitay, 1 avenue Victor Hugo, 26000 Valence, France
Filed Mar. 16, 1988, Ser. No. 168,972
Claims priority, application France, Mar. 17, 1987, 87 03865
Int. Cl.⁴ A61H *1/00*
U.S. Cl. 128—38 4 Claims



1. Massaging apparatus of the type in which a pair of parallel rollers of a predetermined diameter are mounted for free rotation in a manually operated housing, the latter being connected to means for creating a vacuum above the rollers wherein the housing includes two parallel walls at a distal end which support the pair of rollers therebetween, the rollers being mounted at a fixed separation therebetween, the housing also having a roof which, with the parallel walls and the rollers, defines a chamber whose height corresponds substantially to the diameter of the rollers, and in which a conduit connects said vacuum creating means to said chamber; comprising the improvement wherein said rollers project slightly beyond the parallel walls and the rollers have a tangent that lies substantially along the roof of said chamber but with a small clearance on the order of a few hundredths of a millimeter being provided between the periphery of two rollers and the roof of the chamber to permit rotation of the rollers, said clearance alone constituting the only vacuum sealing means between the roof of the chamber and the periphery of the rollers, and said vacuum conduit flares out at the roof of the chamber to spread over substantially the entire space between the rollers, wherein there is a fixed radial spacing between the periphery of the rollers that is substantially equal to the diameter of the rollers.

4,883,048
APPARATUS AND METHOD FOR USE IN PERFORMING A SURGICAL OPERATION

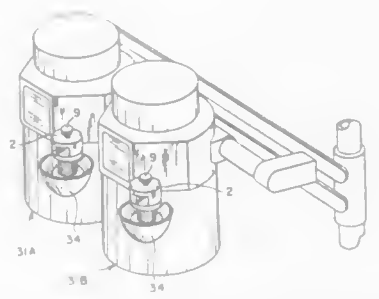
Mark L. Purnell, 323 Free Silver Dr.; Robert R. Oden, P. O. Box 660, both of Aspen, Colo. 81611; William L. McCune, 1739 West 35th, Denver, Colo. 80211, and Michael E. Berkeley, 1695 Silver King Dr., Aspen, Colo. 81611
Division of Ser. No. 915,122, Oct. 3, 1986, Pat. No. 4,781,182. This application Aug. 15, 1988, Ser. No. 232,102
Int. Cl.⁴ A61F *5/04*
U.S. Cl. 128—92 VD 8 Claims



1. A method for use in the reconstruction of a cruciate ligament comprising:
preparing a knee for an arthroscopic operation;
providing an arcuate support means having a longitudinal axis comprising an arc of a circle having a center;
attaching a targeting means to said arcuate support means so that said targeting means has a target area at said center of said circle;
attaching a clamping means to said arcuate support means for cooperation with said target means to hold said target area at a desired location;
arthroscopically placing said target area at a position relative to the anatomic center of the original cruciate ligament on the tibia;
clamping said targeting means on said tibia so that said target area remains in said position;
providing a guide means on said arcuate support means, said guide means having a passageway extending therethrough and having a longitudinal axis coinciding with a ray from said center of circle;
inserting a kirschner wire through said guide means and through said tibia until said kirschner wire hits said target area;
removing said arcuate support means, said targeting means, said clamping means and said guide means;
over-reaming said kirschner wire to form a passageway in said tibia;
attaching another targeting means having a target area to said clamping means;
arthroscopically inserting a suture into said knee;
tying one end of said suture to said target area of said another targeting means;
arthroscopically placing said target area of said another targeting means at a position relative to the anatomic center of the original cruciate ligament on the femur;
clamping said another targeting means on said femur so that its target area remains in said position;
arthroscopically moving said suture through said passageway formed in said tibia;
providing an excursion device;
securing said suture to said excursion device so that any movement of said suture can be observed;
performing an isometric test by flexing said knee through positions of 0 degree to 90 degree of movement;
observing any movement of said suture during said movement of said knee to ensure that any movement is less than the required limit;
attaching said arcuate support means and said guide means to said clamping means;
inserting a kirschner wire through said guide means until said kirschner wire hits said target area;
removing said arcuate support means, said targeting means, said clamping means and said guide means;
over-reaming said kirschner wire to form a passageway through said femur; and
arthroscopically placing a cruciate ligament graft substitute in and extending between the tibial and femoral passageways.

4,883,049
APPARATUS FOR USE IN REFILLING AN ANESTHETIC VAPORIZER

Sandy McDonald, Barrie, Canada, assignor to Southmedic Incorporated, Barrie, Canada
Continuation of Ser. No. 873,954, Jun. 13, 1989, abandoned. This application Feb. 5, 1988, Ser. No. 154,444
Int. Cl.⁴ A61M *17/00*
U.S. Cl. 128—202.22 8 Claims



1. Apparatus for use in refilling a standard anesthetic vaporizer canister having a threaded female fluid refill inlet, comprising:
a body having an upper guide section provided with a male threaded base section means extending therefrom for removably securing in the re-fill inlet of the canister and an elongated passage extending through said guide section at an angle to said base section means and defining a tubular channel of a predetermined cross section extending through said guide section perpendicularly to said base section means, said channel having an aperture in the lower surface of said channel, duct means extending through said base means for fluidically communicating the aperture with the canister
a coupling having inlet means at one end for fluidically communicating with a supply of liquid anesthetic and a dispensing key at its other end for connecting to said body, said dispensing key conforming in cross sectional size and shape to said tubular channel and being adapted to slide axially into said channel, said dispensing key having a fluid discharge outlet means in the lower surface thereof for fludically communicating said inlet means with the aperture in the lower surface of the channel;
abuttment means extending into and located in said tubular channel for cooperative engagement with said dispensing key so as to limit the movement of said dispensing key in said channel to fix the fluid discharge outlet means of said dispensing key in alignment with the aperture in the lower surface of said channel only when a dispensing key so cooperatively configured is axially received in said channel.

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4,883,050

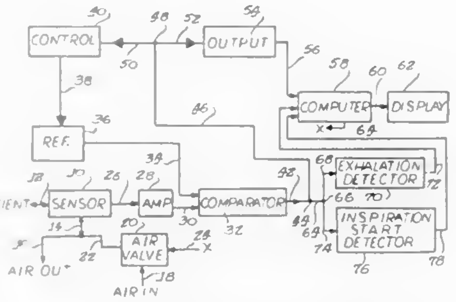
CIRCUIT PROVIDING INDICATION OF AIR ENTRAPMENT IN PATIENT'S LUNGS

Robert Urman, Schaumberg; Alfred G. Brisson, Kildeer, and Cristopher Nowacki, Long Grove, all of Ill., assignors to Nortgate Research, Inc., Arlington Heights, Ill.

Filed Feb. 29, 1988, Ser. No. 161,754

Int. Cl.^{4} A62B *9/04*

U.S. Cl. 128—202.27 3 Claims



1. Apparatus for patient ventilation comprising forced ventilation means for connection to a patient, sensor means connected to said ventilation means for producing an electrical signal in accordance with air flow on inspiration and on expiration, first signal means connected to said sensor means for detecting when expiration drops below a predetermined threshold and producing a first electrical output in accordance therewith, second signal means connected to said sensor means and producing a second electrical output upon start of inspiration, timing means to which said first and second signal means are connected and producing a third electrical output if said first and second electrical outputs are closer in time than a predetermined time, and alarm means to which said third electrical output is connected and providing an alarm if a plurality of said first and second electrical outputs are closer in time than said predetermined time.

4,883,051

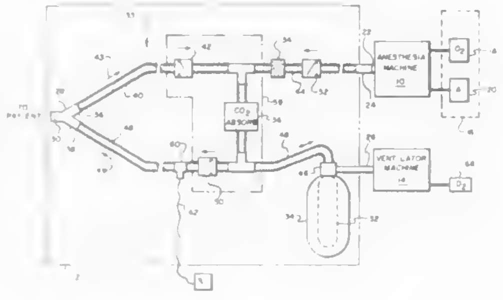
DISPOSABLE BREATHING SYSTEM AND COMPONENTS

Dwayne R. Westenskow, Salt Lake City, and Fidel Silva, Sandy, both of Utah, assignors to Summa Vest, Inc., Salt Lake City, Utah

Filed Feb. 18, 1988, Ser. No. 158,949

Int. Cl.^{4} A62B *7/00;* **A61M** *16/00*

U.S. Cl. 128—204.21 48 Claims



1. An anesthesia system comprising:

anesthesia machine means connected to an external gas source to receive gas therefrom, and connected to continuously supply a preselected mixture of gas, said anesthesia machine means have means to mix the gas received into said preselected mixture of gas;

a disposable breathing circuit interconnectable between said anesthesia machine means and a patient, said disposable breathing circuit having:

first connector means for connection to said anesthesia machine means to receive said preselected mixture of gas therefrom,

second connector means for connection to said patient to supply and receive respiratory gas,

reservoir means connected for receiving, storing and supplying said preselected mixture of gas and for receiving, storing and supplying said respiratory gas and for adding said preselected mixture of gas thereto,

tube means interconnected between said first connector means, second connector means and said reservoir means to communicate said respiratory gas from said patient to said reservoir means upon expiration of gas from said patient and from said reservoir means to said patient upon inspiration of gas to said patient, and to communicate said preselected mixture of gas from said anesthesia machine means to said reservoir means,

actuator means positioned operatively proximate to said reservoir means to urge said reservoir means between a collapsed first position in which said preselected mixture of gas and respiratory gas therewithin are supplied from said reservoir means to the patient via said tube means and an expanded second position in which the respiratory gas is expelled from the patient via said tube means and to receive said preselected mixture of gas via said tube means from said anesthesia machine means;

excessive gas pressure relief means in communication with said respiratory gas and said preselected mixture of gas during all but the time said gases are being supplied from said reservoir means to the patient; and

means operated by the flow of gases from the reservoir means to the patient for blocking communication of the excessive gas pressure relief means with the respiratory gas and the preselected mixture of gas during supply of said gases to the patient; and

ventilation machine means for generating inspiration signals and expiration signals in accordance with a preselected pattern and removably connected to said actuator means to supply said inspiration signals and expiration signals thereto for urging said reservoir means between said first and second positions respectively.

4,883,052

PROTECTIVE BREATHING MASK

Anna-Maria Weiss, Wunsiedel, and Klaus Smolik, Gefrees, both of Fed. Rep. of Germany, assignors to Helsa-Werke Helmut Sandler GmbH & Co. KG, Gefrees, Fed. Rep. of Germany

Filed Sep. 11, 1987, Ser. No. 95,816

Claims priority, application Fed. Rep. of Germany, Jun. 11, 1987, 3719420

Int. Cl.^{4} A62B *7/10*

U.S. Cl. 128—205.27 32 Claims

1. A multi-layer protective breathing mask for covering the mouth and the nose of a wearer comprising an outer layer, an inner layer and a filter element between the outer and inner layers, the filter element comprising a particle filter which comprises a layer of electret material, and an adsorber filter which comprises at least one layer of open-pore foam material provided with at least two different particle sizes of adsorber material, said particle filter being arranged at the outward side of said filter element and said adsorber filter being arranged at the inward side of said filter element.

4,883,053

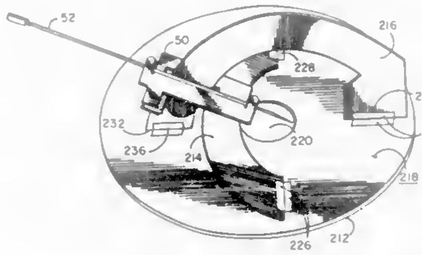
SELF-SUPPORTING ANGULATOR DEVICE FOR PRECISE PERCUTANEOUS INSERTION OF A NEEDLE OR OTHER OBJECT

Morris Simon, Boston, Mass., assignor to Beth Israel Hospital, Boston, Mass.

Continuation of Ser. No. 98,142, Sep. 18, 1987, abandoned. This application Apr. 17, 1989, Ser. No. 339,916

Int. Cl.^{4} A61B *17/00*

U.S. Cl. 128—303 B 8 Claims



1. A folded angulator erectable on demand into a self-supporting device useful for precise positioning and percutaneous insertion of an object into a subject, said folded angulator comprising:

a flexible base plate having a plurality of external surfaces, said base plate being positionable at will on the body of the subject;

at least one primary member rotatably hinged at a primary position to said base plate and rotatably extendable at a range of about 180 degrees over said base plate;

at least one secondary member rotatably hinged to said base plate at a secondary position which is substantially spatially removed from said primary position on said base plate, said secondary member being rotatably extendable at a range of about 180 degrees over said base plate for intersection with said primary member at a plurality of different angles of intersection over about a 180 degree range;

means for coupling said secondary member to said primary member over the 180 degree range at a plurality of different angles of intersection;

means for holding the object to be inserted upon at least one of said members after said primary and secondary members are coupled at a desired angle of intersection; and

an adhesive disposed upon an external surface of said flexible base plate for securing said base plate to the body of the subject at a desired position.

4,883,054

OPTICAL FIBER BREAK DETECTOR

Terry A. Fuller, Highland Park, and John G. Kwasegroch, Algonquin, both of Ill., assignors to Fuller Research Corporation, Vernon Hills, Ill.

Filed Dec. 9, 1987, Ser. No. 130,828

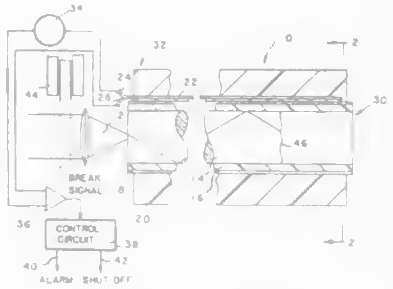
Int. Cl.^{4} A61B *17/00*

U.S. Cl. 128—303.1 15 Claims

1. Apparatus for detecting a break in an optical fiber adapted for carrying optical energy such as laser energy, comprising:

an optical fiber having a core, cladding means concentric with and surrounding the core and sheath means concentric with and surrounding the cladding means,

detector means within said sheath means and having a portion thereof contiguous the cladding means, the detector means being adapted to detector both (1) a break in the portion contiguous the cladding means as a result of a break in the fiber independent of optical energy in the fiber and (2) a change in transmission of optical energy resulting from a break in the fiber without concomitant break in said portion, the detector means providing a break signal indicative of a break in the fiber.



4,883,055

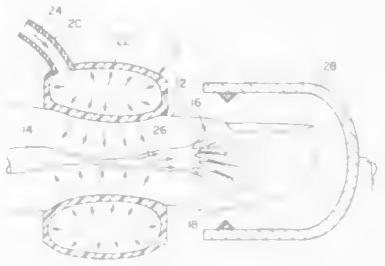
ARTIFICIALLY INDUCED BLOOD PULSE FOR USE WITH A PULSE OXIMETER

Edwin B. Merrick, Stow, Mass., assignor to Puritan-Bennett Corporation, Wilmington, Mass.

Filed Mar. 11, 1988, Ser. No. 167,301

Int. Cl.^{4} A61B *5/00*

U.S. Cl. 128—633 5 Claims



1. A pulse oximeter for determining oxygen saturation comprising:

a means for transmitting at least two wavelengths of light related to hemoglobin light absorption through a body member;

a cuff means for artificially inducing blood pulse in the body member;

photodetection means for detecting light transmitted through said body member and for producing electrical signals that are proportional to intensities of light detected for each wavelength of light; and

electronic means for receiving the electronic signals produced by the photodetection means when blood is pulsed in said body member by said cuff means for determining oxygen saturation.

4,883,056

PNEUMATIC PRESSURE PROBE

Maurice E. Langham, Timonium, Md., assignor to Ocular Blood Flow Laboratories, Inc., Timonium, Md.

Filed Nov. 5, 1987, Ser. No. 117,235

Int. Cl.^{4} A61B *3/16*

U.S. Cl. 128—645 15 Claims

1. A pneumatic pressure probe which comprises:

a hollow elongated handle defining therewithin a pressure chamber, a pressurizing gas passageway in communica-

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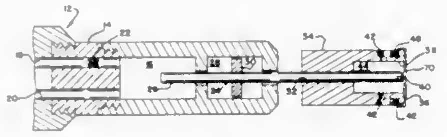
tion with the pressure chamber and adapted for operable association with a pressurized gas source for pressurizing the pressure chamber, and a gas exit passageway in communication with the pressure chamber and adapted for communication with a pressure transducer means;

a hollow, elongated and foreshortenable shaft received in said handle, mounted so as to transmit no force from the pressure chamber, and having a proximal end extending into said pressure chamber while a distal end thereof extends beyond the handle; and

a sensor head mounted to the distal end of said hollow shaft and defining a substantially planar contact face for placement on the epithelium of an organ, a cavity that provides a venting chamber which extends to and terminates in a sensing aperture in the contact face, and peripheral vent means in communication with the cavity;



said shaft distal end extending into said cavity for a fixed distance and terminating in a thrust nozzle that is substantially coplanar with but does not extend beyond a plane defined by said contact face; and

said pressure chamber being closed to the atmosphere and communicating with said cavity through said hollow.shaft so that the total gas flow from the pressure chamber is through the hollow shaft to the sensor head.

4,883,057

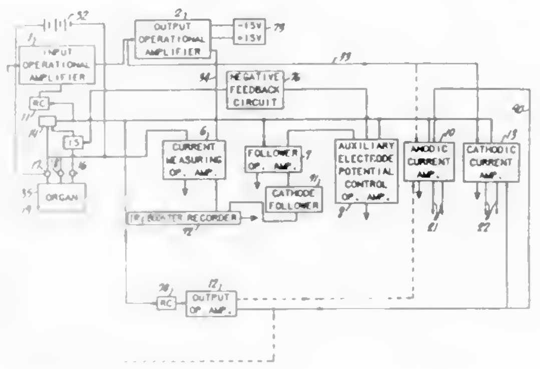
CATHODIC ELECTROCHEMICAL CURRENT ARRANGEMENT WITH TELEMETRIC APPLICATION

Patricia A. Broderick, Bronx, N.Y., assignor to Research Foundation, The City University of New York, New York, N.Y.

Continnation-in-part of Ser. No. 608,426, May 9, 1984, abandoned. This application Sep. 9, 1986, Ser. No. 905,579

Int. Cl.⁴ A61B *5/07*

U.S. Cl. 128—631 **34 Claims**


OUTPUT OPERATIONAL AMPLIFIER
-15V
+15V
INPUT OPERATIONAL AMPLIFIER
NEGATIVE FEEDBACK CIRCUIT
RC
CURRENT MEASURING OP. AMP.
FOLLOWER OP. AMP.
CATHODE FOLLOWER
AUXILIARY ELECTRODE POTENTIAL CONTROL OP. AMP.
ANODIC CURRENT AMP.
CATHODIC CURRENT AMP.
ORGAN
RECORDER
OUTPUT OP. AMP.

1. A method for measuring the rate of release and/or reuptake of one or more biogenic chemicals in vivo and in situ in a warm-blooded or cold-blooded animal brain or body comprising:

connecting said brain or body to an electrical circuit comprising:

an auxiliary electrode placed in contact with an outer layer of an organ or sub-organ to be analyzed;

a reference electrode placed in contact with said outer layer of said organ or sub-organ to be analyzed;

an indicator microelectrode which is packed with graphite paste and mineral oil modified with a compound selected from the group of fatty acids, fatty acid derivatives, perfluorosulfonated compounds and salts thereof which is inserted into said organ or sub-organ's interior;

a D.C. source and means for forming cathodic current connected between said reference electrode and said indicator electrode; said organ or sub-organ, auxiliary electrode, reference electrode and indicator electrode thus forming an electrochemical cell which produces output cathodic current;

means connected in series with said reference electrode for semidifferentiating the cathodic current and;

processing the signal which represents the output current as the semiderivative of the linear current function;

thereby producing a cathodic current which represents the rates of release and/or reuptake of one or more biogenic chemicals, the cathodic current enabling the detection of one or more biogenic chemicals which are reduced as well as oxidized and which therefore provides for reproducible results.

4,883,058

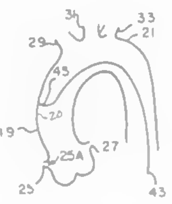
RIGHT CORONARY ANGIOGRAPHIC METHOD

Oscar F. Ruiz, Coconnt Grove, Fla., assignor to Sherwood Medical Company, St. Louis, Mo.

Filed Jan. 6, 1988, Ser. No. 141,208

Int. Cl.⁴ A61B *17/00*

U.S. Cl. 128—654 **4 Claims**



4. A method of performing a selective coronary arteriography on the right coronary artery of a human being comprising the steps of:

inserting a catheter having a catheter body through the aortic arch into the ascending aorta of the human being such that a tip portion of the catheter is disposed above the ostium of the right coronary artery;

orienting the catheter so that an open distal end of said catheter tip portion is pointed toward and in contact with the inner wall of said ascending aorta;

advancing the catheter tip portion toward the ostium of the right coronary artery by moving the distal end along and contacting said inner wall while biassing the tip portion of the catheter toward the inner wall of the ascending aorta the catheter body; and

inserting the distal open end of the tip portion in the ostium of the right coronary artery responsive to the advancing and biassing steps.

4,883,059

INTRAVAGINAL TRANSDUCER BIOPSY GUIDE

David Stedman, Kirkland, and Norio Harui, Seattle, both of Wash., assignors to Advanced Technology Laboratories, Inc., Bothell, Wash.

Filed Nov. 21, 1986, Ser. No. 933,708

Int. Cl.⁴ A61B *10/00*

U.S. Cl. 128—660.01 **10 Claims**

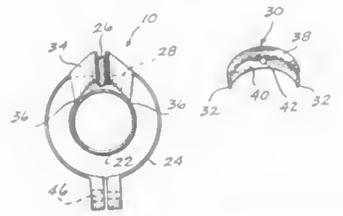
1. An improved needle guide, for use in connection with a medical ultrasound scanhead to guide a biopsy needle, of the type comprising:

(a) a body;

(b) slot means on said body for directly engaging and guiding the biopsy needle; and

(c) attachment means for attaching said body to the ultrasound scanhead and providing a desired alignment between said slot means and the ultrasound scanhead,

the improvement comprising needle cover means which is slidably attached to said body, said needle cover means including means for covering the biopsy needle when the biopsy needle is within said slot means and preventing intimate contact between the needle and a patient until the needle is properly positioned.



4,883,060

DEVICE FOR ELIMINATING FIXED ECHOES FOR AN ULTRASONIC ECHOGRAPH

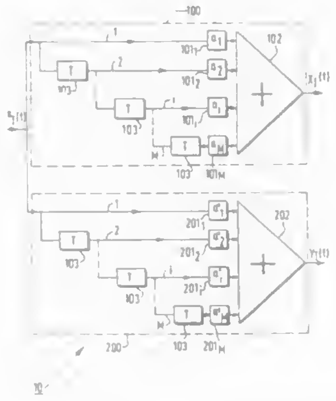
Patrick R. Pesque, Perigny, and Odile M. A. Bonnefous, Nogent sur Marne, both of France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 6, 1988, Ser. No. 215,965

Claims priority, application France, Jul. 9, 1987, 87 09734

Int. Cl.⁴ A61B *8/06*

U.S. Cl. 128—660.01 **5 Claims**



1. In an ultrasonic echograph having a pulse repetition period, T, a circuit for eliminating echo signals which represent fixed objects from a stream of echo signals, comprising:

first and second filters, each of said filters including:

M parallel lines connected to apply respective delays $(i-1)T$, where $i=1, \ldots M$, to the stream of echo signals;

an adder; and

M weighting means, each of the weighting means applying signals from a corresponding line to an input of the adder with a respective weighting coefficient a_i; and

means which combine outputs of the first and second filters;

wherein, in each filter the sum of the weighting factors of the M weighting means is zero;

the phase response of the second filter shifted by $(M-1)T$ with respect to the first filter; and

the impulse response of the second filter is

$$h_2(t)=h_1((M-1)T-t)$$

where $h_1(t)$ is the impulse response of the first filter.

4,883,061

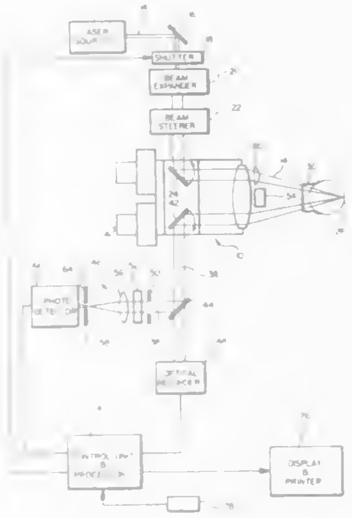
METHOD AND APPARATUS FOR MEASURING THE THICKNESS OF EYE COMPONENTS

Ran C. Zeimer, Chicago, Ill., assignor to The Board of Trustees of the University of Illinois, Urbana, Ill.

Filed Feb. 29, 1988, Ser. No. 162,011

Int. Cl.⁴ A61B *5/10, 6/00*

U.S. Cl. 128—665 **30 Claims**



1. Apparatus for enabling the determination of the thickness of the retina of an eye between the anterior surface and the posterior surface of the retina, said apparatus comprising:

a light source providing a coherent monochromatic beam;

means for focusing said beam on the retina to provide a first reflected beam reflected from the anterior surface of the retina and a second reflected beam reflected from the posterior surface of the retina; and

detection means for detecting said first reflected beam and said second reflected beam, wherein the relationship between said first and second reflected beams enables the determination of the thickness of the retina.

4,883,062

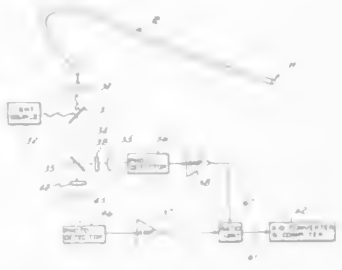
TEMPERTURE AND PRESSURE MONITORS UTILIZING INTERFERENCE FILTERS

Warren B. Nicholson, Worthington, Ohio, assignor to Medex, Inc., Hilliard, Ohio

Filed Apr. 25, 1988, Ser. No. 186,086

Int. Cl.⁴ A61B *5/02*

U.S. Cl. 128—667 **5 Claims**



1. Apparatus for measuring a parameter of blood comprising,

an optical fiber having at its end an edge filter consisting of alternating metal and dielectric layers, the layers being

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dimensionally variable in the presence of the blood parameter to be measured,

means for launching a polychromatic light into the end of said optical fiber to produce a reflected light having an intensity versus wavelength reflection curve whose transition line shifts with variations in said blood parameter,

means for measuring the amount of the shift of the edge of the reflected curve and means for converting the magnitude of said shift to units of said parameter.

4,883,063

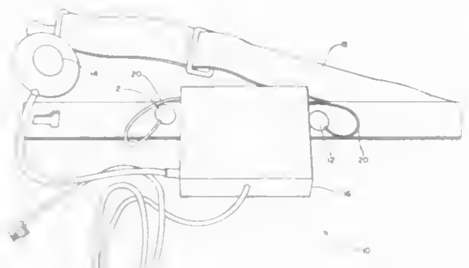
PERSONAL MONITOR AND PROCESS FOR HEAT AND WORK STRESS

Thomas E. Bernard, Pittsburgh; Gary W. Sherwin, Yukon; William L. Kenney, Jr., Boalsburg, and Debra A. Lewis, State College, all of Pa., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.

Continuation of Ser. No. 55,654, May 29, 1987, abandoned. This application Apr. 13, 1989, Ser. No. 338,374

Int. Cl.⁴ A61B *5/02*

U.S. Cl. 128—670 19 Claims



1. A personal monitor for work and heat stress which comprises a heart beat sensor producing output electrical signals indicating a user's heart beats, means for storing heart beat information corresponding to the heart beat signals produced over predetermined time intervals, information processing means connected to receive the heart beat information from said storing means, said information processing means being configured to analyze the heart beat information incrementally over the predetermined time intervals through moving time averages with a plurality of different time bases to obtain a physiological demand during the predetermined time intervals and to compare the obtained physiological demand against a stored physiological demand limit, and means for providing an indication to the user when the stored physiological demand limit has been exceeded, said information processing means being configured and connected to control operation of said indication providing means.

4,883,064

METHOD AND SYSTEM FOR GATHERING ELECTROCARDIOGRAPHIC DATA

Richard J. Olson, Ramsey, and David C. Gust, Andover, both of Minn., assignors to EquiMed Corporation, Plymouth, Minn.

Filed Nov. 19, 1987, Ser. No. 122,796

Int. Cl.⁴ A61B *5/04*

U.S. Cl. 128—696 28 Claims

1. A method of generating electrocardiographic data from a patient, said method comprising:

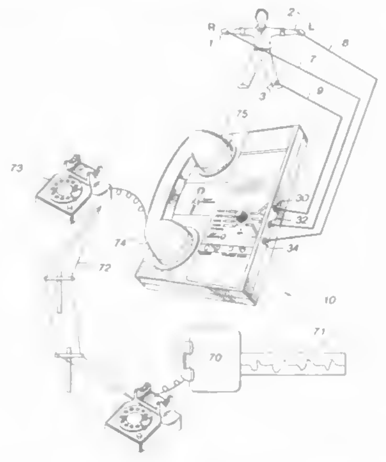
placing at least three electrodes at discrete locations on the surface of said patient's body;

selecting a first pair of said electrodes and assigning one electrode of said first pair to measure a positive polarity and the other electrode of said first pair to measure a negative polarity;

continuously measuring the difference in electrical potential between said first pair of electrodes for a first time period of at least about 10 seconds and less than about 60 seconds;

selecting a second pair of said electrodes different from said first pair of electrodes and assigning one electrode of said second pair to measure a positive polarity and the other electrode of said second pair to measure a negative polarity;

continuously measuring the difference in electrical potential between said second pair of electrodes for a second time period of at least about 10 seconds and less than about 60 seconds consecutive to said first period;



selecting a third pair of said electrodes different from said first and second pairs of electrodes and assigning one electrode of said third pair to measure a positive polarity and the other electrode of said third pair to measure a negative polarity;

continuously measuring the difference in electrical potential between said third pair of electrodes for a third time period of at least about 10 seconds and less than about 60 seconds consecutive to said second period; and

telemetrically transmitting or translating the chronological sequence of said measurements,

such that said electrocardiographic data comprises the chronological sequence of said measurements of electrical potential difference.

4,883,065

MICROPOTENTIAL ANALYZER—A HOLTER SYSTEM WITH COMPREHENSIVE ANALYSIS CAPABILITY FOR VERY LOW AMPLITUDE ELECTROCARDIOGRAPHIC SIGNALS AND METHOD

George J. Kelen, Staten Island, N.Y., assignor to Del Mar Avionics, Irvine, Calif.

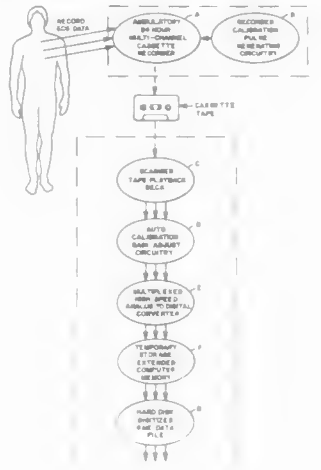
Filed Nov. 15, 1988, Ser. No. 271,903

Int. Cl.⁴ A61B *5/04*

U.S. Cl. 128—711 12 Claims

1. A micropotential analyzer system for long term ambulatory multi channel recording, high speed playback and analysis of electrocardiographic (ECG) signals ranging in amplitude down to one microvolt, said system including: a multi channel magnetic tape Holter recorder; micropotential analyzing means coupled to the recorder for allowing a user to select from an entire recording on the recorder a precise segment of raw data that is to be the subject of micropotential analysis thereby permitting analysis of multiple data segments from a single tape on the recorder and reanalysis of any raw data set by multiple processing algorithms; and recording means coupled to said recorder for recording data on said recorder and

further incorporating circuitry which records on each signal channel on said recorder a calibration signal of precisely known shape and amplitude on a portion of the recording in each such signal channel.


RECORD ECG DATA
AMBULATORY 24 HOUR MULTI-CHANNEL CASSETTE RECORDER
A
RECORDED CALIBRATION PULSE GENERATING CIRCUITRY
B
CASSETTE TAPE
SCANNED TAPE PLAYBACK DECK
C
AUTO CALIBRATION GAIN ADJUST CIRCUITRY
D
MULTIPLEXED HIGH SPEED ANALOG TO DIGITAL CONVERTER
E
TEMPORARY STORAGE EXTENDED COMPUTER MEMORY
F
HARD DISK DIGITIZED RAW DATA FILE
G

4,883,066

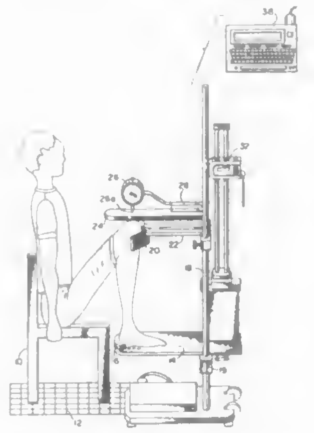
HUMAN LIMB MEASURING SYSTEM AND METHOD

Harold D. Widdoes, Chadds Ford; Solomon H. Katz, Philadelphia, both of Pa., and Christine E. Cronk, Makanda, Ill., assignors to Intersciences Development Associates, Inc., Philadelphia, Pa.

Filed Feb. 9, 1988, Ser. No. 154,771

Int. Cl.⁴ A61B *5/10*

U.S. Cl. 128—774 13 Claims



1. A human limb measuring system comprising:

means for positioning and restraining the limb of a patient in a prescribed repeatable position;

means for compressing body tissue at the ends of said limb a prescribed amount;

and means responsive to said compressing means for measuring the distance between a selected point on said compressing means and a reference point while said body tissue is compressed said prescribed amount.

4,883,067

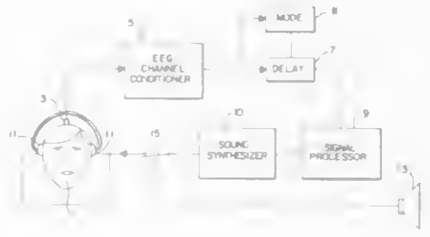
METHOD AND APPARATUS FOR TRANSLATING THE EEG INTO MUSIC TO INDUCE AND CONTROL VARIOUS PSYCHOLOGICAL AND PHYSIOLOGICAL STATES AND TO CONTROL A MUSICAL INSTRUMENT

Joel Knispel, Timonium, and Geoffrey Wright, Baltimore, both of Md., assignors to Neurosonics, Inc., Baltimore, Md.

Filed May 15, 1987, Ser. No. 49,992

Int. Cl.⁴ A61B *5/04*

U.S. Cl. 128—732 71 Claims



1. A biofeedback apparatus useful for creating music, comprising:

means for receiving an ongoing EEG signal from at least one region of the brain of a biological entity, said at least one region of the brain responding to acoustical stimulation, said ongoing EEG signal having a voltage amplitude exhibiting semiperiodic change;

means for translating said ongoing EEG signal into music, said translating means including

means for generating an acoustical indication of the semiperiodic change in said ongoing EEG signal, and

means for generating musical flavor and adding said musical flavor to said acoustical indication;

means for directing said music so as to be received by the brain; and

means for delaying said directing means for a period of time determined so that the brain response to said music occurs with a predetermined phase relationship with respect to the ongoing EEG signal received from said region of the brain.

4,883,068

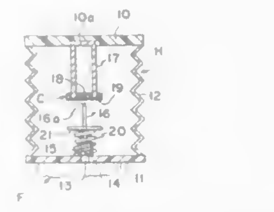
BLOOD SAMPLING DEVICE AND METHOD

Frederick L. Dechow, Lake Leelanau, Mich., assignor to Dec in Tech, Inc., Gillette, N.J.

Filed Mar. 14, 1988, Ser. No. 167,778

Int. Cl.⁴ A61B *5/00*

U.S. Cl. 128—760 14 Claims



1. In a disposable blood sampling device particularly for removing a small volume of blood from the epidermis of the body for testing purposes:

a. a housing comprising inner and outer, spaced apart, walls separated by an axially compressible, axially extending bridging enclosure;

b. said outer wall carrying an axially extending, evacuated, collecting container housed within said axially compressible enclosure and having an open end closed by a penetrable end member;

c. a double-ended cannula device axially slidably carried by

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said inner wall in axial alignment with said end member, and having an end member-penetrating end and a skin-penetrating end;

d. said inner wall having a cannula device passing portion in axial alignment with said cannula device for passing the skin-penetrating end through the inner wall into the epidermis; and

e. means for preventing said cannula device from penetrating the end member of the collecting container when the inner and outer walls are relatively axially compressed, until after penetration of the epidermis by the cannula device.

4,883,069

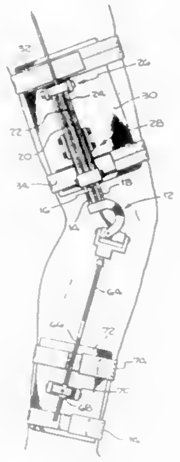
DYNAMIC JOINT MOTION ANALYSIS TECHNIQUE

Paul C. McLeod, Little Rock, Ark., assignor to Physical Diagnostics, Inc., Conway, Ark.

Division of Ser. No. 340,070, Sep. 21, 1981, abandoned, which is a division of Ser. No. 139,908, Mar. 31, 1980, Pat. No. 4,306,571. This application Jun. 10, 1983, Ser. No. 502,916

Int. Cl.⁴ A61B *5/10*

U.S. Cl. 128—782 2 Claims



1. In an apparatus for the study of the motion of a joint between first and second limb members, said apparatus having a multiple plane electrical goniometer with first and second movable input members, first securing means for securing said first movable input member and said multiple plane electrical goniometer to said first limb member, second securing means for securing said second movable input member to said second limb member whereby relative angular movements between said first and said second limb members are sensed by said multiple plane electrical goniometer and converted to electrical signals,

the improvement wherein said first movable input member has a shape so as to preclude the interference of movements of said joint in extreme angular deviations by said apparatus,

the further improvement comprising internal beam means between said first means securing said first movable input member to said first limb member and said first movable input member, and means for adjusting the angle of said internal beam means to adjust the position of said multiple plane goniometer relative to said joint depending upon the musculature and general configuration of said first limb member.

4,883,070

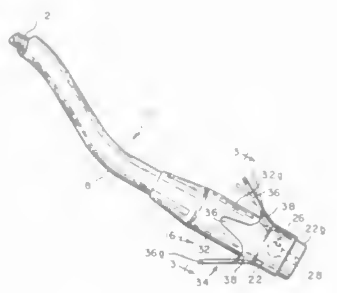
ENDOCARDIAL PACING LEAD

Ralph E. Hanson, Pace Medical, Inc., 391 Totten Pond Rd., Waltham, Mass. 02154

Filed Mar. 2, 1988, Ser. No. 163,367

Int. Cl.⁴ A61N *1/05*

U.S. Cl. 128—785 10 Claims



1. An endocardial pacing lead comprising

A. a flexible insulated electrical conductor;

B. a rigid electrically conductive electrode member having a longitudinal axis;

C. means for mechanically and electrically connecting one end of said member to an end of said conductor, the opposite end of said member constituting a contact tip;

D. fixation means flaring outwardly from said member and away from said tip, said fixation means including a continuous frustoconical flexible, resilient skirt portion connected only at its smaller diameter edge to said member and invertible in the direction of said axis and a plurality of elongated, relatively thin leaves projecting from the larger diameter edge of said skirt portion at spaced apart locations therealong, said leaves constituting flexible resilient extensions of said invertible skirt portion.

4,883,071

INTRAVAGINAL DEVICE

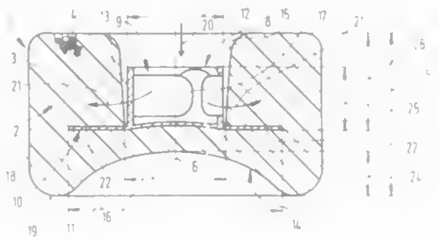
Ewald Pickhard, Redtenbachergasse 15, A-1160 Vienna, and Wolfgang Knogler, Görgengasse 27, A-1190 Vienna, both of Austria

Continuation of Ser. No. 908,704, Aug. 28, 1986, abandoned. This application Jan. 4, 1989, Ser. No. 294,933

Claims priority, application Austria, Nov. 15, 1984, 3622/84; Jul. 2, 1985, 1956/85

Int. Cl.⁴ A61F *5/46*

U.S. Cl. 128—837 15 Claims



1. An intravaginally positionable device consisting essentially of an elastic carrying member of a synthetic resin foam having a medication incorporated therein, the carrying member comprising a substantially cylindrical block of the synthetic resin foam and the cylindrical block having a cylindrical wall defining a blind hole extending concentrically about the axis of the cylindrical block to an edge thereof, and an entraining element anchored in the carrying member during foaming of the synthetic resin foam to form the elastic carrying member, the entraining element not extending beyond the edge and having a cylindrical surface extending upwardly adjacent the cylindrical wall, and the cylindrical surface of the entraining element defining openings capable of being engaged by a member for insertion or extraction of the device into and from the vagina.

4,883,072

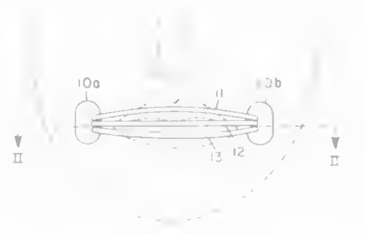
MOUTH APPLIANCE FOR ASSISTING IN WEIGHT CONTROL

Edward W. Bessler, 8 Rosemont Ave., Fort Mitchell, Ky. 41017

Filed Feb. 13, 1989, Ser. No. 309,404

Int. Cl.⁴ A61F *13/12*

U.S. Cl. 128—857 6 Claims



1. Apparatus for assisting in the reduction of food intake on the part of a person using the same, the combination comprising:

first and second pads;

a pressure sensitive adhesive on one side of said pads for securing said pads to a user's cheeks adjacent the corners of the mouth of the user;

at least one narrow band curved to form an arch, the opposite ends of said band being connected to said first and second pads, respectively, the arch of said band projecting from the user's cheeks and arching over the junction of the user's lips out of contact therewith, said bands thereby inhibiting the passage of food through the lips of the user when the pads are secured to the user's cheeks, but not interfering with normal movement of the lips.

4,883,073

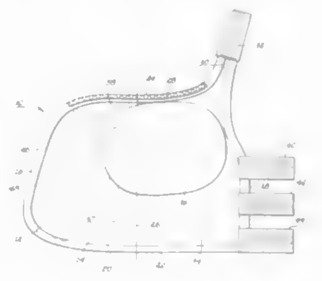
REMEDIAL DEVICE FOR TREATMENT OF CARPAL TUNNEL SYNDROME

Farooq Aziz, 3755 Warrensville Center Rd., Apt. #3, Shaker Heights, Ohio 44122

Filed Jul. 3, 1989, Ser. No. 375,527

Int. Cl.⁴ A61F *5/00*

U.S. Cl. 128—878 18 Claims



1. A remedial device for treatment of carpal tunnel syndrome which permits limited wrist mobility by the wearer in both vertical and horizontal directions comprising in combination:

(a) a flexible substrate sized to fit entirely around the wearer's forearm to form upper, lower and side portions when secured in place and which extends longitudinally at one end from a location below the wearer's elbow to an opposite palm end approaching the metacarpal joints of the wearer's hand, the palm end further terminating in an elastic cuff gripping the wearer's hand while also including a projection extending forwardly therefrom at the wearer's thumb before the device is secured in place but extending backwardly therefrom when secured in place,

(b) a cushioning pad joined to the flexible substrate in the palm region,

(c) a first longitudinally extending splint restraining excess vertical mobility of the wearer's wrist and joined to the flexible substrate in the upper portion,

(d) a second longitudinally extending splint restraining excess horizontal mobility of the wearer's wrist and joined to the flexible substrate in a predetermined side portion, and

(e) releasable fastening means joined to the flexible substrate enabling the side portions to be secured together while also enabling the hand projection to be secured to the top portion.

4,883,074

STRIP GUIDE DEVICE, PARTICULARLY FOR A CIGARETTE MANUFACTURING MACHINE

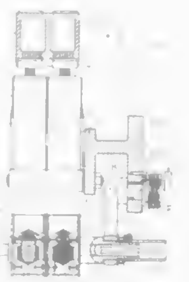
Riccardo Mattei, Bologna, Italy, assignor to G.D Societa' per Azioni, Bologna, Italy

Filed Feb. 19, 1987, Ser. No. 16,217

Claims priority, application Italy, Feb. 28, 1986, 3345 A/86

Int. Cl.⁴ A24C *5/04, 5/20, 5/31*

U.S. Cl. 131—84.1 7 Claims



1. In a cigarette manufacturing machine comprising a horizontal bed;

at least one belt for forming a continuous cigarette rod, said belt having a portion extending above and along said bed between a first and a second end thereof, being movable along said bed towards said second end, and being wound about a suction rotary pulley arranged at said first end;

a device for feeding a continuous stream of tobacco onto said belt portion, said tobacco feeding device extending above said first end and said pulley and defining between the stream of tobacco and the belt an input space for at least one paper strip;

a paper strip guide device for feeding at least one paper strip onto said belt portion, said strip guide device having a device for feeding an end of said paper strip to said input space, and

said paper feeding device comprising means for holding said end of said strip and designed to move between a first and a second position in which said holding means are arranged away from, and respectively within, said input space

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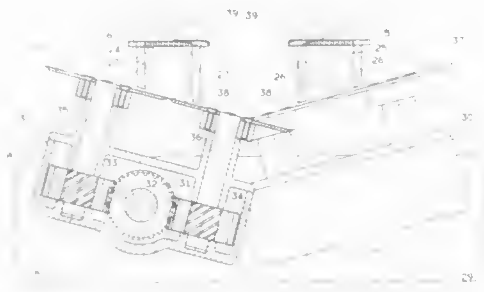
4,883,075
DUAL-ROD CIGARETTE MANUFACTURING MACHINE

Riccardo Mattei, and Salvatore Rizzoli, both of Bologna, Italy, assignors to G. D. Societa' per Azioni, Bologna, Italy
Filed Jul. 20, 1988, Ser. No. 221,888
Claims priority, application Italy, Aug. 3, 1987, 3589 A/87
Int. Cl.⁴ A24C *5/18*
U.S. Cl. 131—84.4 3 Claims

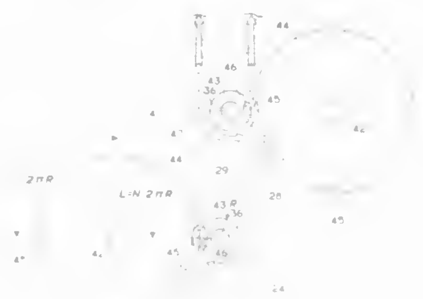


1. A dual-rod cigarette manufacturing machine comprising:
means for forming two continuous tobacco beads;
two substantially parallel coplanar conveyor belts;
each conveyor belt being for advancing a respective tobacco bead along a path;
said two conveyor belts being arranged at a predetermined lateral distance from each other thereby defining a gap between them;
an associated tobacco shaving device, for shaving a respective tobacco bead, being located along the path of each conveyor belt;
each shaving device comprising first and second counter-rotating shafts lying in a first plane substantially perpendicular to the respective conveyor belt path;
the shafts of each shaving device being parallel to each other, and being inclined at a given angle in relation to a vertical second plane extending parallel to said conveyor belts and through said gap;
a first and a second shaving disc mounted on said first and second shafts of each shaving device respectively for rotation therewith; and
the two discs of each shaving device extending in a third plane perpendicular to said first plane, and having respective cutting edges substantially tangent to each other at a point along the respective belt path, and one of said discs projecting into said gap.

4,883,076
DUAL-ROD CIGARETTE MANUFACTURING MACHINE

Bruno Belvederi, S.Martino di Monte S.Pietro, Italy, assignor to G.D Societa' per Azioni, Bologna, Italy
Filed Oct. 31, 1988, Ser. No. 265,142
Claims priority, application Italy, Nov. 3, 1987, 3678 A/87
Int. Cl.⁴ A24C *5/18*
U.S. Cl. 131—84.4 4 Claims

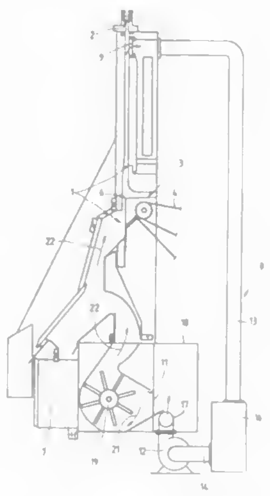
1. A dual-rod cigarette manufacturing machine (2) comprising.
means (**3,4**) for forming two continuous tobacco beads (**24,25**);
two substantially parallel, coplanar conveyor belts (**5,6**) for transferring the two beads (**24,25**) to an unloading station (**13**);
a pair of shaving devices (**28,29**);
one of the pair of shaving devices (**28,29**) being positioned along the path of each of the conveyor belts (**5,6**), for shaving a tobacco bead (**24,25**) transferred by the belt;
each shaving device comprising a pair of first and second counter-rotating disks (**43, 44; 43', 44'**) arranged respectively inside and outside the said bead (24,25) and each disk being mounted on a shaft;
each disk having a cutting edge and being arranged with the respective cutting edges substantially tangent along the path of the respective bead (24,25);



the shafts of the disks (**43, 44; 43', 44'**) lying in a plane substantially perpendicular to the traveling direction of the tobacco beads (**24,25**); and
the diameter of the first disk (**43,43'**) of each shaving device (**28,29**) is approximately equal to the distance between the two tobacco beads (**24,25**).

4,883,077
APPARATUS FOR TRANSPORTING AND TREATING PARTICLES OF TOBACCO AND THE LIKE

Pierre Irigoyen, Vert Saint Denis, France, assignor to Decouflé s.a.r.l., Chilly-Mazarin, France
Filed Dec. 9, 1987, Ser. No. 130,400
Claims priority, application France, Dec. 11, 1986, 86 17363
Int. Cl.⁴ A24B *7/14*
U.S. Cl. 131—108 10 Claims

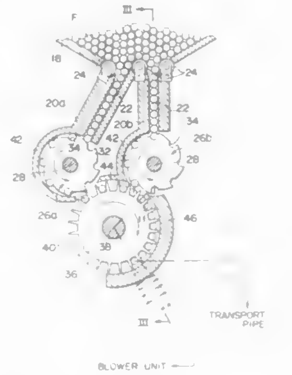


1. Apparatus for transporting and treating particles of tobacco and analogous fibrous material in a rod making machine of the tobacco processing industry, comprising a duct having an air admitting first inlet, an air outlet remote from said inlet, and a second inlet intermediate said first inlet and said outlet; means for evacuating air from said duct by way of said outlet; means for admitting air into said first inlet so that a stream of air flows from said first inlet, past said second inlet and toward said outlet; means for distributing the air stream across the duct in the region of said first inlet, including a rotary impeller extending substantially transversely of the direction of flow of

the air stream from said first inlet toward said outlet; and means for feeding into said duct by way of said second inlet fibrous material containing lighter and heavier components so that the stream entrains at least the lighter components from said second inlet to said outlet.

4,883,078
TRANSPORT SYSTEM FOR TRANSPORTING ROD-SHAPED OBJECTS IN AN AIR FLOW

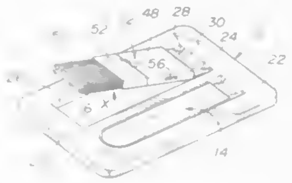
Ichiro Hirose, Tokyo; Takayoshi Sagawa, Hiratsuka; Shichisei Tani, Hiratsuka, and Katsuo Kato, Hiratsuka, all of Japan, assignors to Japan Tobacco Inc., Tokyo, Japan
Filed Sep. 23, 1986, Ser. No. 910,667
Int. Cl.⁴ A24C *5/00, 5/62*
U.S. Cl. 131—280 7 Claims



1. A transport system for transporting rod-shaped objects in an air flow, comprising:
a feeder unit for successively delivering the rod-shaped objects;
a transport pipe connected, at one end, to the feeder unit, and capable of successively receiving the rod-shaped objects from the feeder unit, and transporting the objects therein;
a blower unit for supplying compressed air to the transport pipe, through the one end thereof, so that the rod-shaped objects therein are transported toward the other end side of the transport pipe, by the flow of compressed air,
the blower unit including a compressed-air source connected to the one end of the transport pipe, and adapted to supply the compressed air, and control means provided between the compressed-air source and the one end of the transport pipe, whereby the flow rate of compressed air supplied thereto is controlled;
a receiving unit connected to the other end of the transport pipe, whereby the rod-shaped objects transported through the transport pipe are received;
detecting means disposed in an path for the rod-shaped objects, extending from the feeder unit into the receiving unit, and adapted to detect any jamming of the objects and, if so, to deliver a jam signal;
a control circuit adapted to stop the operation of the feeder unit and the receiving unit immediately when the jam signal is delivered from the detecting means, and to stop the operation of the blower unit after a predetermined delay, following delivery of the jam signal; and
pressure relief means, in the transport pipe, for releasing the compressed air into the atmosphere, the pressure relief means being adapted to be actuated when the jam signal is delivered from the detecting means.

4,883,079
MAKE-UP TOOL AND HOLDER ASSEMBLY

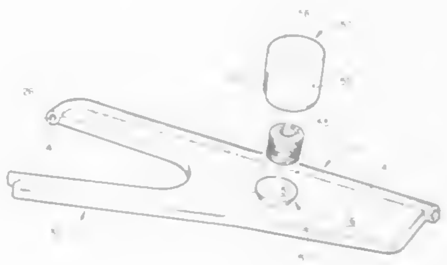
Yosio Sakamaki, Nagareyama; Yuji Ideshita, Yokohama; Fumiyoshi Fujita, Soka, and Takashi Sugiyama, Kodaira, all of Japan, assignors to Yoshida Industry Co., Ltd., Tokyo, Japan
Filed Mar. 1, 1988, Ser. No. 162,709
Claims priority, application Japan, Sep. 18, 1987, 62-141577; Sep. 18, 1987, 62-141578; Sep. 18, 1987, 62-141579; Oct. 15, 1987, 62-156791; Oct. 15, 1987, 62-156792
Int. Cl.⁴ A45D *40/24*
U.S. Cl. 132—318 6 Claims



1. A make-up tool and holder assembly comprising:
a holder body substantially in the shape of a plate;
a plurality of cavities formed in said holder body through the entire thickness thereof, each said cavity being entirely surrounded by marginal walls of said holder body;
a plurality of tools each having at one end thereof a make-up head, each said tool having a dimension capable of being accommodated in a respective said cavity; and
means for securing each said tool in the respective said cavity in a detachable manner, said securing means including a slot formed in said tool at an end thereof opposite to said head, a plug member formed on a respective said marginal wall defining said cavity and adapted to fit in said slot, and a flexible hinge portion for permitting at least a part of said tool including said head to project over said holder body.

4,883,080
COMBINATION NOZZLE AND DENTAL FLOSS ASSEMBLY FOR ORAL HYGIENE FLUSHING APPARATUS

Dennis R. Lang, 12905 Mapleview St. Apt. 5-145, Lakeside, Calif. 92040
Filed Aug. 5, 1988, Ser. No. 228,494
Int. Cl.⁴ A61C *15/00*
U.S. Cl. 132—322 7 Claims



1. A combination nozzle and dental floss assembly for oral hygiene flushing apparatus comprising:
an elongated nozzle having an inlet port and an outlet port formed in its respective opposite ends: and
a finger member having a bottom end and said bottom end is connected to said nozzle, said finger member having a tip that is spaced a predetermined distance from the outlet port of said nozzle; and
means for detachably stringing a predetermined length of

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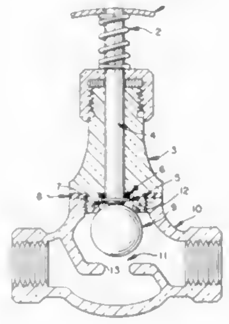
dental floss between the tip of said finger member end and the outlet port of said elongated nozzle.

4,883,081

FLOW AND SEISMIC SENSITIVE SAFETY VALVE FOR GASEOUS FLUIDS

Antone W. Morris, P.O. Box 208, Point Reyes, Calif. 94956
Filed Apr. 6, 1989, Ser. No. 334,172
Int. Cl.^{4} F16K *17/36*
U.S. Cl. 137—39 6 Claims



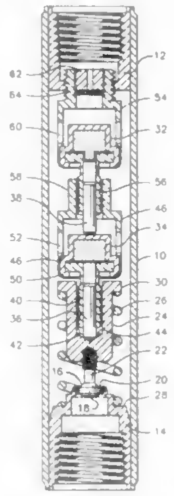
1. A flow and shock sensitive self-closing safety valve for a gas pipeline comprising:
- a valve body of a non-magnetic material having inlet and outlet flow passageways and an annular, generally horizontal valve seat between them;
- a valve element of a magnetic material above said valve seat;
- a permanent magnet in said valve body above said valve element and movable therein toward and away from said valve seat to adjust the magnetic attraction between said magnet and said valve element; and
- spring means biasing said magnet away from said valve element, said spring means being overcome to enable movement of said magnet to engage said valve while on said valve seat.

4,883,082

TEMPERATURE-RESPONSIVE VALVE

Fred L. Pirkle, Box 27, Oreland, Pa. 19075
Continuation-in-part of Ser. No. 194,164, May 16, 1988, Pat. No. 4,815,491. This application Mar. 27, 1989, Ser. No. 328,858
Int. Cl.^{4} F16K *31/64, 17/40;* **E03B** *7/12*
U.S. Cl. 137—62 6 Claims

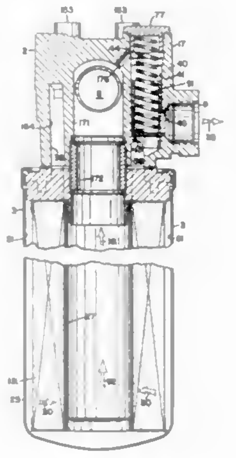
1. A temperature-responsive valve comprising means providing first and second ports with a flow path extending therebetween, means comprising a valve element for closing said flow path, and temperature-responsive means, comprising first and second temperature-sensitive expansible actuators connected in series with each other and set to expand at different temperatures, for causing said valve element to open said flow path when one of said actuators expands, and also causing said valve element to open said flow path when the other of said actuators contracts, said actuators having a stable condition in an intermediate range of temperatures between said different temperatures, said flow path having an orifice, said temperature-responsive means including means, connected to said valve element and responsive to expansion and contraction of said actuators, for causing said valve element to move through said orifice from one side thereof to the other, and said actuators and valve element being arranged so that said valve element is located on one side of said orifice, when said one of said actuators expands, to permit fluid flow in said flow path, so that said valve element is located on the opposite side of said orifice, when other of said actuators contracts, to permit fluid flow in said flow path, and so that said valve element is located in said orifice to shut off flow in said flow path when said one of said actuators is contracted and said other of said actuators is expanded.



4,883,083

RELIEF VALVE ASSEMBLY; PISTON MEMBER FROM SAME AND FILTER HEAD ASSEMBLY INCORPORATING SAME

Patrick Fisher; Jack Stifelman, both of Bloomington; John F. Connelly, Minnetonka; Jeff J. Theisen, Prior Lake, all of Minn., and Patrick Fisher, Blooomington, all of Minn., assignors to Donaldson Company, Inc., Minneapolis, Minn.
Continuation of Ser. No. 46,903, May 5, 1987, abandoned. This application Dec. 29, 1988, Ser. No. 292,644
Int. Cl.^{4} B01D *29/36*
U.S. Cl. 137—110 17 Claims

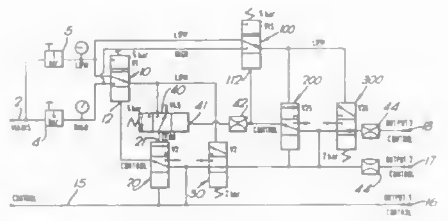


1. A relief valve assembly comprising:
- (a) a valve body;
  - (i) said valve body defining an elongate valve chamber having a longitudinal axis and a lateral fluid takeoff aperture;
- (b) a valve piston member slideably positioned in said valve chamber for selected movement along said longitudinal axis to selectively permit substantial fluid flow communication outwardly from said valve body and through said lateral fluid takeoff aperture; and
- (c) lateral pressure relief means constructed and arranged to stabilize said valve piston member with respect to potential lateral pressures acting thereon due to a relatively low pressure at said lateral fluid takeoff aperture;
- (d) whereby a tendency for said valve piston member to deviate laterally from smooth sliding movement along said longitudinal axis, and toward said lateral fluid takeoff aperture, due to relatively low pressure at said takeoff aperture, may be substantially alleviated.

4,883,084

PRESSURE FLUID CONTROL SYSTEM

David T. Walter, Milton Keynes, England, assignor to TI Interlock Limited, Bedford, England
Filed Jul. 20, 1988, Ser. No. 221,855
Claims priority, application United Kingdom, Jul. 21, 1987, 8717169
Int. Cl.^{4} F16K *31/36*
U.S. Cl. 137—118 10 Claims



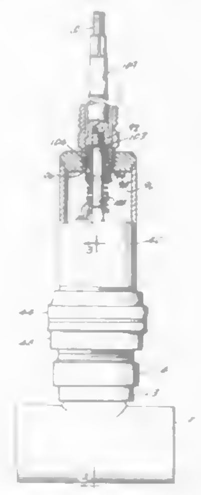
6. A fluid pressure control system in a pressure fluid circuit comprising: first, second and third comparator valves, said first and third comparator valves each having a comparison port opposed by a fixed bias, said second comparator valve having two comparison ports; first, second and third sources respectively of fluid at a higher reference pressure, fluid at a lower reference pressure and fluid at a condition responsive variable pressure; and a system outlet for said fluid from said third source, said first comparator valve having first and second positions respectively connecting said first and said second source with a comparison port of said second comparator valve and with said comparison port of said third comparator valve, said second comparator valve having a first position when said first comparator valve is in the first position thereof connecting said comparison port of said first comparator valve with zero pressure, and a second position when said first comparator valve is in the second position thereof connecting said comparison port with said third source, and said third comparator valve having a first position when said first and second comparator valves are in the first positions thereof connecting said system outlet to zero pressure and a second position when said first and second comparator valves are in the second positions thereof connecting said system outlet to said third source.

4,883,085

METHOD OF INSTALLING A STOPPER IN A FITTING AND APPARATUS THEREFOR

Michael E. Weller, House Springs, Mo., and Joseph L. Daghe, Decatur, Ill., assignors to Mueller Company, Decatur, Ill.
Filed Sep. 15, 1988, Ser. No. 244,297
Int. Cl.^{4} F16K *43/00;* **F16L** *55/12*
U.S. Cl. 137—315 16 Claims

8. An improved line stopping apparatus for use in a plastic fitting and control linkage therefor which is powered by an external drive shaft, comprising:
- a stopper shaft having a second threaded portion formed at a lower end thereof and threaded in a fourth direction, a first threaded portion above said second threaded portion and threaded in a third direction that is opposite the fourth direction, and a threaded nipple portion at an upper end thereof that is threaded in a first direction so as to be adapted to engage a threaded bore in the drive shaft;
- a lock nut mounted on said stopper shaft beneath said nipple and having an outer threaded portion which is threaded in a second direction opposite the first direction so as to be adapted to engage an inner threaded portion provided within a flange on the drive shaft;
- means for releasably locking said stopper shaft against rotation with respect to said lock nut, whereby torque in either direction between the drive shaft and the stopper shaft will cause one of the threaded connections to tighten and the threaded portions may be disassembled by disengaging the locking means when the locking means is pushed away from the lock nut to permit the drive shaft to be unscrewed and removed from the stopper shaft;
- a stopper element adapted to be inserted into the plastic fitting for bearing against the inside thereof to impede the flow of fluid therethrough;
- said stopper element having a first threaded collar threadedly engaged with said first threaded portion;
- a second threaded collar threadedly engaged with said second threaded portion;
- first and second draw bar linkages pivotally attached to said first and second collars, respectively, at first ends thereof, and to said stopper element at second ends thereof, whereby, upon rotation of the stopper shaft the stopper element moves relative to the fitting to impede the flow of fluid therethrough.



4,883,086

ASPIRATION CHEMICAL SUPPLY APPARATUS AND METHOD

Emil A. Lejnar, 201 S. Lake Dr., Lehigh Acres, Fla. 33936
Filed Oct. 26, 1988, Ser. No. 263,201
Int. Cl.^{4} B01F *5/04*
U.S. Cl. 137—399 19 Claims

1. A liquid chemical supply device for use with a liquid distribution system comprising:
- storing means for storing chemical supply;
- transfer means attached to said storing means for transferring chemicals out of said storing means;
- control means attached to said transfer means for controlling liquid flow from said transfer means;
- connecting means adjacent to said control means for carrying chemicals from said control means to the liquid distribution system;
- attaching means on said connecting means for attaching said connecting means to the liquid distribution system;
- suction means in said attaching means for creating suction in said connecting means and transfer means;
- prevention means in said transfer means for preventing liquid in the distribution system from flowing into said storing means;

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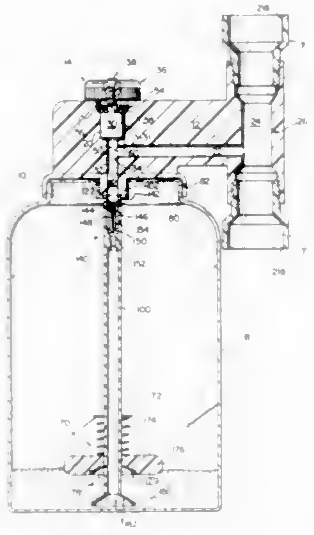
stopping means on said transfer means for automatically stopping liquid flow from said storing means into said transfer means when chemical supply in said storing means reaches a predetermined level;

wherein said storing means comprises a closed container with a top and an opposed bottom, said closed container having an opening defined by a lid at said top of said container, said container defining a reservoir interior for holding a supply of liquid chemicals;

wherein said transfer means comprises an elongated hollow tube having one end attached to said control means and the other end terminating at the bottom of said storing means; and



wherein said other end of said tube includes a closure portion closing off said other end from the passage of said chemical supply, and at least one opening defined along the cylindrical periphery of tube near said other end, and wherein said stopping means comprises a float means movably mounted to said tube, and an elongated spring means fixedly mounted to said tube, said spring for normally urging said float means in a first direction for blocking fluid flow through said at least one opening, said float means operative in a second direction under the urging of said liquid for opening said at least one opening to fluid flow.

4,883,087

CENTRAL HEATING SYSTEM AND WATER SYSTEM AND METHOD FOR CONTROLLING THE TIGHTNESS THEREOF

Inge Nielsen, Odense, Denmark, assignor to I.K. Trading Aps., Odense, Denmark

PCT No. PCT/DK87/00002, § 371 Date Sep. 10, 1987, § 102(e) Date Sep. 10, 1987, PCT Pub. No. WO87/04520, PCT Pub. Date Jul. 30, 1987

PCT Filed Jan. 12, 1987, Ser. No. 100,779

Claims priority, application Denmark, Jan. 17, 1986, 245/86; Jul. 28, 1986, 3587/86

Int. Cl.^{4} F16K *17/00*

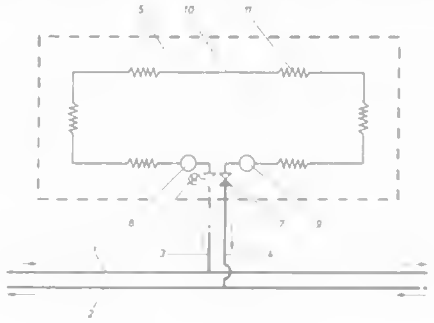
U.S. Cl. 137—458 22 Claims

1. A method of controlling water flow in a water system, comprising the steps of:

detecting a leak in the water system based on a comparison between a signal indicative of the water flow and at least one of a predetermined upper and lower limit of allowable water flow;

stopping the water flow in response to the step of detecting if the comparison reveals that the water flow is one of in excess of the upper limit and below the lower limit; and

effecting the steps of detecting and stopping even during an absence of any demand from the water system for water flow into the water system other than that caused by the leak.



4,883,088

PRESSURE REGULATING APPARATUS

Kurt Herbst, Burgstetten, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

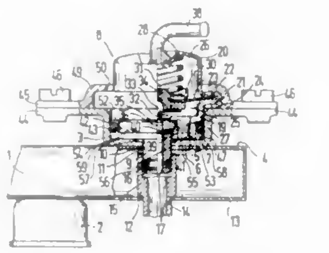
Continuation-in-part of Ser. No. 931,811, Nov. 18, 1986, Pat. No. 4,741,315. This application Apr. 6, 1988, Ser. No. 178,419

Claims priority, application Fed. Rep. of Germany, May 15, 1987, 3716316

The portion of the term of this patent subsequent to May 3, 2005, has been disclaimed.

Int. Cl.^{4} F02M *39/00*

U.S. Cl. 137—510 2 Claims



1. A pressure regulating apparatus having a pressure regulating valve, disposed on and connected to a rigid fuel distributor line for supplying fuel to fuel injection valves of a fuel injection system for internal combustion engines, the regulating valve having a resilient wall that divides a spring chamber from a fuel chamber in the valve housing and arranged to cooperate with a valve seat in the fuel chamber, at least one inflow opening arranged to connect the fuel chamber with the fuel distributor line, and an outlet conduit adapted to lead from the valve seat, via a valve seat body and an outlet connector, to a fuel return line, a cup-shaped holder having a bottom tightly connected to the fuel distributor line, the holder arranged to at least completely encompass the valve housing of the pressure regulating valve in the axial direction and in a region which leads away from the fuel distributor line, an elastic seal disposed in said region, between the valve housing and the holder, in a sealing groove that is defined, remote from the bottom of the holder, in the axial direction by a step of the valve housing, characterized in that on the side of the seal (43) remote from the step (52), the sealing groove (42) is defined axially by a separate ring (58, 61), which is adapted to rest on the bottom (7) of the holder (3).

4,883,089

RAILWAY CAR PRESSURE CONTROL VALVES

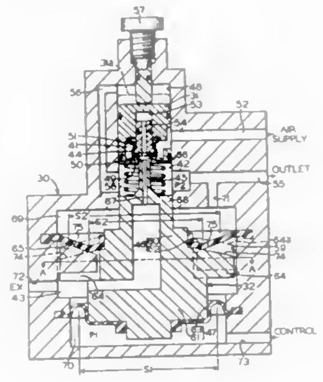
Hideo Tamamori, Kobe, Japan, assignor to Nippon Air Brake Co., Ltd., Kobe, Japan

Filed Dec. 1, 1988, Ser. No. 278,518

Claims priority, application Japan, Dec. 8, 1987, 62-186765[U]

Int. Cl.^{4} G05D *16/00;* F16K *31/126*

U.S. Cl. 137—596.18 8 Claims



1. A railway car pressure control valve comprising, an adjustable middle body member having an air supply chamber, an air supply valve and a valve seat, the air supply chamber is connected to a source of compressed air, an output chamber is connected to an output passage, an exhaust chamber is opened to the atmosphere, the valve seat located in an air supply passage connects the air supply chamber to the output chamber, the air supply valve is biased by a spring toward the valve seat, an exhaust valve rod having a valve tip which seats on the air supply valve and fits loosely in the air supply passage and having an exhaust passage which has one end open at the valve tip and which has the other end open to the exhaust chamber, a control piston having a center portion attached to an inner periphery of a control piston diaphragm, the control piston diaphragm having an outer periphery fixed to the inside wall of a valve main body for defining a control chamber, a source of control air pressure connected to the control chamber to provide a pressure force to move the exhaust valve rod in the direction of the air supply valve, a balance piston having a center portion attached to an inner periphery of a balance piston diaphragm, the balance piston diaphragm having an outer periphery fixed to the inside wall of the valve main body for defining a balance chamber which receives the air pressure from the output chamber proving a balancing force to resist the pressure force in the control chamber, a first and second plurality of radially extending fins have upper slanted surfaces which contact the adjacent surface of the balanced piston diaphragm, and the first and second plurality of the radially extending fins have lower slanted surfaces which contact the adjacent surface of the control piston diaphragm.

4,883,090

MIXING BIBCOCK

Yoshiaki Kitamura, and Kinji Goto, both of Yamagata, Japan, assignors to Kitamuragokin Ind. Co., Ltd., Gifu, Japan

Filed Nov. 9, 1987, Ser. No. 117,834

Int. Cl.^{4} F16K *11/074*

U.S. Cl. 137—625.41 3 Claims

1. A mixing bibcock having a valve mechanism for individually supplying hot water, cold water, or a mixture thereof at a desired temperature, said mixing bibcock comprising:

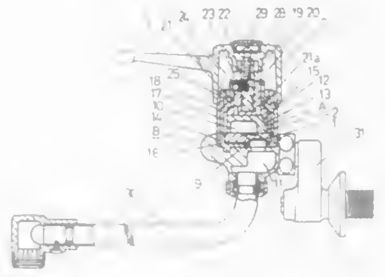
a fixed plate valve having a cold water inlet port, a hot water inlet port, and an outlet port, said ports all extending through said fixed plate valve to connect the top surface thereof to the bottom surface thereof;

a movable plate valve having a recessed water guide groove in the form of a blind hole in one surface thereof;

a main mixing valve body having a valve chamber therein in which said fixed plate valve and said movable plate valve are positioned with the one surface of said movable plate valve abutting one surface of said fixed plate valve and with said recessed water guide groove always in communication with said outlet port in all positions of movement of said movable plate valve on the abutting surface of said fixed plate valve;

an operating means connected to said movable plate valve for reciprocally turning said movable plate valve in a plane on the abutting surface of said fixed plate valve between a middle position which is between said two inlet ports and two end positions on opposite sides of said middle position which are respectively toward said cold water inlet port and said hot water inlet port;

said recessed water guide groove having a first branch extending generally radially outwardly of said movable plate valve and when said movable plate valve is in said middle position, lying between said inlet ports and being movable toward said inlet ports for gradually uncovering the respective inlet ports as said movable plate valve is moved toward the respective end positions, and having a second branch extending radially of said movable plate valve and at an angle to said first branch which, when said movable plate valve is in said middle position, causes said second branch to be inclined toward said cold water inlet, said second branch having a shape which, when said movable plate valve is moved toward the end position corresponding to the hot water inlet, at first comes into communication with said cold water inlet for mixing cold water with the hot water flowing through said recessed water guide groove and gradually increases the area of communication to a maximum and then gradually decreases the area of communication to a minimum as said first branch uncovers the hot water inlet port.



4,883,091

MULTI-PORT SELF-REGULATING PROPORTIONAL PRESSURE CONTROL VALVE

Charles A. Weiler, Holly, Mich., and Logan H. Mathis, Lavonia, Ga., assignors to Ross Operating Valve Company, Troy, Mich.

Filed Dec. 27, 1988, Ser. No. 290,745

Int. Cl.^{4} F15B *13/043*

U.S. Cl. 137—625.64 20 Claims

1. In a pneumatic fluid control valve apparatus having a working fluid inlet connectable to a source of pressurized pneumatic working fluid, a pair of working fluid load outlets, a movable valve member, and a pilot operator for selectively applying a pneumatic control fluid pressure to the movable valve member in order to communicate a selected one of the load outlets with the working fluid inlet to produce load outlet pressures dependent upon the position of the movable valve member, the improvement wherein the pilot operator includes a pair of control pistons interconnected with opposite sides of the movable valve member, the pilot operator being selectively operable to apply control fluid pressure to a selected one of said control pistons and to exhaust control fluid pressure from

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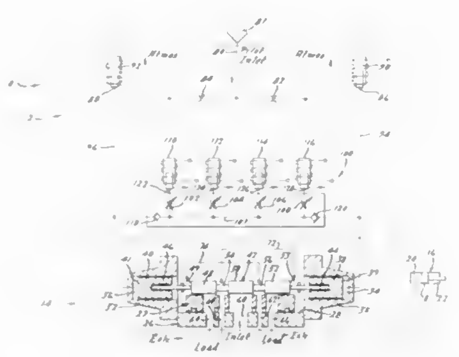
the other of said control pistons in order to cause selective movement of the movable valve member in either of opposite directions, said control valve apparatus including self-regulation means for maintaining the load outlet pressure proportional to the control fluid pressure, said self-regulation means including portions on opposite sides of the movable valve member and feedback means in fluid communication with said valve member portions for applying load outlet pressure from said selected load outlet to one of said valve member portions in order to tend to urge said movable valve member in a direction opposing movement of the movable valve member in a direction that communicates the working fluid inlet with said selected load outlet, the area of each of said control pistons being greater than the area of each of said valve member portions, the load outlet pressure at said selected load outlet being proportional to the control fluid pressure applied to said one of said control pistons in the same ratio as the ratio of the area of said one of said control pistons to the area of said one of said valve member portions, the pilot operator further including means for selectively applying equal control fluid pressures to both of said control pistons simultaneously in order to maintain the movable valve member in a center-off position with substantially no working fluid flow and substantially no control fluid flow, said self-regulation means also tending to maintain the movable valve member in said center-off position in the event of undesired movement from said center-off position.



4,883,092

MULTI-WAY CONTROL VALVE APPARATUS

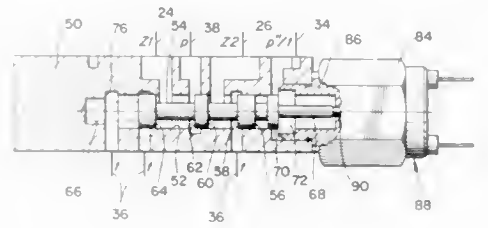
Winfried Rüb, Neustadt/Main, Fed. Rep. of Germany, assignor to Mannesmann Rexroth GmbH, Lohr/Main, Fed. Rep. of Germany

Filed Sep. 8, 1988, Ser. No. 241,957

Claims priority, application Fed. Rep. of Germany, Sep. 17, 1987, 3731297

Int. Cl.⁴ F15B *13/06*

U.S. Cl. 137—625.65 9 Claims



1. A control valve apparatus for use in a hydraulic system of a type in which there are at least two working spaces and in which the control valve apparatus enables selective transmission of pressure to each of said working spaces and also selective depressurizing of all of said working spaces simultaneously, said apparatus including a single control valve having a body and control piston means slidable in said body, a restoring device for biasing said control piston means in one direction, a magnetic control device for moving said control piston means to an intermediate control position, and a control pressure system for moving said control piston means against the force of said restoring device.

4,883,093

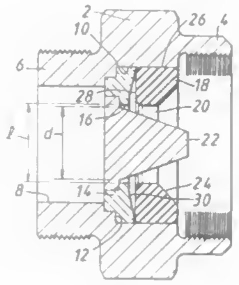
FLUID FLOW CONTROL DEVICE

Peter Miles, Crowthorne, and Leslie A. D. Smith, Newbury, both of England, assignors to Hydro-Tec Limited, Berkshire, England

Filed Dec. 28, 1987, Ser. No. 137,981

Int. Cl.⁴ F16K *15/14;* G05D *7/01*

U.S. Cl. 138—45 13 Claims



1. A device for controlling fluid flow comprising a chamber having an inlet and an outlet for the fluid and flow control means between the said inlet and outlet; the flow control means comprising a resilient member and a dished support therefor having aligned fluid flow passages therethrough; the said resilient member just fitting within the chamber with a small clearance from the chamber walls, and having a downstream face and an upstream face, the upstream face including a flat outer surface and a chamfered inner surface that is inclined downwardly towards the fluid flow passage in the resilient member; and the support including means projecting through the fluid flow passage in the resilient member with clearance therefrom in the relaxes state of the resilient member, for limiting the inward deformation of the said member without closing said fluid flow passage therethrough.

4,883,094

APPARATUS FOR SEALING PIPE

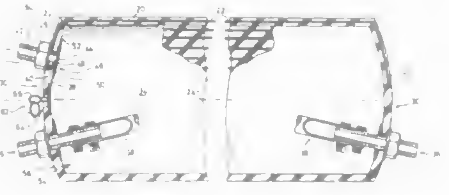
Manfred Vetter, Burg Langendorf, D-5352 Zülpich, Fed. Rep. of Germany

Filed May 11, 1988, Ser. No. 192,828

Claims priority, application Fed. Rep. of Germany, May 11, 1987, 3715645

Int. Cl.⁴ F16L *55/12*

U.S. Cl. 138—89 11 Claims



1. A pipe sealing pad having

a cylindrical, external sleeve made of reinforced rubber material; and

two end walls made of rubber material and exhibiting an inner surface each;

said sleeve and said two end walls are linked together by heat vulcanization and define an air-tight compartment; said air-tight compartment is accessible by means of a connection in form of a pipe fitting inserted in an opening in one of the two end walls, and in the compartment the pipe fitting is linked to a ring disk having an inner area, an outer area, and a ring-shaped compensation zone between said inner area and said outer area, said inner area being linked to the pipe fitting; the ring disk is linked to the said inner surface of the end wall exhibiting the opening only in the said outer area, in the ring shaped compensation zone the ring disk is not linked with either the pipe fitting or the inner surface of the said end wall exhibiting the opening; and the ring disk at least in its ring-shaped compensation zone is made of a material that has a greater elasticity than the material of the end wall exhibiting the opening.

4,883,095

CONNECTING CONSTRUCTION FOR SIDESTAY OF HEALD FRAME AND TRANSVERSE BEAM

Setsu Maruyama, Sakai, and Kiyosbi Takei, Toyonaka, both of Japan, assignors to Maruyama Mfg. Co., Ltd., Sakai, Japan

Filed Dec. 4, 1987, Ser. No. 128,646

Claims priority, application Japan, Oct. 30, 1987, 62-167574

Int. Cl.⁴ D03C *9/06*

U.S. Cl. 139—91 4 Claims

1. A connecting construction for a sidestay of a heald frame and a transverse beam comprising:

a sidestay of a heald frame;

a transverse beam to be connected via an end face thereof with said sidestay;

a concave engagement space defined in the end face of said transverse beam;

a projecting portion formed integrally with said sidestay to be inserted into said concave engagement space;

securing means for pressingly securing a peripheral wall of said concave engagement space to said projecting portion in a longitudinal direction of said sidestay; wherein said securing means includes:

a wedge-shaped securing member provided at an interspace formed between one of two outer faces of said projecting portion and one of two peripheral wall faces of said concave engagement space, said one outer face of said projecting portion and said one peripheral wall face being opposed to each other in a longitudinal direction of said sidestay, said wedge-shaped securing member having contact faces respectively in contact with said one outer face and said one peripheral wall face, and

operative means moving said securing member along said transverse beam to secure the sidestay to the transverse beam.

4,883,096

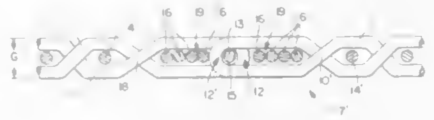
SEAM DESIGN FOR SEAMED FELTS

Patrick H. Penven, Clinton, S.C., assignor to Asten Group, Inc., Charleston, S.C.

Filed May 4, 1988, Ser. No. 190,136

Int. Cl.⁴ D03D *3/04*

U.S. Cl. 139—383 A 3 Claims



1. A seam construction for closing an open papermaker's fabric having a plurality of machine direction yarns interwoven with a plurality of cross machine direction yarns in a repeated pattern throughout the fabric length with each end of the fabric terminated with a plurality of machine direction loops, said seem construction comprised of:

each of said plurality of machine direction loops having a free end defined by a continuous arcuate portion of the machine direction yarn and a fixed end defined by an adjacent crossing portion of the said machine direction yarn as interwoven in the repeated pattern, said arcuate portion defining a vertical plane which is substantially perpendicular to the horizontal plane defined by said cross machine direction yarns;

said machine direction loops at each end of said fabric intermeshed to define a cross machine direction pintle channel, each of said loops having an internal aperture which has a longitudinal dimension equal to at least three times the average longitudinal dimension of the cross machine direction yarns and a vertical dimension no greater than the largest vertical dimension of a cross machine direction yarn;

a pintle in said pintle channel such that a cross machine direction stuffer channel is formed through the loops of at least one end of the fabric between the crossing segments of those loops and the free ends of the loops of the other fabric end which is at least the diameter of one cross machine direction yarn; and

at least one cross machine direction stuffer positioned within said cross machine direction stuffer channel.

4,883,097

PAPERMAKERS WET FELTS

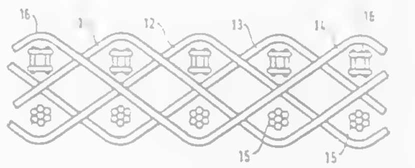
Marcel Dufour, Sryrieix, France, assignor to Asten Group, Inc., Charleston, S.C.

Continuation of Ser. No. 357,014, Mar. 11, 1982. This application Sep. 4, 1986, Ser. No. 904,028

Claims priority, application France, Mar. 11, 1981, 81 04839

Int. Cl.⁴ D21F *7/08;* D03D *1/00*

U.S. Cl. 139—383 A 9 Claims



1. A shock absorbing, vibration suppressing fabric for transporting a paper sheet in a papermaking machine having at least one roller nip through which the paper sheet must be transported, said fabric having at least two systems of yarns interwoven in a repeat pattern with at least one of said systems having compressible knitted yarns interwoven with at least one of said systems having longitudinally extending incompressible yarns, said compressible yarns being under less tension than

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said monofilament yarns so that the entire fabric is compressible and has a thickness limit EL which is defined by the equation EL=eF+ee+ef, wherein eF is the theoretical thickness reduced to a homogeneous unit, ee is the thickness corresponding to the quantity of water carried by the fabric and ef corresponds to the thickness of the paper sheet.

4,883,098
PROJECTILE OPENER AND LIFT FOR A PROJECTILE LOOM

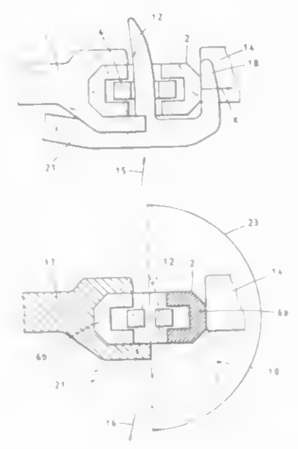
Erwin Pfarrwaller, Winterthur, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Oct. 26, 1988, Ser. No. 262,900

Claims priority, application Switzerland, Nov. 20, 1987, 04516/87

Int. Cl.^{4} D03D *47/24. 47/27;* **D03J** *5/06*

U.S. Cl. 139—439 **16 Claims**



1. In a projectile loom, the combination comprising a projectile lift for pivoting and positioning a projectile into a ready-to-pick position, said lift having a guide profile cross-section open on a striking side of the projectile; and
a projectile opener pivotal with said lift to open a gripper in the projectile said opener including a guide element for engaging a guide surface of the projectile during pivoting of the projectile into said ready-to-pick position.

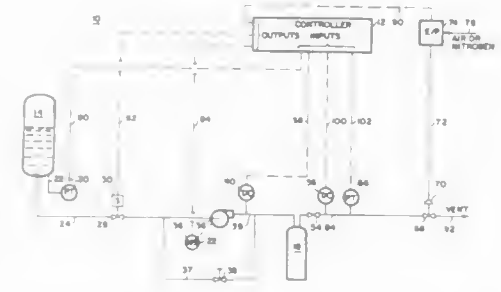
4,883,099
METHOD AND SYSTEM FOR FILLING LIQUID CYLINDERS

James Vanommeren, R.D. #2, Box 254-8, New Tripoli, Pa. 18066

Filed Jul. 22, 1986, Ser. No. 888,655

Int. Cl.^{4} B67C *3/32*

U.S. Cl. 141—1 **15 Claims**



1. A method for minimizing cryogenic substance loss in a filling station having a storage tank storing cryogenic substance for loading a container having an outlet vent with a throttle vent valve for adjusting the differential pressure between the substance being loaded and the container, comprising the steps of:
- (a) first determining a value of filling loss for each of a plurality of values of differential pressure;
- (b) selecting and storing prior to loading an optimum value of differential pressure from the plurality of values to produce the minimum filling loss;
- (c) loading substance into a container;
- (d) continuously monitoring the differential pressure during loading;
- (e) comparing the monitored differential pressure to the optimum differential pressure; and
- (f) adjusting the throttle vent valve to maintain the monitored differential pressure at a value substantially equal to the optimum differential pressure value.

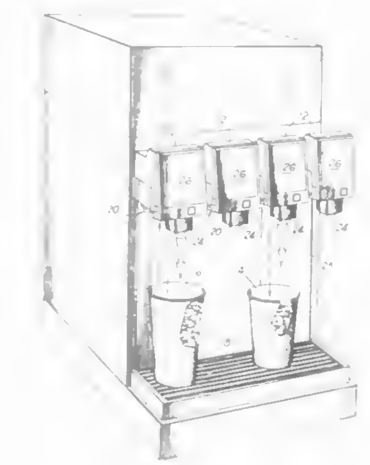
4,883,100
AUTOMATIC CONTROL SYSTEM FOR FILLING BEVERAGE CONTAINERS

William F. Stembridge, 618 Camelot Dr., College Park, Ga. 30349; James C. Sturrock, Rte. 1, Box 389, Espanola, N. Mex. 87532, and W. Frank Stembridge, 1821 Farris St., East Point, Ga. 30344

Division of Ser. No. 48,111, May 8, 1987, which is a continuation-in-part of Ser. No. 684,215, Dec. 20, 1984, abandoned, which is a continuation-in-part of Ser. No. 629,397, Jul. 10, 1984, abandoned. This application Nov. 30, 1987, Ser. No. 128,117

Int. Cl.^{4} B65B *57/14;* **G01F** *23/00*

U.S. Cl. 141—1 **26 Claims**



1. An apparatus for automatically filling a container with a beverage comprising:
- (a) a beverage dispenser including a beverage dispensing nozzle located above a container supporting grate;
- (b) a pair of ultrasonic energy transmitters mounted on said dispenser for transmitting ultrasonic energy down toward said container supporting grate located below said beverage dispensing nozzle;
- (c) a pair of ultrasonic energy receivers mounted on said dispenser, separate from and spaced apart from said transmitters and positioned for receiving ultrasonic energy reflected back up from the direction of said grate and from generating signals corresponding to the travel time of the ultrasonic energy;
- (d) control circuit means using said generated signals for automatically detecting the presence of any container placed on said grate and below said nozzle; and
- (e) said control circuit means including means using said generated signals for controlling the filling of any container placed on said grate with beverage from said nozzle.

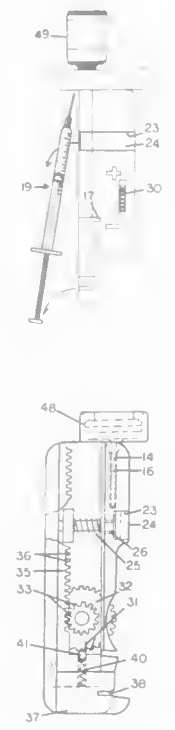
4,883,101
FILLING DEVICE WITH SOUND INDICATOR FOR FILLING INJECTION SYRINGE

Bernard Strong, Tarzana, Calif., assignor to Jordan Enterprises, Garden Grove, Calif.

Filed Jun. 27, 1988, Ser. No. 212,210

Int. Cl.^{4} B65B *3/32*

U.S. Cl. 141—27 **8 Claims**



1. A filling device for a syringe, including barrel and stem portions, comprising a case portion, and including:
- i. movable holding means for releasably securing the stem portion of the syringe, and adapted to load or unload the syringe by movement of the stem portion;
- ii. a linear gear, including gear teeth attached to the holding means, and adapted to move the holding means;
- iii. a rotatable gear mounted by the case portion, the rotatable gear defining manually actuable gear teeth, the rotatable gear including gear teeth for engaging and actuating the gear teeth of the linear gear;
- iv. a sounding element adapted to be biased against the manually actuable gear teeth of the rotatable gear; and,
- v. a locking arm mounted on the filling device and adapted to secure the syringe against movement when the syringe stem is moved to load or unload the syringe, the locking arm being adapted to release the syringe after loading; and, means for detachably mounting to the filling device a bottle containing liquid medicine for loading or unloading by the syringe; whereby:
- vi. movement of the linear gear in one direction causes the holding means to load the syringe with liquid medicine from the medicine bottle, and movement of the linear gear in an opposite direction causes the syringe to unload liquid medicine into the bottle; and,
- vii. manual movement of the rotatable gear produces a sound from the sounding element due to contact with an individual gear tooth of the manually actuable gear teeth which coincides with an increment of movement of the rotatable gear, each sound being equivalent to a predetermine amount of liquid medicine loaded by the syringe.

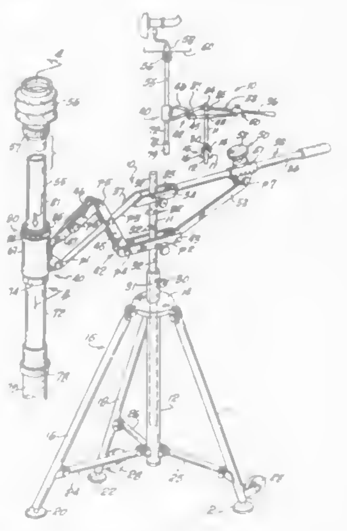
4,883,102
DRAIN LINE APPARATUS

Mher Gabrielyan, 5921 Fountain Ave., Los Angeles, Calif. 90028, and John R. Brestel, Sepulveda, Calif., assignors to Mher Gabrielyan, Hollywood, Calif.

Filed Feb. 18, 1987, Ser. No. 16,127

Int. Cl.^{4} B65B *3/04*

U.S. Cl. 141—98 **21 Claims**



1. A drainage apparatus comprising
a stand mast,
means for supporting said stand mast on a working surface,
first-class lever means having a fulcrum and including a load arm and an effort arm fulcrumed on said stand mast,
funneling means pivotally attached to said effort arm,
means fulcrumed on said stand mast and pivotally attached to said funneling means for maintaining in drainage orientation said funneling means during operation of said lever means, and
means for locking said funneling means in a fixed position after operation of said lever means,
said maintaining means being fulcrumed on said stand mast below the fulcrum for said lever means.

4,883,103
FILLER NECK SEALING ASSEMBLY

Emil Szlaga; Robert S. Harris, and Robert H. Thompson, all of Connersville, Ind., assignors to Stant Inc., Connersville, Ind.

Continuation-in-part of Ser. No. 106,632, Oct. 8, 1987, Pat. No. 4,816,045, which is a continuation-in-part of Ser. No. 846,081, Mar. 31, 1986, Pat. No. 4,707,164. This application Jan. 25, 1988, Ser. No. 148,384

Int. Cl.^{4} B67D *5/04*

U.S. Cl. 141—368 **6 Claims**

1. A system for communicating fuel from a fuel-dispensing nozzle to a fuel tank, the system comprising:
a filler neck having an inner wall defining a nozzle-receiving passageway having a mouth, and
means for dividing the nozzle-receiving passageway into an outer chamber communicable with the atmosphere through the mouth and an inner chamber in fluid communication with the fuel tank, the dividing means including establishing means for forming a liquid fuel and fuel vapor seal to block flow of liquid fuel and fuel vapor through any space between the inner wall of the filler neck and a fuel-dispensing nozzle inserted into the inner chamber through the filler neck mouth so that the fuel dispensing nozzle is admitted into the inner chamber without cou-

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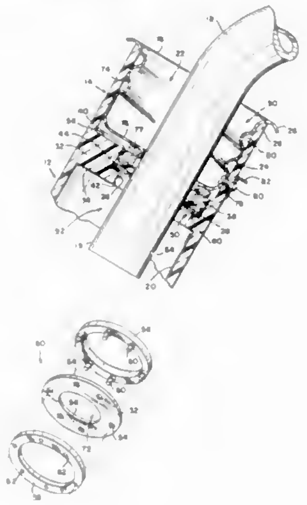
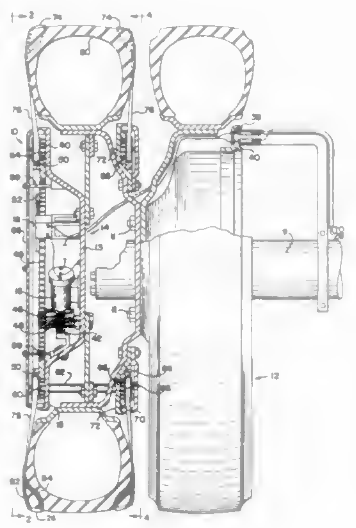
pling the inner and outer chambers in fluid communication, the establishing means including an annular seal member having a radially outer perimeter sealingly engaging the inner wall of the filler neck and a circular radially inner perimeter configured to define aperture means for sealingly engaging a fuel-dispensing nozzle received therein, the annular seal member being made of a resilient material and including forward and rearward faces extending between the radially inner and outer perimeters the inner and outer perimeters of the seal moveable independently of each other, and the establishing means further including a first mounting ring abutting the forward face, a second mounting ring abutting the rearward face, and means extending through said resilient material for permanently interconnecting the first and second mounting rings to one another in fixed spaced-apart relation to capture the annular seal member in a permanently fixed position therebetween so that said annular sealing ring and interconnected mounting rings cooperate to define a subassembly mountable in the dividing means to provide a nozzle-sealing apparatus in a filler neck.

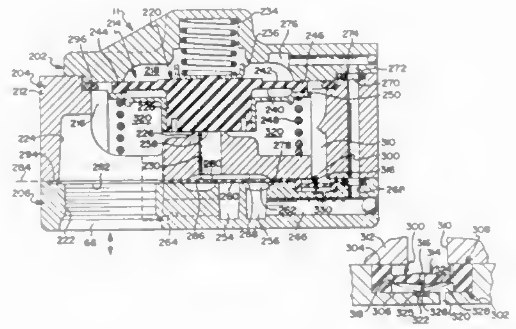


4,883,104
STUDDED TIRE APPARATUS
Tomiji Minami, 59, Suwa 2-chome, Toyokawa 422, Japan
Filed Jun. 16, 1988, Ser. No. 206,703
Int. Cl.⁴ B60C *11/00*
U.S. Cl. 152—210 5 Claims

2. A studded tire apparatus comprising a wheel adapted to be rotatably mounted on a vehicle, a tire mounted on said wheel, said tire having a plurality of angularly spaced pairs of passages forming holes on opposite sides of said tire leading to the outer peripheral surface thereof, a belt extending movably through each of said pairs of passages, a stud fastened to each of said belts and movable with the associated belt between projected and retracted positions, gear means mounted on said wheel and connected with said belts for moving said belts and said studs between said positions, and an electric motor connected to said gear means for operating said gear means.



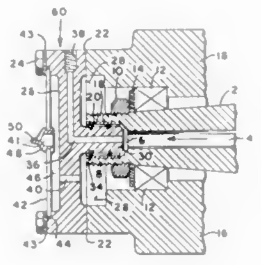
4,883,105
WHEEL END VALVE FOR CENTRAL TIRE INFLATION SYSTEM
Gary R. Schultz, Kalamazoo, Mich., assignor to Eaton Corporation, Cleveland, Ohio
Filed Sep. 12, 1988, Ser. No. 243,003
Int. Cl.⁴ B60C *29/00*
U.S. Cl. 152—416 2 Claims



1. A wheel end valve assembly for a central tire inflation system comprising a valve body having a first fluid connection defined by a first port for connection to a selectively pressurized and exhausted conduit, a second fluid connection defined by a second port for connection to an interior pressurized chamber of an inflatable tire, said valve assembly comprising first valve means responsive to pressurization of said selectively pressurized and exhausted conduit to assume a first position for establishing fluid communication between said first and second ports and responsive to exhausting to atmosphere of said selectively pressurized and exhausted conduit to assume a second position for blocking fluid communication between said first and second ports thereof, said first valve means comprising a valve member having a first surface exposed to fluid pressure at said first port and an opposed second larger surface, said valve assembly comprising a second valve means constantly in fluid communication with said second port and responsive to a sensed pressurization of said interior chamber of said tire being less than a predetermined minimum reference pressure and an isolation circuit to conduct fluid from said first port past said second valve means to said second larger surface to maintain said first valve means in said second position thereof in response to said pressurization of said tire being less than said mimimum reference pressure, said assembly characterized by:

a normally opened third valve means in fluid communication with said first port and said isolation circuit, said third valve comprising an elastomeric disc shaped diaphragm having peripheral sealing means and a fixed post, an orifice formed in said diaphragm into which said post extends to thereby maintain a zero reference pressure differential between said first port and said second larger surface, said third valve being responsive to a rapid increase in pressure at said first port to flex said diaphragm causing said post to close said orifice and thereby permit said first valve means to open.

4,883,106
ROTARY WHEEL-END ASSEMBLY FOR TIRE INFLATION SYSTEM
Gary R. Schultz, and Dale L. Kwasniewski, both of Kalamazoo, Mich., assignors to Eaton Corporation, Cleveland, Ohio
Filed Jan. 19, 1989, Ser. No. 299,926
Int. Cl.⁴ B60C *29/00*
U.S. Cl. 152—417 10 Claims



1. A rotary wheel-end assembly for a central tire fluid inflation system, said assembly securable to an annular surface of a wheel hub journaled for rotation on a non-rotating axle having an open-ended bore in the end thereof in fluid communication with the central inflation system, said assembly comprising;

a disc-like member securable to the wheel hub annular surface and, upon securement thereto, defining a first chamber between the wheel hub and a surface of said disc-like member within the annular surface facing theretowards,

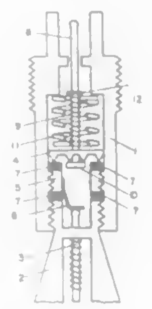
a projection extending from the disc-like member into the axle bore and adapted to enable rotary movement of the assembly relative thereto upon rotation of the wheel hub,

means for sealing against fluid leakage between a radially inner axle surface surrounding said bore and a radially outer surface of the projection disposed therewithin whilst enabling rotary movement of the assembly relative thereto,

a passageway extending through the projection axially and the disc-like member and operative to convey the fluid received from the axle bore therethrough to an outlet port thereof adapted to enable the fluid to be conveyed from the assembly to the tire, and

said first chamber operative to hold a lubricant therein for lubricating the projection to lessen rotational friction between the rotary assembly and the axle.

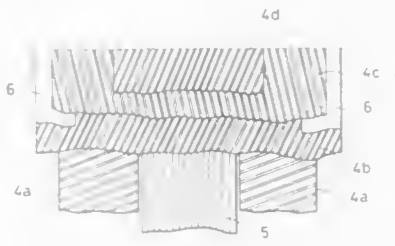
4,883,107
AIR INLET AND AUTOMATIC PRESSURE ADJUSTMENT DEVICE FOR A TIRE
Kenneth B. Keys, Rte. 13, Box 9502, Leander, Tex. 78641
Filed Dec. 4, 1987, Ser. No. 128,909
Int. Cl.⁴ B60C *29/00, 23/00*
U.S. Cl. 152—431 2 Claims



1. An assembly to allow air filling and automatic pressure adjustment of a tire comprising:

(a) a housing means with an externally threaded upper end
(b) an adjustable loading spring contained in said housing means
(c) a secondary valve held down by said adjustable loading spring
(d) a primary valve with a stem extending through the top of said housing means and through said secondary valve
(e) a seat in said secondary valve to seat said primary valve
(f) a return spring around said stem of said primary valve that urges said primary valve to seat in said secondary valve, and (g) wherein said housing means is a cap containing an internal collar threaded externally under said secondary valve with said collar containing a depessor spring to open a valve core valve in a valve stem and further serving the purpose of adjusting said adjustable loading spring.

4,883,108
HEAVY-DUTY PNEUMATIC RADIAL TIRE
Ken Takahashi, Atsugi, and Kazuyuki Kabe, Tokyo, both of Japan, assignors to The Yokohama Rubber Co., Ltd., Tokyo, Japan
Filed Sep. 23, 1988, Ser. No. 248,528
Claims priority, application Japan, Sep. 24, 1987, 62-237086
Int. Cl.⁴ B60C *9/20, 9/28*
U.S. Cl. 152—531 10 Claims



1. A heavy-duty radial tire comprising a carcass layer, a tread, and a belt layer provided between said carcass layer and said tread, said belt layer comprising at least four metallic cord layers of first, second, third, and fourth belts in that order from said carcass layer towards said tread, wherein said first belt has a cord angle of 40° to 75° relative to the circumferential direction of the tire and is split into left and right portions so as to provide a space in the central region of a crown portion, said left and right portions being provided on left and right shoul-

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der portions, respectively; said space is provided with at least one organic fiber cord layer having a total tensile strength per unit width of at least 240 kgf/cm and a cord angle of 0° to 10° relative to the circumferential direction of the tire; said second belt comprises cords provided at a cord angle of 22° to 30° relative to the circumferential direction of the tire; said third belt comprises cords crossing said cords constituting said second belt and provided at a cord angle of 10° to 16° relative to the circumferential direction of the tire; and said fourth belt comprises cords provided at a cord angle of at least 18° relative to the circumferential direction of the tire.

4,883,109
ROLLER BLIND FOR SKYLIGHTS

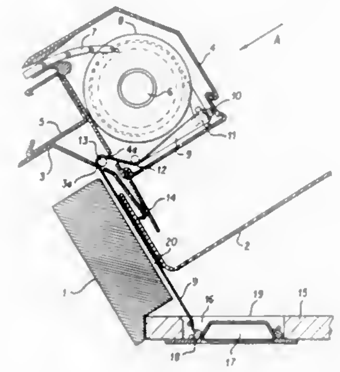
Svend A. Sonderby, Videbaek, Denmark, assignor to V. Kann Rasmussen Industri A/s, Soborg, Denmark

Filed May 23, 1988, Ser. No. 197,705

Claims priority, application Fed. Rep. of Germany, May 26, 1987, 3717681

Int. Cl.^{4} E04F *10/08;* E06B *9/26*

U.S. Cl. 160—32 **14 Claims**



1. A roller blind for use with skylights mounted on a roof, said roller blind having a frame upper piece, an outer covering, a roller blind compartment which can be fitted on the upper part of the blind, a winding shaft rotatably mounted in the compartment and a strap drum coaxially connected to the winding shaft for a pulling strap leading to the inside of the room and connected if necessary to a strap winder, wherein there are arranged

(a) in the roller blind compartment (**4**) at least a first strap deflecting element (**10**) for deflection of the pulling strap (**9**) leaving the strap drum (**8**) into a direction substantially parallel to the winding shaft (**6**), and

(b) at least a second strap deflecting element (**11**) for further deflection of the pulling strap (**9**) into a direction substantially parallel to the central plane of the strap drum (**8**), and

(c) at least a third strap deflecting element (**13**) is provided for deflection of the pulling strap (**9**) into a direction running outward from the window substantially perpendicular to the exit plane of the roller blind (**7**) from the roller blind compartment (**4**), said strap deflecting element (**13**) being mounted on the roller blind compartment (**4**) spaced from said first strap deflecting element to a point proximate to the frame upper piece (**1**) so that the pulling strap (**9**) can, in the installed position, be led inward through a strap opening (**3*a***), made in said outer covering (**3**) of a frame upper piece (**1**), said pulling strap being located between said frame upper piece (**1**) and a cover part (**2**) said cover part being partially disposed between said outer covering (**3**) and said frame upper piece thereby avoiding passing of the strap through the roof and the inherent sealing problems associated therewith.

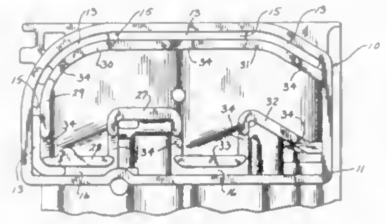
4,883,110
EVAPORABLE FOAM PATTERN FOR USE IN A CASTING PROCESS AND HAVING LOAD TRANSFER WALLS

Edward J. Morgan, North Fond du Lac, and William D. Corbett, Fonde du Lac, both of Wis., assignors to Brunswick Corporation, Skokie, Ill.

Filed Oct. 26, 1988, Ser. No. 263,006

Int. Cl.^{4} B22C *7/02*

U.S. Cl. 164—249 **11 Claims**



6. An evaporable foam engine block pattern, comprising an evaporable foam cylinder block pattern section having an outer peripheral rim and an internal wall spaced inwardly from said rim to provide a water passage therebetween, said cylinder block section having an exhaust manifold passage bordered by said internal wall, an evaporable foam exhaust passage cover section having a rim disposed in abutting relation with the rim of said cylinder block section and having an inwardly facing internal wall disposed in abutting relation with the internal wall of said cylinder block section, the internal wall of said exhaust passage cover section being spaced inwardly of the rim thereon to provide a water passage communicating with the water passage of said cylinder block section, said exhaust passage cover section also having a central portion disposed inwardly of the internal wall and enclosing the exhaust manifold passage, an evaporable foam water passage cover section including a rim disposed in abutting relation with the rim of said exhaust passage cover section, said water passage cover portion including a central portion spaced outwardly of the central portion of the exhaust passage cover section to define a water chamber therebetween, load transmitting means disposed within said water chamber and interconnecting the outer surface of said exhaust passage cover section with the inner surface of said water passage cover section, said load transmitting means being disposed in load transmitting alignment with said abutting internal walls, a layer of adhesive securing the abutting rims together, and a second layer of adhesive joining said abutting internal walls.

4,883,111
INGOT MOULD FOR CONTINUOUS CASTING

Hermann Lax, Düsseldorf; Waldemar Radtke, Oberhausen, and Karl-Heinz Wyrwas, Moers, all of Fed. Rep. of Germany, assignors to Thyssen Stahl Aktiengesellschaft, Duisburg, Fed. Rep. of Germany

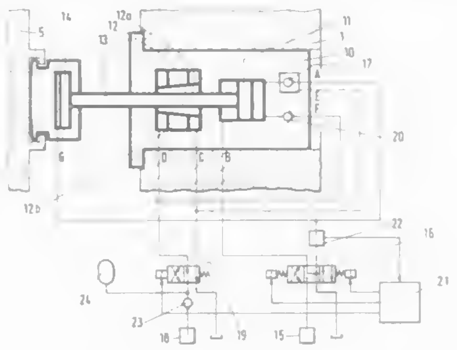
Filed Oct. 17, 1988, Ser. No. 258,402

Claims priority, application Fed. Rep. of Germany, Oct. 23, 1987, 3735883

Int. Cl.^{4} B22D *11/04*

U.S. Cl. 164—436 **9 Claims**

1. An ingot mould for continuous casting, comprising: wide side plates (**4, 5**), one of which (**4**) forms a fixed side wall and the other (**5**) a loose side; adjustable narrow side plates (**2, 3**) clamped by the wide side plates (**4, 5**); and adjusting cylinders (**8, 9, 11**) adjustable to a supporting force for the wide side plate (**5**) forming the loose side wall, characterized in that in addition to supporting cylinders (**8, 9, 11**) the wide side plate (**5**) forming the loose side wall is supported on supporting elements (**12**) which are locked in dependence on a limit value of the pressure operative at the adjusting cylinders (**8, 9, 11**).



4,883,112
METHOD OF CASTING AND MOLD MAKING

Horst Gravemann, Osnabrueck, Fed. Rep. of Germany, assignor to Kabel-und Metallwerke G. AG, Osnabrueck, Fed. Rep. of Germany

Filed Aug. 5, 1988, Ser. No. 229,214

Claims priority, application Fed. Rep. of Germany, Aug. 5, 1987, 3725950

Int. Cl.^{4} B22D *11/00*

U.S. Cl. 164—459 **11 Claims**

1. A method of continuous casting comprising providing a continuous casting mold of a copper alloy, said copper alloy including from 0.01% to 0.15% boron, and from 0.01 to 0.2% magnesium, the remainder being copper as well as manufacture-dependent impurities and working additives all percentages by weight.

4,883,113
POURING DEVICE FOR DUAL-ROLL TYPE CONTINUOUS CASTING MACHINE

Kunio Matsui, Yokohama; Hisahiko Fukase, Tokyo; Atsushi Hirata, Hiratsuka, and Akihiro Nomura, Yokohama, all of Japan, assignors to Ishikawajima-Harima Jukogyo Kabushiki Kaisha, Japan

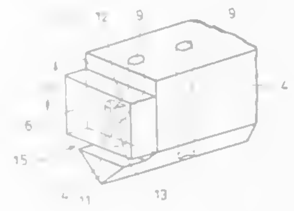
Filed Dec. 5, 1988, Ser. No. 280,139

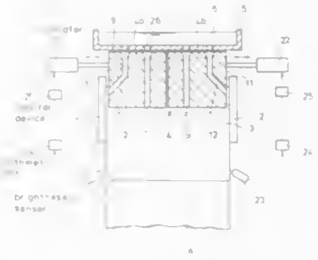
Claims priority, application Japan, Mar. 3, 1988, 63-50017[U]; Mar. 3, 1988, 63-28574

Int. Cl.^{4} B22D *11/06*

U.S. Cl. 164—428 **8 Claims**

1. In combination, a pouring device and a pair of parallel cooling rolls for dual-roll type continuous casting machines, wherein a core is supported to be partially submerged in a basin defined by said pair of parallel cooling rolls as well as side dams disposed at both end faces of said cooling rolls, said core being formed with side-dam-wise flow passages at opposite end faces for supplying melt through said core and said opposite end faces of said core in an axial direction of the cooling rolls, an improvement comprising movable means associated with said end faces for controlling, in relation to the side dams, the flow rate of melt flowing through said side-damwise flow passages toward inner surfaces of said side dams.





4,883,114
OSCILLATION METHOD AND APPARATUS FOR A CONTINUOUS CASTING MOLD

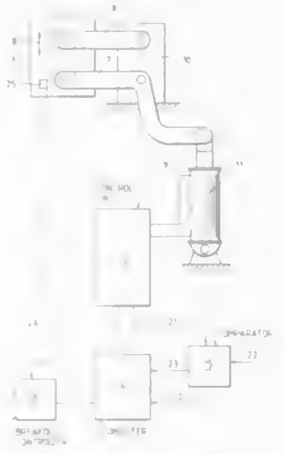
Manfred Wolf, Zurich, Switzerland, assignor to Clecim, Cergy-Pontoise, France; Davy (Distington) Limited, Cumbria, England and Sumitomo Heavy Industries Ltd., Tokyo, Japan

Filed Jan. 24, 1989, Ser. No. 301,605

Claims priority, application Switzerland, Jan. 28, 1988, 00305/88

Int. Cl.^{4} B22D *11/04. 11/16*

U.S. Cl. 164—478 **20 Claims**



1. A method for the continuous casting of steel, comprising the steps of forming a continuously cast steel strand in a continuous casting mold, said mold defining a casting passage having an inlet end and an outlet end, and the forming step including admitting molten steel into said inlet end and at least partially solidifying said molten steel in said mold; withdrawing said strand from said passage via said outlet end in a first direction; oscillating said mold by alternately moving the latter in said first direction and in a second direction counter to said first

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direction, the oscillating step being performed in such a manner that displacement of said mold varies cyclically with time in a sawtooth-like fashion; and regulating oscillation of said mold so that, during an oscillation cycle, the speed of said mold exceeds the speed of said strand essentially throughout travel of said mold in said first direction and the travel time of said mold in said first direction approximates 0.1 second, the regulating step further being performed in such a manner that the oscillation frequency increases from a value between about 60 and about 120 cycles per minute to a value between about 120 and about 200 cycles per minute as said strand accelerates in a first range of speeds extending from standstill to a predetermined speed between about 0.8 and about 1.2 meter per minute, and the regulating step also being performed such that the oscillation frequency remains substantially constant while the oscillation stroke increases with strand speed as said strand accelerates from said predetermined speed in a second range of speeds.

9. An apparatus for the continuous casting of steel, comprising a continuous casting mold for steel, said mold defining a casting passage having an inlet end for molten steel and an outlet end for a continuously cast steel strand, and said outlet end being spaced from said inlet end in a first direction; a mechanism for oscillating said mold so that the latter alternately moves in said first direction and in a second direction counter to said first direction in a sawtooth-like fashion with time; and means for regulating said mechanism, said regulating means including computer means programmed to effect oscillation of said mold so that, during an oscillation cycle, the speed of said mold exceeds the speed of the strand essentially throughout travel of said mold in said first direction and the travel time of said mold in said first direction approximates 0.1 second, and said computer means further being programmed to increase the oscillation frequency from a value between about 60 and about 120 cycles per minute to a value between about 120 and about 200 cycles per minute as the strand accelerates in a first range of speeds extending from standstill to a predetermined speed between about 0.8 and about 1.2 meter per minute, said computer means also being programmed to maintain the oscillation frequency substantially constant while increasing the oscillation stroke with strand speed as the strand accelerates from said predetermined speed in a second range of speeds, and said regulating means additionally including a comparator for continuously comparing the friction between the strand and said mold with a reference value and continuously transmitting a signal indicative of the difference to said computer means, said computer means being operative to vary the oscillation of said mold in response to said signal so as to minimize friction between the strand and said mold.

4,883,115
METHOD AND APPARATUS FOR COOLING HIGH-TEMPERATURE PROCESSES

Niles W. Johanson; James C. Saeger, both of San Diego, and Mark L. White, San Marcos, all of Calif., assignors to Ogden Environmental Services, Inc., San Diego, Calif.

Filed Sep. 16, 1988, Ser. No. 245,914

Int. Cl.⁴ F28D *19/00*

U.S. Cl. 165—1 20 Claims

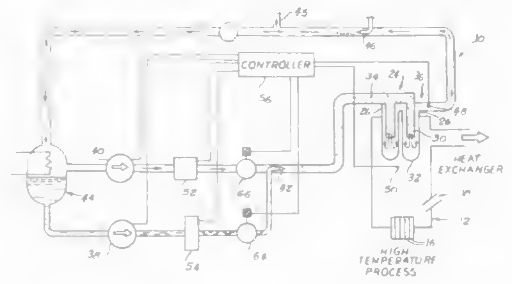
1. A method of controllably cooling a high-temperature process comprising the steps of:

pumping a coolant comprising a mixture of gas and atomized liquid through a heat exchanger to enable heat transfer from said high-temperature process to said coolant in said heat exchanger while maintaining said coolant separate from said process;

measuring the process temperature;

comparing the temperature of said process with a reference temperature; and

varying the flow rate of at least one of said liquid and said gas as necessary to maintain the actual temperature of said process close to said reference temperature while maintaining a coolant flow rate such that said atomized liquid is substantially entirely vaporized and the resulting vapor is at least slightly superheated in said heat exchanger.



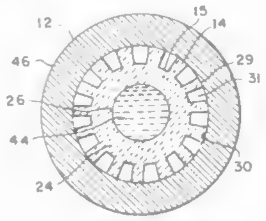
4,883,116
CERAMIC HEAT PIPE WICK

Benjamin Seidenberg, Baltimore, and Theodore D. Swanson, Columbia, both of Md., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Jan. 31, 1989, Ser. No. 304,147

Int. Cl.⁴ F28D *15/02*

U.S. Cl. 165—104.26 18 Claims



1. A wick for inclusion in a capillary loop or heat pipe including a first surface means for contacting a working fluid in a liquid state in said loop, and a second surface means for evaporation of said liquid in said loop, said wick being comprised of a permeable, open-cell, fibrous ceramic foam material.

4,883,117
SWIRL FLOW HEAT EXCHANGER WITH REVERSE SPIRAL CONFIGURATION

Bradley A. Dobbs; David B. Wigmore, both of San Diego, Calif., and Richard E. Niggemann, Rockford, Ill., assignors to Sundstrand Corporation, Rockford, Ill.

Filed Jul. 20, 1988, Ser. No. 221,803

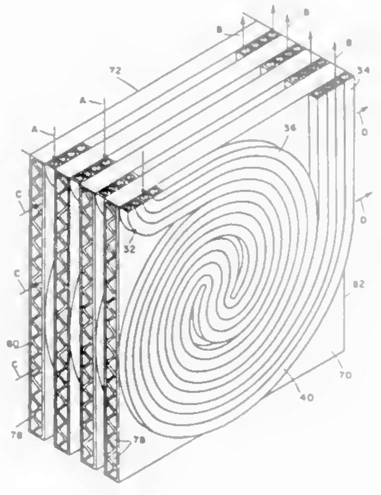
Int. Cl.⁴ F28D *7/02*

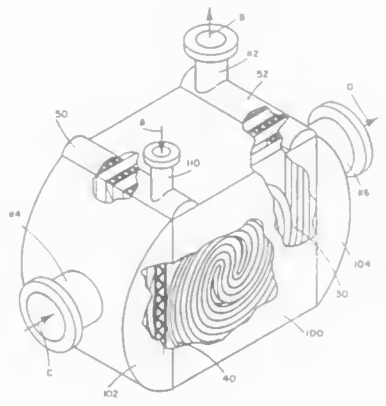
U.S. Cl. 165—164 3 Claims

1. A heat exchanger, comprising:

a plurality of first fluid conduit assemblies, each of said first fluid conduit assemblies comprising a first fluid conduit disposed in a first generally planar region and having a first end and a second end, a first portion of said first fluid conduit extending in an inward spiral from said first end to a first area of said first generally planar region, a second portion of said first fluid conduit being connected in fluid communication with said first portion of said first fluid conduit and extending in an outward spiral form said first area of said first generally planar region toward sai second end of said first fluid conduit, said inward spiral extending in a rotational direction opposite to the rotational direction of said outward spiral, said second end of said first fluid conduit being connected in fluid communication with said second portion of said first fluid conduit, said first end of said first fluid conduit being connected in fluid communication with said first portion of said first fluid conduit, both said first and second ends of said first fluid conduit being disposed outwardly from said inward and outward spirals and within said first generally planar region; and

a plurality of second fluid conduit assemblies, each of said second fluid conduit assemblies comprising a first plate and a second plate, said first and second plates being arranged in parallel association to define a second generally planar region therebetween, a spacer disposed between said first and second plates, said spacer defining a plurality of generally parallel channels within said second generally planar region between said first and second plates, each of said first generally planar regions of said plurality of said first fluid conduit assemblies being arranged in generally parallel association with a preselected one of said second generally planar regions of said plurality of second fluid conduit assemblies, each of said first plates of said plurality of second fluid conduit assemblies being connected in thermal communication with a preselected one of said first fluid conduits of said plurality of first conduit assemblies.





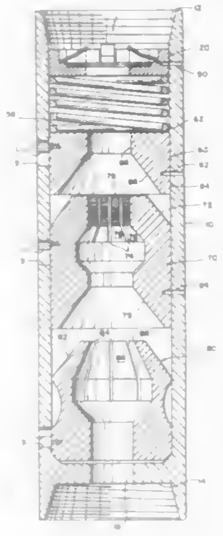
4,883,118
COMBINATION TUBING CUTTER AND RELEASING OVERSHOT

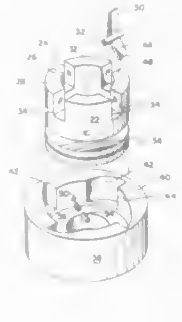
Clyde N. Preston, 110 Oakshire Dr., Houma, La. 70364

Filed Nov. 17, 1988, Ser. No. 272,401

Int. Cl.⁴ E21B *31/16, 31/18*

U.S. Cl. 166—55.3 15 Claims





1. A tubing cutter comprising a hollow cylindrical housing containing:

a cutter assembly having plural knives with inclined upper cam surfaces,

a slip body above said cutter, said body comprising plural cam-operated slips for clamping said tubing by applying radial force thereto, and having a lower conical surface for engaging the upper cam surfaces of said knives,

a slip actuator above said slip body, said acutator having a lower conical surface for actuating said slips, and

means, above said slip actuator, for engaging a projection on said tubing,

said engaging means, said actuator and said slip body all being retained in installed axial positions within said housing by first, second and third shear pins, respectively, said pins having different strengths so as to fail progressively, the first pin being the weakest of the three and the third pin being the strongest,

whereby when said device is placed over a length of tubing and then pulled upward toward said projection with progressive force, the tubing is first engaged by said engaging means, then clamped by actuation of the slips, and then cut by actuation of the cutter.

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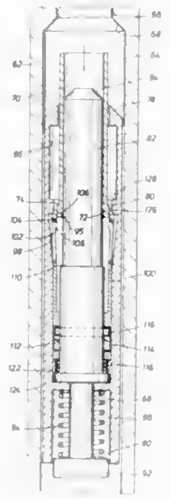
4,883,119

MECHANICAL LATCHING DEVICE OPERATED BY DEAD WEIGHT AND TENSION

Henry H. Leggett, Singapore, Singapore, assignor to Eastern Oil Tools PTE Ltd., Jurong, Singapore

Division of Ser. No. **145,376, Jan. 19, 1988, Pat.** No. 4,828,023.
This application **Aug. 1, 1988,** Ser. No. 226,386
Int. Cl.⁴ E21B *23/00*
U.S. Cl. 166—72 8 Claims



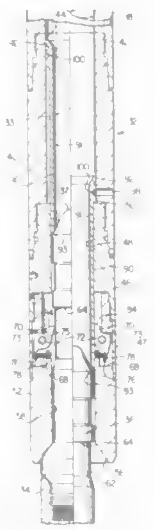
1. A mechanical latching device for repeatable latching and unlatching of downhole well tools, comprising:
(a) a tubular downhole tool mandrel for attachment in the tubing string of a well, said mandrel defining a downwardly directed internal stop shoulder;
(b) a fishing neck adapted for interconnection with said downhole well tool and being positioned in upstanding generally centralized relation within said mandrel and disposed for upward an downward movement within said mandrel;
(c) a collect member having a plurality of flexible collet fingers and being positioned about said fishing neck and movably disposed relative to said fishing neck, said collet fingers being radially yieldable and defining internal pulling shoulders;
(d) a compression spring being in force transmitting engagement with said collet member and said fishing neck and urging said collet member toward said latching position thereof relative to said fishing neck;
(e) a latch retainer element being received in movable relation about said fishing neck and being linearly movable from a latching position forming external support for said collet fingers to prevent radial expansion thereof to release position permitting radial expansion of said collet fingers, said latch retainer element further defining an upwardly directed latch release shoulder disposed for restraining engagement with said internal stop shoulder of said mandrel;
(f) means urging said latch retainer element to said latching position relative to said fishing neck and being yieldable upon engagement of said latch retainer element with said downwardly directed internal stop shoulder to permit the relative movement of said latch retainer element and said finishing neck to said release position upon predetermined upward movement of said fishing neck relative to said latch retainer element; and
(g) latch actuator means having fixed relation with said fishing neck and forming a pulling flank for latching interengagement with said pulling shoulders of said latch fingers upon said predetermined upward movement of said latch actuator means by upward force applied to said latch actuator means by said collet member, said collet fingers being moved radially outwardly by said pulling flank of said latch actuator means thus releasing said latching interengagement between said pulling flank of said actuator means and said internal pulling shoulders of said collet fingers.

4,883,120

LATCHING TOOL FOR RETRIEVING WELLBORE DEVICES

Thomas Schasteen, Garland, and Lonnie J. Smith, Allen, both of Tex., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed **Jan. 18, 1989,** Ser. No. 298,391
Int. Cl.⁴ E21B *31/18*
U.S. Cl. 166—98 6 Claims



1. A latching tool for latching onto a head member connected to a wellbore device and wherein said head member includes a means forming a transverse surface thereon, said latching tool comprising:
elongated body means including means for connecting said latching tool to a tubing string insertable in said wellbore for disposition of said latching tool at the lower end of said tubing string;
a guide surface on said body means for engaging said head member for movement of said head member into a bore formed by said body means;
at least one pivotally mounted latching dog disposed on said body means and movable between a retracted position out of engagement with said head member to a position for engagement with said head member for retrieval of said device from said wellbore; and
means for holding said at least one latching dog in a retracted position, said means for holding being engageable by said head member for movement with said head member to release said latching dog for engagement with said head member.

4,883,121

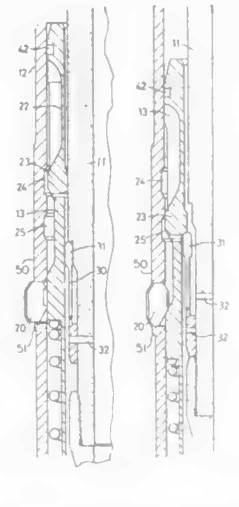
DOWNHOLE LOCK ASSEMBLY

Klaas Zwart, Peterculter, Scotland, assignor to Petroline Wireline Services Limited, Scotland

Filed **Jul. 5, 1988,** Ser. No. 215,331
Claims priority, application United Kingdom, Jul. 7, 1987, 8715967
Int. Cl.⁴ E21B *23/02*
U.S. Cl. 166—217 8 Claims

1. A downhole lock assembly comprising a lock mandrel connected to a running tool which holds an inner mandrel

located within a body of the lock mandrel in a position which allows lock-out keys of the lock mandrel to remain within the outside diameter of the lock mandrel body, shear pins adapted on downward jarring against a landing nipple to expand the keys and shear pins adapted on upward jarring to release the running tool, said running tool having a tell-tale indicating device to indicate that the lock mandrel is correctly set in the landing nipple, the inner mandrel being resiliently urged in an upward direction in the direction of flow from the well, to actuate the lock-out keys to set the lock, and latch means being provided to hold the inner mandrel in a downward disposition against its resilient means prior to setting the lock, and said tell-tale indicating device including collet means carried by the running tool and connected thereto by a shear pin, said collet means being adapted when the running tool is released from the lock mandrel after setting the lock to disengage intact from the lock mandrel if the lock-out keys are correctly set and to foul the inner mandrel and shear the shear pin if the lock-out keys are incorrectly set said collet means adapted to remain on said running tool and be withdrawn with said running tool when said running tool is released from said mandrel when said lock-out keys are correctly set and also when said lock-out keys are incorrectly set.

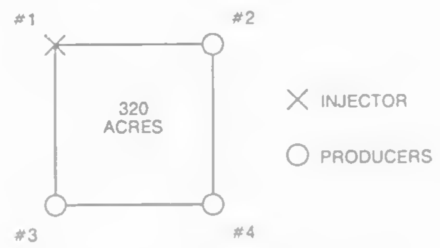


4,883,122

METHOD OF COALBED METHANE PRODUCTION

Rajen Puri, Tulsa, Okla., and Michael H. Stein, Houston, Tex., assignors to Amoco Corporation, Chicago, Ill.

Filed **Sep. 27, 1988,** Ser. No. 249,810
Int. Cl.⁴ E21B *43/24, 43/30, 43/40*
U.S. Cl. 166—263 21 Claims



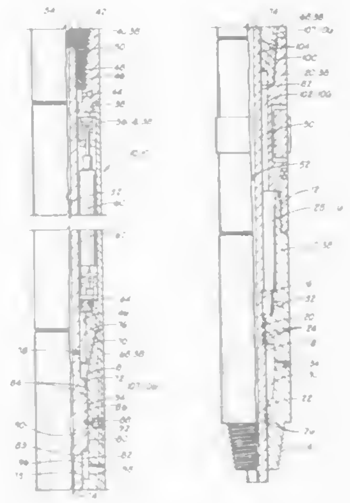
1. A method for producing coalbed methane from a coal seam containing coalbed methane and penetrated by at least one injection well and at least one producing well, said method comprising the steps of:
(a) injecting an inert gas through the injection well and into the coal seam; said inert gas being a gas that (i) does not react with the coal under conditions of use and (ii) that does not significantly adsorb to the coal; and
(b) producing a gas from the production well which consists essentially of the inert gas, coalbed methane, or mixtures thereof.

4,883,123

ABOVE PACKER PERFORATE, TEST AND SAMPLE TOOL AND METHOD OF USE

Gary D. Zunkel, Chickasha; H. Kent Beck, Duncan, both of Okla., and Jon B. Christensen, Ankeny, Iowa, assignors to Halliburton Company, Duncan, Okla.

Filed **Nov. 23, 1988,** Ser. No. 276,491
Int. Cl.⁴ E21B *49/08*
U.S. Cl. 166—264 19 Claims



8. A downhole tool for testing fluid from a formation reservoir in a well, said tool comprising:
a packer connectable to a drill string and sealingly engageable with a well bore such that a first well annulus portion is defined above the packer and a second well annulus portion is defined therebelow;
a housing portion disposed above said packer and defining a sampling chamber therein, said sampling chamber having no communication with said tool string;
a valve disposed below said packer and having a valve portion therein in communication with said second well annulus portion;
passageway means for providing communication between said sample chamber and said valve; and
an operating mandrel slidably disposed in said housing portion, packer and valve for providing fluid communication between said sampling chamber and said port in said valve when in an open position.

4,883,124

METHOD OF ENHANCING HYDROCARBON PRODUCTION IN A HORIZONTAL WELLBORE IN A CARBONATE FORMATION

Alfred R. Jennings, Jr., Plano, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed **Dec. 8, 1988,** Ser. No. 281,170
Int. Cl.⁴ E21B *43/27*
U.S. Cl. 166—307 14 Claims

1. An acid stimulation method for increasing the permeability of a carbonate formation where a horizontal wellbore is used to produce hydrocarbonaceous fluids therefrom comprising:
(a) filling said horizontal wellbore with a solution of a predetermined specific gravity containing one acid and an agent

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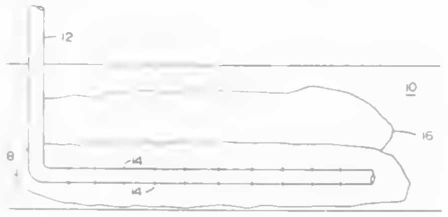
to inhibit the precipitation of calcium sulfate which solution enters said formation via cracks or fissures communicating with said wellbore;

(b) injecting into said wellbore a displacement fluid of a specific gravity greater than said acid solution which fluid displaces the acid substantially further into the formation; and thereafter



(c) allowing said acid to remain in contact with said formation for a time sufficient to solubilize compounds therein so as to cause the formation to become substantially more permeable.

4,883,125

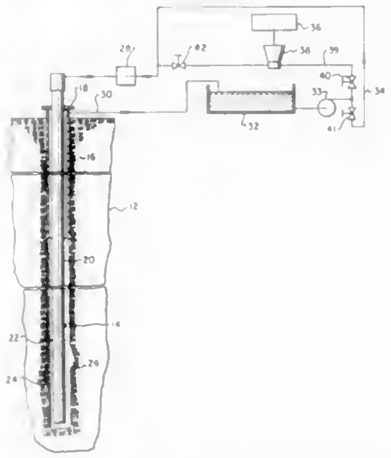
CEMENTING OIL AND GAS WELLS USING CONVERTED DRILLING FLUID

William N. Wilson; Leon H. Miles; Brett H. Boyd, all of Plano, and Robert B. Carpenter, Hurst, all of Tex., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Dec. 11, 1987, Ser. No. 131,878

Int. Cl.⁴ E21B *33/14, 33/16*

U.S. Cl. 166—291 18 Claims



1. A method for cementing a wellbore penetrating an earth formation into which a conduit extends, said wellbore having a space occupied by a drilling fluid to be converted to cement for cementing said space to form a seal between spaced apart points in said formation, said method comprising the steps of:

providing means for adding cement material and a dispersant to said fluid, circulating said fluid and adding said cement material and said dispersant to a quantity of said fluid in predetermined proportions to form a settable cement composition;

circulating said cement composition into said space to fill said space with said cement composition; and

recirculating a quantity of said cement composition through said space.

4,883,126

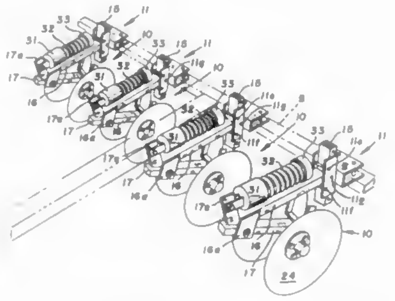
RIDGE PLANTER GUIDE UNIT

Gregory Leland, P.O. Box 130, Bricelyn, Minn. 56014

Filed Feb. 21, 1989, Ser. No. 312,757

Int. Cl.⁴ A01B *69/00*

U.S. Cl. 172—26 8 Claims



1. A guide unit arranged and adapted for mounting on a tool bar of a towed vehicle for guiding and maintaining seed planters and the like in operative position over preformed ridges, said guide unit including:

a. a first clamping member arranged and constructed to be received about and clamped to the tool bar;

b. a first stationary bar rigidly fixed to and extending forwardly of said first clamping member;

c. a second vertically moveable mounting bar hingedly attached to a forward end portion of said first stationary bar;

d. a pair of laterally spaced concave-convex disc members having facing convex surface rotatably mounted on said second bar positioned for contacting the sides of a preformed ridge for guiding therealong; and,

e. biasing means mounted on said first stationary bar and arranged and constructed for operative movement of said second, moveable mounting bar to normally urge said second bar and said discs into ground contacting relation whereby the position of the vehicle is controlled to maintain its position over the uppermost ridge surface.

4,883,127

SPRAYER MARKER

Claude Chevrier, 948 Warner Street, Moose Jaw, Saskatchewan, Canada S6H 5S4

Filed Feb. 21, 1989, Ser. No. 312,442

Claims priority, application Canada, Feb. 29, 1988, 560143

Int. Cl.⁴ A01B *69/02*

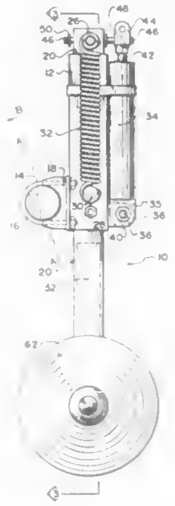
U.S. Cl. 172—126 17 Claims

1. A field marker for attachment to a spray boom, comprising:

a stationary member including elongate guide means and means for clamping the guide means to the spray boom with the guide means in a generally upright orientation;

a moveable member mounted on the guide means for free up and down movement therealong;

a spring means connecting the stationary and moveable members and biasing the moveable member to a marking position extending downwardly from the stationary member;



power means for selectively moving the moveable member against the biasing force of the spring means; and

a marker disk mounted on the moveable member.

4,883,128

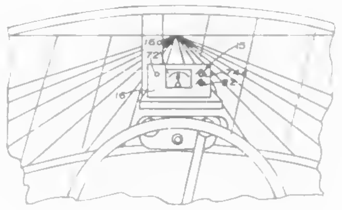
GUIDANCE SYSTEM FOR FARM IMPLEMENTS

Donald L. O'Neall, Rte. 1, Box 165, Downs, Ill. 61736, and Kerry L. Meyer, Bloomington, Ill., assignors to Donald L. O'Neall, Downs, Ill.

Continuation of Ser. No. 892,124, Jul. 30, 1986, abandoned. This application Nov. 14, 1988, Ser. No. 271,375

Int. Cl.⁴ A01B *69/00*

U.S. Cl. 172—430 6 Claims



1. In combination with a tractor and a drawn implement mounted to said tractor and located behind said tractor; the improvement comprising a guidance system for providing an indication to the operator of the tractor of variance of the implement from a desired course relative to crop rows as the implement is drawn therealong, said guidance system comprising: position sensing means including crop-engaging rod means having first and second portions extending in spaced relation for engaging the crop when said implement deviates from a desired course; support means including rotatable means mounting said sensing rod means to said implement, said sensing rod means causing said rotatable means to rotate about a vertical axis whenever the implement deviates from the desired course and said sensing rod means engages a row of crop; error signal generating means coupled to said rotatable means for generating an error signal indicative of the amount and direction of rotation of said rotatable means; and indicating means including an analog meter and drive circuit means for said meter responsive to said error signal generating means, said meter being mounted on the tractor in the normal line of sight of the operator in the forward direction, said drive circuit means being responsive to said error signal for driving an indicating needle of said meter from a midscale position by an amount and in a direction corresponding to the error signal

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4,883,129

BIT ASSEMBLY UTILIZING CARBIDE INSERT

Alan H. Lonn, Edelstein, Ill., and Daniel W. Nelson, Rogers, Ak., assignors to Caterpillar Inc., Peoria, Ill.

Filed Dec. 16, 1988, Ser. No. 285,565

Int. Cl.⁴ E02F *9/28, 3/815;* **E21C** *35/18*

U.S. Cl. 172—777 13 Claims

1. An earth working bit assembly, comprising:

a body having a substantially planar leading surface and

a hardened insert having top and bottom portions and first and second opposed surfaces, the thickness of said hardened insert, between said first and second opposed surfaces, increases from the top portion to the bottom portion and defines an angle in the range of 10 degrees ot 45 degrees, and the first opposed surface of said hardened insert is bonded to the leading surface of said body.

4,883,130

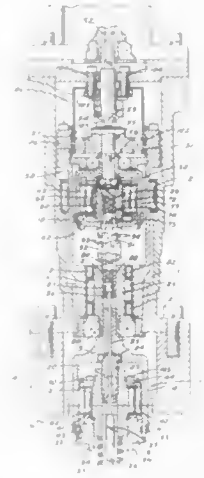
DUAL SPEED TRANSMISSION FOR AUTOMATIC ASSEMBLY MACHINE

Paul H. Dixon, Belvidere, Ill., assignor to Dixon Automatic Tool, Inc., Rockford, Ill.

Filed Aug. 31, 1988, Ser. No. 238,487

Int. Cl.⁴ B23Q *5/04*

U.S. Cl. 173—12 6 Claims



1. An automatic assembly machine having a rotatable spindle and a rotary motor, and a drive transmission for causing said motor to rotate said spindle first at a fast speed and then at

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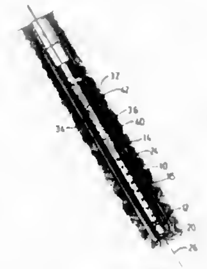
a significantly slower speed, said transmission having a rotatable input and having first and second rotatable outputs, said motor being connected to said input and being operable to rotate said input, a torque-responsive clutch coupled between said input and said first output and operable to cause said input to rotate said first output at said fast speed as long as the torque imposed on said first output is below a predetermined magnitude, said clutch automatically releasing and interrupting the drive between said input and said first output when the torque imposed n said first output exceeds said predetermined magnitude, means coupling said input to said second output and causing said input to rotate said second output at a speed significantly slower than said fast speed, and a second clutch operable to cause said first output to rotate said spindle as long as the speed of said first output exceeds the speed of said second output, and said second clutch being operable to cause said second output to rotate said spindle when the drive between said input and said first output is interrupted by said torque-responsive clutch.

4,883,131
CORE ORIENTATION SYSTEM
William B. Foster, P.O. Box 115, Garson, Ontario, Canada P0M 1V0

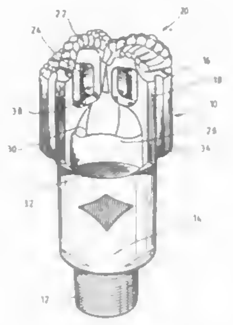
Filed May 23, 1988, Ser. No. 197,495
Int. Cl.⁴ E21B *25/16, 47/024*
U.S. Cl. 175—44 9 Claims

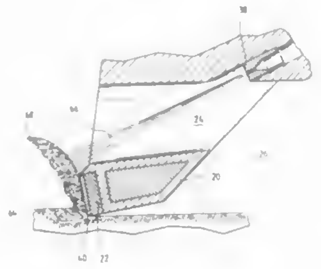


1. A core sampling and orientation apparatus comprising, in combination, a sampling tube having a front end and a rear end, said sampling tube having a cylindrical wall and a front end opening for receiving a core sample from a rock formation, said sampling tube including retention means for grasping said core sample, and said sampling tube having a plurality of aligned slots formed longitudinally along the cylindrical wall parallel to the tube longitudinal axis, said slots having a width sufficient to permit the scribing of a line along a core contained within the sampling tube, an instrumentation housing tube having a front end and a rear end, means for securing the rear end of the sampling tube to the front end of the instrumentation tube, angular orientation means formed on the instrumentation housing tube to permit angular alignment of the sampling tube and said plurality of slots with the instrumentation housing tube, and means contained within said instrumentation housing tube for indicating the uppermost position of the instrumentation housing tube at a predetermined time during sampling, relative to the angular orientation means, whereby the core sample can be subsequently orientated to its original formation position and a line scribed along the core sample through the plurality of aligned slots.

4,883,132
DRAG BIT FOR DRILLING IN PLASTIC FORMATION WITH MAXIMUM CHIP CLEARANCE AND HYDRAULIC FOR DIRECT CHIP IMPINGEMENT
Gordon A. Tibbitts, Salt Lake City, Utah, assignor to Eastman Christensen, Salt Lake City, Utah

Continuation of Ser. No. 106,793, Oct. 13, 1987, abandoned. This application Sep. 9, 1988, Ser. No. 243,135
Int. Cl.⁴ E21B *7/18, 10/60*
U.S. Cl. 175—65 19 Claims



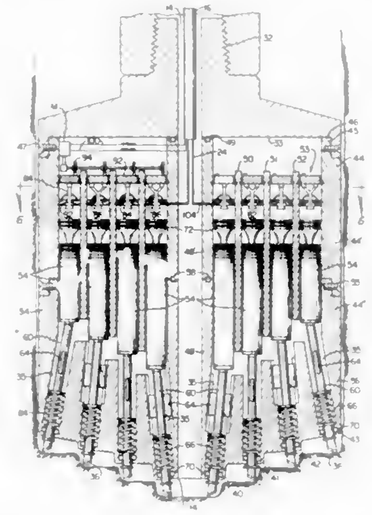


1. A drill bit for drilling a borehole in an earth formation, comprising:
- a bit body having connection means at the upper end thereof and a fluid passage extending therethrough from said connection means to the interior of said bit body;
- at least one blade connected to said bit body therebelow and longitudinally spaced therefrom to define a cavity between said blade and said bit body;
- a laterally extending cutting surface on said blade, said cutting surface having an upper extent proximate said cavity and a lower extent adapted to contact said earth formation and facing the direction of intended forward rotation of the bit; and
- at least one nozzle associated with said cutting surface disposed in said bit body at a location behind said cutting surface relative to the direction of intended rotation of the bit and oriented generally in the direction of said rotation to direct a flow of hydraulic fluid from said fluid passage through at least a portion of said cavity proximate the upper extent of the cutting surface.

14. A method for preventing bit balling in the cutting of a plastic rock formation with a drill bit, comprising the steps of:
- providing a bit having a bit body, a cutting surface and a cavity defined between the bit body and the cutting surface;
- rotating said drill bit;
- presenting substantially only said cutting surface to said plastic rock formation;
- cutting said plastic rock formation with said cutting surface; and
- removing rock cuttings cut by said cutting surface from said cutting surface by directing hydraulic flow through the cavity to a portion of said cutting surface most removed from said plastic formation from a nozzle positioned behind said cutting surface as defined by the direction of rotation of said drill bit.

4,883,133
COMBUSTION OPERATED DRILLING APPARATUS
Gerald L. Fletcher, and Gregory T. Fletcher, both of Box 6 KBYCL, Jakarta, Indonesia 12430

Filed Oct. 24, 1988, Ser. No. 261,596
Int. Cl.⁴ E21B *4/06, 4/14, 4/16, 10/36*
U.S. Cl. 175—93 20 Claims

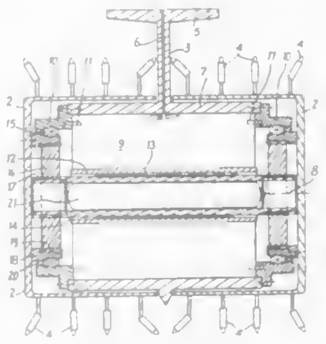


13. In a percussion drill bit apparatus for earth boring into subterranean formations wherein a drill bit housing is mounted at a lower end of a drill string, the improvement comprising:
- a plurality of drill rods arranged for downward extension in a plurality of concentric rows through individual drill rod bores in the lower end of said housing including impact teeth at lower ends of said drill rods, said concentric rows of said drill rods vertically offset with respect to one another so that at least one inner row of said drill rods will extend to a greater depth into said formation than outer rows of said drill rods, and at least one outer row of said drill rods diverging downwardly and outwardly through said lower end of said housing, and means mounting said drill rods for slidable lengthwise reciprocal movement along respective longitudinal axes of said drill rods; and
- drill rod drive means for sequentially imparting a percussive force to each said concentric row of said drill rods whereby to sequentially activate said drill rods and associated impact teeth successively from the innermost to outermost concentric rows to penetrate said formation.

4,883,134
MILLING MACHINE FOR CUTTING TRENCHES
Karl Bollinger, Rueil-Malmaison, and Daniel Barre, Moret-sur-Loing, both of France, assignors to Soletanche, Nanterre, France

Filed Sep. 25, 1987, Ser. No. 101,173
Claims priority, application France, Sep. 26, 1986, 86 13468
Int. Cl.⁴ E21B *4/04, 10/00*
U.S. Cl. 175—96 6 Claims

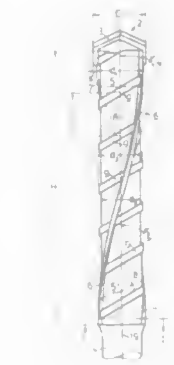
1. Milling apparatus for cutting trenches in the ground comprising:
- (a) a central support arm in the form of a vertical plate;
- (b) a hollow cylindrical bushing with a horizontal axis intersecting said plate;
- (c) a bearing support plate supported on said bushing and fastened at each of its extremities;
- (d) two semi-drums with cutting tools surrounding said bushing and being supported on each of said bearing support plates by means of bearings; and



- (d) a motor having a housing and a rotor located inside said bushing means maintaining said housing against rotation relative to said bushing, said rotor being rotatively connected to said semi-drums.

4,883,135
APPARATUS FOR ROCK DRILL
Bernhard Moser, Altshausen; Wolfang Peetz, Blitzenreute, and Hermann Hugger, Altshausen, all of Fed. Rep. of Germany, assignors to Hawera Probst GmbH & Co., Ravensberg, Fed. Rep. of Germany

Filed Aug. 24, 1988, Ser. No. 235,936
Claims priority, application Fed. Rep. of Germany, Sep. 18, 1987, 8712650[U]; Oct. 19, 1987, 3735316; Dec. 1, 1987, 3740692
Int. Cl.⁴ E21B *17/22*
U.S. Cl. 175—323 19 Claims



1. Rock drill for rotary and percussive drilling operation, comprising:
- a drill head having a hard metal cutting edge;
- a chucking shank; and
- at least one transport coil having a substantially cylindrical core which has a longitudinal axis, a plurality of spiral-shaped longitudinal transport ribs extending a first predetermined distance from said cylindrical core, and a plurality of spiral-shaped secondary transport ribs extending from said cylindrical core a second predetermined distance which is smaller than said first predetermined distance, said secondary transport ribs connecting adjacent ones of said longitudinal transport ribs, adjacent ones of said plurality of longitudinal transport ribs respectively bounding main transport grooves, each of said main transport grooves being continuous and spiral-shaped along said cylindrical core, adjacent ones of said plurality of secondary transport ribs respectively bounding secondary

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transport grooves, each of said plurality of longitudinal transport ribs having a relatively steep pitch along said cylindrical core and consequently a relatively small angle of twist relative to said longitudinal axis, and each of said secondary transport ribs having a relatively small pitch and consequently a relatively large angle of twist relative to said longitudinal axis.

4,883,136

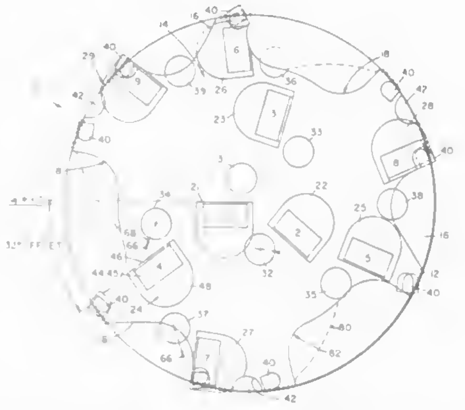
LARGE COMPACT CUTTER ROTARY DRILL BIT UTILIZING DIRECTED HYDRAULICS FOR EACH CUTTER

William R. Trujillo, West Jordan, Utah, assignor to Eastman Christensen Co., Salt Lake City, Utah

Division of Ser. No. 906,169, Sep. 11, 1986, abandoned. This application Jan. 19, 1988, Ser. No. 144,958

Int. Cl.⁴ E21B *10/60*

U.S. Cl. 175—339 12 Claims



1. An improvement in a rotating bit having a bit face and gage including at least one junk slot defined in said gage of said bit, said junk slot extending substantially longitudinally along said gage and having a compound profile along said longitudinal extent, said compound profile including at least two distinct substantially longitudinally superimposed regions of differing cross-sectional configuration connected by a hydrodynamically smooth transition region.

4,883,137

SYSTEM AND METHOD FOR CONTROLLING THE GROUND SPEED AND ENHANCING THE MANEUVERABILITY OF AN OFF-ROAD VEHICLE

Lee J. Wanie; Robert N. Behrens, both of Horicon; Stanley J. DeBraal, West Bend, and Michael Bedis, Oconomowoc, all of Wis., assignors to Deere & Company, Moline, Ill.

Division of Ser. No. 901,716, Aug. 27, 1986, Pat. No. 4,759,417. This application Jul. 7, 1988, Ser. No. 216,689

Int. Cl.⁴ B60K *23/00;* **B62D** *1/00*

U.S. Cl. 180—6.34 11 Claims

2. A cruise control mechanism for a vehicle having a variable speed transmission, a means for driving said vehicle including a forward and reverse pedal and a master brake and a turn brake system comprising:

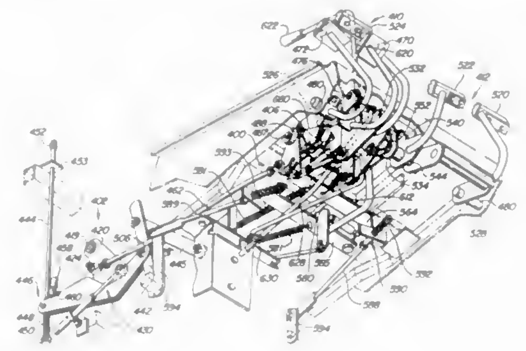
two connecting links coupled with the forward pedal for movement therewith;

a pivotable ratchet with teeth is pivotably connected between said connecting links;

a shaft carrying a pawl having a means for selectively engaging the various teeth of said ratchet when said vehicle is being driven in a forward direction upon movement of the forward pedal;

and

a strap fastened to said pawl shaft and coupled with a cruise control linkage rod for selectively moving the pawl shaft and pawl, said strap also connected with an adjustable link which in turn is connected to said master brake.



4,883,138

FOUR-WHEEL DRIVE VEHICLE OPERATING SYSTEM

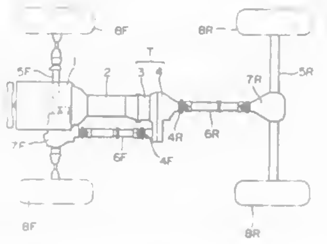
Osamu Kameda, Hiroshima, and Hirokazu Yamasaki, Higashihiroshima, both of Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Apr. 27, 1988, Ser. No. 186,965

Claims priority, application Japan, Apr. 27, 1987, 62-103645

Int. Cl.⁴ B60K *17/34*

U.S. Cl. 180—249 12 Claims



1. In an operating system used in a vehicle equipped with four-wheel drive having a center-differential which is shiftable between a differential-locked and a differential-free drive mode of operation and between a two-wheel and a four-wheel drive mode of operation, and a free-wheeling device with a clutch means incorporated in an output shaft of an axle differential in association with wheels which are non-driven when the vehicle is in said two-wheel drive mode of operation, said clutch means being adapted to disconnect the transmission of driving power between said axle differential and said non-driven wheels when the vehicle is in said two-wheel drive mode of operation and to connect a transmission of driving power between said axle differential and said wheels when the vehicle is in said four-wheel drive mode of operation, the improvement comprising:

transfer case shift means operable between at least two positions for selecting said two-wheel drive mode and four-wheel, differential-free drive mode; and

shift control means responsive to an operation of said transfer case shift means for shifting said center-differential to from one to the other between said two-wheel drive mode and four-wheel, differential-free drive mode, said shift of drive mode of said center-differential being accompanied by an intermediate transition of said center-differential to a differential-locked drive mode.

4,883,139

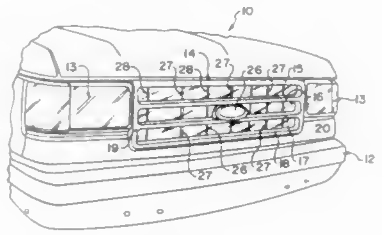
WINTER FRONT FOR THE GRILL OF A MOTOR VEHICLE

Edward J. Gross, Ile Des Chenes, Canada, assignor to Sundawn Inc., Manitoba, Canada

Filed Nov. 14, 1988, Ser. No. 270,587

Int. Cl.⁴ B60K *11/08*

U.S. Cl. 180—68.6 18 Claims



1. A motor vehicle having a front grill comprising a front face defined by a plurality of transverse ribs and a plurality of vertical ribs forming therebetween a plurality of apertures through the grill for cooling air to pass into an engine compartment of the vehicle, each of the ribs having a front face defining the front face of the grill, and a plurality of structural elements each associated with a respective one of the apertures and lying in a plane spaced rearwardly of the front face of the grill, and a winter front covering the grill to reduce the amount of cooling air flowing therethrough, the winter front comprising a plurality of separate panels each formed of a plastic sheet material, each panel defining a front surface having a shape to cover at least part of one of said apertures leaving the front face of the ribs exposed, each panel being sufficiently rigid so as to be self supporting across the aperture, each panel having thereon fastening means extending rearwardly therefrom and engaging said structural element of the grill so as to fasten the panel to the grill, the fastening means of each panel being separate from the fastening means of the other panels such that each panel can be separately attached to and removed from the grill.

4,883,140

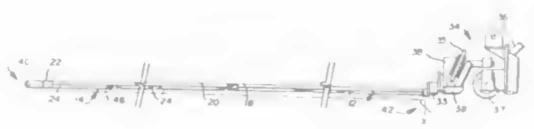
SHEET MATERIAL DISPENSING FOR AIR BEARING STRUCTURES

James J. Harp, Annandale, Va., and Robert Molten, Hagerstown, Md., assignors to Admiralty Group Ltd., New London, Conn.

Continuation-in-part of Ser. No. 42,815, Apr. 27, 1987. This application Mar. 15, 1988, Ser. No. 168,407

Int. Cl.⁴ B60V *1/00;* **B65H** *20/38*

U.S. Cl. 180—116 20 Claims



1. An assembly for moving a heavy load out of or into an overseas transport container over a deck, comprising:

(a) at least one finger having a plurality of air bearings disposed along the bottom of a length thereof and operatively connected to a source of air under pressure;

(b) a coiled supply of sheet material capable of providing a smooth surface for the air bearings of the finger to traverse;

(c) means for supplying substantially constant tension to said supply of sheet material to allow proper uncoiling and coiling thereof;

(d) means for engaging a free end of said sheet material to hold said free end relatively stationary with respect to said engaging means; and

(e) means for mounting said structures (b), (c) and (d) to allow said sheet material to be uncoiled as said air bearings move with respect to the deck, to dispense sheet material over the deck and thereby facilitate movement of the air bearings over the deck.

4,883,141

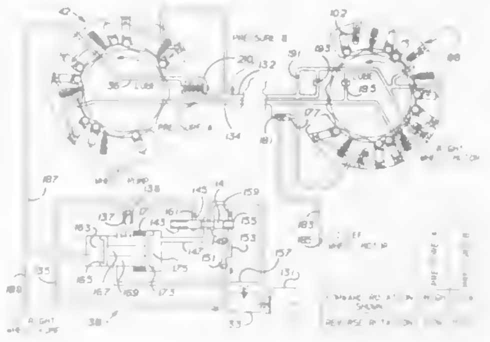
HYDRAULIC WHEEL MOTOR AND PUMP

Frank H. Walker, Grand Blanc, Mich.

Filed Apr. 22, 1988, Ser. No. 185,122

Int. Cl.⁴ B60K *25/04*

U.S. Cl. 180—243 6 Claims



1. A hydraulic drive apparatus for a motor vehicle having a pair of left and right mechanically driven wheels, and a pair of left and right non-mechanical driven wheels, said hydraulic drive apparatus comprising:

a right and left rotary hydraulic pump coupled to the right and left mechanically driven wheel respectively, each of said pumps having an A and B port providing a fluid output and a fluid input respectively when the vehicle is driven in the forward direction, and a fluid input and a fluid output respectively when the vehicle is driven in reverse;

a right and left rotary hydraulic motor coupled to the right and left non-mechanically driven wheel respectively, each of said motor having an A and B port providing a fluid input and fluid output respectively when the vehicle is driven in the forward direction, and a fluid output and fluid input respectively when the vehicle is driven in reverse;

conduit means for hydraulically coupling the A and B ports of the right rotary hydraulic pump to the A and B ports of the left rotary hydraulic motor respectively, and hydraulically coupling the A and B ports of the left rotary hydraulic pump to the A and B ports of the right rotary hydraulic motor respectively, forming a pair of substantially independent closed-loop hydraulic circuits; thereby maximizing the vehicle's tractive force when one side of the vehicle is placed on a low friction coefficient surface; and

means for by-passing sufficient hydraulic fluid between the two closed-loop hydraulic circuits to enable the vehicle to make tight turns without wheel slippage.

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4,883,142
DRIVE ARRANGEMENT FOR CONNECTING A VEHICLE OUTPUT SHAFT TO A VEHICLE AXLE

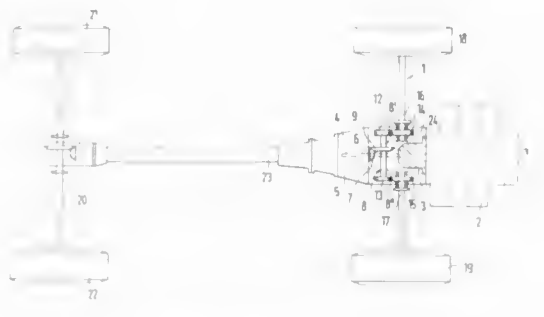
Siegfried Rispeter, Besigheim, Fed. Rep. of Germany, assignor to Dr. Ing. h.c.F. Porsche AG, Weissach, Fed. Rep. of Germany

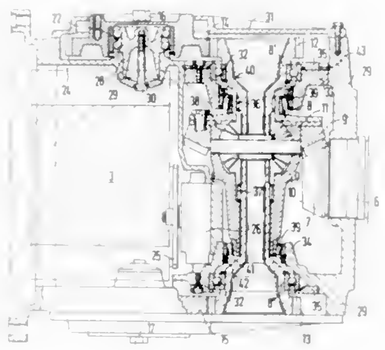
Filed Sep. 9, 1988, Ser. No. 242,312

Claims priority, application Fed. Rep. of Germany, Sep. 9, 1987, 3730251

Int. Cl.⁴ B60K *17/22*

U.S. Cl. 180—245 8 Claims





1. A drive arrangement for connecting a vehicle output shaft to a vehicle axle comprising an engine having an engine housing, an axle housing connected to said engine housing a clutch having a housing flangedly connected to the engine housing, a change-speed transmission having an output shaft and axle drive means including axle drive shafts and a U-shaped drive connection means forming a U-shaped intermediate space in said axle housing and connecting the transmission output shaft to the axle drive shafts driving vehicle wheels, the U-shaped connection means having an intermediate shaft substantially parallel to the axle drive shafts, a bevel gear-angle drive means connecting the transmission output shaft to the intermediate shaft and spur gear pairs for driving the axle drive shafts arranged on each end of the intermediate shaft substantially at right angles thereto, the clutch housing extending into the U-shaped intermediate space.

4,883,143
ANECHOIC COATING FOR ACOUSTIC WAVES

Michel Lagier, Le Cannet, France, assignor to Thomson-CSF, Paris, France

Filed Oct. 26, 1988, Ser. No. 262,998

Claims priority, application France, Oct. 27, 1987, 87 14826

Int. Cl.⁴ E04B *1/82*

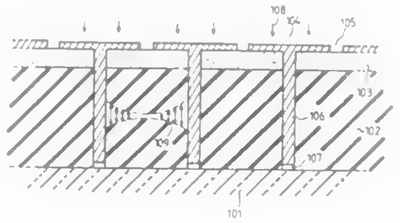
U.S. Cl. 181—286 5 Claims

1. An anechoic coating for acoustic waves, adapted to be placed on a reflecting wall, comprising:

a first layer of elastic material of low compressibility, which is highly absorbent under shearing waves, and which is fixed at one surface thereof to said wall;

a second layer of highly compressible elastic material fixed to an opposite surface of the first layer;

a set of rigid plates fixed to the second layer opposite said first layer to receive the acoustic waves; and



a set of rigid rods fixed to a bottom portion of the plates, which extend through the second layer and anchored in the first layer to exert shear stresses on the first layer in response to acoustic waves received by the plates.

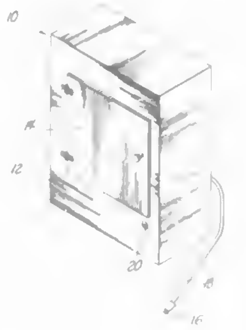
4,883,144
NOISE ABSORBING HOUSING FOR A BLENDER

Frederick W. Haushalter, 365 N. Detroit St., Kenton, Ohio 43326, and John S. Robinson, 3200 S. Ala, Unit #130, St. Augustine, Fla. 32084

Filed Aug. 26, 1988, Ser. No. 240,712

Int. Cl.⁴ H02K *5/24*

U.S. Cl. 181—198 1 Claim



1. A noise absorbing housing for absorbing noise generated by blenders, the housing comprising:

a structure composed of noise absorbing materials for enclosing the blender;

a dead air within the structure and surrounding the enclosed blender, the space comprising an area for noise absorption;

a door on the housing for allowing access to the blender wherein the blender is enclosed within the structure and surrounded by the area of dead air space;

internal circuitry connectable to a power source for supplying power to the enclosed blender, wherein power is applied to operate the blender when the door is closed;

an indicator light for indicating when the enclosed blender is in operation; and

a temperature sensitive device for shutting off power to the enclosed blender if the blender is over-heating.

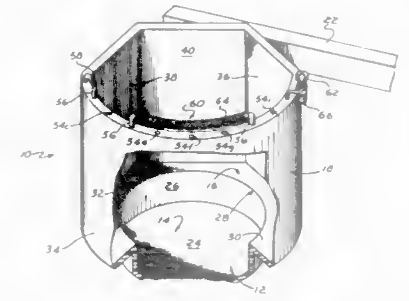
4,883,145
ERGONOMIC AERIAL BASKET

Charles D. Deltatto, 184 Northampton St., Easthampton, Mass. 01027

Continuation-in-part of Ser. No. 155,537, Feb. 12, 1988, abandoned. This application Jan. 25, 1989, Ser. No. 280,831

Int. Cl.⁴ B66F *11/04*

U.S. Cl. 182—2 11 Claims



1. An aerial basket for elevating a worker within a partially enclosed platform, comprising:

a. a floor of the basket;
b. a plurality of interconnected walls affixed to the floor that rise perpendicularly up from the floor;
c. a circular well in the floor in which the worker may stand;
d. a cylindrical wall connected to an outer edge of the well that rises perpendicularly up from the well; and
e. a footrest platform that is O-shaped and connected at its inner edge to an upper edge of the cylindrical wall and at its outer edge to the bottom edges of the interconnected walls, wherein the footrest platform is elevated above and surrounds the circular well so that the platform is adapted to receive a raised, extended foot of the worker.

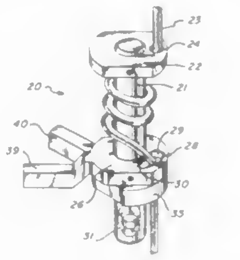
4,883,146
DESCENT CONTROL DEVICE WITH DEADMAN BRAKE

Horace M. Varner, and Ernest L. Stech, both of Littleton, Colo., assignors to Frost Engineering Development Corporation, Englewood, Colo.

Filed Dec. 30, 1988, Ser. No. 292,294

Int. Cl.⁴ A62B *1/14;* **B65H** *59/14*

U.S. Cl. 182—5 5 Claims



1. A descent control device for lowering a load along a rope from an elevated position at which said rope is anchored to a relatively lower position, said device including a friction cylinder of a length adapted to receive a plurality of turns of rope wrapped thereabound, said cylinder having an upper end and a lower end, top and bottom end plates attached respectively adjacent the upper and lower ends of said cylinder, said end plates both having a portion thereof overhanging the cylinder and defining apertures sized to loosely receive the rope, the aperture defined in the bottom plate including an arcuate slot with an entryway of a width adapted to freely admit the rope and tapering from said entryway as it follows the contour of the cylinder partially thereabound to a relatively narrower blind end, and means depending from the lower end of said cylinder for attaching a load carrying device, wherein the improvement comprises, a locking end plate rotatably mounted on said cylinder below said lower end plate in close juxtaposition therewith, means defining an aperture in said locking plate for loosely receiving the rope, means biasing said locking plate to rotate said plate to forceably urge said rope into the narrowly tapered slot in said lower end plate for locking said cylinder against movement on said rope, and handles on said lower end plate and said locking plate for moving said locking plate with respect to said lower end plate to position said rope in the aperture in said lower end plate to release said cylinder for controlled movement along said rope.

4,883,147
SCAFFOLDING SYSTEMS AND CLAMPING DEVICES THEREFOR

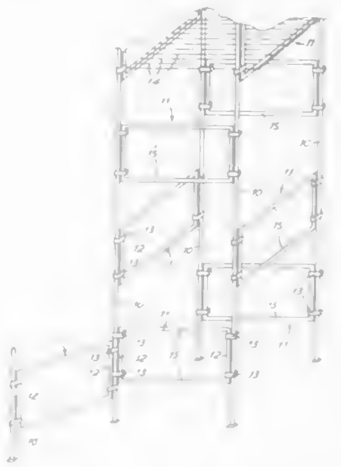
Derek G. Davison, and Gordon T. Pover, both of Kent, England, assignors to Derek George Davison, Kent, England

Filed Jun. 27, 1988, Ser. No. 211,921

Claims priority, application United Kingdom, Jun. 25, 1987, 8714945

Int. Cl.⁴ E04G *1/14, 7/06*

U.S. Cl. 182—179 4 Claims



1. A scaffolding system comprising vertical members, a plurality of rectangular frame units each having vertical side elements and horizontal top and bottom elements joining the side elements, each of which side elements is disposed adjacent and parallel to respective vertical members, and individual clamping devices securing the side elements of the frame units to said respective vertical members, each clamping device comprising an angle element one arm of which is generally twice as long as the other, a second element which is hinged by one of its ends to the free end of said one arm and which is substantially equal in length to said other arm, a third element which is substantially equal in length to said one arm and which has one end thereof hingedly connected to the other end of said second element, interlocking means between the other end of said third element, and the free end of said other arm which interlocking means is engageable by movement of the third element lengthwise of itself, a dividing element connected to said one arm at substantially its mid-length and extending generally parallel to said other arm and clamping means, a vertical side element and a vertical members being disposed on opposite sides of the dividing element and enclosed in the device by engagement of the interlocking means.

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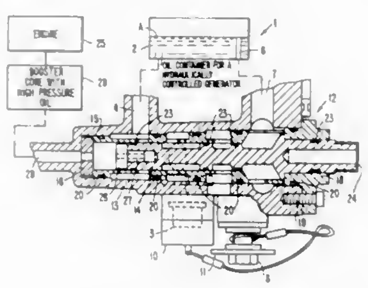
4,883,148
FILL VALVE FOR LIQUID CONTAINING DEVICE

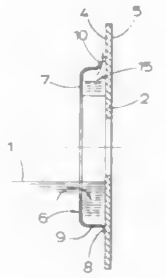
Richard C. Welch, Rockford, Ill., assignor to Sundstrand Corporation, Rockford, Ill.
Filed Oct. 11, 1988, Ser. No. 255,834
Int. Cl.⁴ F01M *1/18*
U.S. Cl. 184—6.4 **14 Claims**


ENGINE
BOOSTER CORE WITH HIGH PRESSURE OIL
OIL CONTAINER FOR A HYDRAULICALLY CONTROLLED GENERATOR

1. A device for use in conjunction with an engine, comprising means for containing liquid, fill passage means for adding liquid to the means for containing a liquid, drain passage means for draining liquid from the means for containing a liquid, movable valve means for opening and closing said fill passage means and said drain passage means, and means for positioning said valve means so as to close both said fill passage means and said drain passage means in response to start-up of said engine.

4,883,149
VEHICLE DISC BRAKES OF THE LIQUID COOLED TYPE

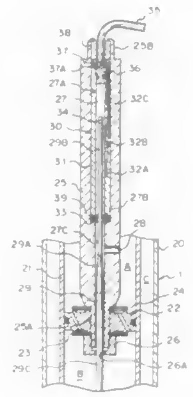
Roy Campbell, Worcestershire, England; Anthony G. Price, and Andrew P. Green, both of Gwent, Wales, assignors to Lucas Industries public limited company, Birmingham, England
Filed Jul. 28, 1988, Ser. No. 225,185
Claims priority, application United Kingdom, Jul. 28, 1987, 8717877
Int. Cl.⁴ F16D *65/78, 55/02, 13/72, 13/74*
U.S. Cl. 188—264 E **21 Claims**



1. A vehicle disc brake of the liquid-cooled type comprising a housing, at least one rotatable friction braking member having a friction surface and being disposed within said housing and slidably keyed to a shaft to be braked, said housing containing cooling liquid for cooling said braking member, means defining a relatively stationary braking surface in said housing, and actuating means for urging said friction surface of said braking member into engagement with said relatively stationary braking surface to apply said brake, wherein said braking member comprises a generally planar plate member having a first radial surface on one side and a second, axially spaced, radial surface on the other side, and a reservoir member secured to said plate member at said first radial surface and disposed to said one side of said plate member, said reservoir member having a region which is axially spaced from said first surface of said plate member and part-defines an annular reservoir for cooling liquid disposed to said one side of said plate member, and wherein passage means are arranged to control the release of liquid from said annular reservoir to the friction surface in response to centrifugal force.

4,883,150
HYDRAULIC SHOCK ABSORBER WITH PISTON ROD POSITION DETECTING MEANS

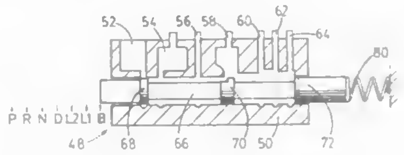
Susumu Arai, Kanagawa, Japan, assignor to Tokico Ltd., Kanagawa, Japan
Filed Mar. 1, 1988, Ser. No. 162,713
Claims priority, application Japan, Mar. 20, 1987, 62-67050
Int. Cl.⁴ F16F *9/48;* **F16D** *66/00;* **G01B** *7/14*
U.S. Cl. 188—289 **6 Claims**



1. A hydraulic shock absorber comprising:
a shock absorber body;
a piston disposed within said shock absorber body and slidable therein,
two fluid-receiving chambers being defined in said shock absorber body on opposite sides of said piston, respectively;
a piston rod having one end thereof connected to said piston and the other end thereof projecting from said shock absorber body,
said piston rod including an orifice, a hollow portion the interior of which is open to said orifice, and a radial bore open to the interior of said hollow portion and one of said fluid-receiving chambers,
said fluid-receiving chambers being in fluid communication via said radial bore, the interior of said hollow portion and said orifice;
a rod-shaped member having one end thereof secured to said shock absorber body at an inner portion thereof and extending in an axial direction through said orifice,
said rod-shaped member having a cross-sectional area that varies as taken along said axial direction so as to regulate the flow of fluid from said one of said fluid-receiving chambers to the other of said fluid-receiving chambers to a degree corresponding to the relative position of said orifice and said rod-shaped member; and
detector means for detecting the relative position of said piston rod and said rod-shaped member,
said detector means including a detector body having a tubular shape a magnet integral with said rod-shaped member, and a plurality of magnetically actuatable switches embedded in said detector body and spaced apart at predetermined intervals in the axial direction of the detector body,
said detector body disposed in said piston rod in the hollow portion thereof, and said rod-shaped member extending within said detector body.

4,883,151
TRANSMISSION BRAKE

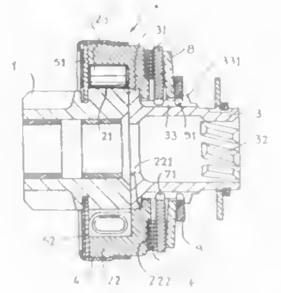
Stephen R. Tobler, Post Office Box 779, Station 'J' , Calgary, Alberta, Canada (T2A 6A6)
Filed May 23, 1988, Ser. No. 197,440
Int. Cl.⁴ B60K *41/26;* **F16H** *47/00*
U.S. Cl. 192—4 A **7 Claims**



1. An automotive transmission including:
a torque converter;
a gear set driven by the torque converter;
a gear set conditioning means for establishing plural power transmission paths with different transmission ratios through the gear set;
a selector manually positionable in a plurality of selected positions, including a transmission brake position and a plurality of gear positions, the transmission brake position being adjacent a first gear position;
operating means responsive to the positioning of the selector in the first gear position to operate the gear set conditioning means to establish a first gear power transmission path through the gear set, and responsive to the positioning of the selector means in the transmission brake position to operate the gear set conditioning means to establish the first gear power transmission path and a second power transmission path with a different transmission ratio through the gear set, whereby the gear set is locked; and
means biasing the selector from the transmission brake position to the first gear position whereby on manual release of the selector, the second transmission path is released.

4,883,152
STARTER DRIVE ASSEMBLIES FOR INTERNAL COMBUSTION ENGINES OF THE TYPE HAVING AN OVERRUNNING CLUTCH

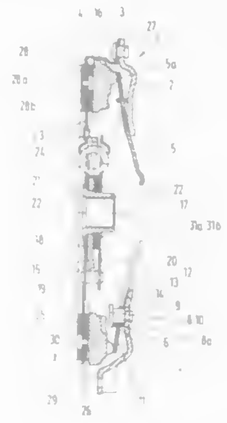
Francis Froment, Lyons, France, assignor to Societe Equipements Electriques Moteur, Creteil, France
Filed May 13, 1988, Ser. No. 193,682
Claims priority, application France, May 21, 1987, 8707355
Int. Cl.⁴ F16D *7/06, 15/00*
U.S. Cl. 192—42 **8 Claims**



1. A starter drive assembly of an internal combustion engine, said assembly comprising:
an overrunning clutch, a drive pinion defining an inner track of the overrunning clutch, a cam housing axially retained in the clutch relative to said drive pinion and defining an outer track of the overrunning clutch extending around said inner track and a flange-receiving recess, roller means on the overrunning clutch disposed in the assembly between said inner and said outer tracks, a drive sleeve having a flange seated in the flange-receiving recess defined by said housing and an angular fastening portion located on the outer peripheral surface of the sleeve, and torque limiting means operatively connected between said cam housing and said drive sleeve for allowing torque to be transmitted from said drive pinion to said drive sleeve through the overrunning clutch when torque applied to said drive pinion is below a predetermined value and for preventing torque from being transmitted from said drive pinion to said drive sleeve through the overrunning clutch when torque applied to said drive pinion exceeds said predetermined value,
said torque limiting means including a friction lining disposed against said cam housing, a driving plate disposed against said friction lining and an elastic mechanism exerting a force on said driving plate that urges said driving plate against said friction lining,
said driving plate engaging said drive sleeve at the angular fastening portion thereof, the angular fastening portion preventing said driving plate from rotating relative to said drive sleeve.

4,883,153
FRICTION CLUTCH

Edmund Maucher, Wooster, Ohio; Lothar Huber, Bühl, Fed. Rep. of Germany; Kurt Frietsch, Bühlertal, Fed. Rep. of Germany, and Paul Maucher, Sasbach, Fed. Rep. of Germany, assignors to Luk Lamellen und Kupplungsbau GmbH, Bühl, Fed. Rep. of Germany
Filed Dec. 17, 1987, Ser. No. 134,326
Claims priority, application Fed. Rep. of Germany, Dec. 17, 1986, 3643109
Int. Cl.⁴ F16D *13/44, 13/58*
U.S. Cl. 192—70.27 **33 Claims**



1. A friction clutch, particularly for attachment to a flywheel in a motor vehicle, comprising a rotary first unit including a cover, a pressure plate having a first side facing toward said cover and a second side adjacent the flywheel when the clutch is attached to the flywheel, resilient means reacting against said cover and arranged to bias said pressure plate, and means for non-rotatably but axially movably securing said pressure plate to said cover; a rotary second unit including a clutch plate adjacent the second side of said pressure plate; and means for separably coupling said units to each other, at least prior to attachment of the clutch to the flywheel, so that the axes of rotation of said units coincide or are closely adjacent one another and said units are permanently separable from each other during and subsequent to attachment to the flywheel, said coupling means including means for maintaining said clutch plate and said first unit in a predetermined axial position relative to each other.

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4,883,154

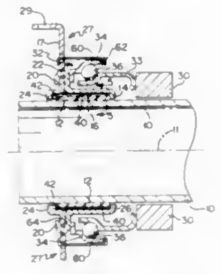
SELF-ALIGNING BEARING CARRIER

Douglas A. Drewes, West Bloomfield, and Phillip D. Yee, Troy, both of Mich., assignors to Federal-Mogul Corporation, Southfield, Mich.

Filed Jun. 2, 1988, Ser. No. 201,520

Int. Cl.⁴ F16D *23/14*

U.S. Cl. 192—98 8 Claims



1. A clutch release apparatus for use with a stationary rectilinear guide element, said apparatus comprising:

a driven member surrounding said guide element for rectilinear motion thereon, said driven member comprising an outer sleeve and an inner sleeve located within said outer sleeve and slidably mounted on said guide element wherein said outer sleeve comprises radially inwardly extending walls captively retaining said inner sleeve against axial dislocation within an annular space circumscribed by said outer sleeve; and

resilient spacer means located between said inner and outer sleeves and operable to absorb radial and angular misalignments between said sleeves.

4,883,155

CLUTCH RELEASE BEARING, IN PARTICULAR FOR AUTOMOTIVE VEHICLE

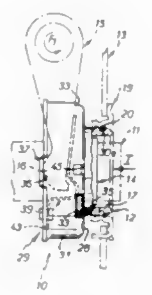
Christian Gay, Paris, and Philippe Lassiaz, Boulogne, both of France, assignors to Valeo, Paris, France

Filed Apr. 22, 1988, Ser. No. 186,713

Claims priority, application France, Mar. 27, 1985, 8504549

Int. Cl.⁴ F16D *23/14*

U.S. Cl. 192—98 16 Claims



1. Clutch release bearing, comprising a drive member cooperable with a clutch release device of a clutch and an operating means having two axially shallow recesses, the bottom of each of the recesses faces axially towards said drive member and forms a transverse bearing facet cooperable with a clutch release yoke, the clutch release bearing being angularly displaceable relative to the clutch release yoke to bring said recesses into and out of registration with the clutch release yoke for selectively mounting and dismounting the clutch release bearing, wherein each of said recesses forms means for interlocking with said clutch release yoke to prevent, in operation, rotation of said operating means about the axis of the clutch release bearing, said operating means comprising an operating member and a cover for coupling said drive member axially to said operating member, wherein said transverse bearing facets are in one piece with said cover.

4,883,156

TORSION DAMPING DEVICE FOR A DISC TYPE FRICTION CLUTCH FOR AN AUTOMOBILE VEHICLE

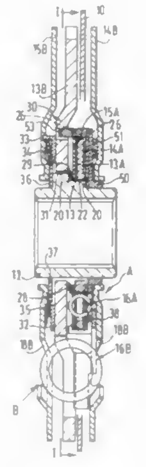
Dieter Rohrle, Montmorency; Michel Graton, Paris, and Philippe Lhermitte, Senlis, all of France, assignors to Valeo, Paris, France

Filed Apr. 7, 1988, Ser. No. 178,983

Claims priority, application France, Apr. 7, 1987, 87 04882

Int. Cl.⁴ F16D *3/66*

U.S. Cl. 192—106.2 11 Claims



1. A torsion damper for a disc type friction clutch for an automotive vehicle, of the kind comprising a lining support plate and a hub which are movable angularly with respect to each other within the limits of a predetermined angular displacement, the support plate and the hub being coupled together by two torsion damping devices arranged to act successively, one of which, namely a first device or pre-damper, is weaker than the other, namely a second device or main damper; comprising a damper plate mounted on the hub with a clearance permitting said angular displacement, two guide rings, fixed with respect to each other and disposed axially on either side of the damper plate, and a plurality of resilient angular displacement means interposed circumferentially between the damper plate and the rings; and further comprising associated friction means, in which said damper there is provided a centring means comprising a bush surrounding the hub, and a face plate fixed with respect to the bush and extending radially intermediate one of the guide rings and the damper plate of the main damper, axial elements being provided for centring the damper plate and projecting axially between the damper plate and the face plate, wherein the outer peripheral surface of the bush is in frictional contact with the inner peripheral edge of said one of the guide rings of the main damper, the face plate also having axially extending spacers the end surfaces of which make contact with the adjacent face of the damper plate of the main damper.

4,883,157

DOOR/LEDGE ASSEMBLY FOR GRAVITY CHUTE

Daniel R. McDermott, Clinton, Md., assignor to Trihard, S.A., Luxembourg, Luxembourg

Filed Dec. 7, 1988, Ser. No. 280,914

Int. Cl.⁴ E04F *17/12*

U.S. Cl. 193—34 6 Claims

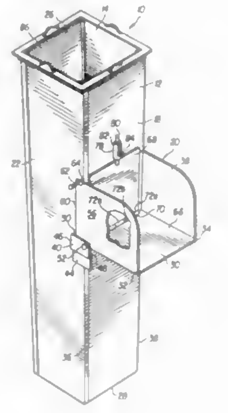
1. A gravity conveyor chute section of a type which can be engaged with other conveyor chute sections to form a gravity conveyor chute, the section comprising a sidewall having basically a tubular shape which guides items falling through a bore thereof, said section having an upstream end opening for receiving items dropped into said section from above and a downstream end opening for discharging said items passing through the bore of said section, at least one of said ends being selectively engagable with an adjacent section to form said conveyor chute to be longer than a single section whereby items serially fall through the bores of said thusly engaged sections, said section further defining a side opening through a panel of the sidewall thereof at a position intermediate said upstream and downstream ends through which items can be dropped into the bore of said section, said section including a door/ledge assembly mounted on said sidewall at said side opening, said door/ledge--assembly comprising:

a ledge and a ledge-hinge means for hingedly attaching said ledge to said sidewall below said side opening for allowing said ledge to be selectively rotated to a laterally-extending position extending laterally away from said sidewall, thereby forming a ledge below said side opening, and to a covering position for covering said side opening, said ledge being wider than the width of said panel of said sidewall with first and second side edges of said ledge extending beyond first and second side edges of said panel;

first and second side supports respectively attached to said first and second side edges of said ledge for extending to, and engaging said sidewall for providing support to said ledge when it is in the laterally-extending position, said first and second side supports being respectively positioned beyond said first and second side edges of said panel so that when said ledge is moved to the covering position said first and second side supports move along the outer surface of said sidewall beyond the respective first and second side edges of said panel; and

a door and a door-hinge means for hingedly attaching said door to said chute section below said opening for allowing said door to be selectively rotated to said laterally-extending position with said ledge and to said closed position with or without said ledge;

whereby said ledge can be moved to said closed position without blocking said bore and can be moved to a laterally-extending position while allow said door to be selective opened and closed.



4,883,158

DEVICE AND METHOD FOR MANAGING AMOUNT OF STORED COINS

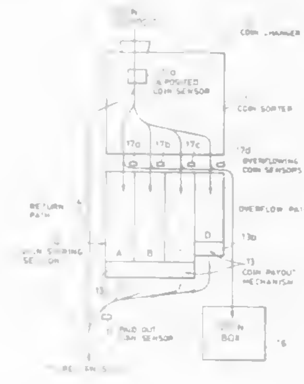
Osamu Kobayashi, Iruma; Yonezou Furuya, Hiki; Takeshi Isida, Sakado, and Mitsugu Mikami, Kawagoe, all of Japan, assignors to Kabushiki Kaisha Nippon Coinco, Tokyo, Japan

Filed Mar. 22, 1988, Ser. No. 171,688

Claims priority, application Japan, Mar. 24, 1987, 62-67985

Int. Cl.⁴ G07D *3/16*

U.S. Cl. 194—217 20 Claims



19. A coin mechanism comprising:

coin discrimination means for discriminating a true coin from a false one among deposited coins;

a coin storing device for storing a deposited coin which has been detected as a true coin by said coin discrimination means and paying out a coin or coins among the stored coins for change or other purpose;

payout means for paying out a coin from said coin storing device;

a coin box receiving coins which have overflown from said coin storing device;

a plurality of coin sensors, one of said coin sensors provided for each denomination in a passage leading coins which have overflown from said coin storing device to said coin box and detecting a coin passing through said passage.

4,883,159

FEEDER APPARATUS FOR TIMBER HARVESTERS

Lauri K. Ketonen, Huvilekatu 15, SF 64120 Kristiinankaupunki, Finland

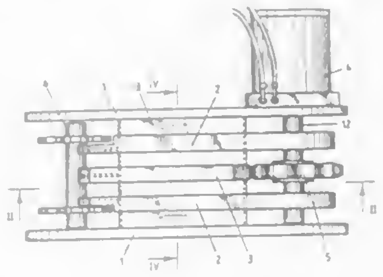
Continuation-in-part of Ser. No. 822,887, Jan. 27, 1986, Pat. No. 4,753,338. This application Apr. 5, 1988, Ser. No. 178,021

Claims priority, application Finland, May 29, 1984, 842152

The portion of the term of this patent subsequent to Jun. 28, 2005, has been disclaimed.

Int. Cl.⁴ B65G *15/10*

U.S. Cl. 198—626 20 Claims



1. A feeder apparatus for timber harvesters for pulling logs into the timber harvester comprising

a frame;

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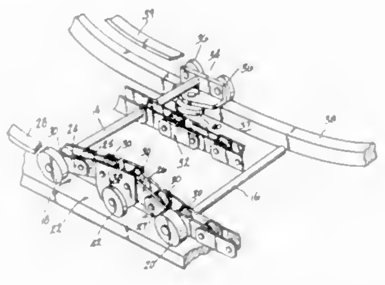
two outer side walls attached to the frame;
a first shaft supported by the side walls;
a second shaft supported by the side walls;
a drive means attached to the first shaft;
a cog wheel coaxially positioned on the first shaft;
a turning wheel positioned on the second shaft;
a three strand roller chain having middle strand of roller links and two outer strands of roller links with outer plates, where the roller chain rotates around the turning wheel and the cog wheel and where the cog wheel drives the center strand of roller links and where a respective turning wheel engages a respective outer strand;
log grabbing members attached to the outer plates of the two outer strands of roller links;
an inner rolling bed for supporting the middle strand of roller links;
outer rolling beds for supporting the two outer strands of roller links for essentially their total grab length, wherein the outer rolling beds are fitted to support the rollers of the outer strands of roller links in the area of the cog wheel over an angle of at least about 60 degrees of the roller chain's turn.

4,883,160
CURVED ESCALATOR WITH FIXED CENTER CONSTANT RADIUS PATH OF TRAVEL

Frank M. Sansevero, West Hartford, Conn.; Klaus Sechausen, Niedernwohren, Fed. Rep. of Germany; James A. Rivera, Bristol; Dat Nguyen, New Britian, both of Conn., and Peter Borchers, Bad Munder, Fed. Rep. of Germany, assignors to Otis Elevator Company, Farmington, Conn.

Filed Mar. 27, 1989, Ser. No. 328,935
Int. Cl.⁴ B66B *21/02*
U.S. Cl. 198—328 4 Claims



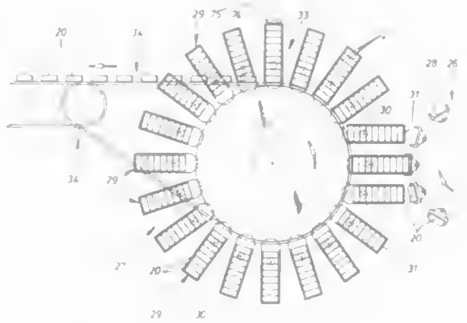
1. An escalator assembly having an arcuate path of travel defined by a constant radius derived from a fixed center as viewed in plan, the escalator including horizontal entry and exit landing zones, an intermediate constant slope zone, and entry and exit transition zones of continuously varying slope interconnecting the constant slope zone with the entry and exit landing zones respectively, said escalator having turn around sprockets at each of said landing zones for reversing the direction of travel of the moving escalator components and said escalator assembly including:

(a) radially inner and outer tracks extending between said landing zones and through said transition and constant slope zones for supporting movement of steps along the path of travel of the escalator;
(b) a plurality of steps, each having: an upper tread portion which remains substantially horizontal throughout a people transporting portion of the path of travel of the escalator; a step axle at radially inner and outer sides of each step; radially inner and outer step axle rollers rotatably mounted on said step axles, said step axle rollers being operable to travel over said inner and outer tracks;
(c) a radially outer step chain forming a continuous connection between outer ends of said step axles whereby all of said steps are connected together by the outer step chain at their outer sides throughout the entire path of travel of the escalator;
(d) means for continuously changing the effective length of said outer step chain, without changing the actual length of said outer step chain as the steps move through each of said transition zones so as to move the outer ends of the step axles of adjacent steps toward and away from each other in said transition zones, whereby the steps are continuously guided along said arcuate path of travel said means for continuously changing comprising a camming bracket assembly mounted on said outer step chain between each pair of adjacent step axle rollers, said camming bracket assemblies each including a pair of brackets straddling said outer step chain and depending downwardly from adjacent links of said outer step chain, and a camming roller mounted on a lower end of each of said brackets, said camming rollers being spaced transversely of said step axle rollers, whereby said camming and said step axle rollers travel over transversely separated paths in said outer track; and said track being birfurcated in said landing and transitional zones whereby said separated paths are coplanar in said constant slope of said outer track, and vertically spaced apart in said transitional and landing zones of said outer track;
(e) a radially inner step chain forming a continuous connection between inner ends of said step axles whereby all of said steps are connected together by said inner step chain at their inner sides throughout the entire path of travel of the escalator, said inner step chain having a fixed and constant effective length throughout the entire path of travel of the escalator;
(f) a bracket connecting said inner step rollers to said step axles, said bracket also carrying a side thrust roller for engaging an outer side surface of said inner track to counter inwardly directed side thrust of the assembly during operation of the escalator;
(g) radially inner and outer upthrust tracks disposed above said inner and outer step axle rollers for engagement by the latter to resist upthrust of the assembly during operation of the escalator; and
(h) said outer step chain having an effective length which equals its actual length when engaging said turnaround sprockets.

4,883,161
APPARATUS FOR THE FORM-STABILIZING STORAGE OF PACKS

Heinz Focke, Verden, Fed. Rep. of Germany, assignor to Focke & Co. (GmbH & Co.), Verden, Fed. Rep. of Germany

Filed Apr. 14, 1987, Ser. No. 38,261
Claims priority, application Fed. Rep. of Germany, Apr. 22, 1986, 3613482
Int. Cl.⁴ B65G *47/52*
U.S. Cl. 198—347 13 Claims

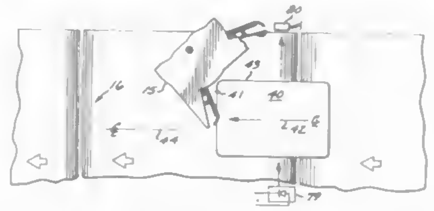


1. Apparatus for the temporary form-stabilizing storage of cuboid soft cigarette packs wi.h folding tabs connected by adhesive bonding, which can be introduced into pockets of a rotating turret and which can be pushed out of these after a dwell time, characterized in that each pocket is designed as a storage pocket (29) for receiving a plurality of packs (20), and after one revolution of the turret (27) the pack (20) located in the storage pocket (29) for the longest time is ejected and a new pack is introduced into the storage pocket (29); in that the storage pockets (29) are directed radially, and new packs (20) can be pushed into the respective storage pocket (29) via a radially outer pushing-in orifice (31) and the radially inner pack (20) can be pushed out of the storage pocket (29); and in that the radially inner pack (20) can be pushed out of the storage pocket (29) in the transverse direction, in a direction parallel to the axis of the turret (27), onto a pack discharge conveyor (34) running in a plane offset relative to the turret (27).

4,883,162
BAG TURNING APPARATUS

James M. Flot, Irvine, Calif., assignor to MHE Company, Inc., Santa Ana, Calif.

Filed Sep. 30, 1988, Ser. No. 252,057
Int. Cl.⁴ B65G *47/24*
U.S. Cl. 198—374 20 Claims



1. A bag turning apparatus for rotating a bag having a front and side surface and moving along a path on a conveyor, comprising:

a bag turning wheel having an axis of rotation substantially normal to the plane of said conveyor and offset to the side of the path of the bags, said wheel including
first and second radial members, extending from said axis in a horizontal plane to form a substantially right angle,
means for (a) lowering said bag turning wheel to permit said first radial member to engage a bag moving on said conveyor and (b) turning said bag turning wheel to permit said second member to drive said bag side surface through a predetermined arc and to position said bag to have a predetermined orientation and to be moving on a predetermined track on said conveyor surface as the bag loses contact with said radial member; and
means for raising said bag turning wheel to permit free passage of said bags on said conveyor.

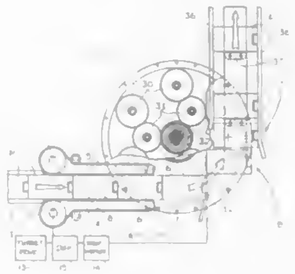
4,883,163
APPARATUS AND METHOD FOR REGULARLY SPACING APART RANDOMLY SPACED OBJECTS WHILE CONVEYING THEM

Antonio Gamberini, Bologna, and Fiorenzo Draghetti, Medicina, both of Italy, assignors to G.D. Società per Azioni, Bologna, Italy

Filed Dec. 4, 1987, Ser. No. 128,883
Claims priority, application Italy, Dec. 17, 1986, 3612 A/86
Int. Cl.⁴ B65G *43/00*
U.S. Cl. 198—460 15 Claims

1. Apparatus for accepting a succession of like objects having a similar spatial orientation but arriving with irregular timing from one object to the next, and outputting the objects in succession with both a similar spatial orientation and a regular spacing from one object to the next, while conveying the objects along a path,

said apparatus comprising:
a first conveyor having a first conveying surface extending along said path from an accepting end to a delivery end of said first conveyor, and means for advancing said first conveying surface in a downstream direction, for advancing a succession of like objects having a similar spatial orientation but arriving with irregular timing from between objects, from said accepting end to said delivery end of said first conveyor;
a second conveyor having a second conveying surface extending along said path, downstream of said first conveyor, from an accepting end to a delivery end of said second conveyor, and means for advancing said second conveying surface in a downstream direction, for advancing a succession of like objects having a similar spatial orientation and placed thereon proximally of said accepting end of said second conveyor, with regular spacing between objects;
a continuously rotating turret mounted for continuous rotation about an axis which carries successive peripheral portions of said turret along said path so that such successive peripheral portions are each successively juxtaposed with said delivery end of said first conveyor and said accepting end of said second conveyor;
each said peripheral portion carrying a respective pick-up head for picking up an object which has been conveyed to said delivery end of said first conveyor and delivering and depositing that object onto said second conveyor;



a braking means juxtaposed with said first conveyor beside said delivery end of said first conveyor, for engaging objects successively conveyed into proximity therewith on said first conveying surface, said braking means comprising a pair of endless belts having object-engaging runs which transversally-spacedly confront one another across path in juxtaposition with said first conveyor, and variable speed means for running said belts so that the object-engaging runs thereof advance at a controlled speed which is continuous, but slower than that of said first conveying surface, whereby the succession of like objects being conveyed by the first conveyor becomes condensed into a single file of serially engaged objects including an advancing leading said object which becomes positioned to be picked-up by a respective pick-up head as said turret rotates; and
means responsive to spatial positioning of successive ones of said leading objects in relation to rotation of said turret, for adjusting the speed of said means for running said belts, for causing each said leading object, while continuously advancing, to become located at an appropriate location to be picked-up by a next said pick-up head as such pick-up head becomes ready to pick-up the respective leading object.

4,883,164
VACUUM OPERATED TRANSFER MACHINE

Paul Korzenecki, Benton Harbor, Mich., assignor to Mac Engineering & Equipment Company, Inc., Benton Harbor, Mich.

Filed Jun. 8, 1988, Ser. No. 203,883
Int. Cl.⁴ B65G *37/00*
U.S. Cl. 198—468.4 21 Claims

1. Apparatus for transporting battery plate grids which

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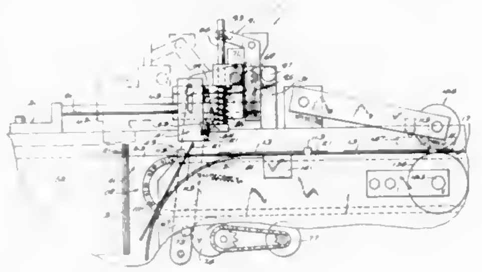
include a lug, and which are transported from a magazine for delivery from said apparatus, said apparatus comprising a frame including a rail supporting a grid lug for movement of the grid lug along said rail from a pick-up station adjacent the magazine, through and to a second station spaced from said pick-up station, a suction cup, means on said frame for supporting said suction cup for movement of said suction cup parallel to said rail and from a first position wherein said suction cup engages the grid lug at said pick-up station and to a second position spaced from said first position, for movement of said suction cup transversely to said rail from said second position to a third position, and thereafter for return movement of said suction cup to said first position, and means connected to said suction cup for applying suction at said suction cup during movement of said suction cup from said first position to said second position so as to retain the grid lug in engaged relation with said suction cup and so as thereby to transport the grid along said rail in common with movement of said suction cup from said pick-up station to said second station.



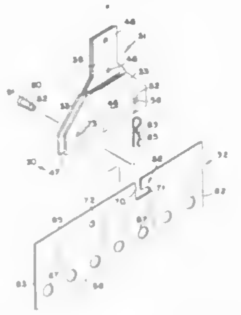
4,883,165
HANGER FOR PAINT CONVEYOR LINE

Richard D. Nelman, Chester Springs, Pa., assignor to Vesper Corporation, Bala-Cynwyd, Pa.

Filed Jul. 8, 1988, Ser. No. 221,958

Int. Cl.^{4} B65G *17/32*

U.S. Cl. 198—682 **2 Claims**



1. In an endless traveling conveyor for carrying articles to be painted through a spray paint field having

(1) a fixed track;

(2) roller arms on the track;

(3) a traveling flexible member secured to the roller arms; and

(4) hangers secured to and depending from the roller arms having holes therein for suspending the articles;

the improvement comprising

a hanger having

(1) an upper element

(a) secured at its upper section to roller arms, and having

(b) a lower section having a channel extending therein and having a uniform width;

(2) a lower element in the form of a rectangular plate, extending in a vertical plane, having horizontally spaced holes therein;

the thickness of the plate conforming generally to the thickness of the channel, and

(3) means for removably securing the lower element partially within the channel of the upper element, comprising

(a) a fixed plug in the upper element that receives a slot in the lower element to form an initial pivotal connection between the elements, and

(b) matching holes in the upper and lower elements for receiving a removable pin after the pivotal connection is made and the lower element is rotated to line up the holes;

wherein the holes in the lower element are located outside the upper element when the lower element is secured in the upper element.

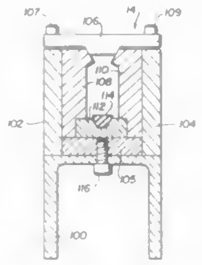
4,883,166
CONVEYING SYSTEM

Charles F. Whitaker, Bristol, Va., assignor to Reynolds Metals Company, Richmond, Va.

Filed Sep. 9, 1985, Ser. No. 774,013

Int. Cl.^{4} B65G *15/42*

U.S. Cl. 198—688.1 7 Claims



1. A conveyor system for transporting relatively thin articles in their upright position as a continuous stick without gaps between adjacent articles comprising a channel, said channel having a pair of stationary sidewalls and a bottom wall, said sidewalls conforming generally to the shape of said articles in their upright position and providing lateral support to said articles to thereby prevent significant side-to-side movement of said articles, said bottom wall including an endless belt therein, and means for driving said endless belt and providing driving force to said articles, said endless belt having spaced transverse grooves therein to provide additional driving force to certain of said articles in said continuous stick to thereby prevent slippage of said articles and gaps in said continuous stick.

4,883,167
CONTINUOUS CONVEYOR APPARATUS

Katsuaki Shibata, 845-38, Ogoori, Tsuko, Fukuoka, Japan

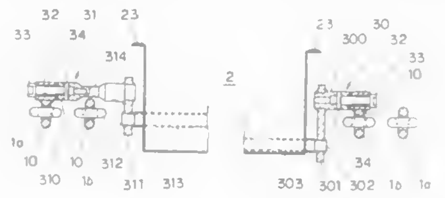
Filed Sep. 8, 1987, Ser. No. 93,881

Claims priority, application Japan, Sep. 19, 1986, 61/221643; Jun. 17, 1987, 62/149058

Int. Cl.^{4} B65G *17/36*

U.S. Cl. 198—712 3 Claims

1. A continuous conveyor apparatus having at least one zone of horizontal movement and at least one zone of vertical movement, comprising, in combination, a pair of inner link chains and a pair of outer link chains, a plurality of carrying vessels each having a front end and a rear end, front connecting means mounting the front ends of said carrying vessels between said inner link chains, rear connecting means mounting the rear ends of said carrying vessels between said outer link chains, said chains being mounted upon a plurality of tandem wheel means and coaxial wheel means in such a manner that at least one tandem wheel means is mounted at the junction between a horizontal zone and a vertical zone; each said tandem wheel means comprising a pair of inner wheels each wheel mounted in cantilever on an inner shaft, said inner shafts being coaxially aligned, a pair of outer wheels each wheel mounted in cantilever on an outer shaft, said outer shafts being coaxially aligned with each other and horizontally aligned with and spaced from said inner shafts, each said coaxial wheel means comprising a pair of inner wheels and a pair of outer wheels all mounted on a common shaft, said link chains being of simple construction, through which lubricant generally sufficiently penetrates to provide better abrasion resistance than roller chains, and adapted to high speed, compactness, and twisting in three dimensions, each of said link chains comprising an endless sequence of alternating vertical links and horizontal links, said front connecting means and said rear connecting means each being connected with the outer side of the straight portion of a vertical link, wherein said connection to the outer side of the straight portion of a vertical link of said outer link chains includes a cylindrical fitting, mounted directly onto said outer side of said straight portion, within which said rear connecting means is rotatably mounted.



4,883,168
REINFORCING CORNER FLAP FOR GROUP PACKAGES

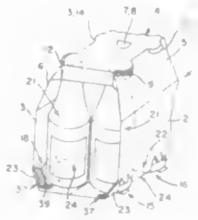
Roger Dreyfus, Strasbourg, France, assignor to I.C.P., S.A., Fegersbeim, France

Filed Aug. 3, 1988, Ser. No. 227,856

Claims priority, application France, Aug. 3, 1987, 87 11100

Int. Cl.^{4} B65D *5/04*

U.S. Cl. 206—152 19 Claims



1. Protective and reinforcing flap means incorporated within a wrapping type package for housing a plurality of containers, wherein said package includes cut-out means, for retaining said plurality of containers within said package, formed within bottom and sidewall panels of said package and extending across fold lines defined between said bottom and sidewall panels of said package; intermediate connecting strips interconnecting said bottom and sidewall panels of said package by extending across said fold lines defined between said bottom and sidewall panels of said package, and separating said cut-out means; and end strips interconnecting said sidewall and bottom panels of said package by extending across said fold lines defined between said bottom and sidewall panels of said package, and interposed between end ones of said cut-out means and exterior side edges of said package, said protective and reinforcing flap means comprising:

a flap formed within each one of said end cut-out means and interconnecting said bottom and sidewall panels of said package by extending across said fold lines defined between said bottom and sidewall panels of said package;

fold line means defined between each one of said flaps and each one of said end strips for permitting each one of said flaps to be folded over each one of said end strips whereby an outer edge portion of each one of said folded flaps is substantially aligned with an outer edge portion of each one of said end strips which define said exterior edges of said package such that said end strips of said package, within the vicinity of said containers and within corners of said package as defined along said fold lines between said bottom and sidewall panels of said package, are reinforced by means of a double-thickness of material forming said package panels; and

means for bonding each one of said flaps to each one of said end strips so as to secure each one of said flaps to each one of said end strips so as to insure said double-thickness reinforcement of said package within said exterior edge regions of said package.

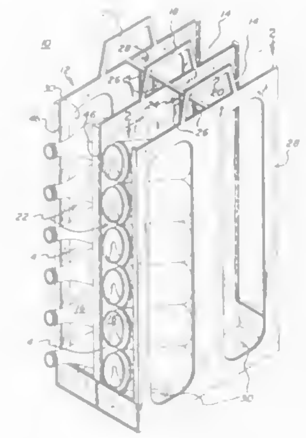
4,883,169
PORTABLE RECEPTACLE FOR RETURNABLE BEVERAGE CONTAINERS

Richard E. Flanagan, Jr., P.O. Box 217, West Sand Lake, N.Y. 12196

Filed Dec. 19, 1988, Ser. No. 286,167

Int. Cl.^{4} B65D *5/36, 6/40, 71/00*

U.S. Cl. 206—170 16 Claims



1. A receptacle for storing and transporting returnable beverage containers, said receptacle comprising:

portable frame structure, said structure having at least one module sized to receive a plurality of returnable beverage container, said at least one module having an outwardly facing open end and an at least partially sealed end opposed thereto, said open end allowing positioning of said plurality of containers within said at least one module, said at least one module including means for orienting said containers within said module such that the containers are angled downwardly from said open module end to said at least partially sealed end, said at least one module being sized such that said containers remain so angularly orientated when stored and when transported within the receptacle, whereby residue fluids within said containers remain therein when the containers are positioned within said module with their tops facing outward at said open end of said module, and said orienting means enhances retention of said beverage containers within said at least one module when said receptacle is utilized to transport said containers.

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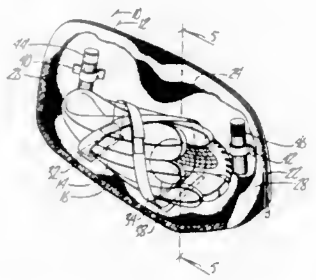
4,883,170
BALL GLOVE CONDITIONING BAG

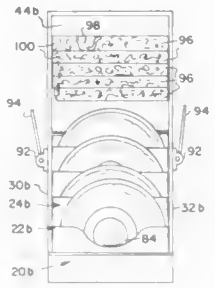
Robert L. Wright, Des Moines, Iowa, assignor to Creative Athletic Products and Services, Inc., Des Moines, Iowa
Filed Jun. 27, 1989, Ser. No. 371,748
Int. Cl.⁴ B65D *85/18, 81/22*
U.S. Cl. 206—315.1 17 Claims



1. A ball glove and glove conditioning bag comprising,
a bag having a chamber defined by a bottom wall and side walls, and an access opening into said bag,
a ball glove in said chamber,
fastening means in said bag for holding said glove stationary and substantially centered between said side walls,
a conditioning fluid applicator ball in the pocket of said glove, and
said fastening means holding said glove in a wrapped-around-said-ball relationship whereby conditioning fluid may be transferred from said ball to said glove.

4,883,171
ANIMAL CALL DEVICE HOLDER AND ASSEMBLY

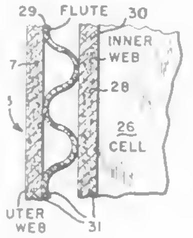
Wayne Carlton, 206 Lynch St., Edgefield, S.C. 29824
Filed Oct. 21, 1988, Ser. No. 260,499
Int. Cl.⁴ B65D *85/00*
U.S. Cl. 206—315.11 13 Claims



1. An improved animal call device holder, said holder comprising, in combination:
a. a container having a rhomboidal configuration in side elevation with wedge-shaped lower and upper ends to facilitate insertion into and withdrawal from a pocket, said container having a bottom portion comprising a generally flat closed bottom and upraised, integral closed front, rear and sides sloped upwardly rearwardly to provide said wedge shape and defining a lower storage space therewith, and an openable lid for said container, hinged to said bottom portion and having a closed flat top and depending closed integral sides, front and rear defining an upper storage space sloped downwardly forwardly to match the slope of said bottom portion to provide said wedge shape and defining an upper storage space; and,
b. a rack disposed in said container bottom portion and comprising a plurality of spaced parallel upwardly and rearwardly sloping plates connected to said bottom portion sides and/or bottom, and defining a plurality of pockets adapted to separately releasably hold the lower portions of generally flat animal call devices, said upper space being adapted to hold the upper portion of said animal calls.

4,883,172
CONTAINER FOR STATIC-SENSITIVE ARTICLES

William I. Young, North Situate, Mass., assignor to Hy-Con Products, Inc., Framingham, Mass.
Continuation of Ser. No. 860,499, May 7, 1986, Pat. No. 4,712,674, which is a continuation of Ser. No. 715,203, Mar. 25, 1985, Pat. No. 4,610,353. This application Oct. 29, 1987, Ser. No. 114,564
The portion of the term of this patent subsequent to Sep. 9, 2003, has been disclaimed.
Int. Cl.⁴ B65D *73/02*
U.S. Cl. 206—328 1 Claim

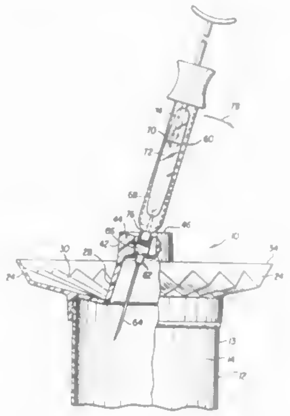


1. Container for use with an article which can be damaged by static electricity, comprising:
a plurality of walls forming a Faraday cage in which the article resides, each wall of the cage consisting of a sheet of corrugated board, which board has at least an outer web, an inner web, and a corrugated flute web that is sandwiched between the inner and outer webs, at least one of the webs being provided with a substantially uniform electrically-conductive dispersion of conductive particles, wherein the said dispersion of conductive particles extends continuously through the said conductive web from one of its surfaces to the other of its surfaces and wherein the walls of the cage have a surface conductivity and bulk conductivity in the range from 10^3 to 10^9 ohms/square.

4,883,173
HYPODERMIC NEEDLE REMOVAL AND DISPOSAL DEVICE

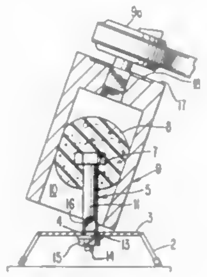
Diana L. Goldman, and Michael S. Goldman, both of 5109 Foxon Rd., Virginia Beach, Va. 23464
Filed Jun. 1, 1989, Ser. No. 359,577
Int. Cl.⁴ B65D *25/00*
U.S. Cl. 206—366 11 Claims

1. A hypodermic needle removal and disposal device for detaching hypodermic needle assemblies, including needles and hubs, from hypodermic syringes, said device comprising:
an elongated storage container having closed side and bottom walls and an open top, the side wall of said storage container having an outer surface of a size and shape that it can be gripped by a single normal-size human hand and held in an upright attitude;
a needle-removing shield permanently mounted at the top of said elongated storage container for closing said open top, said needle-removing shield comprising an apron extending laterally outwardly substantially beyond the outer surface of said side wall, said apron having a funnel-shaped top surface facing away from said storage container, said funnel-shaped top surface slanting toward a plateau, said plateau rising over the funnel shaped top surface to form a plateau surface above said funnel-shaped top surface and defining an elongated hole in said plateau surface of a relatively uniform dimension along the length thereof and being of a size for closely receiving a hub of a hypodermic needle;
whereby a hypodermic needle mounted on threads of a hypodermic syringe can be inserted through said elongated hole, so that said hub of said hypodermic needle is positioned in said elongated hole, said hypodermic syringe can be turned as a lever about said hypodermic needle hub, which is held from turning by a wall defining said elongated hole, thereby ripping threads of said syringe out of engagement with said hub and allowing said hypodermic needle to fall into said elongated storage container, said funnel shaped top surface serving as a shield for a hand holding said elongated container and guiding needles contacting it toward said plateau.



4,883,174
WRENCH SOCKET ASSEMBLY

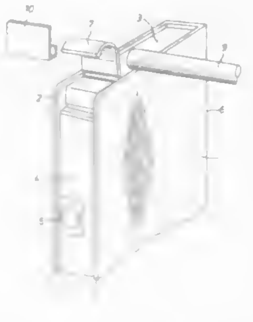
Ralph F. Reeside, 4316 Leland St., Chevy Chase, Md. 20815
Filed Nov. 14, 1988, Ser. No. 270,811
Int. Cl.⁴ B65D *85/20*
U.S. Cl. 206—378 8 Claims



1. A wrench socket assembly comprising stud means removably mounted on a supporting surface for holding wrench socket means with drive ends exposed for engagement by a wrench handle, said stud means having molded thereon an elastomeric spherical ball selectively and compressibly fittable in a work opening of and firmly gripping one of said socket means, wherein the socket means are a plurality of sockets having work openings of different cross-sectional area, and each socket is swivelable relative to the elastomeric ball fitting its work opening for accommodating relative angling of a wrench handle in applying and removing a socket to and from one of said stud means.

4,883,175
SUSPENSION DEVICE FOR A CONTAINER

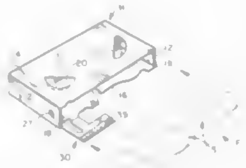
Hartmut Thiele, Munich, and Heinz Mauser, Gilching, both of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany
Filed Feb. 12, 1988, Ser. No. 155,564
Claims priority, application Fed. Rep. of Germany, Feb. 24, 1987, 8702812
Int. Cl.⁴ B65D *85/00*
U.S. Cl. 206—387 6 Claims



1. A rectangular case for audio and video recording tape consisting of a base, lid and means for receiving recording tape, and having in combination,
two major side walls,
a face wall extending around three sides of said rectangular case and positioned between said walls so as to separate the side walls by the lateral dimension of the face wall,
said face wall consisting of two end sections separated by a front face wall section,
a rim on each of said side walls extending around the three sides of the case adjacent to the face wall, said rims extending beyond said face wall,
a recess provided in said face wall by said extending rims,
a hinged bracket with a hooked free end pivotally mounted on one of said face wall end sections for movement between an open position so that said hooked free end is engageable to provide support for the case, and a closed position in which the hinged bracket is retained within the recess,
said bracket extending the full lateral dimension of the face wall from rim to rim.

4,883,176
PAPERBOARD VIDEO CASSETTE HOUSING

Joseph J. Hart, Philadelphia, and Christine S. Springman, Downington, both of Pa., assignors to Container Corporation of America, Clayton, Mo.
Filed May 15, 1989, Ser. No. 351,587
Int. Cl.⁴ G11B *23/087, 23/04*
U.S. Cl. 206—387 9 Claims



1. In a composite, limited use, video cassette, a conventional operating mechanism, formed primary of molded plastic material and including a frame carrying a pair of tape reels and control elements engagable with related elements of a video cassette recording device for driving and braking said reels,

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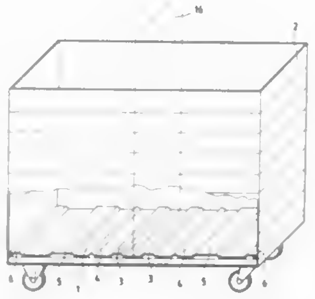
and a housing enclosing said operating mechanism, said housing being formed from a unitary blank of foldable sheet material such as paperboard and comprising:
- (a) a pair of first and second side wall walls spaced from each other and interconnected by a front wall and a pair of end walls foldably joied to corresponding front side edges and end edges, respectively, of said side walls to form a box-like structure open at the rear;
- (b) a retaining member extending between said side walls across the rear of said housing to retain said operating mechanism in said housing;
- (c) one of said side walls having a pair of openings affording access to said tape reels;
- (d) the other of said side wall having a pair of spring tabs cut from from material thereof and folded inwardly therefrom between said other side wall and said tape reels to bias the latter toward said one side wall.

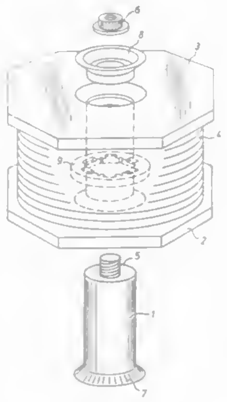
4,883,177
PLATE MOUNTABLE ON THE BASE OF A BIN-TYPE CONTAINER FOR THE ORDERED STORAGE OF BOBBINS
Benito Galbani, Pordenone, Italy, assignor to Savio S.p.A., Pordenone, Italy
Filed Sep. 15, 1988, Ser. No. 244,709
Claims priority, application Italy, Sep. 25, 1987, 22422/87[U]
Int. Cl.⁴ B65D *85/66*
U.S. Cl. 206—391 4 Claims



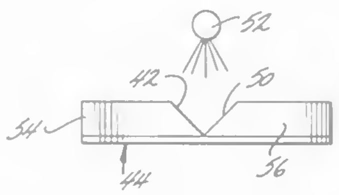
1. A bin-type container for storing different bobbins therein, comprising a base plate including two end projections and a plurality of intermediate projections therebetween wherein at least two of said intermediate projections have a substantially cuspidal cross section and at least a further two intermediate projections have a substantially trapezoidal cross section, and wherein two adjacent intermediate projections are spaced a distance apart, all for limiting movement of the bobbins stored in the bin.

4,883,178
MULTIPLE PACKING FOR MAGNETIC TAPES WOUND ON CORES
Hartmut Thiele, and José Toral, both of Munich, Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengessellschaft, Leverkuse, Fed. Rep. of Germany
Filed Dec. 2, 1988, Ser. No. 279,401
Claims priority, application Fed. Rep. of Germany, Dec. 16, 1987, 8716579[U]; Dec. 16, 1987, 8716580[U]; Mar. 8, 1988, 8803062[U]
Int. Cl.⁴ B65D *85/67*
U.S. Cl. 206—391 10 Claims

1. Packing for a plurality of recording carriers in the form of tapes wound on flangeless reel hubs which have central bores (so called pancakes), the packing comprising plastic pellets in the form of discs which protect the outer reels of tape each, disc being defined by an outer wall and an inner wall, and a fixing device rising up through the axial bore and having a diameter equal to the internal diameter of the bores in the reel hubs and in the plastic discs, characterised in that the fixing device is a centering sleeve (**1, 13, 22**) which can be inserted through the outer walls (**2, 3**) and through the central bores of the reel hubs (**9**) and has a closure element which co-operates with another closure element for locking and tightening, the centering sleeve optionally having further elements (**7, 8**) which prevent rotation of the centering sleeve against the outer walls of the plastic discs on opening or closing of the packing.



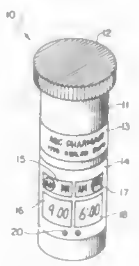
4,883,179
ANGLED PACKING MATERIAL
Pierre A. Dionne, Martinsville, Va., assignor to Pierre Dionne and Southeast Foam Converting & Packaging, Inc., both of Stokesdale, N.C., a part interest
Filed Jan. 6, 1988, Ser. No. 141,147
Int. Cl.⁴ B65D *81/02*
U.S. Cl. 206—523 18 Claims



1. A packing member in the form of an edge or corner protector, said packing member comprising a plastic foam sheet having a sheet material backing, and said plastic foam sheet having a longitudinal V-groove dividing said plastic foam sheet into two legs connected to one another by a hinge defined by said sheet material backing, said V-groove in combination with said hinge defining means for facilitating folding of said two legs from a planar state to one wherein said two legs are generally at a right angle to one another with the foam of one leg abutting the foam of the other leg, surfaces of said V-groove having an adhesive coating which is a water soluble rubber latex thereon for forming a bond when said legs are folded to bring said surfaces of said V-groove into facing contact.

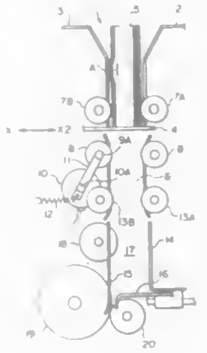
4,883,180
COLOR CODED MEDICINE CAPS AND LABELS FOR DAILY DOSAGE
Essie Mae Humphrey, and Pete Humphrey, Jr., both of 19802 Dalfsen Ave., Carson, Calif. 90746
Filed Jun. 9, 1988, Ser. No. 204,584
Int. Cl.⁴ B65D *83/04*
U.S. Cl. 206—534 1 Claim

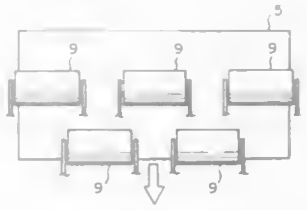
1. A coded medicine container holding a quantity of medicine to be taken at specific time periods, the combination which comprises:
an open-ended container having an exterior surface carrying a first color;
a cap closure having an exterior surface removably carried on said container to selectively close the open end thereof;
said container having a label carried on said exterior surface imprinted with indicia related to time periods for taking of the medicine;
said cap closure and said label being identical in color to visually represent said indicia related to the number of times that medicine is to be taken per day;
said container color being different from said cap closure and said label color;
a plurality of raised, non-removable nubs carried on said label correlating with and cooperating with said cap closure and said label color to be indicative of the medication time period of consumption; and
said cap closure and said label color representation and said raised nubs constitute a code correlated to represent said indicia related to medicine-taking times.



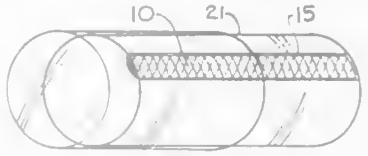
4,883,181
FOREIGN SUBSTANCE DISPOSING DEVICE FOR MONEY RECEIVING AND DISBURSING MACHINE
Eiichi Yoshikawa, Hasuda, Japan, assignor to Laurel Bank Machines Co. Ltd., Tokyo, Japan
Filed Nov. 10, 1988, Ser. No. 269,648
Claims priority, application Japan, Nov. 12, 1987, 62-285736
Int. Cl.⁴ B07C *5/00*
U.S. Cl. 209—534 7 Claims

1. A foreign substance disposing device for a money receiving and disbursing machine comprising a bill receiving section for receiving a stack of bills to be processed in said machine, pick out means for picking out the bills one by one from the stack, transfer means for transferring the stack of bills from said bill receiving section to said pick out means, transfer drive means for driving said transfer means, detecting roller means swingably provided between said bill receiving means and said pick out means, said detecting roller means being brought into contact with a surface of the stack of bills being transferred, and being operable to produce a swingable movement in response to an undulation of the surface of the stack of bills as the stack of bills are transferred, said undulation being caused by a foreign substance potentiometer means for producing a signal in response to the swingable movement of the detecting roller means, control means for judging whether or not the stack of bills received in the machine are accompanied by a foreign substance based on said signal from the potentiometer means and for controlling said transfer drive means to return the stack of bills to the bill receiving section when a foreign substance is detected as a result of said judgment.





4,883,182
TAMPER EVIDENT CAPSULE AND INSERT DEVICE
Raymond J. Hughes, P. O. Box 801, Mantoloking, N.J. 08738
Filed Jan. 12, 1988, Ser. No. 142,976
Int. Cl.⁴ A61K *9/48;* **A61J** *3/07*
U.S. Cl. 206—534 8 Claims



1. A tamper-evident capsule, comprising:
a shell;
an insert disposed within said shell and generally visible from outside said shell;
said insert adapted to change its appearance when said shell is subjected to physical stress.

4,883,183
BILL DEPOSITING/DISPENSING APPARATUS
Haruo Kimura; Takeo Ishidate, and Masao Goto, all of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan
Filed Oct. 2, 1987, Ser. No. 103,822
Claims priority, application Japan, Oct. 13, 1986, 61-241464
Int. Cl.⁴ G06F *15/30;* **G07D** *7/00*
U.S. Cl. 209—534 2 Claims

1. A bill depositing/dispensing apparatus comprising:
(a) a normal-bill storage box for storing normal bills;
(b) a marred-bill storage box for storing marred bills;
(c) a rejected-bill storage box for storing rejected bills;

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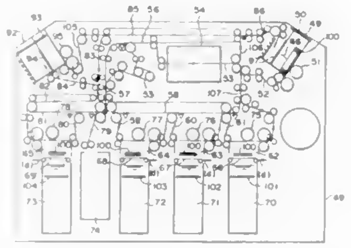
(d) a separator for separating and feeding normal bills from said normal-bill storage box;
(e) a discriminator for detecting whether or not bills are true or false, normal or marred, and for detecting whether a face or a back of a bill is being presented, and for detecting the denomination of the bill, and for detecting abnormal traveling of the bills;
(f) a customer-side bill slot for receiving and dispensing bills;
(g) a first shutter disposed over said customer-side bill slot;
(h) a drive means for opening and closing said first shutter;
(i) a clerk-side bill slot for receiving and dispensing bills;
(j) a second shutter disposed over said clerk-side bill slot;
(k) a drive means for opening and closing said second shutter;
(l) a first feeding means for feeding bills from said customer-side bill slot to said discriminator, said first feeding means including a first roller for separating bills disposed in said customer-side bill slot from said customer-side bill slot, a first table for pressing bills disposed in said customer-side bill slot against said first roller, and a first drive means for moving said first table back and forth;
(m) a second feeding means for feeding bills from said clerk-side bill slot to said discriminator, said second feeding means including a second roller for separating bills disposed in said clerk-side bill slot from said clerk-side bill slot, a second table for pressing bills disposed in said clerk-side bill slot against said second roller, and a second drive means for moving said second table back and forth;
(n) a third feeding means for feeding normal bills from said discriminator to said normal-bill storage box;
(o) a fourth feeding means for feeding marred bills from said discriminator to said marred-bill storage box;
(p) a fifth feeding means for feeding rejected bills from said discriminator to said rejected-bill storage box;
(q) a sixth feeding means for feeding bills from said discriminator to said customer-side bill slot;
(r) a seventh feeding means for feeding bills from said discriminator to said clerk-side bill slot;
(s) an eighth feeding means for feeding normal bills from said normal-bill storage box to said discriminator; and
(t) a control means for feeding, upon dispensing from said customer-side bill slot, rejected bills which are discriminated as abnormal in traveling by said discriminator from said discriminator to said clerk-side bill slot, and for feeding rejected bills in said clerk-side bill slot to said discriminator.



4,883,184
CABLE ARRANGEMENT AND LIFTING PLATFORM FOR STABILIZED LOAD LIFTING

James S. Albus, 952 W. Stanhope Rd., Kensington, Md. 20891
Division of Ser. No. 866,252, May 23, 1986, abandoned. This application Jun. 10, 1988, Ser. No. 205,091
Int. Cl.⁴ B66C *13/06, 13/16, 23/72, 11/00*
U.S. Cl. 212—146 8 Claims

1. A stabilized load lifting device for use with a crane for lifting and translocating loads, said stabilized load lifting device comprising:

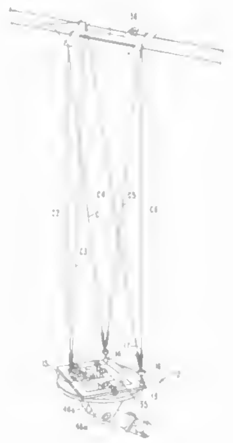
a load platform to secure loads to be lifted, said platform including an attachment frame having first, second and third cable attachment points located such that said third point is along the perpendicular bisector of said first and second points, and load securing means, operatively coupled to said attachment frame, for securing the load to be lifted;

an attachment carriage to operatively couple said load platform to the crane, said carriage including a cable winch having a shaft and means for rotating said shaft, and first, second and third cable pair guides capable of operatively guiding a first and second cable pair downward from said shaft and capable of operatively guiding a third cable pair horizontally away and downward from said shaft;

a first cable pair slidably attached to said first cable pair guide, said first cable pair having first and second cables, one end of said first and second cables coiled about said shaft near one end of said shaft, the other end of said first and second cables operatively coupled to said second and third attachment points, respectively;

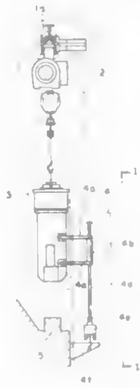
a second cable pair slidably attached to said second cable pair guide, said second cable pair having third and fourth cables, one end of said third and fourth cables coiled about said shaft near the other end of said shaft, the other end of said third and fourth cables operatively coupled to said third and first attachment points, respectively; and

a third cable pair slidably attached to said third cable pair guide, said third cable pair having fifth and sixth cables, one end of said fifth and sixth cables coiled about said shaft near the center of said shaft, the other end of said fifth and sixth cables operatively coupled to said second and first attachment points, respectively.



4,883,185
SUSPENSION TYPE TRANSPORTER FOR A BOLT DRAWING MACHINE AND POSITIONING CONTROLLER THEREFOR

Takashi Fujitani; Hiromi Uemura, both of Osaka; Toshiaki Kishimoto, Fuknoka; Masayuki Uchiyama, Tokyo; Isao Shirasu, Kobe; Hideyuki Kurokawa, Kobe; Takashi Nishioka, Kobe; Kenji Kikukawa, and Yoshinori Sato, both of Kanagawa, all of Japan, assignors to The Hokkaido Electric Power Co., Inc., Hokkaido; The Kansai Electric Power Co., Inc., Osaka; Shikoku Electric Power Co., Inc., Kagawa; Kyushu Electric Power Co., Inc., Fukuoka; The Japan Atomic Power Company, Tokyo; Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo and The Japan Steel Works, Ltd., Tokyo, all of, Japan
PCT No. PCT/JP85/00474, § 371 Date Nov. 2, 1987, § 102(e) Date Nov. 2, 1987, PCT Pub. No. WO87/01364, PCT Pub. Date Mar. 12, 1987
PCT Filed Aug. 28, 1985, Ser. No. 57,908
Int. Cl.⁴ B23K *9/12*
U.S. Cl. 212—147 12 Claims



1. A suspension type transporter which transports a bolt drawing machine while suspending the bolt drawing machine, comprising:

a guide mechanism including a holding member fixedly mounted to the bolt drawing machine, a cylindrical slide holder mounted vertically to said holding member, a main shaft penetrating said slide holder movably in the vertical direction and rotatably, a wheel support mounted to a lower end of said main shaft, a wheel supported by said wheel support to rotate on a track disposed on a stationary portion at a floor side, a guide provided along the stationary portion, and a guided contact portion disposed to a side surface of said guide to be opposed to said wheel support with a small gap between said wheel support and said contact portion, whereby movement of the bolt drawing machine in the air is restricted.

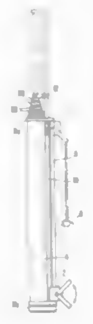
4,883,186
EASY ERECTING TELESCOPIC MAST

Manuel M. Werber, 41 Brookside Ter., North Caldwell, N.J. 07006
Filed May 2, 1988, Ser. No. 189,338
Claims priority, application Israel, Oct. 28, 1987, 84299
Int. Cl.⁴ B66C *23/06*
U.S. Cl. 212—184 7 Claims

1. A self-erecting telescopic mast comprising a plurality of hollow concentric mast sections including a bottom/outer mast section and further sections having an increasingly smaller diameter with respect to the diameter of the bottom/outer mast section;

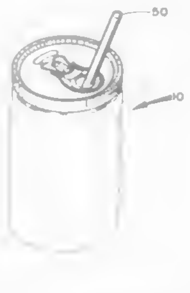
a mechanical erecting means for erecting each mast section relative to a next outer section, said erecting means comprising an elongated element mounted relative to said bottom/outermost mast section exterior to the mast sections, and a jacking means for movement relative to said elongated element, said jacking means being adapted to travel upwardly along the length of said elongated element and including a second elongated element having clamping means at an upper end thereof for pulling each mast section upwardly from its next surrounding mast section by clamping the mast section at a top end thereof; and

locking means for fixing each mast section relative to its next adjacent section in erected position.



4,883,187
SOFT DRINK ADVERTISING DEVICE

Peter Knitzer, 165 West End Ave., #4-J, New York, N.Y. 10023
Filed Jul. 17, 1987, Ser. No. 74,871
Int. Cl.⁴ B65D *1/00, 41/18;* **A47G** *19/22, 23/03*
U.S. Cl. 215—1 R 14 Claims



11. An advertising device substantially proportioned to simulate the shape of a beverage containing can comprising:
(a) a cylindrical glass vessel sidewall defining an internal volume, having an external surface including a simulated label made of ceramic frit which is glazed onto said vessel sidewall and having an upper open portion and a bottom portion;
(b) a bottom member integral with said closing said bottom portion;
(c) said upper open portion of said vessel sidewall having a smaller diameter region coaxial with said internal volume at the uppermost region of said vessel;
(d) a first bead extending along an outside perimeter of said smaller diameter region of said cylindrical vessel sidewall;
(e) a cap comprising a cylindrical sidewall with a top and bottom section having an outside diameter substantially similar to that of said cylindrical vessel sidewall below said smaller diameter region;
(f) said cap further comprising a top member made of plastic incorporating a reflective pigment integral with said cap sidewall, said top member closing the top section of said cap and comprising an embossed raised portion simulating a can opening structure;
(g) a second bead extending along the inside of said bottom section of said cap sidewall dimensioned and proportioned

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to engage said first bead such that said cap may repeatedly be secured to and disengaged from said cylindrical vessel sidewall; and

(h) a hole in said top member which coincides substantially with the embossed feature that would open on a functioning "pop-top" can top simulated on said top member.

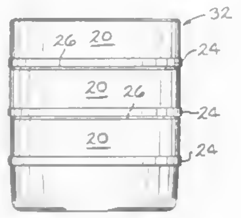
4,883,188
CONTAINER WITH BASE CUP AND PROJECTION TO LIMIT STACKING OF BASE CUPS

John M. Barth, Saline, Mich., assignor to Hoover Universal, Inc., Ann Arbor, Mich.

Continuation-in-part of Ser. No. 934,340, Nov. 24, 1986, abandoned. This application Oct. 27, 1987, Ser. No. 114,092

Int. Cl.⁴ B65D *23/08, 21/02*

U.S. Cl. 215—12.1 5 Claims



1. A composite container comprising an upright plastic bottle having a generally cylindrical side wall and a cup-shape base portion, a cup-shape base cup member telescoped upwardly over said bottle base portion and arranged in a supporting relation with said bottle, said base cup being formed of blow molded plastic and having a planar bottom portion shaped to sit on a horizontal surface and an upwardly extending tubular wall which terminates at its upper end in an annular rim engaged with said cylindrical bottle side wall, said tubular base cup wall being formed substantially midway between its bottom portion and upper rim with outwardly extending projection means symmetrical with respect to said base cup and having a flat bottom surface extending radially outwardly beyond said rim, said projection means being operable to limit the extent to which an upper and lower pair of said base cups can be nested one within the other with the bottom surface of the projection means on the upper cup engaging the uppermost surface on the lower cup, said surface constituting the rim.

4,883,189
DEVICE FOR HYGIENIC WASTE COLLECTION IN HOSPITALS, LABORATORIES AND SIMILAR ESTABLISHMENTS

Johannes Löbbert, Herteler 54, D-4420 Coesfeld, Fed. Rep. of Germany

PCT No. PCT/EP87/00702, § 371 Date Jul. 12, 1988, § 102(e) Date Jul. 12, 1988, PCT Pub. No. WO88/03416, PCT Pub. Date May 19, 1988

PCT Filed Nov. 13, 1987, Ser. No. 223,073

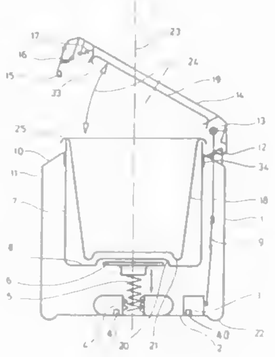
Claims priority, application Fed. Rep. of Germany, Nov. 14, 1986, 8630535[U]

Int. Cl.⁴ B65F *1/08*

U.S. Cl. 220—1 T 10 Claims

1. Disposal equipment for infectious or otherwise contaminated waste, to be used for instance in hospitals, doctors' offices, laboratories and similar institutions; the waste is disposed of in a container (**18**) placed on a support (**1**), and when the container (**18**) is full it is closed tight by means of a lid (**19**) provided,

with the specific feature that the lid (**19**) is held on the support (**1**) by means of a lid holder (**14**) which is actuated by a motorized drive (**3**) and which provides the opening and closing of the container (**18**), while the lid (**19**) is closed down loosely on the container (**18**) during a filling phase,



and that another drive (**4, 5; 27, 28**) linked to the equipment (**1**) closes the lid holder (**14**), with the lid (**19**), down tight onto the container (**18**), and releases the lid (**19**) once the lid (**19**) has been connected to the container (**18**).

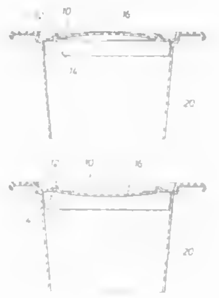
4,883,190
THERMOPLASTIC BELLOWS LID FOR THERMOPLASTIC CONTAINERS

John S. Thomas, Jr., Williamsburg, Va., assignor to Rampart Packaging, Inc., Williamsburg, Va.

Filed Aug. 15, 1988, Ser. No. 231,925

Int. Cl.⁴ B65D *6/34*

U.S. Cl. 220—66 9 Claims



1. A thermoplastic lid for a thermoplastic container which is subject to paneling caused by the pressure differential which occurs when hot gases in head space of the container condense upon cooling after hot filling, which comprises a flange for attachment to the container and a recessed center portion which has a flex area which is thinner than the rest of the lid and comprises a raised ridge adjacent to the outer edge of the center portion, wherein the stiffness of the lid and the thickness of the flex area are no greater than the maximum which will allow the top of the lid to flex inwardly to provide the minimum displacement of head space necessary to prevent paneling.

4,883,191
RELEASABLE CHAIN KEEPER

Kean Christensen, 807 Avenue "C", Billings, Mont. 59102

Filed Oct. 11, 1988, Ser. No. 255,661

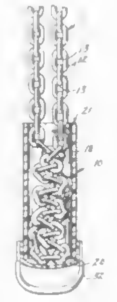
Int. Cl.⁴ A47F *5/08*

U.S. Cl. 220—83 7 Claims

1. A releasable keeper for releasably storing a suspended length of open link chain, comprising:

an open tubular body having an open top end and an at least partially closed bottom end adapted to receive and contain a gathered length of the chain; and

hanger means on the tubular body adjacent the open top end thereof including a movable finger selectively engageable with the chain for supporting the body and gathered length of the chain, and for selectively moving to release the chain responsive to a direct downward pull applied to the tubular body to facilitate complete removal of the tubular body from the chain.



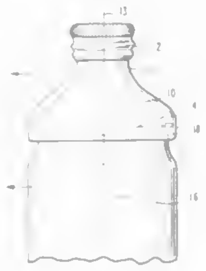
4,883,192
REUSABLE BEVERAGE CONTAINER CLOSURE

Robert Krugman, 3302 Aruba Way, Coconut Creek, Fla. 33066

Filed Oct. 11, 1988, Ser. No. 255,347

Int. Cl.⁴ A47G *19/22*

U.S. Cl. 220—85 SP 2 Claims



1. A bifunctional reusable beverage container closure for sealing an opened metal can containing carbonated liquids which comprises:

a hollow funnel-shaped housing having a longitudinal axis, a spout end axially aligned with said axis, and a skirt end axially aligned with said axis;

spout means axially aligned with said longitudinal axis for recloseably sealing the spout end of said housing, including:

an externally threaded cylindrical spout end, and

an internally threaded removable screw cap operatively disposed on said spout end for hermetically sealing said spout end;

cylindrical skirt means disposed on said skirt end and axially aligned with said axis which includes;

a cylindrical skirt wall end having a skirt hook lower end which operatively engages a crimp bead of said can;

an annular shelf member having an annular gasket groove therein; and

a single annular gasket operatively disposed in said gasket groove for providing hermetic sealing of said housing to said can after it has been opened thereby permitting said carbonated liquids to be stored under pressurized condition.

4,883,193
POWDER PROOF RECLOSABLE LID FOR CONTAINERS

Lars Christensson, Gliavägen, Sweden, assignor to Akerlund & Rausing Licens AB, Jarfalla, Sweden

Filed Sep. 19, 1988, Ser. No. 246,442

Claims priority, application Sweden, Oct. 14, 1987, 8703994

Int. Cl.⁴ B65D *41/32*

U.S. Cl. 220—266 3 Claims

1. Reclosable lid having a frame (**1**) adapted to be sealingly secured to the upper part of a container sleeve (**9**) and having a bore (**15**) therethrough and a downwardly facing channel (**8**) for receiving the upper part of the sleeve (**9**) therein, a securing lid (**2**), hinge means (**3**) for connecting the securing lid (**2**) to the frame (**1**) to move between open and close portions relative to the frame (**1**), and tamper proof means cooperating between the sealing lid (**2**) and the frame (**1**) for locking the sealing lid (**2**) in its closed position and including at least one securing pin (**11**) carried by the sealing lid (**2**), the one securing pin (**11**) having a leg and barb (**12**) projecting inwardly from the leg, and breakable connecting means (**13, 14**) for connecting the one securing pin (**11**) to the sealing lid (**2**), the bore (**15**) being of such size that the barb (**12**) can move through it, the barb (**12**) in the closed position of the sealing lid (**2**) engaging an edge of the frame (**1**) to retain the sealing lid (**2**) in its closed position, and characterized in that the bore (**15**) opens into the channel (**8**), the securing pin (**11**) is located in relation to the bore so that the leg portion thereof engages an outwardly facing portion of the bore (**15**), the width of the channel (**8**) in the region of the tamper proof mean being such that said upper part of said container sleeve (**9**) cooperates in assembly with said reclosable lid to prevent movement of said leg portion outwardly and in a direction away from the sealing lid (**2**) to release the barb (**12**) from locking engagement with the frame edge, whereby the securing pin is constantly secured in locking engagement with the frame and the breakable connecting means **13, 14** must be broken to release the sealing lid (**2**) for hinged movement from its closed to its open position leaving the securing pin (**11**) in the frame (**1**).

4,883,194
TEMPORARY CLOSURE FOR USE WITH STORAGE TANKS

Elson G. Fernandes, Kitchener, Canada, assignor to Clemmer Industries Limited, Waterloo, Canada

Filed Dec. 15, 1988, Ser. No. 284,495

Claims priority, application Canada, Oct. 6, 1988, 579529

Int. Cl.⁴ B65D *39/00*

U.S. Cl. 220—307 6 Claims

1. A temporary closure for use with an opening in storage tanks or the like, said opening having screw threads located on an inner surface, said closure comprising a cap portion and being made of a slightly flexible but rigid material, said cap portion having an upper and lower surface when said closure is in an upright position, a plurality of spaced apart arcuate threads supports extending away from said lower surface, said supports having screw threads on an outer surface thereof, said screw threads together corresponding to screw threads in the tank opening, said thread supports being arranged to form an

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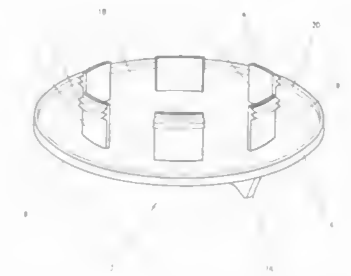
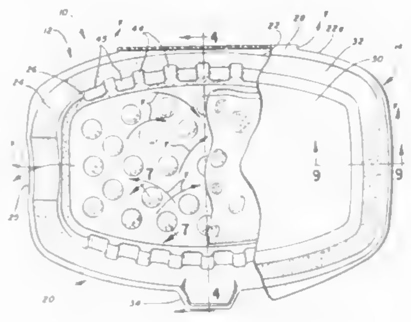
intermittent circle of a size that will fit snugly within the tank opening with the screw threads of the tank engaged with the screw threads of the closure, the upper surface of the cap portion containing means to rotate the closure, the thread supports being flexible enough so that the closure can be pushed into the tank opening in a longitudinal direction until the lower surface of the cap portion abuts the outer surface of the tank opening and the screw threads of the closure are engaged with the screw threads of the tank, the closure being removable from the tank opening by rotating the closure in an appropriate direction.



4,883,195
PIZZA CONTAINER

Edward L. Ott, Smyrna, Ga.; Timotby F. Conway, Riverside, and Thomas S. Kubala, Chicago, both of Ill., assignors to Restaurant Technology, Inc., Oak Brook, Ill.
Filed Nov. 2, 1988, Ser. No. 265,856
Int. Cl.⁴ B65D *85/36*
U.S. Cl. 220—339 22 Claims

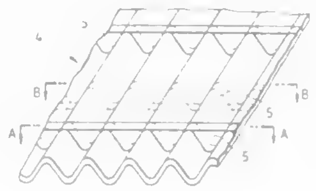


1. A container suitable for containing pizza comprising:
(a) a base;
(b) a plurality of raised dimples on said base for supporting said pizza thereon while defining a cavity for air flow between said pizza and said base;
(c) an upwardly extending wall formed along the periphery of said base;
(d) a cover capable of removably coupling to said wall to define a chamber for containing pizza, a portion of the bottom edge of said cover extending outward from and not contacting said wall to form a vent for the exchange of air between said chamber and the exterior of the container; and
(e) said base including a raised elongated boundary enclosing said dimples, said base further including a depression along at least a portion of said elongated boundary on the said opposite said dimples.

17. A container for food comprising:
(a) a bottom including a base;
(b) support means on said base for supporting the food above the base while defining a cavity between the food and said base; and
(c) finger guides also located on said base for guiding a person's fingers between the food and said base; and
(d) an elongated, raised boundary on said base surrounding said support means, said finger guides forming part of said boundary.

4,883,196
HEAT-INSULATING PACKAGING BOX

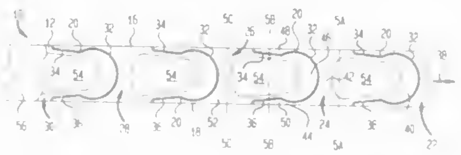
Eiji Kato, Yokobama; Katsumi Kuboshima, Fuji, and Tomoyuki Kaneko, Shizuoka, all of Japan, assignors to Shizuoka Prefectural Government, Shizuoka and Nihon Dimple Carton Co., Ltd., Tokyo, both of, Japan
Filed Sep. 12, 1988, Ser. No. 243,470
Claims priority, application Japan, Sep. 11, 1987, 62-226549
Int. Cl.⁴ B65D *1/00*
U.S. Cl. 220—415 24 Claims



1. A heat-insulating packaging box which comprises: a planar liner; a corrugated core of corrugated card-board having a plurality of grooves; and a plurality of blocking partitions located at spaced intervals between said core and said planar liner for preventing air from moving in the grooves of the corrugated core having said blocking partitions.

4,883,197
SAMPLE STRIP AND DISPENSING APPARATUS THEREFOR

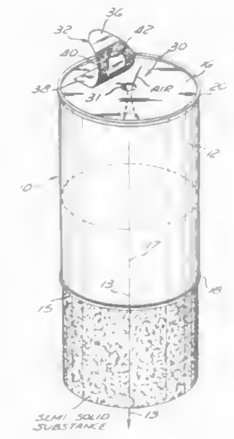
Hernando Sanchez, New York, N.Y.; Richard M. Franczak, Laurence Harbor, N.J., and Menachem Futter, Staten Island, N.Y., assignors to Revlon, Inc., New York, N.Y.
Filed Sep. 18, 1987, Ser. No. 98,279
Int. Cl.⁴ B65H *3/58;* **G07F** *11/00*
U.S. Cl. 221—26 59 Claims



1. A strip in combination with a dispenser, the dispenser including a dispensing tip and a pair of force-exerting members adapted to exert a force against said strip as said strip passes through the dispensing tip, said strip comprising a pair of side edges and dividing lines which extend across said strip from one of said side edges to the other of said side edges and which are spaced apart along the length of said strip such that said strip is divided into a plurality of individual pieces arranged seriatim and connected in end-to-end fashion, each of said pieces containing a sample and including a nose section which has a size and shape selected such that said nose section is spaced from both of said side edges of said strip, a midsection which extends rearwardly from said nose section to a nose section of a trailing piece and which extends across said strip from one of said side edges to the other of said side edges, and a tail section which includes a pair of legs extending rearwardly from said midsection to a midsection of the trailing piece, one of said legs being arranged adjacent to one of said side edges of said strip and the other of said legs being arranged adjacent to the other of said side edges of said strip such that said legs straddle the nose section of the trailing piece so as to present contact surfaces for the force-exerting members of the dispenser as the strip passes through the dispensing tip, whereby the force-exerting members do not exert any substantial force on the trailing piece until the midsection of the trailing piece reaches the force-exerting members at which time the leading piece can be separated from the trailing piece along one of said dividing lines by pulling on the leading piece as the trailing piece is maintained substantially stationary due to the force exerted on the midsection thereof by the force-exerting members, and both of said legs having a length selected such that upon the separation of the leading piece from the trailing piece the nose section of the trailing piece, which now becomes a leading piece, projects outwardly from the dispensing tip a distance sufficient to permit it to be gripped by a user.

4,883,198
CONTAINER AND METHOD FOR DISPENSING SEMI-SOLID SUBSTANCES

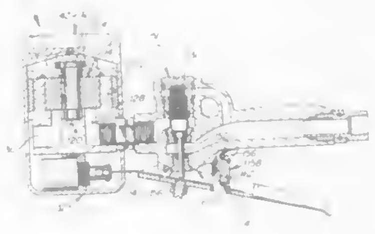
Wayne E. Manska, 1921 Kellog Dr., Anaheim, Calif. 92807
Filed Oct. 6, 1987, Ser. No. 106,716
Int. Cl.⁴ B67B *7/24*
U.S. Cl. 222—1 8 Claims



1. A container comprising first and second ends, and a side wall, said container being filled with a semi-solid substance, said first end being mechanically fastened to said side wall and being removable to provide a mouth for dispensing said semi-solid substance along an axis of flow, said axis extending from one end of said semi-solid substance to another end of said semi-solid substance, said mouth having a cross-sectional area which is at least as large as that of other portions of the container to permits said semi-solid substance to slide out of said container, said cross-sectional area being in a section perpendicular to said axis of flow, said semi-solid substance (a) being sufficiently viscous and cohesive to prevent air from readily flowing from said mouth to said second end, thereby producing a vacuum retention force on said substance, and (b) being sufficiently heavy and having sufficiently low adhesive bonding to said side wall such that after release of said vacuum retention force, said semi-solid substance will slide out of said container without the aid of a machine or device, said container additionally comprising a seal-breaking opening structure attached to said second end of said container, adjacent to said another end of said semi-solid substance, said seal-breaking opening structure comprising a peelable thin film covering a hole formed in said container at said second end, said seal-breaking opening structure being responsive to force applied thereto by a user to provide a vent area in said second end to release said vacuum retention force.

4,883,199
FLUID DISPENSING DEVICE

Vernon K. Ouarve, Minneapolis, and Dennis L. McCormick, Mendota Heights, both of Minn., assignors to Graco Inc., Minneapolis, Minn.
Continuation of Ser. No. 78,917, Jul. 28, 1987, abandoned. This applicatioo Jan. 23, 1989, Ser. No. 300,484
Int. Cl.⁴ B67D *5/30*
U.S. Cl. 222—14 12 Claims



1. A fluid dispensing unit for dispensing a predetermined volume of fluid, said unit comprising:
a rotary positive displacement measuring means having an inlet and an outlet;
a valve connected to said measuring means, said valve having an open position and a closed position inlet,
actuating means for opening said valve;
means for biasing said valve in a closed position;
means for latching said valve in an open position;
means for releasing said latch means in response to the passage of said predetermined fluid volume through said measuring means said release means comprising:
a solenoid, said solenoid being unbiased; and
a battery power source, said power source powering said measuring means and energizing said solenoid, said solenoid releasing said latch means upon dispensing of said predetermined volume of fluid.

4,883,200
THERMOPLASTIC MELTING APPARATUS WITH A LEVEL INDICATOR

Scott R. Miller, Roswell, Ga., and Robert A. Dunn, Westlake, Ohio, assignors to Nordson Corporation, Westlake, Ohio
Continuation-in-part of Ser. No. 114,437, Oct. 29, 1987, Pat. No. 4,821,922. This application Sep. 28, 1988, Ser. No. 249,545
The portion of the term of this patent subsequent to Feb. 7, 2006, has been disclaimed.
Int. Cl.⁴ G01G *13/00*
U.S. Cl. 222—77 13 Claims

9. Apparatus for converting solid thermoplastic material to molten thermoplastic material, comprising:
a housing having an interior formed with an open top, said housing having a top cover for opening and closing said interior;
a tank mounted within said interior of said housing, said tank being formed with an interior adapted to receive thermoplastic material, said tank having a lid for opening and closing said interior;
connector means for mounting said lid of said tank to said cover of said housing so that said lid is protected from forces applied to said cover in a direction toward said interior of said tank;
melting means connected to said tank for melting the solid thermoplastic material therein to form molten thermoplastic material;
pump means communicating with said melting means for pumping molten thermoplastic material;
drive means having linkage drivingly connected to said pump means, said linkage producing a drive force for

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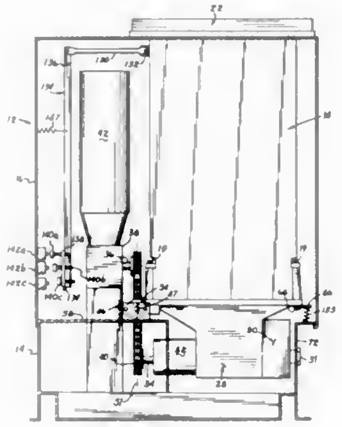
operating said pump means acting between said drive means and said pump means;

pivot means connected to one side of said tank for permitting pivotal motion of said tank, said pivot means having a pivot axis located in a plane containing said drive force produced by said linkage;



level indicator means connected to said tank for sensing the extent of said pivotal motion of said tank and providing a corresponding measurement of the quantity of thermoplastic material carried within said tank.

4,883,201
MATERIALS HANDLING EQUIPMENT

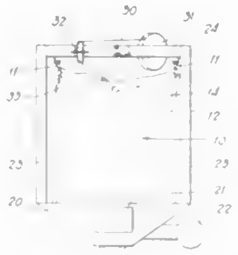
Barrie Poulton, Cheltenham, England, assignor to Flomat Ltd., England

Filed Apr. 19, 1988, Ser. No. 183,642

Claims priority, application United Kingdom, Jun. 8, 1987, 8713392

Int. Cl.^{4} B65D *35/56*

U.S. Cl. 222—105 6 Claims



1. Apparatus for discharging particulate solid material from an intermediate bulk container in the form of an outer bag having an inner liner comprising frame members having means to which an upper end of said outer bag can be anchored, means for removing slack from said inner liner by withdrawing said inner liner from said outer liner, said means comprising a reel having resilient return means and a cord means on said reel and extendable against the action of said resilient return means and adapted to be connected with an upper end of the inner liner.

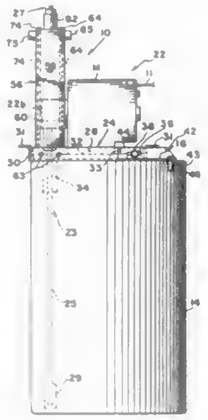
4,883,202
LIQUID PUMPING SYSTEM

Arthur A. Wahl, 6205 Broughton, St. Charles, Mich.

Filed Jan. 20, 1988, Ser. No. 146,197

Int. Cl.^{4} B05G *1/28;* B67D *5/40*

U.S. Cl. 222—109 25 Claims



1. Apparatus for dispensing liquid from a liquid container comprising

a liquid pump;

a feeder hose coupled to a portion of said pump for conveying liquid from said container to a remote location including a first hose section extending from said container to said pump and a second hose section extending from said pump to said remote location; and

liquid recovery means enveloping said feeder hose and said portion of said pump and sealed to a downstream portion of said second hose section for confining and recovering any liquid inadvertently emitted from said feeder hose and directing same to said container.

4,883,203
DISPENSING STORAGE CONTAINER AND ASSEMBLY FOR LAUNDRY TREATMENT MATERIAL

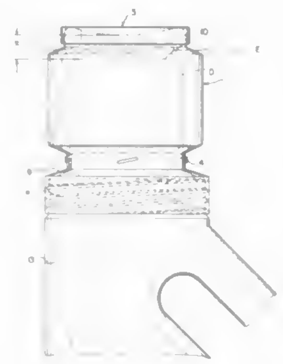
Peter Kittscher, Kaarst, Fed. Rep. of Germany, assignor to Henkel Kommanditgeschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

Filed May 24, 1988, Ser. No. 197,870

Claims priority, application Fed. Rep. of Germany, Feb. 15, 1988, 3804665

Int. Cl.^{4} B67D *5/60*

U.S. Cl. 222—143 10 Claims



1. In a dispensing storage container for accommodating and dispensing a laundry treatment material within a washing machine or the like, comprising a shell housing having an interior compartment and having an open filling end, a cover having a face containing relatively small media for transfer holes, and holding means for securing the cover over the filling end of the container shell housing for the dispensing of laundry treatment liquid through the transfer holes during use, the improvement wherein the shell housing comprises a wide shell housing having a side wall, a base end and an open, relatively wide filling end surrounded by a cylindrical annular collar spaced radially-inwardly from the side wall, releaseable holding means on said collar, and said cover having a contoured face providing a recessed funnel area containing relatively small media transport holes at the base of said recessed area, and having a depending cylindrical skirt which is designed to overlap and be releaseably fastenable to the holding means on the collar to secure the cover over the filling end of the container, said container, without the cover over the filling end thereof, being designed to be secured over the conventional some bottle cap having an outwardly-extending lower cap flange of a bottle of laundry treatment liquid by the reception of the dome bottle cap within the shell housing of the container and the supporting engagement of the annular collar at the wide filling end of the container with the flange of a said dome bottle cap.

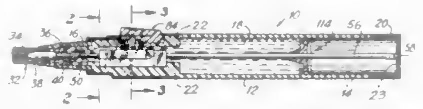
4,883,204
MANUALLY-OPERATED FLUID DISPENSER AND ASSOCIATED CLOSURE CAP

Nathan Kay, Encino; Donald McNab, Long Beach, and Edward Moya, San Gabriel, all of Calif., assignors to Photofinish Cosemetics Inc., Encino, Calif.

Continuation-in-part of Ser. No. 194,840, May 17, 1988. This application Nov. 14, 1988, Ser. No. 270,197

Int. Cl.^{4} B67D *5/06*

U.S. Cl. 222—192 38 Claims



1. In a fluid dispenser for manually-effected operator-controlled discharge of a stored fluid:

an elongated dispenser housing defining an interior space for storing a fluid dischargeable from the housing, said housing including a fluid discharge opening and a vent opening proximate opposite ends of the housing;

variable length means normally urged to a maximum longitudinal extension between and for concurrently closing said vent opening and sufficiently closing said fluid discharge opening so as to prevent discharge of stored fluid through said discharge opening but permitting predetermined bleeding of fluid from the housing interior space through the discharge opening; and

fluid discharge actuating means operatively movable between a first and a second position for causing foreshortening of said variable length means relative to said maximum longitudinal extension to space said variable length means from and concurrently open said fluid discharge and vent openings whereby stored fluid is discharged from said dispenser through said fluid discharge opening and air enters the housing through said vent opening.

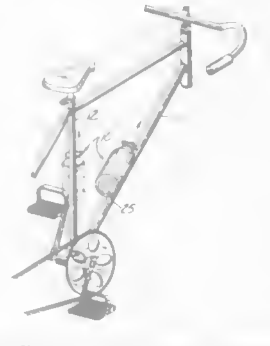
4,883,205
INSULATED BOTTLE RACK APPARATUS FOR BICYCLES

William R. Saelens, 313 SE. Uehlamar, and Gary L. Osborne, 2714 NW. 4th Cir., both of Ankeny, Iowa 50021

Filed Feb. 13, 1989, Ser. No. 309,710

Int. Cl.^{4} B62J *9/00*

U.S. Cl. 224—32 R 16 Claims



1. An insulated liquid bottle rack apparatus for bicycles comprising:

means for receivingly holding a bottle, said means defining an interior of a bottle receiving area and an exterior, including a first side, a second side opposite to said first side, and a bottom interconnecting the first and second sides;

means connected to the first side of the bottle holding means for selectively attaching said bottle holding means to a bicycle; and

insulation means completely surrounding the exterior of said bottle holding means for insulating the bottle holding area of said bottle holding means.

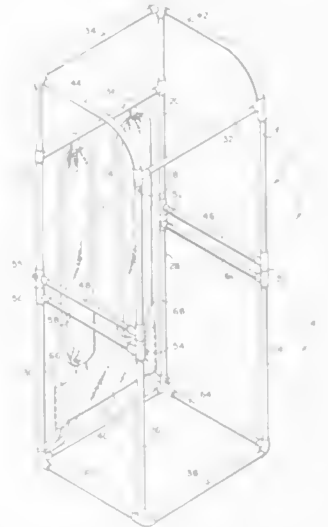
4,883,206
TENT/COT/BACKPACK STRUCTURE

Irvin W. Miller, 8 Forrestal Dr. NASB, Brunswick, Me. 04011

Filed Oct. 18, 1988, Ser. No. 259,306

Int. Cl.^{4} A45F *4/02, 4/04, 4/06*

U.S. Cl. 224—153 3 Claims



1. A backpack structure disposed in a generally vertical first mode when used as a backpack, comprising: an upper framework having an outer side and an inner side and a lower framework having an outer side and an inner side, said lower framework being releasably attached to said upper framework; storage areas defined respectively within said upper and lower

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framework; storage bags disposed in each storage area; said upper and lower frameworks being separable to form the second mode of use of said structure as a cot when said upper and lower frameworks are horizontally disposed apart from one another on the ground with said outer side the disposed facing upwards; said second mode including a planar cot member attached to the upper facing outer sides of each of said upper and lower frameworks; first and second extension poles attaching said upper and lower frameworks together and supporting said cot member; said backpack structure then disposable in its third mode wherein said lower framework includes a tent pole receipt aperture defined therein; a tent pole structure extending from said tent pole receipt aperture over said cot member to the ground beyond the sides of said cot member; a tent member extending over said tent pole structure, said tent member further including a tent bottom extending under said cot member to provide containment of said cot member within said tent member; and

wherein said storage bags of the structure in its first mode contain said first and second extension poles, said tent pole structure and said tent member.

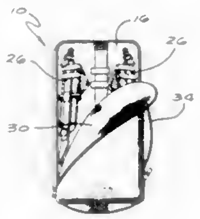
4,883,207
VERSATILE SPORTS PACK

Patrick D. McArthur, 20763 Schoolcraft, Canoga Park, Calif. 91306

Filed Aug. 3, 1988, Ser. No. 227,809

Int. Cl.^{4} A45F *4/02, 3/08*

U.S. Cl. 224—153 19 Claims



1. A combination luggage and backpack assembly comprising:

a body having side, front, rear, top and bottom walls and defining a storage space;

a plurality of L-shaped support members affixed to said rear body wall and with their short portions extending along said bottom body wall to provide support to the contents of said assembly when it is employed as a backpack;

a plurality of shoulder straps affixed to the outside surface of said rear body wall;

a sealable pouch affixed to the outside surface of said bottom body wall;

a closable flap attached to said rear body wall and adapted to cover the outside surface of said rear body wall, including said shoulder straps, when in its closed position and adapted to be stored in said pouch when in its open position when the assembly is to be used as a backpack;

a shoulder strap affixed to one of said side body walls;

a hand strap affixed to one of said side body walls;

a hand strap affixed to the top of said body walls;

a day pack including means for removably securing said day pack to the outside surface of said front body wall;

means for partially detaching said front body wall from said body thereby permitting access to said storage space;

a briefcase including means for removably securing said briefcase to the inside surface of said front body wall; and

a plurality of sealable pockets disposed within said storage space and affixed to the inside surfaces of said body walls.

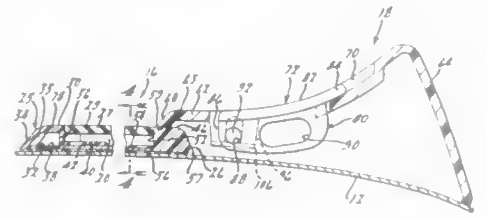
4,883,208
VEHICLE DECK RACK WITH POP-UP TIE-DOWNS

John A. Bott, 931 Lakeshore Dr., Grosse Pointe Shores, Mich. 48236

Continuation of Ser. No. 27,836, Mar. 19, 1987, abandoned. This application Sep. 6, 1988, Ser. No. 241,840

Int. Cl.^{4} B60R *9/04*

U.S. Cl. 224—316 16 Claims



1. In combination in a vehicle article carrier adapted to be mounted on a planar surface of a motor vehicle comprising:

one or more article supporting slats adapted to be coupled with the planar surface and arranged substantially parallel to the planar surface, said one or more slats each having two ends, means for tying down articles to be operably associated with one end of each of said one or more slats;

means for deflecting wind, said means for deflecting wind adapted to be associated with the planar surface and oriented substantially transverse to said one or more slats, said wind deflection means forming an opening and having a first upper surface which is arcuate; and

second means for tying down articles to be carried coupled with said wind deflection means, said second means being disposed in said opening and having a second upper surface substantially the same curvature as said first upper surface, said second means for tying down articles pivoting from a first position, wherein said second upper surface of said second means for tying down articles is substantially flush with said first upper surface of said wind deflection means, to a second position wherein said second means for tying down articles projects from said wind deflection means.

4,883,209
APPARATUS FOR THREADING THE LEADERS OF FLEXIBLE WEBS IN A PROCESSING MACHINE

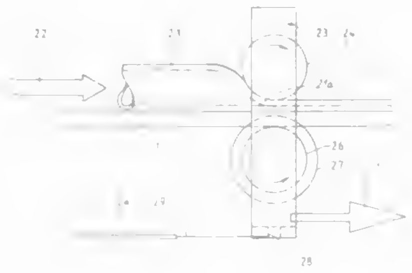
Albert Hebels, Hamburg, Fed. Rep. of Germany, assignor to PAGENDARM Beschichtungstechnik GmbH, Hamburg, Fed. Rep. of Germany

Filed Jun. 24, 1988, Ser. No. 212,202

Claims priority, application Fed. Rep. of Germany, Jul. 7, 1987, 3722345

Int. Cl.^{4} G03D *13/10;* B65H *20/16*

U.S. Cl. 226—92 20 Claims



1. Apparatus for threading the leader of an elongated flexible body, such as a web of plastic material or paper, into an elongated path, comprising an elongated track adjacent and having an outline at least substantially conforming to that of the path, said track having a first side and a second side; a deformable and inflatable hose adjacent said first side of said track; a follower connectable with the flexible body and mounted on said track so as to deform the adjacent portion of said hose, said follower including a first portion overlying the hose and a second portion at the second side of said track, said hose having an opening at one side of said follower; and means for admitting a pressurized fluid into said hose by way of said opening so that the pressurized fluid inflates the hose at said one side of the follower and the inflated hose propels the follower along said track in a predetermined direction.

4,883,210
MATERIAL FEEDING APPARATUS

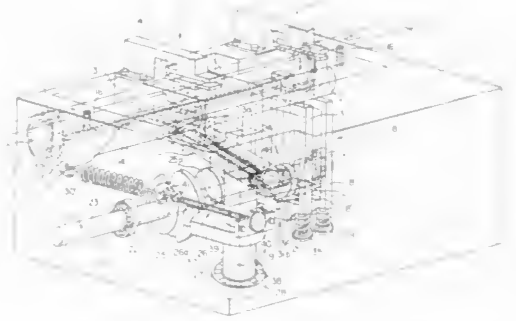
Heizaburo Kato, Shizuoka, Japan, assignor to Sankyo Manufacturing Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 96,094, Sep. 14, 1987, Pat. No. 4,819,850. This application Jan. 24, 1989, Ser. No. 300,874

Claims priority, application Japan, Sep. 22, 1986, 61-224297

Int. Cl.^{4} B65H *20/18*

U.S. Cl. 226—100 13 Claims



1. A feeding apparatus for sheet material member comprising:

a first gripper device having a first fixed gripper and a first movable gripper for cooperating with each other in clamping and unclamping a material positioned therebetween;

a slide block for reciprocal sliding motion along the feeding path of the material; and

a second gripper device disposed on said slide block opposite the first gripper device having a second fixed gripper and a second movable gripper for cooperating with each other in clamping and unclamping the material positioned therebetween;

means for guiding movement of the material between the second and the first gripping device including a pair of fixed guide members disposed between said second fixed and movable grippers and defining a passage for the material member, each guide member being provided at its opposite ends seen in the direction of the material flow with first and second groups of teeth-like projections and with a gap formed between said first and second groups,

a pair of grip members provided on said second gripper device with one grip member being secured to said second fixed gripper and the other grip member to said second movable gripper, each grip member having at its opposite ends projections which engage into recesses formed between the teeth-like projections of the associated guide member, and a stem portion which extends between said projections of grip member and is in engagement with said gap of the associated guide member; and

wherein a dimension of said gap in the feeding direction of the sheet material is larger than the corresponding dimension of stem portion so that the grip members for feeding the sheet material can be reciprocated in the feeding direction within said guide members.

4,883,211
EXPLOSIVE POWDER CHARGE OPERATED FASTENING ELEMENT SETTING DEVICE

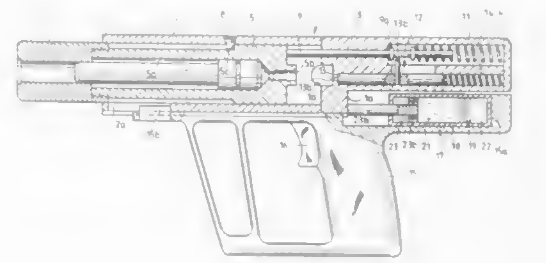
Leo Philipp, Untervaz, Switzerland; Ernst Thuer, and Gerhard Ehmig, both of Rankweil, Austria, assignors to Hilti Aktiengesellschaft

Filed Mar. 3, 1989, Ser. No. 319,425

Claims priority, application Fed. Rep. of Germany, Mar. 3, 1988, 3806831

Int. Cl.^{4} B25C *1/14;* B25D *17/24*

U.S. Cl. 227—9 5 Claims



1. Explosive powder charge operated setting device for driving fastening elements in a driving direction into a receiving material, comprising a housing having a front end and a rear end, a handle displaceably mounted on said housing, a damping unit in contact with said housing and said handle, a fastening element guide mounted in the front end of said housing and being displaceable into said housing counter to the driving direction against the force of spring mean biasing said guide in the setting direction, wherein the improvement comprises that said damping unit applies a force acting on said housing greater than the biasing force of said spring means, said handle is shaped as a receptacle for a cylinder forming a part of said damping unit and containing a first fluid medium pressurized by a second fluid medium, and said damping unit includes a first piston located within and extending out of said cylinder and bearing against said housing exteriorly of said cylinder with said first piston being acted on by said first fluid medium within said cylinder.

4,883,212
EXPLOSIVE POWDER CHARGE OPERATED SETTING DEVICE

Leo Philipp, Untervaz, Switzerland, assignor to Hilti Aktiengesellschaft, Fürstentum Liechtenstein, Fed. Rep. of Germany

Filed Mar. 3, 1989, Ser. No. 319,401

Claims priority, application Fed. Rep. of Germany, Mar. 3, 1988, 3806834

Int. Cl.^{4} B25C *1/14*

U.S. Cl. 227—9 6 Claims

1. An explosive powder charge operated setting device comprises a housing, an axially extending barrel axially displaceably mounted in said housing, said barrel having a front end and a rear end with a cartridge chamber in the rear end of the barrel, an outflow opening having a flow cross-section extending through said barrel and communicating with the cartridge chamber for flowing explosive gases outwardly from the barrel, a slide for regulating the flow cross-section of said outflow opening, wherein the improvement comprises an axially extending bore located at least in part within said barrel and extending parallel to the axis of said barrel, said bore traversing said outflow opening, said slide being movably

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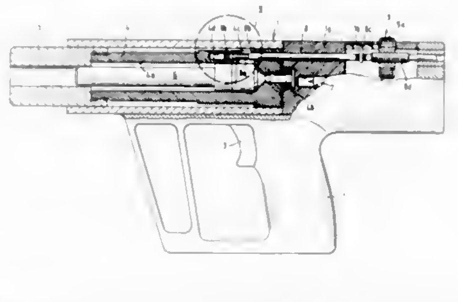
displaceable in said bore, said slide including a sealing piston located at least in the range of said outflow opening, and means engaging said slide for slidably displacing said sealing piston within said bore.



4,883,213

EXPLOSIVE DIVING TOOL APPARATUS WITH IMPROVED EXTRACTOR

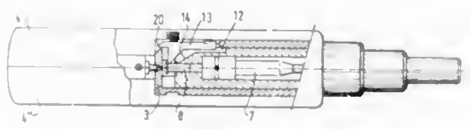
Roland Almeras, Tournon, France, assignor to Societe de Prospection et d'Inventions Techniques (S.P.I.T.), Bourg les Valence, France

Filed Oct. 5, 1988, Ser. No. 253,543

Claims priority, application France, Oct. 28, 1987, 87 14908

Int. Cl.^{4} B25C *1/14*

U.S. Cl. 227—10 11 Claims



1. Explosive tool driving apparatus, comprising:

a barrel holder;

a barrel movably disposed within said barrel holder between a firing position and an open position;

a propulsive charge case containing a propulsive charge, for generating propulsive gases for propelling a fastener to be driven into a workpiece, and having a collar formed upon a rear portion thereof;

bore means defined within a rear portion of said barrel for housing said propulsive charge case;

notch means defined within said barrel holder for defining first rearward and second forward stops; and

an extractor movably mounted upon said barrel holder between first rearward apparatus-firing and second forward apparatus-opening positions, and having engagement means disposed within said notch means of said barrel holder so as to be interposed between said first and second stops, and an extraction claw for engaging said collar of said propulsive charge case during opening of said apparatus so as to remove said propulsive charge case from said housing bore means of said barrel,

wherein when said apparatus is disposed at said firing position, said extractor is disposed at said first rearward position at which said engagement means of said extractor, disposed within said notch means of said barrel holder, is engaged with said first rearward stop such that a front end portion of said extractor engagement means is spaced from said second forward stop of said notch means so as to define an axial distance (J) therebetween while said extraction claw is spaced from said collar of said propulsive charge case so as to define an axial distance (t) therebetween, while when said barrel is moved toward said open position, said collar of said propulsive charge case engages said extraction claw of said extractor so as to move said extractor forwardly whereby said engagement means of said extractor engages said second forward stop of said notch means so as to prevent further forward movement of said extractor and said propulsive charge case whereby said propulsive charge case is extracted from said bore means of said barrel as said barrel continues to move forwardly toward said open position.

4,883,214

HEATED TOOL WITH HEATED SUPPORT

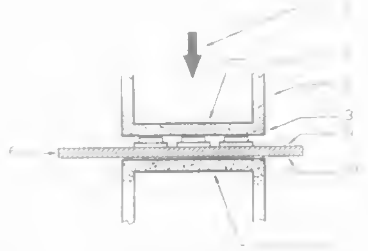
Gero Zimmer, Munich, Fed. Rep. of Germany, assignor to Productech Reflow Solder Equipment Inc., Rolling Hills Est., Calif.

Filed Jul. 6, 1988, Ser. No. 215,625

Claims priority, application Fed. Rep. of Germany, Jul. 9, 1987, 3722730

Int. Cl.^{4} B23K *3/00*

U.S. Cl. 228—9 6 Claims



1. An apparatus for heating parts to be thermally treated, the parts being supported on a thin substrate, the apparatus comprising a heating tool for heating and applying pressure to the top of the parts which are supported on a thin substrate, and a heated mechanical support under the substrate aligned with the tool for absorbing forces exerted by the tool and for heating the bottom of the substrate to compensate for a temperature gradient produced across the thickness of the substrate by heating of the tool, whereby a low temperature gradient is produced across the thickness of the substrate, said tool and support each comprising a U-shaped structure having a heating portion and a pair of support portions connected to opposite ends of the heating portion.

4,883,215

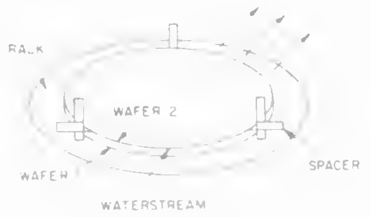
METHOD FOR BUBBLE-FREE BONDING OF SILICON WAFERS

Ulrich M. Goesele, and Reinhard J. Stengl, both of Durham, N.C., assignors to Duke University, Durham, N.C.

Filed Dec. 19, 1988, Ser. No. 286,460

Int. Cl.^{4} H01L *21/304*

U.S. Cl. 228—116 32 Claims



1. A method for bonding at least two wafers wherein said at least two wafers includes at least one first wafer comprising silicon and at least one second wafer comprising either silicon or glass wherein each of said wafers has at least one mirror-polished surface, including the steps of:

positioning said first and second wafers in closely spaced-apart and parallel relationship to each other and with each of said wafers having a mirror-polished surface opposing a mirror-polished surface of the other wafer;

introducing a cleansing solution onto the opposing mirror-polished surfaces of said first and second wafers;

flushing said cleansing solution from said mirror-polished surfaces of said first and second wafers;

drying said mirror-polished surfaces of said first and second wafers;

moving said first and second wafers together so that contact occurs between said opposing mirror-polished surfaces of said first and second wafer.

4,883,216

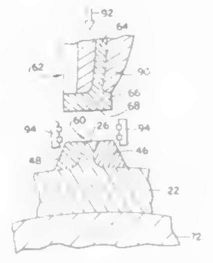
METHOD FOR BONDING AN ARTICLE PROJECTION

Ralph E. Patsfall, Cincinnati, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Filed Mar. 28, 1988, Ser. No. 173,791

Int. Cl.^{4} B23P *15/02*

U.S. Cl. 228—119 13 Claims



1. In a method of repairing an article having a support and an integral projection extending from the support, the steps of:

removing a portion of the projection to provide a projection stub connected to and extending away from the support, the stub having a stub registry surface;

providing a collar having a collar contact surface matched in shape with the stub registry surface and having a collar upper portion;

disposing the stub registry surface and the collar contact surface in juxtaposition with the collar upper portion remote from the support;

bonding together the collar contact surface and the stub registry surface to provide a stub-collar combination, the collar upper portion thereby, defining a first bonding interface;

providing a replacement member including a replacement projection and including at one end a second bonding interface remote from the replacement projection;

disposing the first and second bonding interfaces in juxtaposition; and then

bonding together the replacement member and the stub-collar combination at the first and second bonding interfaces.

4,883,217

METHOD OF BONDING A CERAMIC ARTICLE TO A METAL ARTICLE

Edmund M. Dunn, Lexington; Shinhoo Kang, Wayland, and George C. Wei, Weston, all of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Mar. 17, 1989, Ser. No. 324,928

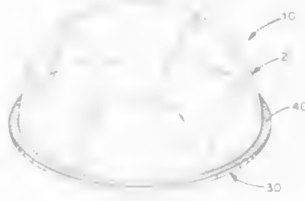
Int. Cl.^{4} B23K *31/02*

U.S. Cl. 228—122 11 Claims

1. A method of bonding a ceramic article to a metal article to form a ceramic-metal article comprising the following steps:

Step 1. placing a sheet of a brazing material between a surface of a ceramic article and a surface of a metal article forming a layered structure, said ceramic article comprising an yttria based ceramic, said ceramic article having a liquidus temperature, a solidus temperature and a coefficient of thermal expansion, said metal article having a liquidus temperature, a solidus temperature and a coefficient of thermal expansion said sheet of brazing material being in contact with said surface of said ceramic article and in contact with said surface of said metal article, said sheet of brazing material comprising a ductile material containing a group IVB metal, said brazing material having a liquidus temperature less than said solidus temperature of said ceramic article and less than said solidus temperature of said metal article, said brazing material having a solidus temperature above a service temperature of said ceramic-metal article;

Step 2. heating said layered structure from Step 1 in an atmosphere non-reactive to said ceramic article, said metal article, and said brazing material at a rate of temperature increase sufficiently slow to preclude thermal-shock fracturing said ceramic article and to a temperature above said solidus temperature of said brazing material. less than said solidus temperature of said ceramic article and less than said solidus temperature of said metal article for a period of time sufficient to chemically react said brazing material with said ceramic article and to react said brazing material with said metal article to form a heated layered structure; and



Step 3. cooling said heated layered structure to room temperature at a rate of temperature decrease sufficiently slow to preclude thermal-shock fracturing said ceramic article to form a bonded ceramic-metal article.

4,883,218

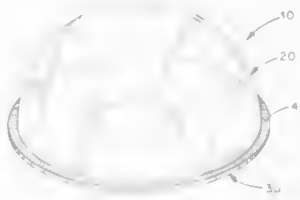
METHOD OF BRAZING A CERAMIC ARTICLE TO A METAL ARTICLE

Edmund M. Dunn, Lexington; Shinhoo Kang, Wayland, and George C. Wei, Weston, all of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Mar. 17, 1989, Ser. No. 324,856

Int. Cl.^{4} B23K *31/02*

U.S. Cl. 228—122 11 Claims



1. A method of brazing a ceramic article to a metal article to form a ceramic-metal article comprising the following steps:

Step 1. coating a predetermined surface of a ceramic article with a group IVB metal to form a coated surface of said ceramic article.

Step 2. placing a sheet of a brazing material between said coated surface of said ceramic article and a surface of a metal article forming a layered structure, said ceramic article comprising an yttria based ceramic, said ceramic article having a liquidus temperature, a solidus temperature, and a coefficient of thermal expansion, said metal

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article having a liquidus temperature, a solidus temperature, and a coefficient of thermal expansion, said sheet of brazing material being in contact with said coated surface of said ceramic article and in contact with said surface of said metal article, said sheet of brazing material comprising a ductile metal, said brazing material having a solidus temperature and said brazing material having a liquidus temperature less than said solidus temperature of said ceramic article and less than said solidus temperature of said metal article, said brazing material having a solidus temperature above a service temperature of said ceramic-metal article;

Step 3. heating said layered structure from Step 1 in an atmosphere non-reactive to said ceramic article, said metal article, and said brazing material at a rate of temperature increase sufficiently slow to preclude thermal-shock fracturing said ceramic article and to a temperature above said solidus temperature of said brazing material less than said solidus temperature of said ceramic article, and less than said solidus temperature of said metal article for a period of time sufficient to chemically react said brazing material with said ceramic article and to react said brazing material with said metal article to form a heated layered structure; and

Step 4. cooling said heated layered structure to room temperature at a rate of temperature decrease sufficiently slow to preclude thermal-shock fracturing said ceramic article to form a bonded ceramic-metal article.

4,883,219

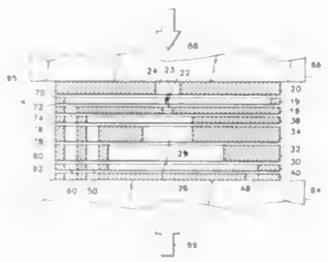
MANUFACTURE OF INK JET PRINT HEADS BY DIFFUSION BONDING AND BRAZING

Jeffrey J. Anderson, 12540 SW. Edgewood, Portland, Oreg. 97225; John S. Moore, 15087 NW. Oakmont Loop, Beaverton, Oreg. 97005; Ted E. Deur, 1670 Saltzman Rd., Portland, Oreg. 19077, and Joy Roy, 14855 NW. Hunters Dr., Beaverton, Oreg. 97006

Filed Sep. 1, 1988, Ser. No. 239,358

Int. Cl.⁴ B23K *20/00*

U.S. Cl. 228—190 34 Claims



1. A method of bonding a first surface of a first metal component of an ink jet print head to a second surface of a second metal component of an ink jet print head, the first and second surfaces being of materials having the same or similar coefficients of thermal expansion, the method comprising:

placing a layer of a filler material on at least one of the surfaces, the filler material having a melting point which is below the melting points of the first and second components, the total thickness of the filler material on the first and second surfaces together being in the range of from approximately one-sixteenth micron to approximately five microns;

positioning the first surface and second surfaces together in an abutting relationship;

applying pressure and heat to the first and second components to diffusion bond the first and second surfaces together without melting the filler material; and

melting the filler material without melting the first and second components to thereby braze the first and second components together.

4,883,220

CONTINUOUS PARTIALLY PREPRINTED WEB FOR HEAT SEALED ENVELOPE CONSTRUCTION

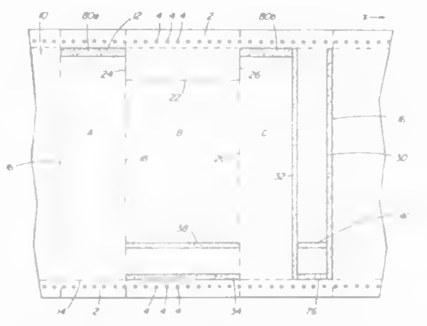
Peter E. Brown, Everett, Canada, assignor to Moore Business Forms, Inc., Grand Island, N.Y.

Filed Dec. 16, 1988, Ser. No. 285,275

Claims priority, application Canada, Aug. 29, 1988, 575955

Int. Cl.⁴ B65D *27/10*

U.S. Cl. 229—69 6 Claims



1. A continuous partially preprinted, preglued form suitable for subsequent envelope construction comprising:

(a) a single web partially preprinted on one side, having detachable marginal feed hole strips parallel with each longitudinal edge;

(b) transverse marginal lines of perforations defining each individual envelope form with two transverse lines of perforations defining fold lines intermediate said marginal lines of perforations,

(c) on the side of said web opposite said preprinting, a first transverse adhesive strip immediately adjacent one of said transverse marginal lines of perforations,

(d) a second transverse adhesive strip parallel to said first transverse adhesive strip intermediate between said first transverse adhesive strip and the adjacent fold line of perforations,

(e) two first aligned longitudinal adhesive strips parallel to one of said longitudinal edges adjacent a marginal feed hole strip wherein one adhesive strip extends between said transverse adhesive strips and the other extends between said transverse fold lines of perforations,

(f) two second aligned longitudinal adhesive strips parallel to and coextensive with said first two longitudinal adhesive strips and spaced a predetermined distance therefrom, and

(g) a longitudinal line of perforations between said two transverse fold lines of perforations a predetermined distance from the other of said longitudinal edges.

4,883,221

CARTON TRAY APPARATUS

David J. Brundage, Salinas, Calif., assignor to Stone Container Corporation, Chicago, Ill.

Filed Apr. 28, 1989, Ser. No. 344,918

Int. Cl.⁴ B65D *5/22*

U.S. Cl. 229—143 16 Claims

1. An articulable carton tray apparatus for containment and protection of articles, such as food produce articles, which apparatus resists collapse during stacking while maintaining its assembled configuration under load, said carton tray apparatus comprising:

a bottom wall having oppositely arranged first and second side edges and oppositely arranged first and second end edges, said first and second side edges extending substantially perpendicular to said first and second end edges,

said bottom wall further defining a plurality of corner regions;

first and second side walls extending along and emanating upwardly from said first second side edges respectively;

first and second end walls extending along and emanating upwardly from said first and second end edges, respectively;

first and second top walls extending along and emanating from said first and second end walls, respectively;

said bottom wall, said first and second side walls, and said first and second end walls, upon articulation of same, describing an article containment region;

said first and second top walls, extending, upon articulation, substantially parallel to said bottom wall to partially cover said article containment region;

flap means operably emanating from at least one of said first and second side walls, said first and second end walls, and said first and second top walls, for operable alignment with an adjacent respective one of said first and second side walls, said first and second end walls, and said first and second top walls,

said flap means including a peripheral portion and an internal portion;

first locking means for maintaining said articulation of said bottom wall, said first and second side walls, said first and second end walls, and said first and second top walls,

said first locking means including at least one first locking member positioned within and operably emanating from said internal portion of said flap means for operable positive engagement with said adjacent respective one of said first and second side walls, said first and second end walls, and said first and second top walls; and

support column means, operably positioned, upon articulation, in a support position between at least one of said first and second top walls, and said bottom wall, for resisting collapse of said carton apparatus during stacking.

4,883,222

OPENING STRUCTURE FOR PAPER BEVERAGE CONTAINERS

Satoko Fujisawa, Aptartment 401, 3-6-2 Tobakan, Meguro-ku, Tokyo, Japan

Filed Mar. 1, 1989, Ser. No. 317,550

Claims priority, application Japan, Apr. 4, 1988, 63-44799

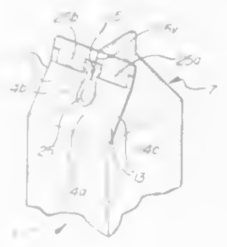
Int. Cl.⁴ B65D *5/74*

U.S. Cl. 229—160.2 2 Claims

1. A beverage container formed of resin or wax coated cardboard or paper, having a reclosable dispensing spout for dispensing beverage therefrom, and comprising, in combination:

(a) a rectangular, parallel body portion having a gable top (7) with a lateral rib across the top thereof, said gable top having endwalls (**14***a*) and sidewalls (**10***a* and **10***b*), one of said endwalls (**14***a*) of said gable top being adapted for initial sealing said spout at a seal therein and subsequent opening and reclosing said spout, said one end wall (**14***a*) having a pair of folded portions (**114***b* and **114***c*) and a triangular port at a horizontal edge line (**115***h*), with a leading edge (**15**) defining a free e above said horizontal edge line (**115***h*); and

(b) paper vertical tab tensile force means (**23**) adherent to an external of the leading edge (**15**) of the reclosable dispensing spout at the said lead and extending horizontally outwardly from said leading edge (**15**) said tensile means (**23**) being adapted to be pulled away from the beverage container (**1**) t the leading edge (**15**) from the sidewalls (**10***a* and **10***b*) and open the reclosable dispensing spout.



4,883,223

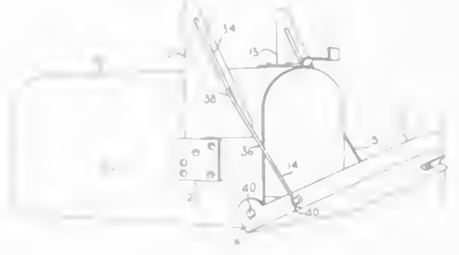
MAILBOX SIGNAL FLAG SYSTEM

George Taniguchi, 5102 Sorrento Dr., Boise, Id. 83704

Filed May 2, 1989, Ser. No. 345,900

Int. Cl.⁴ B65D *91/00;* A47G *29/12*

U.S. Cl. 232—35 3 Claims



1. A mail delivered flag system for attachment to a mail box having a front, downwardly opening, door, and vertical side portions, which comprises:

a mail delivered flag having an elongated flag portion for positioning in a horizontal position, a fully extended vertical position and a dropped vertical position, said flag further having an expansion slot disposed therein for generally vertical orientation when said flag is vertically oriented and generally horizontal orientation when said flag is in a down position,

an elongated channel bar aligned with and attached to the bottom of said flag, said channel bar having an elongated drop slot disposed therein parallel to the longitudinal axis of said channel bar for slidable engagement with a base pivot pin, said channel bar further adapted in size and shape for pivotal rotation about a base pivot pin from said down flag position to a fully extended vertical flag position and for slidable insertion into a channel from said

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fully extended vertical flag position to a dropped vertical flag position;

a channel frame assembly having a forward brace and a rear brace, for attachment to a vertical side portion of the mailbox and defining a vertical channel for slidably receiving said channel bar, with said forward brace being of substantially the same length as the defined channel, and said rear brace of a shorter length so as to allow rotation of said channel bar about a base pivot pin from a down flag position to a fully extended vertical position;

a base pivot pin positioned and attached to said channel frame assembly for slidable engagement within the channel bar drop slot to allow the channel bar to rotate from the down flag position to the fully extended vertical position and to drop from said fully extended position to the dropped vertical position;

a control arm having one end slidably engaged within the elongated expansion slot of the flag, and the other end pivotally attached to the mailbox door, said control arm sized to engage the bottom end of the expansion slot when the mailbox door is opened to rotate the channel bar about the base pivot pin from the down position to the fully extended vertical position, and when the channel bar is in the dropped vertical position, to slide within the expansion slot, when the mailbox door is reshut, without contacting the top of the expansion slot.

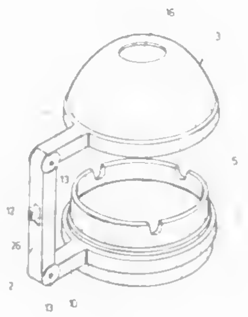
4,883,224

ASHTRAY APPARATUS

Shin-Ching Sun, 3F., No. 32, 132nd Lane, Hu-Lin St., Taipei, Taiwan

Filed May 18, 1988, Ser. No. 197,134
Int. Cl.⁴ A42F *19/00*

U.S. Cl. 232—43.1 **7 Claims**



1. An ashtray apparatus comprising:

a seat having an upper surface adapted to receive an ashtray and defining a hollow space adapted to receive a PC board and at least one battery;

a cage cover adjustably connected to said seat and having an open end opened towards said seat;

a negative ion emitting needle device fixed at the open end of said cage cover and having one end connected to a negative ion output circuit of the PC board;

a positive ion dust collecting film fixed with said cage cover; and

wherein particle cigarette ashes from smoke produced from a burning cigarette in the ashtray adheres to said positive ion dust collecting film responsive to operation of said negative ion emitting needle device.

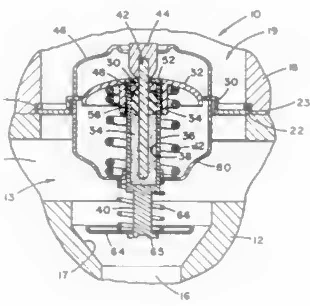
4,883,225

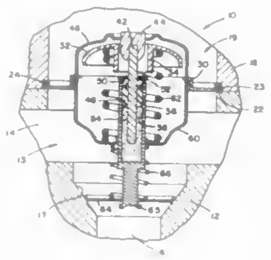
FAIL-SAFE THERMOSTAT FOR VEHICULAR COOLING SYSTEMS

James L. Kitchens, Haiku, Hi., assignor to S.T.C., Inc., Haiku, Hi.

Filed Mar. 18, 1988, Ser. No. 170,405
Int. Cl.⁴ F01P *7/02*

U.S. Cl. 236—34.5 **16 Claims**





6. A vehicular thermostat for controlling flow of coolant in a passageway between a coolant pump and a radiator comprising:

cylindrical means defining a central interior chamber having an open end;

central rod means extending into the interior chamber through the open end and having a free end adjacent the passageway;

seal means within the cylindrical means slidably engaged to the central rod means and closing the open end of the interior chamber;

a temperature responsive medium filling the interior chamber, said medium volumetrically changing with temperature to act against the central rod means and exert force on the cylinder means to displace the same axially in a first direction;

valve means coupled to the cylindrical means and movable therewith, the coupling including a temperature responsive alloy material;

thermostat housing means mountable in fixed relation to the passageway and coupled to the free end of the central rod to hold the central rod in fixed relation; and

means including a spring means disposed between the valve means and the thermostat housing means for (1) opposing movement of the valve means in the first direction and (2) shifting the position of the valve means if the coolant exceeds a predetermined temperature and melts the temperature responsive alloy material.

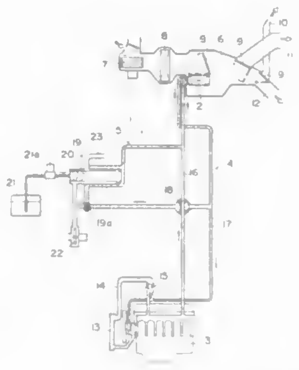
4,883,226

HEATER DEVICE FOR MOTOR VEHICLE

Itizo Tomita, Konan, and Takehide Matsumoto, Higashi-matsuyama, both of Japan, assignors to Diesel Kiki Co., Ltd., Tokyo, Japan

Filed Aug. 2, 1988, Ser. No. 227,252
Claims priority, application Japan, Aug. 12, 1987, 62-201391
Int. Cl.⁴ B60H *1/02*

U.S. Cl. 237—12.3 C **3 Claims**



1. A heater device for a motor vehicle having an engine wherein cooling water is used for heating the passenger compartment of the motor vehicle, said heater device comprising:

a heater core for exchanging heat between the engine cooling water and air going to the passenger compartment of the motor vehicle;

a circulation circuit for circulating the engine cooling water between the engine and said heater core, said circulation circuit having a supply conduit adapted to be connected to the engine for supplying therethrough the engine cooling water from the engine to said heater core and a return conduit adapted to be connected to the engine for returning therethrough the engine cooling water from said heater core to the engine;

a combustion heater for heating the engine cooling water;

a bypass circuit branching off from said supply conduit for bypassing the engine cooling water to said combustion heater, said bypass circuit having a supply pipe for supplying the engine cooling water from said supply conduit to said combustion heater for heating the engine cooling water and a return pipe for returning the engine cooling water heated by said combustion heater to said supply conduit; and

a directional control valve for changing the flow path of the engine cooling water, said directional control valve comprising a valve box and rotary valve spool disposed in said valve box;

said valve box having a first intake port connected to a first portion of said supply conduit extending from the engine to said valve box, a first discharge port connected to a second portion of said supply conduit extending from said valve box to said heater core, said first discharge port disposed diametrically opposite and in confronting relation to said first intake port, a second intake port connected to said return conduit, and a second discharge port connected to said supply pipe, said second discharge port disposed diametrically opposite and in confronting relation to said second intake port;

said intake and discharge ports in said valve box equally circumferentially spaced about said valve box with respect to each other; and

said rotary valve spool having a radial straight hole extending therethrough passing through the central axis of said rotary valve spool for interconnecting said diametrically opposite intake and discharge ports and an arcuate peripheral recess extending over one-fourth of the entire circumference of said rotary valve spool for connecting two adjacent said ports.

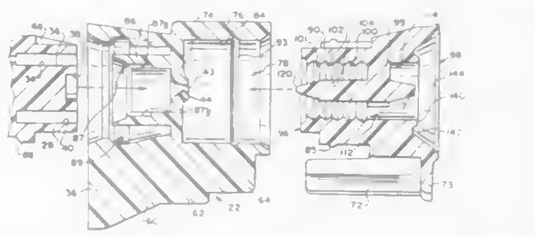
4,883,227

FOAMER NOZZLE ASSEMBLY WITH AIR PASSAGEWAY

Joseph W. J. Maas, Someren, Netherlands, assignor to AFA Products, Inc., Forest City, N.C.

Continuation of Ser. No. 817,935, Jan. 10, 1986, Pat. No. 4,730,775. This application Feb. 19, 1988, Ser. No. 158,329
The portion of the term of this patent subsequent to Mar. 15, 2005, has been disclaimed.
Int. Cl.⁴ B05B *1/02, 1/12, 7/04*

U.S. Cl. 239—120 **9 Claims**



2. A trigger sprayer having a mounting formation at a front end thereof from which liquid is ejected and comprising a foam generating nozzle assembly including structure having an orifice and a foam generating chamber therein, said nozzle assembly structure being mounted on the formation at the front end of said trigger sprayer so that liquid is emitted from the formation at the front end of the trigger sprayer through said orifice into said foam generating chamber in a generally conical spray pattern, said foam generating chamber having an entrance end into which said spray is directed, and said nozzle assembly also including a front nozzle member having a discharge opening at a front end thereof from which foam is discharged, said discharge opening being in communication with said foam generating chamber whereby foam is ejected forwardly from said foam generating chamber into and then out of said discharge opening, air passage means for supplying air to the entrance end of said foam generating chamber, and having an enclosed air passageway having a first end and a second end, said first end communicating with said air passage means and said second end opening adjacent said front end of said front nozzle member and adjacent said discharge opening at said front end of said front nozzle member.

4,883,228

WATER-STABILIZED SPRINKLER

William J. Vydrzal, and William S. Vydrzal, both of 1409 E. 8th St., Smithville, Tex. 78957

Filed Sep. 12, 1988, Ser. No. 242,867
Int. Cl.⁴ B05B *15/00*

U.S. Cl. 239—279 **1 Claim**

1. A garden sprinkler comprising a ground-engageable hollow base having an H-configuration in top plan view, an elongated riser conduit (49) extending upwardly from a central point on said base, and a sprinkler head (51) mounted on the upper end of said conduit;

said hollow base comprising a central hub member (39) having first, second, third and fourth socket openings therein; said first, second and third socket openings being oriented in a horizontal T-configuration, with said first and second socket openings being in horizontal axial alignment with one another, and with said third socket opening being normal to the first and second socket openings; said fourth socket opening extending vertically upwardly from a central point on the hub member;

an internally threaded water intake fitting (47) extending into said third socket opening, said intake fitting being adapted to connect with a water supply hose for introduc-

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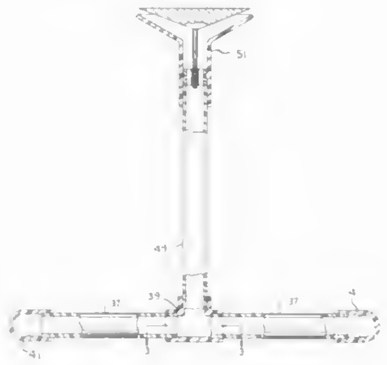
ing pressurized water into the central hub member and associated socket openings;
- a first straight horizontal pipe (**37**) having one end thereof extending into said first socket opening; a second straight horizontal pipe (**37**) having one end thereof extending into said second socket opening, whereby said first and second pipes are in axial alignment with each other;
- a first T-fitting (**41**) connected to the other end of said first pipe; third and fourth horizontal pipes (**43** and **45**) having ends thereof connected to said first T-fitting so that said third and fourth pipes are in axial alignment with each other and normal to said first pipe;
- a second T-fitting (**41**) connected to the other end of said second pipe; fifth and sixth horizontal pipes having ends thereof connected to said second T-fitting so that said fifth and sixth pipes are in axial alignment with each other and normal to said second pipe;



- sealing caps on the free ends of said third, fourth, fifth and sixth pipes;
- said first, second, third, fourth, fifth and sixth pipes being in liquid communication with each other and with said central hub member, so that the weight of the hollow base is augmented by the weight of the water contained in said pipes, to thus provide increased resistance against overturnment of the sprinkler;
- the aforementioned riser conduit having its lower end seated in said fourth socket opening so that pressurized water flows from the central hub member into the riser conduit and thence into the aforementioned sprinkler head;
- said first and second horizontal pipes having the same length;
- said third, fourth, fifth and sixth pipes having the same length, whereby the central hub member is located at the imaginary center of the hollow H-configuration base.

4,883,229

RETROFIT REFUELING APPARATUS FOR AN OVERHEAD FUEL MANIFOLD

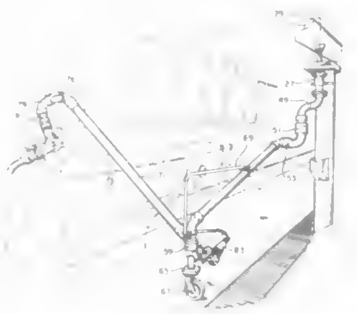
Arnold T. Moeller, 3565 Dorothy La., South, Fort Worth, Tex. 7610

Continuation of Ser. No. 84,282, Aug. 11, 1987, abandoned. This application Oct. 11, 1988, Ser. No. 258,123

Int. Cl.⁴ F17D *1/00;* **B65B** *3/04*

U.S. Cl. 239—587 2 Claims

1. A locomotive refueling apparatus, comprising:
- an overhead fuel manifold of the type used to supply fuel to a locomotive fuel tank, the overhead fuel manifold being supported in a horizontal orientation above the ground and having a primary flow valve which extends downwardly from the overhead fuel manifold along a vertical axis with respect to the ground;
- a feed pipe of rigid material connected at one end to the primary flow valve by a vertical swivel joint which allows rotation in an arc about the vertical axis defined by the primary flow valve, the feed pipe having an opposite end;
- a movable carriage mounted on a wheel, the carriage being connected to the opposite end of the feed pipe whereby the carriage s movable on the wheel in an arcuate path which defines a fixed orbit with respect to the vertical axis of the primary flow valve, the feed pipe forming an inclined angle greater than horizontal with respect to the ground between the movable carriage and the primary flow valve;
- a refueling arm of rigid material running from the movable carriage to a refueling nozzle and communicating with the feed pipe for conveying fuel from the primary flow valve to the refueling nozzle, the refueling arm being joined to the movable carriage by an elbow coupling which includes a vertical swivel joint which allows the refueling arm to be rotated in an arc about an imaginary vertical axis defined by the wheel between a rest position and a loading position and which also includes a horizontal swivel joint;



- a torsion spring means mounted on the movable carriage between the refueling arm and the carriage for spring biasing means such that the refueling arm is biased to a positive angular orientation above the plane of the ground, whereby the refueling arm is movable about the horizontal swivel joint of the movable carriage through a range of positive angular orientations and whereby the refueling arm and the feed pipe form a V-shaped configuration in both the loading position and the rest position; and
- wherein the movable carriage the sole point of contact with the ground between the primary flow valve and the refueling nozzle wherein the feed pipe and refueling arm together define a predetermined length of pipe between the primary flow valve at one end and the refueling nozzle at an opposite end, the movable carriage being located at the approximate midpoint of the predetermined length.

4,883,230

CABLE SWITCHING DEVICE

Lennart Lindström, Vällingby, Sweden, assignor to Kabmatik AB, Vällingby, Sweden

Filed Jun. 7, 1988, Ser. No. 203,112

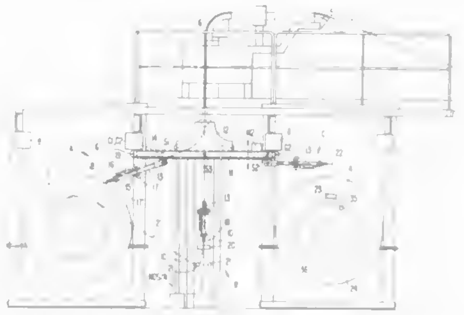
Claims priority, application Sweden, Jun. 12, 1987, 8702454

Int. Cl.⁴ B65H *54/00*

U.S. Cl. 242—25 R 10 Claims

1. In a system for winding a partly flexible elongate body (2), such as a cable, selectively on one of a first rotatable take-up drum (3) and a second rotatable take-up drum (**4**), a switching device for switching the elongate body from one of said drums to the other for take-up, said switching device comprising a pivotable guide arm (13) for supporting the elongate body (2) and adapted to be directed to the first (3) or, alternatively, the second (**4**) drum, as selected, or to a cutting device (20), said guide arm (13) comprising a nose portion (18) movable into and out of the selected drum (**4** or 3), a clamping member (15, 16, 19) in the guide arm (13) for temporary clamping of said elongate body (2), said cutting device (20) being adapted to cut

the elongate body at a given distance from the guide arm nose portion (18), and a catch arm (25) adapted to be inserted into the selected drum (**4** or 3) through a suitable opening (23) in one of the sides (24) of the selected drum so as to take the cut-off free end (22) of the elongate body from the nose portion



(18) inside the selected drum (**4** or 3), and transfer it to a grapple (32) outside the selected drum (**4** or 3), said grapple (32) being adapted to hold the free end (22) and rotate together with the selected drum (**4** or 3) during the subsequent winding of the elongate body (2) onto the selected drum.

4,883,231

COP TUBE TRANSPORTING DEVICE FOR TEXTILE MACHINES

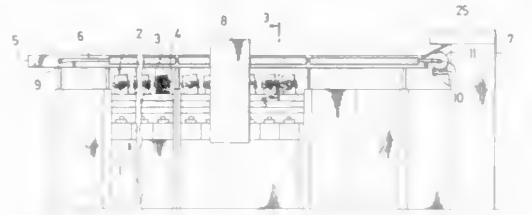
Frantisek Burysek, Usti nad Orlici; Bohuslav Jirka, Upice; Zdenek Jarolimek, Bila Tremesnice, and Ludvik Fajt, Usti nad Orlicii, all of Czechoslovakia, assignors to Vyzkumny ustav bavlnarsky, Usti nad Orlicl, Czechoslovakia

Filed Aug. 30, 1988, Ser. No. 238,692

Claims priority, application Czechoslovakia, Sep. 2, 1987, 6374-87

Int. Cl.⁴ B65H *67/04, 67/06*

U.S. Cl. 242—35.5 A 12 Claims



1. A cop tube transporting device for a textile machine for guiding tubes from a magazine at one end of the machine to tube withdrawing means of a travelling automatic service unit, said device comprising
- a conveyor arranged along the machine, and a guiding support surface;
- the conveyor comprising an endless flat conveyor belt, said conveyor belt being supported by an upper slide surface of an upper supporting wall, said supporting wall being mounted to said machine;
- said supporting wall together with said conveyor belt being inclined to a horizontal plane at an angle of at least 10 degrees, and at most 45 degrees.

4,883,232

ADHESIVE TAPE FEEDER, PARTICULARLY FOR A CARDBOARD BOX SEALING MACHINE TAPING UNIT

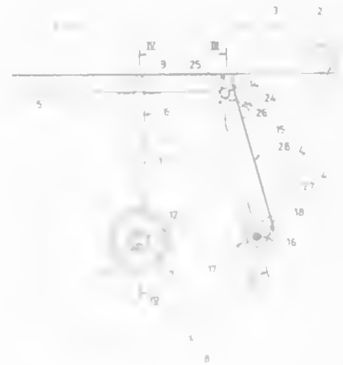
Augusto Marchetti, Piazza Sicilia, 7, 20146 Milano, Italy

Continuation of Ser. No. 765,157, Aug. 13, 1985, abandoned. This application Sep. 2, 1987, Ser. No. 93,144

Claims priority, application Italy, Oct. 17, 1984, 23545/84[U]

Int. Cl.⁴ B65H *19/04*

U.S. Cl. 242—55.2 2 Claims



1. An adhesive tape feeder, particularly for a cardboard box-sealing machine taping unit, comprising:
- a longitudinally-elongated support frame;
- a supporting arm means having two opposite ends, said supporting arm means depending by one said end from a first site on said support frame;
- a freely-revolvable roller arranged with a longitudinal axis of revolution thereof crosswise to said longitudinally-elongated support frame;
- said support arm means supporting said roller at an opposite said end of said support arm means;
- a roll of adhesive tape having an outer circumferential peripheral surface and a generally constant width extending longitudinally of said roll of adhesive tape;
- said roll of adhesive tape being mounted on said roller for revolution therewith;
- a lever having two opposite ends, said lever depending by one said end from a second site on said support frame, said second site being longitudinally spaced along said support frame from said first site;
- a tape withdrawal roller arranged with a longitudinal axis of revolution thereof crosswise to said longitudinally-elongated support frame, said tape withdrawal roller including an axially central drum portion having a radially outwardly-facing circumferential peripheral surface flanked at axially opposite ends by respective circumferentially-extending flanges each having a greater radially outward extent than said radially outwardly-facing circumferential peripheral surface, said flanges being spaced axially apart along said tape withdrawal roller by a certain distance;
- said tape withdrawal roller being disposed with said radially outwardly-facing circumferential peripheral surface thereof in facial contact throughout a substantial angle of circumferential extent thereof, with an outer face of a leading portion of adhesive tape as withdrawn tangentially from said roll of adhesive tape, with opposite ends of said leading portion being flanked by said flanges of said tape withdrawal roller;
- spring means active between said support frame and said lever for resiliently biasing said radially outwardly-facing circumferential peripheral surface of said drum portion thereof against said outer circumferential peripheral surface of said roll of adhesive tape at a leading end withdrawal site;
- stop element means provided and effective between said support arm means and said freely-revolvable roller for

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permitting a range of limited axial movement of said freely-revolvable roller along said longitudinal axis thereof, transversally of said support frame;

the difference between the length of said certain distance by which said flanges of said tape withdrawal roller are spaced apart and said constant width of said roll of adhesive tape being less than the maximum limited axial movement of said freely-revolvable roller permitted by said stop element means; and

a braking means provided and effective between said tape withdrawal roller an said lever for braking revolution of said tape withdrawal roller.

4,883,233

METHOD FOR CONTROLLING THE REELING OF A WEB

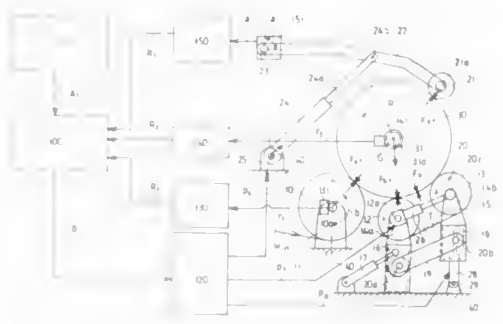
Seppo Saukkonen, Vantaa, and Kauko Tomma, Helsinki, both of Finland, assignors to Valmet Paper Machinery, Inc., Finland

Filed May 20, 1988, Ser. No. 196,740

Claims priority, application Finland, May 20, 1987, 872224

Int. Cl.^{4} B65H *18/20*

U.S. Cl. 242—66 16 Claims



1. Method for controlling reeling of a web, comprising the steps of

measuring the radius of a roll that is being formed by said reeling, with at least one detector,

passing measurement signals from the at least one detector to a reeling control system,

storing predetermined values in a memory of the control system and comparing said measurement signals with said stored values, and thereby forming adjusting signals in the control system,

adjusting support of the roll being formed with said generated adjustment signals,

supporting the roll being formed from underneath with a carrier roll and passing incoming web over a sector of the carrier roll,

stabilizing the roll being formed in reeling position with a press member placed at an upper side of the roll being formed,

supporting the roll being formed with a belt at least when the reeled-up roll passes a certain radius in size,

wherein the roll support is adjusted by at least adjusting tension of the supporting belt, which in turn adjusts linear load of the belt support,

wherein said supporting belt is adjusted so that with larger radii of the roll being formed, a supporting sector provided by the belt along an outer circumference of the roll being formed is several times longer as compared to a supporting sector formed by a supporting roll nip, and

programming and controlling said adjusting step to provide a substantially suitable distribution of linear load in a nip formed by the carrier roll and the web roll being formed as a function of radius of the web roll, and to maintain other supporting linear loads within predetermined limits permitting a substantially undisturbed reeling and good quality of the reeled roll.

4,883,234

CASSETTE WITH WINDING SLACK PREVENTING MECHANISM

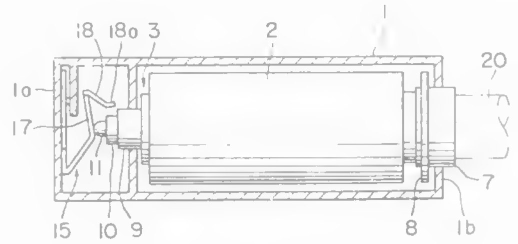
Noboru Yamakawa, Nara, and Mineo Yamauchi, Kyoto, both of Japan, assignors to Dai Nippon Insatsu Kabushiki Kaisha, Japan

Filed Oct. 19, 1988, Ser. No. 259,593

Claims priority, application Japan, Oct. 19, 1987, 62-158795[U]

Int. Cl.^{4} B65H *18/10*

U.S. Cl. 242—67.3 R 5 Claims



1. In a cassette of the type in which reels carrying a sheet-like medium wound there around are rotatably mounted in a cassette case in such a manner that the reels are movable in their longitudinal directions, said cassette having winding slack preventing mechanism, the improvement of said mechanism comprising:

rotation preventing means extending axially outwardly of one end of at least one of the reels;

a projection on said rotation preventing means, extending axially outwardly;

said rotation preventing means and said projection being disposed within a space defined in said cassette case; and

a reel-biasing leaf-spring assembly provided in said space to bias the reel longitudinally thereof in a direction opposite to the direction in which said projection projects, said leaf-spring assembly being in contact with said projection for biasing the reel and having on the distal end thereof a rotation preventing arm disposed adjacent to, and normally engaging said rotation preventing means to prevent the rotation of the reel,

said leaf-spring assembly being so designed and constructed that when the reel is pushed in the direction opposite to the direction in which said leaf-spring assembly imparts the biasing force so that said leaf-spring assembly is deformed, said rotation preventing arm is moved away from said rotation preventing means, thereby to allow the reel to rotate.

4,883,235

FILM CASSETTE

John J. Niedospial, Jr., Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

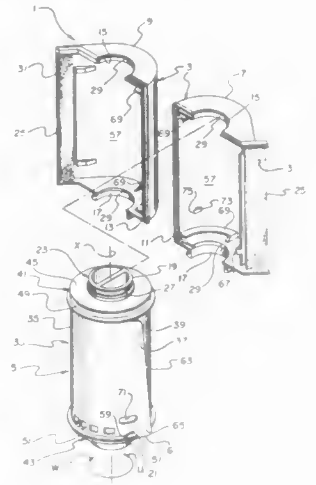
Filed Mar. 8, 1989, Ser. No. 320,440

Int. Cl.^{4} G03B *17/26*

U.S. Cl. 242—71.1 8 Claims

1. An improved film cassette wherein (a) a film spool is rotatable within the cassette shell, (b) a convoluted film roll whose outermost convolution is a film leader is coiled about said spool, (c) a pair of flanges are coaxially arranged on said spool to radially confine said film leader to prevent the leader from substantially contacting an interior wall of said cassette shell, and (d) a film stripper-guide is received between a leading end of said film leader and the next-inward convolution of said film roll succeeding the leader to remove said leader from said flanges and guide the leader through a film passageway to the exterior of said cassette shell responsive to rotation of said spool in a film unwinding direction, and wherein the improvement comprises:

said film leader and at least one of said flanges include mutual engagement means for maintaining said leading end of the leader spaced at least a minimum radial distance from said next-inward convolution sufficient to locate the leading end within range of said stripper-guide to ensure that said leading end will be advanced over the stripper-guide responsive to rotation of said spool in the film unwinding direction, whereby said leading end is prevented from being advanced between said stripper-guide and said next-inward convolution.



4,883,236

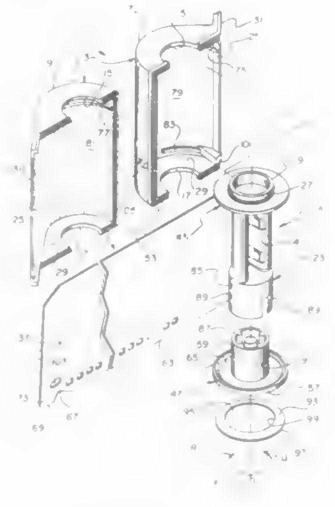
FILM CASSETTE

John J. Niedospial, Jr., Rochester, and Patricia D. Fairman, Spencerport, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 8, 1989, Ser. No. 320,438

Int. Cl.^{4} G03B *17/26*

U.S. Cl. 242—71.1 6 Claims



1. An improved film cassette wherein (a) a spool includes two coaxial core pieces having a convoluted film roll coiled about them, whose outermost convolution is a film leader, and respective flanges fixed to said core pieces which radially extend over the opposite sides of said film roll, (b) at least one of said core pieces is supported for movement axially toward the other one to move at least one of said flanges axially toward the other one to provide an axial clamping force at the opposite sides of said film roll, and (c) a film stripper-guide is received between a leading end of said film leader and the next-inward convolution of said film roll succeeding the leader to remove said leader from said flanges and guide it through a film passageway to the exterior of the cassette shell responsive to rotation of said spool in the film unwinding direction during application of said axial clamping force, and wherein the improvement comprises:

said film leader and at least one of said flanges are adapted for mutual engagement to secure said leading end of the leader at least a minimum radial distance from said next-inward convolution sufficient to locate the leading end within range of said stripper-guide to ensure that said leading end will be advanced over the stripper-guide responsive to rotation of said spool in the film unwinding direction during application of said axial clamping force; and

limiting means for restricting axial separation between said flanges, previous to at least one of the flanges being moved axially toward the other one, to maintain the leader and at least one of said flanges mutually engaged to secure said leading end of the leader said minimum radial distance from said next-inward convolution.

4,883,237

WIRE REEL

Gerhard Berz, Leverkusen, Fed. Rep. of Germany, assignor to Sms Schloemann-Siemag Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

Filed Aug. 22, 1988, Ser. No. 235,033

Claims priority, application Fed. Rep. of Germany, Aug. 20, 1987, 3727741

Int. Cl.^{4} B21C *47/00*

U.S. Cl. 242—83 7 Claims

1. A reel for wire with a wire basket, comprising a reel bottom which can be raised and lowered and a spiral tube cylinder which can be raised and lowered and swiveled relative to the reel bottom, the spiral tube cylinder having a diameter and a lower end, a spiral tube connected to the spiral tube cylinder, the reel bottom having a series of axial projections facing the lower end, the axial projections defining a circumference having a diameter, wherein the diameter of the circumference corresponds to an inner diameter of the wire coil to be coiled, and wherein the diameter of the cylinder also corresponds to the inner diameter of the coil to be coiled.

4,883,238

FLY FISHING REEL WITH A LINE RETAINER

John R. Harder, East Dorset, Vt., assignor to The Orvis Company, Inc., Manchester, Vt.

Filed Dec. 23, 1988, Ser. No. 289,306

Int. Cl.^{4} A01K *89/01*

U.S. Cl. 242—317 14 Claims

1. In a fly fishing reel comprising:

a frame having a mounting means for attaching said frame to a fly rod and a spindle;

a spool having an axis, said spool comprising a first side wall

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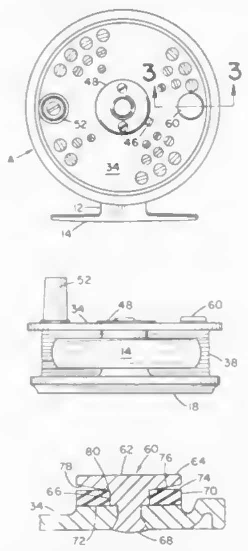
having a periphery, a second side wall having a periphery and a hub adapted to rotate about said spindle;
a handle having a fixed mass located on one of said side walls;
the improvement comprising;
a line retainer located on the said one of said side walls at a position diametrically opposed to said handle, said line retainer having a fixed mass related to the mass of said handle in approximately inverse proportionality to the relationship between the distance from the spool axis to the line retainer and the distance from the spool axis to the handle to afford balanced rotational movement of the spool; wherein said line retainer comprises a metallic stud having an enlarged head portion secured to said one side wall and having resilient gripping means which, along with said head portion, defines a groove adapted to grip a fishing line below said head portion.



4,883,239

GUIDED ARTILLERY PROJECTILE WITH TRAJECTORY REGULATOR

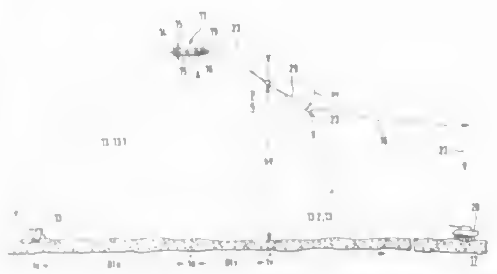
Karl-Heinz Lachmann; Peter Sundermeyer, both of Lauf-Pegn.; Johann Schreier, Ruckersdorf; Albrecht Reindler, Lauf-Schonberg, and Jurgen Leininger, Lauf/Pegn., all of Fed. Rep. of Germany, assignors to Diehl GmbH & Co., Nuremberg, Fed. Rep. of Germany

Filed Oct. 21, 1988, Ser. No. 260,882

Claims priority, application Fed. Rep. of Germany, Nov. 13, 1987, 3738580

Int. Cl.⁴ F41G *7/22*

U.S. Cl. 244—3.15 11 Claims



1. A guided artillery projectile with an autopilot, a flight attitude regulator in said autopilot for the transitional guidance into a gliding trajectory upon the assumption of a predetermined pitch angle after passage through the apogee of a ballistic firing trajectory; and different mission-dependent parameter inputs being provided for the regulator.

4,883,240

AIRCRAFT PROPELLER NOISE REDUCTION

Arthur P. Adamson, and Philip R. Gliebe, both of Cincinnati, Ohio, assignors to General Electric Company, Cincinnati, Ohio

Continuation of Ser. No. 764,144, Aug. 9, 1985, abandoned. This application Nov. 12, 1986, Ser. No. 930,065

Int. Cl.⁴ B64C *11/48*

U.S. Cl. 244—69 23 Claims

1. A counterrotating aircraft propeller set comprising:
(a) a first propeller having N1 blades and
(b) a second propeller having N2 blades
wherein N1 and N2 are selected from the following group of numbers: 3, 5, 7, 9, 11, 13, 15, and 17 and wherein the difference between N1 and N2 is 2.

4,883,241

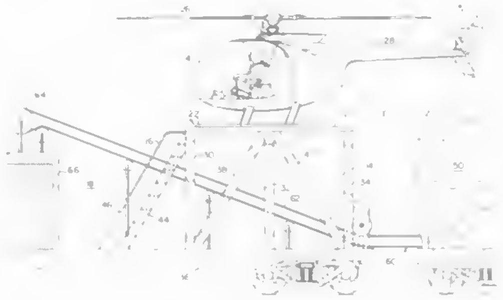
HELICOPTER PAD FOR TRAINS

Edwin DeS. Snead, P.O. Box 1000, Georgetown, Tex. 78626

Filed Sep. 8, 1988, Ser. No. 241,705

Iot. Cl.⁴ B64F *1/00*

U.S. Cl. 244—114 R 18 Claims



1. A helicoper pad for use on trains comprising:
a flat surface having an area suitable for the receipt of helicopter skids, said flat surface having a strength suitable for supporting the weight of a helicopter, said flat surface comprising a plurality of sections of plywood material, said flat surface having a plurality of stiffeners extending beneath said sections;
a plurality of structural members connecting said flat surface to the frame of a railroad car; and
ladder means extending from said flat surface and connected to the frame of said railroad car, said ladder means for providing access to said flat surface.

4,883,242

PACKING SACK FOR A LIFE JACKET AND ITS EASY ACCESS STORAGE, ESPECIALLY IN AN AIRCRAFT

Reinhard Becker, and Bruno Jansa, both of Hamburg, Fed. Rep. of Germany, assignors to Messerschmitt-Boelkow-Blohm GmbH, Bremen, Fed. Rep. of Germany

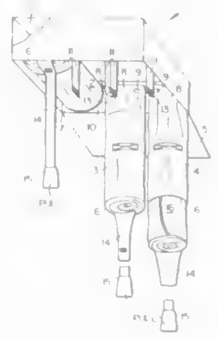
PCT No. PCT/DE87/00052, § 371 Date Dec. 7, 1987, § 102(e) Date Dec. 7, 1987, PCT Pub. No. WO87/04990, PCT Pub. Date Aug. 27, 1987

PCT Filed Feb. 14, 1987, Ser. No. 123,862

Claims priority, application Fed. Rep. of Germany, Feb. 15, 1986, 3604857

Int. Cl.⁴ B64D *13/00*

U.S. Cl. 244—118.5 13 Claims



1. A packing sack for a life jacket and for an easy access storage of said life jacket, in a craft, such as an aircraft, comprising a substantially hose shaped construction forming said packing sack with an open end (6, 32) and a closed end (7), said closed end (7) having a tab (8, 30) for receiving at least one securing element, a rip cord (14, 28) on the inside of said packing sack, said rip cord being secured to said packing sack, at a location intermediate the ends of said packing sack (2, 3, 4, 25), said rip cord leading from said location around that jacket end of a folded life jacket (16, 26) which faces away from said open end (6, 32) of said packing sack (2, 3, 4, 25), said rip cord further passing along the inner surface of the packing sack (2, 3, 4, 25) out through said open end (6, 32), and wherein said packing sack has such an inner dimension that a life jacket (16, 26) is safely held by friction inside said packing sack in a vertical position of said packing sack (2, 3, 4, 25) hanging with its open end (6, 32) downwardly.

4,883,243

EJECTION SEAT HAVING RECEDING HEADREST FOR SPINAL ALIGNMENT DURING EJECTION

Gerald F. Herndon, Bellevue, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Nov. 17, 1987, Ser. No. 121,531

Int. Cl.⁴ B64D *25/10*

U.S. Cl. 244—122 R 19 Claims

1. A receding ejection seat headrest comprising:
a rigid shell mounted on said seat in a position that is adapted to be behind the head of a pilot occupying said seat, said shell having a back panel and a pair of side panels extending forwardly from said back panel, said side panels being spaced apart by a distance that is slightly larger than the width of the pilot's helmet;
a front panel extending between the forward edges of said side panels, said front panel being in a position that is adapted to support the pilot's head at a forwardly titled angle at a position that is substantially in front of the forward edges of said side panels; and
actuation means for moving said front panel rearwardly into said shell to allow the pilot's head to move rearwardly between said side panels to an angle at which the pilot's head and spinal column are in alignment with each other and the pilot's head is substantially enclosed by said side panels.

4,883,244

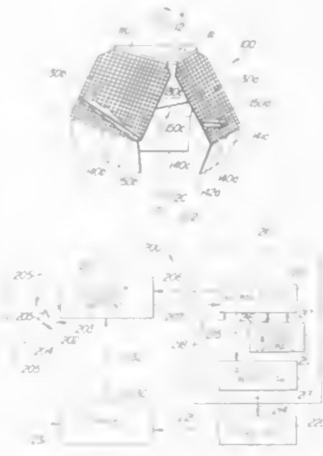
SATELLITE ATTITUDE DETERMINATION AND CONTROL SYSTEM WITH AGILE BEAM SENSING

A. Dorian Challoner, Manhattan Beach; U. A. von der Embse, Westchester; Mark P. Mitchell, Playa del Rey; Donald C. D. Chang, Thousand Oaks; Richard A. Fowell, Palos Verdes Estates; Ken Y. Huang, Redondo Beach; Joseph H. Hayden, Rancho Palos Verdes, and Gene E. Allen, Torrance, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Dec. 23, 1987, Ser. No. 137,225

Int. Cl.⁴ B64G *1/24, 1/36*

U.S. Cl. 244—171 25 Claims



1. An on-board attitude determination system for a spacecraft orbiting a celestial body comprising:
means for estimating the orbit and attitude of the spacecraft relative to a plurality of remote sources of coherent energy signals;
an agile beam sensor sensing the locations of the remote sources;
means for pointing the agile beam sensor at the estimated relative locations of the remote sources;
means for determining error signals representative of the difference between the estimated locations of the remote

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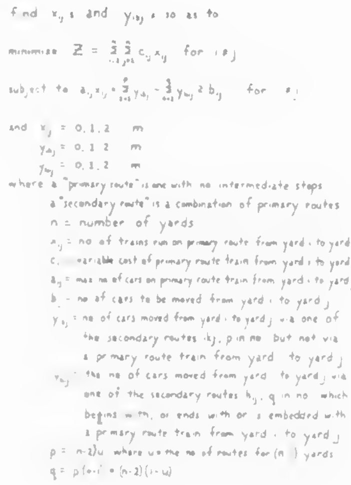
sources and actual locations of the remote sources as sensed by the agile beam sensor; and

said estimating means being adapted to receive said error signals and update the predicted orbit and attitude of the spacecraft.

4,883,245
TRANSPORATION SYSTEM AND METHOD OF OPERATION

Thomas F. Erickson, Jr., 213 Engle Dr., Wallingford, Pa. 19086
Filed Jul. 16, 1987, Ser. No. 74,534
Int. Cl.⁴ B61L *27/00*
U.S. Cl. 246—2 R 22 Claims



find x_{ij}s and y_{kij}s so as to

minimize $Z = \sum_{i=1}^{n}\sum_{j=1}^{n} c_{ij}x_{ij}$ for $i \neq j$

subject to $a_{ij}x_{ij} + \sum_{k=1}^{p} y_{kij} - \sum_{h=1}^{q} y_{hij} \geq b_{ij}$ for $i \neq j$

and $x_{ij} = 0, 1, 2 \ldots m$
$y_{kij} = 0, 1, 2 \ldots m$
$y_{hij} = 0, 1, 2 \ldots m$

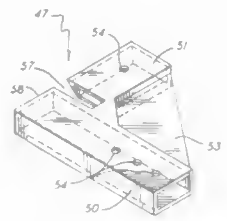
where a "primary route" is one with no intermediate stops
a "secondary route" is a combination of primary routes
n = number of yards
a_{ij} = no of trains run on primary route from yard i to yard j
c_{ij} = variable cost of primary route train from yard i to yard j
a_{ij} = max no of cars on primary route train from yard i to yard j
b_{ij} = no of cars to be moved from yard i to yard j
y_{kij} = no of cars moved from yard i to yard j via one of the secondary routes k_{ij}, p in no but not via a primary route train from yard i to yard j
y_{hij} = the no of cars moved from yard i to yard j via one of the secondary routes h_{ij}, q in no which begins with, or ends with or is embedded with a primary route train from yard i to yard j
p = (n-2)u where u = the no of routes for (n-1) yards
q = p(n-1) + (n-2)(1-u)

1. An improved method of operating a freight train system on a predefined network of rail lines wherein freight trains comprise locomotive means, freight cars and operating method comprising:

(a) establishing an array of Nodes throughout said linear network whereat trains arrive and/or depart, defining:
  (i) Primary Nodes as Nodes whereat both operating crews and freight cars are interchanged;
  (ii) Secondary Nodes as Nodes whereat freight cars are interchanged and operating crews are not; and
  (iii) Tertiary Nodes as Nodes whereat operating crews are interchanged and freight cars are not;
(b) defining a plurality of Routes for the freight trains such that:
  (i) each Route includes a set of Nodes along a linear path within said network,
  (ii) each said set of Nodes comprises at least Nodes at each end of said linear path which are defined as Primary Nodes, and
  (iii) all Nodes are included in at least one Route;
(c) selectively configuring trains into Relays for departure from each Primary and Secondary Node including:
  (i) grouping freight cars destined for common destination Nodes together in contiguous linear Blocks; and
  (ii) selectively determining a maximum number of said Blocks for each Relay such that each Relay departing from a given Node along its given Route comprises only Blocks destined for the maximum Block number of next consecutive Primary and Secondary Nodes whereby freight cars to be delivered to more distant Primary and Secondary Nodes along said Route are transshipped through an intermediate Primary or Secondary Node destination;
(d) selecting a maximum Cue Frequency being the upper limit of selected Cue Frequencies for each Route, Cue Frequency being a uniform time interval between successive Relays on said Routes;
(e) for each said Route, operating at least a number of Relays equal to the number of Primary and Tertiary Nodes contained within the respective Route minus one (P+T−1) such that Relays depart in each direction:
  (i) from at least every other Primary and Tertiary Node at the commencement of operation, and
  (ii) from every Node exactly once during each Cue Frequency interval thereafter during operation; and
(f) scheduling crews to operate said Relays upon their respective Routes such that crews are scheduled to return to their Node of origin within the maximum Cue Frequency.

4,883,246
THREE LEGGED WORKBENCH

Joseph R. Esposito, 315 Greenway Ave., Syracuse, N.Y. 13206
Division of Ser. No. 231,829, Aug. 12, 1988. This application Mar. 13, 1989, Ser. No. 321,920
Int. Cl.⁴ F15M *11/00*
U.S. Cl. 248—165 6 Claims



1. A corner bracket for use in the construction of a three legged support frame for a workbench that includes a pair of perpendicularly aligned hollow arms said arms including a vertically disposed arm that is closed at the top and having a bottom opening for receiving a leg member therein so that the leg stands upright on a support surface and a horizontally disposed arm having a bottom wall and two side walls and an opening in the distal end thereof, for slidably receiving a beam member therein, said horizontal arm further including an angularly disposed notch having an open top, said notch being located behind the opening for slidably receiving said beam member in said horizontally disposed arm, said notch passing downwardly through the top of the bracket for allowing a second horizontally disposed beam member to be inserted downwardly into said opening, said notch being at an angle of 60 degrees with one side wall of the horizontal arm, the depth of said notch being equal to the depth of the horizontal arm, a reinforcing support means positioned immediately beneath the notch for providing load bearing support to a beam inserted in said notch whereby three of said corner brackets can be joined in assembly to form an adjustable triangular work bench frame by placing one end of a beam member in the horizontal arm of each bracket and the other end of each beam member in the notch of another bracket and a leg member in the vertical arm of each bracket.

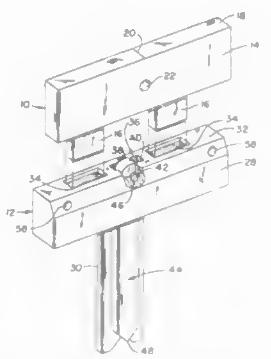
4,883,247
PICTURE HANGER AND METHOD OF USING

Neil H. Crandall, 309 Watauga Ave., Elizabethton, Tenn. 37643
Filed Jun. 27, 1988, Ser. No. 211,863
Int. Cl.⁴ A47F *7/14*
U.S. Cl. 248—542 11 Claims

1. A picture hanger comprising

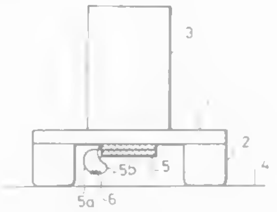
a T-shaped wall mount member having a horizontal portion and a vertical portion extending intermediately of and below said horizontal portion, said horizontal portion having a flat horizontal upper surface; said T-shaped wall mount member being securable on one side thereof to a wall of a room and having on the other side an elongated pendulum member pivotally mounted therefrom for indicating when the T-shaped wall mount member has been oriented on said wall to align said horizontal portion in a plane parallel to normal horizontal reference lines about said room, said T-shaped wall mount member defining within said flat horizontal upper surface two spaced similarly shaped apertures extending downwardly into said horizontal portion; and

a picture mount member having a horizontally extending portion and being securable on one side thereof to the rear face of a horizontal frame member of a picture frame and having extending downwardly therefrom at right angles to the general axis of said horizontally extending portion a pair of spaced tongue members, each said tongue member being similarly configured to one of said two spaced similarly shaped apertures to engage and slide therewithin in close conformity therewith for securing said picture mount member to said T-shaped wall mount member.



4,883,248
SHOCK PREVENTING APPARATUS

Kenji Uchino, Yokohama, and Kazumasa Ohnishi, Nagaoka, both of Japan, assignors to Alps Electric Co., Ltd., Tokyo, Japan
Filed Sep. 15, 1988, Ser. No. 244,891
Claims priority, application Japan, Jan. 22, 1988, 63-12082
Int. Cl.⁴ F16F *15/00*
U.S. Cl. 248—550 14 Claims



1. A vibration preventing apparatus comprising:

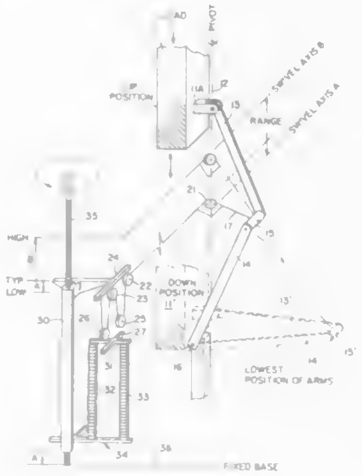
a supporting plate on which an object to be supported is mounted; and

a member fixed on said supporting plate, for supporting said supporting plate, wherein:

a piezoelectric effect element, to which electrodes a resistor having a predetermined resistance is connected, wherein the resistance of the resistor is selected such that a substantial amount of vibration energy received by the piezoelectric effect element is converted to heat energy, the piezoelectric effect element being attached to a surface of said supporting plate.

4,883,249
COUNTERBALANCING

Thomas A. Garland, 76 Reservoir Cir., Jamestown, R.I. 02835
Filed Feb. 4, 1987, Ser. No. 10,725
Int. Cl.⁴ F16M *13/00*
U.S. Cl. 248—566 19 Claims



1. Counterbalancing apparatus comprising,

a weight W to be counterbalanced movable along a first axis,

means for supporting said weight W to be counterbalanced and movable along said axis,

at least one upper lever means for pivotal connection to said means for supporting at its upper end,

at least one lower lever means for pivotal connection at its lower end to an intermediate pivot point and pivotally connected at its upper end to the lower end of said upper lever means,

spring means for providing a counterbalancing force,

and means for coupling said spring means to an inside pivotal connection such that a force from said spring means lies along a second axis through said lower lever means in a direction intersecting said first axis,

the spring rate R_T of said spring means, the weight W to be supported on said means for supporting and the distance L between said inside pivotal connection and said lower level means lower end being related by the equation $R_T = 2W/L$,

whereby said counterbalancing apparatus comprises a self-contained counterbalance mechanism that, neglecting minimal effects of friction, manufacturing inaccuracies and strains, substantially exactly counterbalances said weight W over the linear range of travel of said weight along said first axis.

4,883,250
VIBRATION-PROOF AND EARTHQUAKE-IMMUE MOUNT SYSTEM

Kenichi Yano, Tokyo; Hiroshi Midorikawa, Kanagawa; Toshiaki Kamei, Kanagawa, and Takeharu Shizume, Kanagawa, all of Japan, assignors to Kajima Corporation and Kayaba Industry Co., Ltd., both of Tokyo, Japan
Filed Mar. 10, 1988, Ser. No. 166,441
Claims priority, application Japan, Mar. 12, 1987, 62-58587
Int. Cl.⁴ F16M *1/00*
U.S. Cl. 248—638 8 Claims

1. A vibration-proof and earthquake immune mount system connecting a structure to a foundation comprising a number of mounts for reducing vibrations of said structure in any direction and dampers for reducing horizontal vibrations of said structure provided between said structure and foundation,

each of said mounts comprising:

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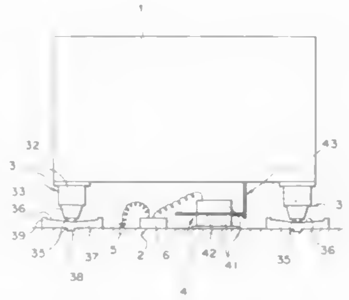
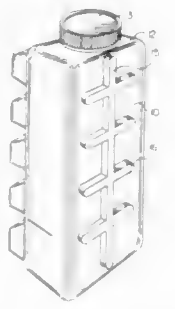
a spring means connected to a bottom surface of said structure;
a support mounted on a lower end of said spring means;
a ball means rollably abutting said support at an upper surface of said ball means;
a saucer mounted on said foundation, an upper surface of said saucer being in the form of a recess which receives a lower surface of said ball means in rollable contact; and
each of said dampers comprising:
an electromagnet with north and south poles mounted on said foundation;
a connector mounted on a bottom surface of said structure;



a conductor plate connected to said connector so as to be slidable in a vertical direction, the free end of said conductor plate being interposed between the north and south poles of said electromagnet;
a sensor for detecting movement of said foundation and for generating a signal when movement of said foundation exceeds a predetermined amount; and
a controller for receiving said signal from said sensor and for using said signal to control the electromagnet to develop a magnetic field which interacts with said conductor plate to produce eddy currents which generate a braking effect and absorb the disturbance energy when movement of said foundation exceeds a predetermined amount;
whereby horizontal vibrations may be absorbed.

4,883,251
CONTAINER FOR MAKING ICE CUBES

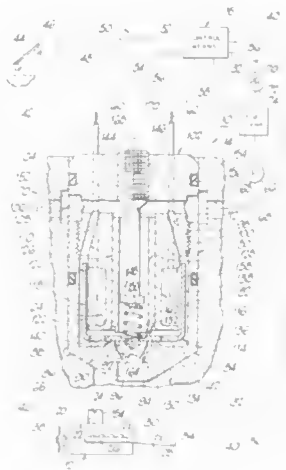
Jorge F. Manas, c/Esproceda, 310-318, 08027Barcelona, Spain
Continuation of Ser. No. 59,968, Jun. 9, 1987, abandoned. This application Nov. 15, 1988, Ser. No. 273,182
Int. Cl.⁴ F25C *1/24;* **B65D** *1/04*
U.S. Cl. 249—53 R 2 Claims



1. Apparatus for making ice cubes comprising a generally prismatic one-piece self-supporting container of hollow configuration, the container having a base wall, front and back walls, opposite side walls, and a top wall, the front and back walls being wider than the side walls, the front wall being formed with rows of outwardly directed ice-forming cavities, each cavity having the shape of a truncated pyramid to allow an ice cube to be released therefrom by external pressure, inter-cavity walls with channels therein providing liquid flow communication between the cavities, a combination filling and emptying aperture in the top wall dimensioned to allow ice cubes released from the respective cavities to be discharged therethrough, a fill marking on one of the front, back and side walls to indicate a fill level for the ice-forming cavities when the container is oriented with said aperture facing upwards, and mutually perpendicular external stacking ribs on the back wall enabling a plurality of said containers to be stacked selectively in parallel and in mutually perpendicular relation, the apparatus further including a closure member for said aperture, the stacking ribs including an elongate spine extending substantially the entire length of the back wall and lateral ribs spaced along and extending outwardly from opposite sides of said spine.

4,883,252
ELECTROMAGNET AND VALVE ASSEMBLY

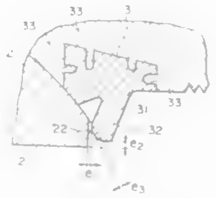
Gerhard Mesenich, Bochum, Fed. Rep. of Germany, assignor to **Colt Industries Inc., New York, N.Y.**
Filed Jan. 23, 1989, Ser. No. 300,030
Int. Cl.⁴ F16K *31/06*
U.S. Cl. 251—129.18 6 Claims



1. A valving assembly for cyclically permitting and terminating fluid flow, comprising stationary magnetic body means of magnetic material, said magnetic body means being formed as to have a first axis of revolution, pole piece means situated as to be centrally of and functionally stationary with respect to said magnetic body means, electrical coil means effective upon energization thereof to create a magnetic field, valve seat means, fluid flow passage means formed through said valve seat means, said pole piece means comprising a pole piece face portion, an armature-valve member situated generally between said pole piece face portion and said valve seat means, resilient means normally resiliently urging said armature-valve member in a first direction whereby said armature-valve member moves toward operative seating engagement with said valve seat means as to thereby terminate flow of said fluid through said fluid flow passage means, said armature-valve member being moved in a second direction opposite to said first direction and into contact with said pole piece face portion upon energization of said coil means thereby permitting flow of said fluid through said fluid flow passage means, said magnetic body means and said pole piece means functioning to provide a magnetic flux path loop about said electrical coil means upon energization thereof, wherein said flux path loop is comprised of a non-moving portion and of a moving portion, wherein said moving portion comprises said armature-valve member wherein said non-moving portion comprises said pole piece means and said stationary magnetic body means, and a gap of non-magnetic material having a second axis of revolution substantially aligned with said first axis of revolution, said gap of non-magnetic material forming a magnetic interruption in said non-moving portion for enhancing flux leakage in the vicinity of said gap of non-magnetic material thereby reducing the flux decay time in said flux path loop upon de-energization of said coil means and enabling said resilient means to move said armature-valve in said first direction, and wherein said armature-valve member is of cup-shaped configuration having an armature-valve axial end wall and an armature-valve cylindrical side wall.

4,883,253
BALL VALVE AND METHODS OF FABRICATION

Mitsuharu Hashimoto, and Shinji Takeda, both of Saitama, Japan, assignors to Sekisui Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan
Continuation-in-part of Ser. No. 561,867, Feb. 16, 1983, abandoned. This application Feb. 19, 1986, Ser. No. 830,492
Claims priority, application Japan, Dec. 16, 1982, 57-221636
Int. Cl.⁴ F16K *5/00*
U.S. Cl. 251—315 12 Claims

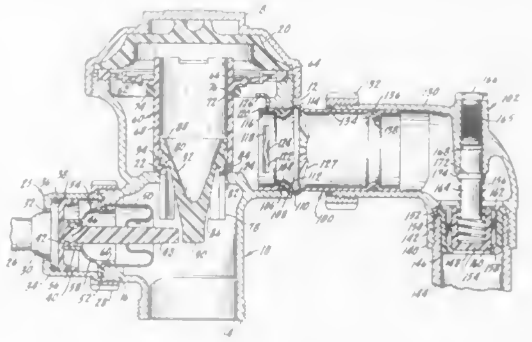


1. A ball valve comprising: a generally spherically shaped ball having a shaft integrally attached to one side thereof, a flow passage being formed through said ball, a recessed surface being formed around said flow passage on either side of said ball extending inwardly beyond the spherical surface of said ball; a valve body made of a synthetic resin, said valve body having a flow passage extending longitudinally therethrough and provided with connecting means at outer ends of said flow passage in said valve body; a generally annularly shaped ball seat fixed to said valve body at a position surrounding said flow passage in said valve body, said ball seat having an inner generally annularly shaped lip extending into a recess defined by said recessed surface of said ball when said ball is in an open position without contacting said ball and in close contact with said ball to thereby bring said lip into sealing engagement with said ball when said ball is in a closed position irrespective of the flow pressure of the flow passage.

4,883,254
FLUSH VALVE HANDLE ASSEMBLY

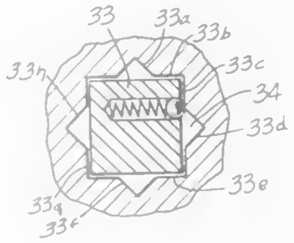
John F. Whiteside, Franklin Park, Ill., assignor to **Sloan Valve Company, Franklin Park, Ill.**
Filed Mar. 24, 1989, Ser. No. 328,326
Int. Cl.⁴ F16K *31/145*
U.S. Cl. 251—335.2 12 Claims

1. An operator assembly for use in operating a plumbing fixture such as a flush valve, including a collar adapted to be attached to a flush valve body, an opening in said collar, an operator having a portion extending through said collar opening, a piston movable within said collar and having a surface thereof in contact with that portion of the operator which extends through said opening, a rod attached to said piston and formed and adapted to operate the flush valve, a diaphragm attached to said rod at a location remote from said piston, said diaphragm being movable with said rod and in sealing contact with the flush valve body, spring means urging said piston and rod to an unoperated position outwardly of the flush valve body, movement of said operator causing movement of said piston, rod and diaphragm inwardly toward the flush valve to cause operation thereof.



4,883,255
WINCH HANDLE

Walter H. Bacon, North Haven, Conn., assignor to **Custom products Corporation, North Haven, Conn.**
Filed Feb. 1, 1988, Ser. No. 150,888
Int. Cl.⁴ B25G *3/28;* **B66D** *1/04*
U.S. Cl. 254—266 3 Claims



1. An operating handle for a winch having a four or eight-sided socket comprising a hand engaging portion, a lever arm and a driver, said driver being secured to an end of said lever arm at an end opposite to said hand engaging portion, said driver having a square shape and having a bore in one side thereof, a detent in said bore, a spring in said bore urging said detent outwardly of a side of said driver to engage a wall of a socket, said bore being positioned off the vertical center line of said side of said driver and so positioned that said detent will engage only one wall of an eight-sided socket.

4,883,256
PICKET FENCE AND METHOD OF CONSTRUCTION

Thomas J. Hebda, 539 S. Park, Lombard, Ill. 60148
Filed Jan. 23, 1989, Ser. No. 299,674
Int. Cl.⁴ B21F *27/00*
U.S. Cl. 256—22 5 Claims

1. A picket fence assembly, comprising in combination
upper and lower horizontal rails each having a plurality of non-circular through-holes therein,
a plurality of vertically disposed pickets arranged in mutually parallel relationship between said rails and extending through respectively aligned ones of said through-holes in said rails,
said pickets being respectively in said through-holes from an assembly position wherein said pickets are axially movable in said through-holes to a locking position wherein vertical movement of said pickets relative to said rails is prevented,
said pickets being provided with transverse through-holes

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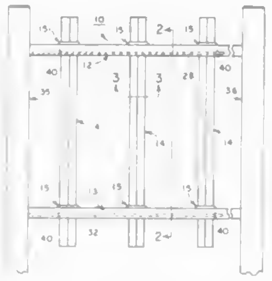
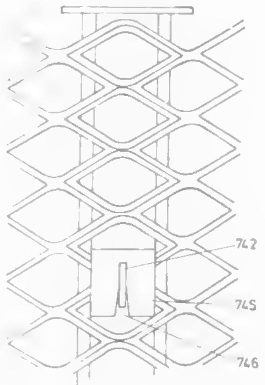
which are in mutual alignment when each of said pickets is in said locking position, and



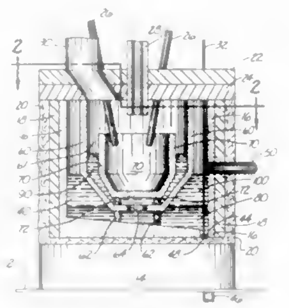
a rigid rod slidably extending through said transverse through-holes in said pickets to prevent rotation of said pickets from said locking positions to said assembly positions.

4,883,257
SECURITY FENCING
Brendan Bracken, 35 Oaklawn West, Leixlip, County Kildare, Ireland
Filed Jul. 24, 1987, Ser. No. 78,378
Claims priority, application Ireland, Jul. 25, 1986, 1968/86
Int. Cl.⁴ E04H *17/10*
U.S. Cl. 256—54 11 Claims



1. A post for security fencing, the post comprising a pair of longitudinal sections, the first longitudinal section being adapted to be fixed in the ground and having means for securing fence meshing thereto, the second longitudinal section being adapted to fit over the first longitudinal section, with complementary engaging means being provided for securing the first and second longitudinal sections together, said complementary engaging means being enclosed within the post when assembled, the complementary engaging means comprising at least one generally L-shaped bracket and a complementary locking plate; such an L-shaped bracket having a spine and a leg generally perpendicularly disposed to the spine, the end of the spine remote from the leg being fixed to an inner wall of the first longitudinal section with the leg being vertically disposed on erection of the longitudinal sections, and such a corresponding locking plate having a slot at its lower edge and being fixed in the second longitudinal section so as to be engageable with the corresponding L-shaped bracket of the first longitudinal section.

4,883,258
PLASMA FURNACE
Atwood P. Foster, 1220 NE. 17th, Portland, Oreg. 97232, and Allan L. Berg, 6504 SE. Reedway, Portland, Oreg. 97206
Filed Sep. 15, 1988, Ser. No. 244,316
Int. Cl.⁴ F27B *15/00*
U.S. Cl. 266—148 6 Claims



1. A plasma furnace for removing precious metals from ore, said plasma furnace comprising:

a vessel having an upper chamber and a lower chamber in fluid communication therewith;

said upper chamber including:

a feed tube attached to said vessel and disposed to extend from exterior said vessel into said upper chamber for feeding ore, carbon and a plasma gas into said upper chamber;

three electrodes attached to said vessel and disposed to extend into said upper chamber at angles of about 120 degrees from each other, said electrodes having ends terminating radially outward from said feed tube, said electrodes being operably connected to a three phase alternating electric power source for producing a plasma arc;

a vent attached to said vessel, said vent providing fluid communication between said upper chamber and the exterior of said vessel;

a central crucible attached to said vessel and supported within said upper chamber below said feed tube such that the ends of said electrodes are disposed within said central crucible; and

an outer crucible attached to said vessel and disposed to surround said central crucible in spaced relationship thereto, said outer crucible defining the boundary between said upper chamber and said lower chamber, said outer crucible including a central discharge hole that provides fluid communication between said upper chamber and said lower chamber;

said lower chamber including:

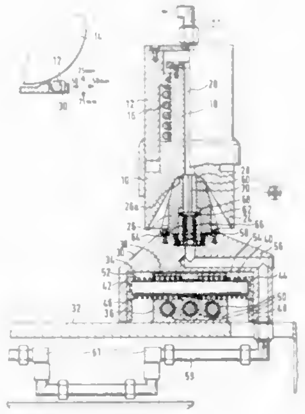
a sloping floor inclined dowardly to a sump;

a drain tube attached to said vessel, said drain tube providing fluid communication between said sump and the exterior of said vessel;

a valve disposed to selectively control the flow of fluid from said sump to said drain tube; and

an overflow tube attached to said vessel above the central discharge hole in said outer crucible, said overflow tube providing fluid communication between said lower chamber and the exterior of said vessel.

4,883,259
APPARATUS FOR COUPLING A METALLURGICAL LADLE TO A GAS SUPPLY
Hubert Stomp, Howald/Grand-Duchy; Jean-Pierre Barthel, Oberanven; Albert Feltler, Strassen, and Fred Parasch, Schifflange, all of Luxembourg, assignors to Paul Wurth S.A., Luxembourg, Luxembourg
Filed Dec. 15, 1988, Ser. No. 284,920
Int. Cl.⁴ C21C *5/46*
U.S. Cl. 266—217 11 Claims



1. An apparatus for coupling a metallurgical ladle to a gas supply for treatment of molten metal contained in the ladle wherein gas is injected through the bottom of the ladle into the liquid metal at a treatment station and wherein the ladle rests on a ladle support, comprising:

base means mounted on said ladle support;

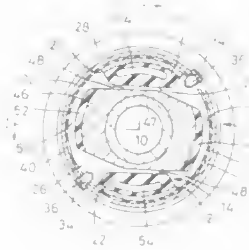
spring means associated with said base means to slide said base means in at least first and second directions, said first and second directions being mutually transverse to one another;

male connection head means having an axial passage therethrough, said male connection head means including means for communicating with a gas supply;

foot means for attachment to the ladle; and

female connection member means for engagement on said male connection head means when said ladle is positioned on said ladle support.

4,883,260
ELASTIC BUSHING HAVING FLUID CHAMBER FILLED WITH HIGHLY VISCOUS FLUID
Ryouji Kanda, Komaki, Japan, assignor to Tokai Rubber Industries, Ltd., Japan
Filed Sep. 12, 1988, Ser. No. 242,823
Claims priority, application Japan, Sep. 16, 1987, 62-231587
Int. Cl.⁴ F16F *1/36;* **F16M** *13/00;* **B60G** *11/26*
U.S. Cl. 267—140.1 12 Claims



1. A fluid-filled elastic bushing to primarily damp vibrations applied in an axial direction of the elastic bushing, comprising:

an inner sleeve;

an outer sleeve disposed radially outwardly of said inner sleeve;

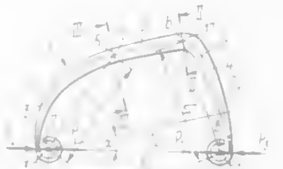
an annular elastic body interposed between said inner and outer sleeves, for elastically connecting said inner and outer sleeves;

said elastic body including a pair of axially intermediate connecting portions which define a first pair of diametrically opposed parts of an outer circumferential surface of the elastic body, said elastic body having an opening formed through an axially intermediate portion thereof in a diametric direction thereof such that said opening is partially defined by said connecting portions and is open in a second pair of diametrically opposed parts of said outer circumferential surface of the elastic body which are located between said pair of connecting portions in a circumferential direction of the elastic body, said opening being closed by said outer sleeve, at said second pair of diametrically opposed parts of said outer circumferential surface of said elastic body, whereby a fluid chamber filled with a viscous fluid having a high kinematic viscosity is defined around an axially intermediate portion of said inner sleeve;

a restrictor member supported by said inner sleeve such that said restrictor member is accommodated within said fluid chamber, so as to substantially divide said fluid chamber into two parts spaced apart from each other in an axial direction of said inner sleeve, said restrictor member cooperating with said pair of axially intermediate connecting portions of said elastic body, to define a first pair of restricted portions of said fluid chamber, respectively, said two parts of said fluid camber communicating with each other through said first pair of restricted portions; and

said pair of axially intermediate connecting portions of said elastic body having respective axial holes formed therethrough.

4,883,261
ZAMITTER BLADE SPRING
Mikhail N. Zamitter, ulitsa Aviatsii, 2/32, korpus 4, kv. 18, Kiev, U.S.S.R.
PCT No. PCT/SU86/00115, § 371 Date Jul. 12, 1988, § 102(e) Date Jul. 12, 1988, PCT Pub. No. WO88/03616, PCT Pub. Date May 19, 1988
PCT Filed Nov. 13, 1986, Ser. No. 241,986
Claims priority, application U.S.S.R., Feb. 20, 1984, 3713661
Int. Cl.⁴ B60B *11/00*
U.S. Cl. 267—158 7 Claims



1. A Zamitter blade spring made from a resilient blade having a length and having cross sections along the length thereof which define centers of gravity arranged in one plane and on one line which substantially corresponds to a neutral line of the spring, the linear dimensions of said resilient blade cross sections being variable along the length thereof, said resilient blade comprising a midportion and end portions joined to said midportion, said end portions having neutral lines which are divergent from a neutral line of said midportion to one side in their common plane, said end portions having free ends which include eyes for receiving elements to provide pivotable connections to the blade spring, longitudinally extending axes of said eyes being perpendicular to the plane containing the neu-

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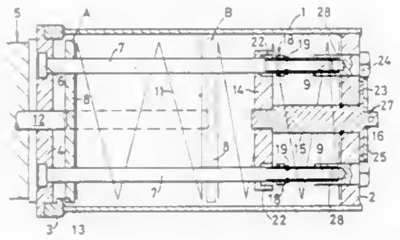
tral line of the spring, said end portions (3, 4) of the resilient blade (1) being of different relative length (S,S1).

4,883,262
DEVICE CONTAINING A FORCE-IMPARTING MEANS AND EQUIPPED WITH SAFETY MEANS

Michael A. Calvert, Kirkcaldy, Great Britain, assignor to Prime Actuator Control Systems Limited, Glenrothes, Great Britain
PCT No. PCT/GB87/00214, § 371 Date Feb. 1, 1988, § 102(e) Date Feb. 1, 1988, PCT Pub. No. WO87/05986, PCT Pub. Date Oct. 8, 1987
PCT Filed Mar. 30, 1987, Ser. No. 126,110
Claims priority, application United Kingdom, Apr. 1, 1986, 8607879
Int. Cl.⁴ F16P *3/08;* **F10J** *13/24*
U.S. Cl. 267—175 4 Claims

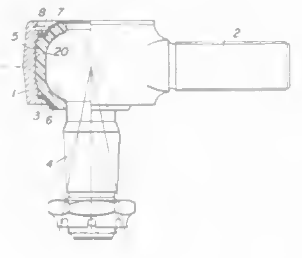


1. A device comprising a housing including an end plate, means for imparting a force and captive within the housing between the end plate and removable retaining means biased by the force imparting means, a plurality of screw-threaded tie rods and nuts holding the end plate in assembly in the housing, and safety means comprising a safety plate within the housing at a fixed spacing from the end plate, but short of the retaining means at the closest approach of the retaining means to the end-plate, the safety plate being fast on a shaft rotatable in the end plate and adapted to be turned from outside the housing, the safety plate having keyhole-shaped openings through which the respective tie rods extend and the tie rods each having a safety collar which in one angular position of the safety plate can pass through the respective keyhole-shaped opening but in another angular position of the safety plate cannot pass through the keyhole-shaped opening.

4,883,263
MOLECULAR JOINT FOR AXLE STRUTS AND CONNECTING RODS AND SIMILAR PARTS OF MOTOR VEHICLES

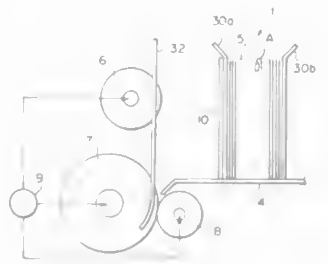
Reinhard Buhl, Bohmte, Fed. Rep. of Germany, assignor to Lemförder Metallwaren AG, Lemförder, Fed. Rep. of Germany
Filed May 6, 1988, Ser. No. 191,276
Claims priority, application Fed. Rep. of Germany, May 8, 1987, 3715360
Int. Cl.⁴ B60G *11/18, 7/02;* **B62D** *7/16*
U.S. Cl. 267—293 7 Claims

1. A molecular joint for axle struts, connecting rods, and similar parts of motor vehicles comprising:
- a hollow housing having a substantially cylindrical interior surface;
- a substantially ball-shaped joint pivot in said housing lying roughly along a middle axis of said housing;
- a sleeve-like joint body of elastomer material arranged between said housing and said joint pivot and adhering to said housing and to said joint pivot under a prestressing;
- said interior surface defining a top portion, a bottom portion, and a middle portion;
- said interior surface including a first end wall arranged at a first distance from said middle axis and a second end wall arranged at a second distance from said middle axis, said second end wall being further away from said middle axis than said first end wall, said first end wall occupying said top portion and said bottom portion of said interior surface, and said second end wall located in said middle portion of said interior surface;
- a first joint body portion being between said first end wall and said joint pivot providing said joint body with a first prestressed region, a second joint body portion being between said second end wall and said joint pivot providing said joint body with a second prestressed region, said first pre-stressed region being substantially more prestressed than said second prestressed region so that small radial loads are transmitted to the first prestressed region and large radial loads are transmitted to the second prestressed region.



4,883,264
BILL DISBURSING SYSTEM

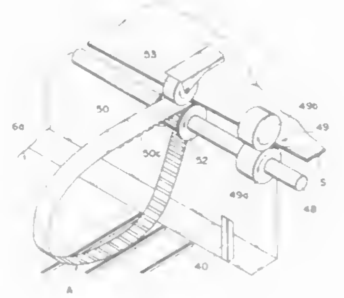
Eiichi Yoshikawa, Hasuda; Takashi Shinozaki, Kashiwa, and Takahiko Ito, Yokohama, all of Japan, assignors to Laurel Bank Machines Co., Ltd., Tokyo, Japan
Filed Oct. 31, 1988, Ser. No. 264,798
Claims priority, application Japan, Nov. 2, 1987, 62-277897
Int. Cl.⁴ B65H *7/08*
U.S. Cl. 271—110 15 Claims



1. A foreign substance disposing device for a money receiving and disbursing machine comprising stationary clip means and movable clip means for clipping bills therebetween, pick out means for picking out the bills which are clipped between said stationary clip means and movable clip means, pick out control means for controlling an operation of said pick out means, coil means provided on circuit board means for producing a change in impedance in response to passing of the bills, impedance detecting means for detecting the change in the impedance of the coil means, control signal output means for judging whether or not the bills passing the coil means are accompanied by a foreign substance based on signals from said impedance detecting means and for providing said pick out means with a control signal for preventing the pick out means from picking the bills out when a foreign substance is detected, and alarm means for receiving signals from said output means and producing an alarm signal.

4,883,265
TRAY APPARATUS

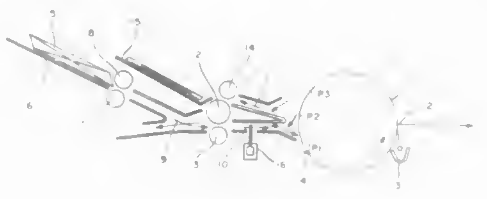
Noriyoshi Iida, Ichikawa; Nobutaka Uto, Yokohama; Masakazu Hirol, Tokyo, and Akimitsu Hoshi, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 839,603, Mar. 14, 1986, abandoned. This application Jul. 28, 1988, Ser. No. 226,551
Claims priority, application Japan, Mar. 15, 1985, 60-052055; Mar. 18, 1985, 60-055486; Mar. 20, 1985, 60-057139
Int. Cl.⁴ B65H *31/26*
U.S. Cl. 271—220 11 Claims



1. A tray apparatus, comprising:
- a sheet discharging outlet provided with a rotatable member for discharging sheets;
- a tray for receiving and stacking sheets discharged from said sheet discharging outlet, said tray being provided with a stopper at a side adjacent said sheet discharging outlet; and
- a rotatable endless belt disposed adjacent said sheet discharging outlet and having a part disposed opposite to a top surface of said tray, said endless belt having a first travel portion for contacting the bottom surface of a sheet being discharged through said sheet discharging outlet, for conveying the sheet in a direction of sheet discharge, and for contacting the rear end of the sheet to convey it downwardly to said tray, said endless belt also having a second travel portion for contacting a top surface of the sheet which is being discharged to convey the sheet back in the opposite direction so as to abut it to the sheet stopper.

4,883,266
AUTOMATIC DOCUMENT FEEDER IN ELECTROPHOTOGRAPHIC COPYING MACHINE

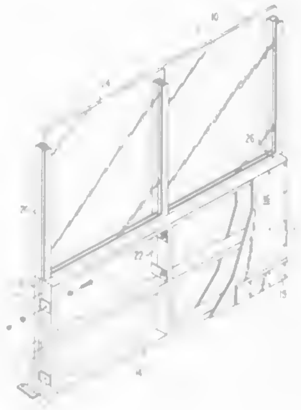
Yoshihal Fujii, Sakurai, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan
Continuation of Ser. No. 68,802, Jun. 29, 1987, abandoned, which is a continuation of Ser. No. 877,392, Jun. 23, 1986, abandoned. This application Jun. 23, 1988, Ser. No. 212,041
Claims priority, application Japan, Jul. 16, 1985, 60-159141
Int. Cl.⁴ B65H *39/10*
U.S. Cl. 271—291 5 Claims



1. An automatic document feeder in a copying machine comprising
- an endless document recycling path having thereon a document receiving position at which a document is introduced into said recycling path and a document releasing position where a document is released from said recycling path,
- document circulating means for transporting a document through said recycling path in a fixed direction from said document receiving position to said document releasing position,
- a passageway with one end disposed near said document receiving position and said document releasing position, and
- document transporting means for transporting a document through said passageway selectably in a normal direction towards said document receiving position or in a reverse direction opposite to said normal direction from said document releasing position,
- said recycling path, said passageway and said document circulating means being so arranged with respect to one another that a document which is transported in said reverse direction through said passageway after moving through said recycling path is facing oppositely to when said document is transported in said normal direction through said passageway prior to moving into and through said recycling path.

4,883,267
DASHER BOARD SYSTEM

John S. Burley, Salix, Pa., assignor to Burley's Rink Supply, Salix, Pa.
Filed Jul. 1, 1988, Ser. No. 214,433
Int. Cl.⁴ A63C *19/06*
U.S. Cl. 272—3 10 Claims



1. A dasher board system for an ice rink comprising:
- a plurality of main supports anchored around the periphery of the ice rink;
- a plurality of dasher panel frame segments supported by said supports and connected together to form a continuous framework around the periphery of the ice rink;

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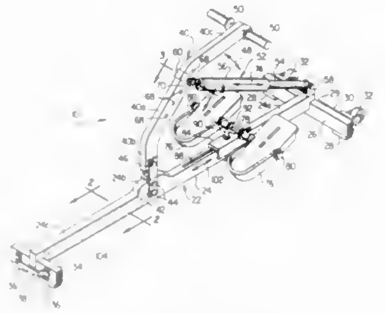
a plurality of dasher board facing panels supported by said continuous framework; and

an adjustable shock absorbing means anchoring each of said main supports to the ice rink substrate for providing a desired degree of resilience to said dasher board panels, wherein said adjustable shock absorbing means includes a spring loaded fastening element having a bolt with a head portion and a threaded portion and a spring disposed concentrically around said threaded portion, so that when said bolt is tightened, the resilience of said dasher board panels is reduced, and wherein each of said main supports has a support base, each of said support bases having first and second holes for receiving two of said spring loaded fastening elements therein, and wherein each of said support bases further comprises a third hole for receiving a third, non-spring-loaded, fastening element, said third fastening element having a spring washer.

4,883,268
COMPACT, PORTABLE, ROWING TYPE EXERCISE APPARATUS USABLE BY A CHAIR-SEATED EXERCISER

Harry Salkind, Dallas, Tex., assignor to McCabe-White Investment Corporation, Dallas, Tex.
Filed Apr. 12, 1989, Ser. No. 336,835
Int. Cl.⁴ A63B *69/06*
U.S. Cl. 272—73 14 Claims



1. Compact, portable, seatless rowing type exercise apparatus usable by an exerciser seated in a chair or the like having a pair of support portions resting upon a floor surface and disposed on opposite sides of an elevated seat, said exercise apparatus comprising:

an elongated base structure having a front longitudinal portion with an outer end, a longitudinally intermediate portion, and a rear longitudinal portion with an outer end,

said rear longitudinal portion consisting essentially of an outer end portion, a handle means mounted on said outer end portion, an elongated connecting portion connecting said outer end portion to said longitudinally intermediate portion of said base structure and a counterweight means operatively connected to said elongated connecting portion,

said base structure having a use orientation in which it longitudinally extends along and is supported by the floor surface, with said rear longitudinal portion extending rearwardly between the support portions of the chair beneath its seat, and the balance of said base structure extending forwardly beyond the chair along the floor surface;

an elongated, upstanding force input lever pivotally connected at an inner end thereof to said longitudinally intermediate portion of said base structure for forward and rearward pivotal movement relative thereto, in a generally rowing-like fashion, about a horizontal axis generally transverse to the length of said base structure, said force input lever having an outer end portion to which handgrip means are secured that may be grasped by an exerciser sitting in the chair and pushed and pulled to respectively impart said forward and rearward pivotal movement to said force input lever;

resistance means operatively connected between said base structure and said force input lever for yieldingly resisting both said forward pivotal movement and said rearward pivotal movement of said force input lever relative to said base structure;

footrest means, carried by said front longitudinal portion of said base structure between its outer end and said longitudinally intermediate portion of said base structure, for supporting the feet of the seated exerciser;

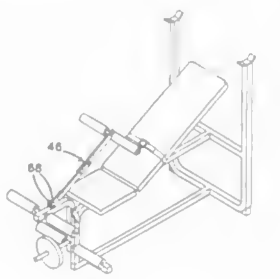
rolling support means, secured to said outer end of said front longitudinal portion of said base structure, for rollingly supporting said outer end of said front longitudinal portion on the floor surface when said base structure is forwardly and upwardly tipped, said rolling support means being spaced upwardly apart from the floor surface when said base structure is in its use orientation;

said handle means being associated with said outer end portion of said rear longitudinal portion of said base structure and liftable to forwardly and upwardly pivot said base structure to thereby operatively engage said rolling support means with the floor surface to permit said exercise apparatus to be easily rolled therealong to a storage location; and

said counterweight means, being operatively connected to said rear longitudinal correcting portion of said base structure, for inhibiting forward and upward tipping of said base structure during forward pivotal motion of said force input lever relative to said base structure with said base structure in its use orientation.

4,883,269
ATTACHMENT FOR EXERCISE BENCH

Conroy Shaver, P.O. Box 284, Bengough, Saskatchewan, Canada 50C 0K0
Filed May 9, 1988, Ser. No. 192,250
Int. Cl.⁴ A63B *21/06*
U.S. Cl. 272—117 12 Claims



1. An exercise apparatus comprising:

a bench;

at least one L-shaped arm pivotally mounted on an end of the bench for pivotal movement about a lateral arm axis between a rest position with a first part of the arm projecting substantially horizontally from the end of the bench and a second part of the arm projecting downwardly therefrom, and an elevated position in which the first part of the arm projects upwardly from the bench and the second part projects from the end of the bench;

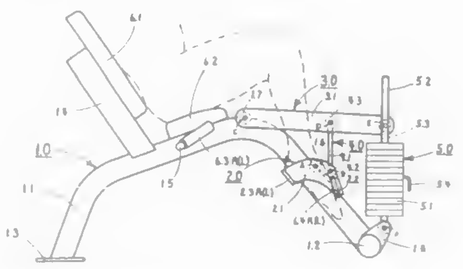
means connected to the second part of the arm for resisting the upward pivoting movement of the arm;

a tension link connected to the first part of the arm at a single position spaced from the end of the bench for free pivotal movement with respect to the arm, the link being otherwise unconnected to the apparatus; and

a link crossbar connected to the link remote from its connection to the arm.

4,883,270
FOUR-BAR VARIABLE-RESISTANCE FRONTAL CALF DEVELOPING MACHINE

Henry H. Maag, 5332 Clark Cir., Westminster, Calif. 92683
Filed Feb. 9, 1989, Ser. No. 308,192
Int. Cl.⁴ A63B *21/00*
U.S. Cl. 272—134 2 Claims



1. A frontal calf exercising machine, comprising:

a rigid frame which includes means for supporting an operator in a seated position of operation;

a rigid rotating foot-engaging assembly which is journaled in said frame on an axis which is approximately common with the axes of rotation of said operator's ankle joints while said operator is supported in said machine's frame in the operating position;

said rigid rotating foot-engaging assembly includes both top and heel-of-the-foot engaging surfaces which, through body-machine contact, apply resistive forces to the respective tops and heels of the operator's feet through circular paths about the rotational axes of the operator's ankle joints;

a rigid rotating weight arm which is journaled in said machine's frame on an axis which is both parallel with and separated by a specific distance from the axis of rotation of said rigid rotating foot-engaging assembly;

said rigid rotating weight arm includes means for loading weights onto at a point offset from its axis of rotation;

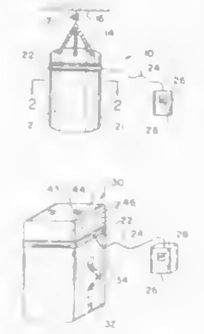
said rigid rotating foot-engaging assembly and said rigid rotating weight arm are mechanically linked to each other at axes which are both parallel with and offset by specific distances from their respective axes of rotation by a rigid connecting link which has a specific length between its centers of connection;

said rigid rotating foot-engaging assembly, said rigid rotating weight arm, said link mechanically joining said rigid rotating foot-engaging assembly and said rigid rotating weight arm, and said frame of said frontal calf exercising machine join together to form a four-bar linkage which, when acting in conjunction with the sinusoidally changing values of force applied by the machine's rotating weight arm as the applied weight swings through a circular path through the gravitational field, applies a predetermined variably resistive force at the top and heel-of-the-foot engaging surfaces on said rigid rotating foot-engaging assembly, which varies as a function of the degrees of rotation of the operator's ankle joints and which is characteristic of the releationships in length and orientation of the four rigid members forming the four-bar linkage and the orientation of the rotating weight arm to the gravitational field throughout the range of the exercise movement;

said specific distance between the axis of rotation of said rigid rotating foot-engaging assembly and the axis of rotation of said rigid rotating weight arm, said specific distance between the axis of rotation of said rigid rotating foot-engaging assembly and the axis of connection of said connecting link on said rigid rotating foot-engaging assembly, said specific distance between the axis of rotation of said rigid rotating weight arm and the axis of connection of said connecting link on said rigid rotating weight arm, and said specific distance between the centers of connection on said connecting link all have a definite non-changing relationship to each other, which relationship, along with their orientations to each other, is determined through kinematic analysis of the moving parts of the four-bar linkage age/rotating weight arm force-varying mechanism and is dependent on said predetermined variably resistive force which said four-bar linkage / rotating weight arm force-varying mechanism is designed to put out throughout the exercise movement.

4,883,271
SPORTS IMPACT MEASURING APPARATUS

Barry J. French, Bay Village, Ohio, assignor to French Sportech Corporation, Bay Village, Ohio
Continuation-in-part of Ser. No. 785,969, Oct. 10, 1985, Pat. No. 4,761,005, and a continuation-in-part of Ser. No. 904,356, Sep. 8, 1986, Pat. No. 4,824,107. This application Apr. 18, 1988, Ser. No. 182,913
Int. Cl.⁴ A63B *67/00, 69/00*
U.S. Cl. 273—1 GC 24 Claims



21. A flexible transducer means for measuring at least one characteristic of a sports impact on a resilient support for receiving such impacts, said resilient support comprising a resilient material compressible at the region of impact and expandable at parts of said support away from the region of impact, said means including a flexible means for generating an electrical signal having at least one characteristic varying in accordance with the extent of movement of the resilient support, and means for holding said flexible means relative to the expandable parts of said resilient support to detect such movement.

4,883,272
BALL CATCHING FRAME WITH BALL EXPELLING MACHINE CONNECTED THERETO

William C. Lay, 931 Creek Hill La., Midvale, Utah 84047
Filed May 2, 1988, Ser. No. 189,103
Int. Cl.⁴ A63B *69/40*
U.S. Cl. 273—26 A 12 Claims

1. A multi-purpose ball expelling apparatus that can be used with repeated operations for the training of baseball fielders, batters and pitchers comprising in combination a netted frame joined to a ball expelling machine,

(a) the said netted frame comprising an inverted U shaped frame having two separate legs as the sides of the inverted U, each leg having a support brace one end of which is adjustably attached near the top of each leg and the other end of the brace resting on the ground so as to maintain the inverted U shaped frame in a forwardly inclined position, a rectangular frame having two sides, a back and front section, the front end of the two opposite sides of said rectangular frame being adjustably joined between and to the said support braces from about 10 to 25 inches above the bottom of said braces, and the back end of said

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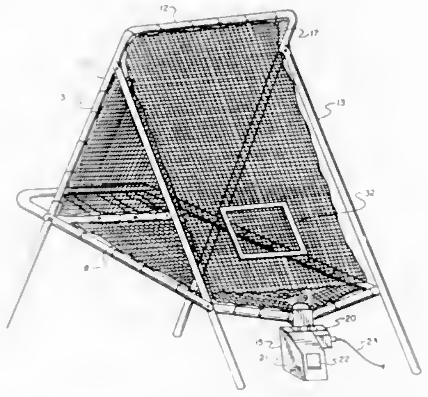
opposite sides being adjustably joined between and to the legs of the inverted U shaped frame at a position so as to have the rectangular frame sloping downward and said back ends of the opposite sides extending beyond the legs and joining the back end of the rectangular frame so as to form a reinforcement section to said frame, and the front section of the rectangular frame being formed in a V shape and being fixedly attached to and within the braces at about 10 to 25 inches from the bottom of said braces, and having means for attaching a ball expelling machine at the point of the V, a tight net being joined to all sides of the rectangular frame with an opening near the point of the V at the front of said frame to permit any ball on the net to drop down the opening, a tight net being attached between the legs of the inverted U shaped frame, and a net being attached to the top of the inverted U shaped frame and loosely hanging down so that the bottom end touches the net on the rectangular frame,



(b) a ball expelling machine being firmly attached to and under the front end of the rectangular frame at the point of the V, said machine comprising a housing with an opening at the top positioned directly under the opening in the net at the point of the V on the front section of the rectangular frame, a power driven wheel in said housing positioned such that the outer circumference edge of the wheel strikes the outside cover of any ball dropping down the opening and forcefully pushes it forward along the inside of the housing, a curved ledge following the contour of the wheel but under the wheel and positioned so as to direct any pushed ball into an outward direction towards an opening in the front side of the housing, an adjustable lever at the end of the curved ledge that can be adjusted to change the slope of the ball as it exits the opening in the housing.

4,883,273
TOY-GAME APPARATUS

Toshio Kobayashi, Chiba Prefecture, Japan, assignor to Asahi Corporation, Tokyo, Japan

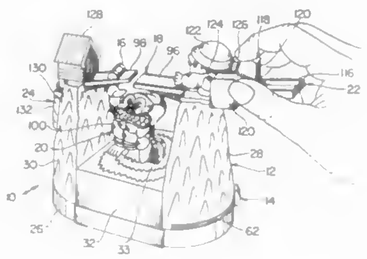
Filed Nov. 18, 1988, Ser. No. 273,222

Claims priority, application Japan, Nov. 21, 1987, 62-178206[U]

Int. Cl.⁴ A63B *67/14;* A63F *9/00*

U.S. Cl. 273—110 10 Claims

1. A toy-game apparatus comprising a base, a timer on said base actuatable for a set period of time, a plurality of game elements, slide means on said base, said slide means having an upper end and a lower end and being operative during said set period of time in a downwardly inclined normal position wherein when said slide means is subtantially stationary a game element positioned thereon at a point adjacent the upper end thereof is gravitationally movable thereon to a point adjacent the lower end thereof, said slide means being movable from the normal position thereof to an interfering position for interfering with the movement of a game element thereon and being further movable to an interrupted position wherein sliding movement of a game element thereon from a point adjacent the upper end thereof to a point adjacent the lower end thereof is prevented, means for moving said slide means between the normal and interfering positions thereof during said set period of time to interface with the movement of game elements thereon and means for moving said slide means to the interrupted position thereof upon the expiration of said set period of time.



4,883,274
GOLF CLUB HEAD WITH VARIABLE CENTER OF GRAVITY

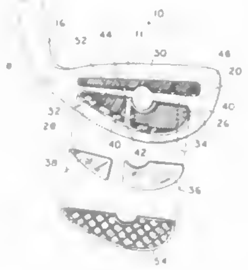
James C. Hsien, 1457 St. James Pkwy., Concord, Calif. 94521

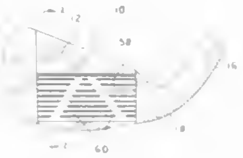
Filed Sep. 15, 1988, Ser. No. 244,480

Claims priority, application Taiwan, Dec. 31, 1987, 76212463

Int. Cl.⁴ A63B *53/08*

U.S. Cl. 273—164 3 Claims





1. A golf club head comprising:
- a substantially vertical hosel adapted for attachment to a shaft;
- said head having horizontal top and sole portions extending between a toe portion and heel portion with an inclined front face in a single plane and curved back face;
- said back face having a contour of variable radii of curvature from a larger radius at the top horizontal portion of the head to a smaller radius of curvature at the horizontal sole portion of the head;
- said back face comprising recesses inset in said back face of larger radius of curvature including one upper long recess and two lower separate shorter recesses with two rims in the same plane and coextensive with and just below the upper recess;
- said lower recesses being capable of retaining a plurality of additive mass means and being completely separated by a vertical partition, the bottom thereof being flat and substantially parallel to the contour of the back face;

- additive mass means for insertion in only said two lower recesses;
- a fourth recess comprising said lower recesses and having in the contour of very large radius of curvature a further rim separated from the plane of the rims of said two lower recesses, said rim of said fourth recess being outside the rims of the two lower recesses in countersunk fashion;
- a cover element for insertion in said fourth recess to cover said additive mass means while being flush with said contour of said back face with said larger radius of curvature; and
- said inclined front face having horizontal lines inscribed thereon and unmachined lines defining a triangle disposed amid said lines.

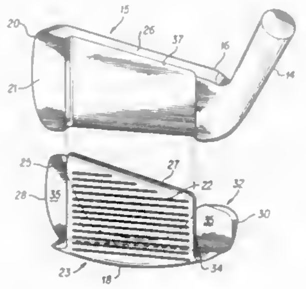
4,883,275
GOLD CLUB IRON HEAD

David D. Boone, El Toro, Calif., assignor to Lynx Golf, Inc., City of Industry, Calif.

Continuation-in-part of Ser. No. 59,212, Jun. 8, 1987, abandoned, which is a continuation of Ser. No. 887,735, Jul. 21, 1986, abandoned. This application Mar. 11, 1988, Ser. No. 167,209

Int. Cl.⁴ A63B *53/04*

U.S. Cl. 273—172 2 Claims



1. A golf club iron head **(10)** defining a hosel **(14)** coupled to a heel portion **(16)**, said heel portion **(16)** being coupled to a toe portion **(20)** by a sole portion **(18)**, and a ball striking surface **(22)** located between said toe **(20)** and heel **(16)**, comprising:
- a first unitary member **(15)** defining the hosel **(14)**, and a front portion of said heel **(16)** and a toe portion **(21)** of said head **(10)**, said first unitary member **(15)** having a recess **(37)** formed between said heel **(16)** and toe **(21)** front portions defining a substantially planar surface, said planar surface of said recess **(37)** being substantially parallel to said striking surface of said head **(10)**;
- a second unitary member **(23)** having (a) a front face member **(27)** defining said ball striking surface **(22)**, (b) said sole **(18)**, and (c) an integral backweight **(32)** extending upward from said sole **(18)** in rearwardly spaced parallel relation to said front face member **(27)** and defining a rear portion of said heel **(30)** and a rear portion of said toe **(28)**, wherein said backweight is substantially continuous from said heel to said toe; said second unitary member **(23)** having a channel **(34)** formed between said backweight **(32)** and said front face member **(27)**;
- said channel **(34)** receiving said first unitary member **(15)** and said recess **(37)** receiving said front face member **(27)** to form a contiguous frontal surface of said head **(10)**, wherein said toe **(21)** and heel **(16)** portions of said first unitary member **(15)** are substantially coplanar with said ball striking surface **(22)** of said second unitary member **(23)**, said front face member **(27)** having an upper edge substantially coplanar with an upper surface of said first unitary member **(15)**;
- the weight density of said second unitary member **(23)** being greater than the weight density of said first unitary member **(15)**;
- whereby said front face member **(27)** is matingly engaged within said recess **(37)** for locking engagement with said first unitary member **(15)** in a transverse direction with respect to a direction line substantially orthogonal to said ball striking surface **(22)**.

4,883,276
GOLF AID

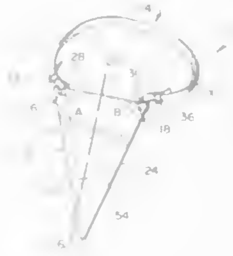
Leo T. Brown, 7 Ridge Drive, Heuwelkruin, KNYSNA, Cape Province, South Africa

Filed Aug. 2, 1988, Ser. No. 227,237

Claims priority, application South Africa, Aug. 4, 1987, 87/5754

Int. Cl.⁴ A63B *69/36*

U.S. Cl. 273—183 B 5 Claims



1. A golf aid which comprises a harness and a structure to the upper part of which said harness is connected, said harness being in the form of a horizontally extending loop which enables said structure to be worn over the chest region with the harness extending around the user's back, the harness being secured to said structure at two horizontally spaced locations, the structure lying in a substantially vertical plane and hanging downwardly from where the harness is connected to it to a downwardly pointing apex which is offset horizontally from a vertical centre line which is equi-distant horizontally from said two locations at which the harness is attached to the structure

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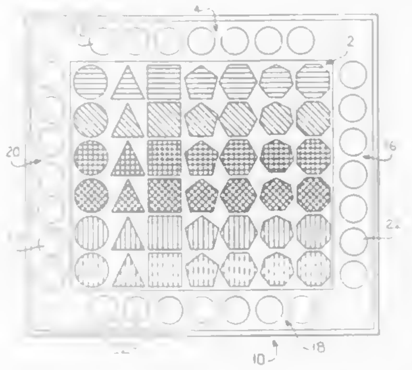
4,883,277
EDUCATIONAL BOARD GAME FOR TEACHING MATHEMATICS AND LOGIC

Thomas J. Laisure, 9113 W. 69th Ter., Merriam, Kans. 66204

Filed Sep. 30, 1988, Ser. No. 252,610

Int. Cl.⁴ A63F *3/06;* G09B *19/22, 19/02*

U.S. Cl. 273—236 2 Claims



1. A method of playing an educational board game comprising the steps of:
- providing a game board having a field of individual indicia thereon;

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generating a random symbol; partially removing a card from a container by an amount and in a manner sufficient to reveal a number fewer than all of a plurality of indicia on the card, each of the indicia of the plurality being identical to one of the indicia in the field, the number of indicia revealed corresponding to the random symbol;

positioning a marker on one of the indicia within the field on the game board to indicate a player's predicition of a designated indicia to be subsequently revealed on the card; and

further removing the partially removed card from the container to reveal further indicia on the card for comparison with the player's choice.

4,883,278

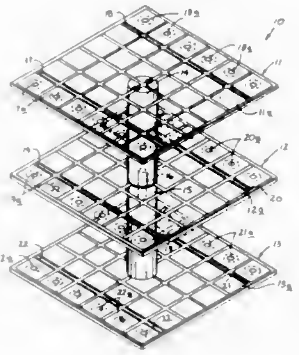
MULTI-LEVEL GAME

Philip A. Scott, 2901 1st St., Marion, Iowa 52302

Filed Aug. 10, 1988, Ser. No. 230,518

Int. Cl.⁴ A63F *3/00*

U.S. Cl. 273—241 **6 Claims**



1. A method of playing a multi-level game by two opposing players comprising,

providing a game board including an upper, central and bottom game board wherein each game board is symmetrical, planar, and vertically aligned with one another, and

providing a first and second set of tokens of different coloration with one set utilized by each of said opposing players, and

providing a six-sided die with each face of said die of a different coloration, and

providing six decks of cards wherein each deck is of a different coloration relative to one another and corresponding to a like coloration on each face of said six-sided die, and

initially positioning said first and second tokens by said opposing players on respective ends of respective upper, central, and bottom game boards, and

each player alternatively rolling said die and thereafter moving a respective token relative to instructions imprinted on a top card selected from one of said six decks consistent with the coloration indicated upon the top face of the die subsequent to rolling said die.

4,883,279

SEALING SYSTEM

Robert C. Sabo, 291 Indian Paintbrush #3, Casper, Wyo. 82604

Filed Sep. 8, 1987, Ser. No. 93,770

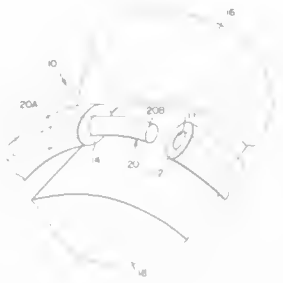
Int. Cl.⁴ F16J *15/18;* **B65Q** *53/00*

U.S. Cl. 277—1 **16 Claims**

7. A sealing system for application around a rotatable shaft extending outwardly from a bearing housing, said system comprising:

(a) a length of hollow flexible tubular sealing material having a longitudinal interior cavity therein;

(b) a length of solid flexible substantially arcuate connecting material having a uniform diameter approximately equal to the diameter of said cavity in said sealing material; said connecting material being adapted to be inserted into said cavity in a manner such that abutting ends of said sealing material are aligned by said connecting material; and



(c) adhesive on said connecting material and on said sealing material for adhering said connecting material in said cavity of said sealing material and for adhering said sealing material to said bearing housing completely around said shaft.

4,883,280

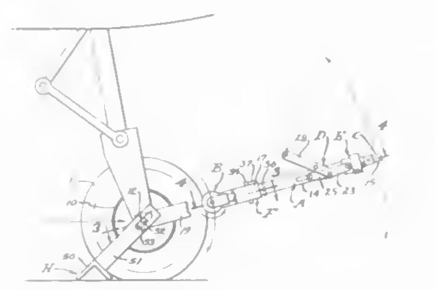
TOWBAR AND COME-ALONG FOR LIGHT AIRCRAFT

Fredrick W. Christian, 10317 Havenhurst, Granada Hills, Calif. 91344

Filed Jun. 16, 1988, Ser. No. 207,220

Int. Cl.⁴ B64F *1/04*

U.S. Cl. 280—3 **10 Claims**



1. A towbar and come-along for ground handling light aircraft and the like having a ground engaging wheel free to rotate on an axle axis, and including;

a tongue extending on a radius from

the axle axis of the wheel,

trunnion means

mounted on said tongue and pivotally attaching the tongue to the wheel axle for manipulation to tow the aircraft,

a slide carried by and rotatable with the tongue,

and ratchet means mounted on an end of the slide and engageable with a periphery of the wheel to rotate the wheel in one direction and rotatable 180° with the tongue to reverse the ratchet means and rotate the wheel in the other direction,

the tongue and ratchet means cooperatively forming a second class lever having its fulcrum at the axle axis of the wheel and resistance to torque at the periphery of the wheel when manual force is applied to rotate the tongue about said axle axis of the wheel.

4,883,281

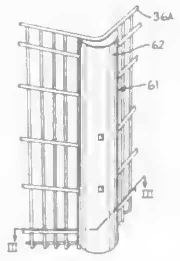
ELASTOMERIC VERTICAL CORNER BUMPER FOR SHOPPING CART

Dewey J. Waterman, Ceresco, Mich., assignor to United Steel & Wire Company, Battle Creek, Mich.

Continuation of Ser. No. 270,362, Nov. 14, 1988, abandoned. This application Apr. 14, 1989, Ser. No. 338,542

Int. Cl.⁴ B62B *3/00*

U.S. Cl. 280—33.992 **9 Claims**



1. In a shopping cart having a wheeled base and an upwardly opening basket mounted on said base in upwardly spaced relationship therefrom, said basket including a front wall which extends between and rigidly joins to a pair of sidewalls and to a bottom wall, said front wall where it joins to the side walls defining a pair of front corners, said front and side walls being of a meshlike construction formed from a plurality of transversely extending rods which intersect and are joined together, said plurality of rods including a plurality of substantially horizontally extending rods which are vertically spaced apart, said plurality of horizontally extending rods including a first rod which defines the upper edge of the side and front walls and a second rod which is generally parallel to the first rod but spaced downwardly therefrom by a small vertical extent, said plurality of substantially horizontal rods including a third rod which extends along the side and front walls and is the lowermost one of said plurality and is spaced upwardly only a small distance above said bottom wall, said plurality of horizontal rods also including fourth and fifth rods which are vertically spaced from one another and are vertically spaced between said second and third rods, and a bumper arrangement attached to said basket in the vicinity of each said front corner, the improvement wherein said bumper arrangement comprises:

a vertically elongated striplike bumper formed of a plastics materials having limited elasticity for permitting elastic deformation due to impacts thereagainst, said bumper being positioned closely adjacent the exterior side of said front corner and extending along substantially the full vertical extent of said corner;

said bumper having a substantially L-shaped cross section defined by a pair of approximately perpendicularly extending leg parts joined by a curved corner part, said bumper having an inner surface which is adapted to abuttingly engage the horizontal rods defining said basket in the vicinity of said front corner, said inner surface having a configuration which closely corresponds to the configuration of said corner so that said bumper closely conforms to said front corner;

said bumper having a plurality of mounting flanges integrally molded therewith and projecting outwardly from said inner surface in generally perpendicular relationship thereto, said plurality of mounting flanges being disposed in generally vertically aligned but vertically-spaced relationship along said inner surface, each said mounting flange being defined by a platelike rib which projects outwardly from the inner surface in the vicinity of the curved part with said rib being integrally joined to and extending between said leg parts, each said mounting flange having an opening extending vertically therethrough substantially in alignment with similar openings formed in the other mounting flanges;

said plurality of mounting flanges including a pair of upper mounting flanges which are vertically spaced apart by a slot which opens horizontally, said slot having a vertical width which approximately equals the diameter of said second rod for accommodating said second rod therein, the uppermost one of said pair of upper mounting flanges being disposed closely adjacent but spaced downwardly a small distance from the upper end of said striplike bumper;

said plurality of mounting flanges including a pair of lower mounting flanges which are vertically spaced apart by a slot which opens horizontally and has a vertical height which approximately equals the diameter of said third rod for accommodating said third rod therein, the lowermost one of said lower mounting flanges being disposed closely adjacent the lower end of said striplike bumper; and

a vertically elongate rod projecting through the aligned openings in said mounting flanges for confining rounded corners of said horizontal rods between said elongate mounting rod and the inner surface of said bumper, said elongate rod having upper and lower ends which respectively project upwardly beyond and downwardly below the respective uppermost upper mounting flange and the lowermost lower mounting flange, and means fixedly associated with the projecting upper end of said mounting rod for engaging the uppermost upper mounting flange to retain the mounting rod in position.

4,883,282

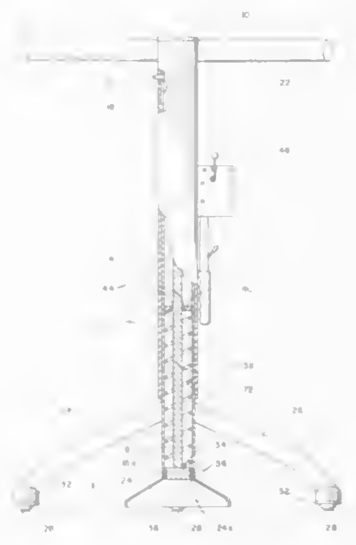
APPARATUS FOR SUPPORTING THE HANDICAPPED OR ELDERLY

Isobel T. Wolf, Rte. 3, Box 540, Dunn, N.C. 28334, and Clifton Baldwin, 4493 Chisolm Rd., John's Island, S.C. 29455

Filed Mar. 7, 1988, Ser. No. 165,178

Int. Cl.⁴ B62B *7/08*

U.S. Cl. 280—43.24 **14 Claims**



1. A dressing aid for assisting in the support of an elderly or handicapped individual while that individual is being dressed, comprising:

(a) an elongated upright frame structure having upper and lower portions;

(b) grasping means mounted about the upper end portion of the upright frame structure for supporting an individual, such as an elderly or handicapped person, while the individual grasps and holds on to the same, the grasping means including a handle secured to the upper end portion;

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(c) stabilizing means formed about the lower portion of the frame structure for stabilizing the same;

(d) a suction cup mounted to the lower portion of the frame structure and being movable between a position engaged with the underlying floor and a position spaced above the underlying floor;

(e) means for selectively creating a vacuum within the suction cup when the same is engaged with the floor such that the suction cup anchors the entire dressing aid to the floor in order that the individual may rest and support themself thereon while being dressed;

(f) the means for creating the vacuum further including means for automatically releasing the vacuum within the suction cup in order that the dressing aid can be moved from one location to another and

(g) retractable wheel means associated with the stabilizing means for moving between extended and retracted positions such that when a vacuum is created in the suction cup and the suction cup is engaged with the floor, the retractable wheel means may assume a retracted position while the stabilizing means engages the floor and stabilizes the upright frame structure.

4,883,283

IMPROVED HITCH AND SUSPENSION FOR ONE-WHEEL CYCLE TRAILERS

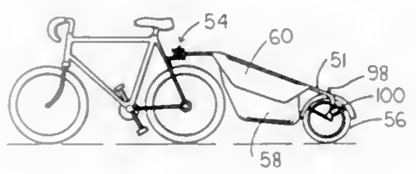
S. Richard Hazelett, P.O. Box 8, Colchester, Vt. 05446; Bernhard Bender, Essen-Heidhausen, Fed. Rep. of Germany, and John V. Savage, Hinesburg, Vt., assignors to S. Richard Hazelett, Colchester, Vt.

Filed Jul. 1, 1988, Ser. No. 214,482

The portion of the term of this patent subsequent to Nov. 8, 1990, has been disclaimed.

Int. Cl.^{4} B62D *63/08*

U.S. Cl. 280—204 3 Claims



1. For use in conjunction with a one-wheel trailer having a normal upright position and adapted to be pulled by the frame of a "cycle," such as a bicycle, motorcycle or moped, universal-joint trailer hitch apparatus comprising:

a trailer frame for said one-wheel trailer having a transverse elongated frame member with a cylindrical rounded surface,

said elongated frame member extending horizontally transverse to the length of said one-wheel trailer when said trailer is in said normal upright position,

mounting means including attachment means for attaching said mounting means to the frame of the cycle for pulling the one-wheel trailer,

upper and lower wafer-like annular sector bearing elements positioned one above the other in spaced parallel relationship,

each of said sector bearing elements having a plurality of radially extending cylindrical concave bearing surfaces in juxtaposition with each other,

said upper sector bearing element being positioned above said elongated frame member with the concave bearing surface thereof engaged down against the cylindrical rounded surface of said elongated frame member,

said lower sector bearing element being positioned below said elongated frame member with the concave bearing surface thereof engaged up against the cylindrical rounded surface of said elongated frame member being journaled between the respective concave bearing surfaces of said upper and lower sector bearing elements for providing a transverse pivot axis,

said upper sector bearing element having an upwardly projecting centrally located trunnion with an upwardly facing thrust surface encircling said trunnion,

said lower sector bearing element having a downwardly projecting centrally located trunnion with a downwardly facing thrust surface encircling said latter trunnion,

said two trunnions being aligned for defining a vertical pivot axis, said mounting means having a hole for receiving the trunnion of said lower sector bearing element and having a surface complementary with the thrust surface which encircles said lower sector trunnion for engaging against said thrust surface,

a cap plate having a hole for receiving the trunnion of said upper sector bearing element and having a surface complementary with the the thrust surface which encircles said hinge means pivotally connecting one end of said cap plate to said mounting means, and

clamping means for urging the other end of said cap plate toward said mounting means.

4,883,284

POSITION DETECTING DEVICE FOR A MOTORCYCLE SIDE STAND

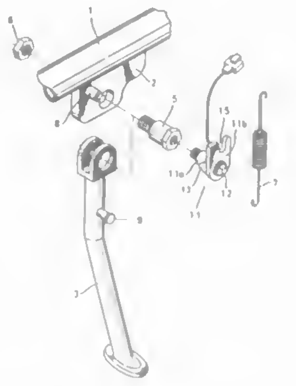
Yoshihiro Nakazawa; Masayuki Kudou; Satoshi Iijima; Katsuiki Sanada, and Yoshihiro Matsuo, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 4, 1988, Ser. No. 267,267

Claims priority, application Japan, Dec. 25, 1987, 62-331582

Int. Cl.^{4} G62H *1/02*

U.S. Cl. 280—293 23 Claims



1. A position detecting switch for use with a vehicle side stand mechanism that includes a mounting bracket attached to the frame of said vehicle and a side stand bar mounted on said bracket by a pivot for pivotal movement between a projecting position and a receiving position, said switch comprising:

stationary contact means fixed with respect to said mounting bracket; and

movable contact means concentrically engageable with said stationary contact means and being movable coincident with said pivotal movements of said side stand bar.

4,883,285

REMOVABLE TRAILER HITCH

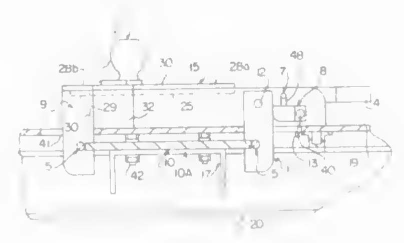
Harlan W. Hohrman, HCR 32, Box 74, Fort Pierre, S. Dak. 57532

Filed Dec. 27, 1988, Ser. No. 289,814

Int. Cl.^{4} B60D *1/06*

U.S. Cl. 280—491.5 15 Claims

1. A trailer hitch adapted to be removably mounted on the bed of a towing vehicle that has a mounting member mounted to the vehicle frame beneath the bed with the mounting member front and rear transverse end portions beneath longitudinally spaced front and rear latch members slots that extend vertically through the bed, comprising a hitch frame having a front end, an intermediate and a rear end portion, a rear latch member fixed to the hitch frame rear end portion to extend a substantial distance below the hitch frame, the rear latch member being adapted to extend downwardly through the rear slot and having a forwardly opening notch for receiving the mounting member rear end portion therein, a front latch member adapted to extend downwardly through the front slot and being movable in the front slot between a release position and a latching position to latchingly engage the mounting member front end portion, the front latch member having a rearwardly opening notch for receiving the mounting member therein when the front member is in its latching position and being spaced from the mounting member when the front latch member is in its release position, and first means for movably mounting the front latch member on the hitch frame adjacent to the hitch frame front end portion and selectively moving the front latch member between its positions.



4,883,286

TOE PIECE FOR SAFETY SKI BINDING

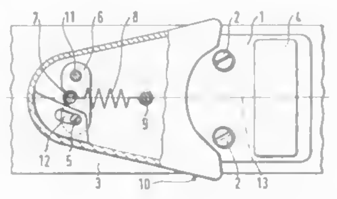
Heinz Hornschemeyer, Oberammergau, Fed. Rep. of Germany, assignor to Marker Deutschland GmbH, Eschenlohe, Fed. Rep. of Germany

Filed Aug. 2, 1988, Ser. No. 227,147

Claims priority, application Fed. Rep. of Germany, Aug. 3, 1987, 3725709

Int. Cl.^{4} A63C *9/085*

U.S. Cl. 280—629 7 Claims



1. A toe piece for holding a ski boot in a safety ski binding wherein said toe piece is pivotable laterally against a biasing force when excessive side forces occur, said toe piece comprising:

a base plate mountable to the upper surface of a ski;

a first pivot pin mounted to said base plate, said first pivot pin being disposed to one side of the longitudinal axis of said ski and being perpendicular to the surface thereof;

holding means for holding the sole of said boot, said holding means including an elongated, arcuate opening for receiving one end of said first pivot pin therein,

a second pivot pin mounted to said holding means for movement therewith, said second pin being parallel to said first pin and disposed on the other side of said longitudinal axis;

a generally elongated link member pivotally mounted at one end to said first pivot pin and pivotally mounted at the other end to said second pivot pin, said link member extending generally transversely to said longitudinal axis; wherein said soleholder is symmetrically disposed with respect to said longitudinal axis; and

a stop member fixed to said base plate disposed along the longitudinal axis of said ski operable to cause said soleholder to pivot about said first pivot pin when said boot exerts an outward force toward said one side of said ski, and to pivot about said second pivot pin when said boot exerts an outward force toward said other side of said ski.

4,883,287

DOUBLE LINK TYPE SUSPENSION SYSTEM WITH STABILIZER BAR

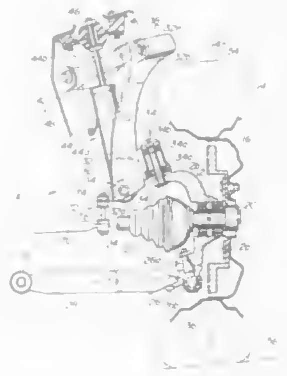
Takuya Murakami, Atsugi; Yoichiro Kato, and Kenji Terauchi, both of Zama, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Oct. 18, 1988, Ser. No. 259,193

Claims priority, application Japan, Oct. 19, 1987, 62-159811[U]; Oct. 19, 1987, 63-159812[U]

Int. Cl.^{4} B60G *15/00*

U.S. Cl. 280—665 39 Claims



1. A double link type suspension system for a vehicle, comprising:

a knuckle for rotatably supporting a wheel of the vehicle;

a lower control arm for swingably connecting a lower section of said knuckle and side of a vehicle body, said lower control arm being movably connected through a first joint to the knuckle lower section;

an upper control arm movably connected to the side of the vehicle body;

an extension member for movably connecting an upper section of said knuckle and said upper control arm, said extension member being jointed to the knuckle upper section to be rotatable around an axis line passing through said first joint; and

a stabilizer bar having an end section which is connected to said extension member at a position inside said axis line relative to the vehicle body.

4,883,288

SUSPENSION STRUT WITH SIDE LOAD SUPPORT

Bernard J. Finn, Traverse City, and Gene R. Hawkins, Warren, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 20, 1988, Ser. No. 260,338

Int. Cl.^{4} B60G *3/06, 11/62*

U.S. Cl. 280—672 5 Claims

1. A suspension for an automotive vehicle comprising a suspension strut for mounting a road wheel assembly to body structure in the vehicle, said strut having an elongated housing containing a damping medium attached at one end to said road wheel assembly, suspension spring means associated with said housing for the spring suspension support of said body structure relative to the road wheel assembly, piston means operatively mounted for reciprocating movement within said hous-

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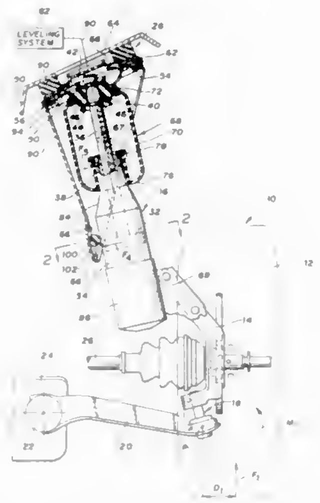
ing strut to control the action of said suspension spring means during operation of the vehicle along a support surface, said piston means mounted for reciprocating movement in said housing and through said medium, a rod guide supported by said housing, a piston rod operatively connected to said piston means and extending from said piston means through said rod



guide into connection with said body structure, a bracket attached to said vehicle body extending along said housing and rolling spring means between said bracket and said housing for applying a side load to said housing for effectively neutralizing side loads on said rod guide and piston means from the support of said road wheel by said strut.

4,883,289

AXLE ASSEMBLY FOR A MOTOR VEHICLE

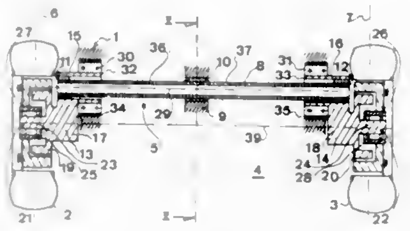
Max A. Sardou, Arpajon, France, assignor to Thor S.A., Saint-Soupplets, France

Filed Oct. 5, 1988, Ser. No. 253,466

Claims priority, application France, Dec. 17, 1987, 87 17625; Jan. 27, 1988, 87 00912; Oct. 5, 1988, 87 13709

Int. Cl.⁴ B60G *11/20;* B60B *37/10;* F16F *1/16*

U.S. Cl. 280—684 29 Claims



1. An axle assembly for a vehicle including a chassis, at least two wheels suitable for contacting the ground, means for associating said two wheels with said chassis and for holding them in two substantially parallel planes, said means comprising a unit beam, having opposite ends, means for preventing a point situated substantially between the two ends of the beam from rotating relative to said chassis, two arms, means for fixing each arm substantially at one of its ends to a respective one of the two ends of the beam, and means for rotatably mounting respective ones of said two wheels to the opposite ends of said arms, wherein two portions of the beam situated on respective sides of said point are made of a material such that each of them has anisotropic torsion elasticity in the opposite direction.

4,883,290

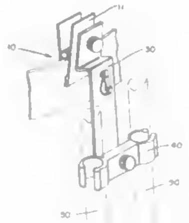
SKI POLE CARRIER

Kevin Landa, 769 Georgia Ave., Reading, Pa. 19605

Filed Feb. 15, 1989, Ser. No. 311,476

Int. Cl.⁴ A63C *11/00*

U.S. Cl. 280—814 8 Claims



1. A carrier for carrying ski poles on the person comprising
(a) clip means for attachment to the person;
(b) clamp means for holding a pair of ski poles snugly in the carrier;
(c) rotation means attached to the clamp means to alter rotationally the longitudinal axis of the ski poles relative to the person when held in the carrier;
(d) offset bracket means between the clip means and clamp means for offsetting the poles from the person.

4,883,291

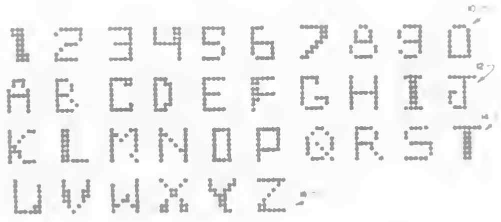
DOT MATRIX FORMED SECURITY FONTS

John A. Robertson, Chillicothe, Ohio, assignor to Telesis Controls Corporation, Chillicothe, Ohio

Filed May 11, 1988, Ser. No. 192,842

Int. Cl.⁴ B42D *15/00*

U.S. Cl. 283—117 30 Claims



1. The combination of an article of manufacture having a surface bearing identifying characters of an alphabetical and numerical set produced in a form adapted to be recognized by human vision in accordance with their shapes and orientations, said characters being formed of character shape defining pixels selected from a predetermined available constant matrix having a predetermined number of rows of pixel positions extending from a top row to a bottom row, wherein each character is formed as a unique combination of a predetermined constant and equal number of said pixels.

4,883,292

CORROSION RESISTING STEEL PIPE AND METHOD OF MANUFACTURING SAME

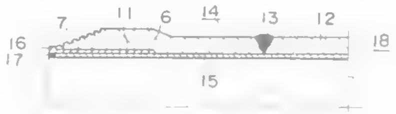
Takanori Kuroki, Munakata, Japan, assignor to Kuroki Kogyosho Co., Ltd., Fukuoka, Japan

Continuation of Ser. No. 140,929, Dec. 22, 1987, abandoned, which is a continuation of Ser. No. 689,995, Jan. 9, 1985, abandoned. This application Feb. 10, 1989, Ser. No. 310,003

Claims priority, application Japan, Jan. 20, 1984, 59-7256; Apr. 18, 1984, 59-76664

Int. Cl.⁴ F16L *9/14*

U.S. Cl. 285—55 4 Claims



1. A corrosion resisting steel pipe comprising an outer steel pipe member lined with an inner liner of a corrosion resisting material, characterized in that said steel pipe has a unit length and consists of an outer steel pipe member and an inner pipe member made of titanium metal;
said outer steel pipe member consisting of an end tube and a general tube joined to said end tube;
said inner pipe member comprising a short tube of titanium metal pipe member metallurgically bonded inside of an end portion of said end tube and a long tube of titanium metal pipe member metallurgically joined by heat welding to an end portion of an inside portion of said short tube;
wherein said short tube of titanium metal is fitter closely outside of a portion of said long tube of said titanium metal pipe member.

4,883,293

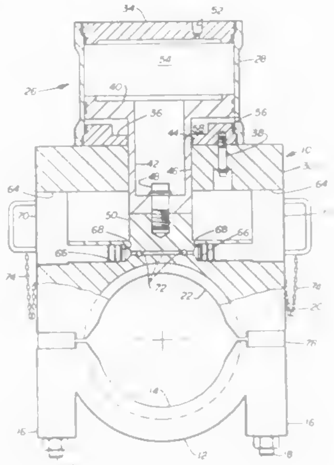
CLAMP CONNECTOR

John E. Lawson, Woking, England, assignor to Cameron Iron Works USA, Inc., Houston, Tex.

Filed Sep. 27, 1988, Ser. No. 249,730

Int. Cl.⁴ F16L *21/06*

U.S. Cl. 285—364 1 Claim



1. A connector clamp for connecting and securing flanges on abutting ends of tubular members together in sealing relationship comprising
a first arcuate clamping member having opposed annular lips for engaging flanges of abutting tubular members,
a second arcuate clamping member having opposed annular lips for engaging the flanges of abutting tubular members,
a pressure responsive actuator,
said actuator including
a first portion connected to one of said clamping members,
a second portion connected to a plate,
tension members connecting said pressure responsive actuator to one of said arcuate clamping members,
said plate having said tension members secured thereto,
actuation of said pressure responsive actuator in one direction moving said clamping members into tight clamping engagement with the flanges of the abutting tubular members and to preload said tension members,
means coacting with said pressure responsive actuator and said clamping members to maintain said tension members under the desired preload condition independent of the pressure on said actuator,
actuation of said actuator to close said clamping members moving said first portion into spaced relationship from said plate,
said coacting means being sized to be positioned in the space between said plate and said one of said clamping members,
opposed openings in said one of said clamping members,
means for supplying fluid under pressure to said opposed openings, and
a piston on each of said coacting means sized for sliding and sealing position within said openings when installed to maintain the preset tension load in said tension members.

4,883,294

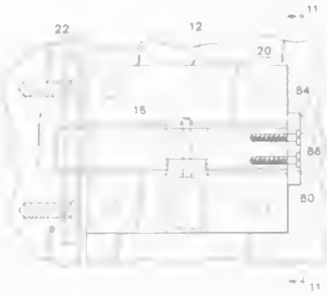
TAMPER-PROOF LOCKING DEVICE

Byron L. Goodspeed, 1111 Holcomb Rd., Kelso, Wash. 98626

Filed May 16, 1988, Ser. No. 194,333

Int. Cl.⁴ E05C *1/04*

U.S. Cl. 292—148 4 Claims



1. A device used in connection with a padlock having a body and a shackle wherein the shackle may be brought into locking engagement with the body, the device being adapted to lock a movable element against movement relative to a stationary element, the device comprising:
an elongate deadbolt adapted to fit within the shackle of the padlock such that the deadbolt may translate along its longitudinal axis with respect to the padlock when the shackle is not in locking engagement with the body and is held substantially stationary with respect to the padlock when the shackle is in locking engagement with the body;
a keeper adapted to slibably receive the deadbolt;
a base plate having mounting holes therethrough;
a top plate having threaded holes extending partially therethrough; and
bolts positionable through at least one of said movable and stationary elements and through the mounting holes for threaded engagement with the threaded holes,
wherein at least one of said base plate and said top plate includes a first channel defining a first pathway adapted to slidably support said deadbolt to allow said deadbolt to translate along its longitudinal axis therein and includes a second channel defining a second pathway which intersects the first pathway and is adapted to receive the pad-

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lock while restricting motion of the padlock in directions parallel to the longitudinal axis of said deadbolt.

4,883,295

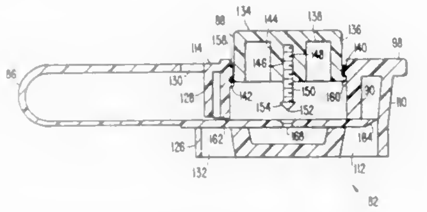
TAMPER DETERRENT ASSEMBLY

David A. Kesselman, 5494 Winter Creek Rd., Santa Rosa, Calif. 95404

Continuation-in-part of Ser. No. 773,079, Sep. 6, 1985, Pat. No. 4,699,408. This application Oct. 9, 1987, Ser. No. 106,360

Int. Cl.⁴ B65D *27/30*

U.S. Cl. 292—307 R 22 Claims



1. A tamper deterrent assembly comprising:

a body member having wall means defining a locking space which is enclosed except for an open end thereof, first and second strip receiving means formed on said wall means in opposed relationship on opposite sides of said locking space and in spaced relationship to the open end of said locking space, at least said first strip receiving means being formed by a slot which extends through said wall means to provide an opening to said locking space,

a closure means having a locking strip engagement means projecting outwardly therefrom;

mounting means formed on said body member for retaining said closure means within said locking space and releasably retaining said closure means in a first position wherein said locking strip engagement means is spaced from said first and second strip receiving means in the direction of the open end of said locking space, said closure means being operative to prevent access to said locking space through the open end thereof and being movable from said first position relative to said wall means into said locking space in the direction of said first and second strip receiving means in response to pressure applied to said closure means sufficient to release said closure means from said mounting means, said closure means being freely movable to a locking position after said release, and

an elongated locking strip including a first portion of a length greater than the distance across said locking space between said first and second strip receiving means, said first portion being formed for insertion into the slot forming said first strip receiving means so as to extend across said locking space to said second strip receiving means and including receiver means operative to receive said locking strip engagement means when the first portion of said elongated locking strip is inserted through the slot forming said first strip receiving means and extends across said locking space into said second strip receiving means and said closure means is moved from said first position to move said locking strip engagement means past said first and second strip receiving means to a locking position, said closure means being positioned in said locking space completely within the confines of said wall means when said locking strip engagement means is in the locking position.

4,883,296

HANDLE ASSEMBLY

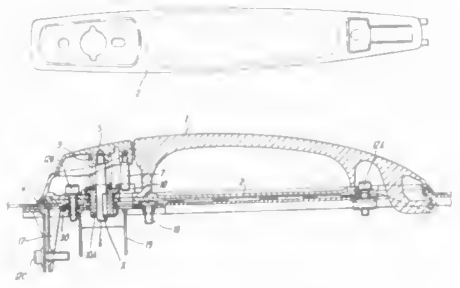
Stephen A. Laurie, Crewe, England, assignor to Rolls-Royce Motor Cars Limited, Crewe, England

Filed Jan. 25, 1988, Ser. No. 148,019

Claims priority, application United Kingdom, Jan. 28, 1987, 8701875

Int. Cl.⁴ E05C *21/00*

U.S. Cl. 292—336.3 10 Claims



1. A handle assembly for a closure member comprising a handle having a portion mounted to be resiliently moved in relation to the remainder of the handle between a first inoperative position and a second operative position in which a closure member to which the handle is attached may be opened, and means for connecting the handle assembly to the closure member, from externally of the closure member, access to said means being prevented by the handle when the handle is so connected, said means for connecting including a restrain preventing removal of the portion of said restraint being accessible only when the closure member is in an open position; release of said restraint permitting access for further manipulating of said means for connecting.

4,883,297

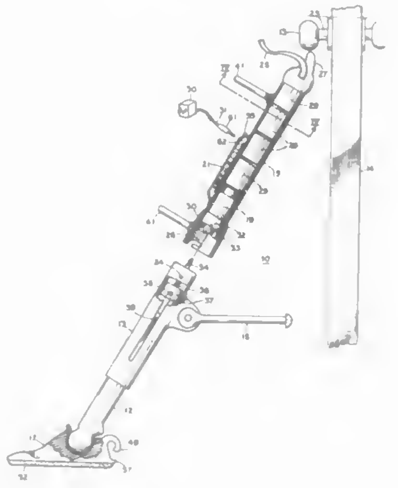
POWER OPERATED DOOR GUARD

Daniel R. Smith, 32 W. Anapamu St., #351, Santa Barbara, Calif. 93101

Filed Sep. 30, 1988, Ser. No. 251,316

Int. Cl.⁴ E05C *19/18*

U.S. Cl. 292—339 10 Claims



1. A security brace for doors having doorknobs or the like for rooms having floors comprising:

(a) a telescoping brace having relatively moveable parts;

(b) means attached to one end of the brace for holding the brace to a doorknob;

(c) a foot attached to the other end of the brace for engaging a floor;

(d) thread and nut means for extending and retracting the brace;

(e) an electric motor connected to one of said thread and nut to rotate one with respect to the other;

(f) an arm extending from the brace to contact a door to hold the brace at an angle to the door.

4,883,298

BOLT ASSEMBLY FOR MOTOR-VEHICLE DOOR LATCH

Frank Kleefeldt, Heiligenhaus, Fed. Rep. of Germany, assignor to Kiekert GmbH & Co. Kommanditgesellschaft, Heiligenhaus, Fed. Rep. of Germany

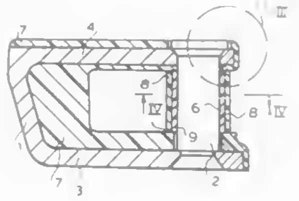
Division of Ser. No. 203,245, Jun. 6, 1988, Pat. No. 4,834,435. This application Oct. 31, 1988, Ser. No. 265,492

Claims priority, application Fed. Rep. of Germany, Jul. 28, 1987, 8710288[U]

The portion of the term of this patent subsequent to May 30, 2006, has been disclaimed.

Int. Cl.⁴ E05C *21/00*

U.S. Cl. 292—341.12 1 Claim



1. A bolt assembly for a motor-vehicle latch wherein the assembly is secured to a doorpost and coacts with a latch fork, the assembly comprising:

a metallic U-shaped yoke having an inner flange adapted to be secured to the doorpost and an outer flange spaced therefrom, forming a fork-receiving space therewith, and having an outer surface turned away from the inner flange;

a metallic bolt fixed to the two flanges and extending generally perpendicularly therebetween;

a nonmetallic resilient sleeve surrounding the bolt between the flanges;

a nonmetallic cover overlying at least the outer surface of the outer flange; and

a second sleeve surrounding the first-mentioned sleeve and of a material substantially more resistant to wear than the first sleeve; the cover being molded on the yoke, and forming a separate element complementarily fitted to the yoke.

4,883,299

BUMPER

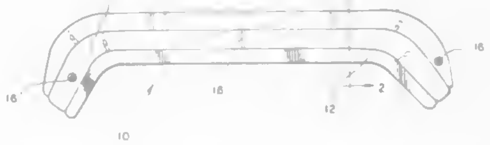
George D. Bonar, 333 Bowery, New York, N.Y. 10003

Filed Apr. 7, 1988, Ser. No. 178,540

Int. Cl.⁴ B60R *19/10*

U.S. Cl. 293—110 4 Claims

1. A cushioned bumper for a vehicle, comprising a plurality of resilient inflated members attached to the outer portion of a conventional vehicle bumper, said inflated members having interconnecting valves therebetween to equalize pressures in all members upon impact of one or more members with another vehicle or other object.



4,883,300

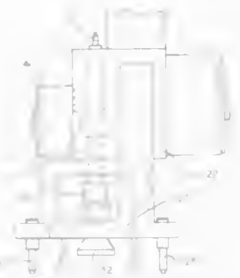
END EFFECTOR FOR IC CHIP HANDLING

Minoru Akagawa, Fremont, Calif., assignor to Intelmatec Corporation, Fremont, Calif.

Filed Oct. 13, 1988, Ser. No. 257,324

Int. Cl.⁴ H05K *13/00*

U.S. Cl. 294—2 2 Claims



1. An end effector for automatically removing an IC chip from a frame-like holder therefor provided with holes at specified positions and a plurality of tongue-like protruding pieces extending in specified parallel direction and normally in contact with said IC chip to together securely support said IC chip with respect to said holder but elastically bendable away from said IC chip, said end effector comprising

downward protruding locating pins which fit said holes to thereby correctly position said end effector with respect to said holder,

a pair of pincer-like grippers, a plurality of downward shoving pins protruding downwardly from said grippers so as to be able, when said locating pins are inserted into said holes, to press and thereby bend said tongue-like protruding pieces to release said IC chip from said tongue-like protruding pieces,

a tubular member disposed substantially vertically, a lower end thereof being directly above said IC chip when said locating pins are inserted into said holes, and an upper end thereof being connectable to vacuum pump means for providing suction at said lower end,

gripper moving means for moving said grippers horizontally and linearly towards or away from each other, and

tube moving means for vertically moving said tubular member up and down.

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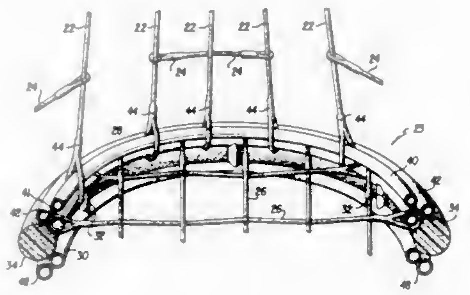
4,883,301
CUSHION FOR A PERSONNEL/CARGO NET

Billy G. Pugh, Corpus Christi, Tex., assignor to Billy Pugh Company, Inc., Corpus Christi, Tex.

Filed Aug. 1, 1988, Ser. No. 226,884

Int. Cl.⁴ B66C *1/16*

U.S. Cl. 294—77 7 Claims



1. In a personnel/cargo net having at least one spreader ring, and said at least one spreader ring is a base spreader ring comprising top and bottom rings secured together in a vertically spaced relationship, and a buoyant pad surrounding each of said top and bottom rings, wherein the improvement comprises, at least one separate fluid-containing shock absorbing means for absorbing landing-or collision-shock experienced by the base spreader ring, and being located above said buoyant pad.

4,883,302
CAR TRUNK SECURITY DOOR

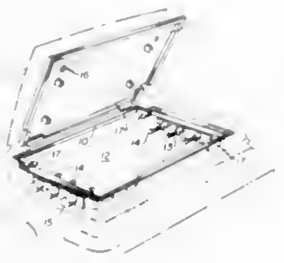
Andrew H. McCain, 170 N.E. 163rd St., N. Miami Beach, Fla. 33162

Filed Mar. 15, 1988, Ser. No. 168,240

Claims priority, application United Kingdom, Mar. 3, 1987, 8704976

Int. Cl.⁴ B60R *5/04*

U.S. Cl. 296—37.1 4 Claims



1. A demountable security door system for a car trunk comprising a frame with an opening and longitudinal ends, said frame being substantially two dimensional and mountable within said car trunk with a trunk opening, bottom wall, and sidewalls at opposite lateral ends of said trunk, a door attachable to said frame and constructed and arranged with buttresses to cover said frame opening, frame fastening means comprising a plurality of rods of adjustable lengths extending longitudinally of said frame and rotatably secured to each end of said frame for adjusting the length of said rods, said frame spaced from said trunk's bottom wall with pivoting, swiveling foot pads fastened to the distal ends of each of said rods for self alignment of said pads against said sidewalls of said car trunk and to distribute outward stress caused by extending the rods against said side walls to hold said frame at any position of height securely within said trunk below a lid for said car trunk.

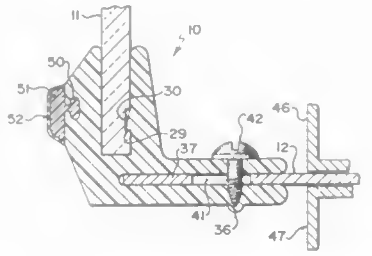
4,883,303
DEFLECTOR SCREEN FOR MOTOR VEHICLE

Edward J. Gross, Ile de Chenes, Canada, assignor to Sundawn Inc., Winnipeg, Canada

Filed Jun. 16, 1987, Ser. No. 62,835

Int. Cl.⁴ B60J *1/20*

U.S. Cl. 296—91 13 Claims



1. A deflector screen apparatus for attachment adjacent the front of the hood of a motor vehicle comprising an extruded strip member and defining a generally upstanding front surface, a channel portion rearwardly of the front surface defining a substantially vertical channel extending longitudinally along the strip member, a pane of screen material mounted in said channel and extending upwardly therefrom, an attachment portion extending rearwardly from said channel portion for receiving mounting means by which the strip member can be attached to the vehicle, said attachment portion comprising a pair of parallel flanges extending rearwardly from said channel portion and defining therebetween a substantially horizontal channel receiving a plate member therein, wherein an upper one of said flanges includes a groove in an upper surface thereof extending longitudinally therealong, and wherein a lower one of said flanges includes a projecting rib in a lower surface thereof and lying the same vertical plane as the groove whereby a screw can be screwed into said upper flange at said groove, through said horizontal channel and into said rib to maintain said plate member in said channel.

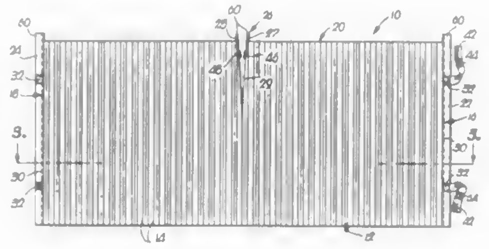
4,883,304
VEHICULAR WINDOW SUN SHIELD

Everett E. Elliott, 825 S. 5th St., Atchison, Kans. 66002

Filed May 31, 1988, Ser. No. 200,760

Int. Cl.⁴ B60J *3/02*

U.S. Cl. 296—97.8 2 Claims



1. A sun shade for a windshield of a vehicle, wherein said vehicle includes side wall sections extending along lateral edges of said windshield and wherein said vehicle includes a rear view mirror and a mounting post connecting said mirror to said windshield, said shade comprising:

a collapsible panel comprised of a flexible membrane having a plurality of pleats for collapse of said panel along a longitudinal axis, said pleats extending transversely to said longitudinal axis,

said panel presenting a pair of opposed, lateral marginal edge portions and a normally upper central portion extending

longitudinally intermediate said lateral marginal edge portion when said panel is in an extended orientation,

said upper central portion including a transversely extending channel for receiving said mounting post when said shade is installed with said longitudinally extending axis in a generally horizontal orientation, said opposed lateral marginal edge portions positioned adjacent said side walls and said upper central portion positioned adjacent said post;

means for releasably securing each of said marginal edge portions of said panel to a respective one of said wall sections of the vehicle; and

stiffener structure including three elongated, flexible elements for supporting said panel in an extended orientation adjacent said windshield,

two of said three elements being connected to respective ones of said marginal edge portions of said panel and extending generally parallel to said pleats along said respective edge portions,

the remaining stiffener element being secured to said panel and extending along at least one side of said channel for reinforcing said panel in the vicinity of said mirror, said remaining stiffener element including two upper, separable portions joined at lower ends; and including means for releasably coupling together said upper separable portions at a location above the mirror post.

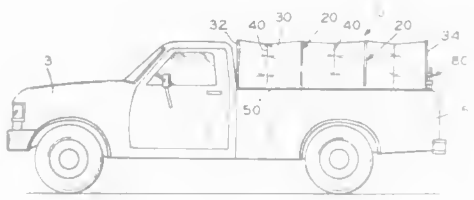
4,883,305
COLLAPSIBLE CANOPY FOR PICKUP TRUCKS

Paul F. Horton, 9393 Hackamore Dr., Boise, Id. 83709

Filed Feb. 6, 1989, Ser. No. 306,040

Int. Cl.⁴ B60J *7/24*

U.S. Cl. 296—105 16 Claims



1. A collapsible canopy for a vehicle with cargo bed comprising:

elongated guide means positioned along each side of the cargo bed;

a plurality of slide members mounted within said guide means for reciprocal movement therein;

a plurality of rigid canopy stays; each of said stays substantially arch-shaped in construction having a pair of laterally spaced and upright leg members and a transverse member supported by said legs; each of said leg members attached to a respective slide for reciprocal movement along said guide means;

a flexible fabric cover engaging said rigid stays to define an arch-like covering for the bed when in the extended canopy mode;

a plurality of elastic bands, each of said elastic bands engaging said fabric cover between and in parallel relationship with said rigid stays for drawing said rigid stays into close apposition with one another in the collapsed canopy mode and to maintain a taut cover in the extended canopy mode; and

latch means for holding said rigid stays in a spaced, front to rear relationship, when in the extended canopy mode.

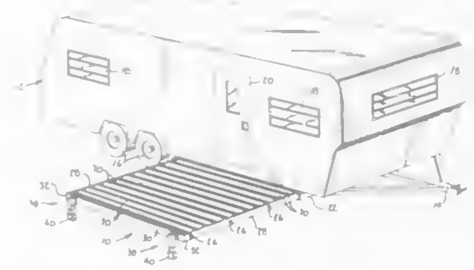
4,883,306
DECK FOR MOBILE HOMES

Michael E. Stucky, Attica, Kans., assignor to E Z Dek, Inc., Fort Scott, Kans.

Filed Sep. 9, 1987, Ser. No. 94,516

Int. Cl.⁴ B60R *15/00*

U.S. Cl. 296—162 10 Claims



1. A deck for attachment to the underside of a mobile home, said deck comprising:

a platform presenting a generally horizontal deck surface and having a leading edge; and

means for mounting said platform on the underside of the mobile home in a manner permitting the platform to move between a retracted position wherein the platform is substantially beneath the underside of the mobile home and an extended position wherein the platform extends laterally from the mobile home with said leading end spaced away from same, said platform comprising a plurality of wooden deck planks; and

a rigid frame presenting thereon a plurality of parallel channels each open at the top and each having a size and shape to receive and retain one of the deck planks therein with the planks cooperating to provide a substantially continuous and generally horizontal deck surface.

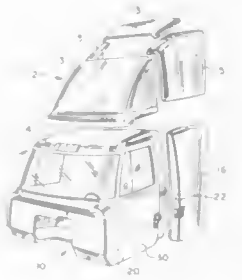
4,883,307
REAR QUARTER PANEL FORMING INTEGRAL CAB EXTENDER

Jay P. Hacker, Fort Wayne, Ind., and Rodney A. Laukhuf, Haviland, Ohio, assignors to Navistar International Transportation Corp., Chicago, Ill.

Filed Jun. 10, 1988, Ser. No. 204,822

Int. Cl.⁴ B62D *35/00*

U.S. Cl. 296—180.2 11 Claims



1. In combination with a cab of a tractor-trailer, a cab side extender for reduction of air drag, said cab extender comprising a unitary structure attached to said cab and comprising a rear-quarter-panel-forming portion including a rear wall, a side wall and a front wall, the side wall and rear wall of said rear-quarter-panel-forming portion forming an integral aerodynamic fairing, the side wall having a rearwardly and laterally outwardly flared sidewall-forming surface and the rear wall having a rearwardly laterally outwardly flared rear-wall-form-

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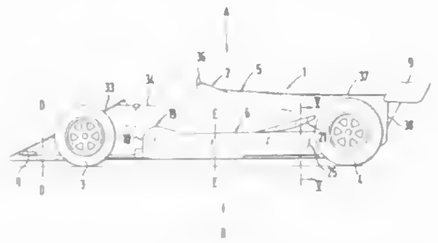
ing surface which extends from a vertical mounting surface engaging the cab and converges with a rear end edge of said sidewall-forming surface to form the fairing.

4,883,308

SINGLE SEATER MOTOR VEHICLE

Norbert Singer, Vaihingen, Fed. Rep. of Germany, assignor to Dr. Ing. h.c.F. Porsche AG, Stuttgart, Fed. Rep. of Germany
Filed Sep. 1, 1988, Ser. No. 239,397
Claims priority, application Fed. Rep. of Germany, Sep. 4, 1987, 3729558
Int. Cl.⁴ B60R *27/00*
U.S. Cl. 296—185 20 Claims



1. A single seater motor vehicle with essentially freely exposed wheels, comprising a streamlined body extending in the vehicle longitudinal direction and resembling an aircraft body, the streamlined body including a base body means of a cross section at least shapewise approximately in the shape of a door arch and having negative lift surface means extending transversely to the vehicle longitudinal direction provided in the front and rear and lateral body means of approximately rectangular cross section, the lateral body means being provided adjacent the front wheels with inlet openings for radiators of an internal combustion engine, the internal combustion engine being arranged covered by the base body means between the front wheels and rear wheels but more adjacent the rear wheels, the base body means having—as viewed in top plan view—a configuration tapering toward the front and rear in such a manner that it has its greatest width in a cross plane between the wheel axes but adjacent the rear wheels, the base body means having—as viewed in bottom plan view—a configuration tapering toward the front and rear in such a manner that it has its largest width in a cross plane within the area of the front wheels, the base body means including at its bottom side a boundary wall that extends substantially parallel to the road surface over a considerable partial area of this bottom side, the lateral body means being provided at their bottom sides adjacent the front wheels with concave guide sections which extend away from substantially horizontal boundary wall means, the boundary wall means being continued at the bottom side of the lateral body means to the rear of the guide sections, on the one hand, horizontally up to the rear wheels and, on the other, being continued as through-flow channels, the through-flow channels rising from the boundary wall means and extending inside of the rear wheels, and the lateral body means being constructed in the manner of a wing profile above the inlet openings.

4,883,309

FRONT STRUCTURE FOR MODULAR VEHICLE BODY

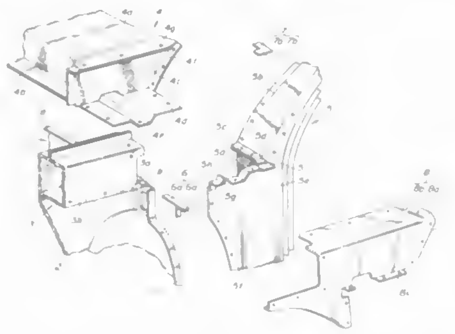
Kenichi Miyazaki, Sagamihara; Katsumi Nakamura, Fujisawa, and Taro Hagiwara, Sagamihara, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama City, Japan
Filed Apr. 29, 1988, Ser. No. 188,507
Claims priority, application Japan, Apr. 30, 1987, 62-107387
Int. Cl.⁴ B62D *25/00*
U.S. Cl. 296—194 15 Claims

1. A front structure for a modular vehicle comprising:

a dash lower panel having at the upper end thereof a first horizontal flange, said first horizontal flange having a first recess at an end thereof;

a front pillar having at a front waist portion thereof a second horizontal flange, said second horizontal flange having a second recess at an end thereof;

a patch plate extending between said first and second flanges and cooperating with same to form a smooth continuous joining surface, said patch plate being disposed in said first and second recesses so that an outer surface of said plate is substantially flush with adjacent outer surfaces of said first and second flanges;



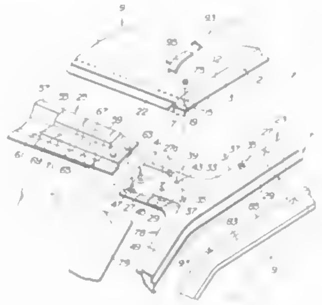
sealant adhesive applied to said joining surface; and

a cowl box having a cowl side panel and a side portion projecting outwardly from said cowl side panel, said side portion being laid upon said joining surface and secured to same by interposing therebetween said sealant adhesive.

4,883,310

ROOF STRUCTURE FOR MODULAR VEHICLE BODY

Kenichi Miyazaki, Sagamihara, and Tadahiko Morigaki, Hatano, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan
Filed Mar. 25, 1988, Ser. No. 173,402
Claims priority, application Japan, Mar. 26, 1987, 62-70484
Int. Cl.⁴ B60D *25/06*
U.S. Cl. 296—210 13 Claims



1. A roof structure for a vehicle body comprising:

roof rail means having a plurality of joining surfaces which are nearly flush with and extend consecutively from each other;

a sealant adhesive applied to said joining surfaces of said roof rail means;

a roof assembly having at the periphery thereof a joining surface lapped on said joining surface of said roof rail means with said sealant adhesive being interposed therebetween; and

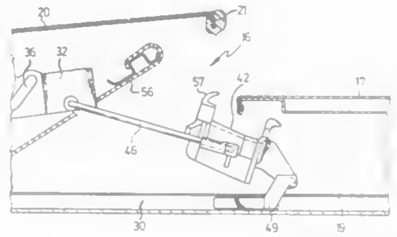
mechanical fastening means for mechanically fastening said joining surface of said roof assembly to said joining surfaces of said roof rail means;

wherein said roof assembly includes a roof panel with a front end, said roof assembly further having a moulding secured to said front end of said roof panel to cover an upper end portion of a windshield glass.

4,883,311

SLIDING AND LIFTING ROOF FOR VEHICLES

Georg Kohlpaintner, Martinsried, and Horst Bienert, Gauting, both of Fed. Rep. of Germany, assignors to Webasto AG Fahrzeugtechnik, Gauting, Fed. Rep. of Germany
Filed Nov. 28, 1988, Ser. No. 276,660
Claims priority, application Fed. Rep. of Germany, Nov. 26, 1987, 3740129
Int. Cl.⁴ B60J *7/05*
U.S. Cl. 296—213 20 Claims



1. A sliding and lifting roof for vehicles of the type having a rigid cover mounted on guide tracks extending parallel to side edges of a roof opening formed in a fixed roof surface, said cover, in a closed position, closing said roof opening, being selectively raisable, at a rear edge thereof, above the fixed roof surface, and being slidably displaceable, by lowering of its rear edge, below the fixed roof surface; said roof further having a displaceable rain gutter which underlies the rear edge of the roof opening when the cover is raised or closed, the rain gutter being connected with a tilt assembly in a manner causing the rain gutter to assume an inclined position, in which a forward edge thereof is elevated, when the cover is raised, said tilt assembly having control levers, at each side of the roof opening, a rearward end area of said control levers being fixedly connected with the rain gutter and a forward end area of the control levers being pivotably attached to the cover at a fixed pivot point which is closer to the rear edge of the cover than the forward edge of the cover; wherein the rain gutter is pivotably connected at each side of the roof opening by a sliding element that is slidably displaceable along the guide tracks and provides a pivot axis for the rain gutter which is located at a distance rearward of the rain gutter and at a fixed predetermined vertical height above the guide tracks; said position of the rain gutter pivot axis and the location of the fixed pivot points of the control levers being selected in a manner enabling a roof headliner to be connected with the cover by being slid below the rain gutter from a position disposed rearwardly of the rain gutter.

4,883,312

PANEL IN-PART LOCATORS

Lawrence J. Kulis, Sterling Heights, Mich., assignor to United Technologies Automotive, Inc., Dearborn, Mich.
Continuation of Ser. No. 938,317, Dec. 5, 1986, abandoned, which is a division of Ser. No. 802,509, Nov. 26, 1985, Pat. No. 4,664,865. This application Jul. 8, 1988, Ser. No. 216,472
Int. Cl.⁴ B60J *7/00;* B32B *3/30*
U.S. Cl. 296—214 5 Claims

1. A headliner panel for use with a motor vehicle and for use with an assembly process including part locators for aligning headliner panels during various process steps comprising a contoured molded panel of predetermined thickness at selected locations and configured to the dimensions of the motor vehicle, said panel defining a locator notch extending from one surface of the panel inwardly, said locator panel notch being positioned at a location having sufficient thickness that the locator notch does not extend through the panel, said notch defining a cavity fill area of panel material extending into the locator notch, and said notch serving as an opening for mating with part locators for assuring positive alignment of the panel for subsequent manufacturing operations.

4,883,313

VEHICLE SUNROOF

Dennis Bradley, Stafford, England, assignor to Arrowin Limited, England
Filed Aug. 16, 1988, Ser. No. 232,699
Claims priority, application United Kingdom, Feb. 10, 1988, 8803067
Int. Cl.⁴ B60J *7/04*
U.S. Cl. 296—216 7 Claims

5. A vehicle sunroof comprising:

a frame, said frame being mountable in a roof aperture of a vehicle and having a front and a rear edge and a pair of fixed elongate side support members; and

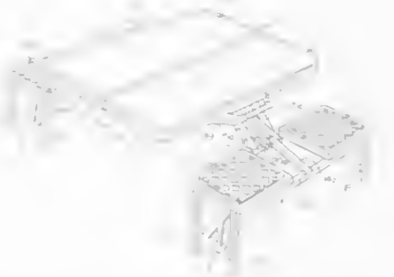
a slidable panel, said panel being supported in said side support members of said frame, said side support members being adapted to allow rearwards sliding of said panel;

each of said side support members extending beyond said rear edge of said frame ,said side support members each having a rear opening, and wherein said panel is adapted to slide to an open position cantilevered from said rear openings.

4,883,314

FOLDING TABLE AND SEAT ASSEMBLY

Chul H. Sakong, 11 Nowon-Dong, 3-Ka, Buk-Ku, Daegu, Rep. of Korea
Filed Apr. 15, 1988, Scr. No. 182,082
Int. Cl.⁴ A47B *39/00*
U.S. Cl. 297—159 4 Claims



1. A folding table and seat assembly collapsible into a self-contained carrying case which comprises:

a table including two pivotally attached table top halves for opening and folding together,

seat assemblies including an inside frame portion nearer to said table and an outside frame portion further from said

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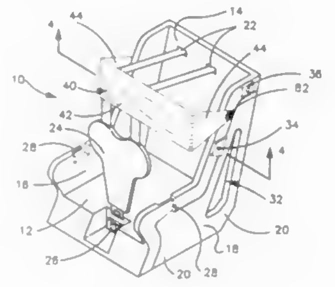
table, wherein said seat assemblies are operatively connected to said table for opening up and collapsing into said table top halves, and said seat assemblies include a plurality of legs pivotally attached thereto,
table support assemblies for connecting said table to said seat assemblies, said table support assemblies each including:
a first table support member pivotally connected to said outside frame, said first table support member extending to support said table from said seat assemblies, and
a pair of second table support members pivotally connected to both sides of said first table support member and to said inside frame,
table support connecting members operatively connecting said first table support member to said seat assemblies, said table support connecting members each including:
a first connecting member pivotally connected to said inside frame, and
a second connecting member pivotally connected to said first table support member and said first connecting member, wherein said first connecting member has a bent flange and said second connecting member has a slot for receiving said bent flange,
seat support members formed in said seat assemblies and including a lower arm pivotally connected between a pair of said legs and a tubular upper arm pivotally connected to said lower arm and to said seat, said lower arm has a channel for operatively receiving said tubular upper arm,
tensible ring members having an elliptical configuration and a pair of projecting members disposed within said tubular upper arm for operatively engaging said pair of projecting members in a pair of apertures disposed in the tubular upper arm,
fixing pins mounted to said channel of the lower arm for tightly engaging in a pair of apertures disposed in the channel when the seat member is opened,
hinge plates, attached to edge portions of said table, having pivot pins for pivotally moving said table top halves in open and closed positions, said hinge plates each including a hook member for locking one hinge plate together with the other hinge plate,
handle members mounted on said table top halves, and
a pair of locking members slidably attached to said handle members for locking said handle members together, said locking member including a hollow member which has a pair of vertical protrusions disposed therein for locking in a pair of vertical grooves disposed in the surface of handle portions of said table, whereby the folding table and seat assembly is readily portable for hand-carrying when collapsed, stable when opened and assembled for use, and simple to manufacture.

4,883,315

VISOR APPARATUS MOUNTED ON PROTECTIVE SEAT FOR CHILDREN

James L. Ferguson, P.O. Box 853, Monument, Colo. 80132
Filed Jun. 16, 1988, Ser. No. 207,736
Int. Cl.⁴ A47C *7/10*
U.S. Cl. 297—184 **28 Claims**

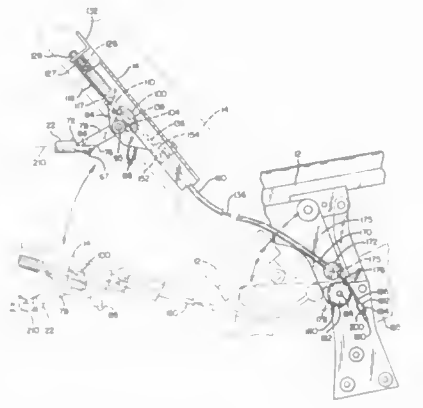


1. In a protective seat for children adapted to be secured on a seat of a vehicle by releasable restraint belts of the vehicle, said protective seat including a support shell having longitudinal length and transverse width, said support shell operative to receive and support a child during travel, a support frame positioning and supporting the support shell on a seat of the vehicle and child restraining means releasably securable about a child received by the support shell for keeping the child in the protective seat apparatus in the event of a collision, sudden stop of the vehicle and the like, said support shell having a seat portion, a back portion and lateral side edge portions, the improvement comprising a visor including a central portion and opposite end portions with each said end portion having a mounting hole and mounting means on each lateral side edge portion, each said mounting means for mounting each end portion to the protective seat apparatus and including a mounting post projecting laterally outwardly from the protective seat apparatus and a securing member releasably received and secured on the respective mounting post whereby each mounting post is matably received by a respective mounting hole so that the end portions engage the mounting post and each end portion is retained in a selected position with said central portion extending across the support shell in spaced part relation thereto so that the central portion is positioned over a child placed in said protective seat.

4,883,316

DENTAL INSTRUMENT DELIVERY SYSTEM

George K. Austin, Jr., Newberg, and Mathew H. Parlier, Sheridan, both of Oreg., assignors to A-Dec, Inc., Newberg, Oreg.
Continuation-in-part of Ser. No. 101,797, Sep. 28, 1987, abandoned. This application Sep. 20, 1988, Ser. No. 245,675
Int. Cl.⁴ A47C *7/62*
U.S. Cl. 297—191 **25 Claims**

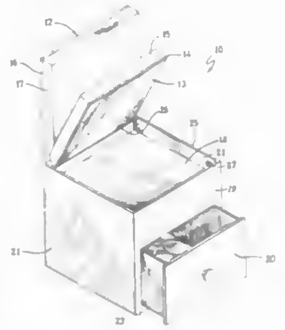


1. A dental instrument delivery system for use with a dental chair having a seat and a back rest tiltable about a fixed horizontal axis, said system comprising:
retaining means pivotably attached to said back rest for movement about a second horizontal axis holding a plurality of dental instruments in an accessible position during a dental procedure;
control means connected between said retaining means and said seat for pivoting said retaining means relative to said back rest with the tilting of said back rest so as to maintain said retaining means in a predetermined relation with respect to the horizontal irrespective of the position of said back rest; and
safety release means operatively connected between said control means and said back rest for enabling said retaining means to move upward relative to said back rest when said retaining means is accidentally lowered downward onto a stationary object, whereby said safety release means prevents damage to said retaining means.

4,883,317

MULTI-PURPOSE CHAIR

Lizzie B. Davenport, RR. 1, P.O. Box 278, Pine Knot, Ky. 42635
Filed Oct. 17, 1988, Ser. No. 258,805
Int. Cl.⁴ A47C *7/62*
U.S. Cl. 297—193 6 Claims

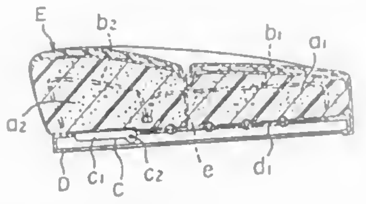


1. A multi-purpose chair, comprising, in combination:
a base means;
a seat means;
hinge means pivotally connecting the seat means and the base means;
support means provided by the base means;
the base means having support means providing that the seat means is supported between a generally horizontal seat position for providing a support seat for a person, and an upraised position spaced from the support means;
the base means being provided with a support tray supported by the base means below the seat position of the seat means, and providing article-storage of a first type below the seat means;
the base means provided with a generally upright panel means extending above the seat position of the seat means, providing a supportive back for a person seated on the seat means;
the said panel means being provided with receiver means for providing article-storage of a second type rearwardly on the back of the panel means.

4,883,318

VEHICLE SEAT

Mitsuhiro Adachi, Akishimashi, Japan, assignor to Tachikawa Spring Co., Ltd., Tokyo, Japan
Continuation of Ser. No. 878,312, Jun. 25, 1986, abandoned. This application Oct. 13, 1987, Ser. No. 105,995
Int. Cl.⁴ A47C *3/00*
U.S. Cl. 297—234 **6 Claims**

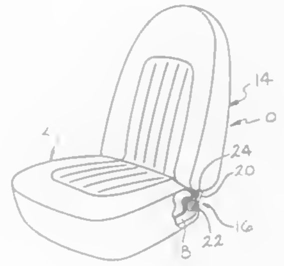


1. A vehicle seat comprising:
(a) a cushion member made of a foam material, said cushion member including a buttocks support section and a (peripheral) thigh support section, wherein both said buttock support section and said (peripheral) thigh support section are integrally formed with each other;
(b) a shape-retaining frame-like member for retaining the shape of said cushion member, said shape-retaining member being wholly embedded within said cushion member and comprising a fixed frame-like element located in said buttocks support section of said cushion member and a movable frame-like element located in said (peripheral) thigh support section of said cushion member, the lateral edges of fixed and moveable elements being bent upwardly to conform to the peripheral contour of said cushion, and said movable element being pivotally connected for rotation to said fixed element so as to be movable vertically relative thereto; and
(c) means for raising and lowering said movable frame-like element and said (peripheral) thigh support section of said cushion member therewith, said means being located at the bottom portion of said (peripheral) thigh support section, whereby said (peripheral) thigh support section can be pivotally adjusted up and down by vertical rotation with respect to said buttocks support section while maintaining a continuous sitting surface on said cushion member.

4,883,319

SELF-LOCKING SPACER BUSHING

Glenn Scott, Ann Arbor, Mich., assignor to Hoover Universal, Inc., Ann Arbor, Mich.
Filed Dec. 16, 1988, Ser. No. 285,653
Int. Cl.⁴ B60N *1/02*
U.S. Cl. 297—354 **7 Claims**



1. In a vehicle seat assembly having a generally horizontal seat frame member and a generally upright back frame member, means including a hinge pin connecting said back frame member to said seat frame member to enable pivotal movement of one frame member about a pivot axis relative to the other frame member, a bushing assembly telescoped over said hinge pin, said bushing assembly comprising:
a pair of coaxial sleeve members each having an annular portion forming a bore therethrough centered on said axis and at least one tang portion extending axially along said bore from said annular portion;
retaining means on each of said tang portions of each one of said pair of sleeve members for engaging said annular portion of the other one of said pair of sleeve members to interlock said sleeve members together; and
shoulder means on each of said annular portions engageable with said one of said frame members for maintaining said one frame member in a position between said annular portions of said sleeve members to limit relative movement of said frame members when said frame members are connected by said hinge pin passing through said bore.

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4,883,320
SEAT STRUCTURE

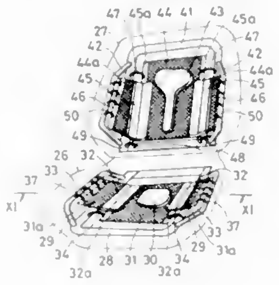
Satoshi Izumida, and Katsumi Kitamura, both of Ayase, Japan, assignors to Ikeda Bussan Co., Ltd., Ayase, Japan

Filed Jul. 13, 1988, Ser. No. 218,265

Claims priority, application Japan, Jul. 17, 1987, 62-107582[U]

Int. Cl.^{4} A47C *7/00*

U.S. Cl. 297—452 7 Claims



1. A seat structure comprising:

a seat frame;

a back frame;

sheet-like springs supported by said seat frame and by said back frame;

support panels fixed on each sheet-like spring for supporting selected portions of a person seated on the seat structure;

portions extending continuously from sides of each of said sheet-like springs;

reinforcing panels connected to said seat frame and to said back frame, each of which is curved slightly upward and fixed on a border between each of said sheet-like springs and each of said extended portions;

a strap-like rim piece fixed to an outer side of each of said extending portions; and

side support frames fixed to said seat frame and said back frame and to which said rim pieces are hooked.

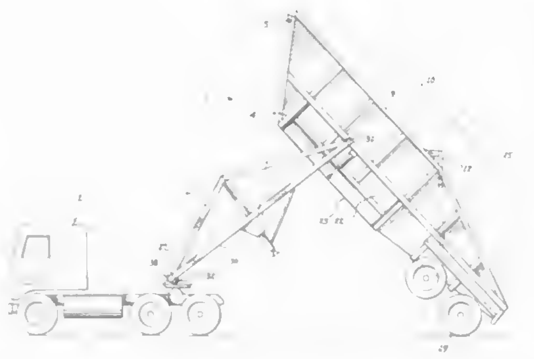
4,883,321
COMBINATION REAR DUMP AND BOTTOM DUMP SEMI TRAILER

Wallace D. Voigt, 5985 Sunnyside Rd., SE, Salem, Oreg. 97302

Continuation-in-part of Ser. No. 856,676, Apr. 25, 1986, Pat. No. 4,733,451. This application Dec. 30, 1987, Ser. No. 139,680

Int. Cl.^{4} B60P *1/56*

U.S. Cl. 298—17.7 4 Claims



1. A combination rear dump and bottom dump trailer apparatus, comprising:

attaching means to attach said trailer apparatus to a truck to pull said trailer apparatus;

hopper means for holding cargo, said hopper means having a front end means a rear end means, two side means connecting said front end means and said rear end means, and a bottom means, said front end means, side means, rear end means and bottom means forming a container for said cargo;

rear dump means for allowing dumping of cargo through said rear end means of said hopper means said rear dump means comprising a rear chute means for allowing said cargo to slide out of said hopper means while said front end means of said hopper means is elevated;

bottom dump means for allowing dumping of cargo through said bottom means of said hopper means, said bottom dump means comprising:

  bottom door means for discharging cargo through said bottom means of said hopper means; and

  at least one power assisted operable door opening means for moving said bottom door means between open and closed positions, said bottom dump means being under said hopper means; and

bottom dump power assist means to apply power to said bottom dump means.

4,883,322
MINING AND CONVEYING APPARATUS

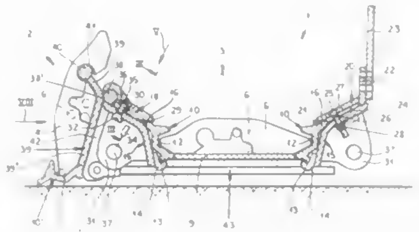
Günter Blumenthal, Westerbolt; Heinz Kunzer, and Kurt Plaga, both of Herne, all of Fed. Rep. of Germany, assignors to Bochumer Eisenhutte Heintzmann GmbH & Co. KG, Bochum, Fed. Rep. of Germany

Filed Dec. 15, 1988, Ser. No. 284,976

Claims priority, application Fed. Rep. of Germany, Dec. 19, 1987, 3743239

Int. Cl.^{4} F21C *25/56*

U.S. Cl. 299—34 16 Claims



1. In an apparatus for mining a mineral seam and for conveying said minerals in the mine longitudinal direction comprising a trough-like conveyor portion assembled from a plurality of pan-like members, a basin-like digging portion pivotally attached vertically to the upper edge of said conveyor portion on the breast wall side of said apparatus which with regard to the length of a pan of said digging portion is balanced relative to the length of a pan-like member of said conveyor portion and a chain conveyor guided positively in said conveyor portion and in said digging portion incorporating a plurality of digging tools and carrier members, the improvement wherein:

each of said pan-like members of said conveyor portion comprises two guide pieces which are mirror images of each other and which form a channel attached to each other by a base plate, said guide pieces engaging and fitting with a bottom side centering strip in a plurality of comparatively short members distributed over the length of said pan-like member of said conveyor portion which are parts of two-legged bent plates extending beyond said guide pieces and are clamped releasably with top side clamping strips between said bent plates and a plurality of clamping plates screwable to said bent plates;

each of said trough parts of said digging portion extends from an unequal-legged bent basin-like plate, a guide bead being provided on the upper longitudinal edge of said basin-like plate and another guide piece identical with said guide piece of said conveyor portion attached to the lower longitudinal edge of said basin-like plate;

a substantially circular cross section strip is attached to the vertex of both legs of said basin-like plate, which is clamped between said bent plate on said breast wall side and said clamping plates are screwed thereon so as to be pivotable; and

a plurality of coupling members and a plurality of cross-pieces with mounting recesses are fastened in the vicinity of the screws for said clamping plates under said bent plates.

4,883,323
LONGWALL MINING MACHINE FOR THE MINING OF THICK MINERAL SEAMS

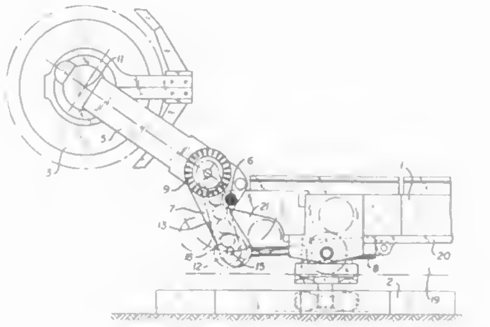
Friedhelm Henrich, Bochum, and Werner Hellmuth, Dortmund, both of Fed. Rep. of Germany, assignors to Gebr. Eickhoff Maschinenfabrik und. Eisengieberel mbH, Fed. Rep. of Germany

Filed Oct. 24, 1988, Ser. No. 261,363

Claims priority, application Fed. Rep. of Germany, Oct. 29, 1987, 3736609

Int. Cl.^{4} E21B *25/10*

U.S. Cl. 299—42 6 Claims



1. A drum cutter mining machine for releasing material from a thick mine seam while traversed along a conveyor, said drum cutter mining machine including the combination of:

a machine body including body portion traversing said conveyor above a material transportation portion while moving back and forth along said conveyor;

a support arm pivotally connected by pivotal to said machine body at an end thereof for leading and trailing with respect to movement of the machine body along said conveyor;

a cutting drum rotatably supported by an extended end portion of said support arm for releasing material from the mine seam;

a drive motor for rotating said cutting drum, said drive motor being supported above said conveyor by said support arm for allowing passage of debris on the conveyor beneath the drive motor and said body which bridges the conveyor;

a jib secured to a surface of said drive motor which is turned away from the support arm for support thereby;

an auxiliary cutting drum rotatably mounted at an extended end of said jib which projects from the drive motor;

gear means for drivingly interconnecting said drive motor and said auxiliary cutting drum;

said jib having an extended length such that the auxiliary drum is situated thereby below the axis of pivotal movement formed by said pivot when said support arm is in a central position to its range of pivotal movement ranging between operation of the cutting drum at the mine roof and at the mine floor; and

means supported by said machine body and connected to said support arm for pivoting said support arm to locate the cutting drum carried thereby for operation at the roof of the mineral seam and at other times at the floor of the mineral seam, said auxiliary cutting drum being concurrently positioned by operation of said means from a position below the pivotal axis to operating positions where the operating height of the auxiliary cutting drum above the conveyor is substantially the same independently of whether the cutting drum is operating at the roof or the floor of the coal seam.

4,883,324
SUPPORT BLOCK FOR TRACK ADJUSTMENT WHEELS

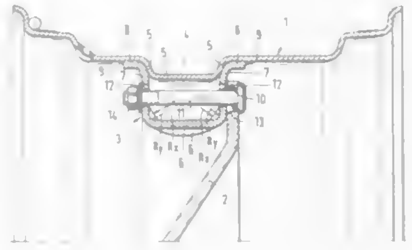
Willi Fuchs, Hennef, and Werner Kermelk, Mnch, both of Fed. Rep. of Germany, assignors to Lemmerz-werke KGaA, Koenigswinter, Fed. Rep. of Germany

Filed May 1, 1989, Ser. No. 345,295

Claims priority, application Fed. Rep. of Germany, Jun. 25, 1988, 3821533

Int. Cl.^{4} B60B *23/12*

U.S. Cl. 301—9 TV 17 Claims



1. A support block for track adjustable wheels having felloes and wheel dishes, the block comprising:

two profile members, each having a lower edge and first and second ends; and a profile bar having first and second end regions and an intermediate region, and joining said lower edges of the profile members to form a substantially U-shaped cross-section;

along the intermediate region, the profile bar and each profile member meet at a first inner radius of curvature;

in said first and second end regions the profile bar is arched away from the profile members, and the bar has a second inner radius of curvature in said end regions which is greater than said first inner radius of curvature;

the first and second ends of the profile members being connectable to the felloes.

4,883,325
ANTI-LOCK BRAKE CONTROL SYSTEM FOR MOTOR VEHICLES

Haruki Shimanuki, Kasukabe; Takao Maki, Kitakatsushika, and Yoshio Takahashi, Ohmiya, all of Japan, assignors to Akebono Brake Industry Co., Ltd., Japan

Filed Feb. 9, 1989, Ser. No. 308,823

Claims priority, application Japan, Feb. 12, 1988, 63-28924

Int. Cl.^{4} B60T *8/82*

U.S. Cl. 303—96 13 Claims

1. An anti-lock control system for motor vehicles wherein a respective wheel speed Vw of the motor vehicle is detected, a computed vehicle speed Vv approximate to the real vehicle speed is calculated on the basis of the detected wheel speeds; a reference wheel speed Vr is set up which follows said wheel speed Vw with a predetermined speed difference ΔV and decelerates from a point of time when the deceleration of the wheel speed Vw becomes equal to a predetermined value; and reduction of the brake hydraulic pressure is started at a point of time when the decelerating wheel speed Vw becomes equal to the reference wheel speed Vr, said anti-lock control system comprising:

a first means for setting up first and second threshold values

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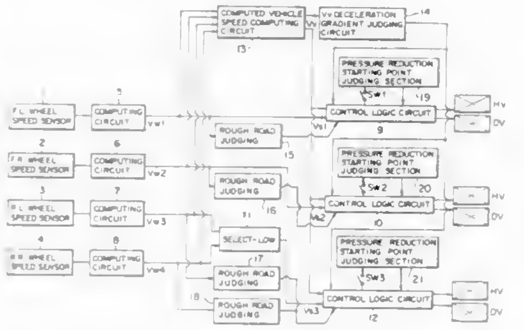
Vv1 and Vv2 which follow said computed vehicle speed Vv with predetermined speed differences ΔV1 and ΔV2, said first threshold value being higher than said second threshold value;

a second means for measuring a time period T during which said wheel speed Vw which accelerates and decelerates in repetition reciprocates once between said first and second threshold values Vv1 and Vv2; and



a third means for changing said reference wheel speed Vr to a second reference wheel speed Vr′ on the basis of a predetermined speed difference ΔV′ which is greater than said speed difference ΔV when it is detected that the time period T is shorter than said predetermined time period T1.

4,883,326

VEHICLE BRAKING SYSTEM FOR DRIVE WHEELS, HAVING MEANS FOR DELAYING COMMENCEMENT OF BRAKE PRESSURE CHANGE

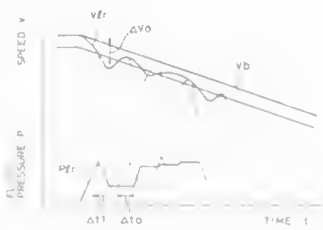
Tatsuo Sugitani, Mishima; Kiyoyuki Uchida, Susono, and Hideo Inoue, Yamakita, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Japan

Filed Mar. 3, 1988, Ser. No. 163,784

Claims priority, application Japan, Mar. 11, 1987, 62-55583

Int. Cl.⁴ B60T *8/58, 8/64*

U.S. Cl. 303—110 8 Claims



1. A braking system including a hydraulically operated brake for braking a drive wheel of a motor vehicle driven by a drive system, comprising:

slip-detecting means for detecting an amount of slip of said drive wheel and producing output signals indicative of the detected amounts of slip of the drive wheel;

pressure-regulating control means connected to said slip-detecting means, for increasing or decreasing a fluid pressure to be applied to said brake in response to each output signal whose value indicates a pressure-increase or pressure-decrease condition which requires an increase or decrease in said fluid pressure, respectively, whereby the amount of slip of said drive wheel is maintained within an optimum range; and

delay means operative to reduce a tendency of resonance of the drive system by commanding said pressure-regulating control means to delay commencement of pressure-increasing control, upon the establishment of at least one of a plurality of occurrences of said pressure-increase condition and irrespective of the magnitude of said fluid pressure at a point of time at which the at least one pressure-increase condition is established, said delay to continue for a predetermined time duration from said point of time such that during said delay, no pressure-increasing control is effected, said pressure-regulating control means commencing the delayed pressure-increasing control to increase said fluid pressure, upon expiration of aid predetermined time duration.

4,883,327

HYDRAULIC ANTI-LOCK BRAKING SYSTEMS FOR VEHICLES

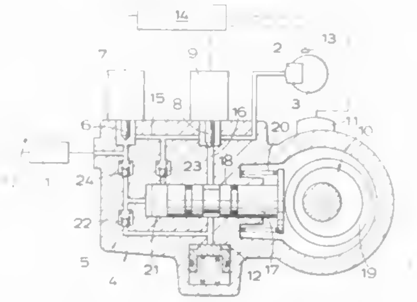
Glyn P. R. Farr, Warwickshire, England, assignor to Lucas Industries, Great Britain

Filed Jan. 19, 1989, Ser. No. 299,402

Claims priority, application United Kingdom, Jan. 30, 1988, 8802091

Int. Cl.⁴ B60T *8/40, 13/70*

U.S. Cl. 303—116 11 Claims



1. An hydraulic anti-lock braking system for a vehicle comprising a brake on a wheel of the vehicle, an hydraulic master cylinder for supplying hydraulic fluid under pressure to said brake to apply said brake, modulator means for modulating the supply of pressure fluid from said master cylinder to said brake in accordance with the behaviour of said braked wheel, said modulator means comprising fluid storage means comprising an expansion chamber, a first control valve located between said master cylinder and said brake and movable between a first open position to provide communication between said master cylinder and said brake and a second closed position to isolate said brake from said master cylinder, a second control valve located between said brake and said expansion chamber and movable between a first closed position to isolate said brake from said expansion chamber and a second open position in which fluid in said brake is dumped to said expansion chamber, a motor, and a pump driven by said motor to produce an output which generates energy necessary to recover fluid in order to re-apply said brake automatically after said pressure fluid applied to said brake has first been released to said expansion chamber in response to movement of said second control valve into said second open position, said pump comprising a pump plunger movable in opposite first and second directions during an induction stroke and a power stroke respectively, means defining a pressure space in advance of said plunger, a one-way inlet valve through which fluid is adapted to be withdrawn from said expansion chamber into said pressure space upon movement of said plunger in said first direction, a first passage means defining a first connection between said pressure space and said brake, first flow-control means disposed in said first passage means through which fluid is pumped back to said brake, and a second passage means defining a second connection between said pressure space and said master cylinder, and second flow-control means disposed in said second passage means through which fluid is pumped back to said master cylinder, said first flow-control means including first pressure-responsive means responsive to pressure in said brake

in opposition to flow from said pump to said brake, said second flow control means including second pressure-responsive means responsive to pressure in said master cylinder in opposition to flow from said pump to said master cylinder, and one of said pressure-responsive means exhibiting a greater resistance to flow than the other of said first pressure-responsive means, whereby fluid is returned by said pump to both said brake and said master cylinder.

4,883,328

BRAKE SYSTEM WITH ANTI-LOCKING AND/OR TRACTION SLIP CONTROL

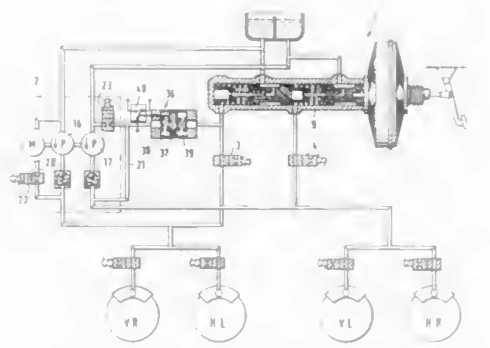
Jochen Burgdorf, Offenbach-Rumpenheim, and Lutz Weize, Mainz, both of Fed. Rep. of Germany, assignors to Alfred Teves GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed Sep. 20, 1988, Ser. No. 247,019

Claims priority, application Fed. Rep. of Germany, Sep. 24, 1987, 3732161

Int. Cl.⁴ B60F *8/32*

U.S. Cl. 303—116 14 Claims



1. An automotive brake system including slip control control comprising pressure fluid conduits connected to a brake pressure generator and wheel brakes, electrically controllable multi-way valves in said pressure fluid conduits, said multi-way valves normally open in one switching position and re-switchable to block pressure fluid passage during a regulating phase, at least one normally open separating valve in said pressure fluid conduit, said normally open separating valve being switchable to block said pressure fluid conduit during the regulating phase, a controllable auxiliary pressure supply system, a pressure compensating reservoir connected to the brake pressure generator and to the auxiliary pressure supply system, electronic circuit means for processing electric signals from wheel sensors representing wheel rotational behavior and for generating electric brake pressure control signals for operating the multi-way valves, the separating valve and the auxiliary pressure supply system, said auxiliary pressure supply system comprising at least one bypass-regulated hydraulic pump connected to the wheel brakes, and a bypass conduit connected in parallel to the hydraulic pump including at least one additional multi-way valve dischargeable into the pressure compensating reservoir and differential pressure detecting means coupled to said brake pressure generator for comparing the pressure in said brake pressure generator with the auxiliary pressure of said auxiliary pressure supply system and means responsive to said differential pressure detecting means to control said auxiliary pressure supply system.

4,883,329

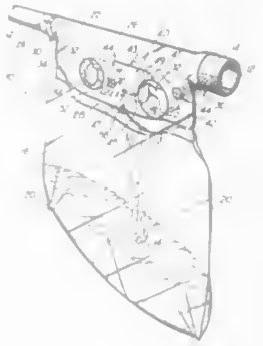
ASBESTOS CONTAINMENT BAG WITH SLIDE FASTENER CLOSURE

Gene Flannery, Thomasville; T. Blair Crouse, Lexington, and Wesley L. Patterson, Thomasville, all of N.C., assignors to Abatement Technologies, Inc., Duluth, Ga. and CPP, Inc., Thomasville, N.C.

Filed Oct. 14, 1988, Ser. No. 257,711

Int. Cl.⁴ A61G *11/00*

U.S. Cl. 312—1 5 Claims



1. A hazardous waste containment bag for use in removing waste from a pipe, comprising:

(a) a section of plastic film configured to form a container having an interior and an opening defined by free film edges,

(b) a slide fastener assembly comprising a first slide fastener attached to plastic film gussets affixed to the film section within the interior to divide the container into waste-receiving and workspace chambers, the assembly having sufficient width to avoid significantly drawing the film section together when the waste-receiving chamber contains waste and the first slide fastener is closed, and the gussets being of different widths so that the slide fastener assembly may lie flat when the waste-receiving chamber is empty.

(c) at least one glove and sleeve appliance mounted in the film section to provide access to the workspace chamber,

(d) a second slide fastener attached to portions of the free film edges for drawing such edges together in order to surround a portion of the pipe and close the container opening, and

(e) at least one loop attached to the film to receive a strap for cinching the film snugly around the pipe.

4,883,330

SPINE ASSEMBLY

Eric J. Armstrong, Pennsburg, and David D. McClanahan, Lansdale, both of Pa., assignors to Knoll International, Inc., New York, N.Y.

Continuation of Ser. No. 923,409, Oct. 27, 1986, abandoned, which is a continuation-in-part of Ser. No. 618,492, Jun. 8, 1984, Pat. No. 4,619,486. This application May 11, 1988, Ser. No. 193,239

Int. Cl.⁴ A47B *17/00*

U.S. Cl. 312—195 14 Claims

1. A spine system assembly for supporting desk tops and panels and accessories comprising a plurality of housings joined end-to-end to create an interconnected network of such housings each housing being open on the bottom and adapted to being free-standing and comprising a first and second framework each framework being defined by first and second upwardly extending supports said first and second upwardly extending supports being connected by an upper and lower transverse member, said first and second frameworks being

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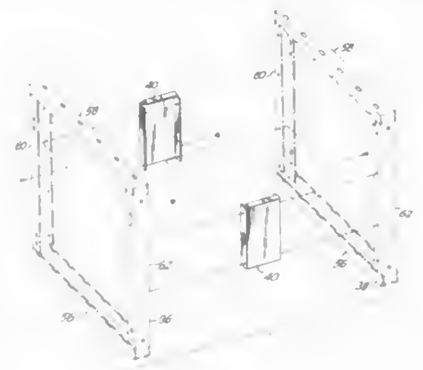
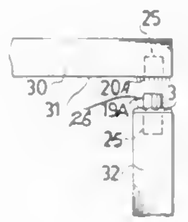
connected by at least one pair of transverse members said transverse members connecting the upwardly extending support of one framework with the upwardly extending support of said second framework to form a housing said housing having a spaced apart substantially parallel side panels removably connected to each of said frameworks, said frameworks lying totally within the space between said side panels, said frameworks being spaced apart from each other to permit the unimpeded laying of electrical wiring within each housing, said housing having a means for attaching end panels and said housing having a means for connecting one or more housings to form a spine assembly said housing being adapted to connect a bracket for supporting a panel above said housing and said housing being adapted to support a cover assembly and a desktop on its upper surface.



4,883,331
METHOD OF AND STRUCTURE FOR THE JOINING OF SUBSTANTIALLY RIGID PARTS TOGETHER

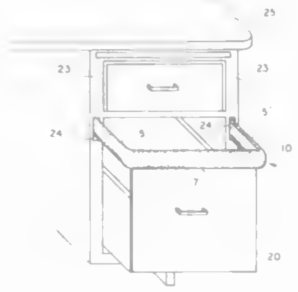
Craig Mengel, 2114 Robinson Street, Regina, Saskatchewan, Canada (S4T 2P7)
Filed Jul. 19, 1988, Ser. No. 221,120
Claims priority, application Canada, Jul. 24, 1987, 548982
Int. Cl.⁴ A47B *17/00*
U.S. Cl. 312—195 2 Claims



1. A knock-down kit of substantially rigid parts for the construction of furniture and the like comprising a plurality of parts and means to detachably fasten said parts together in the desired relationship to form the assembled furniture, said means including one portion of a hook and loop fastening material secured to the mating surface of one of said parts and the other portion of said hook and loop fastening material to the mating surface of the other of said parts, and means to mechanically align said parts in the desired relationship one with the other just prior to engaging said hook and loop portion together in detachable fastening relationship, said kit including a pair of floor engaging desk pedestals, a rear panel and a desk top panel, said hook and loop portions being secured in matching relationship, firstly on the mating surface of the upper side of said pedestals and on the mating surface of the underside of said desk top portion and secondly, upon the mating surfaces of the rear side of said pedestals and the mating surface of the inner side of said rear panel, said means to mechanically align said parts also engaging between the upper side of said pedestal and the under side of said top desk panel and between the rear sides of said pedestal and said rear panel, said means to mechanically align said parts comprises at least one dowel extending perpendicular from said mating surface of one of said parts and a matching aperture extending perpendicular from the mating surface of the other of said parts engageable with said dowel prior to the engagement of said portions of said hook and loop fastening material to one another in a detachable fastening relationship, and hook and loop portions being situated spaced from said dowels and said matching apertures.

4,883,332
ARM-KNEE AND LEG GUARD FOR DESKS AND FILE CABINETS

Ronald E. Hadad, 1140 Mill Rd., Richmond, Va. 23231
Filed Jul. 20, 1988, Ser. No. 221,634
Int. Cl.⁴ A47B *88/00*
U.S. Cl. 312—330.1 7 Claims



1. A retractable body guard assembly for a furniture drawer having parallel, vertically disposed sides and a front side extending therebetween, said furniture drawer being enclosed in a drawer cabinet having parallel, vertically disposed inner and outer surfaces, said retractable body guard assembly comprising:

elongated panels of resilient material extending longitudinally adjacent said parallel, vertically disposed sides of the furniture drawer, said elongated panels are terminally joined to a transverse front panel of resilient material which extends horizontally adjacent said front side of the furniture drawer and securely fastened thereto; and

an associated channel-like track system longitudinally mounted to either of the parallel, vertically disposed surfaces of said drawer cabinet and adapted to support and guide said elongated panels of resilient material, wherein upon rectilinear displacement of the furniture drawer the elongated panels of resilient material slide substantially frictionlessly along associated tracks to effectively provide cushioning against impact when said furniture drawer is displaced in an open position and to prevent injuries on impact with protruding surfaces of the furniture drawer.

4,883,333
INTEGRATED, SOLID, OPTICAL DEVICE

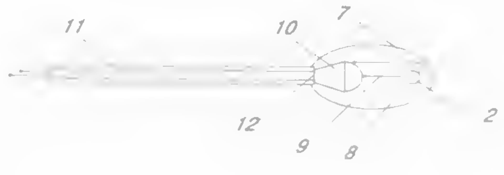
Serge J. Yanez, 25395 Pine View Dr., Colfax, Calif. 95713
Filed Oct. 13, 1987, Ser. No. 106,650
Int. Cl.⁴ G02B *6/00*
U.S. Cl. 350—96.10 23 Claims

1. An optical device for radiant energy transmission comprising, in combination:

a source of energy,

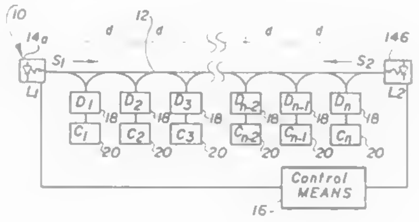
a means for directing energy from said energy source to a light pipe including a solid mass of optical material which collects and directs the energy, reflective means circumscribing at least a portion of said optical material for focusing the energy, a lens means interposed between said optical material and said light pipe,

and a luminaire at an end of said light pipe material remote from said energy source to display the energy transmitted wherein said light pipe has a proximal end immersed into said lens means to improve energy transfer therebetween, defined by said proximal end placed within said lens means and dimensioned to tightly engage said proximal end.



4,883,334
OPTICAL SELECTOR SWITCH

Donald M. Chiarulli; Rami Melhem, and Steven P. Levitan, all of Pittsburgh, Pa., assignors to The University of Pittsburgh, Pittsburgh, Pa.
Filed Nov. 30, 1987, Ser. No. 126,931
Int. Cl.⁴ G02B *6/10*
U.S. Cl. 350—96.13 31 Claims



1. An optical selector switch comprising:

an optical waveguide means;

M means for producing light that can be transmitted through the optical waveguide means, said M light producing means optically connected to the optical waveguide means, M being greater than or equal to 2;

means for controlling when each of the M light producing means produces optical pulses to be transmitted through the optical waveguide means; and

N optical transducers optically connected to the optical waveguide means and arranged in a three dimensional array, each of N optical transducers capable of producing an electrical signal corresponding to the combination of optical pulses received from the M light producing means, N being greater than or equal to 2.

4,883,335
SINGLE-MODE OPTICAL FIBER TAP

Rodney C. Alferness, Holmdel, and Thomas H. Wood, Highlands, both of N.J., assignors to American Telephone and Telegraph Company, New York, N.Y. and AT&T Bell Laboratories, Murray Hill, N.J.
Continuation of Ser. No. 816,437, Jan. 6, 1986, abandoned. This application Jan. 20, 1988, Ser. No. 144,777
Int. Cl.⁴ G02B *6/26*
U.S. Cl. 350—96.15 8 Claims

1. An optical communication system comprising a bus comprising at least two fiber taps,

said fiber taps comprising,

a. first input and first output means adapted for connecting said at least two optical fiber taps in series

b. a second input means for receiving light from an optical transmitter, and

c. a second output means for delivering light to an optical receiver

the invention characterized in that

said optical fiber tap includes

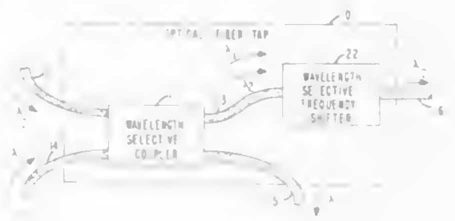
a single mode coupler means having first and second input ports and first and second output ports for cross-coupling light having a first characteristic with high efficiency and for cross-coupling light having a second characteristic with lower efficiency,

said first and second input ports being connected to said first and second input means respectively, said second output port being connected to said second output means, and

single mode conversion means for converting light having said first characteristic to light having said second characteristic while passing virtually unchanged light having said second characteristic,

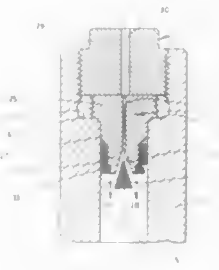
said single mode conversion means being connected to receive light from said first output port and to provide to said first output means, and

means, connected to said second input means, for varying said light of said first characteristic in a manner representative of intelligence.


OPTICAL FIBER TAP
22
WAVELENGTH SELECTIVE FREQUENCY SHIFTER
WAVELENGTH SELECTIVE COUPLER
3
4
5
6

4,883,336
METHOD AND LEADTHROUGH SYSTEM FOR LAYING OUT OPTICAL FIBRES ACROSS AN APERTURE OF A CONTAINER SHELL

Wojtek Bock, and Jacek Chrostowski, both of Gloucester, Canada, assignors to Conseil National de Recherches du Canada, Ottawa, Canada
Filed Feb. 17, 1989, Ser. No. 311,865
Int. Cl.⁴ G02B *6/36, 7/26*
U.S. Cl. 350—96.20 17 Claims



9. A leadthrough system for optical fibres, said system comprising:

a plug member formed with an axial through fibre passage having a conical first portion and a second portion opening into said conical portion at the apex thereof;

an essentially conical wedge member having a size suitable for fitting into said conical portion, said wedge member

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being formed with a plurality of grooves on the outer surface thereof, said grooves extending between the base and the apex thereof; said wedge member being inserted into said conical first passage portion with said grooves opening into said second passage portion;

a plurality of optical fibres divided into fractions of at least one fibre; each fraction being received individually into one of said grooves and said fractions being received collectively into said second passage portion, and

plastics material in said grooves and in said straight passage portion completely embedding said fibres and adhering to the surfaces of said grooves and of said passage portions.

4,883,337

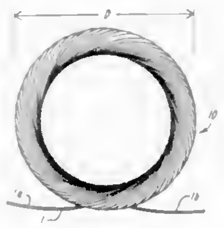
LOW STRAIN OPTICAL FIBER COIL

Robert P. Dahlgren, Somerville, Mass., assignor to The Charles Stark Draper Laboratory, Inc., Boston, Mass.

Filed Aug. 29, 1988, Ser. No. 237,779

Int. Cl.^{4} G02B *6/02*

U.S. Cl. 350—96.29 **20 Claims**



1. An optical fiber coil forming an optical path for use in an instrument, such coil being characterized in that it comprises an unsupported fiber wound about itself along a defined curve such that mutual fiber-to-fiber contact of successive windings of said fiber maintain coil in a self-supporting ring.

4,883,338

SYNTHETIC RESIN OPTICAL FIBER

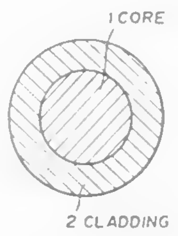
Tomiya Abe; Yukio Shimazaki; Takanobu Ishibashi; Norimoto Abe; Takayasu Asai, and Noriaki Taketani, all of Ibaraki, Japan, assignors to Hitachi Cable, Ltd. & Hitachi, Ltd., Tokyo, Japan

Filed Oct. 14, 1988, Ser. No. 262,334

Claims priority, application Japan, Oct. 15, 1987, 62-260380

Int. Cl.^{4} G02B *6/00;* **C08F** *120/18*

U.S. Cl. 350—96.34 5 Claims



1. A synthetic resin optical fiber comprising:

a core of a transparent synthetic resin for the transmission of light and having a first predetermined refractive index; and

a cladding formed around the core and having a second predetermined refractive index lower than said first predetermined refractive index, said cladding layer containing 0.03 to 5 weight % of a light interruption substance such as a pigment or the like in a region of said cladding layer equal to or greater than half a wavelength of transmission light from the interface between said core and said cladding layer, said cladding layer including a region less than half a wavelength of transmission light from the interface between said core and cladding layer that is substantially free of the light interruption substance.

4,883,339

OXIDE COATINGS FOR FLUORIDE GLASS

Lubos J. B. Vacha, Southbridge, Mass.; Cornelius T. Monyihan, Watervliet, N.Y., and Peter C. Schultz, Sturbridge, Mass., assignors to Spectran Corporation, Sturbridge, Mass.

Filed Jul. 17, 1987, Ser. No. 74,646

Int. Cl.^{4} B29D *11/00;* **G02B** *6/44*

U.S. Cl. 350—96.34 29 Claims

1. A method for making a coated optical fiber which is resistant to water or water vapor during preform handling, fiber drawing and fiber usage which comprises:

preparing a preform comprising a non-oxide glass core, a non-oxide cladding therefore, and a protective coating of an oxide glass having a glass transition temperature below about 400° C. and a thermal expansion coefficient of less than about $19\times10^{-6°}$ C.$^{-1}$; and

drawing a fiber from said preform in a draw furnace without a protective atmosphere therefore, said oxide glass having a viscosity which is approximately the same as the viscosity of the non-oxide glass at the drawing temperature to obtain said coated optical fiber.

4,883,340

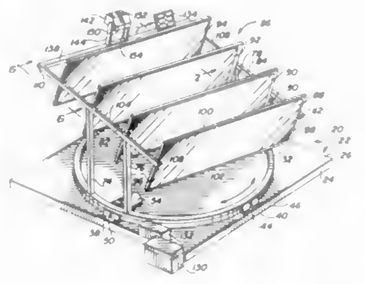
SOLAR LIGHTING REFLECTOR APPARATUS HAVING SLATTED MIRRORS AND IMPROVED TRACKER

Richard L. Dominguez, Glendale, Ariz., assignor to Solar Lighting Research, Inc., Glendale, Ariz.

Filed Aug. 2, 1988, Ser. No. 227,239

Int. Cl.^{4} G02B *17/00, 27/00;* **F24J** *2/38*

U.S. Cl. 350—260 17 Claims



1. A solar lighting reflector apparatus for illuminating the interior of a roofed building during daylight hours and adapted to follow daily movements of the sun, the roofed building having a light transmissive opening in the roof therein, said apparatus comprising in combination:

a. a base;

b. means for rotatably supporting the base above the light transmissive opening of the roofed building;

c. a plurality of generally planar reflective panels for reflecting sunlight into the light transmissive opening, each of the reflective panels extending between first and second opposing ends along a generally horizontal longitudinal axis, the longitudinal axes of the plurality of reflective panels being parallel to each other, each of the plurality of reflective panels being supported by the base for rotation therewith, the plurality of reflective panels including at least a frontmost reflective panel and a rearmost reflective panel;

d. the rearmost reflective panel being supported at a higher elevation than the frontmost reflective panel to avoid shading of the rearmost reflective panel by the frontmost reflective panel; and

e. tracking means for rotating the base to direct the reflective panels toward the sun as the sun moves throughout each day.

4,883,341

NON-REFLECTIVE GRAPHIC SURFACE

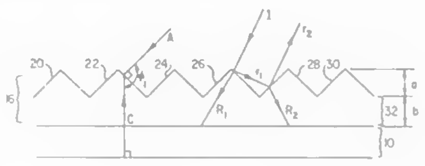
Lorne A. Whitehead, Vancouver, Canada, assignor to Tir Systems LTD, Canada

Filed Mar. 17, 1988, Ser. No. 169,292

Claims priority, application Canada, Apr. 24, 1987, 535569

Int. Cl.^{4} G02B *3/08, 5/04*

U.S. Cl. 350—276 R 27 Claims



1. A graphic surface display device, comprising:

(a) a graphic surface to be displayed; and,

(b) a cover of substantially transparent material overlying said graphic surface, said cover having a minutely textured outer surface wherein an angle ϕ_1 between:

(i) a first vector normal to a randomly selected point on said outer surface; and,

(ii) a second vector which passes through said selected point and which is normal to a plane tangential to said graphic surface at the point of intersection of said second vector with said graphic surface;

has substantially unity probability of exceeding 45°.

4,883,342

METHOD OF ASSEMBLING A LIGHT EMITTING DEVICE WITH AN OPTICAL FIBER

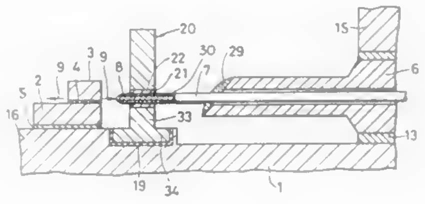
Satoru Ishii, Tamamura; Tugio Nemoto, and Kunio Aiki, both of Takasaki, all of Japan, assignors to Hitachi, Ltd. & Hitachi Iruma Electronic Corp., Ltd., Tokyo, Japan

Continuation of Ser. No. 85,761, Aug. 17, 1987, Pat. No. 4,834,492. This application Dec. 5, 1988, Ser. No. 279,458

Claims priority, application Japan, Aug. 22, 1983, 58-151575

Int. Cl.^{4} G02B *6/42*

U.S. Cl. 350—320 14 Claims



1. A method of assembling a light emitting device with an optical fiber comprising the steps:

(a) preparing a stem having a pedestal portion;

(b) fixing supporting means for an optical fiber on said stem, said supporting means having a hole and being deformable in three orthogonal directions;

(c) mounting a laser diode chip on said pedestal portion of said stem;

(d) inserting a portion of the optical fiber into said hole, and immovably fixed in said hole; and after said inserting;

(e) adjusting said supporting means in at least one of the three orthogonal directions to determine an optimum position of a photocoupled end part of said optical fiber relative to a light emitting portion of said laser diode chip and fixing the supporting means in the optimum position.

4,883,343

LIQUID CRYSTAL DISPLAY ELEMENT HAVING A CR$_2$O$_3$ THIN FILM FOR PREVENTING DAZZLEMENT

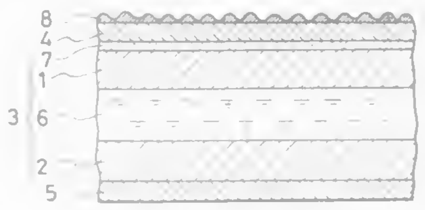
Toshiyuki Teshirogi, Iwaki, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan

Filed Mar. 25, 1988, Ser. No. 173,662

Claims priority, application Japan, Jul. 13, 1987, 62-107386

Int. Cl.^{4} G02F *1/13*

U.S. Cl. 350—338 2 Claims



1. A liquid crystal display element having a liquid crystal cell formed by bonding front and rear transparent substrates, and a polarizing plate disposed on a display surface of the front transparent substrate comprising

a Cr_2O_3 thin film disposed on the display surface of the front transparent substrate.

4,883,344

LIQUID CRYSTAL DEVICE HAVING A MODIFIED POLYVINYL ALCOHOL ALIGNMENT LAYER

Shinjiro Okada, Kawasaki; Kazuo Yoshinaga, Machida; Osamu Taniguchi; Hideyuki Kawagishi, both of Kawasaki; Akira Tsuboyama, Tokyo; Yukio Hanyu, Yokohama; Masataka Yamashita, Kawasaki, and Kazuharu Katagiri, Tama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

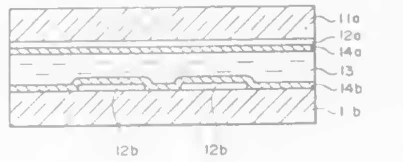
Division of Ser. No. 26,977, Mar. 17, 1987, Pat. No. 4,820,026.

This application Jan. 24, 1989, Ser. No. 300,922

Claims priority, application Japan, Mar. 20, 1986, 61-063457; May 15, 1986, 61-109444; May 15, 1986, 61-109445; May 15, 1986, 61-109446; May 15, 1986, 61-109447; May 15, 1986, 109448; May 15, 1986, 109449; May 15, 1986, 61-109450; May 15, 1986, 61-109451; May 22, 1986, 61-118531; Jun. 3, 1986, 61-128811; Jun. 3, 1986, 61-128812; Jun. 11, 1986, 133774; Jun. 11, 1986, 61-133775

Int. Cl.^{4} G02F *1/13*

U.S. Cl. 350—339 R 67 Claims



1. In a liquid crystal device, comprising: a pair of parallel substrates and a ferroelectric liquid crystal disposed between the substrates so as to have an arrangement of molecules forming a plurality of layers perpendicular to the faces of said pair of parallel substrates; the improvement wherein at least one of said pair of parallel substrates has an alignment control film formed of a modified polyvinyl alcohol resin containing a material selected from the group consisting of sulfur; boron;

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$R_{12-1}C(CH_2)R_{12-2}$,

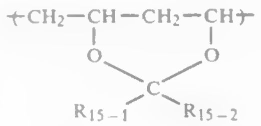
wherein R_{12-1} and R_{12-2} independently represent hydrogen, alkyl, aryl, alkyl having aryl, halogen, cyano or a residue derived from a heterocyclic ring;

$-CH_2C(H)OCH_2CHR_{13-1}CONHCH_2OR_{13-2}$,

wherein R_{13-1} is hydrogen or methyl and R_{13-2} is hydrogen or C_{1-4} alkyl;

$R_{14-1}C(CH_2)CONHCH_2O-R_{14-2}$,

R_{14-2}, wherein R_{14-1} is hydrogen or methyl and R_{14-2} is C_{1-4} alkyl; and



, wherein R_{15-1} and R_{15-2} are independently hydrogen, alkyl, aryl, allyl, lower alkyl having aryl, allyl, alkynyl or a saturated hydrocarbon group formed by cyclizing R_{15-1} and R_{15-2}, said modified polyvinyl alcohol having a function of aligning said plurality of layers preferentially in one direction.

4,883,345
PROJECTION OPTICAL APPARATUS
Satoru Anzai, Zama, and Hiroshi Tanaka, Yokohama, both of Japan, assignors to Nikon Corporation, Tokyo, Japan
Filed Dec. 28, 1988, Ser. No. 291,324
Claims priority, application Japan, Dec. 2, 1983, 58-228225; Dec. 2, 1983, 58-228226; Mar. 16, 1984, 59-50763
Int. Cl.⁴ G02B *3/12*
U.S. Cl. 350—418 10 Claims

1. An apparatus for projecting a pattern on a first plane onto a second plane, comprising:

a projection lens system disposed between and spaced from said first plane and said second plane, said projection lens system including a plurality of lens element disposed at intervals and defining a plurality of spaces;

means for isolating at least one of said plurality of spaces from the atmosphere, said at least one space being selected such that, in the absence of the isolating of said at least one space from the atmosphere, variation in magnification of said projection lens system caused by variation of the pressure in said at least one space with atmospheric pressure is substantially equal to variation in magnification of said projection lens system caused by variation of the pressure in all of said plurality of spaces and in the spaces between said projection lens system and said first and second planes with atmospheric pressure; and

means for maintaining the refractive index in said at least one space of said projection lens system at a fixed value in spite of the variation of atmospheric pressure.

4,883,346
ZOOM LENS SYSTEM
Norihiko Aoki, and Juro Kikuchi, both of Tokyo, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan
Filed Aug. 3, 1988, Ser. No. 227,803
Claims priority, application Japan, Aug. 5, 1987, 62-194421
Int. Cl.⁴ G02B *15/15, 9/60, 9/34*
U.S. Cl. 350—423 9 Claims

1. A zoom lens system comprising, in the order from the object side, a first lens group having positive refractive power and a second lens group having negative refractive power, and so adapted as to perform variation of focal length by varying an airspace reserved between the two lens groups, said second lens group comprising at least one positive lens component designed as a graded refractive index lens component.

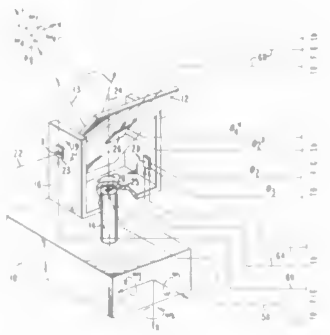
4,883,347
STABILIZED POINTING MIRROR
Bradley G. Fritzel, Hermosa Beach, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.
Filed Jan. 22, 1988, Ser. No. 146,993
Int. Cl.⁴ G02B *23/00;* **G01C** *15/14*
U.S. Cl. 350—500 7 Claims

1. A pointing mirror, having a line-of-sight and supported on gimbals about an elevation axis and an azimuth axis, and a system coupled to the mirror for stabilizing the mirror and, thus, for stabilizing its line-of-sight from three-dimensional rotational disturbances exerted upon the mirror, comprising:

a first two-degree-of-freedom gyroscope secured to the mirror and placed on a first of the axes, said first two-degree-of-freedom gyroscope being coupled to electronic means for providing inertial rates (ω_4*, ω_2*) of angular motion of the mirror respectively about an axis angled from a line normal thereto and about the first axis;

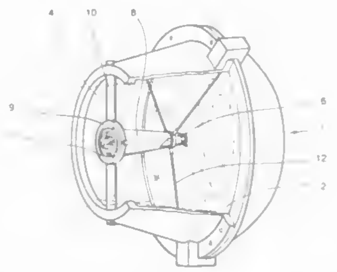
a second two-degree-of-freedom gyroscope secured to the gimbal on the second of the axes, said second two-degree-of-freedom gyroscope being coupled to electronic means for providing inertial rates (ω_2, ω_3) of angular motion of the mirror respectively about a pitch axis and a yaw axis;

means for computing inertial rates (ω_e, ω_d) of angular motion of the mirror respectively about a line-of-sight pitch axis and a line-of-sight yaw axis from the inertial rates (ω_4*, ω_2*, ω_2, ω_3); and



means for summing the inertial rates (ω_e, ω_d) to zero and thus for driving the mirror about its elevation and azimuth axes to stabilize its line-of-sight.

4,883,348
WIDE FIELD OPTICAL SYSTEM
Brett A. Spivey, 131 Seeman, Encinitas, Calif. 92024; Brian W. Neff, 9685 Genessee Ave. #F-2, San Diego, Calif. 92121, and Murray R. Dunn, 8870-202 Villa La Jolla Dr., La Jolla, Calif. 92037
Filed Jun. 10, 1988, Ser. No. 204,902
Int. Cl.⁴ G02B *17/06, 17/08, 26/10*
U.S. Cl. 350—503 14 Claims



1. A telescope system for detecting electromagnetic radiation within a viewing range comprising:

a spherical concave primary mirror defining a focal surface and center of curvature,

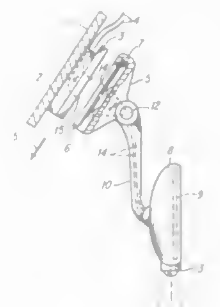
a secondary optical means for directing beams of radiation reflected off said primary mirror to the vicinity of said center of curvature,

a positioning means for positioning said secondary optical means tangentially about said center of curvature at a plurality of positions, each of said plurality of positions being near said focal surface and the same distance from said focal surface,

a detector means for detecting all or a portion of said beams of radiation,

said primary mirror, said secondary optical means, said positioning means and said detector means, being arrange so that said positioning means positions said secondary optical means so as to permit said telescope system to scan said viewing range and to permit said detector means to detect all or portions of said beams of radiation within said viewing range without movement of said primary mirror or said telescope systems as a whole.

4,883,349
REAR VIEW MIRROR FOR MOTOR VEHICLES
Bernhard Mittelhäuser, Am Krähenberg, 3002 Wedemark 2, Fed. Rep. of Germany
Filed Sep. 23, 1988, Ser. No. 248,491
Claims priority, application Fed. Rep. of Germany, Oct. 10, 1987, 3734393
Int. Cl.⁴ G02B *7/18, 5/08;* **B60R** *1/06*
U.S. Cl. 350—631 10 Claims



1. A rear view mirror for a motor vehicle, comprising:

an anchoring member that is fixedly mounted on said vehicle;

a part that is provided with a mirror body and that is adapted to be connected to said anchoring member by being pressed or otherwise placed thereon;

first electrical contact means disposed on said anchoring member and connected to a source of current; and

second electrical contact means disposed on said part provided with said mirror body in such a way that when said part is placed on said anchoring member, said first and second electrical contact means cooperate with one another such that a contact connection is established between said first and second contact means and hence between said anchoring member and said part provided with said mirror body.

4,883,350
CONTACT LENS PROVIDING A CENTRAL SPHERICAL REGION BOUNDED BY A CIRCUMSCRIBING ASPHERICAL REGION
Dieter Muckenhirn, Dorfstrasse 2, D-7801 Au, Fed. Rep. of Germany
PCT No. PCT/EP86/00269, § 371 Date Dec. 30, 1986, § 102(e) Date Dec. 30, 1986, PCT Pub. No. WO86/06848, PCT Pub. Date Nov. 20, 1986
PCT Filed May 7, 1986, Ser. No. 2,714
Claims priority, application Fed. Rep. of Germany, May 8, 1985, 3516575
Int. Cl.⁴ G02C *7/04*
U.S. Cl. 351—160 R 26 Claims

1. A contact lens comprising a rear surface presenting a central spherical region described by an arc passing through the vertex, characterized in that said central spherical region is circumscribed by an aspherical region defined by a curve adjacent the spherical region, said curve and said arc having a

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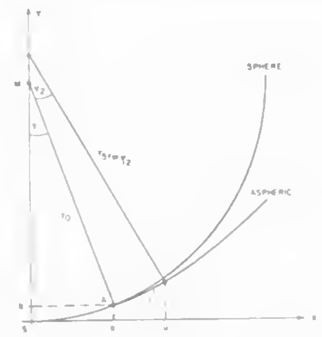
substantially equal radius of curvature and a substantially equal gradient in the area of transition and further characterized in



that the arc extends up to an angle in the range of 10° to 20° measured from the center of curvature.

4,883,351

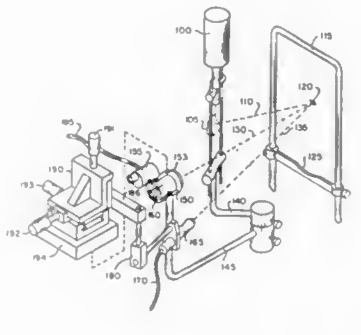
APPARATUS FOR THE DETECTION OF DIABETES AND OTHER ABNORMALITIES AFFECTING THE LENS OF THE EYE

Jeffrey N. Weiss, 77 Pond Ave., Brookline, Mass. 02146

Division of Ser. No. 416,654, Sep. 10, 1982, abandoned. This application Nov. 15, 1984, Ser. No. 671,520

Iot. Cl.^{4} A61B *3/10*

U.S. Cl. 351—221 3 Claims



1. In apparatus for measuring the movement of light scattering elements in the lens of an in vivo eye where the apparatus is of the type having
   (a) means for providing a beam of light,
   (b) means for focusing the light beam on a site in the lens of the eye,
   (c) a photomultiplier,
   (d) optical means for transmitting light back-scattered from the eye's lens to the photomultiplier, and
   (e) correlator means for providing an output that is an autocorrelation function of light intensity variations affecting the photomultiplier's output,

the improvement wherein
   the optical means for transmitting light back-scattered from the eye's lens to the photomultiplier is an optical fiber having a light receiving input end,

and the improvement further comprises
   (i) a binocular microscope for providing a stereoscopic view of the site at which the light beam is focused in the lens, the optical axis of the binocular microscope being directed at an angle to the light beam sufficient to provide depth perception, and
   (ii) the optical fiber having its input end disposed to enable the binocular microscope to focus light back-scattered from the eye's lens upon the input end of the optical fiber without impairing the stereoscopic view of the site.

4,883,352

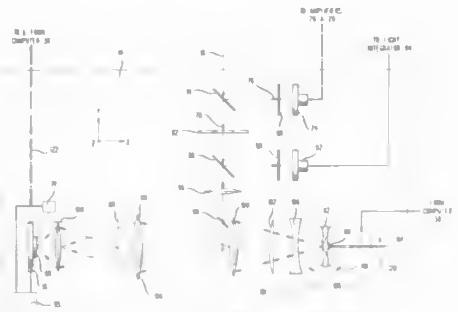
DEEP-UV LITHOGRAPHY

John H. Bruning, Brookside, N.J., assignor to American Telephone and Telegraph Company, Murray Hill, N.J.

Continuation of Ser. No. 939,278, Dec. 12, 1986, Pat. No. 4,773,750, which is a continuation of Ser. No. 874,883, Jun. 16, 1986, abandoned, which is a continuation of Ser. No. 623,247, Jun. 21, 1984, abandoned. This application Aug. 12, 1988, Ser. No. 231,803

Int. Cl.^{4} G03B *27/42*

U.S. Cl. 353—122 2 Claims



1. Apparatus comprising:
means for providing laser radiation that inherently i s characterized by a relatively wide bandwidth;
a lens assembly, disposed in the path of said radiation, which exhibits unacceptably large chromatic aberrations in response to the relatively wide bandwidth radiation inherently provided by said means; and
means for sufficiently narrowing the bandwidth of said radiation to cause said assembly to exhibit acceptably low chromatic aberrations.

4,883,353

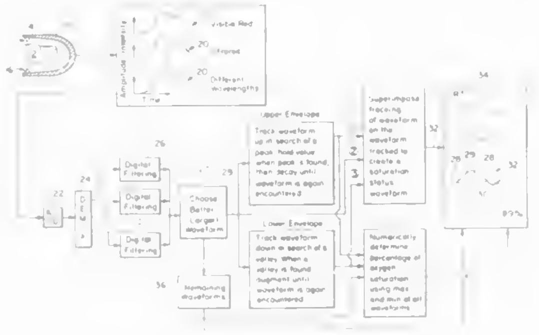
PULSE OXIMETER

Kenneth A. Hausman, Concord, and Edwin B. Merrick, Stow, both of Mass., assignors to Puritan-Bennett Corporation, Wilmington, Mass.

Filed Feb. 11, 1988, Ser. No. 154,929

Int. Cl.^{4} G01N *33/49*

U.S. Cl. 356—41 22 Claims



1. A pulse oximeter comprising:
a sensor responsive to light transmitted through an area of blood flow and optically absorbed by hemoglobin for producing a pulsatile waveform indicating the current pulsatile component of blood flow;

process means for determining an amplitude of said pulsatile waveform;
a displayable process waveform for tracking said process means; and
display means for superimposing said displayable process waveform onto said pulsatile waveform to form a saturation status wave form and to display said saturation status wave form onto an output display, along with a calculated percentage of oxygenated blood.

4,883,354

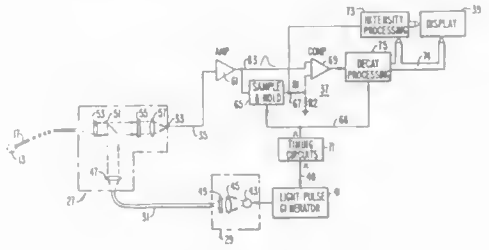
FIBEROPTIC SENSING OF TEMPERATURE AND/OR OTHER PHYSICAL PARAMETERS

Mei H. Sun, Los Altos; Kenneth A. Wickersheim, Menlo Park, and Stanley O. Heinemann, Irvine, all of Calif., assignors to Luxtron Corporation, Mountain View, Calif.

Division of Ser. No. 921,637, Oct. 22, 1986, Pat. No. 4,752,141, which is a continuation-in-part of Ser. No. 791,223, Oct. 25, 1985, abandoned. This application Mar. 4, 1988, Ser. No. 164,130

Int. Cl.^{4} G01N *21/51;* G01K *11/20*

U.S. Cl. 356—128 20 Claims



1. A condition measuring system comprising:
a length of an optical fiber communication medium having first and second ends,
a sensor carried at said first fiber medium end, said sensor including an optically clear solid non-deformable light concentrator extending outwardly away from said first fiber end and providing a substantially unattenuated light path out of said concentrator through a surface thereof, and a layer of luminescent material attached to said surface,
means in optical communication with said second fiber communicating medium end for directing excitation radiation along said fiber and through said light concentrator to said luminescent material,
means in optical communication with said second fiber communication medium end for detecting a characteristic of luminescent radiation passing from the luminescent material through the light concentrator and optical fiber communication medium, thereby measuring said condition, and
means responsive to said detecting means for determining the refractive index of an environment surrounding said sensor.

4,883,355

SLOTTED THRUSTERS FOR FLUID PROPELLED BORESCOPES

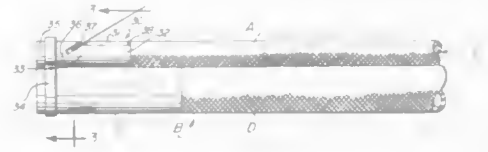
Hamid Saghatchi, Burbank, and Geoffrey L. Taylor, Valencia, both of Calif., assignors to Welch Allyn, Inc., Skaneateles Falls, N.Y.

Filed Sep. 3, 1987, Ser. No. 92,669

Int. Cl.^{4} G01N *21/88*

U.S. Cl. 356—241 31 Claims

1. A thruster adapted to attach to a borescope and to propel said borescope by the reaction force generated in response to pressurized fluid expe'led from said thruster comprising:
a. an elongated, generally straight and cylindrically shaped, hollow body having an entrance opening communicating with the hollow interior of said body,
b. a bulkhead sealing an end of said body opposite said entrance opening,
c. a narrow aperture through the cylindrical wall of said body, said aperture being located longitudinally between said entrance opening and said bulkhead, whereby pressurized fluid supplied to said hollow interior of said body through said entrance opening exits said hollow body through said narrow aperture, thereby producing a reaction thrust force on said thruster body.



4,883,356

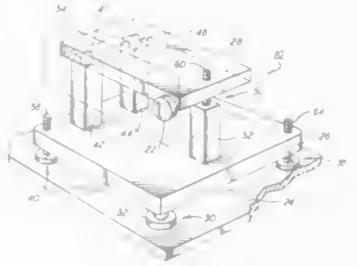
SPECTROMETER DETECTOR MOUNTING ASSEMBLY

Charles F. deMey, II, West Redding, Conn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Sep. 13, 1988, Ser. No. 243,853

Int. Cl.^{4} G01J *3/02*

U.S. Cl. 356—326 14 Claims



1. A spectrometer assembly comprising
means for producing a radiation beam from a sample for analytical detection, said radiation beam extending along an optical path,
a detector for detecting said radiation beam,
a housing having a base support, and
a detector mounting assembly for precisely aligning the detector relative to said radiation beam comprising
a first support plate
first pivotal connection means for pivotally connecting said first support plate to said base support so that said first support plate is selectively pivotal about first and second pivot axes,
first position adjustment means for selectively pivotally positioning said first support plate about said first pivot axis,
second position adjustment means for selectively pivotally positioning said first support plate about said second pivot axis,
a second support plate mounted to said first support plate.
second pivotal connection means for pivotally connecting said second support plate to said first support plate so that said second support plate is selectively pivotal about a third pivot axis, and
third position adjustment means for selectively pivotally positioning said second support plate about said third pivot axis,
said detector being mounted to said second support plate and positioned within said optical path, and

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said first, second and third pivot axes being relatively positioned so that

(a) said first adjustment means pivots said detector along a first arc generally transverse to said radiation beam,

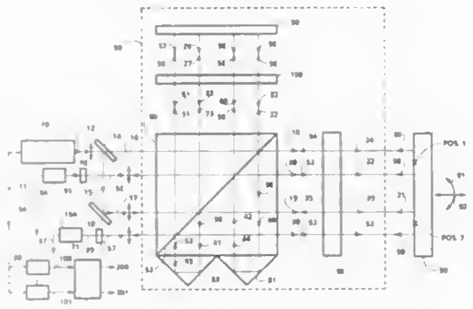
(b) said third adjustment means pivots said detector along a third arc generally transverse to said radiation beam and orthogonal to said first arc, and

(c) said second adjustment means pivots said detector along a second arc genera.lly along said radiation beam.

4,883,357

DUAL HIGH STABILITY INTERFEROMETER

Carl A. Zanoni, Middlefield, Conn., and Alan H. Field, San Jose, Calif., assignors to Zygo Corporation, Middlefield, Conn.
Filed Mar. 1, 1989, Ser. No. 317,672
Int. Cl.⁴ G01B *9/02*
U.S. Cl. 356—349 51 Claims

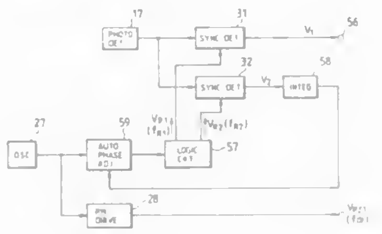


1. A dual high stability interferometer system capable of measuring linear displacement and angular displacement simultaneously of a movable plane mirror comprising a source of a frequency stabilized input beam with two linear orthogonally polarized components; means for dividing said input beam into two parallel, spatially displaced beams; optical system means comprising a stationary plane reference mirror, said optical system being disposed to reflect one polarization component of one of said spatially displaced beams twice from a first position on said movable plane mirror to produce a first output beam and to reflect the other polarization component of said spatially displaced beams twice from said stationary plane mirror to produce a second output beam; means disposed for recombining said first and second output beams into a third output beam having two orthogonally polarized components in which the phase difference between the two components of the third output beam is related to four times the linear displacement of said movable plane mirror at said first position; means disposed for mixing said orthogonal components of said third output beam; means disposed to produce a first electrical measurement signal; means associated with said first electrical measurement signal for indicating a first measured phase, said first measured phase being related to four times the linear displacement of said movable plane mirror at said first position; means disposed to reflect one polarization component of the second of said spatially displaced beams twice from a second position on said movable plane mirror to produce a fourth output beam and to reflect the other polarization component of said second of said spatially displaced beams twice from said stationary plane mirror to produce a fifth output beam; means disposed for recombining said fourth and fifth output beams into an sixth output beam having two orthogonally polarized components in which the phase difference between the two components of the sixth output beam is related to four times the linear displacement of said movable plane mirror at said second position; means disposed for mixing said orthogonal components of said sixth output beam; means disposed to produce a second electrical measurement signal; and means associated with said second electrical measurement signal for indicating a second measured phase, said second measured phase being related to four times the linear displacement of said movable plane mirror at said second position.

4,883,358

FIBER OPTIC GYRO STABILIZED BY HARMONIC COMPONENTS OF DETECTED SIGNAL

Kenichi Okada, Oume, Japan, assignor to Japan Aviation Electronics Industry Limited, Tokyo, Japan
Filed Aug. 25, 1988, Ser. No. 236,435
Claims priority, application Japan, Sep. 2, 1987, 62-220758; Sep. 2, 1987, 62-220759; Apr. 15, 1988, 62-93210; Jun. 3, 1988, 62-137781
Int. Cl.⁴ G01B *9/02*
U.S. Cl. 356—350 10 Claims



2. A fiber optic gyro comprising:

a circular optical path of at least one loop;

means for allowing light waves to pass through the optical path in both clockwise and counterclockwise directions;

interference means whereby the light waves having passed through the optical path are made to interfere with each other;

phase modulating means connected in cascade between the interference means and one end of the optical path, for phase modulating both light waves;

a photodetector for detecting, as an electric signal, the intensity of the interference light;

first synchronous detecting means whereby an odd-numbered harmonic component of the modulation frequency of the phase modulating means, contained in the photodetector output, is synchronously detected;

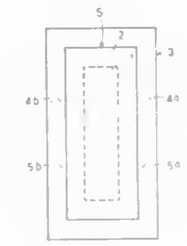
second synchronous detecting means whereby an even-numbered harmonic component of the modulation frequency of the phase modulating means, contained in the photodetector output, is synchronously detected; and

control means responsive to a signal from the second synchronous detecting means to effect control so that an input signal and a reference signal both applied to the first synchronous detecting means become substantially in-phase with each other and an input signal and a reference signal both applied to the second synchronous detecting means are displaced substantially 90 degrees apart in phase.

4,883,359

ALIGNMENT METHOD AND PATTERN FORMING METHOD USING THE SAME

Hideki Ina, Kanagawa, and Akiyoshi Suzuki, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation-in-part of Ser. No. 120,165, Nov. 12, 1987, abandoned, which is a continuation of Ser. No. 57,649, Jun. 9, 1987, abandoned, which is a continuation of Ser. No. 705,523, Feb. 26, 1985, abandoned, which is a continuation-in-part of Ser. No. 125,827, Nov. 25, 1987, abandoned, which is a continuation of Ser. No. 705,537, Feb. 26, 1985, abandoned. This application Apr. 25, 1988, Ser. No. 186,773
Claims priority, application Japan, Feb. 28, 1984, 59-35322; Feb. 28, 1984, 59-35330
Int. Cl.⁴ G01B *11/00*
U.S. Cl. 356—401 2 Claims



1. An alignment and exposure method comprising the steps of:

placing a workpiece on a holder having first and second alignment marks;

placing a first mask having a third alignment mark, which is alignable with the first alignment mark of the holder, so that the first mask is opposed to a first region of the workpiece;

aligning the first mask and the first region of the workpiece by use of the first and third alignment marks;

exposing the first region of the workpiece to an exposure beam transmitted through the first mask;

placing a second mask having a fourth alignment mark, which is alignable with the second alignment mark of the holder, so that the second mask is opposed to a second region of the workpiece, the second region being contiguous to the first region of the workpiece;

aligning the second mask and the second region of the workpiece by use of the second and the fourth alignment marks; and

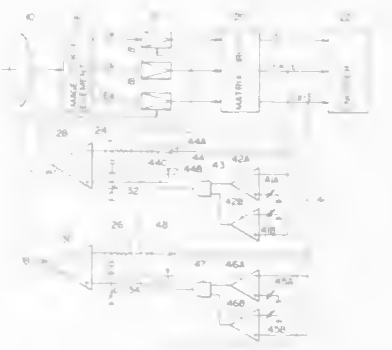
exposing the second region of the workpiece to an exposure beam transmitted through the second mask.

4,883,360

METHOD AND APPARATUS FOR AUTOMATICALLY ADJUSTING WHITE BALANCE

Yukihiro Kawada, and Yoshiaki Nakayama, both of Tokyo, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Aug. 12, 1988, Ser. No. 231,474
Claims priority, application Japan, Aug. 13, 1987, 62-202509; Aug. 13, 1987, 62-202510; Aug. 13, 1987, 62-202511
Int. Cl.⁴ G01J *3/46*
U.S. Cl. 356—402 8 Claims

1. A method of automatically adjusting white balance in which color difference signals (E_R-E_Y) and (E_B-E_Y) are created respectively from signals obtained by photographing an object, the color difference signals are respectively integrated over the entire screen, and the gains of red and blue signals are controlled so that the integration average values can be identical with predetermined reference levels respectively; said method being characterized in that, with respect to said respective color difference signals, there is set a slice level for detecting a strong color difference, and that, if, among said respective color difference signals, there is present a strong color difference signal which exceeds said slice level, in place of said strong color difference signal a predetermined level representing a weaker color difference signal than said slice level or the same level of said slice level is integrated to thereby remove said strong color difference signal from said respective color difference signals are to be individual.



4,883,361

DOUGH PROCESSING APPARATUS

Frank Valentino, Hickory Hills, Ill.; David E. Betts, Pataskala, Ohio, and Edward A. Alesch, Richardson, Tex., assignors to B-V Dough Handling Systems, Inc., Pataskala, Ohio
Filed Jun. 9, 1988, Ser. No. 204,385
Int. Cl.⁴ B01F *7/02, 7/04, 15/02*
U.S. Cl. 366—97 15 Claims

1. Apparatus for developing dough comprising

an elongated chamber having an inlet at one end and an outlet at the opposite end whereby dough may be caused to flow axially therethrough,

dough conditioning means disposed in said chamber for developing the dough flowing through said chamber, said conditioning means including at least two elongated rotors extending axially through said chamber in side by side relationship to each other, each of said rotors having an elongated shaft and a plurality of dough conditioning bars mounted on said shaft, each of said bars being formed from a rigid rod bent into a substantially U-shaped configuration having two spaced apart legs and a web interconnecting said legs at one end with said legs secured at their opposite ends to a respective one of said shafts and projecting a distance laterally outward from said shaft thereby supporting the web in radially outward relationship to said shaft, said bars being oriented to place the legs thereof in a plane that extends substantially axially of the respective shaft and axially spaced apart on a shaft a distance to permit passage of a bar on the other shaft between a pair of adjacently disposed bars on the first mentioned shaft,

support means provided for each of said rotors for support of the rotors for revolution about their respective axes spaced a distance apart whereby the conditioning bars on each rotor shaft revolve in planes that overlap the plane of revolution of a next adjacent conditioning bar on the other rotor shaft, and

drive means mechanically coupled with said rotors for revolving said rotors.

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4,883,362
DEVICE FOR ENRICHING A CARRIER GAS WITH THE VAPOR OF A SPARINGLY VOLATILE SUBSTANCE

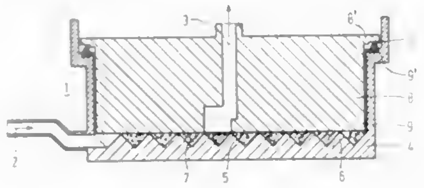
Georg F. Gärtner; Hans Rau, both of Aacheo, and Peter A. Janiel, W/e,uml/u/ rselen, all of Fed. Rep. of Germany, assignors to U.S. Philips Corp., New York, N.Y.

Filed Jan. 27, 1988, Ser. No. 148,800

Claims priority, application Fed. Rep. of Germany, Jan. 31, 1987, 3702923

Int. Cl.⁴ B01F *13/02*

U.S. Cl. 366—101 18 Claims



1. A device for enriching a carrier gas with the vapor of a volatile material composed of relatively small solid particles comprising:

- a container having an outer wall and at least one side wall;
- a tightly fitting metal body insertable within said container, said metal body having a surface for engagement with the outer wall of said container;
- at least one of said outer wall of said container and said engagement surface of said metal body having at least one spiral groove forming a heatable inner space for holding the volatile material through which the carrier gas passes and flows, said grooves having a wedge-like cross section with the tips of the wedges disposed in contact with the other of said outer wall of said container and said engagement surface of said metal body to separate the individual turns of the groove from each other;
- an inlet duct leading to one end of said spiral groove for entry of the carrier gas; and
- an outlet duct disposed at the other end of said spiral groove for outletting said enriched carrier gas.

4,883,363
DEVICE INTER ALIA FOR UNIFORMLY DISTRIBUTING SOLID AND/OR LIQUID PARTICLES, AND AN ASSEMBLY COMPRISING SUCH A DEVICE

Francis D. Pillon, 33 rue d'Amiens, and Michel A. Andriot-Ballet, 9 avenue de Bourgogne, both of 60000 Beauvais, France

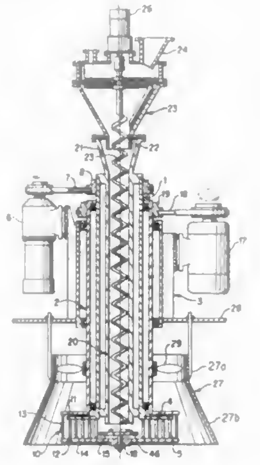
Filed Sep. 8, 1988, Ser. No. 241,664

Claims priority, application France, Sep. 8, 1987, 87 12441

Int. Cl.⁴ B01F *7/16, 15/02;* B02C *13/22;* B65G *65/32*

U.S. Cl. 366—157 11 Claims

1. A device inter alia for uniformly distributing solid and/or liquid particles, characterised in that it comprises, on the one hand, a hollow vertical primary shaft (1) driven in rotation, the bottom end comprising a substantially horizontal primary ring (4) the bottom surface of which bears vertical teeth (5) disposed in concentric circles, the device on the other hand comprising a hollow vertical secondary shaft (2) in which the primary shaft (1) is coaxially disposed and which is driven in rotation in the opposite direction to the rotation of the primary shaft (1), the bottom end of the secondary shaft comprising a cylindrical cage (10) containing a secondary ring (11) secured to the aforementioned bottom end and wider than the primary ring (4) and a disc (12) connected to the bottom surface of the secondary ring (11) by at least three bars (13), the top surface of the disc (12), which faces the bottom surface of the secondary ring (11), comprising on the one hand vertical teeth (14) disposed concentrically and staggered with respect to the teeth (5) on the first ring (4) disposed inside the cylindrical cage (10), and on the other hand comprising a central circular anvil (15) coaxial therewith and at least equal in diameter to the primary shaft (1).



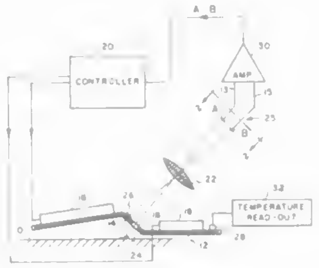
4,883,364
APPARATUS FOR ACCURATELY MEASURING TEMPERATURE OF MATERIALS OF VARIABLE EMISSIVITY

Robert W. Astheimer, Westport, Conn., assignor to Barnes Engineering Company, Shelton, Conn.

Filed Nov. 14, 1988, Ser. No. 270,735

Int. Cl.⁴ G01J *5/06, 5/12*

U.S. Cl. 374—129 1 Claim



1. In a temperature measuring apparatus for determining the temperature of a target material to be measured as compared to the temperature of a spaced reference source having temperature control means for controlling the temperature of the spaced reference source and differential radiation detector means having first detector means exposed to said target material for measuring the temperature of said target material and exposed to said reference source for measuring the temperature of the reference source, the improvement comprising:

- means for locating said differential radiation detector means in spaced relationship to said target material and said reference source,
- said reference source is a plate having a step near the center of said plate, said step containing a hole therein,
- optical means for focusing said differential radiation detector means through said hole onto said target material and said reference source, said first detector means of said differential radiation detection means being exposed to said target material and said second detector means being exposed only to said reference source, said step containing said hole permitting viewing the target material at an angle through said hole to prevent reflection from said detector means back through said hole.
- means for combining the outputs of said first and second detector means to produce a differential error signal,
- means for applying said differential error signal to said temperature control means for driving said reference source to the same temperature of said target material, and
- temperature read out means for indicating the temperature read out means for indicating the temperature of said reference source which will have the same as that of said target material when the differential error signal in zero regardless of the emissivity of the target material.

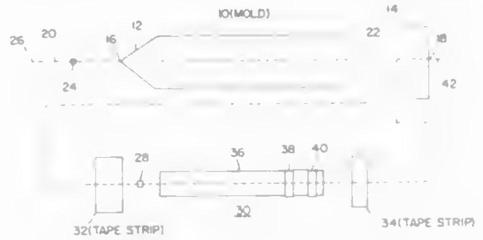
4,883,365
DEVICE FOR MEASURING SUBSURFACE TEMPERATURES OF LIQUID BODIES, USEFUL FOR DETERMINING OPTIMUM FISHING LOCATIONS

Bruce F. Monzyk, 2254 Murray Forest, Maryland Heights, Mo. 63043, and Lloyd A. Woodard, 7322 E. 107th St., Kansas City, Mo. 64134

Filed May 7, 1987, Ser. No. 46,782

Int. Cl.⁴ G01K *1/14, 13/00*

U.S. Cl. 374—136 26 Claims



1. A device for measuring temperature in a liquid body comprising: a temperature sensing element integrally embedded in a thermally insulated matrix material selected from plastics and glasses, and mixtures thereof; said matrix material being chemically resistant to the liquid whose temperature is to be measured; said material having sufficient non-wetting and insulating properties to provide a heat flow pattern from the liquid such that the matrix assumes the temperature of the liquid at a desired level below the surface, and enable the temperature sensing element to measure and retain the temperature at the desired level sufficiently long that it may be observed and/or recorded after the device is removed from the liquid; weight means for ensuring that the device will assume a position at the desired level below the surface of the liquid; and means for supporting the device at the desired level for a time sufficient for the temperature of the liquid at the desired level to be transferred to the matrix material, and then to the sensing element, and said supporting means removing the device from the liquid after the temperature of the liquid at the desired level has been measured.

4,883,366
TEMPERATURE SENSOR

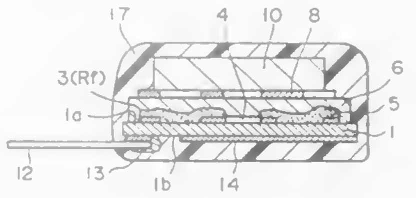
Katsuji Dohl, Kyoto; Akira Kumada, and Mlchihlro Murata, both of Kanagawa, all of Japan, assignors to Murata Mfg. Co., Ltd., Kyoto, Japan

Filed Sep. 28, 1988, Ser. No. 250,738

Claims priority, application Japan, Sep. 29, 1987, 62-245270

Int. Cl.⁴ G01K *7/34*

U.S. Cl. 374—184 5 Claims



1. A temperature sensor comprising a capacitor having electrodes between which a dielectric body having its dielectric constant variable depending on the variations of temperature is interposed, said capacitor being used to define a CR oscillating circuit, said dielectric body being made of a ceramic dielectric material which has a working temperature range in the normal dielectic phase and a dielectric constant having its temperature coefficient ranged between −1,000 ppm/°C. and −10,000 ppm/°C., said ceramic dielectric body being also used as a substrate on which said CR oscillating circuit is formed, said CR oscillating circuit being of a laminated construction which is formed by covering the surface of the ceramic dielectric body which an insulating layer and suitably printing and baking electrically conductive patterns and resistors on the surface of said insulating layer.

4,883,367
BEARING UNIT

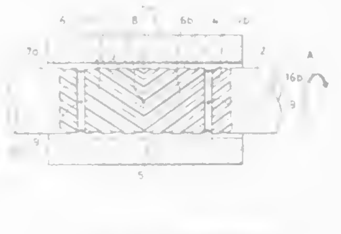
Teruo Maruyama, Hirakata, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

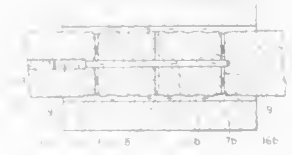
Filed Apr. 28, 1988, Ser. No. 187,346

Claims priority, application Japan, Apr. 30, 1987, 62-106703

Int. Cl.⁴ F16C *32/06*

U.S. Cl. 384—114 5 Claims





1. A bearing unit serving as a static pressure bearing comprising:

- a bearing;
- a shaft which rotates relative to said bearing and includes a plurality of shallow grooves on a surface thereof for generating a pumping pressure, at least one deeper circumferential groove formed in a circumferential direction of said surface, and an inner passage which is formed in the shaft

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and communicates a part of said shallow groove with a part of said circumferential groove; and

a fluid held in a gap formed between said bearing and said shaft which forms a hydrodynamic lubrication film between said bearing and said shaft by relative rotation of said bearing and said shaft with a fraction of said fluid being circulated between said plurality of shallow grooves and said circumferential groove through said inner passage and said gap by said pumping pressure with said bearing unit less said circumferential groove serving as a dynamic pressure bearing.

4,883,368

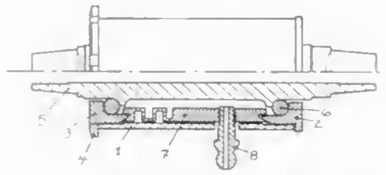
GREASE INJECTOR FOR BICYCLE CRANK BEARINGS

James A. Stein, 711½ Miller Valley Rd., Prescott, Ariz. 86301

Filed Dec. 8, 1987, Ser. No. 130,208

Int. Cl.⁴ G05G *1/14;* **F01M** *11/04;* **F16C** *9/21, 33/66*

U.S. Cl. 384—458 19 Claims



1. Apparatus disposed intermediate bearing cups of opposed bearings within a bicycle crank bearing assembly for encircling a spindle supported by the bearings, said apparatus comprising in combination:

(a) a sleeve for encircling the spindle intermediate the opposed bearings;
(b) first means disposed at one end of said sleeve for sealingly engaging one of the bearing cups;
(c) second means disposed at the other end of said sleeve for sealingly engaging the other of the bearing cups;
(d) means for urging said first and second engaging means into sealing engagement with their respective bearing cups; and
(e) valve means for injecting a lubricant within said sleeve to force lubricant longitudinally within said sleeve and through the opposed bearings.

4,883,369

ROLL MOUNTING DEVICE WITH A COOLED BEARING

Daniel Jude, Villeneuve D'Ascq, France, and James T. Stull, Evans City, Pa., assignors to Dujardin Montbard Somenor, Seclin Cedex, France

Filed Mar. 25, 1988, Ser. No. 173,298

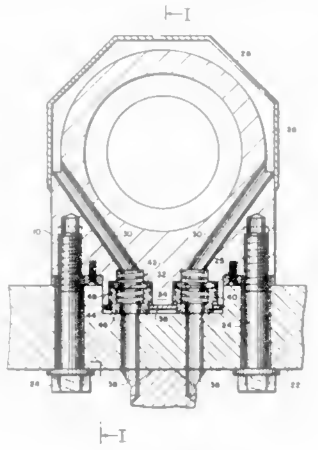
Claims priority, application France, Mar. 25, 1987, 87 04135

Int. Cl.⁴ B22D *11/06;* **F16M** *1/00;* **F16C** *37/00, 23/06*

U.S. Cl. 384—476 5 Claims

1. A mounting device for a roll, which comprises

(a) a support means,
(b) a bearing means for the roll, the bearing means being affixed to the support means,
  (1) the support means and the bearing means defining channels for the circulation of a cooling fluid therethrough, the support means and bearing means channels being in communication with each other across a plane of support of the bearing means on the support means through respective ends of the channels,
(c) a respective tubular element slidingly mounted in a seat at the end of each of said channels defined in one of said means, each tubular element having a cylindrical surface,
(d) a respective spring element biasing each tubular element outwardly from each one of said ends into contact with an opposite surface of the other one of said means, the tubular elements having ends maintained in contact with the opposite surface by the spring elements, and



(e) a respective fluid-tight gasket in the cylindrical surface of each tubular element providing a sliding fluid-tight seal between the tubular element and the seat.

4,883,370

ROTARY STRUCTURE

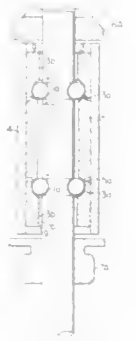
Tsutomu Nakanishi, Fujimidai-kunitachi, Japan, assignor to C.S.U. Ltd., Tokyo, Japan

Filed Jan. 27, 1987, Ser. No. 7,336

Claims priority, application Japan, Jan. 28, 1986, 61-11391[U]

Int. Cl.⁴ F16C *43/06*

U.S. Cl. 384—490 4 Claims



1. A rotary structure for a VCR or floppy disc comprising a shaft having an outer periphery with an annular groove of substantially semi-circular cross-section therein, a ball engaging element around said shaft and having an end adjacent to said groove, an outer race comprising a ring surrounding said shaft and having an inner surface facing said shaft which is provided with a concave ball receiving groove therein of part circular cross-section, a plurality of spherical balls partly received in said annular groove in said shaft and projecting therefrom, said concave surface of said outer race being in contact with said balls to hold said balls rotatably in said annular groove in said shaft and in said ball-receiving groove in said outer race, and a bearing housing surrounding said outer race and fixedly supporting the same, said outer race having an end facing said end of said ball engaging element in spaced relation, said concave ball-receiving groove in said outer race extending to said end of said outer race, the spacing between said end of the outer race and said end of the ball engaging element being such that said ball engaging element can support said balls when freely inserted in said bearing housing during assembly

and enable said outer race to engage said balls and urge the same away from said ball engaging element and into said groove in said shaft, said housing having an open end in which said shaft is inserted, said end of said outer race facing inwardly into said housing in a direction away from said open end, said end of said ball engaging element facing in the direction towards said open end of said housing, said ball engaging element being fixed in said housing and said outer race being located between said ball engaging element and said open end of the housing, said end of said ball engaging member having a plurality of grooves receiving respective balls to hold the balls in spaced separated relation.

4,883,371

BEARING SYSTEM FOR A WHEEL

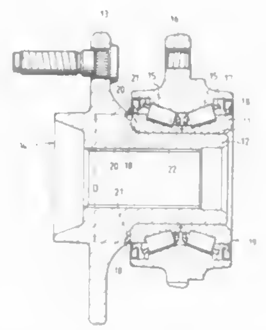
Masaaki Matsumoto, Osaka, Japan, assignor to Koyo Seiko Co., Ltd., Osaka, Japan

Filed Nov. 18, 1988, Ser. No. 272,852

Claims priority, application Japan, Nov. 19, 1987, 62-176672

Int. Cl.⁴ F16C *19/38*

U.S. Cl. 384—559 3 Claims



1. A bearing assembly for a wheel of a vehicle, comprising:

a hub having a first flange portion for securing at one end either to the wheel or a support member of the vehicle, said first flange portion having a first predetermined diameter, said hub having an axially extending cylindrical portion with an outer peripheral surface of a second predetermined diameter less than the first diameter, forming a substantially radially extending wall adjoining the first flange portion, defining a shoulder portion with said first diameter;

a first member having an inner peripheral surface comprising a bearing seat engaging with the outer peripheral surface of the cylindrical portion;

a second member having a second flange concentrically mounted relative said first member for securing either to the wheel or the support member and not to said first flange; and

a separable double row anti-friction bearing, including rolling elements rotatably disposed between a circular outer race formed on an inner peripheral surface of the second member, and circular inner races formed on an opposing outer peripheral surface of the first member;

said first member having a radial dimension extending from the bearing seat at least substantially equal to the radial dimension of said wall;

wherein at least one of the shoulder portion and the outer peripheral surface of the first member adjacent the shoulder has at least two notches for exposing radially extending surfaces of the hub and first member.

4,883,372

DEVICE TO CLAMP A ROLL ASSEMBLY HAVING A VERTICAL AXIS ON UNIVERSAL ROLLING STANDS

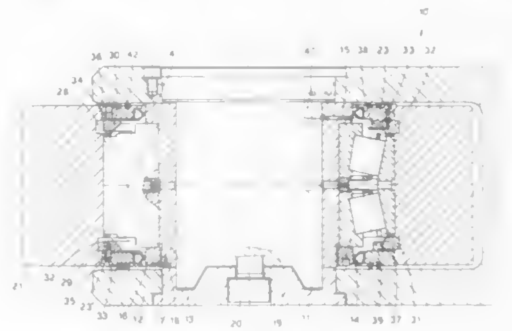
Fausto Drigani, Zugliano (UD), and Alfredo Poloni, Fogliano Di Redipuglia, both of Italy, assignors to Danieli & C. Officine Meccaniche SpA, Buttrio, Italy

Filed Feb. 15, 1989, Ser. No. 310,652

Claims priority, application Italy, Mar. 4, 1988, 83332 A/88

Int. Cl.⁴ F16C *19/38*

U.S. Cl. 384—585 7 Claims



1. Clamping device for a rolling ring assembly (**10′**) which has a vertical axis and comprises a rotation axle (**11′**) fitted to a bearing block (**12′**), a jacket (**13′**) secured to the rotation axle (**11′**) and supported by an end support (**19′**) cooperating with the axle (**11′**) and a bearing (**14′**) installed in cooperation with the jacket (**13′**), a rolling ring (**21′**) that forms a rolling body being fitted to the bearing (**14′**) by means of clamping means including a pair of flanges (**23′**), the device being characterized in that it comprises shoulder rings (**30–31**) consisting of at least one metallic elements capable of being inserted in circumferential grooves (**28–29**) which are substantially perpendicular to the rotation axle (**11′**) and which are formed in the inner wall of the rolling ring (**21′**), the shoulder rings (**30–31**) projecting from the grooves (**28–29**) by a pre-determined distance and cooperating with the flanges (**23′**) to clamp and keep in position the rolling ring (**21′**) against the bearing (**14′**).

4,883,373

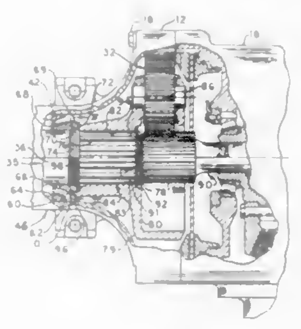
MOUNTING ARRANGEMENT FOR A BEARING ASSEMBLY

Brent E. Rieke, Aurora, Ill., assignor to Caterpillar Inc., Peoria, Ill.

Filed Oct. 17, 1988, Ser. No. 258,532

Int. Cl.⁴ F16C *19/38*

U.S. Cl. 384—585 18 Claims



1. A mounting arrangement for a bearing assembly, comprising:

a first member having a plurality of splines defined on a portion thereof;

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means for fixedly positioning the bearing assembly on the first member;

a second member having a flange portion defined thereon and a plurality of splines formed therethrough, said second member being so constructed and arranged as to be positioned on the first member with the splines thereof in intermeshing engagement with the splines of the first member and at a location adjacent the positioning means with the flange portion in close proximity thereto to limit the movement of the positioning means and the bearing assembly; and

means for securing the position of the second member with respect to the first member.

4,883,374
THRUST BEARING ASSEMBLY

Thomas G. Rhoads, Thomaston, and Paul M. Cornish, Burlington, both of Conn., assignors to The Torrington Company, Torrington, Conn.

Filed May 3, 1988, Ser. No. 190,617

Int. Cl.⁴ F16C *19/30*

U.S. Cl. 384—618 1 Claim

1. A thrust bearing assembly comprising:

a thrust bearing having at least one thrust washer having a radially-extending portion and an axial annular flange and a plurality of rollers adapted to roll along said radially-extending portion of said thrust washer;

an annular band having an axially-extending annular portion having a periphery engaging a periphery of said thrust washer flange of said thrust bearing; and

a selective thrust washer spacer having an annular configuration adapted to allow said spacer to be affixed to said band, said spacer having a radially inwardly extending annular lip, and said annular band having a radially outwardly extending annular flange, said flange being configured to cooperate with said lip of said spacer so as to hold said thrust bearing, said band, and said spacer together in a unitary thrust bearing assembly, said flange being configured to facilitate easy installation of said band into said spacer while providing a positive locking action which prevents the band from being pulled away from said spacer without damaging said band or said spacer.

4,883,375
PRINTING DEVICE

Yoshiyuki Karube, Aza-kuroishi, and Yuji Kawahara, Nagoya, both of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Continuation of Ser. No. 911,024, Sep. 24, 1986, abandoned. This application Apr. 12, 1989, Ser. No. 338,390

Claims priority, application Japan, Sep. 26, 1985, 60-214359

Int. Cl.⁴ B41J *11/20, 13/04*

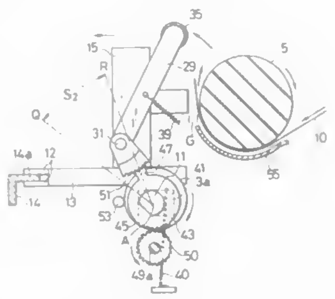
U.S. Cl. 400—55 8 Claims

1. In a printing device including a frame, a platen wound, on its peripheral surface, with a printing medium, a print head which defines a gap between the print head the the platen and is movable parallel to the platen, along a print line of the platen, so that the printing medium is printed as the print head moves, and medium holding means movable between a hold position in which the holding means holds the printing medium down on the platen, and a release position in which the holding means is off the platen, said printing device comprising:

drive means for moving the print head back and forth in a transverse direction, with respect to the print line of the platen, said drive means having an advance stroke, in which the print head is moved toward the platen, and retreat stroke, in which the print head is moved away from the platen; and

operative-transmission means operative for operatively connecting the drive means and the medium holding means so that the medium holding means is moved from the hold position to the release position, wherein:

said retreat stroke of said drive means including, at the start of the retreat stroke, a first stroke portion in which operation of said operative-transmission means is disabled and, subsequent to the first stroke portion, a second stroke



portion in which operation of said operative-transmission means is enabled;

said first stroke portion being allowed to an adjustment operation of said gap for regulating printing condition by said print head on the printing medium, thereby causing said adjustment operation of said gap to be done independently of the operation of said operative-transmission means;

said drive means includes a single reversible electric motor, adapted to provide the advance stroke by rotating in one direction, and to provide the retreat stroke by rotating in the other direction, said motor being stopped at the end position of the advance stroke and then rotating reversely, thus starting the first stroke portion of the retreat stroke; and

said gap adjustment operation being continued during said first stroke portion until said gap has a predetermined width.

4,883,376
DATA PROCESSING APPARATUS WITH CRT AND PRINTER

Takayuki Iwase, Chiryu; Minoru Sakanobe, Komaki, and Yuji Koga, Nagoya, all of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Aichi, Japan

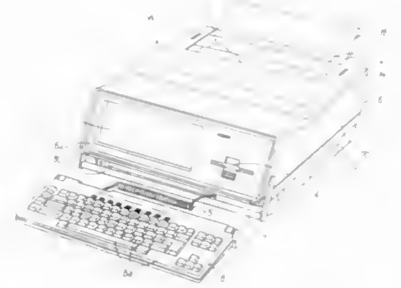
Filed Dec. 30, 1987, Ser. No. 139,634

Claims priority, application Japan, Jan. 6, 1987, 62-808; Jan. 7, 1987, 62-1453

Int. Cl.⁴ B41J *3/46*

U.S. Cl. 400—83 11 Claims

1. A data processing apparatus including a keyboard having a plurality of keys, a CRT display with an electron gun for displaying, on a picture plane, characters corresponding to keys operated on said keyboard, and an impact printer for printing data inputted from said keyboard on printing paper, said data processing apparatus characterized in that said apparatus has a body having upper, bottom, front and rear surfaces which is divided into a first portion including said front and bottom surfaces, and a second portion including said upper and rear surfaces, where said first portion includes said CRT display, the picture plane of which occupies most of said front surface of said first portion with the top of said picture plane slanting rearwardly, said second portion includes said impact printer which is placed over the electron gun of said CRT display, and a shield plate is disposed between said first and second portions for shielding a magnetic flux generating from said impact printer.



4,883,377
CHARACTER PATTERN GENERATOR FOR DOT MATRIX PRINTER

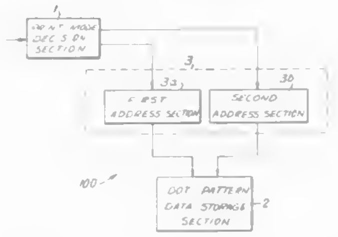
Hiroshi Takeda, Nagano, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan

Continuation of Ser. No. 852,860, Apr. 16, 1986, abandoned. This application Apr. 6, 1988, Ser. No. 183,323

Claims priority, application Japan, Apr. 18, 1985, 60-82951

Int. Cl.⁴ B41J *3/12, 19/32*

U.S. Cl. 400—121 20 Claims



1. A character pattern generator for a dot-matrix type printer having a print mode detector for detecting the fixed pitch or proportional pitch printing modes in accordance with an attribute code associated with a character code input from a host device, a momentary storage for storing the detection by the print mode detector, the character pattern generator outputting a character code signal corresponding to a fixed pitch or proportional pitch mode based on the result of the detection by the printing mode detector, comprising:

storage means for storing a plurality of first character characteristic dot pattern data for fixed pitch printing, and for storing a plurality of second character characteristic dot pattern data for proportional pitch printing only where the proportional pitch printing character characteristic dot pattern data corresponding to a character differs from the corresponding character's fixed pitch character characteristic dot pattern data and is not commonly used for printing the character in the fixed pitch and proportional pitch printing modes, said storage means being formed as a single ROM for storing the fixed pitch mode dot pattern data and the proportional pitch mode dot pattern data are intermixed;

first address location means for indicating the addresses of the fixed pitch character characteristic dot pattern data in the storage means in the fixed pitch mode;

second address location means for indicating the addresses of the character characteristic dot pattern data for proportional pitch printing in the storage means in the proportional pitch mode;

said character characteristic dot pattern data of said first address location means and of said second address location means indicating the address of a memory region wherein character patterns and symbol patterns for each respective mode are stored, information indicating the width of said pattern, and information indicating the size of blank portions adjacent said character and said symbol, said character characteristic dot pattern data being arranged so that when the character characteristic dot pattern of said proportional pitch mode and said fixed pitch mode are the same the address information has the same value; and

selection means coupled to the storage means and the first and second address location means for receiving a character code signal representative of a charaacter and an attribute signal representative of one of fixed pitch and proportional pitch printing modes and for supplying the character code signal to the first address location means or the second address location means in accordance with the attribute signal.

4,883,378
CONTROL SYSTEM FOR SHEET-FEEDING DEVICE FOR PRINTING APPARATUS

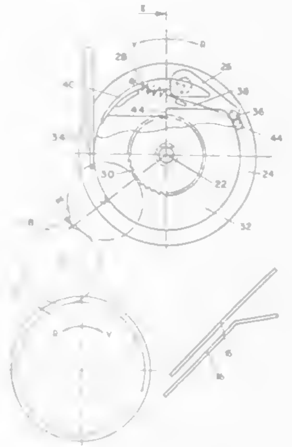
Helmut Steinhilber, Saline 29, 7210 Rottweil, Fed. Rep. of Germany

Division of Ser. No. 846,779, Mar. 26, 1986. This application Dec. 1, 1987, Ser. No. 132,812

Claims priority, application Fed. Rep. of Germany, Apr. 4, 1985, 3512419

Int. Cl.⁴ B41J *11/58, 13/10*

U.S. Cl. 400—624 5 Claims



1. A device for feeding individual sheets to the platen of a printing apparatus which incorporates a plurality of storage units each accommodating a stack of individual sheets, said device also incorporating separating means assigned to each storage unit engageable with the uppermost sheet of a respective stack in a respective storage unit, said device being driven by said platen and further incorporating selecting means for each storage unit driven by said platen to permit only the driving of the separating means of a selected storage unit, whereby each selecting means incorporates a driven engagement member and a switching means located at a given rotary distance from one position, which rotary distance differs for each storage unit and whereby said switching means guides said engagement member in one direction of rotation into an engagement position for establishing the driving connection for said separating means and in the opposite direction of rotation guides said engagement member beyond said engagement position, characterized by the provision of locking means

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for each selecting means which in one direction of rotation lock and release said switching means and furthermore characterized by a counting device which, by addition or subtraction, counts or measures the line movement of said printing apparatus platen in forward or reverse directions and, after the number of line movements corresponds to the complete sheet-feeding and printing cycle, switches the locking device from the blocking position to the releasing position.

4,883,379
CORRECTION SHEET AND CORRECTION METHOD

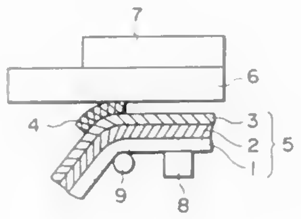
Tsuguhiro Fukuda; Hiroshi Sato, and Kazuhiro Nakajima, all of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 2, 1988, Ser. No. 162,993

Claims priority, application Japan, Mar. 2, 1987, 62-048585; May 27, 1987, 62-131003

Int. Cl.⁴ B41M *5/26*

U.S. Cl. 400—697.1 8 Claims



1. A correction sheet comprising an adhesive layer disposed on a support so that the adhesive layer develops an adhesive force on heating sufficient to adhere onto an erroneously recorded image on a recording medium and upon peeling to remove the erroneously recorded image from the recording medium; wherein the adhesive layer comprises a separation prevention layer comprising a thermoplastic resin having a glass transition temperature of −40° to 30° C. and an upper layer developing an adhesion on heating and containing a resin having a glass transition temperature of 60° C. or higher in a proportion of 1-25wt %.

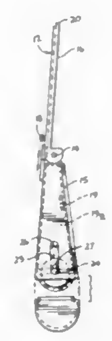
4,883,380
LOTION APPLICATOR

Paul H. Ritterman, 5938 St. Mary's St., Baltimore, Md. 21207

Filed Sep. 26, 1988, Ser. No. 248,989

Int. Cl.⁴ A45D *34/04*

U.S. Cl. 401—208 1 Claim



1. A lotion applicator apparatus for application of fluid to a surface of the human body comprising,

a housing means including a reservoir for replaceably storing a quantity of said fluid therein, and

a handle means pivotally mounted to said housing means for movement from a first position adjacent to said housing means to an extended second position extending outwardly of said housing means, and

latch means for securing said handle means in said extended second position, and

a semi-cylindrical sponge-like applicator member selectively positionable in said housing means for dispensing fluid from said reservoir to the human body, and

wherein said applicator member is reciprocatably mounted in said housing means and positionable from a first position retracted within said housing means to a second position extending outwardly of said housing means, and

wherein said applicator member includes a hemispherical form member positioned interiorly of said applicator member and spaced and secured to an axle wherein said axle is mounted for manual grasping from said first position to said second position, and

wherein said handle means includes a plurality of flanges orthogonally and integrally formed to sides of said handle means and nestable within recesses formed in said housing means, and

wherein said handle means includes a reduced terminal tip extending outwardly of said handle means between said flanges and positionable within a recess formed within a cap lid, and said cap lid is frictionally securable to an end of said housing means remote from the pivotal mounting of said housing means for securement of said housing means and simultaneously securing said handle means in said first position, and

wherein said axle extends outwardly of said housing means through either side thereof for manual grasping, and

wherein said latch means is slidably mounted on said housing means and is bifurcated at a forward end for engaging a pin orthogonally directed outwardly of said handle means, and

wherein said reservoir is accessible upon removal of a replaceable plug mounted within said housing means wherein said plug is underlying said handle means in said first position and exposed when said handle means is in said second position.

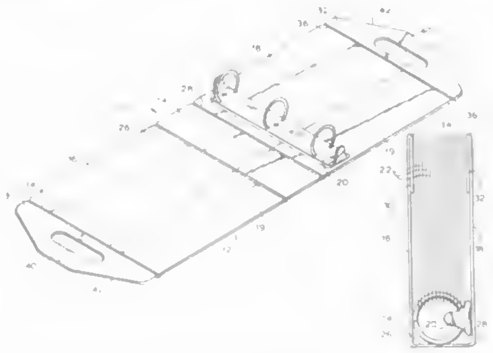
4,883,381
BOOK

Trudy Pisciotti, New Milford, N.J., and Dennis Healy, Baltimore, Md., assignors to Prentice Hall, Inc., Englewood Cliffs, N.J.

Filed Sep. 8, 1988, Ser. No. 241,706

Int. Cl.⁴ B42F *1/00*

U.S. Cl. 402—74 16 Claims



15. A book configured for easy carrying, comprising:

a. a continuous cover of plastic including:
  i. a spine;
  ii. front and rear panels
  iii. front and rear flaps, each of said flaps defining an aperture therethrough in the form of an elongated slot extending parallel to said spine configured and dimensioned to receive fingers;

said front and rear panels being connected to said spine along one panel edge by first foldlines and to said flaps along said remote panel edge by second foldlines, said first and second foldlines being parallel;

said panels being movable between a closed orientation wherein said panels are generally parallel and an open orientation wherein said panels are at least transverse;

said flaps tapering inwardly away from said second foldlines and being movable between a storage orientation and a carrying orientation, said flaps in said storage orientation being disposed intermediate said panels, overlying said panels without appreciably adding to the peripheral dimensions thereof, and extending substantially parallel to said panels generally towards said spine, said flaps in said carrying orientation extending generally outwardly from said panels and away from said spine, with both said flap apertures aligned to permit passage therethrough of fingers and thereby facilitate carrying of said book, said spine, said panels and said flaps being substantially sheet members; and

b. means fixed to said cover for securing paper intermediate said panels, said securing means being located adjacent the connection of said spine and one of said panels so as to avoid said securing means or the paper precluding movement of either of said flaps to said storage orientation.

4,883,382
MOUNTING MEMBER

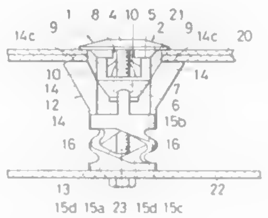
Takashi Mushya, Kanagawa, Japan, assignor to Nifco, Inc., Kanagawa, Japan

Filed Nov. 29, 1988, Ser. No. 277,157

Claims priority, application Japan, Dec. 2, 1987, 62-184041

Int. Cl.⁴ B25G *3/00*

U.S. Cl. 403—405.1 13 Claims



1. A mounting member for mounting a first member, having a mounting hole, upon a second member, with a stud secured thereto, such that said first member is spaced apart from said second member, comprising:

a stud holder section including a stem portion, having a head having a greater diameter than said mounting hole of said first member; and an inserting portion extending from said head, to be inserted through said mounting hole of said first member, and provided with securement means for securing a free end portion of said stud; and

a spacer section including a stem portion having a plurality of legs for cooperating with said head of said stud holder section so as to clamp said first member therebetween, and a free end portion having a spring portion capable of being compressed when urged in a longitudinal direction by means of a biasing force and of elastically restoring to its initial non-compressed state when said biasing force is removed, said spacer section being capable of being penetrated by said stud and being interposed between said first and second members.

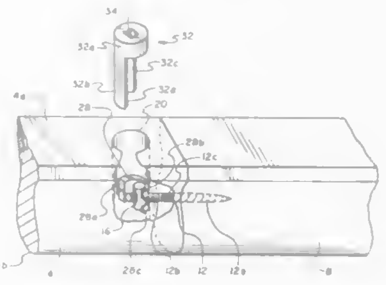
4,883,383
COMPONENT FASTENING SYSTEM

Brian Challis, No. 9 Northridge Way, Sandy, Utah 84092

Filed Jul. 15, 1988, Ser. No. 219,195

Int. Cl.⁴ F16D *1/00;* **F16B** *5/00*

U.S. Cl. 403—407.1 14 Claims



1. Apparatus for fastening together in a mating relationship two articles having complementary, facing surfaces, wherein one of the articles has a cylindrical opening whose axis is generally parallel with said one article's facing surface, and a bore extending from the cylindrical opening to the facing surface ay an orientation generally perpendicular thereto, said apparatus comprising

an elongate shaft, one end of which is fixable in the facing surface of the other article so that the other end of the shaft projects generally perpendicularly therefrom to extend through the bore and into the cylindrical opening of said one article when the articles are placed with their facing surfaces together in a mating relationship, the other end of said shaft including a generally cylindrically-shaped element whose cylindrical axis is substantially perpendicular to the longitudinal axis of the shaft and is positioned to be generally parallel with the cylindrical axis of the opening,

an arcuate wedge means tapered from a thick back end to a narrower front end, the outer surface of the wedge means being shaped to generally conform to the side wall of the cylindrical opening to enable inserting the wedge means into the opening, and rotating the wedge means about the axis of the opening so that the wedge means moves, front end first, between the cylindrically-shaped element and adjacent side wall of the opening to increasingly urge the element away from the wall to thereby secure the two articles together, and

socket means comprising
  a generally cylindrically shaped head having a tool receiving element to which a tool may be attached for causing rotation of the head, and
  a generally semicylindrical skirt projecting downwardly from the head and having a leading edge and a trailing edge, said skirt being dimensioned to enable insertion thereof into the opening of said one article in registry with the wedge means so that as the head is rotated, the leading edge of the skirt engages the back end of the wedge means to cause the wedge means to rotate.

4,883,384
PROTECTIVE ROADWAY MARKER GUARD RAILS

Peter Hedgewick, Windsor, Canada, assignor to Pac-Tec, Inc., Newark, Ohio

Filed Dec. 14, 1988, Ser. No. 284,127

Int. Cl.⁴ G08B *1/00*

U.S. Cl. 404—14 12 Claims

1. A roadway pavement marker (11) protective member comprising; a guard rail (10) having two inclined ramps (12*a*, 12*b*) aligned in a common plane, each inclined ramp (12*a*, 12*b*) going from a lower end (16*a*, 16*b*) to an upper end (14*a*, 14*b*), a bridging surface (18) joins said upper ends (14*a*, 14*b*), said

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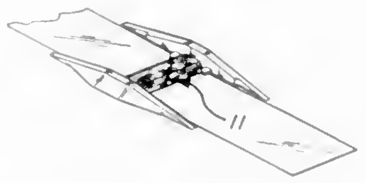
lower ends (**16***a*, **16***b*) are at diametrically opposed ends of the guard rail (**10**),

a locating means (**20**) for locating said member with respect to a roadway surface having an upper locating end (**22**) and a lower locating end (**24**), said upper locating end (**22**) being substantially coincident with said guard rail (**10**) said lower locating end (**24**) being located between said guard rail (**10**) and a keel member (**32**), with an inclined ramp (**26**) extending between the upper (**22**) and lower locating ends (**24**),

positioning means (**28**) for positioning said protective member relative to both the pavement marker (**11**) and roadway surface characterized by first and second spaced apart projections (**30***a*, **30***b*), one projection (**30***a*, **30***b*) being adjacent to each inclined ramp (**12***a*, **12***b*) and opposite said locating means (**20**),

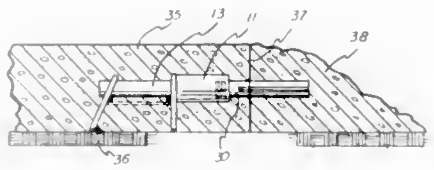


a keel member (**32**) having an upper end (**34**) and a lower end (**36**), said upper end (**34**) extending from the guard rail (**10**) to the lower end (**36**), said keel member (**32**) having a downwardly curved bottom surface (**38**),

said protective member characterized by said guard rails (**10**) being secured in the roadway surface by said keel member (**32**) using only one slot in said roadway surface for placement of the protective member with the marker resting on the roadway surface and having an inclined surface to deflect oncoming objects from striking the pavement marker.

4,883,385
LOAD TRANSFER ASSEMBLY

Mark K. Kaler, Kettering, Ohio, assignor to Dayton Superior Corporation, Miamisburg, Ohio
Continuation of Ser. No. 182,273, Apr. 15, 1988, abandoned. This application Apr. 20, 1989, Ser. No. 341,262
Int. Cl.⁴ E01C *11/02*
U.S. Cl. 404—47 11 Claims



1. Apparatus for use in the construction of concrete pavement of predetermined thickness laid without stationary forms by a paving machine to transfer load lengthwise of said pavement across a predetermined vertical plane defined by the adjacent ends of two sections of said pavement laid at different times while providing for relative lengthwise movement of said pavement sections in use, comprising:

(a) a plurality of elongated coupling members each having a socket at the front end thereof,

(b) each of said coupling members having a straight cylindrical dowel releasably secured in said socket therein and projecting therefrom,

(c) means for attaching said coupling members together in spaced parallel relation with said front ends thereof defining a common vertical plane,

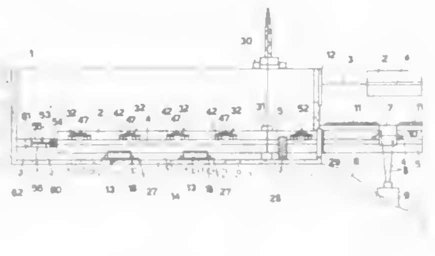
(d) means to be embedded in the first of said sections to be laid for supporting said attached coupling members on a roadbed with said coupling members and dowels defining a substantially horizontal plane aligned with a vertically intermediate location in said pavement and with said vertical plane defined by said coupling member ends extending substantially parallel with and in spaced relation with said predetermined vertical plane such that a portion of each of said dowels extends through said predetermined vertical plane,

(e) said supporting means being constructed and arranged to stand on said roadbed in spaced relation with said predetermined vertical plane and to support said dowels projecting therefrom in cantilevered fashion through said plane, and

(f) said dowels being of a material susceptible to being readily cut off by a saw capable of cutting concrete whereby upon saw cutting said pavement along said predetermined vertical plane, the cut ends of said dowels will be exposed in the end of the resulting pavement section for removal from said coupling members and replacement thereof in said sockets by straight cylindrical dowels projecting from said pavement section for embedding in the next pavement section to be laid.

4,883,386
METHOD AND DEVICE FOR UNDERWATER MODULAR CROSSING CONSTRUCTION

Crescenzo Orlando, Sesto San Giovanni; Sandro Zenere, San Donato Milanese; Antonio Butera, Rome, and Leonardo Beghetto, Venice, all of Italy, assignors to Saipem S.p.A., Milan; Snamprogetti S.p.A., Milan; Spea S.p.A., Milan and Tecnomare S.p.A., Venice, all of, Italy
Filed May 11, 1988, Ser. No. 192,581
Claims priority, application Italy, May 15, 1987, 20531 A/87
Int. Cl.⁴ E21D *10/14*
U.S. Cl. 405—136 5 Claims



3. An apparatus for making an underwater crossing using prefabricated modules which are sequentially butt-connected in a floodable assemblage basin until the bank opposite that of the assemblage basin is reached, comprising:

an adjustable support saddle on which the module comes to rest when the floodable basin is emptied, wherein said adjustable support saddle is positioned on the bed of the basin, and wherein said adjustable support saddle includes:

(a) a base axially moveable on the bed of the basin;

(b) wheels for moving said base;

(c) a ratiomotor for driving the saddles;

(d) hydraulic adjustment cylinders fastened to the sides of said base wherein pistons of said cylinders operate against rigid shoulders and guide structures fastened on the bed of the basin;

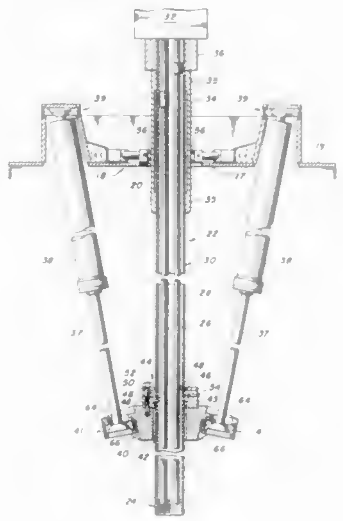
(e) vertically adjustable hydraulic cylinders attached to and supported by said base;

(f) a curvilinear structure positioned above said base having a fixed portion which is attached to said floodable assemblage and a movable portion which is circumferentially movable upon the surface of said fixed portion and wherein said movable portion is adapted to support the prefabricated module; and

(g) hydraulic cylinders hinged to said curvilinear structure for causing the circumferential movement of said movable potion.

4,883,387
APPARATUS FOR TENSIONING A RISER

Roderick J. Myers, and Jorge H. Delgado, both of Houston, Tex., assignors to Conoco, Inc., Ponca City, Okla.
Continuation-in-part of Ser. No. 41,904, Apr. 24, 1987, which is a continuation-in-part of Ser. No. 936,579, Dec. 1, 1986, Pat. No. 4,733,991. This application Jun. 29, 1988, Ser. No. 212,801
Int. Cl.⁴ E21B *43/01*
U.S. Cl. 405—195 20 Claims



1. Apparatus for resiliently interconnecting a substantially rigid riser with a deck of a floating production platform, said apparatus comprising

a plurality of riser tensioner cylinders each including a piston rod with a piston head connected thereto, said piston rod having a first length, and said riser tensioner cylinder having a second length, means for mounting said piston rod for movement within said riser tensioner cylinder;

means connecting each of said piston rods to said riser at an angle relative thereto;

spring means engaged between each said piston head and each said riser tensioner cylinder adapted to apply an upward tensioning force on said riser, wherein said spring means exert a non-linearly increasing force between said deck and said riser as relative motion between said deck and said riser increases, such that said first length of said piston and said second length of said cylinder may be significantly reduced thereby reducing the overall vertical distance between said platform deck and said means interconnecting said riser and said piston rod.

4,883,388
LOAD COMPENSATING SYSTEM

T. Dave Cherbonnier, 57 Kheam Hock Rd., Singapore, Hong Kong (1129)
Continuation-in-part of Ser. No. 783,679, Oct. 3, 1985, Pat. No. 4,662,786. This application Apr. 8, 1987, Ser. No. 35,784
The portion of the term of this patent subsequent to May 5, 2004, has been disclaimed.
Int. Cl.⁴ E21B *7/12, 19/09*
U.S. Cl. 405—195 19 Claims

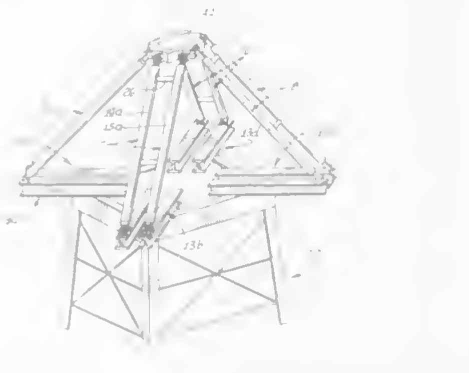
1. In a dynamic load compensating system, the combination comprising

(a) first structure to receive applied loading, and subject to displacement along a longitudinal path generally in the direction of load exertion,

(b) a base spaced from said structure, and

(c) means including pairs of generally parallel fluid actuator members pivotally connected to said base and to said structure for supporting said structure on the base, said members acting to resist said displacement of said structure characterized in that said base may move relatively toward and away from said structures while said loading continues to be applied to said structure,

(d) the actuator members of each pair being interconnected along their lengths between their pivotal connections to the base and said first structure so as to extend in and



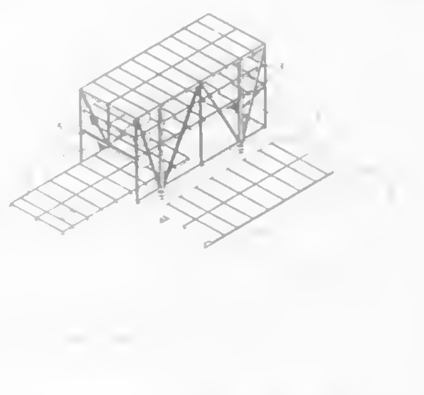
remain in side by side parallel relation during actuation, said actuators including pistons and cylinders, the cylinders being directly interconnected proximate ends thereof from which the pistons emerge,

(e) there being two pairs of said actuator members, respectively at opposite sides of the path of said structure displacement, the actuators of each pair having like inclination to said path, and being inclined from vertical,

(f) and including side load resisting clevis devices pivotally connecting each of actuators at its opposite ends respectively to said structure and to said base.

4,883,389
METHOD FOR CONSTRUCTING HUGE MODULES, AND A MODULE FABRICATED BY SAID METHOD

Torodd E. Olsen, Haugesund, Norway, assignor to Haugesund Mekaniske Verksted A/S, Haugesund, Norway
PCT No. PCT/NO87/00017, § 371 Date Nov. 2, 1987, § 102(e) Date Nov. 2, 1987, PCT Pub. No. WO87/05349, PCT Pub. Date Sep. 11, 1987
PCT Filed Mar. 6, 1987, Ser. No. 124,792
Claims priority, application Norway, Mar. 7, 1986, 860856
Int. Cl.⁴ E02B *17/08*
U.S. Cl. 405—204 11 Claims



1. A method for constructing and assembling huge modules (1), particularly trusswork modules of steel for oil rigs operating at sea, wherein the completed module is defined by a sur-

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rounding module frame (**2**) comprising trusswork frames for side walls (**5,6,7,8**) and roof (**4**), and at least one deck structure (**3**) provided therein and secured to said module frame (**2**), characterized in that a first separately built deck structure (**3**) is introduced at floor level into said module frame (**2**), either through a temporary lower opening (**12**) in one of the side wall frames, or from below into a module frame lifted from floor level, and is properly positioned inside said module frame (**2**), and is then controllably elevated in said module frame (**2**) to a desired level, whereafter said deck structure (**3**) is secured to said module frame (**2**), and that this sequence is, if desired, repeated so that a second separately built deck structure is similarly introduced into said module frame (**2**), is properly positioned and elevated to a desired level underneath said first deck structure, and is then secured to said module frame, said sequence being repeated until the desired number of deck structures is installed, and that any lower opening (**12**) in said side wall frame(s) is then closed by providing trusswork braces (**9**).

4,883,390

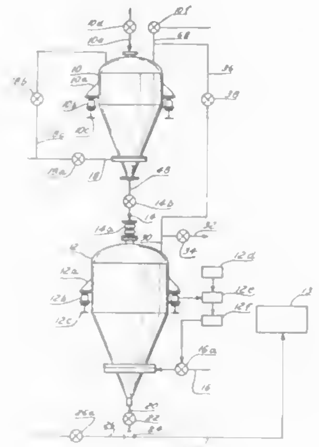
METHOD AND APPARATUS FOR EFFECTING PNEUMATIC CONVEYANCE OF PARTICULATE SOLIDS

Harold Reintjes, Short Hills, and Sam Lampert, Upper Montclair, both of N.J., assignors to Petrocarb, Inc., Charlotte, N.C.

Filed Aug. 16, 1982, Ser. No. 408,634

Int. Cl.⁴ B65G *53/66, 53/36, 53/3P*

U.S. Cl. 406—24 6 Claims



1. Apparatus for effecting pneumatic conveyance of particulate solids comprising:

(a) container means having a lower part which comprises an inverted conical section,

(b) a double cone baffle mounted centrally within said container means composed of two cones each of which is smaller than said conical section and which are joined base to base and with an axis common to that of said container means with the wall of the lower cone of said double cone baffle being substantially parallel to the coextensive wall of said inverted conical section and forming an annular space therebetween,

(c) said container means having a solids charging inlet near its top and being adapted to hold gases at elevated pressures,

(d) means for introducing a gas into said annular space,

(e) means for controlling the pressure in said container means,

(f) means forming a mixing chamber under said container means with an inlet passageway connecting the bottom of said inverted conical section with the top of said mixing chamber, and said mixing chamber having a discharge passageway,

(g) means for supplying a controllable amount of gas to one side of said mixing chamber,

(h) a conduit system,

(i) means to conduct particulate solids pneumatically out of said discharge passageway of said mixing chamber and to said conduit system,

(j) supply means for supplying a predetermined amount of particulate solids to the upper zone of said container means during the period when said particulate solids are flowing from said mixing chamber into said conduit system without substantially influencing the pressure in said container means,

(k) means for controlled venting of gas from said container means during the periods when said supply means is supplying solid material to said container, and

(l) means for measuring the weight rate of solid material flowing from said container, including load cell means for generating a first signal decreasing in proportion to the weight of material measured by the load cell means;

(m) means for generating a second signal proportional to the desired weight rate of solid material flow from said container;

(n) means for comparing said first and second signals and determining the deviation therebetween; and

(o) said means for controlling pressure in said container means being responsive to the deviation between said first and second signals to produce a continuous flow of said particulate solids to said mixing chamber even during the period when said particulate solids are being supplied to the upper zone of said container means.

4,883,391

BALL END MILL

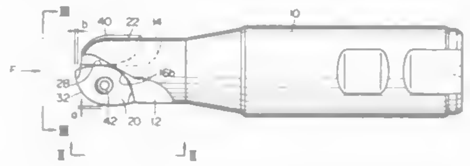
Osamu Tsujimura, Kawasaki; Tatsuo Arai, Kitamoto, and Masayuki Okawa, Kawasaki, all of Japan, assignors to Mitsubishi Kinzoku Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 21, 1988, Ser. No. 247,347

Claims priority, application Japan, Sep. 24, 1987, 62-145723[U]

Int. Cl.⁴ B23B *27/06*

U.S. Cl. 407—40 2 Claims



1. A ball end mill comprising:

an end mill body including an axis of rotation therethrough and a recess formed in a forward end portion thereof and having a bottom face, said forward end portion having a bore formed therein and opening to said bottom face of said recess, said bore including a cylindrical bore portion disposed adjacent to said bottom face and an internally threaded portion extending coaxially from said cylindrical bore portion, said cylindrical bore portion being greater in diameter than said internally threaded portion;

an indexable cutter insert having a front face, a rear face and at least two convexly curved side faces lying between said front and rear faces, said insert having at least two convexly curved main cutting edges each defined by the intersection of a respective one of said convexly curved side faces with said front face, said insert having an aperture formed therethrough and extending generally perpendicular to said rear face, and insert being received in said recess with said rear face held in contact with said bottom face of said recess in such a manner that one of said main cutting edges is indexed in a cutting position, said front face serving as a rake surface for said indexed main cutting edges; and

a clamp screw for releasably securing said cutter insert to said recess, said screw including an externally threaded portion and a cylindrical engaging portion disposed coaxially with said externally threaded portion and being greater in diameter than said threaded portion, said clamp screw passing through said aperture of said insert and being received by said bore in such a manner that said externally threaded portion is threaded into said internally threaded portion while said cylindrical engaging portion is held in engagement with said cylindrical bore portion;

said aperture having a larger diameter portion disposed adjacent to said front face, a reduced diameter portion disposed adjacent to said rear face and a tapered portion tapering from said larger diameter portion to said reduced diameter portion, said clamp screw having a head portion disposed adjacent to said cylindrical engaging portion and having a tapered portion tapering to said cylindrical portion, said head being received in said larger diameter portion of said aperture with said tapered portion held in abutment with said tapered portion of said aperture so that when said screw is tightened, said head portion presses said insert against said recess, said bottom face of said recess facing generally in the direction of rotation of said body, said recess having a generally arcuate side wall facing axially forwardly and radially outwardly of said end mill body, said insert being of a generally ellipsoidal shape having a pair of convexly curved side faces, the side face cooperating with said front face to define the other main cutting edge being held in abutment with said side wall.

4,883,392

FLY-CUTTER MILLING MACHINE

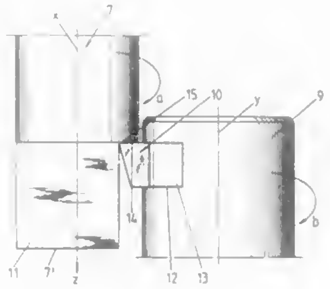
Karl Lieser, Wuppertal, Fed. Rep. of Germany, assignor to Wera Werk Hermann Werner GmbH & Co., Wuppertal, Fed. Rep. of Germany

Filed May 13, 1988, Ser. No. 193,875

Claims priority, application Fed. Rep. of Germany, May 30, 1987, 3718261

Int. Cl.⁴ B23C *3/04*

U.S. Cl. 409—165 4 Claims



1. A fly-cutter milling machine for the simultaneous milling of a plurality of profiled structures having the form of grooves, surfaces and the like in rotating workpieces, the machine comprising:

a drive means for rotating a workpiece;

a rotating tool holder, and a fly cutter which protrudes radially outwards on the rotating tool holder;

a drive means for operatively rotating the cutter; and

control means connected to said cutter and workpiece drive means so that the cutter plunges via a plunge path through the cross section of the workpiece with a speed corresponding to the conditions of the fly-cutting, the cutter exiting the workpiece via an emerged path, speeds of rotation of tool holder and workpiece being in a ratio determined by a desired profiled structure, the speed of rotation of the fly cutter being different over the emerged path than over the plunge bath.

4,883,393

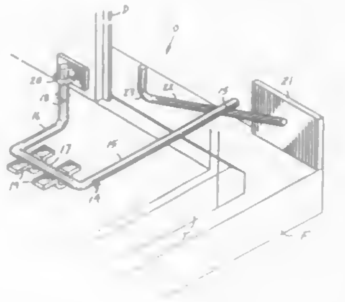
CARGO TRAILER SAFETY LOCK

William D. Acquaro, 268 Sackett Rd., Westfield, Mass. 01085

Filed Apr. 13, 1988, Ser. No. 181,169

Int. Cl.⁴ B60P *1/00*

U.S. Cl. 410—52 11 Claims



1. A cargo trailer safety lock apparatus for use in combination with an elongate vehicular trailer positioned on a transport surface with said trailer formed with rearwardly positioned-doors pivotally mounted to said trailer for movement outwardly of said trailer, said apparatus comprising,

a latch bar pivotally secured to an underlying surface of said trailer proximate said trailer doors, and

said latch bar including a plurality of legs with a first elongate leg means extending linearly beyond said trailer doors for cooperation with a biasing bar integrally secured to a plate means secured to said transport surface, and

said latch bar including a second leg extending a distance parallel to said first elongate leg means, and

a third leg means integrally and angularly secured to said second leg for passage through an opening in said underlying surface of said trailer and through a latch member secured on an interior surface of one of said doors for securement of said doors.

4,883,394

COVER WITH INTEGRAL FASTENING MEANS

Gerbrig W. Van der Woude, Rock Island, and Timothy M. Moore, Silvis, both of Ill., assignors to Polyco, Inc., Moline, Ill.

Continuation-in-part of Ser. No. 105,361, Oct. 7, 1987. This application Oct. 14, 1988, Ser. No. 258,751

Int. Cl.⁴ F16B *13/06;* **B44D** *5/08*

U.S. Cl. 411—51 1 Claim

1. An expansion fastener for grates which is adapted to be supported from a hole in a cover member in such a manner as

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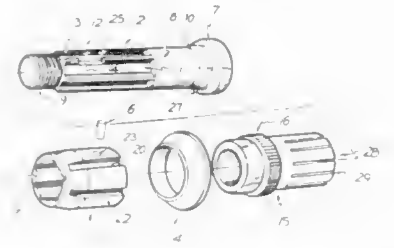
to be inserted between the bars of a grate and manipulated so as to expand into engagement with the surfaces of the bars of said grate, said fastener including a "U" shaped channel member having two planar sides and the third side having a predetermined configuration and a hole therein, an externally threaded shaft with a manipulative head larger than the hole in said cover member inserted in said hole in said channel member;

- a nut having a conical face with lateral extensions 180° apart threaded on said shaft;
- said planar sides of said channel member expanding as said nut is rotated on and therefore restrained as said shaft is rotated to secure the channel member to the sides of said bars.

4,883,395
CONNECTING DEVICES FOR STRUCTURAL ELEMENTS

Dinko Klaric, South Melbourne, Australia, assignor to Space Display Systems Pty. Ltd., South Melbourne, Australia
Filed Dec. 29, 1987, Ser. No. 139,202
Claims priority, application Australia, Jan. 16, 1987, PH9909
Int. Cl.⁴ F16B *13/06*
U.S. Cl. 411—55 4 Claims



1. A device for connecting two hollow tubular structural elements, a first one of said elements having a threaded opening and a second one of said elements having a cavity therein, comprising:

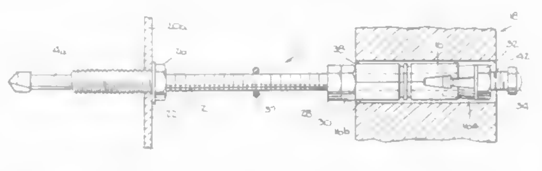
- a bolt having a threaded end adapted to cooperate with the threaded opening of the first structural element, and a head end, said bolt increasing in thickness toward said head end;
- a nut member disposed on said bolt and rotationally keyed so as to be adapted to rotate said bolt and to axially float on said bolt; and
- a sleeve disposed between said nut member and said head end of said bolt, said sleeve being adapted to be force fitted into the cavity of the second structural element, said sleeve being at least partially deformable;
- whereby upon sufficient rotation of said bolt in the threaded opening, said bolt contacts inwardly and expands at least a part of said sleeve outwardly to enhance the force fitting of said sleeve in the cavity.

4,883,396
DUAL EXPANSION AND NON-EXPANSION ANCHOR

Alfred A. Shamah, and James R. Schroeder, both of York, Pa., assignors to U.S.E. Diamond, Inc., York, Pa.
Continuation-in-part of Ser. No. 147,246, Jan. 22, 1988, Pat. No. 4,772,166. This application Aug. 15, 1988, Ser. No. 232,698
Int. Cl.⁴ F16B *25/00, 13/06*
U.S. Cl. 411—55 7 Claims

1. A dual anchor comprising:

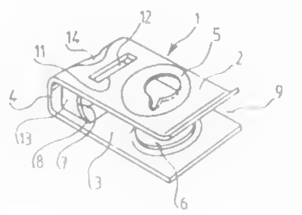
a. a screw-threaded connecting tie,
b. a first non-expansion fastener on said connecting tie at one end thereof,
c. a second expansion fastener on said connecting tie at the opposite end thereof;
d. a wedge nut of said second expansion fastener mounted on, but free from threaded engagement with, said connecting tie,
e. first stop means on said connecting tie engaging a structural member for said first non-expansion fastener,
f. said first non-expansion fastener being rotatable when the connecting tie is rotated to insert it into said structural member and secure it thereto,
g. second stop means on said connecting tie engaging an expansion sleeve of the second expansion fastener,



h. an additional nut threaded to said connecting tie,
i. said additional nut abutting the wedge nut of the second expansion fastener, and
j. the expansion sleeve of the second expansion fastener being expandable when the additional nut is rotated relative to the connecting tie to drive said wedge nut of the second expansion fastener against said expansion sleeve.

4,883,397
U-SHAPED FASTENING CLIP DEVICE WITH RESILIENT TONGUE MEMBER

Dominique Dubost, Saint Cloud, France, assignor to RAPID S.A., Paris Cedex, France
Filed Feb. 15, 1989, Ser. No. 310,871
Claims priority, application France, Feb. 24, 1988, 88 02241
Int. Cl.⁴ F16B *37/04;* **B42F** *1/02*
U.S. Cl. 411—174 6 Claims

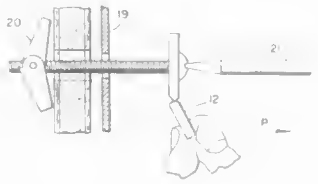


1. A resiliently deformable U-shaped fastening clip adapted to be clipped onto the edge of an article, the clip comprising: two resilient legs;

- a portion connecting the two resilient legs to one another;
- a resilient tongue, the tongue member comprising a first end integrally connected to a first one of the two legs and a second end which is free, the tongue extending between the two legs for maintaining the two legs in a spaced apart position before the clip is clipped onto the article and for allowing the two legs to remain in a closed position after being clipped onto the article;
- a tongue member receiving portion formed in the second one of the two legs;
- the free end of the tongue member contacting the second leg to maintain the two legs in a spaced apart position before the clip is clipped onto the article and the free end being movable to a position in which the tongue is received in the tongue member receiving portion of the second leg so as to allow the two legs to remain in a closed position after being clipped onto the article.

4,883,398
TOGGLE BOLT INSTALLATION, HARDWARE, AND MANUFACTURE

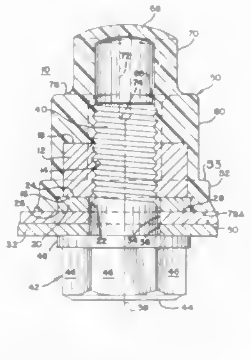
Edward H. Duncan, Avonmore, Pa., assignor to Daniel A. Sullivan, Jr., New Kensington, Pa., a part interest
Filed Jun. 10, 1987, Ser. No. 60,327
Int. Cl.⁴ F16B *21/00*
U.S. Cl. 411—344 1 Claim



1. In combination with a toggle bolt, a means for exerting a pull on the bolt of the toggle bolt, for maintaining contact of its wings with the inner surface of a wall until the bolt has been tightened, said means comprising a washer dimensioned for permitting exertion of pull at final tightening, said washer being rigid and having an inclined tab, the tab having a joint with the washer of reduced cross section permitting the tab to be broken off.

4,883,399
PLASTIC ENCAPSULATED NUT AND WASHER ASSEMBLY

Barry L. MacLean, Libertyville, Ill., assignor to MacLean-Fogg Company, Mundelein, Ill.
Filed Dec. 5, 1988, Ser. No. 280,140
Int. Cl.⁴ F16B *19/00, 33/00, 37/14*
U.S. Cl. 411—431 20 Claims

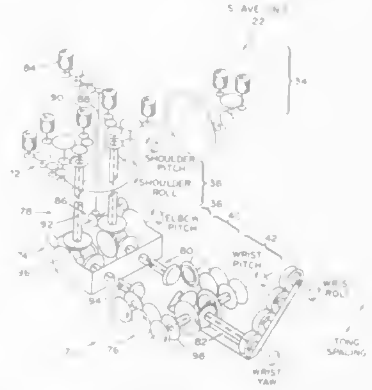


1. A fastener assembly comprising:

- a nut having a face and a threaded bore intersecting said face;
- a washer abutting said face having a central bore aligned with said threaded bore; and
- a body of plastic material permanently molded on said nut and encapsulating at least a portion of said nut and washer for retaining said washer in abutting relation to said face of said nut with said bore exposed to receive a threaded element engaging said threaded bore of said nut, said plastic body having an external surface for receiving tool means for turning said nut while threadedly engaging said threaded element.

4,883,400
DUAL ARM MASTER CONTROLLER FOR A BILATERAL SERVO-MANIPULATOR

Daniel P. Kuban, Oak Ridge, Teno., and Gerald S. Perkins, Altadena, Calif., assignors to Martin Marietta Energy Systems, Inc., Oak Ridge, Tenn.
Filed Aug. 24, 1988, Ser. No. 236,068
Int. Cl.⁴ B25J *9/08*
U.S. Cl. 414—2 7 Claims



6. A master controller for controlling a slave servo-manipulator, comprising:

- at least one manually manipulative arm including a shoulder joint, an upper arm member extending from said shoulder joint, a forearm member, an elbow joint operative between a proximal end portion of said forearm member and said upper arm member, means for actuating a tong arrangement of the slave servo-manipulator, and a wrist joint operative between a distal end portion of said forearm member and said actuating means;
- a plurality of motors located adjacent one another at said shoulder joint;
- means for transmitting the output of said motors to said members through said joints, said transmitting means including sheaves located at said joints and a plurality of cables within said members extending between said joints and engaging said sheaves, said sheaves having diameters so as to provide a torque cross-coupling that substantially duplicates the torque cross-coupling in the corresponding slave joints;
- said sheaves also providing positional cross-coupling between adjacent joints of said master controller that substantially duplicates the positional cross-coupling between corresponding joints of the slave servo-manipulator.

4,883,401
ARTICLE HANDLING APPARATUS FOR THE STORAGE AND DELIVERY OF PLURAL TYPES OF ARTICLES

Shelden M. Kavieff, Farmington Hills, Mich., assignor to Jervis B. Webb Company, Farmington Hills, Mich.
Filed Oct. 21, 1988, Ser. No. 260,734
Int. Cl.⁴ B65G *1/06*
U.S. Cl. 414—273 5 Claims

1. Article handling apparatus comprising:

- a rack structure having opposite sides and vertical rows of compartments extending transversely of said sides; each compartment being adapted to contain an article;
- a storage and retrieval machine mounted for movement along one side of said rack structure, said machine including a vertically movable carriage, and article handling means on said carriage operable to place an article in or remove an article from a selected one of said compartments;
- an indexable turntable having an axis of rotation and a plurality of article supports spaced radially and circumferentially relative to said axis;
- means for mounting said turntable with the axis thereof disposed vertically and with peripheral portions thereof

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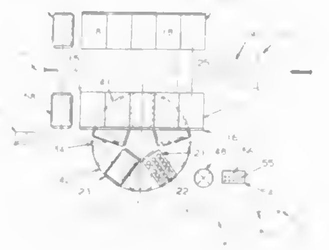
extending into and projecting from the other side of said rack structure whereby in response to indexing movements of said turntable each of said article supports is selectively positionable within said rack structure so as to form a transfer compartment accessible by said storage and retrieval machine; and control means connected to said storage and retrieval machine and to said turntable for correlating the respective movements thereof whereby articles are selectively transferable between said compartments and said article supports of said turntable.



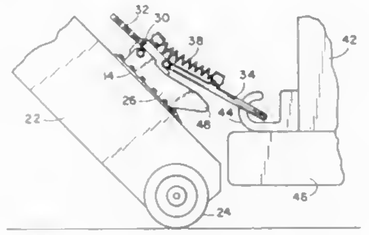
4,883,402
COUPLING SYSTEM FOR DROP BOX

Fredrick R. Wyss, Newberg, Oreg., assignor to Force Northwest Distributors, Inc., McMinnville, Oreg.

Continuation of Ser. No. 874,213, Jun. 13, 1986, Pat. No. 4,764,080. This application May 23, 1988, Ser. No. 197,593

Int. Cl.⁴ B60P *1/64*

U.S. Cl. 414—499 3 Claims



1. A drop box loading system comprising:

(a) a drop box having an upwardly opening hook located at its front end;

(b) an elongate hoist frame having an upper portion with a track defined therein;

(c) an endless chain which is rotatably mounted on said frame;

(d) means for moving said chain in either direction along the elongate axis of said frame;

(e) a carriage which is attached to said chain;

(f) said carriage including means for moving it along said track as said chain is moved;

(g) a bail attached to said carriage, having a tip which extends toward one extremity of said frame;

(h) a stop, located on said frame, which prevents movement of said carriage past a certain point towards said one extremity of said frame;

(i) said carriage including lifting means for raising said tip above said hook whenever said chain continues to urge said carriage towards said one extremity of said frame after said carriage has engaged said stop; and

(j) said carriage further including means for orienting said carriage and said bail so that said bail drops back onto said hook when said carriage is pulled free from said stop.

4,883,403
IMPELLERS FOR CENTRIFUGAL PUMPS

Craig I. Walker, Artarmon, Australia, assignor to Warman International Limited, New South Wales, Australia

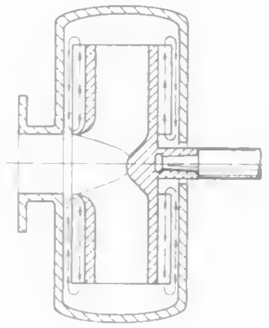
PCT No. PCT/AU87/00334, § 371 Date Aug. 5, 1988, § 102(e) Date Aug. 5, 1988, PCT Pub. No. WO88/02820, PCT Pub. Date Apr. 21, 1988

PCT Filed Oct. 2, 1987, Ser. No. 239,959

Claims priority, application Australia, Oct. 7, 1986, PH8368

Int. Cl.⁴ F01D *5/26, 5/34*

U.S. Cl. 415—98 8 Claims



1. A centrifugal slurry pump impeller comprising:

auxilliary vanes located on at least one side surface thereof;

an annular projection joining the outer ends of the auxilliary vanes at or adjacent the periphery of the impeller; and

at least one further projection extending between adjacent auxilliary vanes and spaced substantially from both ends of the adjacent auxilliary vanes to form pockets intermediate said adjacent auxilliary vanes with said annular projection.

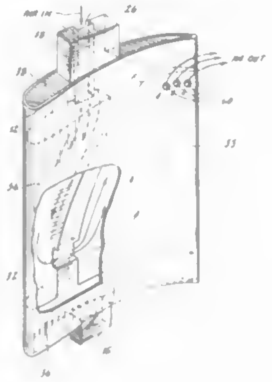
4,883,404
GAS TURBINE VANES AND METHODS FOR MAKING SAME

Alden O. Sherman, 85 Weston Rd., Weston, Conn. 06883

Filed Mar. 11, 1988, Ser. No. 166,687

Int. Cl.⁴ F01D *5/18*

U.S. Cl. 415—115 20 Claims



1. A gas turbine vane that is adapted to have fluids pass therethrough comprising

a support member

and a cover member having outer surfaces of predetermined configuration for a gas turbine vane,

said cover member being retentively positioned on said support member by having been bonded to said support member at locations other than those at which the hereinafter-described passageways and chambers have been formed,

the outside surfaces of said support member being so configured and dimensioned that, together with the inside surfaces of said cover when said cover is so positioned on said support member, passageways and chambers of predetermined size, shape, configuration and location are formed for fluid to pass through as it passes through said vane.

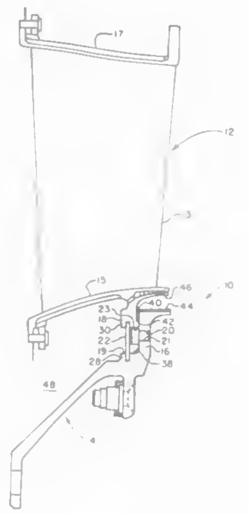
4,883,405
TURBINE NOZZLE MOUNTING ARRANGEMENT

Alan Walker, Wyoming, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Nov. 13, 1987, Ser. No. 122,142

Int. Cl.⁴ F01D *9/04*

U.S. Cl. 415—137 14 Claims



1. A turbine nozzle and nozzle support assembly comprising:

a turbine nozzle mounting flange affixed to the turbine nozzle;

a nozzle seating flange forming a part of the nozzle support, said nozzle seating flange supporting the turbine nozzle at said mounting flange;

pins engaging said turbine nozzle mounting flange and said nozzle support in order to affix said turbine nozzle to said nozzle support at said nozzle seating flange; and

retainer strips engaging said pins and said nozzle support in order to maintain said pins in engagement with said turbine nozzle mounting flange and said nozzle support, said retaining strips being held within a retention flange of said nozzle support.

4,883,406
TRANSPORT VENTILATOR

Johann Arnold, Mühlemattweg 3, CH-6374 Buochs, Switzerland

PCT No. PCT/CH88/00037, § 371 Date Oct. 14, 1988, § 102(e) Date Oct. 14, 1988, PCT Pub. No. WO88/06240, PCT Pub. Date Aug. 25, 1988

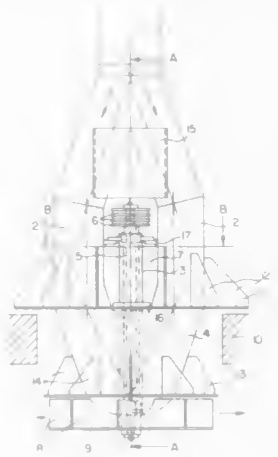
PCT Filed Feb. 16, 1988, Ser. No. 279,154

Claims priority, application Switzerland, Feb. 17, 1987, 582/87

Int. Cl.⁴ F04D *29/52*

U.S. Cl. 415—183 5 Claims

1. A transport ventilator for moving air or for transporting loose material, the transport ventilator comprising: a fan-blade wheel, a drive motor, an inlet suction pipe, said inlet suction pipe bifurcated upstream of said fan-blade wheel forming two separate pipes, said two separate pipes having a first cross-sectional area at least equal to a second cross-sectional area of said inlet suction pipe, said bifurcated pipes discharging into an expanded opening of a common cone, said fan-blade wheel arranged on an outlet side of said cone, a drive shaft of said fan-blade wheel extending axially outwards in an area between said bifurcated pipes, and said drive shaft driven by a drive motor located outside said bifurcated pipes.



4,883,407
SCREWED ATTACHMENT OF A BODY OF REVOLUTION TO AN ANNULAR FLANGE IN A TURBINE ENGINE

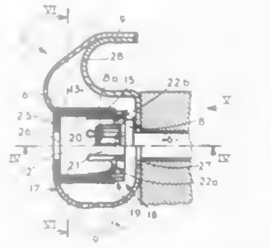
Eric Touze, Le Mee Sur Seine, France, assignor to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation "SNECMA", Paris, France

Filed Dec. 16, 1988, Ser. No. 285,583

Claims priority, application France, Dec. 16, 1987, 87 17547

Int. Cl.⁴ F04D *29/60*

U.S. Cl. 415—190 9 Claims



1. Attachment means for fixing a body of revolution to an annular flange in a turbine engine, comprising a plurality of evenly distributed screws, each of said screws having a head, an annular fairing forming a bolt guard over the heads of said screws, said bolt guard having means defining access holes to said screws in the face of said bolt guard opposite said screws, a plurality of first tubular sockets within said bolt guard and respectively aligned with said screws, said first sockets being wider than the heads of said screws and having first and second ends, said first ends being rigidly fixed to said bolt guard in the region of said access holes, and said second end of each of said first sockets having at least one notch-like cut-out, and a plurality of second tubular sockets respectively disposed within said first sockets, each of said second sockets having its inner end formed with at least one lug cooperating with said cut-out of the respective first socket, and at least one second lug curved inwardly and cooperating with the head of the respective screw in such a way as to prevent rotation of said screw.

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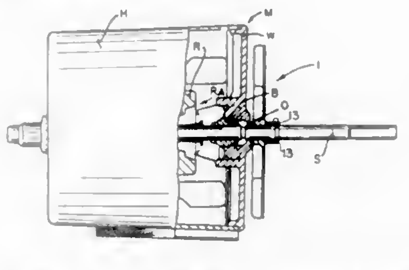
4,883,408
MOTOR FAN RETENTION ON A NON-STEPPED SHAFT

Gary W. Borcherding, St. Louis County, Mo., assignor to Emerson Electric Co., St. Louis, Mo.

Filed Oct. 7, 1988, Ser. No. 255,838

Int. Cl.⁴ B63H *1/20*

U.S. Cl. 416—93 R **7 Claims**



1. In a dynamoelectric machine comprising a housing, and a rotor assembly including for at least a portion its axial length a rotatable generally uniform diameter shaft, an outer end of the shaft projecting through an opening in an end wall of the housing, said shaft having a circumferential groove formed in it, the improvement comprising a fan for moving air through the machine to ventilate the machine and keep it cool, means for securing the fan to the shaft, said securing means including a hub integrally formed with said fan, said hub having an axial opening in it for receiving said shaft, a plurality of tabs formed in said hub, at least one of said tabs having a projection extending radially inwardly therefrom, said projection snap fitting into said groove to locate said fan on said shaft, and a retention ring fitted over the outer surface of said hub and exerting sufficient compressive force on said at least one of said tabs to retain said at least one of said tabs in said groove when said shaft is rotating during normal motor operation.

4,883,409
PUMPING APPARATUS FOR DELIVERING LIQUID AT HIGH PRESSURE

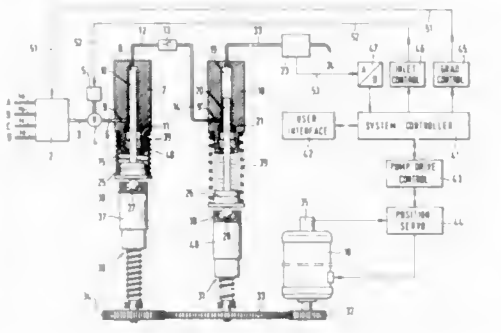
Fred Strohmeier, Ringstrasse 58, D-7587 Rheinmunster 2, and Klaus Witt, Quellenstrasse 16, D-7538 Keltern 3, both of Fed. Rep. of Germany

Filed Sep. 19, 1988, Ser. No. 246,479

Claims priority, application European Pat. Off., Sep. 26, 1987, 87114091.9

Int. Cl.⁴ F04B *41/06*

U.S. Cl. 417—43 **12 Claims**



1. Pumping apparatus for delivering liquid at a high pressure, comprising:

a. a first piston (**10**) for reciprocation in a first pump chamber (**7**), the first pump chamber having an inlet port (**9**) and an outlet port,

b. a second piston (**20**) for reciprocation in a second pump chamber (**18**), the second pump chamber having an inlet port (**9'**) and an outlet port,

c. a conduit connection (**12,14**) between the outlet port of the first pump chamber and the inlet port of the second pump chamber,

d. an inlet valve (**4**) connected to the inlet port of the first pump chamber for allowing flow of liquid into the first pump chamber and for inhibiting flow in the opposite direction,

e. an outlet valve (**13**) connected to the outlet of the first pump chamber for allowing flow of liquid into the second pump chamber and for inhibiting flow in the opposite direction,

f. drive means (**30,34; 31,33; 32,36**) for reciprocating the first and the second piston, comprising ball-screw spindles (**30,31**) coupled to each of said pistons (**10,20**), respectively, and said drive means for each piston further comprising:

an actuating element (**37**) having a recess (**38**) for receiving a ball (**27**),

a ball (**27**) having such a diameter that it projects above the recess (**38**), but can freely move inside the recess,

a piston holder (**25**) to which the piston (**10**) is mounted having a surface for contacting the ball (**27**),

a return spring (**15**) for exerting a force on the piston (**10**) in a direction away from the pump chamber (**7**), and a guiding element (**39**) arranged between the actuating element (**37**) and the pump chamber (**7**) for guiding the piston (**10**), and

g. control means (**41,42,43,44,35**) coupled to the drive means (**30,34; 31,33; 32,36**) for adjusting the stroke lengths of the pistons (**10,20**) between their top dead center and their bottom dead center, respectively, thereby permitting an adjustment of the amounts of liquid displaced by the first and second piston, respectively, during a pump cycle such that pulsations in the flow of the liquid delivered to the output of the pumping apparatus are reduced.

4,883,410
FUEL SUPPLY SYSTEMS

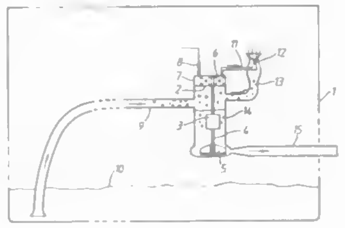
John Goddard, and Peter Taylor, both of Hampshire, England, assignors to Plessey Overseas Limited, Ilford, England

Filed Jan. 17, 1989, Ser. No. 297,365

Claims priority, application United Kingdom, Jan. 18, 1988, 8801037

Int. Cl.⁴ F04C *19/00*

U.S. Cl. 417—69 **6 Claims**



1. A liquid fuel pump arrangement for delivering liquid fuel to an engine comprising a liquid-ring pump including a motor-driven bladed impeller rotor which is located eccentrically within a cylindrical bore of a chamber forming part of a hollow pump body structure so that during rotation of the impeller rotor the blade tips thereof come into close proximity with the cylindrical wall of said bore at one position only, the hollow pump body structure also accommodating a motor-driven prime pump impeller which pumps fuel within the pump body structure to an aircraft or other engine, in which an inner end wall of the liquid ring pump provides the liquid ring with access to the liquid fuel within the hollow pump body structure whilst an outer end wall of the liquid ring pump has an air/-vapour inlet port through which the bladed impeller of the liquid ring pump during rotation thereof draws air/vapour and an air/vapour outlet port the flow of air/vapour expelled therefrom by compression of the air/vapour within the liquid-ring in response to rotation of the bladed impeller being restricted by flow the restriction means in order to build up static pressure within the liquid ring to a level preventing boiling of the liquid within the ring which could cause vapour blockage of the pump.

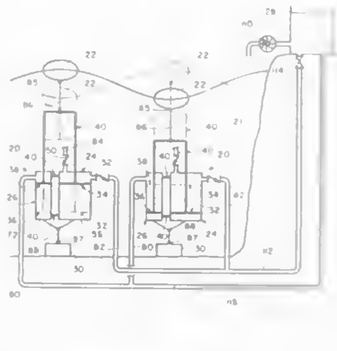
4,883,411
WAVE POWERED PUMPING APPARATUS AND METHOD

Tom J. Windle, 3500 Southeast Washington Blvd., Bartlesville, Okla. 74006

Filed Sep. 1, 1988, Ser. No. 239,618

Int. Cl.⁴ F04B *17/00;* **F03B** *13/12*

U.S. Cl. 417—331 **31 Claims**



2. A method of pumping fluid using energy from rising and falling wave action in a body of fluid comprising:

connecting a primary pumping means between a float and anchor in a body of fluid;

connecting a secondary pumping means between a float and an anchor in a body of fluid;

pumping fluid with the primary pumping means as the float rises with rising wave action;

pumping fluid into a fluid container extending above the primary and secondary pumping means with the secondary pumping means as the float rises with rising wave action;

exerting reloading pressure on the secondary pump with the fluid in the fluid container in opposition to the buoyancy of the float;

using the reloading pressure to reload the secondary pump as the float falls with falling wave action; and

interconnecting the primary pumping means and the secondary pumping means so that the primary pump is reloaded as the secondary pump is reloaded.

4,883,412
VARIABLE CAPACITY DIAPHRAGM PUMPS

Max A. Malizard, Saint Remy L'Honore, and Jean C. Degremont, Vascoeuil, both of France, assignors to Dosapro Milton Roy, Pont-Saint-Pierre, France

Continuation of Ser. No. 873,474, Jun. 11, 1986, abandoned, which is a continuation of Ser. No. 689,794, Jan. 8, 1985, abandoned. This application Jul. 27, 1987, Ser. No. 77,983

Claims priority, application France, Jan. 11, 1984, 84 00343

Int. Cl.⁴ F04B *43/06*

U.S. Cl. 417—387 1 Claim

1. In a variable capacity diaphragm pump in which the diaphragm defining pumping chamber is actuated hydraulically by a liquid contained in a displacement chamber, said variable capacity diaphragm pump comprising:

a piston actuated by reciprocating movement with fixed stroke moves;

said piston having a front end, a back end and an axis, said piston being hollow and presenting in the vicinity of the back end radial orifices;

an outer ring mounted around and adjustably mounted along said back end and being positioned to shut off said radial orifices during part of the stroke, the orifices opening into a reserve chamber at atmospheric pressure during another part of the stroke;

guide means for guiding the front end of said piston over substantially less than the axial length of said piston;

said piston being driven in a reciprocating movement by a circular eccentric cooperating with two opposed surfaces secured to said piston;

said eccentric being integral with the gear of a speed reducing gear pair defining an eccentric/wheel assembly;

the reducing gear pair including a gear and screw;

a stationary shaft perpendicular to and having an axis passing through the axis of said piston, said eccentric/wheel assembly being mounted on said shaft to rotate thereon;

said piston terminating in an integral U-shaped shank spaced axially outwardly of said radial orifices;

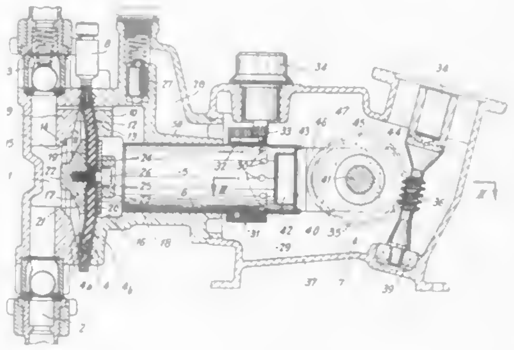
said shank defining a pair of wings having said opposed surfaces on which said eccentric bears, said opposed surfaces being perpendicular to and spaced apart axially along the piston axis, said opposed surfaces being spaced apart by a length slightly greater than the diameter of said eccentric;

said shank including a base extending between said wings and perpendicular to said fixed shaft;

said base having a longitudinal groove parallel to the axis of said piston;

said stationary shaft extending through said groove, said groove having a width slightly greater than the diameter of said stationary shaft to permit free axial movement of said piston relative to said stationary shaft; and

said groove and said stationary shaft supporting and guiding the back end of said piston to provide reduced length of said guide means for the front end of said piston and to minimize forces on said piston in a direction transverse to the piston axis.



4,883,413
ROTARY SPIRAL PISTON DISPLACEMENT MACHINE HAVING A SILICON RUBBER BIASED SEAL

Josef Perevuznik, Fislisbach; Fritz Spinnler, Arisdorf, and Jürg Weber, Birmenstorf, all of Switzerland, assignors to BBC Brown Boveri AG, Baden, Switzerland

Filed Jul. 1, 1988, Ser. No. 214,340

Claims priority, application Switzerland, Jul. 10, 1987, 2638/87

Int. Cl.⁴ F04C *18/04, 27/00;* **F16F** *1/36;* **F16J** *15/48*

U.S. Cl. 418—55 3 Claims

1. A rotary-piston displacement machine for compressible media, comprising at least one deliver space which is defined by spiral-shaped peripheral walls, extending axially from a side wall, and leads from an inlet to an outlet, and includes a spiral-shaped displacement body which protrudes into the delivery space and is mounted with respect to the delivery space for executing a circling, torsion-free motion, the displacement body having a center offset eccentrically relative to a center of

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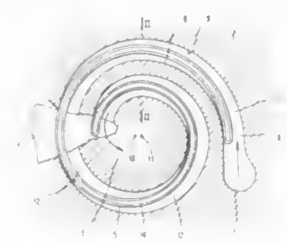
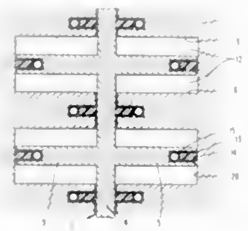
the peripheral walls in such a way that the displacement body always touches both an outer and inner wall defining the peripheral walls of the delivery space at at least one advancing contact point each, wherein end faces of the displacement body which adjoin the side wall are provided with a groove in which an elastic and slidable material sealing strip is inserted, and a spring element is arranged between a root of the groove and an underside of the sealing strip, the spring element being a tube of silicone rubber.





4,883,414

ROTATING PISTON COMPRESSOR

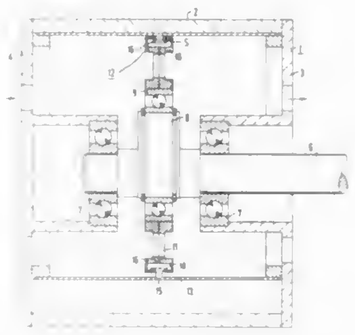
Hans-Peter Schabert, Erlangen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Mar. 22, 1988, Ser. No. 171,653

Claims priority, application Fed. Rep. of Germany, Mar. 23, 1987, 3709493; Aug. 19, 1987, 3727697

Int. Cl.⁴ F04C *18/356, 27/00*

U.S. Cl. 418—57 40 Claims



1. Rotating piston compressor, comprising a cylinder, a thin-walled radially resilient piston contacting said cylinder at a given location and having a circular cross section, a surface facing said cylinder and a surface facing away from said cylinder, a rotationally symmetrical radial support engaging said surface of said piston facing away from said cylinder, said support and said piston having local play therebetween at said given location, and a drive shaft connected to said support for eccentrically moving said support and said piston, said drive shaft having an eccentricity being greater than one-half the difference between the diameters of said cylinder and said piston.

4,883,415

PRESS FOR TIRES AND AUTOMATIC DEVICE FOR RAPIDLY DISMOUNTING THE RELATIVE VULCANIZING MOLD

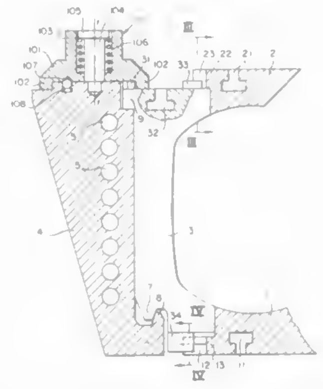
Bruno Salvadori, Cormano, Italy, assignor to Pirelli Coordinamento Pneumatici S.p.A., Milan, Italy

Filed Nov. 24, 1987, Ser. No. 124,966

Claims priority, application Italy, Dec. 1, 1986, 22515 A/86

Int. Cl.⁴ B29C *33/04, 35/00*

U.S. Cl. 425—47 10 Claims



1. A segmented vulcanizing mold for elastomeric or plastomeric toroidal articles, mountable and detachable from a press-frame, comprising:

a first cheek and a second cheek being axially opposed to each other; said first cheek and said second cheek delimit the flanks of an article to be molded;

a crown of radially contractile and expansible sectors interposed between said first cheek and said second cheek which delimits a radially outer surface of the article to be molded, said crown of radially contractile and expansible sectors being contained in a holder ring solidly locked to said press-frame and the sectors comprising two connected pieces wherein a first connected piece is a matrix having a radially inner surface substantially corresponding to a portion of the crown surface of the article to be molded, and a second connecting piece is a support for the matrix having a radially outer surface inclined with respect to an axis of the mold, the matrix being freely movable with respect to a corresponding support in at least the axial direction along the mating surfaces between said matrix and said support; said support and a corresponding matrix therefor being operatively associated with one another through at least one fixing device that is alternatively shiftable between two operative positions, a first operative position being a working position wherein the matrix is solidly locked on the support and a second operative position being a rest position wherein the matrix and the support are freely movable with respect to one another.

4,883,416

SLIP-FORM CASTING MACHINE FOR FABRICATION OF ELONGATED CONCRETE PRODUCTS

Hannu Tomminen, Nurmijärvi, Finland, assignor to Parma Oy, Forssa, Finland

Filed Jun. 15, 1988, Ser. No. 207,168

Claims priority, application Finland, Jun. 18, 1987, 872740

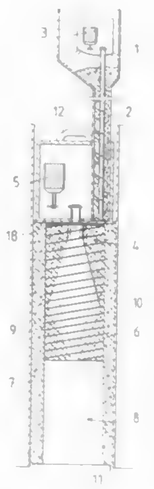
Int. Cl.⁴ B28B *1/26*

U.S. Cl. 425—64 4 Claims

1. A slip-form casting machine for fabrication of elongated concrete products, comprising:

a casting mold which defines an elongate cavity and has first and second opposite ends, the mold being plugged at its first end,

a casting machine body of which the external cross-sectional form is substantially complementary to the cross-sectional form of the cavity defined by the mold, the casting machine body being positioned inside the cavity and being movable therein longitudinally of the cavity, and having a first side directed towards the first end of the mold and a second side directed away from the first end of the mold,



an auger positioned in the mold cavity between the first side of the casting machine body and the first end of the mold, the auger being supported by the casting machine body and being rotatable relative to the mold, and

means for feeding concrete into the mold cavity between the auger and the first side of the casting machine body, whereby the auger exerts pressure on the concrete as the auger rotates.

4,883,417

APPARATUS FOR CONTINUOUSLY PRODUCING AT A SUBSTANTIALLY CONSTANT FLOW RATE A STRIP DOUGH OF SUBSTANTIALLY UNIFORM DIMENSIONS

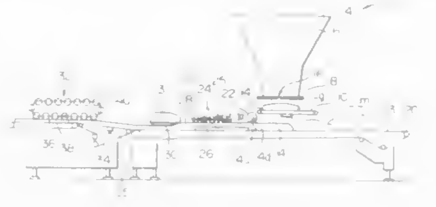
Michio Morikawa, and Torahiko Hayashi, both of Utsunomiya, Japan, assignors to Rheon Automatic Machinery Co., Ltd., Tokyo, Japan

Filed Mar. 30, 1988, Ser. No. 175,103

Claims priority, application Japan, Apr. 1, 1987, 62-80290

Int. Cl.⁴ A21C *9/08*

U.S. Cl. 425—140 8 Claims



1. Apparatus for continuously producing, at a substantially constant flow rate, a strip of dough of substantially uniform dimensions, comprising:

(a) a hopper for dough,

(b) divider means provided downstream of said hopper for dividing said dough into portions,

(c) weighing and supplying means disposed adjacent said divider means for weighing each of said dough portions and supplying said dough portions,

(d) conveyor means for successively receiving said portions from said supplying means and conveying said dough portions, and provided with a path for said dough portions thereon,

(e) control means for providing a signal to the weighing means, when said conveyor means has conveyed a dough portion a distance proportional to the weight of said dough portion, to cause said weighing means to supply a subsequent dough portion to the area where dough portions are received on the conveyor means,

(f) pressing means disposed above said path downstream of said area and spaced apart from said path so as to cause said dough portions to have a determined thickness, and

(g) a pair of width defining members positioned, one on each side of said path, between said pressing means and said path, for constricting said dough portions so that they have a predetermined width.

4,883,418

PLASTICS INJECTION MOLDING MACHINE

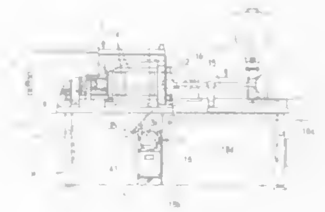
Karl Hehl, Artbur-Hehl-Str. 32, D-7298 Lossburg-1, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 116,218, Nov. 3, 1987, abandoned. This application Oct. 3, 1988, Ser. No. 252,124

Claims priority, application Fed. Rep. of Germany, Nov. 5, 1986, 3637612

Int. Cl.⁴ B29C *45/17*

U.S. Cl. 425—217 20 Claims



1. In an injection molding machine having a vertical longitudinal plane of symmetry and comprising:

a pedestal adapted to be supported on an approximately rectangular undersurface,

a horizontal injection molding unit, which is mounted on said pedestal and adapted to contain an injection mold, which is adapted to be opened and closed,

a horizontal clamping unit mounted on said pedestal and operable to clamp said mold in said injection molding unit,

an ejector for ejecting usable moldings and unusable parts from said mold in said injection molding unit when said mold is open, and

sorting means, which are mounted in said pedestal under said injection mold in said injection molding unit and comprise:

a housing,

pivotal mounting means mounted in said housing and defining a horizontal pivotal axis,

a sorting plate, which is mounted in said housing on said pivotal mounting means for a pivotal movement between first and second inclined positions, which respectively constitute a "pass" position and a "reject" position, which sorting plate is provided on mutually opposite sides with a first sliding surface, which is downwardly inclined and arranged to receive usable moldings from said ejector and to deliver said usable moldings on one side of said pivotal axis when said sorting plate is in said "pass" position, and a second sliding surface, which is arranged to receive unusable parts from said ejector and to deliver said unusable parts on the other side of said pivotal axis when said sorting plate is in said "reject" position, and

power-operated turning means for pivotally moving said

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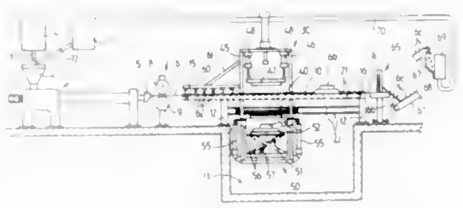
sorting plate from said "pass" position to said "reject" position and from said "reject" position to said "pass" position,
the improvement residing in that
said pedestal is generally parallelepipedic,
said sorting means constitute a sorting unit, which is detachably mounted in said pedestal with said pivotal axis extending at right angles to said plane of symmetry of the injection molding machine,
a belt conveyor unit is detachably mounted in said pedestal and arranged to receive usable moldings from said sorting plate when it is in said "pass" position, which belt conveyor has a conveying surface which adjoins said first sliding surface when said sorting plate is in said "pass" position,
said pedestal comprises a transverse wall, which defines in said pedestal an open-topped recycling space, and
said second sliding surface has a lower end, which is arranged to be disposed over said recycling space when said sorting plate is in said "reject" position.

4,883,419
DEVICE FOR THERMOFORMING PARTS FROM SYNTHETIC MATERIAL

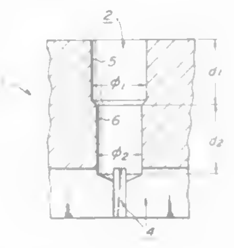
Joël Queirel, La vendue Mignot, Saint Julien, Les Villas (Aube), France 10800
Continuation of Ser. No. 139,175, Dec. 28, 1987, abandoned, which is a continuation of Ser. No. 906,083, Sep. 11, 1986, abandoned. This application Oct. 27, 1988, Ser. No. 263,984
Claims priority, application France, Sep. 11, 1985, 85 13483
Int. Cl.⁴ B29C *1/14*
U.S. Cl. 425—326.1 17 Claims



1. An apparatus for manufacturing thermoformed parts comprising:
extrusion press means for continuously extruding thermoformable material;
an extrusion head on said press means through which said thermoformable material is extruded for producing a continuous flat strip of said material;
rolling means downstream of said extrusion head for receiving and rolling said flat strip of material;
substantially horizontal longitudinal members disposed downstream of said rolling means and extending substantially in a feed direction of said strip of material;
substantially horizontal feeding means mounted on said longitudinal members adapted to engage the longitudinal edges of said strip of material downstream of said rolling means for feeding said strip of material in said feed direction;
first drive means mounted on said longitudinal members and engaging said feeding means for imparting continuous movement to said feeding means and said strip of material;
a mobile thermoforming assembly downstream of said rolling means and through which said longitudinal members and said feeding means extend comprising,
thermoforming mold means movably mounted on one side of the plane of movement of said strip material when fed by said feeding means for movement into thermoforming engagement with said strip of material, backing means for said thermoforming mold means on the other side of said plane of movement of said strip of material,
heating means between said mold means and said rolling machine means for heating said strip of material prior to thermoforming by said mold means, said heating means having an entrance end spaced from said rolling means a predetermined distance to facilitate cooling of said strip of material to a predetermined hardness prior to entering said heating means, and
second drive means engaging said first drive means for moving said mobile assembly in said feed direction simultaneously with said feeding means and intermittently relatively to said feeding means in the direction opposite to said feed direction; and
mobile assembly supporting means for supporting and guiding said mobile assembly for said movement in and opposite to said feed direction.

4,883,420
DIE FOR EXTRUDING HONEYCOMB STRUCTURAL BODIES

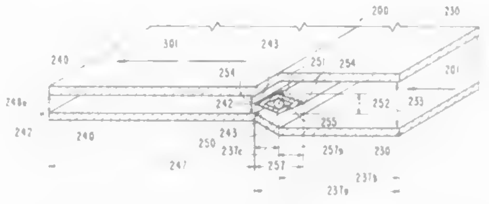
Sei Ozaki, Aichi; Satoru Inoue, Hazu, and Sboji Futamura, Kawasaki, all of Japan, assignors to NGK Insulators, Ltd., Nagoya, Japan
Continuation of Ser. No. 942,408, Dec. 16, 1986, abandoned. This application Sep. 2, 1988, Ser. No. 240,446
Claims priority, application Japan, Dec. 18, 1985, 60-284571
Int. Cl.⁴ B29B *47/12*
U.S. Cl. 425—464 14 Claims



1. An extrusion die for forming ceramic honeycomb structural bodies from a mass of ceramic material, comprising:
an extrusion die body having an entrance surface and an exit surface, said surfaces being located on opposite parallel sides of said die body;
discharge channels formed in said exit surface, said channels being defined by a plurality of intersecting slits which form a matrix corresponding to the geometrical configuration of the honeycomb structural body to be formed thereby, such that said geometric configuration of said honeycomb structural body is formed solely by said discharge channels; and
a plurality of independent body supply holes formed in said entrance surface and extending into the die body from said entrance surface in a direction substantially normal to said entrance surface and directly communicating with said discharge channels, each of said body supply holes having at least two different, coaxially arranged, inner peripheral surface zones, said plurality of independent body supply holes being the first point at which said mass of ceramic material is separated while entering said extrusion die;
wherein the cross-sectional shapes of the body supply holes in each surface zone are substantially the same, and the cross-sectional dimensions of the body supply holes in axially adjacent surface zones are substantially different.

4,883,421
DIRECTIONAL FLOW BAR EXTRUDER

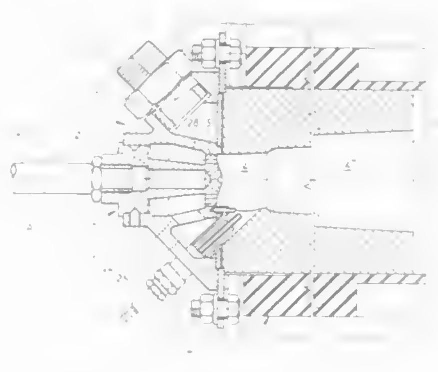
Ronnie G. Morgan, Nortbbrook, Iil., assignor to Nabisco Brands, Inc., East Hanover, N.J.
Division of Ser. No. 24,079, Mar. 10, 1987, abandoned. This application Apr. 14, 1988, Ser. No. 181,709
Int. Cl.⁴ B29C *47/00;* A22C *7/00*
U.S. Cl. 425—135 30 Claims



1. An extrusion nozzle for aligning fibers in an extrudable fiber-containing composition comprising:
a. a housing having an inlet channel and an outlet channel, said inlet and outlet channels being defined by substantially parallel top and bottom portions; a first intermediate portion connecting the top of the inlet channel to the top of the outlet channel at an upper leading and trailing apex; a second intermediate portion connecting the bottom of the inlet channel to the bottom of the outlet channel at a lower leading and trailing apex; the first and second intermediate portions converging toward the outlet channel such that the height of the outlet channel is less than the height of the inlet channel;
b. at least one fiber-aligning flow bar having an essentially diamond-shaped cross-section having an upper and lower leading face converging to an acute angle leading edge and an upper and lower trailing face converging to an acute trailing edge, the leading and trailing edges defining a length of the flow bar and wherein said flow bar is operatively disposed transversely between and spaced from the converging first and second intermediate portions and the inlet channel of said housing to effect fiber alignment of a substantial amount of fiber in the extrudable composition.

4,883,422
MIXED AIR AND GAS NOZZLE FOR GAS BURNERS, IN PARTICULAR BURNERS OF LOW THERMAL OUTPUT FOR FIRING KILNS

Eugen D. Cristea, Zibido S. Giacomo, Italy, assignor to T.T.C. Termo Tecnica Ceramica S.P.A., Modena, Italy
Filed Apr. 5, 1989, Ser. No. 333,614
Claims priority, application Italy, Apr. 5, 1988, 46826 A/88
Int. Cl.⁴ F23M *9/00*
U.S. Cl. 431—182 5 Claims



1. A mixed air and gas nozzle for gas burners, particularly burners of low thermal output for firing kilns, the nozzle being applied to an axially elongated combustion chamber and of the type comprising:
a first part (21) and a second part (22), of which the first is inserted into and coupled to the interior of the second and is coaxial thereto;
a first elongated axial chamber (23) provided in the first part (21) coaxial to the combustion chamber and communicating with gas feed means;
a second chamber (24) coaxially surrounding the first chamber (23) and provided between said first and second part (21) and (22) and communicating with air feed means; said first and second chamber (23) and (24) being separated from the combustion chamber (4) by a circular front plate (5) which closes the initial circular section of the combustion chamber; characterised in that said front plate comprises:
a first series of apertures (31) providing communication between the second chamber (24) and the combustion chamber and disposed on the periphery of the front plate (5) such that their axes lie substantially on one and the same cylindrical surface coaxial to the combustion chamber (4) and are inclined tangentially in the same direction by an angle of about 30–60 degrees to the generators; of the cylindrical surface
a second series of apertures (32) providing communication between the second chamber (24) and the combustion chamber and disposed on one and the same circumference concentric to but inward of the periphery of the front plate (5);
a third series of apertures (33) providing communication between the first chamber (23) and the combustion chamber and disposed a shorter distance from the center of the plate (5) than the second apertures (32); the proportion of air throughput passing through the second apertures to the total air throughput passing through the apertures (31) and (32) being between 15% and 30%.

4,883,423
METHOD FOR MAKING AN INFRARED BURNER

Alex Holowczenko, Kirkville, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.
Filed May 8, 1989, Ser. No. 348,369
Int. Cl.⁴ F23D *14/12*
U.S. Cl. 431—328 8 Claims

1. A method of making an infrared burner comprising:
(a) admixing alumina, ceramic fibers, a binder, a carrier, and a clathrate-forming halocarbon, while keeping the mixture uniformly suspended;
(b) cooling the mixture to a temperature below the clathrate-forming temperature;
(c) depositing the mixture onto a mesh screen substrate; and
(d) drying the screen at a temperature sufficient to melt the clathrate and evaporate the carrier forming small void areas in the deposited mixture;
thereby producing a porous coating on the screen having structural integrity, the ability to generate radiant energy at a rate of 80,000 BTU to 100,000 BTU per sq. ft. per hour, a pressure drop during operation of less than 0.4 inch of water, and a pressure drop cold versus hot of less than 0.20 inch of water.

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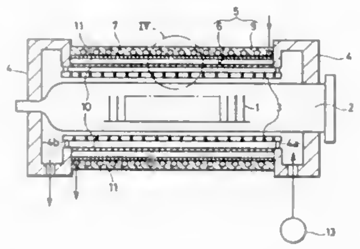
4,883,424
APPARATUS FOR HEAT TREATING SUBSTRATES

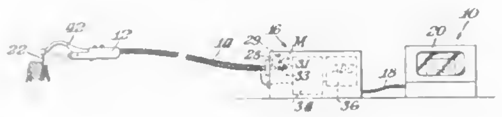
Takamasa Sakai, and Yuusuke Muraoka, both of Kyoto, Japan, assignors to Dainippon Screen Mfg. Co., Ltd., Japan
Filed Aug. 17, 1988, Ser. No. 233,236
Claims priority, application Japan, Aug. 21, 1987, 62-208943
Int. Cl.⁴ F27D *15/02*
U.S. Cl. 432—77 8 Claims



1. An apparatus for heat treating a substrate, said apparatus comprising:
a container for housing a substrate to be heated;
heating means for enclosing said container and for heating said substrate;
heat intercepting means for intercepting heat generated by said heating means, said heat intercepting means enclosing said heating means;
an outer furnace enclosing said heat intercepting means, said outer furnace having an inner surface;
a reflector formed on said inner surface of said outer furnace for reflecting heat generated by said heating means; and
a sealed layer of heat insulating gas located between said heat intercepting means and said outer furnace; and
wherein said outer furnace has cooling means associated therewith for cooling said reflector.

4,883,425
DENTAL PROBE ASSEMBLY

Alan W. Zimble, 507 Blackgates Rd., Wilmington, Del. 19803
Filed Aug. 26, 1988, Ser. No. 236,773
Int. Cl.⁴ A61C *3/00*
U.S. Cl. 433—32 17 Claims

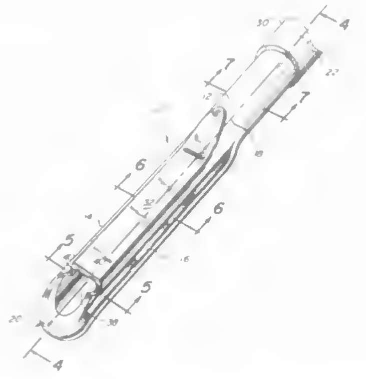


1. 1 A probe assembly for depth measurement comprising a hand held portable tool having a handle section at one end thereof, a probe mounted to the end of said tool remote from said handle, said probe being made of a light conducting material, means for transmitting light to said probe, and means for indicating the depth of a gum pocket or the like in accordance with the length of said probe remaining out of the pocket when said probe is inserted into the pocket.

4,883,426
DENTAL IMPLEMENT FOR FLUID ASPIRATION AND TISSUE RETRACTION

Euler R. Ferrer, 410 N. Bristol "C", Santa Ana, Calif. 92703
Continuation-in-part of Ser. No. 128,219, Dec. 3, 1987. This application Jul. 5, 1988, Ser. No. 215,407
Int. Cl.⁴ A61L *17/04*
U.S. Cl. 433—91 23 Claims

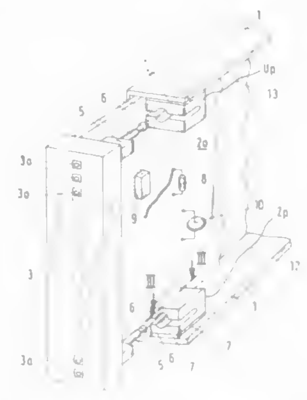
1. A dental implement for the aspiration of fluids from a patient's mouth and for the retracting of soft tissues in said patient's mouth, the dental implement comprising a slender, elongate and substantially straight member having:
(a) a hollow tubular portion having a longitudinal axis and having a suction end and a connection end remote from the suction end for enabling the member to be connected to a suction tube or the like; and,



(b) first and second, longitudinally extending fins which project sidewardly from opposite, lower, side regions of said tubular portion, said fins being of substantially uniform width and being rigid and relatively narrow and extending along a substantial length of said tubular member from the suction end thereof and extending around the suction end of the tubular portion so as to join one another at a vertical plane through said longitudinal axis.

4,883,427
APPARATUS FOR SUPPLYING VOLTAGE TO COMPONENT ASSEMBLIES

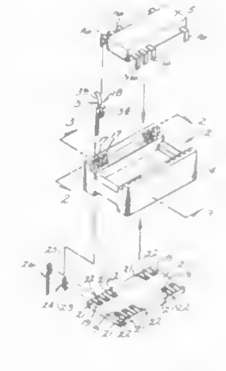
Gerhard Kohl, Frankenthal, Fed. Rep. of Germany, and Mogens B. Christiansen, Lengnau, Switzerland, assignors to Asea Brown Boveri AG, Baden, Switzerland
Filed Apr. 1, 1988, Ser. No. 176,775
Claims priority, application Fed. Rep. of Germany, Oct. 3, 1986, 3633695
Int. Cl.⁴ H01R *23/68;* **H05K** *7/10*
U.S. Cl. 439—64 4 Claims

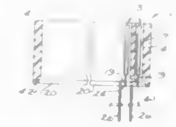


1. Voltage supply apparatus, comprising a component assembly rack having a top and a bottom; a plurality of component assemblies to be plugged into said component assembly rack, each of said component assemblies having a front part subject to interference potential, a rear part free of interference potential, and a contact strip mechanically rigidly connected to said front part of said component assembly for feeding process signals to said component assembly, said contact strip having upper and lower parts; separate voltage supplies for said front and rear parts of said component assembly; a front plug to be connected to said contact strip for supplying external process signals; a pair of plugs each being disposed at a respective one of said upper and lower parts of said contact strip in the vicinity of said front part of said component assembly, components disposed on said front part of said component assembly and electrically connected to said plugs, and electrically insulated sockets each being disposed at a respective one of said top and said bottom of said component assembly rack, said plugs and said sockets being in electrical contact when said component assembly is plugged into said component assembly rack.

4,883,428
TEST SOCKET INCORPORATING CIRCUIT ELEMENTS

Takashi Tonooka, Shizuoka, Japan, assignor to Texas Instruments Incorporated, Dallas, Tex.
Filed Feb. 23, 1988, Ser. No. 159,152
Claims priority, application Japan, Feb. 27, 1987, 62-046301
Int. Cl.⁴ H01R *23/72*
U.S. Cl. 439—69 6 Claims

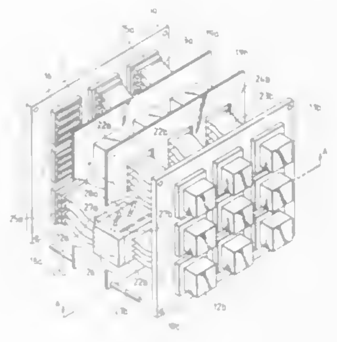




1. A socket comprising an electrically insulating body having a top, having a bottom of selected area, and having a plurality of openings extending through the body between said top and bottom; an insulating base board having a selected area corresponding to the area of the bottom of the body accommodated at the bottom of the body; a plurality of circuit components mounted in spaced relation to each other on the base board; first circuit means on the base board secured to respective first portions of the components on the base board for making electrical connections to the respective components; other circuit means on the base board secured to respective other portions of the components on the base board for electrically connecting the components in a circuit; a plurality of electrically conductive contacts disposed in the respective body openings for detachably electrically engaging respective terminal pins of an integrated circuit unit inserted therein from the top of the body to mount the integrated circuit unit on the socket, said contacts having portions connected to respective first circuit means on the base board for electrically connecting the terminal pins of the integrated circuit to the respective components and for mounting and supporting the insulating base board on the body at the bottom of the body; and a plurality of terminal members secured to said respective other circuit means on the base board to be electrically connected to the respective circuit components and to support the terminal members to extend from the base board to be connected in an external circuit for connecting the integrated circuit terminal pins in the external electrical circuit with the circuit components in series between the respective integrated circuit unit terminal pins and said external circuit.

4,883,429
ELECTRONIC DEVICE PACKAGING STRUCTURE

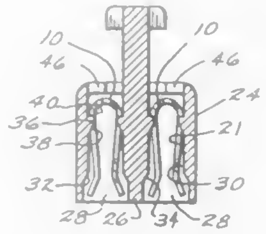
Takao Suzuki, Ohme, and Kouzou Uekido, Tokyo, both of Japan, assignors to Japan Aviation Electronics Industry, Limited and NEC Corporation, both of Tokyo, Japan
Filed Jan. 25, 1989, Ser. No. 302,167
Claims priority, application Japan, Feb. 3, 1988, 63-13389[U]
Int. Cl.⁴ H01R *9/90*
U.S. Cl. 439—74 4 Claims



1. An electronic device packaging structure comprising:
first and second back panels, each having mounted on its one side a plurality of arrays of electronic circuit packages with their signal input/output terminals projecting out onto the other side;
pluralities of first and second wiring cables connected at one end to connectors connected to the signal input/output terminals of the first and second back panels;
first and second relay connector means connected to the other ends of the first and second wiring cables and detachable from each other; and
first and second frames for fixing thereto the first and second relay connector means, the first and second frames being detachably coupled together via the first and second relay connector means.

4,883,430
BRIDGE CLIP CARRIER

John A. Siemon, Watertown, and Brian E. Reed, New Hartford, both of Conn., assignors to The Siemon Company, Watertown, Conn.
Filed Jun. 6, 1988, Ser. No. 202,956
Int. Cl.⁴ H01R *31/08*
U.S. Cl. 439—510 15 Claims



1. A bridge clip carrier device comprising:
a substantially rectangular insulative housing having a top face and an opposed bottom face;
at least a pair of spaced, parallel substantially rectangular cavities in said housing with each cavity terminating on said bottom face at an opening;
bridge clip retaining means in each of said cavities;
a discrete electrical bridge clip disposed in at least one of

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said cavities, said bridge clip being retained therein by said bridge clip retaining means;

a pair of registered apertures through said top face of said housing to permit communication between test probe means and each bridge clip disposed in each of said cavities; and

handle means extending upwardly from said top face of said housing with said apertures being on opposed sides of said handle means.

4,883,431

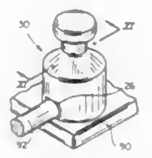
GEL-FILLED CAP MEMBER

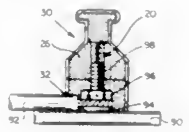
David Uken, Fremont, Calif.; R. Grant Truesdale, Jr., Cary, and Daniel L. Swan, Raleigh, both of N.C., assignors to Raychem Corporation, Menlo Park, Calif.

Filed Sep. 26, 1986, Ser. No. 912,309

Int. Cl.⁴ H01R *13/52*

U.S. Cl. 439—521 8 Claims





1. A cap member for a threaded contact member, the cap member comprising:

(A) a hollow body having a closed end, an open end and a wall;

(B) a retaining nut member positioned within said body for engaging the threads of the contact member;

(C) a gel substantially filling said body, said gel having a cone penetration value from approximately 100 to 350 (10^{-1}mm) and an ultimate elongation of at least approximately 200%;

said body at the open end having a notch for receiving a wire connected to the threaded contact member; the notch having a first axially disposed portion which is positioned generally parallel to the longitudinal axis of the cap member and a second circumferentially disposed portion which is (a) positioned generally perpendicular to the longitudinal axis of the cap member and (b) as adapted to lift and hold the wire away from the open end when the cap member is rotated about the longitudinal axis.

4,883,432

MODULAR JACK YOKE

Brian E. Reed, New Hartford, Conn., assignor to The Siemon Company, Watertown, Conn.

Filed Dec. 28, 1988, Ser. No. 291,107

Int. Cl.⁴ H01R *13/74*

U.S. Cl. 439—553 10 Claims

1. A modular telecommunications jack yoke, comprising:

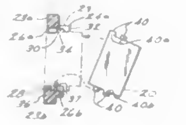
a unitary body, said body including a front face;

at least one rectangular opening in said body for receiving at least one modular telecommunications jack, said opening having opposed first and second sides;

a first stop extending from the first side into the opening;

a resilient, cantilevered hook extending from the first side and spaced back from the first stop, said first stop and hook cooperating with said modular telecommunications jack to affect locking of said modular telecommunications jack within said opening; and

mounting means for mounting said body to a support.



4,883,433

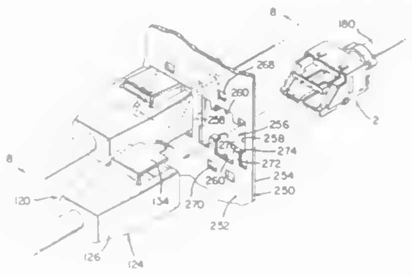
ELECTRICAL CONNECTOR FOR DATA DISTRIBUTION PANEL

David Lane, Greensboro, N.C., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Dec. 21, 1987, Ser. No. 136,090

Int. Cl.⁴ H01R *13/00*

U.S. Cl. 439—607 8 Claims



1. An electrical data connector for interconnection to an electrically shielded cable, and for the matable interconnection to a data distribution panel, the connector comprising:

(a) a shielded subassembly comprising:

(i) an insulative housing means having terminal supporting means including a platform for the receipt of a plurality of electrical terminals, and sidewalls upstanding from the platform, the platform and the sidewalls defining an open upper face of the housing means,

(ii) a plurality of electrical terminals including base portions for mounting on the platform in transition with reversely bent portions forming resilient contact portions, the contact portions extending rearwardly to free ends of the terminals, the contact portions being intermatable with like contact portions in a complementary connector, the terminals further comprising wire connecting portions extending from end of the terminal base portions,

(iii) an insulative cap member, securable within the housing means, including means of aligning individual wires of the shielded cable with selected wire connecting portions,

(iv) shield means securable to the housing means, and substantially enclosing the exterior of the sidewalls, the exterior of the platform, and the open upper face of the housing means, thereby overlying the terminal wire connecting portions, the insulative cap member providing a spaced relation between the shield means and the wire connecting portions of the terminals, the shield means comprising upper and lower shield members each having at least one outward projection therefrom; and

(b) an insulative cover means which is slidably received over the shielded subassembly, and includes latch means which are snap latchable to the panel, the housing means includes a one-piece molded member having a central body portion having an internal cavity for receiving the shielded subassembly, the projections on the shield means providing an interference fit between the cover means and the shield means, retaining the cover means and shield means together.

4,883,434

WEDGE-BASE LAMP AND SOCKET ASSEMBLY

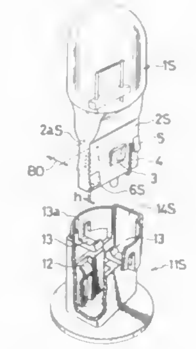
Akira Toyoshima, Shiki, Japan, assignor to Stanley Electric Co., Ltd., Tokyo, Japan

Filed Nov. 17, 1988, Ser. No. 273,191

Claims priority, application Japan, Oct. 7, 1988, 63-253431

Int. Cl.⁴ H01R *17/00*

U.S. Cl. 439—619 3 Claims



1. A wedge-base lamp and socket assembly in which a double filament socket excludes the entry of a single filament lamp, comprising:

a wedge-base lamp having an envelope containing at least one filament therein, a wedge base coupled to said envelope, and a pair of projections formed on opposite sides of said wedge base near the center of said wedge base;

a socket for receiving a wedge base of a wedge-base lamp therein, said socket having a pair of arms which are engageable with said pair of projections of said wedge-base lamp when said wedge base of said wedge-base lamp is mounted within said socket;

and wherein said wedge-base lamp is of the single filament wedge-base type and has a fool-proof projection on said base thereof; and

wherein said socket is a double filament type wedge-base socket and has an abutment portion therein which is abuttingly engageable with said fool-proof projection of said single filament type wedge-base lamp when said single filament type wedge-base lamp is inserted into said double filament type wedge-base socket, to prevent full entry of said single filament type wedge-base lamp into said double filament type wedge-base socket, thereby preventing erroneous coupling between a single filament type wedge-base lamp and a double filament type wedge-base socket;

and wherein said abutment portion of said double filament type wedge-base socket is arranged such that when a double filament type wedge-base lamp is used in place of said single filament type wedge-base lamp, said double filament type wedge-base lamp being free of said fool-proof projection so that full entry of said double filament type wedge-base lamp into said double filament type wedge-base socket is permitted without said abutting engagement.

4,883,435

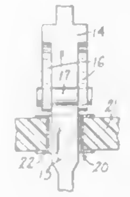
SOLDER-BEARING TERMINAL PIN AND LEAD

Jack Seidler, Flushing, N.Y., assignor to North American Specialties Corporation, Flushing, N.Y.

Continuation of Ser. No. 876,820, Jun. 20, 1986, abandoned, which is a continuation-in-part of Ser. No. 600,362, Apr. 16, 1984, abandoned, which is a continuation of Ser. No. 396,764, Jul. 9, 1982, abandoned, and a continuation-in-part of Ser. No. 850,754, Apr. 11, 1986, Pat. No. 4,728,305, which is a continuation-in-part of Ser. No. 793,654, Oct. 31, 1985, Pat. No. 4,679,889, which is a continuation-in-part of Ser. No. 737,230, May 24, 1985, Pat. No. 4,605,278. This application Dec. 7, 1987, Ser. No. 129,715

Int. Cl.⁴ H01R *4/02*

U.S. Cl. 439—876 13 Claims



1. A solder-bearing lead adapted to be soldered to a conductive area on a substrate having a lead-receiving opening, said lead comprising

an elongated body having an upper body portion and a lower body portion, said lower body portion being sized to fit in said substrate opening substantially perpendicular to said substrate,

said body being cut longitudinally to define a finger having a first end integral with and attached to said body and also having a free end,

said finger being bent out of the plane of said body and having a portion spaced from and in opposition to said body,

a solder mass,

said finger being bent only partially around said solder mass with each solder mass held between said finger free end and said body, said finger free end being wrapped only partially around said solder mass to leave at least a portion of said solder mass uncovered by said finger,

said uncovered solder mass portion being in a position to confront directly and to contact said substrate conductive area with the end of said finger adjacent to said conductive area but not interposed between said solder mass and said conductive area,

said body also being cut longitudinally along a second line to define a second finger, said fingers being separated by said upper body portion, both of said fingers being wrapped only partially around said solder mass.

4,883,436

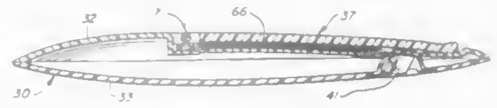
KNEEBOARD WITH RETRACTABLE FINS

Dennis N. Oakland, Woodinville, Wash., assignor to O'Brien International, Inc., Redmond, Wash.

Continuation of Ser. No. 99,127, Sep. 21, 1987, abandoned. This application Apr. 19, 1989, Ser. No. 341,292

Int. Cl.⁴ B63B *41/00*

U.S. Cl. 441—65 11 Claims



1. A kneeboard comprising an elongated body having top

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and bottom surfaces and front and rear end portions, a fin movably mounted in the rear end portion of the body, the fin being movable between a lowered position in which it extends downwardly below the bottom surface of the kneeboard and a raised position, and operating means mounted on the front end portion of the body for moving the fin from its lowered position to its raised position, the operating means comprising a channel-shaped bracket mounted in the body, a slide slidably positioned within the channel, a knob positioned above the channel, and locking means on the knob for engaging the slide and retaining the slide in a desired position within the channel, the cable being secured to the slide, whereby movement of the slide within the channel retracts the fin from its lowered position toward its raised position.

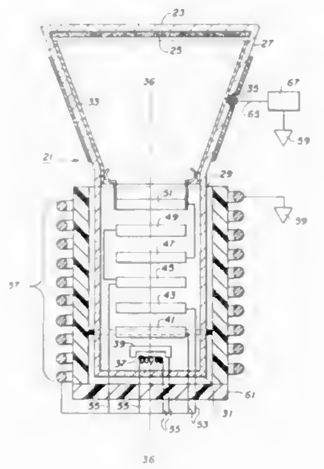
4,883,437
METHOD FOR SPOT-KNOCKING AN ELECTRON GUN MOUNT ASSEMBLY OF A CRT UTILIZING A MAGNETIC FIELD

Karl G. Hernqvist, Princeton, N.J., assignor to RCA Licensing Corp., Princeton, N.J.

Continuation-in-part of Ser. No. 214,556, Jun. 29, 1988, abandoned. This application Mar. 29, 1989, Ser. No. 330,015

Int. Cl.⁴ H01J *9/44*

U.S. Cl. 445—5 7 Claims



1. In a method for spot-knocking a completed CRT having an electron gun with a plurality of spaced apart gun elements including a heater, a cathode, a control electrode, a screen electrode, at least one focus electrode and at least one anode arranged along a longitudinally extending gun axis, the steps comprising

interconnecting selected ones of the gun elements including at least said heater, said cathode, said control electrode and said screen electrode,

providing a magnetic field along said gun axis, and

applying spot-knocking voltages between said anode and the interconnected gun elements.

4,883,438
METHOD FOR SPOT-KNOCKING AN ELECTRON GUN MOUNT ASSEMBLY OF A CRT

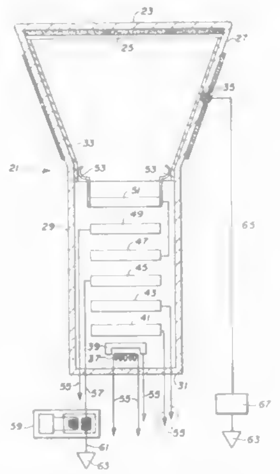
Karl G. Hernqvist, Princeton, N.J., assignor to RCA Licensing Corp., Princeton, N.J.

Continuation-in-part of Ser. No. 214,554, Jun. 29, 1988, abandoned. This application Mar. 29, 1989, Ser. No. 336,609

Int. Cl.⁴ H01J *9/44*

U.S. Cl. 445—5 9 Claims

1. A method for spot-knocking an electron gun mount assembly in an evacuated CRT, said mount assembly comprising a plurality of gun elements including a heater, a cathode, a control electrode, a screen electrode, a first focus electrode, a first anode, a second focus electrode and a second anode, said method comprising the step of applying spot-knocking voltages between said first and second anodes, and said first focus electrode, the remaining gun elements being electrically floating.



4,883,439
APPARATUS FOR FIXTURING A CATHODE RAY TUBE

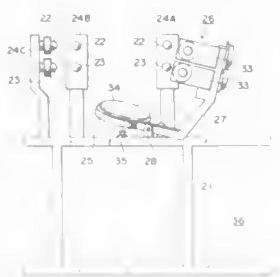
Tatsurou Sakamoto; Masayoshi Ito, both of Gifu, and Yoshinori Yamano, Aichi, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Dec. 7, 1987, Ser. No. 129,142

Claims priority, application Japan, Dec. 8, 1986, 61-291911

Int. Cl.⁴ H01J *9/24*

U.S. Cl. 445—66 8 Claims



5. A cathode ray tube fixturing device for aligning a face panel and a funnel for a frit sealing process comprising:

a cone holder proportioned to engage a constricted portion of said funnel,

a movable abutting block arranged to abut said panel and said funnel,

a pivotal arm arranged to position said movable abutting block into abutting relation with said panel and said funnel, said cone holder mounted on said pivotal arm, whereby said pivotal arm pivots in response to said funnel being placed in said cone holder, and

at least one fixed abutting block arranged to abut said panel and said funnel in opposed relation to said movable abutting block,

said panel and said funnel when located in said cone holder being oriented along a vertical axis, and said movable abutting block being positioned upon movement to urge said panel and said funnel against said fixed abutting block,

said cone holder having a circular annular shape and including an inside contact member arranged to contact said funnel in a continuous line contract, said inside contact member being composed of a carbonaceous material.

4,883,440
ELECTRIFIED TOY BUILDING BLOCK WITH ZIG-ZAG CURRENT CARRYING STRUCTURE

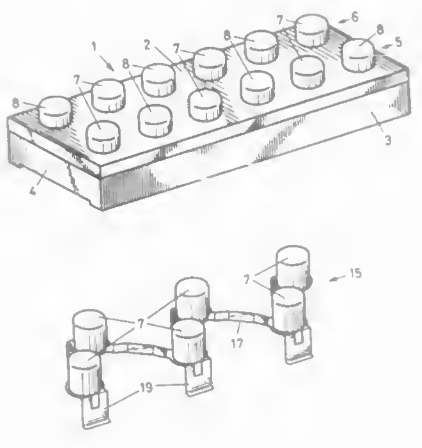
Peter Bolli, Steinhausen, Switzerland, assignor to Interlego A.G., Baar, Switzerland

Filed Jan. 29, 1987, Ser. No. 8,640

Claims priority, application Switzerland, Feb. 5, 1986, 461/86

Int. Cl.⁴ A63H *33/08*

U.S. Cl. 446—91 11 Claims



1. A building block for a toy construction set comprising:

a top wall having an outer surface and an inner surface;

a side wall extending from said top wall;

a plurality of coupling pins on the outer surface of said top wall; said coupling pins each having electrically conductive means and said pins being arranged in at least two equally spaced rows forming at least two equally spaced columns of pins, the rows and columns being orthogonally directed;

means for electrically connecting alternate coupling pin conductive means of one row with alternate coupling pin conductive means of an adjacent row whereby no coupling pin is electrically connected to the coupling pin in neither the immediately adjacent row, nor the immediately adjacent column, thereby forming two separate electrical conductors; and,

counter coupling means for engaging pins of another block, said counter coupling means being on said top wall inner surface and including said side wall.

4,883,441
DOLL

Andrew Byer, 11839 Doral Ave., Northridge, Calif. 91326

Filed Oct. 12, 1988, Ser. No. 256,845

Int. Cl.⁴ A63H *3/16, 3/02*

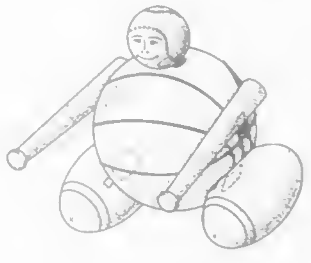
U.S. Cl. 446—99 2 Claims

1. A doll comprising:

a spherical head having soft cloth head covering containing a soft filling, said covering including at least an embroidered mouth and eyes and an embroidered baseball-like seam, said covering also having a fastener strip thereon spaced apart from said mouth and opposite said eyes;

a pair of elongate arms, each arm having a soft arm cloth covering containing a soft filling, each arm tapering from a larger end to a smaller end, said smaller end terminating in a knob, each arm having a fastener strip disposed on said covering adjacent said larger end thereof;

a pair of oblong legs, each leg having a soft cloth covering containing a soft filling, said leg covering having a pair of spaced apart annular and embroidered bands and embroidered football-like seams positioned in between said bands, said leg covering further including a fastener strip overlying said football-like seam;



a spherical body having a soft cloth body covering containing a soft filling, said body having a plurality of embroidered basketball-like meridians on said covering thereof, and a plurality of body fastener strips releasably engageable to said fastener strips on said head, arms, and legs, said body fastener strips generally positioned on said body and equally spaced apart over a single meridian circumscribing said body.

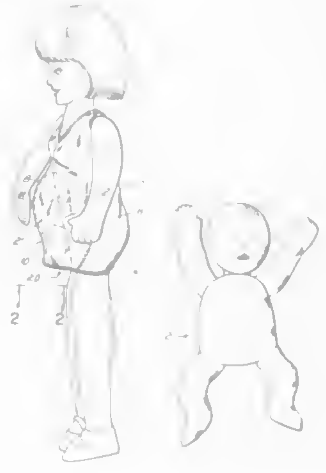
4,883,442
PREGNANT MOTHER DOLL AND SEPARABLE BABY DOLL

Ida B. Kaplan, Cincinnati, Ohio, assignor to MTR Enterprises, Cincinnati, Ohio

Filed Jan. 20, 1987, Ser. No. 5,208

Int. Cl.⁴ A63H *3/02*

U.S. Cl. 446—320 4 Claims



1. A doll set comprising a pregnant mother doll and separate baby doll,

said mother doll having a head, trunk, arms and legs, the trunk having the profile of a woman who is not pregnant, and means presenting an elastically expansible and contractable external pouch on the abdomen area of the trunk, said means being of stretchable fabric material,

said pouch being presented in an undergarment which is fitted snugly over the trunk of the mother doll,

said pouch opening downwardly just above the legs of the mother doll and dimensioned to receive and hold said baby doll within it to simulate the shape of a pregnant

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woman, said pouch being contracted elastically so as to conform to an assume the shape of said trunk so that the mother doll appears trim and not pregnant when the baby doll is not within said pouch,

said baby doll being dimensioned and shaped to fit within the pouch and, when in the pouch, to impart a rounded appearance to the pouch so as to simulate pregnancy of the mother doll.

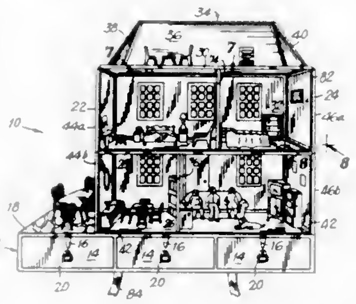
4,883,443
FOLDING PLAY STRUCTURE

Herbert S. Chase, One Lincoln Plaza, New York, N.Y. 10398

Filed Sep. 12, 1988, Ser. No. 242,561

Int. Cl.⁴ A63H *3/52, 33/00*

U.S. Cl. 446—478 13 Claims



1. A collapsible play structure, comprising an enclosed box-like base unit having storage means located therein; a pair of opposed parallel and upright side wall panels, each of which having pairs of opposed upper and lower and front and back edges, each of said wall panels being pivotly mounted to said base along said lower edge; a plurality of horizontal panels, each of which having pairs of opposed first and second sides and front and back edges, each of said horizontal panels being pivotly mounted to and between said side walls along said sides of said horizontal panels; a front wall panel extending upwardly between said side walls between the front edges thereof and extending horizontally between said side walls, said front wall panel being pivotly attached to the front edge of one of said horizontal panels by a hinge means; and lock means mounted to said horizontal panels and said front wall panel to retain said horizontal and front wall panels in an abutting relationship whereby the structure is retained in the upright and upstanding position.

4,883,444
COUPLING FOR TRANSMITTING A ROTARY MOTION

Ernst Strickler, Wolfhausen, and Hansueli Wild, Jona, both of Switzerland, assignors to Mettler Instrumente AG, Greifensee, Switzerland

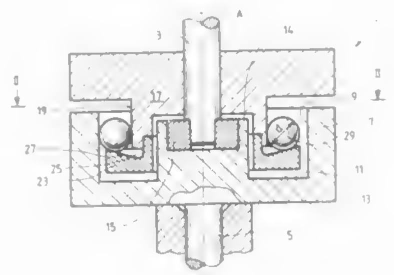
Filed May 9, 1988, Ser. No. 191,587

Claims priority, application Switzerland, Jun. 2, 1987, 2092/87

Int. Cl.⁴ F16D *41/06*

U.S. Cl. 464—160 6 Claims

1. A coupling for transmitting a rotary motion in both directions of rotation, the coupling including a vertically extending drive shaft and a vertically extending driven shaft having an axis of rotation, the driven shaft having an end, a clamping disk mounted on the drive shaft, the clamping disk defining a peripheral surface, the peripheral surface having at least one partial constriction, an annular plate mounted between the drive shaft and the driven shaft, the annular plate defining a circumferential surface opposite the clamping disk, the circumferential surface being located essentially concentrically with the axis of rotation and being inclined relative to the horizontal, at least one ball having a diameter being placed on the circumferential surface, and a cage attached to the end of the driven shaft, the cage defining a guide surface facing the peripheral surface of the clamping disk and the circumferential surface, a spacing defined between the peripheral surface and the guide surface, the spacing being greater than the diameter of the at least one ball at the constriction and being smaller than the diameter of the at least one ball at at least a portion of the peripheral surface, such that the coupling has a freewheeling capability in both directions for rotary motion introduced into the driven shaft when the at least one ball is located at the constriction and that when the drive shaft is rotated the at least one ball is moved radially outwardly and in clamped engagement between the peripheral surface of the clamping disk and the guide surface of the cage resulting in a transmission of rotary motion from the drive shaft to the driven shaft.



4,883,445
DEVICE FOR TENSIONING OF A PULLING ELEMENT OF A PRINTER

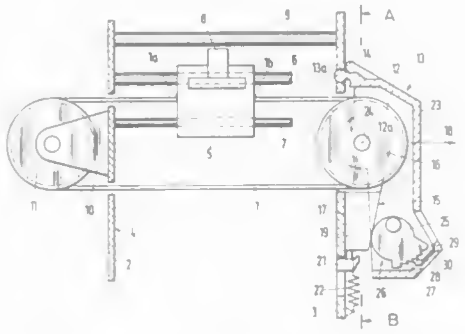
Günter Gomoll, Nersingen/Leibi, and Wolfgang Hauslaib, Langenau, both of Fed. Rep. of Germany, assignors to Mannesmann Aktiengesellschaft, Düsseldorf, Fed. Rep. of Germany

Filed Sep. 26, 1988, Ser. No. 248,659

Claims priority, application European Pat. Off., Oct. 16, 1987, 87 730 130.9

Int. Cl.⁴ B41J *19/20;* **F16H** *7/14*

U.S. Cl. 474—113 17 Claims



1. A tensioning device for tensioning of a pulling element in a printer comprising

a frame;

an axis fixed relative to the frame;

a carriage movable back and forth and having a first and a second end;

a flexible line attached to the first end of the carriage;

a first deflection roller guiding the flexible line coming from the carriage, where the first deflection roller is rotatably supported relative to the axis fixed relative to the frame;

a second deflection roller having a second axis and guiding the flexible line coming from the first deflection roller and where the second end of the flexible line coming from the second deflection roller is attached at the second end of the movable carriage;

an axle disposed in parallel to the second axis of the second deflection roller;

a frame surface disposed perpendicular to the direction of the flexible line disposed between the first deflection roller and the second deflection roller;

a wedge face having a slope relative to the frame surface and which wedge face can be shifted parallel to said frame surface disposed perpendicular to the direction of the flexible line;

a tension spring attached to the frame and to the wedge, which tension spring acts in the sense of an increase in tensioning force of the flexible line;

a tiltable lever formed as a covering casing and rotatably supporting the second deflection roller, which tiltable lever is supported at the axle disposed in parallel to the second axis of the second deflection roller and where the tiltable lever rests against said wedge face and which wedge face is subjected to the force of the tension spring, which tension spring acts in the sense of an increase in tensioning force;

support bearings supporting the second deflection roller and mounted to the tiltable lever;

an adjustable cam settable to a fixed cam position and rotatably disposed in the tiltable lever formed as a covering casing and said cam having a surface contacting the wedge surface.

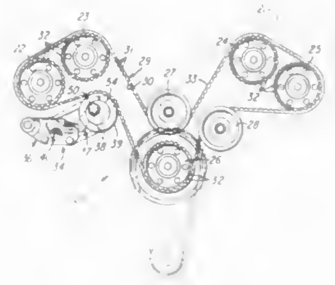
4,883,446
BELT TENSIONING SYSTEM, TENSIONER AND PARTS THEREFOR AND METHODS OF MAKING THE SAME

James L. Mitchell, Springfield, Mo., and Daniel P. Bexten, Columbus, Miss., assignors to Dayco Products, Inc., Dayton, Ohio

Filed Mar. 14, 1989, Ser. No. 323,539

Int. Cl.⁴ F16H *7/12*

U.S. Cl. 474—133 28 Claims



1. In a belt tensioning system comprising a support means, an endless transmission belt construction carried by said support means and arranged to move in a certain path, an arm pivotally mounted to said support means, a pulley rotatably carried by said arm and being in engagement with said belt construction, and an actuator carried by said support means and having opposed ends, said actuator having a movable piston projecting out of one of said opposed ends thereof and being in engagement with said arm to pivot said arm in a direction to urge said pulley into said belt construction as said piston is extended outwardly from said one of said opposed ends of said actuator, the improvement wherein the other of said opposed ends of said actuator is pivotally mounted to said support means whereby said actuator pivots relative to said support means as said piston thereof extends and retracts at said one end thereof.

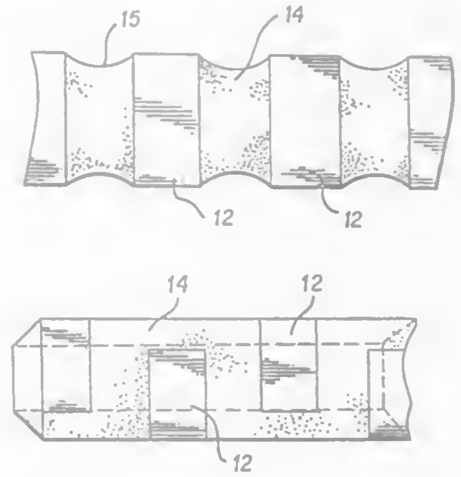
4,883,447
POWER TRANSMISSION BELT

Saul Schulhoff, Jr., 3502 Fallstaff Rd., Baltimore, Md. 21215

Filed Dec. 21, 1987, Ser. No. 136,202

Int. Cl.⁴ F16G *5/00, 5/10, 5/12*

U.S. Cl. 474—242 17 Claims



8. A belt for transmitting power, comprising:

a band formed of a resilient binder;

a plurality of traction members spaced apart from one another, said traction members being formed integrally within said resilient binder;

said traction members being formed at least in part from a dense, abrasion-resistant material;

said traction members having a density greater than that of said resilient binder; and

said traction members extending substantially transversely across and laterally outward from said resilient binder.

4,883,448
BELT HAVING EMBEDDED WIRES INTERLACED ACROSS LENGTHWISE SURFACES OF SHAFTS

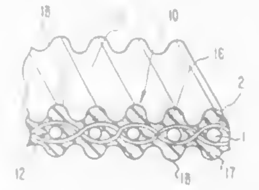
Toshimitsu Kobayashi, Tokai; Akio Inagaki, Okazaki; Yasuhiro Kobayashi; Masanori Mori, both of Chiryu, and Takashi Sakakibara, Handa, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Aichin, Japan

Filed Jul. 8, 1988, Ser. No. 216,520

Claims priority, application Japan, Jul. 10, 1987, 62-173407; Jul. 10, 1987, 62-173408

Int. Cl.⁴ F16G *1/10*

U.S. Cl. 474—260 13 Claims



1. A belt comprising:

a main body including a first plurality of cogs defining an upper surface and a second plurality of cogs defining lower surface with said body formed into an endless configuration;

a plurality of substantially equally pitched approximately round shafts with each shaft disposed between an upper surface cog and a corresponding lower surface cog; and

a plurality of wires interlaced with said shafts in such a manner that each shaft is positioned at a portion at which two adjacent wires intersect.

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4,883,449
DEVICE FOR MAKING GROOVES IN CIGARETTE FILTERS

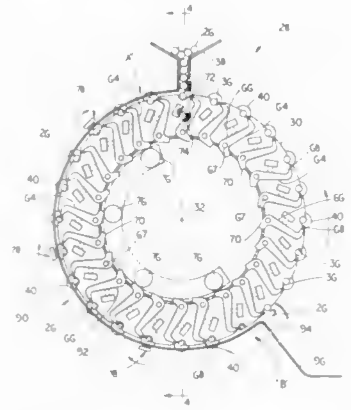
Richard Heaney, Campbell, and Erik I. Naslund, Los Gatos, both of Calif., assignors to Brown & Williamson Tobacco Corporation, Louisville, Ky.

Filed Jul. 18, 1984, Ser. No. 632,081

The portion of the term of this patent subsequent to May 14, 2002, has been disclaimed.

Int. Cl.^{4} B29C *43/08;* A24C *3/02, 3/04*

U.S. Cl. 493—43 20 Claims



1. An apparatus for making elongated grooves in the peripheral surface of a filter rod, comprising:

a generally cylindrical, rotatable drum;

means for rotating the drum operatively associated therewith;

means defining a plurality of filter rod receiving channels in the peripheral surface of the drum, the filter rod receiving channels being open to the peripheral surface of the drum, the longitudinal axes of the channels being generally parallel to the rotational axis of the drum; means operatively positioned relative to said channels for depositing filter rods to be grooved in the channels; means for successively forming grooves in the peripheral surface of the filter rods while the filter rods remain disposed in the channels, the groove forming means being located adjacent each of the filter rod receiving channels and selectively movable into and out of the channels, the grooves being circumferentially spaced apart around the periphery of the filter rod; and,

means associated with said drum for indexing filter rods relative to the rotation of the drum in selected ones of the channels while the filter rods remain in the filter rod receiving channels about the longitudinal axes of the filter rods to position the filter rods for succeeding groove formation by the groove forming means as the drum continues to rotate.

4,883,450
PROCESS FOR MAKING SINGLE SIDE FREE PLASTIC BAG

Gordon L. Benoit, Macedon, N.Y., assignor to Mobil Oil Corp., New York, N.Y.

Filed Nov. 2, 1987, Ser. No. 115,318

Int. Cl.^{4} B31B *1/64*

U.S. Cl. 493—196 9 Claims

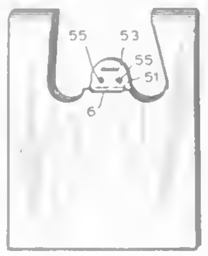
1. A method of continually making thermoplastic film bags having one side substantially free for separation from an opposite side; comprising:

providing a continuous tube of thermoplastic film for formation of said bags, said tube having a continuous wall which forms opposing front and rear sides;

separating said front and rear sides of said continuous wall from each other;

intermittently at least partially cutting one of said opposing sides of said continuous wall of said continuous tube at intervals corresponding to single bag lengths, thereby providing cuts therein at said intervals;

forming sealed seams across said continuous tube at intervals which provide sealed bottom ends for said bags; and



severing said continuous tube at intervals to separate individual bags from said continuous tube such that each of said separated individual bags includes front and rear sides formed from said front and rear sides of said continuous wall of said continuous tube, top and bottom ends, and a cut within one of said front and rear sides thereof.

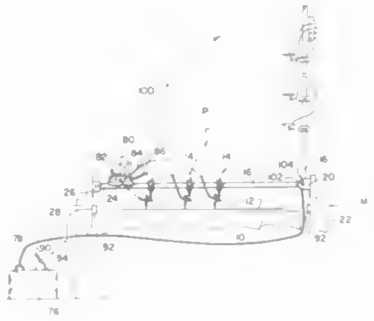
4,883,451
PAPER SCORING APPARATUS

Martin L. Hoy, 6409 63rd Pl., Riverdale, Md. 20737, and Aubrey B. Hurst, 6200 Westchester Dr., College Park, Md. 20740

Filed Nov. 4, 1988, Ser. No. 267,315

Int. Cl.^{4} B31F *1/00, 1/36*

U.S. Cl. 493—396 10 Claims



1. A water scoring apparatus for paper or the like being moved through a machine comprising:

an elongated bar,

means supporting said bar in a substantially horizontal plane,

a needle assembly on said bar,

said needle assembly including a mounting lock engaging said bar,

a support bracket projecting from said block,

a needle holder carried by said bracket,

a hollow needle removably attached to said holder,

releasable means connecting said bracket to said block and said holder to said bracket and permitting relative position adjustment between said holder, bracket and block,

a supply container adapted to hold fluid,

flexible fluid transmission means communicating between said container and needle, and

control means operable to regulate the flow of fluid from said container to said needle;

said bar supporting means includes a bracket on the machine and said bar includes one end pivotally attached to said machine bracket, whereby

said support bar is angularly displaceable from a horizontal position to an elevated position.

4,883,452
METHOD OF FABRICATING FROZEN FINE LIVER PIECES FOR ARTIFICIAL LIVER, APPARATUS FOR FREEZING THE SAME, AND FREEZING VESSEL

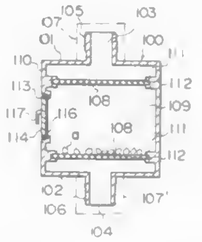
Yoichi Kasai, deceased (by Motoko Kasai, personal representative); Akio Kawamura; Yoshimi Nakanishi; Akira Kakita; Toshihiko Tsuburaya, all of Sapporo; Yasno Kuraoka, and Nobuo Sakao, both of Ibaraki, all of Japan, assignors to Hoxan Corporation, Sapporo, Japan

Continuation of Ser. No. 661,469, Oct. 16, 1984, abandoned. This application Sep. 16, 1988, Ser. No. 245,925

Claims priority, application Japan, Mar. 2, 1984, 59-30260[U]; Mar. 16, 1984, 59-37534[U]; Mar. 16, 1984, 59-37533[U]; Mar. 17, 1984, 59-6172

Int. Cl.^{4} A61B *19/00;* F25D *25/00*

U.S. Cl. 600—36 2 Claims



1. A method of fabricating frozen fine liver pieces for an artificial liver comprising:

cutting a liver removed from a human being or an animal, from which blood has been removed, into fine pieces of cubic shape and size of about 3 to 5 mm per side,

placing the liver fine pieces in a closed cavity, and

instantaneously freezing the liver pieces by introducing into the closed cavity at high speed and freezing velocity of about 1000 degrees C./min. helium gas evaporated directly from a source of liquid helium.

4,883,453
METHOD OF MANUFACTURING SYNTHETIC VASCULAR GRAFTS

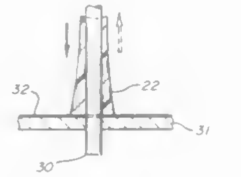
John P. Berry, Wirral, and David Annis, Bromborough, both of England, assignors to Ethicon Inc., Somerville, N.J. and The University of Liverpool

Filed Aug. 28, 1987, Ser. No. 90,312

Claims priority, application United Kingdom, Oct. 27, 1986, 8625679

Int. Cl.^{4} A61F *2/04, 2/06;* B32B *31/00;* F16L *31/00*

U.S. Cl. 600—36 4 Claims



1. A method of manufacturing an aotro-coronary bypass graft comprising a partially cylindrical plate portion and at least one tube portion extending from said plate portion, said method comprising the steps of forming the plate portion, forming the tube portion, placing at least one hole in the plate portion, mounting the tube portion on a rigid tube or rod of external diameter adapted to pass snugly through the hole in the plate portion, applying adhesive to the end of the tube portion to be attached to the plate portion, passing the rigid rod or tube through the hole in the plate portion until the adhesive contacts the surface of the plate portion surrounding the hole and removing the rigid rod or tube once the plate portion and tube portion are secured together

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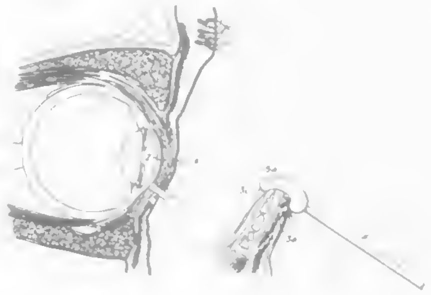
4,883,454
EYELID AND ANTERIOR ORBIT SWAB

Sol Hamburg, 9006 Abbeydale, Houston, Tex. 77031

Filed Sep. 4, 1987, Ser. No. 93,182

Int. Cl.^{4} A61F *9/00, 13/00*

U.S. Cl. 604—1 9 Claims



1. An improved swab-type applicator for treatment of the eyelid margin inflammation due to meibomian gland dysfunction or other related infection comprising:

an upper blotting means

a lower blotting means,

each said blotting means being constructed of a lightweight, porous, sponge-like material capable of retaining its configuration when wet,

each said upper and lower blotting means characterized by an intermediary blotting means,

said intermediary blotting means consisting of a concave portion of compatible configuration to accommodate any two of the three surfaces of the lid margin so as to enable efficacious treatment by removal of the sebaceous debris or the like simultaneously from either the exterior surface and lower surface or the lower surface and anterior surface of said eyelid margin.

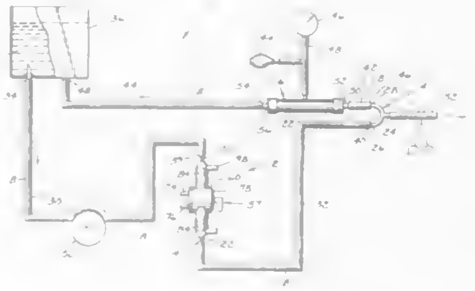
4,883,455
CARDIOPLEGIA ADMINISTRATION SET

Ronald J. Leonard, Saint Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Sep. 13, 1988, Ser. No. 243,896

Int. Cl.^{4} A61M *37/00*

U.S. Cl. 604—4 34 Claims



1. A cardioplegia administration set suitable for continually cooling and debubbling cardioplegia solution for delivery to a

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patient's heart on demand at a predetermined pressure for injection into the heart, said administration set comprising:

- A. a heat exchanger having an inlet and an outlet;
- B. a bubble trap having an inlet and an outlet;
- C. a three-end connector having one end adapted to connect to a cardioplegia solution injection catheter, one end comprising an inlet and one end comprising a recirculation outlet;
- D. first tubing means having an inlet adapted to be connected to a source of cardioplegia solution and an outlet connected to the inlet of the three-end connector, said tubing means interconnecting the inlets and the outlets of the heat exchanger and the bubble trap therebetween so that a solution passageway is established from the source of cardioplegia solution through the heat exchanger and through the bubble trap to the end of the three-end connector adapted to connect to the injection catheter; and
- E. a recirculation loop comprising:
  - 1. a normally-closed, pressure-responsive valve having an inlet and an outlet; and
  - 2. second tubing means having an inlet connected to the recirculation outlet of the three-end connector and an outlet adapted to be connected to the source of cardioplegia solution so that a solution passageway is established from the three-end connector through the normally-closed valve back to the source of cardioplegia solution when the valve is open.

4,883,456

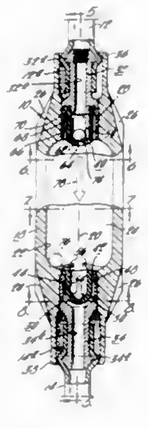
ATTITUDE AND PRESSURE RESPONSIVE VALVE

John W. Holter, Valley Forge Circle 1000-619, King of Prussia, Pa. 19405

Filed Feb. 22, 1988, Ser. No. 158,695

Int. Cl.⁴ A61M *5/00*

U.S. Cl. 604—9 5 Claims



1. A pressure and attitude responsive valve comprising;

a resilient hollow valve body,

an inlet opening in one end of said valve body for introduction thereinto of a pressurized fluid to be regulated,

a circular outlet opening in the opposite end of said valve body,

a ball larger in diameter than said outlet opening disposed within said valve body and adapted to open or close said outlet opening in accordance with the attitude of said valve body, and

at least one slit in said valve body adapted to open to permit fluid flow therethrough outwardly from said valve body upon occurrence of a predetermined pressure gradient across the valve body.

4,883,457

DISPOSABLE AND/OR REPLENISHABLE TRANSDERMAL DRUG APPLICATORS AND METHODS OF MANUFACTURING SAME

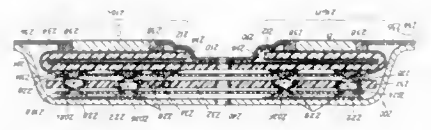
Dan Sibalis, Stony Brook, N.Y., assignor to Drug Delivery Systems Inc., New York, N.Y.

Continuation-in-part of Ser. No. 807,234, Dec. 10, 1985, Pat. No. 4,731,926, Continuation-in-part of Ser. No. 702,486, Feb. 19, 1985, abandoned, Continuation-in-part of Ser. No. 660,192, Oct. 12, 1984, Pat. No. 4,622,031, Continuation-in-part of Ser. No. 524,252, Aug. 18, 1983, Pat. No. 4,557,723. This application Jun. 5, 1987, Ser. No. 58,527

Claims priority, application Taiwan, Nov. 18, 1986, 75105482; Argentina, Nov. 20, 1986, 305963; European Pat. Off., Nov. 28, 1986, 86116547.0; Rep. of Korea, Nov. 28, 1986, 10126/86[U]; Australia, Dec. 3, 1986, 66193/86; Colombia, Dec. 5, 1986, 263611; Brazil, Dec. 9, 1986, PI8606062[U]; Canada, Dec. 9, 1986, 524873; Japan, Dec. 9, 1986, 61-293319; Mexico, Dec. 9, 1986, 4602; Venezuela, Dec. 10, 1986, 2160/86

Int. Cl.⁴ A61N *1/30*

U.S. Cl. 604—20 27 Claims



1. A transdermal drug applicator for application to the skin of a patient which is electrically powered, comprising:

a flexible, non-conductive substrate having conductive coated areas which together form a single flexible member said flexible substrate defining first and second surfaces, and said conductive coated areas being on said first surface and forming drug reservoir electrodes, said flexible member being folded at about 180 degrees at each of two opposite ends to form top side and bottom side portions with the conductive coated areas providing electrical conductors between said top side and said bottom side portions, a plurality of separated drug reservoirs in electrical contact with said drug reservoir electrodes at said bottom side portions, a power source, including an electrical circuit, connected to said conductors at said top side portions for providing current to said plurality of drug reservoirs via said conductors and drug reservoir electrodes, electrical current conditioning means in said circuit with said power source and said drug reservoir electrodes, and a covering for said drug applicator enveloping and enclosing said flexible member, said power source and current conditioning means, and said plurality of drug reservoirs leaving a side of said drug reservoirs free for application.

4,883,458

ATHERECTOMY SYSTEM AND METHOD OF USING THE SAME

Samuel Shiber, Mundelein, Ill., assignor to Surgical Systems & Instruments, Inc., Mundelein, Ill.

Continuation-in-part of Ser. No. 18,083, Feb. 24, 1987, which is a continuation-in-part of Ser. No. 874,546, Jun. 16, 1986, Pat. No. 4,732,154, which is a continuation-in-part of Ser. No. 609,846, May 14, 1984, abandoned. This application Jun. 13, 1988, Ser. No. 205,479

Int. Cl.⁴ A61B *17/32*

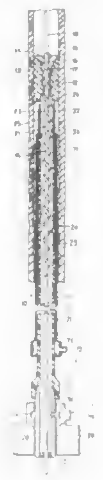
U.S. Cl. 604—22 25 Claims

1. An atherectomy system for coring, ingesting and removing an obstruction from within a patient's vessel, comprising in combination:

a flexible guide-wire insertable into the vessel,

a flexible rotary catheter, rotatably disposed and insertable into the vessel over said flexible guide-wire, having at its distal end a rotary coring means for making a circular cut in an obstruction located in front of it, and coupling means at its proximal end, and,

a continuous passage, for ingesting the cored obstruction material, defined between said flexible rotary catheter and said flexible guide-wire, where the relative motion between said flexible rotary catheter and said flexible guide-wire assists in moving said ingested obstruction material proximally in said continuous passage.



4,883,459

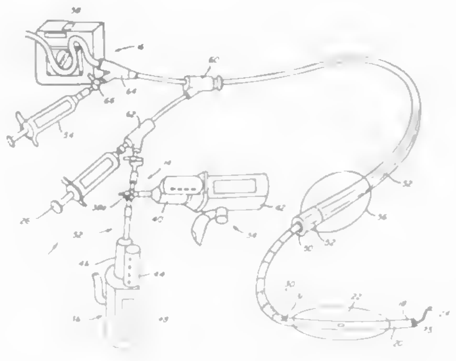
RETROGRADE PERFUSION

Reynaldo Calderon, 5620 Greenbriar #105, Houston, Tex. 77005

Continuation-in-part of Ser. No. 83,673, Aug. 12, 1987, Continuation-in-part of Ser. No. 871,528, Jun. 6, 1986, Pat. No. 4,714,460, Continuation of Ser. No. 518,685, Jul. 29, 1983, abandoned. This application Dec. 21, 1987, Ser. No. 139,065

Int. Cl.⁴ A61M *1/00*

U.S. Cl. 604—28 11 Claims



5. A method for treating a tumor in the body of a patient with an active ingredient, comprising the steps of:

- (a) placing a catheter having a suction lumen and an infusion lumen extending beyond the suction lumen and an infusion seal associated with the infusion lumen and a suction seal associated with the suction lumen in a vein of the patient near the tumor;
- (b) sealing the flow of fluid in the patient's vein between the infusion lumen and the suction lumen with the infusion seal;
- (c) injecting a carrier medium into the tumor from the infusion lumen at selected flow rates and pressures to establish preferential flow paths through the tumor;
- (d) sealing the flow of fluid in the patient's vein past the suction lumen with the suction seal;
- (e) injecting a carrier medium from the infusion lumen in a selected one of the established flow paths at a desired flow rate and pressure until steady state flow is established;
- (f) injecting a second, less dense carrier medium from the infusion lumen in the selected one of the established flow paths;
- (g) increasing the back pressure on the carrier medium when the second carrier medium is in the tumor to force the second carrier medium into interstitial spaces in the tumor at an attack site;
- (h) injecting an active ingredient behind a carrier fluid into the patient's vein from the infusion lumen along the established flow path;
- (i) increasing the back pressure on the carrier fluid and active ingredient when the active ingredient is at the attack site to force the active ingredient into interstitial spaces in the tumor so that the active ingredient is driven into the interstitial spaces in the tumor; and
- (j) collecting the active ingredient in the suction lumen after perfusion through the tumor.

4,883,460

TECHNIQUE FOR REMOVING DEPOSITS FROM BODY VESSELS

Paul H. Zanetti, 5226 St. Andrews, Corpus Christi, Tex. 78413

Filed Apr. 25, 1988, Ser. No. 185,435

Int. Cl.⁴ A61B *17/20*

U.S. Cl. 604—22 11 Claims

1. A method of removing relatively hard, abnormal deposits from a relatively soft vessel of a patient, comprising

inserting a catheter into the vessel from a location outside the patient,

inserting a flexible drive member having first and second ends and a cutting tool on the second end though the catheter and positioning the cutting tool adjacent the deposit, the cutting tool comprising an elongate member defining an axis having a lateral exterior surface extending along the axis and provided with a sharp cutting element; and

reciprocating the first end of the elongate member at a rate of 3,000–30,000 cycles per minute through a stroke of 0.01–5 millimeters, contacting the hard deposit with the cutting element on the lateral exterior surface and comminuting the hard deposits.

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4,883,461

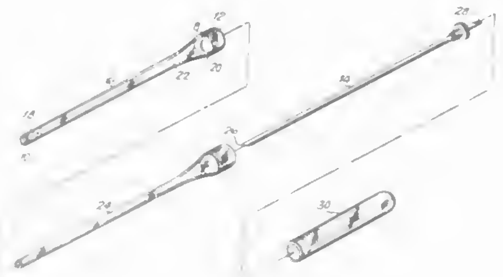
SAFETY NEEDLE SHEATH IN ANTI-REFLUX CATHETER HAVING NOVEL VALVE MEANS

Philip N. Sawyer, Brooklyn, N.Y., assignor to Interface Biomedical Laboratories Corp., Brooklyn, N.Y.

Continuation-in-part of Ser. No. 50,589, May 15, 1987, Pat. No. 4,784,644. This application Nov. 10, 1988, Ser. No. 269,829

Int. Cl.⁴ A61M *5/00*

U.S. Cl. 604—53 20 Claims



1. A method for preventing needle-stick injuries when catheter means is introduced into or withdrawn from the vascular system of a patient during intravenous or intraarterial procedures as well as during disposal, storage or transportation of the catheter means which comprises:

providing a catheter means having fluid flow control means and needle-enveloping means, said fluid flow control means comprising: a tubular structure including input means and output means, each provided with an open bore constituting a flow channel; valve means located between the bores of said input and output means of said tubular structure and having an open and closed position, said valve means providing for a connecting channel between said bores when said further means is in the open position, said further means normally being prestressed to said closed position and being forcible to said open position in response to a positive fluid pressure in the bore of either of said input or output means, said valve means being constructed and arranged so as to return to said closed position in response to a removal of said positive fluid pressure from said bore containing same; said needle-enveloping means including obturating means inserted into said tubular structure so as to render said valve means incompetent, needle means inserted into said obturating means, and receptacle means releasably securable to one end of said needle means;

introducing the catheter means having said inserted obturating means and needle means into an organ or pleural cavity of a patient for removal of fluids therefrom;

retracting the needle means within the overlying obturating means so that the obturating means envelops said needle means; and

withdrawing simultaneously the retracted needle means and said obturating means with the needle means unexposed from within the tubular structure so that only said tubular structure remains in the organ or pleural cavity of said patient and said valve means remains competent in response to fluid reflux.

4,883,462

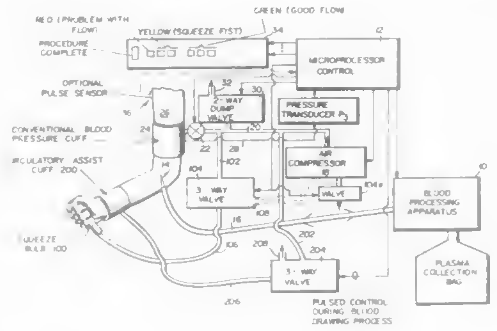
BLOOD EXTRACTION ASSIST APPARATUS AND METHOD

Warren P. Williamson, Huntingdon Beach, and Donald W. Schoendorfer, Santa Ana, both of Calif., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Jan. 30, 1987, Ser. No. 8,753

Int. Cl.⁴ A61M *25/00*

U.S. Cl. 604—53 17 Claims



5. Blood extraction assist apparatus comprising

a phlebotomy needle for fluid connection with a vein in a limb of a living body;

limb stimulus means adapted for tactile engagement with a lower portion of said limb for facilitating sustained venous blood flow to said needle when activated; and

control means connected to activate said stimulus means when sustained venous blood flow is to be facilitated.

4,883,464

MILKING EQUIPMENT

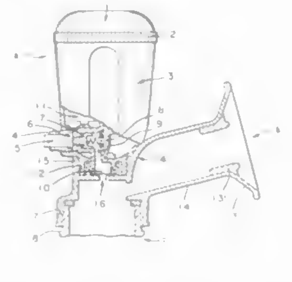
Yaso Morifuki, Osaka, Japan, assignor to Jex Co., Ltd., Osaka, Japan

Continuation of Ser. No. 110,545, Oct. 19, 1987, abandoned, which is a continuation of Ser. No. 783,245, Oct. 2, 1985, abandoned, which is a continuation-in-part of Ser. No. 517,999, Jul. 27, 1983, abandoned. This application Oct. 27, 1988, Ser. No. 266,205

Claims priority, application Japan, Aug. 10, 1982, 57-138756

Int. Cl.⁴ A61M *1/06*

U.S. Cl. 604—74 3 Claims



1. A milking equipment comprising a suction assembly, a milk sucking section, and a bottle, said equipment is characterized in that a suction pressure adjusting screw and a pressure releasing button which works in cooperation with said pressure adjusting screw, are provided on the outside of the case of an electric type suction assembly, which includes batteries, such that the amount of air taken into an outer air intake portion through said pressure releasing button and a pressure shaft can be adjusted by turning said pressure adjusting screw, and an air sucking valve of the electric type suction assembly communicates with the outer air intake portion and an air intake which is provided at the lower portion of the suction member, and said suction assembly milk sucking section equipped with an open trumpet at its side, and said bottle are connected vertically to communicate with each other.

4,883,465

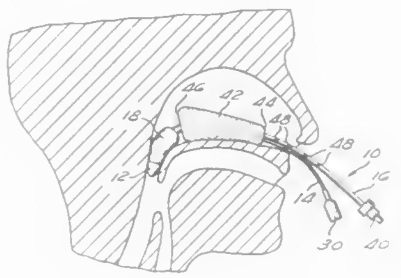
NASAL TAMPON AND METHOD FOR USING

H. George Brennan, 1137 Granville, Newport Beach, Calif. 92660

Filed May 24, 1988, Ser. No. 197,835

Int. Cl.⁴ A61M *25/00*

U.S. Cl. 604—96 13 Claims



1. An intranasal device for controlling nasal hemorrhaging without direct pressure, said device adapted for insertion into a nasal cavity during a nasal operation or other nasal procedure for (i) occluding the choanae to prevent blood and other fluids from flowing from the nose into the patient's throat, and (ii) expelling blood, mucous and other debris from the nasal cavity, without direct suctioning of the soft surrounding tissue, said device comprising:

an elongated tubular element, having mounted thereon a blunt, tapered guiding end, adapted to facilitate manipulation of said device within the nasal cavity;

an expansible low pressure sealing cuff, contiguous with said guiding end and adapted to be inflated by a source of pressurized fluid;

an inflation conduit, having a tubular passageway, for transmitting said pressurized fluid into and out of said expansible low pressure sealing cuff, so as to inflate and deflate said cuff, respectively;

a drainage conduit, adapted to be connected to a source of suction, said drainage conduit exhibiting a plurality of influent ports which enable blood, mucous, and other liquid debris to be suctioned from the nasal cavity; and

an absorptive member, adapted to enclose said influent ports of said drainage conduit so as to prevent soft tissue present in the nasal cavity from being suctioned into said influent ports and to evenly distribute said suction over substantially the entire surface area of said absorptive member.

4,883,466

NON-REUSABLE SYRINGE

Stephen C. Glazier, 211 E. 35th St. , Suite 8B, New York, N.Y. 10016

Filed Apr. 25, 1988, Ser. No. 185,975

The portion of the term of this patent subsequent to Oct. 13, 2004, has been disclaimed.

Int. Cl.⁴ A61M *5/00*

U.S. Cl. 604—110 22 Claims

1. An improved non-reusable syringe comprising:

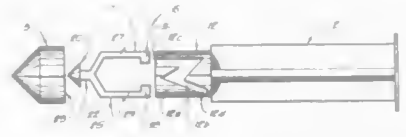
a barrel having one open end and one restricted end through which a fluid may pass;

a piston slidably positioned within said barrel, said piston forming a liquid-tight seal with the interior of said barrel;

a shaft slidable within said barrel, said shaft extending beyond one end of said barrel;

connector means having one end engaging said piston such that said connector means is rotatable relative to said piston; and

guide means formed on said shaft, said guide means receiving the other end of said connector means, said guide means for controlling the movement of said piston relative to the movement of said shaft, said guide means causing said connector means to disengage from said shaft.



4,883,467

RECIPROCATING PUMP FOR AN IMPLANTABLE MEDICATION DOSAGE DEVICE

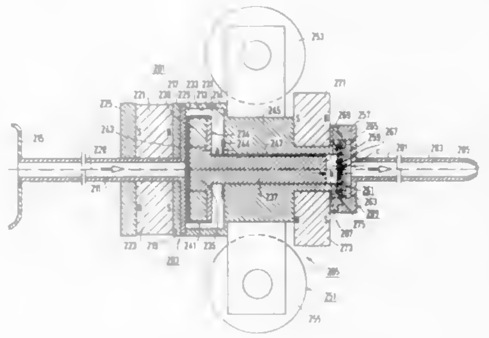
Manfred Franetzki, Uttenreuth; Georg Geisselbrecht, Erlangen; Gerhard Buchholtz, Erlangen; Werner Fickweller, Erlangen, and Peter Obermann, Erlangen, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Apr. 18, 1988, Ser. No. 182,723

Claims priority, application Fed. Rep. of Germany, Apr. 22, 1987, 3713498

Int. Cl.⁴ A61M *1/00*

U.S. Cl. 604—152 11 Claims



1. A reciprocating pump for an implantable medicaton dosage device comprising:

a housing have a fluid conveying passage with a piston consistig at least in part of magnetically attractive material and having a planar end face disposed in said passage, said passage terminating in an outlet;

first magnetic means for moving said piston in said passage through an output stroke to force fluid through said outlet;

second magnetic means for moving said piston in said passage through a return stroke;

a valve disposed at said outlet of said passage having a moveable element having a portion consisting of magnetic material;

a permanent magnet spring system disposed to act on said magnetic material portion of said moveable element for normally forcing said moveable element against said outlet to block fluid flow through said passage;

said moveable element of said valve having a planar surface disposed for pressing tightly adjacent said end face of said piston for at least a portion of said output stroke, at least one of said surface of said moveable element or said end face of said piston having a non-planar region; and

said piston assuming a rest position in said housing at an end of said return stroke with a distance between said end face of said piston and said surface, and said piston and said

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passage being cooperatively dimensioned so that said output stroke is longer than said distance, thereby lifting said moveable element away from said outlet during said output stroke.

4,883,468
MEDICAL TOOL INTRODUCTION CANNULA AND METHOD OF MANUFACTURING THE SAME

Tadashi Kousai; Toshinobu Ishida, and Yousuke Moriuchi, all of Fuji, Japan, assignors to Terumo Kabushiki Kaisha, Tokyo, Japan

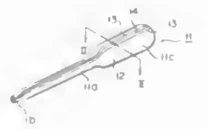
Filed Apr. 1, 1988, Ser. No. 176,601

Claims priority, application Japan, Apr. 8, 1987, 62-86251; Aug. 14, 1987, 62-202858

The portion of the term of this patent subsequent to Nov. 1, 2005, has been disclaimed.

Int. Cl.⁴ A61M *5/00, 25/00*

U.S. Cl. 604—164 17 Claims



1. A medical tool introduction cannula for introducing a rod-like medical tool into a living body, said introduction cannula comprising:
a hollow tubular body made of a synthetic resin, a rod-like medical tool being insertable therethrough;
said hollow tubular body having at least one portion which comprises a strip member made of a material different from other portions of said hollow tubular body, said strip member extending longitudinally over substantially the entire length of said hollow tubular body; and
said strip member having a weld line formed therein, said weld line being bonded with a relatively weak force, and said weld line being longitudinally formed in said strip member to permit breaking of said strip member along said weld line in the longitudinal direction of said strip member.

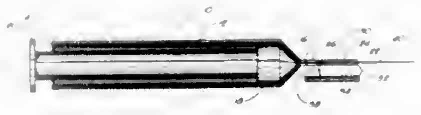
4,883,469
GUARD ASSEMBLY FOR HYPODERMIC NEEDLE

Stephen C. Glazier, 211 E. 35th St., Suite 8B, New York, N.Y. 10016

Filed Apr. 8, 1988, Ser. No. 179,434

Int. Cl.⁴ A61M *5/32*

U.S. Cl. 604—192 16 Claims



1. The guard assembly for a hypodermic needle comprising:
a hinge means connected to said hypodermic needle at a location distal the pointed end of said hypodermic needle; and
guard means attached to said hinge means such that said guard means is movable relative to said hypodermic needle, said guard means having a receiving slot extending longitudinally through at least a portion of said guard means, said receiving slot opening through the wall transverse to the longitudinal axis of said guard means, said guard means for receiving the pointed end of said hypodermic needle, said guard means comprising:
a cylindrical member having a longitudinal V-cut narrowing from the wall to said receiving slot;
an end cap fixed to the end of said cylindrical member, said end cap covering the end of said longitudinal V-cut and said receiving slot; and
lock means formed within said receiving slot for retaining said hypodermic needle within said receiving slot.

4,883,470
SAFETY CAP

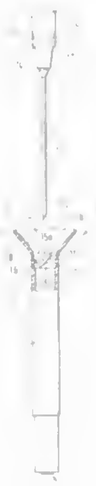
Hans Haindl, Melsungen, Fed. Rep. of Germany, assignor to B. Braun Melsungen AG, Melsungen, Fed. Rep. of Germany

Filed Sep. 20, 1988, Ser. No. 245,578

Claims priority, application Fed. Rep. of Germany, Sep. 25, 1987, 8712926[U]

Int. Cl.⁴ A61M *5/32*

U.S. Cl. 604—192 9 Claims



1. A safety cap for connection with a cannula hub of a cannula, the cannula hub having a plurality of longitudinal wings, the safety cap comprising:
a substantially longitudinal sleeve having a tubular wall and an axial aperture,
an outwardly flared funnel extending from the axial aperture of the sleeve,
a plurality of radial projections on the inner surface of the longitudinal sleeve,
at least one of the radial projections comprising a slide flank inclined relative to the longitudinal axis of the sleeve and positioned to engage at least one of the longitudinal wings of the cannula hub during relative rotation of the cannula hub and the sleeve,
the radial projections being positioned so that the longitudinal wings of the cannula hub fit tightly to the inner wall surface of the sleeve between the radial projections when the safety cap and the cannula hub are in connection.

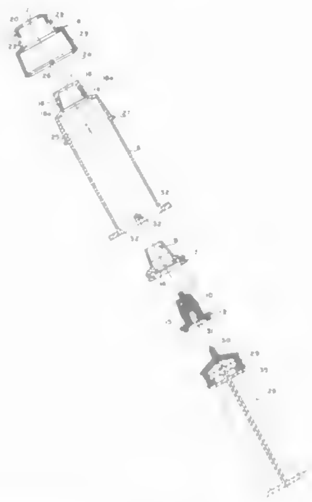
4,883,471
DISPOSABLE SHIELDED MEDICAL SYRINGE

Paul A. Braginetz, 214 Oak Ridge Cir.; Mark R. Leadbetter, 1926 Spring Hill Rd., and Joseph A. Peduto, Rte. 5, all of, Staunton, Va. 24401

Filed Aug. 16, 1988, Ser. No. 232,775

Int. Cl.⁴ A61M *5/32*

U.S. Cl. 604—195 11 Claims



1. A disposable shielded medical syringe comprising a syringe barrel, a plunger slidably mounted in said barrel, a piston secured to the distal end of the plunger and being in sealing, sliding engagement with the inner wall of the barrel, a second piston slidably mounted in said barrel and being in sealing, sliding engagement with the inner wall of the barrel and being positioned between the distal end portion of the barrel and the plunger piston, a syringe needle extending outwardly longitudinally of the barrel at the distal end thereof, means for connecting the syringe needle to said second piston, vent means communicating the interior distal end portion of the barrel with the atmosphere, closure means for closing the communication of the interior distal end portion of the barrel with the atmosphere, and a medicament contained within the barrel between the plunger piston and the second piston, whereby when the vent means are closed the medicament is dispensed through the needle by pushing the plunger inwardly of the barrel, and when the vent means are open the second piston and associated contaminated needle is drawn inwardly to a shielded position within the barrel by pulling the plunger in a direction toward the proximate end of the barrel.

4,883,472
INJECTION DEVICE

Peter Michel, Burgdorf, Switzerland, assignor to Disetronic Ag., Burgdorf, Switzerland

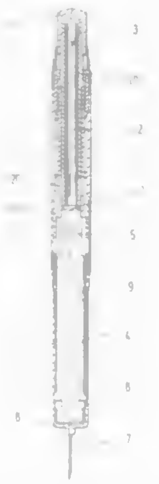
Filed Jul. 31, 1987, Ser. No. 80,561

Claims priority, application Switzerland, Nov. 8, 1985, 04 805/85

Int. Cl.⁴ A61M *5/24*

U.S. Cl. 604—208 16 Claims

1. A dispenser device for dispensing selectable amounts of liquid from an elongated cylindrical container (4) having a plunger (5) slidable forward therein from one end thereof for forcing liquid out of the container through an outlet in the opposite end of the container, comprising a drive mechanism (3) having an elongated rod member (12, 17), and a carrier element (20), and displacing means (10, 11, 26),
said carrier element (20) being displaceable forth and back in the advancing direction of the plunger (5),
said rod member (12, 17) connected to and carried by said carrier element (20) in such a way that it can be axially advanced with respect to the carrier element (20) in the advancing direction of the plunger (5) and is positively carried by the carrier element (20) in the forward as well as in the backward direction,
said displacing means (10, 11, 26) being connected on the one hand to advance the rod member (12, 17) with respect to the carrier element (20) and on the other hand to advance and retract the carrier element (20) together with the rod member (12, 17) carried thereby with respect to the container (4), the rod member (12, 17) being adapted to abut and force the plunger (5) forward during activation of said displacing means (10, 11, 26) for advancing the carrier element (20) together with the rod member (12, 17) with respect to the container (4),
housing means (1, 2), said cylindrical container (4) and said drive mechanism (3) connected in said housing means axially to each other, said displacing means (10, 11, 26) including a manually engageable element (11) extending from said housing means (1, 2), said rod member (12, 17) positioned to push the plunger (5) of the cylindrical container (4) forward and to move away from said plunger (5) leaving the latter in the forward pushed position,
said displacing means (10, 11) connected for axially displacing said carrier element (20) by a constant stroke (h) forth and back in the advancing direction of the plunger (5) from a rearward rest position in said housing means (FIG. 2; FIG. 9) to a forward position (FIG. 3) axially toward the plunger (5), and back again into the rest position (FIG. 2; FIG. 9),
said rod member (12, 17) on the one hand being axially advanceable by means of said displacing means (10, 11) with respect to said carrier element (20) in the advancing direction of the plunger (5) by any selected distance in correspondence with the plunger path, required for the desired quantity of liquid to be dispensed from said cylindrical container (4), and on the other hand said rod member (12, 17) being displaceable forth and back together with said carrier element (20) by said constant stroke (h) by said displacing means (10, 11),
whereby said rod member (12, 17) located at a distance from the plunger (5) in the rest position (FIG. 2; FIG. 9) of the carrier element (20) can be axially moved, by means of said displacing means (10, 11), relative to the carrier element (20) remaining in the rest position (FIG. 2; FIG. 9), in the advancing direction by the selected axial distance without abutting against the plunger (5), and abuts during actuation and displacement (h) of the carrier element (20) from the rest position (FIG. 2; FIG. 9) into the forward position (FIG. 3) against the plunger (5) at the moment, when the carrier element (20) has been axially displaced by the difference between the constant stroke (h) and the



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selected distance, when the displacement of the carrier element (20) is continued up to the forward position (FIG. 3), and means (26) connected to move said carrier element (20) and rod member (12, 17) away from the plunger (5) by the constant stroke (h) leaving the plunger (5) in the forward pushed position, while displacing the carrier element (20) back from the forward position (FIG. 3) into the rest position (FIG. 2; FIG. 9).

4,883,473

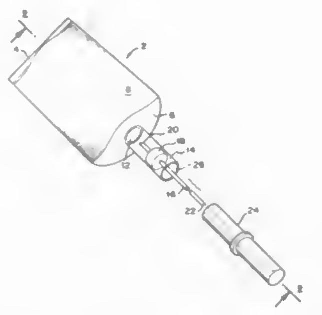
SINGLE USE INJECTION DEVICE

Ronny D. Thomas, Bellevue, Wash., assignor to Path, Seattle, Wash.

Continuation-in-part of Ser. No. 44,054, Apr. 29, 1987. This application May 27, 1988, Ser. No. 199,612

Int. Cl.⁴ A61M *5/18, 5/32*

U.S. Cl. 604—217 1 Claim



1. A single-use disposable syringe for providing a medicament for injection into a patient, the syringe comprising:
- a needle portion for injecting the medicament into the patient;
- a main body portion for storing the medicament and for expelling the medicament into the needle portion, the main body portion including:
  - a compressible outwardly curved first end panel,
  - a compressible outwardly curved second end panel, and
  - a cylindrical bridging member, coupled to the first and second end panels, for separating the first and second end panels, to enable each of the end panels to become concave in response to complete compression of both of the end panels together; and
- a neck portion coupled to the needle portion and to the main body portion for directing the medicament from the main body portion to the needle portion;
- wherein the main body portion substantially collapses in response to complete compression of both of the end panels together to prevent the main body portion from being reformed and to expel the medicament out of the main body portion;
- wherein in response to partial compression of both of the end panels together, the main body portion partially collapses to expel some of the medicament out of the main body portion; and
- wherein the end panels, after partial compression of the end panels together and partial collapse of the main body portion, expand to reform the outwardly curved end panels of the main body portion, thereby drawing fluid into the main body portion and aspirating the needle portion.

4,883,474

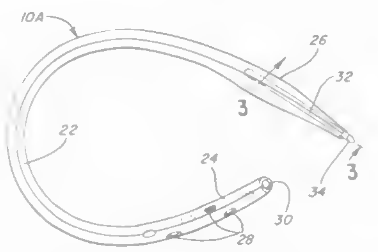
THORACIC CATHETER

David S. Sheridan, Hook Rd., Argyle, N.Y. 12809, and Ralph D. Alley, Loudonville, N.Y., assignors to David S. Sheridan, Argyle, N.Y.

Continuation-in-part of Ser. No. 891,919, Jul. 30, 1986, abandoned, which is a continuation-in-part of Ser. No. 885,477, Jul. 14, 1986, abandoned. This application Jun. 16, 1987, Ser. No. 62,844

Int. Cl.⁴ A61M *5/00*

U.S. Cl. 604—280 28 Claims



1. A catheter having a distal end portion and a proximal end portion, comprising tubing of flexible material having a passageway extending from a distal end to a proximal end thereof and having at least one radial opening communicating with the passageway at the distal end portion thereof for draining a body cavity, at least a portion of the proximal end portion of the tubing tapering toward the proximal end thereof, a longitudinally facing opening aligned with the passageway in the tubing at the proximal end thereof, and sharpened stiffening means connected with the inside of the passageway at the proximal end portion of the tubing and projecting outwardly from the longitudinally facing opening, said stiffening means extending inwardly beyond said connection with the tubing into the passageway in the tubing, said stiffening means being spaced from the wall of the passageway in the tubing, said spacing extending from the connection of the tubing with the stiffening means to the inner end of the stiffening means, whereby pressure applied to the tubing and underlying stiffening means from inside the body cavity forces the stiffening means and the catheter proximal end portion outwardly through body tissue while simultaneously drawing the catheter distal end portion into the body cavity, whereupon the sharpened stiffening means can be severed from the catheter and the catheter distal end portion positioned in situ.

4,883,475

CHEMICALLY TREATED PAPER PRODUCTS—TOWEL AND TISSUE

Larry Bogart, Penn Valley; James J. Hipkins, Prospect Park, both of Pa., and Morris L. Smith, Lawnside, N.J., assignors to Scott Paper Company, Philadelphia, Pa.

Division of Ser. No. 82,203, Aug. 6, 1987. This application Sep. 12, 1988, Ser. No. 243,923

Int. Cl.⁴ A61K *7/40, 7/48*

U.S. Cl. 604—290 1 Claim

1. A method of simultaneously absorbing water or aqueous body fluids from the human skin while imparting to the skin an emollient effect by wiping the skin with a web of cellulosic fibers treated with an emollient composition consisting essentially of a water-soluble emollient, said emollient comprising glucose glutamate in an amount from 0.1 to 2% by weight of the web.

4,883,476

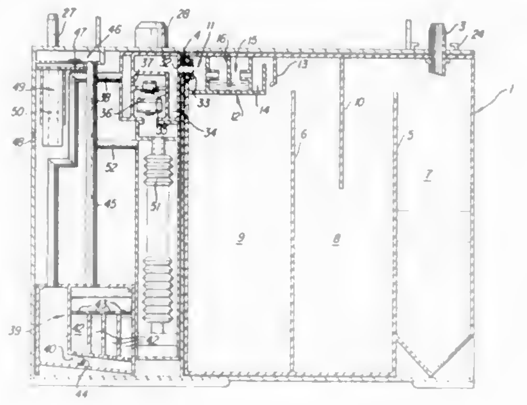
DRAINAGE DEVICE WITH DISPOSABLE COLLECTION CHAMBER

Leonard D. Kurtz, Woodmere, and Joseph LiCausi, Port Jefferson Station, both of N.Y., assignors to BioResearch, Inc., Farmingdale, N.Y.

Filed Jan. 7, 1988, Ser. No. 141,518

Int. Cl.⁴ A61M *1/00*

U.S. Cl. 604—323 8 Claims



1. A drainage device comprising a nondisposable section and a disposable section, said disposable section comprising a collection chamber, a patient tube inlet in said collection chamber, an outlet passageway in said collection chamber to be connected to said nondisposable section, said nondisposable section including an inlet adapted to be connected to the outlet passageway from said disposable section, a suction outlet in said nondisposable section, a passageway from said inlet in the nondisposable section to said suction outlet, valve means in said passageway to prevent atmospheric air from passing into the collection chamber, suction control means in said passageway for regulating the degree of suction applied to the collection chamber, means in said passageway including a fluid retaining chamber in said nondisposable section in fluid communication with the outlet from said collection chamber for determining whether fluid from the collection chamber has passed into said nondisposable section and means including baffles in said disposable section for preventing contaminates in said collection chamber from entering said nondisposable section.

4,883,477

OSTOMY APPLIANCE

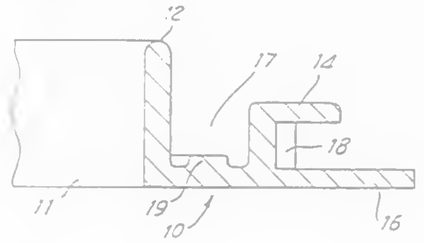
Peter L. Steer, Surrey, England, assignor to E. R. Squibb and Sons, Inc., Princeton, N.J.

Filed Apr. 15, 1988, Ser. No. 182,274

Claims priority, application United Kingdom, May 22, 1987, 8712190

Int. Cl.⁴ A61F *5/44*

U.S. Cl. 604—339 4 Claims



1. An ostomy appliance which includes four separate annular parts of which a first part is attachable to the body of the wearer by a pad of medical grade adhesive and is also attachable to a third part by rotating a second part comprising a rotatable locking ring from a non-locking position to a locking position, the second part also being attachable to the third part, and the third part is itself attachable to the fourth part in a push-fit manner, the fourth part connected to the ostomy bag, said second, third and fourth parts being attachable as an assembly separate from attachment to said first part.

4,883,478

PROCESS FOR PREPARING A LIQUID-ABSORBING COMPOSITION

Eric Lerailler, Lognes; Michel Pierre, Mulhouse; Bernard Thiriet, Juvisy s/Orge, and Jean Wacquez, Courbevoie, all of France, assignors to Beghin-Say, S.A., Thumeries, France

PCT No. PCT/FR86/00398, § 371 Date Sep. 21, 1987, § 102(e) Date Sep. 21, 1987, PCT Pub. No. WO87/03208, PCT Pub. Date Jun. 4, 1987

PCT Filed Nov. 21, 1986, Ser. No. 88,110

Claims priority, application France, Nov. 22, 1985, 85 17351

Int. Cl.⁴ A61F *13/16, 13/18, 13/20*

U.S. Cl. 604—360 11 Claims

1. A process for the preparation of a composition which absorbs large quantities of liquids comprising the steps of
- (a) providing a concentrated solution of a saccharide in water;
- (b) adding a pre-determined quantity of a hydrophilic water-insoluble, water-swellable polymer to the solution of step (a);
- (c) kneading of the composition of step (b) to provide a homogeneous paste; and
- (d) drying the paste of step (c) to adjust the water content to a value ranging between about 2 and 15% water.

4,883,479

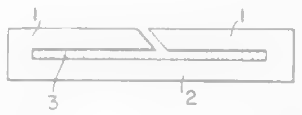
ABSORBENT NAPKIN, PARTICULARLY FOR INFANT'S DIAPER PADS

Jean P. Piron, Thoissey, and Jean C. Daugan, Bougival, both of France, assignors to Colgate-Palmolive Company, New York, N.Y.

Filed Sep. 26, 1986, Ser. No. 912,759

Int. Cl.⁴ A61F *13/16*

U.S. Cl. 604—365 4 Claims



1. An absorbent article comprising a base sheet of fluid impervious material, a top sheet of fluid pervious non-woven material, said sheets being connected to each other about the periphery, and an absorbent pad disposed between said top sheet and said base sheet, said absorbent pad having a central portion and two side panels, said side panels being folded under said top sheet and over said central panel, and a binder on said central panel securing said side panels to said central panel to render said absorbent pad more absorbent, said absorbent pad including a wadding sheet, said binder penetrating said wadding sheet binding said side panels to said central panel.

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4,883,480

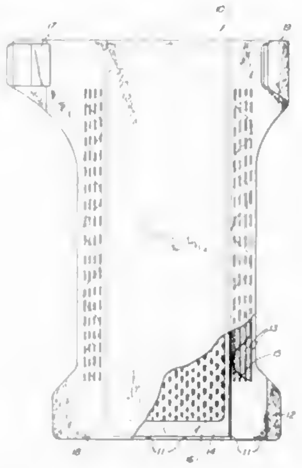
INFANT DIAPER WITH IMPROVED FIT

Gloria M. Huffman, Skillman, and Heinz A. Pieniak, No. Brunswick, both of N.J., assignors to McNeil-PPC, Inc., Milltown, N.J.

Continuation of Ser. No. 42,501, Mar. 27, 1987, abandoned, which is a continuatioo-in-part of Ser. No. 838,878, Mar. 10, 1986, abandoned, which is a continuatioo of Ser. No. 641,666, Aug. 17, 1984, abandoned. This application Jan. 17, 1989, Ser. No. 296,992

Int. Cl.⁴ A61F *13/16*

U.S. Cl. 604—385.1 1 Claim



1. A disposable infant diaper having a modified "T" configuration comprising:

(a) a substantially rectangular absorbent core, said core comprising a substantially rectangular absorbent panel superimposed on a liquid barrier, said barrier being substantially the same shape as said panel but extending slightly beyond each edge of said panel, said core forming the stem of the "T" and extending substantially the entire length of the "T";

(b) a first breathable fabric underlying the absorbent panel and liquid barrier and forming the top of the "T" and extending beyond the stem of the "T" to form margins, said first breathable fabric being vapor permeable but liquid impermeable;

(c) a second breathable fabric covering said absorbent core and extending beyond said core at least sufficiently to be adhered to said first breathable fabric in the margins, said second breathable fabric being both liquid and vapor permeable;

(d) at least one of said breathable fabrics extending beyond the edges of the absorbent core at the base of the "T" in substantially equal portions, said extensions at the base of the "T" being substantially less than the extensions of the first breathable fabric at the top of the "T";

(e) elastic gathering means secured between said first and second breathable fabrics in said margin along the stem of the "T" at least in the central portion thereof;

(f) closure means attached on the inside of each terminating end of the top of the "T", both of said breathable fabrics being substantially nonextendable in a crosswise direction; and

(g) said disposable diaper having dimensions wherein the length of the "T" configuration A is x, the width across the top of the "T" B is about 0.8x, the width of the base of the stem of the "T" C is from about 0.5x to about 0.55x, the width of the stem of the "T" D at the transverse axis at the center of the length of the product is from about 0.45x to about 0.50x, the length of the panel E is about 0.9x, the width of the panel F is about 0.25x, the length of the elastic is about 0.65x, said elastic length being distributed about 55 percent above the transverse axis and about 45 percent below the transverse axis, and said elastic width being at least about 0.5 inch, and said closure longitudinal length I is at least about 0.08x and the terminating ends of the top of the "T" H are about 0.1x.

4,883,481

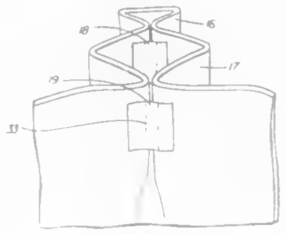
ADJUSTABLE DISPOSABLE PANTY

JoAnn Blanchard, Apt. 101, 1423 Yonge St., Toronto, Ontario, Canada K1P 5W6

Filed Sep. 9, 1988, Ser. No. 242,225

Int. Cl.⁴ A41B *9/00, 9/12*

U.S. Cl. 604—385.1 1 Claim



1. A human undergarment in the form of a panty formed of a flexible sheeting material and having a waistband region and a central crotch-covering region wherein a first pleat is formed of said waistband region, said first pleat being held closed by a frangible tab, and wherein a second pleat held closed by a frangible tab is formed within said first pleat.

4,883,482

NAPKIN-KNICKERS PROVIDED WITH AN IMPROVED ELASTIC ARRANGEMENT

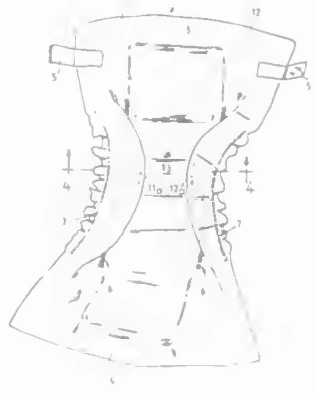
Jean-Francois Gandrez, Sainte Honorine, and Jean-Claude Daugan, Bougival, both of France, assignors to Colgate-Palmolive Company, New York, N.Y.

Filed Nov. 23, 1985, Ser. No. 797,067

Claims priority, application France, Dec. 11, 1984, 84 17219

Int. Cl.⁴ A61F *13/16*

U.S. Cl. 604—385.2 3 Claims



1. A diposable napkin-knickers having a generally rectangular shape and comprising a flexible and impermeable support sheet, an absorbent wad disposed on the support sheet and a flexible and permeable upper sheet covering the absorbent wad, the upper sheet being fixed in at least a part of its periphery to the support sheet, two distinct systems of elastic bands extending longitudinally in at least a part of the length of said napkin-knickers, the first system comprising two elastic bands disposed between said wad and said support sheet one hand near each edge of said wad so that said wad cushions said first system of elastic bands, said first system imparting an anatomical shape to said napkin-knickers, said second system comprising two elastic bands disposed along the opposite edges of said napkin-knickers so as to ensure fluid tightness thereof when worn by the user, the bands of said first elastic system being substantially wider than the bands of said second elastic system, the material of said bands of said second elastic system being more stretchable than the material of said bands of said first elastic system, the bands of said second elastic system having greater than fifty and less than eighty percent of their length located in the near part of said napkin-knickers measured from a median transverse axis perpendicular to the longitudinal direction of said napkin-knickers.

4,883,483

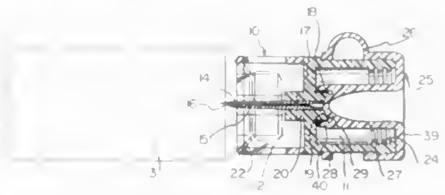
MEDICINE VIAL ADAPTOR FOR NEEDLELESS INJECTOR

Istvan Lindmayer, Pierrefonds, Canada, assignor to Advanced Medical Technologies Inc., Charlottetown, Canada

Continuation of Ser. No. 24,535, Mar. 11, 1987, abandoned, which is a continuation of Ser. No. 797,529, Nov. 13, 1985, Pat. No. 4,662,878. This application Apr. 14, 1988, Ser. No. 183,449

Int. Cl.⁴ A61B *19/00*

U.S. Cl. 604—411 5 Claims



1. A disposable plastic adaptor for connecting a medicine vial to a needleless injector comprising

a hollow, generally cylindrical body member having a top end and a bottom end,

a wall dividing said hollow body into a generally cylindrical top end cavity and bottom end cavity, said bottom end cavity being adapted to slide over the top end of a medicine vial, said cavity wall including a plurality of detents which prevent removal of the adaptor from the vial, and said top end cavity being adapted to be twist connected to the end of a needleless injector and a fluid connector member mounted within said body member composing a sharp tipped, hollow probe extending axially downwardly within said bottom and cavity and an axial projection with a concave and face extending axially upwardly within said top end cavity and an axial bore extending through said fluid connector member to flow connect said concave end face and the probe tip, said probe being adapted to penetrate the top of a medicine vial and said concave end face being adapted to provide fluid tight seal with the convex end of a cylindrical medicine reservoir within said needleless injector, and

a protective cap member for protecting said top end cavity when the adaptor is not connected to a needleless injector, said protective cap comprising an end portion adapted to snugly close the top end of said adaptor and having an inner cylindrical projection extending axially from the end portion, said cylindrical projection having at the end thereof remote from said cap end portion a cylindrical skit with convex end face recessed within said skirt, said convex end face being adapted to provide a fluid tight seal with the concave end face of said top end cavity axial projection and said skirt being adapted to protect said convex end face.

4,883,484

DELIVERY DEVICE

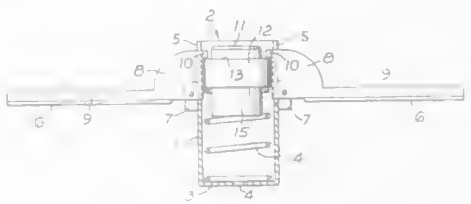
Michael T. Shepherd, Coopers Animal Health Limited Berkhamsted Hill, Berkhamsted, Hertfordshire, England, and Scott R. Edwards, 71, Epplng Road, North Ryde, New Sonth Wales, 2113, Australia

Filed Dec. 2, 1987, Ser. No. 127,757

Claims priority, application United Kingdom, Jun. 17, 1986, 8614716; Australia, Jul. 15, 1986, PH 06936; Eurnpean Pat. Off., Nov. 3, 1987, 87309709.1

Int. Cl.⁴ A61M *31/00*

U.S. Cl. 604—891.1 18 Claims



1. An intra-ruminal depot adapted to be retained in the rumen of a ruminant animal which comprises:

a main portion comprising an elongate body for containing and progressively releasing a veterinary substance;

a plurality of elongate members hingedly attached thereto and movable between a compact position wherein the spread of the depot is minimized and an extended position wherein the spread of the device is maximized, each elongate member being constituted by a respective wing pivotally attached at one end thereof to a leading end of the body, each wing being resiliently biased to pivot from the said compact position wherein the wing lies alongside the body for passage down the esophagus of the animal to the said extended position wherein the wing projects laterally outwards from the body, thereby retaining the depot in the rumen;

biasing means operatively mounted on the body to bias the elongate members to the extended position;

stop means operatively mounted on the body to prevent hinged movement of each elongate member beyond the said extended position; and

locking means carried on the body and operative between each elongate member and the body for locking the wings in the said extended position and preventing any subsequent pivotal movement away from the said extended position.

4,883,485

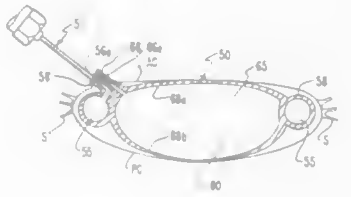
EXPANDABLE LENS REPLACEMENT

Jayant K. Patel, 25 S. Raymond, #204, Alhambra, Calif. 91801

Filed May 15, 1987, Ser. No. 50,084

Int. Cl.⁴ A61F *2/16*

U.S. Cl. 623—6 5 Claims



1. A method for implanting synthetic lenses into the natural capsular bag of a human eye, comprising the steps of:

making an incision in the said eye communicating into the interior of said capsular bag;

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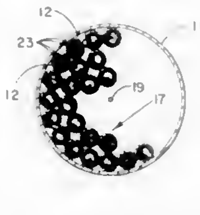
evacuating the natural lens substance from said capsular bag through said incision;
inserting a collapsed, expandable lens insert into a hollow needle, said lens insert including an exterior toroidal cavity formed at the periphery of a substantially circular lens cavity;
expelling said lens insert from said hollow needle through said incision into said evacuated capsular bag;
pressuring by injecting liquid under pressure into said torroidal cavity; and
expanding by liquid pressure said lens cavity.

4,883,486

PROSTHETIC LIGAMENT

Indu Kapadia, 33 Front St., Denville, N.J. 07834, and Kemal Schankereli, 7979 Neal Ave. N., Stillwater, Minn. 55082
Filed May 31, 1988, Ser. No. 200,427
Int. Cl.⁴ A61F *2/08*
U.S. Cl. 623—13 17 Claims



1. A ligament prosthesis for implanting in situ in a body, comprising:
an elongated tubular porous sheath made of PTFE yarn;
an unwoven non-braided core within said sheath, said core comprising a plurality of linearly arranged high tenacity strands of polyester running generally parallel to one another and to the central axis of said sheath;
said core being anchored to said sheath with a stitching of multifilamentous synthetic thread passing through said sheath and said core.

4,883,487

METHOD OF PRODUCING AN ARTIFICAL SKIN

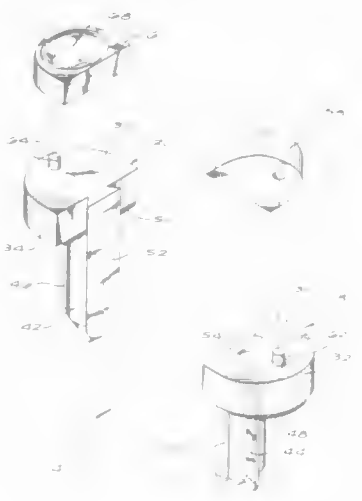
Katsutoshi Yoshizato, Ebina; Toshio Taira, Yokohama, and Teruo Miyata, Tokyo, all of Japan, assignors to Koken Co., Ltd., Tokyo, Japan
Filed Apr. 6, 1987, Ser. No. 34,958
Claims priority, application Japan, Apr. 19, 1986, 61-91022
Int. Cl.⁴ A61F *2/10*
U.S. Cl. 623—15 3 Claims

1. A method of producing an artificial skin comprising:
(a) pouring an acidic atelocollagen solution into a mold to a depth of 1 to 5 mm;
(b) air-drying said poured atelocollagen solution to form a dry sheet;
(c) cross-linking said dry sheet by ultraviolet irradiation for a time sufficient to form an insoluble atelocollagen sheet;
(d) inoculating epidermal cells on one surface of said atelocollagen sheet; and
(e) suspending the inoculated atelocollagen sheet in a liquid culture medium to culture said epidermal cells, thereby forming an epidermal cell layer.

4,883,488

TIBIAL COMPONENT FOR A KNEE PROSTHESIS

Roy D. Bloebaum, Salt Lake City, Utah; Frank P. Magee, Phoenix, and Thomas P. Murray, Scottsdale, both of Ariz., assignors to Harrington Arthritis Research Center, Phoenix, Ariz.
Filed Jun. 13, 1988, Ser. No. 206,045
Int. Cl.⁴ A61F *2/38*
U.S. Cl. 62.3—20 14 Claims



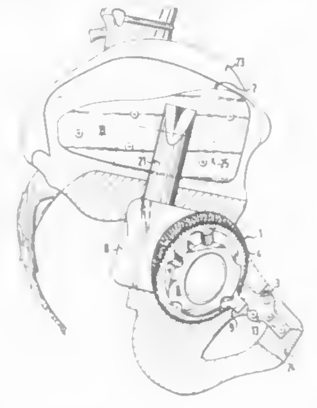
1. In a tibial component for a knee prosthesis, the improvement comprising:
a tibial platform defining by medial and lateral tibial tray members;
means for interconnecting said medial and lateral tibial tray members to permit shifting therebetween constrained substantially to a single axis; and
a pair of meniscal bearing components mounted respectively on said medial and lateral tibial tray members.

4,883,489

PELVIS PART PROSTHESIS

Hans Grundei, Lübeck; Erwin Hipp, and Bernd Heinhuber, both of Munich, all of Fed. Rep. of Germany, assignors to S&G Implants GmbH, Lübeck, Fed. Rep. of Germany
PCT No. PCT/DE87/00387, § 371 Date Apr. 29, 1988, § 102(e) Date Apr. 29, 1988, PCT Pub. No. WO88/01491, PCT Pub. Date Mar. 10, 1988
PCT Filed Aug. 29, 1987, Ser. No. 192,518
Claims priority, application Fed. Rep. of Germany, Sep. 2, 1986, 3629799
Int. Cl.⁴ A61F *2/34*
U.S. Cl. 623—22 3 Claims

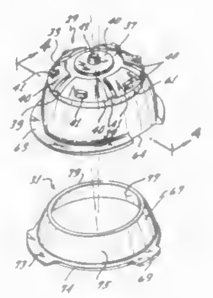
1. Pelvis part prosthesis for replacement of a pelvis section in the area of the hip joint of a human being, comprising a shell portion for the reception of an artificial hip joint ball and two connection elements mechanically joined to the shell portion for securing the prosthesis in the areas of the os pubis and the ilium, respectively, characterized in that the shell portion is formed as a hollow metal hemisphere having two outer integrally formed appendices spaced about said hemisphere at positions near the os pubis and the ilium, each having a conically formed reception bore, and that said two connection elements comprise metal plates which are formed such to adapt securing faces to remaining bone material of the os pubis and ilium, respectively, and which are provided with holes for receiving screws on said securing faces, and pin means having conically formed ends to be secured in respective conically formed reception bores of said appendices by means of a self-locking tight fit.



4,883,490

ACETABULAR CUP

Indong Oh, 851 Lyndon St., S. Pasadena, Calif. 91030
Continuation-in-part of Ser. No. 340,024, Jan. 18, 1982, Pat. No. 4,437,193. This application Mar. 7, 1984, Ser. No. 587,311
Int. Cl.⁴ A61F *2/34*
U.S. Cl. 623—22 **14 Claims**

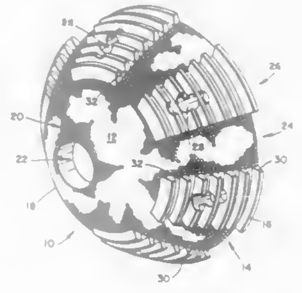


1. An acetabular cup of approximately hemispherical configuration adapted for implantation in the acetabulum, said acetabular cup having an outer surface with a generally part-spherical contour and an inner concave being surface adapted to receive a femoral head said outer surface having a plurality of grooves defining segments on the outer surface, said grooves being adapted to receive and interlock with a cement for affixing the acetabular cup within the acetabulum, at least one of said grooves having at least one undercut which defines an overhanging flange whereby the cement can be received in said one groove behind the flange to interlock with the flange and tend to resist loosening of the acetabular cup from the acetabulum, said grooves including a plurality of latitude grooves and said one groove is the latitude groove which is most remote from a polar region on the acetabular cup, each of at least some of said segments having at least one spacer lug on the outer surface thereof to assist in positioning the acetabular cup in the acetabulum.

4,883,491

POROUS-COATED ARTIFICIAL JOINTS

Thomas H. Mallory, Columbus; Timothy McTighe, Chagrin Falls, both of Ohio, and Douglas G. Noiles, New Canaan, Conn., assignors to Joint Medical Products Corporation, Stamford, Conn.
Continuation of Ser. No. 820,772, Jan. 21, 1986, abandoned. This application Oct. 6, 1988, Ser. No. 256,126
Int. Cl.⁴ A61F *2/34*
U.S. Cl. 623—22 8 Claims

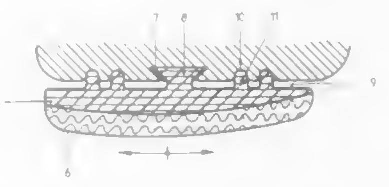


1. A prosthesis comprising a cup for use as part of an artificial ball and socket joint, said cup having a spherically-shaped outside surface upon which is formed a screw thread for engagement with bone, said outside including a dome portion and a base portion, the dome portion being porous-coated and the base portion including (a) the screw thread and (b) a plurality of porous-coated columns which extends from the dome portion into the region of the base of the cup where the cup is of greatest width, the outer surface of the porous-coated column lying substantially on the same sphere as the outer surface of the porous-coated dome, said screw thread being free of porous coating and being interrupted by the porous-coated columns so as to produce an alternating pattern of threaded columns adjacent to porous-coated columns, the threaded columns providing initial mechanical fixation of the prosthesis to the bone and the porous-coated columns allowing long-term fixation through bone ingrowth and remodeling.

4,883,492

METAL BONE IMPLANT

Otto Frey, Winterthur, and Rudolf Koch, Berlingen, both of Switzerland, assignors to Sulzer Brothers Limited, Winterthur, Switzerland
Filed May 26, 1988, Ser. No. 198,397
Claims priority, application Switzerland, Jun. 23, 1987, 2363/87
Int. Cl.⁴ A61F *2/36*
U.S. Cl. 623—23 7 Claims



1. A hip joint implant comprising:
a blade-like shank of metal having at least one depression therein;
a plastic part having a body portion spaced from said shank at least one prop extending from said body portion into said depression with a lateral clearance therein to support said body portion in elastically displaceable manner relative to said shank and at least one elastic projection extending from said body portion to against said shank; and

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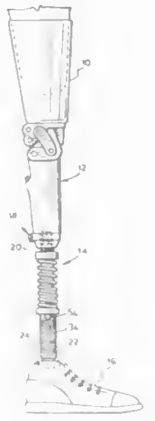
a metal grid structure mounted on said plastic part opposite said shank for ingrowth of bone tissue.

4,883,493
LEG PROSTHESIS

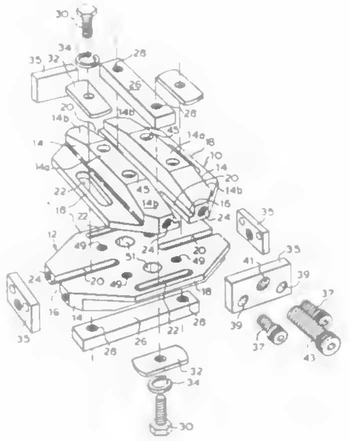
Guy G. Martel, 350 The Driveway, Apt. #1205, Ottawa, Ontario, Canada K1S 3N1 , and Edwin A. Iler, 32 Gray Court Drive, Ancaster, Ontario, Canada L9G 2S1
Continuation of Ser. No. 802,911, Nov. 29, 1985, abandoned. This application Apr. 13, 1988, Ser. No. 181,609
Int. Cl.⁴ A61F *2/80*
U.S. Cl. 623—38 8 Claims



1. A running prosthesis for use by a leg amputee amputated below the knee and having a leg stump and a natural leg, the prosthesis comprising:
- attachment means for connecting the prosthesis to said stump;
- a shank having upper and lower ends and being coupled at said upper end to the attachment means;
- a foot for engagement with the ground and coupled to said lower end of the shank; and
- said shank comprising a first part defining said upper end and a second part telescopically engaged with the first part and defining said lower end, resilient means engaged between said parts to bias the parts away from one another and into a relationship corresponding to the full length of the prosthesis whenever the prosthesis does not support the amputee, the resilient means being responsive to end loading in the shank to allow the first and second parts to move relative to one another to reduce the length of the prosthesis and so store potential energy in the prosthesis so that during running movements when the amputee is supported by the prosthesis the amputee can move his natural leg forwardly past the prosthesis with minimal vertical movement of the amputee's centre of gravity, the amputee further being propelled upwardly and forwardly as the weight of the amputee is transferred from the prosthesis to his natural leg and the potential energy stored in the prosthesis is released.

4,883,494
SHIFT DEVICE FOR A PROSTHETIC LIMB

John E. Cooper, Leatherhead, United Kingdom, assignor to J. E. Hanger & Company Limited, London, England
Filed Nov. 19, 1987, Ser. No. 122,742
Claims priority, application United Kingdom, Nov. 21, 1986, 8627952
Int. Cl.⁴ A61F *1/02*
U.S. Cl. 603—39 14 Claims



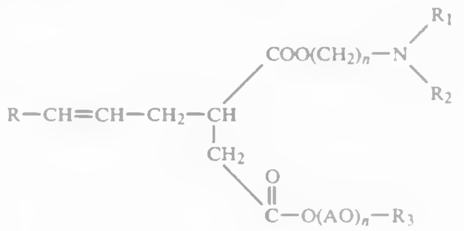
1. A shift device for a prosthetic limb, comprising:
- first and second plates having adjoining flat faces in sliding contact;
- an elongated slideway extending across an outer face of each plate and ending at respective edges of the plate;
- guiding means for guiding the slideways of the first and second plates for movement generally at right angles to one another, said guiding means including first and second bars slideably received in a respective slideway;
- means in each slideway defining at least one longitudinal slot whose length permits limited relative translational movement of the plates; and
- a clamping screw located freely in each slot of each of the first and second plates and engaging the guide bar in the slideway of the other plate, said clamping screw being releasable to allow relative movement of the plates and on re-tightening immobilising the plates.

CHEMICAL

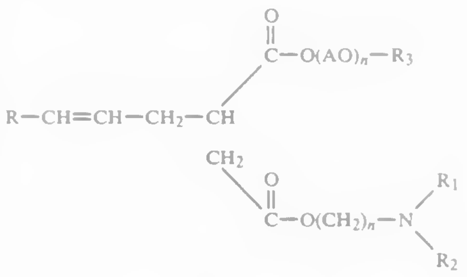
4,883,495
AMINO-CONTAINING ALKENYLSUCCINIC ESTERS

Lothar Jaeckel, Flörsheim am Main; Rolf Kleber, Neu-Isenburg, and Bernhard Mees, Eppstein, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany
Filed Sep. 21, 1988, Ser. No. 247,277
Claims priority, application Fed. Rep. of Germany, Sep. 25, 1987, 3732340
Int. Cl.⁴ D06M *9/00;* **C07C** *69/593*
U.S. Cl. 8—115.6 9 Claims

1. A compound of the formulae



or



where R denotes linear or branched C_1–C_{20}-alkyl, R_1 denotes hydroxy-C_2–C_6-alkyl or C_1–C_4-alkyl, R_2 denotes methyl or ethyl, R_3 denotes C_6–C_{20}-alkyl, or C_6–C_{20}-alkenyl, A denotes —C_2H_4— or —C_3H_7— and n denotes a number from 1 to 10.

9. A spin-finish composition containing an effective amount of a compound of claim 1 and at least one additional spin-finish component.

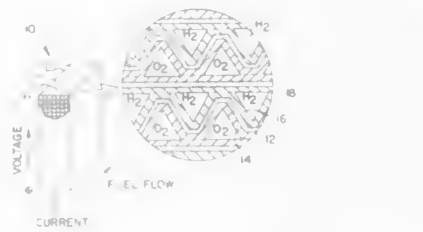
4,883,496
PROCESS FOR DYEING CRYSTALLINE AROMATIC POLYAMIDE FIBERS WITH WATER-INSOLUBLE DYES

Hamid M. Ghorashi, Midlothian, Va., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Continuation-in-part of Ser. No. 156,694, Feb. 14, 1988, abandoned. This application Dec. 30, 1988, Ser. No. 290,870
Int. Cl.⁴ D06P *5/00, 7/00*
U.S. Cl. 8—476 6 Claims

1. A process for dyeing a tow of crystalline poly-(m-phenylene isophthalamide) filaments comprising the steps of:
- padding onto the surface of the filaments of the tow an aqueous dispersion of 1 to 20 wt. % of a water-insoluble dye material having a dye-activation temperature at or less than about 130° C. and below the glass transition temperature of poly(m-phenylene isophthalamide),
- heating the tow with steam to a temperature below the glass transition temperature of the poly(m-phenylene isophthalamide) but above the dye-activation temperature to activate the dye material on the surface of the filaments of the tow, and thereafter
- heating the tow with steam to a temperature above the glass transition temperature of the poly(m-phenylene isophthalamide) but no more than about 165° C. to diffuse substantially all of the dye material into the filaments of the tow.

4,883,497
FORMATION OF THIN WALLED CERAMIC SOLID OXIDE FUEL CELLS

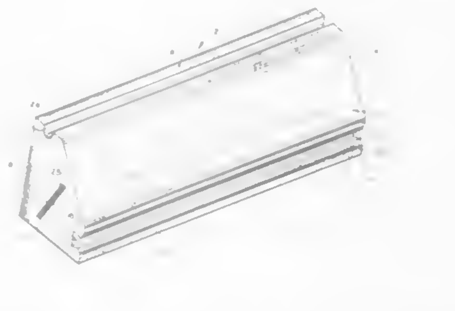
Terry D. Claar, Tisle; Donald E. Busch, Hinsdale, and John J. Picciolo, Lockport, all of Ill., assignors to Arch Development Corporation, Chicago, Ill.
Filed Mar. 28, 1988, Ser. No. 174,146
Int. Cl.⁴ H01M *8/10*
U.S. Cl. 29—623.5 22 Claims



1. A method for forming an SOFC comprising the steps of:
- dispersing each of four ceramic powders into respective ones of a plurality of liquid media to form four slips of an anode, a cathode, an electrolyte and an interconnect;
- milling a binder and a plasticizer into each of said four slips;
- casting the four slips into thin layers or tapes;
- forming a plurality of said tapes into a stacked array including the step of depositing an intermediate bonding layer between adjacent tapes, wherein said intermediate layers are comprised of portions of each of the adjacent layers between which the intermediate layer is disposed;
- forming a plurality of corrugations in the stacked array of tapes, wherein said corrugated stacked array is self-supporting; and
- heating the stacked array of tapes at an elevated temperature so as to increase the density of electrolyte and interconnect tapes, form bonds between adjacent tapes, and rigidify and increase the strength of the stacked array of tapes.

4,883,498
ARTIFICIAL FIRELOG

John E. MacIsaac, Beloit, Ohio, assignor to Sebring Forest Industries, Inc., Sebring, Ohio
Filed Jul. 1, 1988, Ser. No. 214,495
Int. Cl.⁴ C10L *11/06*
U.S. Cl. 44—532 11 Claims



1. An artificial firelog including, an elongated flammable body formed of compressed particulate material and a binder, said body having a front surface; generally dovetailed-shaped groove means formed in the front surface by spaced upper and lower inwardly extending surfaces, and groove means extending throughout the length of the body for creating venturi air currents along said groove means to facilitate ignition of said body, said upper surface of the groove means forming an included angle of less than 90 degrees with the front surface and forming an upper edge therebetween; and a protective wrapper formed of a flammable material enclosing the elon-

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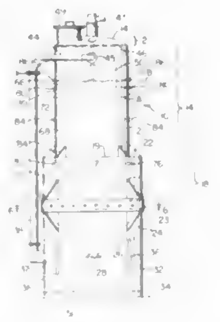
gated body, said wrapper generally conforming to the external configuration of said body, whereby when said wrapper is ignited the flames will burn through the wrapper and easily ignite the upper edge of the groove means and create a turbulent air current along the entire groove means for subsequently spreading the flame along the upper edge and for igniting said front surface.

4,883,499
PROCESS ADAPTED TO PRODUCE SYNTHESIS GAS AND ACTIVATED CARBON FROM ORGANIC INPUT MATERIAL

Frederick P. Beierle, 1442 Sunset Dr., Prosser, Wash. 99350, and Mounir Mazzawi, 36 Fairlawn Rd., Weymouth, Mass. 02191

Filed May 6, 1988, Ser. No. 191,209
Int. Cl.⁴ C10B *49/06;* C10J *3/14;* C01B *31/10*
U.S. Cl. 48—203 4 Claims

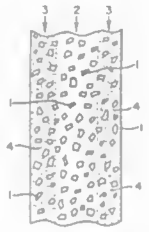


1. A process adapted to produce synthesis gas and activated carbon from organic input material, comprising the steps of:
establishing a synthesis gas production bed having a top and a bottom and a selected diameter in a closed gasifier reaction chamber to produce synthesis gas which exits the gas production bed at a selected point, the gas production bed comprising in sequence an upper layer of organic input material, first and second intermediate pyrolysis layers, in which the organic input material is gradually reduced to charcoal and volatiles are released from the organic input material, including hydrogen, carbon monoxide, methane, water vapors and tars, and a lower layer of substantially tar-free charcoal, wherein the first intermediate layer is at a temperature within a first range of 400° to 500° C. in which the organic input material is carbonized and the second intermediate layer is at a temperature within a second range of 850° to 950° C. in which the organic input material is partially oxidized and is substantially surrounded by carbon dioxide, and wherein the lower layer includes an upper portion which is at a temperature within a third range of 850° to 950° C., wherein substantially all the volatiles from the first and second intermediate layers are reduced to carbon monoxide, methane and hydrogen, wherein the distance between the first intermediate layer and the selected point where the synthesis gas exits from the gas production bed is approximately 1.5 times the diameter of the gas production bed but not less than approximately seven feet and wherein the organic input material has a residence time in the second intermediate layer and the lower layer of approximately six to ten hours;
adding additional organic input material to the reaction chamber in an amount sufficient to maintain the upper layer of the gas production bed;
moving air down through the gas production bed in a controlled amount so as to maintain the temperatures of the first and second intermediate layers and the lower layer within the first, second and third ranges, respectively; and
removing charcoal from the bottom of the gas production bed, wherein charcoal so removed is activated carbon, having an iodine number of at least 500.

4,883,500
SAWBLADE SEGMENTS UTILIZING POLYCRYSTALLINE DIAMOND GRIT

Martin E. Deakins, Dublin; David E. Slutz, Worthington; Neil R. Johnson, Columbus; Thomas J. Clark, Powell, and Harold P. Bovenkerk, Worthington, all of Ohio, assignors to General Electric Company, Worthington, Ohio

Filed Oct. 25, 1988, Ser. No. 262,405
Int. Cl.⁴ C09K *3/14*
U.S. Cl. 51—298 18 Claims



1. A cutting segment for use in a saw blade, comprising thermally stable polycrystalline diamond cutting elements and single crystal diamond cutting elements dispersed in a bonding matrix.

4,883,501
ALUMINA BONDED ABRASIVE FOR CAST IRON

Douglas G. Haynes, Jr., Grand Island, N.Y., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Continuation of Ser. No. 666,131, Oct. 30, 1984, Pat. No. 4,800,685, which is a continuation of Ser. No. 615,663, May 31, 1984, abandoned, which is a continuation of Ser. No. 536,830, Sep. 30, 1983, abandoned, which is a continuation of Ser. No. 331,442, Dec. 16, 1981, abandoned. This application Sep. 19, 1988, Ser. No. 245,589
Int. Cl.⁴ B24D *3/02*
U.S. Cl. 51—309 10 Claims

1. A bonded abrasive in the form of a wheel comprising sol-gel alumina abrasive grain, fused alumina abrasive grain, and a binder material.

4,883,502
ABRASIVE COMPOSITION AND PROCESS FOR POLISHING

Kunihiro Miyazaki, and Ken Ishitobi, both of Shiojiri, Japan, assignors to Showa Denko Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 11, 1988, Ser. No. 255,897
Claims priority, application Japan, Oct. 9, 1987, 62-253591
Int. Cl.⁴ B24D *3/02*
U.S. Cl. 51—309 12 Claims

1. A process for polishing a workpiece with an abrasive composition comprising polishing a surface of the workpiece with an aluminous abrasive, nickel sulfamate, and water.

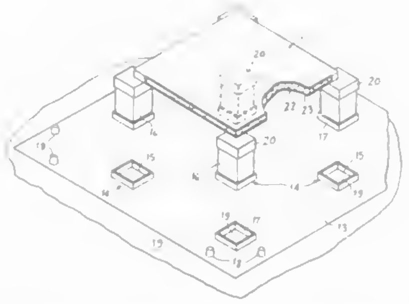
4,883,503
ACCESS FLOOR CONSTRUCTION

Hugh R. A. Fish, London, Great Britain, assignor to Microfloor Systems Limited, London, England

Filed Nov. 2, 1987, Ser. No. 116,099
Int. Cl.⁴ E04B *5/48*
U.S. Cl. 52—220 18 Claims

1. In an access floor construction in which floor panels are supported above a subfloor on spaced pedestals upstanding from said subfloor, said floor panels being individually removable to provide ready access to underfloor space between said floor panels and said subfloor, the improvement comprising

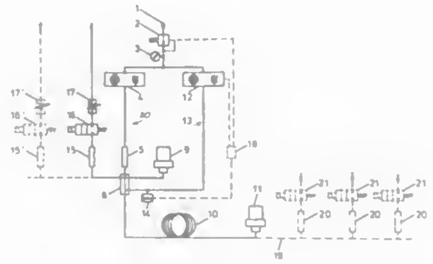
blocks forming said pedestals, and a base layer of sheeting material disposed on said subfloor and having an array of pedestal block locating means on an upper surface thereof adapted to retain said pedestal blocks in predetermined positions, said pedestal blocks being disposed in engagement with said block locating means and supporting said floor panels.



4,883,504
GAS CHROMATOGRAPH

Eberhard Gerstel, Heerstr. 4, D-4330 Mülheim a.d. Ruhr 14, Fed. Rep. of Germany

Filed May 20, 1988, Ser. No. 196,362
Claims priority, application Fed. Rep. of Germany, May 23, 1987, 3717456
Int. Cl.⁴ B01D *15/08*
U.S. Cl. 55—67 83 Claims



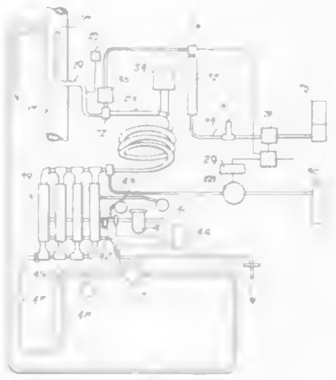
1. A process for separation by gas chromatography, comprising the steps of:
in a first operating state
(a) passing a regulated carrier gas stream through a sample applicator,
(b) directing a relatively small portion of flow from said sample applicator to a monitoring detector,
(c) directing the remainder of flow from the sample applicator to an open discharge line,
(d) blocking access to a separation column of flow from the sample applicator with a regulated auxiliary gas stream, and
(e) directing at least the major portion of the regulated auxiliary gas stream to the separation column; and
in a second operating state
(a) closing the discharge line,
(b) directing a relatively small portion of flow from said sample applicator to a monitoring detector,
(c) directing the remainder of flow from the sample applicator, and all the regulated auxiliary gas stream, to said separation column, and
(d) maintaining flow through the sample applicator and the separation column at substantially the same level as during the first operating state.

19. A gas chromatographic system comprising:
a carrier gas supply means for a pressure regulated supply of a carrier gas stream to the system;
a sample application means for the introduction of a sample to be chromatographically handled into the system, said sample application means being able to provide a preliminary chromatographic separation of said sample and being connected with said carrier gas supply means so that a first stream of carrier gas can flow through said sample application means;
a branching means which is provided with two inlet means and at least two outlet means, a first one of said inlet means being connected with said sample application means, a first one of said outlet means being connected with a separation column means and said first inlet and outlet means being connected with each other via a conduit means provided with a throttle means, the second inlet means being connected with said carrier gas supply means for the supply of a regulated second auxiliary carrier gas stream to said conduit means at a location between said first outlet means and said throttle means, and the second outlet means being connected with a switchable valve arrangement and further with said conduit means at a location between said first inlet means and said throttle means; and
two operating states, in the first one of which said valve arrangement is open so that said second auxiliary stream of carrier gas prevents the introduction of incoming components of said sample into said separation column, whereas in the second one of which said valve arrangement is closed so that said incoming components of said sample are introduced into said separation column.

4,883,505
METHODS AND APPARATUS FOR ATMOSPHERIC SAMPLING AND ANALYSIS OF TRACE CONTAMINANTS

Daniel P. Lucero, Triangle, Va., assignor to IIT Research Institute, Chicago, Ill.

Filed Jul. 22, 1988, Ser. No. 223,283
Int. Cl.⁴ B01D *53/30*
U.S. Cl. 55—84 13 Claims



3. A method for removing and concentrating substances from a flowing gas sample stream and depositing such substances in a liquid film stream in a controlled and quantitative fashion, the method comprising the steps of:
sampling a flowing gas stream by means of a gas probe inserted in the gas stream and transporting the flowing sample gas stream so obtained through a heated transport line to a gas inlet port in an inlet cap of a heated hollow fluorocarbon sample processing tube having a length of at least 100 inches, and a diameter in the range of 0.35 to 0.625 inches having a hydrophylic inner surface;
dispersing a surfactant containing liquid uniformly and circumferentially on the inner surface of the hollow tube by means of liquid dispersion ports circumferentially placed in the top or inlet cap of the sample processing tube, the surfactant containing liquid having been delivered from a

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liquid reservoir by means of a liquid transport line, a liquid pump and a liquid metering valve;

removing the substance to be analyzed from the flowing sample gas stream by means of contact of the flowing sample gas stream with the liquid film stream whereby the molecules or substances to be analyzed are removed from the flowing sample gas stream and concentrated in the liquid film stream at the gas-liquid interface to a value such that the concentration of the substance in the liquid film stream is at least 50,000 times the concentration of the substance in the flowing gas stream;

collecting the liquid containing the concentrated substance in a liquid collection well located circumferentially in an outlet cap of the sample processing tube, the liquid collecting well having a liquid port whereby the liquid can be removed from the wall, and venting the flowing sample gas stream from the sample processing tube.

4,883,506

ELECTROSTATIC POWDER COATING INSTALLATION AND METHOD OF OPERATING THE SAME

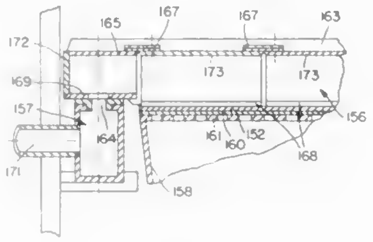
Peter Ribnitz, Haselstrasse 15, 9013 St. Gallen, Switzerland

Continuation of Ser. No. 913,254, Sep. 30, 1986, abandoned, which is a continuation-in-part of Ser. No. 648,744, Sep. 10, 1984, Pat. No. 4,647,298. This application Apr. 28, 1988, Ser. No. 188,072

Claims priority, application Switzerland, Sep. 8, 1983, 4904/83; Nov. 29, 1983, 6366/83

Int. Cl.⁴ B01D *46/04*

U.S. Cl. 55—96 15 Claims



1. An electrostatic powder coating installation comprising a cabinet means, means disposed in said cabinet means for discharging electrostatically charged powder, open ended filter strip means located in a bottom area of an inner space of the cabinet means and maintained in a stationary position during a powder coating operation, respective rollers supporting each end of the filter strip means, a first exhaust fan means for producing a suction field with vacuum in the cabinet means through the filter strip means, cleaning means located in said cabinet means and associated with the filter strip means for removing surplus powder lying on the filter strip means, and means for driving said rollers for displacing the filter strip means for at least one length of the cabinet means only upon a pigment change in the powder so as to enable an assigning of a portion of the filter strip means to respective pigments in the powder, wherein said cleaning means comprises a suction nozzle means and means for moving the suction nozzle means in a direction of the filter strip means extending between said rollers.

4,883,507

FILTER COMPRISING A MATERIAL OBTAINED BY FREEZE-DRYING, METHOD OF PREPARATION AND USE ESPECIALLY IN PHARMACY

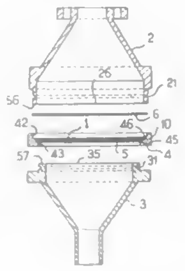
Louis Rey, Epalinges, Switzerland; Brynjulf Ottar, Kjeller, Norway, and Louis Lafon, Paris, France, assignors to Laboratoire L. Lafon, Paris, France

Filed Jun. 29, 1988, Ser. No. 213,308

Claims priority, application France, Jul. 8, 1987, 87 09696; Aug. 12, 1987, 87 11468; Sep. 4, 1987, 87 12277

Int. Cl.⁴ B01D *46/10*

U.S. Cl. 55—97 24 Claims



1. A method of using a filter element to purify a gaseous fluid, which comprises the steps of (a) passing the gaseous fluid through the filter element with a pressure loss of between about 80 and 10,000 Pa, where in the filter element comprises a porous material produced by freeze-drying a liquid or paste to form a porous product and compressing the product in the form of a porous layer.

4,883,508

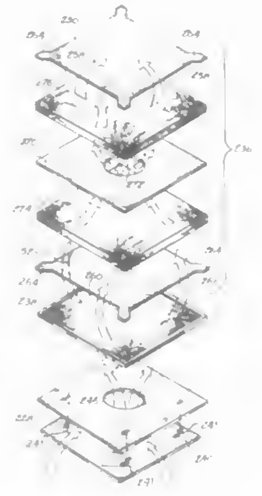
SEMIAUTOMATIC FRYING MACHINE AND AIR FILTER APPARATUS THEREFOR

James P. Lansing, St. Cloud, Minn., assignor to JVJ Enterprises, Inc., St. Cloud, Minn.

Division of Ser. No. 119,785, Nov. 10, 1987. This application Aug. 26, 1988, Ser. No. 237,512

Int. Cl.⁴ B01D *50/00*

U.S. Cl. 55—322 5 Claims



1. Air filter apparatus for use in filtering an air flow, comprising:

spaced-apart upstream and downstream endwalls each having an inner portion, an outer periphery and an outer portion adjacent the outer periphery, said endwalls further having major surfaces opposing each other and each endwall being impervious except for defining an air flow opening for allowing said air flow therethrough;

at least two layers of filter media between said endwalls, each having a pair of opposed major surfaces one of which opposes an endwall major surface and the other of which opposes the other media layer, each media layer having an inner portion and an outer portion adjacent the periphery thereof, and each media layer defining an air flow path therethrough between the major surfaces thereof which extends between the inner and outer portions thereof;

an inner wall located between and spaced from the endwalls so as to be positioned between said filter media layers, said inner wall having spaced inner and outer portions, and defining being impervious except for an air flow opening;

sidewall means adjacent the periphery of said filter media layers and cooperating with said endwalls and said inner wall to confine the air flow between the major surfaces of the filter media layers; and

the air flow openings of said endwalls located at one of said inner and said outer portions of said endwalls and the air flow opening of said inner wall located at the other of said inner and said outer portions of said inner wall, with the filter media layers extending between the openings of said endwalls and the inner wall, and the inner wall including means for remaining spaced apart from the end walls so that said air flow passing between said endwalls travels through said media layers between the major surfaces thereof, from the inner to the outer portions thereof, while traversing a generally labyrinthian path through said air filter apparatus.

4,883,509

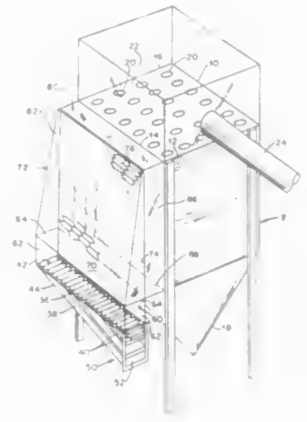
MULTI STAGE GAS INLET CONSTRUCTION FOR DUST COLLECTORS

Giambattista Giusti, 50 The Fellsway, and Robert W. Duyckinck, 187 Commonwealth Ave., both of New Providence, N.J. 07974

Filed Feb. 12, 1988, Ser. No. 155,567

Int. Cl.⁴ B01D *46/02*

U.S. Cl. 55—326 25 Claims



1. Apparatus for treating gas being conveyed in a moving high velocity gas stream of first predetermined cross-sectional area,

gas treating means perimetrically defining a gas treatment zone of predetermined height, width and depth,

a gas impervious housing perimetrically surrounding said gas treatment zone,

gas inlet means for equably distributing and introducing said gas stream at reduced velocity into said gas treatment zone, said gas inlet means comprising,

a first velocity reducing transition section having an entry port of substantially said first predetermined crossectional area for reception of said high velocity gas stream, an exit port of second and larger predetermined cross-sectional area to deliver said gas stream therefrom at a first reduced velocity, and first expanded metal grid means of overall planar character selectively disposed in and traversing said exit port for equably distributing and effecting a change in the direction of flow of said gas stream of at least 90°,

means defining a first turbulent flow reduction zone located immediately downstream of said first expanded metal grid means to permit dissipation of localized turbulence induced by passage of said gas stream through said first expanded metal grid means,

a second velocity reducing transition section having an entry port of substantially said second predetermined crosssectional area to receive said reduced velocity gas stream emanating from said first turbulent flow reduction zone, an exit port of a third and still larger cross-sectional perimetrically contoured to conform to the shape, height and width of at least a substantial portion of said gas treatment zone and disposed in spaced fluid communicating relation thereto through a complementally contoured opening in said gas impervious housing to deliver said gas stream at a second and further reduced velocity, and second expanded metal grid means of overall planar character selectively disposed in and traversing said exit port for equably distributing and effecting a change in the direction of flow of said gas stream of at least 90°, and

means defining a second turbulent flow reduction zone immediately downstream of said second expanded metal grid means and intermediate said second grid means and said gas treatment zone to permit dissipation of localized turbulence induced by passage of said gas stream through said second expanded metal grid means,

said first and second expanded metal grid means each having a plurality of polygonal openings therein each bounded by a three dimensional border of angularly offset strands, at least one strand of which is of a double width disposed in generally facing relation to the approaching gas stream.

4,883,510

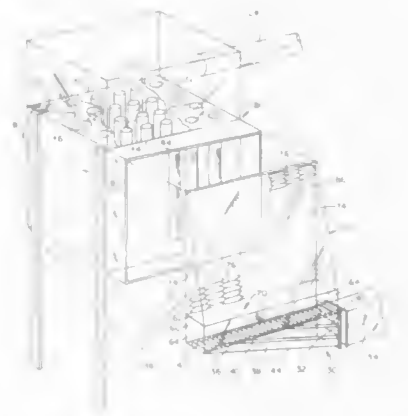
GAS INLET CONSTRUCTION FOR FABRIC FILTER DUST COLLECTIONS

Giambattista Giusti, 50 The Fellsway, and Robert W. Duyckinck, 187 Commonwealth Ave., both of New Providence, N.J. 07974

Filed Feb. 12, 1988, Ser. No. 155,446

Int. Cl.⁴ B01D *46/02*

U.S. Cl. 55—326 12 Claims



1. In fabric filter dust collector apparatus for separating and collecting entrained particulate matter being conveyed in an incoming gas stream of a first predetermined cross-sectional area,

a multiplicity of vertically oriented elongate filter bags arranged in spaced parallel relation to each other and peri-

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metrically defining a particle separation zone of predetermined height, width, and depth,

a gas impervious housing surrounding said particle separation zone including side walls and a dependent particle collecting hopper,

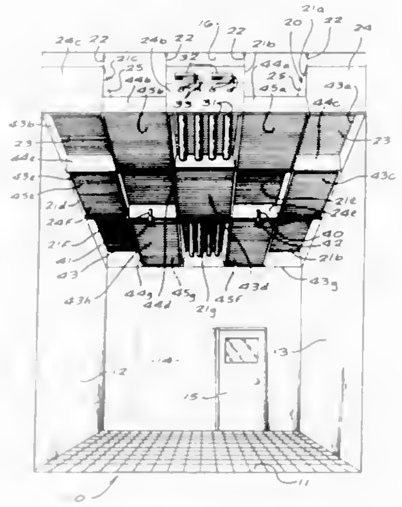
gas inlet means for equably distributing and introducing the incoming gas stream and entrained particulate matter at reduced velocity into said particle separation zone, said gas inlet means comprising,

a velocity reducing transition section having an entry port of second predetermined cross-sectional area for reception of the incoming gas stream, an exit port of a third and markedly enlarged cross-sectional area disposed in spaced fluid communicating relation with said particle separation zone through a complementally contoured opening in said gas impervious housing to deliver the gas stream therefrom at reduced velocity and expanded metal grid means of overall planar character disposed in and traversing said exit port for equably distributing and diverting the incoming gas stream through at least a 90° change of direction for delivery toward said filter bags,

said expanded metal grid means having a plurality of polygonal openings therein each bounded by a three dimensional border of angularly offset strands, at least one strand of which is of a double width disposed in facing relation to the approaching gas stream.

4,883,511
LAMINAR FLOW MULTIPLANE MATRIX CEILING SYSTEM

Arnold Gustin, and Kevin McGillivray, both of 28210 Crocker Ave., Suite 301, Valencia, Calif. 91355
Filed Mar. 25, 1988, Ser. No. 173,316
Int. Cl.⁴ B01D *46/00*
U.S. Cl. 55—355 12 Claims



1. A multiplane modular ceiling system for clean rooms comprising a first set of first framed filters, each including a generally planar filter medium and a peripheral frame enclosing and mounting a respective filter medium in a horizontal plane for air flow from the upper side of the filter medium to the lower side of the filter medium, with the upper side of the filter medium exposed to an air supply plenum above said framed filters and the lower side of the framed filters exposed to a space to be maintained as a clean room;

said first framed filters being of regular shape and each peripheral frame including depending substantially air tight walls extending below the lower surface of said filter medium;

a second set of framed filters, each including a generally planar filter medium and a peripheral frame enclosing and mounting a second respective filter medium with an upper surface of said filter medium exposed to the air supply in said plenum and the lower surface of said filter medium exposed to the space to be maintained as a clean room;

said second set of framed filters defining an edge trough open at the top with lengths corresponding to the lengths of the lower edge of the first frame depending substantially air tight walls;

seal means within said troughs;

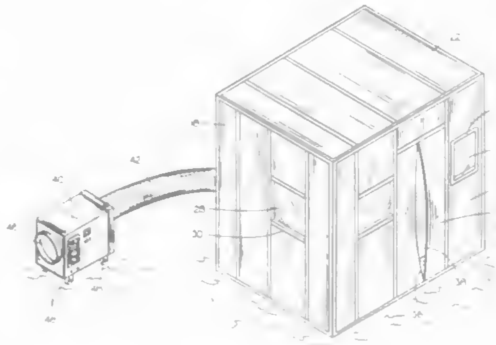
the first set of framed filters having the lower edges thereof resting in respective troughs in sealed relationship with said second set of troughs;

means securing said first set of framed filters to said second set of framed filters in supporting relationship therewith; and

means for supporting said framed filters from the plenum side of said framed filters.

4,883,512
PORTABLE ISOLATION ENCLOSURE

Steven C. Griffis, 2929 Ave. D, Council Bluffs, Iowa 51501
Filed Feb. 21, 1989, Ser. No. 313,160
Int. Cl.⁴ B01D *46/06*
U.S. Cl. 55—356 2 Claims



1. A portable enclosure for collecting contaminated material from the ground, comprising:

an open-bottomed enclosure means having a top portion, a wall means depending from said top portion and extending to the ground, and an interior adapted to accommodate at least one person for collecting contaminated material from the ground within the enclosure means;

said top portion and wall means being sealed to prevent contaminated material from passing therethrough; said wall having at least one selectively closable door means provided therein to permit a person to enter and exit said interior of said enclosure means;

said enclosure means being constructed of lightweight materials such that a person can lift and transport said enclosure along the ground;

air vacuuming means pneumatically connected to said interior through said wall means, to remove air from said enclosure means and to place a negative air pressure in said interior;

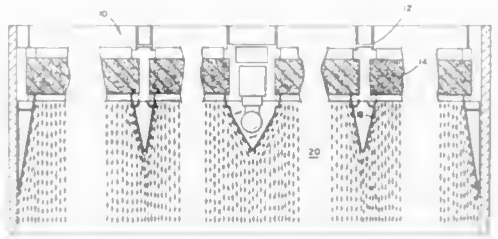
said air vacuuming means further including air filtration means for removing contaminated materials from the air;

wheel means mounted on said air vacuuming means such that said air vacuuming means will move in conjunction with the movement of said enclosure means; and

said door means being operable to allow wire to enter said enclosure when a negative air pressure is present in said interior, and operable to prevent escape of contaminated material therethrough when a negative air pressure is not present in said interior.

4,883,513
FILTER CAP FOR CLEAN ROOM CEILING GRID SYSTEM

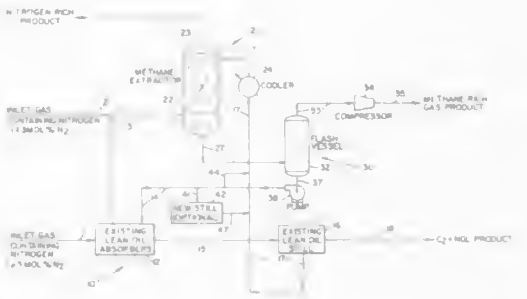
Donald R. Monson, West St. Paul, and James A. Leblanc, Eden Prairie, both of Minn., assignors to Donaldson Company, Inc., Post Office Box 1299, Minn.
Filed Feb. 5, 1988, Ser. No. 152,942
Int. Cl.⁴ B01D *46/00*
U.S. Cl. 55—385.2 11 Claims



1. A system for providing an airtight/particle tight hermetically sealed clean room environment consisting of a clean room bounded by a ceiling, a floor, and sidewalls extending therebetween; said clean room including a ceiling grid filter system comprising a plurality of ceiling mounted grid members arranged in a pattern beneath said clean room ceiling; said ceiling grid members defining a plurality of apertures receiving filter panels therein, said filter panels being mounted on peripheral portions of said grid members defining said apertures, and said filter panels each having an upper end constructed and arranged for receiving supply air, a lower end constructed and arranged for emitting filtered air into said clean room, and filter panel sidewalls; said filter panel sidewalls defining sides of a chamber located between adjacent filter panels, and between filter panels and adjacent clean room sidewalls; and, said ceiling grid filter system comprising filter caps each having upper ends and a lower end, said filter caps each having sidewalls extending between said filter cap upper ends and said filter cap lower end, said filter cap sidewalls comprising angled attaching means at said filter cap upper ends for removably attaching said filter caps to angled means on said filter panel sidewalls, said filter caps extending downwardly into said clean room and each comprising means for hermetically sealing said filter panel sidewalls and for providing substantially laminar flow of clean room air beneath said filter cap lower end.

4,883,514
PROCESSING NITROGEN-RICH GASES WITH PHYSICAL SOLVENTS

Yuv R. Mehra, The Woodlands, Tex., assignor to Advanced Extraction Technologies, Inc., Houston, Tex.
Continuation-in-part of Ser. No. 24,561, Mar. 11, 1987, Pat. No. 4,740,222, which is a continuation-in-part of Ser. No. 854,383, Apr. 21, 1986, Pat. No. 4,743,282, which is a continuation-in-part of Ser. No. 828,996, Feb. 13, 1986, Pat. No. 4,696,688, and Ser. No. 828,988, Feb. 13, 1986, Pat. No. 4,680,042, each is a continuation-in-part of Ser. No. 808,463, Dec. 13, 1985, Pat. No. 4,642,174, which is a continuation-in-part of Ser. No. 784,566, Oct. 4, 1985, Pat. No. 4,817,038, which is a continuation-in-part of Ser. No. 759,327, Jul. 26, 1985, Pat. No. 4,623,371, which is a continuation-in-part of Ser. No. 758,351, Jul. 24, 1985, Pat. No. 4,601,738, which is a continuation-in-part of Ser. No. 637,210, Aug. 3, 1984, Pat. No. 4,578,094, which is a continuation-in-part of Ser. No. 532,005, Sep. 14, 1983, Pat. No. 4,526,594, which is a continuation-in-part of Ser. No. 507,564, Jun. 24, 1983, Pat. No. 4,511,381, which is a continuation-in-part of Ser. No. 374,270, May 3, 1982, Pat. No. 4,421,535. This application Jul. 16, 1987, Ser. No. 74,226
The portion of the term of this patent subsequent to Nov. 18, 2003, has been disclaimed.
Int. Cl.⁴ F25J *3/00*
U.S. Cl. 62—17 5 Claims



1. A process for separating C_1+ hydrocarbons and nitrogen from a nitrogen-rich gas stream which contains more than 3 mol % of said nitrogen, comprising the following steps:

A. contacting said nitrogen-rich gas stream with a lean oil, comprised of paraffinic, aromatic or cyclo hydrocarbons or mixtures thereof having molecular weights ranging between 75 and 250, at temperatures no lower than −40° F. to produce a nitrogen stream as an overhead product and a bottoms methane-rich oil stream; and

B. flashing said bottoms methane-rich oil stream to recover a methane-rich overhead gas product and a lean oil rich bottoms stream; and recycling said lean oil stream to said contacting of step A

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4,883,515

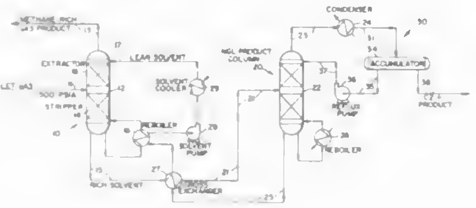
PROCESSING HYDROCARBON GASES WITH SELECTED PHYSICAL SOLVENTS

Yuv R. Mehra, The Woodlands, and Freylon B. Coffey, Austin, both of Tex., assignors to Advanced Extraction Technologies, Inc., Houston, Tex.

Continuation-in-part of Ser. No. 100,242, Sep. 23, 1987, Pat. No. 4,832,718, which is a continuation-in-part of Ser. No. 74,226, Jul. 16, 1987, which is a continuation-in-part of Ser. No. 24,561, Mar. 11, 1987, Pat. No. 4,740,222, which is a continuation-in-part of Ser. No. 854,383, Apr. 21, 1986, Pat. No. 4,743,282, which is a continuation-in-part of Ser. No. 828,996, Feb. 13, 1986, Pat. No. 4,696,688, which is a continuation-in-part of Ser. No. 828,988, Feb. 13, 1986, Pat. No. 4,680,042, which is a continuation-in-part of Ser. No. 808,463, Dec. 13, 1985, Pat. No. 4,692,179, which is a continuation-in-part of Ser. No. 784,566, Oct. 4, 1985, Pat. No. 4,817,038, which is a continuation-in-part of Ser. No. 759,327, Jul. 26, 1985, Pat. No. 4,623,371, which is a continuation-in-part of Ser. No. 758,351, Jul. 24, 1985, Pat. No. 4,601,738, which is a continuation-in-part of Ser. No. 637,210, Aug. 3, 1984, Pat. No. 4,578,094, which is a continuation-in-part of Ser. No. 532,005, Sep. 14, 1983, Pat. No. 4,526,594, which is a continuation-in-part of Ser. No. 507,564, Jun. 24, 1983, Pat. No. 4,511,381, which is a continuation-in-part of Ser. No. 374,270, May 3, 1982, Pat. No. 4,421,535. This application Sep. 29, 1987, Ser. No. 102,350

Int. Cl.⁴ F25J *3/00*

U.S. Cl. 62—17 5 Claims



1. In a process for separating a C_2+hydrocarbons product and a methane gas product from a natural gas stream with a physical solvent, comprising the following steps:

A. contacting said hydrocarbon gas stream with said physical solvent to produce an overhead gas stream of said methane and a rich solvent bottoms stream,

B. regenerating said solvent bottoms stream to produce an overhead stream of said C_2+hydrocarbons product and a regenerated solvent bottoms stream, and

C. recycling said regenerated solvent stream to said Step A, the improvement comprising said contacting of said Step A, at a pressure no more than approximately 500 psia and at a pressure under which the difference between liquid and vapor density is at least 20 lbs/cubic foot, with said physical solvent selected from the group consisting of

1. paraffinic solvents having molecular weights ranging from 75 to 140 and UOP characterization factors ranging from 12.0 to 13.5, said factors being independent of the aromatic content of said paraffinic solvents;
2. naphthenic solvents having molecular weights ranging from 75 to 130 and UOP characterization factors ranging from 10.5 to 12.0, said factors being independent of the aromatic content of said naphthenic solvents; and
3. benzene and toluene.

4,883,516

AIR SEPARATION

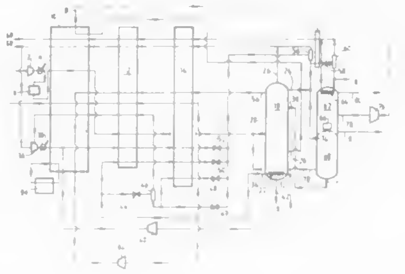
David J. Layland, Norton, and John T. Lavin, Chingford, both of England, assignors to The BOC Group, Inc., Murray Hill, N.J.

Filed Apr. 4, 1988, Ser. No. 176,900

Claims priority, application United Kingdom, Apr. 7, 1987, 8708266; Mar. 18, 1988, 8806477

Int. Cl.⁴ F25J *3/04*

U.S. Cl. 62—22 11 Claims



1. A process of separating air comprising removing carbon dioxide and water vapor from compressed air, reducing the temperature of the compressed air in a heat exchange means to a temperature suitable for its separation by cryogenic distillation, separating the air into nitrogen and oxygen using one or a plurality of distillation columns, taking a stream enriched in argon from one distillation column and introducing it into a further distillation column in which an argon product is produced, introducing vapor from said one column or another of said plurality of columns into said further distillation column to provide reboil therefor; and returning the resulting condensed vapor as reflux to the distillation column from which it was withdrawn.

4,883,517

AIR SEPARATION

Thomas Rathbone, Farnham, United Kingdom, assignor to The BOC Group, Inc., New Providence, N.J.

Filed Jan. 13, 1989, Ser. No. 297,145

Claims priority, application United Kingdom, Jan. 14, 1988, 8800842

Int. Cl.⁴ F25J *3/04*

U.S. Cl. 62—22 16 Claims

1. A process of separating air, comprising the steps of:

(a) introducing a stream of air into a first distillation column;

(b) withdrawing an oxygen-rich liquid from a bottom region of the first distillation column and introducing it into a top region of a mixing zone;

(c) withdrawing nitrogen-rich vapor from the first distillation column and introducing it into a bottom region of the mixing zone;

(d) establishing through the mixing zone a downward flow of liquid that becomes progressively richer in nitrogen and an upward flow of vapor that becomes progressively richer in oxygen;

(e) withdrawing liquid nitrogen from the mixing zone and introducing it into the top of the first distillation column to act as reflux;

(f) withdrawing as product or waste a mixed stream comprising oxygen and nitrogen from a chosen level of the mixing zone;

(g) providing condensation for oxygen-rich vapor at the top of the mixing zone;

(h) withdrawing from the first distillation column a stream enriched in argon relative to the air stream, and separating an argon product from the argon-containing stream in a second distillation column; and

(i) withdrawing a vapor stream from a level of the mixing zone intermediate the level from which said mixed stream is withdrawn and the top thereof, condensing said vapor stream in heat exchange with a stream of boiling liquid from one of the distillation columns, returning a stream of thus-formed condensate to the mixing zone, and returning the boiled liquid to said distillation column.

4,883,518

PROCESS FOR AIR FRACTIONATION BY LOW-TEMPERATURE RECTIFICATION

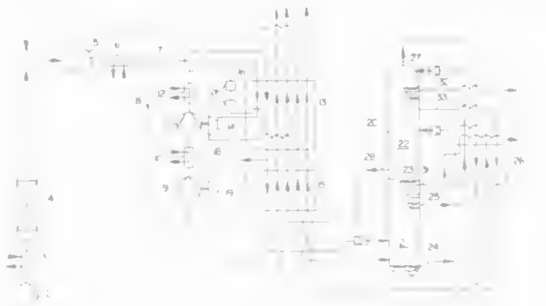
Werner Skolaude, Munich; Gunnar Eggendorfer, Gruenwald, and Horst Corduan, Puchheim, all of Fed. Rep. of Germany, assignors to Linde Akitengesellschaft, Wiesbaden, Fed. Rep. of Germany

Filed Nov. 14, 1988, Ser. No. 270,606

Claims priority, application Fed. Rep. of Germany, Nov. 13, 1987, 3738559

Int. Cl.⁴ F25J *3/00*

U.S. Cl. 62—38 36 Claims



1. In a process for air fractionation by low-temperature rectification comprising a rectification step from which nitrogen and product oxygen streams are obtained and a cooling stage wherein a process gas of the air fractionation is employed as working gas to produce refrigeration by compression and expansion of at least a portion of said working gas, the improvement comprising:

compressing said working gas in said cooling stage and thereafter dividing said working gas into a first partial stream and a second partial stream, both of which are at least partially cooled and at least partially subjected to engine expansion, said first partial stream being expanded at a temperature higher than that at which the second partial stream is expanded;

compressing at least said second partial stream, prior to expansion, wherein work gained during expansion of at least a part of one of said partial streams is utilized in the compression of said second partial stream, said compression of said second partial stream being performed in two compression stages; and

introducing at least a portion of at least one of said partial streams to the rectification step.

4,883,519

PROCESS FOR THE PRODUCTION OF HIGH PRESSURE NITROGEN WITH SPLIT REBOIL-CONDENSING DUTY

Rakesh Agrawa, Allentown; Steven R. Auvil, Macungie, and Keith B. Wilson, Allentown, all of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Oct. 6, 1988, Ser. No. 254,512

Int. Cl.⁴ F25J *3/00*

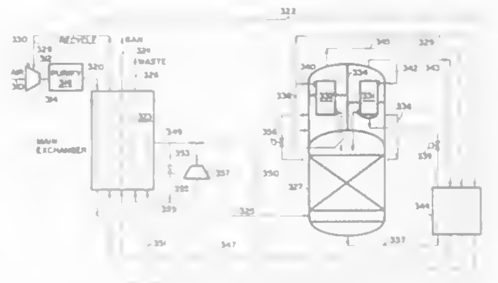
U.S. Cl. 62—39 17 Claims

1. A process for the recovery of nitrogen from a feed gas stream containing nitrogen and oxygen whereby a pressurized condition is retained in a recycle process stream comprising the steps of:

(a) compressing a feed gas stream containing nitrogen and oxygen to an elevated pressure;

(b) introducing the elevated pressure feed gas stream into a cryogenic separation zone to recover a high purity nitrogen product from said zone and to produce an initial oxygen-enriched waste stream;

(c) introducing the initial oxygen-enriched waste stream into a first reboil-condenser zone of the cryogenic separation zone to recover an elevated pressure recycle stream and a second reboil-condenser zone to recover a final oxygen-enriched waste stream; and



(d) removing said elevated pressure recycle stream from said cryogenic separation zone and while at least maintaining the oxygen content of said recycle stream, recycling said stream at elevated pressure to the feed gas stream for introduction into the cryogenic separation zone.

4,883,520

WATER TREATMENT APPARATUS AND METHOD

Colin A. Connery, Mt. Vernon, N.Y., assignor to Living Water Corporation, Chicago, Ill.

Continuation of Ser. No. 943,423, Dec. 19, 1986, abandoned. This application Aug. 29, 1988, Ser. No. 238,526

Int. Cl.⁴ C02F *1/22*

U.S. Cl. 62—542 25 Claims

1. An apparatus for producing an effectively stratified vertical column of salt water containing at least one foreign substance dissolved therein, from the top of which column water of a certain degree of purity can be obtained, and from the bottom of which column a concentrate of a certain concentration can be obtained, which apparatus comprises:

(a) a vertically oriented, heat insulated, watertight duct;

(b) a column of chilled water confined in said duct, said water containing said at least one foreign substance dis-

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solved therein, said column of water having a bottom and a top;

(c) means for introducing small, individual pieces of ice into said column of salt water adjacent the bottom thereof at such a rate and in such a manner that said individual pieces of ice float freely and separately from the bottom portion to the top portion of said column of water, without being packed together, while water containing said at least one foreign substance that clings to said small, individual pieces of ice is carried up through said column of water and is rinsed off said pieces of ice by water at successively higher levels in said column;

(d) means for removing said small, individual pieces of ice from the top of said column of salt water after they have floated freely and separately, as aforesaid, up to the top of the column;

(e) means for introducing added rinse water into the top of said column of salt water,

the volume of added rinse water thus introduced being the quantity necessary to maintain the concentration of said at least one foreign substance in said column of salt water at the top thereof at a level no higher than a first predetermined maximum concentration when the desired end product from the use of said effectively stratified column of water is water of said certain degree of purity;

(f) means for removing heavy brine from the bottom of said column of salt water,

the volume of heavy brine thus removed being the quantity necessary to maintain the concentration of said at least one foreign substance in said column of salt water at the bottom thereof at a level no higher than a second predetermined maximum concentration when the desired end product from the use of said effectively stratified column of water is concentrate of said certain concentration, said second predetermined maximum concentration being substantially higher than said first predetermined maximum concentration; and

(g) means for introducing a quantity of added salt water into said column of salt water,

the volume of said quantity of added salt water, plus the volume of any small, individual pieces of ice introduced from outside the duct into said column of chilled water, plus the volume of any additional rinse water introduced from outside the duct into the column of chilled water being substantially equal to the volume of said pieces of ice removed as described above, plus the volume of any heavy brine removed as described above,

said means for introducing pieces of ice, said means for removing pieces of ice, said means for introducing added rinse water, said means for removing heavy brine, and said last mentioned means for introducing added salt water all being adapted to minimize the impartation of stirring or mixing motion to said column of salt water,

whereby, after said introduction and removal of said pieces of ice, said introduction of added rinse water, said removal of heavy brine, and said introduction of a quantity of added salt water have been carried out for a period of time, the concentration of said at least one foreign substance dissolved in said column of salt water varies substantially continuously from the greatest concentration at the bottom of said column to the lowest concentration at the top thereof, with the concentration at any given level in said column of salt water being substantially the same throughout said given level.

4,883,521

METHOD FOR THE PREPARATION OF SILICA GLASS

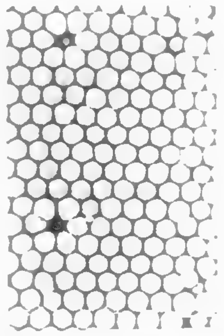
Takaaki Shimizu, and Syuji Tanaka, both of Niigata, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Sep. 26, 1988, Ser. No. 249,317

Claims priority, application Japan, Sep. 30, 1987, 62-24685; Sep. 30, 1987, 62-246686

Int. Cl.⁴ C03B *37/016*

U.S. Cl. 65—17 11 Claims



1. A method for the preparation of transparent silica glass which comprises the successive steps of:

(a) hydrolyzing an alkoxy silane compound in the presence of a basic catalyst to prepare a dispersion containing spherical particles of silica;

(b) removing the basic catalyst from the dispersion by distillation so as to bring the pH of the dispersion to 8 or below;

(c) settling the silica particles in the dispersion;

(d) discarding the supernatant from the dispersion to obtain a first deposit of the silica particles;

(e) dispersing the first deposit of silica particles in a silica sol solution of a hydrolyzate of an alkoxy silane compound obtained by the hydrolysis thereof in the presence of an acidic catalyst to prepare a dispersion of the silica particles in the silica sol solution;

(f) adjusting the pH of the dispersion to have a value of 2 to 6;

(g) settling the silica particles in the dispersion;

(h) discarding the supernatant from the dispersion to obtain a sexcond deposit of the silica particles;

(i) heating the second deposit of the silica particles to obtain a wet gel thereof; and

(j) drying, sintering and vitrifying the wet gel of silica particles to give a block of transparent silica glass.

4,883,522

FABRICATION OF MACRO-GRADIENT OPTICAL DENSITY TRANSMISSIVE LIGHT CONCENTRATORS, LENSES AND COMPOUND LENSES OF LARGE GEOMETRY

James J. Hagerty, Saratoga, and Leslie A. Danziger, Los Altos Hills, both of Calif., assignors to Integrated Solar Technologies Corp., San Jose, Calif.

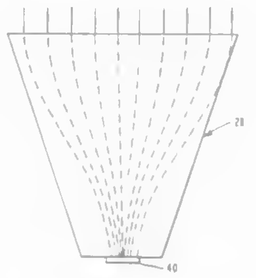
Continuation-in-part of Ser. No. 87,598, Aug. 19, 1987, abandoned. This application Jun. 17, 1988, Ser. No. 206,109

Int. Cl.⁴ C03B *19/06*

U.S. Cl. 65—18.4 7 Claims

1. A process for preparing a refractive glass article having an intermediate index of refraction from those of the constituent components thereof comprising the steps of: selecting two glass samples having selected indices of refraction and similar coefficients of expansion in vitrified form, powdering the samples to a chose grit, mixing the two powders formed thereby by weight in a proportion which reflects the desired final index of refraction of said refractive article as being substantially a combination of the indices of refraction of the selected glasses according to the proper weight proportion thereof, mechanically compacting the sample, heating the mixture of powdered glass samples prepared thereby to a temperature above the higher of the softening temperatures of the powdered glass samples employed for a chosen period of time, and cooling the fused glasses at a rate such that significant annealing occurs.

4. A process for preparing an article having a bidirectionally graded index of refraction comprising the steps of: preparing a series of powdered glass samples having decreasing indices of refraction and similar coefficients of expansion in vitrified form, placing the powdered glass sample having the highest index of refraction in the bottom region of a crucible having a chosen shape and having further a generally cylindrical cross section to a chosen height, mechanically compacting the sample, forming an annular region between the wall of the crucible and the central volume thereof beginning above the layer of powdered glass sample having the highest index of refraction by using a cylindrical tube having a thin wall and a chosen outside diameter, forming successive layers of the powdered glass samples each having a chosen height in the annular region formed and mechanically compacting each layer before the next layer is placed above it, each layer being composed of a glass powder having an index of refraction lower than that of the layer immediately below it, the powdered glass sample having the lowest index of refraction occupying the uppermost layer of the annular region, removing the cylindrical tube, filling the central volume with the powdered glass sample having the highest index of refraction and mechanically compacting it, heating the assembly of powdered glass samples prepared thereby to a temperature above the highest softening temperature of the powdered glass samples employed for a chosen period of time, cooling the fused glasses at a rate such that significant annealing occurs, and removing the fused glasses from the crucible.



4,883,523

AVOIDANCE OF SURFACE DETERIORATION OF GLASS DURING STRENGTHENING PROCESSES

Huai-Chuan Lee, Albany; Hisayoshi Toratani, Fremont, and Helmuth E. Meissner, Pleasanton, all of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Filed May 17, 1988, Ser. No. 194,786

Int. Cl.⁴ C03B *27/02*

U.S. Cl. 65—30.14 28 Claims

1. In a process for strengthening a glass part comprising immersing said glass part in a salt melt containing an alkali metal salt to effect ion exchange therewith, the improvement comprising purging said salt melt with a chlorine-containing gas to convert substantially all water and all hydroxyl ions dissolved therein to hydrogen chloride gas.

4,883,524

INVISIBLE FLAT-TOP MOLD BLANK AND METHOD FOR MANUFACTURING SAME

Alexander C. Bristol, 14317 SW. 142 Ave., Miami, Fla. 33186

Filed Jul. 25, 1988, Ser. No. 223,645

Int. Cl.⁴ C03B *23/00*

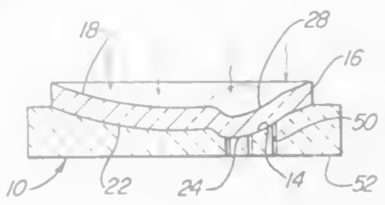
U.S. Cl. 65—37 5 Claims

1. A method for manufacturing a mold blank for an optical lens having a bifocal segment comprising the steps of:

constructing a mold having a concave surface and a recess corresponding in shape to the bifocal segment,

forming a concave surface and a convex surface spaced apart on a thermally deformable mold blank,

placing said convex surface of a thermally deformable mold blank on said concave surface and across said recess of said mold,



heating said mold and said mold blank to a preselected temperature at which said mold blank thermally deforms and a portion of said unitary mold blank is sagged against said recess whereby said bifocal segment is formed in said mold blank, and

cooling said mold blank.

4,883,525

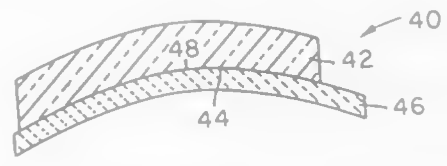
GLASS-CERAMIC SUPPORT FOR FUSING AND SAGGING OPHTHMALMIC MULTIFOCAL LENSES

Milford L. Buckley, Horseheads, N.Y., and Harry L. Burke, Harrodsburg, Ky., assignors to Corning Incorporated, Corning, N.Y.

Filed Aug. 5, 1988, Ser. No. 228,455

Int. Cl.⁴ C03B *11/08*

U.S. Cl. 65—37 21 Claims



8. A method of supporting a multifocal ophthalmic lens assembly during a heat treatment which comprises providing a low expansion glass-ceramic body, surfacing the upper surface of the body to a predetermined curvature, applying a coating of a titania-alumina-mica paint to the upper surface, baking the coating, said coating being capable of withstanding temperature up to 750° C. and thereafter mounting the multifocal assembly on said coated surface for heat treatment.

16. A method of heat treating a multifocal ophthalmic lens assembly which comprises providing a low expansion glass-ceramic body, surfacing the upper surface of the body to a predetermined curvature, applying a coating of a titania-alumina-mica paint to the upper surface, baking the coating said coating being capable of withstanding temperatures up to 750° C., and thereafter mounting the multifocal assembly on said coated surface for heat treatment and subjecting said assembly to an elevated temperature for a predetermined time.

4,883,526

METHOD AND APPARATUS FOR SHAPING AND CONVEYING GLASS SHEETS

Allan T. Enk; Jennifer R. Wolfe, and John W. Borer, all of Toledo, Ohio, assignors to Libbey-Owens-Ford Co., Toledo, Ohio

Filed Mar. 30, 1989, Ser. No. 331,258

Int. Cl.⁴ C03B *23/023*

U.S. Cl. 65—104 16 Claims

1. A process for conveying a formed glass sheet, in a glass treatment system of the type including a furnace for heating a glass sheet to the plastic temperature thereof, a press bending glass forming station for bending the glass sheet into a desired

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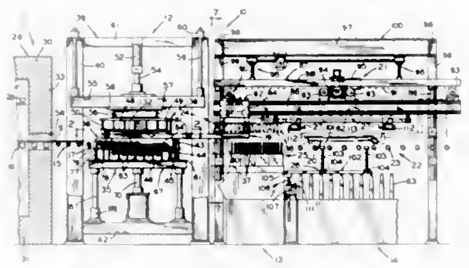
shape, and an unloading zone for discharging the formed glass sheet, the process comprising the steps of:

(A) positioning a shuttle ring to receive a formed glass sheet, the shuttle ring conforming in outline and elevation to the marginal edges of the formed glass sheet;

(B) transferring the formed glass sheet from a lower shaping mold onto the shuttle ring, by the relative downward vertical movement of the lower shaping mold away from an upper shaping mold;

(C) conveying the shuttle ring having the formed glass sheet thereon, to a glass discharge zone; and

(D) removing the formed glass sheet from the shuttle ring.



10. Apparatus for conveying a formed glass sheet, in a glass treatment system of the type including a furnace for heating a glass sheet to the plastic temperature thereof, a press bending glass forming station for bending the glass sheet into a desired shape, optionally a tempering station for tempering the formed glass sheet, and an unloading zone for discharging the glass sheet, the apparatus comprising:

(A) a shuttle ring conforming in outline and elevation to the marginal edges of the formed glass sheet;

(B) a first support means for positioning the shuttle ring concentric with and slightly below a lower shaping rail of a lower shaping mold during a press bending glass forming operation in which the lower shaping mold contacts an upper shaping mold thereby forming the glass sheet;

(C) a second support means for positioning the shuttle ring to engage and support the formed glass sheet upon the relative downward vertical movement of the lower shaping mold away from the upper shaping mold;

(D) means for conveying the shuttle ring and formed glass sheet supported thereon away from the upper and lower shaping molds; and

(E) an unloading means for removing the formed glass sheet from the shuttle ring.

4,883,527

GLASS SHEET BENDING AND TEMPERING APPARATUS

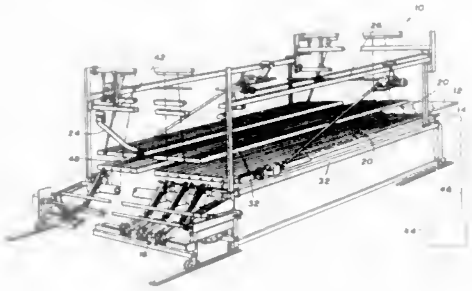
Harold A. McMaster, Woodville; Norman C. Nitschke; Dexter H. McMaster, both of Perrysburg, and Ronald A. McMaster, Woodville, all of Ohio, assignors to Glasstech International L.P., Scarsdale, N.Y.

Continuation of Ser. No. 83,675, Aug. 7, 1987, Pat. No. 4,822,398. This application Sep. 27, 1988, Ser. No. 249,718

Int. Cl.⁴ C03B *23/03*

U.S. Cl. 65—273 16 Claims

1. A glass bending and tempering apparatus comprising: a first platen for receiving a heated glass sheet to be bent; said first platen being deformable and including an actuator for deforming said platen from a planar shape to a bent shape; said first platen including quench openings throughout the extent thereof; said quench openings of the first platen movable therewith during the deformation of the platen; a second platen having quench openings throughout the extent thereof and opposing the first platen in spaced relationship with the glass sheet therebetween; said actuator being constrainable and having the ability to lift portions of said first platen a controlled distance to form the desired bent shape in the glass sheet; and quenching gas being supplied to the quench openings of both platens and thereby to both sides of the glass sheet to temper the bent glass sheet between the platens.



4,883,528

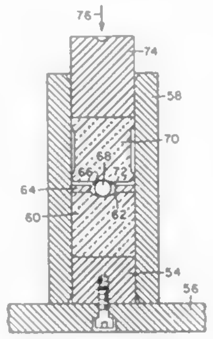
APPARATUS FOR MOLDING GLASS OPTICAL ELEMENTS

Larry L. Carpenter, Painted Post; Mark L. Morrell, Horseheads, and Peter A. Schrauth, Elmira, all of N.Y., assignors to Corning Incorporated, Corning, N.Y.

Filed Mar. 8, 1989, Ser. No. 320,753

Int. Cl.⁴ C03B *11/08*

U.S. Cl. 65—275 36 Claims



1. A apparatus for molding a glass optical element having first and second opposed optical surfaces and a predetermined diameter comprising

a molded first mold formed of glass and having a first glass molding surface adapted to form said first optical surface,

a second mold having a second glass molding surface adapted to form said second optical surface,

a ring having a predetermined desired thickness and defining a central longitudinal aperture having a diameter corresponding to said predetermined diameter, and

constraining means for holding said ring intermediate said first and second molds such that said first and second glass molding surfaces are disposed in an opposing cooperative molding relationship,

said ring and said first and second glass molding surfaces defining a mold cavity of predetermined volume.

4,883,529

CIRCULAR TUBE SHAPING APPARATUS

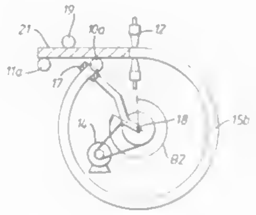
Hiroshi Nishimura, and Satoshi Tanaka, both of Kanagawa, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Aug. 26, 1988, Ser. No. 236,728

Claims priority, application Japan, Aug. 27, 1987, 62-213535; Jun. 30, 1988, 63-106772

Int. Cl.⁴ C03B *23/06*

U.S. Cl. 65—281 3 Claims



1. An apparatus for shaping a tube into circle, comprising:

rod means releasably engageable to a rear end of the tube for extending the length of the tube, the rod means comprising a dummy extension of the tube positioned substantially coextensive with the tube;

means for supporting and feeding a combination of the tube and the rod means for movement toward the front end of the tube, the supporting means comprising means for initially supporting only the tube of the combination and finally supporting only the rod means of the combination;

means located ahead of the supporting means in a direction of movement of the combination for locally heat softening the tube;

turning arm means having a free end rotatable about an axis, including means for coupling the turning arm means to the front end of the tube for pulling the tube along a circle around the axis, so that the tube is shaped into a circle defined by turning movement of the turning arm means; and

means coupled to the means for supporting and feeding for moving said combination in synchronism with said turning arm means.

4,883,530

USE OF AMMONIUM SYNGENITE AS A SLOW-ACTING NITROGEN FERTILIZER

Walter Von Maessenhausen, Ludwigshafen; Vilmos Czikkely, Mannheim, and Johann Jung, Limburgerhof, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Continuation of Ser. No. 856,970, Apr. 29, 1986, abandoned. This application Mar. 17, 1988, Ser. No. 170,626

Claims priority, application Fed. Rep. of Germany, May 22, 1985, 3518369

Int. Cl.⁴ C05C *3/00;* C05D *9/00;* C05B *3/00*

U.S. Cl. 71—36 3 Claims

1. A process for fertilizing soils with a sustainedreleased fertilizing composition by applying the composition to soils, said composition consisting of ammonium syngenite or a mixture of finely divided ammonium sulfate and finely divided hydrated or anhydrous calcium sulfate, calcium chloride and/or dicalcium phosphate, with the proviso that the molar ratio of calcium to $S_4^{=}$ in the mixture is 1:2±10% .

4,883,531

THREAD FRICTION MEASUREMENT ARRANGEMENT

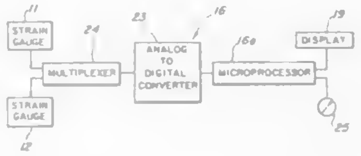
Michael Cole, 6 Beedy Road, Scraptoft, Leicester; Dennis L. Munden, The Paddock, Ford View Close, Great Glen, Leicester, and Marilynn J. Ryan, 32 Dominion Road, Glenfield, Leicester, LE3 8FA, all of England

Filed May 25, 1988, Ser. No. 198,731

Claims priority, application United Kingdom, May 29, 1987, 8712658

Int. Cl.⁴ G01N *19/02*

U.S. Cl. 73—9 1 Claim



1. A thread friction measuring arrangement comprising first and second strain gauges arranged in a thread path to either side of a cylindrical surface against which friction is to be measured so that the said first and second strain gauges give first and second electrical outputs respectively corresponding to the tension in the thread before and the second tension in the thread after turning around the said surface so as to turn through an angle θ, and further comprising electronic means computing the frictional coefficient of the thread on the surface from the said electrical outputs, said electronic means comprising logarithm evaluating means evaluating logarithms of said first and second outputs, and computing means subtracting the logarithm of said first output from the logarithm of said second output, and output means outputting the result of such subtraction divided by the angle θ.

4,883,532

SONIC METHOD FOR FACILITATING THE EXTRACTION OF MINERALS FROM ORE IN A LEACHANT

Albert G. Bodine, 7877 Woodley Ave., Van Nuys, Calif. 91406

Continuation-in-part of Ser. No. 128,454, Dec. 3, 1987, Pat. No. 4,780,138, which is a continuation of Ser. No. 923,575, Oct. 27, 1986, abandoned. This application Jul. 22, 1988, Ser. No. 222,895

The portion of the term of this patent subsequent to Oct. 25, 2005, has been disclaimed.

Int. Cl.⁴ C22B *3/00, 3/02*

U.S. Cl. 75—101 R 4 Claims

1. A method for facilitating the separation of mineral from ore in a leachant comprising the steps of:

attaching an oscillator to one end of a bar member of an elastic material,

supporting said oscillator with said bar member suspended in tension in said leachant and ore without any sidewise support for freedom of lateral motion throughout substantially the entire extent of said bar member; and

driving said oscillator so as to cause cycloidal resonant standing wave vibration of said bar member to effect nutating motion of said bar member throughout the longitudinal extent thereof,

whereby sonic energy is transferred from said bar member to

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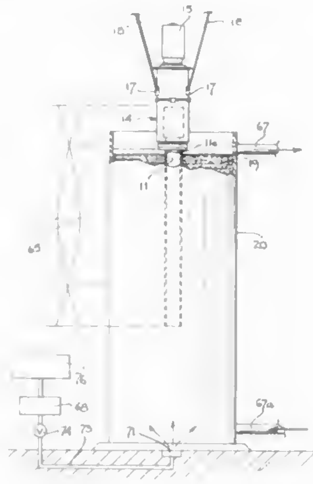
the leachant and ore to set up force vectors therein both normal and tangential to said bar member thereby facilitating the mixing of the ore and leachant and engendering the separation of the mineral from the ore.



4,883,533

MODIFIED SYNTHETIC HYDROTALCITE

John A. Kosin, Bel Air; Barry W. Preston, Whiteford, and David N. Wallace, Elkton, all of Md., assignors to J. M. Huber Corporation, Locust, N.J.

Filed Jul. 5, 1988, Ser. No. 214,963

Int. Cl.⁴ C08K *3/32;* **C09D** *5/18;* **C01B** *25/32, 25/36*

U.S. Cl. 106—18.14 **4 Claims**

1. A phosphate modified hydrotalcite of the following formula:

$$x\text{MgO.Al}_2\text{O}_3.y\text{PO}_4.z\text{H}_2\text{O}$$

wherein, x, y and z are integers indicating the number of moles present of MgO, PO_4 and H_2O, respectively, said phosphate modified hydrotalcite having a particle morphology of platelets and an average particle size less than about 1 micron.

4,883,534

BENZOIN ANTIMICROBIAL DENTAL VARNISHES

H. J. Sandham, Thornhill, and Thomas E. Balanyk, Toronto, both of Canada, assignors to University of Toronto Innovations Foundations, Toronto, Ontario, Canada

Continuation of Ser. No. 680,936, Dec. 12, 1984, abandoned, which is a continuation-in-part of Ser. No. 493,755, May 11, 1983, Pat. No. 4,496,322. This application Jun. 18, 1987, Ser. No. 63,735

The portion of the term of this patent subsequent to Jan. 29, 2002, has been disclaimed.

Int. Cl.⁴ A61K *6/00, 7/16, 9/08*

U.S. Cl. 106—35 **11 Claims**

1. A liquid varnish composition in an orally acceptable liquid vehicle means suitable for dental use and effective in combatting growth of caries-causing bacteria, said composition being capable of drying on teeth to yield at least initially a translucent, transparent or tooth colored film and capable of adherence to the dental infection site,

said composition comprising an effective amount of at least one dentally acceptable antimicrobial means effective against *Streptococcus mutans* and an amount of benzoin effective to form said film and sufficient to permit effective communication of said antimicrobial means with the infection site and sustained release thereof when the composition is applied thereto.

4,883,535

NOVEL HYDRAULIC COMPOSITION

Tetsuo Hamaguchi, Chigasaki; Tsunehisa Ueda, Zushi, and Tadao Natsuume, Yokosuka, all of Japan, assignors to Nippon Zeon Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 50,338, May 18, 1987, abandoned. This application Sep. 26, 1988, Ser. No. 249,248

Claims priority, application Japan, May 20, 1986, 61-115635; Jul. 31, 1986, 61-181140; Jul. 31, 1986, 61-181141; Aug. 15, 1986, 61-191528; Sep. 30, 1986, 61-232779; Sep. 30, 1986, 61-232780

Int. Cl.⁴ C04B *24/34*

U.S. Cl. 106—93 **19 Claims**

1. A hydraulic composition comprising a hydraulic component and an organic hydrogel holding 5 to 1000 times its own weight of water and obtained by water absorption of highly water-absorbing polymers selected from the group consisting of starch/acrylonitrile graft copolymer and olefin/maleic anhydride copolymers or obtained by reacting a polycarboxylic acid salt selected from the group consisting of polyacrylic acid salts and olefin/maleic anhydride copolymer salts with a crosslinking agent in the presence of water, and optionally aggregate, a reinforcing material selected from the group consisting of pulp fibers, glass fibers, rockwool, resin fibers, carbon fibers and metallic fibers, and other additives selected from the group consisting of binders, air-entraining agents, cement wetting dispersants, expanding agents, water-proofing agents, strength increasing agents, setting accelerators, setting retarders and thickeners.

4,883,536

SUSPENSION OF WATER-SOLUBLE POLYMERS IN AQUEOUS MEDIA CONTAINING DISSOLVED SALTS

Charles L. Burdick, Landenberg, Pa., assignor to Aqualon Company, Wilmington, Del.

Filed Aug. 5, 1988, Ser. No. 229,379

Int. Cl.⁴ C08L *1/08;* **C08K** *3/00*

U.S. Cl. 106—194 **26 Claims**

1. An aqueous suspension consisting essentially of greater than 20%, by total weight of the suspension, of at least one anionic or nonionic water-soluble polymer dispersed in an aqueous solution of an ammonium salt having a multivalent anion, wherein the weight ratio of the multivalent ammonium salt to the water in the suspension is at least 0.15.

4,883,537

AQUEOUS SUSPENSION OF CARBOXYMETHYLCELLULOSE

Charles L. Burdick, Landenberg, Pa., assignor to Aqualon Company, Wilmington, Del.

Filed Dec. 28, 1988, Ser. No. 290,973

Int. Cl.⁴ C08L *1/08*

U.S. Cl. 106—194 **23 Claims**

1. An aqueous suspension consisting essentially of at least 8%, by weight of the total suspension, of water-soluble carboxymethylcellulose dispersed in an aqueous solution of at least 33%, by weight of the total salt and water, of potassium carbonate.

4,883,538

COLORED THERMAL JOINT COMPOUND

Raymond Marlow, Rte. #6 Eastshore Rd., Rockwall, Tex. 75087; William M. Robertson, 209 Northwood, Lewisville, and Edward J. Burke, 1700 Hearthstone, Plano, both of Tex. 75067

Filed Aug. 8, 1988, Ser. No. 231,372

Int. Cl.⁴ C09K *3/00;* **C09C** *1/02*

U.S. Cl. 106—287.13 **5 Claims**

1. A colored thermal joint compound comprising:

a heat conductive compound as carrier comprising silicone oil and a colored chalk as colloidal particles, each particle of the colored chalk having a size and preselected color for forming colloidal particles for the heat conductive compound, said colored chalk being mixed with the heat conductive compound in a quantity sufficient to form a colloidal dispersion suitable for use as a preselected thermal joint compound.

4,883,539

COATED SILICATE PARTICLES

Harri O. Mattila, Ulvila, and Pekka J. Eskelinen, Pori, both of Finland, assignors to Kemira Oy, Finland

Filed Mar. 15, 1988, Ser. No. 168,279

Claims priority, application Finland, Apr. 14, 1987, 871644

Int. Cl.⁴ C04B *14/20*

U.S. Cl. 106—417 **5 Claims**

1. A method for the preparation of coated platey silicate particles, characterized in that there is first prepared a preliminary-stage product of coated silicate particles, made up of a substrate and a coating, the coating on them being either poorly soluble in acids or insoluble in acids, and the particles thus obtained are leached either with a mineral acid, or a mineral acid together with some oxidant and without hydrofluoric acid, whereupon the substrate dissolves selectively so that only the silica skeleton is left.

4,883,540

METALLIC SUBSTRATE HAVING AN ADHERENT PHOTO-PRODUCT COATING ON ITS SURFACE AND A METHOD OF COATING SAID METALLIC SUBSTRATE

Robert M. Etter, and Phillip J. Neumiller, both of Racine, Wis., assignors to S. C. Johnson & Son, Inc., Racine, Wis.

Continuation-in-part of Ser. No. 3,350, Jan. 14, 1987, Pat. No. 4,794,131. This application Feb. 18, 1988, Ser. No. 157,191

The portion of the term of this patent subsequent to Dec. 27, 2005, has been disclaimed.

Int. Cl.⁴ B08B *7/04;* **B32B** *15/04*

U.S. Cl. 134—1 **23 Claims**

3. A metallic substrate having on its surface an adherent photo-product coating, which coating is formed by exposing to light in the presence of an oxygen source, a reactant mixture having a pH from about 7 to 10.5 comprising:

(a) 2,2′,4,4′-tetrahydroxybenzophenone;
(b) at least one metal salt wherein the metal is selected from the group consisting of zinc, copper, nickel, silver, iron, manganese, lead, cobalt, zirconium, mercury, palladium, cadmium, ruthenium, rhodium, and mixtures thereof; and
(c) at least one amine;

in a solvent.

20. A method of cleaning a metallic substrate comprising the steps of:

(A) forming an adherent photo-product coating on the surface of said substrate by:
  (1) preparing a reactant mixture of claim 3;
  (2) contacting said substrate with said reactant mixture; and
  (3) exposing said reactant mixture in contact with said substrate to light in the presence of an oxygen source; and
(B) removing said photo-product coating from the surface of said substrate.

4,883,541

NONCHROMATE DEOXIDIZER FOR ALUMINUM ALLOYS

Maher E. Tadros, Ellicott City, Md., assignor to Martin Marietta Corporation, Bethesda, Md.

Filed Jan. 17, 1989, Ser. No. 297,829

Int. Cl.⁴ B08B *3/08*

U.S. Cl. 134—3 **55 Claims**

45. A process for deoxidizing and desmutting aluminum and aluminum alloy articles which comprises immersing such articles in an aqueous solution consisting essentially of nitric acid and a halate salt selected from the group consisting of alkali metal bromates, chromates, an iodates, for a period of at least 1 second.

4,883,542

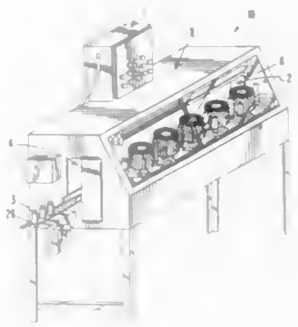
METHOD AND APPARATUS FOR CLEANING CONTAINERS

John Voneiff, 623 South Caroline St., Baltimore, Md. 21231

Filed Dec. 22, 1987, Ser. No. 136,323

Int. Cl.⁴ B08B *1/02*

U.S. Cl. 134—21 **2 Claims**



1. A method for cleaning particulate matter from container bodies comprising:

(a) moving the container bodies through a station;
(b) subjecting said containers to an ionization atmosphere while moving through said station;
(c) wiping particulate matter from said container bodies within said station;
(d) subjecting said wiping element to a vacuum for removing particulate material therefrom;
(e) said step of subjecting said container bodies to an ionization atmosphere including moving ionized air over said containers while moving through said station;
(f) the step of moving ionized air over said container bodies including moving said air during and after said wiping step;
(g) said wiping step including arranging a series of brushes along a linear path, and rotating said brushes about a fixed axis of rotation, and said container bodies being maintained in a path for movement adjacent to said brushes for engagement thereby to wipe a particulate matter therefrom;
(h) said step of subjecting said wiping element to a vacuum including applying the vacuum at a position on a rotating brush remote from a path of movement from said container bodies;
(i) said vacuum being applied along a narrow band substantially the entire width of each brush;
(j) a series of brushes being arranged in a line parallel to the path of said container bodies, and each brush being subjected to an independent vacuum band to remove the particulate matter therefrom;
(k) the step of moving said container bodies through the station including arranging a series of bottles in spaced relationship while in the station such that each bottle

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moves at a fixed rate past the brushes and at a fixed relationship between adjacent bodies;

(l) said step of moving ionized air including passing air over ion bars to ionize the air prior to passing the air over said bottles as they move through the station; and

(m) said ionized bars being located in a position above the path of movement of said bottles and air being moved from a position above the bar such that it flows over the bars to be ionized and then passes over the bottles as they move along the fixed path.

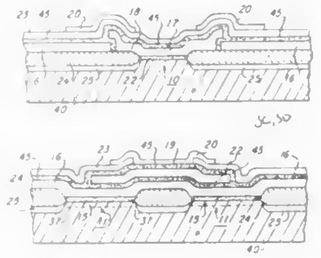
4,883,543
SHIELDING FOR IMPLANT IN MANUFACTURE OF DYNAMIC MEMORY

Richard N. Gossen, Jr., Sugarland; William C. Bruncke, Houston, and Gordon D. Baker, Lubbock, all of Tex., assignors to Texas Instruments Incroporated, Dallas, Tex.

Filed Jun. 5, 1980, Ser. No. 156,533

Int. Cl.^{4} H01L *21/265, 21/28*

U.S. Cl. 437—37 6 Claims



1. A method of making a semiconductor device such as an array of memory cells of the one-transistor type, comprising the step of:

applying conductive areas such as transistor gates and capacitor gates to a face of a semiconductor body separated from the face by a thin dielectric, wherein the body is P-type silicon, and the conductive areas include conductive material which is polycrystalline silicon,

coating said entire face with a thin layer of insulating material which acts as a shield against electrostatic build-up on said conductive areas,

subjecting said face to an ion implant to create heavily doped N+ semiconductor regions in said face, wherein said implant is arsenic,

wherein said step of coating includes thermal oxidation, the thickness of the coating being much greater over said polycrystalline silicon than over exposed single crystal silicon.

4,883,544
PROCESS FOR PREPARATION OF AUSTENITIC STAINLESS STEEL HAVING EXCELLENT SEAWATER RESISTANCE

Masanori Ueda; Masayuki Abe, both of Kitakyushu; Kensai Shitani, Hikari; Tetsuo Yoshimoto; Hiroki Yamamoto, both of Kitakyushu, and Fumio Kurosawa, Kawasaki, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Dec. 9, 1988, Ser. No. 282,110

Claims priority, application Japan, Dec. 12, 1987, 62-314834

Int. Cl.^{4} B22D *25/06*

U.S. Cl. 148—2 17 Claims

1. A process for the preparation of an austenitic stainless steel having an excellent seawater resistance, which comprises pouring a melt of an austenitic stainless steel containing 3 to 13% by weight of Mo in a casting mold and forming a cast piece by continuous casting, wherein the temperature of the melt poured into the casting mold is controlled so that the temperature of the melt is higher by at least 25° C. than the melting point of the alloy, to form a cast piece in which the equiaxed zone ratio in the section of the cast piece is lower than 25%, and then heating treating, hot rolling and annealing the cast piece.

4,883,545
PROCESS FOR MAKING A METALLIC ARTICLE WITH IMPROVED RESISTANCE TO SURFACE CRACKING DURING COLD FORMING

David K. Matlock, Golden; Michael P. Riendeau, Lakewood, both of Colo., and Mark L. Robinson, Wyomissing Hills, Pa., assignors to Colorado School of Mines, Golden, Colo.

Filed Sep. 1, 1988, Ser. No. 239,457

Int. Cl.^{4} C22C *8/06*

U.S. Cl. 148—12 B 10 Claims

1. A process for making a metallic article with improved resistance to surface cracking during cold forming, comprising the steps of:

providing a substantially cylindrical starting metallic form which has been previously worked, with or without thermal treatment;

compressively working said starting form by axisymmetrically reducing the cross-sectional area thereof so as to provide an intermediate form having a strain gradient between the surface and the center of said intermediate form, said compressive working being carried out below the recrystallization temperature of the metallic material, said axisymmetric reduction being carried out in a deformation zone having a deformation zone geometry parameter (Δ) of at least about 8; and then

thermally treating said intermediate form to at least partially recrystallize the metallic material near the surface but with no significant grain growth;

said strain gradient being such that the strain near the surface of said intermediate form is great enough to result in a relatively fine-grained structure near the surface of the thermally treated intermediate form and the strain near the center of said intermediate form is low enough to result in a relatively coarse-grained structure near the center of the thermally treated intermediate form.

4,883,546
PROCESS FOR THE MANUFACTURE OF WOOD FIBER BOARDS

Otto Kunnemeyer, Paschenburg 5, 4934 Horn-Bad Meinberg 1, Fed. Rep. of Germany

Filed Aug. 17, 1987, Ser. No. 86,406

Claims priority, application Fed. Rep. of Germany, Aug. 30, 1986, 3629586

Int. Cl.^{4} B29C *67/02;* **B32B** *31/20, 31/22*

U.S. Cl. 156—62.2 8 Claims

1. A process for the manufacture of wood fiber boards comprising the steps of,

coating wood fibers with adhesive,

forming the same into a fiber web,

covering the wood fiber web on both sides with a layer comprising substantially entirely fine wood dust to a predetermined thickness,

subjecting the web and the layers thereon to heat and pressure to compact the same into a board, and,

removing substantially the entire wood dust layers,

thereby to produce a wood fiber board wherein the wood fibers thereof have not been subjected to any substantial surface removal.

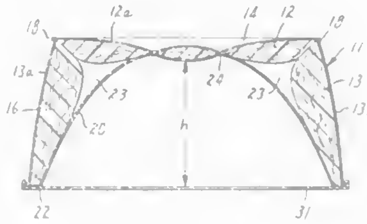
4,883,547
METHOD OF FORMING A HIGH EFFICIENCY RESPIRATOR

Daniel A. Japuntich, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 22,258, Mar. 2, 1987, Pat. No. 4,827,924. This application Mar. 1, 1989, Ser. No. 317,530

Int. Cl.^{4} B32B *31/16*

U.S. Cl. 156—73.4 13 Claims



1. A method for producing a mask blank comprising the steps of:

bonding two sheets of filter material together along a pair of oppositely disposed arches, one of said sheets having a slot lying between said arches;

removing the sheet lying outside of said arches to form a filter blank;

opening said filter blank along said slot so as to form a cup-like filter member having a pair of side wall portions formed from said sheet having a slot and a frontal portion formed from the other sheet which bridges said sidewall portions.

4,883,548
PROCESS FOR PRODUCING LAMINATED OPHTHALMIC LENS

Fumio Onoki, Tokorozawa, Japan, assignor to Hoya Corporation, Tokyo, Japan

Filed Apr. 21, 1988, Ser. No. 184,426

Claims priority, application Japan, Apr. 24, 1987, 62-101486

Int. Cl.^{4} B32B *31/12, 17/06*

U.S. Cl. 156—99 3 Claims

1. A process for producing an ophthalmic lens which is a laminate of a first lens element and a second lens element, which process comprises the sequential steps of:

(I) providing a plurality of first and second lens elements, each of said first and second lens elements having predetermined lens optical values and anterior and posterior surfaces, wherein only said anterior surfaces of said first lens elements and said posterior surfaces of said second lens elements have been surface-treated to form thereon at least one layer selected from a tinted layer, a protective film layer and an anti-reflection film layer, whereby said posterior surfaces of said first lens elements and said anterior surfaces of said second lens elements are untreated;

(II) selecting one of said first lens elements and one of said second lens elements on the basis of an ophthalmic prescription so that said selected first and second lens elements collectively provide a desire dophthalmic correction according to said prescription when said selected first and second lens elements are laminated one to another; and

(III) laminating said selected first and second lens elements one to another by overlaying said untreated posterior surface of said selected first lens element onto said untreated anterior surface of said selected second lens element, and adhesively bonding said untreated posterior and anterior surfaces of said first and second lens elements, respectively, one to another, thereby to form a laminated ophthalmic lens of said desired prescription.

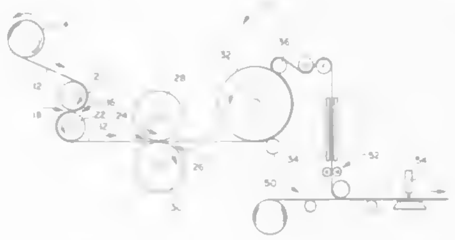
4,883,549
METHOD OF ATTACHING A COMPOSITE ELASTIC MATERIAL TO AN ARTICLE

Johnathan E. Frost, Paris, Tex.; Eric T. Hsu; David M. Jackson, both of Roswell, Ga.; Thomas G. Olsen, Neenah, and Robert L. Popp, Hortonville, both of Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed Dec. 6, 1988, Ser. No. 280,465

Int. Cl.^{4} B32B *31/16*

U.S. Cl. 156—161 20 Claims



1. A method for attaching a composite elastic material to a gatherable article comprising the steps of:

providing a composite elastic material including at least one elastic sheet joined to at least one gatherable layer at least at two locations, said gatherable layer being gathered between said locations;

stretching said composite elastic material so that said gatherable layer is at least partially extended between the locations where the gatherable layer is joined to the elastic sheet;

compressing said stretched composite elastic material to press at least a portion of said gatherable layer against at

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least a portion of said elastic sheet to temporarily inhibit total recovery of said composite elastic material;
attaching said temporarily inhibited composite elastic material to said gatherable article at least at two locations,
wherein said temporarily inhibited composite elastic material is adapted, upon recovery, to gather said gatherable article.

4,883,550
METHOD OF MANUFACTURING FIBER-REINFORCED ARTICLES OR PLASTICS MATERIAL

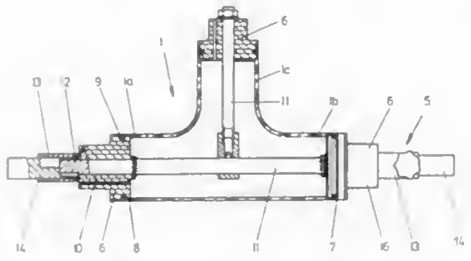
Friedhelm Overath, and Michael Weyer, both of Schaffhausen, Switzerland, assignors to Georg Fischer AG, Schaffhausen, Switzerland

Filed Apr. 26, 1988, Ser. No. 186,150

Claims priority, application Switzerland, Apr. 30, 1987, 01650/87

Int. Cl.⁴ B29C *41/14*

U.S. Cl. 156—171 5 Claims



1. In a method of manufacturing a fiber-reinforced shaped article of plastics material for pipeline systems, the article including an inner casing of injection-molded thermoplastic material, the inner casing having tubular ends, and an outer casing of a fiber winding impregnated with synthetic resin, the method including winding a dry glass fiber fabric tape in accordance with a given program onto the inner casing, the tape being wound onto the inner casing so that at least the entire surface thereof is covered, immersing the article formed of the inner casing and the tape wound thereon into a resin bath while a negative pressure is maintained, the resin bath containing an ultraviolet light-setting resin, subsequently subjecting the resin bath to atmospheric pressure, the improvement comprising inserting a bushing in each tubular end, prior to winding the tape onto the inner casing, mounting the bushings on a support mandrel, closing the tubular ends by means of cover caps after the tape has been wound on the inner casing, wherein at least one of the cover caps includes a venting hose, such that the interior of the article is connected to the ambient pressure acting on the resin bath, removing the impregnated article from the resin bath and hardening the resin by means of ultraviolet light while the article is simultaneously rotated.

4,883,551
MANUFACTURE OF FLEXIBLE SHEET MATERIAL

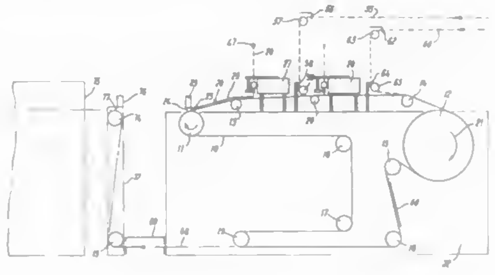
Arthur Britton, High Eldwick, nr Bingley, England, assignor to Courtaulds PLC, London, England

Continuation of Ser. No. 699,850, Feb. 8, 1985, abandoned. This application May 26, 1987, Ser. No. 54,057

Claims priority, application United Kingdom, Feb. 10, 1984, 8403622

Int. Cl.⁴ B32B *5/08, 5/02*

U.S. Cl. 156—178 14 Claims



1. A method of manufacturing reinforced sheet material for conveying purposes by incorporating strands in a binding material, said method comprising the steps of: providing a supply of a settable bonding material comprising a natural or synthetic resin in a flowable paste-like condition above a moving supporting surface, causing material from the supply to flow onto the supporting surface so as to form a coherent layer of bonding material on the surface, which layer is such that it will flow well enough to allow entry into it of the strands and will have sufficient material to encompass the strands completely; laying strands so that they traverse the layer of bonding material; driving the strands into the layer of bonding material before the material sets so that the bonding material surrounds the strands; and treating the bonding material to form it into a solid, flexible sheet material having the strands embedded therein.

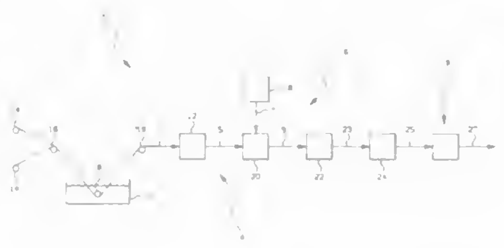
4,883,552
PULTRUSION PROCESS AND APPARATUS

James E. O'Connor; William H. Beever; Jeffrey W. Dancer; William B. Beaulleu; Larry M. Selby, and Virgil H. Rhodes, Jr., all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Dec. 6, 1986, Ser. No. 938,689

Int. Cl.⁴ D04H *3/08*

U.S. Cl. 156—180 22 Claims



1. A continuous process for consolidating and shaping a plurality of preformed continuous prepreg-type structures into a unitary formed product structure, each such prepreg-type structure comprising long reinforcing fibers in a solidified thermoplastic resin matrix, said process comprising the steps of continuously and sequentially

(a) positioning the respective members of said plurality of prepreg-type structures together in a predetermined interfacially overlapping relationship relative to one another along their respective lengths,
(b) passing the resulting so positioned plurality of structures through at least one heated die zone, each such zone being adapted both to heat said plurality of structures to a temperature that is above the fusion bonding temperature for said themoplastic resin matrix and to pressure said plurality of structures selectively whereby said plurality of structures is conformed by said passing into said unitary formed structure having a predetermined consolidated cross-sectional configuration, and
(c) cooling said so formed structure while retaining the form thereof.

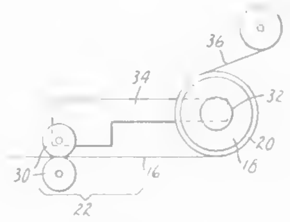
4,883,553
PAD FORMING METHOD

John R. David, White Bear Lake Township, Ramsey County, and Daniel P. Pohl, Grant Township, Washington County, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 10,213, Feb. 3, 1987, Pat. No. 4,842,919. This application Nov. 22, 1988, Ser. No. 274,988

Int. Cl.⁴ B65H *81/00*

U.S. Cl. 156—193 5 Claims



1. A method form forming pads of pressure sensitive adhesive coated sheets with a similar discontinuity on each sheet substantially aligned with the discontinuity on adjacent sheets in the pad, said method comprising the steps of:

helically winding a strip of pressure sensitive adhesive coated material around the periphery of a roller to form a roll comprising a multiplicity of overlying layers of the strip by rotating the roller about its axis to pull the strip along a predetermined path onto the roller;
forming discontinuities on the strip along the predetermined path at locations that are progressively increasingly spaced apart to compensate for the increasing circumference of the roll and which result in the location of at least one set of discontinuities along the periphery of the roller in substantial alignment radially outwardly of the roller; and
cutting at least one pad containing at least one set of aligned discontinuities from the roll.

4,883,554
PLAQUE AND METHOD OF MAKING SAME

Sam Bida, 2160 Crawford St., Ely, Nev. 89301

Filed Sep. 23, 1987, Ser. No. 100,356

Int. Cl.⁴ B32B *31/00*

U.S. Cl. 156—219 16 Claims

6. The method of making a plaque comprising, providing a thin sheet of metal foil having an upper viewing surface, applying a layer of fixative to said viewing surface, inserting said sheet of metal foil about the curved platen of a conventional typewriter, typing information onto said sheet by conventional typing strokes to form indentations into said viewing surface ad deposit material a high degree of visibility in the bottom of said indentations so that information may be readily perceived by the human eye, removing said sheet of metal foil from the platen of said typewriter, applying a further layer of fixative to said indented viewing surface, mounting said indented sheet on a base, and providing a layer of transparent protective material over the viewing surface of said sheet to permanently preserve the information while enabling an observer to read information through said protective layer.

4,883,555
METHOD FOR FORMING FOAM BRACED PACKAGING

Christina M. Turngren, 339 Chestnut St., St. Paul, Minn. 55102

Filed Aug. 11, 1987, Ser. No. 84,425

Int. Cl.⁴ B32B *31/18*

U.S. Cl. 156—227 14 Claims

1. Apparatus for forming custom-sized foam braced packaging, comprising:

(a) means for forming foam into a rail of desired cross-sectional and length dimensions;
(b) means for shaping said foam rail into a multi-sided foam frame in which remote ends of said rail are joined;

(c) means for cutting reinforced packaging material to a length and width corresponding to the foam frame; and
(d) means for adhering said packaging material to said frame.

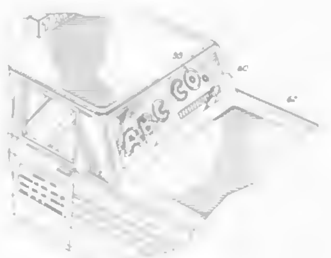
4,883,556
METHOD FOR APPLYING INFORMATION TO A TRANSPARENT SURFACE

Edward J. Leavitt, Sr., 823 Fontana, Richardson, Tex. 75080, and Edward J. Leavitt, Jr., 535 E. Charleston, Phoenix, Ariz. 85022

Filed Apr. 21, 1986, Ser. No. 854,405

Int. Cl.⁴ B32B *31/28*

U.S. Cl. 156—273.3 3 Claims



1. A method of applying informational images to a surface such as a vehicle window comprising:

(a) providing a perforated polymeric substrate of predetermined size;
(b) coating a surface of said perforated polymeric substrate with a photo coat emulsion;
(c) applying a mask to the coated polymeric substrate in selected areas to define image-bearing areas corresponding to the areas of the substrate immediately beneath said mask;
(d) exposing the polymeric substrate to light;
(e) removing the mask from the substrate;
(f) washing the polymeric substrate to remove the emulsion from the image areas;
(g) silkscreening at least predetermined portions of said image areas to impart images thereon; and
(h) adhesively securing the substrate to said window.

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4,883,557

METHOD FOR LINING PIPE LINES WITH A PRESSURIZED GAS

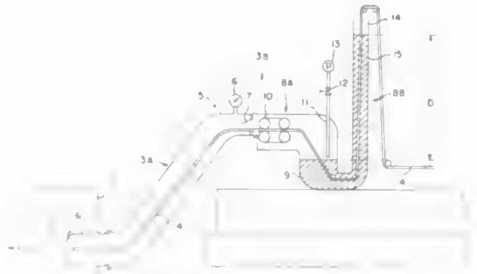
Akio Morinaga, Fujisawa; Isaburo Yagi, Amagasaki; Hideo Maruyama, Osaka, and Akifumi Yamamoto, Takatsuki, all of Japan, assignors to Tokyo Gas Co., Ltd., Tokyo and Asbimori Industry Co., Ltd., Osaka, both of, Japan

Filed Aug. 26, 1988, Ser. No. 236,995

Claims priority, application Japan, Aug. 26, 1987, 62-212464

Int. Cl.⁴ B29C *63/36*

U.S. Cl. 156—287 3 Claims



1. A method for lining pipe lines which comprises inserting a flexible tubular lining material provided on the inner surface thereof with a binder and on the outer surface thereof with an air-impervious coating into a pipe line through an induction pipe, with the front end of the lining material being fixed annularly to one end of the pipe line to form a turning point of evagination, and allowing the tubular lining material to advance within the pipe line while moving the turning point of evagination forwards from one end to the other end of the pipe line to turn the tubular lining material inside out under fluid pressure thereby applying the evaginated tubular lining material onto the inner surface of the pipe line over its full length with the binder on the exterior surface of the evaginated tubular lining material being interposed between the pipe line and the tubular lining material, characterized in that a portion of the tubular lining material positioned in rear of the pipe line is passed through open air and then through an elevated tower filled with a liquid and then through a confined space, the liquid isolating the confined space from the open air, and a pressurized gas is introduced into the confined space to produce the pressure for moving the turning point of evagination forwards.

4,883,558

METHOD AND APPARATUS FOR BONDING PAIRS OF MOLD SHELLS INTO MOLDS

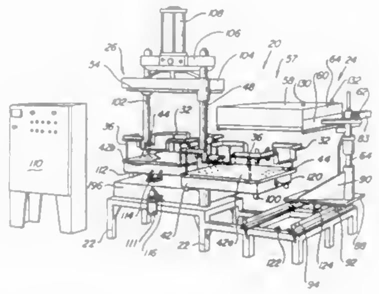
Kenneth E. Bellis, Rochester; Jackson E. Brown, Mt. Clemens; Pheroze J. Nagarwalla, Rochester Hills, all of Mich.; William Niedermeyer, Willowick, and Paul Pawlak, Mentor, both of Ohio, assignors to Roberts Corporation, Lansing, Mich.

Filed Sep. 23, 1988, Ser. No. 248,513

Int. Cl.⁴ B32B *31/00*

U.S. Cl. 156—292 24 Claims

1. Apparatus for bonding a pair of mold shells (**28***a*, **28***b*) into a mold, characterized by:
- a base (**42**) upon which one of said mold shells (**28***b*) can be supported;
- a frame (**22**);
- means (**46, 48**) for pivotally mounting said base (**42**) on said frame (**22**) whereby said mold shells (**28***a*, **28***b*) may be pivoted about an axis between first and second workstations (**24, 26**);
- means (**57**) at said first workstation (**24**) for applying an adhesive to said one mold shell (**28***b*), said adhesive applying means (**58**) including
  - (1) an adhesive applicator (**58**) including a supply (**73**) of said adhesive for dispensing said adhesive from said supply thereof onto said one mold shell (**28***b*), and
  - (2) means (**62, 62, 90, 88, 92, 94**) for mounting said applicator (**58**) for shifting movement between a standby position spaced from said first workstation (**24**) to allow said mold shells to be placed onto said base (**42**), and an operative position at said first workstation (**24**) disposed over said one mold shell (**28***b*) on said base (**42**),



  - (3) controllable motor means (**96**) coupled with said applicator (**58**) for shifting said applicator (**58**) between said standby position and said operative position;
- control means (**110**) for controlling the operation of said motor means (**76**); and
- means (**54, 104, 108**) at said second workstation (**26**) for pressing said mold shells (**28***a*, **28***b*) together after said base (**42**) is pivoted from said first workstation (**24**) to said second workstation (**26**).

4,883,559

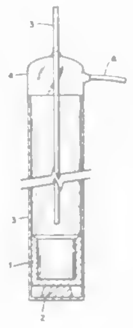
PROCESS FOR MAKING TRANSITION METAL NITRIDE WHISKERS

Carlos E. Bamberger, Oak Ridge, Tenn., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Apr. 12, 1988, Ser. No. 180,753

Int. Cl.⁴ C01B *21/06, 21/076;* **C30B** *1/10*

U.S. Cl. 156—603 4 Claims



1. A process for making transition metal nitride whiskers comprising;
- contacting a cyanide salt with a first compound selected from the group transition metal nitrides, transition metal oxides and a second compound selected from the group free alkali metal oxides and alkali metal oxides that are associated with anions that are not strong oxidants which would interfere with the reducing properties of the cyanide to form a mixture;
- heating said mixture to a temperature of about 1000° C. for not less than 15 hours in an inert atmosphere.

3. A process for making transition metal nitride whiskers comprising;
- contacting a cyanide salt with an alkali metal metallate to form a mixture;
- heating said mixture to a temperature of about 1000° C. for not less than 15 hours in an inert atmosphere.

4,883,560

PLASMA TREATING APPARATUS FOR GAS TEMPERATURE MEASURING METHOD

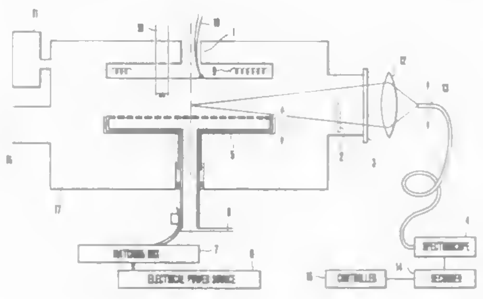
Shin-ichiro Ishihara, Takatsuki, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Feb. 13, 1989, Ser. No. 309,292

Claims priority, application Japan, Feb. 18, 1988, 63-35707

Int. Cl.⁴ B44C *1/22;* **B05D** *3/06;* **C23C** *16/00, 14/00*

U.S. Cl. 156—626 6 Claims



2. A plasma temperature measuring method, comprising steps of
- calculating a theoretical nitrogen plasma emission intensity at various gas temperatures,
- measuring an actual nitrogen plasma emission intensity in a plasma treating room,
- comparing said measured emission intensity with said calculated emission intensity at a peak spectrum in a range from 400 nm to 406 nm among dissociated emission spectra of nitrogen molecules,
- distinguishing, through said comparison, a temperature rise of nitrogen gas caused by said electric power source for generating plasma from a temperature rise caused by heated bodies such as a substrate, a substrate holder and the like or by local heat sources or abnormal electric discharges.

4,883,561

LIFT-OFF AND SUBSEQUENT BONDING OF EPITAXIAL FILMS

Thomas J. Gmitter, Lakewood, and Eli Yablonovitch, Middletown Township, Monmouth County, both of N.J., assignors to Bell Communications Research, Inc., Livingston, N.J.

Continuation-in-part of Ser. No. 174,852, Mar. 29, 1988, Pat. No. 4,846,931. This application Dec. 5, 1988, Ser. No. 279,217

Int. Cl.⁴ H01L *21/306;* **B44C** *1/22;* **C03C** *15/00, 25/06*

U.S. Cl. 156—633 19 Claims

1. A process for selectively freeing an epitaxial film from a single crystal substrate upon which it was grown, said method comprising the steps of
- selectively etching away a thin release layer positioned between said film and said substrate and causing edges of said film to curl upwardly as said release layer is etched away to enhance the outdiffusion of reaction products of the etching step from an active etching area,
- adhering said film to a second substrate, and depositing at least one semiconductor layer on said film adhered to said substrate.

4,883,562

METHOD OF MAKING A PHOTOSENSOR

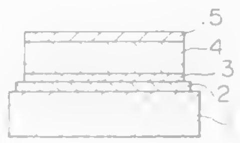
Hirofumi Ogawa; Kenji Sameshima, both of Hachioji; Tadaaki Hirai, Koganei; Takaaki Unnai; Masanao Yamamoto, both of Mobara; Keiichi Shidara, Tama; Junichi Yamazaki, Kawasaki; Eikiyu Hiruma, Komae, and Shirou Suzuki, Yokosuka, all of Japan, assignors to Hitachi, Ltd. and Nippon Hoso Kyokai, both of Tokyo, Japan

Filed Jan. 26, 1989, Ser. No. 301,467

Claims priority, application Japan, Jan. 28, 1988, 63-15940

Int. Cl.⁴ B44C *1/22;* **C03C** *15/00, 25/06*

U.S. Cl. 156—643 12 Claims



1. A method of making a photosensor, comprising the steps of:
- ion etching away a predetermined surface of a substrate;
- forming an electrode on the etched-away surface of the substrate; and
- forming on the electrode a photoconductive layer mainly made of an amorphous semiconductor such that the photoconductive layer is put in rectifying contact with the electrode.

4,883,563

METHOD OF MANUFACTURING A THIN GLASS MEMBRANE

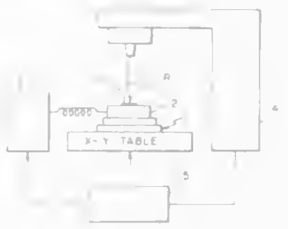
Haruo Kotani; Katsuhiko Tomita; Takaaki Yada, and Tsuyoshi Nakanishi, all of Miyanohigashi, Japan, assignors to Horiba, Ltd., Tokyo, Japan

Division of Ser. No. 124,567, Nov. 24, 1987, Pat. No. 4,816,132. This application Oct. 28, 1988, Ser. No. 264,143

Claims priority, application Japan, Nov. 27, 1986, 61-283802; Nov. 28, 1986, 61-285371

Int. Cl.⁴ B44C *1/22;* **C03C** *15/00, 25/06*

U.S. Cl. 156—645 23 Claims



1. A method of manufacturing a thin pH-responsive glass membrane, comprising the steps of:
- providing a glass ingot;
- cutting the glass ingot to form a glass sheet of approximately a predetermined thickness;

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adjusting the thickness of the glass sheet, if necessary, to the predetermined thickness;
heating the glass sheet to a temperature below its melting point;
applying additional heat energy to the heated glass sheet of an amount to uniformly melt only its surface, and
solidifying the melted surface to form the pH-responsive glass membrane.

4,883,564
CREPING DEVICE ADHESIVE FORMULATION

Patrick P. Chen, Sewell, N.J.; Taiwoo Chiu, Springfield, and J. Richard Skerrett, Bala Cynwyd, both of Pa., assignors to Scott Paper Company, Philadelphia, Pa.

Filed Jun. 1, 1988, Ser. No. 201,496
Int. Cl.⁴ D21H *5/24*

U.S. Cl. 162—112 3 Claims

1. In a process of treating a paper web by applying an adhesive composition to a creping surface and creping the web from said surface, the improvement which consists of employing an adhesive composition comprising a water soluble binder and a phosphate salt present in an amount from 1–15% by weight of the solids content of the adhesive.

4,883,565
PROCESS FOR ELECTROPHORETIC WHITE AND COLORED ENAMELLING

Bruno Hees, Langenfeld, and Hans Hoffmann, Leichlingen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Feb. 24, 1988, Ser. No. 159,909

Claims priority, application Fed. Rep. of Germany, Mar. 7, 1987, 3707401

Int. Cl.⁴ B05D *3/02*

U.S. Cl. 204—180.2 4 Claims

1. In an improved method for the electrophoretic application of enamel in white or colors to sheet steel by a two layer/-single stoving process, the improvement comprises the first of the two layers consisting essentially of an enamel which has the following properties:

(a) a coefficient of expansion below 165×10^{-7}/K at 0° to 100° C.,
(b) a surface tension higher than 300 mN/m,
(c) a transformation temperature of from 480° to 520° C.,
(d) a yield value of 15 to 30 and
(e) high viscosity.

4,883,566
ELECTRODE ASSEMBLY FOR IN-SITU MEASUREMENT OF ELECTROLYTIC CONDUCTIVITY OF BOILER WATER

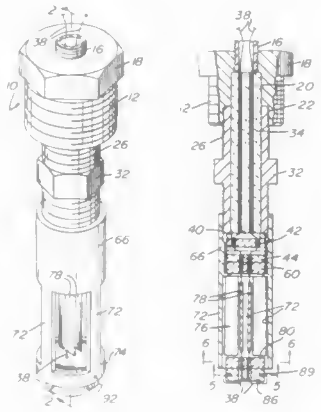
John A. Muccitelli, Feasterville, and Nancy A. Feldman, Trevose, both of Pa., assignors to Betz Laboratories, Inc., Trevose, Pa.

Filed Jun. 7, 1988, Ser. No. 203,779
Int. Cl.⁴ G01N *27/02, 27/26*

U.S. Cl. 204—1 T 18 Claims

1. An electrode assembly for in situ measurement of physical constants of boiler water at elevated temperature and/or pressure and under variable boiler operating conditions wherein pH can vary between 7 and at least **11**, said electrode assembly comprising electrodes supported by stabilized zirconia and wherein electrical current generated by said electrodes in contact with the boiler water is conducted by conductive leads supported by said stabilized zirconia, said zirconia being stabilized with about 6% calcia and 3% hafnia or about 1 to 3% magnesia and 1 to 2% hafnia.

10. A method of insulating and using an electrode assembly for performing in situ measurement of physical constants of boiler water at elevated temperature and/or pressure, at variable boiler operating conditions wherein pH can vary between 7 and at least **11**, said method comprising protecting and supporting electrodes of the assembly with stabilized zirconia, the electrodes of the assembly in said boiler water, transmitting electrical current generated by said electrodes by conductive leads supported by said stabilized zirconia, with said zirconia being stabilized with about 6% calcia and 3% hafnia or about 1 to 3% magnesia and 1 to 2% hafnia, and determining a value by reading the generated eletrical current passing through said electrodes.

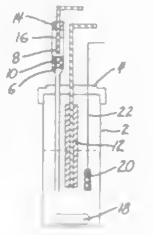


4,883,567
METHOD OF PLATING METALLO-GALLIUM FILMS

Mark W. Verbrugge, Troy, and Michael K. Carpenter, Warren, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Aug. 26, 1988, Ser. No. 236,871
Int. Cl.⁴ C25D *3/66*

U.S. Cl. 204—39 6 Claims



1. A method for the electrocodeposition of a substantially uncontaminated microcrystalline film having substantially equal atomic portions of gallium and a metal selected from the group consisting of arsenic, aluminum and antimony comprising the steps of:

immersing a conductive substrate opposite a counterelectrode in an organochlorogallate melt consisting essentially of a salt of said metal and a $GaCl_3$-dialkylimidazolium chloride wherein (1) the alkyl groups comprise no more than four carbons, (2) the molar ratio of the dialkylimidazolium chloride to the $GaCl_3$ is at least 1 but less than about 20, and (3) the molar ratio of the metal salt to the $GaCl_3$ is less than 0.5;
and cathodizing said substrate at a potential selected to codeposit said gallium and metal at substantially equal rates onto said substrate.

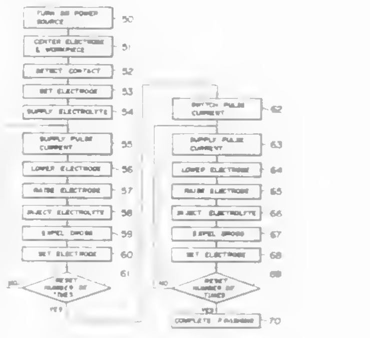
4,883,568
FINISHING METHOD EMPLOYING ELECTRO-CHEMICAL PROCESS

Yohei Kuwabara, Fukuroi, and Teruo Asaoka, Kakegawa, both of Japan, assignors to Shizuoka Seiki Co., Ltd., Shizuoka, Japan

Filed Dec. 16, 1988, Ser. No. 285,853

Claims priority, application Japan, Feb. 13, 1988, 63-31499
Int. Cl.⁴ B23H *3/00*

U.S. Cl. 204—129.43 1 Claim



1. A finishing method employing electro-chemical process, comprising the steps of: supplying identical electrical pulses between an electrode and a workpiece disposed opposite to each other in a stationary electrolyte with a predetermined gap therebetween; reducing said gap after said pulses have been supplied; thereafter enlarging said gap; and injecting electrolyte into said gap at least during said step of enlarging said gap.

4,883,569
METHOD FOR THE PREPARATION OF A CYCLOALKYL SILANE COMPOUND

Mikio Endo; Minoru Takamizawa; Toshinobu Ishihara; Tohru Kubota, all of Niigata, and Toshio Shinohara, Gunma, all of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Feb. 11, 1988, Ser. No. 154,691

Claims priority, application Japan, Feb. 13, 1987, 62-30994
Int. Cl.⁴ B01J *19/2*

U.S. Cl. 204—157.74 9 Claims

1. A method for the preparation of a cycloalkyl silane compound which comprises:

(A) admixing an unsaturated cyclic hydrocarbon compound represented by the general formula

$$C_mR^1_nA_p,$$

in which R^1 is a hydrogen atom, a fluorine atom or a fluorine-substituted or unsubstituted monovalent hydrocarbon group having 1 to 8 carbon atoms, A is a divalent intramolecular bridging group selected from methylene group $>CH_2$ and dimethylmethylene group $>C(CH_3)_2$, m is an integer of 4 to 8, p is zero or 1 and n is an integer given by $n=2m-2p-2$, with a hydrogen silane compound represented by the general formula

$$HR^2_qSiX_{3-q},$$

in which R^2 is an unsubstituted or substituted monovalent hydrocarbon group, X is a halogen atom or an alkoxy group and q is zero, 1 or 2, and a platinum catalyst prepared by heating chloroplatinic acid in an alcohol, to form a reaction mixture; and

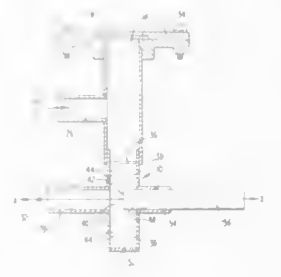
(B) irradiating the reaction mixture with light to effect the hydrosilylation reaction between the unsaturated cyclic hydrocarbon compound and the hydrogen silane compound.

4,883,570
APPARATUS AND METHOD FOR ENHANCED CHEMICAL PROCESSING IN HIGH PRESSURE AND ATMOSPHERIC PLASMAS PRODUCED BY HIGH FREQUENCY ELECTROMAGNETIC WAVES

Philip C. Efthimion, Bedminister, and Dennis J. Helfritch, Flemington, both of N.J., assignors to Research-Cottrell, Inc., Somerville, N.J.

Filed Jun. 8, 1987, Ser. No. 60,048
Int. Cl.⁴ H01J *7/46, 19/80, 19/12*

U.S. Cl. 204—164 63 Claims



1. An apparatus which creates a plasma for chemical processing of gaseous fluid comprising:

(a) an electro-magnetic resonator cavity having first and second conductive walls and a resonant frequency;
(b) an electro-magnetic energy source which produces electro-magnetic energy having a frequency corresponding to said resonant frequency and a power level sufficient for breaking down said gaseous fluid and creating a plasma within said electro-magnetic resonator cavity;
(c) an electro-magnetic wave guiding structure connecting said electro-magnetic energy source to the first wall of said electro-magnetic cavity, the first wall having an aperture therein and the wave guiding structure coupling said electro-magnetic energy into an interior of said electro-magnetic cavity through said aperture;
(d) the wave guiding structure having an intake port for introducing said gaseous fluid into said wave guiding structure;
(e) the second wall of the resonator cavity having an exhaust port for discharging processed gaseous fluid in the form of a plasma from said cavity; and
(f) plasma confinement means for causing said gaseous fluid to flow into said electro-magnetic resonator cavity through said aperture along with the electro-magnetic energy for confining and stabilizing said plasma within said electro-magnetic resonator cavity.

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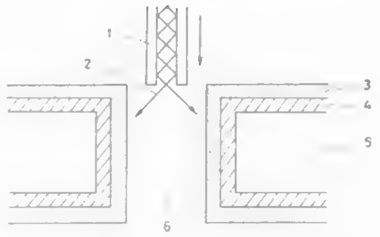
4,883,571
PROCESS FOR PREPARING A PRINTED-CIRCUIT BOARD

Toshio Kondo, and Yoshimasa Kinaga, both of Hiratsuka, Japan, assignors to Kansai Paint Co., Ltd., Amagasaki, Japan
Filed Jan. 25, 1988, Ser. No. 147,894
Claims priority, application Japan, Jan. 26, 1987, 62-15602
Int. Cl.⁴ H05K *3/06;* C25D *15/00*
U.S. Cl. 204—180.6 8 Claims



1. Improved process for preparing a printed-circuit board, which process comprises the steps of:
- (a) subjecting a copper-plated, laminated, insulative plate for use in a printed circuit and having through-holes to electrodesposition coating in a photo-curable electrodeposition coating composition bath to form a resist film on the surface of a copper foil of the copper-plated, laminated, insulative plate;
- (b) lapping a wiring pattern mask on the resist film so that a through-hole wall area can form an exposed area;
- (c) exposing the resist film to ultraviolet light through the lapped wiring pattern mask;
- (d) removing the wiring pattern mask to from the resist film;
- (e) removing the resist film not exposed under the wiring pattern mask to form an etching resist pattern film on the plate;
- (f) etching away the exposed copper foil; and
- (g) removing the etching resist pattern film, the improvement comprising, after the step of (d) removing the wiring pattern mask from the resist film, exposing the resist film in the through-hole wall area to ultraviolet light through an optical fiber having a shape capable of passing through the through-hole, the ultraviolet light emitted from an emitter of the optical fiber being irradiated onto the resist film in the though-hole wall area as the emitter of the optical fiber passes through the through-hole reciprocally throughout the through-hole.

4,883,572
CONTROLLED FILM BUILD EPOXY COATINGS APPLIED BY CATHODIC ELECTRODEPOSITION

Nancy A. Rao, and Richard A. Hickner, both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.
Filed Jul. 2, 1987, Ser. No. 69,475
Int. Cl.⁴ C25D *13/06*
U.S. Cl. 204—181 F 8 Claims

1. In a process of coating a cationic, epoxy resin-based composition onto an object having an electroconductive surface by steps comprising immersing the electroconductive object into a coating bath comprising an aqueous dispersion of cationic particles of the epoxy-based composition, passing an electric current through said bath sufficient to electrodeposit a coating of said composition on the object by providing a difference of electrical potential between the object and an electrode that is (a) spaced apart from said object (b) in electrical contact with said bath and (c) electrically positive in relation to said object; the improvement which comprises using as the cationic resin composition a composition comprising a blend of (I) a cationic, epoxy-based resin containing a diglycidylether of an aliphatic diol which diol is essentially free of ether oxygen atoms which epoxy-based resin has been advanced with a diphenol and (II) a different cationic epoxy-based resin, said blend containing from about 10 to about 90 percent of (I) and from about 90 to about 10 percent of (II) based on the total weight of cationic resin and having a charge density of from about 0.2 to about 0.6 milliequivalent of cationic charge per gram of resin.

4,883,573
REMOVAL OF ACID FROM CATHODIC ELECTROCOATING BATHS BY ELECTRODIALYSIS

Hartwig Voss, Frankenthal, and Thomas Bruecken, Dortmund, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany
Filed Dec. 9, 1987, Ser. No. 130,570
Int. Cl.⁴ B01D *13/02*
U.S. Cl. 204—182.4 6 Claims

1. A process for removing acid from a cathodic electrocoating bath in which an electroconductive substrate is coated with a cationic resin present in the form of an aqueous dispersion, by separation of the dispersion by ultrafiltration into a resin dispersion and an ultrafiltrate and further treatment of the ultrafiltrate comprising the steps of

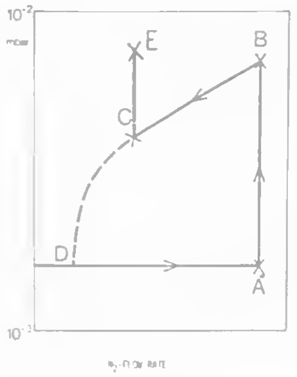
passing the ultrafiltrate through the chambers K_1 of an electrodialysis cell Z_C comprising the characteristic sequence

$$—(K_3—M_1—K_1—M_1—K_2—M_2)_n—,$$

where M_1 is an anion exchange membrane and M_2 is a cation exchange membrane, and passing an aqueous base through the chambers K_2 and water or an electrolyte, preferably the acid to be separated off, a salt of this acid or a mixture thereof, through the chambers K_3, and performing the electrodialysis using current densities of up to 100 mA/cm^2, the electric field required for this purpose being applied by means of two electrodes at the ends of the electrodialysis cell Z_C.

4,883,574
METHOD FOR APPLYING COATINGS TO OBJECTS BY MEANS OF MAGNETIC FIELD SUPPORTED REACTIVE CATHODE SPUTTERING

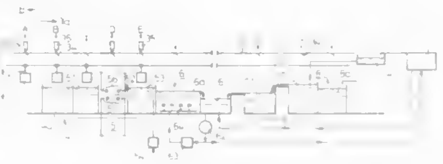
Carlos A. S. P. dos Santos Pereina Ribeiro, Albstadt, Fed. Rep. of Germany, assignor to hartec Gesellschaft fur Hartstoffe und Dunnschichttechnik mbH & Co. KG, Stetten an kalten Markt, Fed. Rep. of Germany
Filed Aug. 1, 1988, Ser. No. 226,731
Claims priority, application Fed. Rep. of Germany, Aug. 11, 1987, 3726731
Int. Cl.⁴ C23C *14/34*
U.S. Cl. 204—192.15 14 Claims



1. Method for applying coatings to objects by means of magnetic field supported cathode sputtering in a vacuum, wherein in order to maintain the glow discharge necessary for the sputtering of the target material, the method includes the steps wherein an inert gas is continuously fed into the coating chamber and, with the aid of a vacuum pump, is continuously pumped out of the coating chamber in such a way that a constant inert gas partial pressure is maintained in the coating chamber, and the step wherein at least one reactive gas is fed into the coating chamber, which forms a compound with the sputtered metallic target material, with which the workpieces are coated, characterized in that the total quantity of reactive gas continuously fed into the coating chamber is so chosen that the reactive gas component of the metal-reactive gas compound of the coating is in sub-stoichiometric relationship and there is no build up of reactive gas partial pressure, and that the step of feeding reactive gas into the coating chamber conducts the reactive gas flow directly into the space between the sputtering cathode and the workpieces to be coated, by-passing the sputtering cathode.

4,883,575
APPARATUS FOR CONTINUOUSLY PRODUCING A BASE FOR A PRINTED CIRCUIT BOARD

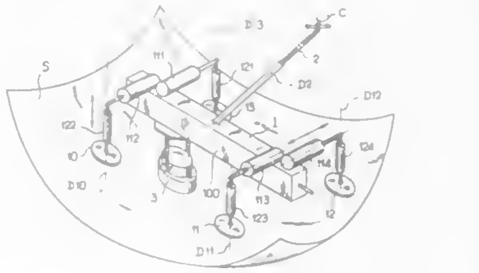
Hiroshi Yasuno; Fumio Sakatani, both of Ichihara, and Takeshi Kanda, Ayase, all of Japan, assignors to UBE Industries Ltd., Yamaguchi and Meiko Electronics Company, Ltd., Kanagawa, both of, Japan
Filed Jun. 2, 1988, Ser. No. 201,912
Claims priority, application Japan, Jun. 5, 1987, 62-141142
Int. Cl.⁴ C25D *17/00*
U.S. Cl. 204—198 22 Claims



1. An apparatus for continuously producing a base for a printed circuit board comprising:
- (A) a degreasing zone for degreasing at least one base for a printed circuit board, comprising at least one vessel containing a degreasing liquid;
- (B) a water pre-washing zone for pre-washing said degreased base with water, comprising at least one water pre-washing vessel located downstream from the degreasing zone;
- (C) an electrodeposition coating zone for treating said prewashed base with an electrodepositing liquid, comprising at least one vessel containing the electrodepositing liquid and located downstream from the water pre-washing zone;
- (D) a zone for recovering electrodepositing liquid remaining on said electrodeposition coated base, comprising at least one filtrate vessel connected to an ultrafiltration device and to the electrodeposition coating zone to form a closed channel and located downstream from the electrodeposition coating zone;
- (E) a water post-washing zone for washing said base delivered from the recovering zone, comprising at least one water post-washing vessel located downstream from the recovering zone; and
- (F) a transporting device for intermittently transporting said base successively through the degreasing, water prewashing, electrodeposition coating, filtrate and water post-washing vessels, which transporting device is provided with means for conveying said base to a predetermined position above one of said vessels, stopping said base at said predetermined position, introducing said base into said one of said vessels, keeping said base in said vessel for a predetermined time and withdrawing said base from said vessel.

4,883,576
APPARATUS FOR SURVEY AND/OR TREATMENT OF A SMOOTH, CURVED SURFACE

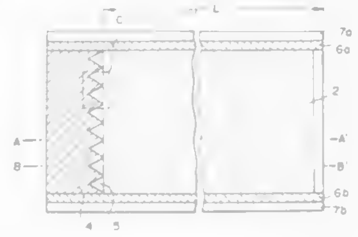
Antoine Gemma, Meudon, France, assignor to Electricite De France (Service National), Paris, France
Filed Nov. 30, 1987, Ser. No. 126,859
Claims priority, application France, Dec. 1, 1986, 86 16725
Int. Cl.⁴ C25D *17/00;* C25F *7/00;* B60T *7/16;* B60S *9/02*
U.S. Cl. 204—224 M 18 Claims



1. Apparatus for survey and/or treatment of a smooth curved surface, said apparatus comprising:
- a vehicle able to be moved on said surface along a predetermined path,
- a body of said vehicle,
- means provided in said vehicle for abutment onto said surface, which means are movable with respect to said body of said vehicle,
- a support arm for said vehicle and fixed thereto at one of its ends, said arm being at its other end rotatably pivotable in the vicinity of a centre of curvature of said curved surface, axes of said abutment means and of said support arm being able to be oriented substantially concurrent in the vicinity of said centre of curvature of said curved surface,
- means for survey and/or treatment of said curved surface fixed to said vehicle,
- means for control and driving of said vehicle and of said means for survey and/or treatment.

4,883,577
ELECTROPHORESIS DEVICE WITH SHARK-TOOTHED COMB HAVING A THICKNESS DETERMINED BY THE THICKNESS OF THE GEL

Naohiko Sugimoto, and Akira Fujita, both of Saitama, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Mar. 28, 1988, Ser. No. 174,467
Claims priority, application Japan, Mar. 30, 1987, 62-76591; May 12, 1987, 62-114959
Int. Cl.⁴ G01N *27/28*
U.S. Cl. 204—299 R 4 Claims



1. An electrophoresis device, comprising:
- a pair of electrically-insulated, flexible, water-impervious sheets disposed in an opposing relationship to one another;
- spacers disposed between said sheets for separating said sheets, said spacers having a predetermined thickness;
- gel membrane disposed between said sheets adapted to function as an electrophoresis medium;
- a combo disposed adjacent an end of said gel membrane, said

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comb having a plurality of saw-like protrusions abutting said end of said gel membrane so as to define a plurality of sample-pouring apertures, each of said apertures having a substantially triangular space formed by said end of said gel membrane and adjacent end faces of said saw-like protrusions, wherein the thickness of said shark's teeth comb d and the thickness of said gel membrane G satisfy the following equation:

$$G \times 1.1 < d < G+50$$

in which the units are in micrometers.

4,883,578
ELECTRO-COATING APPARATUS AND METHOD

Frederick W. Jowitt; Robert H. Harrison, and Adrian C. Noke, all of Oxfordshire, United Kingdom, assignors to Metal Box plc, Reading, England

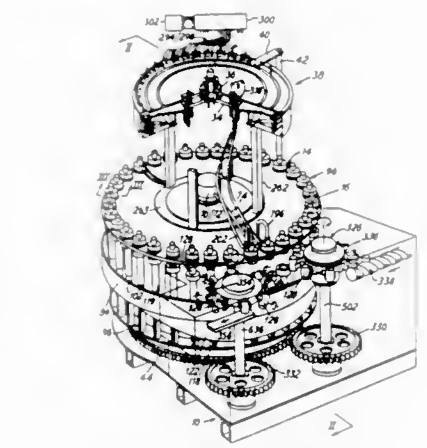
PCT No. PCT/GB87/00455, § 371 Date May 6, 1988, § 102(e) Date May 6, 1988, PCT Pub. No. WO88/00256, PCT Pub. Date Jan. 14, 1988

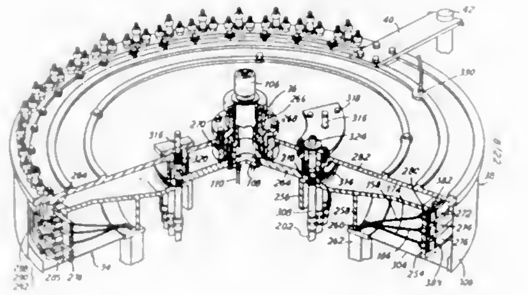
PCT Filed Jun. 26, 1987, Ser. No. 193,454

Claims priority, application United Kingdom, Jul. 7, 1986, 8616514

Int. Cl.⁴ C25D *13/00*

U.S. Cl. 204—300 EC 26 Claims





1. Electro-coating apparatus for electro-coating containers comprising:

(a) a rotatable turret;

(b) a plurality of electro-coating cells carried on said turret at positions spaced circumferentially at constant angular pitch, each cell incorporating at least one electro-coating electrode and being arranged to enclose a container in spaced relationship with said electrode and with an electro-coating fluid therebetween whereby a flow of electro-coating current between the electrode and an opposed surface of a container causes the electro-coating of the surface;

(c) a segmented slip-ring carried on said turret for rotation therewith, said slip-ring having successive segments connected electrically with the respective electrodes of successive cells;

(d) a plurality of stationary electrical brushes spaced around said segmented slip-ring and electrically contacting successive segments of said segmented slip-ring at corresponding positions on said segments;

(e) a plurality of switching means connected with the respective brushes for energizing said brushes with an electro-coating potential as required thereby to cause an electro-coating current to flow in the respective cells; and

(f) control means for causing operation of said switching means thereby to alternately energize and de-energize said brushes;

(g) said control means including (i) a control disc arranged for synchronous rotation with said turret; (ii) said control disc carrying a plurality of trigger devices at positions spaced circumferentially therearound; (iii) stationary sensing means being disposed adjacent said control disc and arranged to sense the passage thereby of successive trigger devices as said turret rotates and to provide in response to successive trigger devices successive output signals for controlling said switching means alternately in opposite senses thereby to successively energize and de-energize said brushes; and (iv) said trigger devices being positioned on said control disc so that each brush is energized with said potential only while it lies wholly in contact with a segment, and with each brush remaining energized for a predetermined constant angle of rotation of said turret, corresponding to a predetermined high proportion of the circumferential pitch of said segments, regardless of the speed of rotation of the turret.

4,883,579
PHOTORESPONSIVE REDOX DETECTION AND DISCRIMINATION

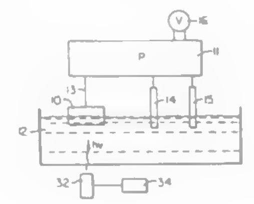
Gillian M. K. Humphries, Los Altos, Calif.; John W. Parce, Winston-Salem, N.C., and Harden M. McConnell, Stanford, Calif., assignors to Molecular Devices Corporation, Palo Alto, Calif.

Continuation of Ser. No. 604,800, Apr. 27, 1984, Pat. No. 4,704,353. This application Apr. 1, 1987, Ser. No. 34,036

The portion of the term of this patent subsequent to May 27, 2003, has been disclaimed.

Int. Cl.⁴ G01N *33/50, 33/53*

U.S. Cl. 204—403 2 Claims



1. A photoresponsive device for making a plurality of determinations of a redox substance capable of modifying an electrical signal resulting from irradiation of a photoresponsive element, said device comprising:

a photoresponsive element having an irradiation receiving surface;

irradiation means for irradiating said surface;

a counterelectrode;

means for polarizing said element with respect to said counterelectrode; and

means for determining the photoresponse by maintaining a fixed potential and light intensity and measuring the DC component of the photoresponse.

4,883,580
METHODS FOR DEACTIVATING IRON IN HYDROCARBON FLUIDS

Paul V. Roling, Spring, Tex., and Joseph H. Y. Niu, Wanaque, N.J., assignors to Betz Laboratories, Inc., Trevose, Pa.

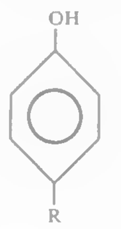
Division of Ser. No. 201,655, Jun. 1, 1988, Pat. No. 4,847,415. This application Apr. 14, 1989, Ser. No. 338,018

Int. Cl.⁴ C10G *29/20*

U.S. Cl. 208—48 AA 9 Claims

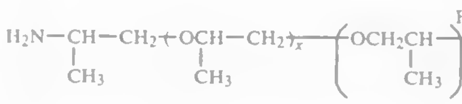
1. A method of deactivating an iron species disposed in a hydrocarbon medium, wherein in the absence of said deactivating said metal would initiate decomposition of the hydrocarbon medium, said method comprising adding to said hydrocarbon medium an effective amount of a Mannich reaction product formed by reaction of reactants (A), (B), and (C); wherein (A) comprises an alkyl substituted phenol of the structure

FORMULA I



wherein R is selected from the alkyl, aryl, alkaryl, or arylalkyl of from about 1 to 20 carbon atoms; (B) comprises a polyoxyalkylenediamine selected from the group consisting of

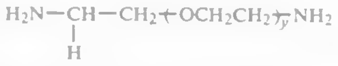
FORMULA IIA



$$H_2N-\underset{CH_3}{\underset{|}{CH}}-CH_2\left(O\underset{CH_3}{\underset{|}{CH}}-CH_2\right)_x\left(OCH_2\underset{CH_3}{\underset{|}{CH}}\right)_z NH_2$$

where the sum of x and z is from 1 to 6 and

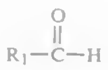
FORMULA IIB



$$H_2N-\underset{H}{\underset{|}{CH}}-CH_2\left(OCH_2CH_2\right)_y NH_2$$

where y is from 1 to 6; and (C) comprises an aldehyde of the structure

FORMULA (III)



$$R_1-\overset{\overset{O}{\|}}{C}-H$$

wherein R_1 is selected from H and an alkyl group having from about 1–6 carbon atoms wherein said iron species are deactivated.

4,883,581
PRETREATMENT FOR REDUCING OXIDATIVE REACTIVITY OF BASEOILS

Ghazi B. Dickakian, Houston, Tex., assignor to Exxon Chemical Patents Inc., Linden, N.J.

Filed Oct. 3, 1986, Ser. No. 914,994

Int. Cl.⁴ C10G *9/16*

U.S. Cl. 208—48 R 26 Claims

1. A method of producing lubricating oil baseoil having a reduced coking tendency comprising the steps of:

(a) subjecting said baseoil to conditions which accelerate formation of asphaltene coking precursors in said baseoil, said conditions comprising oxidizing said baseoil by sparging said baseoil with an oxidizing gas selected from the group consisting of air, oxygen; ozone, nitrogen oxides, sulfur oxides, and mixtures thereof; and

(b) removing asphaltene formed in step (a) from said baseoil by contacting said baseoil with a liquid antisolvent, said liquid antisolvent being miscible with said baseoil and having a higher insolubility for said asphaltene than said baseoil has for said asphaltene whereby said asphaltene is precipitated.

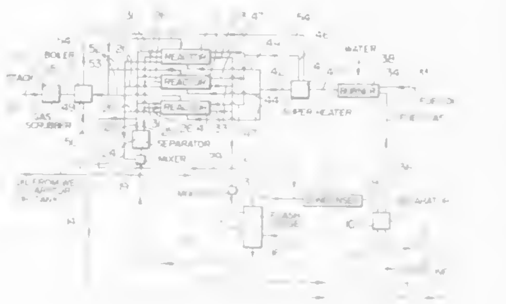
4,883,582
VIS-BREAKING HEAVY CRUDE OILS FOR PUMPABILITY

Malcolm T. McCants, 2400 Augusta, Suite 260, Houston, Tex. 77057

Filed Mar. 7, 1988, Ser. No. 164,861

Int. Cl.⁴ C10G *65/12, 47/20*

U.S. Cl. 208—106 6 Claims



1. A method of reducing the viscosity of untreated crude oil, comprising the steps of:

(a) vis-breaking in a reactor a first portion of the untreated crude oil with a recycled stream to produce a partially cracked residuum of the untreated oil;

(b) mixing the partially cracked residuum of the untreated oil with a second portion of the untreated oil to quench cracking and producing a first mixture;

(c) separating gas, vapor, and liquid by flashing from said mixture;

(d) condensing the gas and vapor obtained in step (c) to produce liquid hydrocarbons and gas;

(e) splitting the liquid obtained in step (c) into first and second streams thereof;

(f) passing said first stream obtained in step (e) for use as said recycled stream in step (a);

(g) reacting coke produced in step (a) with superheated steam to produce a hydrogen-containing gas during regeneration cycle to the reactor; and

(h) mixing said hydrogen-containing gas with said first stream obtained in step (e) prior to vis-breaking in step (a).

4,883,583
PROCESS FOR THE CATALYTIC CRACKING OF HYDROCARBONS IN A FLUIDIZED BED AND THEIR APPLICATIONS

Jean-Louis Mauléon, Marly-le-Roy, and Jean-Bernard Sigaud, Vaucresson, both of France, assignors to Compagnie de Raffinage et de Distribution Total France, Paris, France

Continuation of Ser. No. 885,911, Jul. 15, 1986, abandoned. This application Aug. 8, 1988, Ser. No. 229,810

Claims priority, application France, Jul. 16, 1985, 85 10891

Int. Cl.⁴ C10G *35/04*

U.S. Cl. 208—113 10 Claims

1. A process for the catalytic cracking of a heavy hydrocarbon feedstock into lighter weight products in a fluidized bed, comprising the steps of:

injecting from an upstream position active catalyst particles in a fluidizing gas as a fully fluidized suspension, the fluid-

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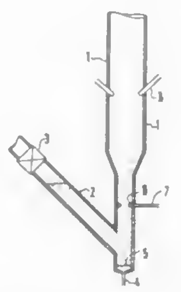
izing gas comprising hydrocarbons having five or fewer carbon atoms or mixtures thereof, the resulting dilute phase suspension having a density of from 15 to 700 kg/m^3 at a temperature above 550° C., into an elongate reaction zone, so that the fully fluidized catalyst suspension flows axially downstream through the reaction zone at a velocity of from 0.01 to 10 meters/second; and

injecting the feedstock to be cracked as jets of atomized droplets less than 200 microns in diameter and at a temperature of from 70° to 400° C. into the elongate reaction zone at a velocity of from 10 to 600 meters/second, said jets originating from a plurality of positions spaced around the periphery of the reaction zone and downstream of the position of injection of said active catalyst, said jets of atomized feedstock being angled upstream at from 5 to 80 degrees relative to the axis of the reaction zone, so that the jets of atomized feedstock droplets enter the reaction zone in an upstream direction countercurrently to downstream flow of a fully established dilute phase fluidized suspension of active catalyst particles, wherein the atomized feedstock droplets are vaporized with the matter comprising the droplets being ultimately discharged downstream from said reaction zone.



4,883,584

PROCESS OF SEPARATING SPECIAL STEEL COMPONENTS FROM LUMP SHREDDER SCRAP

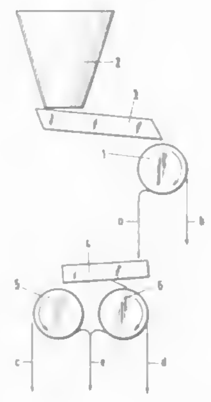
Hans-Peter Sattler, Bad Homburg, and Bernd Nichtweiss, Frankfurt am Main, both of Fed. Rep. of Germany, assignors to Metallgesellschaft AG, Frankfurt am Main, Fed. Rep. of Germany

Filed Oct. 27, 1987, Ser. No. 114,167

Claims priority, application Fed. Rep. of Germany, Nov. 14, 1986, 3639014

Int. Cl.^{4} B03C *1/30*

U.S. Cl. 209—38 **4 Claims**



1. In a process of separating special steel components from a fraction of shredder scrap from a shredding step, which fraction remains after the ferromagnetic content has been removed, the improvement comprising: dividing the fraction of shredder scrap into a normal size sub-fraction and an undersize sub-fraction, removing the normal size sub-fraction from the process and subjecting same to a separate processing, and separating from the undersize sub-fraction the special steel, the structure of which has been partly transformed from austenite into martensite during the shredding, by means of a magnetic drum having a field strength above 0.2 tesla.

4,883,585

ORE FLOTATION AND SULFENYL DITHIOCARBAMATES AS AGENTS FOR USE THEREIN

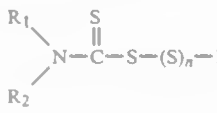
Clarence R. Bresson, and Rector P. Louthan, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Oct. 27, 1988, Ser. No. 263,438

Int. Cl.^{4} B03D *1/02*

U.S. Cl. 209—166 **25 Claims**

1. In a process for the recovery of minerals from an ore or concentrate containing the minerals wherein the ore or concentrate in the form of an aqueous pulp is subjected to froth flotation and the minerals are selectively recovered in the froth, and wherein a mineral flotation agent is employed in the aqueous pulp in an amount sufficient to control the type of minerals in the froth, the improvement comprising employing as said mineral flotation agent at least one sulfenyl dithiocarbamate defined by the formula:



$$\begin{array}{l} R_1 \\ \quad\searrow \\ \qquad N-\overset{\overset{\displaystyle S}{\|}}{C}-S-(S)_n-R_3 \\ \quad\nearrow \\ R_2 \end{array}$$

wherein:

R$_1$ and R$_2$ are each selected from the group consisting of hydrogen and hydrocarbyl groups with not more than one of R$_1$ and R$_2$ being hydrogen;

n is 1 or 2; and

R$_3$ is a hydrocarbyl group.

4,883,586

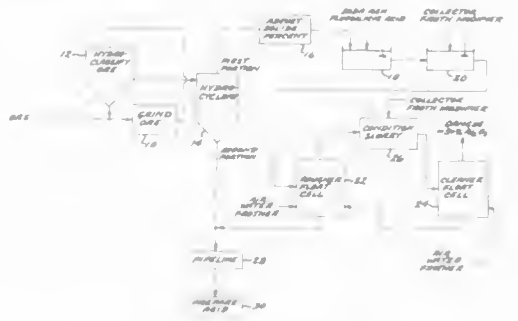
PROCESS FOR BENEFICIATING ORES CONTAINING FINE PARTICLES

Laurence W. Bierman; Samuel M. Polinsky, and Roger B. Humberger, all of Pocatello, Id., assignors to J. R. Simplot Co., Pocatello, Id.

Filed Jun. 16, 1988, Ser. No. 208,170

Int. Cl.^{4} B03D *1/02*

U.S. Cl. 209—167 **12 Claims**



1. A process for beneficiating a phosphate-containing ore wherein the phosphates are present in both coarse and fine particles mixed with gangue, comprising the steps of:

separating the phosphate-containing ore into two portions, a first portion consisting essentially of an aqueous slurry of fine gangue particles and fine value particles containing phosphate values, at least about 75 percent of the particles in said first portion having a size of less than about 26 micrometers, the fine value particles having a size of less than about 20 micrometers, and a second portion comprising an aqueous slurry of coarse particles having a size greater than about 20 micrometers containing phosphate values;

conditioning the first portion by adding a flotation collector to the first portion that renders the gangue particles hydrophobic and adjusting the solids content of the first portion to less than about 15 percent by weight of solids if the solids content is greater than about 15 percent; and

subjecting the conditioned, less than about 15% solids first portion to froth flotation to separate a gangue concentrated fraction and a fine value particle fraction containing enriched phosphate values, but without mechanically agitating the fine value particles containing phosphate values other than by action of the flotation bubbles.

4,883,587

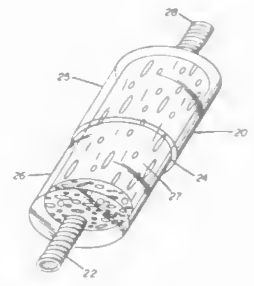
POLYURETHANE IODINE SPONGE SWIMMING POOL FILTER

Harry H. LeVeen, 321 Confederate Cir.; Eric G. LeVeen, 19 Palmetto Rd., both of Charleston, S.C. 29407, and Robert F. Leveen, 312 Lombard St., Philadelphia, Pa. 19147

Filed Oct. 13, 1988, Ser. No. 257,215

Int. Cl.^{4} C02F *1/76*

U.S. Cl. 210—94 **8 Claims**



1. A flowing water sterilization filter apparatus for the treatment of large quantities of water comprising a sectional housing, the housing sections being adapted to be sealingly mounted to each other to form a chamber, one of said sections being connected to inlet means and the other section being connected to outlet means, said inlet means and outlet means communicating with said chamber and a polyurethane open cell sponge loaded with iodine mounted in said housing chamber between said inlet means and outlet means, said sponge forming means for allowing water to pass therethrough and being treated to release iodine rangine from 1 to 5 parts per million of water into water as it passes through said housing.

4,883,588

UNDERWATER FILTER SYSTEM

Stephen W. Primavera, North Attleboro; John J. Burbank, Jr., Marlboro, and Garrett J. Neault, Carver, all of Mass., assignors to Vacco Industries, South El Monte, Calif.

Filed May 29, 1987, Ser. No. 55,536

Int. Cl.^{4} B01D *27/08*

U.S. Cl. 210—117 **15 Claims**

1. A submersible filter system for immersion in a pool, said system, comprising:

a frame means;

a fluid coupling means affixed to said frame means in an upstanding position, said coupling means comprising the downstream end of a conduit for conducting an effluent fluid under pressure to said coupling means;

a hollow cannister having a bottom nipple means for releasably connecting said nipple means to said coupling means to establish fluid communication therebetween and to fixedly support said cannister in an upright position on said coupling means of said frame means;

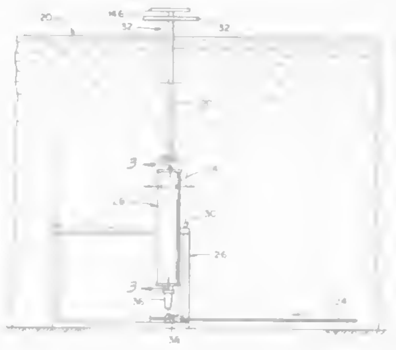
said cannister having a first fluid passage means in alignment with said nipple means for inducting the effluent fluid from said nipple means into said hollow cannister;

a filter means;

mounting means for fixedly mounting said filter means within and in spaced apart relation to said cannister,

said mounting means and said filter means being adapted to divide the interior of said cannister into an inlet chamber and a filtrate chamber;

said cannister having a second fluid passage means for exhausting filtrate fluid directly from said filtrate chamber into the pool;



a check valve means mounted in operative association with said first fluid passage means, said check valve means being responsive to the presence or absence of effluent fluid under pressure in the conduit for admitting effluent fluid into said inlet chamber and for preventing backflow of effluent fluid from said inlet chamber to said nipple means,

whereby when said cannister and said nipple means are uncoupled from said coupling means in the absence of effluent fluid under pressure in the conduit, effluent fluid is confined within said inlet chamber; and

an elongate tool means having cooperating means and adapted at one end for releasable interconnection at a top of said cannister to effect uncoupling of said cannister and nipple means from said coupling means when said tool means is operated at its other end.

4,883,589

SYSTEM FOR REMOVING CONTAMINANTS FROM GROUND WATER

Walter Konon, Waccabuc, N.Y., assignor to New Jersey Institute of Techoology, N.J.

Filed May 17, 1988, Ser. No. 194,801

Int. Cl.^{4} B01D *35/02*

U.S. Cl. 210—140 **28 Claims**

1. Apparatus for removing contaminants from ground water, comprising:

a tubular member made of a liquid pervious material, said tubular member having an upper end and a closed lower end, and said tubular member inserted in ground containing contaminated water with the ground in surrounding contact therewith;

supply conduit means for supplying a pressurized fluid to the lower end of said tubular member, said conduit means being positioned in said tubular member and having a lower, open end spaced above and adjacent to said lower end of said tubular member with a continuous gap pro-

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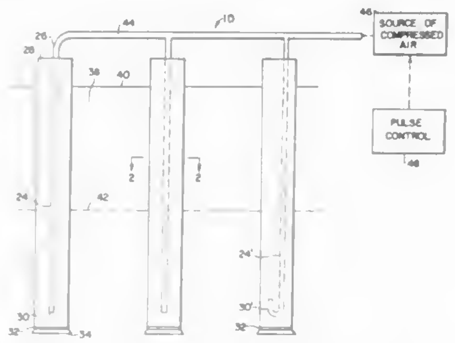
vided between said conduit means and said tubular member which extends from the lower, open end of the con-



duit means to the upper end of the tubular member to permit the pressurized fluid to travel therein; and
a contaminant-removing material in said tubular member.

4,883,590

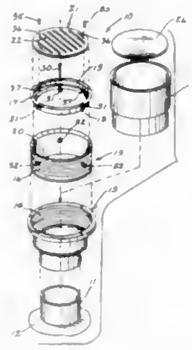
ADJUSTABLE FLOOR DRAIN APPARATUS

David J. Papp, 3578A S. 14th St., Milwaukee, Wis. 53221

Filed Oct. 20, 1988, Ser. No. 260,043

Int. Cl.⁴ E03C *1/26*

U.S. Cl. 210—164 5 Claims



1. An adjustable floor drain apparatus comprising:
an outer cylindrically shaped body having an interior portion having threads disposed on the inside thereof, and having a predetermined inner diameter;
means for attaching said outer body to a top portion of a drain pipe having an outer diameter smaller than said predetermined inner diameter of outer body;
means for forming a seal between the top of said pipe and the bottom of said outer body;
a stepped shoulder removable cylindrical member having an enlarged upper outer diameter and a reduced dimension lower outer diameter wherein the lower outer diameter is smaller than the diameter of said inner portion of said outer body whereby at least the lower outer diameter of said cylindrical member is slideable relative to the inside of said outer body so that concrete poured around said cylindrical member will not come into contact with a substantial portion of the threads on the outer body and whereby said cylindrical member is removable from said outer body after the concrete has cured;
an inner cylindrically shaped body having thread means on the exterior thereof for mating with the inside thread means on said outer body whereby said inner body is threadable into said outer body in a space vacated by said cylindrical member;
ring means adapted to engage the top of said inner body, said ring means having a partially spherical surface around the lower outer periphery thereof and the top of said inner body having a complementary shaped partial spherical surface thereon for providing a mating slidable joint between said ring means and said inner body;
means for adjustably attaching said ring means to said inner body;
a grate having openings therethrough; and
recess means for receivably holding said grate on top of said ring means.

4,883,591

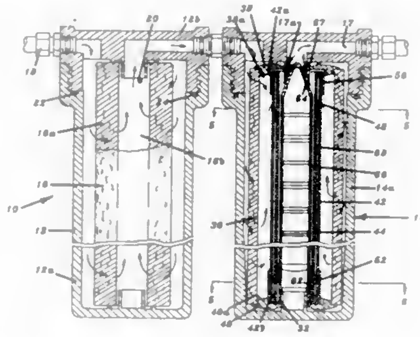
MULTI-PASS FLUID TREATING DEVICE

David Belasco, 10702 Rhonda Ave., Garden Grove, Calif. 92643

Continuation-in-part of Ser. No. 878,572, Jun. 25, 1986, abandoned, and Ser. No. 81,618, Jul. 31, 1987, abandoned, which is a continuation of Ser. No. 804,297, Dec. 3, 1985, abandoned, which is a continuation-in-part of Ser. No. 783,411, Oct. 3, 1985, Pat. No. 4,731,186. This application Sep. 11, 1987, Ser. No. 96,131

Int. Cl.⁴ C02F *1/48;* **B01D** *35/06*

U.S. Cl. 210—223 13 Claims



1. A device for conditioning a fluid, comprising
container means having an inlet and an outlet so that fluid enters the container means through the inlet and exits the container through the outlet,
a plurality of magnets aligned in a row and contained within the container means between the inlet and the outlet, said magnets providing a magnetic field which surrounds the magnets, and
flow control means including a plurality of passageways proximate the magnets and generally parallel thereto and means for directing the flow of fluid serially through the passageways so that said fluid makes a plurality of passes by the row of magnets prior to exiting the outlet.

4,883,592

FILTER PRESS

Tetsuya Kurita, Takarazuka; Atsushi Takashima, Kobe, and Katsutami Shibasaki, Osaka, all of Japan, assignors to Kurita Machinery Manufacturing Co., Ltd., Osaka, Japan

Filed Aug. 28, 1987, Ser. No. 90,668

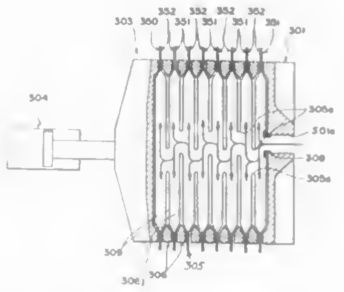
Claims priority, application Japan, Sep. 3, 1986, 61-208390; Sep. 6, 1986, 61-210007; Sep. 25, 1986, 61-227536; Sep. 25, 1986, 61-227537; Dec. 9, 1986, 61-293691; Feb. 14, 1987, 62-31908; Apr. 4, 1987, 62-83344

Int. Cl.⁴ B01D *25/12*

U.S. Cl. 210—227 7 Claims

1. A filter press comprising:
a front stand and a rear stand in spaced opposed relation to each other;
a plurality of filter plates positioned between said strands, each of said filter plates consisting essentially of a filter frame in the shape of a closed geometric figure defining a space therewithin;

a pair of abutting filter cloths between each two adjacent filter plates with the filter plates in abutting relation and holding said filter cloths therebetween when said press is in filtering operating condition and defining a raw liquid chamber therebetween and defining within each filter frame a filtrate chamber;



means for feeling a raw liquid to be filtered to said raw liquid chamber;
means for leading filtrate out of said filtrate chambers; and
a movable plate cn said rear stand for pressing against and releasing pressure on said plurality of filter plates.

4,883,593

ULTRATHIN-SKINNED ASYMMETRIC MEMBRANES BY IMMISCIBLE SOLVENTS TREATMENT

Dwayne T. Friesen, and Walter C. Babcock, both of Bend, Oreg., assignors to Bend Research, Inc., Bend, Oreg.

Flied Oct. 27, 1988, Ser. No. 263,368

Int. Cl.⁴ B01L *13/00*

U.S. Cl. 210—500.32 9 Claims

1. A process of making an asymmetric fluid separation membrane having an ultrathin dense layer on at least one surface thereof, comprising:
(a) substantially filling the pores of an asymmetric cellulosic semipermeable membrane having a finely porous layer on at least one surface thereof with a water immiscible organic liquid; and, while the pores of said membrane are still substantially filled with said water immiscible organic liquid,
(b) contacting said finely porous layer of said cellulosic semipermeable membrane with water.

9. The asymmetric fluid separation membrane prepared by the process of claim 1, 2, 3, 4, 5, 6, 7 or 8.

4,883,594

FLOODED BIOLOGICAL FILM REACTOR FOR WATER TREATMENT, WITH GAS CHARGING VIA A MEMBRANE

Ivan Sekoulov, Muellenhoffweg 22, DE-2000 Hamburg 52, and Hans-Juergen Braeutigam, Marmstorfer Weg 74, D-2100 Hamburg 90, both of Fed. Rep. of Germany

PCT No. PCT/EP86/00419, § 371 Date May 4, 1987, § 102(e) Date May 4, 1987, PCT Pub. No. WO87/00517, PCT Pub. Date Jan. 29, 1987

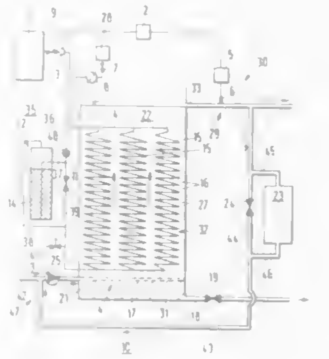
PCT Filed Jul. 17, 1986, Ser. No. 26,693

Claims priority, application Fed. Rep. of Germany, Jul. 17, 1985, 3525493; Dec. 14, 1985, 3544383

Int. Cl.⁴ C02F *3/06*

U.S. Cl. 210—603 3 Claims

1. Process for elimination of undesired water components from water by means of flooded biofilm reactors having a reactor bed with reactor support material, wherein water is supplied into the reactor via a distribution system and a gas is constantly admitted to the reactor support material over the full height of the whole reactor bed, wherein the admitted gas is a gas required by a biofilm on the reactor support material, is admitted to the reactor support material and released metabolic end products are withdrawn from the reactor support material by means of a first substance exchanger formed of a liquid impermeable synthetic material that is reinforced by a textile and surrounded by the reactor support material, wherein water is withdrawn from the biofilm reactor for recirculation and a gas from the group consisting of oxygen, hydrogen and carbon dioxide is supplied to the recirculation water through a second substance exchanger formed of a textile reinforced nonporous synthetic material and the recirculation water then returned to the biofilm reactor, and wherein undesired gas and volatile components are separated and removed from the reactor and passed through an absorber unit.



4,883,595

METHOD FOR THE EXTRACTION OF A SUBSTANCE FROM AN AQUEOUS SOLUTION

Reijo O. Seppänen, Äetsä , Finiand, assignor to Oy Nokia AB, Helsinki, Finland

Filed May 27, 1988, Ser. No. 199,557

Claims priority, application Finland, May 28, 1987, 872389; Oct. 8, 1987, 874438

Int. Cl.⁴ B01D *11/04*

U.S. Cl. 210—634 4 Claims

1. A method for separating a substance from an aqueous solution and possibly concentrating it at the same time comprising the steps of extracting said substance from the aqueous solution into an organic volatile extractant, and thereafter evaporating said extractant in direct contact with the aqueous phase into which said substance is desired to be transferred.

4,883,596

CARBONACEOUS ADSORBENT FOR REMOVAL OF PYROGEN AND METHOD OF PRODUCING PURE WATER USING SAME

Wataru Agui, Tokyo; Shuji Tamnra, Ohmiya; Hiroshi Kuyama, Urawa; Yoshiya Kurachi, Tokyo; Masahiko Abe, Noda; Yukihiro Kaneko, Funabashi, and Keizo Ogino, Tokyo, all of Japan, assignors to Tokyo Organic Chemical Industries, Ltd., Tokyo, Japan

Filed Mar. 11, 1988, Ser. No. 167,239

Claims priority, application Japan, Mar. 31, 1987, 62-76093; Mar. 31, 1987, 62-76094

Int. Cl.⁴ C02F *1/28, 9/00*

U.S. Cl. 210—638 6 Claims

1. A method for the removal of pyrogenic matter dissolved in water, comprising:
contacting the water containing pyrogenic matter with a

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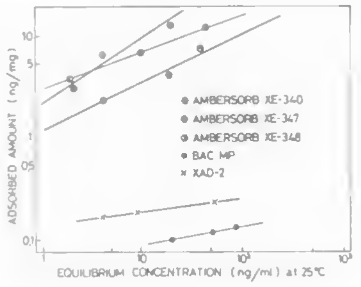
carbonaceous adsorbent prepared by carbonizing porous beads of a cross-linked polymer, wherein the cross-linked porous beads retain their skeletal structure intact through the carbonization treatment.



4,883,597
HYDROPHOBIC MEMBRANE FOR DRYING GEL MATRICES

Daniel Perlman, Arlington, Mass., assignor to Brandeis University, Waltham, Mass.

Filed Oct. 28, 1988, Ser. No. 264,097

Int. Cl.⁴ B01D *13/00*

U.S. Cl. 210—640 16 Claims

1. A method for removing liquid from an electrophoresis gel matrix comprising the steps of:

providing a water vapor-permeable membrane adapted to transmit water vapor and to resist passage of liquid water by capillary diffusion, said membranes being hydrophobic,

contacting said gel matrix with said membrane, and

subjecting said gel matrix and membrane to a vacuum to remove water vapor from said matrix through said membrane, whereby liquid is removed from said matrix and said matrix adheres to said membrane.

4,883,598
PROCESS FOR ISOLATING COAGULATION FACTORS, AND ADSORBENT MATERIAL SUITABLE THEREFOR

Waander Riethorst, Walkottelanden 92, 7542 MV Enschede; Bondewyn W. König, Maarssenbroeck; Willem G. van Aken, Amstevlveen; Adriaan Bantjes, Enschede; Tom Beugeling, Enschede, and Marcelinus P. W. M. Te Booy, Amsterdam, all of Netherlands, assignors to Waander Riethorst, Netherlands

Filed Aug. 3, 1988, Ser. No. 227,681

Claims priority, application Netherlands, Aug. 14, 1987, 8701915

Int. Cl.⁴ B01D *15/08*

U.S. Cl. 210—656 20 Claims

1. A process for isolating coagulation factors from a starting material by means of liquid chromatography, comprising the step of adsorbing said coagulation factors on an adsorbent material comprising a polymeric carrier material to which ligands selected from the group consisting of primary, secondary, tertiary and quarternary amino groups, are linked via spacers, said spacers having a chain length of at least 6 atoms and containing within said chain at least one link having hydrophilic properties and wherein the ligand density is greater than 30 umoles/ml of swollen matrix.

4,883,599
METHOD FOR CLEANSING METAL-CONTAINING SOLUTIONS

Erik Lindahl, Appelboms väg 14, S-186 00 Vallentuna, and Gunnar Hovsenius, Tunavägen 32, S-194 51 Upplands Väsby, both of Sweden

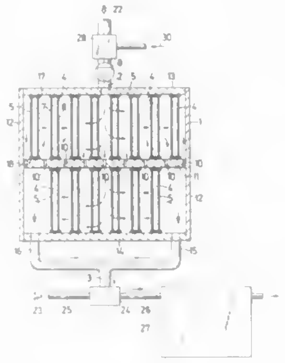
PCT No. PCT/SE87/00454, § 371 Date Jun. 6, 1988, § 102(e) Date Jun. 6, 1988, PCT Pub. No. WO88/02738, PCT Pub. Date Apr. 21, 1988

PCT Filed Oct. 8, 1987, Ser. No. 204,176

Claims priority, application Sweden, Oct. 16, 1986, 8604404

Int. Cl.⁴ C02F *1/42*

U.S. Cl. 210—670 6 Claims



1. A method for cleansing metal-containing solutions, which comprise a fluid solution selected from the group consisting of water containing contaminates from contaminated flue gases and contaminated process water, said fluid solution containing at least one of the metals from the group consisting of mercury, cadmium, zinc and lead, the metals being present in water-soluble form, the method comprising: passing said solution through an ion-exchange material (4) which consists essentially of sulfhydrated cellulose, said metals being absorbed in the sulfhydrated cellulose; regenerating the ion-exchange material (4) subsequent to the absorption of a predetermined quantity of metal, by rinsing the ion-exchange material with an aqueous solution that contains hydrochloric acid at a concentration of at least about 1 molar HC1 and precipitating the metals in sulphide form from the liquid that is eluted from the ion-exchange material in said rinsing process.

4,883,600
STABILIZATION OF SOLUBLE MANGANESE IN AQUEOUS SYSTEMS

James R. MacDonald, Chicago, and Barbara E. Fair, Downers Grove, both of Ill., assignors to Nalco Chemical Company, Naperville, Ill.

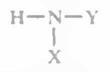
Filed Oct. 12, 1988, Ser. No. 256,541

Int. Cl.⁴ C02F *5/12*

U.S. Cl. 210—696 7 Claims

1. A method of stabilizing soluble manganese by the reduction of manganese deposits or precipitates formed in situ in the waters of aqueous systems in the presence of an effective amount of halogen species to control microbiological growth in said aqueous systems comprising:

adding to said waters an effective amount of a water-soluble, nitrogen containing composition, said composition having the general chemical structure of Formula I:



$$\begin{array}{c} H-N-Y \\ | \\ X \end{array}$$

Formula I

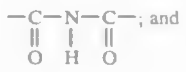
and is further defined as:

(a) sulfamic acid and the water-soluble alkali metal, ammonia, and amine salts thereof, wherein one of X and Y is hydrogen, the other being $-SO_3^-$;

(b) water-soluble nonaromatic primary amines, wherein one of X and Y is hydrogen, the other being a hydrocarbon radical;

(c) water-soluble nonaromatic secondary amines, wherein each of X and Y is a hydrocarbon radical; and

(d) water-soluble amides which include the moiety of Formula II wherein both X and Y have carbonyl radicals:



$$\begin{array}{ccccc} -C & - & N & - & C- \\ \| & & | & & \| \\ O & & H & & O \end{array}; \text{ and}$$

Formula II

mixtures thereof.

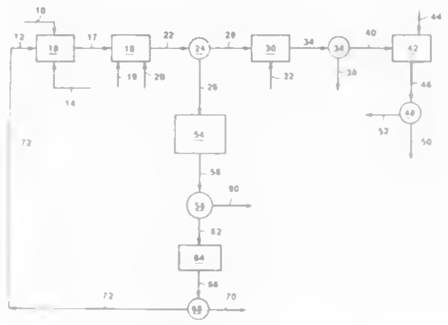
4,883,601
PROCESS FOR PURIFYING AN AQUEOUS, HYDROGEN SULFIDE-SCRUBBING SOLUTION

Jeffery W. Koepke, Orange, and Dennis D. Delaney, Yorba Linda, both of Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

Filed Aug. 30, 1988, Ser. No. 238,752

Int. Cl.⁴ C01G *31/00;* **C02F** *1/72*

U.S. Cl. 210—710 40 Claims



1. A process for purifying an aqueous hydrogen sulfide-scrubbing solution containing a water-soluble vanadium component and a water-soluble organic compound, said scrubbing solution being capable of absorbing hydrogen sulfide and converting the hydrogen sulfide into elemental sulfur, which process comprises:

(a) forming a slurry by mixing said scrubbing solution with (1) particles of a spent solid catalyst containing molybdenum and aluminum and (2) a basic aqueous solution;

(b) contacting said slurry with an oxygen-containing gas under conditions such that the molybdenum in said catalyst is dissolved and oxidized to molybdate while said aluminum remains substantially in the form of a solid residue;

(c) separating said aqueous solution formed in step (b) from said solid residue;

(d) contacting said aqueous solution with hydrogen sulfide under conditions such that the molybdenum in said solution is precipitated, thereby forming an aqueous solution having a reduced concentration of molybdenum;

(e) contacting said aqueous solution having a reduced concentration of molybdenum with a base under conditions such that the vanadium in said solution is precipitated, thereby forming an aqueous solution having a reduced concentration of vanadium and molybdenum; and

(f) recovering said aqueous solution having a reduced concentration of vanadium and molybdenum as wastewater which also has a reduced concentration with respect to said slurry formed in step (a) of said water-soluble organic compound originally present in said hydrogen sulfide-scrubbing solution.

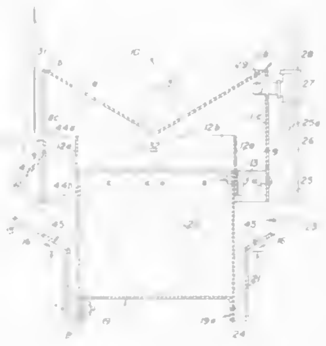
4,883,602
DECANTING APPARATUS AND METHOD

Marvin H. Anderson, Denver, Colo., assignor to Fluid Dynamics, Inc., Boulder, Colo.

Filed Aug. 22, 1988, Ser. No. 235,010

Int. Cl.⁴ C02F *1/20*

U.S. Cl. 210—776 20 Claims



1. A method of decanting liquid from a tank receiving liquid and solids for settling out of the solids from the liquid, comprising:

fixing a trough having an open top in the tank and surrounding the open top with a weir;

covering the open top with an air tight hood having a lower edge extending outwardly of and below the open top of the trough;

supplying liquid into the tank up to a level above the open top of the trough;

controlling both the supply and the discharge of air to the interior of the hood by vent control means for maintaining the level of liquid in the hood to be just above the open top of the trough for permitting liquid to flow over the open top of the weir into the trough; and

discharging liquid into a liquid trap into an effluent outlet connected to the trough at a level below the lower edge of the hood to prevent siphoning through said effluent outlet

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4,883,603
METHOD FOR SEPARATING COARSE GRAINED AND AGGLOMERATE PIGMENT PARTICLES FROM A SUSPENSION

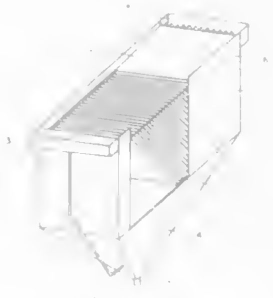
Walter Roggenstein, Freiburg, and Paul Rustemeyer, Gundelfingen, both of Fed. Rep. of Germany, assignors to Rhodia AG, Breisgau, Fed. Rep. of Germany

Filed Jul. 18, 1988, Ser. No. 220,567

Claims priority, application Fed. Rep. of Germany, Oct. 15, 1987, 3734881

Int. Cl.⁴ B01D *21/02*

U.S. Cl. 210—802 1 Claim



1. A method of separating coarse grained and agglomerated

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pigment particles from a suspension containing coarse grained, agglomerated and fine grained particles by sedimentation by gravity and removing a suspension containing primarily fine grained pigment particles which consists of introducing said suspension into an apparatus comprising a vessel **(1)**, said vessel having an inflow device **(3)** for introducing said suspension into the vessel, the vessel being funnel shaped at the bottom (4), said inflow device leading into said funnel shaped bottom, a plurality of stationery angled plates **(2)** within the vessel disposed parallel to each other and at an angle of <90° from the horizontal, said inflow device being located below said angled plates, an upper drain or overflow device **(5)** in the upper part of said vessel for discharging a suspension containing mainly finely grained pigment particles from the vessel, a lower drain (7) in the lower part of the vessel for discharging the suspension containing mainly coarse grained and agglomerated pigment particles from the vessel, a horizontal plate **(9)** in the upper part (6) of said vessel **(1)** covering the area of the upper part of the vessel **(1)** which is free of said angled plates **(2)**, the horizontal plate **(9)** being located between the angled plate (2) which is the closest to said upper drain or overflow device (5) and said overflow device **(5)**, said upper drain or overflow device being located on the same level as said horizontal plate (9), whereby short-circuit flow of the suspension from the lower part **(4)** of the vessel **(1)** is avoided, transferring a suspension containing primarily fine grained pigment particles to the upper drain or overflow device **(5)** and discharging said suspension containing primarily fine grained pigment particles therefrom.

4,883,604

SMOOTHING COMPOSITIONS FOR TEXTILE FIBERS CONTAINING DIALKYL ETHERS OF (POLY)ALKYLENE GLYCOLS

Rudolf Veitenhansl, Haan; Peter Waltenberger, Breitscheid-Hollig; Fritz Lange, Essen; Guenter Uphues, Monheim, and Uwe Ploog, Haan, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

Filed Feb. 23, 1988, Ser. No. 159,621

Claims priority, application Fed. Rep. of Germany, Oct. 15, 1987, 3734931

Int. Cl.⁴ D06M *13/02, 13/18, 13/46*

U.S. Cl. 252—8.9 15 Claims

1. A liquid composition for treating fibers to impart the property of slipperiness to the fibers consisting essentially of from about 5 to about 30% by weight of a smoothing agent containing an aliphatic polyether having the formula:

$$R^1—X—O—R^2$$

wherein R^1 and R^2 are selected from a hydroxy substituted or non-hydroxy substituted alkyl or alkenyl group having from 6 to 24 carbon atoms, each of R^1 and R^2 being the same or different, and X is a homopolymer of copolymer containing one or more C_2 to C_6 alkylene oxide groups having a degree of polymerization of 1 to 25, said composition being in the form of a solution, dispersion or emulsion in water or an organic solvent and oxidized, high-density polyethylene wherein the weight ratio of aliphatic polyether to said polyethylene is within the range of about 10:1 to about 1:4, respectively.

7. A process for smoothing textile fibers consisting essentially of contacting said fibers with the composition of claim 1, and drying said fibers, said composition being applied at a weight sufficient to lower the coefficient of friction of said fibers.

4,883,605

ZIRCONIUM CHELATES AND THEIR USE FOR CROSS-LINKING

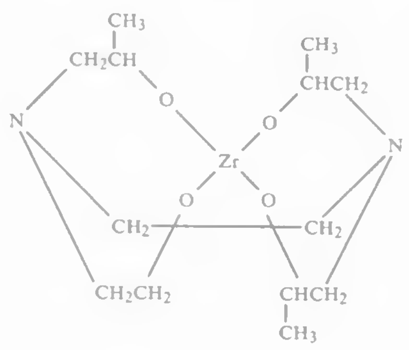
Donald E. Putzig, Newark, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 12,404, Feb. 9, 1987, Pat. No. 4,798,902. This application Aug. 26, 1988, Ser. No. 236,784

Int. Cl.⁴ E21B *43/26*

U.S. Cl. 252—8.551 8 Claims

1. In a process for selectively plugging permeable zones in subterranean formations or subterranean leaks wherein a cross-linked gel formed from a water soluable polysaccharide is injected into the permeable zone or the site of the subterranean leak, the improvement comprising effecting cross-linking of the gel with a zirconium diamine chelate represented by the formula:



4,883,606

WATER-SOLUBLE TEMPER ROLLING OIL AND METHOD OF TEMPER ROLLING

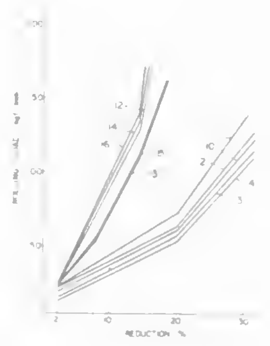
Hiroshi Kuwamoto, Fukuyama; Shuichi Iwado, Okayama; Yoichi Koga; Tomoya Izushi, both of Fukuyama; Toshimi Muto, Hiratsuka, and Nobuomi Kuroi, Yokohama, all of Japan, assignors to Nippon Kokan Kabushiki Kaisha and Yushiro Chemical Industry Co., Ltd., both of Tokyo, Japan

Filed Oct. 7, 1987, Ser. No. 105,982

Claims priority, application Japan, Oct. 13, 1986, 61-241526

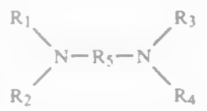
Int. Cl.⁴ C10M *105/58, 105/74*

U.S. Cl. 252—32.5 4 Claims



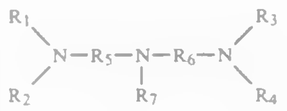
1. A temper rolling oil which comprises:

(A) a water-soluble cationic compound prepared by neutralizing a condensation product obtained by reacting the following compounds i to iii with each other by heating:
  i. an aliphatic dicarboxylic acid having 6 to 22 carbon atoms,
  ii. at least one amino compound selected from the group consisting of (a)–(c):



(a)

wherein R_1 to R_4 are each a hydrogen atom or an alkyl group having 1 to 3 carbon atoms, provided that at least one of them is a hydrogen atom, and R_5 is an alkylene group having 1 to 4 carbon atoms,



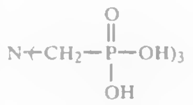
(b)

wherein R_1 to R_4 and R_7 are each a hydrogen atom or an alkyl group having 1 to 3 carbon atoms, provided that at least one of them is a hydrogen atom, and R_5 and R_6 are each an alkylene group having 1 to 4 carbon atoms, and

$$H_2N(C_2H_4NH)_nH \qquad (c)$$

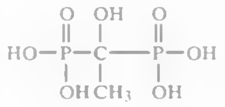
wherein n is an integer of 3 to 5; and

iii. a polyethyleneimine having an average molecular weight of 300 to 2,000, with at least one oxoacid of phosphorus selected from the group consisting of (d)–(f):
  (d) phosphoric acid, phosphorous acid, hypophosphorous acid, and perphosphoric acid;
  (e) a condensed product of an oxoacid of phosphorus selected from the group consisting of pyrophosphoric acid, trimetaphosphoric acid, tetrametaphosphoric acid, pyrophosphorous acid, polymetaphosphorous acid, and diperphosphoric acid; and
  (f) a compound selected from the group consisting of (I)–(III):



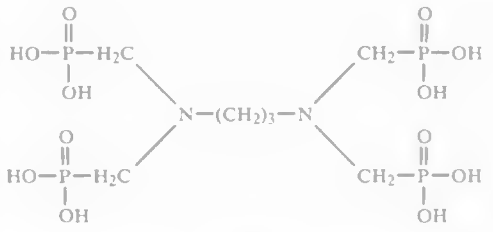
(I)

$$N\left(CH_2-\overset{\overset{O}{\|}}{\underset{\underset{OH}{|}}{P}}-OH\right)_3$$



(II)

$$HO-\overset{\overset{O}{\|}}{\underset{\underset{OH}{|}}{P}}-\overset{\overset{OH}{|}}{\underset{\underset{CH_3}{|}}{C}}-\overset{\overset{O}{\|}}{\underset{\underset{OH}{|}}{P}}-OH$$

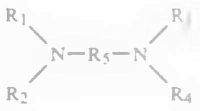


(III)

(B) an aqueous rust preventing component, and
(C) water.

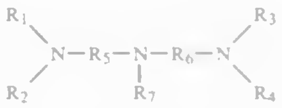
2. A method of temper rolling, comprising the steps of pickling a hot rolled steel sheet, subjecting the pickled steel sheet to cold rolling, annealing the resulting steel sheet, and rolling the annealed steel sheet with rollers, wherein said rolling of the annealed steel sheet is conducted at a reduction ranging from 0.5 to 30% using a diluted solution obtained by diluting a temper rolling oil which comprises:

(A) a water-soluble cationic compound prepared by neutralizing a condensed product obtained by reacting the following compounds i to iii with each other by heating:
  i. an aliphatic dicarboxylic acid having 6 to 22 carbon atoms,
  ii. at least one amino compound selected from the group consisting of (a)–(c):



(a)

wherein R_1 to R_4 are all hydrogen atoms or alkyl groups having 1 to 3 carbon atoms, provided that at least one of them is a hydrogen atom, and R_5 is an alkylene group having 1 to 4 carbon atoms,



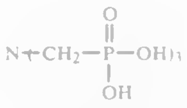
(b)

wherein R_1 to R_4 and R_7 are all hydrogen atoms or alkyl groups having 1 to 3 carbon atoms, provided that at least one of them is a hydrogen atom, and R_5 and R_6 are each an alkylene group having 1 to 4 carbon atoms, and

$$H_2N(C_2H_4NH)_nH \qquad (c)$$

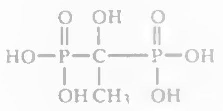
wherein n is an integer of 3 to 5, and

iii. a polyethyleneimine having an average molecular weight of 300 to 2,000, with at least one oxoacid of phosphorus selected from the group consisting of (d)–(f):
  (d) phosphoric acid, phosphorous acid, hypophosphorous acid, and perphosphoric acid;
  (e) a condensed product of an oxoacid of phosphorus selected from the group consisting of pyrophosphoric acid, trimetaphosphoric acid, tetrametaphosphoric acid, pyrophosphorous acid, polymetaphosphorous acid, and diperphosphoric acid; and
  (f) a compound selected from the group consisting of (I)–(III):



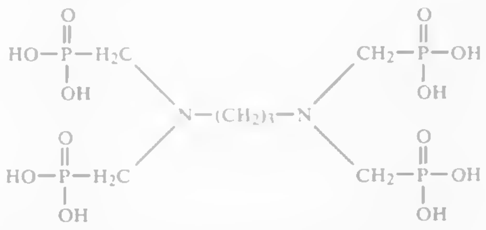
(I)

$$N\left(CH_2-\overset{\overset{O}{\|}}{\underset{\underset{OH}{|}}{P}}-OH\right)_3$$



(II)

$$HO-\overset{\overset{O}{\|}}{\underset{\underset{OH}{|}}{P}}-\overset{\overset{OH}{|}}{\underset{\underset{CH_3}{|}}{C}}-\overset{\overset{O}{\|}}{\underset{\underset{OH}{|}}{P}}-OH$$



(III)

(B) an aqueous rust preventing component, and
(C) water, so that the concentration of the water-soluble cationic compound contained therein is 300 to 5,000 ppm.

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4,883,607
WATER-INSOLUBLE SILICATE CONTAINING DETERGENT BUILDER GRANULATE

Manfred Diehl, Frankfurt am Main, Fed. Rep. of Germany, assignor to Degussa Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jan. 25, 1988, Ser. No. 147,943

Claims priority, application Fed. Rep. of Germany, Jan. 30, 1987, 3702763; Oct. 21, 1987, 3735618

Int. Cl.⁴ C11D *7/02, 7/20*

U.S. Cl. 252—174.18 **4 Claims**

1. A granulated detergent builder consisting of:

70 to 80 weight percent of a water-insoluble silicate, capable of binding calcium, in the form a finely divided, bound-water-containing, synthetically produced, water-insoluble, crystalline compound of the general formula

$$(Kal)2/n^{O})x \;.\; Me_2O_3 \;.\; (SiO_2)_y \qquad (I),$$

in which Kat represents an n-valent cation which is exchangeable with calcium, x a number from 0.7 to 1.5, Me is boron or aluminum and y a number from 0.8 to 6,

2 to 3 weight percent of nonionic surfactant,

0 to 1 weight percent of alkali,

2.4 to 5 weight percent of carboxymethylcellulose and/or methylcellulose,

and the balance water.

4,883,608
POLYMERIC DECONTAMINATION COMPOSITION

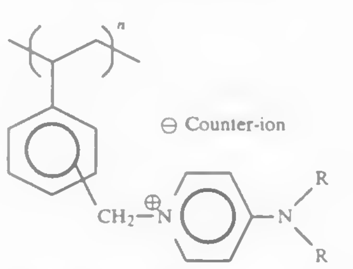
David A. Trujillo; William A. McMahon, Jr., and Robert E. Lyle, Jr., all of San Antonio, Tex., assignors to Southwest Research Institute, San Antonio, Tex.

Filed Nov. 18, 1987, Ser. No. 121,941

Int. Cl.⁴ B23B *5/16*

U.S. Cl. 252—189 **10 Claims**

1. A polymeric chemical warfare agent decontamination composition comprising a polymeric quaternary pyridinium salt resulting from the reaction of a polyvinylbenzyl salt and a aminopyridine and having the general formula:



in which n is an integer of at least 10 and R is a C_1 to C_{20} or higher alkyl group.

4,883,609
PYRIMIDINE DERIVATIVES

Shuhei Yamada, Nagano, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan

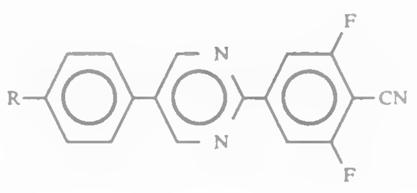
Filed Nov. 16, 1988, Ser. No. 271,795

Claims priority, application Japan, Nov. 17, 1987, 62-289690

Int. Cl.⁴ G02F *1/13;* **C09K** *19/34;* **C07D** *239/00, 239/02*

U.S. Cl. 252—299.61 **9 Claims**

1. A pyrimidine derivative having general formula:



wherein, R is one of a straight chain alkyl group having from 1 to 12 carbon atoms and an alkoxy group having from 1 to 12 carbon

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4,883,610
SOIL RELEASE PROMOTING LIQUID DETERGENT COMPOSITION CONTAINING A PET-POET COPOLYMER AND NARROW RANGE ALCOHOL ETHOXYLATE

Loretta K. Ciallella, Hopelawn, N.J., assignor to Colgate-Palmolive Co., Piscataway, N.J.

Filed Oct. 27, 1987, Ser. No. 113,798

Int. Cl.⁴ C11D *1/72, 3/37, 17/08;* **D06M** *15/507*

U.S. Cl. 252—559 **6 Claims**

1. A soil release promoting liquid detergent composition which comprises 12 to 20% of a narrow range ethoxylate nonionic detergent (NRE) which is a condensation product of a saturated higher fatty alcohol of 12 to 14 carbon atoms and an average of 6 to 8 moles of ethylene oxide per mole of such higher fatty alcohol, in polyethoxy ethanol groups, with at least 90% of the NRE being higher fatty alcohol ethoxylates of ethoxy contents in the range of 4 to 10 ethylene oxide groups per mole, 0.5 to 2% of a soil release promoting compound which is a copolymer of polyethylene terephthalate and polyoxyethylene terephthalate (PET-POET copolymer) which is of a weight average molecular weight in the range of 15,000 to 50,000 and in which the polyoxyethylene of the polyoxyethylene terephthalate of the PET-POET copolymer is of a molecular weight in the range of 1,000 to 10,000, and 60 to 80% of water, which liquid detergent composition is of improved soil release promoting characteristics vs. oily soils on polyester fabrics to be washed at low temperature with aqueous wash water solutions of the detergent composition, compared to identical compositions in which the nonionic detergent component is a broad range ethoxylate nonionic detergent (BRE) being employed in wash water at low temperature to wash identically soiled polyester fabrics.

4,883,611
DICHROIC COLORING AGENTS FOR LIQUID CRYSTAL DISPLAYS

Keisuke Takuma; Sizuo Kuroda; Tsukasa Oyama, and Hiroshi Aiga, all of Ohmuta, Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

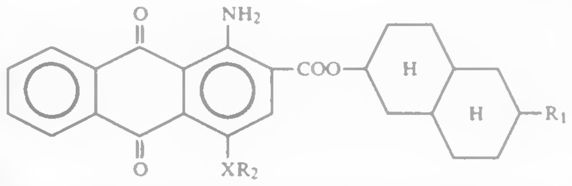
Filed Sep. 9, 1988, Ser. No. 242,289

Claims priority, application Japan, Sep. 16, 1987, 62-229825; Dec. 18, 1987, 62-318705

Int. Cl.⁴ C09K *19/00;* **C07C** *101/80;* **C09B** *1/16, 1/60*

U.S. Cl. 552—235 **12 Claims**

1. Dichroic coloring agent for liquid crystal displays represented by the formula (I):



(I)

wherein X is S or NH; R_1 is a hydrogen atom, halogen atom, alkyl or alkoxy; and R_2 is a hydrogen atom, alkyl or aryl group.

4,883,612
PREPARATION OF PARA-ACYLOXYBENZENE SULFONATES

José Moyne, Caluire, and Camille Disdier, Lyons, both of France, assignors to Rhone-Poulenc Chimie de Base, Courbevoie, France

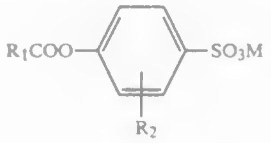
Continuation of Ser. No. 702,732, Feb. 19, 1985, abandoned. This application May 14, 1987, Ser. No. 51,226

Claims priority, application France, Feb. 17, 1984, 84 02399

Int. Cl.⁴ C07C *143/46, 143/38*

U.S. Cl. 260—402 **19 Claims**

1. A process for the preparation of a paraacyloxybenzene sulfonate having the general formula (I):



wherein R_1 is a straight or branched chain aliphatic radical having from 6 to 11 carbon atoms, R_2 is hydrogen, halogen, an alkyl radical having from 1 to 4 carbon atoms, or the radical $—SO_3M$, and M is an alkali or alkaline earth metal, or ammonium, which process comprises acylating an alkali or alkaline earth metal, or ammonium p-phenol sulfonate, with an anhydride of a straight or branched chain carboxylic acid having from 7 to 12 carbon atoms, in a polar aprotic solvent and in the presence of a catalytically effective amount of an alkali or alkaline earth metal salt of a straight or branched chain aliphatic carboxylic acid having from 7 to 12 carbon atoms, the molar ratio of polar aprotic solvent to p-phenol sulfonate ranging from 5 to 50.

19. The process as defined by claim 1, said acid anhydride comprising pelargonic anhydride or 3,5,5-trimethylhexanoic anhydride.

4,883,613
PHENYL SUBSTITUTED-2,4,6,8-NONATETRAENOIC ACID

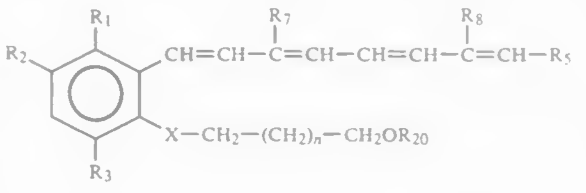
Edward R. Aig, Fair Lawn; John W. Coffey; Allen J. Lovey, both of West Caldwell, and Michael Rosenberger, Caldwell, all of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 922,430, Oct. 23, 1986, Pat. No. 4,780,251, which is a division of Ser. No. 746,812, Jun. 20, 1985, Pat. No. 4,648,996, which is a continuatioo-in-part of Ser. No. 635,100, Jul. 27, 1984, abandoned. This application Jul. 31, 1987, Ser. No. 79,974

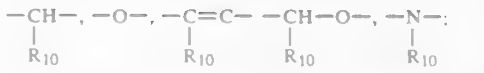
Int. Cl.⁴ C09F *7/00*

U.S. Cl. 260—408 **5 Claims**

1. A compound selected from the groups of phenyl derivatives of the formula:



wherein n is an integer of from 6 to 7; R_1 is hydrogen, loweralkyl, trifluoromethyl, chlorine or fluorine R_2 is trifluoromethyl, hydrogen, hydroxy, loweralkyl, alkoxy, trifluoromethylloweralkoxy, chlorine or fluorine; R_3 is hydrogen, lower alkyl, chlorine or fluorine, X is



$$-\underset{\substack{|\\R_{10}}}{CH}-,\ -O-,\ -\underset{\substack{|\\R_{10}}}{C}=C-\ -\underset{\substack{|\\R_{10}}}{CH}-O-,\ -\underset{\substack{|\\R_{10}}}{N}-;$$

R_7, R_8, R_9 and R_{10} are individually hydrogen or lower alkyl; and R_{20} is hydrogen or taken together with its attached oxygen atom forms a hydrolizable ether group and R_5 is $—COOR_9$;

and pharmaceutically acceptable salts thereof.

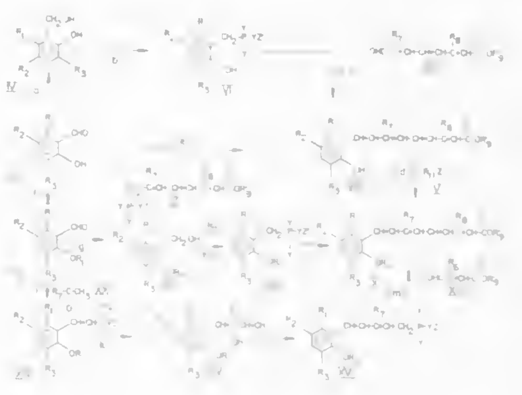
4,883,614
PHENYL SUBSTITUTED-2,4,6,8-NONATETRAENOIC ACID

Edward R. Aig, Fair Lawn; John W. Coffey; Allen J. Lovey, both of West Caldwell, and Michael Rosenberger, Caldwell, all of N.J., assignors to Hoffman-La Roche Inc., Nutley, N.J.

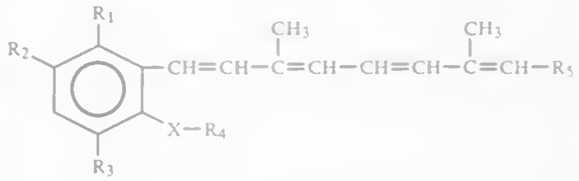
Continuation-in-part of Ser. No. 635,100, Jul. 27, 1984. This application Oct. 24, 1986, Ser. No. 922,621

Int. Cl.⁴ C11C *1/00*

U.S. Cl. 260—413 **23 Claims**



1. A compound selected from the group of phenyl derivatives of the formula:



wherein R_1 is hydrogen, lower alkyl, chlorine, fluorine or trifluoromethyl; R_2 is chlorine, trifluoromethyl, lower alkyl, fluorine, hydroxy, loweralkoxy, trifluoromethylloweralkoxy, or hydrogen; R_3 is hydrogen, lower alkyl, chlorine, or fluorine; R_4 is an alkyl group having a straight chain length of 4 to 9 carbon atoms; X is —0—; R_5 is $COOR_9$; and R_9 is hydrogen or lower alkyl; and pharmaceutically acceptable salts thereof.

4,883,615
FLAMEPROOFING COMPOUNDS

Tibor Robinson, Basel, and Rainer Wolf, Allschwil, both of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

Filed Jul. 14, 1986, Ser. No. 884,853

Claims priority, application Fed. Rep. of Germany, Jul. 18, 1985, 3525659; Jul. 18, 1985, 3525660

Int. Cl.⁴ C07F *9/00*

U.S. Cl. 428—423.1 **9 Claims**

1. A process for flameproofing a substrate comprising applying to the substrate a compound of formula I

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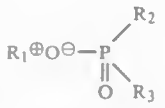


$$R_1^{\oplus}O^{\ominus}-\overset{\displaystyle R_2}{\underset{\displaystyle O\quad R_3}{P}}$$

(I)

in which $R_1^{\oplus}$ is an $N^{\oplus}$ cation derived from protonation of

(A) the water-soluble reaction product of an alkylene diamine or polyalkylene polyamine with cyanamide, dicyanodiamide, guanidine or bisguanidine or with a mixture of at least 50 mole % of cyanamide, dicyanodiamide, guanidine or biguanidine and up to 50 mole % of a dicarboxylic acid or a mono- or di-ester of a dicarboxylic acid, optionally in the presence of a catalyst selected from metals, metal salts and heterocyclic nitrogen-containing organic bases; said Product A containing reactive hydrogen atoms bound to nitrogen; or

(B) the water-soluble reaction product of Product A with epichlorohydrin or a precursor thereof,

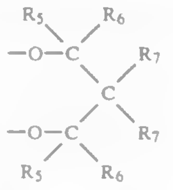
(C) the water-soluble reaction product of Product A with formaldehyde or a formaldehyde precursor, or

(D) the water-soluble reaction product of Product A, B or C with a N-methylol derivative of a urea, melamine, guanamine, triazinone, urone, carbamate or acid amide optionally in the presence of a catalyst for the crosslinking of N-methylol compounds listed above;

R_2 is —OH; —OC_{1-12}alkyl; —O—phenyl; —$O^{\ominus}NH_4^{\oplus}$; or —$O^-R_1^{\ominus}$ where $R_1^{\ominus}$ is as defined above;

R_3 is C_{1-12}alkyl or phenyl or has a significance of R_2 independently of R_2; or

R_2 and R_3 form a group of the formula (a)



(a)

where

each R_5 independently is hydrogen or C_{1-4}alkyl;

each R_6 independently is hydrogen or methyl; and

each R_7 independently is hydrogen, C_{1-4}alkyl,

—CH_2Br or —CH_2Cl.

4,883,616

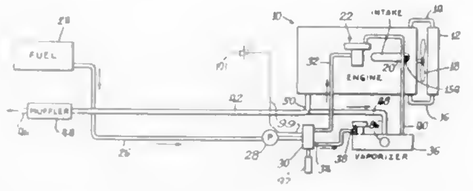
VAPORIZER/CARBURETOR AND METHOD

Ray M. Covey, Jr., 2901 Penwood, El Paso, Tex. 79935

Continuation-in-part of Ser. No. 640,352, Aug. 13, 1984, Pat. No. 4,611,567. This application Sep. 10, 1986, Ser. No. 905,472

Int. Cl.⁴ F02M *31/14*

U.S. Cl. 261—64.4 **1 Claim**



1. Vaporizer/carburetor apparatus for retrofitting with a self-contained internal combustion engine utilizing petroleium fuel and for use in conjunction with such fuel in liquid form, and including a main carburetor having a fuel inlet, the engine providing vacuum in its operation, and having an exhaust pipe for exhaust gases, and further including a fuel line and means for transmitting fuel from a supply through the fuel line to a position adjacent the engine for use therein as stated more specifically herein below, said apparatus comprising,

a vaporizer unit including a casing having an exhaust passage extending transversely therethrough, and a fuel mixture passage including tubes extending through the exhaust passage, the entire surfaces of the tubes being exposed to exhaust gases in the exhaust passage, and the passages thereby having mutual heat exchange,

an auxiliary carburetor having a fuel inlet operably connected with the fuel line, and a fuel mixture outlet operably connected with the inlet of said fuel mixture passage in the vaporizer unit, the auxiliary carburetor including means for controlling the rate of flow of air therethrough and thereby controlling the rate of development of fuel mixture, and further, thereby controlling the rate of flow of the fuel mixture into said fuel mixture passage,

the fuel mixture from the auxiliary carburetor constituting the sole medium containing fuel entering into said fuel mixture passage,

a vapor line leading from the outlet of said fuel mixture passage in the vaporizer unit to the fuel inlt of the main carburetor, and

the casing having a normal position adjacent the horizontal, and mesh inserts positioned in the tubes, and the tubes sloping downwardly in direction opposite the flow of fuel therethrough.

4,883,617

METHOD OF FORMING BINDERLESS CARBON MATERIALS

Malcolm Benn, Sheffield; Alan Grint, Chertsey; Graeme P. Proud, Staines, and Brian Rand, Sheffield, all of England, assignors to The British Petroleum Company p.l.c., England

Filed Mar. 15, 1988, Ser. No. 168,215

Claims priority, application United Kingdom, Mar. 19, 1987, 8706499

Int. Cl.⁴ B29B *11/12;* C01B *31/00*

U.S. Cl. 264—29.7 **6 Claims**

1. A process for the production of a solid carbon material having improved flexural strength which process comprises:

(a) grinding an unoxidized mesophase pitch and recovering ground particles to form ground particles substantially all of which are smaller than 10 micrometers in diameter,

(b) subjecting said ground particles to an oxidation treatment,

(c) forming said ground oxidized particles having substantially no particles greater than 10 micrometers into a shaped article and

(d) carbonising the article.

4,883,618

ABSORBABLE NERVE REPAIR DEVICE AND METHOD

Thomas H. Barrows, Cottage Grove, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 719,009, Feb. 4, 1985, which is a division of Ser. No. 569,557, Dec. 1, 1984, Pat. No. 4,534,349, which is a continuation-in-part of Ser. No. 463,242, Feb. 2, 1983. This application Feb. 17, 1987, Ser. No. 14,869

Int. Cl.⁴ C08J *9/26;* B29C *67/14, 67/20;* A61B *17/04*

U.S. Cl. 264—49 **16 Claims**

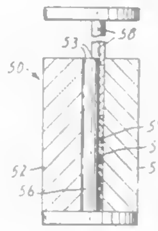
1. A process for preparing a longitudinally-openable, rough-surfaced, porous, tubular device for the repair of a lacerated, severed, or grafted nerve, said process comprising the steps:

(a) providing a mold cavity capable of producing said tubular device, the mold cavity having the shape of the desired device,

(b) filling said mold cavity with a body-absorbable polymer in the form of a nonwoven fibrous web,

(c) bonding said polymer fibers by means of at least one of heat and solvent into a self-supporting longitudinally-openable, tubular device having a porosity in the range of 25 to 95 percent by volume and a coefficient of static friction, μ_s, in the range of 0.40 to 0.90, and

(d) removing said device from said mold cavity.



4,883,619

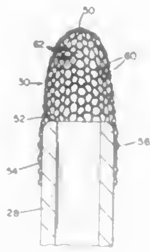
REFRACTORY METAL OXIDE PROCESSES

Walter J. Diederich, West Newbury, and Robert E. Nelson, Weston, both of Mass., assignors to TPV Energy Systems, Inc., Waltham, Mass.

Continuation-in-part of Ser. No. 408,511, Aug. 16, 1982, abandoned, and a continuatioo-in-part of Ser. No. 515,011, Jul. 20, 1983. This application Feb. 24, 1986, Ser. No. 833,322

Int. Cl.⁴ C04B *33/32*

U.S. Cl. 264—60 **45 Claims**



1. A process for producing a sturdy refractory metal oxide article comprising the steps of

heating in an atmosphere in which the partial pressure of oxygen is less than two mm Hg a substrate of organic material impregnated with a metal nitrate compound to increase the temperature of said substrate at a rate of at least two degrees Celsius per minute to thermally decompose said metal nitrate compound as a step in the conversion of said metal nitrate compound to a refractory metal oxide such that evolved oxides of nitrogen interact with said organic substrate material to partially oxidize said organic substrate material;

further heating said impregnated substrate in an atmosphere containing an increased amount of oxygen to decompose and remove said organic material from said impregnated substrate and to complete the conversion of said metal nitrate compound to said refractory metal oxide so that a metal oxide replica of said substrate remains; and

further heating said metal oxide replica to sinter and strengthen said metal oxide replica such that said replica retains such strength after said replica has been heated to a temperature of 1500° C.

4,883,620

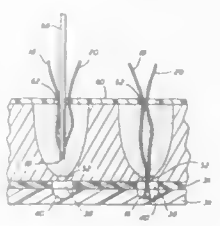
METHOD OF FABRICATION OF A DISINTEGRATING CASTING WEIGHT AND FISH ATTRACTOR

John L. Follett, 14554 Richmond Ave., Fair Haven, N.Y. 13064

Continuation-in-part of Ser. No. 17,481, Feb. 24, 1987, abandoned, which is a division of Ser. No. 717,039, Mar. 28, 1985, Pat. No. 4,663,881. This application Jul. 15, 1988, Ser. No. 220,999

Int. Cl.⁴ B28B *1/08*

U.S. Cl. 264—72 **14 Claims**



1. A method of fabricating a fish attracting casting weight comprising:

(a) preparing a moldable mixture of water, soil and sand size stone;

(b) preparing a mold having an upper opening and a surface defining a substantially hemispherical cavity with a lower opening extending through said mold at an apex of said hemispherical cavity defining surface;

(c) positioning said mold with said apex facing downward;

(d) filling said cavity with said mixture such that said mixture includes an upper surface;

(e) subjecting said mold to a first vibration to compact said mixture in said cavity;

(f) inserting a length of flexible material having free ends and a medial portion into said compacted mixture through said upper surface of said compacted mixture and out through said lower mold opening such that said free ends of said flexible material extend out of said upper surface of said compacted mixture and said medial portion forms a small, closed loop extending out of said mold through said lower opening;

(g) subjecting said mold to a second vibration to compact said mixture about said flexible material;

(h) drying said compacted mixture to remove substantially all of said water therefrom and to fabricate said casting weight; and

(i) removing said casting weight with said flexible material embedded therein from said cavity.

4,883,621

METHOD FOR FORMING CAST ARTICLE BY SLIP CASTING

Tatsuo Natori, Kashiwa; Takashi Shimaguchi, Ibaraki; Akihide Watanabe, Ibaraki, and Toshihiro Yamada, Ibaraki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 9, 1986, Ser. No. 883,759

Claims priority, application Japan, Jul. 12, 1985, 60-152235; Nov. 1, 1985, 60-243953

Int. Cl.⁴ C04B *33/28*

U.S. Cl. 264—86 23 Claims

1. A method for forming a cast article by slip casting through casting of a slip into a casting mold composed mainly of gypsum and removing of the casting mold after solidification of the slip, which comprises heating the casting mold prior to casting the slip therein, said casting mold being heated at a temperature of 120°-130° C. such that the strength of the casting mold is lowered, but is kept within a shape-maintaina-

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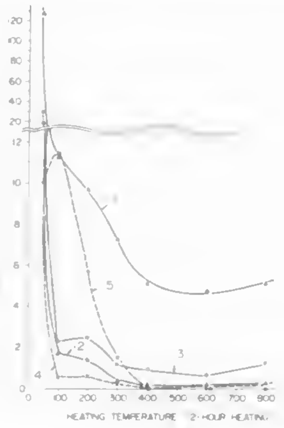
ble range, then casting the slip into the casting mold, forming a green body from the slop, and removing the casting mold,

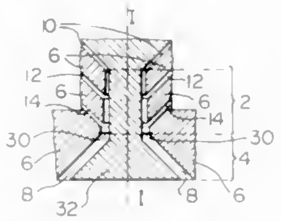


whereby cracks and internal stresses in the geen body due to the strength of the casting mold are avoided.

4,883,622
METHOD OF MANUFACTURING DISCRETE FIBER REINFORCED, PLASTIC TUBE AND APPARATUS THEREFOR

John M. Dealy, Westmount; Jean-Michael Charrier, Ile des Soeurs, and Shailesh Doshi, Montreal, all of Canada, assignors to Canadian Patents and Development Limited, Ottawa, Canada

Filed Sep. 17, 1987, Ser. No. 97,723
Int. Cl.⁴ B29C *47/24*
U.S. Cl. 264—108 6 Claims



1. A method of extruding discrete fiber reinforced, plastic tube, comprising:

(a) introducing a first plastic material in an upstream portion of an annular die channel for forming an inner layer of the tube;

(b) introducing a second plastic material filled with discrete fibers in the upstream portion of the channel and around the whole of the inner layer for forming an intermediate layer of the tube;

(c) introducing a third plastic material in the upstream portion of the channel and around the whole of the intermediate layer for forming an outer layer of the tube; and

(d) co-extruding the materials through a downstream portion of the annular die channel which is divergent diametrically in the downstream direction so that at least a major portion of the fibers are oriented to extend predominantly in a general direction lying between the circumferential and the longitudinal axis of the tube with the orientation of the fibers being generally the same throughout the thickness of the intermediate layer.

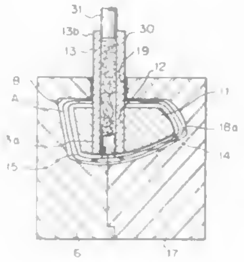
4,883,623
METHOD FOR PRODUCING A GOLF CLUB HEAD

Itsushi Nagamoto; Tatsuo Nakanishi, and Tomoharu Yamashita, all of Hamamatsu, Japan, assignors to Yamaha Corporation, Japan

Continuation of Ser. No. 092,431, Sep. 3, 1987, abandoned. This application Jan. 12, 1989, Ser. No. 296,848

Claims priority, application Japan, Nov. 28, 1986, 61-285552; Dec. 27, 1986, 61-313459; Sep. 8, 1987, 61-211223

Int. Cl.⁴ B29C *33/12, 45/14, 45/16, 45/36*
U.S. Cl. 264—108 6 Claims



1. In a method for forming a golf club head in a split mold having a mold cavity to define the size and shape of the golf club head, the steps of:

a. forming a sized and shaped crude core with an infusion tube connected thereto and extending from the top to the bottom of the crude core so that the infusion tube has an end opening to the exterior of the bottom of the crude core,

b. covering the outersurface of the crude core with sheets of long fibrous material so that the sheets also cover the end opening of the infusion tube,

c. setting the covered crude core and infusion tube in the mold so that the infusion tube is held by the closed mold to fix the covered crude core in predetermined spaced relation to the walls of the mold cavity to define therewith a peripheral cavity about the crude core in which the fibrous sheet material is disposed in the peripheral space between the crude core and the mold cavity,

d. forcing fiber reinforced plastic under pressure from the open end of the infusion tube so that a substantial portion passes through the sheets of fibrous material pressing and orienting the combined fiber reinforced plastic and occluded fibrous sheets of materials against the walls of the mold cavity,

e. heating the mold to harden the fiber reinforced plastic in assembled position about the occluded fibrous sheets of material to form a shell having the desired size and shape of the golf club head, and

f. opening the split mold and separating the formed golf club head from the mold cavity.

4,883,624
METHOD AND APPARATUS FOR MANUFACTURING BLANKS OF SEMI-FINISHED PRODUCTS

Albert J. Spaay, Bretten, Fed. Rep. of Germany, assignor to Matec Holding AG, Kusnacht, Switzerland

Continuation of Ser. No. 835,229, Mar. 19, 1986, abandoned. This application Jan. 6, 1988, Ser. No. 143,274

Claims priority, application Fed. Rep. of Germany, Mar. 5, 1985, 3507720

Int. Cl.⁴ B29C *31/08, 43/02;* **D04H** *5/04*
U.S. Cl. 264—112 13 Claims

1. A process for manufacturing products from fiber-reinforced synthetic resin compound and fiber matter comprising:

(a) making a plurality of batches of fiber-reinforced thermosetting synthetic resin compound without wrapping and having a sufficiently high viscosity that substantially no impregnation of a glass fiber mat will occur at ambient temperature,

(b) providing a plurality of mats of material capable of being impregnated by said fiber-reinforced synthetic resin compound upon heating thereof, each said mat having an area and shape which correspond to the final product,

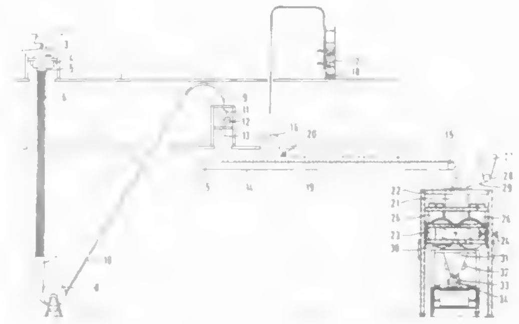
(c) providing molding apparatus including heatable molds,

(d) placing a said batch of resin compound without wrapping on a said mat immediately after making said batch of resin compound,

(e) transporting a mat with a said batch of resin compound thereon to said molding apparatus, and

(f) molding said batch and mat in said molding apparatus by applying heat and pressure thereto.

7. Apparatus for manufacturing blanks form fiber-reinforced synthetic resin compounds for automatic feeding of synthetic resin molding presses, said presses producing fiber-reinforced synthetic resin goods, comprising:



(a) a molding plant for producing synthetic resin compound comprising a pair of rollers, means for rotating said rollers in opposite directions, and means for feeding pumpable resin components, fiber components such as cut glass and mineral fibers and additives to the rollers, and vibrating hopper means for receiving material from said rollers;

(b) batching means for receiving material from said vibrating hopper means and for compressing the synthetic resin compounds received from said hopper means into batches of predetermined weight and density, said batching means being without means for wrapping said batches;

(c) means for producing resin bonded fiber mats with structure and filling weight adapted to the desired pattern of fiber reinforcement of the synthetic resin goods to be produced;

(d) stamping means for stamping pieces out of the fiber mat having shapes which conform to the shape of the synthetic resin goods to be produced;

(e) means for delivering each of said batches provided by said batching means, without wrapping thereon, onto a piece of fiber mat so that each batch of synthetic resin compound is supported by a piece of fiber mat, and

(f) means for transporting the fiber mat pieces together with the synthetic resin compound batches supported on them.

4,883,625
PROCESS FOR THE MANUFACTURE OF SECTIONS OF THERMOPLASTIC RESIN REINFORCED WITH CONTINUOUS FIBERS

Michel Glemet, Serquigny, and Gilles Cognet, Bernay, both of France, assignors to Societe Atochem, Puteaux, France

Filed Apr. 4, 1988, Ser. No. 176,854

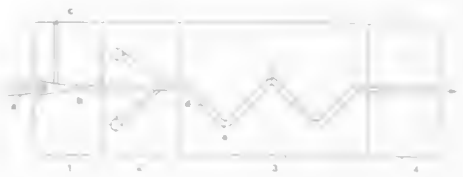
Claims priority, application France, Apr. 9, 1987, 87 04996

Int. Cl.⁴ B05D *1/00;* **B29C** *47/02*
U.S. Cl. 264—136 3 Claims

1. In a process for the manufactuie of articles of thermoplastic resin reinforced with continuous fibers by coating continuous rovings with thermoplastic resin, the improvement which comprises:

expanding the rovings to form a sheet of fibers aligned in parallel by passing the rovings through at least one baffle of a first baffle zone;

coating the fibers with molten resin to form a coated fiber sheet; and



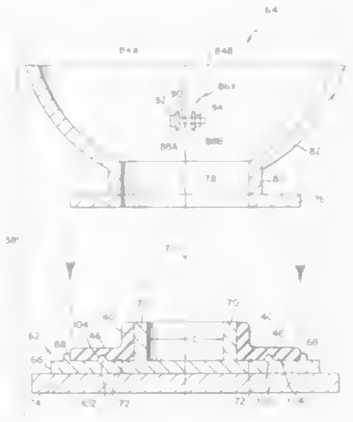
passing the coated fiber sheet through an impregnation zone comprising a channel having at least two baffles opposite to, and parallel with, each other to force the resin to penetrate between the fibers wherein the baffles in the impregnation zone are parallel to at least one baffle in the first baffle zone.

4,883,626
METHOD OF MOLDING A MANHOLE FRAME FOR SPHERICAL TANKS

William J. Weidman, Old Tappan, N.J., and Edmund Netz, Rego Park, N.Y., assignors to Cardinal Tank Corp., Brooklyn, N.Y.

Division of Ser. No. 29,625, Mar. 24, 1987, Pat. No. 4,818,211. This application Nov. 21, 1988, Ser. No. 274,274

Int. Cl.⁴ B28B *1/48, 7/16, 1/34;* **B29C** *33/40*
U.S. Cl. 264—156 10 Claims



1. A method of making an access-hole frame for a spherical tank made of a moldable, nonmetal material, the access-hole frame including a cylindrical neck having a neck axis and circular top and bottom edges as oriented with the spherical tank and forming a cylindrical access hole, an outwardly extending, partly spherical collar connected to the bottom edge of the neck, and a radially outwardly extending access-hole flange having top and bottom sides an connected to the top edge of the neck, comprising the following steps:

(a) placing a bottom die piece onto a rotatable table; the bottom die means including a bottom die piece having a horizontal base wall, an outer matrix ring connected to the base wall, and an inner matrix ring connected to the base wall, the outer and inner matrix rings being centered at a common vertical axis adapted to be aligned with the axis of the neck of the to be formed access-hole frame, the outer matrix ring having an inner surface that extends vertically upwardly from the base wall; the inner matrix ring having an outer surface that extends vertically upwardly from the base wall; the base wall having an upper surface, the upper surface and the inner and outer surfaces

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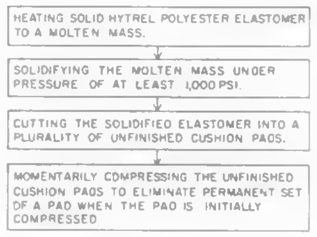
of the outer and inner matrix rings defining an access-hole-flange cavity in which the access-hole flange is formed;
(b) preparing an operational top die piece by joining a pair of top die pieces together by connecting at least one die-lock connected to the pair of top die pieces; the operational top die piece including a circular matrix flange having a circular center hole having an axis aligned with the vertical axis of the bottom die piece, the matrix flange being adapted to be placed in contact with the outer matrix ring of the bottom die piece and alignable with the horizontal base wall of the bottom die piece; the operational top die further including a cylindrical matrix wall having top and bottom rims, the bottom rim being connected to the matrix flange at the inner rim of the center hole, the cylindrical matrix wall having an axis coextensive with the vertical axis, the neck of the accesshole frame having a thickness, the cylindrical matrix wall having an inner surface which is spaced from the outer surface of the inner matrix ring of the bottom die piece at a distance that is the thickness of the neck; the operational top die further including an upwardly and outwardly dished matrix skirt configured as a segmented sphere and having top and bottom sides, the bottom side being connected to the top rim; wherein as mounted with the spherical tank the access-hole flange has a bottom surface, the neck has an outer surface, and the collar has an outer surface; wherein the matrix flange has a bottom surface which is the forming surface of the bottom surface of the access-hole flange; wherein the cylindrical matrix wall has an inner surface which is the forming surface of the outer surface of the neck; and wherein the matrix skirt has an inner surface which is the forming surface of the outer surface of the collar;
(c) activating the rotatable table so that it slowly turns;
(d) then spraying the surfaces defining the access-hole flange cavity and the outer surface of the inner matrix ring with a thin layer, preferably approximately 0.10 in., of catalyzed polyester resin so that the outer surface of the access-hole frame to be formed will have a glossy surface;
(e) then spraying the surfaces defining the access-hole flange cavity and the outer surface of inner matrix ring with a liquidized nonmetal molding material and a reinforcing material;
(f) then rolling out the liquidized molding material in order to completely wet the reinforcing material and to eliminate air inclusions;
(g) repeating steps (e) and (f) until the liquidized molding material fills the access-hole flange cavity to overflowing;
(h) then deactivating the rotatable table;
(i) then placing the joined top die pieces upon the bottom die piece centered at an axis so that excess liquidized molding material lying in the area of the access-hole flange cavity is forced from the bottom die piece so that air inclusions are eliminated; the joined top die pieces being sufficiently heavy so as to force the excess liquidized molding material from the bottom die piece;
(j) then activating the rotatable table;
(k) then spraying the inner surfaces of the cylindrical matrix wall and the skirt with a thin layer, approximately 0.10 in., of catalyzed polyester resin in order to give the surface of the access-hole frame a glossy surface;
(l) then spraying the inner surfaces of the cylindrical matrix wall and the skirt with the liquidized molding material in the manner set forth in step (e);
(m) then rolling out the liquidized molding material sprayed on in step (l) in order to eliminate air inclusions and in order to completely wet the reinforcing material mixed with the liquidized molding material; during rolling out the curvature of the skirt is followed;,
(n) repeating steps (l) and (m) until the projected wall thicknesses of the neck and the access-hole of the projected access-hole frame are attained;
(o) then allowing the liquidized moldable material to harden;
(p) then removing the bottom die piece from the formed access-hole frame by lifting the joined top die pieces away from the bottom die piece along with the formed access-hole frame;
(q) removing the joined top die pieces from the accesshole frame by first unconnecting the die-locks by freeing and removing the bolts and then pulling the joined top die pieces apart so as to free the access-hole frame;
(r) then inverting the access-hole frame so that the flange is on top, and the collar is on the bottom; and
(s) then drilling bolt holes through the access-hole flange at equal circular intervals concentric around the axis.

4,883,627

METHOD OF MAKING ELASTOMERIC CUSHION PAD

Raymond C. Hettlinger, 2279 Weir Dr., Hudson, Ohio 44236
Filed May 27, 1988, Ser. No. 199,456
Int. Cl.^{4} B29C *43/02*
U.S. Cl. 264—157 14 Claims


HEATING SOLID HYTREL POLYESTER ELASTOMER TO A MOLTEN MASS.
SOLIDIFYING THE MOLTEN MASS UNDER PRESSURE OF AT LEAST 1,000 PSI.
CUTTING THE SOLIDIFIED ELASTOMER INTO A PLURALITY OF UNFINISHED CUSHION PADS.
MOMENTARILY COMPRESSING THE UNFINISHED CUSHION PADS TO ELIMINATE PERMANENT SET OF A PAD WHEN THE PAD IS INITIALLY COMPRESSED

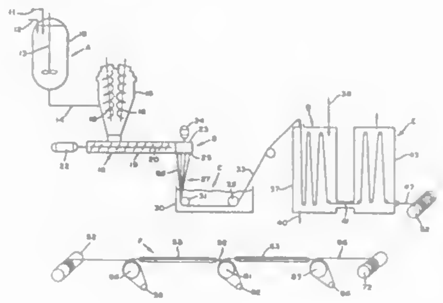
1. A method of forming an unannealed cushion pad, comprising the steps of:
(a) heating solid elastomeric material to a molten mass;
(b) solidifying the molten mass in an elongated chamber under a pressure of at least one thousand pounds per square inch, the axial length of the chamber being sufficient to form a plurality of cushion pads;
(c) removing the solidified material from the chamber and, without annealing it, cutting it crosswise into a plurality of cushion pads which have a thickness that is greater than and correlated to the correspondingly measured smaller thickness of a finished cushion pad; and
(d) compressing each unannealed pad sufficiently to at least substantially reduce permanent deformation of a pad which occurs when an uncompressed pad is initially compressed, to form a finished, unannealed cushion pad.

4,883,628

METHOD FOR PREPARING TENACITY AND MODULUS POLYACRYLONITRILE FIBER

Young D. Kwon, Morristown; Sheldon Kavesh, Whippany, and Dusan C. Prevorsek, Morristown, all of N.J., assignors to Allied-Signal Inc., Morris Township, Morris County, N.J.
Continuation of Ser. No. 557,984, Dec. 5, 1983, abandoned. This application Sep. 18, 1986, Ser. No. 910,245
Int. Cl.^{4} D01F *6/18*
U.S. Cl. 264—178 F 25 Claims

1. A process comprising the steps:
(a) forming a solution of a substantially linear polyacrylonitrile having a weight average molecular weight at least about 500,000 in a first solvent at a first concentration of about 2 to about 15 weight percent polyacrylonitrile,
(b) extruding said solution through an aperture, said solution being at a temperature no less than a first temperature upstream of the aperture and being substantially at the first concentration both upstream and downstream of said aperture,
(c) cooling the solution adjacent to and downstream of the aperture to a second temperature below the temperature at which a rubbery gel is formed, forming a gel containing first solvent of substantially indefinite length,
(d) extracting the gel containing first solvent with a second, volatile solvent for a sufficient contact time to form a fibrous structure containing second solvent, which gel is substantially free of first solvent and is of substantially indefinite length;
(e) drying the fibrous structure containing second solvent to form a xerogel of substantially indefinite length free of first and second solvent; and
(f) stretching at least one of:



(i) the gel containing the first solvent,
(ii) the fibrous structure containing the second solvent and,
(iii) the xerogel, at a total stretch ratio sufficient to achieve a tenacity of at least about 5 g/denier and a secant modulus of at least about 100 g/denier.

4,883,629

PROCESS FOR THE PRODUCTION OF DIMENSION-STABLE POLYESTER TIRE CORD

Bruno Lang, Ballwil, Switzerland, assignor to Viscosuisse SA, Emmenbruücke, Switzerland
Continuation of Ser. No. 870,311, Jun. 3, 1986, abandoned. This application Oct. 14, 1988, Ser. No. 259,510
Claims priority, application Switzerland, Jun. 19, 1985, 02597
Int. Cl.^{4} D02J *1/22*
U.S. Cl. 264—289.6 1 Claim

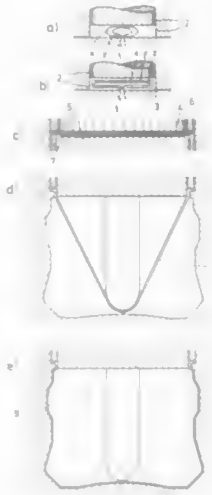
1. Process for the production of dimension-stable polyester tire cord, comprising of at least 95 percent by weight of polyethylene terephthalate having a limit viscosity of more than 0.70 dl/g and a titer of at least dtex 1100×2, by means of a heat treatment of the polyester cord, including hot stretching and hot relaxation, the stretching effected at a higher temperature than the relaxation, wherein the polyester tire cord is stretched between 3 and 7 percent in a first process step, and the polyester tire cord is relaxed between 3 and 7 percent in a second process step at a temperature between 205°-250° C. resulting in a total stretching of less than 5%.

4,883,630

METHOD FOR PRODUCING HOLLOW ARTICLES OF THERMOPLASTIC MATERIALS

Günter Langecker, Meinerzhagen, Fed. Rep. of Germany, assignor to Battenfeld Fischer Blasformtechnik GmbH, Lohmar, Fed. Rep. of Germany
Filed Dec. 22, 1986, Ser. No. 944,856
Claims priority, application Fed. Rep. of Germany, Dec. 20, 1985, 3545162
Int. Cl.^{4} B29C *49/06, 49/12, 49/22, 49/64*
U.S. Cl. 264—513 17 Claims

1. A method of producing hollow articles of thermoplastic materials, comprising the steps of
preparing a compact blank composed of at least two plastics material layers which surround one another by successively injecting the plastics material components for each layer into a mold cavity until the mold cavity is filled, the mold cavity having a variable volume, the volume of the mold cavity being adjusted as each plastics material component is injected, the adjustment of the volume being carried out at a rate in accordance with the rate of flow of each plastics material component as each plastics material component enters the mold cavity, so that the volume of the mold cavity is adjusted from a minimum volume corresponding to the quantity of the first plastics material component injected in the mold cavity to a maximum volume corresponding to the quantities of all plastics material components injected in the mold cavity,

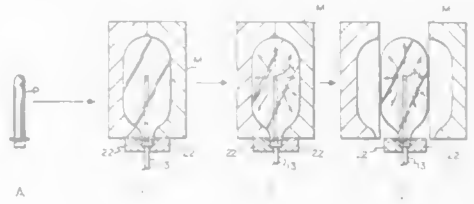


conditioning at least portions of the blank from outside the blank while the blank is in a heated state by an additional heat treatment,
removing the heated blank from the mold cavity,
reducing the thickness and increasing the surface area size of the heated blank by a compression molding operation, and
stretching and blow-molding the compressed heated blank into a hollow article.

4,883,631

HEAT SET METHOD FOR OVAL CONTAINERS

Prakash R. Ajmera, Toledo, Ohio, assignor to Owens-Illinois Plastic Products Inc., Toledo, Ohio
Continuation of Ser. No. 909,800, Sep. 22, 1986, abandoned. This application Apr. 27, 1988, Ser. No. 188,092
Int. Cl.^{4} B29C *35/16, 49/06, 49/08, 49/18*
U.S. Cl. 264—528 28 Claims



1. In a method for making a partially crystalline, biaxially oriented, heat set plastic container from a hollow polyethylene terephthalate parison having an open end and a closed end, comprising engaging the open end of the parison which is at a temperature within its molecular orientation temperature range, enclosing the parison in a hot mold, the mold being at heat-setting temperature of 180° C. to 230° C., expanding the parison to form the container within the blow mold by introducing a blow molding fluid within the parison, to induce biaxial orientation of the parison and force the parison into intimate contact with the blow mold, and to maintain contact of the parison with the blow mold by the internal pressure of the blow molding fluid for a time sufficient to induce partial crystallization of the plastic material, and further comprising the steps of: cooling the container with a cooling fluid that

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changes its state to cool by the latent heat of vaporization, the cooling fluid being selected from the group consisting of liquid carbondioxide, liquid nitrogen, and a combined mixture of water vapor and sub-zero temperature air, the cooling fluid having a positive pressure sufficient to allow the cooling fluid to change its state and to keep the container in contact with the heated mold, while at the same time exhausting the blow molding fluid with the hot mold closed, the cooling within the mold being for a time of 0.5 to 9.5 seconds until the average temperature of the container is reduced to a condition such that it will not expand under the positive pressure of the cooling fluid but would collapse in the absence of the positive pressure of the cooling fluid so that the positive pressure of the cooling fluid prevents the container from collapsing when the hot mold is opened, and continuing to cool the container while preventing the container from collapsing when the hot mold is opened with positive pressure of the cooling fluid until the container is self-sustaining.

4,883,632

METHOD FOR SHAPING THERMOPLASTIC FABRICS

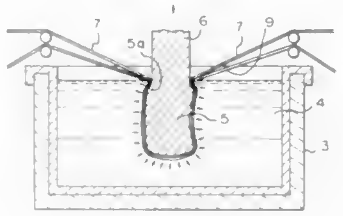
Fumio Goto, and Taro Otawa, both of Kurashiki, Japan, assignors to Namba Press Works Co., Ltd., Kurashiki, Japan

Filed Oct. 21, 1988, Ser. No. 265,671

Ciaims priority, application Japan, Feb. 23, 1987, 62-038154

Int. Cl.⁴ B29C *51/42*

U.S. Cl. 264—544 **11 Claims**



1. A method for shaping thermoplastic fabrics comprising:

(a) preparing a cover material from fabrics composed of fibers having both crystalline and non-crystalline regions therein, or thermoplastic films,

(b) providing a liquid metallic bath comprising eutectic mixtures of metals and having an eutectic point at least equal to or higher than the softening point of said non-crystalline regions or said thermoplastic films, and lower than the melting point of said crystalline regions or said films, and said metallic bath being heated to a temperature higher than the eutectic point and lower than the melting point of said crystalline regions or said films, said metallic bath having relatively high density,

(c) using an uppr mold having three dimensional outer configurations substantially corresponding to outer contours of final products to be obtained for pushing down and immersing said cover materials into said liquid metallic bath to thereby cause said cover material to follow the outer configurations of said upper mold and be shaped accordingly,

(d) taking out the shaped cover material from said bath along with said upper mold, and cooling said cover material, and

(e) withdrawing said upper mold from the inside of said shaped cover material.

4,883,633

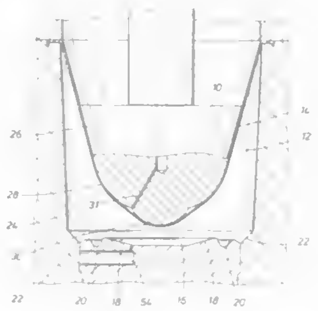
PROCESS AND APPARATUS FOR PRODUCTION OF ARTICLES WITH SELECTIVELY THINNED PORTIONS USING A MULTI-RADIUS FORMING PLUG

Kent H. French, Newport News, Va., assignor to Rampart Packaging Inc., Houston, Tex.

Filed Dec. 24, 1987, Ser. No. 137,839

Int. Cl.⁴ B29C *51/10*

U.S. Cl. 264—550 **10 Claims**



1. In a process for making cupped articles from thermoplastic sheet or billets which comprises clamping a heated sheet or billet of a thermoplastic material in the solid phase state between a forming plug and a hollow mold having an end opening, moving the forming plug into the opening to carry the sheet or billet into the mold and stretch a portion of the sheet or billet and introducing pressure fluid into the stretched portion of the sheet or billet to form said article by making the sheet or billet conform to the shape of the hollow mold, the improvements which comprise

forming a bellows bottom in the cupped articles by providing the hollow mold with a closed end having a flat central portion, a tapered portion which extends outwardly from the central portion, tapers in the direction of the open end of the mold and ends in a first ridge which extends away from the open end and vertically beyond the flat central portion, and a second ridge which extends away from the open end of the mold and horizontally beyond the first ridge, and

forming said bellows bottom with selectively thinned portions by providing the forming plug with inwardly tapering sides which terminate in a curved portion, said curved portion terminating at a plug tip wherein the radius of the curved portion is greater than the radius of the plug tip.

4,883,634

PROCESS FOR MANUFACTURING A HIGH MODULUS POLY-P-PHENYLENE TEREPHTHALAMIDE FIBER

Terry S. Chern, Richmond, Va.; Stephan C. De La Veaux; Jacob Lahijani, both of Wilmington, Del., and James E. Van Trump, Hockessin, Del., assignors to E. I. DU Pont De Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 868,667, May 30, 1986, abandoned. This application Apr. 27, 1987, Ser. No. 41,589

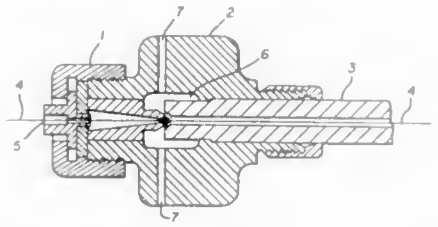
Int. Cl.⁴ D01D *10/02*

U.S. Cl. 264—555 6 Claims

1. A process for manufacturing a fiber of poly-p-phenylene terephthalamide having a modulus greater than 1100 grams per denier and tenacity of greater than 18 grams per denier, the polymer of said fiber having a Crystallinity Index of at least 75%, comprising the steps of:

exposing a wet never dried fiber of poly-p-phenylene terephthalamide having absorbed therein 20 to 100% of water based on the weight of dry fiber and having an acidity of less than 60 and a basicity of less than 10, to a turbulent, heated atmosphere wherein the atmosphere, in the direct vicinity of the fiber being exposed, has a flow of greater than Reynolds Number 10,000 throughout the duration of the exposure, the atmosphere has a temperature of 500 to 660 degrees,

the exposure is for a duration of 0.25 to 3 seconds, and



the fiber is maintained at a tension of 1.5 to 4 grams per denier.

4,883,635

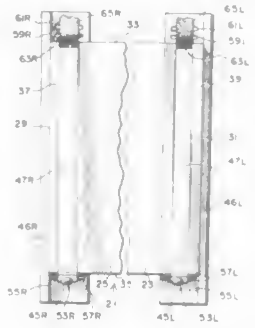
MEANS FOR MANUALLY HOLDING A STACK OF KARATE BOARDS

Gerald Goradesky, 17425 NE. 7th Ave., North Miami Beach, Fla. 33162

Filed May 26, 1988, Ser. No. 199,320

Int. Cl.⁴ A63B *69/00*

U.S. Cl. 272—76 **13 Claims**



1. Means for manually holding a stack of one or more karate boards in a striking position, each board having opposed major board surfaces, two opposite, substantially parallel sides, and marginal areas adjacent said sides,

said manual holding means comprising two physically separate components adapted to be used together with said board, each said component comprising:

an elongated slat having a contact surface adapted to contact one of said marginal areas on the outside board of said stack,

handle means mounted longitudinally on said slat opposite said contact surfaces,

a strap having a proximal end portion attached to said slat,

and means for fastening said strap around said stack and to said slat to bind said component to said stack such that said components are physically separated when in said striking position wherein said strap fastening means includes a transverse proximal slot and distal slots in each of said slats such that said straps are inserted into said slots for fastening said boards to said components.

4,883,636

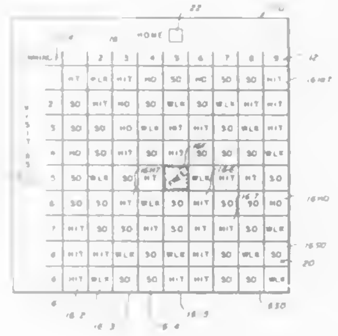
BASEBALL BINGO GAME

Willard E. Fantle, Jr., 1828 - 13th St., Greeley, Colo. 80631

Filed Sep. 29, 1988, Ser. No. 250,511

Int. Cl.⁴ A63F *3/06*

U.S. Cl. 273—269 **15 Claims**



1. A game card for use in combination with a baseball game, the card including:

nine rows and nine columns which intersect to form a nine-by-nine matrix having eighty-one zones, each zone being associated with a particular inning and containing indicia which corresponds to a regulation offensive play associated with a baseball game;

the card further including means for identifying the rows according to the at-bat attempts of one team participating in the baseball game, and further means for identifying the columns according to the at-bat attempts of the other team participating in the baseball game;

means for identifying when said one team executes the regulation offensive play indicated in a particular zone during its at-bat attempt in the inning associated with that particular zone; and

means for identifying when the other team executes the regulation offensive play indicated in a particular zone during its at-bat attempt in the inning associated with that particular zone.

4,883,637

CLOSURE ARRANGEMENT FOR SPENT NUCLEAR FUEL SHIPPING CONTAINERS

John D. McDaniels, Jr., Duluth, Ga., assignor to Nuclear Assurance Corporation, Norcross, Ga.

Filed Aug. 25, 1988, Ser. No. 236,204

Int. Cl.⁴ G21F *5/00*

U.S. Cl. 376—272 **15 Claims**

11. A closure system for closing and sealing a cask member having an open end, said closure system comprising

a stepped bore in the open end of said cask member, said bore having a first diameter forming a first shoulder within the open end of said cask, and a second, larger diameter forming a second shoulder in said bore, the wall of said bore formed by the first diameter having a continuous annular groove therein, and the wall of said bore formed by the second diameter having one or more radially extending slots formed therein,

a first closure member adapted to rest upon said first shoulder,

a second closure member adapted to rest upon said second shoulder,

said second closure member having a continuous peripheral groove,

first locking means mounted on one surface of said first closure member having a plurality of blade members having locked and unlocked positions and adapted to fit into said annular groove when in said locked position,

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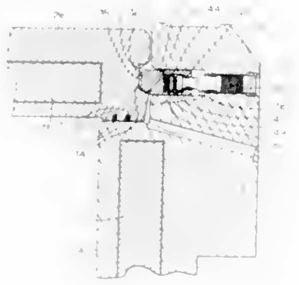
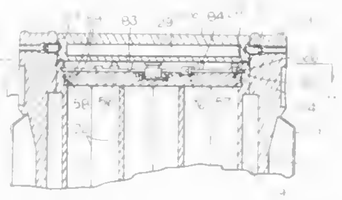
second locking means mounted in said one or more radially extending slots having locked and unlocked positions and adapted to engage said peripheral groove of said second closure member when in said locked position,





means for forcing said second locking means into engagement with said second closure member, and

sealing members mounted in said first and second closure members.

4,883,638

METHOD AND DEVICE FOR PRODUCING A FRICTION OR RUBBING ELEMENT

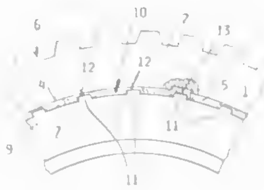
Fred Blankenhagen, Penzberg, and Hermann Pütz, Schongau, both of Fed. Rep. of Germany, assignors to Enfo Grundlagenforschungs AG, Döttingen, Switzerland

Filed May 10, 1988, Ser. No. 192,700

Claims priority, application Austria, May 20, 1987, 1282/87

Int. Cl.⁴ B22F *7/00*

U.S. Cl. 419—9 3 Claims



1. A method for producing a friction or rubbing element for clutches, brakes, bearings or the like, which consists of a metal ring element with at least one uneven friction or rubbing surface which is substantially rotationally symmetrical about the ring axis and to which a spray-sintered lining is applied, the ring element being placed in an at least largely level position together with a sinter mould disposed substantially concentrically to the side of the friction or rubbing surface in such a manner as to maintain an annular gap, the annular gap being filled with sinter powder, sintering being carried out at sintering temperature, and the spray-sintered lining being compacted, characterised in that in order to compact the the sinter powder contained in the annular gap **(10)** at sintering temperature, a sinter mould (7) is used of a material having a coefficient of thermal expansion which is different from that of the ring element (2), and which in the case of an internal sinter mould (7) is greater than and in the case of an external sinter mould is less than that of the ring element (2).

4,883,639

METHOD OF MANUFACTURING AN OBJECT OF A POWDERED MATERIAL BY ISOSTATIC PRESSING

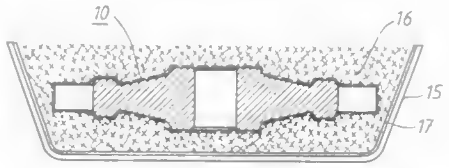
Jan Adlerborn; Hans Larker, and Jan Nilsson, all of Robertsfors, Sweden, assignors to ABB Cerama AB, Robertsfors, Sweden

Filed Dec. 16, 1988, Ser. No. 285,597

Claims priority, application Sweden, Dec. 18, 1987, 8705058

Int. Cl.⁴ B22F *1/00*

U.S. Cl. 419—49 9 Claims



1. A method of manufacturing an object of a powdered material by isostatic pressing of a body, preformed from the powdered material, whereby the preformed body is surrounded by a casing, which consists of a boron oxide-containing glass or a boron oxide-containing material which forms glass upon heating and which at least for the main part is transferred to molten phase, before the isostatic pressing is carried out while sintering the powder, wherein in that the boron oxide containing glass, or the material forming glass when heated, contains 48–52 percent by weight boron oxide, 46–50 percent by weight silicon dioxide and 1.5–2.5 percent by weight aluminium oxide.

4,883,640

TITANIUM-NIOBIUM-NICKEL BRAZING ALLOY

Howard Mizuhara, Hillsborough, Calif., assignor to GTE Products Corporation, Stamford, Conn.

Filed Jun. 17, 1988, Ser. No. 207,803

Int. Cl.⁴ C22C *14/00, 19/03, 30/00*

U.S. Cl. 420—417 6 Claims

1. A brazing alloy having a brazing temperature of about 1020° to 1250° C. consisting of, in weight percent, 37–75 titanium, 5–43 niobium, 20–58 nickel.

4,883,641

CLOSURE AND CONTAINER ASSEMBLY FOR BIOLOGICAL STERILITY INDICATOR

James H. Wicks, and William E. Foltz, both of St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

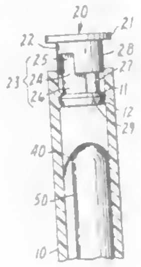
Continuation-in-part of Ser. No. 66,586, Jun. 26, 1987, abandoned, which is a continuation of Ser. No. 823,535, Jan. 29, 1986, abandoned, which is a continuation of Ser. No. 621,554, Jun. 18, 1984, abandoned. This application Sep. 27, 1988, Ser. No. 249,982

Int. Cl.⁴ B65D *51/16*

U.S. Cl. 422—50 15 Claims

1. A closure and container assembly comprising a closure having a top and a depending sidewall, and a container having an interior surface and an opening for receiving the closure, wherein the closure is movable between two positions within the container such that when in the first position the container is sealed and when in the second position fluid communication exists between an environment outside of the container and the interior of the container via a tortuous pathway defined by at least one recess along the interior surface of the container or

the exterior surface of the sidewall of the closure which tortuous pathway is constructed and arranged to cause at least two deflections of a fluid entering the container and to require that said fluid entering the container flow in a direction which forms an angle of 90° or less with an axis running through the center of said container, from said opening to the bottom of said container, to displace fluid in the container and is sized and shaped to accommodate a rapid rate of flow therethrough so that when tested to determine the flow resistance thereof, in a test wherein a hole is drilled in said bottom of said container and the hole is connected to a source of air, upon forcing air from the source of air through the container across the tortuous pathway, when the closure is in its second position and the assembly is placed in a tank of water at the bottom of a 20 cm column of water extending above the surface of the water in the tank, the air flowing across the tortuous pathway and into the column of water under 10 mm Hg pressure will displace a 90 ml, 14 cm column of water in a maximum time of 10 seconds.



4,883,642

MEANS TO AUTOMATICALLY HOLD, PROCESS, STORE AND ANALYZE BIOLOGICAL SAMPLES

Jean-Claude Bisconte, Vaucresson, France, assignor to Universite Paris-Nord, Villetaneuse, France

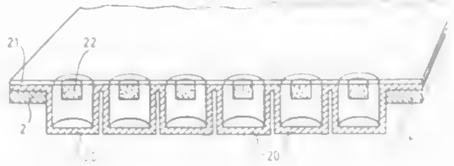
PCT No. PCT/FR85/00138, § 371 Date Sep. 11, 1986, § 102(e) Date Sep. 11, 1986, PCT Pub. No. WO85/05563, PCT Pub. Date Dec. 19, 1985

PCT Filed Jun. 4, 1985, Ser. No. 865,736

Claims priority, application France, Jun. 5, 1984, 84 08769

Int. Cl.⁴ G01N *35/02*

U.S. Cl. 422—66 8 Claims



1. A device for the automatable analysis of biological samples, comprising:

a flexible coiled, non-hydrophobic polymeric ribbon, said ribbon having two longitudinally extending laternal edges, a longitudinally extending biological storage zone for storing biological samples on a first lateral section of an upper surface of said ribbon, and a longitudinally extending first data storage zone longitudinally coextensive with said biological storage zone and made of a magnetic or optical data storage medium for storing said data specific to each biological sample to be stored on said biological storage zone, on a second lateral section of a longitudinal surface of said ribbon, said second lateral section being at a lateral edge of said ribbon and spatially distinct from said first lateral section, a longitudinally extending second data storage zone longitudinally coextensive with said biological storage zone and made of said data storage medium, for storing data specific to each biological sample to be stored on said biological storage zone, on a third lateral section of said ribbon at a laternal edge of said ribbon and spatially distinct from said first and second lateral sections, said biological storage zone being positioned centrally with respect to said lateral edges and between said first and second data storage zones wherein said data storage medium of both said first and second data storage zones is attached to a lower surface of said ribbon, opposite said upper surface, so that said first and second data storage zones form, respectively, first and second shoulders downwardly depending from each said lateral edge, so as to form a reservoir between adjacent turns of said coil and between said lateral shoulders, said shoulders contacting the upper surface of said ribbon at an adjacent lower turn of said coil, said data storage medium being capable of storing data indicating the longitudinal location of any biological sample stored on said biological storage zone.

4,883,643

OXYGEN SENSOR PROTECTED AGAINST CONTAMINANTS

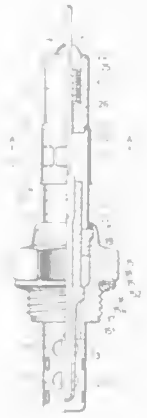
Hisaharu Nishio, and Toshio Okumura, both of Aichi, Japan, assignors to NGK Spark Plug Co., Ltd., Aichi, Japan

Continuation of Ser. No. 129,878, Dec. 4, 1987, abandoned, which is a continuation of Ser. No. 876,061, Jun. 19, 1986, abandoned. This application Mar. 28, 1989, Ser. No. 332,425

Claims priority, application Japan, Jun. 20, 1985, 60-931169

Int. Cl.⁴ G01N *31/12*

U.S. Cl. 422—94 6 Claims



1. An oxygen sensor comprising:

an oxygen detecting element in a tubular form of a solid electrolyte which is closed at a lower end and opened at the other upper end and which has a conductive layer deposited on both outer and inner surfaces;

an output terminal, one end of which is retained at an upper portion of the open end of said oxygen detecting element;

a first tube which surrounds and protects said oxygen detecting element and said output terminal;

a second tube having a lower end portion surrounding an upper end portion of said first tube, vertical air flow pas-

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sages being provided between said first and second tubes and extending to the uppermost end of said first tube so that the length of said air flow passage is maximized; and

air-permeable, water- and oil-impermeable spacer means having a lower end abutting against an uppermost end of said first tube and having an upper end fitted into an upper end of said second tube, said spacer means circumscribing said output terminal for insulating said output terminal and covering uppermost ends of said vertical air flow passages, for permitting atmospheric air to flow therethrough while blocking oil and water, said spacer means being molded from a mixture of an inorganic fiber and a thermal plastic resin.

4,883,644

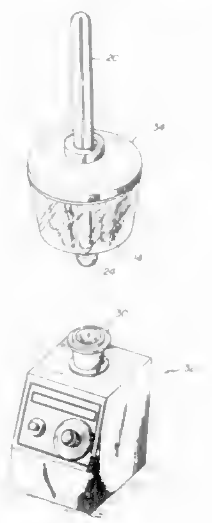
MICROTUBE VORTEXER ADAPTER AND METHOD OF ITS USE

Daniel Perlman, Arlington, Mass., assignor to Brandeis University, Waltham, Mass.

Filed Dec. 9, 1987, Ser. No. 130,412

Int. Cl.^{4} B01L *9/00;* **B01F** *11/00*

U.S. Cl. 422—104 10 Claims



1. A vortex adapter suitable for holding a plurality of tubes to be vortexed and for subjecting the tubes simultaneously to vortex forces, said adapter being adapted for use with a vortexing machine having a vibrating cup, said adapter comprising:

an elongated handle;

a base connected to said handle with said handle extending above said base, said base comprising a plurality of fixed apertures sized to receive a plurality of tubes respectively, each of said apertures having an upper portion and a lower portion with said upper portion positioned closer to the top of said base than said lower portion; and

a nipple connected to and positioned below said base, wherein said nipple is constructed and configured to be received into the cup of the vortexing machine while said adapter is held at said handle, and wherein said nipple, said base, and said handle are structurally associated in a manner whereby rotation of said nipple by insertion into the cup causes vibration of said base and causes tubes held within said apertures in said base to be subject to vortex forces wherein said adapter has a first longitudinal axis parallel to said handle, and a said aperture forms a second longitudinal axis extending from said upper portion to said lower portion, and wherein said first and second axes form an acute angle to each other wherein the distance of said second axis from said first axis in said upper portion is greater than the distance of said second axis from said first axis in said lower portion.

4,883,645

DEVICE FOR PREPARING AND EJECTING A CHEMICALLY REACTING MIXTURE

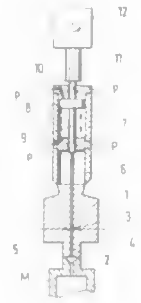
Klaus Pontius, Hermeskeil, and Manfred Settinger, Ockten, both of Fed. Rep. of Germany, assignors to Klöckner Ferromatik Desma GmbH, Malterdingen, Fed. Rep. of Germany

Filed Aug. 21, 1987, Ser. No. 87,786

Claims priority, application Fed. Rep. of Germany, Aug. 27, 1986, 3629042

Int. Cl.^{4} C08J *9/00;* **B29C** *45/02;* **B01F** *5/04, 15/02*

U.S. Cl. 422—133 3 Claims



1. A device for preparing a chemically reacting mixture, and for ejecting the mixture into a mold, the mixture comprising at least two components, in particular a mixture of isocyanate and a polyol that reacts completely to form polyurethane, the device comprising a mixing head having an outwardly open bore, a reciprocable ram coupled to said head, said ram having an ejector rod axially movable in said bore for therewith defining a mixing chamber and for ejecting the mixture from said chamber, said head having inlet passages for inletting the respective components into said chamber for preparing the mixture, means associated with said ram for axially moving said rod for ejecting the mixture out of said chamber, said rod having a circular cross-section and said bore having a cross-section complementary thereto, and drive means coupled to said ram for rotating said rod about its longitudinal axis continuously during the preparation of the mixture, whereby any adherence of the mixture to said rod and to the wall of said bore is substantially avoided.

4,883,646

SYSTEM AND DEVICE TO MAKE CATALYTIC BASKET WALLSFOR HETEROGENEOUS SYNTHESIS REACTORS

Umberto Zardi, Breganzona, Switzerland, assignor to Ammonia Casale S.A., Switzerland

Filed Sep. 23, 1987, Ser. No. 100,023

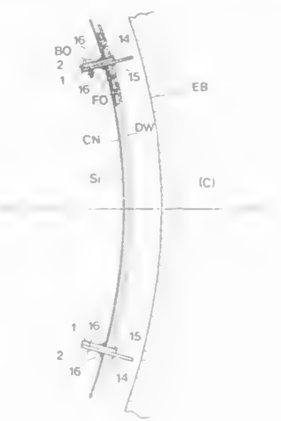
Claims priority, application Switzerland, Sep. 25, 1986, 03837/86

Int. Cl.^{4} B01J *8/02*

U.S. Cl. 422—311 2 Claims

1. An apparatus for joining two outer wall segments of a catalyst basket inserted into an existing heterogeneous synthesis reactor for revamping the reactor, comprising:

two elongated upstanding flange plates having heights substantially coextensive with the wall segments, the flange plates having different widths and oriented in a substantially radial direction with respect to a central longitudinal axis of the basket, both flange plates having portions extending inside the catalyst basket, and one flange plate having a portion extending outward past the catalyst basket outer wall segment, the flange plates stiffening and centering the catalyst basket for uniform gas distribution in the reactor; and,



means for joining together the portions of the two flange plates extending inside the catalyst basket.

4,883,647

USE OF MANGANESE NODULES OR DEEP-SEA ORES CONTAINING MANGANESE FOR THE REDUCTION OF NITROGEN OXIDES IN EXHAUST GASES

Hartmut Kainer, Wiesbaden; Daniel Grimm, Schlangenbad; Wilfried Schnelle, Geseke, and Peter Halbach, Clausthal-Zellerfeld, all of Fed. Rep. of Germany, assignors to Didier-Werke AG, Wiesbaden, Fed. Rep. of Germany

Filed Oct. 8, 1987, Ser. No. 107,483

Claims priority, application Fed. Rep. of Germany, Oct. 10, 1986, 3634553

Int. Cl.^{4} C01B *21/00*

U.S. Cl. 423—239 18 Claims

15. A catalytic process for removing at least a portion of pollutants from an exhaust gas, said process comprises the steps of:

providing a catalyst material for removing pollutants from an exhaust gas;

passing the exhaust gas over said catalyst material to thereby remove at least a portion of said pollutants;

passing at least one additional reactant over said catalyst material, said at least one additional reactant comprising NH_3; and

catalytically reacting at least one of said pollutants in the exhaust gas with said at least one additional reactant;

said catalyst material comprising at least one of:

1. manganese nodules; and
2. a deep-sea ore containing manganese.

4,883,648

CUBIC BORON NITRIDE MANUFACTURE

Geoffrey J. Davies, 36 Boundary Road, Linden Ext., Randburg, Transvaal; Lesley K. Hedges, 4 Oriole Mews, Delphinium Street, Brackenhurst, Transvaal, and Stuart H. Robertson, 92 Duke of York Avenue, Northcliff Ext. 4, Johannesburg, Transvaal, all of South Africa

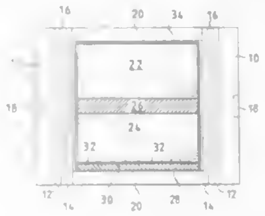
Filed Jul. 29, 1987, Ser. No. 79,259

Claims priority, application South Africa, Jul. 30, 1986, 86/5695

Int. Cl.^{4} C01B *21/064;* **C30B** *29/38*

U.S. Cl. 423—290 3 Claims

1. A method of producing CBN crystals including the steps of placing a reaction vessel into the reaction zone of a high pressure/high temperature apparatus, the reaction vessel containing CBN seed material, a CBN source separated from the seed material and sandwiched between two masses of solvent-/catalyst for CBN synthesis which is capable of melting under CBN synthesis conditions, and contains sufficient hexagonal boron nitride to saturate the catalyst with boron nitride when molten, the separation of seed material and source material being such that under the operating conditions of CBN synthesis a temperature gradient is created between the seed material and the source material with the seed material being located at a point near the minimum value of temperature of the temperature gradient and the source material being located at a point near the maximum value of temperature for the temperature gradient in the reaction zone of a high temperature/high pressure apparatus and subjecting the contents of the reaction vessel to conditions of temperature and pressure in the CBN stable region of the boron nitride phase diagram for not more than 24 hours to produce CBN crystals.



4,883,649

IODINATED CLONIDINE DERIVATIVES AS RADIOACTIVE IMAGING TRACERS

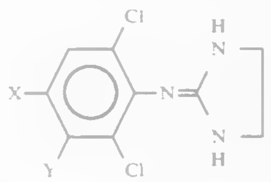
Raymond E. Counsell; Marcian Van Dort, and Richard Neubig, all of Ann Arbor, Mich., assignors to The University of Michigan, Ann Arbor, Mich.

Continuation of Ser. No. 774,260, Sep. 10, 1985, abandoned. This application Oct. 13, 1988, Ser. No. 257,181

Int. Cl.^{4} A61K *43/00;* **C07D** *403/30*

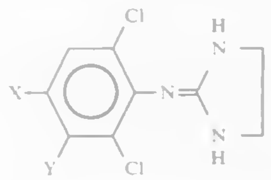
U.S. Cl. 424—1.1 20 Claims

1. A compound, and the salts thereof, of the formula:



wherein X is selected from the group consisting of radioactive isotopes of iodine and NH2 and Y is H or, when X is NH2, Y is selected from the group consisting of iodine and radioactive isotopes of iodine.

19. A radioactive binding assay composition for 2-adrenergic receptor sites, said assay composition comprising an effective amount of the compound of the formula:



wherein X is selected from the group consisting of radioactive isotopes of iodine and NH2 and Y is H or, when X is NH2, Y is a radioactive isotope of iodine.

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4,883,650
RADIOIDOHIPPURIC ACID ESTER, A CONJUGATE THEREOF, AND METHODS OF MAKING THE SAME

Kuldeep K. Bhargava, Bronx; Lakshman R. Chervu, Larchmont, and M. Donald Blaufox, Rye, all of N.Y., assignors to ALbert Einstein College of Medicine - of Yeshiva University, Bronx, N.Y.

Filed Apr. 13, 1988, Ser. No. 181,229
Int. Cl.^{4} A61K *49/02, 39/395;* **C07D** *207/46*
U.S. Cl. 424—1.1 **7 Claims**

1. The N-hydroxysuccinimide ester of iodohippuric acid wherein said iodohippuric acid is radioiodinated.

4,883,651
DEODORANT

Holger Meyer, Elfenbeinweg 15, 2000 Hamburg 65, Fed. Rep. of Germany

Filed May 9, 1988, Ser. No. 191,978
Claims priority, application Fed. Rep. of Germany, May 14, 1987, 3716129
Int. Cl.^{4} A61K *7/32, 9/12;* **A61L** *9/01*
U.S. Cl. 424—47 **2 Claims**

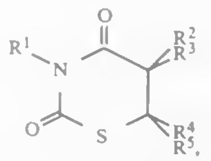
1. A deodorant composition comprising an effective amount of an extract of coffee arabinensis and an extract of rhubarb.

4,883,652
TETRAHYDRO-1,3,THIAZINE-2,4 DIONES, USE THEREOF AND SKIN TREATING COMPOSITIONS CONTAINING THEM

Wolfgang Hanefeld, Marburg, Fed. Rep. of Germany; Rudi Röthlisberger, Marly, and Friedrich Noser, Bonnefontaine, both of Switzerland, assignors to Wella Aktiengesellschaft, Darmstadt, Fed. Rep. of Germany

Division of Ser. No. 30,247, Mar. 24, 1987, Pat. No. 4,746,738, which is a continuation of Ser. No. 653,238, Sep. 7, 1984, abandoned. This application Mar. 2, 1988, Ser. No. 162,870
Claims priority, application Fed. Rep. of Germany, Feb. 12, 1983, 3304871
Int. Cl.^{4} A61K *7/40, 7/42, 7/48*
U.S. Cl. 424—59 **4 Claims**

1. A cosmetic skin treatment composition comprising, in a physiologically compatible cosmetic carrier, an effective amount of at least one tetrahydro-1,3-thiazine-2,4-dione of the general formula (I)



(I)

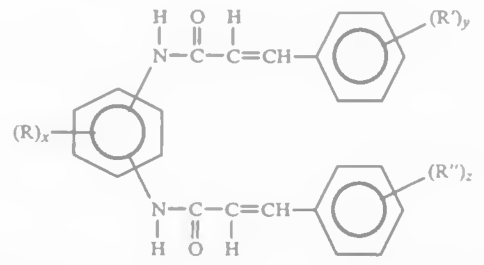
wherein R^1 represents H, alkyl (C1–C4), phenyl, phenyl alkyl (C1–C4), phenyl substituted in para positioning with alkyl (C1–C4), halogen, nitro, alkoxy (C1–C4), phenyloxy or cyano, phenyl alkyl (C1–C4) substituted in para positioning in the phenyl moiety with alkyl (C1–C4), halogen, nitro, alkoxy (C1–C4), phenyloxy or cyano, R^2 and R^3 are independently H, phenyl, phenyl substituted in para positioning with alkyl (C1–C4), halogen, nitro, alkoxy (C1–C4), phenyloxy or cyano, R^4 and R^5 are independently H, alkyl (C1–C4) or phenyl.

4,883,653
ARYL N,N-BIS CINNAMAMIDE COMPOUNDS AND THEIR USE AS ULTRAVIOLET LIGHT STABILIZERS

Robert J. Raynor, North Branford, Conn., assignor to Olin Corporation, Cheshire, Conn.

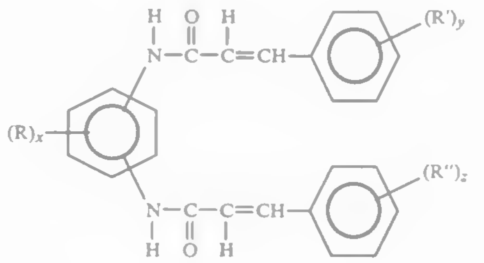
Filed Jun. 25, 1984, Ser. No. 623,859
Int. Cl.^{4} A61K *31/165;* **C07C** *103/78, 103/76*
U.S. Cl. 424—60 **5 Claims**

1. An organic composition susceptible to ultraviolet degradation stabilized against such degradation with an effective stabilizing amount of an aryl N,N'-bis cinnamamide compound having the formula:



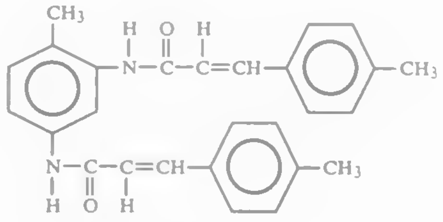
wherein x equals an integer from 1 to 3; y equals an integer from 0 to 2; z equals an integer from 0 to 2; each R is individually selected from the group consisting of a lower alkyl group having 1 to 4 carbon atoms, a lower alkoxy group having from 1 to 4 carbon atoms, a nitro group, an aryl group having 6 to 18 carbon atoms; and each R' and R'' is individually selected from the group consisting of a lower alkyl group having from 1 to 4 carbon atoms, a lower alkoxy group having from 1 to 4 carbon atoms, a halo group, a nitro group or an aryl group having from 6 to 18 carbon atoms.

3. A sunscreen composition which effectively prevents UV light from penetrating human skin or hair said sunscreen composition comprising a human sunscreen carrier and an effective screening amount of an aryl N,N'-bis cinnamamide compound having the formula:

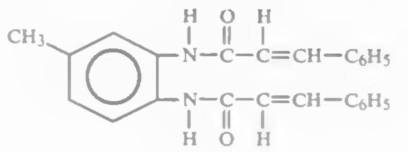


wherein x equals an integer from 1 to 3; y equals an integer from 0 to 2; z equals an integer from 0 to 2; each R is individually selected from the group consisting of a lower alkyl group having 1 to 4 carbon atoms, a lower alkoxy group having from 1 to 4 carbon atoms, a nitro group, an aryl group having 6 to 18 carbon atoms; and each R' and R'' is individually selected from the group consisting of a lower alkyl group having from 1 to 4 carbon atoms, a lower alkoxy group having from 1 to 4 carbon atoms, a halo group, a nitro group or an aryl group having from 6 to 18 carbon atoms.

4. An aryl N,N'-bis cinnamamide compound having the formula:



5. An aryl N,N'-bis cinnamamide compound having the formula:



4,883,654
COSMETIC PREPARATION

Deborah A. Young, 20 Panama Court, Keswick, Ontario, Canada (L4P 3L7)

Continuation of Ser. No. 1,853, Jan. 9, 1987. This application Oct. 6, 1988, Ser. No. 254,152
Int. Cl.^{4} A61K *11/56*
U.S. Cl. 424—69 **12 Claims**

1. A toiletry formulation for cosmetic use in masking local skin irritation in the eye brow area arising from mechanical depilation;

said formulation incorporating desensitizing agent in a cosmetically acceptable, stable, spreadable lotion or cream;

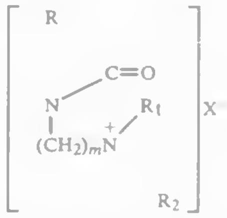
the desensitizing agent comprising in the range of from 0.4 to 0.8% of menthol, and in the range of from 0.5 to 2.0% or eugenol, based on the weight of the formulation.

4,883,655
QUATERNIZED NITROGEN CONTAINING POLYCYCLIC COMPOUNDS

Robert B. Login, Oakland; Ratan K. Chaudhuri, Butler; David J. Tracy, Lincoln Park, and Michael W. Helioff, Westfield, all of N.J., assignors to GAF Corporation, Wayne, N.J.

Continuation-in-part of Ser. No. 922,923, Oct. 24, 1986, Pat. No. 4,732,900. This application Aug. 28, 1987, Ser. No. 91,010
Int. Cl.^{4} C07D *401/06, 403/06, 413/06, 417/06*
U.S. Cl. 424—70 **18 Claims**

1. The quaternized compound having the formula



wherein X^- is a chloride, bromide or iodide anion; m is an integer having a value of from 1 to 4; R is linear alkylene having from 3 to 8 carbon atoms and is optionally substituted with C_1 to C_4 alkyl; R_1 forms a double bond in the heterocyclic ring with the quaternized nitrogen or is selected from the group consisting of alkyl, hydroxyalkyl, alkyleneoxyalkyl, aryl, alkaryl, aralkyl, aralkenyl and alkylene amidoalkyl and R_2, together with the quaternary nitrogen atom forms a 5 to 14 membered heterocyclic structure optionally substituted with alkyl and having a single heteroatom.

11. The process of adding an effective hair or skin conditioning amount of the compound of claim 1 to a cosmetic formulation.

4,883,656
COMPOSITION AND METHOD FOR THE OXIDATIVE DYEING OF HAIR

Eugen Konrad, Darmstadt; Herbert Mager, Fribourg, and Axel Hoffmann, Reinheim, all of Fed. Rep. of Germany, assignors to Wella Aktiengesellschaft, Darmstadt, Fed. Rep. of Germany

PCT No. PCT/EP87/00144, § 371 Date Nov. 12, 1987, § 102(e) Date Nov. 12, 1987, PCT Pub. No. WO87/05801, PCT Pub. Date Oct. 8, 1987
PCT Filed Mar. 12, 1987, Ser. No. 133,130
Claims priority, application Fed. Rep. of Germany, Mar. 27, 1986, 3610396
Int. Cl.^{4} A61K *7/13*
U.S. Cl. 424—70 **10 Claims**

1. Composition for the oxidative dyeing of hair based upon a combination of coupler substance and developer substance, comprising

(A) 0.1 to 5.0 percent by weight 5-amino-2-methylphenol or a physiologically compatible salt thereof as coupler substance and
(B) 0.1 to 4.0 percent by weight 4-amino-3-methylphenol or a physiologically compatible salt thereof and
(C) 0.1 to 2.0 percent by weight 1,4-diaminobenzene, 2,5-diaminotoluene or a mixture of 1,4-diaminobenzene and 2,5-diaminotoluene or physiologically compatible salts thereof

as developer substance, whereby the weight percents are in proportion to the total weight of the composition.

4,883,657
REARRANGER PROCESS AND COMPOSITION FOR PERMANENT WAVING PROCESS

Barry W. Williams, Chicago, Ill., and Pamela M. Daniels, Gary, Ind., assignors to Soft Sheen Products, Inc., Chicago, Ill.

Filed Feb. 19, 1988, Ser. No. 158,209
Int. Cl.^{4} A61K *7/09;* **A45D** *7/04*
U.S. Cl. 424—72 **13 Claims**

1. A process for waving hair, comprising the following steps in combination:

(a) applying to the hair a rearranging composition with chemical properties sufficient to break the cystine bonds in the hair keratin, said rearranging composition comprises a homogenous mixture of a salt of thioglycolic acid, and a cationic homopolymer of methylacrylamidopropyltrimethyl ammonium chloride;
(b) rinsing the hair to substantially remove the rearranging composition;
(c) applying a wrapping lotion composition to the hair;
(d) wrapping the hair around a rod to produce a curl pattern and allowing the hair and wrapping lotion to set for a predetermined length of time;
(e) rinsing the wrapped hair;
(f) applying a neutralizer composition to the curl pattern; and
(g) rinsing the hair to substantially remove the neutralizer composition, whereby the process produces thicker, fuller hair with loose, bouncy curls.

4,883,658
OPHTHALMIC SOLUTION FOR TREATMENT OF DRY-EYE SYNDROME

Frank J. Holly, 301 York Ave., Lubbock, Tex. 79416

Continuation of Ser. No. 856,531, Apr. 28, 1986, Pat. No. 4,794,980. This application May 16, 1988, Ser. No. 194,215
Int. Cl.^{4} A61K *31/74, 31/79*
U.S. Cl. 424—80 **4 Claims**

1. An aqueous solution exhibiting a surface tension similar to that of aqueous tears while forming a completely water-wettable absorbed layer over an hydrophobic surface such as glossy polyethylene, which comprises:

a partially hydrolyzed polyvinyl acetate having at least 73%

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but no more than 90% of its acetate groups hydrolyzed to alcohol in combination with a fully hydrolyzed polyvinyl alcohol having more than 99% of its acetate groups hydrolyzed to alcohol;

wherein the weight ratio of partially hydrolyzed polyvinyl acetate to fully hydrolyzed polyvinyl alcohol is within the range from 1:2 to 1:5; and

a viscous hydrophilic polymer.

4,883,659

SKIN TREATMENT PREPARATION

Jack J. Goodman, Morristown, N.J.; Harvey S. Tauman, Boca Raton, Fla.; Charles Fox, Fairlawn, and Thomas J. Hart, Dover, both of N.J., assignors to Dento-Med Industries, Inc., Boca Raton, Fla.

Filed Aug. 24, 1988, Ser. No. 235,630

Int. Cl.^{4} A61K *31/74, 31/78, 7/00;* **C08F** *18/00*

U.S. Cl. 424—78 9 Claims

1. A stable oil in water emulsion containing an ammonium salt of a long chain fatty acid as a emulsifying agent, 2-hydroxyethyl methacrylate homopolymer in the aqueous phase and a combination of 2-hydroxyethyl methacrylate homopolymer solvents of different activities, at least one is volatile and at least one is nonvolatile, in said aqueous phase.

4,883,660

GEL BASES FOR PHARMACEUTICAL COMPOSITIONS

Steven T. Blackman, New York, and Irene Ralske, North Bellmore, both of N.Y., assignors to Thames Pharmacal Co., Inc., Ronkonkoma, N.Y.

Filed Oct. 17, 1988, Ser. No. 258,581

Int. Cl.^{4} A61K *31/74, 9/66, 9/48*

U.S. Cl. 424—78 10 Claims

1. A pharmaceutical composition comprising a gel base including:

(a) from about 0.5 to about 10.0% by weight $CH_3(CH_2)_{21}(OCH_2CH_2)_nOH$ and from about 90 to about 99.5% of a glycol solvent, or

(b) from about 2.5 to about 10.0% by weight $CH_3(CH_2)_x(OCH_2CH_2)_nOH$ and from about 90 to about 97.5% of a glycol solvent,

wherein n is an integer from 2 to 30 and x is an integer from 15 to 20, the base being anhydrous and substantially free of any added gelling agents, and a topically, systemically or orally active pharmaceutical agent dissolved therein or admixed therewith.

4,883,661

USE OF ARGININE AS AN LYMPHOKINE SYNERGIST

John M. Daly, 559 Ferndale La., Haverford, Pa. 19041, and John Reynolds, 4617 Pine St., Apt. H-510, Philadelphia, Pa. 19143

Filed Oct. 9, 1987, Ser. No. 107,287

Int. Cl.^{4} A61K *37/02, 45/02*

U.S. Cl. 424—85.2 9 Claims

1. An improved method of treating a mammal with interleukin-2 to increase the receptivity of cells of said mammal to said lymphokine to enhance the cytotoxic effect of said lymphokine on cells of said mammal wherein said improvement comprises administering interleukin-2 to said mammal in combination with an amount of arginine effective to increase the receptivity of cells of said mammal to interleukin-2.

4,883,662

METHOD OF INCREASING NATURAL KILLER CELL POPULATION OF CANCER PATIENTS

Robert L. Stout, Overland Park, Kans., assignor to Clinical Biotechnologies, Inc., Kansas City, Mo.

Continuation of Ser. No. 818,779, Jan. 13, 1986, abandoned, which is a continuation-in-part of Ser. No. 598,744, Apr. 10, 1984, Pat. No. 4,572,834. This application Jan. 6, 1987, Ser. No. 872

Int. Cl.^{4} A61K *39/42, 39/395, 35/16, 37/02*

U.S. Cl. 424—101 4 Claims

1. An in vivo method of increasing the Natural Killer cell population in the blood of a cancer patient, said method comprising the steps of:

injecting a biologic into the bloodstream of said cancer patient, and allowing said biologic to operate therein for a period of time to increase said Natural Killer cell population,

said biologic being a glycoprotein and having an apparent molecular weight of above about 100,000 and being derived from the blood of an animal injected with a virus, wherein the aminal's blood containing the biologic is fractionated to separate potentially interfering substances from the biologic, said virus being a feline panleukopenia or canine origin parvo virus and said animal being other than a feline or canine which is a nonpermissive host for the virus, said virus-injected animal being allowed to react to the presence of the virus such that 50 microliters of the animal's serum, when added to an in vitro human white blood cell culture containing $2–4\times10^5$ white blood cells and followed by three days inclubation at 37° C. under a 5% CO_2/95% air atmostphere, will give rise to at least about a 50% increase in T-helper and Natural Killer cells in the biologic-supplemented cell culture as compared with an otherwise identical in vitro cell culture having added thereto 50 microliters of serum from a normal animal of the same species as said injected animal, such rise in T-helper and Natural Killer cells being detected by staining with fluorescent-labeled monoclonal antibodies against T-Helper and Natural Killer cells.

4,883,663

THERAPEUTIC POWDER AND PROCESS OF MANUFACTURING

Rogue O. Leon Leon, Buenavista No. 46, Col., Lindavista, Mexico D.F. 07300

Filed Sep. 9, 1987, Ser. No. 94,615

Claims priority, application Mexico, Sep. 9, 1986, 298

Int. Cl.^{4} A61L *35/78*

U.S. Cl. 424—195.1 10 Claims

1. A method of manufacturing a therapeutic powder for treatment of skin injuries comprising the steps of:

providing a wood material selected from the group consisting of the bark of a Mimosa tree, the outer layer of wood of the Mimosa tree that is stripped away from the tree with the bark of the tree, and a mixture of said bark and said wood, roasting said wood material for a time and temperature sufficient for curative active ingredients in said wood material to separate from the cells containing said active ingredients, and grinding said wood material into a powder.

4,883,664

MEDICINAL SALVE

Mary Sharkey, 80 George Ave., North Adams, Mass. 01247

Filed Jun. 29, 1987, Ser. No. 67,806

Int. Cl.^{4} A61K *35/78, 31/19, 31/20, 31/125*

U.S. Cl. 424—196.1 2 Claims

1. A medicinal salve for the topical treatment of burns, scalds, insect bites and the like, said salve comprising 2 parts olive oil by volume, 1 part bee's wax by volume, 1 part camphor by volume, 4 parts anhydrous lanolin by volume a trace of pine rosin.

4,883,665

PROCESS FOR PRODUCING LIPOSOME COMPOSITION

Koichiro Miyazima, Uji; Keiko Tomita, Nara, and Masayuki Nakagaki, Kyoto, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 786,305, Oct. 10, 1985, abandoned. This application Aug. 15, 1988, Ser. No. 232,539

Claims priority, application Japan, Apr. 11, 1985, 60-78173

Int. Cl.^{4} A61K *37/22;* **A01N** *25/26*

U.S. Cl. 424—417 7 Claims

1. A process for producing liposome compositions, which comprises (1) preparing liposomes entrapping an internal aqueous solution composed of (a) an effective amount of a hydrophilic drug selected from the group consisting of antitumor agents, antiviral agents, antibiotics, peptide hormones, enzymes, immunopotentiating agents or proteins and (b) at least one saccharide selected from the group consisting of D-glucose, D-galactose, D-mannose and maltose in a concentration of 0.1 to 1M, wherein the concentration of maltose is based on the molarity converted to glucose units, (2) adding the resulting liposomes to an external aqueous solution containing at least one member selected from the group consisting of glucose, galactose, mannose, maltose in a concentration of 0.1 to 1M, wherein the concentration of maltose is based as above, and (3) freezing the resulting aqueous solution containing the liposomes.

4,883,666

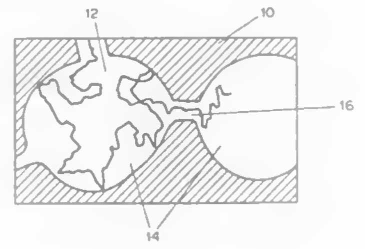
CONTROLLED DRUG DELIVERY SYSTEM FOR TREATMENT OF NEURAL DISORDERS

Bernhard A. Sabel, Munich, Fed. Rep. of Germany; Andrew Freese, Jamaica Plain, and William M. Saltzman, Somerville, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Apr. 29, 1987, Ser. No. 43,695

Int. Ci.^{4} A61F *13/00;* **A61K** *9/14*

U.S. Cl. 424—422 22 Claims



1. A method for treating disorders of the nervous system comprising: Selecting a compound which stimulates or replaces a specific function of components or the nervous system selected from the group consisting of L-dopa, dopamine, carbidopa, choline, acetyl choline, cholinergic neuronotropic agents, gangliosides, nerve growth enhancing agents, antipsychotropic agents, antidepressants, excitatory amino acid antagonist or agonist, antiepileptic medications enzymes and combinations thereof; selecting a biocompatible polymer; encapsulating said compound within said polymer to form a polymeric device having at least one opening at the surface, wherein said compound is linearly released from said polymeric device over a sustained period of time greater than three months at a predetermined level and rate to the nervous system.

4,883,667

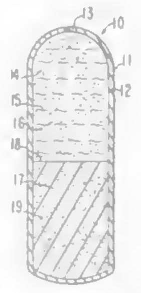
PROCESS FOR FORMING DISPENSING DEVICE

James B. Eckenhoff, Los Altos, Calif., assignor to ALZA Corporation, Palo Alto, Calif.

Division of Ser. No. 42,197, Apr. 24, 1987, which is a continuation of Ser. No. 766,456, Aug. 16, 1985, Pat. No. 4,704,118. This application Nov. 27, 1987, Ser. No. 126,079

Int. Cl.^{4} A61K *9/22;* **A61M** *31/00*

U.S. Cl. 424—438 1 Claim



1. A process for forming a dispensing device to deliver a beneficial agent to a fluid environment of use having a temperature of at least 24° C., wherein the process comprises providing a dispenser by the steps of:

(a) mixing a beneficial agent with a carrier means for absorbing thermal energy from the environment of use for forming a flowable composition;

(b) mixing an expandable means for absorbing fluid and swelling with a weight means for increasing the specific density of the expandable means thereby forming an expandable weight means;

(c) placing the composition formed in (a) in contacting arrangement with the expandable weight means formed in (b);

(d) surrounding said contacting arrangement with a wall comprising in at least a part of a semipermeable composition permeable to the passage of fluid and impermeable to the passage of a beneficial agent; and,

(e) forming a passageway through the wall for delivering the beneficial agent from the dispenser to the environment of use over time.

4,883,668

MATERIAL FOR ENDERMIC ADMINISTRATION PRE-TREATMENT

Midori Ohta, Funabashi, Japan, assignor to Kabushiki Kaisya Advance, Tokyo, Japan

Continuation of Ser. No. 144,034, Dec. 11, 1987, abandoned. This application Feb. 15, 1989, Ser. No. 309,892

Claims priority, application Japan, Apr. 24, 1986, 61-93405

Int. Cl.^{4} A61F *13/02*

U.S. Cl. 424—448 11 Claims

1. In inontophoretic transdermal drug administration, the improved method which comprises pre-treating a portion of the skin to which the drug administration is to be made by pressing a substance capable of removing stratum corneum, and which is substantially uniformly distributed on a support in the form of small areas discontinuous to each other at a density of 0.001 to 5%, against a portion of the skin to which the drug administration is to be made, adhering said substance to the stratum corneum on said skin, and removing the substance together with the support from the skin so as to remove a portion of the stratum corneum and provide fine openings in the stratum corneum having reduced impedance and permitting enhanced iontophoretic transdermal drug administration.

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4,883,669
TRANSDERMAL ABSORPTION DOSAGE UNIT FOR ESTRADIOL AND OTHER ESTROGENIC STEROIDS AND PROCESS FOR ADMINISTRATION

Yie W. Chien, North Brunswick; Chia-Shun Lee, Highland Park, both of N.J.; Kirti H. Valia, Indianapolis, Ind., and Te-Yen Chien, Piscataway, N.J., assignors to Rutgers, The State University of New Jersey, New Brunswick, N.J.

Continuation-in-part of Ser. No. 705,194, Feb. 25, 1985, and a continuation-in-part of Ser. No. 770,968, Aug. 30, 1985, abandoned. This application May 30, 1986, Ser. No. 868,709

Int. Cl.^{4} A61F *13/02*

U.S. Cl. 424—448 20 Claims

1. A transdermal pharmaceutical-containing polymer matrix dosage unit having the following components:

(a) a backing layer which is substantially impervious to the pharmaceutical to be delivered transdermally;

(b) a polymeric matrix disc layer which is adhered to said backing layer and which has microdispersed therein an amount of a pharmaceutical selected from the group consisting of an estradiol; non-estradiol estrogenic steriods capable of transdermal absorption and which will provide a dosage amount of said pharmaceutical to be delivered transdermally; esters thereof which are absorbable by the skin of the subject being treated and which are bioconvertible after transdermal absorption to estradiol or said non-estradiol estrogenic steriods; and pharmaceutically effective combinations thereof; and

(c) an adhesive means for securing the dosage unit to the subject treated for transdermal absorption and which has distributed therein an amount in the range from zero up to an effective amount of one or more skin permeation enhancers to provide substantial skin absorption enhancement for said pharmaceutical;

said polymeric matrix disc layer covered by and adhered to said adhesive means or being in direct contact with the skin of the subject treated.

4,883,670
COSMETIC PREPARATIONS CONTAINING UBIDECARENONES

Vincenzo Zappia, and Mario De Rosa, both of Naples, Italy, assignors to Arval S.p.A., Milan, Italy

PCT No. PCT/EP87/00614, § 371 Date Jun. 20, 1988, § 102(e) Date Jun. 20, 1988, PCT Pub. No. WO88/03015, PCT Pub. Date May 5, 1988

PCT Filed Oct. 19, 1987, Ser. No. 222,914

Claims priority, application Italy, Oct. 23, 1986, 22105 A/86; Sep. 10, 1987, 48373 A/87

Int. Cl.^{4} A61K *37/22*

U.S. Cl. 424—450 6 Claims

1. A ubidecarenone derivative formed by the addition of an N-acyl-2-amino-ethane-sulphonate to ubideceronone, the acyl radical of said sulphonate having more than 5 carbon atoms and said ubidecarenone and said sulphonate being at least in equimolar ratio.

4,883,671
MANUFACTURING MACHINE FOR SAGGED SELF-SUPPORTING CABLE

Fumio Onodera; Hiroshi Uchimi, and Toshio Koseki, all of Miyagi, Japan, assignors to Kitanihon Electric Wire Co., Ltd., Sendai, Japan

Filed Jan. 22, 1988, Ser. No. 147,201

Claims priority, application Japan, Jul. 31, 1987, 62-190217

Int. Cl.^{4} H02G *7/06*

U.S. Cl. 425—122 7 Claims

1. A manufacturing machine for sagged self-supporting cable comprising:

a turntable;

drive means for imparting rotation to said turntable;

several die casting means including molds adapted to selectively open and close to define a mold cavity, said die casting means being circumferentially mounted on said turntable;

mold assembling means for selectively opening and closing said molds;

a sag adjusting device mounted on said turntable for adjusting a position of a main cable so as to be longer between adjacent die cast means than a suspension wire, said sag adjusting device includes a first plate and a second plate, said first and second plates being adjustably secured relative to each other and to said turntable for selectively adjusting a spacing between a main cable and a suspension wire; and

an injection means disposed adjacent to a crimping point and moving synchronously with said die casting means and filling said mold cavity with crimping material for securing a relative positioning of a main cable relative to a suspension wire.

4,883,672
METHOD FOR PREVENTING DIET INDUCED CARNITINE DEFICIENCY IN DOMESTICATED DOGS AND CATS

Austin L. Shug, 1201 Shorewood Blvd., and Bruce W. Keene, 625 N. Blackhawk Ave., both of, Madison, Wis. 53705

Filed Apr. 29, 1988, Ser. No. 187,870

Int. Cl.^{4} A23K *1/00*

U.S. Cl. 426—2 7 Claims

1. A method for preventing diet-induced carnitine deficiency in a domesticated dog or cat, comprising the step of: administering daily to said dog or cat a prophylactic amount of L-Carnitine.

4,883,673
METHOD FOR INHIBITING BACTERIAL SPOILAGE AND RESULTING COMPOSITIONS

Carlos F. Gonzalez, College Station, Tex., assignor to Microlife Technics, Inc., Sarasota, Fla.

Filed Feb. 9, 1987, Ser. No. 12,619

Int. Cl.^{4} A01N *65/00;* **A23C** *9/12*

U.S. Cl. 424—195.1 13 Claims

1. A method for inhibiting gram-positive bacteria in an unspoiled food system which comprises:

adding a bacteriocin into the unspoiled food system in an effective amount which inhibits the bacteria, wherein the bacteriocin is derived from a *Pediococcus* containing DNA derived from a plasmid measuring about 6.2 Mda which encodes production of the bacteriocin, to provide in the food system between about 10 and 100,000 Au of the bacteriocin per gram of the food system which is sufficient for the bacteriocin to inhibit the Gram-positive bacteria.

4,883,674
CONTROLLED ATMOSPHERE CUT FRUIT PACKAGE AND METHOD

Steve T. Fan, Maple Grove, Minn., assignor to General Mills, Inc., Minneapolis, Minn.

Continuation of Ser. No. 921,501, Oct. 22, 1986, abandoned. This application Dec. 16, 1987, Ser. No. 135,553

Int. Cl.^{4} A21D *10/02*

U.S. Cl. 426—118 7 Claims

1. A packaged food article for the extended refrigerated storage of cut fruit produce blends, comprising:

A. a sealed imperforate continer;

B. a quantity of a perishable produce consisting essentially of a blend of cut fruit pieces disposed within the container forming a produce bed having a bed depth ranging from about 1 to 3 inches, said blend being a mixture of a plurality of fruit species,

wherein the container has at least a portion fabricated from a gas permeable material such as to allow about 4 to 12 cc of O_2 per oz of produce blend per day to permeate into the package,

said produce blend at the time of packaging in said container having an initial microbial load of less than about 1000 APC per gram of blend and a respiration rate of less than 10 mg CO_2/kg-hr at 40°–45° F., and having inactivated surface browning enzymes;

wherein the container has an initial atmosphere upon sealing within said container consisting essentially of

about 15% to 30% by volume oxygen,

about 0.1% to 5% by volume carbon dioxide, and the balance being substantially all molecular nitrogen,

said container and produce blend being selected such that said container has an equilibrium atmosphere within said container comprising 2 to 5% by volume oxygen, 10 to 15% by volume carbon dioxide, and the balance being substantially all molecular nitrogen, said equilibrium atmosphere being obtained from five to 10 days after sealing and wherein the container is substantially free of chemical agents capable of absorbing gases.

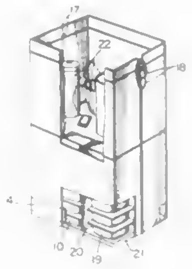
4,883,675
FLEXIBLE PACKAGE HAVING MAIN COMPARTMENT AND ANCILLARY COMPARTMENT

Donna M. Wernz, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Nov. 30, 1988, Ser. No. 277,750

Int. Cl.^{4} B65D *30/22, 85/62*

U.S. Cl. 426—120 12 Claims



1. A flexible package having a sealed main compartment and an openable compartment for ancillary materials, said package comprising:

(a) a main compartment having a top wall and a bottom wall interconnected to one another by a multiplicity of side walls;

(b) an ancillary compartment vertically extended from said main compartment; and

(c) a column of product units totally enclosed and sealed within said main compartment and adjacent at least one of said side walls; and

(d) a continuous line of weakness for creating a dispensing opening within at least one of said main compartment side walls for removing said product units one at a time without other product units protruding from said flexible package; and

(e) an opening at the top axial end of said ancillary compartment for inserting and removing ancillary materials; and

(f) means for repeatedly opening and closing said ancillary compartment opening without damaging said flexible package

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4,883,676
METHOD OF FORMING LIQUID SMOKE

Spyros Sophianopoulos, Willowdale; Kenneth S. Darley, Ajax, both of Canada, and Louis Sair, Evergreen Park, Ill., assignors to The Griffith Laboratories, Limited, Scarborough, Canada

Filed May 21, 1987, Ser. No. 52,065

Int. Cl.^{4} A23B *4/04*

U.S. Cl. 426—314 11 Claims

1. A method of forming a liquid smoke, which comprises:

feeding dry sawdust to a combustion zone and forming a thin layer thereof having an exposed upper surface in said combustion zone,

feeding a dry molecular oxygen-containing gas stream to said combustion zone,

heating said combustion zone to a temperature at least sufficient to effect combustion of said sawdust,

combusting said sawdust in said thin layer while said molecular oxygen-containing gas stream sweeps over said exposed surface of the combusting sawdust in said combustion zone from an inlet thereto to an outlet therefrom to produce a combustion product gas stream containing condensible vapors,

said sawdust layer having a thickness no greater than that which will permit efficient heat transfer to the sawdust layer in said combustion zone and efficient volatilization of volatile combustion products from the sawdust layer into the sweeping molecular oxygen-containing gas stream to form said product gas stream while the formation of char and ash in said combustion zone is substantially avoided,

removing said product gas stream from said combustion zone from said outlet therefrom, and

condensing said condensible vapors from said removed product gas stream to produce liquid smoke.

4,883,677
METHOD OF ARRANGING A FORM OF PROCESSED MEAT

Tadan Aiga, Tokyo, and Masoyoshi Kimura, Chiba, both of Japan, assignors to Kureha Chemical Industry Co., Limited, Tokyo, Japan

Division of Ser. No. 7,649, Jan. 28, 1987, abandoned. This application Sep. 1, 1988, Ser. No. 240,002

Claims priority, application Japan, Jan. 29, 1986, 61-12093

Int. Cl.^{4} A23B *4/04*

U.S. Cl. 426—420 6 Claims

1. A method of arranging a form of processed meat comprising:

arranging string made of polyvinylidene chloride on raw meat, said string having a heat contraction property; and

heating the meat with the string to cause said string to contract;

whereby a form of the heated meat is arranged by the heat contraction of the string.

4,883,678
METHOD FOR SHAPING A SPHERICAL BODY

Yasunori Tashiro, Utsunomiya, Japan, assignor to Rheon Automatic Machinery Co., Ltd., Tokyo, Japan

Division of Ser. No. 900,074, Aug. 9, 1986, Pat. Nn. 4,734,024. This application Jan. 28, 1988, Ser. No. 149,538

Claims priority, application Japan, Jan. 16, 1986, 61-6925; Feb. 11, 1986, 61-27587

Int. Cl.^{4} A21C *3/00, 3/10, 3/04*

U.S. Cl. 426—496 4 Claims

1. A method of shaping a spherical body consisting of dough crust and a filling, comprising:

feeding a cylindrical body consisting of dough crust and a filling through an opening defined by at least three members, and applying constrictive force to the cylindrical

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body from around it and perpendicularly to the direction of movement of said cylindrical body,

wherein said force is applied to said cylindrical body with at least three members of an assembly horizontally aligned around said cylindrical body, each member having two sliding surfaces, each surface of a member slidably adjoining a sliding surface of an adjacent member in a nonoverlapping manner.

4,883,679

BRINE FOR CONSERVING CUCUMBER

Pentti K. Sewón, Pirttilähdevägen 11, Åbo, Finland (SF-20310)

Filed Jul. 14, 1988, Ser. No. 219,007

Int. Cl.^{4} A23B *7/10*

U.S. Cl. 426—532 2 Claims

1. Brine for conserving cucumber in bulk, comprising in solution per liter of the brine: at least 0.15 kg sodium chloride, 0.01–0.05 kg acetic or lactic acid or a non-toxic salt thereof, at least 1 g each of sodium benzoate, calcium chloride, and potassium sorbate, and at least 50 mg each of ascorbic acid and citric acid.

4,883,680

PROCESS FOR PREPARING DRY ACETALDEHYDE AND PRODUCT PRODUCED THEREBY

Brian Byrne, North Brunswick, N.J., assignor to International Flavors & Fragrances Inc., New York, N.Y.

Filed Dec. 2, 1988, Ser. No. 279,171

Int. Cl.^{4} A23L *1/226*

U.S. Cl. 426—534 1 Claim

1. A process for preparing a dry form of acetadehyde comprising the steps, in sequence of:

(a) mixing a modified food starch with water thereby forming a mixture of water and modified food starch;

(b) adjusting the pH of the resulting mixture of modified food starch and water to a pH in the range of from about 7.2 up to about 7.5 thereby forming a pH-adjusted mixture of modified food starch and water;

(c) initimately admixing acetaldehyde with the pH-adjusted mixture of modified food starch and water; and

(d) freeze-drying the resulting mixture whereby the resulting freeze-dried product is free of paraldehyde and crotonaldehyde.

4,883,681

PROCESS FOR PREPARING AN EDIBLE DISPERSION

Peter B. Ernsting, Delft, Netherlands, assignor to Lever Brothers Company, New York, N.Y.

Filed Jun. 2, 1988, Ser. No. 201,518

Claims priority, application United Kingdom, Jun. 5, 1987, 8713266

Int. Cl.^{4} A23D *5/00*

U.S. Cl. 426—573 19 Claims

1. Continuous process for the preparation of an edible plastified dispersion having a continuous fat phase and a dispersed aqueous phase consisting essentially of:

(i) cooling a constituted emulsion having a continuous aqueous phase and a dispersed fat phase and comprising essentially no solid fat, which emulsion is prepared by admixing at least two different compositions, one comprising a continuous fat phase and the other comprising a continuous aqueous phase, said cooling being achieved by passing said emulsion through a static heat exchanger to cause partial crystallization of fat, the emulsion leaving the heat exchanger as a dispersion having a continuous aqueous phase and containing crystallized fat, and

(ii) feeding the dispersion from the step (i) directly to means for imparting kinetic energy so as to invert the dispersion into a dispersion having a continuous fat phase and a dispersed aqueous phase.

4,883,682

PROCESS FOR THE PREPARATION OF A STERILIZED CASEIN-BASED LIQUID COMPOSITION

Jehuda Stein, Bremgarten, Switzerland, assignor to Nestec S.A., Vevey, Switzerland

Filed May 25, 1988, Ser. No. 198,234

Claims priority, application Switzerland, Jun. 9, 1987, 2165/87

Int. Cl.^{4} A23C *7/04, 9/15;* A23L *1/29*

U.S. Cl. 426—580 6 Claims

1. A process for the production of a sterilized liquid composition based upon acidic casein comprising:

preparing and mixing a 10% to 18% by weight aqueous suspension containing acidic casein and a 10% to 30% by weight aqueous suspension containing $Ca(OH)_2$ and containing a substance selected from a group consisting of KOH and NaOH for obtaining a solution having a pH below 6.5 and wherein the $Ca(OH)_2$ content is from 14 g/kg to 20 g/kg casein dry matter, and wherein when KOH is the substance, the KOH content is from 4 g/kg to 11 g/kg dry matter and wherein when NaOH is the substance, the NaOH content is from 2.5 g/kg to 8 g/kg casein dry matter;

heat-treating the solution;

cooling the heat-treated solution;

introducing and then homogenizing fats into the cooled solution;

introducing additives including carbohydrates into the homogenized solution for preparing a product mixture;

sterilizing the mixture;

homogenizing the sterilized mixture; and

packaging the homogenized mixture aseptically.

4,883,683

METHOD FOR PREPARATION OF SOLID FOODSTUFFS

Hiroyuki Sano, Kishiwada; Masatoshi Kizaki, and Yukiya Iwanaga, both of Sennan, all of Japan, assignors to Fuji Oil Company, Limited, Osaka, Japan

Continuation of Ser. No. 71,705, Jul. 8, 1987, abandoned. This application Dec. 16, 1988, Ser. No. 285,024

Claims priority, application Japan, Jul. 10, 1986, 61-163206

Int. Cl.^{4} A23C *20/00;* A23J *1/20*

U.S. Cl. 426—582 5 Claims

1. A method for preparation of solid foodstuff which comprises providing an emulsion comprising soybean protein, a casein, oils and fats and water, adding an alkaline earth metal-type solidifying agent selected from the group consisting of calcium sulfate, calcium chloride, calcium lactate, magnesium sulfate and magnesium chloride to said emulsion, and reacting said solidifying agent with said emulsion under heating,

said alkaline earth metal-type solidifying agent being used in an amount of 0.05 to 5% calculated as the amount of the alkaline earth metal based on said soybean protein,

the ratio of said soybean protein to said casein being in a range of approximately 1//5to 3/1,

said oils and fats being used in an amount of 0.3 to 1.7 parts per 1 part of the total amount of said soybean protein and casein,

said soybean protein having a crude protein content of at least 60%, and

said water being used in said emulsion in an amount of 30 to 60%.

4,883,684

FUNCTIONAL HARDSTOCK FAT COMPOSITION

David K. Yang, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jul. 1, 1988, Ser. No. 213,959

Int. Cl.^{4} A23D *5/00*

U.S. Cl. 426—607 8 Claims

1. A plastic shortening composition comprising:

(a) from about 65% to about 95% of a triglyceride fat or oil base stock having an iodine value of less than 150; and

(b) from about 5% to about 35% of a beta prime tending hardstock with a melting point between 35° C. and 70° C., said hardstock consisting essentially of:

(i) from about 14% to 100% of a triglyceride esterified with a $C_{18:2}$ fatty acid and the remaining fatty acids are selected from the group of C_{18}–C_{26} saturated fatty acids; and

(ii) from about 86% to 0% of a mixture of triglycerides esterified with one or more saturated or unsaturated C_{18}–C_{26} fatty acids.

4,883,685

MESO-ERYTHRITOL HARD CANDY AND PROCESS FOR PRODUCING THE SAME

Tsutomu Koudou, Sagamihara, Japan, assignor to Mitsubishi Kasei Corporation and Nikken Chemicals Company, Limited, both of, Japan

Filed Aug. 11, 1988, Ser. No. 231,220

Claims priority, application Japan, Aug. 14, 1987, 62-202820

Int. Cl.^{4} A23G *3/00*

U.S. Cl. 426—658 17 Claims

1. A hard candy comprising 30% to 80% by weight of meso-erythritol based on said candy, and saccharides taken from the class consisting of sugar alcohols other than meso-erythritol and sugars as the main components.

4,883,686

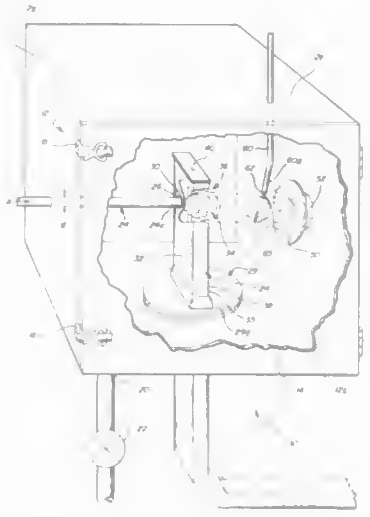
METHOD FOR THE HIGH RATE PLASMA DEPOSITION OF HIGH QUALITY MATERIAL

Joachim Doehler, Union Lake; Stephen J. Hudgens, Southfield; Stanford R. Ovshinsky, Bloomfield Hills; Buddie Dotter II, Utica; Lester R. Peedin, Oak Park; Jeffrey M. Krisko, Highland, and Annette Krisko, Highland, all of Mich., assignors to Energy Conversion Devices, Inc., Troy, Mich.

Filed May 26, 1988, Ser. No. 199,062

Int. Cl.^{4} B05D *3/06*

U.S. Cl. 427—38 41 Claims



1. A method of fabricating high quality thin films at a relatively high rate of deposition, said method comprising the steps of:

providing an enclosure;

maintaining the interior of said enclosure at a sub-atmospheric background pressure;

introducing an energy transferring gas into the interior of said enclosure through at least one aperture formed in a first conduit;

creating a choke condition adjacent the aperture in said first conduit so as to provide a localized high pressure of energy transferring gas flowing therethrough;

activating said energy transferring gas in an activation region so as to form a high density plume of activated species from said energy transferring gas;

introducing a precursor deposition gas into the interior of said enclosure through a second conduit; the point of introduction of said precursor deposition gas from said second conduit into said enclosure being spacedly disposed relative to said activation region, whereby collisions of said high density of activated species with said precursor deposition gas define a collision region in which a high density of energized deposition species of said precursor deposition gas are generated;

operatively disposing substrate means interiorly of said enclosure for depositing energized deposition species of said precursor deposition gas thereupon; said substrate means spacedly positioned from said activation region a distance sufficient to substantially prevent electron damage; and

maintaining a substantial pressure differential between the pressure of said energy transferring gas in said first conduit and the background pressure in said enclosure, said pressure differential being sufficient to, provide for the activation of a high density of activated species of said energy transferring gas, whereby high quality thin film material of desired deposition species is deposited onto said substrate at a rate greater than about 5 Angstroms per second.

4,883,687

FLUID BED PROCESS FOR PRODUCING POLYSILICON

Marcelian F. Gautreaux, and Robert H. Allen, both of Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

Division of Ser. No. 4,116, Jan. 16, 1987, Pat. No. 4,820,587, which is a continuation-in-part of Ser. No. 899,906, Aug. 25, 1986, abandoned. This application Dec. 27, 1988, Ser. No. 290,584

The portion of the term of this patent subsequent to Nov. 15, 2005, has been disclaimed.

Int. Cl.^{4} B05D *7/00;* C01B *33/02*

U.S. Cl. 427—213 2 Claims

1. A process comprising the step of intimately contacting:

(a) a bed of particles of silicon maintained:

(i) in a vertically disposed reaction zone, and

(ii) at a reaction temperature higher than the thermal decomposition temperature of silane with;

(b) silane contained in a first and second decomposition gas, each of said deposition gases being introduced into said bed of particles at a flow rate sufficient to maintain said bed in a fluidized state within said reaction zone, said first deposition gas being introduced for a first deposition period and being a mixture of about 10 to about 15 mole percent silane in hydrogen, said second deposition gas being introduced for a second deposition period beginning substantially immediately after the termination of said first deposition period, and being a mixture of about 1 to 5 mole percent silane in hydrogen, said process being further characterized in that said first

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deposition period is from about 2 to about 5 times as long in time duration as said second deposition period, such that polysilicon in the form of approximately spherical particles is produced, said particles having
(i) a size distribution of from 400 to 100 microns;
(ii) an average size of 650 to 750 microns;
(iii) a boron content of no more than 0.25 ppba;
(iv) a phosphorus content of no more than 0.19 ppba;
(v) a carbon content of no more than 0.33 ppm; and
(vi) a surface dust content less than about 0.08 weight percent bonded to said particles by a silicon layer in the range of 0.1 to about 5 microns in thickness.

4,883,688

METHOD FOR PRODUCING CHROMATOGRAPHIC DEVICES HAVING MODIFIED EDGES

Thomas M. Houts, Mountain View, and Edwin F. Ullman, Atherton, both of Calif., assignors to Syntex (U.S.A) Inc., Palo Alto, Calif.
Division of Ser. No. 591,155, Mar. 16, 1984, Pat. No. 4,757,004. This application Jul. 5, 1988, Ser. No. 215,020
Int. Cl.^{4} B05D *5/00, 3/12*
U.S. Cl. 427—285 **3 Claims**

1. A method for producing a device comprised of chromatographic material having a longitudinal edge, which comprises introducing a pluality of indentations along the longitudinal edge of said material, the number, configuration, and dimensions of said indentations being sufficient to render the front of a component traversing said chromatographic material substantially flat or convex.

2. A method for producing a device comprised of chromatographic material having a longitudinal edge, which comprises introducing a chemical substance along the longitudinal edge of said material, said substances being capable of reducing the rate of migration of a component traversing said chromatographic material, the amount of said substance being sufficeint to render the front of a component traversing said chromatographic material substantially flat or convex.

4,883,689

METHOD OF PRESERVING WOOD WITH LANTHANIDE DERIVATIVES

Peter S. Gradeff, Pottersville, N.J., assignor to Rhone Poulenc, Inc., Princeton, N.J.
Continuation-in-part of Ser. No. 121,623, Nov. 17, 1987, which is a continuation-in-part of Ser. No. 17,159, Feb. 20, 1987, Pat. No. 4,743,473. This application Nov. 4, 1988, Ser. No. 267,009
Int. Cl.^{4} B05D *1/18, 3/00*
U.S. Cl. 427—297 **30 Claims**

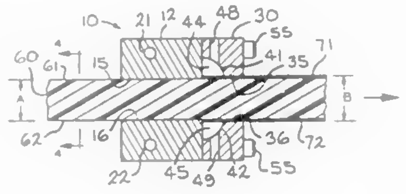
16. A method for preserving wood comprising the steps of:
(a) subjecting wood to a vacuum;
(b) introducing a composition comprising a solution comprising an organic solvent and one or more lanthanide derivatives and contacting the wood and composition for a period of time sufficient to bond the lanthanide to the wood.

4,883,690

METHOD AND APPARATUS FOR COATING ELONGATE MEMBERS

Neil A. Carter, Granville, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio
Filed Jun. 6, 1988, Ser. No. 202,332
Int. Cl.^{4} B29C *41/20;* **B05C** *1/02, 5/02*
U.S. Cl. 427—430.1 **15 Claims**

1. Apparatus for applying a coating to an advancing elongate member having a constant cross-sectional shape comprising:
a housing having a guideway closely conforming to the cross-sectional size and shape of the uncoated elongate member over at least a portion thereof, the guideway being comprised of a plurality of guide surfaces; and
a collar in abutting engagement with the housing, the collar having a passageway in communication with the guideway of the housing, and the collar passageway being comprised of a plurality of passageway surfaces corresponding to the guide surfaces of the housing guideway;
a first passageway surface being coplanar with the corresponding guide surface of the housing so that substantially none of the coating is applied to the portion of the elongate member in contact with said first passageway surface;
a second passageway surface being offset from the plane of the corresponding guide surface of the housing so that the coating is applied to the portion of the elongate member in contact with said second passageway surface, where the amount of offset of said second passageway surface is substantially equal to the desired coating thickness to be applied to the portion of the elongate member in contact with said second passageway surface; and
a transverse recess in said second passageway surface, said transverse recess being adapted to be supplied with the coating material, said transverse recess and second passageway surface being adapted to cooperate to continuously apply the coating to the desired portion of elongate member at the desired thickness as the elongate member continuously advances through the apparatus.



4,883,691

METHOD OF AND APPARATUS FOR MAINTAINING UNIFORM HOT MELT COATINGS ON THERMALLY SENSITIVE WEBS BY MAINTAINING DIMENSIONAL STABILITY OF SILICONE AND RUBBER-LIKE WEB BACK-UP ROLLS

Frederic S. McIntyre, Wellesley, Mass., assignor to Acumeter Laboratories, Inc., Marlborough, Mass.
Division of Ser. No. 53,386, May 22, 1987, Pat. No. 4,805,554. This application Nov. 14, 1988, Ser. No. 270,215
Int. Cl.^{4} B05D *1/26*
U.S. Cl. 427—434.2 6 Claims

1. A method of maintaining uniform hot melt coatings on thermally sensitive webs by maintaining the dimensional stability of silicone and rubber-like web back-up rolls that would otherwise be subject to dimensional variations as hot melt is deposited from a nozzle upon the front of the web, with attendant nozzle-to-web spacing variation as well, the method comprising, continuously contacting the surface of the back-up roll with a heat-conducting roll that, with increased surface temperature of the back-up roll, can directly remove heat as a heat sink from the back-up roll, and with decrease in back-up roll surface temperature can directly contact-heat the surface of the back-up roll; sensing variations in heat of the surface of the back-up roll in response to the deposition of hot melt from the nozzle onto the front of the web and the transfer of heat from the back-up roll to the back of the web that would tend to introduce web coating variations and degradation; and controlling the temperature of the heat-conducting roll in response to such sensing to control the direct transfer of heat between the back-up and heat-conducting rolls and vice versa so as to maintain the substantial dimensional stability of the back-up roll and of the nozzle-to-web spacing.

4,883,692

AROMATIC FOAM-PLASTIC DECORATIVE OBJECT

Donald Spector, 380 Mountain Rd., Union City, N.J. 07087
Filed Jan. 13, 1989, Ser. No. 296,683
Int. Cl.^{4} A61L *9/04;* **B42D** *15/02*
U.S. Cl. 428—16 **10 Claims**

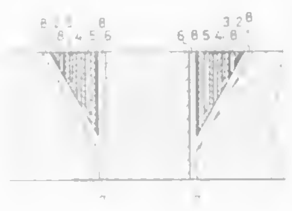
1. An aromatic, foam-plastic, decorative, three-dimensional article comprising:
(a) an envelope configured to assume the contoured three-dimensional form of a decorative object, said envelope forming a mold cavity and having a port therein to admit a charge of foam-forming mixture having a liquid fragrance dispersed therein which expands under gas pressure to ill said cavity and conform to the contours of the envelope, aid envelope having minute apertures therein to relieve aid gas; and
(b) a foam-plastic object formed in situ in the cavity from said mixture admitted through said port and conforming to the contours of the envelope, aid object exuding said fragrance and said envelope being at least partially transparent to expose the object.

4,883,693

HEAT-SHRINKABLE LAMINATE TUBULAR FILM

Masaki Ohya, and Yoshibaru Nishimoto, both of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan
Continuation-in-part of Ser. No. 675,307, Nov. 27, 1984, Pat. No. 4,732,795. This application Dec. 9, 1987, Ser. No. 130,528
Claims priority, application Japan, Dec. 2, 1983, 58-228116
The portion of the term of this patent subsequent to Mar. 22, 2005, has been disclaimed.
Int. Cl.^{4} B32B *27/08, 27/34*
U.S. Cl. 428—34.9 **7 Claims**

1. A coextruded, biaxially stretched and laminated heat-shrinkable tubular film, comprising:
(1) a gas-barrier layer of a copolymer of vinylidene chloride having a thickness of not less than 6 μm, which is not more than 30% of the total thickness of the coextruded, biaxially stretched and laminated heat-shrinkable tubular film,
(2) outer layers prepared from at least one polymer selected from the group consisting of:
(i) a copolymer of ethylene and vinyl acetate having a crystal melting point ranging from 80° to 103° C.,
(ii) a linear low-density polyethylene having a crystal melting point ranging from 110 to 130° C.,
(iii) a mixture of more than 0% and not more than 40% by weight of a linear-low density polyethylene having a crystal melting point ranging from 110° to 130° C., and not less than 60% and less than 100% by weight of a copolymer of ethylene and vinyl acetate having a crystal melting point ranging from 80° to 103° C., and
(iv) a mixture of more than 40% by weight and less than 100% by weight of a linear low-density polyethylene of a density in the range of 0.915 to 0.930 and more than 0% by weight and less than 60% by weight of a copolymer of ethylene and vinyl acetate of a crystal melting point in the range of 80° to 103° C.,



said outer layers having a thickness of 40 to 92% of the total thickness of the coextruded, biaxially stretched and laminated heat-shrinkable tubular film,
(3) at least one intermediate layer of a polyamide or a thermoplastic polyester, both of which show a crystal melting point of not more than 240° C., said intermediate layer having a thickness of 5 to 40% of the total thickness of the coextruded, biaxially stretched and laminated heat-shrinkable tubular film, and
(4) adhesive layers disposed between all or certain polymer layers, each adhesive layer having a thickness of 0.5 to 5.0 μm, and
the total thickness of the coextruded, biaxially stretched and laminated heat-shrinkable tubular film being in the range of 25 to 110 μm
said coextruded, biaxially stretched and laminated heat-shrinkable tubular film being produced by laminating and coextruding the copolymer of vinylidene chloride, the polyolefin, polyamide or the thermoplastic polyester and the adhesive material, cooling, heating and stretching the resultant laminated tubular film.

4,883,694

METHOD OF FORMING FLEXIBLE PACKAGES AND NOVEL FLEXIBLE PACKAGES

Balasubramaniam Ramalingam, Columbus, Ohio, assignor to Century Adhesives Corp., Columbus, Ohio
Division of Ser. No. 258,460, Oct. 17, 1988, and a continuation-in-part of Ser. No. 134,790, Dec. 18, 1987, abandoned. This application Mar. 13, 1989, Ser. No. 322,351
Int. Cl.^{4} C09J *3/16*
U.S. Cl. 428—35.2 **13 Claims**

1. A flexible package comprising a joint between a plurality of sections of flexible substrate bonded together by an layer of adhesive comprising a chain extended urethane polymer containing peroxy carbamyl groups.

6. The flexible package of claim 1 which is a retortable pouch.

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4,883,695

OPERATION TABLE COVER

Albert Weimar, Rosenheim-Pang, Fed. Rep. of Germany, assignor to SENGEWALD Klinikprodukte GmbH, Rohrdorf/-Thansau, Fed. Rep. of Germany

Filed May 2, 1988, Ser. No. 191,166

Claims priority, application Fed. Rep. of Germany, May 12, 1987, 3715691

Int. Cl.^{4} B65D *30/00;* B31B *1/64*

U.S. Cl. 428—35.2 4 Claims

1. An operation table cover, comprising a hose of a thermoplastic foil material, said hose having a bottom end which is closed and an opposite head end with which it is slippable over a supporting surface of an operation table, said hose having two walls each having two lateral edges, said lateral edges of one of said walls being connected with said lateral edges of the other of said walls by first welding seams, said hose having an upper surface; a coating of an absorptive non-woven fabric provided on said upper surface of said hose; and two strips overlapping said head end of said hose at its two opposite sides, said hose having a predetermined width, said overlapping strips having a width which in an unstretched condition of said overlapping strips is greater than the width of said hose, said strips having two lateral edges, said two lateral edges of one of said strips being connected with said two lateral edges of the other of said strips by two second welding seams which are separate from said first welding seams and are located laterally outside of said first welding seams.

4,883,696

LAMINATE

Teruo Iwanami, Ibaraki; Takamasa Moriyama, Suita, and Knniyoshi Asano, Hirakata, all of Japan, assignors to Nippon Gohsei Kaguku Kogyo Kabushikis Kaisha, Osaka, Japan

Continuation-in-part of Ser. No. 115,041, Oct. 30, 1987, abandoned. This application Nov. 21, 1988, Ser. No. 273,571

Claims priority, application Japan, Nov. 1, 1986, 61-261037

Int. Cl.^{4} B32B *27/08;* C08L *29/04*

U.S. Cl. 428—35.4 8 Claims

1. A laminate comprising a layer of a composition (A) consisting essentially of 100 parts by weight of a hydrolyzed ethylene-vinyl acetate copolymer having an ethylene content of 20 to 55 by mole and a degree of hydrolysis of at least 90% by mole and 1 to 100 parts by weight of a thermoplastic polyester having a glass transition termperature of —50° to 25° C. and a heat of fusion of not more than 30 joules/g, the acid component of said thermoplastic polyester being a mixture of 20 to 70% by mole of an aromatic dicarboxylic acid of at least one of terephthalic acid and isophthalic acid and 80 to 30% by mole of an aliphatic dicarboxylic acid of at least one of adipic acid and sebasic acid, and the glycol component of said thermoplastic polyester being an alkylene glycol having 2 to 6 carbon atom; and a layer of a composition (B) comprising at least one polymer selected from the group consisting of a polyolefin, a polystyrene, a polyvinyl chloride, a polyamide, a polycarbonate and a polyester having a glass transition temperature of not less than 30° C.

4,883,697

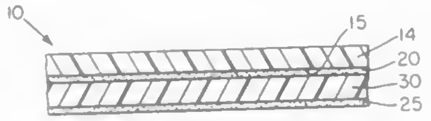
THERMOPLASTIC IN-MOLD LABELING LABEL STRUCTURE FOR DEFORMABLE THERMOPLASTIC PACKAGES

Arthur H. Dornbusch; Roger E. Schanzle, both of Cincinnati, Ohio, and Irvin L. Brazier, West Milwaukee, Wis., assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 67,771, Jul. 8, 1987, abandoned, which is a continuation-in-part of Ser. No. 889,031, Jul. 23, 1986, abandoned. This application Jul. 22, 1988, Ser. No. 223,055

Int. Cl.^{4} B32B *27/08;* B65D *25/34*

U.S. Cl. 428—35.7 11 Claims



1. A non-paper, flexible, resilient, multilayer label adapted for application to a deformable thermoplastic package by in-mold labeling procedures, said label comprising:

(a) An elastic, machineable, thermoplastic, stress-compensating stratum which comprises an unfoamed film having a Young's Modulus less than about 2800 Kg/cm^2, said stress-compensating stratum having an upper and lower surface and a thickness in the range of from about 0.019 mm to about 0.076 mm;

(b) a thermoplastic, low temperature heat-activated sealant layer generally coextensive with and laminated to the lower surface of said stress-compensating stratum; and

(c) a thermoplastic label stratum which has a Young's Modulus greater than about 7030 Kg/cm^2 and a smooth label surface, said label stratum being laminated to the upper surface of said stress-compensating stratum and having a thickness in the range of from about 0.0064 mm to about 0.025 mm.

4,883,698

MULTILAYER FILM CONTAINING A BIAXIALLY ORIENTED POLYPROPYLENE FILM

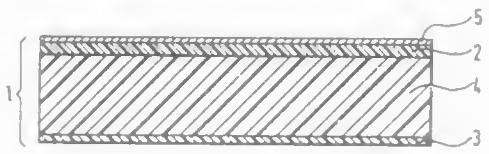
Lothar Bothe, Mainz; Guenther Crass, Taunsstein-Wehen; Siegfried Janocha, Weisbaden, and Gunter Schloegl, Kelkheim, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jan. 11, 1988, Ser. No. 141,728

Claims priority, application Fed. Rep. of Germany, Jan. 17, 1987, 3701307

Int. Cl.^{4} B65D *65/40;* B32B *27/08, 27/32*

U.S. Cl. 428—35.9 17 Claims



1. A multilayer film comprising:

a biaxially oriented polypropylene film as a base layer;

a first surface layer comprising a metal layer deposited by metallization on a surface which is free from organic additives, such as lubricants or antistatic agents, and which has been exposed to a corona discharge before the metallization, wherein said surface is a surface of said base layer or a surface of an intermediate layer; and

a second surface layer comprising a heat-sealing layer containing an additive combination comprising an inorganic pigment and a polydiorganosiloxane, wherein said heat sealing layer is applied on the surface of said base layer opposite said first surface layer and comprises an ethylene, ethylene/propylene, ethylene/butylene propylene/butylene or ethylene/propylene/butylene polymeric material or a mixture of said polymeric materials, and wherein said inorganic pigment comprises aluminum silicate in platelet form.

4,883,699

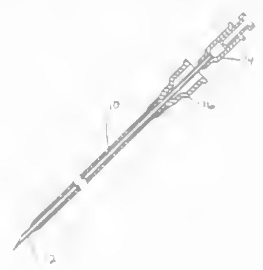
POLYMERIC ARTICLE HAVING HIGH TENSILE ENERGY TO BREAK WHEN HYDRATED

Lawrence M. Aniuk, Santa Clara; Ronald L. Dieck, Irving, and Dwayne Hardy, San Mateo, all of Calif., assignors to Menlo Care, Inc., Palo Alto, Calif.

Continuation of Ser. No. 780,543, Sep. 26, 1985, abandoned, which is a continuation-in-part of Ser. No. 653,390, Sep. 21, 1984, abandoned. This application Jan. 23, 1987, Ser. No. 8,117

Int. Cl.^{4} B27N *5/02*

U.S. Cl. 428—36.9 30 Claims



1. An article, suitable for use as a body implant, having been formed from a multiple phase polymeric composition comprising:

(a) a first phase which is continuous and comprises a substantially non-hydrophilic polymeric component capable of absorbing water in an amount of no more than about 30% by weight based on the weight of the non-hydrophilic polymer; and

(b) a second phase which comprises a hydrophilic polymeric component capable of absorbing at least about 50% water, by weight based on the weight of the hydrophilic polymer;

wherein said article (i) is capable of absorbing water to an extent that it softens with a softening ratio of at least about 2:1 or swells with a swelling ratio of at least about 1.3:1; and (ii) has an energy to break of at least about 700 N-cm/cm^3 and a 2.5% Secant modulus of less than about 7,000 N/cm^2, when substantially completely hydrated.

4,883,700

COMPOSITE AND ARTICLE USING SHORT LENGTH FIBERS AT OBLIQUE ANGLES

G. A. Harpell, Morris Township, Morris County; H. L. Li, Parsippany; Y. D. Kwon, Mendhem, and D. C. Prevorsek, Morris Township, Morris County, all of N.J., assignors to Allied-Signal Inc., Morris Township, Morris County, N.J.

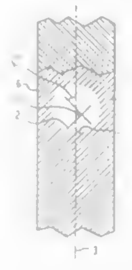
Filed Aug. 3, 1987, Ser. No. 81,073

Int. Cl.^{4} B32B *5/12*

U.S. Cl. 428—113 14 Claims

1. A multilayer composite comprising a plurality of prepreg layers where each prepreg layer comprises an array of at least two coplanar fibrous elements, with each element having a longitudinal axis and comprising a plurality of unidirectional fibers embedded in a polymeric matrix, the fibers being at an angle of from 30° to 60° to the longitudinal axis of the element and up to eight inches in length.

12. A multilayer composite comprising a plurality of prepreg layers where each prepreg layer comprises a fibrous element having a longitudinal axis and comprising a plurality of unidirectional fibers embedded in a polymeric matrix, the fibers being at an angle of from 30° to 60° to the longitudinal axis of the element and up to eight inches in length.



4,883,701

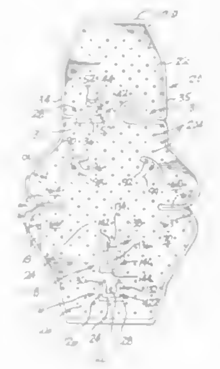
INFANT CAR SEAT LINER

Janice J. Rankin, and Marilyn M. Pearson, both of Portland, Oreg., assignors to Weyerhaeuser Company, Tacoma, Wash.

Filed Apr. 29, 1988, Ser. No. 187,988

Int. Cl.^{4} B32B *3/10*

U.S. Cl. 428—136 26 Claims



1. A disposable infant seat liner for car seats of the type having a pair of shoulder straps and at least one leg strap comprising:

a body of a disposable material having a longitudinal centerline and including an upper ;shoulder supporting section, a central section and a lower leg supporting section;

means defining at least two shoulder strap receiving slotways, the shoulder strap receiving slotways being positioned at opposite sides of the centerline of the upper shoulder supporting section;

means defining at least one leg strap receiving slotway in the lower leg supporting section; and

the body having first and second side edges and in which the central section of the body is enlarged relative to the upper end portion of the body and relative to a lower end portion of the lower leg supporting section of the body, the first and second side edges converging from the central section to the lower leg supporting section to provide a narrowing transition between these sections of the infant seat liner, the liner including a first inwardly directed slit extending inwardly from the first side edge of the central body section and a second inwardly directed slit extending inwardly from the second side edge of the central section of the body opposite to the first side edge, whereby the slits permit portions of the central section of the body adjacent to these slits to overlap one another when the body is positioned in an infant seat.

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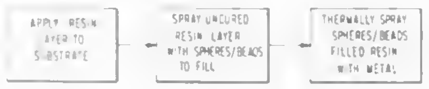
4,883,702
POLYPHENYLENE SULFIDE RESIN COMPOSITION USEFUL FOR PLATING

Masatoshi Sato; Kensuke Ogawara, and Noriaki Emura, all of Yamaguchi, Japan, assignors to Tosoh Corporation, Yamaguchi and Hodogaya Chemical Co., Ltd., Tokyo, both of, Japan
Continuation of Ser. No. 941,120, Dec. 12, 1986, abandoned.
This application May 23, 1988, Ser. No. 198,657
Claims priority, application Japan, Dec. 12, 1985, 60-277914
Int. Cl.⁴ C08K *3/40, 3/10*
U.S. Cl. 428—141 4 Claims

1. An article comprised of a polyphenylene sufide resin composition comprising 30 to 70% by weight of a polyphenylene sulfide resin, from 70 to 30% by weight of glass fibers, and from 1 to 10% by weight of potassium titanate fibers, the surface of said article having been etched by an etching solution.

4,883,703
METHOD OF ADHERING THERMAL SPRAY TO SUBSTRATE AND PRODUCT FORMED THEREBY

Louis M. Riccio, P.O. Box 81, DeVault, Pa. 19432, and Alexander A. Bosna, 135 Summit Rd., Malvern, Pa. 19355
Filed Aug. 29, 1988, Ser. No. 237,125
Int. Cl.⁴ B32B *3/30, 5/18;* **B05D** *1/08, 1/36*
U.S. Cl. 428—142 2 Claims


APPLY RESIN LAYER TO SUBSTRATE
SPRAY UNCURED RESIN LAYER WITH SPHERES/BEADS TO FILL
THERMALLY SPRAY SPHERES/BEADS FILLED RESIN WITH METAL

1. A method of applying a coating to a substrate surface comprising:
- forming a curable resin filled with micron-sized beads or spheres or other filler on the surface of said substrate and, prior to curing of said resin;
- thermally spraying metal particles in a molten state upon the exposed surface of said micron-sized sphere or bead or other filler filled resin so as to cause the molten particles to shape themselves around the upper ones of said micron-sized spheres or beads and into the surface of the uncured resin to form undercuts or roughness in the resin layer;
- thermally spraying metal particles in a molten state upon that surface to a desired thickness of said metal; and
- curing the resin.

2. A metal coated surface made according to the method defined in claim 1.

4,883,704
CIRCUIT SUBSTRATE COMPRISING NITRIDE TYPE CERAMICS, METHOD FOR PREPARING IT, AND METALLIZING COMPOSITION FOR USE IN IT

Hideki Sato; Nobuyuki Mizunoya, both of Yokohama; Hironori Asai, Kawasaki; Kazuo Anzai, Tokyo, and Tsuyoshi Hatano, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Mar. 29, 1988, Ser. No. 174,902
Claims priority, application Japan, Mar. 30, 1987, 62-73989; Mar. 31, 1987, 62-76164; Mar. 31, 1987, 62-76165; Feb. 26, 1988, 63-43858
Int. Cl.⁴ B32B *9/00*
U.S. Cl. 428—209 3 Claims

1. An aluminum nitride ceramic substrate comprising:
- an aluminum nitride ceramic sintered sheet; a conductive metallized layer comprising at least one of the group consisting of molybdenum and tungsten formed on said aluminum nitride ceramic sintered sheet; and
- a layer of a compound containing yttria and alumina at the interface between said aluminum nitride ceramic sintered sheet and said metallized layer and penetrating the metallized layer.

4,883,705
COMPOSITION FOR CERAMIC SUBSTRATE AND SUBSTRATE

Keiichi Kawakami; Mitsuo Takabatake, and Jiro Chiba, all of Yokohama, Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan
Division of Ser. No. 44,738, May 1, 1987, Pat. No. 4,777,092.
This application Jul. 6, 1988, Ser. No. 215,528
Claims priority, application Japan, May 2, 1986, 61-101061; Nov. 11, 1986, 61-266702
Int. Cl.⁴ B32B *9/00*
U.S. Cl. 428—209 9 Claims

8. The composition according to claim 6, wherein the glass powder consists essentially of from 40 to 47% by weight of SiO_2, from 2 to 7% by weight of Al_2O_3, from 2 to 7% by weight of MgO, from 2 to 7% by weight of CaO, from 22 to 28% by weight of BaO, from 1 to 18% by weight of PbO, from 12 to 20% by weight of ZnO, from 1 to 8% by weight of B_2O_3, from 0 to 4% by weight of TiO_2 plus ZrO_2 and from 0 to 3% by weight of Li_2O plus Na_2O plus K_2O.

4,883,706
THICK COMPOSITE POLYESTER FILMS

Pierre Grosjean, Sainte Foy les Lyon, France, assignor to Rhone-Poulenc Films, Courbevoie, France
Filed Dec. 23, 1987, Ser. No. 137,067
Claims priority, application France, Dec. 23, 1986, 86 18230
Int. Cl.⁴ B32B *7/02, 27/08*
U.S. Cl. 428—215 16 Claims

1. A coextruded composite polyester film having a thickness greater than 40 micrometers, comprising a thick crystalline or semicrystalline polyester film substrate (A), said film substrate (A) having a coating (B) of a sulfonated copolyester adhesion primer on at least one of the face surfaces thereof, said sulfonated copolyester comprising at least 80 mol % of terephthalate recurring units and from 3 to 10 mol % of oxysulfonylated recurring units.

2. The composite polyester film as defined by claim 1, said coating(s) (B) having a thickness ranging from 0.3 to 10 micrometers.

4,883,707
HIGH LOFT NONWOVEN FABRIC

David D. Newkirk, Greer, S.C., assignor to James River Corporation, Richmond, Va.
Filed Apr. 21, 1988, Ser. No. 184,228
Int. Cl.⁴ B32B *5/26, 7/10, 31/26*
U.S. Cl. 428—219 14 Claims

1. A nonwoven fabric having a basis weight in the range of 15–40 grams per square yard and suitable for use as coverstock that comprises
- a soft carded web layer consisting essentially of thermoplastic fibers having an average denier of 3 or less, and
- a lofty carded web layer consisting essentially of thermoplastic fibers having an average denier of 3 or greater,

wherein said webs contain sufficient thermoplastic bicomponent fiber to provide bonding within and between each of said web layers and wherein the thermoplastic bicomponent fiber in said lofty layer is flat-crimped.

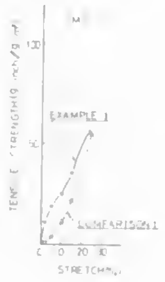
4,883,708
METAL FOIL COVERED LAMINATE

Kenichi Kariya; Masayuki Noda; Takahiro Yamaguchi, and Katsuji Takahashi, all of Hikone, Japan, assignors to Shin-Kobe Electric Machinery Co., Ltd., Tokyo, Japan
Filed Jun. 2, 1988, Ser. No. 201,685
Claims priority, application Japan, Jun. 4, 1987, 62-140186; Jun. 4, 1987, 62-140189; Feb. 26, 1988, 63-43445
Int. Cl.⁴ B32B *15/08, 17/06*
U.S. Cl. 428—263 7 Claims

1. A metal foil covered laminate comprising:
- a sheet-like base formed of at last two of meta-aramic fiber, polyethylene terephthalate fiber and glass fiber and impregnated with preliminary condensation material formed by acrylonitrile/butadiene copolymer having terminal carboxyl groups esterified with apoxy resin having more than two epoxy groups;
- and a metal foil covering on at least one face of said sheet-like base.

4,883,709
COMPOSITE NON-WOVEN FABRIC AND PROCESS FOR PREPARING SUCH NON-WOVEN FABRIC

Satoshi Nozaki, Ehime; Shigeo Imai, Kawanoe; Makoto Ishigami, Tokyo, and Katsushi Tomida, Kanonji, all of Japan, assignors to Uni-Charm Corporation, Ehime, Japan
Filed Oct. 24, 1988, Ser. No. 261,426
Claims priority, application Japan, Jun. 21, 1988, 63-152985
Int. Cl.⁴ D04H *1/58*
U.S. Cl. 428—288 18 Claims

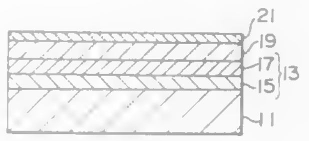


1. A composite nonwoven fabric comprising a nonwoven fabric substrate composed of first staple fibers and second short fibers entangled on and in said nonwoven fabric substrate under action of fluid, characterized by that said substrate comprising a fiber-entangled nonwoven fabric stretched in cross direction by 20 to 200% and that traces of fluid jets are formed on a layer of said fabric comprising predominately the second short fibers, which are more closely spaced from one another than traces of the fluid jets formed on a layer of said fabric comprising predominately the first staple fibers.

4,883,710
MAGNETO-OPTICAL RECORDING MEDIUM

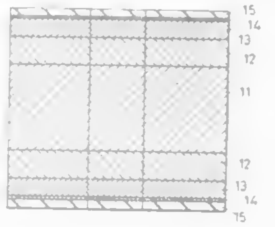
Hajime Machida, Tokyo, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan
Filed Oct. 28, 1987, Ser. No. 113,489
Claims priority, application Japan, Oct. 28, 1986, 61-256424; Oct. 28, 1986, 61-256425
Int. Cl.⁴ G11B *9/00*
U.S. Cl. 428—336 16 Claims

1. A magneto-optical recording medium comprising a substrate, and a magnetic layer supported on said substrate, said magnetic layer comprising:
- a first magnetic layer comprising a magnetic oxide with perpendicular magnetic characteristics, having a saturation magnetization Ms of 100 Gauss or less and a coercive force Hc_1 of 1 KOe or more, and
- a second magnetic layer adjacent to said first magnetic layer comprising a magnetic oxide having a thermal conductivity x of less than 0.3 cal/cm.sec.° C. and a light absorption coefficient α of 5×10^3 cm^{-1} or more.



4,883,711
MAGNETIC RECORDING MEDIUM

Yoshihiro Shiroishi, Hachiouji; Sadao Hishiyama, Sayama; Hiroyuki Suzuki, Kawasaki; Tomoyuki Ohno; Yoshibumi Matsuda, both of Kokubunji; Kazumasa Takagi, Tokyo; Norikazu Tsumita, Kanagawa; Yasushi Kitazaki, Odawara; Masaki Ohura, Odawara, and Sadanori Nagaike, Odawara, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Dec. 15, 1987, Ser. No. 133,357
Claims priority, application Japan, Dec. 24, 1986, 61-306419
Int. Cl.⁴ G11B *5/64*
U.S. Cl. 428—336 9 Claims



1. A magnetic recording medium having a magnetic layer over a substrate , a non-magnetic overcoat layer over said magnetic layer and a non-magnetic intermediate layer disposed between said magnetic layer and said non-magnetic overcoat layer, wherein said non-magnetic intermediate layer is made of an alloy substantially composed of at least one element selected from the group consisting of Zr, Hf and Ti and contains at least one element selected from the group consisting of Pt, Pd, Rh, Ir, Ru and Os in an amount from 0.01 to 1.0 at %.

4,883,712
CARBON FIBER CORD FOR RUBBER REINFORCEMENT

Hiroyasu Ogawa; Yasuo Kogo, both of Shizuoka; Shuji Takahashi, and Yasuo Suzuki, both of Kanagawa, all of Japan, assignors to Toho Rayon Co., Ltd. and The Yokohama Rubber Co., Ltd., both of Tokyo, Japan
Filed Dec. 24, 1986, Ser. No. 945,994
Claims priority, application Japan, Dec. 24, 1985, 60-289306; Dec. 24, 1985, 60-289308
Int. Cl.⁴ B32B *9/00;* **D02G** *3/00*
U.S. Cl. 428—367 13 Claims

1. A carbon fiber cord for rubber reinforcement comprising a carbon fiber bundle having a cured coating thereon provided by coating and curing a resin composition comprising a mixture of 100 parts by weight of a butadiene-acrylonitrile copolymer having a carboxyl group on at least both terminals of the molecule of the copolymer and from 5 to 40 parts by weight of an epoxy resin, or a reaction mixture obtained therefrom, and a curing agent for the epoxy resin in an amount of from 5 to

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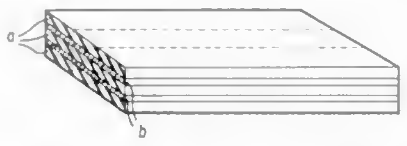
50% by weight, based on the total weight of the carbon fiber bundle and the coating, and further having a coating thereon of a mixture or a phenol-formalin-rubber latex type adhesive for rubber in an amount of from 0.5 to 5% by weight, based on the total weight of the carbon fiber bundle and the resin composition coated thereon.



4,883,713

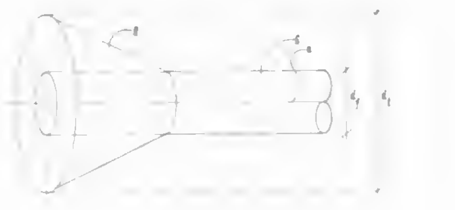
MOLDABLE MATERIAL REINFORCEMENT FIBERS WITH HYDRAULIC OR NON-HYDRAULIC BINDER AND MANUFACTURING THEREOF

Xavier P. Destree, and Angelo A. Lazzari, both of Brussels, Belgium, assignors to Eurosteel s.a., Brussels, Belgium

Continuation-in-part of Ser. No. 857,645, Apr. 28, 1986, abandoned, which is a continuation-in-part of Ser. No. 589,117, Feb. 22, 1984, abandoned. This application Dec. 16, 1987, Ser. No. 133,546

Int. Cl.⁴ B32B *15/00;* **E04C** *5/00*

U.S. Cl. 428—397 1 Claim



1. A reinforcing fiber for use in reinforcing a moldable matrix material, comprising:

an elongated cylindrical steel body having opposite ends, and a longitudinal axis, and a head at each end thereof; said heads being substantially symmetrical with said axis and being substantially conically shaped, and extending longitudinally and radially outwardly from the ends thereof to create a substantially conically shaped surface, whereby the tangent at any point on said conically-shaped surface forms an angle with said axis between 20° and 60°; said heads being formed by mechanically deforming the ends of said elongated cylindrical steel body.

4,883,714

INK COMPOSITIONS AND PREPARATION

Rebecca R. Stockl; Kenneth R. Barton, and Melvin A. Caldwell, all of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 50,645, May 18, 1987, abandoned. This application Jan. 9, 1989, Ser. No. 295,086

Int. Cl.⁴ C09D *11/10*

U.S. Cl. 428—412 15 Claims

1. A composition useful as a printing ink or concentrate thereof comprising a substantially homogeneous system of the components:

(1) from about 4 to about 80 weight % of polymeric material of at least one linear, water-dissipatable polymer having carbonyloxy linking groups in the linear molecular structure wherein up to 80% of the linking groups may be carbonylamido linking groups, the polymer having an inherent viscosity of from about 0.1 to about 1.0 measured in a 60/40 parts by weight solution of phenol/ tetrachloroethane at 25° C. and at a concentration of 0.25 gram of polymer in 100 ml of the solvent, the polymer containing substantially equimolar proportions of carboxylic acid equivalents (100 mole percent) to hydroxy and amino equivalents (100 mole percent), the polymer comprising the reaction products of (a), (b), (c) and (d) from the following reactants or ester forming or esteramide forming derivatives thereof;

(a) at least one difunctional dicarboxylic acid;

(b) from about 4 to about 25 mole percent, based on a total of all acid, hydroxyl and amino equivalents being equal to 200 mole percent, of at least one difunctional sulfomonomer containing at least one metal sulfonate group attached to an aromatic or cycloaliphatic nucleus wherein the functional groups are hydroxy, carboxyl or amino;

(c) at least one difunctional reactant selected from a glycol or a mixture of a glycol and diamine having two —NRH groups, the glycol containing two —CH_2—OH groups of which (1) at least 15 mole percent based on the total mole percent of hydroxy or hydroxy and amino equivalents, is a poly(ethylene glycol) having the structural formula

$$H(OCH_2—CH_2)_nOH,$$

n being an integer of from 2 to about 20, or (2) of which from about 0.1 to less than about 15 mole percent based on the total mole percent of hydroxy or hydroxy and amino equivalents, is a poly(ethylene glycol) having the structural formula

$$H(OCH_2—CH_2)_nOH,$$

n being an integer of between 2 and about 500, and with the proviso that the mole percent of said poly(ethylene glycol) within said range is inversely proportional to the quantity of n within said range; and

(d) from none to at least one difunctional reactant selected from a hydroxycarboxylic acid having one —C(R-$)_2$—OH group, an aminocarboxylic acid having one —NRH group, and an amino-alcohol having one —C$(R)_2$—OH group and one —NRH group, or mixtures of said difunctional reactants;

wherein each R in the (c) or (d) reactants is a H atom or an alkyl group of 1 to 4 carbon atoms;

(2) from about 1 to about 60 weight % of pigment material;

(3) from substantially none to about 90 weight % of water; and

(4) from about 0.05 to about 30.0 weight % of polyvinyl alcohol,

wherein said ink, when printed by a flexographic process onto polyethylene having a surface energy of about 37–39 dynes/cm, has improved printability relative to a control ink without polyvinyl alcohol such that said ink has an increase in optical density relative to the control ink on said polyethylene of at least 100% wherein

$$\text{increase in optical density} = \frac{(\text{optical density of ink} - \text{optical density of control ink})}{\text{optical density of control ink}} \times 100.$$

6. The composition of any one of claims 1-5 wherein the pigment is one or a mixture of the following color index materials: C.I. Pigment Yellow 17;

C.I. Pigment Blue 27; C.I. Pigment Red 49:2; C.I.
Pigment Red 81:1; C.I. Pigment Red 81:3; C.I.
Pigment Red 81:x; C.I. Pigment Yellow 83; C.I.
Pigment Red 57:1; C.I. Pigment Red 49:1; C.I.
Pigment Violet 23; C.I. Pigment Green 7; C.I.
Pigment Blue 61; C.I. Pigment Red 48:1; C.I.
Pigment Red 52:1; C.I. Pigment Violet 1; C.I.

Pigment White 6; C.I. Pigment Blue 15; C.I.
Pigment Yellow 12; C.I. Pigment Blue 56; C.I.
Pigment Orange 5; C.I. Pigment Black 7; C.I.
Pigment Yellow 14; C.I. Pigment Red 48:2; and
C.I. Pigment Blue 15:3.

11. The composition of claim 6 coated onto a substrate selected from metal foil, newsprint, bleached and unbleached Kraft paper, clay coated paper, glass, calendered paper, stainless paper, paper board, and films or other substrates of polyester, polycarbonate, cellulose ester, regenerated cellulose, poly(vinylidiene chloride), polyamide, polyolefin, or polystyrene.

4,883,715

ELASTIC ROTATABLE MEMBER

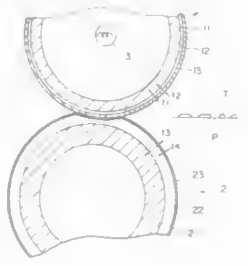
Tsukasa Kuge, Tokyo; Masahiro Goto, Kawasaki, and Isamu Sakane, Ohtsu, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo and Kabushiki Kaisha I.S.T., Ohtsu, both of, Japan

Division of Ser. No. 831,729, Feb. 21, 1986, Pat. No. 4,804,579. This application Jan. 13, 1988, Ser. No. 143,185

Claims priority, application Japan, Feb. 28, 1985, 60-39063; Apr. 12, 1985, 60-78646; Apr. 12, 1985, 60-78647; Oct. 12, 1985, 60-229020

Int. Cl.⁴ B32B *27/28, 27/20;* **F27B** *7/28;* **B65H** *27/00*

U.S. Cl. 428—421 15 Claims



1. A roller for fixing an image, comprising:

a core member;

an elastic rubber layer on said core member;

at least two fluorine resin layers on said elastic layer, said resin layers being provided by sintering unsintered fluorine resin, the outside one of said resin layers being free of filler material.

4,883,716

METHOD FOR MANUFACTURE OF CAST FLUOROPOLYMER-CONTAINING FILMS AT HIGH PRODUCTIVITY

John A. Effenberger, Bedford; Keith G. Koerber, Goffstown, both of N.H.; Michael N. Latorra, North Palm Beach, and John V. Petriello, Palm Beach Gardens, both of Fla., assignors to Chemical Fabrics Corporation, Merrimack, N.H.

Filed Aug. 1, 1988, Ser. No. 226,614

Int. Cl.⁴ B32B *7/02;* **B29C** *41/28, 41/32;* **C08F** *114/18*

U.S. Cl. 428—421 12 Claims

1. A fluoropolymeric film comprising at least one fluoropolymer-containing layer formed by

(a) preparing an aqueous dispersion comprising a fluoropolymer;

(b) dipping a carrier belt through the dispersion such that a coating of the dispersion is formed on the carrier belt;

(c) passing the coated carrier belt through a metering device to remove excess dispersion;

(d) drying the metered coated carrier belt to remove the water from the dispersion;

(e) heating the dried coated carrier belt to a temperature sufficient to consolidate the dispersion;

(f) cooling the consolidated coated carrier belt; and

(g) stripping the consolidated fluoropolymeric film from the carrier belt, wherein the carrier belt is formed from a material of low thermal mass having chemical and dimensional stability at the consolidiation temperature of the dispersion and a work of adhesion that does not exceed the yield strength of the consolidated fluoroplymeric film.

4,883,717

VIBRATION-DAMPING MATERIAL

Shuji Kitamura, Nagaokakyo; Takuzo Okumura, Tokyo; Yoshio Tadokoro; Hiroo Toya, both of Ibaraki; Yoshiaki Togawa, Kyoto; Toshitsugu Kikuchi, Ibaraki; Tadayuki Ohmae, Chiba; Mitsuyuki Okada, Ichihara; Minoru Nishibara, Kyoto; Toshiaki Shiota, Takatsuki, and Hiroyuki Nagai, Nishinomiya, all of Japan, assignors to Sumitomo Chemical Company, Limited and Sumitomo Metal Industries, Ltd., both of Osaka, Japan

Continuation of Ser. No. 784,031, Oct. 4, 1985, abandoned. This application Dec. 14, 1987, Ser. No. 133,238

Claims priority, application Japan, Oct. 11, 1984, 59-213787; Oct. 11, 1984, 59-213788; Oct. 13, 1984, 59-215007

Int. Cl.⁴ G10K *11/16;* **B60R** *13/08;* **B32B** *15/08;* **F16F** *1/36*

U.S. Cl. 428—458 36 Claims

1. A vibration-damping material consisting of two metal plates and a vibration-damping layer formed of thermoplastic resin interposed between the two metal plates, in which said thermoplastic resin has a percentage of elongation at 20° C. of 30% or more, a peak temperature of dissipation factor (tan δ) in the range of $-50°$ C. to 130° C., and a bonding strength toward metal plates of 3 kg/cm or more as determined by 180°-peeling test at 20° C., wherein the thermoplastic resin is formed of a resin composition comprising 100 parts by weight of a resin component (A) comprising at least one member selected from the group consisting of a mixture of crystalline polyester-type resin and an amorphous polyester-type resin, polyolefin-type resin and 1 to 100 parts by weight of a copolymer component (B) comprising 70 to 99.5% by weight of ethylene, 0.5 to 20% by weight of flycidyl methacrylate and 0 to 20% by weight of vinyl acetate.

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4,883,718

FLEXIBLE COPPER-CLAD CIRCUIT SUBSTRATE

Masahiro Obta, Yokohama; Saburo Kawashima, Yokosuka; Yoshiho Snobe, Yokohama; Shoji Tamai, Yokohama; Hideaki Oikawa, Yokohama, and Akihiro Yamaguchi, Kamakura, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

PCT No. PCT/JP86/00334, § 371 Date Feb. 5, 1988, § 102(e) Date Feb. 5, 1988, PCT Pub. No. WO88/00428, PCT Pub. Date Jan. 14, 1988

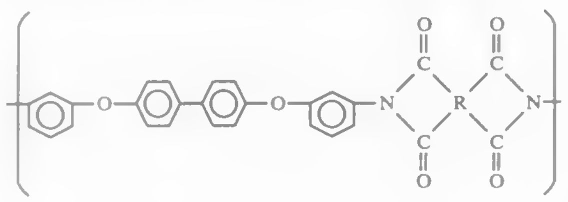
Continuation-in-part of Ser. No. 44,028, Jun. 13, 1986, Pat. No. 4,847,349. This PCT application Jun. 30, 1986, Ser. No. 159,850

Claims priority, application Japan, Feb. 12, 1985, 60-23520

Int. Cl.^{4} B32B *15/08, 27/06*

U.S. Cl. 428—458 3 Claims

1. A flexible copper-clad circuit substrate comprising a high-temperature flowable polyimide film directly jointed with copper foil in the absence of adhesive therein between, the polyimide having recurring units of the formula:



wherein R is a tetra-valent radical selected from the group consisting of a aliphatic radical having 2 and more carbons, a cycloaliphatic radical, monoaromatic radical, a fused polycyclic radical and a polycyclic aromatic radical wherein the aromatic radicals are linked to one another directly or via a bridge member.

4,883,719

METHOD OF SURFACE IMPREGNATION OF WOOD ARTICLES AND WOOD ARTICLES MADE THEREWITH

Keith I. Brebner, Guelph, Canada, assignor to Wood Polymer Composite Processes Ltd., Fredericton, Canada

Filed Nov. 17, 1988, Ser. No. 272,495

Claims priority, application Canada, Nov. 20, 1987, 552414

Int. Cl.^{4} B05D *3/00*

U.S. Cl. 428—541 17 Claims

1. A method for the surface impregnation of a dried finished wood article with a plastic comprising the following steps:

(a) degassing the wood article to a predetermined partial pressure;
(b) soaking the degassed wood article in a catalysed diallyl o-phthalate monomer-prepolymer solution for a predetermined period;
(c) polymerizing at approximately 200 to 210 deg. F.

6. A surface impregnated wood article when made by the method of claim 1.

4,883,720

PROCESS OF MARKING HOT STEEL INGOTS AND PRODUCT

Kurt Stangl, A-4844, Regau 106, Austria

Filed Apr. 5, 1989, Ser. No. 333,448

Claims priority, application Austria, Apr. 13, 1988, 953/88

Int. Cl.^{4} G22F *3/00*

U.S. Cl. 428—552 17 Claims

17. A steel ingot which is provided on its surface with a marking comprising a metallic material which is selected from the group consisting of iron and nickel and is sinter-bonded to said surface and an oxide material which is selected from the group consisting of aluminum oxide and zirconium oxide and is sinter-bonded to said metallic material and present in an amount that is not in excess of 10% by weight of said metallic material.

4,883,721

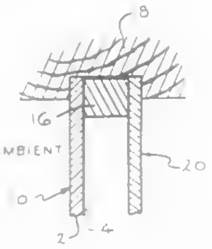
MULTI-LAYER LOW EMISSIVITY THIN FILM COATING

Raymond Nalepka, Westland, Mich., and Russell Huffer, Owatonna, Minn., assignors to Guardian Industries Corporation, Northville, Mich.

Filed Jul. 24, 1987, Ser. No. 77,226

Int. Cl.^{4} B32B *15/04, 17/06*

U.S. Cl. 428—623 26 Claims



18. An improved radiation controlling product comprising, in combination,

a transparent substrate,
a plurality of thin layers disposed on one face of said substrate, said plurality of layers including
a first metallic oxide layer selected from the group consisting of zinc, tin, titanium, indium/tin and bismuth,
a second metallic layer selected from the group consisting of silver and silver alloys,
a third metallic layer selected from the group consisting of stainless steel and titanium and
a fourth metallic oxide layer having a thickness of at least 100 Angstroms selected from the group consisting of zinc, tin, titanium, indium/tin and bismuth.

4,883,722

BRASS-COATED STEEL ELEMENTS HAVING IMPROVED RUBBER ADHESION PROPERTIES

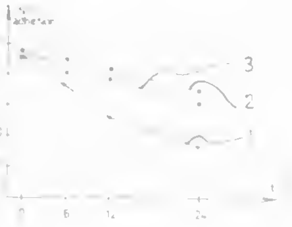
Wilfried Coppens, Kortrijk; Daniël Chambaere, Wevelgem, and Hugo Lievens, Gent, all of Belgium, assignors to N.V. Bekaert S.A., Zwevegem, Belgium

Filed Jun. 11, 1987, Ser. No. 60,634

Claims priority, application United Kingdom, Jun. 27, 1986, 8615746

Int. Cl.^{4} B32B *15/06;* B60C *9/00*

U.S. Cl. 428—625 17 Claims



1. A rubber adherable steel reinforcement element having a brass alloy coating consisting essentially of a substantially homogeneous Cu-Zn composition that has an essentially alpha-brass structure, which contains incorporated therein phosphorus, in the form of phosphate ions, in an amount of from 5 to 50 mg of phosphate ions per square meter of coating surface, wherein said phosphorus in said brass alloy coating serves to provide an enhanced adhesion to vulcanized rubber products upon heat and/or humidity aging.

4,883,723

HOT DIP ALUMINUM COATED CHROMIUM ALLOY STEEL

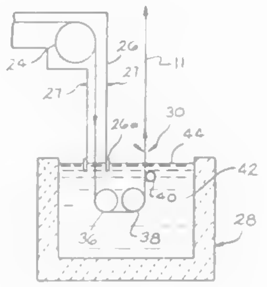
Farrell M. Kilbane, Centerville; Richard A. Coleman, West Chester; Frank C. Dunbar, and Alan F. Gibson, both of Middletown, all of Ohio, assignors to Armco Inc., Middletown, Ohio

Continuation of Ser. No. 16,920, Feb. 20, 1987, Pat. No. 4,800,135, which is a division of Ser. No. 865,238, May 20, 1986, Pat. No. 4,675,214. This application Jun. 24, 1988, Ser. No. 211,019

The portion of the term of this patent subsequent to Jan. 24, 2006, has been disclaimed.

Int. Cl.^{4} B32B *15/18, 15/20*

U.S. Cl. 428—653 4 Claims



1. A ferrous base ferritic strip continuously hot dip coated with a coating metal prepared by a process comprising:

cleaning the ferritic strip, the base metal of said cleaned strip comprising at least about 6% by
weight chromium and less than about 3% by weight nickel, heating said cleaned strip to a temperature near or slightly above the
melting point of said coating metal,
maintaining said cleaned strip in a protective atmosphere of at least about 95% by volume hydrogen having a dew point of no more than +40° F. (+4° C.) and containing no more than about 200 ppm oxygen,
dipping said cleaned strip into a molten bath of said coating metal, which is selected from the group consisting of aluminum and aluminum alloy, to deposit a coating layer on at least one side of said cleaned strip and said coating layer formed without a thick brittle Fe-Al alloy inner layer,
said coating layer being substantially free of uncoated areas, tightly adherent, and resistant to crazing and flaking during bending of said continuous ferritic chromium alloy strip.

4,883,724

CONTROL UNIT OF FUEL CELL GENERATING SYSTEM

Osamu Yamamoto, Tiba, Japan, assignor to Fuji Electric Co., Ltd., Kawasaki, Japan

Filed Feb. 13, 1989, Ser. No. 310,534

Claims priority, application Japan, Feb. 18, 1988, 63-36333

Int. Cl.^{4} H01M *10/48*

U.S. Cl. 429—23 9 Claims

1. In a hybrid electric power generating system including a fuel cell and a storage battery connected to the output of said fuel cell as backup for the fuel cell, a control system comprising:

output control means for controlling the output of said fuel cell;
output current control means for controlling the current drawn from said fuel cell;
voltage detecting means for detecting the voltage of said storage battery;
means including first current detector means for detecting the current flowing to and from said battery for producing an output signal representing remaining storage capacity of said storage battery; and
first controller means including first comparing means for comparing the detected values of the voltage of and the remaining storage capacity of said battery with set values of allowable charging and discharging voltages for the battery and the target value of always to be maintained remaining storage capacity and producing a control command signal, and means for applying said control command signal to said output control means and to said output current control means.

4,883,725

SUPPORT FRAME FOR STORAGE BATTERY CELLS

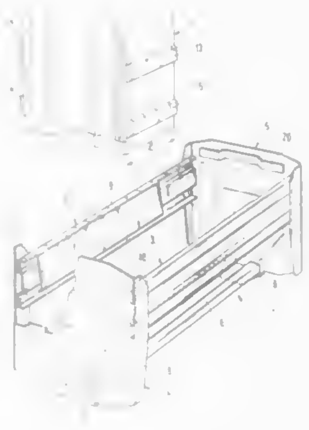
Claude Gérard, Le Bouscat, France, assignor to Saft S.A., Romainville, France

Filed Dec. 15, 1988, Ser. No. 284,493

Claims priority, application France, Feb. 22, 1988, 88 02083

Int. Cl.^{4} H01M *2/10*

U.S. Cl. 429—99 3 Claims



1. A support frame for storage battery cells individually enclosed in cases made of molded insulating synthetic material, the frame being constituted by a metal box comprising at least two side longitudinal members, two frame end plates interconnecting the ends of the side longitudinal members, and at least one element for supporting said cases when said frame is lifted, two facing side longitudinal members each including a flexible wall which is semi-free and sloping slightly relative to the vertical so as to narrow the passage into the frame when going down towards the bottom of the frame, and the bottom ends of said flexible walls co-operating ratchet-like with longitudinal

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projections or grooves carried by the cases of said cells on pairs of opposite faces and preventing the cases from being extracted once inserted even in the event of said frame being turned upsidedown.

4,883,726
MULTI-CELL BATTERY

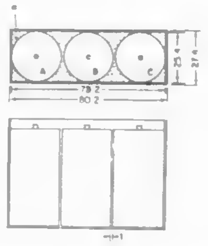
Emanuel Peled, Hanotea Street, Even Yehuda, Israel (40500); Mordechai Brand, 21 Kehilat Budapest Street 21, Tel Aviv, Israel (69701); Esther Elster, 71 Hacarmel Street, Kfar Saba, Israel (44231); Josef Kimel, 58 Brande Street, Petah-Tikva, Israel (49600), and Ronen Cohen, 55 Ein-Ganim Street, Petah-Tikva, Israel

Filed May 22, 1987, Ser. No. 52,967

Claims priority, application Israel, May 23, 1986, 78893

Int. Cl.⁴ H01M *10/50, 6/42, 2/08*

U.S. Cl. 424—120 6 Claims



1. A multi-cell electric battery comprising a housing, a plurality of electrochemical cells of cylindrical cross section positioned in the housing, said cells having a lithium or calcium anode, and an electrically insulating substance provided in the space between the cells, the electrically insulating substance being a solid having a melting point in the range between about 40° C. and about 150° C. and being capable of taking up heat and transferring heat from one cell to the others, in an unimpaired manner.

4,883,727
VENTED NICKEL-CADMIUM STORAGE CELL

Jean-Louis Liska, Bordeaux, France, assignor to Saft, S.A., Romainville, France

Filed Mar. 9, 1989, Ser. No. 321,274

Claims priority, application France, Mar. 15, 1988, 88 03333

Int. Cl.⁴ H01M *2/14*

U.S. Cl. 429—145 5 Claims

1. A vented alkaline storage cell implementing the nickel-cadmium couple, the cell comprising a housing containing a set of nickel positive electrodes and cadmium negative electrodes with interposed separators and an alkaline electrolyte, wherein the width of the gap between adjacent electrodes lies in the range 0.1 mm to 1 mm and is occupied by a separator comprising at least one polymer fiber felt associated with a membrane constituted by a perforated polyolefin film, with the thickness of said film lying in the range 10 μm to 50 μm, with the area of the individual peforations lying in the range 0.1 mm^2 to 20 mm^2, and with the void ratio lying in the range 5% to 50%.

4,883,728
BATTERY SYSTEMS

Pita Witehira, 34 Cowley Drive, Temple View, Hamilton, New Zealand

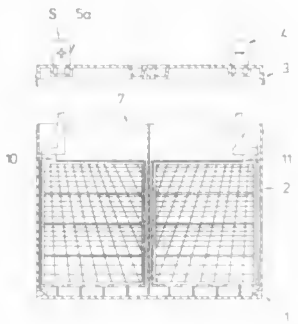
Filed Sep. 26, 1988, Ser. No. 248,715

Claims priority, application New Zealand, Mar. 3, 1987, 223730; Oct. 12, 1987, 222123; Dec. 16, 1987, 222936

Int. Cl.⁴ H01M *10/12*

U.S. Cl. 429—160 20 Claims

1. A battery comprising a container having a plurality of cells, said plurality of cells including at least two positive terminal cells and at least one negative terminal cell, each cell containing a plurality of alternating positive and negative electrode plates separated from each other and constituting a cell element stack, each of said plates including active material, the positive electrode plates of the cell element stack in each positive terminal cell being electrically connected to a positive terminal, the negative electrode plates of the cell element stack in the or each negative terminal cell being electrically connected to a single negative terminal, each electrode plate of each cell element other than a said terminal cell being electrically connected in series to the electrode plate of opposite polarity in an adjoining cell, the cells of each series of connections being electrically connected to one common negative terminal but having separate positive terminals; and an electrolyte in contact with the positive and negative electrode plates in each cell.



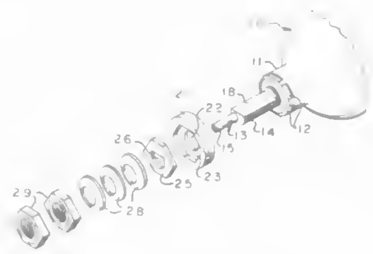
4,883,729
BATTERY TERMINAL LOCKING ASSEMBLY

Ronald C. Anderson, Alachua, Fla., assignor to Gates Energy Product, Inc., Gainesville, Fla.

Filed May 2, 1988, Ser. No. 189,076

Int. Cl.⁴ H01M *2/30*

U.S. Cl. 429—179 10 Claims



1. An assembly for locking a battery terminal against rotation with respect to a container from which the terminal extends, said assembly comprising:

a first means for registering with and engaging said container so as to prevent relative rotation between said first means and said container;

a second means for registering with and engaging said terminal so as to prevent relative rotation between said second means and said terminal; and

means for releasable securing said first means to said second means, said first means and said second means engaging and cooperating to maintain said terminal and said container in a set position.

4,883,730
METHOD FOR MANUFACTURING HEAT-STABLE STRUCTURED LAYERS BASED ON EXPOXY RESIN

Hellmut Ahne, Röttenbach, and Winfried Plundrich, Nürnberg, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Continuation of Ser. No. 092,473, Sep. 3, 1987, abandoned. This application Apr. 11, 1989, Ser. No. 336,578

Claims priority, application Fed. Rep. of Germany, Sep. 11, 1986, 3630956

Int. Cl.⁴ G03C *1/70, 5/16;* **G03F** *7/26*

U.S. Cl. 430—18 18 Claims

1. A method for manufacturing heat-stable structured layers based on epoxy resin, which comprises the steps of applying a radiation-sensitive soluble photopolymer in the form of a layer or film on a substrate, irradiating the layer or film through a negative pattern with actinic light or by using a light, electron, laser, or ion beam, and removing the non-irradiated layer or film portions, wherein the photopolymer comprises an addition reaction product of an olefinic unsaturated monoisocyanate, selected from the group consisting of an isocyanate having at least one methacrylate group, and the addition reaction product of hydroxyethyl acrylate or methacrylate and 2,4-diisocyanatotoluene, and a hydroxyl group-containing epoxy compound.

11. A heat-stable structured layer, produced according to claim 1.

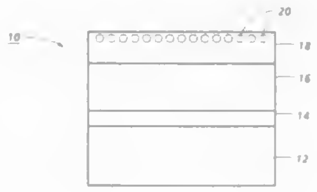
4,883,731
IMAGING SYSTEM

Man C. Tam, Mississauga, and Arnold L. Pundsack, Georgetown, both of Canada, assignors to Xerox Corporation, Stamford, Conn.

Filed Jan. 4, 1988, Ser. No. 141,011

Int. Cl.⁴ G03G *13/22*

U.S. Cl. 430—41 18 Claims



1. A process for preparing an imaging member comprising providing xeroprinting master precursor member comprising a substrate, an intermediate layer selected from the group consisting of an adhesive layer, a charge transport spacing layer and a combination of said adhesive layer and said charge transport charging layer, and an electrically insulating softenable layer on said substrate, said softenable layer comprising charge transport molecules and a fracturable layer of electrically photosensitive migration marking material located substantially at or near the surface of said softenable layer spaced from said substrate, said charge transport spacing layer and said softenable layer comprising charge transport molecules, said charge transport molecules being predominantly nonabsorbing in the spectral region at which said electrically photosensitive migration marking material photogenerates charge carriers, being capable of increasing charge injection from said electrically photosensitive migration marking material to said softenable layer, being capable of transporting charge to said substrate, and being dissolved or molecularly dispersed in said softenable layer; electrostatically charging said member; exposing said member to activating radiation in an imagewise pattern; and developing said member by decreasing the resistance to migration of marking material in depth in said softenable layer at least sufficient to allow migration of marking material whereby marking material struck by said activating radiation migrates toward said substrate in image configuration.

4,883,732
METHOD OF FORMING PRINTING PLATE USING ISOINDOLENINE DERATIVES

Reinhold Leyrer, Ludwigshafen, and Peter Neumann, Mannheim, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

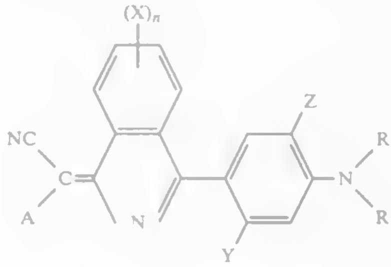
Division of Ser. No. 274,969, Nov. 22, 1988. This application May 24, 1989, Ser. No. 356,069

Int. Cl.⁴ G03G *13/28*

U.S. Cl. 430—49 10 Claims

1. A process for preparing an offset printing plate from an electrophotographic recording material, comprising the following steps in the given order:

1. charging an electrophotographic recording element with an electrically positive or electrically negative charge by means of a high-voltage corona, said electrophotographic recording element comprising
   (A) an electrically conducting base and
   (B) at least one layer consisting essentially of
      (b_1) at least one binder,
      (b_2) at least one sensitizer which on exposure of layer (B) generates charge carriers and which is selected from the group of the isoindolenine dyes of the general structure I



I

where the index and the variables are defined as follows:

A is cyano, carbo-C_1–C_4-alkoxy, carbamoyl, N-C_1–C_4-alkylcarbamoyl, N-C_1–C_4-alkylcarbamoyl where the alkyl is substituted by C_1–C_4-alkoxy, N-phenylcarbamoyl, N-phenylcarbamoyl where the phenyl is substituted by C_1–C_4-alkyl or C_1–C_4-alkoxy, or is acetyl, benzoyl, 4-nitrophenyl or 4-cyanophenyl,

X is hydrogen, chlorine, C_1–C_4-alkyl or C_1–C_4-alkoxy, it being possible when $n=2$ for the substituents to be identical or different,

n is 1 or 2,

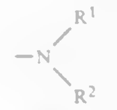
R^1 is hydrogen, methyl, ethyl or 2-hydroxyethyl and

R^2 is phenyl, C_1–C_4-alkyl- or C_1–C_4-alkoxy-substituted phenyl or cyclohexyl, or

R^1 is hydrogen and

R^2 is C_1–C_4-alkyl, or

R^1 and R^2 are each C_1–C_6-alkyl, C_1–C_4-alkyl which is substituted by chlorine, cyano, hydroxyl, C_1–C_4-alkoxy, phenoxy, C_2–C_5-alkanoyloxy, C_2–C_5-alkanoyloxy which is substituted by C_1–C_4-alkoxy or phenoxy, or carbo-C_1–C_4-alkoxy, or are each allyl or phenyl-C_1–C_4-alkyl, or the group



$$-N\begin{matrix}R^1\\R^2\end{matrix}$$

is a saturated or unsaturated heterocyclic five-membered ring, a saturated or unsaturated heterocyclic six-membered ring, a saturated or unsaturated heterocyclic five-or six-membered

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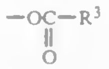
ring which each additionally contains an oxygen atom or a further nitrogen atom,

Y is hydrogen, hydroxyl, methyl or ethyl,

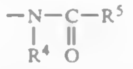
Y is



$$-\underset{\underset{O}{\|}}{OC}-R^3$$

where R^3 is linear or branched C_1–C_{12}-alkyl, phenyl or C_1–C_4-alkyl- or C_1–C_4-alkoxy-substituted phenyl,

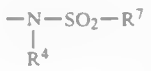
Y is



$$-\underset{\underset{R^4}{|}}{N}-\underset{\underset{O}{\|}}{C}-R^5$$

where R^4 is hydrogen or C_1–C_4-alkyl and R^5 has the following meanings: hydrogen, linear or branched C_1–C_{12}-alkyl, trifluoromethyl, chloromethyl, C_1–C_4-alkoxymethyl, phenoxymethyl, phenoxymethyl with one of the following substituents in the phenoxy group: chlorine, methoxy, nitro or C_1–C_4-alkyl, phenoxymethyl with two substituents selected from the group consisting of chlorine, methoxy, nitro and C_1–C_4-alkyl in the phenoxy group, phenylthiomethyl, phenylthiomethyl where the phenyl is substituted by C_1–C_4-alkyl, benzyl, phenylethyl, C_3–C_7-cycloalkyl, phenyl, C_1–C_{12}-alkyl-, C_1–C_{12}-alkoxy- or nitro-substituted phenyl, H_5C_6—CH=CH—, or —CH_2—$PO(OR^6)_2$, where R^6 is C_1–C_4-alkyl, or

Y is

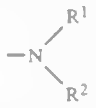


$$-\underset{\underset{R^4}{|}}{N}-SO_2-R^7$$

where R^4 is as defined above and R^7 is C_1–C_{12}-alkyl, phenyl or C_1–C_{12}-alkylphenyl, or

Y is N-C_1–C_4-alkylamino when R^1 and R^2 are each C_1–C_4-alkyl, or

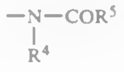
Y is N,N-di-C_1–C_4-alkylamino, N-pyrrolidinyl, N-piperidinyl or N-morpholinyl, when



$$-N\begin{matrix}\diagup R^1\\ \diagdown R^2\end{matrix}$$

has the same meaning, and

Z is hydrogen or if R^1 and R^2 are each C_1–C_4-alkyl or allyl and Y is



$$-\underset{\underset{R^4}{|}}{N}-COR^5$$

also methoxy or ethoxy, and

(b_3) at least one photoconductor which transports the generated charge carriers,

2. subjecting the electrically negatively or electrically positively charged electrophotographic recording element to imagewise exposure with actinic light to produce a latent electrostatic image,
3. developing the latent electrostatic image by means of a solid or liquid toner to produce a toner image,
4. fixing the tonered image by heating and
5. washing away the untonered nonimage areas of the photoconductive layer (B) of the electrophotographic recording element with a developer solvent to bare the hydrophilic surface of the base (A).

4,883,733

ELECTROPHOTOGRAPHIC PRINTING PROCESS USING PHOTOCHROMIC COMPOUND

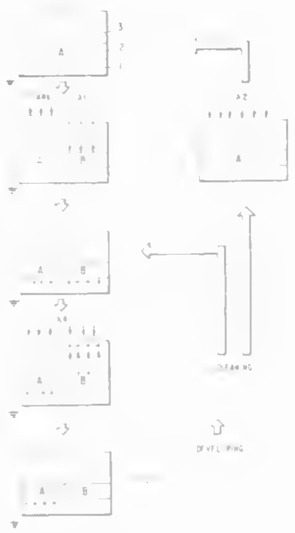
Hiroshi Sugimura, Habikino; Eiji Imada, Nara; Yoshimi Kojima, Nara, and Shuhei Tsuchimoto, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jul. 15, 1988, Ser. No. 219,932

Claims priority, application Japan, Jul. 17, 1987, 62-179715

Int. Cl.⁴ G03G *13/22*

U.S. Cl. 430—54 13 Claims



1. An electrophotographic printing process comprising the steps of:

imagewise exposing a photosensitive means with light of a first wavelength at which photochromism occurs, to thereby record the image therein, wherein said photosensitive means has a photosensitive layer formed on a conductive support, said photosensitive layer containing a photochromically sensitive compound that shows photoconductivity when irradiated with light of different wavelengths before and after said photochromism occurs;

charging the entire surface of said photosensitive layer; and

uniformly exposing said photosensitive means with light of a third or fourth wavelength at which photochromism does not occur, but at which said photochromically sensitive compound or photoisomeric compound therewith shows photoconductivity respectively, to thereby form the image of a charge pattern on the surface of said photosensitive layer.

4,883,734

TONER FOR DEVELOPMENT OF ELECTROSTATIC IMAGE AND METHOD OF FIXING EMPLOYING THE SAME

Satoru Ikeuchi; Mitutaka Arai; Yuki Okuyama, all of Hachioji; Hideki Yuri, Ibaraki; Tomoo Shiohara, and Yasuhiko Oyama, both of Kyoto, all of Japan, assignors to Konica Corporation and Sekisui Kagaku Kogyo Kabushiki, both of, Japan

Filed Mar. 1, 1988, Ser. No. 162,801

Claims priority, application Japan, Mar. 3, 1987, 62-48522

Int. Cl.⁴ G03G *9/08, 9/14*

U.S. Cl. 430—109 14 Claims

1. A toner for developing an electrostatic image comprising, as a main component, a resin obtained by allowing a polymer containing a low molecular weight polymer component and a high molecular weight polymer component, wherein at least said lower molecular weight polymer component contains a carboxylic acid component; to react with a polyvalent metal compound,

said low molecular weight polymer component being obtained from (a) a styrene monomer, (b) an acrylic acid

ester or methacrylic acid ester type monomer, and (c) a half ester compound obtained by subjecting an acrylic acid or methacrylic acid type derivative having a hydroxyl group to an esterification reaction with a dicarboxylic acid,

said low molecular weight polymer component having a maximum molecular weight distribution of 1×10^3 to 2×10^4, said polymer component of high molecular weight having a maximum molecular weight distribution of 10^5 to 2×10^6.

4,883,735

NEGATIVELY CHARGEABLE TONER FOR USE IN DRY ELECTROPHOTOGRAPHY

Masao Watanabe, and Hiroshi Nagase, both of Tokyo, Japan, assignors to Fujikura Kasei Co., Ltd., Tokyo, Japan

Filed Jan. 25, 1988, Ser. No. 148,349

Claims priority, application Japan, Jan. 28, 1987, 62-16267

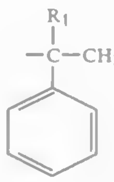
Int. Cl.⁴ G03G *9/00, 13/20*

U.S. Cl. 430—109 11 Claims

1. A negatively chargeable toner for use in dry electrophotography, said toner comprising

(A) a resinous binder composed of at least one resin selected from copolymers of styrene and/or alpha-methylstyrene with alkyl (meth)acrylates,

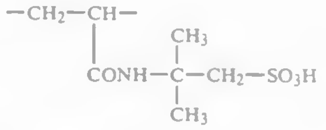
(B) 2 to 10 parts by weight, per 100 parts by weight of the resinous binder, of a copolymer containing a sulfonic acid group, said copolymer having a weight average molecular weight of from 2,000 to 15,000 and composed of 80 to 98% by weight of recurring units represented by the formula



(I)

wherein R_1 represents a hydrogen atom or a methyl group,

and 20 to 2% by weight of recurring units represented by the formula



(II)

(C) a coloring agent.

4,883,736

ELECTROPHOTOGRAPHIC TONER AND DEVELOPER COMPOSITIONS WITH POLYMERIC ALCOHOL WAXES

Thomas R. Hoffend, Webster, and Don B. Jugle, Penfield, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jan. 20, 1987, Ser. No. 4,939

Int. Cl.⁴ G03G *9/08*

U.S. Cl. 430—110 111 Claims

1. A toner composition comprised of resin particles, pigment particles, and a wax component present in an amount of from about 0.05 percent by weight to about 20 percent by weight and comprised of polymeric alcohols of the formula

$CH_3(CH_2)_nCH_2OH$

wherein n is a number of from about 30 to about 300, which composition prevents cometing.

4,883,737

LIGHT-SENSITIVE MATERIAL CONTAINING SILVER HALIDE, REDUCING AGENT AND POLYMERIZABLE COMPOUND AND CONTAINING CORE/SHELL GRAINS DOPED WITH IRIDIUM

Soichiro Yamamoto, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 7, 1988, Ser. No. 165,042

Claims priority, application Japan, Mar. 6, 1987, 62-51621

Int. Cl.⁴ G03C *1/72, 1/44*

U.S. Cl. 430—138 8 Claims

1. A light-sensitive material comprising a support and a light-sensitive layer containing a silver halide grain, an ethylenically unsaturated polymerizable compound, a reducing agent and a color image forming substance, said polymerizable compound and color image forming substance being contained in microcapsules, wherein the silver halide grain has a core/-shell structure, at least 90 mole % of the halogen of the silver halide in the shell portion of the silver halide grain is iodine, and the silver halide grain contains iridium ion in an amount of 10^{-7} to 10^{-3} mole based on one mole of the silver halide grain, said iridium ion being introduced into the silver halide in the form of a water soluble iridium salt having the formula (I) or (II):

$$(R)_mIrX_6 \qquad (I)$$

$$Ir(X)_n \qquad (II)$$

wherein R is a monovalent anion selected from the group consisting of a hydrogen ion, a sodium ion, a potassium ion and an ammonium ion; X is a halogen ion; m is 2 or 3; and n is 3 or 4.

4,883,738

SILVER HALIDE AND POLYMERIZABLE COMPOUND CONTAINING LIGHT-SENSITIVE LAYER PROVIDED ON SUPPORT OF DEFINED ROUGHNESS

Makoto Yamada, Minami, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

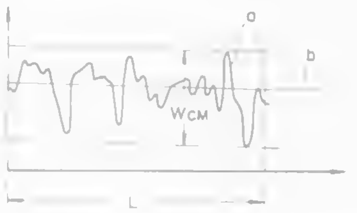
Filed Mar. 11, 1987, Ser. No. 24,501

Claims priority, application Japan, Mar. 11, 1986, 61-52996

The portion of the term of this patent subsequent to Apr. 5, 2005, has been disclaimed.

Int. Cl.⁴ G03C *5/54, 1/86, 1/96*

U.S. Cl. 430—138 14 Claims



1. A light-sensitive material comprising a light-sensitive layer which contains a silver halide, a reducing agent and a polymerizable compound containing carbon to carbon unsaturation provided on a porous support, said silver halide and said polymerizable compound being contained in microcapsules which are dispersed in the light-sensitive layer, wherein the porous support has such a surface characteristic that a filtered maximum waviness of not less than 4 μm is observed in not more than 20 positions among 100 positions which are determined at random on a filtered waviness curve, the filtered maximum waviness being determined within basic length of 2.5 mm extracted from the filtered waviness curve which is obtained from the profile of the porous support under the condition of the cut-off value of 0.8 mm according to JIS-B-0610.

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4,883,739

LIGHT-SENSITIVE RESIN COMPOSITION WITH 1,2-NAPHTHOQUINONE DIAZIDE COMPOUND HAVING SPIROBICHROMAN OR SPIROBIINOANE RING

Shinji Sakaguchi, and Shiro Tan, both of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

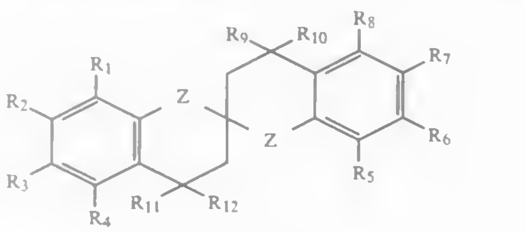
Filed Sep. 16, 1988, Ser. No. 245,190

Claims priority, application Japan, Sep. 17, 1987, 62-233292

Int. Cl.⁴ G03C *1/54*

U.S. Cl. 430—192 3 Claims

1. A light sensitive resin composition comprising a light-sensitive substance represented by the formula (A) shown below and an alkali-soluble resin:



(A)

wherein R_1 to R_8 are independently hydrogen, a hydroxyl group, a halogen atom, an alkyl group, an alkoxy group, an aralkyl group, an aryl group, an amino group, a monoalkylamino group, a dialkylamino group, an acylamino group, an alkylcarbamoyl group, an arylcarbamoyl group, an alkylsulfamoyl group, an arylsulfamoyl group, a carboxyl group, a cyano group, a nitro group, an acyl group, an alkyloxycarbonyl group, an aryloxycarbonyl group, an acyloxy group, -OD, or

$$-\overset{\displaystyle R}{\overset{|}{N}}-D$$

(wherein R is hydrogen, or an alkyl group, and D is a 1,2-naphthoquinonediazido-5-sulfonyl group or a 1,2-naphthoquinonediazido-4-sulfonyl group);

R_9 to R_{12} are independently hydrogen or a lower alkyl group; and

Z is oxygen or a single bond; provided that at least one of R_1 to R_8 is -OD or

$$-\overset{\displaystyle R}{\overset{|}{N}}-D.$$

4,883,740

RADIATION-SENSITIVE MIXTURE FOR PHOTOSENSITIVE COATING MATERIALS

Reinhold Schwalm, Wachenheim; Andreas Boettcher, Nussloch, and Horst Binder, Lampertheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Jun. 30, 1988, Ser. No. 219,689

Int. Cl.⁴ G03C *1/495, 5/16, 5/00*

U.S. Cl. 430—270 17 Claims

1. A radiation-sensitive mixture containing

(a) a polymeric binder which is insoluble in water but soluble in aqueous alkaline solutions and

(b) an organic compound whose solubility in an aqueous alkaline developer is increased by the action of an acid and which contains one or more acid-cleavable groups, wherein the organic compound (b) additionally contains one or more onium salt groups which form a strong acid under the action of radiation.

16. A process for the production of a relief pattern or relief image which comprises:

exposing a radiation-sensitive recording layer imagewise to sufficient radiation to increase the solubility of the exposed parts in aqueous alkaline solvents, said recording layer consisting essentially of

(a) a polymeric binder which is insoluble in water but soluble in aqueous alkaline solutions and

(b) an organic compound whose solubility in an aqueous alkaline developer is increased by the action of an acid and which contains one or more acid-cleavable groups, wherein the organic compound (b) additionally contains one or more onium salt groups which form a strong acid under the action of radiation, and thereafter applying an alkaline developer to the exposed layer to selectively remove the exposed parts.

4,883,741

INFORMATION RECORDING MEDIUM

Younosuke Takahashi, and Takayuki Kuriyama, both of Fujinomiya, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-Ashigari, Japan

Filed Aug. 28, 1987, Ser. No. 90,549

Claims priority, application Japan, Aug. 28, 1986, 61-203483

Int. Cl.⁴ G03C *5/16*

U.S. Cl. 430—270 9 Claims

1. A process for recording information on a recording layer arranged on a substrate, said recording layer containing an organic metal complex compound having the formula:

MmLn

where M is a metal atom belonging to one of groups Ib, IVb, Vb, VIb, VIIb, or VIII of the Periodic Table, L is a ligand, m is an integer from 1 to 4, and n is an integer from 2 to 12, and a sensitizing dye capable of absorbing near infrared rays, by irradiating the recording layer with a laser beam to deposit a metal component in the recording layer at the irradiated area by decomposition of the organic metal complex compound.

4,883,742

SEAMLESS AND FIRM JOINING OF THE END AND/OR LATERAL AREAS OF PHOTOSENSITIVE LAYERS

Guënter Wallbillitch, Neustadt, Fed. Rep. of Germany, and Jan H. Van Heuvelen, Losser, Netherlands, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Feb. 9, 1988, Ser. No. 153,940

Claims priority, application Fed. Rep. of Germany, Feb. 14, 1987, 3704693

Int. Cl.⁴ G03C *1/94*

U.S. Cl. 430—275 15 Claims

1. A process for the coating of a cylinder or sleeve with a seamless photosensitive layer, said process comprising:

applying to the cylinder or sleeve one or more unsupported photosensitive layers to cover the surface of the cylinder or sleeve therewith, said photosensitive layer or layers being essentially solvent-free and thermoplastically processable;

carrying out the said application of the photosensitive layer or layers to the cylinder or sleeve in such a way that the end and/or lateral areas of the photosensitive layer or layers that are next to each other overlap;

displacing the air between the overlapping end and/or lateral areas to prevent any bubble formation therebetween;

heating the total layer material under pressure, thereby joining the overlapping end and/or lateral areas, and

shaping to the exact size and smoothing the resulting continuously joined photosensitive layer.

4,883,743

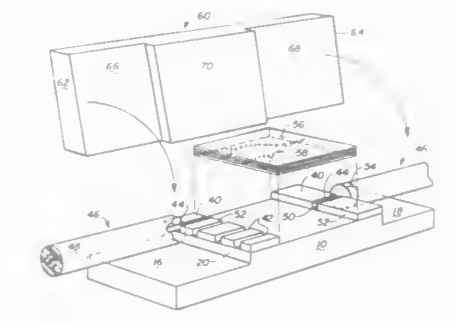
OPTICAL FIBER CONNECTOR ASSEMBLIES AND METHODS OF MAKING THE ASSEMBLIES

Bruce L. Booth, West Chester, Pa., and Joseph E. Marchegiano, Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 15, 1988, Ser. No. 144,002

Int. Cl.⁴ G03C *5/00*

U.S. Cl. 430—321 23 Claims



1. A method of making an optical fiber connector assembly having a waveguide for use in an optical fiber system, comprising the steps of:

laminating a radiation sensitive layer capable of forming a stencil relief image to a step of a pedestal;

aligning a mask on the layer, the mask having clear portions for transmitting light and opaque portions for blocking transmission of light;

exposing the layer to light through the clear portions of the mask; and

removing unexposed regions of the layer and a region of the layer corresponding to the waveguide leaving remaining exposed regions on two end portions of the step, each exposed region having a groove.

4,883,744

FORMING A POLYMIDE PATTERN ON A SUBSTRATE

Natalie B. Feilchenfeld; Stephen J. Fuerniss, both of Endicott; John J. Glenning, Vestal; Walter P. Pawlowski; Giana M. Phelan, both of Endicott, and Paul G. Rickerl, Endicott, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 17, 1988, Ser. No. 196,641

Int. Cl.⁴ G03C *5/16*

U.S. Cl. 430—325 21 Claims

1. A process of forming a polyimide pattern on a substrate which comprises:

(a) providing on the substrate a layer of photosensitive polyimide precursor comprising a polyimide precursor and a compound having a photosensitive group;

(b) prebaking the layer of photosensitive polyimide precursor by placing the layer in an oven and ramping up the temperature of the oven to about 90° C. and maintaining at about 90° C. for up to about 2 minutes, then ramping down to about 80° C. and maintaining about 80° C. for about 90 minutes to 150 minutes and cooling down to at least about 60° C.;

(c) exposing said layer imagewise to actinic radiation through a photomask to form an exposed image pattern of polyimide precursor in the layer;

(d) removing unexposed areas of the layer with a liquid developer; and

(e) curing the exposed image pattern of the polyimide precursor in the layer by heating.

4,883,745

SILVER-COPPER-TITANIUM BRAZING ALLOY CONTAINING CRUST INHIBITING ELEMENT

Howard Mizuhara, Hillsborough, Calif., assignor to GTE Products Corporation, Stamford, Conn.

Filed Nov. 7, 1988, Ser. No. 268,142

Int. Cl.⁴ C22C *5/08*

U.S. Cl. 420—502 7 Claims

1. A brazing alloy having a composition consisting essentially of titanium in an amount of 0.5 to 5 weight percent, silver in an amount of 55 to 73 weight percent, from 0.1 to less than 2 weight percent of at least one crust eliminating element, selected from the group consisting of tin, indium, silicon, aluminum and manganese which inhibits crust formation of the brazing alloy when the brazing alloy is melted and cooled, the balance of the composition being copper.

4,883,746

SILVER HALIDE PHOTOGRAPHIC MATERIAL

Yasuhiro Shimada; Hiroshi Fukuzawa, and Seiji Ichijima, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

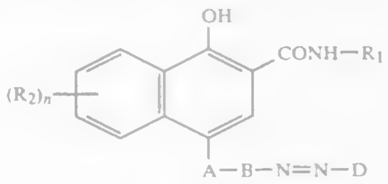
Continuation of Ser. No. 868,389, May 29, 1986, abandoned. This application Feb. 13, 1989, Ser. No. 309,925

Claims priority, application Japan, May 29, 1985, 60-114242

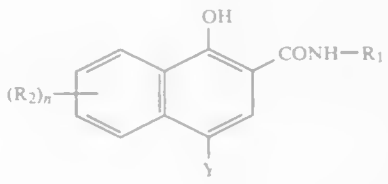
Int. Cl.⁴ G03C *7/26, 7/32*

U.S. Cl. 430—504 20 Claims

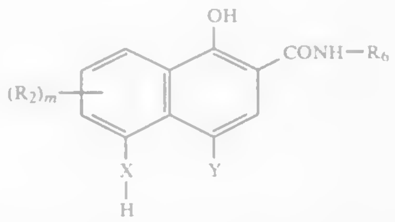
1. A silver halide photographic material comprising a blue-sensitive silver halide emulsion layer, a green-sensitive silver halide emulsion layer, a red-sensitive silver halide emulsion layer on a support and at least one of the color couplers represented by the general formula (I) and at least one of the cyan couplers represented by the general formulae (IV) and (V)



(I)



(IV)



(V)

wherein R_1 represents an aromatic or heterocyclic group; R_2 represents a group capable of being substituted on a naphthol ring; R_6 represents an aliphatic group; n represents an integer of 0 to 4; m represens an integer of 0 to 3; A-B-N=N-D represents a group which is eliminated upon coupling; A represents a divalent group whose bond to the carbon atom at the coupling active position of the coupler is cleaved upon the reaction with an oxidation product of a color developing agent; B represents a divalent aromatic or heterocyclic group; D represents an aromatic or heterocyclic group; Y represents a hydrogen atom or a group which is eliminated upon coupling; X represents —O—, —S— or

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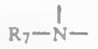


$$R_7{-}N{-}$$

in which R_7 represents a hydrogen atom or an organic substituent group, with the proviso that when n and m are other than 0, R_2 may be the same as or different from each other or may be bonded to each other to form a ring; R_2 and X or X and Y in the general formula (V) may be bonded to each other to form a ring; R_1, R_2, R_6, R_7, X or Y may form a dimer or higher polymer; and at least one of the groups represented by A, B and D in the general formula (I) has a sulfo group, a carboxyl group, or an alkali metal or an ammonium salt thereof as a substituent group, wherein said red-sensitive silver halide emulsion layer contains at least one of the colored couplers represented by the general formula (I) and wherein the red-sensitive silver halide emulsion layer comprises two or more unit layers having different sensitivities, and of the unit layers, at least one of the unit layers other than the unit layer lowest in sensitivity comprises at least one cyan coupler selected from the following group (A) and the unit layer lowest in sensitivity comprises at least one cyan coupler selected from the following group (B):

(A) cyan couplers represented by the general formula (IV) wherein Y represents an aryloxy group or an alkoxy group and cyan couplers represented by the general formula (V) wherein Y represents an aryloxy group or an alkoxy group; and

(B) cyan couplers represented by the general formula (IV) or (V) wherein Y represents a hydrogen atom.

4,883,747
COLOR PHOTOTHERMOGRAPHIC ELEMENTS

Duncan M. A. Grieve, Walden; Stephen S. C. Poon, Harlow; Tran V. Thien, Harlow, all of Great Britain; Kumars Sakizadeh, Woodbury, and David C. Weigel, White Bear Lake, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

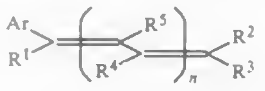
Filed May 31, 1988, Ser. No. 200,665

Claims priority, application United Kingdom, Jun. 3, 1987, 8712961

Int. Cl.⁴ G03C *1/14*

U.S. Cl. 430—542 13 Claims

12. A photothermographic element comprising a support bearing a photothermographic medium, the medium comprising a light sensitive silver halide in reactive association with a silver salt of an organic acid and a colour generating reducing agent which is a leuco compound which is oxidisable by silver ions into a coloured dye of the general formula:



in which:

n=0, 1 or 2,

R^1 represents H, CN, lower alkyl of 1 to 5 carbon atoms, aryl or $COOR^6$ in which R^6 is lower alkyl of 1 to 5 carbon atoms or aryl,

R^2 and R^3 independently represent CN, NO_2, $COOR^6$, SO_2R^6, $CONHR^6$ in which R^6 is as defined above or H, or R^2 and R^3 together represent the necessary atoms to form a 5- or 6-membered carbocyclic or heterocyclic ring having ring atoms selected from C, N, O and S atoms, which carbocyclic or heterocyclic rings possess at least one conjugated electron withdrawing substituent,

R^4 and R^5 independently represent H, CN or lower alkyl of 1 to 5 carbon atoms or together represent the necessary atoms to complete a 5- or 6-membered carbocyclic ring, and

Ar represents:

(a) a thienyl group which may be substituted with one or more lower alkyl groups of 1 to 5 carbon atoms,

(b) a furyl group which may be substituted with one or more lower alkyl groups of 1 to 5 carbon atoms or

(c) a phenyl group which may be substituted with one or more groups selected from halogen, hydroxy, lower alkyl of 1 to 5 carbon atoms, lower alkoxy of 1 to 5 carbon atoms, NR^7R^8 in which R^7 and R^8 are independently selected from H, lower alkyl group of 1 to 5 carbon atoms which may possess substituents selected from CN, OH, halogen and phenyl, and phenyl group which may be substituted with substituents selected from OH, halogen, lower alkyl of 1 to 5 carbon atoms or lower alkoxy of 1 to 5 carbon atoms or R^7 and R^8 together represent the necessary atoms to complete a morpholino group, or when Ar is a phenyl group, that phenyl group may be part of a larger ring structure comprising two or more rings which may be aromatic or heterocyclic containing up to 20 ring atoms selected from C, N, O and S.

4,883,748
NEGATIVE SILVER HALIDE PHOTOGRAPHIC EMULSION

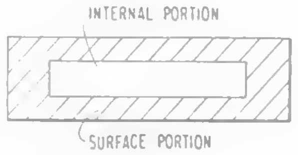
Toshiaki Hayakawa, Shizuoka, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 9, 1988, Ser. No. 282,094

Claims priority, application Japan, Dec. 9, 1987, 62-311419

Int. Cl.⁴ G03C *1/02*

U.S. Cl. 430—567 10 Claims



1. A negative silver halide photographic emulsion comprising silver halide grains dispersed in a binder, said silver halide grains having the ratio of diameter to thickness of 5.0 or less, said grains further having an internal portion corresponding to half the volume of said silver halide grains and a surface portion corresponding to half the volume of said silver halide grains, wherein the average iodine content in the internal portion is less than 1 mol %, and wherein the average iodine content in the surface portion of the grains is 1 to 4 mol % higher than the average iodine content of the internal portion of said grains.

4,883,749
CHILDREN'S TOILET TRAINING DEVICE WITH DIFFERENTIATING MEANS

Freddie R. Roberts, and Robert W. Lancette, both of Clarksville, Tenn., assignors to Pee Patch, Inc., Clarksville, Tenn.

Filed Aug. 15, 1988, Ser. No. 232,448

Int. Cl.⁴ G09B *19/00;* E03D *13/00*

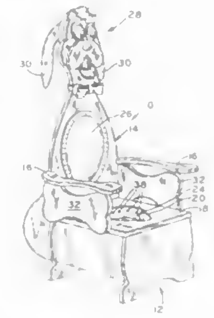
U.S. Cl. 434—247 32 Claims

1. A toilet training device for differentiating the deposition of solid or liquid excrement therein and generating a corresponding signal, the device comprising:

an excrement container having an entrance area;

a light-emitting means for emitting light substantially intersecting said entrance area;

a light-sensing means for sensing said light and generating an electrical signal in response thereto, said electrical signals including a first electrical signal generated in response to the deposition of liquid excrement and a second electrical signal generated in response to the deposition of solid excrement; and,



means for generating one of a sound or sight signal in response to said electrical signal.

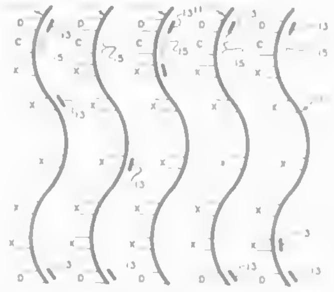
4,883,750
DETECTION OF SPECIFIC SEQUENCES IN NUCLEIC ACIDS

Norman M. Whiteley; Michael W. Hunkapiller, both of San Carlos, and Alexander N. Glazer, Orinda, all of Calif., assignors to Applied Biosystems, Inc., Foster City, Calif.

Filed Dec. 13, 1984, Ser. No. 681,055

Int. Cl.⁴ C12Q *1/68*

U.S. Cl. 435—6 31 Claims



1. A method of testing for the presence or absence of a target sequence in a sample containing DNA, the steps comprising:

(a) denaturing the sample DNA;

(b) treating the denatured DNA with a first probe which is complementary to a first portion of the target sequence to produce a duplex of first probe and denatured DNA;

(c) treating the duplex formed in step (b) with a second probe, which is shorter than the first probe and ligatable therewith, and which is complementary to the remaining portion of the target sequence;

(d) providing conditions for hybridization of the first probe and second probe to the target sequence in steps (b) and (c) wherein, by controlling stringency, the first probe does not bind substantially to the denature DNA which does not contain the first portion and wherein the second probe does not bind substantially to the denatured DNA which does not contain the remaining portion, the first probe and the second probe being of sufficient length that they can be stably hybridized to the target sequence long enough to be ligated to each other, and wherein at least one of the first and second probe is labeled;

(e) ligating first and second probe which are hybridized to the target sequence;

(f) removing unligated probe after step (e);

(g) testing for the presence of label.

4,883,751
SPECIFIC IMMUNOASSAY FOR HEPARIN

Sanford N. Gitel, Elizabeth, N.J., and Stanford Wessler, Rye, N.Y., assignors to New York University, New York, N.Y.

Filed May 28, 1986, Ser. No. 868,122

Int. Cl.⁴ G01N *33/543, 53/00*

U.S. Cl. 435—7 21 Claims

1. An assay for measuring the amount of heparin present in a biological fluid comprising the steps of:

incubating a sample of said fluid in the presence of an immobilized heparin inhibitor, said heparin inhibitor being a positively charged polycarbodiimide compound, thereby causing the heparin contained in said sample to bind to said inhibitor and form an immobilized heparin-inhibitor bimolecular complex;

incubating the heparin-inhibitor complex with a first antibody, said first antibody being an antibody immunochemically reactive with said heparin-inhibitor complex and not reactive with free heparin, thereby causing said first antibody to bind to said heparin-inhibitor complex and form an immobilized heparin-inhibitor-antibody complex;

incubating said heparin-inhibitor-antibody complex with a second antibody immunochemically reactive with said first antibody, said second antibody being capable of being quantitatively detected, thereby forming an immobilized heparin-inhibitor-antibody-(second antibody) complex; and

determining the amount of said immobilized second antibody by reference to the binding of a known amount of said second antibody to a known amount of said heparin-inhibitor-antibody complex.

4,883,752
METHOD FOR PREPARING MONOCLONAL ANTIBODY TO HBSAG

Yasuyuki Eda; Toshihiro Maeda; Kiyoto Nishiyama, and Akira Tashiro, all of Kumamoto, Japan, assignors to Juridical Foundation the Chemo-Sero-Therapeutic Research Institute, Kumamoto, Japan

Filed Oct. 24, 1985, Ser. No. 791,163

Claims priority, application Japan, Oct. 26, 1984, 59-226394

Int. Cl.⁴ C12P *21/00;* C12N *5/00*

U.S. Cl. 435—68 8 Claims

1. A method for preparing a human-derived monoclonal antibody to hepatitis B surface antigen (HBsAg) comprising the steps of:

administering HBsAg vaccine to humans who test positive with respect to anti-HBsAg antibody;

recovering lymphocyte cells from the humans having a titer of anti-HBsAg of at least 10 IU/ml in blood two weeks after administration of said HBsAg;

culturing the lymphocyte cells in vitro for seven days and selecting the lymphocyte cells with a culture supernatant containing anti-HBsAg antibody in an amount of at least 0.01 IU/ml;

stimulating the lymphocyte cells by addition of a non-specific lymphocyte activator;

fusing the lymphocyte cells to myeloma cells to form hybridomas;

cloning said hybridomas;

selecting clones producing the antibody to HBsAg; and

culturing said hybridomas and collecting the antibody to HBsAg produced by said hybridomas.

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4,883,753

HIGH-YIELD METHANE PRODUCTION PROCESS BY CULTURE OF *METHANOBACTERIUM THERMOAUTOTROPHICUM* OR ANY OTHER METHANOGENIC BACTERIUM HAVING THE SAME PHYSIOLOGICAL GROWTH PROPERTIES

Jean-Pierre Belaich, Marseilles; Marie-Laure Fardeau, Pennes Mirabeau; Jean-Paul Peillex, and André Pavia, both of Montpellier, all of France, assignors to Gaz De France, France

Filed Jul. 16, 1987, Ser. No. 74,284
Claims priority, application France, Jul. 17, 1986, 86 10431
Int. Cl.^{4} C12P *5/02*

U.S. Cl. 435—167 4 Claims

1. A process for producing methane with high yield comprising the step of cultivating on a culture medium containing a source of nitrogen and assimilable salts and thermophilic methanogenic bacterium having the same physiological growth properties as *Methanobacterium thermoautotrophicum* with a forced supply of gaseous H_2/CO_2 mixture having a gas transfer velocity of at least 50 liters of H_2/CO_2 mixture per liter and per hour.

4,883,754

BACTERIAL FC RECEPTORS

Michael D. P. Boyle, Gainesville, Fla., and Michele Yarnall, Pullman, Wash., assignors to University of Florida Research Foundation, Alachua, Fla.

Filed Mar. 6, 1986, Ser. No. 836,743
Int. Cl.^{4} C07K *15/00*

U.S. Cl. 435—177 6 Claims

1. A type II proteinaceous, antigenic factor derived from a group A strepococcus which is a receptor for the Fc region of human IgG_3 and which exhibits a major diffuse protein band on polyacrylamide gel electrophoresis and which has a molecular weight of approximately 38,000 daltons.

4,883,755

METHOD OF REENDOTHELIALIZING VASCULAR LININGS

R. Anthony Carabasi, Bryn Mawr; Bruce E. Jarrell, Philadelphia, both of Pa., and Stuart K. Williams, Wilmiogton, Del., assignors to Thomas Jefferson University, Philadelphia, Pa.

Filed Oct. 28, 1987, Ser. No. 114,242
Int. Cl.^{4} C12N *5/00;* **A01N** *1/00;* **A61K** *35/14, 37/00*

U.S. Cl. 435—240.2 13 Claims

1. A method of reendothelializing the vascular passage of a patient, the lining of which has been substantially denuded of endothelial cells, comprising

(a) interrupting the flow of blood through said vascular passage,
(b) applying to said denuded vascular lining uncultured endothelial cells retrieved from the microvessels of said patient in a density sufficient to provide coverage of at least about 50% of said denuded portion; and
(c) maintaining the interruption of blood flow through said vascular passage for a period of time sufficient to allow said applied cells to form an attachment to said vascular lining sufficient to withstand the shear created by resumed blood flow through said vascular passage.

4,883,756

PTN1060, A CONJUGAL PLASMID AND DERIVATIVES THEREOF THAT CONFER PHAGE RESISTANCE TO GROUP N STREPTOCOCCI

Todd R. Klaenhammer, and Rosemary B. Sanozky-Dawes, both of Raleigh, N.C., assignors to North Carolina State University, Raleigh, N.C.

Filed Dec. 16, 1986, Ser. No. 942,524
Int. Cl.^{4} C12N *1/20, 15/00;* **C12R** *1/46;* **A23C** *9/123*

U.S. Cl. 435—252.3 12 Claims

1. The plasmid pTN1030 (ATCC Accession Number 67273) characterized by a molecular weight of 60.0±3.0 megadaltons, having the restriction endonuclease cleavage map as shown in the Figure, and capable of expressing restriction and modification activity, conjugal transfer activity, and lactose fermentation activity in a suitable host.

5. A microorganism containing the plasmid of claim 1, said microorganism selected from the group consisting of *Streptococcus lactis, S. lactis* subsp. *diacetylactis,* and *S. cremoris.*

4,883,757

BIOEMULSIFIER PRODUCTION BY ACINETOBACTER CALCOACETICUS STRAINS

David L. Gutnick, Moshav Sdei Hemed, Israel; Eirik Nestaas, Chestnut Hill, Mass.; Eugene Rosenberg, Raanana, and Nechemia Sar, Holon, both of Israel, assignors to Petroleum Fermentations N.V., Curacao, Netherlands Antilles

Continuation of Ser. No. 676,916, Nov. 30, 1984, abandoned. This application Nov. 24, 1987, Ser. No. 129,389
Int. Cl.^{4} C12N *1/20;* **C12R** *1/01;* **B01F** *17/00*

U.S. Cl. 435—252.1 22 Claims

1. A substantially cell-free medium from a bacterial cell culture in which *Acinetobacter calcoaceticus* NRRL B-15847 has been grown, characterized by nondialyzable emulsifying activity for at least one hydrocarbon, comprising medium from a bacterial cell culture in which *Acinetobacter calcoaceticus* strain NRRL B-15847 has been grown and from which the bacterial cells have been substantially removed.

18. A substantially pure culture of *Acinetobacter calcoaceticus* NRRL B-15847 or a mutant thereof.

4,883,758

BIOLOGICALLY PURE CULTURE OF THE MICROORGANISM *STREPTOMYCAS TROPOLOFACIENS* USED FOR PRODUCING 3,7-DIHYDROXYTROPOLONE AND ANTITUMOR USE

Hideo Kamei; Masaru Ohbayashi; Koji Tomita, all of Tokyo; Koko Sugawara, Wako, and Masataka Konishi, Kawasaki, all of Japan, assignors to Bristol-Myers Company, New York, N.Y.

Division of Ser. No. 927,203, Nov. 5, 1986. This application Jan. 6, 1989, Ser. No. 294,457
Int. Cl.^{4} C12R *1/465;* **C12P** *7/26*

U.S. Cl. 435—253.5 1 Claim

1. A biologically pure culture of the microorganism *Streptomyces tropolofaciens* ATCC 53548, said culture being capable of producing 3,7-dihydroxytropolone in a recoverable quantity upon cultivation in an aqueous nutrient medium containing assimilable sources of carbon and nitrogen.

4,883,759

FERMENTATION METHOD AND APPARATUS

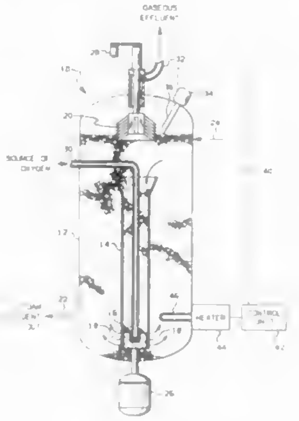
Thomas R. Hopkins, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 513,186, Jul. 12, 1983, Pat. No. 4,752,564. This application Mar. 6, 1986, Ser. No. 816,658
Int. Cl.^{4} C12M *1/36, 1/08, 1/06, 1/02*

U.S. Cl. 435—289 3 Claims

1. Apparatus for the production of microbial cells from a microorganism, comprising:

closed vessel means having an upper end portion and a lower end portion for enclosing a microorganism;
means communicating with the interior of said vessel means for introducing nutrient medium and a carbon source into said vessel means;
means communicating with the interior of said vessel means for introducing oxygen into said vessel means;
means disposed within said vessel means for maintaining said nutrient medium and said carbon source in a foamed condition within said vessel means;
foam enhancement means operatively related to said vessel means for causing a controlled quantity of microorganism constituents to be released from at least a portion of said microorganisms in said vessel means to facilitate the maintenance of said nutrient medium and said carbon source in said foamed condition at a predetermined level;
foam sensing means at least partially disposed within the upper portion of said vessel means for providing an output signal responsive to the level of the foamed nutrient medium and carbon source in said vessel means;
control means operatively related to said foam sensing means and to said foam enhancement means for activating said foam enhancement means in response to a signal from said foam sensing means responsive to a predetermined minimum level of the foamed nutrient medium and carbon source in said vessel means, and, alternately, for deactivating said foam enhancement means in response to a signal from said foam sensing means responsive to a predetermined maximum level of the foamed nutrient medium and carbon source in said vessel means; and



means communicating with the interior of said vessel means for withdrawing microbial cells produced in said vessel means.

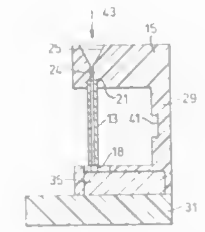
4,883,760

DEVICE FOR PERFORMING ENZYME IMMUNOASSAYS

Donald R. Heelies, Mississauga, Canada, assignor to Adi Diagnostics Inc., Rexdale, Canada

Filed Jun. 20, 1988, Ser. No. 209,332
Int. Cl.^{4} C12M *1/24*

U.S. Cl. 435—296 14 Claims



1. A device for performing immunoassays, comprising:

a support structure for a transparent capillary assay tube, said tube having an internal surface to which is attached an antibody, antigen or hapten, the tube having an upper end attached to a lateral portion of the support structure so that the tube is suspended in an upright position having a lower end being free, the lateral portion defining a first aperture in flow communication with the upper end of the tube, and the support structure having an upright portion attached to the lateral portion, the upright portion being sufficiently resiliently flexible to allow downward deflection of the lateral portion, and hence, the tube upon application of moderate manual pressure; and
absorbent material positioned beneath the capillary tube and spaced from the lower free end thereof, said lower end being engageable with the absorbent material upon downward deflection of the support structure so that liquid contained in the capillary tube may be drawn into the absorbent material.

4,883,761

PERTUSSIS TOXIN GENE: CLONING AND EXPRESSION OF PROTECTIVE ANTIGEN

Jerry M. Keith, and Camille Locht, both of Hamilton, Mont., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Filed Mar. 25, 1986, Ser. No. 843,727
Int. Cl.^{4} C12N *1/00, 15/00, 1/20;* **C07H** *21/04*

U.S. Cl. 435—320 3 Claims

1. An isolated gene consisting essentially of DNA encoding pertussis toxin.

4,883,762

STABILIZED ISOENZYME CONTROL PRODUCTS

Michael K. Hoskins, Irvine, Calif., assignor to Ciba Corning Diagnostics Corp., Medfield, Mass.

Continuation of Ser. No. 47,048, May 6, 1987, abandoned, which is a division of Ser. No. 913,117, Sep. 29, 1986, Pat. No. 4,684,615, which is a continuation of Ser. No. 501,213, Jun. 6, 1983, abandoned. This application Jan. 12, 1989, Ser. No. 296,911

The portion of the term of this patent subsequent to Aug. 4, 2004, has been disclaimed.

Int. Cl.^{4} G01N *31/00*

U.S. Cl. 436—18 8 Claims

1. An isoenzyme control reagent stabilized against disassociation or rearrangement of the subunits of the isoenzyme comprising:

(a) an isoenzyme;
(b) plexiform stabilizing means selected from the group consisting of reducing monosaccharide sugars and reducing disaccharide sugars, the plexiform stabilizing means present in the range of about 2% to 8% weight per volume, and
(c) human sera having the lipids removed therefrom.

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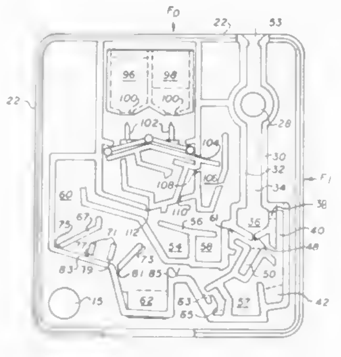
4,883,763
SAMPLE PROCESSOR CARD FOR CENTRIFUGE

James T. Holen, Mundelein, and Vidas P. Kazlauskas, Waukegan, both of Ill., assignors to Abbott Laboratories, Chicago, Ill.

Continuation of Ser. No. 882,734, Jul. 7, 1986, abandoned, which is a continuation-in-part of Ser. No. 861,477, May 9, 1986, abandoned, which is a continuation of Ser. No. 606,785, May 3, 1984, abandoned. This application Sep. 30, 1988, Ser. No. 253,370

Int. Cl.⁴ G01N *21/84;* B01L *3/00*

U.S. Cl. 436—45 21 Claims



1. A sample processor card for carrying out chemical tests under centrifugal force, said centrifugal force being applied in at least two directions relative to said card by the orientation of the card on a centrifuge rotor, said card comprising:

means defining an outer enclosure having a plurality of walls defining therein:

- (a) inlet means for supplying a sample to the card, sample measuring chamber means communicating with said inlet means to measure a volume of sample, and a sample overflow means communicating with the inlet means and the sample measuring chamber means, said sample measuring chamber means and said sample overflow means being disposed such that centrifugal force acting in a first direction relative to said card moves sample into said sample measuring chamber means, with excess sample moving into said sample overflow means;
- (b) reagent containing means for supplying at least one reagent;
- (c) mixing chamber means communicating with said sample measuring chamber means and said reagent containing means and disposed such that centrifugal force acting on the card in a second direction relative to the card admits said measured volume of sample and said reagent into said mixing chamber means; and
- (d) cuvette means communicating with the mixing chamber means;

wherein said sample measuring chamber means, said reagent containing means, said mixing chamber means and said cuvette means are arranged in said enclosure such that movement of sample or reagent among said sample measuring chamber means, said reagent containing means, said mixing chamber means and said cuvette means can be accomplished solely by changing the orientation of the processor card relative to a centrifuge rotor without substantially lowering the magnitude of centrifugal force.

15. A method for carrying out chemical tests under centrifugal force on a centrifuge rotor, comprising the steps of:

- (a) supplying a sample to be tested to a sample processor card having
  - (1) inlet means for supplying a sample to the card, sample measuring chamber means communicating with said inlet means to measure a volume of sample, and a sample overflow means communicating with the inlet means and the sample measuring chamber means, said sample measuring chamber means and said sample overflow means being disposed such that centrifugal force acting in a first direction relative to said card moves sample into said sample measuring chamber means, with excess sample moving into said sample overflow means;
  - (2) reagent containing means for supplying at least one reagent;
  - (3) mixing chamber means communicating with said sample measuring chamber means and said reagent containing means and disposed such that centrifugal force acting on the card in a second direction relative to the card admits said measured volume of sample and said reagent into said mixing chamber means; and
  - (4) cuvette means communicating with the mixing chamber means;
- (b) subjecting the card to a substantially uniform and continuous centrifugal force acting in a first direction relative to the card to move sample into said sample measuring chamber means, with excess sample moving into said sample overflow means;
- (c) reorienting the card relative to a centrifuge rotor to change the effective direction of centrifugal force acting thereon to a second direction, thereby to contact the sample with reagent and effect a chemical reaction therebetween, said contact being accomplished solely by changing the relative direction of centrifugal force and without substantially lowering the magnitude of centrifugal force; and
- (d) measuring the reaction product of the sample and reagent.

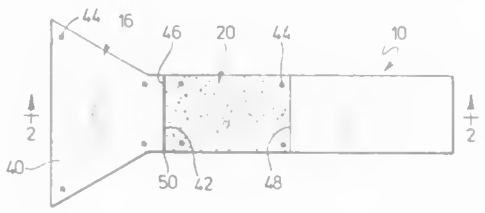
4,883,764
BLOOD TEST STRIP

Mary A. Kloepfer, 10930 Braewick Dr., Carmel, Ind. 46032

Filed Jul. 20, 1987, Ser. No. 75,391

Int. Cl.⁴ G01N *33/48, 31/22*

U.S. Cl. 436—63 25 Claims



20. A method for separating plasma from whole blood comprising:

providing a blood test strip including

- (1) a support member,
- (2) a generally sheet-like separating member, and
- (3) a generally sheet-like recipient member, the recipient member being disposed in a generally co-planar, side-by-side, non-interwoven relation with the separating member to define an incision therebetween, the recipient member having a defined absorptive capacity,

applying a quantity of blood to the separating member in excess of the combined absorptive capacities of the separating member and recipient member,

permitting the blood to flow in the separating and recipient members,

collecting a defined volume of plasma on the recipient member, and

retaining the cellular components of the blood in the separating member.

4,883,765
METHOD FOR THE QUANTITATIVE DETERMINATION OF LIPOPROTEIN COMPONENTS IN A BODY FLUID AND METHOD FOR SEPARATING LIPOPROTEINS FROM BLOOD

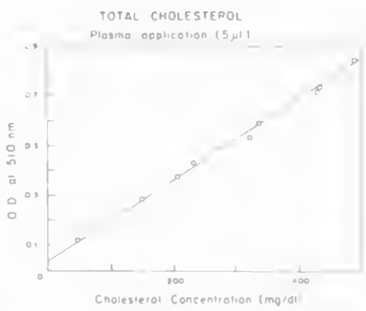
Ilana Tamir, Jerusalem; Ben-Zion Kidron, Givat; Lynn Wang, Gilo, and Michael Inbar, Mazkeret Batya, all of Israel, assignors to I.D.L. Int'l Diagnostic Laboratories Ltd., Jerusalem, Israel

Filed Aug. 28, 1987, Ser. No. 91,218

Claims priority, application Israel, Sep. 4, 1986, 79945

Int. Cl.⁴ G01N *33/92*

U.S. Cl. 436—71 10 Claims



1. A method for the quantitative determination of total cholesterol in a sample of whole blood, which method comprises:

- (a) contacting said sample with a quantity of particulate silica which is capable of selectively absorbing all lipoproteins in said sample;
- (b) separating the non-absorbed components of the sample from the silica with said lipoproteins absorbed thereon;
- (c) after step (b), releasing said lipoproteins absorbed to said silica; and
- (d) quantitatively determining the total cholesterol in said lipoproteins.

4,883,766
METHOD OF PRODUCING THIN FILM TRANSISTOR

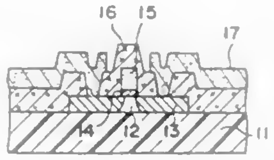
Mamoru Ishida, Yokohama; Shunichi Inaki, Toyonaka; Yoshikazu Akiyama, and Mitsuhiro Kohata, both of Yokohama, all of Japan, assignors to Ricoh Company, Ltd., Tokyo and Ricoh Research Institute of General Electronics, Natori, both of, Japan

Filed Nov. 10, 1988, Ser. No. 269,452

Claims priority, application Japan, Nov. 14, 1987, 62-288193

Int. Cl.⁴ H01L *29/78, 27/12*

U.S. Cl. 437—40 20 Claims



1. A method of producing a thin film transistor comprising the steps of:

preparing a structure having a substrate, an active layer and a diffusion layer formed on the substrate, and a gate electrode formed on the active layer;

forming on said structure an interlayer insulator layer made of a silicon oxide hydrate (SiO_xH_y) having a predetermined composition;

forming contact holes in said interlayer insulator layer;

forming a wiring layer on said interlayer insulator layer; and carrying out a thermal process thereby diffusing hydrogen atoms within said interlayer insulator layer into at least said active layer and said diffusion layer.

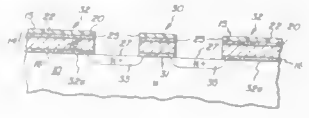
4,883,767
METHOD OF FABRICATING SELF ALIGNED SEMICONDUCTOR DEVICES

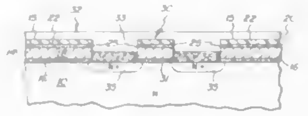
Peter V. Gray, Scotia; Bantval J. Baliga, Schenectady, both of N.Y.; Mike P. S. Chang, Cary, N.C., and George C. Pifer, North Syracuse, N.Y., assignors to General Electric Company, Schenectady, N.Y.

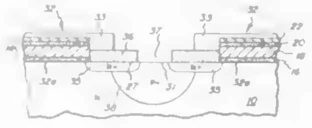
Continuation of Ser. No. 938,693, Dec. 5, 1986, abandoned. This application Jul. 14, 1988, Ser. No. 220,353

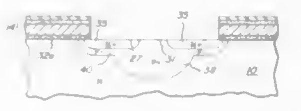
Int. Cl.⁴ H01L *21/265*

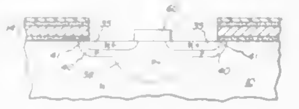
U.S. Cl. 437—41 61 Claims











1. A method of fabricating a self aligned semiconductor device comprising the steps of:

- (a) providing a semiconductor substrate having a major surface;
- (b) providing a first protective layer atop said substrate surface;
- (c) opening a first window through a first portion of said protective layer, said first window having an inner perimeter and an outer perimeter and encompassing a second portion of said first protective layer
- (d) introducing a first dopant into said substrate through said first window to establish a first doped region, said first doped region being self aligned with respect to said first window;
- (e) forming a second protective layer over said substrate in said first window;

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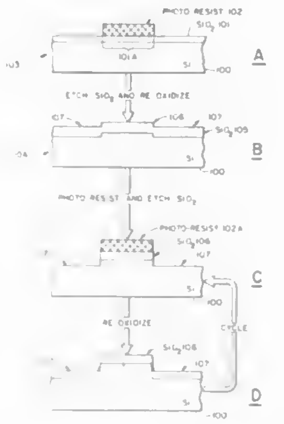
(f) opening a second window by removing said second portion of said first protective layer;
(g) introducing a second dopant into said substrate through said second window to establish a second doped region, said second doped region being self aligned with respect to said inner perimeter of said first window;
(h) opening a third window through said second protective layer to expose a portion of said first doped region; and
(i) introducing a third dopant through said third window into said first region to establish a third region, said third doped region being self aligned with respect to the outer perimeter of said first window.

4,883,768

MESA FABRICATION IN SEMICONDUCTOR STRUCTURES

James L. Swindal, East Hampton, and Daniel H. Grantham, Glastonbury, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.
Filed Feb. 28, 1989, Ser. No. 317,309
Int. Cl.⁴ H01L *29/06*
U.S. Cl. 437—61 5 Claims



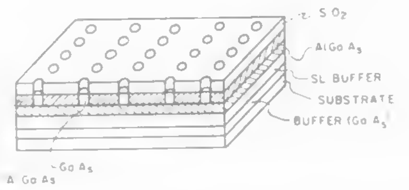
1. A method of fabricating a mesa in a semiconductor structure, comprising the following step(s):
(a) fabricating the mesa in an oxidation process applied in a cyclical fashion, with each cycle including a photolitho graphic operation protecting the previously grown oxide on the mesa from etching while exposing the areas surrounding the mesa to etching; and
(b) during each cycle growing less oxide and conversely consuming less silicon on the mesa than in the preceding cycle, while growing substantially equal amounts of oxide on the non-mesa areas surrounding the mesa in each cycle, causing the top of the mesa to get higher above the surrounding areas in each cycle in comparison to the preceding cycle.

4,883,769

METHOD OF MAKING A MULTIDIMENSIONAL QUANTUM-WELL ARRAY

Thomas R. Au Coin, Ocean Township, Ocean County; Walter D. Braddock IV, and Gerald J. Iafrate, both of Toms River, all of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Aug. 18, 1988, Ser. No. 234,089
Int. Cl.⁴ H01L *21/20, 21/225*
U.S. Cl. 437—110 6 Claims

1. Method of making a multidimensional quantum-well array from a single crystal wafer of gallium arsenide as the substrate including the steps of:
(A) epitaxially depositing a film of about 5000 Å of gallium arsenide onto the top surface of the substrate,
(B) depositing thereover a superlattice buffer of ten periods of approximately 100 Å of gallium arsenide and 15 Å of gallium aluminum arsenide,
(C) epitaxially depositing about 5000 Å of gallium arsenide onto the superlattice buffer,
(D) epitaxially depositing about 1000 Å of gallium aluminum arsenide thereover,
(E) epitaxially depositing about 500 Å of gallium arsenide thereover,
(F) depositing about 500 Å of silicon dioxide thereover,
(G) spinning an electron-beam sensitive resist onto the silicon dioxide film to a thickness of about 1000 to 2000 Å and

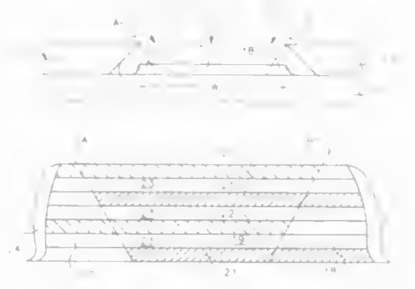


exposing the resist to an electron beam focused properly and of sufficient flux to produce an array of circularly exposed areas of about 500 Å diameter,
(H) developing the exposed areas to open circular holes of about 500 Å in diameter on the surface of the deposited silicon dioxide,
(I) etching circular holes in the silicon dioxide layer,
(J) stripping the e-beam resist from the silica layer and placing the resulting sample in a suitable annealing furnace, and
(K) heating the sample to about 900° C. for about 15 seconds and then cooling.

4,883,770

SELECTIVE NIPI DOPING SUPER LATTICE CONTACTS AND OTHER SEMICONDUCTOR DEVICE STRUCTURES FORMED BY SHADOW MASKING FABRICATION

Gottfried H. Dohler, Palo Alto; Ghulam Hasnain, Mtn. View, and Jeffrey N. Miller, Los Altos, all of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.
Continuation of Ser. No. 909,734, Sep. 19, 1986, abandoned. This application Jan. 17, 1989, Ser. No. 298,794
Int. Cl.⁴ H01L *21/20, 21/203*
U.S. Cl. 437—110 11 Claims

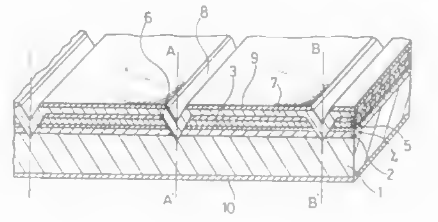


1. A semiconductor fabrication process comprising the steps of:
(a) exposing a substrate by a plurality of molecular beams to produce a epitaxially grown layer on the substrate, said beams being directed along a plurality of directions; and
(b) blocking at least one beam with a mask having therein at least one aperture that enables a first of said beams to expose the substrate only in a first region and a second region and that enables a second of said beams to expose the substrate only in the second region and in a third region, said three regions being nonoverlapping and said second region being contiguous to the first and third regions, said beams being selected to form a first type of selective contact from the first region to the second region and form a second type of selective contact form the third region to the second region.

4,883,771

METHOD OF MAKING AND SEPARATING SEMICONDUCTOR LASERS

Hisao Kumabe, and Wataru Susaki, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Japan
Division of Ser. No. 119,340, Nov. 10, 1987, Pat. No. 4,841,532. This application Mar. 31, 1989, Ser. No. 331,359
Claims priority, application Japan, Nov. 13, 1986, 61-270695
Int. Cl.⁴ H01L *21/20, 21/302*
U.S. Cl. 437—129 10 Claims



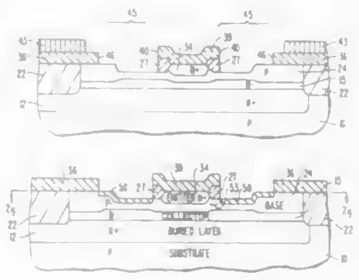
1. A method for making a semiconductor laser comprising:
sequentially depositing on a semiconductor substrate a first semiconductor cladding layer of a first conductivity type, an active semiconductor layer having a first energy band gap, a second semiconductor cladding layer of a second conductivity type opposite said first conductivity type, a fourth semiconductor layer of said second conductivity type as a contacting layer;
forming at least one V shaped groove in said layers extending from said second cladding layer into at least part of said first cladding layer to expose said active layer;
growing a fifth semiconductor layer of said second conductivity type in said groove to cover at least said active layer and said second cladding layer while retaining said groove shape; and
cleaving said substrate and layers along said groove to expose a resonator end surface and form a semicondctor laser having a non-absorbing mirror structure at at least one of its resonator end surfaces.

4,883,772

PROCESS FOR MAKING A SELF-ALIGNED SILICIDE SHUNT

James M. Cleeves, Redwood City, and James G. Heard, Cupertino, both of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.
Continuation of Ser. No. 122,523, Nov. 18, 1987, abandoned, which is a continuation of Ser. No. 906,350, Sep. 11, 1986, abandoned. This application Sep. 6, 1988, Ser. No. 241,784
Int. Cl.⁴ H01L *21/283*
U.S. Cl. 437—200 12 Claims

1. A process for fabricating a low resistance shunt for a silicon semiconductor structure comprising:
on a layer of first conductivity type silicon semiconductor material having a surface, forming a masking region over a first portion of the surface but not over a second portion;
oxidizing the second portion to form an insulating region of oxidized silicon semiconductor material to separate at the surface the first portion of the layer from the second portion, the insulating region encroaching beneath the masking region to thereby reduce the size of the first portion;
in predetermined order (a) removing the masking region and (b) introducing opposite conductivity type impurity into the first portion to thereby form a first region;
subsequently forming a first electrical connection to the first region, which connection extends at least over the part of the insulating region which was encroaching beneath the masking region;
forming a second electrical connection over the layer of first conductivity type semiconductor material, which second electrical connection is spaced apart from the first electrical connection;



using the first and second electrical connections as a mask, removing a part of the insulating region to expose the surface of the first conductivity layer while leaving at least that portion of the insulating layer encroaching beneath the masking region; and
depositing a silicide-forming metal onto at least the surface of the layer to form a low resistance shunt of metal silicide between said first and second electrical connections.

4,883,773

METHOD OF PRODUCING MAGNETOSENSITIVE SEMICONDUCTOR DEVICES

Takuro Ishikura, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan
Continuation of Ser. No. 126,556, Nov. 30, 1987, abandoned. This application Mar. 7, 1989, Ser. No. 320,911
Claims priority, application Japan, Dec. 16, 1986, 61-300678
Int. Cl.⁴ H01L *43/06, 43/14*
U.S. Cl. 437—207 6 Claims

1. A method of producing magnetosensitive semiconductor devices comprising the steps of
forming a magnetosensitive part on a first surface of a semiconductor substrate,
pasting a supporting member on said first surface of said semiconductor substrate,
reducing the thickness of said semiconductor substrate to less than and about equal to 100 micrometers from a second surface thereof with said supporting member kept on said first surface, said first and second surfaces being opposite from each other and said magnetosensitive part not appearing on said second surface,
pasting a magnetic substrate of thickness about 300 micrometers on said second surface of said semiconductor substrate to form a layered structure,
thereafter removing said supporting member and attaching an adhesive tape on said magnetic substrate,

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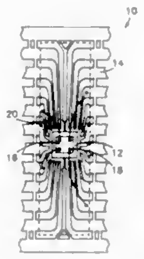
thereafter dividing said layered structure into individual unistructural elements each having a semiconductor chip and a magnetic piece, and
die bonding, wire bonding and resin molding said individual elements.

4,883,774

SILVER FLASHING PROCESS ON SEMICONDUCTOR LEADFRAMES

Frank Djennas, Mesa, and Curtis W. Mitchell, Scottsdale, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Mar. 21, 1988, Ser. No. 171,097
Int. Cl.⁴ H01L *21/44*
U.S. Cl. 437—211 12 Claims

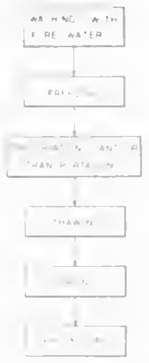


1. A process for flashing a thin layer of silver on metal semiconductor leadframes comprising the steps of:
providing a metal leadframe;
placing said metal leadframe, unmasked, into a cleaning bath, said cleaning bath including silver in solution and having no outside electrical driving force; and
removing said metal leadframe from said cleaning bath following plating of a predetermined thin layer of silver on said entire metal leadframe.

4,883,775

PROCESS FOR CLEANING AND PROTECTING SEMICONDUCTOR SUBSTRATES

Masanori Kobayashi, Meguro, Japan, assignor to Fujitsu Limited, Kawasaki, Japan
Filed Dec. 10, 1987, Ser. No. 131,072
Claims priority, application Japan, Dec. 17, 1986, 61-302118
Int. Cl.⁴ H01L *2/314*
U.S. Cl. 437—225 8 Claims



1. A process for cleaning and protecting semiconductor substrates, comprising the steps of:
washing a cleaned semiconductor substrate with pure water, while keeping said substrate in the pure water,
freezing the pure water to cover surfaces of the substrate with ice, said freezing being continuously carried out by keeping said substrate submerged in the pure water without exposing said substrate to the atmosphere during the period between the washing step and the freezing step,
preserving and/or transporting the ice-covered substrate,
just before a subsequent processing, thawing and drying the ice-covered substrate.

4,883,776

SELF-REINFORCED SILICON NITRIDE CERAMIC OF HIGH FRACTURE TOUGHNESS AND A METHOD OF PREPARING THE SAME

Aleksander J. Pyzik, Midland; William J. Dubensky, Traverse City; Douglas B. Schwarz, Midland, and Donald R. Beaman, Midland, all of Mich., assignors to The Dow Chemical Company, Midland, Mich.
Filed Jan. 27, 1988, Ser. No. 148,748
Int. Cl.⁴ C04B *35/58*
U.S. Cl. 501—10 15 Claims

15. A process for preparing a silicon nitride ceramic body having a fracture toughness greater than about 6 MPa $(m)^{\frac{1}{2}}$ and containing predominantly β-silicon nitride whiskers having an average aspect ratio of at least about 2.5, the process comprising:
preparing a powder mixture comprising
(a) silicon nitride in an amount sufficient to provide a ceramic body;
(b) magnesium oxide in an amount of from about 1.0 to about 20.6 weight percent based upon total weight of the powder mixture, said amount being sufficient to promote densification of the powder;
(c) yttrium oxide in an amount of from about 0.7 to about 28.3 weight percent based upon total weight of the powder mixture, said amount being sufficient to promote the essentially complete conversion of the silicon nitride to β-silicon nitride; and
(d) calcium oxide in an amount of from about 0.01 to about 5.3 weight percent based upon total weight of the powder mixture, said amount being sufficient to promote the formation of β-silicon nitride whiskers,
and hot-pressing the powder under conditions such that densification and in situ formation of β-silicon nitride whiskers having an average aspect ratio of at least about 2.5 occur and such that the silicon nitride ceramic body having a fracture toughness greater than about 6 MPa $(m)^{\frac{1}{2}}$ is formed.

4,883,777

SEALING GLASS COMPOSITION WITH FILLER CONTAINING FE AND W PARTIALLY SUBSTITUTED FOR TI IN PBTIO$_3$ FILLER

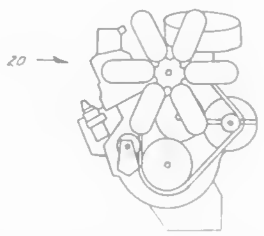
Toshio Yamanaka, Shiga, Japan, assignor to Nippon Electric Glass Company, Limited, Shiga, Japan
Filed Apr. 5, 1989, Ser. No. 333,450
Claims priority, application Japan, Apr. 7, 1988, 63-86909
Int. Cl.⁴ C03C *3/12*
U.S. Cl. 501—15 4 Claims

1. In a sealing glass composition, as used for sealing members in electronic parts, consisting of a mixture which comprises solder glass powder of a low melting temperature and low expansion coefficient filler powder, the improvement wherein said filler powder comprises a ceramic powder which consists, by weight, of PbO 65–75 %, TiO_2 10–25%, Fe_2O_3 1–10%, WO_3 1–12%, and CaO 0–5%.

4,883,778

PRODUCTS FORMED OF A CERAMIC-GLASS-METAL COMPOSITE

Narendra N. SinghDeo, New Haven; Deepak Mahulikar, Meriden, both of Conn., and Sheldon H. Butt, Godfrey, Ill., assignors to Olin Corporation, New Haven, Conn.
Filed Oct. 30, 1986, Ser. No. 924,959
The portion of the term of this patent subsequent to May 31, 2005, has been disclaimed.
Int. Cl.⁴ C03C *8/18, 14/00*
U.S. Cl. 501—19 15 Claims



1. An engineering ceramic product formed from a ceramic-glass-metal composite, comprising:
from about 5 to about 45 volume percent of metallic particles for enhancing the flow characteristics of said composite, said metallic particles selected from the group consisting of aluminum, copper, iron, silver, gold, stainless steel and alloys thereof;
from about 15 to about 50 volume percent of a glass for adhering said composite together; and
the balance essentially ceramic particles, said ceramic particles selected from the group consisting of Al_2O_3, SiC, BeO, TiO_2, ZrO_2, MgO, AlN, Si_3N_4, BN and mixtures thereof;
said composite having a structure comprising substantially a matrix of said glass with said ceramic and metallic particles dispersed therein.

4,883,779

CERAMIC ARTICLES CONTAINING SILICON CARBIDE

Jerome W. McAllister, Hudson, Wis.; Lien-Huong T. Pham, St. Paul, and Harold G. Sowman, Stillwater, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Division of Ser. No. 912,830, Sep. 26, 1986, Pat. No. 4,800,180.
This application Oct. 20, 1988, Ser. No. 260,283
Int. Cl.⁴ C04B *35/52*
U.S. Cl. 501—88 14 Claims

1. A method for preparing a ceramic shaped article having a ceramic matrix and dipersed therein silicon carbide, the method comprising the steps of:
(a) preparing a mixture of viscous precursor liquids comprising at least one ceramic precursor sol and crystalline silicon carbide particles have an average diameter of at most 0.1 micrometer,
(b) shaping said viscous concentrate into a shaped form,
(c) means for providing a green shaped article from said shaped form,
(d) heating and firing the green shaped article to remove moisture and fugitive constituents and provide a refractory shaped article,
wherein said article has a modulus of elasticity (E) value of at least 10 percent greater than the inherent modulus of elasticity (E) value of the fully dense host matrix.

4,883,780

ALUMINUM NITRIDE SINTERED BODY AND PREPARATION THEREOF

Mituo Kasori, Kawasaki; Kazuo Shinozaki, Inagi; Kazuo Anzai, Tokyo; Akihiko Tsuge; Hiroshi Imagawa, both of Yokohama; Takeshi Takano, Samukawa; Fumio Ueno, Kawasaki; Akihiro Horiguchi, Yokohama, and Hiroshi Inoue, Kawaguchi, all of Japan, assignors to Kabushiki Kaisha toshiba, Kawasaki, Japan
Continuation of Ser. No. 878,601, Jun. 26, 1986, abandoned.
This application Feb. 11, 1988, Ser. No. 157,150
Claims priority, applicatioo Japan, Jun. 28, 1985, 60-140166; Sep. 25, 1985, 60-211401; Sep. 25, 1985, 60-211403; Jan. 21, 1986, 61-9010
Int. Cl.⁴ C04B *35/58, 35/50*
U.S. Cl. 501—96 8 Claims

1. An aluminum nitride sintered body prepared by sintering aluminum nitride and additives, which consists essentially of
(a) aluminum nitride,
(b) at least one compound selected from the group consisting of an aluminum compound of a rare earth metal, an aluminum compound of an alkaline earth metal, and an aluminum compound of a rare earth metal and an alkaline earth metal, and
(c) at least one element selected from the transition elements consisting of hafnium, molybdenum, tungsten, the Group Va elements, the Group VIIa elements and the Group VIII elements, and/or at least one compound comprising said element, wherein the content of constituent (b) is 0.01 to 18% by weight in terms of respective oxides of said rare earth and/or alkaline earth metal, and wherein the content of constituent (c) is 0.01 to 15% by weight in terms of oxide of said transition element.

4,883,781

HEAT RESISTING LOW EXPANSION ZIRCONYL PHOSPHATE-ZIRCON COMPOSITE

Keiichiro Watanabe, and Tsuneaki Ohashi, both of Nagoya, Japan, assignors to NGK Insulators, Ltd., Nagoya, Japan
Filed Sep. 9, 1987, Ser. No. 94,743
Claims priority, application Japan, Sep. 13, 1986, 61-215010; May 28, 1987, 62-129873; May 28, 1987, 62-129874
Int. Cl.⁴ C04B *35/16, 35/48*
U.S. Cl. 501—102 19 Claims

1. A heat resisting low expansion zirconyl phosphate-zircon composite body having microcracks therein and containing zirconyl phosphate and zircon as a main crystalline phase and a secondary crystalline phase, respectively, said body having a chemical composition consisting essentially of 58.2 to 65.4% by weight ZrO_2, 17.4 to 37.1% by weight of P_2O_5 and 1.5 to 19% by weight of SiO_2, said body having a coefficient of thermal expansion in a temperature range from room temperature to 1,400° C. of not more than $30\times10^{-7}/°C.$, a melting point of not less and 1,600° C. and a self-weight softening percentage of not more than 0.1%.

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4,883,782
COBALT-MOLYBDENUM THIN FILM CATALYST

James R. Brown, Kanata; Norman S. McIntyre, London, and Darlene D. Johnston, Komoka, all of Canada, assignors to Energy, Mines and Resources-Canada, Ottawa, Canada

Filed Jul. 5, 1988, Ser. No. 215,295

Int. Cl.^{4} B01J *27/049, 27/051*

U.S. Cl. 502—220 7 Claims

1. A thin film catalyst structure comprising:

(a) an aluminum base having an oxidized surface layer thereon, and

(b) sequentially deposited thin films of metallic cobalt and molybdenum on said oxidized layer, said cobalt and molybdenum films having been calcined and sulphided to thereby form catalytically active Co—Mo—S species at the outer surface of the catalyst.

4,883,783
COMPOSITION OF MATTER FOR CONVERSION OF HYDROCARBONS

Emmett H. Burk, Jr., Mountain Home, Ark.; Jin S. Yoo, Flossmoor, and Cecelia A. Radlowski, Riverside, both of Ill., assignors to UOP, Des Plaines, Ill.

Division of Ser. No. 48,623, May 11, 1987, Pat. No. 4,735,705, which is a continuation of Ser. No. 615,184, May 30, 1984, abandoned. This application Dec. 31, 1987, Ser. No. 140,126

Int. Cl.^{4} B01J *21/02, 21/10, 23/10, 23/58*

U.S. Cl. 502—304 12 Claims

1. A composition of matter comprising, in intimate admixture, a major amount of solid particles capable of promoting hydrocarbon conversion at hydrocarbon conditions and a minor amount of discrete entities having a composition different from said solid particles and comprising at least one magnesium-aluminum-containing spinel, and a minor amount of at least one added component selected from the group consisting of alkali metal components, calcium components, barium components, strontium components, beryllium components and mixtures thereof, said discrete entities being present in an amount sufficient to reduce the amount of sulfur oxides in an effluent flue gas.

4,883,784
HUMAN COMPLEMENT FACTORS AND THEIR THERAPEUTIC USE

Isao Kaneko, Tokyo, Japan, assignor to Sankyo Company Limited, Tokyo, Japan

Continuation of Ser. No. 927,733, Nov. 5, 1986, abandoned. This application Apr. 13, 1988, Ser. No. 181,309

Claims priority, application Japan, Nov. 8, 1985, 60-250187

Int. Cl.^{4} A61K *37/04, 37/43*

U.S. Cl. 514—8 9 Claims

1. A method of treating a mammal suffering from a disease selected from the group consisting of systemic lupus erythematosus, rheumatoid arthritis and glomerulonephritis by administering to said mammal an effective amount of a complement factor selected from the group consisting of Factor H, Factor I and mixtures of Factor H and Factor I.

4,883,785
COMPLEX OF ANTI-FUNGAL AGENT AND CYCLODEXTRIN AND METHOD

Wing-Sun Chow, 26 Marquette Rd., Upper Montclair, N.J. 07043; Shirley C. Chen, 91 George Ave., Edison, N.J. 08820, and Peter Timmins, 34, Thornley Road, Morton, Wirral, Merseyside, United Kingdom (L46 6HB)

Filed Jul. 27, 1984, Ser. No. 635,030

Int. Cl.^{4} A61K *31/70;* C07H *17/08*

U.S. Cl. 514—31 7 Claims

1. An anti-fungal complex having improved water-solubility and stability comprising a polyene anti-fungal agent selected from the group consisting of amphotericin B, candicidin, hamycin, and pimaricin and β- or γ-cyclodextrin in a molar ratio of anti-fungal agent to cyclodextrin of within the range of from about 1:2 to about 1:100.

4. An anti-fungal composition comprising an effective amount of an anti-fungal complex as defined in claim 1 and a pharmaceutically acceptable carrier therefor.

4,883,786
DERIVATIVES OF L-CARNITINE

Laura Puricelli, Brescia, Italy, assignor to Magis Farmaceutici Srl, Brescia, Italy

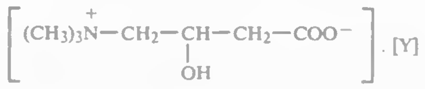
Continuation of Ser. No. 124,405, Nov. 20, 1987, abandoned, which is a continuation of Ser. No. 750,253, Jul. 1, 1985, abandoned. This application Dec. 8, 1988, Ser. No. 282,938

Claims priority, application Italy, Jun. 29, 1984, 21655 A/84

Int. Cl.^{4} C07C *101/30;* A61K *31/19*

U.S. Cl. 514—47 2 Claims

1. A derivative of L-carnitine of the formula:



$$\left[(CH_3)_3\overset{+}{N}-CH_2-\underset{OH}{\underset{|}{CH}}-CH_2-COO^-\right].[Y]$$

wherein Y is the monopotassium salt of an acid selected from the group consisting of: phosphoric acid, aspartic acid, acetylaspartic acid, glutamic acid, acetylglutamic acid, glutaric acid, β-keto-glutaric acid, orotic acid, succinic acid, phosphoserine, acetylphosphoserine, malic acid, pamoic acid and adenosinetriphosphoric acid.

4,883,787
PROCESS FOR PREPARING 2-ACYL-3, 4-DIALKOXYANILINES

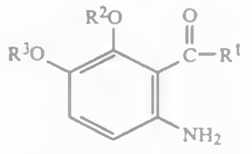
Richard A. Conley, Annandale, and Donald L. Barton, Frenchtown, both of N.J., assignors to Ortho Pharmaceutical Corporation, Raritan, N.J.

Division of Ser. No. 98,821, Sep. 21, 1987, which is a division of Ser. No. 760,003, Jul. 29, 1985, Pat. No. 4,731,480. This application Jun. 20, 1988, Ser. No. 209,130

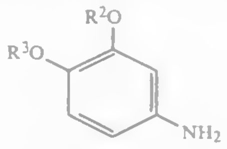
Int. Cl.^{4} C07C *103/38*

U.S. Cl. 564—414 6 Claims

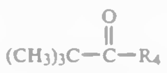
1. A method for preparing a compound of the formula



which comprises reacting a substituted aniline of the formula

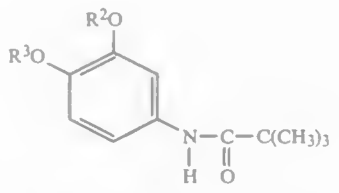


with a pivalic acid compound of the formula



$$(CH_3)_3C-\overset{\overset{\displaystyle O}{\|}}{C}-R_4$$

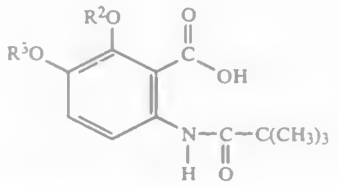
to form an anilide of the formula



reacting the anilide first with an organolithium compound of the formula

R—Li

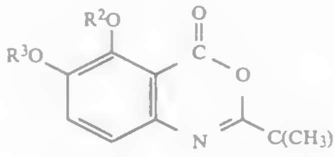
and reacting the product formed with carbon dioxide to form an anilide of the formula



reacting the anilide with an acid anhydride of the formula

$(R_5CO)_2O$

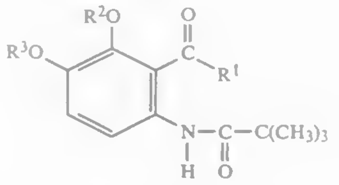
to form a 1,3-benzoxazin-4-one of the formula



reacting the 1,3-benzoxazin-4-one with an organometallic reagent of the formula

R_1M

to form an anilide of the formula



and hydrolyzing the anilide with acid, wherein R_1, R_2, R_3 and R_5 are lower alkyl and R_2 and R_3 when taken together are methylenedioxy; R_4 is chloro, bromo, fluoro or $OCOC(CH_3)_3$; R is n-butyl, s-butyl or t-butyl and M is Li and MgX wherein X is chloro or bromo.

4,883,788
METHOD AND COMPOSITION FOR REDUCING SERUM CHOLESTEROL

Charles E. Day, Fulton, Mich., and Eric H. Kuhrts, Santa Barbara, Calif., assignors to Hauser-Kuhrts, Inc., Santa Barbara, Calif.

Continuation of Ser. No. 871,715, Jun. 6, 1986, Pat. No. 4,824,672. This application Sep. 23, 1988, Ser. No. 191,285

The portion of the term of this patent subsequent to Apr. 25, 2006, has been disclaimed.

Int. Cl.^{4} A61K *31/715, 33/14, 33/10*

U.S. Cl. 514—57 7 Claims

1. An orally-administrable pharmaceutical composition for use in reducing serum cholesterol levels consisting essentially of:

(a) an effective amount of guar gum which exhibits cholesterol-reducing activity, and

(b) a dispersibility-enhancing amount of an orally-ingestible non-toxic pharmacologically-acceptable mineral salt capable of dissolution in the gastric fluid with release of a gas, the ratio of guar gum to said mineral salt being in the range of approximately 3:1 to approximately 10:1.

4,883,789
SUBSTITUTED PHENYLTRIALKYLSILANE INSECTICIDES

Scott M. Sieburth, Princeton, N.J., assignor to FMC Corporation, Philadelphia, Pa.

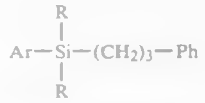
Continuation-in-part of Ser. No. 869,797, Jun. 2, 1986, Pat. No. 4,709,068. This application Feb. 9, 1987, Ser. No. 12,410

The portion of the term of this patent subsequent to Nov. 24, 2004, has been disclaimed.

Int. Cl.^{4} A60K *31/695;* C07F *7/08, 7/10*

U.S. Cl. 514—63 18 Claims

1. A compound of the formula



$$Ar-\underset{\underset{\displaystyle R}{|}}{\overset{\overset{\displaystyle R}{|}}{Si}}-(CH_2)_3-Ph$$

in which Ar is phenyl, furanyl, thienyl, or thiazolyl, each optionally substituted with (C_{1-4})alkyl, halo, (C_{1-4})haloalkyl, (C_{1-4})alkoxy, (C_{1-4})haloalkoxy, or a substituent having the structure —A—$(CR^1)_n$—A—, where R^1 is independently 1 or 2 hydrogens, halogens, or alkyls, n is 1 or 2. and each A is O, S, or CH_2 and is bonded to an adjacent carbon atom of the aromatic ring; R is a (C_{1-4}) alkyl; and Ph is phenoxyphenyl, benzylphenyl, phenyliminophenyl, benzoylphenyl, or benzodioxolyl, each optionally substituted with halogen or lower alkyl.

18. A method for controlling insects by application to the locus where control is desired an insecticidally effective amount of a compound of claim 1.

4,883,790
WAVELENGTH-SPECIFIC CYTOTOXIC AGENTS

Julia G. Levy; David Dolphin, both of Vancouver, and Jack K. Chow, Burnaby, all of Canada, assignors to University of British Columbia, Vancouver, Canada

Continuation-in-part of Ser. No. 5,204, Jan. 20, 1987. This application Apr. 23, 1987, Ser. No. 41,680

Int. Cl.^{4} A61K *31/66*

U.S. Cl. 540—145 11 Claims

1. A method to impair the functioning of target cells to which a hydro-monobenzoporphyrin (Gp) having a light absorption maximum between 670–720 nm is attracted, which method comprises

administering to a mammal in need of such treatment an effective amount of said Gp; and

irradiating said target cells with radiation having a wavelength contained in the range of 670–720 nm,

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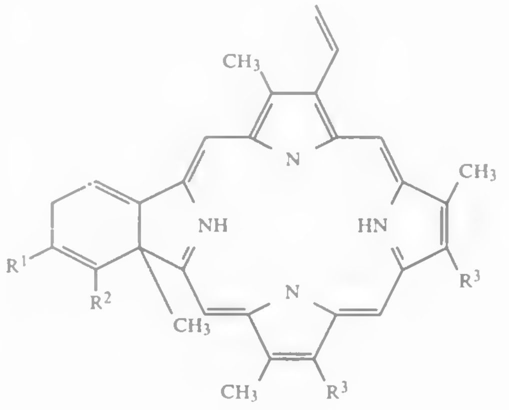
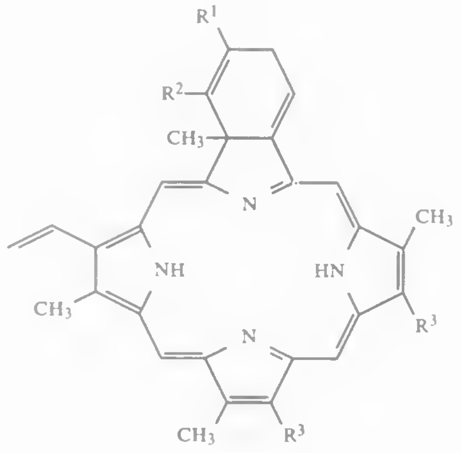
wherein the Gp is selected from the group consisting of

-continued



1



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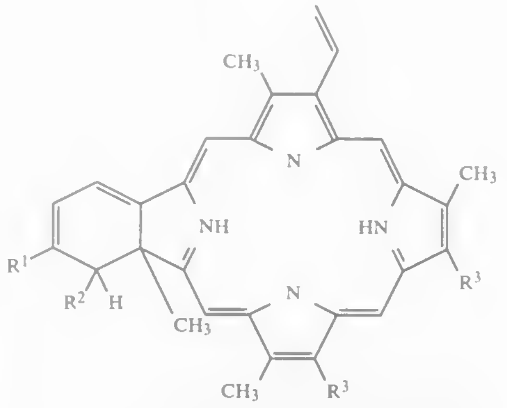

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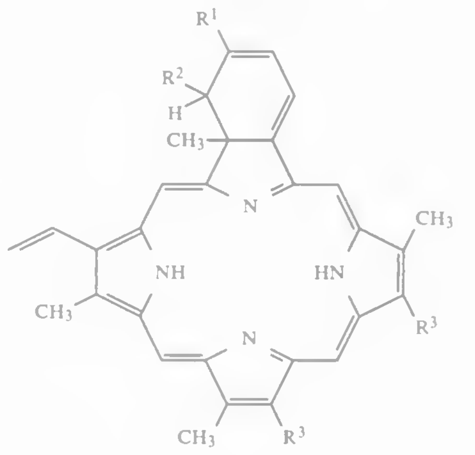

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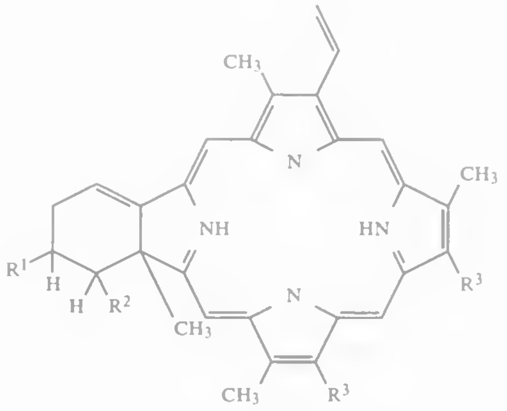

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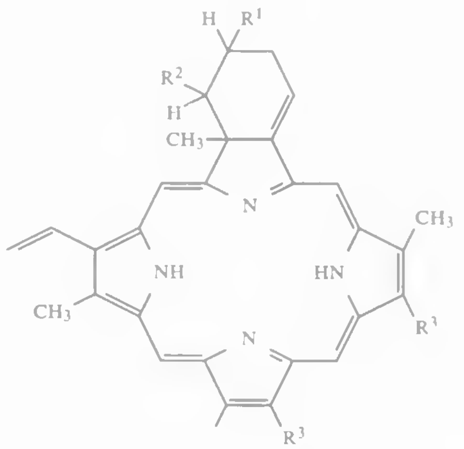
and



6

wherein each R^3 is independently [2-carboxyethyl or a derivative thereof] lower alkyl (1-4C) or omegacarboxyalkyl (2-6C) or the esters (1-6C) or amides (1-10C) thereof; and

each R^1 and R^2 is independently selected from the group consisting of carboxy, carbalkoxy (1-6C), alkyl (1-6C) sulfone, and aryl.

4,883,791

25S,26-DIHYDROXYCHOLECALCIFEROL IN THE TREATMENT OF HYPERCALCITRIOLEMIC DISEASE STATES

Charles Y. C. Pak, Dallas, Tex.; Milan R. Uskokovic, Upper Montclair, N.J., and Joseph E. Zerwekh, Ovilla, Tex., assignors to Board of Regents, The University of Texas System, Austin, Tex. and Hoffman-LaRoche, Inc., Nutley, N.J.

Filed Sep. 21, 1987, Ser. No. 99,191

Int. Cl.^{4} A61K *31/59*

U.S. Cl. 514—167 **7 Claims**

1. A method for the treatment of hypercalcitriolemic disease states which comprises administering an effective amount of 25S,26-dihydroxycholecalciferol to a host in need of such treatment.

4,883,792

STEROID CREAM FORMULATION

Peter Timmins, 6 Copse Grove, Irby, Wirral, Merseyside, L61 4YP, and Nicholas I. Payne, 50 Romsey Avenue, Fareham, Hants, PO16 9TA, both of United Kingdom

Filed Jan. 17, 1989, Ser. No. 297,159

Int. Cl.^{4} A61K *9/06, 31/58*

U.S. Cl. 514—169 **20 Claims**

1. A tipredane and antifungal agent cream formulation having enhanced chemical and physical stability comprising solubilized tipredane, and a vehicle comprising a solubilizer for tipredane, water, at least one emulsifier which includes glyceryl monostearate, at least one buffer, a high melting point wax to impart desired consistency and heat storage stability to the cream formulation, one or more emollients including isopropyl stearate or isopropyl palmitate, and mixtures thereof with one or more metal chelating agents, and mixtures thereof with one or more lubricants, and mixtures thereof with one or more antioxidants or preservatives, and mixtures thereof with one or more antifungal agents, wherein said antifungal agent is amphotericin B, nystatin, griseofulvin, miconazole, ketoconazole, tioconazole, econazole or clotrimazole.

4,883,793

HYDRAZINOCARBONYLOXYLABDANES FOR TREATING CARDIAC FAILURE

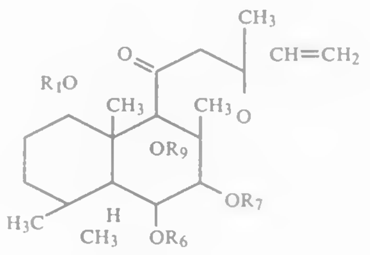
Raymond W. Kosley, Jr., Bridgewater, N.J., and Gerard J. O'Malley, Newton, Pa., assignors to Hoechst-Roussel Pharmaceuticals Inc., Somerville, N.J.

Filed May 9, 1988, Ser. No. 191,457

Int. Cl.^{4} A61K *31/54;* **C07D** *405/12*

U.S. Cl. 514—228.2 **22 Claims**

1. A compound of the formula

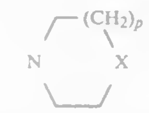


wherein:

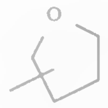
(a) R_1 and R_9 are hydrogen;

(b) R_1 and R_9 taken together form a group of the formula CO, a group of the formula SO or a group of the formula $CHNR_2R_3$ wherein R_2 and R_3 are loweralkyl;

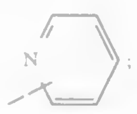
(c) R_6 and R_7 are independently hydrogen, a group of the formula COR_{22} wherein R_{22} is hydrogen or loweralkyl, or a group of the formula $CONR_4Z$ wherein R_4 is hydrogen or loweralkyl and Z is a group of the formula NR_5R_8 or a group of the formula $N{=}CR_{10}R_{11}$ wherein R_5 and R_8 are independently hydrogen, loweralkyl or a group of the formula COR_{12} wherein R_{12} is loweralkyl or a group of the formula $(CH_2)_nNR_{23}R_{24}$ wherein R_{23} and R_{24} are loweralkyl and n is an integer from 2 to 5; R_5 and R_8 taken together with the nitrogen atom to which they are attached form a group of the formula



wherein X is O, S or a group of the formula CHR_{13} wherein R_{13} is hydrogen, loweralkyl or a group of the formula OR_{14} wherein R_{14} is hydrogen, loweralkyl or a group of the formula COR_{15} wherein R_{15} is loweralkyl and p is 0 or 1; R_{10} is hydrogen, loweralkyl or hydroxyloweralkyl; R_{11} is loweralkyl, loweralkenyl, hydroxyloweralkyl, a group of the formula

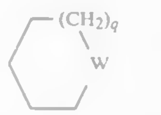


or a group of the formula



;

and R_{10} and R_{11} taken together with the carbon atom to which they are attached form a group of the formula



wherein W is O, S, a group of the formula NR_{19} wherein R_{19} is hydrogen or loweralkyl or a group of the formula CHR_{16} wherein R_{16} is hydrogen, loweralkyl or a group of the formula OR_{17} wherein R_{17} is hydrogen, loweralkyl or a group of the formula COR_{18}, wherein R_{18} is loweralkyl and q is 0 or 1, with the proviso that either R_6 or R_7 is a group of the formula $CONR_4Z$ wherein R_4 and Z are as above; or an optical or geometrical isomer thereof, or a pharmaceutically acceptable salt thereof.

4,883,794

PYRROLO(1,2-B)CINNOLINES

R. Russell L. Hamer, Far Hills; Richard C. Effland, and Joseph T. Klein, both of Bridgewater, all of N.J., assignors to Hoechst-Roussel Pharmaceuticals, Inc., Somerville, N.J.

Division of Ser. No. 100,700, Sep. 24, 1987, Pat. No. 4,800,203.

This application Dec. 19, 1988, Ser. No. 286,396

Int. Cl.^{4} A61D *31/50;* **C07D** *487/04*

U.S. Cl. 514—248 **1 Claim**

1. A method of treating a patient in need of relief from a memory dysfunction characterized by decreased cholinergic function which comprises administering to the patient an effective amount of a compound having the formula

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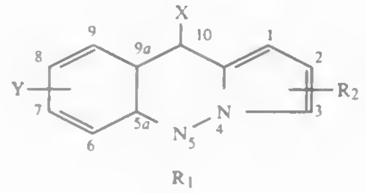


where R_1 when present is hydrogen, loweralkyl, arylloweralkyl or $—CH_2CO_2C_2H_5$; R_2 is hydrogen, loweralkyl, arylloweralkyl, chlorine, bromine, iodine, formyl, nitro, $—CH═CR_3R_4$ or $—CH_2CHR_3R_4$, R_3 and R_4 being independently hydrogen, loweralkyl, aryl or arylloweralkyl; X is oxygen, amino, loweralkylamino, arylloweralkylamino or methoxy; and Y is hydrogen, fluorine, chlorine, bromine, iodine, trifluoromethyl or nitro, the term aryl in each occurrence signifying a phenyl group having 0, 1, 2 or 3 substituents each of which being independently loweralkyl, loweralkoxy, halogen, CF_3, NO_2 or CN; or a pharmaceutically acceptable acid addition salt thereof.

4,883,795

PIPERAZINYL-HETEROCYCLIC COMPOUNDS

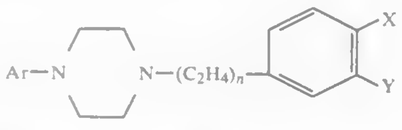
John A. Lowe, III, Stonington, and Arthur A. Nagel, Gales Ferry, both of Conn., assignors to Pfizer Inc., New York, N.Y.

Division of Ser. No. 146,886, Jan. 22, 1988, Pat. No. 4,831,031. This application Jan. 23, 1989, Ser. No. 300,995

Int. Cl.⁴ A61K *31/495;* **C07D** *263/58, 235/26, 413/12*

U.S. Cl. 514—253 16 Claims

1. A compound of the formula



or a pharmaceutically acceptable acid addition salt thereof, wherein

- Ar is naphthyl optionally substituted by fluoro, chloro, trifluoromethyl, methoxy, cyano or nitro; quinolyl; 6-hydroxy-8-quinolyl; isoquinolyl; quinazolyl; benzothiazolyl; benzothiadiazolyl; benzotriazolyl; benzoxazolyl;, benzoxazolonyl; indolyl; indanyl optionally substituted by one or two fluoro; 3-indazolyl optionally substituted by 1-trifluoromethylphenyl; or phthalazinyl;
- n is 1 or 2; and
- X and Y together with the phenyl to which they are attached form quinolyl; 2-hydroxyquinolyl; benzothiazolyl; 2-aminobenzothiazolyl; benzoisothiazolyl; indazolyl; 2-hydroxyindazolyl; indolyl; spiro; oxindolyl optionally substituted by one to three of $(C_1–C_3)$alkyl, or one of chloro, fluoro or phenyl, said phenyl optionally substituted by one chloro or fluoro; benzoxazolyl; 2-aminobenzoxazolyl; benzoxazolonyl; 2-aminobenzoxazolinyl; benzothiazolonyl; benzoimidazolonyl; or benzotriazolyl.

4,883,796

OXIME ETHERS OF 2,6-DIOXABICYCLO(3.3.0)OCTANONES, AND COMPOSITIONS AND METHODS FOR TREATMENT OF A CARDIAC DISEASE OR CIRCULATORY WITH THEM

Matyas Leltold, Biberach, and Peter Stoss, Illertissen, both of Fed. Rep. of Germany, assignors to Heinrich Mack Nachf., Illertissen, Fed. Rep. of Germany

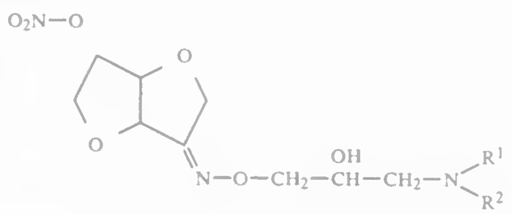
Filed Feb. 2, 1988, Ser. No. 151,336

Claims priority, application Fed. Rep. of Germany, Feb. 13, 1987, 3704604

Int. Cl.⁴ A61K *31/34, 31/50, 31/52;* **C07D** *493/04*

U.S. Cl. 514—253 8 Claims

1. Oxime ethers of 2,6-dioxabicyclo[3.3.0]octanones of the formula I,



I

in which

- R^1 and R^2 are the same or different and are selected from
  - (a) hydrogen,
  - (b) a straight-chain or branched alkyl group with 1–6 C-atoms,
  - (c) an ω-theophyllin-7-yl-$C_2–C_3$-alkyl agroup,
  - (d) an unsubstituted or substituted 2,3-dihydrobenzo[1,4-]dioxin-2-yl methyl group,
  - (e) a benzyl group, or

2 (f) R^1 and R^2, when taken together with the nitrogen atom to which they are attached, are piperazine, optionally substituted by alkyl, phenyl or methoxyphenyl; theophyllin-7-yl; or theobromin-1-yl; and the salts of inorganic or organic acids.

4,883,797

DERIVATIVES OF PIPERAZINE, METHOD FOR MAKING THE SAME

Rafael Foguet; Jose A. Ortiz; Santiago Gubert; Manuel M. Raga, and Aurelio Sacristan, all of Barcelona, Spain, assignors to Ferrer Interuacional, S.A., Barcelona, Spain

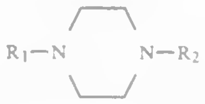
Continuation of Ser. No. 786,169, Oct. 9, 1985, abandoned, which is a continuation of Ser. No. 504,846, Jun. 17, 1983, abandoned. This application Jan. 7, 1988, Ser. No. 143,214

Claims priority, application Spain, Jun. 17, 1982, 514.340

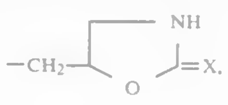
Int. Cl.⁴ A61K *31/495;* **C07D** *405/06*

U.S. Cl. 514—255 9 Claims

1. A compound having the formula



wherein R_1 is benzhydryl or cinnamyl, and R_2 is selected from the group consisting of $—CH_2—CR_3═CHR_4$,



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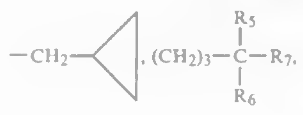


$—CH_2NHR_9$, $—CH_2NH_2$, and $—COR_{10}$,

- wherein R_3 is hydrogen or chloromethyl,
- R_4 is hydrogen, chloromethyl or carbethoxy,
- R_5 and R_6 taken together are oxygen or the sequence $—O—(CH_2)_2—O—$,
- R_7 is methyl, phenyl or 2-thienyl.
- R_9 is 4-sulfamoylbenzoyl
- R_{10} is 4-sulfamoylphenyl and
- X is oxygen or NH.

4,883,798

PHARMACEUTICAL COMPOSITIONS

Lujza Petöcz; István Simonyi; Iván Beck; Gábor Gigler; Márton Fekete; Enikö Szirt née Kiszelly; Attila Mándi; Frigyes Görgényi; András Dietz; Elemér Jákfalvi; Katalin Zukovics née Sümeg; Klára Gadó, and Mária Hegedüs, all of Budapest, Hungary, assignors to EGIS Gyogyszergyar, Budapest, Hungary

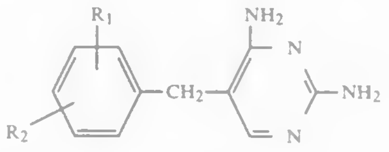
Filed Jul. 20, 1988, Ser. No. 221,529

Claims priority, application Hungary, Jul. 22, 1987, 3375/87

Int. Cl.⁴ A61K *31/505*

U.S. Cl. 514—256 9 Claims

1. A method of treating an individual in need of an analgesic, anti-inflammatory agent, anti-anginal agent and/or antioxidant which comprises administering by oral, rectal or parental means, to an individual in need thereof, an effective amount of at least one 2,4-diamino-5-(substituted benzyl)pyrimidine of the formula



wherein

- R^1 and R^2 may be the same or different and each stands for hydrogen, hydroxy, $C_{1\text{-}6}$ alkoxy, $C_{1\text{-}6}$ alkoxy-$C_{1\text{-}6}$ alkoxy, $C_{2\text{-}6}$ alkenyloxy or phenyl-($C_{1\text{-}3}$ alkoxy), or R^1 and R^2 together form $C_{1\text{-}2}$ alkylenedioxy; with the proviso that at least one of R^1 and R^2 is other than hydrogen and with the further proviso that R^1 and R^2 cannot represent 3,4-dimethoxy substitution,

or a pharmaceutically acceptable acid addition salt thereof.

4,883,799

N-(4-(1-HYDROXY-3-(5,6,7,8-TETRAHYDROPYRIDO(2,3,-D)-PYRIMIDIN-6-YL)PROP-2-YL)BENZOYL)GLUTAMIC ACID DERIVATIVES

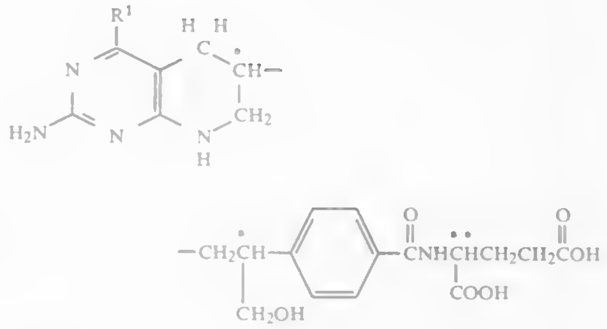
Edward C. Taylor, and Cheol-min Yoon, both of Princeton, N.J., assignors to The Trustees of Princeton University, Princeton, N.J.

Filed Jun. 29, 1988, Ser. No. 213,275

Int. Cl.⁴ A61K *31/505;* **C07D** *425/08*

U.S. Cl. 514—258 6 Claims

1. A compound selected from the group consisting of a glutamic acid derivative having the formula:



in which

- the configuration about the carbon atoms designated C* is (R) or (S), and the configuration about the carbon atom designated C** is (S); and
- the pharmaceutically acceptable salts thereof.

4,883,800

QUINAZOLINE DERIVATIVES AND PROCESS FOR THEIR PRODUCTION

Masashi Hashimoto; Teruo Oku; Yoshikuni Ito; Takayuki Namiki; Kozo Sawada; Chiyoshi Kasahara, and Yukihisa Baba, all of Ibaraki, Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

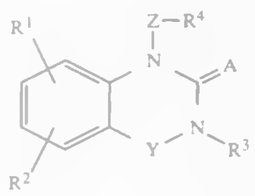
Division of Ser. No. 908,005, Sep. 17, 1986, Pat. No. 4,734,419. This application Dec. 8, 1987, Ser. No. 130,297

Claims priority, application United Kingdom, Oct. 7, 1985, 8524663

Int. Cl.⁴ A61K *31/505;* **C07D** *239/80*

U.S. Cl. 514—259 7 Claims

1. A compound of the formula:



in which

- R^1 and R^2 are each hydrogen, halogen, lower alkoxy or halo(lower)alkyl,
- R^3 is phenyl(lower)alkyl which may have one or more substituent(s) selected from the group consisting of halogen, lower alkoxy, halo(lower)alkyl and lower alkyl,
- R^4 is carboxy or protected carboxy,
- A is sulfur atom,
- Y is carbonyl, thiocarbonyl or sulfonyl and
- Z is lower alkylene, and pharmaceutically acceptable salts thereof.

4,883,801

XANTHINE DERIVATIVE PEST CONTROL AGENTS

James A. Nathanson, Wellesley, Mass., assignor to The General Hospital Corporation, Boston, Mass.

Continuation-in-part of Ser. No. 648,086, Sep. 7, 1984, abandoned. This application Aug. 18, 1986, Ser. No. 898,748

Int. Cl.⁴ A01N *43/90*

U.S. Cl. 514—263 18 Claims

1. A method of controlling a phosphodiesterase-containing invertebrate pest which comprises bringing into contact with said pest a pest-controlling amount of a xanthine derivative having the general formula:

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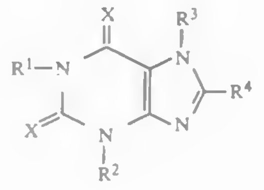
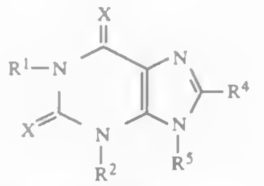


or



or the acid addition salts thereof, wherein

X is oxygen or sulfur; and

R^1, R^2, R^3, R^4 and R^5 are selected from hydrogen; aliphatic hydrocarbons having 1–8 carbon atoms and cycloaliphatic hydrocarbons having 3–8 carbon atoms; aliphatic hydrocarbons having 1–8 carbon atoms and cycloaliphatic hydrocarbons having 3–8 carbon atoms substituted with 1–3 halogen atoms, C_1–C_4 alkyl, or hydroxy; alkoxy having 1–6 carbon atoms; phenyl; naphthyl; halo, hydroxy, or C_1–C_4 alkyl-substituted phenyl or naphthyl; or phenoxy;

with the proviso that for compound I, at least one of R^1, R^2,R^3 and R^4 is other than hydrogen, methyl and ethyl, and

with the further proviso that said compound has a V_{max} of more than 50 and an EC_{50} of no more than 3, where V_{max} is expressed as the percent inhibition of feeding at a 3% (gm/100 ml) concentration of spray and EC_{50} is defined as the spray concentration (gm/100 ml) required to cause a 50% inhibition of feeding.

4,883,802

4-PIPERIDINECARBOXAMIDE DERIVATIVES

Kunihiro Ninomiya; Ken-Ichi Saito, both of Machida; Shuji Morita; Akihiro Tobe, both of Yokohama, and Issei Nitta, Machida, all of Japan, assignors to Mitsubishi Kasei Corporation, Tokyo, Japan

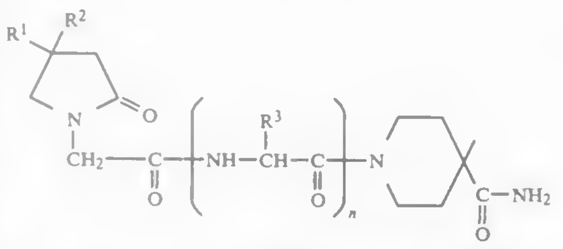
Filed Sep. 9, 1988, Ser. No. 243,322

Claims priority, application Japan, Sep. 16, 1987, 62/231591

Int. Cl.⁴ A61K *31/395;* C07D *401/12, 401/14*

U.S. Cl. 514—278 **3 Claims**

1. 4-Piperidinecarboxamide derivatives represented by the general formula (I):

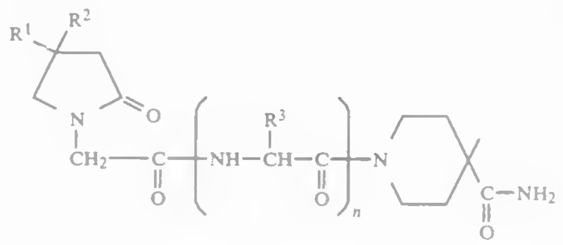


(I)

wherein each R^1 and R^2 represents a hydrogen atom, or R^1 together with R^2 represents a cyclopentanespiro or cyclohexanespiro group; R^3 represents a hydrogen atom, an alkyl group having 1 to 4 carbon atoms, an aralkyl group or an indolylalkyl group; and n is an integer of 1 or 2.

3. A pharmaceutical composition useful as the agent for improving the impaired brain function comprising as the effective ingredient at least one of 4-piperidinecarboxamide derivatives represented by the general formula (I):

I



(I)

II

wherein each R^1 and R^2 represents a hydrogen atom, or R^1 together with R^2 represents a cyclopentanespiro or cyclohexanespiro group; R^3 represents a hydrogen atom, an alkyl group having 1 to 4 carbon atoms, an aralkyl group or an indolylalkyl group; and n is an integer of 1 or 2.

4,883,803

TREATMENT OF ANXIETY

Michael B. Tyers, Welwyn, England, assignor to Glaxo Group Limited, London, England

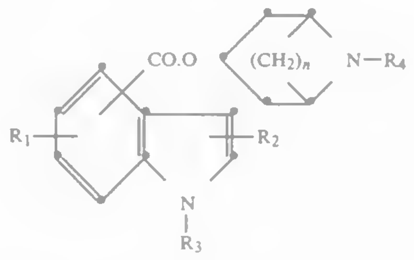
Continuation of Ser. No. 888,467, Jul. 23, 1986, abandoned. This application Oct. 19, 1988, Ser. No. 259,719

Claims priority, application United Kingdom, Jul. 24, 1985, 8518658

Int. Cl.⁴ A61K *31/44*

U.S. Cl. 514—304 **3 Claims**

1. A method for the treatment of anxiety in a human or animal subject suffering from or susceptible to anxiety which comprises administering to the human or animal subject an effective amount for the treatment of anxiety in said subject of a compound of formula (II)



(II)

wherein

R_1 and R_2 independently represent hydrogen, halogen, C_{1-4}alkoxy, hydroxy, amino, C_{1-4}alkylamino, di(C_{1-4})alkylamino, mercapto or C_{1-4}alkylthio;

R_3 represents hydrogen, C_{1-4}alkyl, C_{3-5}alkenyl, aryl or aralkyl;

R_4 represents hydrogen, C_{1-7}alkyl, C_{3-5}alkenyl or aralkyl; n is 2 or 3;

the free valence is attached to either fused ring and the azabicyclic ring is in either the exo or endo configuration; or an acid addition salt or quaternary ammonium salt thereof.

4,883,804

AROMATIC COMPOUNDS

Francis Ince, Loughborough; Brian Springthorpe, Shepshed, and John Dixon, Melton Mowbray, all of England, assignors to Fisons plc, Ipswich, England

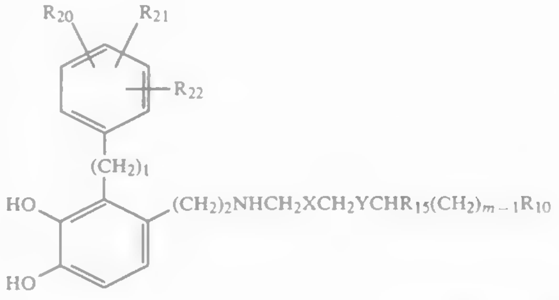
Filed Nov. 19, 1986, Ser. No. 932,473

Claims priority, application United Kingdom, Nov. 20, 1985, 85/28605; Jul. 10, 1986, 86/16792; Jul. 10. 1986, 86/16793; Jul. 10, 1986, 86/16794

Int. Cl.⁴ C07C *87/28;* C07D *239/02;* A01N *37/30;* A61K *31/205*

U.S. Cl. 514—357 **10 Claims**

1. A compound of formula I,



I

in which X represents a C2 to 8 alkylene chain optionally interrupted by a double bond or by $S(O)_n$, wherein n is 0, 1 or 2;

Y represents O or NH,

l and m each independently represent 2, 3 or 4,

R_{10} represents phenyl substituted by one or more substituents R_{23}, which may be the same or different; or R_{10} represents pyridyl, a saturated carbocyclic group, alkyl C 1 to 6 or hydrogen,

R_{15} represents hydrogen or together with R_{23} forms a $(CH_2)_p$ chain, wherein p represents 0, 1 or 2;

R_{20}, R_{21}, R_{22} and R_{23}, which may be the same or different, independently represent hydrogen, alkyl C 1 to 6, NHR_{25}, SH, NO_2, halogen, CF_3, SO_2R_{30}, CH_2OH or OH, wherein R_{25} *represents hydrogen, alkyl C* 1 to 6, alkanoyl C 1 to 6 or SO_2 alkyl C 1 to 6, and R_{30} represents alkyl C 1 to 6 or NH_2,

provided that thwn X represents an uninterrupted C4 alkylene chain, Y represents NH, m represents 2, l represents 2, R_{10} represents phenyl, R_{15} represents hydrogen, and R_{21}, R_{22} and R_{23} represent hydrogen, then R_{20} does not represent hydrogen or 4-OH,

and pharmaceutically acceptable salts and solvates thereof.

10. A method of treatment of renal failure which comprises administration of an effective amount of a compound according to claim 1 to a patient suffering from such a condition.

4,883,805

STABLE, INJECTABLE SOLUTIONS OF VINCA DIMER SALTS

Rodney Kasan, Raanana; Haim Yellin, Ramat-Gan, and Michael Seiffe, Raanana, all of Israel, assignors to Teva Pharmaceutical Industries Ltd., Israel

Filed Jul. 28, 1987, Ser. No. 78,805

Claims priority, application Israel, Jul. 6, 1987, 83086

Int. Cl.⁴ A61K *31/435*

U.S. Cl. 514—411 **15 Claims**

1. A stable, injectable pharmaceutical composition comprising an aqueous solution comprising per 1 ml of solution:

from about 0.2 to about 2 mg of one or more pharmaceutically acceptable vinca dimer salts;

from about 0.1 to about 1.0 mg of a pharmaceutically acceptable ethylenediamine-tetraacetic acid (EDTA) salt;

acetate buffer in an amount necessary to maintain said aqueous solution at a pH of from about 3.0 to about 5.5; and

from about 1.5 to about 2.5 mg of a preservative selected from methyl paraben, propyl paraben and mixtures thereof

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4,883,806

CERTAIN CYCLOPROPANEDICARBOXYLATES WITH AN UNSATURATED SIDE CHAIN HAVING INSECTICIDAL ACTIVITY

Jacques Martel, Bondy; Jean Tessier, Vincennes, and Andre Teche, Paris, all of France, assignors to Roussel Uclaf, Paris, France

Division of Ser. No. 756,396, Jul. 17, 1985, Pat. No. 4,732,903, which is a division of Ser. No. 550,081, Nov. 8, 1983, Pat. No. 4,542,142, which is a continuation-in-part of Ser. No. 279,076, Jun. 30, 1981, abandoned. This application Sep. 23, 1987, Ser. No. 100,284

Claims priority, application France, Jul. 2, 1980, 83 01344; Nov. 22, 1982, 80 14722; Jan. 28, 1983, 82 19515

Int. Cl.⁴ C07D *209/52;* A61K *31/40*

U.S. Cl. 514—417 **3 Claims**

1. A compound selected from the group consisting of (1,3,4,5,6,7-hexahydro-1,3-dioxo-2H-isoindol-2-yl)-methyl (1R,cis, ΔZ) 2,2-dimethyl-3-[3-oxo-3-(2,2,2-trifluoroethoxy)-1-propenyl]-cyclopropane carboxylate, (1,3,4,5,6,7-hexahydro-1,3-dioxo-2H-isoindol-2-yl)-methyl (1R, cis, ΔZ) 2,2-dimethyl-3-[3-oxo-3-(2,2,2-trifluoro-1-(trifluoromethyl)-ethoxy-1-propenyl] cyclopropane carboxylate, (1,3,4,5,6,7-hexahydro-1,3-dioxo-2H-isoindol-2-yl)-methyl (1R, cis, ΔZ) 2,2-dimethyl-3-[3-oxo-3-cyclopropylmethoxy-1-propenyl]-cyclopropane carboxylate, (1,3,4,5,6,7-hexahydro-1,3-dioxo-2H-isoindol-2-yl)-methyl (1R, cis, ΔZ) 2,2-dimethyl-3-[3-oxo-3-propoxy-1-propenyl]-cyclopropane carboxylate, (1,3,4,5,6,7-hexahydro-1,3-dioxo-2H-isoindol-2-yl)-methyl (1R, cis, ΔZ) 2,2-dimethyl-3-[3-oxo-3-(1-methylethoxy)-1-propenyl]-cyclopropane carboxylate and (1,3,4,5,6,7-hexahydro-1,3-dioxo-2H-isoindol-2-yl)-methyl (1R, cis, ΔZ) 2,2-dimethyl-3-[3-oxo-3-methoxy-1-propenyl]-cyclopropane carboxylate.

3. A method of combatting an infection caused by acariens in warm-blooded animals comprising contacting warm-blooded animals with an anti-acaricidally effective amount of a compound of claim 1.

4,883,807

1,2,5,6-TETRAHYDROPYRIDYL TRIAZOLES AND TETRAZOLES USEFUL AS FUNGICIDES

John M. Clough, Marlow; Christopher R. A. Godfrey, Bracknell; Paul J. de Fraine, Wokingham, and Brian K. Snell, Reading, all of England, assignors to Imperial Chemical Industries PLC, London, United Kingdom

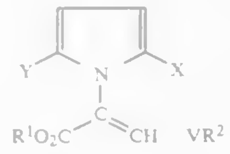
Filed Dec. 1, 1987, Ser. No. 127,769

Claims priority, application United Kingdom, Dec. 16, 1986, 8630027; Mar. 24, 1987, 8706950

Int. Cl.⁴ A61K *31/40;* C07D *207/50, 207/337*

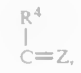
U.S. Cl. 514—427 **4 Claims**

1. A compound of formula (I):



(I)

and stereoisomers and salts thereof, wherein R^1 and R^2, which are the same or different, are C_{1-6} alkyl; V is oxygen or sulphur; Y is hydrogen, C_{1-6} alkyl, cyano, nitro or halogen; X is



$$\overset{R^4}{\overset{|}{C}}=Z,$$

Z is NOR^5 or

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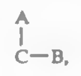


$$\begin{array}{l} A \\ | \\ C-B, \end{array}$$

A is CO_2R^6, COR^7, cyano, nitro or acylamino; B is hydrogen, C_{1-6} alkyl, phenyl, CO_2R^8, COR^9, cyano, nitro or acylamino; R^4 is CO_2R^3 or R^{17}; R^3 is C_{1-6} alkyl; R^5 to R^9 and R^{17}, which are the same or different, are hydrogen, C_{1-6} alkyl, C_{3-6} cycloalkyl, C_{3-8} cycloalkyl-(C_{1-6})alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, phenyl or phenyl(C_{1-6})alkyl; any alkyl, cycloalkyl or cycloalkylalkyl moiety being unsubstituted or substituted with hydroxy, halogen, C_{1-4} alkoxy or C_{1-4} alkoxycarbonyl, any alkynyl or alkenyl moeity being unsubstituted or substituted with phenyl, and any phenyl being unsubstituted or substituted with halogen, hydroxy, C_{1-6} alkyl, methoxy, trifluoromethyl or trifluoromethoxy.

4,883,808

CONDENSATION PRODUCTS OF CYCLIC DIKETONES AND ASCORBIC ACID AS IMMUNOMODULATORY AGENTS

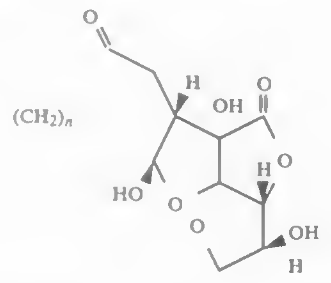
Gabor B. Fodor; Kawporn Sussangkarn, both of Morgantown, W. Va., and Robert W. Veltri, Gaithersburg, Md., assignors to American Biotechnology Company, Rockville, Md.

Continuation of Ser. No. 90,214, Aug. 27, 1987, abandoned. This application Jul. 20, 1988, Ser. No. 222,350

Int. Cl.⁴ A61K *31/365;* C07D *493/14*

U.S. Cl. 514—468 28 Claims

1. A compound of the formula:



wherein n is 1, 2 or 3.

11. A method of stimulating the immune response of a mammal in need of such stimulation which comprises administering an amount which is effective to stimulate such response of <3,4'>-hemiketal-<3,6>-ketal of 2-(1',4'-diketo-3'-cyclohexyl)-2-hydroxy-3-keto-4-dihydroxyethylbutyrolactone.

4,883,809

7-OXABICYCLOHEPTANE IMINO INTERPHENYLENEOXY SUBSTITUTED PROSTAGLANDIN ANALOGS USEFUL IN THE TREATMENT OF THROMBOTIC AND VASOSPASTIC DISEASE

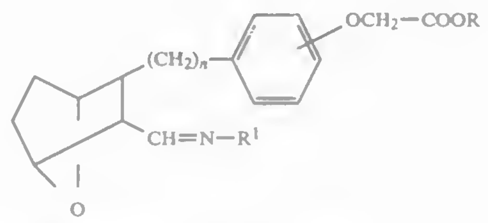
Raj N. Misra, 12 Eaton Pl., Hopewell, N.J. 08525

Filed Nov. 17, 1988, Ser. No. 272,378

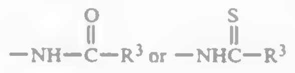
Int. Cl.⁴ A61K *31/34;* C07D *307/00*

U.S. Cl. 514—469 20 Claims

1. A compound having the formula



including all stereoisomers thereof, wherein
n is 1 or 2;
R is H, alkali metal or lower alkyl; and
R^1 is $-OR^2$,



$$-NH-\overset{O}{\overset{\|}{C}}-R^3 \text{ or } -NH\overset{S}{\overset{\|}{C}}-R^3$$

wherein
R^2 is lower alkyl, aryl, aralkyl, alkanoyl or aroyl; and
R^3 is lower alkyl, aryl, aralkyl, alkoxy, aryloxy, aralkoxy, alkylamino, arylamino, or aralkylamino;
wherein lower alkyl or alkyl by itself or as part of another group may be unsubstituted or substituted with halo, aryl, alkyl-aryl, haloaryl, cycloalkyl or alkylcycloalkyl;
aryl by itself or as part of another group may be unsubstituted or substituted with 1 or 2 lower alkyl groups, 1 or 2 halogens and/or 1 or 2 lower alkoxy groups; and cycloalkyl by itself or as part of another group may be unsubstituted or substituted with 1 or 2 halogens, 1 or 2 lower alkyl groups and/or 1 or 2 lower alkoxy groups.

4,883,810

ETHERS

Salvador Moncada, West Wickham, England, assignor to Burroughs Wellcome Co., Research Triangle Park, N.C.

Division of Ser. No. 712,788, Mar. 18, 1985, which is a continuation of Ser. No. 795,524, May 10, 1977, Pat. No. 4,539,333. This application Aug. 29, 1988, Ser. No. 237,984

Claims priority, application United Kingdom, Aug. 17, 1976, 34151; Sep. 3, 1976, 36547

The portion of the term of this patent subsequent to Sep. 3, 2002, has been disclaimed.

Int. Cl.⁴ A61K *31/557, 31/34*

U.S. Cl. 514—469 6 Claims

1. A method of treating a body portion for transplant which comprises contacting said body portion with prostacyclin.

4,883,811

7-OXABICYCLOHEPTANE IMINO INTERPHENYLENE SUBSTITUTED PROSTAGLANDIN ANALOGS USEFUL IN THE TREATMENT OF THROMBOTIC DISEASE

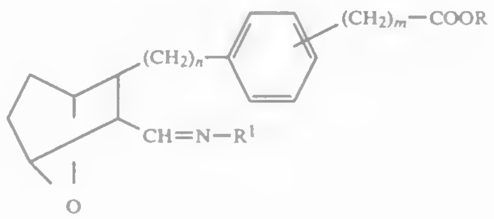
Raj N. Misra, 12 Eaton Pl., Hopewell, N.J. 08525, and Steven E. Hall, 57 Colleen Cir., Trenton, N.J. 08638

Filed Nov. 17, 1988, Ser. No. 272,373

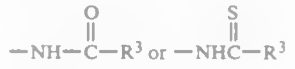
Int. Cl.⁴ A61K *31/34;* C07D *307/00*

U.S. Cl. 514—469 20 Claims

1. A compound having the formula



including all stereoisomers thereof, wherein
n is 1 or 2; m is 1 or 2;
R is H, alkali metal or lower alkyl; and
R^1 is $-OR^2$,



$$-NH-\overset{O}{\overset{\|}{C}}-R^3 \text{ or } -NH\overset{S}{\overset{\|}{C}}-R^3$$

wherein
R^2 is lower alkyl, aryl, aralkyl, cycloalkylalkyl, alkanoyl or aroyl and
R^3 is lower alkyl, aryl, aralkyl, alkoxy, aryloxy, aralkoxy, alkylamino, arylamino, cycloalkylalkylamino or aralkylamino;
wherein lower alkyl or alkyl by itself or as part of another group may be unsubstituted or substituted with halo, alkoxy, aryl, alkyl-aryl, haloaryl, cycloalkyl or alkylcycloalkyl;
aryl by itself or as part of another group may be unsubstituted or substituted with 1 or 2 lower alkyl groups, 1 or 2 halogens and/or 1 or 2 lower alkoxy groups;
cycloalkyl by itself or as part of another group may be unsubstituted or substituted with 1 or 2 halogens, 1 or 2 lower alkyl groups and/or 1 or 2 lower alkoxy groups.

4,883,812

TREATMENT OF HYPERTENSION USING PROSTACYCLIN

Salvador Moncada, West Wickham, England, assignor to Burroughs Wellcome Co., Research Triangle Park, N.C.

Continuation of Ser. No. 712,788, Mar. 18, 1985, which is a continuation of Ser. No. 795,524, May 10, 1977, Pat. No. 4,539,333. This application Aug. 29, 1988, Ser. No. 237,987

Claims priority, application United Kingdom, Aug. 17, 1976, 34151; Sep. 3, 1976, 36547

The portion of the term of this patent subsequent to Sep. 3, 2002, has been disclaimed.

Int. Cl.⁴ A61K *31/557, 31/34*

U.S. Cl. 514—469 4 Claims

1. A method of treating a mammal for hypertension which comprises parenterly administering an effective anti-hypertensive amount of prostacyclin to said mammal.

4,883,813

METHOD OF TREATING INFLAMMATION IN MAMMALS UTILIZING KETOBUTYROLACTONES AND FURYLBUTYROLACTONES

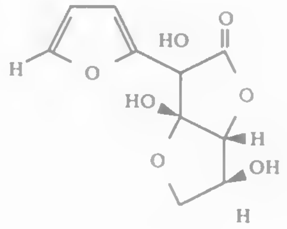
Peter E. Maxim, Germantown, and Robert W. Veltri, Gaithersburg, both of Md., assignors to American Biotechnology Company, Rockville, Md.

Filed Aug. 24, 1988, Ser. No. 236,003

Int. Cl.⁴ A61K *31/34*

U.S. Cl. 514—470 11 Claims

1. A method of treating inflammation in a mammal in need of such treatment which comprises administration to said mammal of an antiinflammatory amount of a compound selected from the group represented by the formulas:



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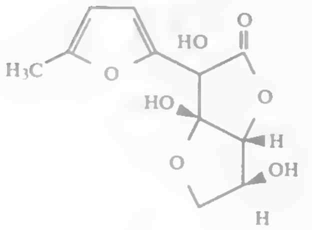
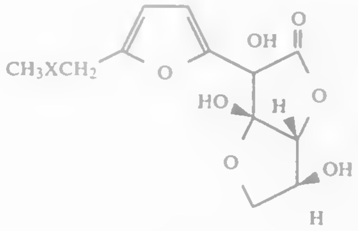
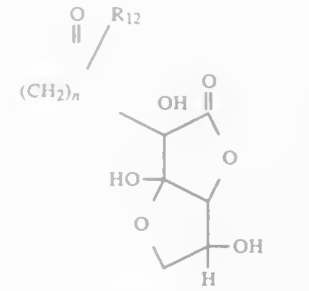
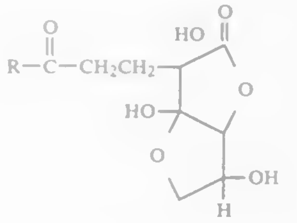






and



wherein x is sulfur or oxygen; R is lower alkyl; n is 2, 3, or 4; R_{12} is hydrogen, lower alkyl, or lower haloalkyl.

4,883,814

1-ARYLOXY-3-(SUBSTITUTED ALKYLAMINO)-2-PROPANOLS AND USE AS β-BLOCKER

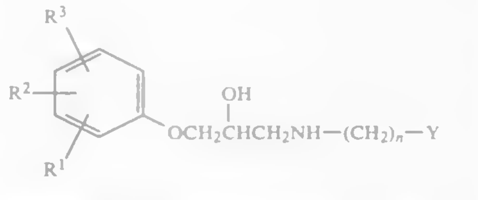
John J. Baldwin, Gwynedd Valley, and Gerald S. Ponticello, Lansdale, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 54,094, May 18, 1987, Pat. No. 4,766,541. This application Jul. 7, 1988, Ser. No. 216,058

Int. Cl.⁴ A61K *31/275;* C07C *43/02*

U.S. Cl. 514—524 6 Claims

1. A compound of structural formula



or a pharmaceutically acceptable salt thereof, wherein:
Y is a di$(C_{1-3}$alkyl)amino

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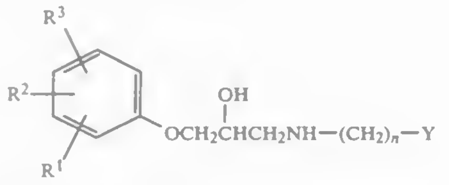
R^1 is hydrogen;
R^2 is hydrogen;
R^3 is cyano; and
n is 2, 3 or 4.

3. A pharmaceutical β-blocking composition comprising a pharmaceutical carrier and an effective β-blocking amount of a compound of structural formula:



or a pharmaceutically acceptable salt thereof, wherein:
Y is a di(C_{1-3}alkyl)amino
R^1 is hydrogen;
R^2 is hydrogen;
R^3 is cyano; and
n is 2, 3 or 4.

4,883,815

HYDROCINNAMIC ACID DERIVATIVES

Werner Aschwenden, Ettingen; René Imhof, Gipf-Oberfrick, both of Switzerland; Roland Jakob-Roetne, Inzlingen, Fed. Rep. of Germany, and Emilio Kyburz, Reinach, Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

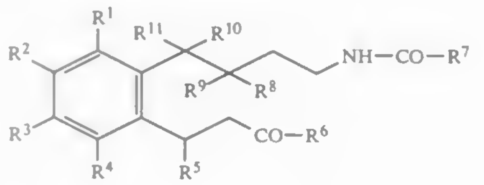
Filed Jul. 5, 1988, Ser. No. 215,003

Claims priority, application Switzerland, Jul. 21, 1987, 2764/87

Int. Cl.⁴ A61K *31/24;* C07C *103/84*

U.S. Cl. 514—541 **32 Claims**

1. A compound of the formula



I

wherein
one or two or the symbols R^1 to R^4 are halogen or methoxy and the others are hydrogen;
R^5 is hydrogen or phenyl;
R^6 is a residue of the formula

$-OR^{12}$ or $-NR^{13}R^{14}$;
(a) (b)

R^7 is (C_1–C_4)-alkyl, (C_2–C_5)-alkanoylamino-(C_2–C_5)-alkyl, amino or (C_1–C_4)-alkoxyphenyl;
R^8 and R^9 each, independently, are hydrogen or (C_1–C_4)-alkyl;
R^{10} is hydrogen and R_{11} is hydroxy or R^{10} and R^{11} taken together are oxo;
R^{12} is hydrogen, (C_1–C_{10})-alkyl, pyridylmethyl or carbamoylmethyl;
R^{13} is hydrogen, (C_1–C_4)-alkyl and R^{14} is hydrogen, (C_1–C_4)-alkyl, pyridyl, phenyl-(C_1–C_4)-alkyl, carboxy-(C_1–C_4)-alkyl, carbamoyl-(C_1–C_4)-alkyl, (C_1–$C_{\text{-alkoxycarbonyl-}(C_1}$–$C_4$)-alkyl, di-($C_1$–$C_4$)-alkoxycarbonyl-($C_2$–$C_5C_5$)-alkyl, piperidino-($C_2$–$C_4$)-alkyl or halopyridinecarboxamido-(C_2–C_4)-alkyl or R^{13} and R^{14} taken together with the nitrogen atom are 4-(C_1–C_4)-alkyl-piperazin-1-yl,

or a pharmaceutically acceptable salt of a basic compound of formula I with an acid or of an acidic compound of formula I with a base.

4,883,816

ANTIHYPERTENSIVE DERIVATIVES

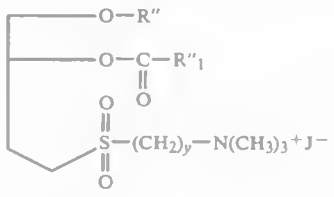
Allan Wissner, Ardsley; Phaik E. Sum, New City, both of N.Y., and Robert E. Schaub, Upper Saddle River, N.J., assignors to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 679,788, Dec. 10, 1984, Pat. No. 4,762,942. This application Feb. 16, 1988, Ser. No. 157,055

Int. Cl.⁴ A61K *31/10;* C07C *147/00*

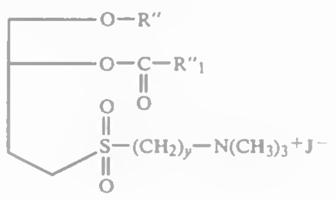
U.S. Cl. 514—546 **6 Claims**

1. A method of treating hypertension in a warm-blooded animal comprising administering to said animal an effective amount of a compound represented by the formula:



wherein
R″ is a C_2–C_{20} alkyl group,
R''_1 is a C_1 to C_4 alkyl group,
y is an integer from 2 to 10, and
J is a pharmacologically acceptable anion.

5. A compound of the formula:



wherein
R″ is a C_2–C_{20} alkyl group,
R''_1 is a C_1 to C_4 alkyl group,
y is an integer from 2 to 10, and
J is a pharmacologically acceptable anion.

4,883,817

RAISING CHICKENS FOR MEAT PRODUCTION WITH KETOISOCAPROATE-CONTAINING FEEDS

Steven L. Nissen, Ames, Iowa, assignor to Iowa State University Research Foundation, Inc., Ames, Iowa

Filed Mar. 2, 1987, Ser. No. 20,606

The portion of the term of this patent subsequent to Aug. 16, 2005, has been disclaimed.

Int. Cl.⁴ A61K *31/19*

U.S. Cl. 514—557 **10 Claims**

1. The method of feeding chickens being raised for meat production to promote the growth of the chickens and to reduce the cholesterol content of the meat, comprising orally administering to said chickens an effective amount of alpha-ketoisocaproate (KIC) as a supplement to their feed diet during a substantial part of their growth period from 0 to 6 weeks of age, said diet containing sufficient leucine-containing protein for the normal requirements of said growing chickens, the amount of KIC administered corresponding to at least 0.05 weight percent (wt. %) of sodium KIC based on the dry weight of the total diet.

4,883,818

ONSET-HASTENED/ENHANCED ANALGESIA

Abraham Sunshine, New York, and Eugene M. Laska, Larchmont, both of N.Y., assignors to Analgesic Associates, Larchmont, N.Y.

Filed Nov. 17, 1987, Ser. No. 121,848

Int. Cl.⁴ A61K *31/19*

U.S. Cl. 514—570 **41 Claims**

1. The method of eliciting an onset-hastened and enhanced analgesic response in a human mammal suffering from pain and in need of such treatment, comprising administering to such organism a unit dosage onset-hastening/enhancing analgesically effective amount of the S(+) fenoprofen enantiomer, and said enantiomer being substantially free of its R(−) fenoprofen antipode.

4,883,819

USE OF A, B AND C PROSTAGLANDINS AND DERIVATIVES THEREOF TO TREAT OCULAR HYPERTENSION AND GLAUCOMA

Laszlo Z. Bito, New York, N.Y., assignor to The Trustees of Columbia University in the City of New York, New York, N.Y.

Continuation-in-part of Ser. No. 892,387, Jul. 31, 1986, abandoned, which is a continuation-in-part of Ser. No. 839,056, Mar. 13, 1986, abandoned. This application Mar. 5, 1987, Ser. No. 22,046

Int. Cl.⁴ A61K *37/08, 31/215*

U.S. Cl. 514—573 **13 Claims**

1. A method for treating ocular hypertension or glaucoma in a subject's eye which comprises topically applying to the surface of the eye with an effective intraocular pressure reducing amount of prostaglandin A (PGA), prostaglandin B (PGB), or prostaglandin C (PGC), applied as the free acid form or as an ester so as to reduce the intraocular pressure of the eye and maintain such reduced intraocular pressure.

4,883,820

METHODS FOR IMPROVING FEED UTILIZATION AND LACTATION IN RUMINANT ANIMALS

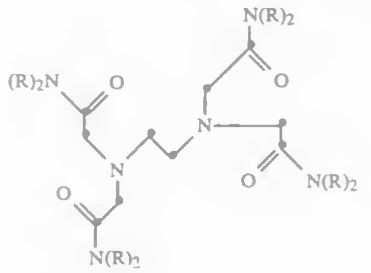
Alan W. White, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 81,063, Aug. 3, 1987, Pat. No. 4,801,618. This application Oct. 25, 1988, Ser. No. 262,374

Int. Cl.⁴ C07C *103/50*

U.S. Cl. 514—616 **6 Claims**

1. A method for improving lactation in lactating ruminant animals comprising administering to said animals a lactation improving amount of a compound of the formula:



wherein each R, independently, represents a straight or branched chain alkyl of one to six carbon atoms, or the physiologically acceptable salts thereof.

4,883,821

AGENT FOR TREATING HYPERURICEMIA

Kouji Nakamoto, Saitama; Nobumichi Morishita, Tokyo, and Masahide Aoyama, Tokyo, all of Japan, assignors to Eisai Co., Ltd., Tokyo, Japan

Filed Mar. 31, 1989, Ser. No. 332,011

Claims priority, application Japan, Apr. 13, 1988, 63-90890

Int. Cl.⁴ A61K *31/165*

U.S. Cl. 514—617 **1 Claim**

1. A method for treating hyperuricemia, which comprises administering to a patient in need thereof, a pharmacologically effective amount of N-(3-(4′-(2″,6″-dimethylheptyl)phenyl)-butanoyl)ethanolamine.

4,883,822

AGENT FOR REGULATING THE MOTIONAL FUNCTION OF GASTROINTESTINAL TRACT

Kohtaro Matsuo, Minoo; Youichirou Ezaki, Neyagawa; Akihiro Tobe, Yokohama; Satoshi Yamazaki; Kozue Enda, both of Machida, and Mariko Kitsukawa, Fujisawa, all of Japan, assignors to Arakawa Chemical Industries, Ltd., Osaka and Mistubishi Kasei Corporation, Tokyo, both of, Japan

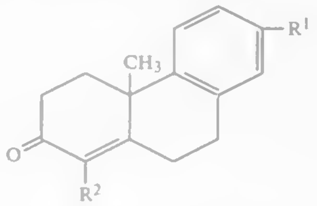
Filed Sep. 23, 1988, Ser. No. 248,087

Claims priority, application Japan, Sep. 25, 1987, 62-240247

Int. Cl.⁴ A61K *31/12*

U.S. Cl. 514—680 **6 Claims**

1. A composition for regulating the motional function of the gastrointestinal tract, comprising a therapeutically effective amount of a 4a-metyl-4,4a,9,10-tetrahydro-2(3H)-phenanthrenone derivative represented by the following formula 1;



(1)

wherein R^1 represents a hydrogen atom, an alkyl group or an alkoxy group and R^2 represents a hydrogen atom or an alkyl group.

4,883,823

SELF-CONTAINED RENEWABLE ENERGY SYSTEM

John H. Perry, Jr., Jupiter, Fla.; Bharat K. Bhatt, Fullerton, Calif.; Jesse Capps, Santa Ana, Calif.; Paul M. Eldridge, Jupiter, Fla.; Leonard Greiner, Sorda Ana, Calif.; Robert W. Lockyer, Jupiter, Fla.; Michelle Martin, Atlanta, Ga.; Raymond R. McNeice, Lake Park, Fla.; Steven M. Misiaszek, Lake Park, Fla.; Stanton S. Perry, Dana Point, Calif.; Thomas F. Sullivan, Lake Worth, Fla., and Paul G. Campbell, North Palm Beach, Fla., assignors to Perry Oceanographics, Inc., Riviera Beach, Fla.

Division of Ser. No. 931,464, Nov. 14, 1986, Pat. No. 4,776,171. This application Apr. 21, 1988, Ser. No. 184,474

Int. Cl.⁴ C07O *27/06;* C07L *31/04*

U.S. Cl. 518—702 **6 Claims**

1. In a process for preparing methanol and an active metal oxide, the process comprising calcining an alkaline earth metal carbonate at elevated temperatures to form the alkaline earth metal oxide and carbon dioxide, admixing the carbon dioxide with a flow of hydrogen gas at a molar ratio of H_2:CO_2 of at least about 3:1 and reacting the H_2 and CO_2 at elevated temperatures, to form a gaseous shift reaction mixture comprising hydrogen, carbon dioxide and carbon monoxide and water vapor; condensing out any water from the gaseous shift reaction mixture to form a synthesis gas mixture having an average molecular weight for methanol synthesis; compressing the substantially water-free synthesis gas mixture to a total pres-

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sure of at least about 500 psig and pre-heating to a temperature of at least about 200° F.; and passing the pressurized and pre-heated water-free shift reaction mixture over a catalyst to form a product mixture comprising methanol and water; the improvement which comprises continuously monitoring the relative proportions of hydrogen gas to carbon dioxide and carbon monoxide in the synthesis gas mixture by a process comprising continuously collecting and measuring the amount of water condensed from the gaseous shift reaction mixture, to determine the amount of hydrogen which reacted with carbon dioxide to form water and carbon monoxide, and controlling the rate of the flow of hydrogen to be admixed with the carbon dioxide to maintain an average molecular weight for the synthesis gas mixture.

4,883,824

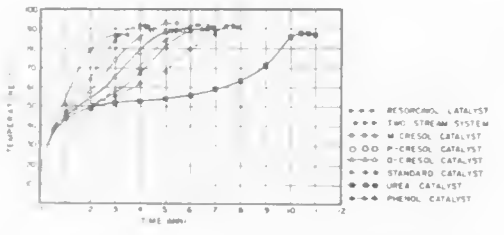
MODIFIED PHENOLIC FOAM CATALYSTS AND METHOD

Paul J. Meunier, Sarnia; James Lunt, Brights Grove, and Edwin J. MacPherson, Sarnia, all of Canada, assignors to Fiberglas Canada, Inc., Ontario, Canada

Continuation of Ser. No. 853,397, Apr. 18, 1986, abandoned. This application Feb. 9, 1989, Ser. No. 310,491

Int. Cl.⁴ C08J *9/14*

U.S. Cl. 521—88 15 Claims



1. A method of making a closed cell phenolic foam material which comprises providing a mixture of a phenol formaldehyde resole resin from which most of any free water has been stripped and having a P/F ratio of from about 1:1.5 to 1:4.5, a surfactant and a blowing agent,

and mixing said mixture with a modified acid catalyst consisting essentially of an aromatic acid, a compound selected from the group consisting of resorcinol, m-cresol, o-cresol and p-cresol, said compound being present in an amount effective to cause a shorter time to peak exotherm than would result if said compound was omitted from said acid catalyst without causing a significant increase in the peak temperature, and a diluent,

and subsequently curing the resultant mixture to yield a closed cell phenolic foam.

4,883,825

PROCESS FOR THE MANUFACTURE OF LOW DENSITY, FLEXIBLE POLYURETHANE FOAMS

Paul M. Westfall, St. Albans; Frank E. Critchfield, South Charleston, and William A. Gill, Hurricane, all of W. Va., assignors to Union Carbide Chemicals and Plastics Company Inc., Danbury, Conn.

Filed Dec. 30, 1987, Ser. No. 139,757

Int. Cl.⁴ C08G *18/14*

U.S. Cl. 521—112 **14 Claims**

1. A process for the manufacture of low density, flexible polyurethane foams which comprises reacting:

(a) a polymer/polyol formed insitu in a polyether polyol having at least 85 percent primary hydroxyl groups, a nominal functionality of at least three, and an ethylene oxide content of from 8 to 30 percent of the polyether polyol;

(b) 0.1 to 5 parts per hundred parts of polyol of a polyhydric material selected from the group consisting of glycerine, trimethylol propane, sorbitol, erythritol, sucrose, simple carbohydrates, and low molecular weight polyethylene oxide polyols which is reactive with isocyanate groups but not more reactive with an isocyanate group than are the primary hydroxyl groups on the polyether polyol (a), said polyhydric material also being sufficiently hydrophillic so as to be at least 40 weight percent soluble in 25° C. water;

(c) water in an amount from 4.0 to 20 parts per hundred parts of polyol;

(d) an organic polyisocyanate; and

(e) 0.001 to 5 percent, based on the weight of (a), b, c and d, of a catalyst for the reaction of (a) and (d) in the presence of a foam stabilizer.

4,883,826

TERTIARY AMINE-CONTAINING POLYOLS PREPARED IN A MANNICH CONDENSATION REACTION USING A MIXTURE OF ALKANOLAMINES

J. E. Marugg, Boerhaavelaan, Netherlands; Michael A. P. Gansow, Waedenswil, Switzerland, and J. A. Thoen, Dommelstraat, Netherlands, assignors to The Dow Chemical Company, Midland, Mich.

Filed Jul. 27, 1988, Ser. No. 225,313

Int. Cl.⁴ C08G *18/28*

U.S. Cl. 521—164 12 Claims

1. A polyurethane foam which is the reaction product of a reaction mixture comprising a polyisocyanate, a blowing agent and a polyol characterized in that the polyol is prepared by alkoxylating a Mannich condensate of (a) phenol or an inertly-substituted phenol, (b) formaldehyde, and (c) a mixture of (i) diethanolamine and (ii) at least one other alkanolamine, wherein the weight ratio of diethanolamine to the other alkanolamine is from about 1:19 to about 19:1.

4,883,827

RECURABLE AND CURED CELLULAR MATERIALS

Gregory A. Ferro, Hoffman Estates, Ill., assignor to Imi-Tech Corporation, Elk Grove, Ill.

Filed Sep. 6, 1988, Ser. No. 240,802

Int. Cl.⁴ C08J *9/36*

U.S. Cl. 521—184 8 Claims

1. A process which comprises exposing cured polyimide foam to an atmosphere of steam at elevated temperature and pressure for a period of time sufficient to convert said foam into a non-flexible, non-resilient recurable cellular material, and subsequently heating to recure such cellular material in the absence of steam.

4,883,828

DISINFECTANT POLYMERIC COATINGS FOR HARD SURFACES

Thomas R. Oakes, Stillwater; Daniel E. Pedersen, Cottage Grove, and Donna M. Majewski, Lino Lakes, all of, assignors to Ecolab Inc., St. Paul, Minn.

Continuation of Ser. No. 48,800, May 12, 1989, abandoned. This application Jan. 30, 1989, Ser. No. 303,009

Int. Cl.⁴ C08K *5/19;* **A61L** *2/13*

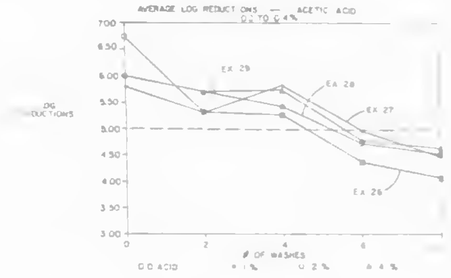
U.S. Cl. 523—122 4 Claims

1. A method for disinfecting and imparting prolonged germicidal properties to a hard porous or nonporous surface comprising coating said surface with a liquid antimicrobial film-forming composition free of complexed inorganic metal salt, and removing the aqueous solvent from said coating to form a germicidal, water-resistant polymeric film there upon, said composition comprising a solution in an aqueous solvent of (i) an amount of a germicidal agent effective to impart prolonged renewable antimicrobial properties and (ii) a film-forming, water-soluble copolymer, said copolymer comprising:

(a) about 20–99.5 mol-% of said copolymer of a monomer having a carboxylic acid ester hydrophilic functional group;

(b) about 0.5–80 mol-% of said copolymer of a monomer selected from the group consisting of an aromatic ester, a cycooalkyl ester, an ester mixture thereof of an alpha, beta-unsaturated carboxylic acid; and

(c) about 0.1 to 5 mol-% of said copolymer of a monomer having a hydrophilic amine group



wherein said antimicrobial film-forming composition imparts an immediate and prolonged germicidal character to the surface of application and once the water-resistant polymeric film is formed the prolonged germidical character of the film can be renewed by wiping with a dampened cloth.

4,883,829

PROCESS FOR PRODUCING POURABLE POWERED RUBBER CONTAINING FILLER

Hans-Juergen Smigerski, Marl, and Uwe Ernst, Borken, both of Fed. Rep. of Germany, assignors to Hüls Aktiengesellschaft, Marl, Fed. Rep. of Germany

Filed Apr. 22, 1988, Ser. No. 184,785

Claims priority, application Fed. Rep. of Germany, Jul. 14, 1987, 3723214

Int. Cl.⁴ C08K *3/30, 3/36, 3/00*

U.S. Cl. 523—334 17 Claims

1. A process for producing a pourable powdered rubber, comprising the steps of:

(i) preparing an aqueous filler suspension by dispersing in water a filler, an acid, and a water-soluble salt of a metal selected from groups IIa, IIb, IIIa or VIII of the Periodic Table;

(ii) mixing said filler suspension with a rubber latex or an aqueous emulsion of a rubber solution to prepare a filler-containing rubber, wherein the pH of the mixture is in the range of 3.8 to 6.5; and

(iii) isolating and drying said filler-containing rubber to produce said pourable powdered rubber.

4,883,830

COATING RESIN COMPOSITION

Michiharu Kitabatake, Hiratsuka, and Akira Tominaga, Chigasaki, both of Japan, assignors to Kansai Paint Co., Ltd., Hyogo, Japan

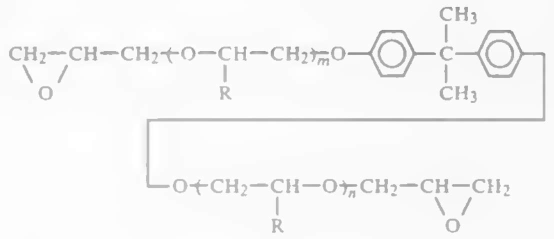
Filed Nov. 3, 1988, Ser. No. 266,895

Int. Cl.⁴ C08G *59/04, 59/24*

U.S. Cl. 523—414 **14 Claims**

1. A coating resin composition comprising mainly an epoxy-polyamine resin obtained by adding (d) an amine compound having active hydrogen to an epoxy resin, said epoxy resin being a reaction product of

(a) a diepoxide compound represented by the following formula (I)


(I)

wherein R represents a lower alkyl group or $—CH_2OR'$ wherein R′ represents a hydrocarbon group having 1 to 10 carbon atoms, and $m+n$ is an integer of 1 to 6

(b) a bisphenol, and

(c) optionally, a bisphenol diglycidylether,

(d) an amine compound having active hydrogen.

4,883,831

MELAMINE-BASED LIGHT STABILIZERS FOR PLASTICS

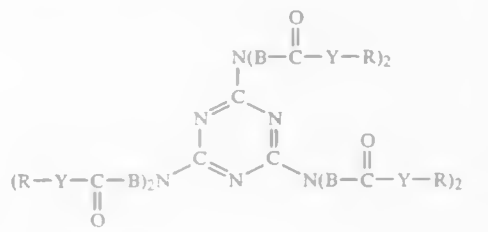
Richard V. Nelson, Wilmington, Del., and John F. Stephen, West Chester, Pa., assignors to ICI Americas Inc., Wilmington, Del.

Filed Dec. 15, 1988, Ser. No. 284,574

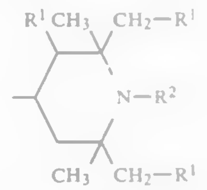
Int. Cl.⁴ C08K *5/34*

U.S. Cl. 524—100 8 Claims

1. A compound of the formula


I

wherein R is the group



R^1 is selected from hydrogen and an alkyl group of 1–5 carbon atoms,

R^2 is selected from the group consisting of hydrogen, oxyl, hydroxyl, a straight or branched chain methylene-linked alkyl group of 1–18 carbon atoms, an alkanoyl group having 2–18 carbon atoms, an alkenyl group of 3–4 carbon atoms, an alkenoyl group of 3–6 carbon atoms, an alkynyl group of 3–6 carbon atoms, a cyanomethyl group, a 2,3-epoxypropyl group, a benzyl or alkylbenzyl group of 7–15 carbon atoms, a group $—CH_2CH(OR^3)—R^4$ and a group of the formula

$$—(CH_2)_m—C(O)—Z$$

wherein Z is a group selected from OR^5 and $—N(R^6)(R^7)$ when m is 1 or 0 and when m is 0, Z can be a group $—C(O)—OR^8$,

R^3 is selected from the group consisting of hydrogen, an aliphatic group of 1–18 carbon atoms, an araliphatic group and an alkanoyl group,

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- R^4 is selected from the group consisting of hydrogen, an alkyl group of 1–16 carbon atoms and phenyl,
- R^5 is selected from the group consisting of an alkyl group of 1–18 carbon atoms, a cycloalkyl group of 5–12 carbon atoms, allyl, benzyl, phenyl, and a group of R,
- R^6 and R^7, same or different, are selected from the group consisting of hydrogen, an alkyl group having 1–8 carbon atoms, a cycloalkyl group having 5–12 carbon atoms, an alkaryl group having 6–10 carbon atoms, an aralkyl group having 7–15 carbon atoms, and additionally R^6 and R^7, together with the N-atom to which they are attached, can form a 5–7 membered ring consisting of pyrrolidine, piperidine, and homopiperidine, and
- R^8 is selected from the group consisting of an alkyl group of 1–18 carbon atoms, phenyl and benzyl,
- B is a divalent alkylene group having 1–10 carbon atoms,
- Y is selected from —O— and —NH—; and —NR^9 where R^9 is an alkyl group of 1–20 carbon atoms or the group R where R^1 and R^2 are as previously described.

4,883,832
PREPARATION OF POLYMER POLYOLS

Rudolpha C. Cloetens; Werner A. Lidy, both of Geneva, and Huy P. Thanh, Onex, all of Switzerland, assignors to BP Chemicals Limited, London, England

Division of Ser. No. 807,512, Nov. 22, 1985, Pat. No. 4,723,026. This application Jun. 24, 1987, Ser. No. 65,777

Claims priority, application United Kingdom, Apr. 24, 1984, 84/10480; Apr. 24, 1985, PCT/GB85/00176

Int. Cl.⁴ C08K *5/24*

U.S. Cl. 524—265 **7 Claims**

1. A fluid polymer/polyol dispersion prepared in the presence of a free radical catalyst one or more monomers selected from the group consisting of styrene, acrylonitrile, methacrylonitrile and methyl methacrylate in a liquid polyol under polymerization conditions characterized in that the liquid polyol comprises:

- (a) a polyether polyol having an average molecular weight in excess of 400 and a hydroxyl number in the range of 20 to 280; and
- (b) a modified alcohol obtained by reacting an olefinically unsaturated functional group and at least one functional group attached to the silicon atom which is reactable with the hydroxyl groups on the alcohol.

4,883,833
PROCESS FOR PRODUCING A DRY GRANULAR PRODUCT

Ronald E. Hughes, P.O. Box 820, Davidson, N.C. 28036

Filed Jun. 15, 1988, Ser. No. 208,144

Int. Cl.⁴ C08K *5/09*

U.S. Cl. 524—394 **4 Claims**

1. A process for producing a dry granular product in the form of an aqueous polymeric complex of sodium acetate trihydrate, comprising reacting dry sodium carbonate, acetic acid and a polymer emulsion selected from the group of silicone emulsions, acrylic emulsions, surfactant solutions, and polyvinylpyrrolidone solutions wherein the polymer is inert with respect to sodium carbonate and acetic acid so as to maintain the integrity of said polymer during said reaction.

4,883,834
PRIMER COMPOSITIONS

Shosaku Yamamoto; Kazuo Kakinuma, both of Yokohama; Fumio Sodeyama, Chigasaki; Junji Mayumi, Tsu, and Riichiro Maruta, Yokkaichi, all of Japan, assignors to Nippon Oil and Fats Company, Limited, Japan

Filed Jul. 13, 1987, Ser. No. 72,423

Claims priority, application Japan, Jul. 21, 1986, 61-171183

Int. Cl.⁴ C08L *51/34, 53/01*

U.S. Cl. 524—504 **8 Claims**

1. A primer composition consisting essentially of a resin obtained by graft-polymerizing a styrene-butadiene-styrene block copolymer or its hydrogenated polymer with α,β-unsaturated carboxylic acid or its anhydride (component A), a crosslinking agent selected from the group consisting of self-reactive type compounds and polyisocyanate compounds together with a resin having an active hydrogen-containing functional group (component B) and an epoxy compound (component C), and having a weight ratio as solid content of component A to component B within a range of 99/1~60/40 and a weight ratio as solid content of components A+B to component C within a range of 100/1~10/50, wherein said α,β-unsaturated carboxylic acid or its anhydride is contained in said component A in an amount of 0.05 10% by weight.

4,883,835
FLAME RESISTANT ANTISTATIC POLYCARBONATE MOULDING COMPOUNDS

Hans-Josef Buysch; Norbert Schön, both of Krefeld, Fed. Rep. of Germany; Hans-Jürgen Kress, Pittsburgh, Pa.; Herbert Eichenauer, Dormagen, and Josef Buekers, Krefeld, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen Bayerwerk, Fed. Rep. of Germany

Filed Mar. 31, 1988, Ser. No. 175,863

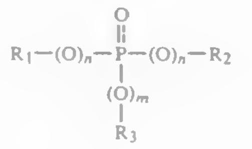
Claims priority, application Fed. Rep. of Germany, Apr. 17, 1987, 3713165; Apr. 17, 1987, 3713162; Aug. 15, 1987, 3727250

Int. Cl.⁴ C08K *5/51;* **C08L** *51/00*

U.S. Cl. 524—504 **10 Claims**

1. Thermoplastic moulding compounds containing

- (A) 20 to 90 parts by weight of a thermoplastic aromatic polycarbonate,
- (B) 0 to 50 parts by weight of a graft polymer of
- (B.1) 5 to 90 parts by weight of a mixture of
- (B.1.1) 50 to 95% by weight of styrene, α-methyl styrene, nuclear substituted styrene, methyl methacrylate or mixtures thereof and
- (B.1.2) 50 to 5% by weight of (meth)acrylonitrile, methylmethacrylate, maleic acid anhydride, N-substituted maleimide or mixtures thereof on
- (B.2) 95 to 10 parts by weight of a rubber having a glass transition temperature of $T_G \leqq 10°$ C.,
- (C) 5 to 70 parts by weight of a thermoplastic copolymer of
- (C.1) 50 to 95% by weight of styrene, α-methyl styrene, nuclear substituted styrene, methyl methacrylate or mixtures thereof and
- (C.2) 50 to 5% by weight of (meth)acrylonitrile, methyl methacrylate, maleic acid anhydride, N-substituted maleimide or mixtures thereof, and
- (D) 0 to 15 parts by weight of a low molecular weight or high molecular weight halogen compound based on 100 parts by weight of A+C+D and B when present, wherein the halogen content resulting from components A+D is to 3 to 10% by weight, based on the total weight of components A and D,
- (E) 1 to 20 parts by weight, based on 100 parts by weight of A+C and B and D when present, of a phosphorus compound corresponding to the formula (I)



$$R_1-(O)_n-\overset{\overset{\displaystyle O}{\|}}{\underset{\underset{\displaystyle R_3}{|}}{\underset{\displaystyle (O)_m}{\underset{|}{P}}}}-(O)_n-R_2 \qquad (I)$$

wherein

- R_1, R_2 and R_3 denote, independently of one another, an unsubstituted or halogenated C_1 to C_8 alkyl or an unsubstituted or halogenated C_6 to C_{20} aryl and
- n and m denote, independently of one another, 0 or 1, and
- (F) 0.05 to 1.0 parts by weight, based on 100 parts by weight of A+C and B and D when present, of a tetrafluoroethylene polymer having average particle sizes of from 0.05 to 1000 μm and a density of from 1.2 to 2.3 g/cm^3 and
- (G) 0.2 to 5.0 parts by weight, based on 100 parts by weight of the sum of A to G, of one or more antistatic agents obtained from a polyalkylene ether which has been modified with a polymer of at least one of (meth)acrylates or other vinyl monomers.

4,883,836
BLEND OF POLYCARBONATE AND POLYAMIDE COMPATIBILIZED WITH A POLYALKYLOXAZOLINE

Bruce P. Thill, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

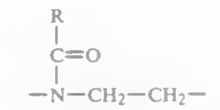
Filed Oct. 31, 1988, Ser. No. 264,929

Int. Cl.⁴ C08L *77/00*

U.S. Cl. 525—66 **16 Claims**

1. A thermoplastic molding composition, comprising:

- (A) an aromatic polycarbonate;
- (B) a polyamide;
- (C) a compatibilizing amount of a polyalkyloxazoline characterized by repeated units corresponding to the general formula:



$$\begin{array}{c} R \\ | \\ C{=}O \\ | \\ -N-CH_2-CH_2- \end{array}$$

wherein R is a monovalent C_1–C_4 alkyl radical; and

- (D) an impact modifying rubber.

4,883,837
COMPATIBLE BLENDS OF POLYOLEFINS WITH THERMOPLASTIC POLYURETHANES

Vincent S. Zabrocki, Newark, Ohio, assignor to The Dow Chemical Company, Midland, Mich.

Filed Jun. 24, 1988, Ser. No. 211,190

Int. Cl.⁴ C08L *75/04*

U.S. Cl. 525—66 **16 Claims**

1. A thermoplastic compatible blended composition comprising A. from about 15 to about 60 weight percent of a polyolefin, B. from about 30 to about 70 weight percent of a thermoplastic polyurethane, and C. from about 10 to about 35 weight percent of at least one modified polyolefin defined as a random, block or graft olefin copolymer having in a main or side chain thereof a functional group selected from the class consisting of carboxylic acid, carboxylate ester, carboxylic acid anhydride, carboxylate salts, amide, epoxy, hydroxy, and acyloxy.

4,883,838
SOLUBLE ACRYLATE COPOLYMER CONTAINING CARBOXYL GROUPS, PROCESSES FOR ITS PREPARATION AND COATING AGENTS BASED ON THE ACRYLATE COPOLYMER

Werner Jung, Ascheberg, and Axel Sievers, Munster, both of Fed. Rep. of Germany, assignors to BASF Lacke & Farben AG, Münster, Fed. Rep. of Germany

Division of Ser. No. 060,243, May 29, 1987, Pat. No. 4,839,448. This application Mar. 2, 1989, Ser. No. 318,114

Claims priority, application Fed. Rep. of Germany, Sep. 30, 1985, 354858

Int. Cl.⁴ C08F *8/00*

U.S. Cl. 525—119 **16 Claims**

1. A coating agent containing as an essential binder,

- (A) an acrylate copolymer prepared by copolymerizing monomers having at least two polymerizable, olefinically unsaturated double bonds, monomers which carry functional groups and other polymerizable monomers with an olefinically unsaturated double bond, the acrylate copolymer containing carboxyl groups, wherein more than 3 to 30% by weight, based on the total weight of the monomers, of a monomer with at least 2 polymerizable, olefinically unsaturated double bonds is copolymerized into the acrylate copolymer and the acid number of the acrylate copolymer is 15 to 200, and
- (B) a compound containing at least two epoxide groups per molecule,

the ratio of (A) to (B) being such that the ratio of the acid groups of (A) to the epoxide groups of (B) is in the range of 0.5:3 to 2:0.5, and a crosslinking catalyst if appropriate.

4,883,839
STAIN-RESISTANT AGENTS FOR TEXTILES

Patrick H. Fitzgerald, Pitman, N.J.; Nandakumar S. Rao; Yashavant Vinod, both of Hockessin, Del., and Jeffrey R. Alender, Wilmington, Del., assignors to E. I. Du Pont De Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 136,033, Dec. 21, 1987, abandoned. This application Dec. 6, 1988, Ser. No. 280,406

Int. Cl.⁴ C08L *61/06*

U.S. Cl. 525—136 **14 Claims**

1. A composition useful in imparting stain resistance to polyamide textile substrates comprising between about 95 and 30 weight % of a hydrolyzed polymer of maleic anhydride and one or more ethylenically unsaturated aromatic monomers and between about 5 weight % and 70 weight % of a sulfonated phenol-formaldehyde condensation product which is useful as a dye-resist agent, a dye-fixing agent, a dye-reserving agent, or an agent which improves the wet-fastness of dyeings on polyamide fibers.

4,883,840
ELASTOMER MODIFIED POLYCARBONATE COMPOSITIONS OF IMPROVED IMPACT STRENGTH

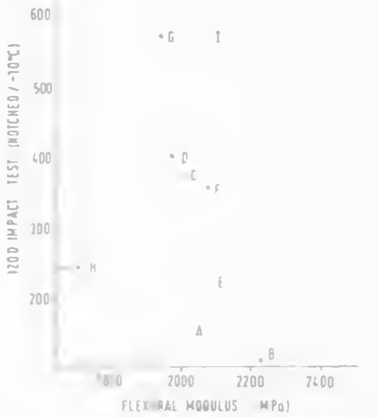
Silvestro Cartasegna, Brussels, Belgium, assignor to Exxon Chemical Patents Inc., Linden, N.J.

Filed Dec. 17, 1987, Ser. No. 133,945

Claims priority, application United Kingdom, Dec. 23, 1986, 8630819

Int. Cl.⁴ C08L *69/00*

U.S. Cl. 525—146 **16 Claims**



1. A thermoplastic polycarbonate composition of improved impact strength which comprises a polymer blend of:

- (a) a thermoplastic polycarbonate plastics material; and
- (b) an impact modifier comprising (i) an elastomer component which contains from 45–55 wt.% ethylene selected from highly amorphous ethylene-higher alpha olefin copolymers, highly amorphous ethylene-higher alpha olefin-polyene terpolymers and mixtures thereof, and (ii) a plastics component selected from ethylene homo- and copolymers.

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4,883,841

POLYCARBONATE COMPOSITIONS HAVING MULTIPLE PHASE IMPACT MODIFIERS THEREIN

Changkiu K. Riew, Akron, and Roger E. Morris, Cuyahoga Falls, both of Ohio, assignors to The B.F. Goodrich Company, Akron, Ohio

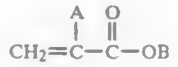
Filed Oct. 5, 1988, Ser. No. 253,527

Int. Cl.⁴ C08L *69/00*

U.S. Cl. 525—148 **15 Claims**

1. A polycarbonate composition having improved impact resistance, comprising:

a polycarbonate and a multiple-phase impact modifier, free of any grafting or crosslinking agents, said impact modifier containing at least an elastomer phase and a plastic polymer phase, wherein said elastomer has a glass transition temperature of 0° C. or less, said elastomer phase containing one or more polymers made from an alkyl acrylate having the formula



$$CH_2{=}\overset{A}{\overset{|}{C}}{-}\overset{O}{\overset{\|}{C}}{-}OB$$

wherein A is hydrogen or an alkyl having from 1 to 3 carbon atoms, and B is an alkyl portion having from 1 to 18 carbon atoms, the number average molecular weight as determined by gel permeation chromatography of said elastomer being at least 100,000, and wherein the amount of said multiple-phase impact modifier is from about 1 part to about 30 parts by weight for every 100 parts by weight of said polycarbonate.

4,883,842

RESIN COMPOSITION

Shigeo Tanaka; Jiro Sakai; Tomohisa Fukao, all of Ichihara; Kizuku Wakatsuki, Takatsuki, and Kazuki Wakamatsu, Ichihara, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Mar. 28, 1988, Ser. No. 172,786

Claims priority, application Japan, Mar. 30, 1987, 62-79293

Int. Cl.⁴ C08L *23/24, 23/10, 23/18*

U.S. Cl. 525—240 **5 Claims**

1. A resin composition, the transparency of which changes reversibly with temperature, comprising

1 to 99% by weight of a polymer A which has a refractive index largely dependent on temperature and is a polymer of a straight-chain α-olefin having 14 or more carbon atoms or a copolymer of two or more straight-chain α-olefins having 14 or more carbon atoms and

1 to 99% by weight of a polymer B which has a refractive index slightly dependent on temperature and is a polymer of an α-olefin having 3–6 carbon atoms, a copolymer of two or more α-olefins or a methacrylic acid ester polymer,

the polymers A and B having refractive indexes which permit satisfaction of the relation:

$$a \leqq 0.015 \text{ and } b-a \geqq 0.005$$

wherein a and b are the minimum absolute value and the maximum absolute value, respectively, of the difference between the refractive indexes of the polymers A and B in a temperature range of 20° C to 100° C.

4,883,843

IMIDE BOND-CONTAINING RESINS AND FLAME RETARDANTS COMPRISING SAID RESINS

Akira Taniuchi; Hirohito Komori, and Koichi Niwa, all of Kyoto, Japan, assignors to Dai-Ichi Kogyo Seiyaku Co., Ltd., Kyoto, Japan

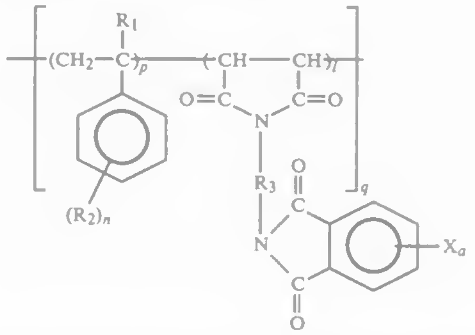
Filed Jan. 23, 1989, Ser. No. 300,406

Claims priority, application Japan, Jan. 29, 1988, 63-19843

Int. Cl.⁴ C08F *8/32*

U.S. Cl. 525—327.6 **2 Claims**

1. A flame retardant which comprises an imide bond-containing resin of the general formula



wherein R_1 is H or CH_3, R_2 is H, Cl, Br, F or CH_3, R_3 is a straight or branched alkylene group containing 1 to 6 carbon atoms or an aromatic nucleus, X is Br, Cl or F, l is equal to 1, m is an integer of 1 to 4, n is an integer of 1 to 5, p is an integer of 1 to 4 and q is a number equal to 1 to 100.

4,883,844

SUBSTITUTED STYRYLAZA EPOXY RESINS

Robert E. Hefner, Jr., Lake Jackson, Tex.; John W. Robinson, Niagara Falls, N.Y., and Jimmy D. Earls, Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 101,048, Sep. 5, 1987, abandoned. This application Dec. 6, 1988, Ser. No. 280,414

Int. Cl.⁴ C08G *16/04, 59/02*

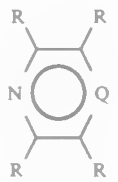
U.S. Cl. 525—472 **4 Claims**

1. A substituted epoxy resin composition containing styrylaza groups prepared by reacting

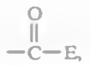
(A) a substituted hydroxystyrylaza compound prepared by reacting

(1) one or more monohydroxy aromatic aldehydes wherein the ortho and para positions from the hydroxy group having no aldehyde groups are substituted by groups inert to condensation with alkyl azines, and

(2) one or more methylated azine compounds having the formula



wherein Q is N or C—R, and each R is independently hydrogen, a halogen, a hydrocarbyl or hydrocarbyloxy group having from 1 to about 20 carbon atoms, nitro, nitroso, nitrile,

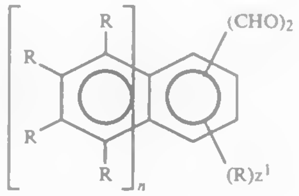


$$-\overset{O}{\overset{\|}{C}}-E,$$

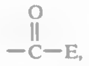
allyl or a methallyl group; E is a hydrocarbyl group

having from 1 to about 20 carbon atoms; with the proviso that the total number of methyl groups ($R=-CH_3$) substituted on the ring is in the range from 2 to 4, and, optionally,

(3) one or more aromatic dialdehydes having the formula



wherein each R is independently hydrogen a halogen, a hydrocarbyl or hydrocarbyloxy group having from 1 to about 20 carbon atoms, nitro, nitroso, nitrile,



$$-\overset{O}{\overset{\|}{C}}-E,$$

allyl or a methallyl group; E is a hydrocarbyl group having from 1 to about 20 carbon atoms; n has a value of zero or 1 and when n is zero, z^1 is four, when n is 1, z^1 is two, and,

(B) one or more epihalohydrins, in the presence or one or more basic-acting substances.

4,883,845

CURABLE COMPOSITION OF POLYETHER SULFONE OR POLYETHER KETONE COPOLYMER AND UNSATURATED IMIDE

Friedrich Stockinger, Courtepin, and Werner Stauffer, Fribourg, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jan. 23, 1989, Ser. No. 299,294

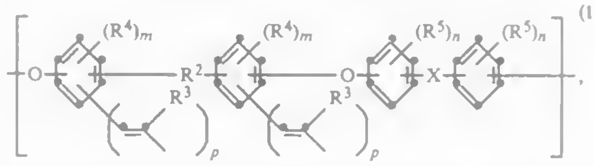
Claims priority, application Switzerland, Feb. 1, 1988, 336/88

Int. Cl.⁴ C08G *65/48*

U.S. Cl. 525—534 **10 Claims**

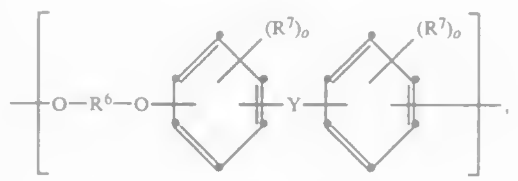
1. A curable composition comprising

(a) a copolyether resin having end groups $—OR^1$ linked direct to phenyl nuclei and containing 1 to 50 mol% of repeating structural units of formula I



(I)

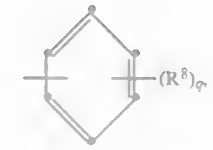
and 99 to 50 mol% of repeating structural units of formula II



(II)

the percentages being based in each case on the total number of repeating structural units in each molecule, in which end groups $—OR^1$ or formulae I and II above

R^1 is hydrogen or a radical of formulae III to VI



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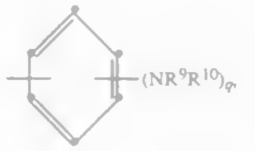

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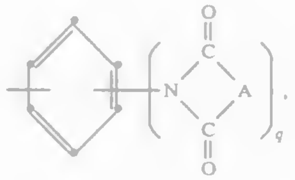

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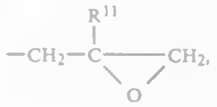


(VI)

R^2 is a direct C—C bond or a group of formula $—C_rH_{2r}—$, —O—, —S—, —CO— or $—SO_2—$,

r is 1 to 20,

R^3 is hydrogen or methyl,

R^4, R^5 and R^7 are each independently of one another C_1–C_4alkyl, C_1–C_4alkoxy or chloro or bromo,

m, n and o are each independently of one another 0, 1 or 2,

p is 1 or 2,

R^6 is a divalent radical of a bisphenol after removal of both phenolic hydroxyl groups, which radical is unsubstituted or substituted by one or two C_1–C_4alkyl or C_1–C_4alkoxy groups or chlorine or bromine atoms,

X and Y are each independently of the other —CO— or $—SO_2—$,

R^8 is vinyl, ethynyl, allyl, methallyl, prop-1-enyl or 2-methylprop-1-enyl,

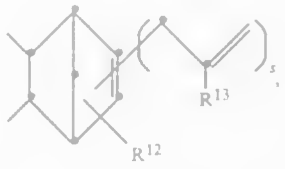
R^9 and R^{10} are each independently of the other hydrogen, allyl or methallyl,

R^{11} is hydrogen or methyl,

q is 1 or 2,

A is a group of formula VIIa or VIIb

$$—CH{=}CH—, \qquad (VIIa)$$



(VIIb)

wherein

R^{12} and R^{13} are each independently of the other hydrogen or methyl, and

s is 0, 1 or 2, and

(b) at least one compound of formula VIII, IX or X

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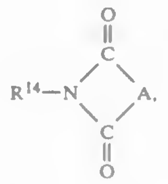
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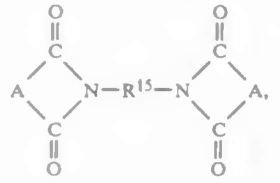
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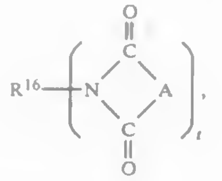

(X)

wherein

A is as defined above,

t is an integer from 3 to 12,

R^{14} is C_1–C_{20}alkyl, C_5–C_{12}cycloalkyl, C_6–C_{18}aryl, C_7–C_{20}-aralkyl or a C_4–C_{18}heterocycle containing one or two N, S or O atoms,

R^{15} is C_2–C_{50}alkylene, C_5–C_{12}cycloalkylene, C_6–C_{18}arylene, C_7–C_{20}aralkylene or a divalent C_4–C_{18}heterocyclic radical containing one or two N, O or S atoms, and

R^{16} is a radical of valency t of an aromatic polyamine after removal of the t amino groups.

4,883,846

ANIONIC POLYMERIZATION OF PURIFIED MONOVINYLIDENE AROMATIC MONOMER FEED STOCK

Eugene R. Moore; Brian D. Dalke; Michael T. Malanga, and Gary M. Poindexter, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Apr. 20, 1987, Ser. No. 40,508

Int. Cl.⁴ C08F *2/06, 4/48, 6/10*

U.S. Cl. 526—73 **20 Claims**

1. A method for anionically polymerizing monovinylidene aromatic monomers comprising:

purifying a monovinylidene aromatic monomer feed stock by, (1) removing reactive gases from said feed stock, (2) contracting said feed stock from which reactive gases have been removed with activated alumina, and (3) hydrogenating said activated alumina-contacted feed stock;

cooling said feed stock to a temperature at which an anionic initiator preferentially reacts with impurities remaining in the feed stock and initiates polymerization without substantial propagation of polymerization;

uniformly dispersing the total quantity of anionic initiator desired into a batch of said feed stock while maintaining said feed stock at said temperature; and

subsequently increasing the temperature of said feed stock and initiator to a temperature at which polymerization of the monovinylidene aromatic monomer proceeds exothermically.

4,883,847

PROCESS TO TERMINATE AN OLEFIN POLYMERIZATION REACTION

Linus Leung, Naperville, Ill., and John B. Rogan, Tarpon Springs, Fla., assignors to Amoco Corporation, Chicago, Ill.

Filed Oct. 27, 1988, Ser. No. 263,000

Int. Cl.⁴ C08F *2/42, 6/12*

U.S. Cl. 526—84 **7 Claims**

1. A method for termination of a polymerization reaction of a reactive olefin under emergency conditions to prevent a "run-away" reaction in the presence of a Lewis acid-type catalyst, and to recover polymer therefrom, wherein the reactor is a stirred, boiling-type reactor, reactor contents comprise a liquid phase and a vapor phase, which method comprises:

(a) storing in a pressure vessel a quantity of diglyme sufficient to terminate said polymerization reaction, said pressure vesse! connected to said reactor by a transfer line with means to control injection of said diglyme into said reactor,

(b) subjecting said diglyme in said pressure vessel to a pressure differential at least 50 psig greater than pressure in said reactor to cause said diglyme to be injected into said reactor within a period of 30 seconds or less,

(c) monitoring pressure of said polymerization reaction,

(d) injecting said diglyme into said reactor by said transfer line when termination pressure of said reaction is within the range of from about 100 psig to about 250 psig to terminate said reaction within 30 seconds or less and to form a diglyme catalyst complex,

(e) transferring contents of said reactor to a water wash vessel to decompose said complex and to form a water phase and a polymer phase, and

(f) recovering said polymer phase.

4,883,848

METHOD FOR PRODUCING AN OLEFIN POLYMER

Yoshinori Suga, Machida; Eiji Tanaka, Kawasaki; Yasuo Maruyama, Tokyo, and Eiji Isobe, Yokohama, all of Japan, assignors to Mitsubishi Chemical Industries Limited, Tokyo, Japan

Continuation of Ser. No. 51,592, May 20, 1987, abandoned. This application Mar. 6, 1989, Ser. No. 320,859

Claims priority, application Japan, May 21, 1986, 61-116732

Int. Cl.⁴ C08F *4/02, 10/06*

U.S. Cl. 526—124 **9 Claims**

1. A method for producing an olefin polymer, which comprises polymerizing or copolymerizing propylene in the presence of a catalyst comprising (a) a titanium-containing solid catalyst component, (b) an organometallic compound of a metal of Groups I-III of the Periodic Table and an electron donative compound (c), said solid catalyst component (a) being obtained by treating (A) a magnesium compound of the formula $Mg(OR^1)_n(OR^2)_{2-n}$ wherein each of R^1 and R^2 is an alkyl group, an aryl group or an aralkyl group, and n is $2 \geqq n \geqq 0$, with (B) an ester of carboxylic acid as electron donative compound, (C) a silicon compound of the formula $Si(OR^3)_4$ wherein R^3 is an alkyl group, an aryl group or an aralkyl group and (D) a titanium compound which is titanium tetrachloride, titanium tetrabromide, titanium tetraiodide or a titanium halide-alcoholate, the amount of said titanium compound (D) being 1–40 mol per mol of said magnesium compound (A), the amount of said silicon compound (C) being 0.0–10 mol per mol of said magnesium compound (A), and the amount of said ester electron donative compound (B) being 0.01–10 mol per mol of said magnesium compound (A).

4,883,849

NITROGEN COMPOUNDS THAT DELAY THE METATHESIS POLYMERIZATION OF CYCLOOLEFINS

Albert S. Matlack, Hockessin, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed Dec. 30, 1988, Ser. No. 291,940

Int. Cl.⁴ C08F *4/44, 32/00, 36/00*

U.S. Cl. 526—141 **12 Claims**

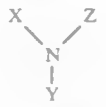
1. A polymerization feed composition comprising:

(a) a metathesis polymerizable cycloolefin;

(b) a metathesis polymerization catalyst;

(c) a catalyst activator comprising an alkyl aluminum compound; and

(d) a reaction rate moderator, wherein said reaction moderator is a nitrogen compound represented by the formula:



wherein X represents an aryl, alkaryl, or haloaryl group; Y represents an alkyl group or hydrogen and Z represents an alkyl, aralkyl, or cycloalkyl group or hydrogen, and wherein when neither Y nor Z represent hydrogen, X, Y and Z all must represent alkyl groups.

4,883,850

PROCESS FOR PREPARATION OF POLYMERS BY SUSPENSION POLYMERIZATION OF VINYL MONOMER IN THE PRESENCE OF HYDROPHOBICALLY MODIFIED WATERSOLUBLE, NONIONIC CELLULOSE ETHER POLYMER IN COMBINATION WITH ELECTROLYTE

Daniel H. Craig, Hockessin, Del., assignor to Aqualon Company, Wilmington, Del.

Continuation-in-part of Ser. No. 64,362, Jun. 22, 1987, abandoned. This application May 23, 1988, Ser. No. 197,713

Int. Cl.⁴ C08F *2/20*

U.S. Cl. 526—200 **19 Claims**

1. A process for forming a vinyl suspension polymer by suspension polymerization, comprising suspension polymerization of at least one vinyl monomer in the presence of (a) from about 0.01% to about 0.4% by weight, based on the total monomers, of at least one water-soluble, nonionic hydrophobically modified cellulose ether polymer selected from the group consisting of hydrophobically modified hydroxyethyl cellulose, hydrophobically modified hydroxypropyl cellulose, and hydrophobically modified methyl cellulose, and (b) at least one inert inorganic electrolyte.

4,883,851

RING OPENING METATHESIS POLYMERIZATION OF STRAINED CYCLIC ETHERS

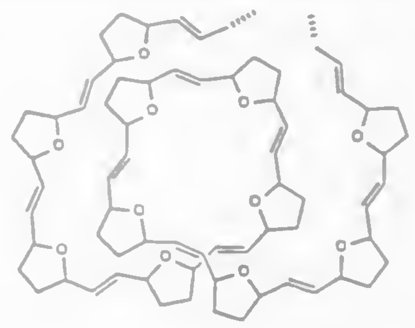
Robert H. Grubbs, South Pasadena, and Bruce M. Novak, El Sobrante, both of Calif., assignors to California Institute of Technology, Pasadena, Calif.

Continuation-in-part of Ser. No. 223,406, Jul. 25, 1988, abandoned. This application Jun. 22, 1989, Ser. No. 371,982

Int. Cl.⁴ C08F *24/00*

U.S. Cl. 526—268 **22 Claims**

1. A process for preparing polymers of 7-oxanorbornene and its derivatives comprising selective ring opening metathesis polymerization thereof in solution in the presence of a catalyst selected from the group consisting of ruthenium and osmium



ions complexed with sigma-donor ligands and 4- and 5-coordinated tungsten alkylidene complexes.

4,883,852

ANTIFOULING COATING

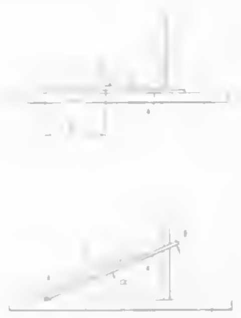
Shigeru Masuoka, and Hiroshi Doi, both of Hyogo, Japan, assignors to Nippon Oil and Fats Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 947,296, Dec. 29, 1986. This application Jun. 22, 1988, Ser. No. 209,813

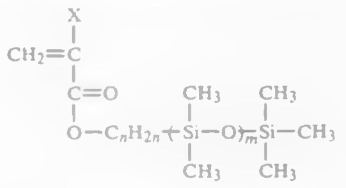
Claims priority, application Japan, Dec. 27, 1985, 60-298918; May 30, 1986, 61-126988; Oct. 27, 1986, 61-255473

Int. Cl.⁴ C08F *30/08*

U.S. Cl. 526—279 **9 Claims**



1. An antifouling paint that contains as its essential components a polymer of one or more of the monomers A represented by formula (1) and/or a copolymer composed of one or more of the monomers A and one or more monomers B selected from the group consisting of a methacrylate ester, an acrylate ester, a maleate ester, a fumarate ester, styrene, vinyltoluene, α-methylstyrene, vinyl acetate, butadiene, acrylamide, acrylonitrile, methacrylic acid, acrylic acid, and maleic acid that are radical-copolymerizable with said monomer A:


(1)

$$CH_2{=}C(X){-}C({=}O){-}O{-}C_nH_{2n}{\leftarrow}Si(CH_3)_2{-}O{\rightarrow}_m Si(CH_3)_3$$

wherein X is a hydrogen atom or a methyl group; n is an integer of 2 to 4; and m signifies the average degree of polymerization and ranges from 0 to 70.

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4,883,853
COPOLYMERS OF ETHYLENE AND 2,4,4-TRIMETHYLPENTENE-1

John Hobes, Dinslaken; Wolfgang Payer, Wesel, and Ludger Bexten, Hünxe, all of Fed. Rep. of Germany, assignors to Ruhrchemie Aktiengesellachaft, Fed. Rep. of Germany

Filed May 29, 1987, Ser. No. 55,722

Claims priority, application Fed. Rep. of Germany, Jun. 26, 1986, 3621394

Int. Cl.⁴ C08F *210/02, 210/14*

U.S. Cl. 526—329 **14 Claims**

1. A copolymer of ethylene containing, per 100 parts by weight of ethylene, 0.2 to 5.0 parts by weight of 2,4,4-trimethylpentene-(1) and optionally 2.0 to 20.0 parts by weight of at least one third member taken from the class consisting of vinyl esters, vinyl ethers, and esters of acrylic acid or methacrylic acid with aliphatic alcohols of 1 to 8 carbon atoms, said copolymer having a melt index MFI (190/2.16) of 0.4 to 20 g/10 min.

4,883,854
HYDROXYL FUNCTIONAL MONOMERS

Arthur J. Coury, St. Paul, and Christopher M. Hobot, Mound, both of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.

Filed Sep. 30, 1988, Ser. No. 251,261

Int. Cl.⁴ C08G *18/38*

U.S. Cl. 528—28 **14 Claims**

1. Urethane polyols, having the general formula $(HO-CH_2-CH_2-OOC-NX)_n-R$, wherein "R" represents a hydrocarbon moiety, "N" represents a primary or secondary amine group, "n" is a number equal to or greater than 2, and "X" represents a hydrogen or a hydrocarbon moiety.

4,883,855
ETHYLENICALLY UNSATURATED POLYETHER SULFONE OR POLYETHER KETONE COPOLYMER

Friedrich Stockinger, Courtepin, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

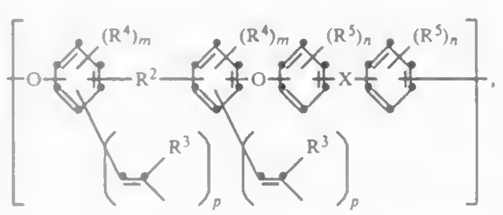
Filed Jan. 23, 1989, Ser. No. 299,291

Claims priority, application Switzerland, Feb. 1, 1988, 337/88

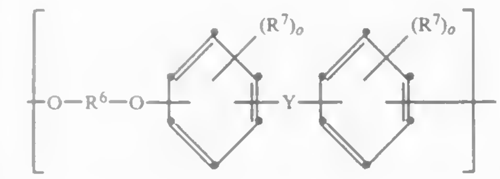
Int. Cl.⁴ C08G *65/48*

U.S. Cl. 528—171 **9 Claims**

1. A copolyether resin having end groups $-OR^1$ linked direct to phenyl nuclei and containing 1 to 50 mol % of repeating structural units of formula I

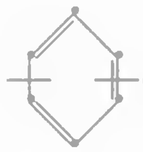

(I)

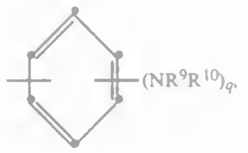
and 99 to 50 mol % of repeating structural units of formula II

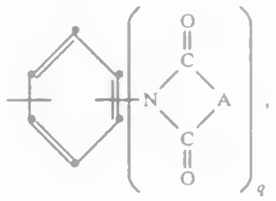

(II)

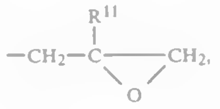
the percentages being based in each case on the total number of repeating structural units in each molecule, in which formulae I and II above

R^1 is hydrogen or a radical of formulae III to IV


(III)


(IV)


(V)


(VI)

R^2 is a direct C—C bond or a group of formula $—C_rH_{2r}—$, —O—, —S—, —CO— or $—SO_2—$,

r is 1 to 20,

R^3 is hydrogen or methyl,

R^4, R^5 and R^7 are each independently of one another C_1-C_4alkyl, C_1-C_4-alkoxy or chloro or bromo,

m, n and o are each independently of one another 0, 1 or 2,

p is 1 or 2,

R^6 is a divalent radical of a bisphenol after removal of both phenolic hydroxyl groups, which radical is unsubstituted or substituted by one or two C_1-C_4alkyl or C_1-C_4alkoxy groups or chlorine or bromine atoms,

X and Y are each independently of the other —CO— or $—SO_2—$,

R^8 is vinyl, ethynyl, allyl, methallyl, prop-1-enyl- or 2-methylprop-1enyl,

R^9 and R^{10} are each independently of the other hydrogen, allyl or methallyl,

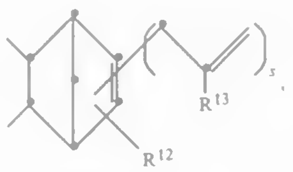
R^{11} is hydrogen or methyl,

q is 1 or 2,

A is a group of formula VII or VIII

$—CH═CH—$,

(VII)


(VIII)

wherein

R^{12} and R^{13} are each independently of the other hydrogen or methyl, and s is 0, 1 or 2.

4,883,856
FLAME-RESISTANT POLYCARBONATES, CONTAINING IN THEIR POLYMERIC CHAIN UNITS DERIVING FROM MONO-HALOGENATED TETRA-PHENYL COMPOUNDS

Alberto Petri, Milan, Italy, assignor to Enichem Tecnoresine, S.p.A., Palermo, Italy

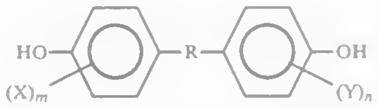
Filed Jul. 13, 1988, Ser. No. 218,818

Claims priority, application Italy, Sep. 11, 1987, 21895 A/87

Int. Cl.⁴ C08G *63/68*

U.S. Cl. 528—202 6 Claims

1. Thermoplastic, branched, high-molecular-weight polycarbonates endowed with flame-resistance properties characterized in that they contain in their polymeric chain, units derived from a di-hydroxy-aromatic compound having the formula:

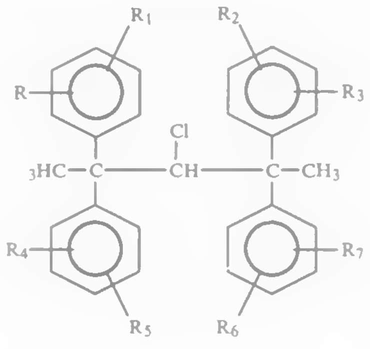

(I)

wherein:

R is a single bond; or a substituted or non-substituted, linear or branched alkyl group containing from 1 to 5 carbon atoms; or a group selected from O, S, SO_2, and CO;

X and Y are the same as, or different from each other and are selected from H and CH_3;

m and n are integers, the same as, or different from each other, and are selected from 1 to 4; and units derived from a mono-halo-tetra-phenyl compound having the formula:


(II)

wherein

R, R_2, R_4, R_6 are OH;

R_1, R_3, R_5, R_7, are the same as, or different, from one another, and are selected from OH, H, and a linear or branched alkyl group having from 1 to 5 carbon atoms.

4,883,857
PRODUCTION OF PHOTODEGRADABLE POLYESTER PLASTICS

James E. Guillet, Don Mills; Ilse Treurnicht, and Ruey S. Li, both of Toronto, all of Canada, assignors to Ecoplastics Limited, Ontario, Canada

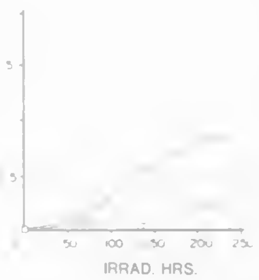
Filed Sep. 30, 1988, Ser. No. 252,799

Claims priority, application Canada, Sep. 30, 1987, 550526

Int. Cl.⁴ C08G *63/02*

U.S. Cl. 528—272 **19 Claims**

1. A process for preparing condensation polymers having accelerated photodegradability and containing keto carbonyl groups, either in the backbone polymeric chain or in a side group adjacent to the backbone polymeric chain, which comprises subjecting a high molecular weight thermoplastic condensation polymer capable of chain scission upon heating, in the substantial absence of oxygen, to thermal treatment to cause polymer ester interchange reaction thereof and so to form condensation polymer products therefrom, in the presence of a keto carbonyl group containing compound containing at least two chemical groups reactive with the condensation polymer products so formed, the thermal treatment being conducted under conditions such that said compound chemically reacts with the condensation polymer products to reform high molecular weight condensation polymer chains containing keto carbonyl groups.



4,883,858
THERMOSETTING RESIN FROM AMINE TERMINATED AMIC ACID AND BIS-MALEIMIDE

Masayuki Takemoto, Yokohama; Osamu Nagura, Chigasaki; Yukio Nomura, and Minoru Yasuda, both of Yokohama, all of Japan, assignors to Nippon Oil and Fats Co., Ltd., Tokyo, Japan

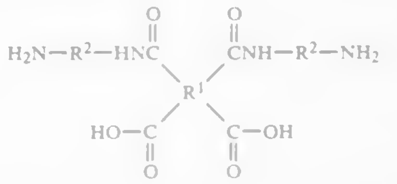
Filed Aug. 19, 1988, Ser. No. 234,411

Claims priority, application Japan, Aug. 25, 1987, 62-211164; Jun. 28, 1988, 63-160362; Jul. 1, 1988, 63-164656

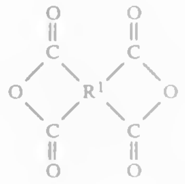
Int. Cl.⁴ C08G *69/14, 69/26, 73/10*

U.S. Cl. 528—322 **5 Claims**

1. A premix for a thermosetting resin, comprising, as a first essential component, an amine-terminated amic acid expressed by the formula (I),


(I)

in which R^1 denotes a tetravalent aromatic residue having 6 to 20 carbon atoms and R^2 denotes a divalent organic residue having 2 to 20 carbon atoms, said amic acid being produced by reacting a tetracarboxylic dianhydride represented by the formula (II),


(II)

wherein R^1 has the same meaning as defined above, with a diamine compound represented by the formula (III),

$$H_2N-R^2-NH_2 \qquad (III)$$

wherein R^2 has the same meaning as defined above, and, as a second essential component, an N,N'-bismaleimide of the formula (IV),

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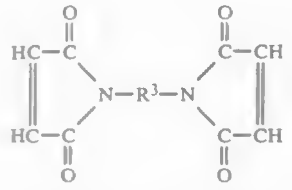


(IV)

wherein R^3 denotes a divalent organic residue having 2 to 20 carbon atoms, the mole ratio of [N,N'-bismaleimide]/[amine-terminated amic acid] being in the range from 1 to 3.

4,883,859
PROCESS FOR PRODUCING HYDROXYLATED POLYBUTADIENE

Richard Andry, Beaumont-le-Roger; Gerard Krempf, Sainte-Foy-les-Lyon, and Jackie Perono, Lyons, all of France, assignors to ATOCHEM, Paris La Defense, France

Filed Jun. 10, 1988, Ser. No. 205,086

Claims priority, application France, Jun. 15, 1987, 87 08571

Int. Cl.⁴ C08F *6/08*

U.S. Cl. 528—484 **11 Claims**

1. In the process of producing hydroxylated polybutadiene from a diene monomer in the presence of hydrogen peroxide and a solvent, wherein the solvent is recovered by distillation for reuse; after separation of the hydroxylated polybutadiene from a mixture containing such solvent and reaction impurities, the improvement comprising subjecting said mixture to the action of an alkali metal hydroxide or a hydrazine prior to distillation.

4,883,860
TRIAZINE-BASED LIGHT STABILIZERS FOR PLASTICS

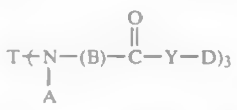
Richard V. Nelson, Wilmington, Del., and John F. Stephen, West Chester, Pa., assignors to ICI Americas Inc., Wilmington, Del.

Filed Dec. 15, 1988, Ser. No. 284,573

Int. Cl.⁴ C08K *5/34*

U.S. Cl. 524—98 **11 Claims**

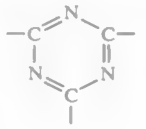
1. A compound of the formula



$$\mathrm{T}\!\left(\underset{\mathrm{A}}{\underset{|}{\mathrm{N}}}-(\mathrm{B})-\overset{\mathrm{O}}{\overset{\|}{\mathrm{C}}}-\mathrm{Y}-\mathrm{D}\right)_3$$

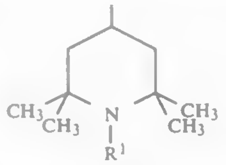
I

where T is the trivalent triazine radical



II

and where A is the hindered piperidino moiety

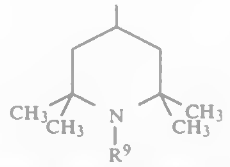


wherein R^1 is selected from the group consisting of hydrogen, oxyl, hydroxyl, a straight or branched chain methylene-linked alkyl group of 1–18 carbon atoms, an alkanoyl group having 2–18 carbon atoms, an alkenyl group of 3–4 carbon atoms, an alkenyl group of 3–6 carbon atoms, an alkynyl group of 3–6 carbon atoms, a cyanomethyl group, a 2,3-epoxypropyl group, a benzyl or alkylbenzyl group of 7–15 carbon atoms, a group $—CH_2CH(OR^2)—^3$ and a group of the formula

$$—CH_2CH(OR^2)_m—C(O)—Z$$

wherein Z is a group selected from $—OR^4$ and $—N(R^5)\ (R^6)$ when m is 1 or 0 and when m is 0, Z can be a group $—C(O)—OR^7$,

- R^2 is selected from the group consisting of hydrogen, an aliphatic group of 1–18 carbon atoms, an araliphatic group and an alkanoyl group,
- R^3 is selected from the group consisting of hydrogen, an alkyl group of 1–16 carbon atoms and phenyl,
- R^4 is selected from the group consisting of an alkyl group of 1–18 carbon atoms, a cycloalkyl group of 5–12 carbon atoms, allyl, benzyl, phenyl, and a group of formula A,
- R^5 and R^6, same or different, are selected from the group consisting of hydrogen, an alkyl group having 1–8 carbon atoms, a cycloalkyl group having 5–12 carbon atoms, an aryl group having 6–10 carbon atoms, an aralkyl group having 7–15 carbon atoms, and additionally R^5 and R^6, together with the N-atom to which they are attached, can form a 5–7 membered ring consisting of pyrrolidine, piperidine, and homopiperidine,
- R^7 is selected from the group consisting of an alkyl group of 1–18 carbon atoms, phenyl and benzyl,
- B is an alkylene group having 1–10 carbon atoms,
- Y is selected from the group consisting of —O—, —NH—, and $—N(R^8)$- where R^8 represents an alkyl group of 1–20 carbon atoms or the group D, and D is the group



where R^9 is oxyl, hydroxyl, hydrogen, an alkyl group of 1–18 carbon atoms, an alkenyl group of 3–4 carbon atoms or an alkynyl group of 3–4 carbon atoms.

4,883,861
CYSTEINE-RICH PEPTIDES HAVING GAMMA-GLUTAMIC ACID AND BETA-ALANINE UNITS, A PROCESS FOR THEIR PREPARATION AND THEIR USE

Erwin Grill; Ernst-Ludwig Winnacker, and Meinhart H. Zenk, all of Munich, Fed. Rep. of Germany, assignors to Consortium fur Elektrochemische Industrie GmbH, Munich, Fed. Rep. of Germany

Filed Mar. 17, 1987, Ser. No. 26,833

Claims priority, application Fed. Rep. of Germany, Apr. 23, 1986, 3613758

Int. Cl.⁴ C07K *7/02, 7/10*

U.S. Cl. 530—326 **4 Claims**

1. A peptide having the formula:

$$(\gamma\text{-Glu-Cys})_n\beta\text{-Ala},$$

wherein,

- n is an integer from 2 to 11;
- γ-Glu represents γ-glutamic acid;
- Cys represents cysteine; and
- β-Ala represents β-alanine.

4,883,862
MERCAPTOSUCCINYL GLYCYL-GLYCYL-GLYCINE A COMPLEX THEREOF WITH TC-99M, AND METHODS OF MAKING THE SAME

Lakshman R. Chervu, Larchmont; Kuldeep K. Bhargava, Bronx, and M. Donald Blaufox, Rye, all of N.Y., assignors to Albert Einstein College of Medicine - of Yeshiva University, Bronx, N.Y.

Filed Apr. 13, 1988, Ser. No. 181,227

Int. Cl.⁴ H61K *37/02;* **C07K** *5/08*

U.S. Cl. 530—331 **17 Claims**

1. The compound mercaptosuccinyl glycyl-glycyl-glycine.

4,883,863
TRIPEPTIDE DERIVATIVES AND ANTIPLASMIN AGENTS CONTAINING THE SAME

Yoshihito Abe; Katsuhiro Yaginuma, both of Koriyama; Takeshi Nagasawa, Urawa, and Katsumasa Kuroiwa, Koriyama, all of Japan, assignors to Nitto Boseki Co., Ltd., Fukushima, Japan

Filed Oct. 13, 1988, Ser. No. 247,455

Claims priority, application Japan, Oct. 30, 1987, 62-274896

Int. Cl.⁴ A61K *37/02;* **C07K** *5/08*

U.S. Cl. 530—331 **6 Claims**

1. A tripeptide derivative represented by the general formula:

$$A—aaa(B)—Phe—Lys—C \qquad (I)$$

wherein A is an alkyloxycarbonyl group, an unsubstituted acyl group, a substituted acyl group having an aryl group as a substituent, a substituted acyl group having an aryloxy group as a substituent, a cycloalkylcarbonyl group, an unsubstituted aroyl group, a substituted aroyl group having an alkyl group as a substituent, a formyl group, a hydrogen atom, an arenesulfonyl group optionally substituted by an alkyl group, a halogen atom, C_{2-6}alkanoyl amino group or an alkyloxy group, or an alkane-sulfonyl group; aaa is a D-lysine residue or a D-tyrosine residue; B is a side-chain substituent of the amino acid residue for aaa which is selected from the group consisting of an aroyl group and an arylsulfonyl group; Phe is a L-phenylalanine residue; Lys is a L-lysine residue or one partly including D-lysine residue; and C is a hydrogen atom, a secondary amino group, or a methyl group having 1 to 3 hydrogen atoms; a pharmaceutically acceptable acid addition salt thereof, and a pharmaceutically acceptable aldehyde equilibrium derivative thereof in case that C is a hydrogen atom.

4,883,864
MODIFIED COLLAGEN COMPOUND AND METHOD OF PREPARATION

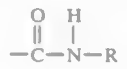
Matthew T. Scholz, Woodbury, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Continuation-in-part of Ser. No. 104,777, Oct. 5, 1987, Pat. No. 4,851,513, which is a continuation-in-part of Ser. No. 890,847, Aug. 6, 1986, Pat. No. 4,713,446, which is a continuation-in-part of Ser. No. 773,310, Sep. 6, 1985, abandoned. This application Oct. 28, 1988, Ser. No. 264,062

Int. Cl.⁴ A61K *31/78;* **A61B** *17/00*

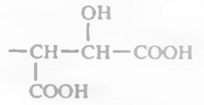
U.S. Cl. 530—356 **21 Claims**

1. A chemically-modified collagen compound comprising at least two native collagen molecules coupled at least one lysine epsilon amino group present on each of said collagen molecules by a coupling group, said coupling group comprising at least two moieties selected from the group consisting of carbonyl and sulfonyl groups, wherein non-coupled lysine epsilon amino groups are linked to amine modifying groups selected from groups of the formula



$$—\overset{\mathrm{O}}{\overset{\|}{\mathrm{C}}}—\overset{\mathrm{H}}{\overset{|}{\mathrm{N}}}—\mathrm{R}$$

wherein R is a substituted or unsubstituted C_{1-8} aliphatic, C_{5-8} alicyclic, or C_{6-10} aromatic group having 0–5 heteoatoms, and the formula



$$—\underset{\mathrm{COOH}}{\underset{|}{\mathrm{CH}}}—\overset{\mathrm{OH}}{\overset{|}{\mathrm{CH}}}—\mathrm{COOH}$$

and its metal salts.

4,883,865
RECOVERY OF PRES2+S ANTIGEN

Dennis J. Kubek, Lansdale, Pa., assignor to Merck & Co. Inc., Rahway, N.J.

Filed Sep. 30, 1987, Ser. No. 102,957

Int. Cl.⁴ C07K *3/18, 3/28*

U.S. Cl. 530—415 **5 Claims**

1. A method of isolating a yeast-produced preS2+S antigen from a liquid phase comprising:

- forming the liquid phase into an upper preS2+S antigen-containing hydrophobic phase by addition of PEG, and a lower hydrophilic phase by addition of dextran,
- separating the upper liquid phase from the lower liquid phase,
- absorbing the antigen in the antigen-containing upper liquid phase on fumed silica,
- and desorbing the adsorbed antigen.

4,883,866
METHINE-AZO COMPOUNDS CONTAINING CYCLIC CATIONIC AMMONIUM GROUPS

Peter Möckli, Schönenbuch, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

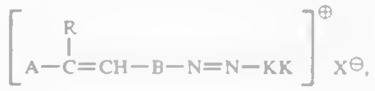
Continuation of Ser. No. 767,910, Aug. 21, 1986, abandoned. This application Feb. 29, 1988, Ser. No. 161,288

Claims priority, application Switzerland, Aug. 22, 1984, 4018/84

Int. Cl.⁴ C09B *44/08, 44/10;* **D06P** *1/41*

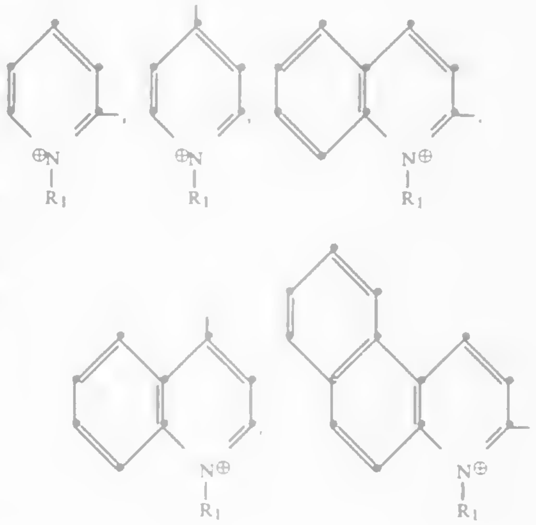
U.S. Cl. 534—606 **9 Claims**

1. A methine-azo compound of the formula



$$\left[\mathrm{A}—\overset{\mathrm{R}}{\overset{|}{\mathrm{C}}}=\mathrm{CH}—\mathrm{B}—\mathrm{N}=\mathrm{N}—\mathrm{KK}\right]^{\oplus} X^{\ominus}, \qquad (I)$$

in which A is one of the following rings



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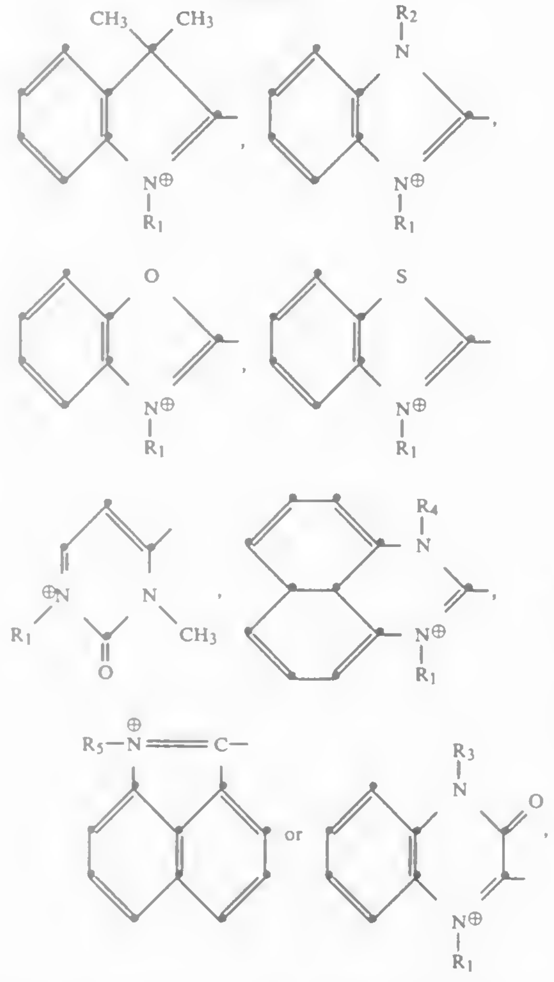
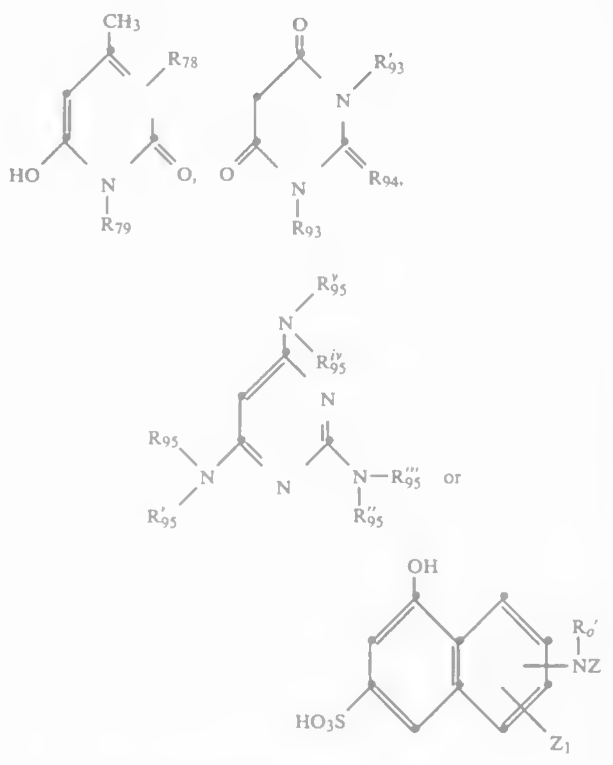
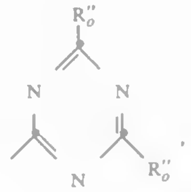


in addition to the substituents R_1–R_5 the rings of A are unsubstituted or are substituted by nitro, halogen, cyano, C_1–C_4-alkyl, C_1–C_4-alkoxy, acetylamino or dimethylamino, and in which R_1, R_2, R_3 and R_4, independently of one another, are C_1–C_8-alkyl, C_2–C_8-alkenyl, or C_3–C_6-cycloalkyl, or are one of these groups in which the alkyl, alkenyl or cycloalkyl chain is interrupted by oxygen or nitrogen atoms, wherein these groups are unsubstituted or are substituted by halogen, cyano, hydroxyl, alkoxy, phenyl, phenoxy, dialkylamino, trialkylammonium, acetylamino, alkylcarbonyl, alkoxycarbonyl, alkylsulfonyl, phenylsulfonyl, benzylsulfonyl, alkylsulfonamido, phenylsulfonamido, benzylsulfonamido, alkylcarbonylamino, benzoyl, benzoylamino, alkylcarbamoyl, phenylcarbamoyl, benzylcarbamoyl, alkylcarbamoyloxy, phenylcarbamoyloxy or benzylcarbamoyloxy, and R_5 is phenyl or is as defined for R_1,

R is hydrogen, cyano or C_2–C_3-alkylene which is bonded to an N atom of ring A to form a 5- or 6-membered ring,
B is unsubstituted phenylene or naphthylene or phenylene or naphthylene which is substituted by C_1–C_4-alkyl, C_1–C_4-alkoxy, halogen, sulfo or acetylamino,
$X^{\ominus}$ is an anion and
KK is the radical of a coupling component of the formula



in which
R_{78} is CN, $CONH_2$, SO_2NH_2 or C_1–C_4-alkyl,
R_{79} is hydrogen or substituted or unsubstituted C_1–C_8-alkyl,
R_{93} and R_{93}^{I}, independently of one another, are hydrogen or C_1–C_4-alkyl,
R_{94} is O or N—CN and
R_{95}, R_{95}^{I}, R_{95}^{II}, R_{95}^{III}, R_{95}^{IV} and R_{95}^{V}, independently of one another, are hydrogen, C_1–C_4-alkyl, C_2–C_4-alkenyl, cyclopentyl, cyclohexyl, phenyl, benzyl or phenethyl,
Z_1 is hydrogen or sulfo and Z is —CO—alkyl(C_1–C_4)-R_{18} or



R_o^{I} is hydrogen or C_1–C_4-alkyl, R_{18} is a basic amino group or a cationic ammonium group, both the R_o^{II}s independently of each other are OH, NH_2 or an aliphatic, cycloaliphatic or aromatic amine radical.

4,883,867

DETECTION OF RETICULOCYTES, RNA OR DNA

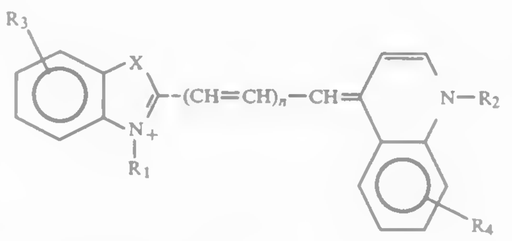
Linda G. Lee, Mountain View, and Chia-Huei Chen, San Jose, both of Calif., assignors to Becton, Dickinson and Company, Franklin Lakes, N.J.

Continuation-in-part of Ser. No. 793,813, Nov. 1, 1985, abandoned. This application Aug. 3, 1987, Ser. No. 81,097

Int. Cl.⁴ C07H *15/12, 17/00;* **G01N** *31/00, 33/48*

U.S. Cl. 536—28 **15 Claims**

5. A compound composed of RNA bound to a dye having the formula:



Wherein: X═O,S, Se or C $(CH_3)_2$:
R_1=alkyl having from 1–6 carbons;
R_2=alkyl having from 1–6 carbons;
R_3=fused benzene, alkyl (having 1–6 carbons), methoxy or is hydrogen;
R_4=alkyl having 1–6 carbons, methoxy or hydrogen; and
n=zero or an integer from 1–6.

4,883,868

7-AMINO-3-(SUBSTITUTED ISOINDOLINIUM)METHYL-3-CEPHEM DERIVATIVES

Susumu Nakagawa; Ryosuke Ushijima; Fumio Nakano; Koji Yamada, all of Okazaki, and Eiichi Mano, Kariya, all of Japan, assignors to Banyu Pharmaceutical Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 813,614, Dec. 26, 1985, Pat. No. 4,677,100. This application Jun. 22, 1987, Ser. No. 64,462

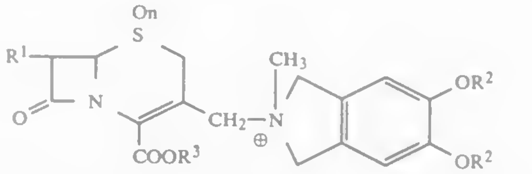
Claims priority, application Japan, Dec. 27, 1984, 59-273591; Aug. 6, 1985, 60-171839; Dec. 9, 1986, 61-291431

Int. Cl.⁴ C07D *501/46;* **A61K** *31/545*

U.S. Cl. 540—222 **10 Claims**

1. A compound having the formula:

(I)



wherein R^1 is an amino group or a protected amino group having a protected group selected from the group consisting of benzylidene, phenylacetyl, formyl, tertbutoxycarbonyl and trityl, R^2 is a hydrogen atom or a protecting group for a hydroxyl group selected from the group consisting of acetyl and trimethylsilyl, R^3 represents negative charge, a hydrogen atom or a protecting group for a carboxyl group, and n is 0 or 1, and a salt thereof.

4,883,869

NOVEL BETA-LACTAMS CONTAINING AMINO ACID SUBSTITUENTS

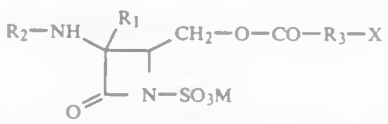
Kyoung S. Kim, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation of Ser. No. 85,912, Aug. 14, 1987, abandoned, which is a continuation-in-part of Ser. No. 789,158, Oct. 24, 1985, abandoned, which is a continuation-in-part of Ser. No. 683,975, Dec. 20, 1984, abandoned. This application Sep. 22, 1988, Ser. No. 249,242

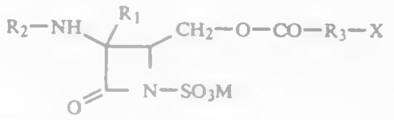
Int. Cl.⁴ C07D *205/08, 417/14, 417/12;* **A61K** *31/425*

U.S. Cl. 540—355 **7 Claims**

1. A compound of the formula,



and pharmaceutically acceptable salts thereof; wherein R_1 is hydrogen, $—OCH_3$, —NH—CHO; wherein R_2 is an acyl group derived from a carboxylic acid; wherein R_3 is selected from the group consisting of —CH—, $—CH_2CH_2—$, $—CH_2CH_2CH_2—$, and $—CH_2CH_2CH_2CH_2—$, and when X is NL_2L3 then $—CH_2CH_2—$, $—CH_2CH_2CH_2—$, and $—CH_2CH_2CH_2CH_2—$ are optionally substituted with one substituted selected from the group consisting of (C_1–C_4) alkyl, (C_1–C_4)carboxyalkyl, or (C_1–C_4) alkylthio;
wherein X is $—NL_2L_3$ or is pyrrole, except when R_3 is $—CH_2CH_2CH_2CH_2—$, of the formula



wherein L_1 is
- a. hydrogen
- b. —CO—O—CH_2—(C_6—H_5), or
- c. SO_3H;

wherein L_2 is
- a. hydrogen, or
- b. SO_3H; and

L_3 is
- a. hydrogen
- b. —CO—(C_1–C_4)alkyl,
- c. —CH═NH,
- d. —C(NH_2)═NH,
- e. —CO—O—CH_2—(C_6H_5),
- f. —COH, or
- g. $—SO_3H$ with the proviso that if one of L_2 or L_3 is $—SO_3H$ then the other is hydrogen.

4,883,870

PIPERIDINE-TRIAZINE COMPOUNDS FOR USE AS STABILIZERS FOR ORGANIC MATERIALS

Giuseppe Cantatore, Bitonto; Valerio Borzatta, Bologna, and Franca Masina, Anzola Emilia, all of Italy, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jul. 11, 1988, Ser. No. 217,262

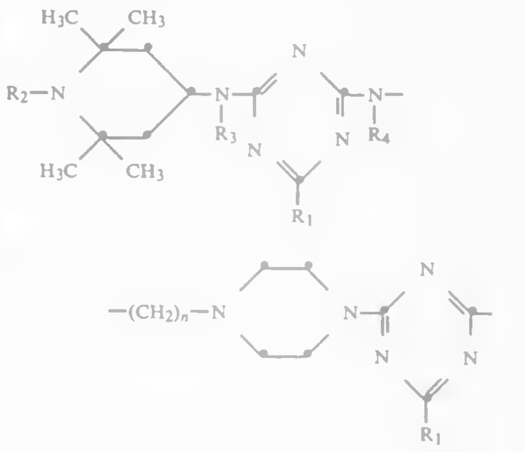
Claims priority, application Italy, Jul. 16, 1987, 21320 A/87

Int. Cl.⁴ C07D *403/00;* **C08K** *5/35*

U.S. Cl. 540—598 **7 Claims**

1. A compound of the formula (I)

(I)



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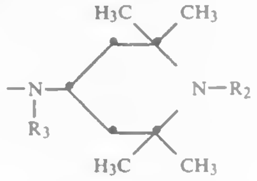
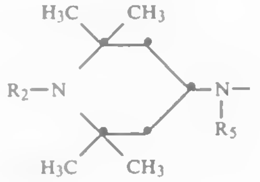
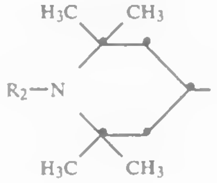


in which R_1 is C_1–C_8-alkyloxy, allyloxy, allylamino, di(C_1–C_4-alkyl)-amino, diallylamino, 1-pyrrolidyl, 1-piperidyl, 4-morpholinyl, 1-hexahydroazepinyl, 4-methyl-1-piperazinyl, or a group of the formula (II),



(II)

R_2 is hydrogen, O·, OH, NO, CH_2CN, C_1–C_8-alkyl, allyl, benzyl, C_1–C_8-acyl, C_1–C_{18}-alkyloxy, C_5–C_{12}-cycloalkyloxy or OH-monosubstituted C_2–C_4-alkyl, R_3 and R_5 independently are hydrogen, C_1–C_{12}-alkyl, C_5–C_{12}-cycloalkyl, C_7–C_9-phenylalkyl, tetrahydrofurfuryl, C_2–C_4-alkyl monosubstituted by OH, by C_1–C_4-alkyloxy or by di(C_1–C_4-alkyl)amino, or a group of the formula (III)



(III)

with R_2 as defined above, R_4 is hydrogen, C_1–C_{12}-alkyl or cyclohexyl and n is an integer from 2 to 6.

4,883,871

PROCESS FOR THE PREPARATION OF 6-ALKYLTHIO-2,4-DIAMINO-1,3,5-TRIAZINES

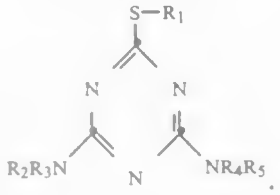
Klaus J. Coers, Reinach, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Sep. 2, 1988, Ser. No. 240,167

Int. Cl.⁴ C07D *251/52*

U.S. Cl. 544—210 **20 Claims**

1. A process for the preparation of a 6-alkylthio-2,4-diamino-1,3,5-triazine of formula I

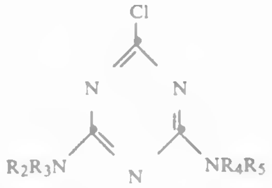


(I)

wherein

R_1 is C_1–C_6alkyl, and

R_2, R_3, R_4 and R_5 are each independently hydrogen, C_1–C_6alkyl, allyl or C_1–C_6alkoxyalkyl, by reacting a 6-chloro-2,4-diamino-1,3,5-triazine of formula II



(II)

wherein R_2, R_3, R_4 and R_5 are as defined above, with a metal thioalkylate of formula III

$M(SR_1)_n$

(II)

wherein

R_1 is as defined above,

n is 1 or 2, and

M is an alkali metal if n is 1 or an alkaline earth metal if n is 2, which process comprises carrying out the reaction in the presence of a tertiary amine in a two-phase reaction medium consisting of water and an inert, organic, water-immiscible solvent.

4,883,872

3-OXO-1,2,4-TRIAZOLO(4,3-a) PYRIMIDINE-6-CARBOXYLIC ACID ESTERS

Karnail Atwal, Cranbury, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

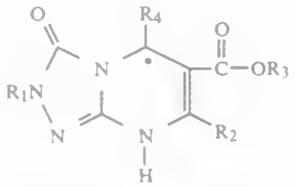
Filed Nov. 25, 1987, Ser. No. 125,089

Int. Cl.⁴ C07D *487/04;* A61K *31/505*

(III)

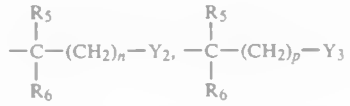
U.S. Cl. 544—263 **6 Claims**

1. Compounds having the formula



and pharmaceutically acceptable salts thereof, wherein:

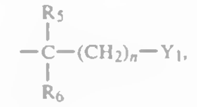
R_1 is hydrogen, alkyl, cycloalkyl, aryl,



$$-\overset{R_5}{\underset{R_6}{C}}-(CH_2)_n-Y_2,\ -\overset{R_5}{\underset{R_6}{C}}-(CH_2)_p-Y_3$$

or halo substituted alkyl;

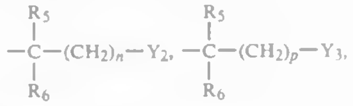
R_2 is hydrogen, alkyl, alkenyl, alkynyl, cycloalkyl, aryl,



$$-\overset{R_5}{\underset{R_6}{C}}-(CH_2)_n-Y_1,$$

or halo substituted alkyl;

R_3 is hydrogen, alkyl, cycloalkyl, aryl,



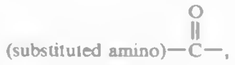
$$-\overset{R_5}{\underset{R_6}{C}}-(CH_2)_n-Y_2,\ -\overset{R_5}{\underset{R_6}{C}}-(CH_2)_p-Y_3,$$

or halo substituted alkyl;

R_4 is aryl;

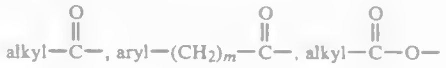
R_5 and R^6 are each independently hydrogen, alkyl, $-(CH_2)_q-$aryl or $-(CH_2)_q-$cycloalkyl;

Y_1 is cycloalkyl, aryl, hydroxyl, alkoxy, aryl$-(CH_2)_m-O-$, mercapto, alkylthio, aryl$-(CH_2)_m-S-$, amino, substituted amino, carbamoyl,



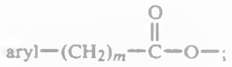
$$(\text{substituted amino})-\overset{O}{\overset{\|}{C}}-,$$

carboxyl, alkoxycarbonyl,



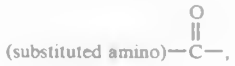
$$\text{alkyl}-\overset{O}{\overset{\|}{C}}-,\ \text{aryl}-(CH_2)_m-\overset{O}{\overset{\|}{C}}-,\ \text{alkyl}-\overset{O}{\overset{\|}{C}}-O-$$

or



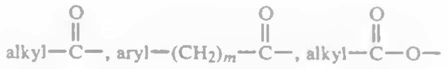
$$\text{aryl}-(CH_2)_m-\overset{O}{\overset{\|}{C}}-O-;$$

Y_2 is cycloalkyl, aryl, carbamoyl,



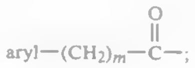
$$(\text{substituted amino})-\overset{O}{\overset{\|}{C}}-,$$

carboxyl, alkoxycarbonyl,



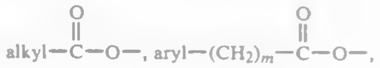
$$\text{alkyl}-\overset{O}{\overset{\|}{C}}-,\ \text{aryl}-(CH_2)_m-\overset{O}{\overset{\|}{C}}-,\ \text{alkyl}-\overset{O}{\overset{\|}{C}}-O-$$

or



$$\text{aryl}-(CH_2)_m-\overset{O}{\overset{\|}{C}}-;$$

Y_3 is hydroxyl, alkoxy, aryl$-(CH_2)_m-O-$, mercapto, alkylthio, aryl$-(CH_2)_m-S-$,



$$\text{alkyl}-\overset{O}{\overset{\|}{C}}-O-,\ \text{aryl}-(CH_2)_m-\overset{O}{\overset{\|}{C}}-O-,$$

amino, or substituted amino;

q is 0, 1, 2 or 3;

m is 0 or an integer of 1 to 6;

n is 0 or an integer of 1 to 5;

p is an integer of 1 to 5;

"alkyl" and "alkoxy" refer to both straight and branched chain groups having 1 to 8 carbon atoms;

"halo substituted alkyl" refers to alkyl groups (as described above) in which one or more hydrogens have been replaced by chloro, bromo or fluoro groups;

"aryl" refers to phenyl and substituted phenyl;

"alkenyl" and "alkynyl" refer to both straight and branched chain groups having 2 to 8 carbon atoms;

"cycloalkyl" refers to groups having 3, 4, 5, 6 or 7 carbon atoms;

"halo" refers to chloro, bromo, fluoro and iodo; and

"substituted amino" refers to a group of the formula $-NZ_1Z_2$ wherein Z_1 is hydrogen, alkyl, or aryl$-(CH_2)_m-$ and Z_2 is alkyl or aryl$-(CH_2)_m-$ or Z_1 and Z_2 taken together with the nitrogen atom to which they are attached are 1-pyrrolidinyl, 1-piperidinyl, 1-azepinyl, 4-morpholinyl, 4-thiamorpholinyl, 1-piperazinyl, 4-alkyl-1-piperazinyl, 4-arylalkyl-1-piperazinyl, 4-diarylalkyl-1-piperazinyl, or 1-pyrrolidinyl, 1-piperidinyl, or 1-azepinyl substituted with alkyl, alkoxy, alkylthio, halo, trifluoromethyl or hydroxy; and

"substituted phenyl" refers to phenyl groups substituted with one or more alkyl, alkoxy, alkylthio, halo, nitro, cyano, hydroxy, amino, alkylamino, dialkylamino, trifluoromethyl, isothicyanoto, or difluoromethoxy groups.

4,883,873

METHACRYLOXY-CONTAINING COMPOUNDS

George E. Abbond, Ajax, Canada; Christopher H. Such, Mount Eliza, Australia; Susan M. Horley, Loudwater, and Julian A. Waters, Goring-On-Thames, both of England, assignors to Imperial Chemical Industries PLC, London, England

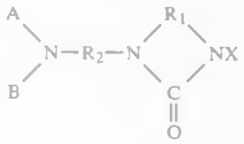
Division of Ser. No. 815,313, Jan. 2, 1986, Pat. No. 4,783,539, which is a continuation of Ser. No. 436,355, Oct. 25, 1982, abandoned. This application Jul. 12, 1988, Ser. No. 217,985

Claims priority, application United Kingdom, Oct. 23, 1981, 8132086; Apr. 30, 1982, 8212639

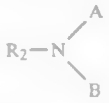
Int. Cl.⁴ C07D *233/36, 239/10*

U.S. Cl. 544—316 **5 Claims**

1. A polymerisable monomer of structure



wherein R_1 and R_2 are the same or different alkylene groups containing 2 or 3 carbon atoms, A is an alkyl group containing 2 to 18 carbon atoms substituted with at least one cyano group, B is a methacryloxyalkyl wherein the alkyl group contains 2 to 18 carbon atoms and is unsubstituted or substituted with a hydroxyl group and X is hydrogen, C_1 to $_{18}$ alkyl or



and wherein A and B are linked to the nitrogen through a carbon atom.

4,883,874

AZABICYCLIC INTERMEDIATES

Francis D. King, Bishop's Stortford; Michael S. Hadley, Sawbridgeworth, and Roger T. Martin, Stevenage, all of England, assignors to Beecham Group plc. of Beecham House, United Kingdom

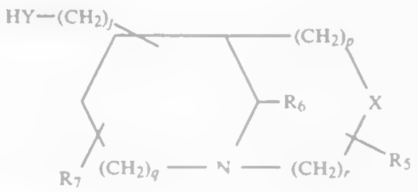
Division of Ser. No. 887,122, Jul. 17, 1986, Pat. No. 4,826,839. This application Feb. 8, 1989, Ser. No. 308,102

Claims priority, application United Kingdom, Jul. 19, 1985, 8518236

Int. Cl.⁴ C07D *498/08, 513/03*

U.S. Cl. 544—47 **3 Claims**

1. A compound of formula (V):



(V)

wherein:

j is 0 or 1;

q is 0, 1 or 2;

p is 0 and r is 2;

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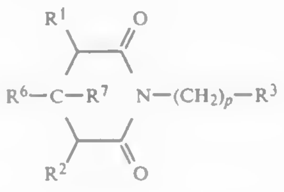
X is O, S or SO;
Y is NH;
one of R5 and R6 is hydrogen, C_{1-6} alkyl, phenyl or phenyl-C_{1-6} alkyl, which phenyl moieties may be substituted by C_{1-6} alkyl, C_{1-6} alkoxy or halogen; and the other is hydrogen or C_{1-6} alkyl; and
R7 is hydrogen, C_{1-6} alkyl, phenyl or phenyl-C_{1-3} alkyl, which phenyl moieties may be substituted by C_{1-6} alkyl, C_{1-6} alkoxy, CF_3 or halogen.

4,883,875

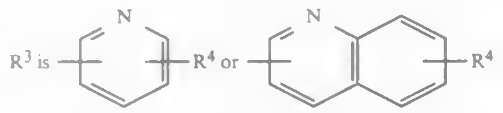
ANTIPSYCHOTIC IMIDES

Magid A. Abou-Gharbia, Glen Mills, Pa., assignor to American Home Products Corporation, New York, N.Y.
Division of Ser. No. 21,952, Mar. 5, 1987, Pat. No. 4,851,533. This application Apr. 7, 1989, Ser. No. 335,172
Int. Cl.^{4} C07D *215/00*
U.S. Cl. 546—16 2 Claims

1. A compound of the formula:



in which
R^1 and R^2 are hydrogen or alkyl of 1 to 3 carbon atoms;
R^6 and R^7, taken together, are tetramethylene, pentamethylene or hexamethylene;
p is one of the integers 2, 3, 4 or 5;
and



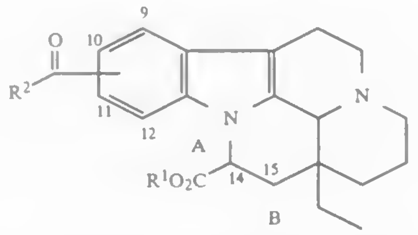
where
R^4 is hydrogen, alkyl of 1 to 6 carbon atoms; alkoxy of 1 to 6 carbon atoms or halo;
or a pharmaceutically acceptable salt thereof.

4,883,876

ACYLATED VINCAMINIC ACID DERIVATIVES

Shin-ichi Nakatsuka, Aichi; Masatoshi Hayashi, Saitama; Sadakazu Yokomori, Urawa; Yoshimoto Nakashima, Ageo; Katsuo Hatayama, Omiya, and Hiroaki Araki, Hasuda, all of Japan, assignors to Taisho Pharmaceutical Co., Ltd., Japan
Filed Sep. 2, 1988, Ser. No. 239,687
Claims priority, application Japan, Sep. 7, 1987, 62-223753
Int. Cl.^{4} C07D *461/00;* **A61K** *31/475*
U.S. Cl. 546—51 2 Claims

1. Vincaminic acid derivatives represented by the formula



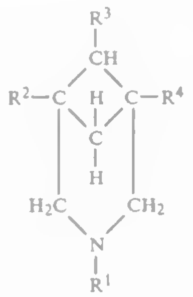
wherein R^1 is a hydrogen atom, an alkyl group having 1 to 8 carbon atoms or an alkoxyalkyl group having 2 to 6 carbon atoms, R^2 is a hydrogen atom, an alkyl group having 1 to 10 carbon atoms, a halogenated alkyl group having 1 to 5 carbon atoms, a cycloalkyl group having 3 to 6 carbon atoms, an alkoxycarbonylalkyl group having 3 to 8 carbon atoms, an alkenyl group having 2 to 4 carbon atoms, a phenyl group, a phenyl group substituted by alkoxy groups each having 1 or 2 carbon atoms or a thienyl group, A is a hydroxyl group, B is a hydrogen atom, or A and B together form a valence bond, and the acid addition salts thereof.

4,883,877

AZABICYCLOHEPTANES AND PROCESS FOR THEIR PREPARATION

Alex Alder, Arisdorf, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.
Filed Oct. 31, 1988, Ser. No. 264,584
Claims priority, application Switzerland, Nov. 13, 1987, 4434/87
Int. Cl.^{4} C07D *221/22*
U.S. Cl. 546—112 11 Claims

1. A compound of the formula I



(I)

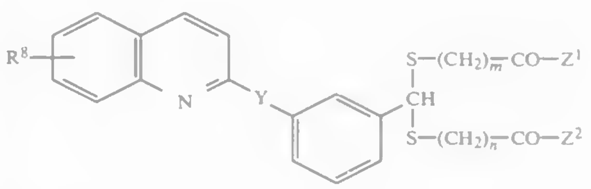
or an ammonium salt thereof, in which R^1 is a hydrogen atom, linear or branched C_1–C_{20}alkyl, C_3–C_8cycloalkyl, C_4–C_{20}alkylcycloalkyl, C_4-C_{12} cycloalkylalkyl, C_5–C_{20}alkylcycloalkylalkyl, C_6–C_{14}aryl, C_7–C_{20}alkaryl or aralkyl or C_8–C_{20}alkaralkyl, which is unsubstituted or substituted by halogen, —OH, —CN, —NO_2, C_1–C_6halogenoalkyl, —COOH, —SO_3H, R^5CO-, R^5COO-, R^5OCO-, R^5OSO_2-, R^5SO_2-, R^5SO_3-, C_1–C_6halogenoalkyl, C_1–C_6alkoxy, C_1–C_6alkylthio, C_6–C_{10} aryloxy or arylthio or C_7–C_{12}aralkyloxy or aralkylthio, in which R^5 is C_1–C_{12}alkyl, C_4–C_7cycloalkyl, C_5–C_{16}alkylcycloalkyl or cycloalkylalkyl, C_6–C_{16}alkylcycloalkylalkyl, C_6–C_{10}aryl, C_7–C_{16}aralkyl or alkaryl or C_8–C_{16}alkaralkyl, R^2 is a hydrogen atom, linear or branched C_1–C_{20}alkyl, alkoxy, alkylthio, C_3–C_8cycloalkyl, C_4–C_{20}alkylcycloalkyl or cycloalkylalkyl, C_5–C_{20}alkylcycloalkylalkyl, C_3–C_8cycloalkyloxy or -thio, C_4–C_{20}alkylcycloalkyloxy or -thio or cycloalkylalkyloxy or -thio, C_5–C_{20}alkylcycloalkylalkyloxy or -thio, C_6–C_{14}aryl, aryloxy or arylthio, C_7–C_{20}alkaryl, alkaryloxy or alkarylthio, C_7–C_{20}aralkyl, C_7–C_{20}aralkyloxy or -thio, C_8–C_{20}alkaralkyl or C_8–C_{20}alkaralkyloxy or -thio, which is unsubstituted or is substituted as defined for R^1, R^4 independently has the same meaning as R^2, with the exception of C_6–C_{14}aryl and C_7–C_{20}alkaryl which is unsubstituted or substituted as defined for R^1, and R^3 independently has the meaning of R^2, or is halogen, carboxyl or carboxylate having 2 to 16 C atoms, with the proviso that R^1, R^2, R^3 and R^4 are not simultaneously H.

4,883,878

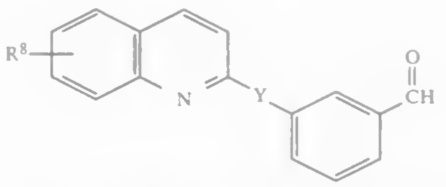
PROCESS FOR UNSYMMETRICAL DITHIOACETALS AND DITHIOKETALS

Joseph S. Amato, Brooklyn, N.Y.; James M. McNamara, Rahway, N.J.; Johnnie L. Leazer, Jr., Piscataway, N.J.; Paul J. Reider, Westfield, N.J., and Robert A. Reamer, Bloomfield, N.J., assignors to Merck & Co. Inc., Rahway, N.J.
Filed Feb. 8, 1988, Ser. No. 153,399
Int. Cl.^{4} C07D *215/12*
U.S. Cl. 546—172 6 Claims

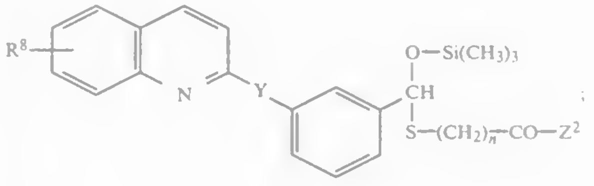
1. A process for preparing a compound having the formula



wherein
R^8 is:
(a) hydrogen;
(b) C_1-C_6 alkyl;
(c) C_1-C_6 alkoxy; or
(d) halogen;
Y is:
(a) C_2-C_6 alkylene; or
(b) C_2-C_6 alkenylene;
Z^1 is C_1-C_6 alkoxy or $NR^{11}R^{12}$, wherein
R^{11} and R^{12} are independently hydrogen or C_1-C_6 alkyl;
Z^2 is C_1-C_6 alkyl; and
m and n are independently integers of from 1 to 10;
comprising:
(a) allowing one part by moles of a compound of the formula



to react, in a suitable organic solvent, with a mixture of about 0.8 to 1.2 parts by moles of a thiol of the formula HS—$(CH_2)_n$—(C=O)—Z^2 and an excess of hexamethyldisilazane, in the presence of imidazole, to form a trimethylsilylated hemithioacetal intermediate of the formula



;

and

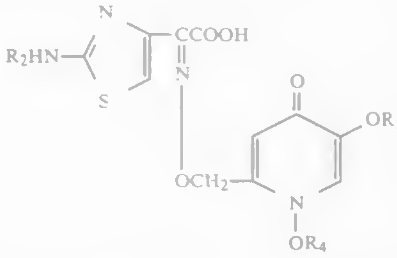
(b) allowing the trimethylsilylated hemithioacetal intermediate to react, in a suitable organic solvent, with at least about 0.8 to 1.2 parts by moles of thiol of the formula HS—$(CH_2)_m$—(C=O)—Z^1, in the presence of boron trifluoride etherate.

4,883,879

CEPHALOSPORIN COMPOUNDS, PROCESSES FOR THEIR PREPARATION AND ANTIBACTERIAL AGENTS

Yoshiyuki Zama, Nagareyama; Nobuo Ishiyama, Washinomiya; Tsuneo Saita, Tokyo; Takanobu Naito, Funabashi; Masao Hirose, Iwai; Masaaki Yokoyama, Tokyo; Taiji Asano, Fukuoka; Hisato Senda, Tokyo; Keiji Sekine, Omiya, and Shigeru Sanai, Wako, all of Japan, assignors to Kaken Pharmaceutical Co., Ltd., Tokyo, Japan
Division of Ser. No. 63,077, Jun. 17, 1987, Pat. No. 4,822,786. This application Jan. 13, 1989, Ser. No. 296,765
Claims priority, application Japan, Jul. 1, 1986, 61-152706; Aug. 18, 1986, 61-191590
Int. Cl.^{4} C07D *417/12*
U.S. Cl. 546—280 1 Claim

1. A compound having the formula:



(II)

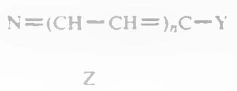
wherein R_2 is a hydrogen atom or an amino-protecting group selected from the group consisting of tri-lower alkylsilyl, acyl and aralkyl, and each of R_3 and R_4 is a hydrogen atom or a hydroxyl-protecting group selected from the group consisting of tri-lower alkylsilyl, acyl, aralkyl, methoxymethyl, allyl and pyranyl, or a reactive derivative thereof selected from the group consisting of a salt, acid halide, ester, anhydride, amide and azide.

4,883,880

PROCESS FOR THE PREPARATION OF SULFOALKYL QUATERNARY SALTS AND FOR THE PRODUCTION OF ALKANE SULTONES

Helmut Kampfer, Cologne, and Wolfgang Himmelmann, Leverkusen, both of Fed. Rep. of Germany, assignors to AGFA-Gevaert Aktiengessellschaft, Leverkusen, Fed. Rep. of Germany
Continuation-in-part of Ser. No. 373,986, May 3, 1982, abandoned, which is a continuation-in-part of Ser. No. 440,201, Nov. 18, 1982, abandoned. This application Aug. 8, 1983, Ser. No. 520,911
Int. Cl.^{4} C07D *213/18, 327/04, 327/06, 143/42*
U.S. Cl. 546—347 13 Claims

1. The process for the preparation of sulfoalkyl quaternary salt of a tertiary amine by reacting the tertiary amine with a sulfoalkylating agent at an elevated temperature, wherein
(a) The tertiary amine corresponds to the following general formula II



$$N{=}(CH{-}CH{=})_nC{-}Y \quad Z$$

II

wherein
Y represents hydrogen, halogen, a saturated or unsaturated aliphatic group containing up to 6 carbon atoms; alkoxy, alkylthio or mercapto;
Z represents the members required for completing a heterocyclic group comprising at least one 5- or 6-membered heterocyclic ring; and
n=0 or 1;
(b) the sulfoalkylating agent is a sulfoalkylaryl ether of the following general formula

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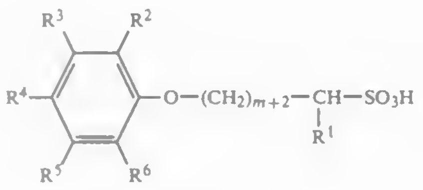


(I)

wherein

- R^1 represents hydrogen or methyl;
- R^2, R^3, R^4, R^5, R^6 represent hydrogen, alkyl having 1 or 2 carbon atoms, halogen, OCH_3, cyano or nitro (but not more than 2 nitro groups are present in the phenyl ring); or R^3 together with R^2 or R^4 represent ring members required for completing a condensed 5- or 6-membered ring; and
- m = 0 or 1; and

(c) the sulfoalkylating reaction is carried out at a temperature in the range of from 100° to 250° C.

4,883,881
PREPARATION OF UV GRADE SYNTHETIC PYRIDINE

David Feltler, New Windsor, and Henry Wetstein, Monroe, both of N.Y., assignors to Nepera, Inc., Harriman, N.Y.

Filed Apr. 27, 1988, Ser. No. 186,825

Int. Cl.⁴ C07D *213/02, 213/127*

U.S. Cl. 546—353 **12 Claims**

1. A method of preparing UV-grade synthetic pyridine from a pyridine-containing reaction product mixture which also contains at least one other compound which is UV absorbing to a sufficient extent that said pyridine mixture is not UV grade, said mixture being obtained from the condensation reaction, over an effective catalyst, of one of more aldehydes and/or ketones with one or more amines and/or ammonia,

comprising recovering from said mixture a pyridine-water azeotrope effective to separate pyridine therefrom sufficiently free of UV-absorbing compounds to be UV grade.

4,883,882
PROCESS FOR THE PREPARATION OF COMPOUNDS CONTAINING A TRIAZOLE AND TETRAHYDROFURAN GROUP, AND NEW COMPOUNDS CAPABLE OF BEING EMPLOYED FOR THE PREPARATION OF THE SAID COMPOUNDS

Jean P. Corbet, Ecully, and Jean M. Mas, Villeurbanne, both of France, assignors to Rhone-Poulenc Agrochimie, Lyons, France

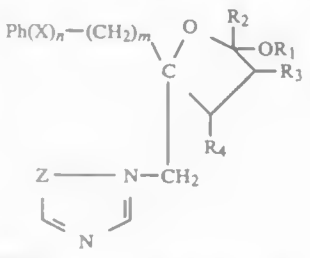
Filed Aug. 24, 1987, Ser. No. 88,257

Claims priority, application France, Aug. 22, 1986, 86 12096

Int. Cl.⁴ C07D *249/08*

U.S. Cl. 548—262 **20 Claims**

1. A process for the synthesis of compounds of formula I,

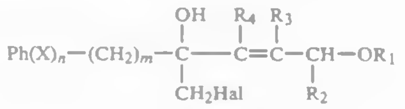


(I)

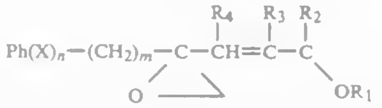
in which:

- R_1 denotes the hydrogen atom or a lower alkyl, lower cycloalkyl, aryl or aralkyl radical, wherein said radical is unsubstituted or substituted by one or more atoms or radicals,
- R_2, R_3 and R_4, which are identical or different denote a hydrogen atom or a lower alkyl or lower cycloalkyl radical, wherein said radical is unsubstituted or substituted by one or more atoms or radicals,
- X is a halogen atom or an alkyl or alkoxy group containing from 1 to 12 carbon atoms which is unsubstituted or substituted with a mono- or polyhalogenated or a cyano group in the case where one or more of R_3 and R_4 correspond to the hydrogen atom,
- n is zero or a positive integer which is smaller than 6, it being understood that when n is greater than 1, the substituents X may be either identical or different,
- m equals 0 or 1, and Z denotes a trivalent group consisting either of a =CH— group or a nitrogen atom =N—, the process comprising:

isomerizing compounds of formula IV or IV*a*

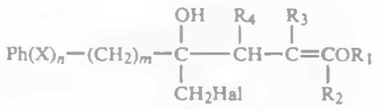


$$\mathrm{Ph(X)}_n-(\mathrm{CH_2})_m-\underset{\underset{\displaystyle \mathrm{CH_2Hal}}{|}}{\overset{\overset{\displaystyle \mathrm{OH}}{|}}{\mathrm{C}}}-\overset{\overset{\displaystyle R_4}{|}}{\mathrm{C}}=\overset{\overset{\displaystyle R_3}{|}}{\mathrm{C}}-\underset{\underset{\displaystyle R_2}{|}}{\mathrm{CH}}-\mathrm{OR}_1 \qquad \text{(IV)}$$

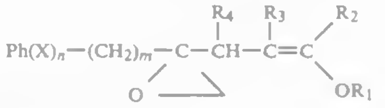


(IVa)

in which Hal corresponds to a halogen atom and X, n, m, and R_1 to R_4 have the same meaning as in the case of formula I, in the presence of a catalyst, in homogeneous or heterogeneous phase, so as to lead to the compounds of formula III or III*a*,



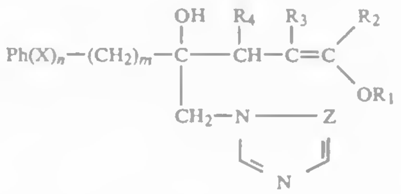
$$\mathrm{Ph(X)}_n-(\mathrm{CH_2})_m-\underset{\underset{\displaystyle \mathrm{CH_2Hal}}{|}}{\overset{\overset{\displaystyle \mathrm{OH}}{|}}{\mathrm{C}}}-\overset{\overset{\displaystyle R_4}{|}}{\mathrm{CH}}-\overset{\overset{\displaystyle R_3}{|}}{\mathrm{C}}=\underset{\underset{\displaystyle R_2}{|}}{\mathrm{C}}\mathrm{OR}_1 \qquad \text{(III)}$$



(IIIa)

this stage being followed:

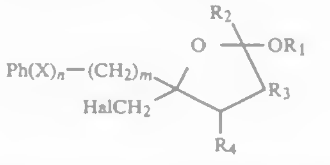
either by grafting an imidazole or triazole ring to produce a compound of formula II



(II)

in which X, n, m, R_1 to R_4 and Z have the same meaning as in formula I, followed by cyclizing the resulting compound in an acidic medium to produce a compound of formula I,

or, in the case of the compound of formula III, cyclizing a compound of formula III in an acidic medium to produce a compound of formula V,



(V)

in which X, m, n and R_1 to R_4 have the same meaning as in formula I, followed by grafting an imidazole or triazole ring in the presence of an acid scavenger to produce the compound of formula I.

4,883,883
NOVEL N[METH)ALLYLOXY(METH)ALLYLPHENYL]MALEIMIDES AND THERMOSETTING IMIDO COPOLYMERS PREPARED THEREFROM

Pascal Barthelemy, Lyons, and Michel Crochemore, Chaponost, both of France, assignors to Rhone-Poulenc Chimie, Courbevole, France

Filed Dec. 17, 1987, Ser. No. 134,088

Claims priority, application France, Dec. 17, 1986, 86 17916

Int. Cl.⁴ C07D *207/28;* **C07G** *101/44*

U.S. Cl. 548—549 **4 Claims**

1. N-[(meth)allyloxy-(meth)allylphenyl]maleimide.

4,883,884
TETRAHYDRO-5-ISOPROPYL-2-METHYL-2-THIOPHENE ACETONITRILE, ORGANOLEPTIC USES THEREOF AND PROCESS FOR PREPARING SAME

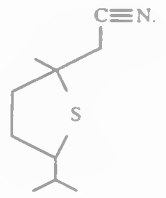
Richard M. Boden, Ocean, and Joseph A. McGhie, South Orange, both of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Filed Nov. 18, 1988, Ser. No. 273,016

Int. Cl.⁴ C07D *333/12;* **A23L** *2/26*

U.S. Cl. 549—74 **1 Claim**

1. The tetrahydro-5-isopropyl-2-methyl-2-thiophene acetonitrile having the structure:



4,883,885
OXOLABDANES

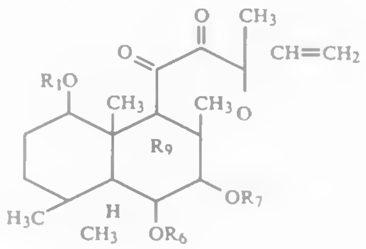
Nicholas J. Hrib, Somerville, N.J., assignor to Hoechst-Roussel Pharmaceuticals Inc., Somerville, N.J.

Division of Ser. No. 901,337, Aug. 28, 1986, Pat. No. 4,740,522. This application Feb. 8, 1988, Ser. No. 153,631

Int. Cl.⁴ C07D *311/92*

U.S. Cl. 549—214 **10 Claims**

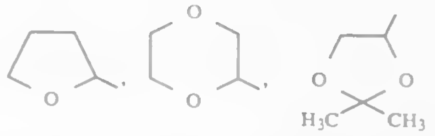
1. A process for the preparation of a compound of the formula



wherein:

(a) R_1 is hydrogen, a group of the formula R_2CO wherein R_2 is hydrogen or loweralkyl of 1 to 6 carbon atoms or a group of the formula $R_3R_4R_5Si$ wherein R_3, R_4 and R_5 are loweralkyl of 1 to 6 carbon atoms;

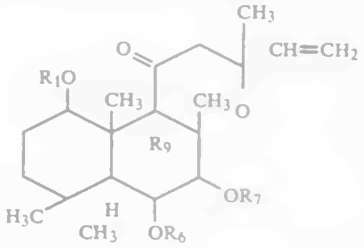
(b) R_6 and R_7 are independently hydrogen, a group of the formula R_8CO wherein R_8 is hydrogen, loweralkyl of 1 to 6 carbon atoms, CH_3CHOH, $HOCH_2CHOH$,



or a group of the formula $R_{10}O(CH_2)_n$ wherein R_{10} is independently hydrogen or loweralkyl of 1 to 6 carbon atoms and n is 2, 3 or 4;

(c) R_9 is a group of the formula OR_{13} wherein R_{13} is hydrogen;

(d) R_6 and R_7 taken together from a group of the formula CO or a group of the formula SO which comprises contacting a compound of the formula



wherein R_1, R_6 and R_7 are as above and R_9 is hydrogen with selenium dioxide.

4,883,886
PROCESS FOR MANUFACTURING POLYALKENYL SUCCINIC ANHYDRIDES

Chente Huang, Naperville, Ill., assignor to Amoco Corporation, Chicago, Ill.

Filed Jan. 14, 1988, Ser. No. 143,760

Int. Cl.⁴ C07D *307/60*

U.S. Cl. 549—255 **3 Claims**

1. A process in which a polymer of a C_2–C_8 olefin having a number average molecular weight of about 250 to 30,000 undergoes reaction with an unsaturated aliphatic dicarboxylic acid anhydride in two stages in the presence of 5–500 ppm, based on said polymer, of a tar and side product suppressing agent to form an alkenylsubstituted anhydride, said process having a first stage comprising the following steps: (1) charging to a reaction zone said olefin polymer; (2) heating same to a reaction temperature of about 150° C. to about 300° C.; (3) charging about 30 to about 60 weight percent of the total amount of tar and side product suppressing agent intended for use in the reaction; (4) charging said anhydride to the heated reaction zone gradually over a period of about 1 to 3 hours and in an amount in the range of about 50 to about 75 weight percent of the total amount of anhydride intended for the reaction while maintaining said reaction temperature; and (5) allowing the reaction of the anhydride and polymer to proceed at said reaction temperature for a period of about 2 to 7 hours following completion of said anhydride addition; followed by a second stage comprising the steps of: (1) charging the remaining tar and side product suppressing agent to the reaction zone; (2) charging the remaining anhydride to the reaction zone gradually over a 1 to 3 hour period; and (3) allowing the reaction of the anhydride and polymer to proceed to completion.

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4,883,887

SULFONE POLYENE INTERMEDIATES

Kurt Bernhard, Lupsingen; Stephan Jäggli, Bubendorf; Paul Kreienbühl, Rieben, and Ulrich Schwieter, Reinach, all of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

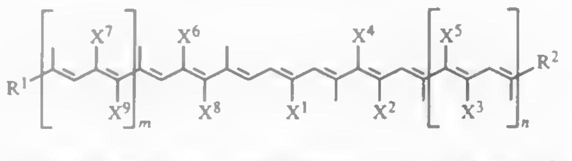
Filed Jul. 1, 1988, Ser. No. 214,567

Claims priority, application Switzerland, Jul. 9, 1987, 2615/87; May 9, 1988, 1749/88

Int. Cl.⁴ C07D *317/72;* **C07C** *147/08*

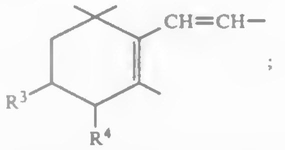
U.S. Cl. 549—341 22 Claims

1. Compounds of the general formula



1

wherein m and n are independently 0 or 1, R^1 and R^2 are selected from the group consisting of 4-methyl-3-pentenyl, formyl protected with an acetal protecting group, carboxy, carboxy esterified with an ester protecting group, and a group of the formula:



;

II

R^3 and R^4 are hydrogen, hydroxy, hydroxy protected with a protecting group, oxo or oxo protected with a protecting group; with the proviso that when m is 1, R^1 is 4-methyl-3-pentenyl; and when m is 0, R^1 is other than 4-methyl-3-pentenyl; and when n is 1, R^2 is 4-methyl-3-pentenyl and when n is 0, R^2 is other than 4-methyl-3-pentenyl; only one of X^1, X^2, X^3, X^4 and X^5 being a sulfonyl residue while the others are hydrogen; and X^6, X^7, X^8 and X^9 all being hydrogen except in the case where R^1 and R^2 are both selected from the same group and X^1 is hydrogen, then in this case, X^6 can be either hydrogen or a sulfonyl residue if X^2 is a sulfonyl residue, X^7 can be either hydrogen or a sulfonyl residue if X^3 is a sulfonyl residue, X^8 can be either hydrogen or a sulfonyl residue, if X^4 is a sulfonyl residue, and X^9 can be either hydrogen or a sulfonyl residue if X^5 is a sulfonyl residue.

4,883,888

OXA-FENCHYL AMINES USEFUL FOR PREPARING HIGH INTENSITY SWEETENERS

John M. Gardlik, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jul. 13, 1984, Ser. No. 630,464

Int. Cl.⁴ C07D *307/00*

U.S. Cl. 549—463 2 Claims

1. endo-2-Amino-1,3,3-trimethyl-7-oxabicyclo[2.2.1]-heptane.

4,883,889

ALKYLENE OXIDES PRODUCTION USING MOLTEN NITRATE SALT CATALYST AND A CO-CATALYST

B. Timothy Pennington, Sulphur, La., assignor to Olin Corporation, Cheshire, Conn.

Continuation-in-part of Ser. No. 929,552, Nov. 12, 1986, Pat. No. 4,785,123. This application Apr. 18, 1988, Ser. No. 182,617

The portion of the term of this patent subsequent to Nov. 15, 2005, has been disclaimed.

Int. Cl.⁴ C07 *301/06*

U.S. Cl. 549—532 17 Claims

1. A process for producing an alkylene oxide or mixture of alkylene oxides by a reaction which comprises reacting an olefin having from 3 to 22 carbon atoms per molecule, or mixture thereof, with an oxygen-containing gas, said olefin and said oxygen-containing gas being gaseous reactants, by contacting said gaseous reactants with a bath, stream, spray or mist of at least one molten nitrate salt catalyst and a co-catalyst, said catalyst being present in an amount sufficient to absorb any heat generated during said reaction while maintaining an essentially constant reaction temperature, said co-catalyst being an elemental metal, or oxide or hydroxide thereof, which is suspended, dispersed or dissolved in said catalyst, said reaction being conducted at a reaction temperature of between about 135° C. and about 600° C. and a reaction pressure of between about 1 and about 50 atmospheres.

4,883,890

UNSYMMETRICAL ORGANIC DISULFIDE COMPOUNDS USEFUL AS ANTIRADIATION AGENTS

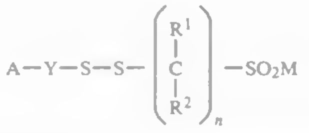
Lamar Field, Nashville, Tenn.; Hikmat A. Musallam, Damascus, Md.; Jeffrey D. Macke, Ft. Mitchell, Ky., and Pramod K. Srivastava, Varanasi, India, assignors to Vanderbilt University, Nashville, Tenn.

Division of Ser. No. 907,882, Sep. 16, 1986. This application Aug. 3, 1988, Ser. No. 228,010

Int. Cl.⁴ C07C *145/00*

U.S. Cl. 558—61 4 Claims

1. A compound of the formula



$$A-Y-S-S-\left(\begin{array}{c}R^1\\|\\C\\|\\R^2\end{array}\right)_n-SO_2M$$

wherein A is COOH, Y is a straight chain alkyl having from two to eight carbon atoms which may have an S-S group interposed therebetween, R^1 and R^2 are hydrogen or cycloalkyl, n is an integer from two through five, M is hydrogen, alkali metal or a straight chain alkyl having up to four carbon atoms.

4,883,891

PHOSPHATE AND PHOSPHONATE COMPOUNDS

Thomas A. Hardy, Thousand Oaks, Calif., and Edward N. Walsh, New City, N.Y., assignors to Akzo America Inc., New York, N.Y.

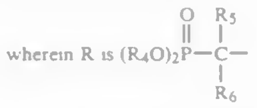
Division of Ser. No. 20,829, Mar. 2, 1987, Pat. No. 4,808,744, which is a continuation of Ser. No. 737,128, May 23, 1985, abandoned. This application Oct. 17, 1988, Ser. No. 258,536

Int. Cl.⁴ C07F *9/40*

U.S. Cl. 558—161 6 Claims

1. A compound of the formula:

$$(RO)_n(R_1O)_{2-n}P(O)Z$$



$$\text{wherein R is } (R_4O)_2\overset{\overset{\displaystyle O}{\|}}{P}-\underset{\underset{\displaystyle R_6}{|}}{\overset{\overset{\displaystyle R_5}{|}}{C}}-$$

R_1 and R_4 are the same or different and are alkyl, aryl or haloaryl,

R_5 and R_6 are the same or different and are hydrogen, alkyl, haloalkyl, aryl, or haloaryl,

n is 1 or 2, and

Z is hydrogen.

4,883,892

PHOSPHATE AND PHOSPHONATE COMPOUNDS

Thomas A. Hardy, Thousand Oaks, Calif., and Edward N. Walsh, New City, N.Y., assignors to Akzo America Inc., New York, N.Y.

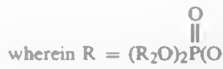
Division of Ser. No. 20,829, Mar. 2, 1987, Pat. No. 4,808,744, Continuation-in-part of Ser. No. 737,128, May 23, 1985, abandoned. This application Oct. 20, 1988, Ser. No. 260,342

Int. Cl.⁴ C07F *9/09*

U.S. Cl. 558—164 4 Claims

1. A compound of the formula:

$$(RO)_n(R_1O)_{2-n}P(O)Z$$



$$\text{wherein } R = (R_2O)_2\overset{\overset{\displaystyle O}{\|}}{P}(OR_3)_x$$

R_1 and R_2 are the same or different and are alkyl, aryl or haloaryl,

R_3 is alkylene or haloalkylene,

n is 1 or 2,

x is an integer from 1 to 10, and

Z is hydrogen.

4,883,893

PROCESS FOR THE CONTINUOUS PRODUCTION OF PHTALODINITRILE

Enrico Pontoglio, Brescia; Sandro Parodi, Nuvolento, and Giancarlo Caretti, Brescia, all of Italy, assignors to Caffaro s.p.a. Societa per l'Industria Chimica Ed Elettro Chimica, Milan, Italy

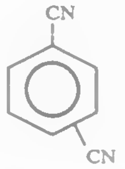
Filed May 19, 1987, Ser. No. 52,028

Claims priority, application Italy, Jun. 24, 1986, 20884 A/86

Int. Cl.⁴ C07C *120/04*

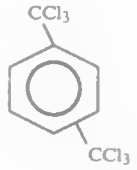
U.S. Cl. 558—308 8 Claims

1. Process for the preparation of compounds of formula (I)



(I)

by reacting a compound of formula (II)



(II)

with ammonia vapours in the presence of a dehydration catalyst, wherein:

(a) the compounds of formula (II) are reacted in the form of vapours;

(b) the reaction is effected in the absence of solvent; and

(c) the catalyst is in the form of a fixed bed, wherein the temperatures ranges from 300° to 450° C.

4,883,894

PROCESS FOR THE PRODUCTION IN CONTINUOUS OF PHTHALODINITRILE

Enrico Pontoglio, Brescia; Sandro Parodi, Nuvolento, and Giancarlo Caretti, Brescia, all of Italy, assignors to Caffaro s.p.a. Societa per l'Industria Chimica ed Elettrochimica, Milan, Italy

Filed Mar. 24, 1987, Ser. No. 29,717

Claims priority, application Italy, Apr. 14, 1986, 20077 A/86

Int. Cl.⁴ C07C *120/00*

U.S. Cl. 558—311 7 Claims

1. Process for the preparation of a compound of formula (I) by reacting a compound of formula (II) with ammonia vapours in the presence of a dehydration catalyst, wherein the improvement is that

(a) the compounds of formula (II) are reacted in the form of vapours;

(b) the reaction is effected in the absence of solvent;

(c) the catalyst is in the form of a fixed bed, the temperature of which ranges from 250 to 450° C.

4,883,895

AMMOXIDATION OF PARAFFINS AND CATALYSTS THEREFOR

James F. Brazdil, Jr., Mayfield Village; Linda C. Glaeser, Lyndhurst, and Mark A. Toft, Lakewood, all of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Division of Ser. No. 250,654, Sep. 29, 1988. This application May 8, 1989, Ser. No. 348,438

The portion of the term of this patent subsequent to Mar. 21, 2006, has been disclaimed.

Int. Cl.⁴ C07C *120/14*

U.S. Cl. 558—319 4 Claims

1. A process for making an α,β-unsaturated mononitrile by the catalytic reaction in the vapor phase of a paraffin selected from propane and isobutane with molecular oxygen and ammonia and optionally a gaseous diluent, by catalytic contact of the foregoing reactant in a reaction zone with an intimate particulate mixture of a first catalyst composition and a second catalyst composition, said feed to the reaction zone containing a mole ratio of said paraffin:NH_3 in the range from 2 to 16 and a mole ratio of said paraffin to O_2 in the range from 1 to 10, said first catalyst composition being 0–99 weight percent of a diluent/support and 100-1 weight percent of a catalyst having the components in the proportions indicated by the empirical formula:

$VP_pW_wA_aD_dC_cT_tO_x$ (formula)

where

A is one or more of Sn, Mo, B and Ge;

D is one or more of Fe, Co, Ni, Cr, Pb, Mn, Zn, Se, Te, Ga, Zr, In and As;

C is one or more of an alkali metal and Tl;

T is one or more of Ca, Sr, Mg and Ba; and

where a is 0–10;

d is 0–10;

c is 0–1;

t is 0–10;

p is 0.1–20;

w is 0.2–10;

the ratio $(a+c+d+t+w):(1+p)$ is no more than 6; x is determined by the oxidation state of the other elements present; and no more than 2 atoms of Mo are present per atom of V; said second catalyst composition being 0–99 weight percent of a diluent/support and 100-1 weight percent of a catalyst having the components in the proportions indicated by the empirical formula:

$Bi_kFe_lMo_{12}H_hE_eF_fG_gO_x$ (formula 2)

where

H is one or more of an alkali metal, Sm, Ag

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E is one or more of Mn, Cr, Cu, V, Zn, Cd, La,
F is one or more of P, As, Sb, Te, W, B, Sn, Pb, Se
G is one or more of Co, Ni, alkaline earth metal and
K is 0.1–12,
l is 0.01–12,
h is 0–0.5,
e is 0.10,
f is 0–10,
g is 0–12,
$k+l+h+e+f+g \leqq 24$, and
x is a number determined by the valence requirements of the other elements present, wherein the weight ratio in said mixture of said first catalyst composition to said second catalyst composition is in the range of 0.001 to 2.5.

4,883,896

METHOD FOR AMMOXIDATION OF PARAFFINS AND CATALYST SYSTEM THEREFOR

Linda C. Glaeser, Lyndhurst; James F. Brazdil, Jr., Mayfield Village, and Mark A. Toft, Lakewood, all of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Division of Ser. No. 194,665, May 16, 1988. This application Nov. 14, 1988, Ser. No. 270,988

Int. Cl.⁴ C07C *120/14*

U.S. Cl. 558—319 10 Claims

1. A process for the ammoxidation of a C_3 to C_5 paraffin to an α,β-unsaturated mononitrile which comprises contacting in a reaction zone said paraffin in the vapor phase in admixture with ammonia, molecular oxygen, and optionally an inert gaseous diluent, with an intimate particulate mixture of a first catalyst composition and a second catalyst composition, said feed to the reaction zone containing a mole ratio of paraffin:NH_3 in the range from 2 to 16, and a mole ratio of paraffin-:O_2 in the range from 1 to 10 said first catalyst composition being 0–99 weight percent of a diluent/support and 100–1 weight percent of a catalyst having oxygen and the cation components in the proportions indicated by the empirical formula:

$$Bi_aV_bL_lM_mT_tO_x, \qquad \text{formula (1)}$$

wherein
L is one or more of K, Cs, Rb and Tl;
M is one or more of Mo, W, Cr, Ge, Sb, Sn, P, Pb and B;
T is one or more of Zn, Nb, Ta, Fe, Co, Ni Cu, Mn, Ti and rare earths,
$a=1\text{–}25$
$b=1\text{–}50$
$l=0\text{–}1$
$m=0.1\text{–}20$
$t=0\text{–}20$
x is determined by the oxidation state of the other elements in the catalyst,
$(a+b):(l+m+t)=20:1$ to $1:5$
$a:b=1:5\text{–}5:1$ with the proviso that the atomic ratio of Mo:V is zero to <10; said second catalyst composition being 0–99 weight percent of a diluent/support and 100–1 weight percent of a catalyst having oxygen and the cation components in the proportions indicated by the empirical formula:

$$Bi_kFe_lMo_{12}V_vD_dE_eF_fG_gO_x \qquad \text{formula (2)}$$

where
D is one or more of an alkali or alkaline earth metal, Sm, Ag
E is one or more of Mn, Cr, Cu, Zn, Cd, La,
F is one or more of P, As, Sb, Te, W, B, Sn, Pb, Se
G is one or more of Co, Ni
and k is 0.1–12, l is 0.01–12, v is 0–0.5, d is 0–0.5, e is 0–10, f is 0–10, g is 0–12, $v+k+l+d+e+f+g \leqq 24$, and x is a number determined by the valence requirements of the other elements present, wherein the weight ratio in said mixture of said first catalyst composition to said second catalyst composition is in the range of 0.001 to 2.5.

4,883,897

PROCESS FOR PRODUCING 2,6-DICHLOROBENZONITRILE

Yutaka Kiyomiya, Fujisawa; Yasumasa Yamaguchi; Masahiro Ushigome, both of Yokohama, and Hiroshi Murata, Tokyo, all of Japan, assignors to Nitto Chemical Industry Co., Ltd., Tokyo, Japan

Filed Dec. 21, 1987, Ser. No. 135,353

Claims priority, application Japan, Dec. 19, 1986, 61-303363; Dec. 19, 1986, 61-303364

Int. Cl.⁴ C07C *120/14, 120/00, 121/52*

U.S. Cl. 558—327 2 Claims

1. A process for producing 2,6-dichlorobenzonitrile comprises contacting a starting gas consisting of 2,6-dichlorotoluene, air and ammonia with a fluidized bed a metallic oxide ammoxidation catalyst is carried on a carrier under the following conditions:
(a) the concentration of 2,6-dichlorotoluene in the starting gas is 2.6 mole % or more,
(b) the reactor effluent gas is contacted with water to cool to a temperature in the range of 50° to 90° C., whereby 2,6-dichlorobenzonitrile in the reaction product gas is collected as a slurry in which solidified 2,6-dichlorobenzonitrile is dispersed in water, and 2,6-dichlorobenzonitrile is obtained from the slurry, and
(c) the cooled reactor effluent gas from which 2,6-dichlorobenzonitrile has been removed is contacted with water again to cool to a temperature in the range of 0° to 40° C., whereby unreacted 2,6-dichlorotoluene in the gas is collected as a dispersion in which it is dispersed in water and 2,6-dichlorotoluene is recovered from the dispersion.

4,883,898

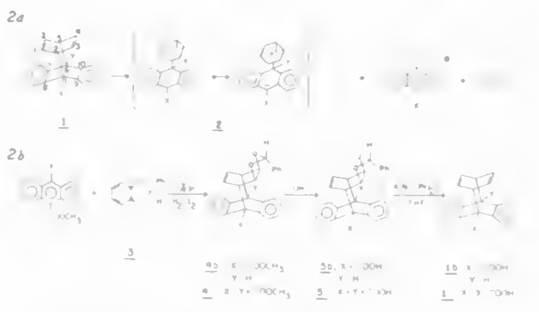
CHEMILUMINESCENT COMPOUNDS

Nien-chu C. Yang, Chicago, Ill., assignor to University of Chicago, Chicago, Ill.

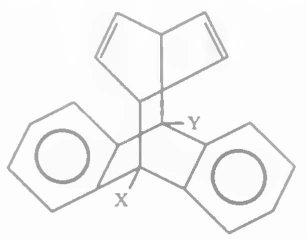
Filed Dec. 10, 1987, Ser. No. 131,113

Int. Cl.⁴ C07C *69/76, 63/33;* **C09K** *11/00*

U.S. Cl. 558—427 13 Claims



1. A composition of matter comprising compounds of the following structure:



wherein X is hydrogen or an electron-withdrawing group; and Y is hydrogen or an electron-withdrawing group; and no more than one of X and Y are hydrogen.

4,883,899

END CARBOXYL BEARING REACTIVE VINYL MONOMERS AND PREPARATION THEREOF

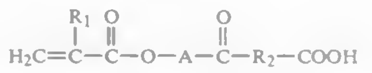
Hisaichi Muramoto, Osaka; Keizou Ishii, Ashiya, and Tadafumi Miyazono, Takatsuki, all of Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 1,011, Jan. 7, 1987. This application Apr. 28, 1989, Ser. No. 345,005

Int. Cl.⁴ C07C *143/525, 69/75, 69/80, 67/08*

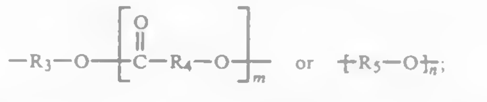
U.S. Cl. 560—14 4 Claims

1. An end carboxyl bearing reactive vinyl monomer represented by the formula;



$$H_2C=\overset{\overset{R_1}{|}}{C}-\overset{\overset{O}{\|}}{C}-O-A-\overset{\overset{O}{\|}}{C}-R_2-COOH \qquad (I)$$

wherein R_1 is hydrogen or methyl group; R_2 is a bivalent aliphatic hydrocarbon having 2 to 10 carbon atoms, a bivalent alicyclic hydrocarbon having 6 to 7 carbon atoms, phenylene or phenylene substituted with halogen, sulfo or carboxyl group; A is a repeating unit of the formula:



$$-R_3-O-\left[\overset{\overset{O}{\|}}{C}-R_4-O\right]_m- \quad \text{or} \quad -\!\!\left[R_5-O\right]_n;$$

R_3 is ethylene or propylene; R_4 is an alkylene having 2 to 7 carbon atoms; R_5 is an alkylene having 2 to 5 carbon atoms; m is an integer of 1 to 10 and n is an integer of 2 to 50.

4,883,900

PROCESS FOR THE PREPARATION OF ASPARTAME AND AGENTS FOR CARRYING IT OUT

Reinhold Keller, Bad Soden am Taunus; Merten Schlingmann, Königstein/Taunus, and Martin Platen, Frankfurt am Main, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

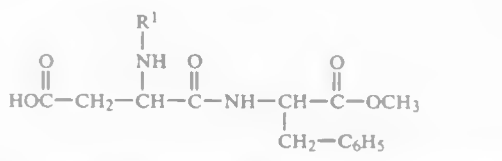
Continuation of Ser. No. 903,751, Sep. 5, 1986. This application Jul. 12, 1988, Ser. No. 219,859

Claims priority, application Fed. Rep. of Germany, Sep. 9, 1985, 3532027

Int. Cl.⁴ C07C *103/52*

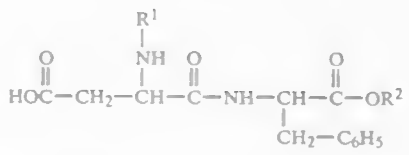
U.S. Cl. 560—41 10 Claims

1. A process for the preparation of an optically active form of the compound of the formula III



$$HO\overset{\overset{O}{\|}}{C}-CH_2-\overset{\overset{\overset{R^1}{|}}{NH}}{\overset{|}{C}H}-\overset{\overset{O}{\|}}{C}-NH-\underset{\underset{CH_2-C_6H_5}{|}}{CH}-\overset{\overset{O}{\|}}{C}-OCH_3 \qquad III$$

in which R_1 is an amino-protecting group, without a racemization occurring; on the two chiral carbon atoms under the reaction conditions, which process comprises dissolving the optically active compound of the formula II



$$HO\overset{\overset{O}{\|}}{C}-CH_2-\overset{\overset{\overset{R^1}{|}}{NH}}{\overset{|}{C}H}-\overset{\overset{O}{\|}}{C}-NH-\underset{\underset{CH_2-C_6H_5}{|}}{CH}-\overset{\overset{O}{\|}}{C}-OR^2 \qquad II$$

in which
R^1 is an amino-protecting group and
R^2 is an alkyl group having 3–7 carbon atoms, in anhydrous methanol, and transesterifying said compound at a temperature of −20° to 50° C. with the addition of an alkali metal alcoholate.

4,883,901

SYNTHESIS OF 2-(4-AMINOPHENOXY)ALKANOIC ACIDS AND ESTERS AND THEIR DERIVATIVES

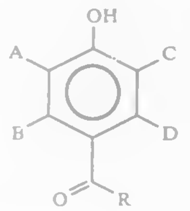
Varadaraj Elongo, Corpus Christi, Tex., assignor to Hoechst Celanese Corporation, Sommerville, N.J.

Filed Mar. 21, 1988, Ser. No. 170,712

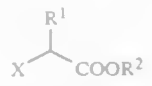
Int. Cl.⁴ C07C *101/72*

U.S. Cl. 560—45 36 Claims

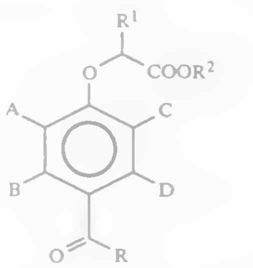
1. A method for synthesizing 2-(4-amidophenoxy)alkanoic acids or esters which comprises reacting a hydroxyaromatic ketone or benzaldehyde derivative of the formula



or a salt thereof; with a substituted acid or ester of the formula



under basic conditions to thereby form a 2-(4-acylphenoxy)alkanoic acid or ester derivative of the formula



and then reacting this intermediate with H_2N-R_3 to form a 2-(4-acyliminophenoxy)alkanoic acid or ester of the formula

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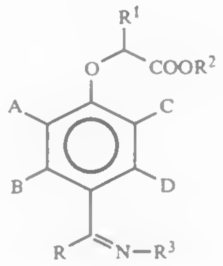
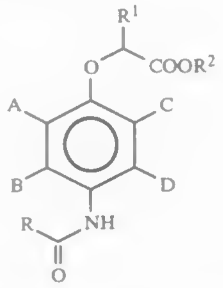


which is then subjected to a Beckmann Rearrangement in the presence of a catalyst to obtain a 2-(4-amidophenoxy)alkanoic acid or ester of the formula



wherein R, R^1, R^2 and R^4 are independently H, C_1 to C_{18} alkyl or C_6 to C_{10} aryl; and R^3 is OH, O—SO_3H; and A, B, C and D are independently H, X, CF_3, NO_2, CN, C_1 to C_4 alkyl or alkoxy, or C_6 to C_{10} aryl; and X is F, Cl, Br, I or a sulfonic ester.

4,883,902

METHOD OF PRODUCING TETRAKIS[3-(3,5-DI-TERT-BUTYL-4-HYDROXYPHENYL)PROPIONYLOXYMETHYL]METHANE

Masayoshi Gohbayashi, Nakatsu; Noritsugu Narita, Suzuka, and Makoto Maruno, Mie, all of Japan, assignors to Yoshitomi Pharmaceutical Industries, Ltd., Osaka, Japan

PCT No. PCT/JP88/00088, § 371 Date Sep. 28, 1988, § 102(e) Date Sep. 28, 1988, PCT Pub. No. WO88/05773, PCT Pub. Date Aug. 11, 1988

PCT Filed Feb. 1, 1988, Ser. No. 275,175

Claims priority, application Japan, Feb. 3, 1987, 62-24163

Int. Cl.^{4} C07C *69/76*

U.S. Cl. 560—75 **1 Claim**

1. A method of producing tetrakis[3-(3,5-di-tert-butyl-4-hydroxyphenyl)propionyloxymethyl]methane by ester exchange between a 3-(3,5-di-tert-butyl-4-hydroxyphenyl)propionic acid alkyl ester and pentaerythritol in the presence of a basic catalyst, which comprises carrying out the reaction in the presence of bis[2,2,2-tris(hydroxymethyl)ethoxy]methane.

4,883,903

NOVEL PROCEDURE FOR THE PREPARATION OF ACTIVATED NITROSOCARBAMATES

Pierre Roger, Montigny-les-Bretonneux; Jean-Paul Fournier, and Rolande Leroy, both of Paris, all of France, assignors to Sanofi, Paris, France

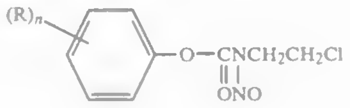
Filed Apr. 22, 1988, Ser. No. 184,915

Claims priority, application France, Apr. 22, 1987, 87 05708

Int. Cl.^{4} C07C *125/067, 69/96*

U.S. Cl. 560—137 **5 Claims**

1. Process for preparing a nitrosocarbamate of the formula:

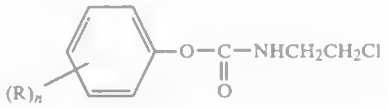


wherein:

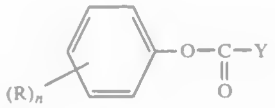
n is an integer of 2 to 5; and

R is Cl, Br or F;

comprising the step of reacting nitrosylsulfuric acid with a carbamate of the formula:



2. The process of claim 1, wherein the carbamate is obtained by reacting $NH_2CH_2CH_2Cl$ with a halogenoformate of the formula:



wherein Y is a halogen.

4,883,904

PROCESS FOR THE PREPARATION OF ETHYLTRIFLUOROACETOACETATE

Louis Amiet, and BErnard Langlois, both of Lyons, France, assignors to Rhone-Poulenc Specialites Chimiques, Courbevoie, France

Filed Jun. 12, 1986, Ser. No. 873,509

Claims priority, application France, Jun. 14, 1985, 85 09023

Int. Cl.^{4} C07C *67/313, 69/716, 67/343*

U.S. Cl. 560—174 **10 Claims**

1. A process for the preparation of ethyltrifluoroacetoacetate comprising the steps of:

(a) condensing ethyltrifluoroacetate and ethyl acetate in the presence of sodium ethoxide in an anhydrous medium in cyclohexane;

(b) neutralizing the condensation product in an anhydrous medium with a protonic acid to release an enol; and

(c) separating by distillation the ethyltrifluoroacetoacetate obtained.

4,883,905

PROCESS FOR PREPARING CITRATES USING ORGANIC TITANATES

Ezekiel H. Hull, Greensboro, and Edward P. Frappier, Kernersville, both of N.C., assignors to Morflex Chemical Company, Inc., Greensboro, N.C.

Continuation of Ser. No. 866,463, May 22, 1986, Pat. No. 4,710,532, which is a continuation of Ser. No. 711,284, Mar. 13, 1985, abandoned, which is a continuation-in-part of Ser. No. 619,583, Jun. 11, 1984, abandoned. This application Sep. 17, 1987, Ser. No. 97,801

The portion of the term of this patent subsequent to Dec. 8, 2004, has been disclaimed.

Int. Cl.^{4} C07C *67/313*

U.S. Cl. 560—180 **6 Claims**

1. A method of producing acetyltri-n-hexyl citrate comprising the steps of: heating n-hexyl alcohol and citric acid in the presence of an organic titanate at a temperature of approximately 140° C. to effect esterification, removing the excess n-hexyl alcohol and acetylating the ester by adding acetic anhydride and sulfuric acid while maintaining the temperature below approximately 110° C. until the acetylation reaction is complete.

4,883,906

PRODUCTION OF TRISUBSTITUTED HYDROXYALKYL ALKANOATES FROM ALDEHYDES

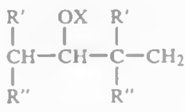
John N. Argyropoulos, Dunbar; Edmond J. Derderian; Brian T. Keen, both of Charleston, and Timothy G. Bumgardner, Liberty, all of W. Va., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Nov. 25, 1987, Ser. No. 125,139

Int. Cl.^{4} C07C *69/28*

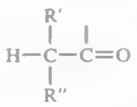
U.S. Cl. 560—238 **26 Claims**

1. In a process for producing and recovering a trisubstituted glycol monoester of the formula:



$$\underset{R''}{\overset{R'}{CH}}-\overset{OX}{CH}-\underset{R''}{\overset{R'}{C}}-CH_2OX \qquad (1)$$

wherein X is a hydrogen atom or a



$$H-\underset{R''}{\overset{R'}{C}}-C=O$$

group with the proviso that at any one time only one X group is a hydrogen atom and R′ and R″ individually are hydrocarbyl groups containing from 1 to about 10 carbon atoms, by the condensation at elevated temperature of a C_4 to C_{12} aldehyde in contact with a strong base catalyst and recovering the trisubstituted glycol monoester produced, the improvement in the recovering step comprising flowing the reaction product mixture directly and immediately to an initial distillation of the reaction product mixture before said mixture essentially cools or comes into contact with added aqueous medium, whereby untreated aldehyde and any water present are removed overhead and crude concentrated reaction product mixture bottoms comprising trisubstituted glycol monoester are recovered as a bottoms stream and said concentrated crude bottoms stream is subsequently further refined.

4,883,907

CARBAZATES

Ildiko Ratz nee Simonek; Pal Benko; Edit Berenyi nee Foldermann, and Karoly Magyar, all of Budapest, Hungary, assignors to Egis Gyogyszergyar, Budapest, Hungary

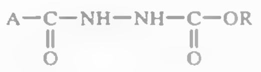
Continuation-in-part of Ser. No. 808,352, Dec. 11, 1985, Pat. No. 4,824,670. This application Apr. 11, 1988, Ser. No. 179,595

Claims priority, application Hungary, Dec. 12, 1984, 4616784

Int. Cl.^{4} C07C *125/063*

U.S. Cl. 560—24 **5 Claims**

1. A carbazate of the Formula (I)



$$A-\underset{\underset{O}{\|}}{C}-NH-NH-\underset{\underset{O}{\|}}{C}-OR \qquad (I)$$

wherein

A is C_3 to C_{10} alkenyl, C_2 to C_{10} haloalkyl, trifluoromethyl, phenyl-C_1 to C_3 alkyl, phenyl-C_2 to C_3 alkenyl, naphthyl-C_1 to C_3 alkyl, C_3 to C_7 cycloalkyl-C_1 to C_3 alkyl, furyl which can be nitro-substituted, diphenyl-hydroxymethyl or indazolyl which can be substituted by one or more C_1 to C_4 alkoxy groups; and

R is C_1 to C_4 alkyl;

or an agriculturally acceptable acid addition salt thereof.

4,883,908

PROCESS FOR THE PREPARATION OF AROMATIC ISOCYANATES FROM DIALKYL UREAS USING AN ORGANIC SULFONIC ACID PROMOTER

Edward T. Shawl, Wallingford; Haven S. Kesling, Jr., Drexel Hill, and Frank J. Liotta, Jr., Collegeville, all of Pa., assignors to Arco Chemical Technology, Inc., Wilmington, Del.

Filed Feb. 2, 1989, Ser. No. 305,356

Int. Cl.^{4} C07C *69/00*

U.S. Cl. 560—344 **16 Claims**

1. A process for the preparation of an aromatic mono- or poly- isocyanate having the formula

$Ar(NCO)_n$

wherein Ar is a mono-, di- or poly-valent aromatic radical which may be substituted with a halogen, ether, or nitro group or an alkyl group having from 1 to 10 carbon atoms and n is an integer of from 1 to 3 which comprises heating at a temperature within the range of from about 50° C. to about 220° C. an aromatic bis dialkyl urea having the formula

$Ar(NHCONR'R'')_n$

wherein Ar is as above described and R′ and R″ which may be the same or different, are an alkyl group having from 1 to 10 carbon atoms which may be substituted or unsubstituted mono-, di-, or tri-valent radicals selected from saturated or monoolefinic unsaturated straight or branched chain aliphatic or cycloaliphatic radicals and n is an integer of from 1 to 3, dissolved in or slurried in an organic solvent or mixture of solvents and in the presence of an organic sulfonic acid or sulfonated aromatic ion exchange resin as a promoter to convert the urea to the corresponding isocyanate, and thereafter separating and recovering the isocyanate.

4,883,909

LIQUID DIPHENYLMETANE DIISOCYANATE COMPOSITIONS

William E. Slack, Moundsville, W. Va., assignor to Mobay Corporation, Pittsburgh, Pa.

Filed May 11, 1988, Ser. No. 193,302

Int. Cl.^{4} C07C *119/48*

U.S. Cl. 560—351 **7 Claims**

1. A liquid, modified isocyanate prepared by reacting:

(i) 4,4′-diphenylmethane diisocyanate,

(ii) an organic material containing two or more primary and/or secondary aming groups, said organic material forming a product solid at 25° C. when reacted with 4,4′-diphenylmethane diisocyanate in an amount such that the resultant solid product would have an isocyanate group content of from 10 to 30% by weight, and

(iii) from 1 to 6% by weight, based on the combined weight of (i), (ii), and (iii) of tripropylene glycol; said modified isocyanate having an isocyanate group content of from about 10 to about 27% by weight.

4,883,910

OXIDATION OF ORGANICS BY A VANADIUM CONTAINING HETEROPOLYANION COMPOUND

William C. Seidel, Hockessin, Del., assignor to E. I. Du Pont De Nemours and Company, Wilmington, Del.

Filed Mar. 20, 1985, Ser. No. 714,196

Int. Cl.^{4} C07C *51/245*

U.S. Cl. 562—528 **17 Claims**

1. A process for liquid phase oxidation of (1) a cyclic aliphatic compound selected from the group consisting of olefins, alcohols and ketones, said cyclic aliphatic compound having at least 6 carbon atoms or (2) a 2,3- or 3,4-benzo-cycloaliphatic compound in which the cycloaliphatic moiety is an alcohol or ketone of 6 to 12 carbon atoms; said process comprising contacting in aqueous media in the absence of molecular oxygen at

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a temperature of from about 60° to 150° C. the cyclic aliphatic compound or the benzocycloaliphatic compound and at least one vanadium containing heteropolyanion compound having the formula $A_mXY_{12-n}V_n{}^{+5}O_{40}$ wherein

A is H, Li, K or Na;
X is p^{+5}, As^{+5}, Si^{+4}, Ge^{+4} or B^{+3};
Y is Mo or W;
n is an integer from 1 to 10; and
m is 3+n where X is P^{+5} or As^{+5}, 4+n where X is Si^{+4} or Ge^{+4} and 5+n where X is B^{+3}.

4,883,911
PROCESS FOR THE PREPARATION OF ALKYLTHIOALKANOATE SALTS

Dennis A. Ruest, Manchester, Mo., assignor to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 860,949, May 8, 1986. This application Oct. 6, 1988, Ser. No. 254,537

Int. Cl.⁴ C01C *147/02*

U.S. Cl. 562—581 **16 Claims**

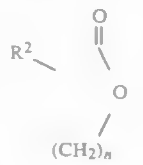
1. A process for the preparation of a compound correspond to the formula:

$$R^1—S—(CH_2)_n—(CH(R^2)—C(O)—OM$$

where R^1 is a lower alkyl group, M is alkali metal, n is an integer between 2 and 4 inclusive, and R^2 is selected from the group consisting of hydrogen, hydroxyl, amino $—OR^3$ and $—NH—R^4$ where R^3 is selected from the group consisting of alkyl and aryl, and R^4 is selected from the group consisting of alkyl, aryl, and acyl, the process comprising reacting an alkali metal and mercaptide corresponding to the formula:

$$R^1—S—M$$

where R^1 and M are as defined above, in the presence of an aprotic polar organic solvent, with a lactone corresponding to the formula:



where R^2 and n are as defined above, said aprotic organic solvent having a dipole moment greater than 1 and a dielectric constant greater than about 10.

4,883,912
PROCESS FOR THE RECOVERY OF ACETIC ACID

Kunio Koga; Koji Shima, and Mutsumi Samejima, all of Himejl, Japan, assignors to Daicel Chemical Industries, Ltd., Sakai, Japan

Continuation of Ser. No. 576,282, Jan. 10, 1984, abandoned. This application May 14, 1986, Ser. No. 865,927

Claims priority, application Japan, Jul. 6, 1982, 57-117445; PCT Int'l Appl., Jul. 6, 1983, PCT/JP83/00216

Int. Cl.⁴ C07C *51/48, 51/50, 53/08*

U.S. Cl. 562—608 **7 Claims**

1. A process for recovering acetic acid from an aqueous acetic acid solution containing one or more metal salts of sulfuric acid as an impurity, which comprises the steps of:

performing liquid-liquid extraction by flowing said aqueous acetic acid solution countercurrent to an organic liquid extractant consisting essentially of a mixture of a tertiary amine, an oxygen-containing organic solvent and sulfuric acid through a plurality of mixer-settler stages, the amount of sulfuric acid in said organic liquid extractant being at least equimolar to the amount of said metal salt of sulfuric acid in said aqueous acetic acid solution so that said amine reacts with the acetic acid to form an amine salt and said metal salt of sulfuric acid contacts and reacts with the amine salt of acetic acid in a zone containing a high concentration of acetic acid to form a metal salt of acetic acid which is dissolved in the aqueous phase, and then the metal salt of acetic acid reacts with sulfuric acid in a zone containing a low concentration of acetic acid to form a metal salt of sulfuric acid which is dissolved in the aqueous phase and the acetic acid is dissolved in the organic phase; and then separating and recovering the acetic acid from the organic liquid extractant.

4,883,913
STABILIZATION OF CHLOROFLUOROALKANES

Manfred Boedecker; Thomas Benecke; Werner Krücke, all of Hannover, and Willi Baumeister, Meinersen, all of Fed. Rep. of Germany, assignors to Kali-Chemie Aktiengesellschaft, Hannover, Fed. Rep. of Germany

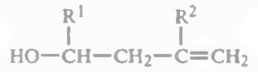
Filed Sep. 8, 1988, Ser. No. 241,468

Claims priority, application Fed. Rep. of Germany, Sep. 9, 1987, 3730221

Int. Cl.⁴ C07C *85/26*

U.S. Cl. 564—2 **20 Claims**

1. A method of stabilizing a composition comprising at least one chlorofluoroalkane and an amine or a polyol containing amino groups, said method comprising incorporating into said composition an effective stabilization promoting amount of a but-3-en-1-ol compound corresponding to the formula:



$$\mathrm{HO-\overset{\overset{R^1}{|}}{C}H-CH_2-\overset{\overset{R^2}{|}}{C}{=}CH_2} \qquad (I)$$

wherein R^1 and R^2 each individually represent hydrogen, a straight-chain or branched C_1 to C_4 alkyl group, a phenyl group or a substituted phenyl group.

4,883,914
BENZENESULFONYL CARBOXAMIDE COMPOUNDS USEFUL AS HERBICIDAL AGENTS

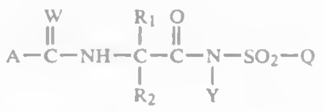
Sergio I. Alvarado, Princeton; Alvin D. Crews, Jr., Plainsboro; Peter J. Wepplo, Princeton; Robert F. Doehner, Jr., East Windsor; Thomas E. Brady, Whitehouse Station; David M. Gange, Princeton, and Desiree L. Little, Burlington, all of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Filed Jul. 7, 1988, Ser. No. 214,507

Int. Cl.⁴ C07C *143/78*

U.S. Cl. 564—91 **10 Claims**

1. A herbicidal phenylsulfonyl carboxamide compound of the formula

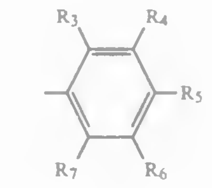


$$\mathrm{A-\overset{\overset{W}{\|}}{C}-NH-\underset{\underset{R_2}{|}}{\overset{\overset{R_1}{|}}{C}}-\overset{\overset{O}{\|}}{C}-\underset{\underset{Y}{|}}{N}-SO_2-Q}$$

wherein

A is hydrogen; straight or branched C_1–C_4 alkyl, unsubstituted or substituted with one to three halogens, C_1–C_4 alkoxy, C_1–C_4 alkylthio, C_1–C_4 alkylsulfinyl, C_1–C_4 alkylsulfonyl, carboalkoxy, phenyl, or oxo;
straight or branched C_2–C_4 alkenyl, unsubstituted or substituted with one to three halogens or phenyl;
C_2–C_4 alkynyl, unsubstituted or substituted with one to three halogens;
and A is amino unsubstituted or substituted with straight or branched C_1–C_6 alkyl, C_3–C_6 cycloalkyl, C_1–C_4 haloalkyl, straight or branched C_2–C_6 alkenyl, C_3–C_6 cycloalkenyl, phenyl, benzyl, (di) alkylamino, or C_1–C_4 alkoxy;
C_1–C_4 alkoxy; or C_1–C_4 alkylthio;

R_1 is C_1–C_4 alkyl;
R_2 is C_1–C_4 alkyl or C_3–C_6 cycloalkyl; and when R_1 and R_2 are taken together with the carbon to which they are attached, they may be C_3–C_6 cycloalkyl unsubstituted or substituted with methyl;
and when R_1 and R_2 are not the same, thus creating an asymmetric center, the optical isomers thereof;
Q is represented by formula (III)



III

wherein

R_3–R_7 are each hydrogen; halogen; nitro; cyano; straight or branched C_1–C_4 alkyl, unsubstituted or substituted with one or more halogens or phenyl;
straight or branched C_2–C_4 alkenyl, unsubstituted or substituted with one to three halogens;
OR_8 where R_8 is hydrogen; C_1–C_4 alkyl unsubstituted or substituted with halogen(s), C_1–C_4 alkoxy, or phenyl; or C_2–C_4 alkenyl unsubstituted or substituted with one to three halogens or phenyl;
phenyl, unsubstituted or substituted with one to three halogens, one to three C_1–C_4 alkyl, one to three C_1–C_4 alkoxy, or one to two nitro;
C_1–C_4 alkylcarbonyl, unsubstituted or substituted with halogen(s);
C_1–C_4 alkylthio, unsubstituted or substituted with halogen(s);
C_1–C_4 alkylsulfinyl, unsubstituted or substituted with halogen(s);
C_1–C_4 alkylsulfonyl, unsubstituted or substituted with halogen(s);
amino, unsubstituted or substituted by C_1–C_4 alkyl;
CO_2R_9 where R_9 is hydrogen, C_1–C_4 alkyl, unsubstituted or substituted with one to three halogens;
R_3–R_4, R_4–R_5, R_5–R_6, R_6–R_7 may also be —(CH=CH—CH=CH)—
which may also be unsubstituted or substituted with up to three of the substituents described for R_3–R_7 above;
with the proviso that no more than three of R_3–R_7 can be: cyano, nitro, (substituted) phenyl, alkylcarbonyl, alkylthio, alkylsulfinyl, alkylsulfonyl, amine, CO_2R_9;
W is O or S;
Y is hydrogen; or a salt thereof, wherein Y is a cation.

4,883,915
CATALYZED OXIME CONVERSIONS

Patrick E. McMahon, Wheaton, Ill., assignor to Amoco Corporation, Chicago, Ill.

Division of Ser. No. 870,822, Jun. 5, 1986, Pat. No. 4,697,010. This application Apr. 8, 1987, Ser. No. 35,868

Int. Cl.⁴ C07D *103/38, 201/04, 103/365*

U.S. Cl. 564—155 **6 Claims**

1. A process comprising contacting under reaction conditions the oxime or dioxime of 4,4'-diacetylphenylether together with an inert diluent and a catalyst composition comprising a HAMS-1B crystalline borosilicate molecular sieve incorporated into an inorganic matrix to form N,N'-diacetyloxy(bis-)aniline.

4. A process comprising contacting under reaction conditions the oxime or dioxime of 2,6-diacetylnaphthalene together with an inert diluent and a catalyst composition comprising a HAMS-1B crystalline borosilicate molecular sieve incorporated into an inorganic matrix to form N,N'-diacetyl-2,6-diaminonaphthalene.

4,883,916
POLYPRENYL COMPOUNDS

Kouji Nakamoto, Tsuchiura; Takeshi Suzuki; Shinya Abe, both of Ushikumachi; Kenji Hayashi; Akiharu Kajiwara, both of Yatabemachi; Isao Yamatsu, Ushikumachi; Issei Otsuka, Sakuramura, and Hiroyuki Shiojiri, Yatabemachi, all of Japan, assignors to Eisai Co., Ltd., Tokyo, Japan

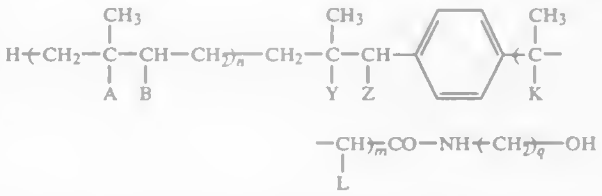
Filed Apr. 1, 1988, Ser. No. 176,637

Claims priority, application Japan, Mar. 15, 1985, 60-50544

Int. Cl.⁴ C07C *103/22*

U.S. Cl. 564—186 **·2 Claims**

1. A polyprenyl compound represented by the general formula



wherein all of A, B, Y and Z stand for hydrogen atoms, or A and B, and Y and Z form each a single bond between both carbon atoms, n is an integer of 0 to 2, K and L are independently a hydrogen atom or form a single bond when taken together, m is an integer of 0 or 1 and q denotes an integer of 1 or 2.

4,883,917
QUATERNARY AMMONIUM COMPOUNDS

Kim R. Smith; Joe D. Sauer, and James E. Borland, all of Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

Filed Oct. 1, 1985, Ser. No. 782,353

Int. Cl.⁴ C07C *91/40*

U.S. Cl. 564—292 **1 Claim**

1. Tetradecyl dimethyl 2-methoxyethyl ammonium chloride.

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ELECTRICAL

4,883,918

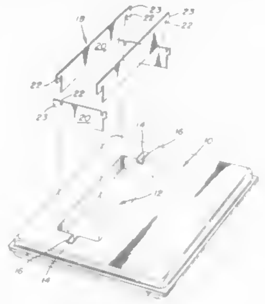
TRANSFORMER MOUNTING PAD HAVING A CABLE OPENING LINED WITH A SAFETY BARRIER

Robert L. Browning, De Kalb County, Ga., assignor to Formex Manufacturing, Inc., Norcross, Ga.

Filed Apr. 20, 1989, Ser. No. 340,663

Int. Cl.^{4} H01B *5/00;* **H01F** *15/02;* **F16M** *5/00*

U.S. Cl. 174—1 9 Claims



1. A transformer mounting pad having a cable opening extending therethrough and a safety wall system installed in the cable opening, said safety wall system comprising
   - a frame positioned in said cable opening and extending from above said opening through the opening along the sides thereof, said frame comprising four detachable and removable individual wall members detachably attached together at respective adjacent ends, and attaching means on each of said wall members detachably attaching said members together.

4,883,919

APPARATUS FOR SEALING CONJOINED CONDUCTORS OF CABLES

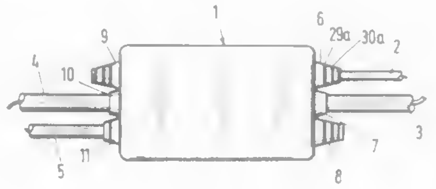
Berthold W. Abele, Walheim/Neckar, Fed. Rep. of Germany, assignor to KSA Dichtsysteme GmbH & Co. KG, Vaihingen/-Enz, Fed. Rep. of Germany

Filed May 16, 1988, Ser. No. 194,240

Claims priority, application Fed. Rep. of Germany, May 15, 1987, 3716252

Int. Cl.^{4} H02G *15/113*

U.S. Cl. 174—93 10 Claims



1. An apparatus for sealing joined conductors of cables, comprising:
   - (a) a distributing box housing through which extends cables to be sealed, said box housing comprising separate housing sections adapted to be sealably connected,
   - (b) sealing housings associated with said box housing and through which said cables extend into said box housing, each of said sealing housings comprising sealing housing sections adapted to be sealably secured together to form said sealing housing, and
   - (c) a plurality of axially spaced, flexibly resilient sealing parts mounted in each of said sealing housing sections, said sealing parts having different inner diameters to firmly press and seal cables of various diameters extending through the sealing housing when said sealing housing sections are assembled, and wherein
   - (d) said sealing housing has at least one predetermined breaking point by means of which the sealing housing can be broken off at such point to expose the appropriate size sealing part for a particular cable diameter.

4,883,920

CHIP TYPE COMPONENT INSTALLATION STRUCTURE

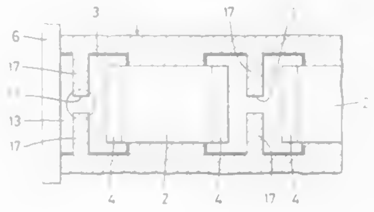
Takeshi Tanabe, and Toshio Hori, both of Nagaokakyo, Japan, assignors to Murata Manufacturing Co., Ltd., Kyoto, Japan

Filed May 31, 1988, Ser. No. 200,374

Claims priority, application Japan, Jun. 2, 1987, 62-138612

Int. Cl.^{4} H05K *01/18*

U.S. Cl. 174—68.5 6 Claims



1. A chip type component installation arrangement, comprising:
   - a substrate having a fitting pattern;
   - a component having an electrode for connection to said fitting pattern of said substrate;
   - at least two resist film portions, a first said resist film portion disposed on and extending along said fitting pattern and having opposite lateral sides, and both said resist film portions disposed so as to form a gap therebetween on said fitting pattern;
   - a solder connection portion connecting said electrode to said fitting pattern, said solder connection portion disposed along one lateral side of said first resist film portion and extending continuously therefrom through said gap between said resist film portions to the opposite lateral side of said first resist film portion.

4,883,921

CABLE JOINTING CLAMP

Bengt E. Legerius, and Jan P. R. Tjäderhane, both of Nyköping, Sweden, assignors to Thorsman & Co. Aktiebolag, Nyköping, Sweden

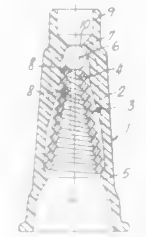
PCT No. PCT/SE87/00058, § 371 Date Oct. 6, 1987, § 102(e) Date Oct. 6, 1987, PCT Pub. No. WO87/05447, PCT Pub. Date Sep. 11, 1987

PCT Filed Feb. 9, 1987, Ser. No. 110,758

Claims priority, application Sweden, Feb. 27, 1986, 8600892.7

Int. Cl.^{4} H01R *4/22*

U.S. Cl. 174—87 4 Claims



1. A jointing clamp for connecting together electrical conductors, comprising an insulating, conical outer sleeve having opposite wide and narrow ends, an electrically conductive,

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screw-like conical inner sleeve arranged within the outer sleeve and having the form of a worm spring, an electric contact element locked against a seat arranged internally of the narrow end of the conical outer sleeve for sealing said narrow end of said sleeve; said seat being provided therein with a hole which is open towards a tubular extension located adjacent to the narrow end of the outer sleeve and which is formed so as to enable a test probe to establish contact with the contact element and therewith, via the inner sleeve, also with the electrical conductors to be connected by the jointing clamp, said electric contact element comprising a ball, said seat being rounded, said ball being pressed against said seat by said worm spring to close said hole, said tubular extension providing an opening for the test probe, said opening being convergent in proximity to said ball.

4,883,922

COMPOSITE SUPERCONDUCTOR AND METHOD OF THE PRODUCTION THEREOF

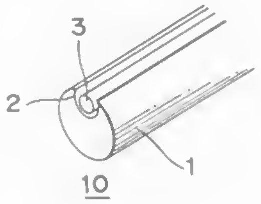
Minoru Yokota; Masayuki Nagata; Shigeo Saito, and Yuichi Yamada, all of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed May 13, 1988, Ser. No. 193,525

Claims priority, application Japan, May 13, 1987, 62-117651; May 13, 1987, 62-117652; May 13, 1987, 62-117653; May 13, 1987, 62-117654; May 13, 1987, 62-117655; May 13, 1987, 62-117656; May 13, 1987, 62-117657; May 13, 1987, 62-117658; May 13, 1987, 62-117659; May 13, 1987, 62-117660; May 16, 1987, 62-119333

Int. Cl.⁴ H01B *12/00*

U.S. Cl. 174—125.1 21 Claims



1. A composite superconducting wire which comprises an elongated reinforcing member, at least one groove defined on the surface portion of the reinforcing member so as to extend generally in a longitudinal direction, and ceramic superconductor material accommodated in and extending along said groove, the ceramic superconductor material having a width less than the width of the groove, the groove being open.

4,883,923

ELECTRIC FENCE INSULATOR FOR HOLDING VARIOUS CONDUCTOR TYPES, INCLUDING TAPE-TYPE

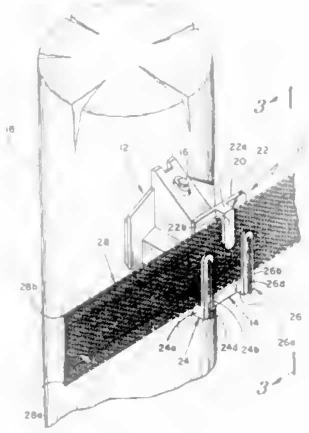
Ronald H. Langlie, and Jon A. Berg, both of Ellendale, Minn., assignors to North Central Plastics, Incorporated, Ellendale, Minn.

Filed Apr. 21, 1989, Ser. No. 343,393

Int. Cl.⁴ H01B *17/14*

U.S. Cl. 174—158 F 12 Claims

1. In combination with a tape-type conductor, an electric fence insulator comprising a body having means disposed at the rear thereof for attaching the body to a fence post, a forwardly facing panel on said body providing a flat surface residing in one plane, and a pair of oppositely directed L-shaped clips on said body, said clips including vertical leg portions forming prongs offset forwardly from the face of said panel and having flat surfaces residing in a rearwardly facing second plane parallel to and spaced forwardly of said one plane, one side of said tape-type conductor confronting the flat surface of said forwardly facing panel and being in a plane closely parallel to said panel, and the other side of said tape-type conductor confronting the rearwardly facing surfaces of said prongs, one of said prongs being more resilient than the other to permit flexing thereof toward said panel to facilitate insertion of said tape so as to achieve the confronting relationship of said tape with respect to said forwardly facing panel and the rearwardly facing flat surfaces of said prongs.



4,883,924

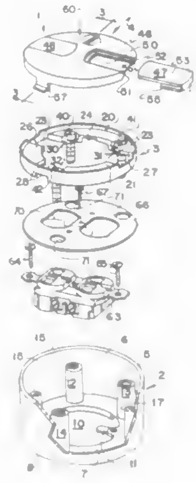
OUTLET FITTING

Robert W. Hadfield, Parkersburg, W. Va., assignor to Butler Manufacuting Company, Kansas City, Mo.

Filed Jul. 20, 1988, Ser. No. 222,054

Int. Cl.⁴ H02G *3/12*

U.S. Cl. 174—48 8 Claims



1. An outlet fitting to be mounted on the flat top surface of an electrical raceway in alignment with an access hole in the top, the fitting including an attaching ring assembly, an adjusting ring assembly, and a closure assembly:

the attaching ring assembly comprising:

- (a) a hollow tubular body having an interior wall;
- (b) an annular base member on one end of said tubular body and having an opening therein, the base member being adapted to engage the top of the raceway on which the attaching ring is to be mounted;
- (c) clamp means connected to said base member for use in securing the tubular member to the top of said raceway;
- (d) a plurality of adjusting ring support posts mounted on said base member and extending parallel to the interior wall of the body toward the opposite end of the body and each having internal threads, the support posts being spaced inwardly from the interior wall of the body;

the adjusting ring assembly comprising:

- (e) an outer annular wall;
- (f) support flange means extending inwardly from said outer annular wall, the amount of the inward extention forming an opening in the adjusting ring;
- (g) a plurality of ring support means formed in said support flange means;
- (h) a plurality of adjusting screws each formed with a support ledge, the adjusting screws being respectively threaded into the threads of said attaching ring support posts and in each adjusting screw, the ledge of each adjusting screw being in engagement with said ring support means;

the closure assembly comprising:

- (i) substantially flat plate means;
- (j) securing means on said flat plate means engaging said adjusting ring and releasably securing the flat plate means to the adjusting ring; and
- (k) means on said substantially flat plate means forming opening means to provide for the passage of electrical conductors.

4,883,925

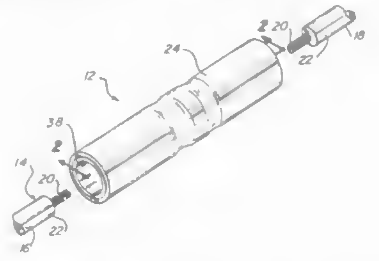
SEALED SOLDER CONNECTOR ASSEMBLY AND METHOD OF USE

Albert C. Graf, 332 Bunker Hill Dr., Pensacola, Fla. 32507

Filed May 2, 1988, Ser. No. 189,142

Int. Cl.⁴ H02G *15/18*

U.S. Cl. 174—84 R 5 Claims



1. A sealed solder connector assembly used to permanently join and enclose adjacent ends of severed members, comprising:

- (a) a main support member of tubular shape;
- (b) a cylindrical anchor member secured within said main support member;
- (c) said main support member constructed of a heat-shrinkable material;
- (d) said anchor member constructed of low temperature heat melt material;
- (e) said melt material includes a low temperature melt solder material having an inner flux coating thereon; and
- (f) said solder material composed of 50 percent tin, 32 percent lead, and 18 percent cadmium;

whereby, the subsequent application of heat about an exterior surface of said main support member causes said main support member to shrink into a skin and airtight fit over said severed members to be enclosed thereby and said anchor member melts and fuses with said severed members.

4,883,926

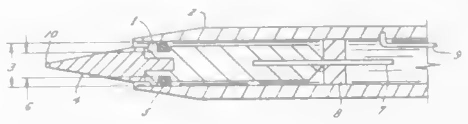
STYLUS SWITCH

Richard R. Baldwin, Saratoga, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Apr. 21, 1988, Ser. No. 184,513

Int. Cl.⁴ G08C *21/00*

U.S. Cl. 178—18 27 Claims



1. A stylus switch comprising:

a stylus housing having a first end, said first end having an opening;

a stylus tip positioned to extend from said opening of said stylus housing;

switch means responsive to radial movement of said stylus tip with respect to said stylus housing;

a power source located within said stylus housing;

signal means for providing a signal in response to said switch means wherein said signal means is located in said stylus tip and provides said signal through a signal transmission means to a point on said stylus tip.

4,883,927

LOCKING ARRANGEMENT FOR TWO SWITCHGEARS

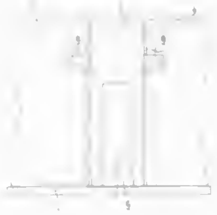
Walter Apfelbacher, Freihung; Edgar Wiessner, Amberg, and Karl-Hans Bärnklau, Weiden, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Oct. 28, 1988, Ser. No. 264,200

Claims priority, application Fed. Rep. of Germany, Oct. 30, 1987, 8714499[U]

Int. Cl.⁴ H01H *9/20*

U.S. Cl. 200—50 C 7 Claims



1. A locking arrangement for two switchgears which each include means for activating said switchgears being coupled via a blocking body in such a way that upon activation of one switchgear the activation of the other switchgear, which acts upon the blocking body in a sense opposite to that of the one switchgear is blocked, said locking arrangement comprising:

a guide housing separate from the switchgears and fastenable there between;

said blocking body comprising an essentially heart-shaped blocking body, said blocking body including a tip and a pair of lobes;

said blocking body being guided with the tip of the blocking body in said guide housing separate from the switchgears; and

means for providing interaction between said lobes of the heart-shaped blocking body and said means for activating, wherein said means for providing interaction comprises,

a pair of slides guided in the guide housing, one slide associated with each of said lobes,

two tappets, one associated with each lobe of said blocking body,

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a plurality of dogs, each dog rigidly connecting a lobe with its associated tappet in the direction of motion, and

means for adjustably coupling each of said slides with one of said two tappets wherein said means for adjustably coupling comprises a collar screw including a collar wherein said collar screw is in a screw connection with said slide and wherein said collar is rigidly connected to one of said tappets in a direction of motion of the slide.

4,883,928

FLOAT SWITCH, A CONTROL APPARATUS AND A WARNING APPARATUS OF AN ENGINE

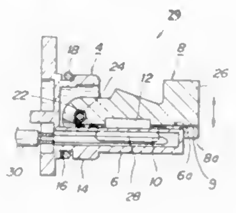
Kazuhiro Umehara, Hamamatsu, Japan, assignor to Suzuki Jidosha Kogyo Kasbushiki Kaisha, Shizuoka, Japan

Division of Ser. No. 750,962, Jul. 2, 1985, Pat. No. 4,755,790. This application Apr. 1, 1988, Ser. No. 176,635

Claims priority, application Japan, Jul. 4, 1984, 59-138816; Dec. 25, 1984, 59-275106

Int. Cl.⁴ H01H *35/40*

U.S. Cl. 200—81.9 M 5 Claims



1. A switch for sensing fluid flow therepast in a first direction, comprising: a main body having thereon an outward projection which extends generally transverse to said first direction; a reed switch provided on said projection; and a member having a magnet thereon and supported on said main body for movement between first and second positions in which said magnet is respectively adjacent and spaced from said reed switch, said reed switch being actuated by the magnetic field of said magnet when said magnet is in said position adjacent said reed switch, said member including a portion having thereon a substantially flat surface which faces in a second direction substantially opposite said first direction, said portion moving approximately in said first direction as said member moves away from said first position thereof; wherein said member is supported at one end on said main body for pivotal movement about a pivot axis which extends in a direction transverse to the direction in which said projection projects outwardly from said main body and transverse to said first direction; wherein said portion of said member is an enlarged end portion at an end thereof remote from said pivot axis; wherein said projection has a convex surface thereon which faces said member and said member has in said substantially flat surface a groove containing a concave surface which faces said projection; wherein in said first and second positions said concave and convex surfaces are respectively adjacent and spaced from each other; wherein in said adjacent position of said convex and concave surfaces said magnet and said reed switch are in said adjacent position and said enlarged end portion of said member projects outwardly past an outer end of said outward projection; and wherein said magnet is partially embedded in said member but has a portion which projects outwardly from said concave surface into said groove.

4,883,929

BARRIER ASSEMBLY FOR MOUNTING CONTROLLING DEVICES

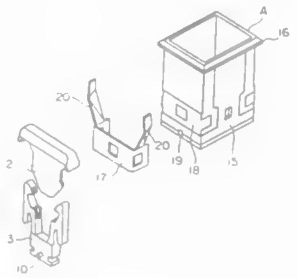
Kenji Shinohara, Osaka; Takashi Niwa, Kyoto, and Yoshihiro Wakatsuki, Shimane, all of Japan, assignors to Omron Tateisi Electronics Co., Kyoto, Japan

Filed Mar. 9, 1988, Ser. No. 166,089

Claims priority, application Japan, Mar. 17, 1987, 62-39780[U]; Jun. 22, 1987, 62-95609[U]

Int. Cl.⁴ H01H *9/08*

U.S. Cl. 200—5 R 7 Claims



1. A barrier assembly comprising:

a mounting panel with an opening therein;

a pluralty or controlling devices;

a first barrier member which is inserted from the front side of a mounting panel; and

a second barrier member which is inserted from the rear side of said mounting panel and connected to said first barrier member;

said first barrier member being snap-fit to said second barrier member and said barrier assembly holding said plurality of controlling devices in a line within said opening and partitioning off said controlling devices which are adjacent to each other.

4,883,930

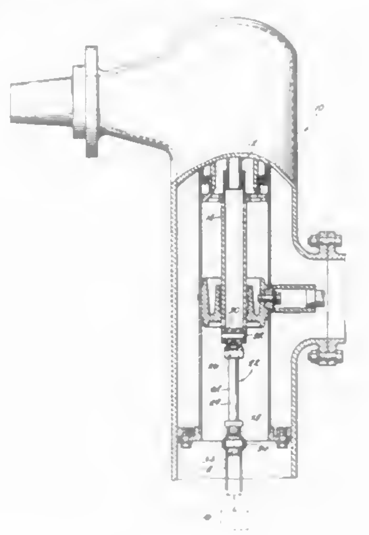
SWITCH MECHANISM OPERATING ROD

Donald R. Martin, Waukesha, Wis., assignor to Cooper Power Systems, Inc., Houston, Tex.

Filed Oct. 30, 1987, Ser. No. 115,538

Int. Cl.⁴ H01H *33/42*

U.S. Cl. 200—148 F 7 Claims



1. A switch apparatus comprising

a switch mechanism including a first contact, and a second contact movable into and out of engagement with said first contact for respectively closing and opening said switch mechanism,

an operating rod assembly connected to said second contact for moving said second contact into and out of engagement with said first contact in response to movement of said operating rod assembly, said operating rod assembly including an operating rod having an outer surface, a first end adapted to be connected to a prime mover, and an opposite second end, and a conductive member connected to said second end of said operating rod and to said second contact, said conductive member including a first portion contacting and connected to said second end of said rod, and a second portion connected to said first portion, said second portion extending, from said first portion, in the direction away from said second end of said rod, said second portion telescopingly overlapping said rod, and said second portion including a radially inner surface facing said outer surface of said rod, a radially outer surface facing away from said outer surface of said rod, and an end surface generally facing away from said second end of said rod and extending between said inner surface and said outer surface, said end surface including an inner portion located adjacent said inner surface and having a first radius of curvature, and an outer portion located adjacent said outer surface and having a second radius of curvature which is greater than said first radius of curvature, and

means for enclosing said switch mechanism and said operating rod assembly and surrounding said switch mechanism and said assembly with dielectric gas.

4,883,931

HIGH PRESSURE ARC EXTINGUISHING CHAMBER

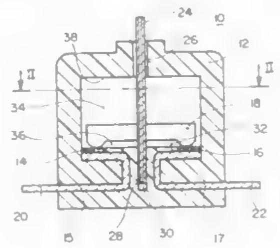
Pierre Batteux, Vizille, and Jean-Pierre Nereau, La Troncbe, both of France, assignors to Merlin Gerin, Grenoble Cedex, France

Filed Jun. 13, 1988, Ser. No. 206,132

Claims priority, application France, Jun. 18, 1987, 8708583

Int. Cl.⁴ H01H *33/70*

U.S. Cl. 200—148 R 6 Claims



1. An arc extinguishing chamber for an electrical switchgear device, notably a circuit breaker or a current limiting unit, comprising:

a system of stationary and movable contacts, housed inside an almost tightly sealed case made of insulating material, the movable contact being biased to the open position by the pressure generated by the arc drawn between the contacts after separation,

a compression piston separated from the walls of the case by a predetermined clearance J subdividing the internal volume of the case into a first compartment generating pressure due to the action of the arc, and a second compartment communicating with said first compartment via the clearance J, the volumes of the two elementary compartments varying inversely to one another when movement of the movable contact occurs,

the movable contact appreciably following the internal configuration of the case playing the role of said piston,

and high-speed opening means by electrodynamic repulsion resulting from the loop arrangement of said contacts, said repulsion taking place as soon as a short-circuit current occurs followed by the piston effect of the movable contact by the pressure generated by the arc.

4,883,932

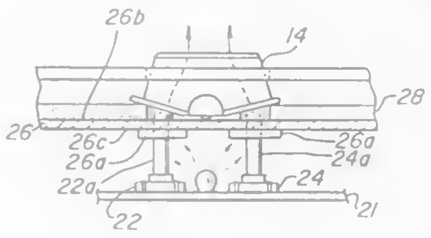
LINKAGE-TYPE SWITCHES FOR CONTROL PANEL ACTUATORS

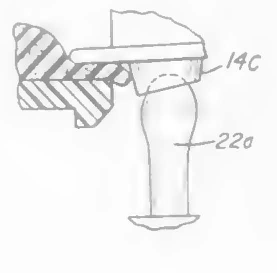
James E. Van Hont, Auburn Heights, and Lee M. Dziekan, East Detroit, both of Mich., assignors to Chrysler Motors Corporation, Highland Park, Mich.

Continuation of Ser. No. 87,728, Aug. 21, 1987, abandoned. This application Jun. 6, 1988, Ser. No. 229,741

Int. Cl.⁴ H01H *23/30*

U.S. Cl. 200—339 2 Claims





1. A linkage switch-type mechanism for controlling a first and a second electric circuit, comprising:

(a) an actuator member rockably mounted about a rotational axis in an opening of an escutcheon plate of a control panel and having a front face divided to form a first section and a second section for causing angular movement in opposing directions;

(b) first and second switch means occupying remote locations from the rear of said actuator member, substantially in-line with said first and second sections respectively, providing substantially increased clearance between the rear of the actuator member and the first and second electric circuits, said first and second switch means having a first and a second snap-some disk respectively, electrically coupled to the first and second circuits for alternately closing and opening the two circuits in response to angularly driving the first and second sections of said actuator member about the rotational axis, said first and second switch means having first and second elongated and compressible plungers respectively, each of said plungers having a front end for contacting a top location on said first and second disks for connecting said first and second disks to said actuator member;

(c) first and second receptacle means spaced apart on the rear surface of said actuator and in alignment with said first and second sections respectively for receiving a distal end of said first and second plungers respectively so that a ball and socket-type joint is formed linking said first and second switch means to said actuator member;

(d) a returning means comprised of a layer of a resilient foam disposed upon a structural member mounted in spaced-apart relationship to the escutcheon plate, said structural

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member having a first and second aperture means through which the distal ends of said first and second plungers are routed to be received by said first and second receptacle means so as to maintain the linkage, for returning said actuator member to neutral position after said first and second sections of said actuator member have been driven angularly about the rotational axis, said first and said second aperture means including a first and a second guide port respectively; and

(e) a frame encompassing a lower peripheral edge of said actuator member;

said first section of said actuator member when actuated by an actuating force causing said frame to depress the foam of said returning member and causing transmission of the actuating force to the associated ball and socket joint formed by the distal end of said first plunger and said first receptacle means, said joint absorbing a portion of the actuating force, said joint rotating in concert with said first section of said actuator member about the rotational axis of said actuator member causing an upper region of said first plunger to move laterally along an arcuate path from its free position to its operating position while a lower region of said first plunger travels linearly and applies a compressive force against the top surface of said first snap-dome disk causing said first disk to flex inwardly against an opening in the first circuit to complete the circuit, said second plunger remaining positioned between the top of said second disk and said second receptacle means under the unpressed second section of said actuator member, said first disk being completely depressed after flexing inwardly against the opening in the first circuit, the length of said first plunger being substantially decreased as said first section of said actuator member continues to rotate until said frame completely compresses the foam.

4,883,933

TRAVELING WIRE ELECTROEROSION MACHINE

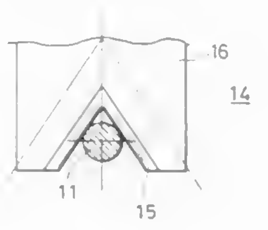
Takeshi Yatomi, and Makoto Tanaka, both of Nagoya, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 18, 1987, Ser. No. 65,246

Claims priority, application Japan, Jun. 18, 1986, 61-140309; Jun. 18, 1986, 61-140310

Int. Cl.^{4} B23H *7/10*

U.S. Cl. 219—69.12 2 Claims



1. In a travelling wire electroerosion machine in which an electrical discharge is generated in a narrow gap between a wire electrode and a workpiece through a processing liquid so as to erosively remove material from said workpiece, the improvement comprising a wire guide device for supporting and guiding said wire electrode wherein said wire guide device comprises a V-shaped guide member including coplanar intersecting guide surfaces, each of said guide surfaces having a single, continuous, convex, arcuate wire engaging surface.

4,883,934

MACHINE USING A WIRE FOR USE IN ELECTROEROSION

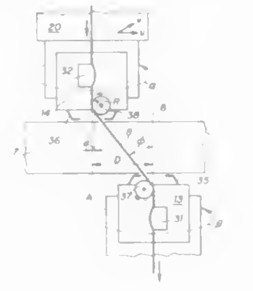
Pierre-Alexandre Mamin, Geneva, Switzerland; Bernard Babel, and Francois Balleys, both of Petit-Lancy/GE, Fed. Rep. of Germany, assignors to Charmilles Technologies S.A., Meyrin, Switzerland

Filed Apr. 4, 1988, Ser. No. 176,874

Claims priority, application Switzerland, Apr. 3, 1987, 1290/87-6

Int. Cl.^{4} B23H *7/10*

U.S. Cl. 219—69.12 9 Claims



1. A machine for usage of electroerosion of an electrode piece by means of a stretched electrode wire and divided between two wire guides with at least one device of cross movements carrying one of these wire guides and arranged in such a fashion in order to displace it into a parallel plane to the one of the trajectory to cut in a fashion by inclining the wire to a predetermined angle in relation to a neutral perpendicular axis to this plane and characterized by the fact that this device is equally arranged in order to rotate the wire guide around a mobile axis parallel to the neutral axis passing by this guide and displacing itself with it by a device put into action in order to subjugate the rotation of the wire guide to displacements of the device to cross movements.

4,883,935

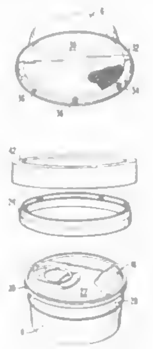
SEPARABLE RECOMBINABLE MULTI-PART CONTAINER WITH SEPARATELY SEALED CHAMBERS

Tim M. Fairchild, 33 East Elm St.; Caroline Laska, 522 N. Darling St., and Gary H. Ward, 418 Vista La., all of Fremont, Mich. 49412

Filed Aug. 4, 1988, Ser. No. 228,623

Int. Cl.^{4} B65D *71/00;* H05B *6/64*

U.S. Cl. 219—10.55 E 16 Claims



1. A multi-part container for use in a microwave, comprising:

a bottom portion having an upper sealed opening and defining a first interior region for housing first contents to be subjected to a specified treatment;

an upper part having a lower sealed second opening and defining a second interior region for second contents, said upper part further being sealed to said bottom portion after treatment of the first contents;

said upper sealed opening and said lower sealed opening being in face-to-face relationship to each other;

said bottom portion and said upper part being separable from each other and individually openable at each of said openings, thereby exposing the contents of said first and second interior regions;

said first interior region being configured to simultaneously accommodate both the first and second contents for use in the microwave.

4,883,936

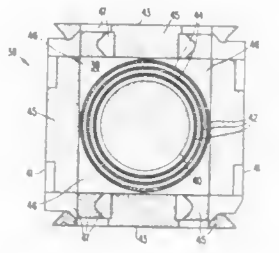
CONTROL OF MICROWAVE INTERACTIVE HEATING BY PATTERNED DEACTIVATION

Patrick L. Maynard, Combined Locks; Michael A. Schmelzer, Appleton, and Thomas D. Pawlowski, Neenah, all of Wis., assignors to James River Corporation, Richmond, Va.

Filed Sep. 1, 1988, Ser. No. 239,264

Int. Cl.^{4} H05B *6/80*

U.S. Cl. 219—10.55 F 23 Claims



1. A microwave interactive heating element capable of converting microwave radiation to heat energy to heat a food product proximate to said heating element, wherein said element is formed of a layer of microwave interactive material supported on a substrate and said element includes a plurality of first areas having a reduced capability to generate heat in response to microwave radiation and a plurality of second areas having an unaltered capability to generate heater in response to microwave radiation arranged in a predetermined pattern relative to said first areas, wherein said pattern is formed by selectively deactivating without removing selected areas of said microwave interactive material from said substrate in the predetermined pattern to form said first areas and by leaving the remainder of said predetermined pattern untreated to form said second areas, thereby producing preselected temperature differences in said food product corresponding to said pattern when said heating element is subjected to microwave radiation.

4,883,937

BUTT WELDING METHOD BY MEANS OF LASER BEAM

Kenji Matsuno; Tsuneo Imatani; Nobuyuki Sato; Osamu Teruuchi, and Hideo Kurashima, all of Kanagawa, Japan, assignors to Toyo Seikan Kaisha, Ltd., Tokyo, Japan

Filed Sep. 23, 1988, Ser. No. 248,061

Claims priority, application Japan, Sep. 30, 1987, 62-244365; Oct. 16, 1987, 62-259457; Feb. 26, 1988, 63-42277

Int. Cl.^{4} B23K *26/00*

U.S. Cl. 219—121.64 21 Claims

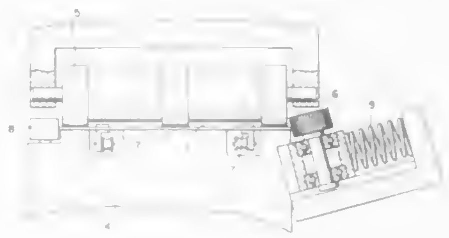
1. A method of butt-welding thin plate members, comprising the steps of:

preparing thin plate members, having a thickness less than or equal to approximately 0.4 mm, provided with end surfaces to be butted together, respectively;

forming a recess means in the end surface of at least one of said thin plate members;

butting linearly said end surfaces of said thin plate members to each other at at least two laterally spaced regions and substantially throughout the thickness of said members so as to define a stable butt contact with respect to each other and with a gap, defined by said recess means, therebetween; and

irradiating a laser beam, at a high rate of speed of at least 20 m/min, along said butted end surfaces of said thin plate members so as to include said recess means whereby said end surfaces of said butted plate members are welded together without the generation of protrusions and undercuts, as welding faults, upon the laser beam side, and the opposite side, surfaces, respectively, of said plate members.



4,883,938

METHOD AND APPARATUS FOR AUTOMATICALLY PERFORMING WORK ON AN OBJECT ALONG A DESIRED PATH

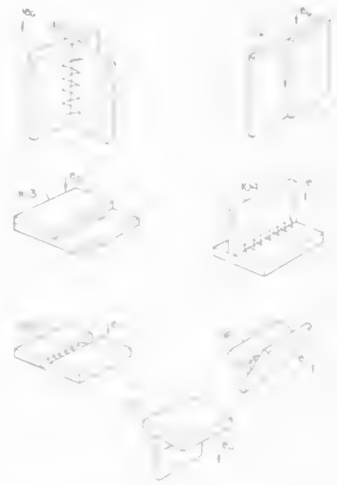
Shinichi Sarugaku, Funabashi, Japan, assignor to Hitachi Ltd., Tokyo and Hitachi Keiyo Engineering Co., Ltd., Narashino, both of, Japan

Filed Apr. 21, 1988, Ser. No. 184,189

Claims priority, application Japan, Apr. 24, 1987, 62-100130

Int. Cl.^{4} B23K *9/12*

U.S. Cl. 219—124.34 29 Claims



3. An automatic working method capable of automatically setting welding conditions comprising the steps of:

preparing predetermined sets of optimum welding conditions for individual combinations of various values representative of each of at least the welding direction relative to the direction of gravity, the direction of a welding torch relative to the gravitational direction and the joint geometry of a work piece to be welded;

teaching a welding path along which said welding torch is to proceed and a welding torch direction;

deriving from said taught welding path and welding torch

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direction the welding direction relative to the gravitational direction and the welding torch direction relative to the gravitational direction;

inputting a joint geometry of said work piece;

selecting from said prepared sets of optimum welding conditions one set of optimum welding conditions on the basis of said derived welding direction and welding torch direction relative to the gravitational direction and said inputted joint geometry; and

executing welding on the basis of said selected optimum welding conditions.

4,883,939

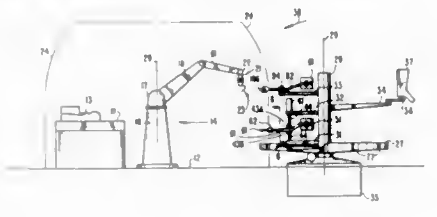
AUTOMATIC TOOL CHANGER FOR WORKPIECE PROCESSING MACHINES

Nehemia Sagi, Indianapolis, Ind., assignor to Automatic Tool Control and Management Systems, Inc., Carmel, Ind.

Filed Jun. 21, 1988, Ser. No. 209,686

Int. Cl.⁴ B23K *9/12*

U.S. Cl. 219—125.1 — 31 Claims



1. In a system for processing a workpiece with one or more processing tools and wherein a tool is mounted on an effector for causing the tool to operate on a workpiece, the improvement comprising:

tool mounting apparatus including a tool adaptor having means thereon for receiving and securing one of said tools thereon; and

an effector adaptor having means thereon for attachment to said effector;

said tool adaptor having a body that is generally symmetrical about an axis and having first and second outwardly projecting flanges mounted on said body and projecting in directions radially outward from said axis and located on opposite sides of said axis;

said effector adaptor having a groove receiving said flanges whereby said tool adaptor is secured to said effector adaptor;

said flanges being movable inward on said body relative to said axis to remove the flanges from the groove and thereby enable separation of the tool adaptor from the effector adaptor, and said flanges being biased outwardly from said axis and movable outward from said axis to securely re-engage said flanges in said groove and thereby again secure the tool adaptor to said effector adaptor.

4,883,940

HEATABLE COMPOSITE BACKLIGHT PANEL

Stephen P. Tokarz, Lincoln Park, Mich., assignor to ASC Incorporated, Southgate, Mich.

Filed Jul. 7, 1988, Ser. No. 215,990

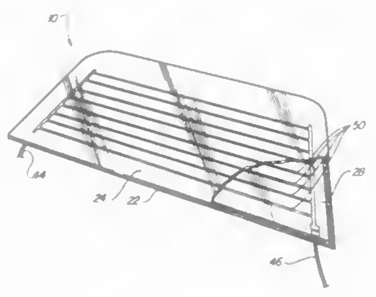
Int. Cl.⁴ B32B *27/40;* **B60L** *1/02*

U.S. Cl. 219—203 — 19 Claims

1. A heatable backlight panel for a convertible top of a vehicle, which comprises:

(a) a first laminate, the first laminate made of a first nonconductive material, having an anode and a cathode disposed on a first surface thereof;

(b) an interlayer having a plurality of electrical members, the electrical members forming a plurality of electrical paths between the anode and the cathode, the interlayer being applied onto the first surface of the first laminate by a silk screening process, the anode and the cathode being electrically engageable with a power source; and



(c) a second laminate disposed over the first surface of the first laminate, the second laminate being made from the first nonconductive material, the first laminate being fused to the second laminate to form a composite structure.

4,883,941

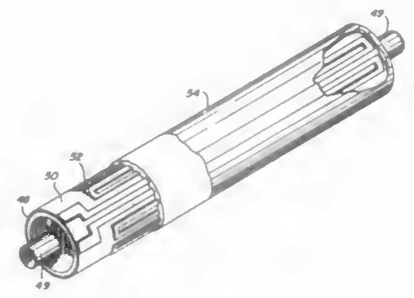
FILAMENT WOUND FOIL FUSING SYSTEM

Robert G. Martin, Rochester, and Paul C. Swanton, Webster, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Aug. 6, 1986, Ser. No. 893,852

Int. Cl.⁴ H05B *1/00*

U.S. Cl. 219—216 — 2 Claims



1. In an electrostatic copying machine having pressure fusing apparatus of the type including an instantly heated fuser roll and a pressure back-up roll defining a nip through which support material bearing toner images is passed for fusing the toner images onto the support material, the fuser roll being raised approximately 120° C. in less than 10 seconds, the instantly heated fuser roll comprising:

a hollow, relatively thin, filament wound cylinder less than 40 mils thick, the cylinder having an outside and an inside surface, the cylinder enclosing ambient air;

a source of thermal energy affixed by a high temperature adhesive to the outside surface of said cylinder; and

the source of thermal energy being a heating circuit element, the heating circuit element being embedded in the filament wound cylinder and patitioned into segments for selective application of the thermal energy.

4,883,942

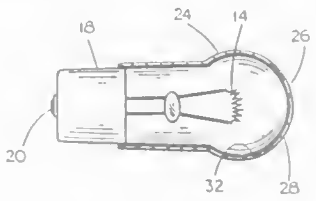
LOW VOLTAGE HEATING ELEMENT FOR PORTABLE TOOLS

Frank E. Robak, Sr., and Andrew H. Robak, Jr., both of Omaha, Nebr., assignors to RobaTherm Products, Omaha, Nebr.

Filed Mar. 21, 1988, Ser. No. 170,921

Int. Cl.⁴ H05B *3/06*

U.S. Cl. 219—227 — 23 Claims



22. A portable curling iron, comprising:

a hollow housing;

a hollow, heat-conducting metal tube mounted on said housing and projecting therefrom;

a low voltage, low direct current heating element removably mounted within said hollow metal tube for heating the same;

said heating element including:

a low voltage, low direct current light bulb having a globe portion at an end portion thereof and a base portion;

means for powering said light bulb electrically at a voltage of substantially twelve volts or less connected to said light bulb; and

a thin metal heat conducting jacket wrapped around and contacting at least a portion of said globe portion of said bulb, said bulb being adapted to produce heat in excess of 150° F.

4,883,943

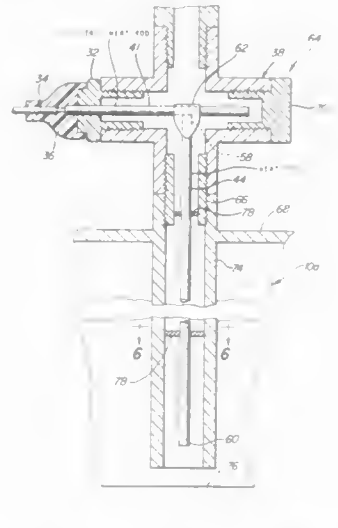
ELECTRIC HEATER FOR FUEL TANK DISCHARGE OPENING COUPLING TO PREVENT FUEL WAXING

Leland L. Davis, Saline, Mich., assignor to Davco Manufacturing Corporation, Slaine, Mich.

Filed Dec. 16, 1987, Ser. No. 133,801

Int. Cl.⁴ H05B *3/82;* **F02M** *31/12;* **F24H** *1/10;* **F28D** *15/02*

U.S. Cl. 219—306 — 22 Claims



1. A heated fuel delivery system coupling adapted for use with a fuel tank having a discharge opening, and wherein a conduit is adapted to be connected to said coupling for directing flow of fuel from the tank through the conduit to a combustion device, said coupling comprising:

a hollow fitting body having a fuel flow passage therethrough, said body having at least two fuel flow openings communicating with said passage, including a first fuel flow opening adapted to be connected to the discharge opening of a fuel tank and a second fuel flow opening adapted to be connected to the conduit;

active heating means in said passage acting as a heat source for warming fuel within said passage; and

a passive heat transfer means in said passage thermally coupled to said active heating means and extending outwardly through said first opening a distance sufficient that when the first opening is connected to the discharge opening of the fuel tank the passive heat transfer means extends into the tank through the discharge opening thereof for heating fuel in the vicinity of the discharge opening thereby reducing fuel waxing.

4,883,944

HEATING APPARATUS HAVING AN OPEN-LOOP CONFIGURATION FOR CONTROLLING TEMPERATURE

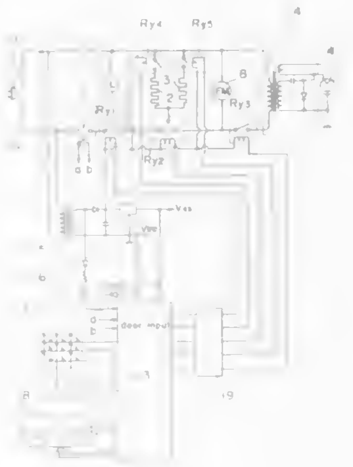
Teruhisa Takano, Osaka; Takahiko Yamasaki, and Mitsuo Akiyoshi, both of Nara, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jun. 23, 1988, Ser. No. 211,417

Claims priority, application Japan, Jun. 23, 1987, 62-155902; Jun. 23, 1987, 62-155908; Jun. 23, 1987, 62-155909

Int. Cl.⁴ H05B *1/02*

U.S. Cl. 219—492 — 6 Claims



1. A device for controlling a heating apparatus having a heating chamber, said device comprising:

an electrical power source for outputting a first power source level and a second power source level which is different from said first power source level, said electrical power source driving a heating element of said heating apparatus;

a setting means for setting a predetermined chamber temperature value and a cooking operation time;

a time counting means for counting and storing a first operation time period in which said heating element is driven at said first power source level, and for counting and storing a second time period in which said heating element is driven at said second power source level, and for counting and storing a stop time period in which said heating element is driven at a power level substantially equal to zero;

an equation storing means for storing a first calculating equation representing a relationship during said first operation time between a change in chamber temperature and a unit of time in which said chamber temperature increases during said first operation time, and for storing a second calculating equation representing a relationship during

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said second operation time between a change in said chamber temperature and a unit of time in which said chamber temperature remains constant at said predetermined chamber temperature value during said second operation time, and for storing a third calculating equation representing a relationship during said stop time period between a change in said chamber temperature and a unit of time in which said chamber temperature decreases during said stop time period;

an output deciding means for selectively driving said heating element at one of said first output level and said second output level in accordance with said first, second and third calculating equations;

wherein said output deciding means determines an initial chamber temperature on the basis of said third calculating equation and a duration of said stop time period, and wherein said output deciding means drives said heating element at said first output level and determines when said predetermined chamber temperature level has been reached on the basis of said first calculating equation and said initial chamber temperature.

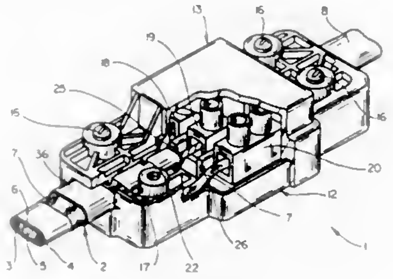
4,883,945
CONNECTOR FOR ELECTRICAL HEATER

Richard L. Bautista, Union City, Calif., assignor to Raychem Corporation, Menlo Park, Calif.

Filed Dec. 8, 1988, Ser. No. 281,580

Int. Cl.⁴ H01R *9/03*

U.S. Cl. 219—541 **16 Claims**



1. A connector for connecting an end of an elongate electrical heater to an end of an elongate electrical component, said heater comprising (a) first and second elongate electrodes, (b) a plurality of resistive heating elements connected in parallel between said electrodes, (c) an insulating jacket surrounding said electrodes and heating elements, and (d) a metallic grounding braid surrounding said insulating jacket, and said electrical component comprising first, second and third elongate members for connection to the first electrode, the second electrode, and the grounding braid respectively, said connector comprising

(1) first and second shell members which can be in (a) a demated configuration or (b) a mated configuration in which the shell members are in contact with each other and form a shell having a first inlet port for the heater and a second inlet port for the electrical component;

(2) securing means for releasably maintaining the shell members in the mated configuration;

(3) a first terminal block for connecting the first electrode to the first elongate member of said electrical component within the shell;

(4) a second terminal block for connecting the second electrode to the second elongate member of said electrical component within the shell;

(5) a third terminal block for connecting the grounding braid to the third elongate member of said electrical component within the shell; and

(6) a plurality of first gripping members associated with the first shell member, and at least one second gripping member associated with the second shell member, the first and second gripping members being such that, when the shell members are brought from the demated configuration into the mated configuration after the electrical heater has been connected to the electrical component via the terminal blocks within the connector, the gripping members are forced against opposite faces of the heater within the shell adjacent the first inlet port and at longitudinally spaced intervals on the heater, thus forcing the heater to form a serpentine configuration.

4,883,946
HEATING APPARATUS, PARTICULARLY FOR THE HEAT TREATMENT OF A TUBE OF SMALL DIAMETER AND OF CURVED SHAPE

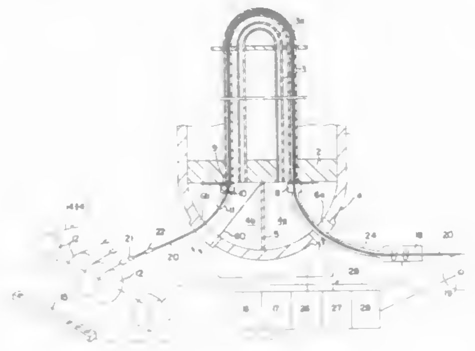
Paul Jacquier, Tassin la Demi-Lune, France, assignor to Framatome, Courbevoie, France

Filed Mar. 25, 1988, Ser. No. 172,819

Claims priority, application France, Mar. 25, 1987, 87 04158

Int. Cl.⁴ H05B *3/06*

U.S. Cl. 219—523 **14 Claims**



1. Heating apparatus for the heat treatment of a tube (3) of small diameter and of curved shape over at least part of its length, which apparatus comprises a flexible heating element (14) consisting of an electric resistance wire (33) wound helically to form a winding whose outside diameter is smaller than the inside diameter of the tube (3), together with an arrangement of means (8, 9, 10, 11, 12, 18, 25, 26, 27) for guidance, displacement and location of the heating element (14) in the tube (3), wherein the electric resistance heating wire (33) constitutes the central core of a coaxial cable (32) comprising an outer tubular metal sheath (34) and an insulating material (35) interposed between the central core (33) and the outer sheath (34), the coaxial cable (32) being wound to form a helical winding (31).

4,883,947
RESISTANCE CERAMIC HEATER WITH MUTUALLY CONNECTED HEAT-GENERATING CONDUCTORS, AND ELECTROCHEMICAL ELEMENT OR OXYGEN ANALYZER USING SUCH CERAMIC HEATER

Takao Murase, Kohnan, and Tsunenori Yoshimura, Nagoya, both of Japan, assignors to NGK Insulators, Ltd., Nagoya, Japan

Filed Mar. 6, 1989, Ser. No. 319,159

Claims priority, application Japan, Mar. 9, 1988, 63-55471

Int. Cl.⁴ H05B *3/6;* **H01C** *7/00*

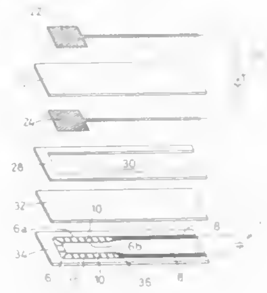
U.S. Cl. 219—553 **12 Claims**

1. A resistance ceramic heater comprising:

a ceramic substrate; and

a heating element including a resistance heat-generating portion, and electrical leads connected to said heat-generating portion for energizing the heat-generating portion to generate heat,

said heat-generating portion consisting of a plurality of electrically resistive heat-generating conductors formed in parallel connection with each other and in series connection to said electrical leads, and a plurality of connecting conductors which connects said plurality of heat-generating conductors, at a plurality of connection points on each of said plurality of heat-generating conductors, said connecting points being spaced apart from each other along a length of said each heat-generating conductor.



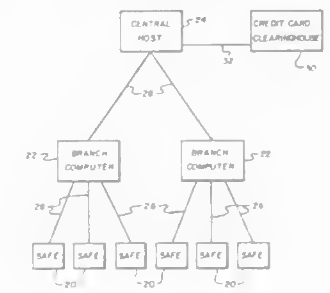
4,883,948
CREDIT CARD STORAGE SYSTEM

Steven L. Sunyich, 402 E. Springhill Cir., North Salt Lake, Utah 84054

Continuation of Ser. No. 170,310, Mar. 18, 1988. This application Apr. 17, 1989, Ser. No. 338,740

Int. Cl.⁴ G06K *5/00*

U.S. Cl. 235—382 **20 Claims**



1. A credit card operable storage system, comprising:

a secure container for storage of items;

a door associated with said container;

a locking mechanism associated with said door to selectively actuate between a locked position to lock said door in a closed position and an unlocked position to allow said door to open;

a card reader associated with said container;

a processor communicatively linked to said locking mechanism and said card reader, said processor being programmed to receive card information from said card reader, to open said locking mechanism based on appropriate card information, to develop use information, and to relay said use information to a billing development means; and

a billing development means communicatively linked to said processor for receiving use information from said processor and for developing billing information.

4,883,949
DATA READER

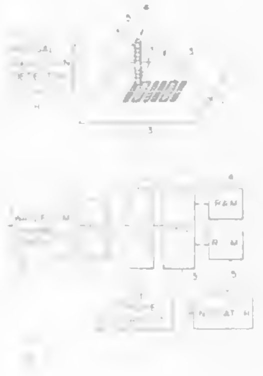
Hiroshi Kokubo, 10-8 Ohharano-Kamisato-Momiji-cho, Nishikyo-ku, Kyoto city, 610-11, Kyoto, and Kinji Tsuboi, Yokohama, both of Japan, assignors to Tokyu Car Corporation, Yokohama and Hiroshi Kokubo, Kyoto, both of, Japan

Filed Apr. 26, 1988, Ser. No. 186,438

Claims priority, application Japan, Apr. 27, 1987, 62-104108

Int. Cl.⁴ G06K *7/08*

U.S. Cl. 235—449 **12 Claims**



1. A data reader assembly comprising:

an induction coil, supplied with an alternating current, and generating an induction current;

data recording means having a substrate of a first material and patterns of a second material which is a different material than said first material so as to cause a change in the impedance of said induction coil and thereby change an amount of said induction current when coming close to said induction coil; and

means for reading information in said data recording means on the basis of an output of induction current generated in said induction coil.

4,883,950
COMPOSITE MAGNETIC AND OPTICAL HEAD

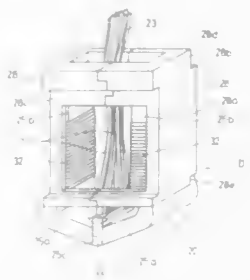
Kazuo Chiba; Yoshiaki Ohishi, both of Ichihara; Jituo Migita, Sakai; Hajime Mochizuki, and Takao Kobayashi, both of Yokohama, all of Japan, assignors to The Furukawa Electric Co., Ltd., Tokyo, Japan

Filed Feb. 22, 1988, Ser. No. 159,041

Claims priority, application Japan, May 23, 1987, 62-126522; May 23, 1987, 62-126525

Int. Cl.⁴ G06K *7/01;* **G11B** *13/04*

U.S. Cl. 235—440 **17 Claims**



1. In a composite magnetic and optical head comprising:

a magnetic sensor including a magnetic core means having an elongated distal gap and adapted to detect a magnetic pattern recorded on a record medium;

an optical sensor including a nonmagnetic light transmitting member located along said distal gap of said magnetic

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sensor and an optical fiber bundle having one end connected to said light transmitting member, and adapted to detect an optical pattern recorded on said record medium; and

a holder containing said magnetic and optical sensors in an internal space thereof, said holder having two opposite side walls extending substantially at right angles to the length of said distal gap of said magnetic core means and one end face from which said distal gap projects outward,

the improvement wherein:

said magnetic core means includes a wide portion, situated close to said distal gap and projecting outward from said one end face of said holder, and a narrow portion surrounded by said holder so as to be located behind said one end face, said wide portion being at least wider than the distance between said opposite side walls.

4,883,951

METHOD AND SYSTEM FOR DETECTING WHETHER AN OPTICAL SYSTEM IS IN FOCUS USING AN IMPROVED INTERPOLATION TECHNIQUE

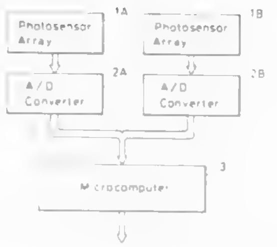
Shotaro Yokoyama, and Takashi Nishiinbe, Kawasaki, both of Japan, assignors to Fuji Electric Company Ltd., Kawasaki, Japan

Continuation of Ser. No. 96,530, Sep. 15, 1987, abandoned. This application Mar. 21, 1989, Ser. No. 326,799

Claims priority, application Japan, Nov. 10, 1986, 61-265469

Int. Cl.⁴ G01J *1/20;* **G03B** *3/00*

U.S. Cl. 250—201 **3 Claims**



1. A focus detection system in which light from a object is incident on first and second photosensor arrays via an optical system to form a first image on the first array and a second image on the second array to obtain a relative displacement amount X between the first image with respect to the first array and the second image with respect to the second array, so as to determine whether said optical system is in focus or not, each array generating a respective pattern of signals in response to light falling on the photosensors of the respective array, said system comprising:

means for storing a function f(i) expressing inconsistency between the pattern of signals from the first array and the pattern of signals from the second array when the patterns are shifted with respect to one another by a shift amount i and compared with each other, the shift amount i being an integer which represents the difference between a photosensor position in the first array and a photosensor position in the second array;

means for obtaining function values $f(i_0)$, $f(i_0-1)$, $f(i_0-2)$, $f(i_0+1)$ and $f(i_0+2)$ corresponding to i_0, (i_0-1), (i_0-2), (i_0+1) and (i_0+2), were i_0 is the value of the shift amount i when f(i) is at a minimum;

means for computing an amount I $=X/p$ (p $=$pitch of the arrayed photosensors in the photosensor arrays) from said function values, said amount I being given by formulas (1) and (2) below:

$$I=i_0+\tfrac{1}{2}-\{f(i_0+1)-f(i_0)\}/A \qquad (1)$$

where

$A=2\{B_1+K_1(B-B_2)\}$
$B_1=f(i_0-1)-f(i_0)$
$B_2=f(i_0+2)-f(i_0+1)$
$k_1=$a constant between 0 and 0.5

$$I=i_0-\tfrac{1}{2}+\{f(i_0-1)-f(i_0)\}/C \qquad (2)$$

where,

$C=2\{D_1+K_1(D_1-D_2)\}$
$D_1=f(i_0+1)-f(i_0)$
$D_2=f(i_0-2)-f(i_0 1)$
$K_1=$a constant between 0 and 0.5

means for comparing said function value $f(i_0-1)$ with said function value $f(i_0+1)$ to judge whether

(a) $f(i_0-1)>f(i_0+1)$,
(b) $f(i_0-1)=f(i_0+1)$, or
(c) $f(i_0-1)<f(i_0+1)$; and

means for obtaining said amount I given by said formula (1) in the case of (a), or given by $I=i_0$ in the case of (b), or given by said formula (2) in the case of (c).

4,883,952

OPTICAL BIREFRINGMENT PARAMETER MEASURING SENSOR

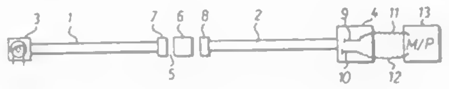
Gordon R. Jones, 17 Brimstage Close, Heswall, Merseyside, England

Filed Mar. 15, 1988, Ser. No. 168,449

Claims priority, application United Kingdom, Mar. 17, 1987, 8706318

Int. Cl.⁴ G02F *1/01*

U.S. Cl. 250—225 **11 Claims**



1. Apparatus for measuring a parameter comprising a polychromatic light source; a detector disposed such that polychromatic light is propagated along a path from the source to the detector, the detector comprising at least first and second photo-responsive elements, the responsivity with respect to wavelengths of the first element being different from that of the second; first and second polarizers longitudinally spaced one from the other in the said path and oriented such that the polarization axis of the first polarizer is substantially orthogonal to that of the second; a modulating element of birefringent material disposed in the path between the first and second polarizers such that a change in the parameter to be measured causes a change in the optical path length of the polychromatic light through the modulating element, and hence a change in the color of the light incident on the detector; analysis means for calculating the color of the polychromatic light incident on the detector as represented by two or more parameters on the Chromaticity (CIE) Diagram, and means for supplying signals from the photo-responsive elements to the analysis means.

4,883,953

SPECTROSCOPIC METHOD AND APPARATUS FOR MEASURING SUGAR CONCENTRATIONS

Katsue Koashi, Toyonaka, and Hiroshi Yokota, Sakai, both of Japan, assignors to Kurashiki Boseki Kabushiki Kaisha, Okayama, Japan

Filed Nov. 1, 1988, Ser. No. 267,109

Claims priority, application Japan, Nov. 17, 1987, 62-290821

Int. Cl.⁴ G01J *3/50*

U.S. Cl. 250—226 **5 Claims**

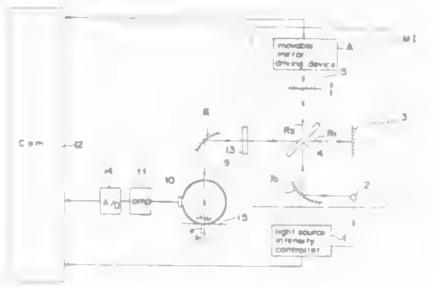
1. A spectroscopic method for measuring concentrations of sugars in samples, which comprises

a first step wherein light intensity of a light source in an interferometer is set at a first prescribed value and outcoming light beams from said interferometer are emitted into an integrating sphere to irradiate a sample placed at a sample aperture of said integrating sphere,

a second step wherein diffusely reflected light beams from said sample are detected by a photo detector,

a third step wherein absorption spectrum of the sugar under measurement at a first depth in said sample is determined by processing electrical signals from said photo detector by a computer,

a fourth step wherein the light intensity of the light source in said interferometer is set at a second prescribed value and absorption spectrum of the sugar under measurement at a second depth in said sample is determined in the same manner as in said first, second and third steps, and


movable mirror driving device
A
M1
5
8
3
Com
12
13
4
9
14
11
10
A/D
amp
15
2
light source intensity controller

a fifth step wherein absorption spectrum of the sugar under measurement at a deeper region between said first and second depths in the sample is determined on the basis of the difference between the respective absorption spectrum determined in said third and fourth steps so that the concentration of the sugar under measurement in said deeper region in said sample can be determined on the basis of said absorption spectrum at said deeper region,

the wavelengths for a use for said absorption spectrum being selected from a wavelength band of from 950 to 1,150 nm, from 1,150 to 1,300 nm, or from 1,300 to 1,450 nm.

4,883,954

METHOD OF MEASURING OPTICAL RADIATION ENERGY REFLECTED BY A REFLECTION AREA

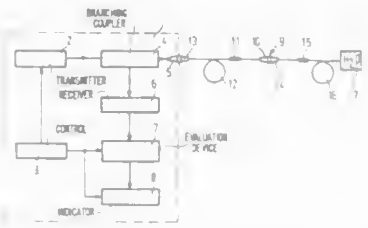
Hildegard Esser, Birreshorner Strasse 55, 5000 Köln 41, and Ulrich Grzesik, August Kierspel Str. 161, 5060 Bergisch Gladbach, both of Fed. Rep. of Germany

Filed Jun. 29, 1988, Ser. No. 212,812

Claims priority, application Fed. Rep. of Germany, Jul. 2, 1987, 3721823

Int. Cl.⁴ H01J *5/16*

U.S. Cl. 250—227 **8 Claims**



1. A method of measuring the optical radiation energy reflected by a reflection place in an optical path as a relative fraction of energy coupled to said path by an optical transmitter, comprising arranging a reflection element having a known reflection factor in the optical path that includes the reflection place; transmitting radiation along said optical path; measuring the optical power backscattered from said reflection place and from said reflection element; and determining the energy reflected from the reflection place from the optical power backscattered from the reflection place and from the reflecting element.

4,883,955

OPTICAL ENCODER WITH CONVERGING MEANS

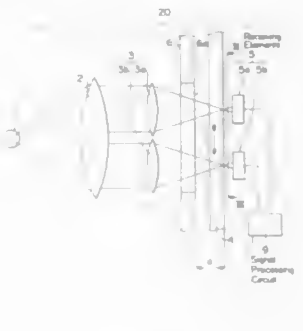
Harumi Kawasaki, and Masato Hara, both of Tokyo, Japan, assignors to Asahi Kogaku Kogyo K.K., Tokyo, Japan

Filed Feb. 25, 1988, Ser. No. 160,320

Claims priority, application Japan, Feb. 25, 1987, 62-42109

Int. Cl.⁴ G01D *5/34*

U.S. Cl. 250—231 SE **10 Claims**



1. An optical encoder comprising:

a measuring section which comprises:

parallel light beam generating means,

light receiving means located in opposition to said parallel light beam generating means,

converging means disposed between said parallel light beam generating means and said light receiving means for converging the parallel light beam to a focal point on a focal plane, and

main grating means arranged between said converging means and said light receiving means; and

scanning grating means located between said main grating means and said light receiving means and on the focal plane of said converging means said scanning grating means being movable relative to said measuring section

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4,883,956

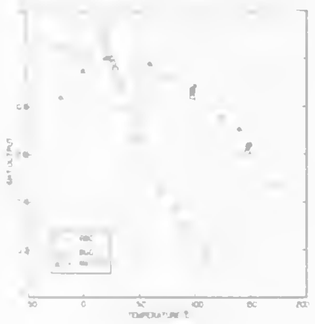
METHODS AND APPARATUS FOR GAMMA-RAY SPECTROSCOPY AND LIKE MEASUREMENTS

Charles L. Melcher, West Redding; Ralph A. Manente, Monroe, and Jeffrey S. Schweitzer, Ridgefield, all of Conn., assignors to Schlumberger Technology Corporation, New York, N.Y.

Continuation of Ser. No. 812,220, Dec. 23, 1985. This application Feb. 2, 1988, Ser. No. 149,953

Int. Cl.⁴ G01T *1/202*

U.S. Cl. 250—269 **28 Claims**



1. Apparatus for investigation of subsurface earth formations, comprising:

a sonde adapted for movement through a borehole;

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detector means carried by said sonde for detecting radiation and including a gadolinium orthosilicate scintillator; and

means coupled to said detector means for generating and recording a signal representative of at least one characteristic of radiation detected by said detector means.

4,883,957

MASS SPECTROMETER INCLUDING COOLING FOR THE ION COLLECTION AMPLIFIERS

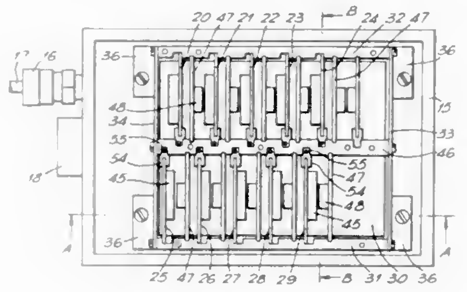
Nigel Kinge, Sandbach; Neil E. Sanderson, Sandiway, and David J. Mills, Northwich, all of England, assignors to VG Instruments Group Limited, Crawley, England

Filed Apr. 8, 1988, Ser. No. 179,426

Claims priority, application United Kingdom, Apr. 9, 1987, 8708502

Int. Cl.⁴ H01J *49/00*

U.S. Cl. 250—283 21 Claims



1. An apparatus comprising a mass spectrometer including at least one ion-collecting means disposed to receive ions subsequent to their mass analysis and produce an electrical current substantially proportional to the number of ions striking said at least one ion-collecting means, the improvement comprising at least one current amplifier means for amplifying the electrical current produced by said at least one ion-collecting means, said at least one current amplifier means being disposed in a substantially sealed housing and comprising a plurality of electronic components, at least one of said components being an amplifying element; means for maintaining the pressure within said substantially sealed housing substantially below atmospheric pressure; means for cooling at least said amplifying element to a temperature substantially below 20° C.; and means for maintaining substantially constant the temperature of at least one of said electronic components.

4,883,958

INTERFACE FOR COUPLING LIQUID CHROMATOGRAPHY TO SOLID OR GAS PHASE DETECTORS

Marvin L. Vestal, Houston, Tex., assignor to 501 Vestec Corporation, Houston, Tex.

Filed Dec. 16, 1988, Ser. No. 285,516

Int. Cl.⁴ H01J *41/04*

U.S. Cl. 250—288 54 Claims

1. An improved interface for receiving liquid effluent including sample solute of interest and solvent from a liquid chromatographic device and outputting sample particles of interest to a detector for analysis of a sample, the interface comprising:

a desolvation chamber;

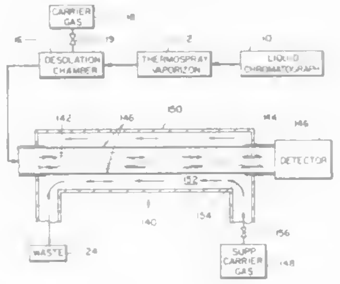
desolvation chamber heating means for heating the sprayed effluent within the desolvation chamber to vaporize substantially all solvent within the desolvation chamber while maintaining the sample particles of interest in the desolvation chamber;

spraying means for discharging the heated liquid effluent into the desolvation chamber;

gas supply means for inputting a carrier gas to the desolvation chamber;

flow path means for transferring an aerosol including the carrier gas, vaporized solvent, and the sample particles of interest from the desolvation chamber; and

solvent removal means for receiving the aerosol and removing substantially all of the vaporized solvent while outputting the carrier gas and substantially all of the sample particles of interest to the detector for analysis, the solvent removal means including a cell housing, a gas diffusion membrane within the cell housing and separating the cell housing into a primary flow chamber for receiving the aerosol and an adjoining secondary flow chamber and supplemental carrier gas supply means for passing carrier gas through the secondary flow chamber while aerosol is passed through the primary flow chamber such that solvent vapor is diffused through the membrane from the primary flow chamber to the secondary flow chamber and is removed by the supplemental carrier gas.



4,883,959

SCANNING SURFACE MICROSCOPE USING A MICRO-BALANCE DEVICE FOR HOLDING A PROBE-TIP

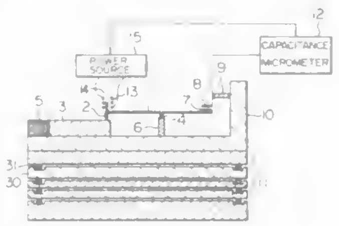
Shigeyuki Hosoki, Hachioji; Sumio Hosaka, Tokyo, and Keiji Takata, Tokorozawa, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 1, 1988, Ser. No. 200,979

Claims priority, application Japan, Jun. 5, 1987, 62-139712

Int. Cl.⁴ G01N *23/00*

U.S. Cl. 250—306 6 Claims



1. A scanning surface microscope comprising:

a probe-tip;

means for positioning a sample in proximity to the probe-tip;

means for changing the relative position of the probe-tip and a surface of the sample;

a micro-balance means including a balance bar balanced about a fulcrum for holding the probe-tip and for converting irregularities of the surface of the sample into the displacement of the balance bar by utilizing a force generated between the probe-tip and the surface of the sample; and

detection means for detecting the displacement of the balance bar.

4,883,960

RADIATION-TYPE DIAGNOSIS APPARATUS

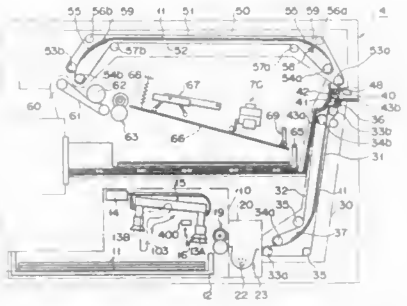
Shinichiro Futamata, Tochigi, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jul. 15, 1988, Ser. No. 219,341

Claims priority, application Japan, Jul. 16, 1987, 62-177405

Int. Cl.⁴ G03C *5/16*

U.S. Cl. 250—327.2 8 Claims



1. A radiation-type diagnosis apparatus wherein a recording sheet is used for receiving the radiation passing through a region of interest of an object and photographing the image of this region, along with a bar code identifying the recording sheet, said diagnosis apparatus comprising:

radiation-generating means for generating radiation;

support means for supporting a subject and defining a recording region;

first storage means for storing a number of recording sheets;

sheet-supplying means for supplying said recording sheets, one by one, from said the first storage means to said recording region;

second storage means for storing the recording sheets exposed to the radiation in said recording region;

bar code-reading means located within said second storage means, for reading data from the bar code provided on each of the recording sheets; and

position-detecting means incorporated within said first storage means, for detecting the presence or absence of a bar code on each recording sheet stored in said first storage means, thereby to determine whether or not the recording sheet is positioned correctly in said first storage means,

wherein the recording sheet held in said recording region is exposed to the radiation passing through a region of interest of the object, an image of the region of interest is thereby photographed on the recording sheet, the recording sheet is scanned with a light beam, thereby reproducing the image of the region of interest, and the reproduced image and the data read from the bar code are used in diagnosing the region of interest.

4,883,961

RADIATION IMAGE RECORDING AND READ-OUT APPARATUS

Satoshi Arakawa; Yuichi Hosoi; Kenji Takahashi; Kaoru Tamura, and Shigeru Satome, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jan. 19, 1988, Ser. No. 145,180

Claims priority, application Japan, Jan. 16, 1987, 62-8571; Feb. 2, 1987, 62-21957; Apr. 17, 1987, 62-94548; Sep. 9, 1987, 62-226174; Oct. 5, 1987, 62-251268; Oct. 14, 1987, 62-259115

Int. Cl.⁴ G01N *23/04*

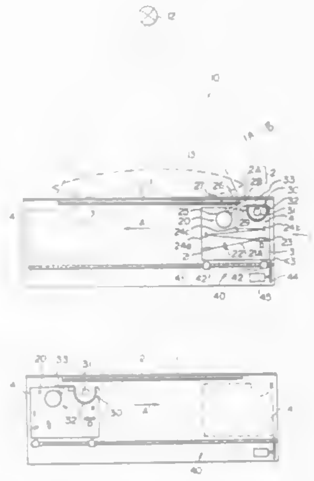
U.S. Cl. 250—327.2 20 Claims

1. A radiation image recording and read-out apparatus comprising:

(i) a stimulable phosphor sheet,

(ii) an image recording means for exposing said stimulable phosphor sheet to a radiation passing through an object, thereby to store a radiation image of said object on said stimulable phosphor sheet,

(iii) a read-out and erasing unit comprising, formed integrally with each other into a unit: (a) an image read-out means provided with a stimulating ray scanning means for scanning said stimulable phosphor sheet carrying said radiation image stored thereon by stimulating rays deflected by a light deflector, and a photoelectric read-out means for photoelectrically detecting light emitted by said stimulable phosphor sheet in proportion to the stored radiation energy at a position of scanning by said stimulating rays, thereby to read out said radiation image, and (b) an erasing means for carrying out erasing by releasing radiation energy remaining on said stimulable phosphor sheet on which the image read-out has been finished, and



(iv) a unit movement means for reciprocally moving said read-out and erasing unit in a direction approximately normal to the direction of scanning of said stimulating rays,

wherein said stimulable phosphor sheet is held at an image recording position facing said image recording means, said read-out and erasing unit is reciprocally moved to face said stimulable phosphor sheet held at said image recording position, carries out the image read-out by said image read-out means in the course of forward movement, and carries out the erasing by said erasing means in the course of backward movement.

4,883,962

THERMAL IMAGING DEVICES

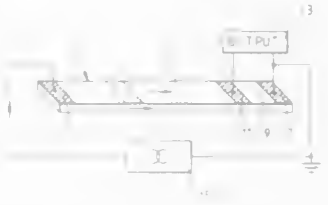
Charles T. Elliott, Malvern, England, assignor to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Continuation-in-part of Ser. No. 178,556, Jul. 29, 1980. This appilcation Jun. 23, 1981, Ser. No. 276,202

Claims priority, application United Kingdom, Jul. 30, 1979, 7926455; Jul. 11, 1980, 8022750

Int. Cl.⁴ G01T *1/22;* **G02B** *26/10*

U.S. Cl. 250—334 10 Claims



1. A thermal imaging system of the kind comprising

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A photoconductive detector including:

at least one elongate detector element;

an input bias contact to each element;

an output bias contact to each element spaced from the corresponding input bias contact; and,

a read-out region for each element, located between the input bias contact and the output bias contact;

biassing means connected across the detector;

at least one read-out circuit, one connected to each read-out region;

an optical assembly for focussing an image of a thermal scene on to the surface of the detector; and,

a scan mechanism for scanning the image along the length of each detector element;

wherein for appropriate scan velocity and bias, photocarriers generated in each element are caused to drift along each element towards the read-out region at an ambipolar drift velocity that is matched to the scan velocity;

wherein the improvement is characterised by detector material of relatively short photocarrier lifetime; and a spacing between each input bias contact and the corresponding read-out region of each detector element such that for the appropriate scan velocity and bias, the time taken to scan the distance between each input bias contact and the corresponding read-out region is greater than the photocarrier lifetime.

4,883,963

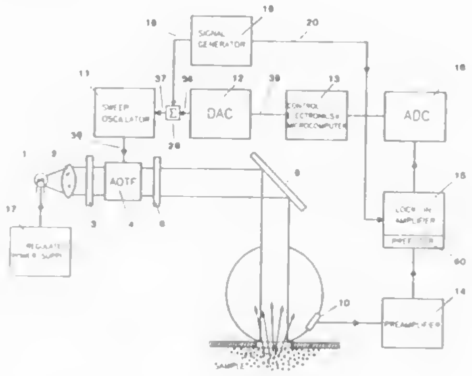
OPTICAL ANALYSIS METHOD AND APPARATUS HAVING PROGRAMMABLE RAPID RANDOM WAVELENGTH ACCESS

Gabor J. Kemeny, and David L. Wetzel, both of Manhattan, Kans., assignors to Bran+Luebbe GmbH, Norderstedt, Fed. Rep. of Germany

Filed Apr. 28, 1986, Ser. No. 856,289

Int. Cl.⁴ G01J *3/42;* G01N *21/35*

U.S. Cl. 250—339 17 Claims



1. An apparatus for providing rapid random wavelength access for optical analysis of a sample comprising,

(a) a light source,

(b) an acousto-optic tunable filter positioned to accept light from the light source and provide emerging tuned output beams,

(c) means to select a predetermined number of tuned beams from the acousto-optic tunable filter,

(d) means to direct said predetermined number of selected tuned output beams onto the sample to be analyzed,

(e) means to collect radiation that is reflected back to transmitted through said sample,

(f) means for detecting and amplifying the reflected or transmitted radiation,

(g) electronic tunable oscillator means connected to said acousto-optic tunable filter,

(h) electronic means providing timing and logic for wavelength selection via said electronic tunable oscillator means, and

(i) means for generating a predetermined periodic signal, said electronic means providing timing and logic for wavelength selection including means for generating a non-periodic signal, means for combining the periodic signal with the non periodic signal to provide a control input signal to the electronic tunable oscillator means to permit optical analyses of at least two discrete optical qualities of said sample.

4,883,964

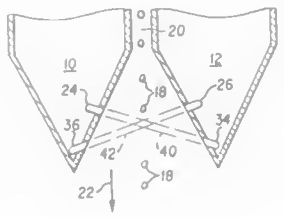
OPTICAL METHOD AND APPARATUS FOR DISCRIMINATING BETWEEN CROP STALKS AND WEED STALKS IN A NON-CONTACT ROW CROP HARVESTER GUIDANCE SYSTEM

Carl E. Bohman, New Holland, Pa., assignor to Ford New Holland, Inc., New Holland, Pa.

Filed Dec. 22, 1988, Ser. No. 288,359

Int. Cl.⁴ A01D *75/00;* G01N *21/59*

U.S. Cl. 250—341 6 Claims



1. In a guidance system for a row crop harvesting machine operable to move along a row of crop stalks which may contain weed stalks of less width than the width of the crop stalks, a method of discriminating between crop stalks and weed stalks, said method comprising:

producing, at one side of a crop row, first and second energy beams of a given width and which cross a crop row and intersect at a crop row when the harvesting machine is aligned with the crop row, said given width being less than the width of crop stalks but greater than the width of weed stalks; and,

detecting said first and second energy beams at the other side of said crop row to determine when either of said energy beams is blocked.

4,883,965

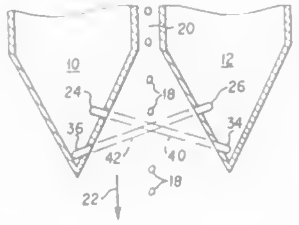
METHOD AND APPARATUS FOR DISCRIMINATING BETWEEN STALKS AND LEAVES IN A NON-CONTACT ROW CROP HARVESTER GUIDANCE SYSTEM

Carl E. Bohman, New Holland, Pa., assignor to Ford New Holland, Inc., New Holland, Pa.

Filed Dec. 22, 1988, Ser. No. 288,360

Int. Cl.⁴ A01D *75/00;* G01N *21/59*

U.S. Cl. 250—341 5 Claims



1. In a guidance system for a row crop harvesting machine operable to move along a row of crop stalks, a method of discriminating between crop stalks and weeds, said method comprising:

providing first and second infra-red energy beam transmitters for producing first and second infra-red energy beams which cross a crop row and intersect at a crop row when the harvesting machine is aligned with the crop row;

providing first and second infra-red energy beam receptors for sensing said first and second infra-red energy beams, respectively; and,

energizing said first and second energy beam transmitters to produce said first and second energy beams of sufficient intensity that said first and second infra-red energy beam receptors sense said first and second infra-red energy beams through leaves but not through crop stalks wherein said first and second infra-red energy beam receptors produce output signals only when said first and second infra-red energy beams, respectively, are blocked by crop stalks.

4,883,966

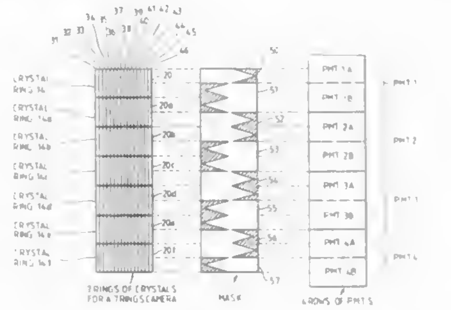
PET CAMERA WITH CRYSTAL MASKING

Wai-Hoi Wong, 7903 Deer Meadow, Houston, Tex. 77071

Filed May 5, 1988, Ser. No. 190,615

Int. Cl.⁴ G01T *1/20*

U.S. Cl. 250—363.02 2 Claims



1. A positron emission tomography camera comprising,

a plurality of scintillation crystals in planes which are positioned side-by-side around a patient area to detect radiation therefrom and forming adjacent rows of crystals transverse to said planes,

each row of each plane having a plurality of crystals for detecting radiation,

a row of light detectors positioned adjacent each row of crystals for receiving detected radiation from the adjacent row of crystals,

a row of reflecting masks positioned between each row of crystals and each row of coacting light detectors, said masks blocking the detected radiation from each crystal in each row a different amount for providing an identification to the light detectors of which crystal detects radiation.

4,883,967

RADIATION DETECTOR AND METHOD OF MANUFACTURING THE SAME

Hiroshi Tsutsui, Yawata; Sneki Baba, Suita; Koichi Ohmori, Toyonaka; Tetsuro Obtsuchi, Osaka, and Masanori Watanabe, Katano, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

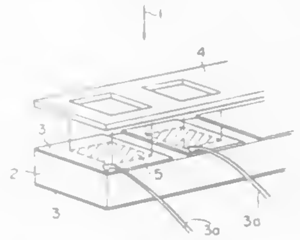
Filed May 3, 1988, Ser. No. 189,816

Claims priority, application Japan, May 26, 1987, 62-127151; Mar. 9, 1988, 63-55172

Int. Cl.⁴ H01L *27/14, 31/00*

U.S. Cl. 250—370.01 16 Claims

1. A radiation detector comprising a radiation screening member for intercepting radiation incident upon a marginal portion of the radiation incident surface of a semiconductor radiation sensor or marginal portions of semiconductor radiation sensors in an array and boundary portions between adjacent sensors in said array, said sensor or said sensors in said array being adapted to output pulses in correspondence with radiation photons, said sensor or said sensors in said array having an effective sensing area, and said radiation screening member having an opening area which is smaller than said effective sensing area.



4,883,968

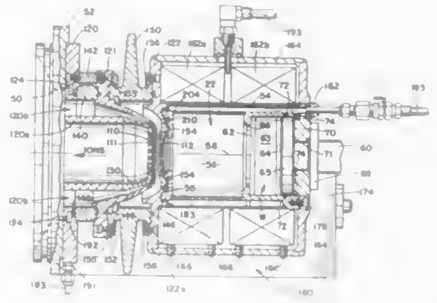
ELECTRON CYCLOTRON RESONANCE ION SOURCE

James E. Hipple, Lexington; Gerald L. Dionne, South Hamilton, both of Mass.; Yasuhiro Torii, Atsugi, Japan; Masaru Shimada, and Iwao Watanabe, both of Ishida, Japan, assignors to Eaton Corporation, Cleveland, Ohio and Nippon Telegraph and Telephone Corporation, Kanagawa, Japan

Filed Jun. 3, 1988, Ser. No. 202,141

Int. Cl.⁴ H01J *37/08*

U.S. Cl. 250—423 R 15 Claims



1. A microwave energized ion source comprising:

(a) structure defining a cylindrical ion producing chamber having a longitudinal axis and a gas inlet for supplying an oinizable gas in controlled concentrations into the chamber, said structure including an ion beam exit opening at one end of said chamber and an energy input opening at an opposite end of said chamber;

(b) magnetic field defining structure comprising one or more annular coils supported along the length of the ion producing chamber which, when energized provides a generally axially aligned magnetic field in the ion producing chamber, said magnetic field defining structure having an outer, coil enclosing structure comprising magnetically permeable material for shaping the magnetic field generated by coil energization;

(c) ion accelerating structure including inner, intermediate and outer spaced aperture plates covering the exit opening and having aligned openings providing exit paths for ions exiting the chamber, said outer aperture plate constructed from a more magnetically permeable material than the inner and intermediate spaced aperture plates for extend-

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ing a region of axial magnetic field alignment through said inner and intermediate spaced aperture plates; and

(d) structure for exciting ionizing electrons in the chamber by application of microwave frequency energy to the chamber, said structure including one or more microwave transmitting elements supported at the energy input opening of said ion producing chamber.

4,883,969

METHOD OF IONIZING GAS WITHIN CATHODE-CONTAINING CHAMBER

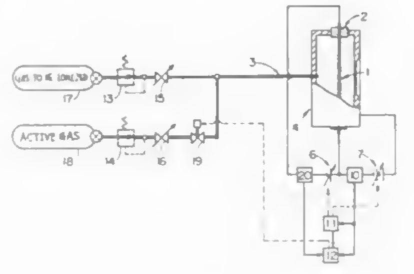
Yoshihiro Ishida, Kawaguchi; Akira Yoshida, Urawa, and Hideo Kobayashi, Tokyo, all of Japan, assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 82,604, Aug. 6, 1987, abandoned. This application Feb. 21, 1989, Ser. No. 314,330

Claims priority, application Japan, Aug. 13, 1986, 61-189994

Int. Cl.⁴ H01J *27/00*

U.S. Cl. 250—427 14 Claims



1. A method of ionizing a gas within a chamber having a cathode disposed therein, wherein the sputtering effect upon the cathode is substantially reduced to prolong the life of the cathode, said method comprising:

activating the cathode to emit thermal electrons therefrom within the chamber by applying a voltage thereto;

introducing a gas to be ionized into the chamber having the cathode therein;

introducing at least one active gas into the chamber having the cathode therein;

ionizing the gas to be ionized by subjecting the gas to be ionized to the thermal electrons emitted by the cathode; and

controlling the introduction of said at least one active gas into the chamber to maintain a predetermined mixture ratio with the gas to be ionized within the chamber to induce growth in the volume of the cathode at least partially offsetting the removal of atoms from the cathode caused by the sputtering effect.

4,883,970

X-RAY INTENSIFYING SCREENS CONTAINING ACTIVATED RARE EARTH BORATES

Catherine J. Page, Eugene, Oreg., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 95,229, Sep. 11, 1987, which is a continuation-in-part of Ser. No. 897,040, Aug. 15, 1986, abandoned. This application Dec. 14, 1988, Ser. No. 284,424

Int. Cl.⁴ C09K *11/78;* H01J *1/63*

U.S. Cl. 250—483.1 7 Claims

1. An X-ray intensifying screen comprising a flexible support, particles of an X-ray phosphor on the support, and a binder for said phosphor particles, wherein the X-ray phosphor consists essentially of

$$Gd_{1-X}BO_3{:}Ce_X$$

wherein X is 0.001 to 0.09.

4,883,971

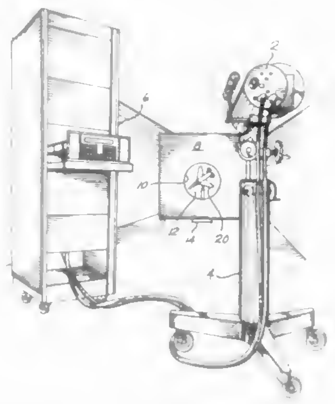
METHOD AND APPARATUS FOR DETERMINING INFRARED SIGNATURE OF OBJECTS

David G. Jensen, Auburn, Wash., assignor to The Boenig Company, Seattle, Wash.

Filed Dec. 19, 1988, Ser. No. 286,628

Int. Cl.⁴ H01K *1/14*

U.S. Cl. 250—495.1 37 Claims



1. A device for simulating the infrared signature of an object, said device comprising:

a plurality of layers of fiber reinforced composite material, said layers including two adjacent electrically insulative layers; and

an elongated conductor interposed between said two layers and connectable to an electric power source, said conductor being arranged in a continuous winding pattern having a plurality of spaced regions;

wherein all of said layers are bonded together to form, with the conductor, an integral structure; said structure is shaped to simulate the three dimensional shape of the object; and said regions are sufficiently close to each other, and said conductor is positioned at a sufficient depth relative to an outer surface of said structure, to produce a substantially continuous temperature gradient on said outer surface when the conductor is heated by supplying electric power thereto.

4,883,972

MONITORING EQUIPMENT FOR DETECTION OF EMISSION

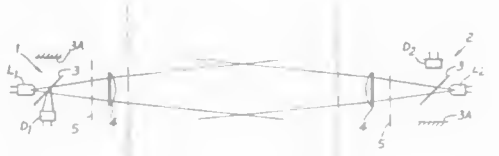
Charles D. Coe, Chesterfield, England, assignor to Combustion Developments Limited, Derbyshire, England

Filed May 6, 1988, Ser. No. 190,757

Claims priority, application United Kingdom, May 13, 1987, 8711309

Int. Cl.⁴ G01N *21/00, 21/49*

U.S. Cl. 250—575 11 Claims



1. Monitoring equipment for smoke and/or fine particulate emissions in which light from a light source is transmitted across a flue to a detector, comprising two units for location to opposite sides of a flue or chimney, each unit comprising a light source, a lens and a light detector, the light from the light source of each said unit being directed by its lens across the flue or chimney in a divergence path, to be gathered by the lens of the opposite unit and directed to the detector in the opposite unit, and there being means in each unit to direct light from said light source to said respective detector, and means for combining the outputs from the detectors of each unit to provide a resulting composite reading of the degree of smoke and/or fine particulate material existing in the flue or chimney.

4,883,973

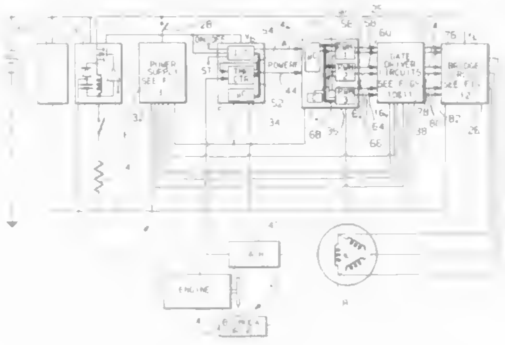
AUTOMOTIVE ELECTRICAL SYSTEM HAVING A STARTER/GENERATOR INDUCTION MACHINE

Leroy E. Lakey, Anderson; David A. Peter, Alexandria; David A. Chance, Noblesville, and Stephen W. Anderson, Anderson, all of Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Aug. 1, 1988, Ser. No. 227,036

Int. Cl.⁴ F02N *11/04*

U.S. Cl. 290—31 5 Claims



1. A motor vehicle electrical system for starting an internal combustion engine and generating electricity for charging a vehicle storage battery and energizing vehicle electrical loads, comprising in combination:

an induction machine coupled to the engine for bi-directional rotary mechanical energy exchange;

bi-directional bridge circuit means electrically coupling the storage battery and the induction machine for bi-directional electrical energy exchange;

control means for controlling the operation of said bridge circuit means (1) in an engine starting mode to operate said bridge as an inverter for energizing said induction machine with substantially sinusoidal voltage derived from the storage battery, and (2) in a generating mode to operate said bridge as a converter for drawing energy from the induction machine for charging the storage battery; and

load converter means coupled between the storage battery and the electrical loads for drawing current from said storage battery at a predefined load voltage for energizing said electrical loads.

4,883,974

VEHICULAR DOOR MULTIPLEXING SYSTEM

David V. Tinder, Dearborn, Mich., assignor to United Technologies Automotive, Inc., Dearborn, Mich.

Filed May 6, 1988, Ser. No. 191,097

Int. Cl.⁴ H02J *1/00*

U.S. Cl. 307—10.1 2 Claims

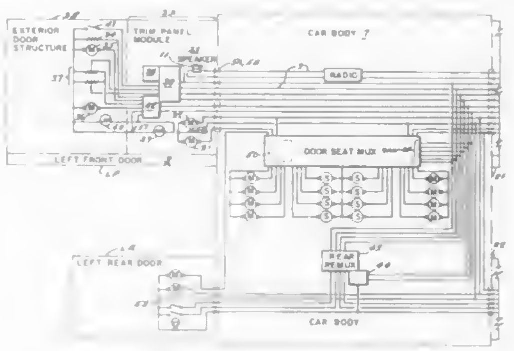
1. A vehicle having a main body, a main DC power source contained in the body, at least one door movably attached to the body of the vehicle to open and close with an attachment gap between them, a number of electrical components in the door with the electrical components powered by the main DC power source, comprising:

at least one relatively low power DC electrical component and at least one relatively high power DC electrical component in the door;

a main multiplexing unit located in the main vehicle body;

a remote multiplexing unit electrically connected to said main multiplexing unit but located in the door, the two multiplexing units being electrically connected together by wiring extending across the hinge gap; and

a low power control unit also located in the door associated with and controlled by said remote multiplexing unit, the DC power from the main DC power source to the low power unit being directly supplied through said low power control unit in the door through wiring totally contained in the door, while the DC power from the main power source to the high power unit is directly supplied from said main multiplexing unit in the vehicle body through the wiring extending across the attachment gap.



4,883,975

SCHMITT TRIGGER CIRCUIT

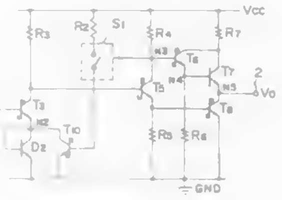
Hiromu Enomoto, Sendai; Hirofumi Dohgome, Kokubu; Masao Kumagai, Sendai; Toru Nakamura, Kushikino, and Kimitaka Yoshiyama, Kagoshima, all of Japan, assignors to Fujitsu Limited, Kawasaki and Kyushu Fujitsu Electronics Limited, Kagoshima, both of, Japan

Filed Nov. 8, 1988, Ser. No. 268,880

Claims priority, application Japan, Nov. 17, 1987, 62-290177

Int. Cl.⁴ H03K *3/29, 5/153, 5/00, 5/12*

U.S. Cl. 307—290 20 Claims



1. A Schmitt trigger circuit for outputting an output voltage having a logic level which changes from a low level to a high level at a first threshold value of an input voltage and which changes from the high level to the low level at a second threshold value of the input voltage, said Schmitt trigger circuit comprising:

a first transistor for inversion having a base supplied with the input voltage and having an emitter voltage;

a level shift diode, coupled to said first transistor, for shifting the emitter voltage of said first transistor from a reference level, said level shift diode having an anode and a cathode;

a second transistor for switching, having a collector and an emitter respectively coupled to the anode and the cathode of said level shift diode, the emitter of said second transistor being coupled to a first power source voltage, said second transistor having a base;

switching means for controlling switching of said second

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transistor, said switching means being coupled between the base of said second transistor and a second power source voltage higher than the first power source voltage; and

an output circuit, coupled to said first transistor and supplied with the input voltage through said first transistor, for outputting the output voltage, said output circuit being coupled between the first and second power source voltages, said switching means being controlled responsive to the output voltage from said output circuit so as to close when the logic level of the output voltage is the high level, thereby turning said second transistor ON.

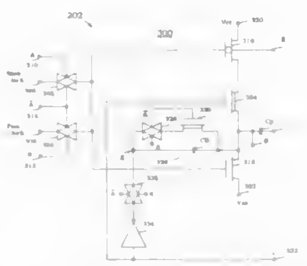
4,883,976
LOW POWER DUAL-MODE CMOS BIAS VOLTAGE GENERATOR

Peter Deane, Sunnyvale, Calif., assignor to Xicor, Inc., Milpitas, Calif.

Filed Dec. 2, 1987, Ser. No. 127,934

Int. Cl.⁴ H03K *3/01, 19/003, 19/096*

U.S. Cl. 307—291.2 **8 Claims**



1. An improved bias voltage generator for generating an output voltage having an opposite polarity than a power source input voltage comprising:

(a) a first receiving means for receiving a first clock signal;

(b) first charge pump means coupled to said power source and said first receiving means including a first charge pump capacitor having a charge pump side and an output side wherein said first charge pump means is responsive to said first clock signal for alternatively switching the charge pump side of said first charge pump capacitor between first and second voltages;

(c) clamping means coupled to said first receiving means and said first charge pump means and responsive to said first clock signal for clamping the output side of said first charge pump capacitor to approximately zero volts when said charge pump side of said first charge pump capacitor is switched to said first voltage such that charge is coupled from said power source to said first charge pump capacitor and for unclamping the output side of said first charge pump capacitor when said charge pump side of said first charge pump capacitor is switched to said second voltage; and

(d) output means coupled to the output side of said first charge pump capacitor for coupling the energy stored on said first charge pump capacitor to a load whenever said output side of said first charge pump capacitor is unclamped by said clamping means.

4,883,977
MAGNETIC POWER CONVERTER

Dennis J. Regan, 318 E. 18th St., Bakersfield, Calif. 93305

Filed Jul. 6, 1987, Ser. No. 69,633

Int. Cl.⁴ H01F *27/42*

U.S. Cl. 307—401 **9 Claims**

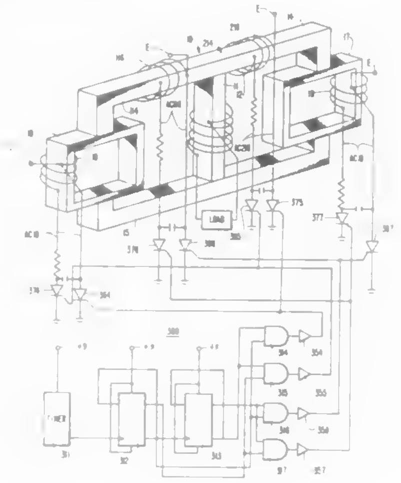
5. A magnetic circuit comprising:

a ferromagnetic core piece having an upper and a lower end;

an upper and a lower ferromagnetic transverse piece respectively aligned in magnetic proximity adjacent said upper and lower ends of said core piece;

a closed ferromagnetic loop fixed between said upper and lower transverse pieces;

a reverse winding affixed on said closed loop;



a forward winding affixed to said upper transverse piece; and

switching means for alternatively applying electrical excitations to said reverse and forward windings.

4,883,978
SEMICONDUCTOR DEVICE HAVING REDUCED POTENTIAL FLUCTUATIONS

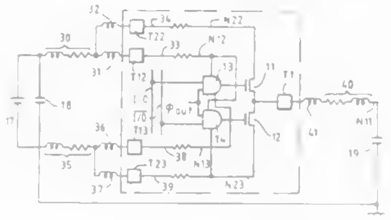
Shigeo Ohshima, and Hiroshi Sahara, both of Tokyo, Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa, Japan

Filed Mar. 11, 1988, Ser. No. 167,082

Claims priority, application Japan, Mar. 23, 1987, 62-68254

Int. Cl.⁴ H03K *17/16*

U.S. Cl. 307—443 **6 Claims**



1. A semiconductor device including a semiconductor integrated circuit having a plurality of circuit components, said device comprising:

first and second power source pads coupled to the high potential side of an external power source by means of respective wirings;

first and second reference pads coupled to the reference potential side of said external power source by means of respective wirings;

a data output buffer having a data output terminal comprising first and second transistors coupled in series between the first power source pad and the first reference pad for supplying an output signal in response to a signal supplied by the semiconductor integrated circuit; and

first and second gate circuits, each gate circuit associated with a respective one of said first and second series connected transistors for generating a signal to control the switching of the corresponding transistor, said gate circuits being circuit components of said semiconductor integrated circuit, said first gate circuit coupled between said second power source pad and said first reference pad, said second gate circuit and remaining circuit components coupled between said second power source pad and said second reference pad.

4,883,979
DARLINGTON BICMOS DRIVER CIRCUIT

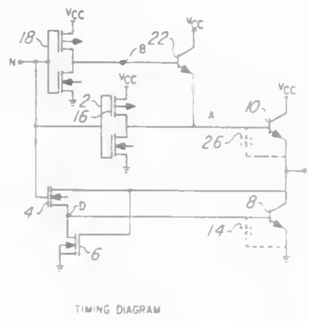
Hiep V. Tran, Carrollton, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 158,004, Feb. 16, 1988, Pat. No. 4,794,280. This application Nov. 14, 1988, Ser. No. 272,145

The portion of the term of this patent subsequent to Dec. 27, 2005, has been disclaimed.

Int. Cl.⁴ H03K *19/02, 3/26, 17/60, 17/687*

U.S. Cl. 307—446 **8 Claims**



1. A BiCMOS driver circuit comprising:

a first CMOS inverter;

a first bipolar transistor connected to the output of said first CMOS inverter;

a second bipolar transistor connected to the base of said first bipolar transistor;

a second MOS inverter connected to the base of said second bipolar transistor;

voltage pull-down circuitry connected to the output of said first bipolar transistor.

4,883,980
SEMICONDUCTOR IC (INTEGRATED CIRCUIT) DEVICE

Toshiki Morimoto, Kawasaki, and Seiji Watanabe, Yokohama, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Aug. 26, 1988, Ser. No. 238,229

Claims priority, application Japan, Aug. 27, 1987, 62-213545

Int. Cl.⁴ H01L *27/10, 23/50, 23/52;* **H03K** *3/01*

U.S. Cl. 307—465.1 **5 Claims**

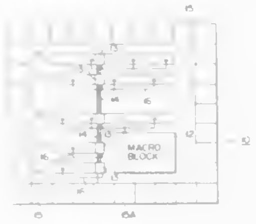
1. A semiconductor integrated circuit device comprising:

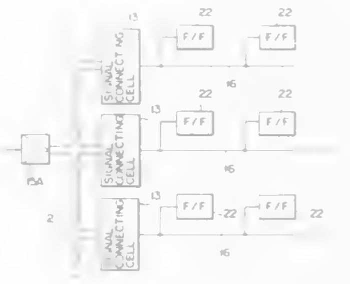
a plurality of cell rows each including a plurality of standard cells;

signal connection cells provided one at each of said cell rows and located on a straight line perpendicular to the respective cell rows;

a connection line for cell rows which is connected to the signal connection cells to allow a signal which is propagated via the signal connection cell to be supplied to the cell in the cell row; and

cell-to-cell connection lines each connected between the signal connection cells and having a greater width than that of an ordinary connection line.





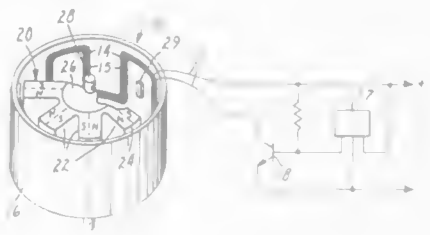
4,883,981
DYNAMOELECTRIC MACHINE HAVING IRONLESS STATOR COIL

Sten R. Gerfast, 1802 Valley Curve Rd., Mendota Heights, Minn. 55118

Continuation-in-part of Ser. No. 870,432, Jun. 4, 1986, abandoned, which is a continuation-in-part of Ser. No. 660,524, Oct. 12, 1984, abandoned. This application Aug. 5, 1988, Ser. No. 229,137

Int. Cl.⁴ H02K *1/22*

U.S. Cl. 310—40 R **17 Claims**



1. A dynamoelectric machine comprising

(1) a rotor comprising alternating N and S poles having working faces of equal length and equal angular width and

(2) a brushless, substantially ironless stator comprising

(a) a continuous electrical conductor having two free ends, which conductor is grouped into compact bundles that are spaced from each other and closely spaced from

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the working faces of the rotor, each bundle (i) containing at least four layers of the conductor, (ii) being coextensive with said length of the working faces of the rotor, and (iii) being directly opposed to an N pole of the rotor when an adjacent bundle is directly opposed to an S pole of the rotor, and

(b) means for connecting said free ends into a circuit such that at any instant current can flow through portions of the conductor within each bundle in the same direction, which direction is opposite to current flowing through portions of the conductor within each adjacent bundle, and electromagnetic flux associated with that current directly interacts with flux of the rotor.

4,883,982

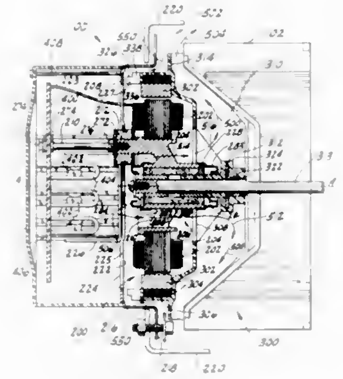
ELECTRONICALLY COMMUTATED MOTOR, BLOWER INTEGRAL THEREWITH, AND STATIONARY AND ROTATABLE ASSEMBLIES THEREFOR

Franklin L. Forbes, LaOtto, and Eldon R. Cunningham, Fort Wayne, both of Ind., assignors to General Electric Company, Fort Wayne, Ind.

Filed Jun. 2, 1988, Ser. No. 201,681

Int. Cl.⁴ H02K *9/00*

U.S. Cl. 310—62 40 Claims



1. A motor assembly comprising:

a support member adapted to be mounted on a stationary support for supporting said motor assembly and having a first side and a second side opposite the first side, said support member having at least one opening therein adapted to permit airflow therethrough;

a stationary assembly mounted on the first side of said support member and having a plurality of winding stages adapted to be electrically energized to generate an electromagnetic field;

an annular rotatable assembly on the first side of said support member and including a plurality of permanent magnetic elements surrounding said stationary assembly;

control means, connected to the winding stages and mounted on the second side of said support member, for applying a voltage to one or more of the winding stages at a time and for commutating the winding stages in a preselected sequence to rotate the rotatable assembly; and

impeller means on said rotatable assembly for moving air in heat exchange relationship with said control means and through the opening in said support member.

4,883,983

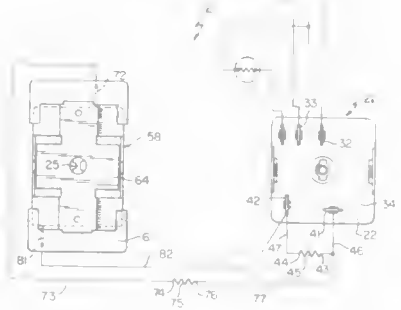
SWITCHING SYSTEM FOR PLURAL LOAD CIRCUIT

David T. Llewellyn, Ebensburg, and William J. Lichtenberger, Murrysville, both of Pa., assignors to Robertshaw Controls Company, Richmond, Va.

Filed Jul. 8, 1988, Ser. No. 216,801

Int. Cl.⁴ H02B *1/24;* **H01H** *19/42;* **H05B** *3/02*

U.S. Cl. 307—112 18 Claims



10. In a system comprising a first load means, an electrical power source, and a cyclable electrical switch construction operatively interconnected to said first load means and said source, said cyclable electrical switch construction comprising a housing means having a cyclable electrical switch means disposed completely therein and a rotatable actuator shaft that extends from said housing means for setting the duty cycle of said switch means for interconnecting said source to said first load means in relation to the rotational position of said shaft in either rotational direction thereof from an "off" position thereof, the improvement comprising an electrical switch unit carried on said housing means and being completely external to said housing means and separate from said switch means while having actuating means operatively interconnected with said shaft so that said switch unit is actuated from an "off" condition thereof to an "on" position there in one rotational direction thereof, and a second load means, said switch unit being operatively interconnected to said source and to said second load means to interconnect said source to said second load means only when said switch unit is in said "on" condition thereof.

4,883,984

PIN DIODE SWITCH

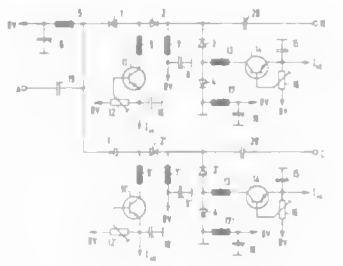
Helmut Kess, Erlangen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jul. 7, 1988, Ser. No. 216,019

Claims priority, application Fed. Rep. of Germany, Jul. 17, 1987, 3723738

Int. Cl.⁴ H03K *17/74, 3/33;* **H01P** *1/10;* **H03H** *7/48*

U.S. Cl. 307—256 3 Claims



1. A PIN diode switch for switching radio-frequency voltages between an input and an output of the switch, said PIN

diode switch being used with a reference potential and comprising:

a series circuit consisting of first and second oppositely polarized PIN diodes, said diodes being connected at a junction and being disposed between said input and said output of said switch;

means for supplying a control current to said first and second PIN diodes at said junction including an inductor and a transistor, said control current being supplied to said junction via a series path including the collector-emitter path of said transistor and said inductor;

third and fourth PIN diodes connected in series between said output and said reference potential, said third and fourth PIN diodes being connected at a junction; and

means for supplying a control current to said junction of said third and fourth PIN diodes.

4,883,985

MESFET LATCH CIRCUIT

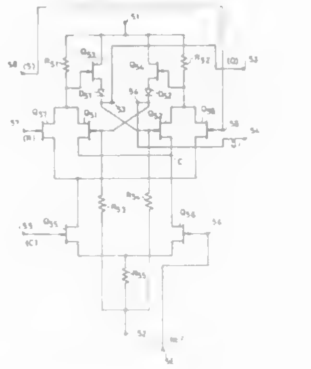
Shin Katsu, Takatsuki; Shutaro Nambu, Ibaraki, and Akio Shimano, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Continuation of Ser. No. 821,889, Jan. 27, 1986, abandoned, which is a continuation of Ser. No. 458,023, Jan. 14, 1983, abandoned. This application Oct. 28, 1987, Ser. No. 117,367

Claims priority, application Japan, Jan. 20, 1982, 57-8119; Feb. 16, 1982, 57-23802; Feb. 16, 1982, 57-23803; May 11, 1982, 57-79349

Int. Cl.⁴ H03K *3/26, 19/017*

U.S. Cl. 307—279 11 Claims



1. An FET circuit comprising:

a pair of inverters, each inverter comprising:

an output terminal,

resistive means,

a first FET having drain, gate and source electrodes and having its drain electrode connected through said resistive means to a first power supply terminal, its gate electrode connected to said output terminal of the other said inverter and its source electrode connected to a first common connection point, and

a second FET having drain, gate and source electrodes and having its drain electrode connected to the drain electrode of said first FET, its gate electrode connected to one of a set terminal and reset terminal and its source electrode connected to a second common connection point;

said pair of inverters comprising a third FET having drain, gate and source electrodes and having its drain electrode connected to said first common connection point and its gate electrode connected to a reference voltage terminal, and a fourth FET having drain, gate and source electrodes and having its drain electrode connected to said second common connection point, its gate electrode connected to a clock terminal and its source electrode connected to the source electrode of the third FET at a third common connection point; and

substantially constant current source means connected between said third common connection point and a second power supply terminal.

4,883,986

HIGH DENSITY SEMICONDUCTOR CIRCUIT USING CMOS TRANSISTORS

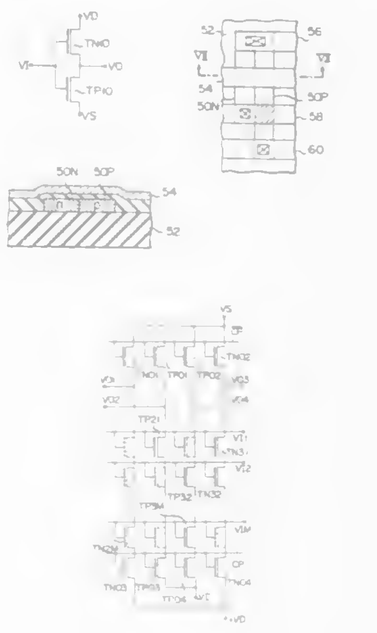
Hideharu Egawa, Tokyo, and Yasoji Suzuki, Yokosuka, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed May 14, 1982, Ser. No. 378,266

Claims priority, application Japan, May 19, 1981, 56-75164; May 19, 1981, 56-75176

Int. Cl.⁴ H01L *27/02, 29/78, 27/12;* **H03K** *19/094*

U.S. Cl. 307—298 13 Claims



1. A semiconductor integrated circuit comprising:

a first terminal set at a first potential;

a second terminal set at a second potential more negative than said first potential;

input and output means;

an n-channel MOS transistor device circuit including at least one n-channel MOS transistor whose gate is connected to said input means and whose current path is connected between said first terminal and a circuit point which is coupled to said output means, said n-channel MOS circuit having a first n-channel MOS transistor whose current path is connected at one end of said circuit point, and a plurality of second n-channel MOS transistors whose current paths are connected in parallel between the other end of the current path said first n-channel MOS transistor and said first terminal; and

a p-channel MOS circuit including at least one p-channel MOS transistor whose gate is connected to said input means and whose current path is connected between said circuit point and said second terminal, said p- and n-channel MOS transistors both being enhancement types, said p-channel MOS circuit having a first p-channel MOS transistor which is connected between said circuit point and said second terminal and a plurality of second p-channel MOS transistors whose current paths are series-connected between said circuit point and said second terminal;

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wherein the conduction state of said n-channel MOS transistor and said p-channel MOS transistor is controlled in response to an input signal supplied through said input means to set a potential at said circuit point in accordance with the conduction states of said n-channel MOS transistor and said p-channel MOS transistor.

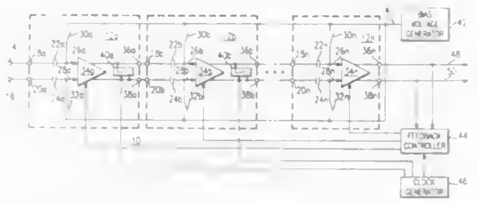
4,883,987
COMPARATOR CIRCUIT HAVING A FAST RECOVERY TIME

John W. Fattaruso, Dallas County, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed May 4, 1988, Ser. No. 190,207

Int. Cl.^{4} H03K *5/24*

U.S. Cl. 307—355 9 Claims



1. A comparator circuit having a short recovery time, said circuit comprising:

a first comarator having a first input for receipt of a first analog signal, a second input for receipt of a second analog signal, and first and second outputs which together indicate whether said first analog signal exhibits a greater amplitude than said second analog signal;

first means, having a first port coupled to said first output and a second port coupled to said second output, for selectively shorting said first and second outputs together;

a second comparator having first and second inputs and first and second outputs;

a first capacitor coupled in series between said comparator first output and said second comparator first input;

a second capacitor coupled ion series between said comparator second output and said second comparator second input;

and second means, having a first port coupled to said second comparator first output and a second port coupled to said second comparator second output, for shorting said first and second outputs of said second comparator together so as to preserve the charge on each of the first and second capacitors.

4,883,988
CURRENT MIRROR SWITCHING CIRCUIT

Akira Ide, and Yoshikazu Saito, both of Takasaki, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 946,777, Dec. 29, 1986, abandoned. This application Oct. 25, 1988, Ser. No. 262,290

Claims priority, application Japan, Dec. 27, 1985, 60-292667

Int. Cl.^{4} H03K *17/16, 19/02, 19/092*

U.S. Cl. 307—443 6 Claims

1. A switching circuit comprising:

first and second power supply terminals for supplying first and second operating voltages, respectively, to said switching circuit;

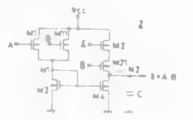
an output terminal;

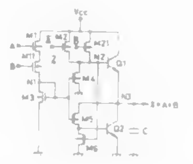
at least first to fourth input terminals for respectively receiving at least first to fourth input signals, said third and fourth input signals being reversed in phase relative to said first and second input signals;

a current mirror coupled to have an input node for receiving an input current and to have an output node which is coupled to said output terminal and to said second power supply terminal, wherein said current mirror provides an output current at said output node thereof in response to a supply of said input current to said input node thereof so as to execute one of charging and discharging of an output capacitance of said output terminal;

a first switching circuit coupled between said first power supply terminal and said input node of said current mirror and for providing said input current to said current mirror, wherein said first switching circuit includes at least first and second switch elements which are driven by said first and second input signals, respectively; and

a second switching circuit coupled between said first power supply terminal and said output terminal and for executing the other of said charging and discharging of output capacitance of said output terminal, wherein said second switching circuit includes at least third and fourth switch elements which are driven by said third and fourth input signals, respectively,





wherein said first and second switch elements are coupled in one connecting mode from among series and parallel connections between said first power supply terminal and said input node of said current mirror,

wherein said third and fourth switch elements are in another connecting mode from among series and parallel connections between said first power supply terminal and said output terminal, and

wherein said first and second switching circuits are selectively operated by said first to fourth input signals.

4,883,989
CIRCUIT FOR PRECHARGING A BUS

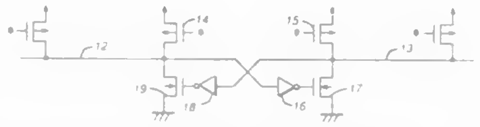
Toshiaki Mizukami, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Aug. 29, 1988, Ser. No. 237,872

Claims priority, application Japan, Sep. 30, 1987, 62-247666

Int. Cl.^{4} H03K *19/017*

U.S. Cl. 307—448 2 Claims



1. A circuit for precharging a bus comprising

a first bus,

a second bus,

a first precharging MOS transistor precharging said first bus,

a second precharging MOS transistor precharging said second bus,

a first CMOS inverter,

a second CMOS inverter,

a first driving MOS transistor for driving said first bus, and

a second driving MOS transistor for driving said second bus,

said circuit being so structured that a signal inputted to said first bus is transmitted to the gate of said second driving MOS transistor through said second CMOS inverter to thereby drive said second bus and that a signal inputted to said second bus is transmitted to the gate of said first driving MOS transistor through said first CMOS inverter to thereby drive said first bus whereby a signal inputted to either of said buses causes said first and second buses to be combined non-synchronously.

4,883,990
ECL-TTL LEVEL CONVERTER

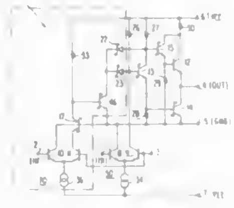
Yoshitaka Umeki, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

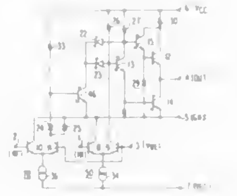
Filed Oct. 31, 1988, Ser. No. 264,555

Claims priority, application Japan, Oct. 30, 1987, 62-276604

Int. Cl.^{4} H03K *19/092, 19/086, 17/10, 17/14*

U.S. Cl. 307—473 6 Claims





1. A signal level converter comprising:

a positive power supply line;

a ground potential line;

a negative power supply line;

a first current switching logic circuit coupled to said ground potential line and to said negative power supply line, and having first, second and third ports;

a second current switching logic circuit coupled to said ground potential line and to said negative power supply line, and having first, second and third ports;

an input terminal connected to said first port of said first current switching logic circuit;

a three-state control input terminal connected to said first port of said second current switching logic circuit;

a reference potential terminal connected to said second ports of said first and second current switching logic circuits;

a TTL circuit coupled to said positive power supply line and to said ground potential line, and including a phase-divide stage transistor, an output transistor and a off-buffer transistor, said phase-divide stage transistor having a base, a collector and an emitter;

an output terminal connected to a connecting port between said output transistor and said off-buffer transistor;

a first diode having an anode and a cathode, said anode being connected to said collector of said phase-divide stage transistor;

a second diode having an anode and a cathode, said anode being connected to said base of said phase-divide stage transistor;

a first transistor having a base, a collector and an emitter, said base being connected to said positive power supply line through a resistor, said emitter being connected to said ground potential line, and said collector being connected to said cathodes of said first and second diodes in common;

a connecting means for connecting said third port of said first current switching logic circuit to said base of said phase-divide stage transistor to send a signal from said first current switching logic circuit to said phase-divide stage transistor; and

a switching means connected to said base of said first transistor and to said third port of said second current switching logic circuit to render said first transistor in a conductive state or a nonconductive state in accordance with a signal from said second current switching logic circuit.

4,883,991
CIRCUIT ARRANGEMENT FOR ADJUSTING A REFERENCE LEVEL IN A PERIODIC SIGNAL

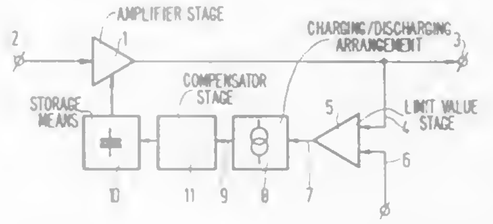
Klaus G. Kröner, Hamburg, and Jörg Wölber, Pinneberg, both of Fed. Rep. of Germany, assignors to U. S. Philips Corporation, New York, N.Y.

Filed Jun. 4, 1987, Ser. No. 58,097

Claims priority, application Fed. Rep. of Germany, Jun. 5, 1986, 3618939

Int. Cl.^{4} H03F *1/30, 3/45;* **H03K** *17/56;* **H03L** *5/0*

U.S. Cl. 307—491 14 Claims



I. A circuit arrangement for controlling a reference level within a periodic signal comprising:

(a) an amplifying stage having at least one amplifier component to which said periodic signal is applied;

(b) storage means for providing a mean value substantially corresponding to said reference level, said storage means being coupled to a control input of said amplifying stage;

(c) charging and discharging means connected to said storage means, for providing charging and discharging currents to said storage means at a ratio with respect to each other which determines said mean value;

(d) limit value means connected to said charging and discharging means, for comparing the value of said periodic signal at an output of said amplifying stage with a substantially constant limit value and thereby controlling said charging and discharging means; and

(e) compensator means connected between said charging and discharging means and said storage means, for compensating for fluctuations in said ratio of charging current to discharging current.

4,883,992
TEMPERATURE COMPENSATED VOLTAGE GENERATOR

Dennis M. Koglin, Indianapolis, and Mark B. Kearney, Kokomo, both of Ind., assignors to Delco Electronics Corporation, Kokomo, Ind.

Filed Sep. 6, 1988, Ser. No. 240,279

Int. Cl.^{4} G01L *9/06*

U.S. Cl. 307—491 10 Claims

1. A temperature compensation circuit for a device effective to generate a voltage as a function of a physical parameter but subject to a predetermined variation of the function with temperature over a predetermined temperature range, the device being characterized by a null value of the input parameter for

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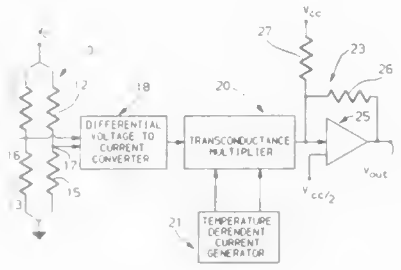
which the generated voltage is zero over the predetermined temperature range, the temperature compensation circuit comprising, in combination:

a voltage to current converter responsive to the generated voltage to produce a proportional current;

a current generator comprising elements responsive to the temperature of the device to generate a pair of compensation currents varying therewith in a predetermined manner so that the ratio of the compensation currents embodies a desired temperature compensation; and

a transconductance multiplier effective to multiply the proportional current by the ratio of the compensation currents to generate a compensated output current.


DIFFERENTIAL VOLTAGE TO CURRENT CONVERTER
TRANSCONDUCTANCE MULTIPLIER
TEMPERATURE DEPENDENT CURRENT GENERATOR
V_{cc}
V_{out}
$V_{cc/2}$
12
18
20
27
23
26
25
16
17
15
13
21

4,883,994
LINEAR MOTOR

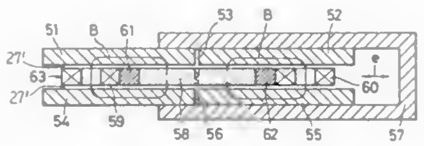
Hideo Nikura, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Division of Ser. No. 918,151, Oct. 14, 1986, Pat. No. 4,803,388. This application Jan. 29, 1988, Ser. No. 149,698

Claims priority, application Japan, Oct. 28, 1985, 60-241144

Int. Cl.⁴ H02K *41/00*

U.S. Cl. 310—12 **3 Claims**



1. A linear motor comprising:

a first yoke and a second yoke spaced apart the width of a first gap from each other;

a magnet spaced apart the width of a second gap from and arranged in opposed relation to said first yoke and second yoke;

a coil fixed to the end of said magnet through a nonmagnetic material;

a third yoke and a fourth yoke spaced apart the same width of a gap as that of said first gap from each other and so arranged in opposed relation to said magnet as to be spaced apart the same width of a gap as that of said second gap from said magnet; and

a member of nonmagnetic material having a substantially U-shaped section and connecting said first and second yokes to said third and fourth yokes.

4,883,993
ANTIBOUNCE CIRCUIT FOR DIGITAL CIRCUITS

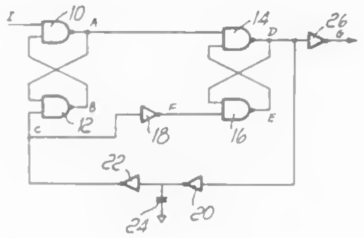
Pierangelo Confalonieri, Canonica d'Adda; Sergio Pernici, Bergamo, and Germano Nicollini, Piacenze, all of Italy, assignors to SGS-Thomson Microelectronics srl., Agrate Brianza, Italy

Filed Dec. 2, 1988, Ser. No. 279,036

Claims priority, application Italy, Dec. 14, 1987, 22987A/87

Int. Cl.⁴ H03K *17/16, 19/003, 5/00*

U.S. Cl. 307—542.1 **5 Claims**



1. Antibounce circuit for digital signals, characterized in that it comprises:

(a) a first flip-flop constituted by a first and a second NAND gate (**10, 12**) having their respective outputs connected to one of the inputs of the other gate, the free input of the first gate being the input for said digital signal;

(b) a second flip-flop constituted by a third and a fourth NAND gate (**14, 16**) having their respective outputs connected to one of the inputs of said other gate, the free input of said third gate being connected to the output of said first gate;

(c) a non-inverting delay circuit (**20, 22, 24**) connecting the output of said third gate to the free input of said second gate;

(d) a first inverter connecting the output of said delay circuit to the free input of said fourth gate.

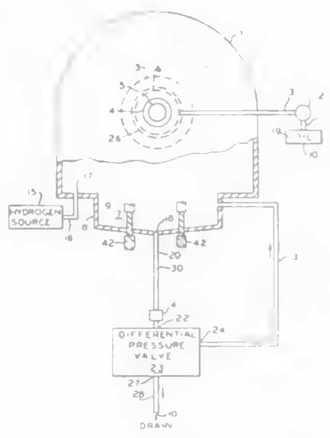
4,883,995
AUTOMATIC OIL DRAINING SYSTEM FOR GENERATORS

Frederick J. Rink, Jr., Danvers, Mass., assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 30, 1988, Ser. No. 292,061

Int. Cl.⁴ H02K *9/24, 5/136*

U.S. Cl. 310—55 **15 Claims**



1. In combination with a rotating machine such as an electric power generator having a housing containing a gas under pressure and bearings to rotatably support the shaft of the machine, an oil supply apparatus comprising;

shaft seals positioned on said shaft adjacent said bearings to maintain the gas within said machine;

means to supply oil to said seals at a pressure above that of said gas to maintain said gas within said machine housing;

a fluid drain located within said machine below said shaft seals to enable draining of any leakage into the interior of said machine;

a differential pressure valve having a first inlet connected to said fluid drain;

a second inlet of said differential pressure valve connected to the gas pressure within said machine; and

the outlet of said differential pressure valve being connected to said first inlet upon actuation thereof, whereby fluid is released from said fluid drain through said outlet of said differential pressure valve when the differential pressure of said first inlet exceeds that of said second inlet by an amount adequate to actuate said differential pressure valve.

4,883,996
MOTOR

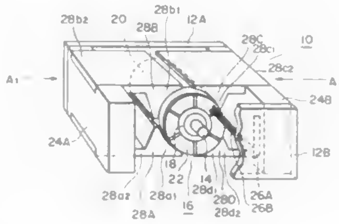
Kanemasa Aoki, Yokohama, Japan, assignor to Canon Kabushiki Kaisha and Canon Seiki Kabushiki Kaisha, both of Tokyo, Japan

Filed May 18, 1988, Ser. No. 195,646

Claims priority, application Japan, May 22, 1987, 62-077046[U]

Int. Cl.⁴ H02K *21/26*

U.S. Cl. 310—154 **2 Claims**



1. A motor having a rotary shaft, a coil wound on an iron core fixed to said rotary shaft, a yoke member, a magnetic flux producing member for magnetizing said yoke member, and commutator means for supplying electric power to said coil,

said yoke member comprising yoke supporting portions serving as a magnetic path of magnetic flux, and four magnetic poles having substantially arcuate shapes and extending from said yoke supporting portions, each magnetic pole having a largest dimension of thickness at a center portion of the magnetic pole, and extending from the center portion toward ends thereof with a gradually reduced dimension of thickness in accordance with a distance from the central portion, the ends of each magnetic pole respectively opposing corresponding ends of adjacent magnetic poles with a slight distance therebetween, said magnetic poles surrounding an outer periphery of said iron core;

said magnetic flux producing member comprising two rectangular parallelepiped blocks, each of said blocks having a north pole and a south pole at the opposite ends thereof, each of said supporting portions being connected and fixed to a respective magnetic pole of each of said blocks;

said motor forming a shape approximate to a rectangle or a square by said two blocks and said four poles and supporting portions,

wherein a dimension of thickness of the whole motor is set to a value near a dimension of an outer diameter of said iron core.

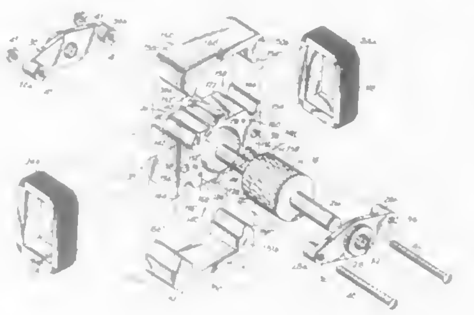
4,883,997
TWO POLE ELECTRIC MOTOR CONSTRUCTIONS WITH STATOR WINDING ENCIRCLING THE ROTOR AND METHOD OF ASSEMBLING SAME

Dominic De Cesare, 223 Center St., Elizabeth, N.J. 07202

Continuation-in-part of Ser. No. 890,134, Jul. 28, 1986. This application Mar. 25, 1988, Ser. No. 173,444

Int. Cl.⁴ H02K *1/00*

U.S. Cl. 310—179 **8 Claims**



1. A construction for a two-pole motor, comprising a main stator section provided with a central cylindrical opening; a rotor within said cylindrical opening mounted for rotation about a motor axis, said main stator section defining lateral stator portions on opposite sides of said cylindrical opening and generally flat top and bottom stator surfaces above and below said cylindrical opening, each of said top and bottom stator surfaces including a coil bearing surface generally coextensive with said cylindrical opening and yoke-abutting surfaces, on each side of said coil bearing surfaces, and generally coextensive with said lateral stator portions; stator windings defining an opening configured and dimensioned to extend over said lateral stator portions with clearance and moved into abutment against said coil bearing surfaces, said stator windings encircling said rotor; stop means on said coil bearing surfaces for limiting movement of said stator coils from one side of the motor axis to the other side thereof while aligning said stator coils axially with the rotor in overlapping relationship therewith; and generally U-shaped upper and lower yokes each having a pair of lateral yoke arms and a transverse yoke portion, said U-shaped yokes being dimensioned to maintain said stator coils on said coil bearing surfaces in overlapping relationship with said rotor.

4,883,998
BRUSH GEAR FOR AN ELECTRIC MOTOR

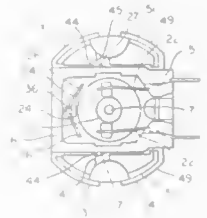
James C. Lau, North Point, Hong Kong, assignor to Johnson Electric Industrial Manufactory, Limited, Chaiwan, Hong Kong

Filed May 4, 1987, Ser. No. 45,561

Claims priority, application United Kingdom, May 2, 1986, 8610774

Int. Cl.⁴ H02K *13/00*

U.S. Cl. 310—239 **13 Claims**



1. An electric motor comprising a housing, a rotor mounted

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in the housing for rotation about an axis, the rotor having a commutator, a brush assembly having a brush and a brush arm supporting said brush and resiliently biassing the brush against the commutator, and a frame supporting the brush arm, wherein holding means is provided on the frame for holding the brush away from the commutator as the frame is inserted into the motor transversely of said axis, release means being provided to release the brush to bear against the commutator as the frame is inserted in the housing said holding means includes a resilient arm having an end which engages one of said brush arm and said brush to hold the brush away from the commutator, and said release means comprises a stop provided on the housing to contact the arm to urge the arm out of engagement with the said one of said brush arm and brush to release the brush onto the commutator as the frame is inserted in the housing.

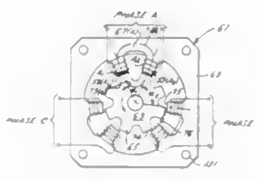
4,883,999
POLYPHASE ELECTRONICALLY COMMUTATED RELUCTANCE MOTOR

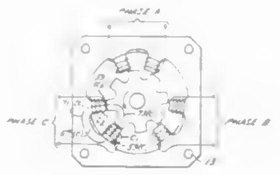
James R. Hendershot, Rockford, Ill., assignor to Pacific Scientific Company, Rockford, Ill.

Filed Aug. 15, 1988, Ser. No. 232,436

Int. Cl.⁴ H02K *1/14*

U.S. Cl. 310—254 34 Claims





1. An electric machine powered by a polyphase source comprising:

a first member of magnetic permeable material, having plurality of poles unevenly spaced relative to one another;

a second member of magnetically permeable material, having a plurality of poles evenly spaced relative to one another;

means for mounting said first and second members for relative movement such that said poles of said first and second members face one another;

said poles of said first member being arranged in pairs such that the intra-pair spacing between poles of a pair is approximately equal to the even spacing of said poles of said second member and the inter-pair spacing between poles of different pairs is unequal to the even spacing of said poles of said second member such that at least one but not all of said pairs may be simultaneously aligned with said poles of said second member to form a low reluctance path between said first and second members; and

means for forming a magnetic flux path bridging said first and second members which polarizes said at least one pair of poles of said first member to form salient magnetic poles of opposite polarity such that the portion of said flux path through said first member does not overlap any other flux paths found in said first member.

4,884,000
BRUSHLESS DC MOTOR INNER TACHOMETER

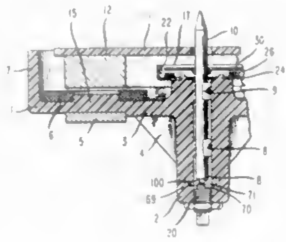
Siegfried Müller, St. Georgen, Fed. Rep. of Germany, assignor to Papst Motoren KG, St. Georgen, Fed. Rep. of Germany

Continuation of Ser. No. 816,299, Jan. 6, 1986, abandoned, which is a continuation-in-part of Ser. No. 111,991, Jan. 1, 1980, Pat. No. 4,357,550. This application Apr. 8, 1988, Ser. No. 179,577

Claims priority, application Switzerland, Jan. 16, 1979, 401/79

Int. Cl.⁴ H02K *11/00*

U.S. Cl. 310—268 23 Claims



1. Brushless D.C. motor with axial air gap comprising

a rotating permanent magnet ring of the motor defining an inner cylindrical space;

a tachogenerator for controlling the speed of the motor disposed about the inner cylinder formed by the rotating permanent magnet ring of the motor and wherein the tachogenerator is disposed within the inner cylindrical space defined by the rotating permanent magnet ring of the motor;

wherein the tachogenerator is disposed about the middle of the axial length of the inner cylindrical space formed by the rotating permanent magnet ring of the motor.

4,884,001
MONOLITHIC ELECTRO-ACOUSTIC DEVICE HAVING AN ACOUSTIC CHARGE TRANSPORT DEVICE INTEGRATED WITH A TRANSISTOR

Robert N. Sacks, and William J. Tanski, both of Glastonbury, Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 13, 1988, Ser. No. 283,625

Int. Cl.⁴ H01L *41/08*

U.S. Cl. 310—313 A 12 Claims

1. A hybrid integrated device having an acoustic charge transport device monolithically integrated with a transistor, comprising:

a substrate structure having first and second portions formed in a piezoelectric semiconducting substrate;

an acoustic charge transport device formed in said first structure portion including

a transducer means for launching along a propagation axis surface acoustic waves characterized by maxima and minima of electrical potential which transport electrical charge provided thereto;

a reflector means formed in said first portion at an end thereof adjacent to said transducer means for reflecting said surface acoustic waves;

a first electrode means for providing electrical charges to said surface acoustic waves,

a transport channel formed in said substrate to have a major dimension extending parallel to said propagation axis, said channel, for receiving said charges and providing lateral and vertical confinement of said charges propagating with said surface acoustic waves;

a second electrode means receiving modulation signals and electrically configured with said transport channel to alter the electrical potential barrier height therein in accordance with said modulation signals, thereby controlling the amount of charge propagating with said surface acoustic waves,

a third electrode means configured with said transport channel for sensing said modulated propagating charge and generating an electrical signal indicative thereof;

a fourth electrode means configured with said transport channel at an end thereof distal to said first electrode means for electrically removing said propagating charge; and

a transistor means formed in said second structure portion including

a source means for providing electrical carriers;

a gate means receiving control signals for controlling the amount of carriers provided from said source means;

a drain means for receiving said carriers.

4,884,002
ROTARY OR LINEAR ELECTRIC MOTOR WHOSE ARMATURE IS DRIVEN BY MEANS OF ULTRASONIC VIBRATIONS

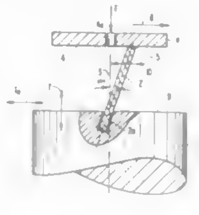
Roland K. Eusemann, Aachen; Heinrich A. Oepen, Stolberg-Gressenich, and Anton Hammers, Aachen, all of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

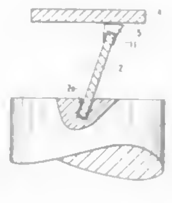
Filed Oct. 19, 1988, Ser. No. 260,204

Claims priority, application Fed. Rep. of Germany, Oct. 21, 1987, 3735623

Int. Cl.⁴ H01L *41/08*

U.S. Cl. 310—323 15 Claims





1. A rotary or linear electric motor whose armature (4) is driven by piezo-electric vibration elements (1) which are made to resonante by means of high-frequency electrical oscillations in order to produce ultrasonic vibrations which are transmitted to a plurality of drive pins (2) which are arranged as brushes and against whose free ends (5) a friction surface (6) of the armature (4) is pressed, the individual drive pins (2) being disposed at an angle α relative to the normal to the contact portion of the friction surface (6), characterized in that the setting angle α is selected to be equal to or slightly larger than the static-friction angle, which is defined as follows

$$\alpha \text{ static friction} = \text{arc tan } \mu,$$

where μ is the coefficient of friction between the drive pins (2) and the friction surface (6).

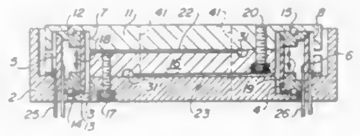
4,884,003
COMPACT MICROMOTION TRANSLATOR

John B. Hayes, Tucson, Ariz., assignor to Wyko Corporation, Tucson, Ariz.

Filed Dec. 28, 1988, Ser. No. 291,178

Int. Cl.⁴ H01L *41/08*

U.S. Cl. 310—328 15 Claims



1. Apparatus for tilt-free translation of a first plate relative to a second plate, comprising in combination:

(a) flexure plate means located between the first and second plates for urging the first and second plates together;

(b) first, second, and third spaced piezoelectric transducers each expandable and contractible along a corresponding axis;

(c) means for translating expansion and contraction of each of the first, second, and third piezoelectric transducers to produce translation of the first plate relative to the second plate;

(d) means for applying first, second, and third voltages to the first, second, and third piezoelectric tranducers, respectively, to cause them to expand or contract equally.

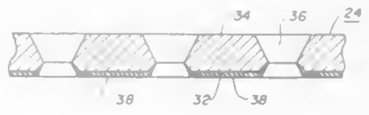
4,884,004
COLOR CATHODE-RAY TUBE HAVING A HEAT DISSIPATIVE, ELECTRON REFLECTIVE COATING ON A COLOR SELECTION ELECTRODE

Samuel B. Deal, Lancaster, and Donald W. Bartch, Wrightsville, both of Pa., assignors to RCA Licensing Corp., Princeton, N.J.

Filed Aug. 31, 1988, Ser. No. 238,378

Int. Cl.⁴ H01J *29/07, 9/02*

U.S. Cl. 313—402 5 Claims



1. In a color cathode-ray tube comprising an evacuated envelope having therein means for producing at least one electron beam, a phosphor screen and a color selection electrode disposed adjacent to said screen, said color selection electrode having a heat dissipative and electron reflective coating on a surface thereof facing said electron beam producing means, the improvement wherein said coating comprises

a compound selected from the group consisting of bismuth oxide-potassium silicate and tungsten-potassium silicate.

3. In a method of making a heat dissipative and electron reflective coating for a color selection electrode of a color cathode ray tube having an evacuated envelope with electron beam producing means therein and a phosphor screen on a portion of said envelope adjacent to said color selection elec-

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trode, said coating being on a surface of said color selection electrode facing said electron beam producing means, the method comprising the steps of

(a) forming an aqueous suspension of a compound selected from the group consisting of bismuth oxide-potassium silicate and tungsten-potassium silicate, and

(b) spraying a plurality of layers of said compound onto said surface of said color selection electrodes to form said coating.

4,884,005

COLOR PICTURE TUBE WITH SUPPORT MEANS FOR SUSPENDING THE MASK

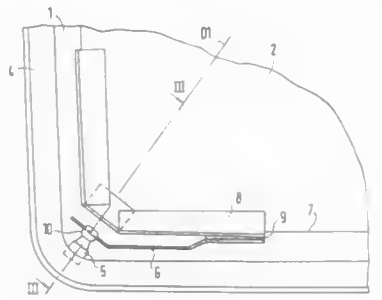
Walter Kornaker, Ulm, and Horst Ruopp, Deizisau, both of Fed. Rep. of Germany, assignors to Nokia Graetz, Pforzheim, Fed. Rep. of Germany

Continuation of Ser. No. 17,557, Feb. 24, 1987, abandoned. This application Jun. 15, 1988, Ser. No. 208,870

Claims priority, application Fed. Rep. of Germany, Feb. 28, 1986, 3606469

Int. Cl.⁴ H01J *29/07*

U.S. Cl. 313—404 5 Claims



1. A color picture tube, comprising:
a funnel portion;
a neck portion attached to said funnel portion;
a generally rectangular faceplate having sidewalls attached to said funnel portion;
studs having a base portion attached to the inside of the sidewalls of the faceplate at the corners of said rectangular faceplate, said studs extending inwardly and having spherical ends;
a shadow mask disposed within the faceplate, said shadow mask being generally rectangular and having a rim extending about its periphery;
auxiliary brackets mounted to the corners of the rim of the shadow mask; and
resilient strip-like retaining springs having first ends attached to said auxiliary brackets and mid portions extending essentially parallel to the rim of the shadow mask to second ends in proximity to said studs, said second ends being bent so as to be perpendicular to longitudinal axes of the studs, said second ends including apertures for receiving a portion of the spherical ends of the studs, whereby the second ends of the strip-like retaining springs are resiliently retained on said studs by the resiliency of the retaining springs so that said shadow mask is retained within said faceplate.

4,884,006

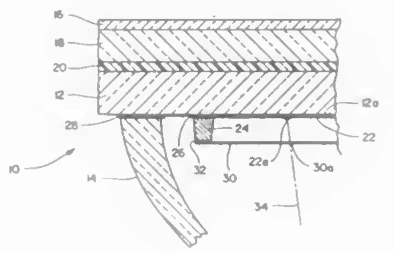
INNER SURFACE SPECULAR REFLECTION SUPPRESSION IN FLAT CRT FACEPLATE

Charles J. Prazak, III, Elmhurst, Ill., assignor to Zenith Electronics Corporation, Glenview, Ill.

Filed Dec. 30, 1986, Ser. No. 947,732

Int. Cl.⁴ H01J *29/28, 9/20*

U.S. Cl. 313—474 8 Claims



1. A low cost CRT faceplate with suppressed reflections from its screen-bearing rear surface, comprising:
a flat glass faceplate having a rear surface roughened by a single lapping operation using loose grains on a hard, rigid grinding wheel in roughening said rear surface to a roughness on the order of 6-9 micro-inches root means square (RMS) depression value range such that it is ineffective to produce specularly reflected images and reflects light incident therein diffusely while being capable of accurately transmitting a video image therethrough; and
a phosphor screen disposed on said roughened rear surface of said flat glass faceplate, whereby light images formed in said screen by electron bombardment and viewed through said screen, being substantially in the plane of said roughened rear surface, are not impaired, but images of objects in the surroundings are reflected diffusely and are not visible through said flat glass faceplate.

4,884,007

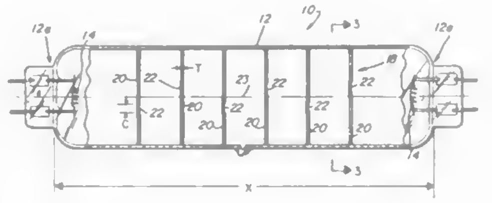
LOW PRESSURE ARC DISCHARGE TUBE HAVING INCREASED VOLTAGE

Radomir Lagushenko, and Jakob Maya, both of Brookline, Mass., assignors to GTE Products Corporation, Danvers, Mass.

Continuation of Ser. No. 678,958, Dec. 6, 1984, abandoned. This application Dec. 15, 1988, Ser. No. 285,370

Int. Cl.⁴ H01J *61/30*

U.S. Cl. 313—573 13 Claims



1. A low pressure arc discharge tube comprising:
an envelope having an elongated substantially cylindrical shape, said envelope having an internal diameter, a longitudinal axis and two axially opposed end portions;
first and second electrodes each located within a respective one of said axially opposed end portions;
an ionizable medium enclosed within said envelope including an inert starting gas and a quantity of mercury for producing a plasma discharge when a predetermined voltage is applied across said electrodes; and
structural means located within said envelope including at least one partition having a predetermined thickness and extending substantially across said envelope in a direction substantially normal to said longitudinal axis of said envelope and having a single aperture with a given diameter located at the midpoint of said partition, the ratio of said internal diameter of said envelope to said aperture of said partition is within the range of from about 5:1 to 50:1, said structural means providing an increase in the voltage across said low pressure arc discharge tube without increasing the effective arc length of said tube.

4,884,008

AUTO-ADJUSTABLE OPERATING ROOM LIGHT

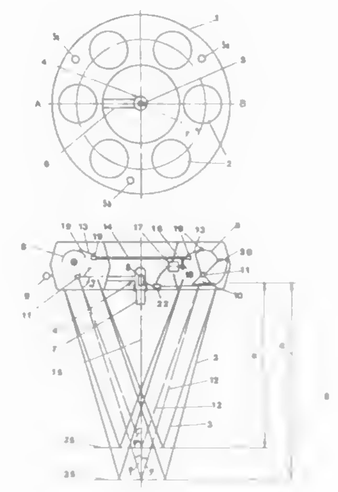
Hans J. Bossler, Münster/Altheim; Peter Enders, Frankfurt; Jörg Boxhammer, Griesheim; Bernd Rudolph, Alzenau, and Bruno Sebralla, Bruchköbel, all of Fed. Rep. of Germany, assignors to W.C. Heraeus GmbH, Hanau, Fed. Rep. of Germany

Filed Mar. 9, 1988, Ser. No. 165,779

Claims priority, application Fed. Rep. of Germany, Jul. 11, 1987, 3723009

Int. Cl.⁴ F21V *23/00*

U.S. Cl. 315—152 14 Claims



1. Operating room light having
a housing (**1**);
manually operable means (**4, 6**) on the housing for adjusting the position of the housing with respect to a reference;
light generating and directing means (**2**) generating light and directing the light, separately, from at least two spatially separate regions of the housing in form of at least two light beams on a surface (**25**) to be illuminated;
adjustment means (**14, 16–19, 36**) coupled to the light generating and directing means to direct the light to said surface such that the at least two beams provide a predetermined illuminated field on said surface,
and comprising, in accordance with the invention,
an ultrasonic distance sensor (**5**) located on the housing facing said surface (**25**) and generating an electrical distance signal (w) representative of the actual distance between said housing and said surface;
manual operation sensing means (**7**) coupled to said manually operable means (**4, 9**) on the housing, and generating a manual handling signal;
and a positioning system (**34, 34′**) including a servo control circuit (**22, 34, 34′**) coupled to receive said distance signal (w) and said manual adjustment signal, and controlling said adjustable means (**14, 16–19, 36**) for controlling said light generating and directing means in accordance with said actual distance signal when said manual adjustment signal is present.

4,884,009

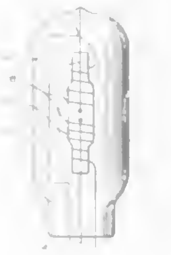
COLOR SELECTABLE SOURCE FOR PULSED ARC DISCHARGE LAMPS

Harold L. Rothwell, Jr., Georgetown, Mass., and Jeffrey O. Grant, Indianapolis, Ind., assignors to GTE Products Corporation, Danvers, Mass.

Filed Dec. 18, 1987, Ser. No. 135,192

Int. Cl.⁴ H05B *41/30;* H01J *7/24, 61/12*

U.S. Cl. 315—246 21 Claims



1. A method of producing light substantially within a particular color band from an emission light source in a pulsed metal halide arc lamp comprising the steps of:

(a) selecting a desired band of colored light;

(b) adjusting the vapor pressure of the metal halide salt in the lamp to within the range of from about 0.3 to 10 Torr; and

(c) applying a high voltage current pulse of from about 0.5 to 2.0 Kv to said lamp, for a sufficient period of time to generate the desired color.

4,884,010

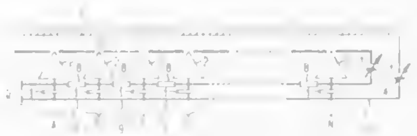
ELECTRON-EMITTING DEVICE AND ITS APPLICATION PARTICULARLY TO MAKING FLAT TELEVISION SCREENS

Jean P. Biberian, 16 Impasse Mouillas, 13008 Marseille, France

Filed Aug. 10, 1988, Ser. No. 230,775

Int. Cl.⁴ H01J *29/70, 1/02;* G09G *3/02*

U.S. Cl. 315—366 3 Claims



1. A flat television screen, comprising several electron-emitting devices, each essentially consisting of an electric power supply connected to two plates of a capacitor supplying by one of these plates at least one field emission tip and an extraction grid placed close to the top of the field emission tip, said grid itself being connected to the other plate of the capacitor by a variable voltage generating device, these devices being connected together facing a fluorescent screen placed to receive a flow of electrons emitted by the field emission tips of each of the devices.

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4,884,011

LIGHT-DETECTING DEVICE

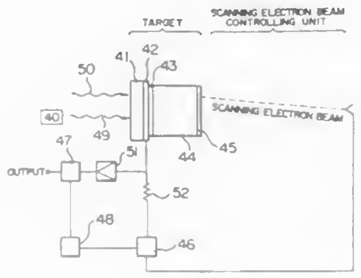
Tatsuo Makishima, Mitaka; Tadaaki Hirai, Koganei; Kazutaka Tsuji, Hachioji, all of Japan; Sachio Ishioka, Burlingame, Calif.; Takashi Yamashita, Sagamihara; Keiichi Shidara, Tama, both of Japan; Junichi Yamazaki, Kawasaki, and Masaaki Aiba, Tokyo, both of Japan, assignors to Hitachi, Ltd. & Nippon Hoso Kasai, Tokyo, Japan

Filed Jan. 13, 1988, Ser. No. 143,384

Claims priority, application Japan, Jan. 14, 1987, 62-4868

Int. Cl.⁴ H04N *3/14*

U.S. Cl. 315—368 23 Claims



1. A light-detecting device comprising:
a photo-electric conversion unit for converting a light to a charge;
a power supply for applying an electric field to the photo-electric conversion unit;
a light source for applying an incident light to the photo-electric conversion unit;
means for applying also a measurement light from an object to said photo-electric conversion unit;
a signal detection means for detecting a charge corresponding to the incident light from the light source converted by the photo-electric conversion unit; and
a signal hold means for controlling the power supply to adjust the electric field applied to the photo-electric conversion unit in order to hold an output signal of the signal detection means at a predetermined level.

4,884,012

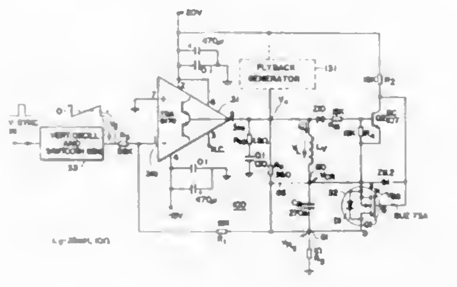
VERTICAL DEFLECTION CURRENT GENERATOR

Giovanni M. Leonardi, Zurich, Switzerland, assignor to RCA Licensing Corporation, Princeton, N.J.

Filed Jun. 15, 1988, Ser. No. 206,780

Int. Cl.⁴ H01J *29/70, 29/76*

U.S. Cl. 315—397 13 Claims



1. A television vertical deflection apparatus, comprising:
a source of an input signal at a frequency that is related to a deflection frequency;
a vertical deflection winding having a pair of terminals;
a vertical deflection circuit output stage responsive to said input signal and coupled to one of said pair of terminals for developing at said one terminal an output voltage that produces a deflection current in said deflection winding, said output voltage including a retrace pulse portion that produces a corresponding retrace portion of said deflection current during a retrace interval and a trace portion that produces a corresponding trace portion of said deflection current during a trace interval;
a retrace capacitance coupled to the other one of said pair of terminals; and
switching means coupled to a junction terminal between said retrace capacitance and said other one of said pair of terminals of said deflection winding for conducting said trace portion of said deflection current in a manner that bypasses said retrace capacitance during said trace interval when said switching means is at a first state, and for enabling said retrace portion of said deflection current to flow in said retrace capacitance when said switching means is at a second state for developing a resonant retrace pulse at the other one terminal of said deflection winding such that said retrace pulse portion of said output voltage and said resonant retrace pulse are oppositely directed pulses during at least a portion of said retrace interval to provide a rapid retrace of said deflection current.

4,884,013

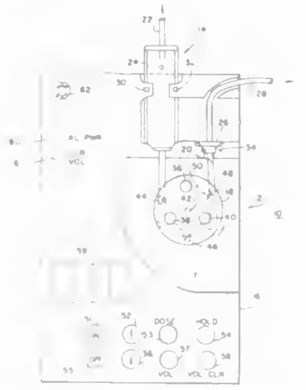
MOTOR UNIT FOR A FLUID PUMP AND METHOD OF OPERATION

Edward Jackson, Northford, and Joseph Pasqualucci, Seymour, both of Conn., assignors to Sherwood Medical Company, St. Louis, Mo.

Filed Jan. 15, 1988, Ser. No. 144,795

Int. Cl.⁴ A61M *5/00*

U.S. Cl. 318—481 8 Claims



1. A motor unit for a medical fluid delivery system for use with a disposable delivery set for pumping medical fluid, comprising:
pump operating means, including a motor, for acting in cooperation with said delivery set to deliver a volume of said fluid during each operating cycle;
pump control means for controlling said pump operating means to deliver said fluid at a desired volumetric rate, said pump control means including means responsive to signals indicating said desired rate for activating said pump operating means for one of said operating cycles and for repeating said activation at variable time intervals selected in accordance with said desired volumetric rate;
wherein said pump control means includes means for sensing a condition of said pump operating means with respect to said operating cycle; and
wherein said pump operating means comprises a DC motor and wherein said means for sensing the condition of said pump operating means comprises means for sensing the AC component of the current supplied to said DC motor.

6. A motor unit for a medical fluid delivery system for use with a disposable delivery set having a flexible pump tube for engagement with said motor unit for pumping medical fluids, comprising:
a housing for receiving at least portions of said delivery set;
a motor mounted on said housing;
a rotor mounted on said housing and driven by said motor for rotational movement with respect to said housing and for receiving said flexible pump tube for forming a peristaltic pump;
at least one magnet and at least one magnetic field detector mounted to said rotor and said housing for relative rotational motion with respect to each other, said magnet and said magnetic field detector being operatively adjacent to each other at at least one rotational position of said rotor;
and pump control means, responsive to selection of a fluid delivery rate and responsive to said magnetic field detector, for operating said motor until said rotor is in said rotational position with said magnet and said magnetic field detector adjacent each other and for repeating said operation at variable time intervals selected in accordance with said selected fluid delivery rate.

8. In a fluid delivery system comprising a motor unit and a disposable delivery set, wherein said motor unit includes a motor driven rotor for engaging a flexible pump tube on said delivery set to form a peristaltic pump, a method for detecting the absence of the pump tube on said rotor, comprising:
providing current to a DC motor to operate said rotor;
detecting an AC component of the current provided to said DC motor; and
comparing the detected AC component of said current to a reference level to detect current variation resulting from the presence of the pump tube on said rotor.

4,884,014

POSITION CONTROL METHOD

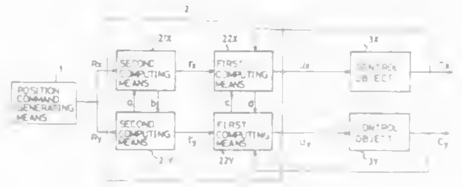
Hiroshi Itoh, Numazu, Japan, assignor to Toshiba Machine Co., Ltd., Tokyo, Japan

Filed Mar. 29, 1988, Ser. No. 174,963

Claims priority, application Japan, Mar. 30, 1987, 62-79216

Int. Cl.⁴ G05B *19/29*

U.S. Cl. 318—600 7 Claims



1. A position control method for controlling a position simultaneously along a plurality of i axes, comprising the steps of
controlling said position on an i^{th} axis in accordance with a control input signal U_i which is generated in response to a position command signal R_i and a state variable X_i for each axis produced on the basis of a position command signal in such a manner as to optimize an evaluation function J; and
generating said control input signal U_i so as to optimize said evaluation function J in such a manner as to reduce a path error by taking into account both the position command signal R_i and the state variable X_i for said i^{th} axis and also a position command signal R_k and the state variable X_j for another axis j.

4,884,015

PROBING CONTROL METHOD AND APPARATUS FOR MECHANISM WITH MULTIPLE DEGREES OF FREEDOM

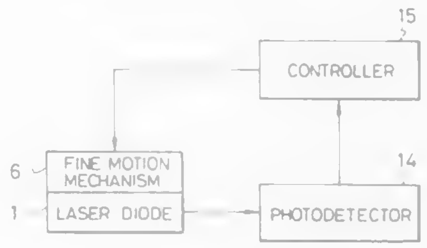
Koichi Sugimoto, Hiratsuka; Hisaaki Hirabayashi, and Tomoyuki Masui, both of Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 17, 1986, Ser. No. 875,189

Claims priority, application Japan, Jun. 17, 1985, 60-129806; Sep. 30, 1985, 60-215014

Int. Cl.⁴ G05B *1/06*

U.S. Cl. 318—640 11 Claims



1. A probing method for effecting optical access alignment of an optical fiber in a laser diode with optical fiber, said method employing a mechanism with a plurality of degrees of freedom, said method comprising the steps of:
driving by predetermined amounts in one-by-one fashion a plurality of actuators for driving said mechanism;
determining change in an optical output from an object in response to the driving of each of the actuators and obtaining a gradient in the optical output on the basis of the change determined;
obtaining an amount of movement for driving each of said actuators on the basis of the gradient in the optical output in an immediately preceding step of driving the same actuator, driving the same actuator by the amount of movement thus obtained, and sequentially measuring the optical output in response to the driving of each actuator; and
determining whether conditions have occurred of said optical output exceeding a first predetermined value or said gradient in the optical output falling below a second predetermined value, stopping the driving of the actuators when one of said conditions has occurred, and repeating the step of driving the actuators in one-by-one fashion when none of said conditions have occurred.

4,884,016

CLOSED LOOP TORQUE ANGLE CONTROL OF SYNCHRONOUS MOTOR

Michael E. Aiello, Monroeville, Pa., assignor to Aerotech, Inc., Pittsburgh, Pa.

Filed Aug. 23, 1988, Ser. No. 235,983

Int. Cl.⁴ G05B *19/40*

U.S. Cl. 318—685 9 Claims

1. In a closed loop motor system having a motor with a plurality of poles and motor windings associated therewith, said poles defining full step motor output positions, said system of the type that assigns intermediated current values to the motor windings for fine step positions of the motor output between motor poles, the improvement comprising
a motor output position encoder for generating an integral and fixed number of encoder pulses as the motor moves between any two motor poles, said pulses being equally spaced and at least some corresponding to the fine step positions,
means for assigning intermediate current values comprising a counter for counting the encoder pulses, function means for converting the count to digital sine and cosine values, digital-to-analog means for converting the digital sine and

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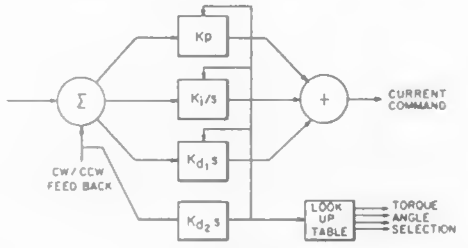
cosine values to analog sine and cosine values, means for controlling electrical current to the motor windings associated with the poles in response to the analog sine and cosine values,

means for setting the torque angle comprising means for adding or subtracting a torque angle value from the count applied to the function means, and



initializing means comprising means for applying full step current values to motor windings for a time interval in which the motor output is assumed to align with a full step position, and means for zeroing the count in the counter and assigning the torque angle value, whereby the encoder does not require mechanical alignment relative to the motor.

4,884,017

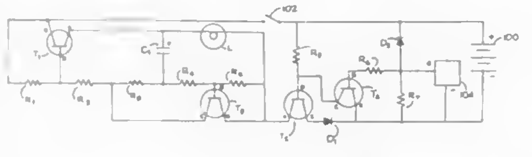
SOLAR POWERED CONSTRUCTION LIGHT

Lloyd E. Williams, West Monroe, La., assignor to Power Plus, Inc., West Monroe, La.

Continuation of Ser. No. 34,709, Apr. 6, 1987, Pat. No. 4,751,622. This application Mar. 7, 1988, Ser. No. 165,185

Int. Cl.⁴ F21L *13/00;* **H02J** *7/00*

U.S. Cl. 320—2 3 Claims



1. A switching circuit for selectively supplying electrical energy to a means for emitting light, comprising:

a. a rechargeable storage battery means for supplying electrical energy to said means for emitting light, said battery means having a positive pole and a negative pole,

b. a first transistor, the emitter of said first transistor being connected to said positive pole of said rechargeable storage battery means and the collector of said first transistor being connected to said means for emitting light,

c. a second transistor, the collector of said second transistor being connected to said means for emitting light,

d. a first diode, the emitter of said first diode being connected to said negative pole of said rechargeable storage battery means and the base of said first diode being connected to the emitter of said second transistor,

e. a first resistor connected to said first transistor between the emitter and the base of said first transistor,

f. a second resistor connected between said positive pole of said rechargeable storage battery means and the base of said second transistor, said first resistor and said second resistor having sufficient resistance when said rechargeable storage battery means is initially connected to said circuit to bias said first transistor to conduct electrical energy from the emitter of said first transistor to the collector of said first transistor and to bias said second transistor to conduct electrical energy,

g. a third transistor having a third resistor connected between the base of said third transistor and the collector of said second transistor, the emitter of said third transistor being connected to the collector of said second transistor,

h. a capacitor, said capacitor having a fourth resistor connected between the negative side of said capacitor and the base of said third transistor, the positive side of said capacitor being connected to the collector of said first transistor, a fifth resistor being connected between the negative side of said capacitor and the collector of said third transistor, a sixth resistor being connected between the base of said first transistor and the collector of said third transistor,

i. a fourth transistor, the collector of said fourth transistor being connected to the base of said second transistor, and the emitter of said fourth transistor being connected to said negative pole of said rechargeable storage battery means,

j. a solar cell means, the positive pole of said solar cell means being connected to the base of said fourth transistor, and

k. a second diode, the base of said second diode being connected to said positive pole of said solar cell means and to the emitter of said fourth transistor, and the emitter of said second diode being connected to the positive pole of said rechargeable storage battery means, the negative pole of said solar cell means being connected to the negative pole of said rechargeable storage battery means.

4,884,018

DEVICE FOR SUPPLYING ELECTRICITY AT A TEMPORARY OVERVOLTAGE TO AUXILIARY CIRCUITS OF AN AUTOMOBILE

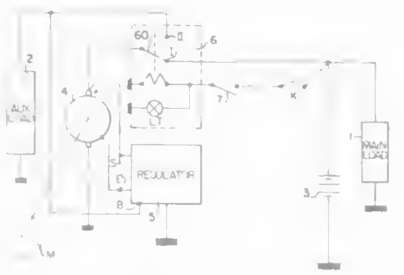
Jean-Pierre Meuret, Noisy-le-Sec; Christian Ducrot, Creteil, and Marcel Vogelsberger, Sceaux, all of France, assignors to Ducellier & Cie, Creteil, France

Filed May 21, 1987, Ser. No. 53,133

Claims priority, application France, May 23, 1986, 86 07403; Oct. 16, 1986, 86 14368

Int. Cl.⁴ B60L *1/02;* **H02J** *7/14*

U.S. Cl. 322—8 12 Claims



1. A device for providing a temporary overvoltage to an auxiliary electrical circuit load in an automobile, the automobile having an engine and a main electrical circuit including a main electrical circuit load, a battery for supplying electrical current to the main electrical circuit at nominal voltage magnitude, an alternator coupled to the engine and having a rectified stator output voltage for charging the battery, said device comprising:

voltage regulation means including an excitation voltage output coupled to the alternator for providing control excitation current to the alternator to control the magnitude of the alternator output voltage, said voltage regulation means including a control voltage input;

commutation means coupled to the alternator rectified stator output and having two operative conditions for connecting the alternator stator output to the battery when in its first operative condition and to the auxiliary electrical circuit when in its second operative condition, said commutation means further connecting the alternator stator output to said control voltage input of said voltage regulation means when in its second operative condition to cause said voltage regulation means to produce said control excitation current to increase the magnitude of the rectified stator output voltage whereby said auxiliary electric circuit load is powered at an overvoltage and reduced current generated by the alternator, and

control means coupled to said commutation means for operating said commutation to one or the other of its first and second operative conditions.

4,884,019

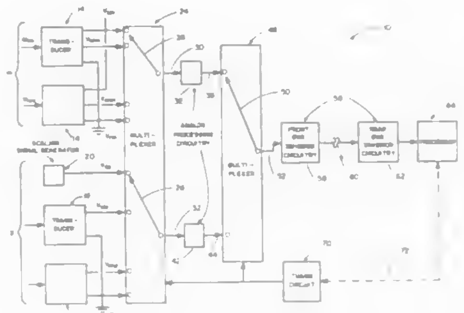
ACCURATE ANALOG MEASUREMENT SYSTEM

Charles B. McKee, Jr., Fort Collins, Colo., assignor to In-Situ, Inc., Laramie, Wyo.

Filed Jan. 29, 1988, Ser. No. 150,050

Int. Cl.⁴ G01R *23/16*

U.S. Cl. 324—77 R 23 Claims



1. An accurate analog measurement apparatus, comprising:

first means for outputting a measurement signal, said measurement signal representing a parameter measured from a physical quantity, wherein said measurement signal is subjected to a level of signal distortion while being transmitted using the apparatus;

at least a first signal for use in reducing the signal distortion of said measurement signal, wherein said first signal is subjected to a level of signal distortion while being transmitted using the apparatus;

second means responsive to said measurement signal and said first signal for receiving, in accordance with one of the following: simultaneously and sequentially, said measurement signal and said first signal, said second means including a common path along which said first signal and said measurement signal are transmitted wherein substantially the same level of signal distortion is experienced by said first signal and said measurement signal while being transmitted along said common path; and

third means for receiving both of said measurement signal and said first signal from said second means via said common path, said third means including means for processing said measurement signal and said first signal to provide an output signal, whereby said output signal is representative of the measured parameter and has reduced signal distortion effects.

4,884,020

PHASE DETECTION SYSTEM

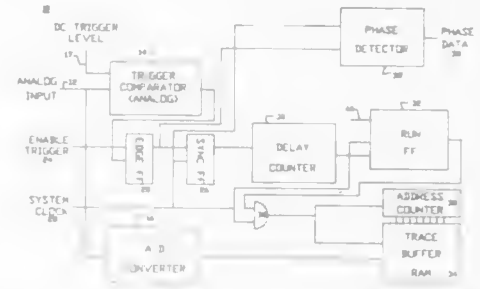
Thomas R. Blakeslee, Woodside, Calif., assignor to Orion Instruments, Inc., Redwood City, Calif.

Filed Jul. 22, 1988, Ser. No. 222,943

Int. Cl.⁴ G01R *25/00*

U.S. Cl. 324—83 D 2 Claims

1. A method of determining relative phase angle between a known reference and a signal under test including the steps of providing a reference signal to a multi-tap delay line, the number of taps being at least equal to the number of phases into which the signal under test is to be resolved, and



clocking a parallel shift register by the signal under test to capture the value of each of the delay line taps.

4,884,021

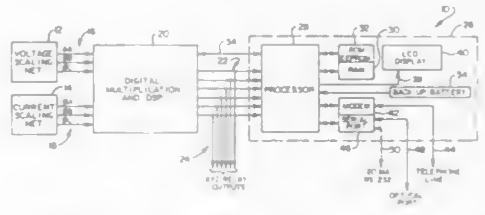
DIGITAL POWER METERING

Scott H. Hammond, Columbus; Ronald L. Kirk, Findlay, and Eric R. Francis, Columbus, all of Ohio, assignors to Trans-Data, Inc., Tyler, Tex.

Continuation of Ser. No. 42,306, Apr. 27, 1987, abandoned. This application Oct. 14, 1988, Ser. No. 258,089

Int. Cl.⁴ G01R *21/06;* **G01P** *15/20*

U.S. Cl. 324—142 43 Claims



1. Apparatus for metering an electrical power supply, comprising:

step-down means connectable with said supply for deriving first and second electrical parameter sample signals of given waveform amplitudes during corresponding given cycles of said supply;

amplifier means having gain characteristics controllable in response to a gain control input for selectively amplifying said first and second sample signals to provide corresponding first and second scaled signals;

converter means actuable for converting said first and second sample signals to corresponding first and second range digital values and subsequently actuable to convert said first and second scaled signal to corresponding first and second data digital values; and

control means for actuating said converter means to derive said first and second range digital values and deriving corresponding first and second scaling factors, responsive to said first and second range digital values for providing said gain control input at predetermined scaling levels, for subsequently actuating said converter means to derive said first and second data digital values, said control means multiplying said first and second data digital values with respective said first and second scaling factors to provide first and second expanded data digital values within a range extending to at least about twenty-one binary bits, said control means being responsive to a predetermined commencement location of the said waveform of a said first electrical parameter sample signal for commencing said actuation of said converter means and subsequently effecting said actuation at predetermined, regular intervals, said control means including a parameter memory for selectively retaining said first expanded data digital

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values and responsive to effect a multiplication of each said parameter memory retained first expanded data digital value with a said second expanded data digital value from the sequence thereof developed following a delay selected to derive predetermined power parameter metering output data.

4,884,022

VOLTAGE TESTING DEVICE ATTACHABLE TO THE BLADE TERMINALS OF A POWER METER

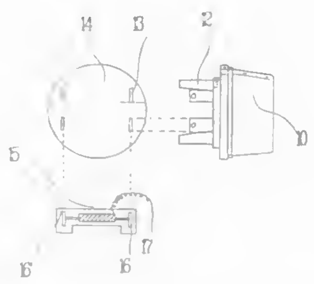
Roy G. Bishop, 31 Donlea Drive, Port Colborne, Ontario, Canada (L3K 4W8)

Filed May 25, 1988, Ser. No. 198,212

Claims priority, application Canada, May 28, 1987, 538269

Int. Cl.⁴ G01R *1/04, 19/00;* **G08C** *19/00*

U.S. Cl. 324—157 9 Claims



1. A voltage monitoring device for use with a standard plug-in type electricity meter having a meter housing with protruding blades fitting into corresponding slots in a meter base, said monitoring device comprising:

a bridge member provided with a pair of spaced slots such that said bridge member can be fitted over a pair of said protruding blades and extend therebetween, said slots being provided with metal contacts to establish contact with said blades, and

electronic circuitry carried by said bridge member, said electronic circuitry being connected to said metal contacts and included means for repeatedly monitoring the voltage of the mains supply, means for storing selected data derived from said measurements for consecutive predetermined periods and means for releasing the stored data upon request.

4,884,023

METHOD AND APPARATUS FOR DETERMINING THE ROTOR RESISTANCE OF A ROTATING-FIELD MACHINE

Rolf Schmidt, and Hubert Schierling, both of Erlangen, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Jan. 9, 1989, Ser. No. 294,830

Claims priority, application Fed. Rep. of Germany, Jan. 14, 1988, 3800915

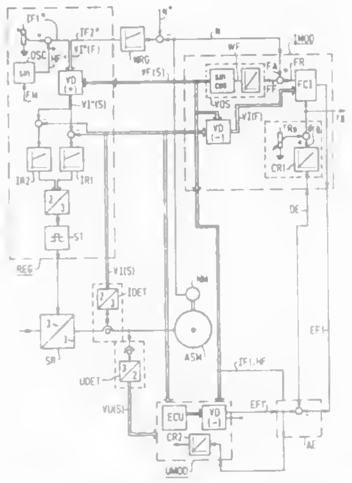
Int. Cl.⁴ G01R *31/02, 27/02*

U.S. Cl. 324—158 MG 14 Claims

1. A method for determining the rotor resistance of a rotating-field machine, at standstill or at low load by means of a voltage model (UMOD) utilizing current values (VI(S)) and voltage values (VU(S)) and a current model (IMOD) for the machine fed with a signal derived form the rotor position (N) and a model parameter (r_R) for the rotor resistance of a machine, using model flux axis (VF(S)) determined by means of the two models, comprising the steps of:

(a) impressing on the machine, a stator current corresponding to a reference current vector ($VI^*(S)$), said current having a component parallel to the model flux axis (FV(S)), having a sinusoidal high-frequency portion (HF^*) with a frequency above the nominal frequency of the machine;

(b) calculating a model component (EF1) of the EMF vector of the machine parallel to the model flux axis (VF(S)) by means of the current model; and



(c) calculating a model-component reference value (EF1') by means of said voltage model (UMOD) and generating a high frequency correlated deviation (DE) between said model component (EF1) and said model-component reference value (EF1'), and

(d) correcting said model parameter (r_R) for the rotor resistance until said deviation is minimized.

4,884,024

TEST PIN ASSEMBLY FOR CIRCUIT BOARD TESTER

Paul M. DiPerna, North Andover, Mass., assignor to Teradyne, Inc., Boston, Mass.

Continuation-in-part of Ser. No. 799,460, Nov. 19, 1985, abandoned. This application Apr. 16, 1987, Ser. No. 38,909

Int. Cl.⁴ G01R *31/02, 15/12*

U.S. Cl. 324—158 F 8 Claims

1. Apparatus for testing the electrical integrity of a plurality of printed circuit boards under test (BUT), each said BUT having a plurality of downwardly directed accessible BUT nodes at a first pattern of predetermined locations in a first field on its bottom surface, said apparatus comprising:

support means for removably supporting a said BUT,

test circuitry including a plurality of channel circuitry printed circuit boards having upwardly directed channel nodes, said upwardly directed channel nodes being directly below said support means at a second pattern of predetermined locations in a second field overlapping said first field, said second pattern not matching said first pattern of predetermined locations,

connection means for electrically connecting said channel nodes to said BUT nodes,

said connection means including spring-biased BUT probe contacts in a pattern that matches said first pattern so as to be aligned with and to contact said BUT nodes when said BUT is mounted on said support means,

said connection means also including a translator board carrying a plurality of upper conducting members comprising tubular housings extending from an upper surface of said translator board,

said tubular housings having first wire wrap posts connected to them,

said upper conducting members being electrically connected to and carrying said BUT probe contacts,

said translator board also carrying a plurality of lower conducting members extending downwardly from the lower surface of said translator board,

said lower conducting members including second wire wrap posts,

said lower conducting members being mounted in a pattern that matches that of said channel nodes,

said first and second wire wrap posts having portions overlapping each other along corresponding positions of vertical axes,

said connection means also including translator means electrically connecting respective said tubular housings to respective said lower conducting members,

said translator means including wires connecting respective first and second wire wrap posts,

said connection means also including an interface assembly between said second wire wrap posts and said channel nodes, said interface assembly comprising:

upwardly directed spring biased interface contacts making electrical connection between said second wire wrap posts and said channel nodes, and

said downwardly directed plungers being carried by lower extensions of said interface contacts, there being elastomeric O-rings between said interface contacts and said tubular housings on said interface board, and

an interface board carrying tubular housings carrying said spring biased interface contacts and downwardly directed plungers extending from the lower surface of the interface board and electrically connected to said channel nodes.

4,884,025

PROCESS FOR THE FAULT MONITORING OF AN ELECTRIC VALVE

Michael Häusler, Weilheim, Fed. Rep. of Germany, assignor to Asea Brown Boveri AG, Baden, Switzerland

Filed May 26, 1987, Ser. No. 54,433

Claims priority, application Switzerland, Jun. 6, 1986, 2301/86

Int. Cl.⁴ G08B *21/00;* **H02H** *7/10*

U.S. Cl. 324—158 SC 18 Claims

13. In a process for fault monitoring an electric valve containing at least two series-connected thyristors, the process comprising the steps of:

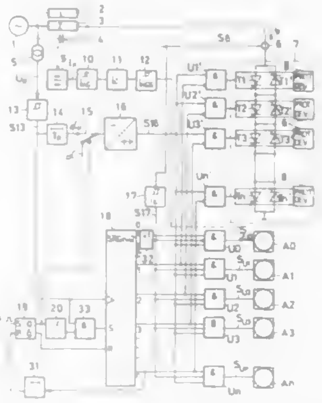
triggering, during a blocked state of the electric valve, the at least two series-connected thyristors associated with a predetermined current direction with the exception of at least one thyristor to be tested of said at least two series-connected thyristors within a predetermined time interval;

conducting a preliminary test prior to triggering said at least two series-connected thyristors, each said thyristor being associated with a triggering channel;

during said preliminary test, checking whether all thyristor triggering channels are in order;

during said checking of said thyristor triggering channels in said blocked state of said electric valve, triggering said at least two series-connected thyristors associated with said predetermined current direction and generating a triggering channel fault signal in the absence of current flow through said electric valve;

in an electric valve in which each one of said at least two series-connected thyristors is connected to a break-over element defining a predetermined break-over voltage, said steps of triggering said at least two series-connected thyristors entails triggering each one of said at least two series-connected thyristors at an applied voltage exceeding said predetermined break-over voltage defined by said break-over element;



said step of generating said triggering channel fault signal entailing the steps of:

applying to a filter an electric valve current which flows through said electric valve after triggering said at least two series-connected thyristors;

filtering, by means of said filter, a harmonic from said electric valve current;

comparing said harmonic with a predetermined limiting harmonic value; and

generating said triggering channel fault signal when said harmonic exceeds said predetermined limiting harmonic value.

4,884,026

ELECTRICAL CHARACTERISTIC MEASURING APPARATUS

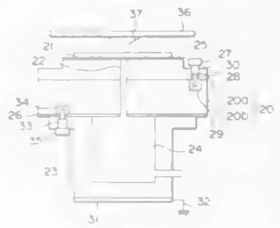
Yuji Hayakawa, and Takuo Uchida, both of Kofu, Japan, assignors to Tokyo Electron Limited, Tokyo, Japan

Filed Jun. 20, 1988, Ser. No. 208,666

Claims priority, application Japan, Jun. 24, 1987, 62-157430

Int. Cl.⁴ G01R *31/26, 1/06*

U.S. Cl. 324—158 F 6 Claims



6. An electrical characteristic measuring apparatus, comprising:

a table formed of an insulating material;

a conductor portion arranged on said table, said conductor portion comprising a voltage application electrode and voltage measuring electrode formed in a zig-zag pattern, and an elongated insulating region being formed substan-

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tially concentric with each said voltage application electrode and each said voltage measuring electrode;
electrical characteristic detecting means arranged above said conductor portion to oppose an object to be measured placed on said conductor portion; and
a support table, formed of an insulating member, for supporting said table.

4,884,027

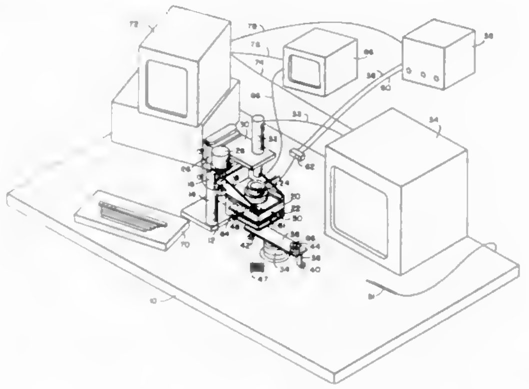
MANUAL MICROCIRCUIT DIE TEST SYSTEM

Daron C. Holderfield, Boaz; Bernard E. Martin, Huntsville, both of Ala., and Samuel S. Russell, Irmo, S.C., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 27, 1988, Ser. No. 263,466

Int. Cl.⁴ G01R *31/02, 31/28*

U.S. Cl. 324—158 F **11 Claims**



1. A microcircuit die test system comprising: a die table with means thereon for accurately mounting a test specimen, means for positioning said die table in a position for testing, a test chamber device having means for being positioned relative to said die table to enable electrical test to be made of the test specimen, means for injecting media onto the test specimen to subject the test specimen to selected temperatures, means for positioning the test chamber device relative to said die table, means mounted relative to said test chamber device for adjusting said test chamber device in x and y axes, and means for viewing through said test chamber device to the specimen on said die table.

4,884,028

MAGNETIZING DEVICE WITH YOKE HAVING LOOSELY FITTED COIL SECTIONS FOR MAGNETOGRAPHIC INSPECTION OF QUALITY OF MATERIALS

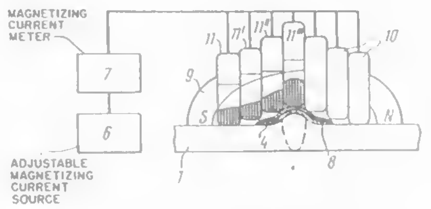
Valery S. Kozlov, Leninsky prospekt, 16, kv. 76; Elena A. Polyakova, ulitsa Kalinovskogo, 70, kv. 142; Alexei E. Novikov, ulitsa Landera, 69, kv. 9, all of Minsk, and Mikhail T. Krupko, Kolomna, ulitsa Kirova 58, kv. 52, Moskovskaya oblast, all of U.S.S.R.

Division of Ser. No. 895,192, Aug. 11, 1986, Pat. No. 4,806,862. This application Mar. 28, 1988, Ser. No. 176,707

Int. Cl.⁴ G01N *27/85;* **H01F** *13/00, 17/04*

U.S. Cl. 324—213 **2 Claims**

1. A device for magnetizing a material to be inspected by means of a magnetographic quality inspection method, comprising:
a magnetic yoke having first and second spaced poles for engagement with the material to be inspected and having a central portion between said poles;
a source of magnetizing current;
said magnetizing coil comprising a plurality of coil sections electrically connected to one another in a parallel circuit, each coil section surrounding and loosely fitted on said magnetic yoke for independently shifting in directions perpendicular to the surface of the material inspected whereby said coil sections assume the shape of the surface of the material being inspected when placed thereon to provide a substantially uniform magnetization in a test zone of the material upon which said magnetic yoke is placed.


MAGNETIZING CURRENT METER
7
6
ADJUSTABLE MAGNETIZING CURRENT SOURCE
10
9
S
N
1
8

4,884,029

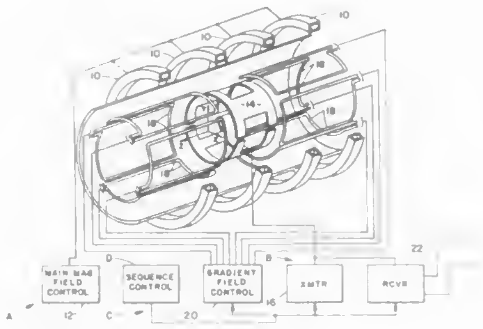
QUICK IMAGING SCHEME UTILIZING DIFFERENTLY PHASE ENCODED PRIMARY AND STIMULATED ECHOES

William Sattin, Cleveland Hts., Ohio, assignor to Picker International, Inc., Highland Hts., Ohio

Continuation-in-part of Ser. No. 897,118, Aug. 15, 1986, Pat. No. 4,774,466. This application Sep. 12, 1988, Ser. No. 243,294

Int. Cl.⁴ G01R *33/20*

U.S. Cl. 324—309 **13 Claims**



13. A magnetic resonance imaging apparatus comprising:
means for generating a generally uniform main magnetic field through an image region;
a radio frequency means for selectively inducing magnetic resonance of selected dipoles of a subject in the examination region and for selectively causing primary and stimulated echoes;
a phase encoding means for phase encoding the primary and stimulated echoes with different phase angles;
a receiver means for receiving primary and stimulated echo data during the primary and stimulated echoes;
a correcting means for adjusting at least one of the primary and stimulated echo data to correct for discontinuities;
a transform means for transforming the aligned primary and stimulated echo data into an image representation.

4,884,030

METHOD AND SYSTEM FOR ACQUISITION AND SEPARATION OF THE EFFECTS OF ELECTROMAGNETIC FIELDS TO PREDICT EARTHQUAKES

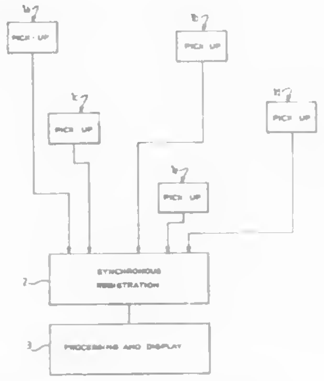
Charles Naville, Grigny; Simon Spitz, Paris, and Rocrol Jean-Pierre, Fresnes, all of France, assignors to Compagnie Generale de Geophysiqne, France

Filed Apr. 6, 1988, Ser. No. 178,120

Claims priority, application France, Apr. 9, 1987, 8705023

Int. Cl.⁴ G01V *3/08, 3/38*

U.S. Cl. 324—344 **13 Claims**



1. A system for acquisition and separation of components of electromagnetic fields generated by simultaneous sources of electromagnetic field in the earth comprising an array of n pick-ups about at the surface of the earth for picking up the components of the electromagnetic fields, connected to registration means, wherein the minimum number n of pick-ups in the array is equal to $2s+2$, s being the number of simultaneous sources to be analyzed, and wherein each pick-up picks up the components of each source.

4,884,031

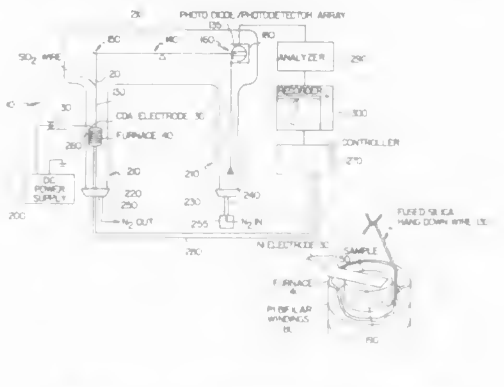
METHOD AND APPARATUS FOR CHARGE DISTRIBUTION ANALYSIS

Friedemann Freund, 225 Sussex St., San Francisco, Calif. 94131, and Francois Batllo, 1970 Latham St., #25, Mountain View, Calif. 94040

Filed Sep. 29, 1988, Ser. No. 250,951

Int. Cl.⁴ G01R *5/28*

U.S. Cl. 324—459 **30 Claims**



1. An apparatus for measurement of electrostatic forces, comprising:
a mass balance including an arm, means attached to said arm for supporting a mass, and means coupled to said arm for determining an amount of force required to maintain said arm at a predetermiend position upon placement of said mass upon said supporting means;
means for heating said mass to a predetermined temperature;
a first electrode and a second electrode positioned near said mass for forming a capacitor with said mass as a dielectric;
means for applying a potential across said first and second electrodes;
means for displaying any attraction and repulsion between either of said first and second electrodes and said mass upon application of said potential.

4,884,032

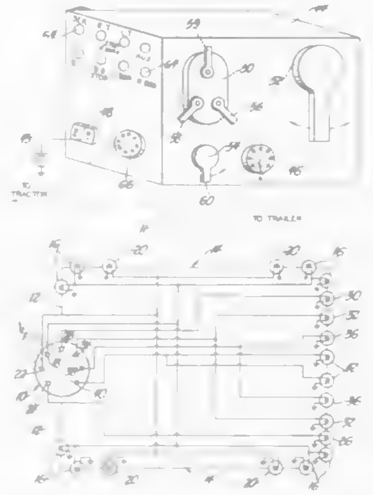
TRAILER/TRACTOR LIGHT SYSTEM TESTER

Kenneth R. LaPensee, Mt. Clemens, Mich., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sep. 16, 1982, Ser. No. 418,920

Int. Cl.⁴ G01R *31/02*

U.S. Cl. 324—504 **1 Claim**



1. Electrical test means for both a military trailer lighting system and an electrical power supply in a military tractor for the lighting system, the test means being configured to provide nonverbal indicia for instructing the human user in operating the test means, the test means comprising;
a three dimensional cabinet having a first upstanding side face and a second upstanding side face; a source of electrical power at the cabinet having a rating similar to the battery power source in the military tractor to be tested;
a first conventional multi-terminal receptacle (46) mounted on the first face of the cabinet; a second conventional multi-terminal receptacle (66) mounted on the second face of the cabinet; the first receptacle being similar to a receptacle used on the tractor; the second receptacle being similar to a receptacle used on the trailer to be tested;
A manual turn signal controller (52) mounted on the first face of the cabinet, the controller being similar to the controller used on the military tractor; a manual multi-function light switch (50) mounted on the first face of the cabinet, the multi-function light switch including a lock-out handle (56) swingable between locked and unlocked positions, an auxilliary switch handle (58) selectively swingable from an off position to various energized positions to control the parking and instrument panel illumination, and a main handle switch (59) swingable from a circuit-breaking position to one of several circuit-completing positions to control vehicle service lamps and blackout lights, the multi-function light switch being similar to a switch used on the military tractor;
a spring biased, manually actuable brake switch simulator means (54) mounted on the first face of the cabinet having

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a manual lever (60) moveable against the spring bias to deliver electrical power to the appropriate brake pin terminal in the first receptacle (46), whereby the brake switch simulator duplicates the action of a brake actuated switch in a military tractor;

the brake switch simulator means having a different shape than the multi-function light switch and being smaller than the manual turn signal controller, the brake switch simulator means being closer to the multi-function light switch than is the manual turn signal controller, the brake switch simulator means being disposed on a corner of the first face of the cabinet diagonally opposite from the manual turn signal controller, whereby the turn signal controller, the multi-function light switch, and the brake switch simulator are tactiley and visually discernable from one another;

a plurality of trailer condition indicator lamps (64) on the second face of the cabinet;

first electrical connections within the cabinet connecting the first receptacle to the power source, turn signal controller, multi-function light switch, and brake switch-simulator means in generally the same manner as the corresponding components in the tractor, whereby the cabinet simulates a conventional tractor power supply for the trailer lighting system;

second electrical connections within the cabinet connecting the second receptacle to the indicator lamps in generally the same manner as the corresponding lamps on the trailer, whereby the cabinet simulates the trailer light system; the test means being adapted for testing the trailer lighting system by training a cable between the first receptacle and a receptacle on the front end of the trailer; the test means being adapted for testing the tractor power supply by training the cable between the second receptacle and a receptacle on the rear end of the tractor to be tested; the first and second receptacles being located near the cabinet lower extremities to minimize potential interference between the cable and any one of the turn signal controller, multi-function light switch, brake switch-simulator means or indicator lamps.

4,884,033

DIAGNOSTIC TEST APPARATUS FOR ELECTRICAL SYSTEM OF AUTOMOTIVE VEHICLE

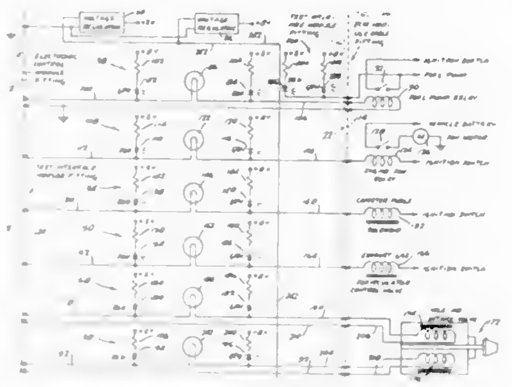
Noel P. McConchle Sr., 6875 Hitchcock Rd., Milford, Mich. 48042

Continuation of Ser. No. 918,269, Oct. 14, 1986, Pat. No. 4,764,727. This application Jun. 6, 1988, Ser. No. 202,258

The portion of the term of this patent subsequent to Aug. 16, 2005, has been disclaimed.

Int. Cl.⁴ G01R *31/02*

U.S. Cl. 324—503 **18 Claims**



1. A diagnostic test circuit for monitoring the magnitude of electrical parameters existing between an electrical driver and an electrical load comprising, in combination:

(a) visual indicator means connected to a point adjacent the electrical driver, said indicator means providing a visual signal when the voltage at the point of connection lies within a predetermined range, with respect to electrical ground,

(b) additional visual indicator means, separate from the first, connected to a point adjacent the electrical load, said additional indicator means providing a visual signal when the voltage at its point of connection lies within a predetermined range, with respect to electrical ground, and

(c) a third visual indicator means, connected between said electrical driver and said electrical load, said third indicator means providing a visual signal in response to current flowing between said driver and said load,

(d) said third visual indicator means having a positive temperature coefficient of impedance whereby it presents a relatively low electrical impedance when experiencing relatively low current flow, and a higher impedance upon experiencing increased current flow.

4,884,034

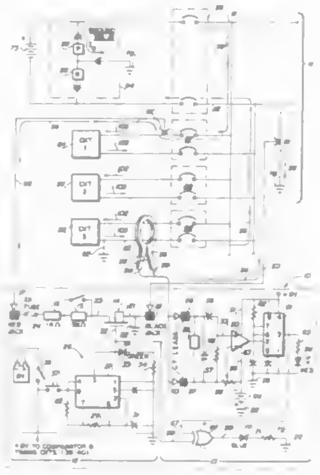
GROUND FAULT DETECTOR AND LOCATOR

Hermilo Guzman, 8115 W. Krall St., Glendale, Ariz. 85303

Filed Jan. 3, 1989, Ser. No. 292,912

Int. Cl.⁴ G01R *31/08*

U.S. Cl. 324—529 **9 Claims**



1. An apparatus for the detection of ground faults in a normally ungrounded a-c or d-c multifeeder power distribution system comprising:

a d-c power supply,

a pulse grounding circuit connected across said power supply,

said pulse grounding circuit comprising transistor means connected across a pair of probe receptacle jacks and a multivibrator means for pulsing said transistor means,

said jacks being connectable across the distribution system for adding a ground fault to the distribution system being checked for ground faults in a pulsating fashion,

whereby the added ground fault in a grounded conduit of the distribution system will create an a-c component of the ground current created thereby for sensing by a sensing circuit,

a sensing circuit comprising a clamp-on current probe,

said probe comprising a yoke for surrounding said grounded conduit of the distribution system which conduit serves as a single primary turn of a transformer,

said yoke being wound with a number of turns of a wire forming a secondary winding of the transformer the terminals forming the ends of said wire being connected across a comparator circuit, and

a comparator circuit for receiving signals from said probe, said comparator circuit when receiving a negative voltage of a predetermined value generating a positive pulse for energizing a first light emitting diode indicating a ground fault on the conduit surrounded by said yoke.

4,884,035

WIDE RANGE DIGITAL PHASE/FREQUENCY DETECTOR

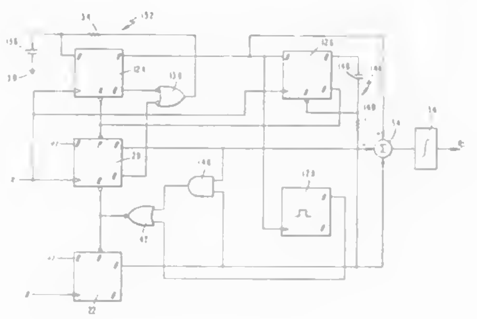
Steven P. Cok, and Robert J. Lewandowski, both of Seattle, Wash., assignors to John Fluke Mfg. Co. Inc., Everett, Wash.

Continuation of Ser. No. 105,468, Aug. 17, 1987, Pat. No. 4,843,332. This application May 15, 1989, Ser. No. 351,229

The portion of the term of this patent subseqnent to Jun. 27, 2006, has been disclaimed.

Int. Cl.⁴ H03K *9/06;* H03D *13/00*

U.S. Cl. 328—133 4 Claims



1. A digital phase/frequency detector for detecting differences in phase or frequency between a variable input signal and a reference input signal comprising:

variable signal and reference signal terminals for receiving the variable and reference input signals;

phase/frequency detector means receiving said variable and reference input signals from said variable and reference signal terminals, the phase/frequency detector means having a preset input and being responsive to a phase or frequency difference between said variable and reference input signals for generating a square wave signal having a duty ratio corresonding to the phase or frequency difference between said variable and reference input signal between a minimum and a maximum phase difference, the duty ratio being repetitively adjusted with each cycle of the variable input signal;

fixed level generator means having a reset input and responsive to said variable input signal and to said square wave signal for generating a fixed level offset signal in response to said variable and reference input signals having a frequency or phase difference greater than or equal to said maximum phase difference;

reset generator means responsive to said variable input signal, said square wave signal, and to said fixed level generator means and for applying a preset signal to said phase/-frequency detector means and a reset signal to said fixed level generator means in response to a phase transition of said variable and reference input signals from a phase value equal to or greater than said maximum phase difference to a phase value less than said maximum phase difference to a phase value less than said maximum phase difference; and

summing means for adding said square wave signal from said phase/frequency detector and said fixed level offset signal from said fixed level generator means and outputting the resultant summed signal.

4,884,036

BAND-PASS FILTER

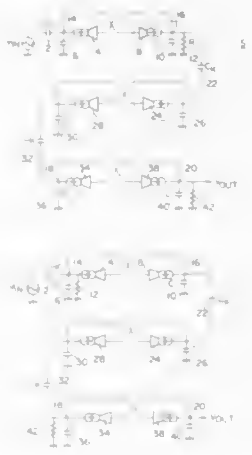
Mikio Koyama, Yokohama, and Hiroshi Tanimoto, Kawasaki, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 3, 1988, Ser. No. 163,843

Claims priority, application Japan, Mar. 4, 1987, 62-47850

Int. Cl.⁴ H03K *5/00;* H03B *1/00*

U.S. Cl. 328—167 20 Claims



1. A band-pass filter comprising:

a first integrating circuit pair including first and second integrating circuits, and first integrating circuit including a first current source connected to first and second nodes and a first integrating capacitor connected to said first node and a predetermined potential, said second integrating circuit including a second current source connected to said first and second nodes and a second integrating capacitor connected to said second node and the predetermined potential;

a second integrating circuit pair including third and fourth integrating circuits, said third integrating circuit including a third current source connected to third and fourth nodes and a third integrating capacitor connected to said third node and the predetermined potential, said fourth integrating circuit including a fourth current source connected to said third and fourth nodes and a fourth integrating capacitor connected to said fourth node and the predetermined potential;

a first coupling capacitor connected to said first node;

a second coupling capacitor connected between said second and third nodes;

a third coupling capacitor connected to said fourth node;

a first termination resistor connected between said first node and the predetermined potential; and

a second termination resistor connected between said third node and the predetermined potential.

4,884,037

FM DEMODULATION CIRCUIT

Akira Sogo, Hamamatsu, Japan, assignor to Yamaha Corporation, Hamamatsu, Japan

Filed Jul. 19, 1988, Ser. No. 221,117

Claims priority, application Japan, Jul. 28, 1987, 62-188013; Jul. 28, 1987, 62-188014

Int. Cl.⁴ H03D *1/00*

U.S. Cl. 329—336 5 Claims

1. A FM demodulation circuit comprising:

(a) analog-to-digital converting portion for converting an inputted frequency-modulated (FM) signal into a digital signal of one bit at a timing based on a predetermined clock signal;

(b) differentiation means for outputting a pulse train in syn-

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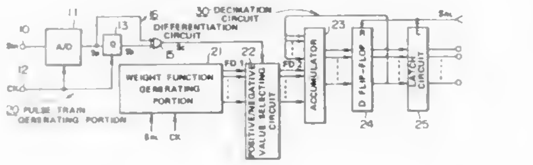
chronism with said clock signal at every time when a state of said digital signal outputted from said analog-to-digital converting portion varies; and

(c) decimation circuit for weighting each pulse of said pulse train outputted from said differentiation means by a

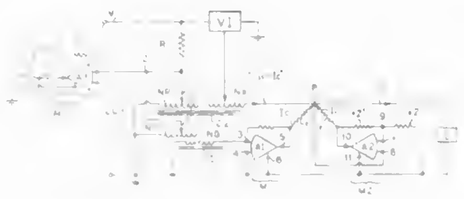


weight function to thereby obtain a weighted function value and then accumulating said weighted function value during a predetermined period, so that said FM signal will be demodulated to thereby obtain a demodulated signal in the form of a linear pulse code modulated (a linear PCM) signal.

4,884,038
TRANSCONDUCTANCE AMPLIFIER WITH TRANSFORMER COUPLED FORWARD FEED

Petar N. Miljanic, Gloucester, Canada, assignor to Canadian Patents and Development Limited-Societe Canadienne Des Brevets Et D'Exploitation Limitee, Ottawa, Canada

Filed Mar. 25, 1988, Ser. No. 173,630
Int. Cl.⁴ H03F *3/50*
U.S. Cl. 330—165 11 Claims



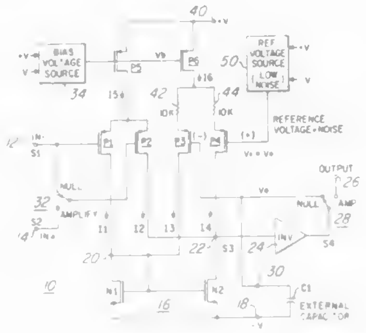
1. The combination of a transconductance amplifier for emitting an output current to a load that is a replica of an input voltage, and means for enhancing the accuracy of such replica, said enhancing means comprising:

(a) a current comparator comprising
  (i) first magnetic core means,
  (ii) second magnetic core means,
  (iii) a pair of ratio windings electro-magnetically coupled with both said core means, and
  (iv) detection winding means electro-magnetically coupled with the first core means but not with the second core means,
(b) means connecting a first of said ratio windings in series with the output current of the transconductance amplifier,
(c) a resistor connected to the second of said ratio windings to form a first series circuit,
(d) means connecting such first series circuit across the input voltage of the transconductance amplifier whereby the current in said second ratio winding accurately reproduces the waveform of said input voltage, and
(e) a current source for injecting into the output current of the transconductance amplifier a current proportional to an error current in the detection winding means.

4,884,039
DIFFERENTIAL AMPLIFIER WITH LOW NOISE OFFSET COMPENSATION

Lawrence A. King, Grapevine, and Peter J. Andrews, Richardson, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Sep. 9, 1988, Ser. No. 242,451
Int. Cl.⁴ H03F *3/45*
U.S. Cl. 330—253 15 Claims



1. A differential amplifier, comprising:

a pair of input transistors for receiving input signals to be amplified and providing first and second output currents to respective inputs of a load circuit for developing an output signal representative of a difference in said input signals; and

a linear offset correction circuit coupled to said load circuit and comprising:

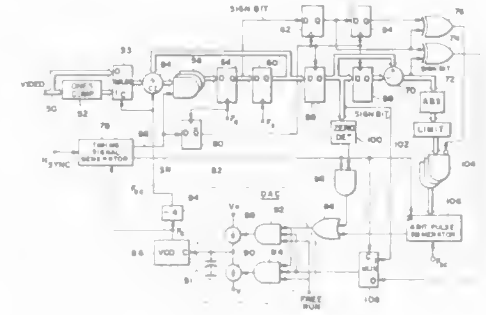
a first source providing an offset correction voltage and a second source providing a reference voltage; and

a pair of auxiliary transistors responsive to said reference and correction voltages for supplying third and fourth differentially related output currents to respective inputs of said load circuit for correcting offset errors of said amplifier.

4,884,040
SAMPLED DATA PHASE LOCKING SYSTEM

Russell T. Fling, Noblesville, Ind., assignor to RCA Licensing Corporation, Princeton, N.J.

Continuation-in-part of Ser. No. 249,022, Sep. 26, 1988, abandoned. This application Mar. 17, 1989, Ser. No. 324,875
Int. Cl.⁴ H03L *7/08;* H03D *13/00*
U.S. Cl. 331—1 A 21 Claims



13. A method of locking a generated signal from a controllable signal generator to an applied signal, comprising:

sampling the applied signal at a particular phase of said generated signal to produce samples representing first and second quadrature phase related components of said applied signal;

accumulating said samples over predetermined intervals to

produce first and second sample sums representing said first and second components;

forming differences of said first sample sums from successive intervals;

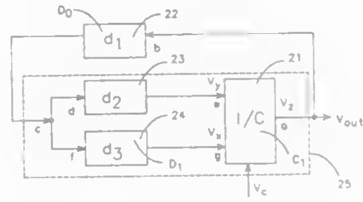
generating a zero detection signal having a first state for said first sample sums being zero valued and at least a second state for said first sample sums being nonzero; and

combining signals representing said differences and said zero detection signal to develop a signal for controlling said controllable signal generator.

4,884,041
FULLY INTEGRATED HIGH-SPEED VOLTAGE CONTROLLED RING OSCILLATOR

Richard C. Walker, Palo Alto, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jun. 5, 1987, Ser. No. 58,477
Int. Cl.⁴ H03B *5/00*
U.S. Cl. 331—57 1 Claim



1. A ring oscillator comprising:

an inverter/combination element having a pair of inputs and an output;

a first delay element having an input connected to the output of the inverter/combination element and having an output;

a second delay element having an input connected to the output of the first delay element and having an output connected to a first one of the inputs of the inverter/combination element;

a third delay element having an input connected to the output of the first delay element and having an output connected to a second of the inputs of the inverter/combination element; and

an output port connected to any internal connection between the other elements of this oscillator.

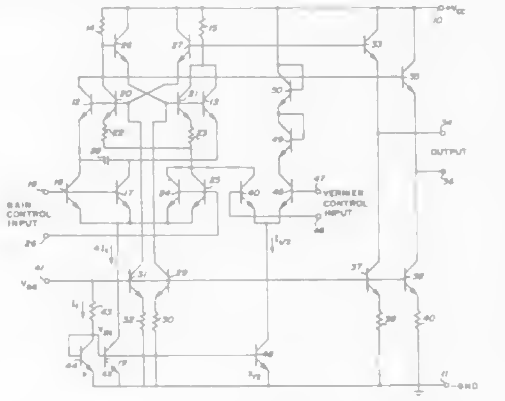
4,884,042
DUAL PORT VOLTAGE CONTROLLED EMITTER COUPLED MULTIVIBRATOR

Suresh Menon, and Enjeti Murthi, both of Sunnyvale, Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed Feb. 15, 1989, Ser. No. 311,493
Int. Cl.⁴ H03K *3/282*
U.S. Cl. 331—113 R 6 Claims

1. In an emitter coupled multivibrator circuit comprising a pair of differentially operated transistors, a capacitor coupled between the emitters of said pair of transistors, load means coupled between the collectors of said pair of transistors and a first power supply reference terminal, a pair of current sources coupled between said emitters of said pair of transistors and a second power supply terminal, a pair of emitter followers cross-coupled between the collectors and bases of said pair of transistors to provide oscillatory feedback therebetween, and a first modulation port for controlling the conduction of said current sources for varying the frequency of oscillation of said pair of transistors, the improvement comprising:

a first differential amplifier having differential input terminals coupled to the bases of said pair of transistors, differential outputs coupled to the collectors of said pair of transistors and a third constant current source coupled to pass the tail current in said first differential amplifier to said second power supply terminal; and

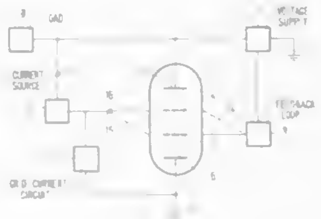


means responsive to the voltage of said first port for modulating said tail current in said differential amplifier differentially with respect to the currents in said pair of current sources.

4,884,043
HIGH-FREQUENCY GENERATOR

Christian S. A. E. Patron; Eugene J. Sowinski, and Aart P. Huben, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jnl. 12, 1988, Ser. No. 218,007
Claims priority, application Netherlands, Jul. 16, 1987, 8701678
Int. Cl.⁴ H03B *5/10;* H05B *6/02*
U.S. Cl. 331—186 13 Claims



1. A high-frequency generator comprising a multigrid electron tube having at least one grid pair including a control grid and a screen grid, a tube supply circuit and a load each being connected to a main current path of the electron tube, a feedback loop for generating a high-frequency signal in the main current path, said feedback loop being connected to the main current path of the electron tube and to one of the grids of the grid pair, and a current source circuit connected to the remaining grid of the grid pair for defining the grid dissipation in the electron tube.

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4,884,044
OPTICAL MODULATORS

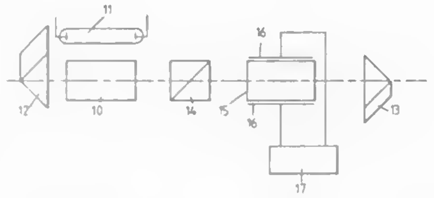
Peter J. Heywood, and Richard A. Eggleston, both of Lothian, Scotland, assignors to Ferranti International Signal plc, Cheshire, England

Filed Aug. 23, 1988, Ser. No. 235,156

Claims priority, application United Kingdom, Sep. 9, 1987, 8721152

Int. Cl.⁴ H01S *3/98*

U.S. Cl. 330—4.3 9 Claims



1. An optical modulator of the Q-switch type comprising:
a crystal of a material which exhibits the pyroelectric effect and having two opposed optical faces through which laser radiation may pass along a path; means to apply an electric field to the crystal ransverse to said path in order to switch said modulator; and
charge-dissipating means for dissipating any static electric charge built up on the two opposed optical faces of the crystal due to the pyroelectric effect.

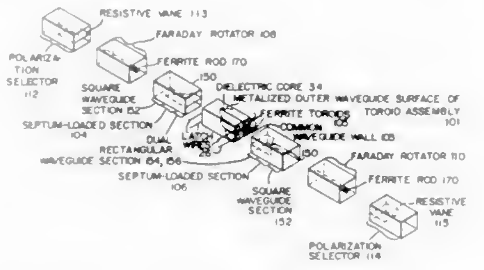
4,884,045
FAST SWITCHING RECIPROCAL FERRITE PHASE SHIFTER

William K. Alverson, Dunwoody, and James A. Ruller, Decature, both of Ga., assignors to Electromagnetic Sciences, Inc., Norcross, Ga.

Filed Jan. 19, 1988, Ser. No. 145,112

Int. Cl.⁴ H01P *1/195*

U.S. Cl. 333—158 35 Claims


RESISTIVE VANE 113
FARADAY ROTATOR 108
FERRITE ROD 170
POLARIZATION SELECTOR 112
150
SQUARE WAVEGUIDE SECTION 152
DIELECTRIC CORE 34
METALIZED OUTER WAVEGUIDE SURFACE OF TOROID ASSEMBLY 101
FERRITE TOROIDS 100
SEPTUM-LOADED SECTION 104
COMMON WAVEGUIDE WALL 105
LATCH WIRES 28
DUAL RECTANGULAR WAVEGUIDE SECTION 64, 66
150
FARADAY ROTATOR 110
SEPTUM-LOADED SECTION 106
FERRITE ROD 170
SQUARE WAVEGUIDE SECTION 152
RESISTIVE VANE 115
POLARIZATION SELECTOR 114

1. A fast switching phase shifter comprising:
a first input/output means for receiving forward and reverse propagating electromagnetic waves;
a waveguide coupled to said first input/output means;
apIurality of non-reciprocal phase shifters enclosed entirely within said waveguide, each of said phase shifters including a toroidal element; and
a second input/output means coupled to said waveguide for receiving forward and reverse propagating electromagnetic waves;
said first input/output means being operatively coupled to route forward propagating electromagnetic waves only to one of said phase shifters and to receive reverse propagating electromagnetic waves only from another one of said phase shifters and said second input/output means being operatively coupled to route reverse propagating electromagnetic waves only to said another one of said phase shifters and to receive rorward propagating electromagnetic waves only from said one of said plurality of phase shifters.

4,884,046
TRANSMITTER/ANTENNA BAY

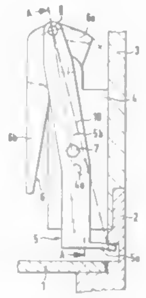
Georg Spinner, Am Eichberg 12, 8152 Feldkirchen-Westerham, Fed. Rep. of Germany

Filed Aug. 11, 1988, Ser. No. 231,188

Claims priority, application Fed. Rep. of Germany, Aug. 14, 1987, 3727200

Int. Cl.⁴ H01P *1/04*

U.S. Cl. 333—260 15 Claims



1. Apparatus for locking the housing of a coaxial transmission line with the front panel of a transmitter/antenna bay for selectively connecting at least two coaxial lines of a plurality of coaxial lines via flange sockets incorporated in the front panel, said locking apparatus, comprising: locking means including a locking lever swingably mounted about a pivot pin fixed to the housing at a distance thereto and a hook hinged to said locking lever at a point of articulation, said hook being suitably supported to allow a swinging motion and a longitudinal displacement thereof for movement between a locking position in which said hook engages a collar of the flange socket and a disengaged position in which said hook is removed from the collar, wherein said hook and said locking lever move in opposite direction upon actuation of said locking lever, said point of articulation defining with the collar a line of action which extends on one side of said pivot pin in locking position and on the other side of said pivot pin is disengaged position.

4,884,047
HIGH RATING MULTIPOLE CIRCUIT BREAKER FORMED BY TWO ADJOINED MOLDED CASES

Pierre Baginski, Grenoble; Jean-Pierre Nebon, St. Martin Le Vinoux, and Marc Bur, Grenoble, all of France, assignors to Merlin Gerin, France

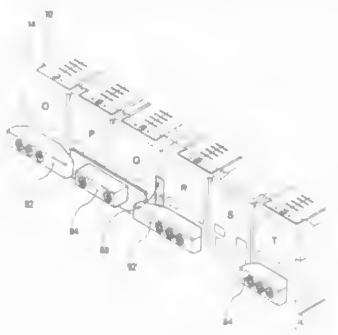
Filed Dec. 5, 1988, Ser. No. 279,457

Claims priority, application France, Dec. 10, 1987, 87 17447

Int. Cl.⁴ H01M *75/00*

U.S. Cl. 335—10 5 Claims

1. A low-voltage multipole circuit breaker, for high current intensities, comprising a plurality of poles juxtaposed inside an insulating molded case whose side walls comprise reliefs, each pole comprising a pair of separable contacts, an arc chute and a pair of contact terminal pads connected to the separable contacts and protruding outwards from the case, the contact terminal pads being connected to connecting strips designed to be connected respectively to the phases of a mains system to be protected, a circuit breaker characterized in that it is formed by two adjoined standard multipole cases, comprising in common an operating bar of the poles, an operating mechanism of said bar, and an electronic trip device actuating said mechanism, a spacer being fixed to the opposite side walls of the two cases, resin cold-cast between said opposite side walls providing fixing of the two cases, and at least one of the connecting strips being connected to at least two adjacent twinned poles, electrically arranged in parallel.



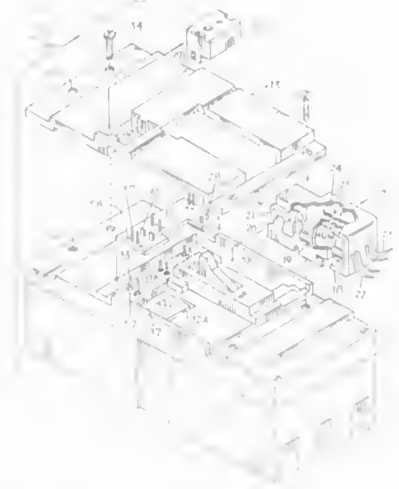
4,884,048
MOLDED CASE CIRCUIT BREAKER CURRENT TRANSFORMER ASSEMBLY

Roger N. Castonguay, Terryville; Joseph M. Palmieri, Southington, and Graham A. Scott, Avon, all of Conn., assignors to General Electric Company, New York, N.Y.

Filed Jan. 18, 1989, Ser. No. 299,179

Int. Cl.⁴ H02B *1/08*

U.S. Cl. 335—18 10 Claims



1. An electronic trip circuit interrupter comprising:
a molded plastic case and cover;
a pair of separable contacts under control of an operating mechanism for separating said contacts upon occurrence of an overcurrent condition through a protected circuit;
at least one current transformer within said case sensing circuit current through said contacts and having a plurality of upstanding pin connectors extending from a top surface;
a printed wire board containing a trip circuit arranged on one surface of said cover and including a corresponding plurality of thru-holes receiving said transformer pin connectors; and
means formed on an opposite surface of said cover facilitating passage of said transformer connectors through openings in said cover nd through said thruholes in said printed wire board.

4,884,049
CIRCUIT BREAKER OVERCURRENT TRIPPING DEVICE

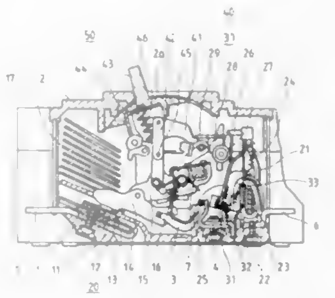
Jun Oyama, and Naoshi Uchida, both of Kanagawa, Japan, assignors to Fuji Electric Co., Ltd., Kanagawa, Japan

Filed Nov. 14, 1988, Ser. No. 270,334

Claims priority, application Japan, Dec. 29, 1987, 335383

Int. Cl.⁴ H01H *75/08, 75/12*

U.S. Cl. 337—36 1 Claim



1. A circuit breaker overcurrent tripping device, comprising:
a bimetallic strip for conducting an electric current and configured to bend in response to a predetermined accidental increase in the electric current;
a fixed iron core having an open side, disposed and configured to accommodate the bimetallic strip;
a movable iron core pivotally supported adjacent the open side of said fixed iron core and magnetically attracted to said fixed iron core in response to the accidental increase of electric current;
a tripping mechanism responsive to the movement of said movable iron core toward said fixed iron core and the bending of said bimetallic strip;
a fixed contact point disposed adjacent the open side of said fixed iron core and electrically connected through a connecting wire to a load terminal;
a movable contact point fixed to said movable iron core for impinging on said fixed contact point, said movable contact point being further connected via a conductor wire to a fixed end of said bimetallic strip; and
means for increasing a magnetic field of the iron core in response to said accidental increase of electric current, said means including a flexible conductor wound at least once around said fixed iron core and electrically connected at opposite ends to a free end of said bimetallic strip and said load terminal.

4,884,050
BLADE TERMINAL TAP FUSE

Emmett L. Kozel, Rte. 1, Box 206, Rockingham, N.C. 28379

Filed Jul. 18, 1988, Ser. No. 220,314

Int. Cl.⁴ H01H *85/22*

U.S. Cl. 337—264 11 Claims

1. An electrically tappable miniature fuse to which an electrical conductor may be connected by way of an electrical connector comprising an electrically insulated housing having upper and lower ends, a pair of spaced and generally parallel electrically conductive blade elements mounted within said housing, an electrical fuse link extending between and connecting said pair of blade elements within said housing, each of said blade elements having a first end extending outwardly from said lower end of said housing, at least one of the said blade elements having an auxiliary end spaced from said end of said

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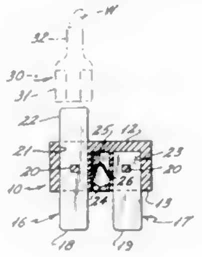
blade elements and extending outwardly of said upper end of said housing whereby said auxiliary end provides an electrical contact through the fuse to which the electrical connector may be selectively mounted.



4,884,051
SEMICONDUCTOR DIFFUSION TYPE FORCE SENSING APPARATUS

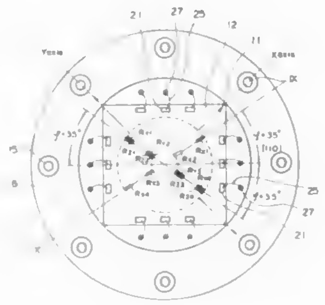
Junichi Takahashi, Yokohama; Daisuke Kosaka, Takarazuka; Hirotoshi Eguchi, Yokohama; Shoji Matsumoto. Minoo; Takashi Akahori, Yokohama; Hiroshi Yamazaki, Tokyo, and Kouji Izumi, Yokohama, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Jul. 5, 1988, Ser. No. 215,412

Claims priority, application Japan, Jul. 8, 1987, 62-170498; Sep. 18, 1987, 62-234042

Int. Cl.⁴ G01L *1/22;* **H01L** *27/20*

U.S. Cl. 338—4 43 Claims



1. A semiconductor diffusion type force sensing apparatus comprising:

a plate-like semiconductor substrate formed by a single crystal material; and

a plurality of sensing elements each constituted by a substantially rectangular impurity-diffused region formed in the semiconductor substrate, said sensing element including a first group of sensing elements and a second group of sensing elements,

the sensing elements having an electric resistance variable in accordance with a deformation thereof due to an external force exerted on the semiconductor substrate,

said first group of sensing elements being aligned in a first direction such that a longitudinal direction of each of the sensing elements related to the first group coincides with a first crystal orientation of the semiconductor substrate having an extremal value of a longitudinal piezoresistance coefficient of the impurity-diffused region,

said second group of sensing elements being aligned in a second direction such that a longitudinal direction of each of the sensing elements related to the second group coincides with a second crystal orientation of the semiconductor substrate having an external value of a longitudinal piezoresistance coefficient of the impurity-diffused region,

said second direction being different from said first direction, the alignment of said first group of sensing elements being arranged so as to intersect the alignment of said second group of sensing elements.

4,884,052
CONTACT STRUCTURE FOR SLIDER POSITION SENSOR

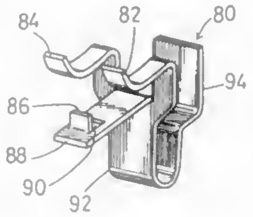
Kenji Eitoku; Mamoru Tateishi, and Kenji Hayashi, all of Obu, Japan, assignors to Aisan Kogyo Kabushiki, Obu, Japan

Filed May 26, 1988, Ser. No. 200,517

Claims priority, application Japan, May 29, 1987, 62-85389[U]; May 29, 1987, 62-85390[U]

Int. Cl.⁴ H01C *1/012*

U.S. Cl. 338—202 6 Claims



1. A sliding contact slidingly moveable on an electrode in association with a sliding movement of a slider, comprising:

a sliding contact piece including

an elongated contact segment slidingly contacting said electrode and

a base plate formed at a base portion of said contact segment, said base plate having a mounting hole for engaging a first projection of said slider; and

an elongated snap member for positioning and fixing said sliding contact piece with respect to said slider,

said snap member mounted on said base plate of said sliding contact piece and extending in a direction substantially perpendicular to an extending direction of said contact segment,

said second snap member formed with first and second snap portions arranged in spaced relationship to each other in the extending direction of said snap member,

said first snap portion having a first mounting hole for engaging said first projection of said slider and a plurality of first snap segments formed around said first mounting hole, and

said second snap portion having a second mounting hole for engaging a second projection of said slider and a pair of cutouts continuing from said second mounting hole at opposite positions in the extending direction of said snap member to form a pair of opposed second snap segments.

4,884,053
SURFACE MOUNT WIREWOUND RESISTOR AND METHOD OF MAKING THE SAME

Gary E. Bongger, Columbus, Nebr., assignor to Dale Electronics, Inc., Columbus, Nebr.

Filed Aug. 26, 1988, Ser. No. 236,718

Int. Cl.⁴ H01C *1/034*

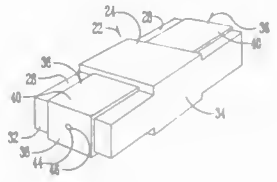
U.S. Cl. 338—275 8 Claims

1. A surface mount resistor, comprising,

a substantially hard plastic rectangularly-shaped body member having substantially flat and parallel upper and lower surfaces, opposite sides, and opposite ends,

an electrical resistance element embedded in said body member and having a pair of spaced terminal ends which extend through said body member and terminate substantially at the exterior surface of said body member,

and a pair of spaced electrical terminal pads secured to the exterior surface of said body member with one each of said terminal pads being in electrical contact with said one each of said terminal ends.



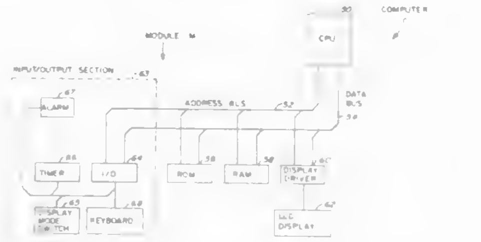
4,884,054
SELF-CONTAINED MOTOR VEHICLE MAINTENANCE INTERVAL MONITOR

John H. Moon, Sr., 3914 Peru Cir., Pasadena, Tex. 77504

Filed Aug. 18, 1988, Ser. No. 233,620

Int. Cl.⁴ G08B *1/00;* **B60Q** *1/00*

U.S. Cl. 340—309.15 18 Claims



1. A vehicle maintenance interval monitor, comprising:

means for storing a plurality of maintenance intervals for the vehicle;

means for setting each of the plurality of maintenance intervals for the vehicle;

means for storing an estimated vehicle speed value;

means for setting the estimated vehicle speed value;

means for determining the actual date and time;

means for storing an actual date and time as a stored date and time;

means for retrieving the stored date and time, for obtaining an actual date and time from the date and time determining means, and for determining a change in the actual date and time by subtracting the retrieved stored date and time from the obtained actual date and time;

means for retrieving the stored estimated vehicle speed value, for obtaining the determined change in the actual date and time, and for calculating an estimated distance traveled by multiplying the determined change in the actual date and time by the stored estimated vehicle speed value;

means for retrieving each of the maintenance intervals, for obtaining the estimated distance traveled, and for comparing the estimated distance traveled with each of the maintenance intervals; and

means responsive to the maintenance interval comparison means for indicating when the estimated distance traveled has exceeded one of the maintenance intervals,

wherein the date and time determining means, the date and time storing means, the date and time change determining means, the estimated distance traveled means, the comparing means and the indicating means are active independent of the vehicle running or moving status.

4,884,055
ANTITHEFT SYSTEM

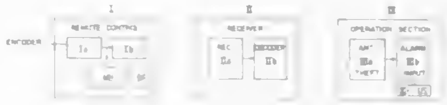
Serafino Memmola, Varese, Italy, assignor to Delta Elettronica S.p.A., Varese, Italy

Filed Nov. 24, 1987, Ser. No. 124,885

Claims priority, application Italy, Dec. 3, 1986, 83667 A/86

Int. Cl.⁴ B60R *25/00*

U.S. Cl. 340—426 21 Claims



1. Antitheft system for a vehicle provided with an engine, engine operating control means having a first state in which the engine is operable and a second state in which the engine is disabled, and a door movable between an open position and a closed position, the antitheft system having an armed condition and an unarmed condition and comprising:

means for generating a control signal; and

means on the vehicle responsive to said control signal, said responsive means being operable to sense the state of the engine control means, the position of the door and the condition of the antitheft system, and said responsive means further being operable to: (i) arm the antitheft system in response to said control signal when the antitheft system is unarmed, the door is closed and the engine control means is in the second state, (ii) disarm the antitheft system in response to said control signal when the antitheft system is armed, and (iii) produce an alarm condition in response to said control signal when the engine control means is in the first state, the door is open and the antitheft system is unarmed, the production of said alarm condition including converting the engine control means to the second state to disable the engine.

4,884,056
SYSTEM FOR DISPLAYING TROUBLE IN AN ELECTRONIC CONTROL SYSTEM OF A MOTOR VEHICLE

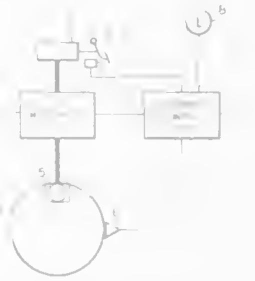
Seiichi Ishizeki, Ashikaga, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 16, 1988, Ser. No. 232,796

Claims priority, application Japan, Sep. 7, 1987, 62-223550

Int. Cl.⁴ B60Q *1/00*

U.S. Cl. 340—453 4 Claims



1. A system for displaying trouble in an electronic control system of a motor vehicle having detecting means for detecting failure in the electronic control system, and a warning lamp for displaying a detected failure, the system comprising:

means for detecting nature of a failure in the electronic control system;

comparing means for comparing the pattern of a pulse signal generated by operating a brake pedal switch in the vehicle with a predetermined stored pattern and for producing a

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failure signal representing the nature of the detected failure; and

display means responsive to the failure signal for intermittently lighting the warning lamp in accordance with a predetermined pattern representing the nature of the failure.

4,884,057
PUSH BUTTON AUTOMATIC TRANSMISSION CONTROL DEVICE

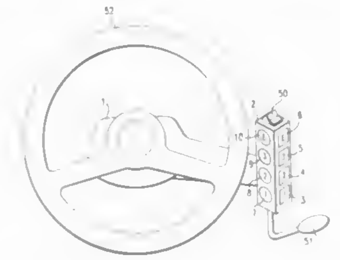
Francois Leorat, Versailles, France, assignor to Regie Nationale des Usines Renault, Boulogne Billancourt, France

Filed Jun. 22, 1987, Ser. No. 64,469

Claims priority, application France, Jun. 20, 1986, 86 08906

Int. Cl.⁴ B60Q *1/00*

U.S. Cl. 340—456 12 Claims



1. An electromechanical control device for selecting and engaging a plurality of gears, located in an automatic transmission of a motor vehicle, while said motor vehicle is operated in a drive position comprising:

a plurality of push buttons positioned so that a driver of said motor vehicle can touch said plurality of push buttons with his fingers while holding a steering wheel;

a digital control means for engaging a particular gear of said plurality of gears corresponding to a driving mode selected by said driver when said driver pushes a designated push button of said plurality of push buttons, said plurality of push buttons being connected to said digital control means, and said digital control means functioning only when said motor vehicle is in a drive position.

4,884,058
COMBINATION INDICATOR APPARATUS FOR AUTOMOTIVE VEHICLE

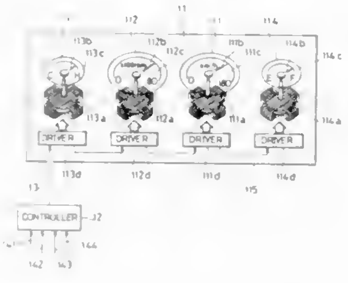
Kimihiko Ikeda, Shizuoka, Japan, assignor to Yazaki Corporation, Japan

Filed Sep. 9, 1988, Ser. No. 242,347

Claims priority, application Japan, Sep. 11, 1987, 62-226564

Int. Cl.⁴ B60Q *1/00;* **G01R** *1/00*

U.S. Cl. 340—461 4 Claims



1. A combination indicator apparatus for an automotive vehicle provided with a plurality of sensors for sensing various information related to the vehicle, comprising:

(a) an indicator assembly including:

(1) a plurality of analog information indicators of the same type, for indicating different information, independently; and

(2) a plurality of driver circuits of the same type, each provided with a digital shift register and each associated with one of said analog information indicators, for driving said analog information indicator independently through said shift register; and

(b) a single controller, disposed remote from said indicator assembly, for receiving various information sensed by the sensors and transmitting various digital drive data indicative of the received information to said driver circuits to indicate various information on said analog information indicators via said driver circuits, independently in serial time sharing mode.

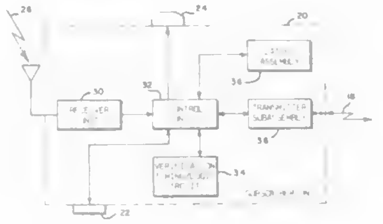
4,884,059
APPARATUS AND METHOD FOR REPORTING VERIFICATION TESTING OF A PERSONAL EMERGENCY RESPONSE SYSTEM

L. Dennis Shapiro, Chestnut Hill, Mass., assignor to Lifeline Systems, Inc., Watertown, Mass.

Filed Dec. 27, 1988, Ser. No. 190,470

Int. Cl.⁴ G08B *29/00*

U.S. Cl. 340—514 16 Claims



1. An apparatus for reporting verification testing of a personal emergency response system including a remote subscriber station capable of transmitting messages over a communications link to a central station, comprising:

portable activator means selectively operable for generating an activating signal at the subscriber station;

subscriber unit means disposed within the subscriber station and normally operative in response to said activating signal for transmitting one or more messages over the communications link to the central station;

latch assembly means coupled to said subscriber unit means and operative in response to said activating signal for indicating operational status of said subscriber unit means and said portable activator means in combination during a predetermined period of time; and

verification timing/logic means for clocking said predetermined period of time and operative in response to expiration of said predetermined period of time for effecting activation of said subscriber unit means to poll said latch assembly means to determine said operational status thereof and to transmit a system test message indicative of said operational status of said latch assembly means to the central station.

4,884,060
MULTI-STATE SELECTION SWITCH FOR A PERSONAL EMERGENCY RESPONSE SYSTEM

L. Dennis Shapiro, Chestnut Hill, Mass., assignor to Lifeline Systems, Inc., Watertown, Mass.

Filed Dec. 27, 1988, Ser. No. 290,469

Int. Cl.⁴ G08B *29/00*

U.S. Cl. 340—514 16 Claims

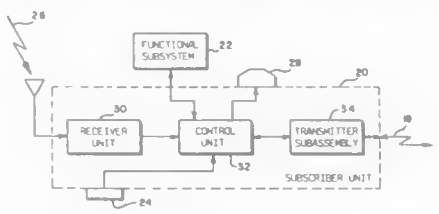
1. A personal emergency response system including a subscriber station capable of transmitting messages over a communications link to a central station, comprising:

portable activator means selectively operable for generating an activating signal;

functional subsystem means operative in response to said activating signal for performing a predetermined function;

subscriber unit means disposed within the subscriber station and normally operative in response to said activating signal for transmitting one or more messages over the communications link to the central station; and

multi-state selection means coupled to said subscriber unit means and selectively actuatable for selectively operating said subscriber unit means in HOME and AWAY modes;



operation of said subscriber unit means in said HOME mode causing said subscriber unit means to be normally operative in response to said activating signal to transmit one or more messages over the communications link to the central station; and

operation of said subscriber unit means in said AWAY mode causing activation of the functional subsystem means to perform the predetermined function.

4,884,061
CAPACITIVE APPARATUS TO MONITOR THE INTEGRITY OF A WALL

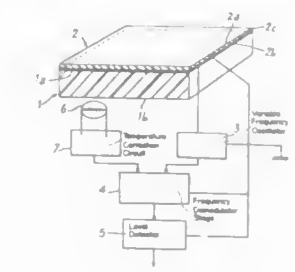
Christophe Genevois, Dijon, France, assignor to Axytel S.A., Dijon, France

Filed May 26, 1988, Ser. No. 199,174

Claims priority, application France, May 27, 1987, 87 07530

Int. Cl.⁴ G08B *13/22*

U.S. Cl. 340—550 11 Claims


2
2a
2c
2b
1a
1
1b
6
7
3
4
5
Temperature Correction Circuit
Variable Frequency Oscillator
Frequency Demodulator Stage
Level Detector

1. An apparatus for verifying the integrity of a wall having internal and external surfaces and adapted to cause an intervention when an aggressive act is committed against the wall, said apparatus comprising,

(a) a sensor mounted on one of the external or internal surfaces of the wall, said sensor being a condenser having a surface area substantially matching the shape of the wall and having a first plate connected to the wall and a second plate connected to ground;

(b) an electronic surveillance circuit on the internal side of the wall comprising a variable frequency oscillator having a control input connected to said first plate;

(c) means for detecting variation of frequency of an output signal of the variable frequency oscillator resulting from a variation in capacitance of the condenser, and for emitting a signal when an aggressive act on the wall causes a variation in surface area of the condenser which causes a variation in capacitance of the condenser.

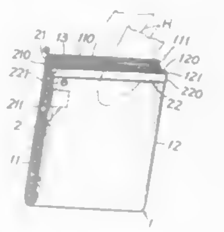
4,884,062
ALARMING WALLET ACTUATED BY A PICKPOCKET'S FINGERS

Wen-Tsung Lin, and Sheng-Chuan Chen, both of P.O. Box 30-443, Taipei, Taiwan

Filed Oct. 11, 1988, Ser. No. 256,312

Int. Cl.⁴ G08B *13/14*

U.S. Cl. 340—571 8 Claims



1. An alarming wallet comprising:

a wallet having two leaves foldable upon each other; and an alarming circuit including: an alarm switch having two contactors respectively formed on two outer surfaces of the two leaves of the wallet, a transistor connected to and actuated by said alarm switch, a sounding integrated circuit connected with a piezoelectric buzzer and connected to a power source through said transistor, whereby upon a withdrawal of said wallet from an owner's pocket, purse or handbag by a pickpocket, the pickpocket's fingers will touch said two contactors of said alarm switch to render said transistor conductive to trigger said sounding integrated circuit and said piezoelectric buzzer for alerting a possible theft of said wallet.

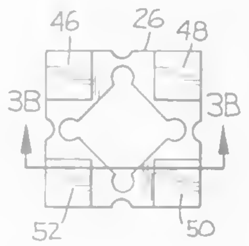
4,884,063
DUAL STATUS MAGNETIC MARKER HAVING MAGNETICALLY BIASABLE FLUX COLLECTORS FOR USE IN ELECTRONIC ARTICLE SURVEILLANCE SYSTEMS

Russell W. Church, Oakdale, and Eugene C. Heltemes, White Bear Lake, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 151,063, Feb. 1, 1988, Pat. No. 4,825,197. This application Jan. 17, 1989, Ser. No. 297,334

Int. Cl.⁴ G01B *13/18*

U.S. Cl. 340—572 5 Claims



1. A dual status marker for use in an electronic surveillance system in which there is applied a magnetic field, said marker comprising at least one center section formed of a low coercive force, high permeability material, flux collectors proximate to each end of each said center section, and means associated with said flux collectors capable of being remanently magnetized wherein when said means is unmagnetized said center section and associated flux collectors in concert respond with a characteristic signal when subjected to a said applied field, and when said means is magnetized, localized fields result which bias said certain flux collectors and results in an altered response of the marker to said applied field.

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4,884,064
INTRUDER DETECTION AND CONTROL APPARATUS

Adrian P. Meehan, Uckfield, England, assignor to Rentokil Limited, West Sussex, England

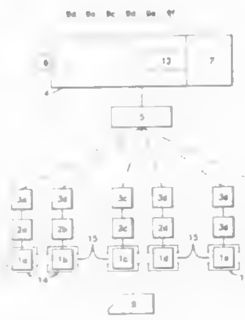
PCT No. PCT/GB86/00493, § 371 Date Apr. 16, 1987, § 102(e) Date Apr. 16, 1987, PCT Pub. No. WO87/01011, PCT Pub. Date Feb. 26, 1987

PCT Filed Aug. 19, 1986, Ser. No. 52,738

Claims priority, application United Kingdom, Aug. 20, 1985, 8520769

Int. Cl.⁴ G08B *23/00*

U.S. Cl. 340—573 **16 Claims**



1. Apparatus for detecting whether or not free-ranging rodent pests are present in an area under surveillance, which apparatus is free from means providing an attractant material and comprises a plurality of sensors distributed over the said area, each sensor having associated therewith an enclosure or channel which a rodent can enter and being capable of sensing whether or not a rodent is present in the enclosure or channel associated therewith, and an indicating means for indicating whether or not a rodent has been sensed by any of the sensors, the indicating means being operatively coupled to each of the sensors and each sensor having associated therewith signaling means for signaling to the indicating means when a rodent has been sensed by that sensor, and the indicating means including recording means and being capable of recording and indicating the fact that a rodent has been sensed.

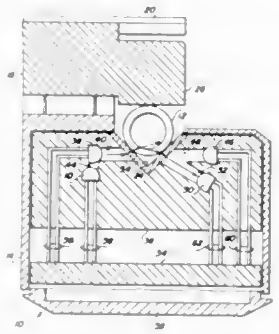
4,884,065
MONITOR FOR DETECTING TUBE POSITION AND AIR BUBBLES IN TUBE

Ronald J. Crouse, McKinney; Norris A. Lauer, Mesquite, and David A. Pinto, Frisco, all of Tex., assignors to Pacesetter Infusion, Ltd., Sylmar, Calif.

Filed Jun. 13, 1988, Ser. No. 206,232

Int. Cl.⁴ G08B *17/10*

U.S. Cl. 340—632 **19 Claims**



1. A device for detecting the presence of air in hollow cylindrical tubing, comprising:

means for mounting a plurality of components therein, said mounting means including a recessed groove therein, said recessed groove for receiving a portion of the tubing;

a light source located in said mounting means on one side of said recessed groove, light from said light source being directed onto said tubing when the tubing is located in said recessed groove;

a tube/no tube light sensor located in said mounting means on the other side of said recessed groove from said light source, said tube/no tube light sensor receiving light from said light source whenever tubing is not located in said recessed groove, said tube/no tube light sensor receiving substantially no light from said light source whenever tubing is located in said recessed groove; and

a liquid in tube light sensor located in said mounting means, light from said light source which enters tubing located in said recessed groove being reflected off the inside of the tubing and directed onto said liquid in tube light sensor whenever air is contained in the tubing, substantially no light entering tubing located in said recessed groove being reflected off the inside of the tubing and being directed onto said liquid in tube light sensor whenever fluid is contained in the tubing, light entering tubing located in said recessed groove instead entering the fluid contained in the tubing.

4,884,066
DETERIORATION DETECTOR SYSTEM FOR CATALYST IN USE FOR EMISSION GAS PURIFIER

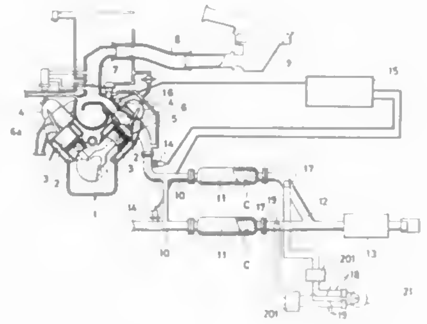
Shigeru Miyata, and Toshiki Sawada, both of Nagoya, Japan, assignors to NGK Spark Plug Co., Ltd., Nagoya, Japan

Filed Nov. 17, 1987, Ser. No. 121,455

Claims priority, application Japan, Nov. 20, 1986, 61-179042[U]

Int. Cl.⁴ G08B *17/10*

U.S. Cl. 340—633 **4 Claims**



1. A deterioration detector system for catalyst used in an emission gas purifier comprising:

(a) a passageway through which exhaust gas from an internal combustion engine passes in contact with a catalyst to facilitate reducing and oxidizing reactions among gaseous components, hydrocarbon, carbon monoxide and nitrogen oxide;

(b) a sensor placed in said passageway at a position downstream of said catalyst against a flow of said exhaust gas so as to generate an output substantially in direct proportion to air-fuel ratio of said exhaust gas, said sensor producing said output, the magnitude of which changes in a relationship with that of theoretical air-fuel ratio such that the greater the deterioration of said catalyst, the more removed the output of said sensor is from said theoretical air-fuel ratio; and

(c) an annunciator arranged including a switching module (210) to be activated when said output level of said sensor reaches at a predetermined level.

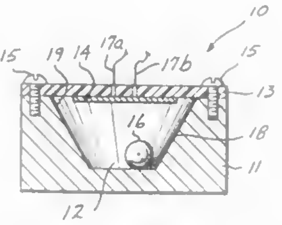
4,884,067
MOTION AND POSITION SENSING ALARM

Ken Nordholm, and Bud Eyers, both of Vancouver, Canada, assignors to Talkie Tooter (Canada) Ltd., Vancouver, Canada

Filed Aug. 13, 1987, Ser. No. 84,959

Int. Cl.⁴ G08B *19/00*

U.S. Cl. 340—686 **43 Claims**



1. A motion and position sensing switch comprising:

an enclosure having a cavity;

a contact-making element resting in said cavity;

a plate having a conductive circuit thereon that caps said cavity;

said cavity having a conductive region near said plate, said plate and said conductive circuit being electrically isolated from said conductive region, wherein, when said enclosure pivots to a predetermined position about a horizontal axis, said contact-making element resting in said cavity moves to make contact between said conductive region and said conductive circuit; and,

said conductive circuit comprising first and second conductive areas separated by a nonconductive region such that when said contact-making element makes contact between said first conductive area and said conductive region of said cavity, said switch is in a first state and when said contact-making element makes contact between said second conductive area and said conductive region of said cavity, said switch is in a second state.

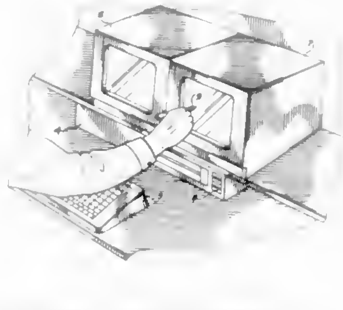
4,884,068
MULTIPLE DISPLAY SYSTEM

Stephen E. Matheny, 1049 Willow Grove, Altamonte Springs, Fla. 32701, and Gary W. Orwig, 2216 Conifer Ave., Winter Park, Fla. 32792

Filed Sep. 12, 1986, Ser. No. 906,801

Int. Cl.⁴ G09G *1/00*

U.S. Cl. 340—707 **12 Claims**



1. A multiple display system comprising:

a microcomputer having a mother board having a plurality of expansion slots therein and connected to a keyboard;

a plurality of display cards attached to said mother board and being operatively attached to each other;

a plurality of displays, one display being attached to each display card for operation thereby;

a synchronization generator card attached to one slot of said mother board for synchronizing said plurality of display cards;

a pointer device attached to said microcomputer for actuating each of said plurality of displays;

means for recognizing which display said pointer device is being used upon and to operate a plurality of displays with the pointer on any one of said displays; and

memory means for storing and retrieving analogue and digitized picture files and information and coordinate text on said stored analogue and digitized picture files, said memory means being coupled to said microcomputer having a plurality of display cards for displaying the stored analogue and coordinate digitized picture files and text.

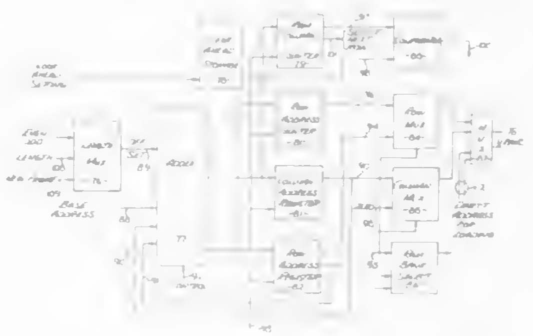
4,884,069
VIDEO APPARATUS EMPLOYING VRAMS

Tobin E. Farand, Mountain View, Calif., assignor to Apple Computer, Inc., Cupertino, Calif.

Filed Mar. 19, 1987, Ser. No. 27,847

Int. Cl.⁴ G06F *13/00*

U.S. Cl. 340—799 **12 Claims**



11. In a video apparatus for providing video data for a display when said apparatus is coupled to a computer which includes a central processing unit and a main memory, an improvement comprising:

a plurality of video random-access memories each of which includes a memory array which is addressed by a row address and a shift register which is addressed by a column address;

addressing means for providing said row address and column address for transfer of said video data directly from said memory array to said shift register;

detection means for providing a first signal prior to the end of the shifting of the data from said shift registers, said first signal initiating a time sequence for transfer of said video data from said memory arrays directly to said shift registers in said video random-access memories, thereby permitting either a non-integer or integer number of scan lines per row of said memory array, said detection means provides said first signal when said shift register has a certain number of bits of data remaining and said certain number of bit is programmable; and

control means for providing second signals to said video random-access memories when said first signal is received from said detection means;

said video random-access memories being addressed by said addressing means.

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4,884,070

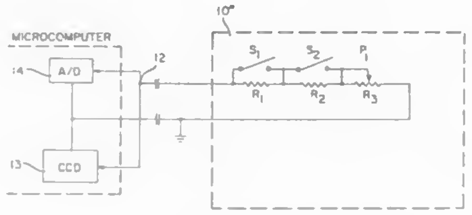
METHOD AND APPARATUS FOR MULTIPLEXING SWITCH SIGNALS

Blake Hannaford, South Pasadena, Calif., assignor to California Institute of Technology, Pasadena, Calif.

Filed Apr. 4, 1988, Ser. No. 176,871

Int. Cl.^{4} H04Q *9/00*

U.S. Cl. 340—825.78 4 Claims



1. A system for multiplexing switch state signals from a device to a utilization system over a single conductor, comprising a series resistor network at said device, said network having n weighted resistors in series in which the resistances of said resistors are functions of different powers of the same base, each resistor except one having a switch in parallel therewith for bypassing it when the switch is closed, a source of constant current with internal resistance connected by said single conductor between circuit ground and one terminal of said series resistor network, a connection between a second terminal of said series resistor network opposite said one terminal and said circuit ground, and means connected to a node between said single conductor and said utilization device for converting the analog voltage at said device to a digital representation of the state of said switches in parallel with said resistors, said one resistor without a switch parallel therewith comprising a potentiometer connected in series with other ones of said n weighted resistors, said potentiometer being adjustable between a maximum resistance that is a function of the lowest power of the same base and a minimum resistance equal to zero.

4,884,071

WELLBORE TOOL WITH HALL EFFECT COUPLING

Mig A. Howard, Houston, Tex., assignor to Hughes Tool Company, Houston, Tex.

Continuation-in-part of Ser. No. 1,286, Jan. 8, 1987, Pat. No. 4,788,544. This application Nov. 28, 1988, Ser. No. 276,722

The portion of the term of this patent subsequent to Nov. 29, 2005, has been disclaimed.

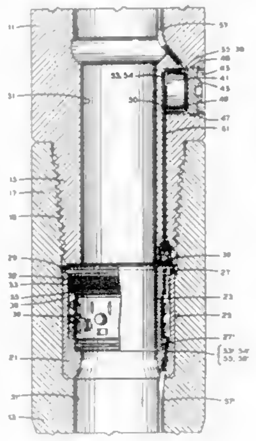
Int. Cl.^{4} G01V *1/00*

U.S. Cl. 340—854 10 Claims

1. An improved wellbore tool for coupling to a drill string at a threaded junction and adapted for use in a wellbore during drilling, comprising:

a sensor disposed in said wellbore tool for sensing a downhole condition and producing a data signal corresponding thereto; and

a Hall Effect coupling transmitter means, carried by the wellbore tool and coupled to said sensor, for generating a magnetic field in response to said data signal provided by said sensor and transmitting data from said Hall Effect coupling transmitter means to a Hall Effect coupling receiver carried by said drill string and disposed across said threaded junction from said wellbore tool, wherein data is transmitted across said threaded junction without requiring an electrical connection at said threaded junction.



4,884,072

DEVICE FOR PHOTOGRAPHIC MONITORING OF CROSS-ROADS

Heinrich Horsch, Pfaffenberger Weg 224, 5650 Solingen 1, Fed. Rep. of Germany

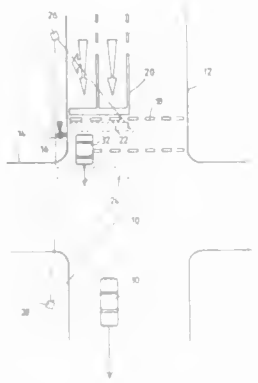
PCT No. PCT/EP86/00467, § 371 Date Jun. 8, 1987, § 102(e) Date Jun. 8, 1987, PCT Pub. No. WO87/01847, PCT Pub. Date Mar. 26, 1987

PCT Filed Aug. 7, 1986, Ser. No. 50,769

Claims priority, application Fed. Rep. of Germany, Sep. 12, 1985, 3532527

Int. Cl.^{4} G01D *3/00*

U.S. Cl. 340—937 4 Claims



1. Device for photographic monitoring of an intersection controlled by traffic lights comprising:

(a) a photographic camera the field of view of which covers the intersection,

(b) a first sensor which responds to a vehicle moving into the intersection beyond a first position and which provides a sensor signal,

(c) means for generating a stop phase signal depending on the traffic lights being switched to stop phase,

(d) a camera-triggering device, which is arranged to be controlled by triggering signals to trigger the photographic camera,

(e) signal processing means to which the sensor signal and the stop phase signal are applied for providing a first triggering signal for triggering a first exposure of the camera, when a sensor signal appears during the duration of the stop phase signal,

(f) and a second sensor arranged to apply a second sensor signal to the signal processing means to provide a second triggering signal delayed with respect to the first triggering signal for triggering a second exposure,

(g) the second sensor is located within the intersection and responds to the passage of the vehicles through a second position located in straight direction behind the first position.

4,884,073

INCREASED SENSITIVITY OPTICAL KEYBOARD

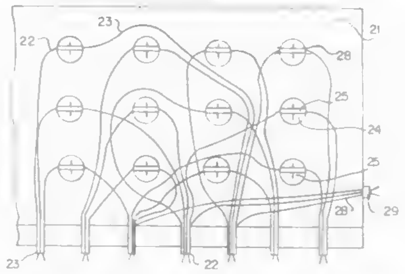
Alain Souloumiac, 29, rue du General Brunet, F-75019 Paris, France

Filed Dec. 23, 1987, Ser. No. 143,162

Claims priority, application France, Apr. 25, 1986, 86 06067

Int. Cl.^{4} H03M *11/00*

U.S. Cl. 341—31 10 Claims



1. A matrix-scanning optical keyboard comprising a logical matrix of optical paths between light inlets and light outlets, with keys being disposed on each optical path connecting an inlet to an outlet in such a manner that depressing a key causes a change which is detectable by a scanning driver circuit connected to said light inlets and outlets in order to register such changes affecting each inlet-to-outlet coupling by cyclically injecting an interrogation signal into each inlet in turn and by inspecting each outlet for the presence of possible modifications thereat opto-electronic transducers connected to the scanning driver circuit and photodetectors at the outlets, said keyboard being characterized by the fact that it includes means which are capable for a given emission level of increasing the sensitivity of said scanning driver circuit to light arriving at said outlets.

4,884,074

METHOD AND APPARATUS FOR ENCODING AND DECODING BINARY INFORMATION

Patrick Nourry, Echirolles; Jacques Husser, Eybens, and Pierre-Yves Thoulon, Grenoble, all of France, assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Aug. 28, 1987, Ser. No. 90,499

Claims priority, application France, Oct. 15, 1986, 8614572

Int. Cl.^{4} H03M *5/12*

U.S. Cl. 341—70 1 Claim

1. A method for encoding and decoding successive information trains coded according to the Manchester code, that is a serial code in which each information bit is transmitted as the succession during a determined time interval of a first level and a second level for a "1" and the succession during the same time interval of a second level and a first level for a "0," wherein, during the encoding, each information train is preceded by a heading having a duration of two determined time intervals during which a code violation is carried out, characterized in that:

during a duration longer than a determined time interval, the coded signal is at the same level, and wherein, at the decoding, this longer time duration is detected for finding said heading, said violation being comprised of a first level during a time interval followed with a Manchester "1" during the following time interval, whereby said coded signal is at the first level during at least one and a half time intervals.

4,884,075

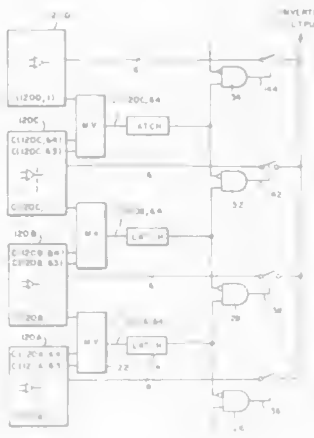
DECODING CIRCUIT FOR FLASH-TYPE ANALOG-TO-DIGITAL CONVERTER

Christopher W. Mangelsdorf, Reading, Mass., assignor to Analog Devices, Inc., Norwood, Mass.

Filed May 19, 1988, Ser. No. 196,035

Int. Cl.^{4} H03M *1/36*

U.S. Cl. 341—159 11 Claims



1. A parallel type analog-to-digital converter for converting an input analog signal to a corresponding digital form, comprising:

a. a voltage divider providing a plurality of N voltage divider taps;

b. a plurality of comparators, each comparator having first and second inputs and an output;

c. one of the first and second inputs of each comparator being connected to a respective one of the voltage divider taps and the other of the comparator inputs being connected to receive the input analog signal; and

d. means for generating for each comparator "n", where n ranges from 0 to N, a corrected comparator output C'(n) in response to the output C(n) of comparator n and the outputs of comparators n+1 and n−1, where comparators n−1, n and n+1 are connected to consecutive electrically adjacent taps of the voltage divider, such that

$$C'(n) = C(n-1)\,C(n) + C(n)\,C(n+1) + C(n-1)\,C(n+1)$$

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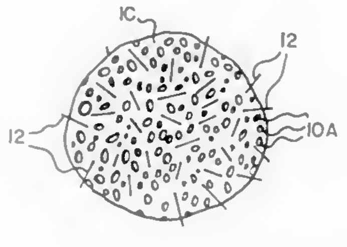
4,884,076
FOAM SUPPORTED ELECTROMAGNETIC ENERGY REFLECTING DEVICE

Richard F. Schneeberger, Snyder, and Charles K. Akers, Williamsville, both of N.Y., assignors to Calspan Corporation, Buffalo, N.Y.

Filed Sep. 29, 1982, Ser. No. 427,087

Int. Cl.⁴ G01S *7/36*

U.S. Cl. 342—5 **9 Claims**



1. An electromagnetic energy reflecting decoy comprising a solidified foam mass of a volume similar to that of an object to be simulated and having a multitude of discrete electrically conducting elements embedded therein for reflecting energy in the radar frequency ranges, said elements having a length approximately equal to one-half the wave length of the electromagnetic energy to be reflected thereby and being dispersed throughout said mass in an approximately uniform distribution.

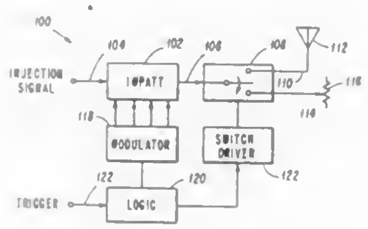
4,884,077
WEATHER RADAR TEMPERATURE CONTROLLED IMPATT DIODES CIRCUIT AND METHOD OF OPERATION

Don L. Landt, Marion, Iowa, assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Jan. 27, 1988, Ser. No. 148,747

Int. Cl.⁴ H04B *6/66*

U.S. Cl. 342—202 **2 Claims**



1. A circuit for generating a pulsed RF signal comprising:

a. means for generating an RF signal;

b. means for switching the RF signal from an antenna to a load;

c. means for manipulating said means for switching so that said means for generating an RF signal is able to generate a pulsed RF signal having a plurality of intervals therein during which no RF signal is generated, the pulsed signal emanating from the antenna by switching the RF signal from the antenna to the load, while providing for heating of said means for generating an RF signal during said plurality of intervals.

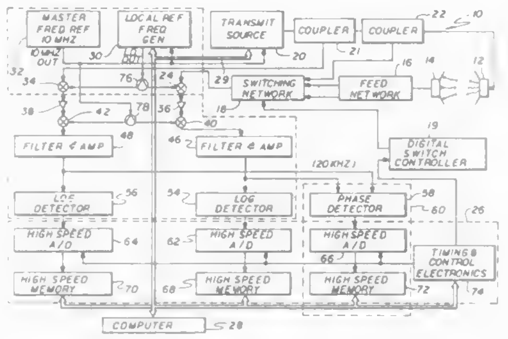
4,884,078
ANTENNA TEST AND MEASUREMENT SYSTEM

Theodore S. Fishkin, Lawndale; Mark Skidmore, Long Beach, and Peter Dimitrijevic, Redondo Beach, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Aug. 1, 1986, Ser. No. 891,828

Int. Cl.⁴ H01Q *3/00*

U.S. Cl. 342—360 **3 Claims**



1. An antenna test and measurement system for use in far field and near field antenna test ranges comprising:

a transmit antenna;

means for providing a test signal to said transmit antenna and initiating the transmission thereof;

a receive antenna adapted to receive said test signal transmitted by said transmit antenna;

means for detecting the amplitude of the received test signal;

an open loop phase detector for measuring the phase of the received test signal relative to a reference signal; and

means for detecting the amplitude of the reference signal.

4,884,079
IMAGE FORMING APPARATUS AND DRIVING METHOD THEREFOR

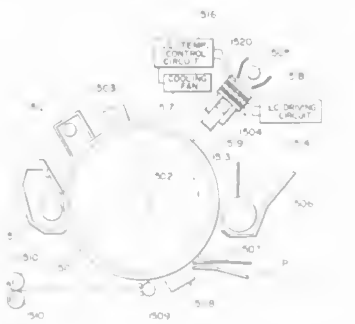
Hiroshi Inoue, Kawasaki; Satoshi Omata, Tokyo; Yoshiyuki Osada, Yokosuka; Yutaka Inoue, Urawa; Tadashi Yamakawa, Yokohama, and Hiroshi Satomura, Hatogaya, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 724,690, Apr. 18, 1985, abandoned. This application Jan. 19, 1989, Ser. No. 300,698

Claims priority, application Japan, Apr. 25, 1984, 59-83286; May 8, 1984, 59-91466; May 14, 1984, 59-96052

Int. Cl.⁴ G01D *15/14;* **G02F** *1/13*

U.S. Cl. 346—1.1 **39 Claims**



1. In an image forming apparatus comprising an exposure light source, a printer head which comprises a plurality of microshutters arranged in at least one line and each controlling the transmission or interruption of light from said exposure light source, and an image bearing member so disposed to be irradiated with light signals transmitted through the printer head; the improvement wherein

each of said plurality of microshutters is connected to one of a plurality of thin film transistors,

said plurality of thin film transistors are divided into a plurality of groups each comprising a prescribed number of thin film transistors which are connected in common to one source line and are connected separately to different gate lines; and

each of said different gate lines is commonly connected to a plurality of thin film transistors each belonging to one of said plurality of groups.

4,884,080
COLOR IMAGE PRINTING APPARATUS

Shuzo Hirahara, Yokohama; Hitoshi Nagato; Kazuhiko Higuchi, both of Kawasaki; Kiyoshi Yamada, Chigasaki; Tadayoshi Ohno, Kawasaki; Tsutomu Kanai, Yokohama, and Toshikazu Matsui, Tokyo, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

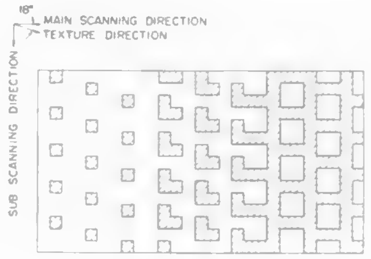
Continuation-in-part of Ser. No. 821,954, Jan. 24, 1986, Pat. No. 4,724,446. This application Jun. 2, 1987, Ser. No. 56,763

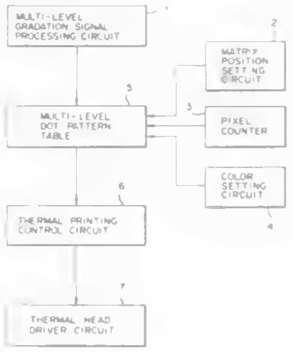
Claims priority, application Japan, Jan. 31, 1985, 60-16768; Jun. 28, 1985, 60-142108; Sep. 24, 1985, 60-208823; Jun. 2, 1986, 61-127616

The portion of the term of this patent subsequent to Feb. 9, 2005, has been disclaimed.

Int. Cl.⁴ G01D *15/10;* **H04N** *1/23;* **G03C** *5/00*

U.S. Cl. 346—46 **9 Claims**




MULTI-LEVEL GRADATION SIGNAL PROCESSING CIRCUIT
2
MATRIX POSITION SETTING CIRCUIT
5
MULTI-LEVEL DOT PATTERN TABLE
3
PIXEL COUNTER
6
COLOR SETTING CIRCUIT
4
THERMAL PRINTING CONTROL CIRCUIT
7
THERMAL HEAD DRIVER CIRCUIT

1. A color image printing apparatus comprising:

dot printing means for printing dots of at least two colors on a printing medium; and

control means for controlling said dot printing means such that only a predetermined dot or dots in accordance with a density of each pixel in units of colors in a dot matrix corresponding to one pixel are printed,

wherein positions of printed dots in the dot matrix are determined such that angles of two texture directions of the printed dots which are generated upon printing of pixels arranged in a two-dimensional manner are different for each color.

4,884,081
MAGNETIC INK AND METHOD OF PRINTING

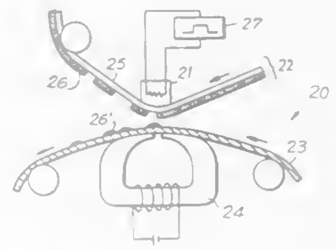
Hitoshi Fukushima; Katsumori Takei; Kohei Iwamoto, and Hiroto Nakamura, all of Nagano, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Filed May 27, 1988, Ser. No. 199,482

Claims priority, application Japan, May 29, 1987, 62-133871

Int. Cl.⁴ G01D *15/00*

U.S. Cl. 346—74.6 **20 Claims**



1. A heat-fusible magnetic ink, comprising:

a heat-fusible binder including magnetic particles dispersed in the binder; and

an effective amount of surface tension control material dispersed in the binder for lowering the surface tension of the ink in its molten state to less than about 20 dynes/cm.

4,884,082
COLOR IMAGE RECORDING APPARATUS

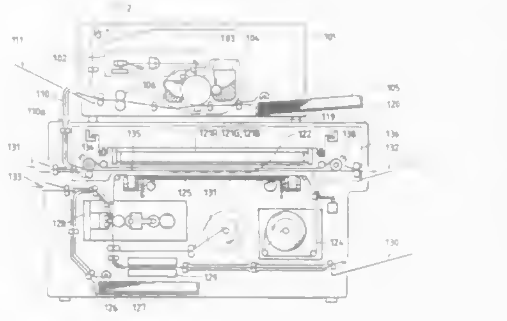
Takakuni Sonoda; Kazunori Tanabe; Morikazu Iwase; Kazuo Sangyoji, all of Nagoya, and Tokunori Kato, Ichinomiya, all of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Apr. 21, 1988, Ser. No. 184,576

Claims priority, application Japan, Apr. 24, 1987, 62-102182; Apr. 28, 1987, 62-105843; Jnl. 17, 1987, 62-110376[U]; Jnl. 24, 1987, 62-186138; Aug. 26, 1987, 62-212329; Sep. 18, 1987, 62-235973

Int. Cl.⁴ G01D *15/00*

U.S. Cl. 346—105 **11 Claims**



1. An image recording apparatus comprising:

a monochromatic printer for producing mask members;

a color printer for exposing a photosensitive recording medium to light through said mask members to form color latent images on the photosensitive recording medium and developing the color latent images into a visibile color image; and

means for introducing the mask members from said monochromatic printer selectively into said color printer.

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4,884,083

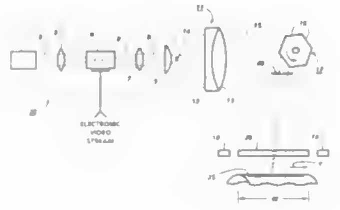
PRINTER COMPENSATED FOR VIBRATION-GENERATED SCAN LINE ERRORS

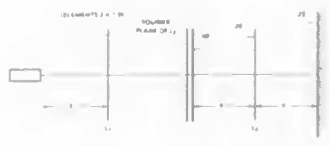
Robert P. Loce, Rochester, and William L. Lama, Webster, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Oct. 3, 1988, Ser. No. 252,618

Int. Cl.⁴ G01D *15/14;* G02B *27/42*

U.S. Cl. 346—108 4 Claims





1. A laser printing system comprising means for generating a beam of high intensity light, a moving recording medium sensitive to said high intensity light, optical means comprising a pluality of optical elements interposed between said light generating means and said recording medium and including a cylindrical lens positioned in proximity to said recording media, for imaging said beam to a spot at the surface of said medium, modulating means located between said light generating means and a scanner device for modulating the light beam in accordance with the information content of electrical signals, means coupled to said modulating means for deflecting said modulated light beam to a predetermined position on said scanner, said scanner device comprising a multi-faceted polygon located in the path of said modulated beam between said beam generating means and said recording medium and having reflective facets for reflecting the beam incident thereon onto said medium, means for rotating said polygon such that the reflected light is scanned in successive traces in any direction across said medium, said system further including an amplitude transmittance spatial filter positioned in the first Fourier plane of said cylindrical lens.

4,884,084

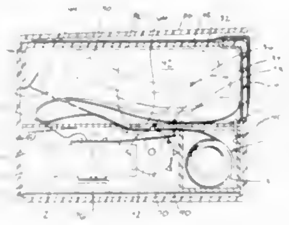
CHART RECORDER

Bart E. Greenhut, Beverly Hills, Calif., assignor to Leon D. Rosen, Los Angeles, Calif.

Filed May 19, 1988, Ser. No. 196,002

Int. Cl.⁴ G01D *15/24*

U.S. Cl. 346—136 18 Claims



1. In a chart recorder which includes a housing, a strip of paper or other markable material lying in said housing, a marking station in said housing for establishing a mark on said strip, and a transport in said housing for pulling said strip in a downpath direction slowly past said marking station, the improvement wherein:

said strip includes a supply roll with a leader;

said housing includes an opening and a substantially closed storage space lying downpath of said transport for receiving said strip after it has been marked, said storage space being devoid of a roll for rolling up said strip, whereby to allow said strip to be stored in loose folds;

said leader of said strip has an outer end extending through said opening and held to said housing, whereby the stored strip can be removed by pulling it out of said housing through said opening.

4,884,085

RECORDER HAVING RECORD MEDIUM FEED AND PRESS ROLLERS AND LOCKABLE MEANS FOR URGING THE PRESS ROLLERS TO AND FROM THE FEED ROLLER

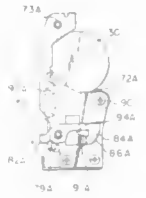
Masakazu Ozawa, Ebina; Kunitaka Ozawa, Isehara; Katsunori Hatanaka, Yokohama; Tetsuo Suzuki, Hiratsuka; Tetsuzo Mori, Hiratsuka; Tadashi Shiina, Hiratsuka, and Ryuichi Ebinuna, Atsugi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

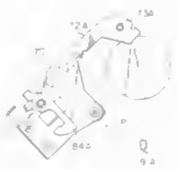
Continuation of Ser. No. 3,050, Jan. 13, 1987, abandoned, which is a division of Ser. No. 733,389, May 13, 1985, Pat. No. 4,651,173. This application Jan. 19, 1989, Ser. No. 300,243

Claims priority, application Japan, May 19, 1984, 59-101508; May 19, 1984, 59-101509; May 19, 1984, 59-101510; May 19, 1984, 59-101511; May 19, 1984, 59-101512

Int. Cl.⁴ G01D *15/28;* B41J *3/04*

U.S. Cl. 346—136 18 Claims





1. A recorder having a feed roller and a press roller for pinching therebetween a continuous form as a record medium and feeding the continuous form to a record position of recording means as said feed roller is rotated, the recorder comprising:

press roller support means pivotable around a pivot point displaced from said press roller for urging said press roller to said feed roller and from said feed roller;

lock means having a lock member for mechanically locking said press roller support means at a pressing position; and

adjust means for adjusting the pressing position of said press roller to said feed roller by adjustments of said pivot point and the position of said lock member, respectively.

4,884,086

METHOD OF ALIGNMENT OF LED CHIPS

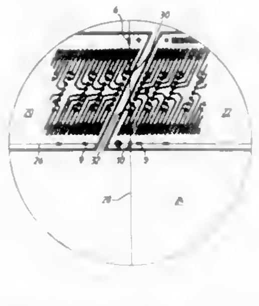
Richard A. Kirk; Peter R. Lee; Peter B. Hart, all of Northampton; George A. A. Chilton, Buckinghamshire, and Alan J. Cobb, Northampton, all of England, assignors to Plessey Overseas Limited, Ilford, England

Filed Sep. 30, 1988, Ser. No. 251,498

Claims priority, application United Kingdom, Sep. 30, 1987, 8722945

Int. Cl.⁴ G01D *15/00*

U.S. Cl. 346—155 7 Claims



1. A method of alignment of monolithic chips of light emitting diodes to form part of a print head, the method comprising placing microscopically visible alignment marks on each chip in predetermined positions relative to the diode array carried on the chip, positioning two chips adjacent to one another in desired relative positions, and viewing the two chips through a microscope having a graticule, whereby the alignment marks of the two chips are positioned on the cross wires of the graticule whereby the chips are aligned with their respective diode arrays in a correct spacing and orientation relative to one another.

4,884,087

PHOTOGRAPHIC FILM PACKAGE AND METHOD OF MAKING THE SAME

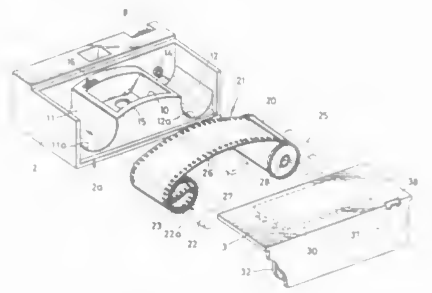
Mitsuyoshi Mochida, Tokyo; Tokuo Maekawa, Kanagawa; Hisashi Takei, Kanagawa; Yasuo Matsumoto, Kanagawa; Hiroshi Ohmura, Tokyo; Shigeru Sugimoto, Kanagawa; Seimei Ushiro, Tokyo; Seiji Asano, Saitama, and Toshio Yoshida, Ibaragi, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Aug. 20, 1987, Ser. No. 87,388

Claims priority, application Japan, Aug. 20, 1986, 61-126942[U]; Oct. 17, 1986, 61–246977; Oct. 17, 1986, 61–246978; Jan. 19, 1987, 62–5694[U] Jan. 19, 1987, 62–5698[U]; Feb. 14, 1987, 62–32185

Int. Cl.⁴ G03B *1/10, 1/66, 17/02, 17/28*

U.S. Cl. 354—75 15 Claims



1. A lens-fitted photographic film package having an externally operable member for effecting an exposure, comprising:

a light-tight film casing which must be destroyed to open the same, having an opening through which said exposure is made when said externally operable member is operated;

an unexposed rolled film disposed on one side of said opening in said light-tight casing;

a removable light-tight film container having a film winding spool therein disposed on the opposite side of said opening in said light-tight casing from said rolled film, one end of said rolled film being attached to said film winding spool;

means for winding said rolled film into said light-tight film container and around said film winding spool; and

winding control means responsive to operation of said externally operable member for allowing said film winding spool to rotate so as to enable said rolled film to be advanced by only one frame after every exposure; said winding control means including:

a sprocket wheel driven by movement of said rolled film; and

a frame counter driven by said sprocket wheel, said frame counter being provided with indications designating a series of frame numbers and means for disabling said winding control means responsive to said frame counter indicating there remains on said unexposed film no film frame capable of being exposed.

4,884,088

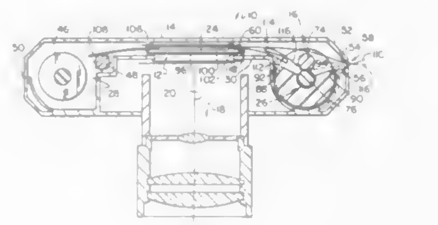
KIT FOR CONVERTING 35 MM CAMERA FOR USE WITH SELF-DEVELOPING TRANSPARENCY FILM

Donald E. Mauchan, Marlboro, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Nov. 21, 1988, Ser. No. 274,504

Int. Cl.⁴ G03B *17/50*

U.S. Cl. 354—86 6 Claims



1. A kit for converting a conventional 35 mm camera for use with self-developing film, said kit comprising:

a substitute film loading door for replacing the film loading door of the conventional camera, said substitute film loading door having means cooperable with a camera surface for defining an egress through which a self-developing film unit is adapted to be advanced subsequent to its photographic exposure; and

a spread roller assembly, said assembly including a housing having a generally cylindrical configuration approximating that of a conventional 35 mm film cassette and being readily received within a film cassette supply chamber in the camera, a pair of elongate rollers rotatably supported in superposition by said housing so as to define a gap therebetween, and locating means on said housing, said locating means being constructed to be received by a recess in a wall of the film cassette supply chamber for insuring the proper positioning of the spread roller assembly within the film cassette supply chamber.

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4,884,089

PSEUDO FORMAT CAMERA

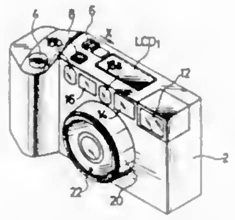
Nobuyuki Taniguchi; Yoshiaki Hata, both of Nishinomiya; Yoshinobu Kudo, Sakai; Manabu Inoue, Kobe; Takeo Hoda, Kawachinagano, and Hiroshi Ueda, Toyokawa, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 895,826, Aug. 12, 1986, Pat. No. 4,780,735. This application Jun. 16, 1988, Ser. No. 207,288

Claims priority, application Japan, Aug. 29, 1985, 60-190520; Aug. 29, 1985, 60-190521; Aug. 29, 1985, 60-190522; Aug. 29, 1985, 60-190523; Aug. 29, 1985, 60-255550; Aug. 29, 1985, 60-286732; Aug. 30, 1985, 60-192621; Sep. 10, 1985, 60-201096; Sep. 10, 1985, 60-201095

Int. Cl.⁴ G03B *13/12*

U.S. Cl. 354—222 5 Claims



1. A pseudo format camera comprising:
manually operated means;
means for outputting a signal in response to the operation of said manually operated means;
a register whose content is changed in response to the signal outputted by said outputting means;
means for selecting, in accordance with the content of said register, a real focal length photographing mode in which a normal range in a frame of a film will be printed on a photographing paper and a pseudo focal length photographing mode in which a range narrower than the normal range in a frame of the film will be printed on a photographing paper;
first means, responsive to the content of the register, for displaying a mark corresponding to the selected mode on the outer surface of the camera; and
second means, responsive to the content of the register, for displaying in a viewfinder of the camera, a photographing range which will be printed on the photographing paper.

4,884,090

PIEZOELECTRIC ACTUATING DEVICE

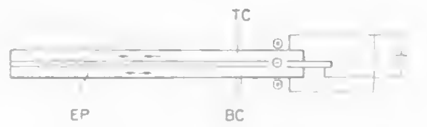
Yoshihiro Tanaka; Hiroshi Ootsuka, and Kob Hayama, all of Osaka, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 172,599, Mar. 24, 1988, abandoned. This application Mar. 22, 1989, Ser. No. 327,393

Claims priority, application Japan, Mar. 25, 1987, 62-72751

Int. Cl.⁴ G03B *7/08;* H01L *41/08*

U.S. Cl. 354—234.1 3 Claims



1. A piezo-electric actuating device, comprising:
a piezo-electric element including a first piezo-electric member which is contracted when a first voltage of a first polarity is applied thereacross and which is elongated when a second voltage of a second polarity opposite to the first polarity is applied thereacross, and piezo-electric element further including a second piezo-electric member which is contracted when the second voltage is applied thereacross and which is elongated when the first voltage is applied thereacross, said piezo-electric member being deformed by application of the first and second voltage thereto;
a voltage applying means for alternatively applying the first and second voltages to said piezo-electric element; and
a driven member connected to be actuated by said piezo-electric element upon deformation of said piezo-electric element such that when the first voltage is applied to said piezo-electric element, said driven member is moved in a first direction, and when the second voltage is applied to said piezo-electric element, said driven member is moved in a second direction opposite to the first direction;
said first and second piezo-electric members having a higher yield strength against deformation thereof by application of the first voltage than by application of the second voltage.

4,884,091

EXPOSURE CONTROL DEVICE IN A CAMERA

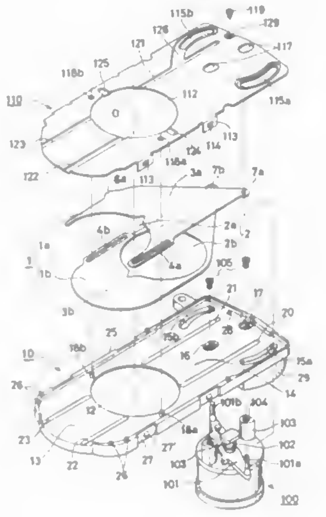
Kazuhito Nakagomi, Kofu, Japan, assignor to Nippon Seimitsu Kogyo Kabushiki Kaisha, Kofu, Japan

Filed Jul. 19, 1988, Ser. No. 221,288

Claims priority, application Japan, Oct. 8, 1987, 62-154453[U]; Nov. 4, 1987, 62-168845[U]; Nov. 10, 1987, 62-171468[U]; Nov. 10, 1987, 62-171471[U]; Nov. 10, 1987, 62-171472[U]; Nov. 10, 1987, 62-171473[U]; Nov. 10, 1987, 62-171474[U]; Nov. 19, 1987, 62-177034[U]; Nov. 19, 1987, 62-177035[U]; Nov. 30, 1987, 62-183824[U]

Int. Cl.⁴ G03B *9/02*

U.S. Cl. 354—271.1 15 Claims



1. An exposure control device in a camera, which comprises an iris composed of a pair of iris diaphragms each having an exposure space, which define an iris aperture and each have a guide slot and a pin hole; a driving motor which is driven in accordance with brightness of a subject to be taken as an image; a rocking lever mounted on said driving motor and provided on its both end portions with driving pins which are in engagement with said pin holes formed in said iris diaphragms; and a base plate having an exposure opening about an optical axis and guide pins slidably fitted one into each guide slot of the iris diaphragms so as to permit the iris diaphragms to move in substantially opposite directions with said rocking lever being, operated by said driving motor, said base plate being provided on its upper surface with guide ribs which come into contact with at least one of said iris diaphragms.

4,884,092

PHOTOGRAPHIC CAMERA

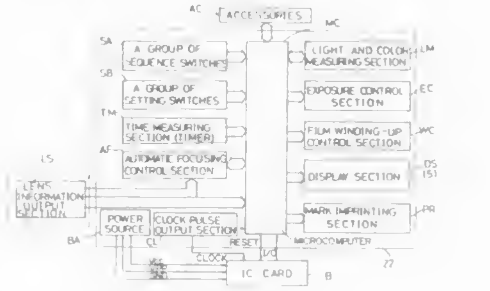
Manabu Inoue, Kobe; Nobuyuki Taniguchi; Yoshiaki Hata, both of Nishinomiya; Takeo Hoda, Kawachinagano; Yoshinobu Kudo, Sakai, and Hiroshi Ueda, Toyokawa, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 161,468, Feb. 26, 1988, abandoned, which is a division of Ser. No. 21,659, Mar. 4, 1987, Pat. No. 4,728,978. This application Oct. 18, 1988, Ser. No. 259,334

Claims priority, application Japan, Mar. 7, 1986, 61-50871; Mar. 7, 1986, 61-50872; Mar. 7, 1986, 61-50873; Mar. 7, 1986, 61-50874; Mar. 10, 1986, 61-52170

Int. Cl.⁴ G03B *17/24*

U.S. Cl. 354—289.1 11 Claims


AC
ACCESSORIES
MC
SA
A GROUP OF SEQUENCE SWITCHES
SB
A GROUP OF SETTING SWITCHES
TM
TIME MEASURING SECTION (TIMER)
AF
AUTOMATE FOCUSING CONTROL SECTION
LS
LENS INFORMATION OUTPUT SECTION
LIGHT AND COLOR MEASURING SECTION
LM
EXPOSURE CONTROL SECTION
EC
FILM WINDING-UP CONTROL SECTION
WC
DISPLAY SECTION
DS
(S)
MARK IMPRINTING SECTION
PR
POWER SOURCE
CLOCK PULSE OUTPUT SECTION
BA
CL
RESET
MICROCOMPUTER
CLOCK
I/O
IC CARD
B
27

1. A photographic camera comprising:
an attaching portion adapted for detachably attaching an information medium including semiconductor memory means capable of reading-out/writing-in, a circuit for communicating data between the semiconductor memory means and the camera to which the medium is loaded and a data exchange terminal for the communication data;
producing means for producing an information which is used during a process of printing a film exposed by the camera and for producing the information at every frame of exposure; and
outputting means for outputting said information from the camera to said medium for making the semiconductor memory means to memorize said information.

4,884,093

APPARATUS FOR THE DEVELOPMENT ESPECIALLY OF A FILM SHEET OF A FILM PUNCHED CARD

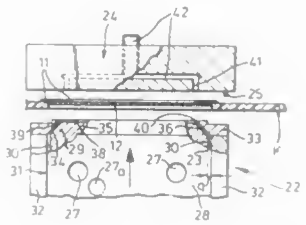
Wolfgang Bohmig, Markgroningen, Fed. Rep. of Germany, assignor to Zeutschel GmbH & Company, Tubingen, Fed. Rep. of Germany

Filed Dec. 21, 1987, Ser. No. 135,974

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1986, 3644050

Int. Cl.⁴ G03D *5/00*

U.S. Cl. 354—299 18 Claims



1. Apparatus for developing an emulsion coating of a film strip, said apparatus comprising:
a development chamber limited on one side by the emulsion coating, said chamber being subjected to the action of at least one fluid;
said development chamber comprising a gap chamber (37) of substantially rectangular plan and of a height (i) of about 0.1 to 1.0 mm.;
said gap chamber being limited by a first surface (35) of a heated chamber body (28);
said heated chamber body having a height (n);
a carrier surface for positioning the emulsion coating on said film strip, said carrier surface being determined by a rib (39) and a seal edge (40) on a cover frame (33), said seal edge being arranged between said heated chamber body surface and said emulsion coating on said film strip;
said heated chamber body surface being bevelled off on each of two edges crossing a direction of flow (x) of said at least one fluid;
each bevelled edge adjoining a respective side groove extending along a side of said heated chamber body over approximately the entire height (n) of said heated chamber body;
said bevelled edges and said side grooves forming part of a flow-gap (23,23_e) of a depth (q) extending over substantially the whole height (n) of said heated chamber body and over a substantial portion of the heated chamber body surface (35);
said flow gap (23,23_e) being connected to a fluid inlet (61) and a fluid outlet (83); and
at least one fluid supply (62,96) communicating with said flow gap via said fluid inlet and said fluid outlet.

4,884,094

DATA TRANSMISSION SYSTEM FOR A CAMERA

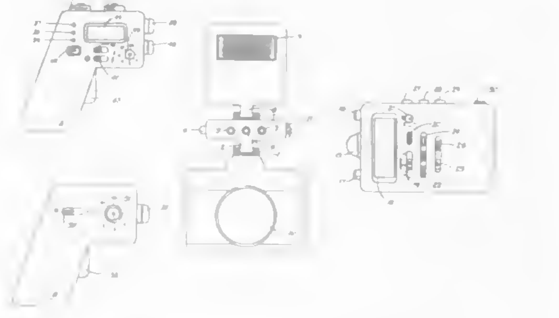
Mashio Kitaura, Tondabayashi; Masaaki Nakai, Kawachinagano; Tadahiro Yoshida, Takatsuki; Yoshiiku Kikukawa, Kishiwada; Takanobu Omaki, Sennan, and Nobuyuki Taniguchi, Tondabayashi, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 126,606, Nov. 30, 1987, Pat. No. 4,816,855, which is a continuation of Ser. No. 879,110, May 23, 1986, abandoned. This application Jul. 5, 1988, Ser. No. 215,227

Claims priority, application Japan, Sep. 26, 1984, 59-2013813; Feb. 27, 1985, 60-38243; Feb. 28, 1985, 60-39476; Mar. 6, 1985, 60-44361

Int. Cl.⁴ G03B *15/05, 7/00, 17/56*

U.S. Cl. 354—412 9 Claims



1. A signal transmitter comprising:
a light measurement means, including a light measuring portion, for measuring light from an object;
an exposure time setting means wherein an exposure data is manually set;
a film sensitivity setting means wherein a film sensitivity is manually set;
a calculation means for calculating a diaphragm aperature value in accordance with the values of light measurement, set exposure time and set film sensitivity;
signal outputting means for outputting a measuring mode signal representing that light measured by said light measurement means is either ambient light or flash light;

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a data selection means wherein a data for designating a desired operation mode of a camera system operable in a plurality of operation modes is selected; and

a transmitting means, including a light emitter, for serially transmitting, in the form of a light signal, the data output from said exposure time setting means, calculation means, signal outputting means and data selecting means.

4,884,095
APPARATUS FOR WRITING A DATA ONTO PHOTOSENSITIVE FILM

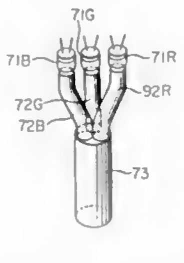
Kenji Yamanouchi, Kokubunji; Yutaka Teraoka, Sagamihara; Makoto Ikeda, Hachioji; Masao Nakamura, Machida, and Satoshi Kawai, Hino, all of Japan, assignors to Konica Corporation, Tokyo, Japan

Continuation of Ser. No. 109,395, Oct. 19, 1987, Pat. No. 4,806,965. This application Feb. 2, 1989, Ser. No. 305,400

Claims priority, application Japan, Oct. 21, 1986, 61-248508; Oct. 23, 1986, 61-250696; Nov. 17, 1986, 61-271720; Nov. 20, 1986, 61-275209; Nov. 21, 1986, 61-276488

Int. Cl.⁴ G03B *27/00*

U.S. Cl. 355—1 3 Claims



1. An apparatus for optically writing data as a latent image on film coated with a photosensitive material while the film is moving in a predetermined direction, the apparatus comprising:

exposure means comprising a light emitting source including a plurality of multicolor LED's, each of said plural multicolor LED's having a plurality of light emitting elements, each of said light emitting elements capable of emitting a specific color light; and

control means for selecting light emitting elements of said multicolor LED to be illuminted in accordance with the data to be written.

4,884,096
MULTIPLE COLOR IMAGE FORMING APPARATUS

Yasuhiro Kusuda, and Takafumi Tottori, both of Osaka, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Jul. 13, 1988, Ser. No. 218,155

Claims priority, application Japan, Jul. 15, 1987, 62-176559

Int. Cl.⁴ G03G *15/01*

U.S. Cl. 355—233 14 Claims

1. A multiple color image forming comprising,

an original table on which an original is placed;

a photosensitive drum which is rotatable;

a scanning means for scanning the original on said original table from the scanning start position to the end position; P1 an image processing means for projecting the original image scanned by said scanning means to said photosensitive drum to form an electrostatic latent image thereon;

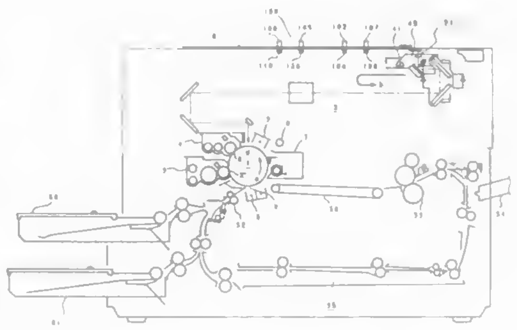
first and second developing means for developing the electrostatic latent image on said photosensitive drum by a toner having different colors respectively;

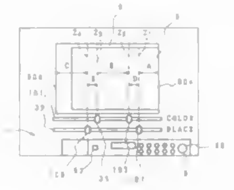
a copying start command input means for inputting the copying start command;

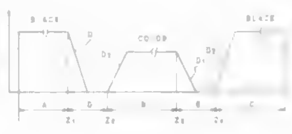
means for starting said scanning means, image processing means and first developing means in response to said copying start command; 'first and second position indicating means for being movable in the scanning direction of said scanning means between said scanning start position and scanning end position along the original table;

a first detecting signal output means for detecting said scanning means arrived at a position responsive to said first position indicating means during the scanning and outputting the first detecting signal;

a first control means for stopping the first developing means in response to said first detecting signal;







a second detecting signal output means for detecting said scanning means arrived at a position responsive to said second position indicating means during said scanning and outputting the second detecting signal; and

a second control means for starting the second developing means in response to said second detecting signal.

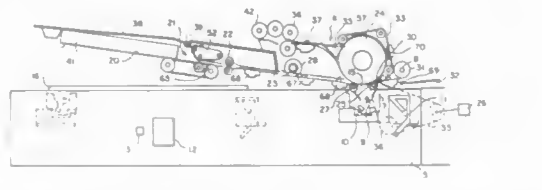
4,884,097
DUPLEX DOCUMENT HANDLER

John Giannetti, Penfield; Robert L. Couture, Scottsville, and Jerry F. Sieve, Henrietta, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 24, 1987, Ser. No. 137,776

Int. Cl.⁴ G03B *27/32*

U.S. Cl. 355—23 9 Claims



1. A duplex document handler f r selectively moving either one side or each side of each document sheet in a multisheet document past a stationary exposure position, comprising:

supply means for receiving a multisheet document,

means for feeding each document sheet of said document from said supply means along a supply path past said exposure position,

means for feeding said document sheet along a simplex path from said exposure position to a simplex exit means for receiving said sheets stacked in their original order, said simplex exit means being located on the side of said exposure position opposite said supply means,

means for feeding said document sheet along a duplex path, leading edge first, from said exposure position, through an inverting path, into a reversing location generally above said supply path, and then for feeding said document sheet, trailing end first, from said reversing location past said exposure position through said inverting path and said reversing location again, to a duplex exit means for receiving said sheets stacked in their original order, said duplex exit means being located on the same side of said exposure position as said supplymeans, and

means for selecting between said duplex and simplex paths.

4,884,098
IMAGE RECORDING APPARATUS

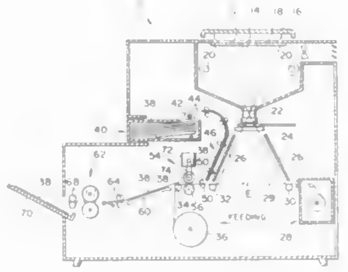
Yumio Matsumoto, Kasugai, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Mar. 25, 1988, Ser. No. 173,051

Claims priority, application Japan, Apr. 1, 1987, 62-50253

Int. Cl.⁴ G03B *27/72*

U.S. Cl. 355—27 5 Claims



1. An image recording apparatus comprising:

a pair of rollers for passing a photosensitive medium between said rollers while pressing said photosensitive medium to thereby develop a latent image formed on said photosensitive medium by exposure means; and

driving means connected to at least one of said pair of rollers rotating said at least one roller repeatedly alternately in a forward and then a reverse rotation whereby in each cycle the rotational angle during the forward rotation is not smaller than the rotational angle during the reverse rotation of the same roller.

4,884,099
AUTOMATIC ADJUSTMENT OF FOCAL LENGTH TO OBTAIN DESIRED OPTICAL REDUCTION RATIO IN A MICROFILM CAMERA

Ensley E. Townsend, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 10, 1988, Ser. No. 204,795

Int. Cl.⁴ G03B *27/52*

U.S. Cl. 355—55 7 Claims

1. A microfilm camera having a document transport system, a film drive and a lens assembly adjustable to provide a plurality of different reduction ratios, said camera comprising:

means for driving said document transport system;

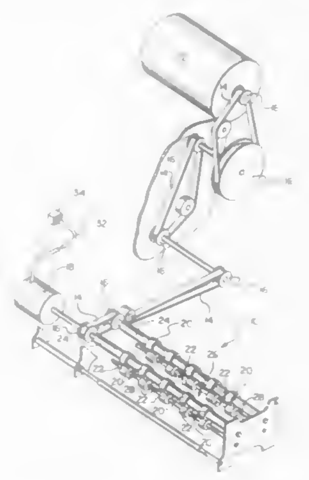
means for monitoring the speed of said document transport system and generating a first signal proportional thereto;

means for driving said film drive;

a drive motor for adjusting said lens assembly;

input means for selecting a desired image reduction ratio; and

control means responsive to said input means for controlling the speed of said film drive in response to said first signal for electronically synchronizing the speed of said film drive to the speed of said document transport system in accordance with said image reduction ratio, and for adjusting said lens assembly by means of said drive motor in accordance with said input means.



4,884,100
DENSITY MEASURING DEVICE FOR ORIGINALS IN AN ENLARGING/REDUCING PROJECTOR

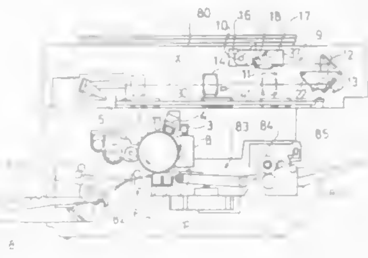
Yamato Kitajima, Ramsey, N.J., and Yuji Hayashi, Osaka, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed May 13, 1988, Ser. No. 193,953

Claims priority, application Japan, May 19, 1987, 62-75694[U]

Int. Cl.⁴ G03B *27/74, 27/80*

U.S. Cl. 355—68 6 Claims



1. A density measuring device for originals in an enlarging/reducing projector comprising:

a light sensor which detects original density by light from an original via mirrors in order to automatically control image exposure;

means for correcting an optical path of projection when a projective magnification is changed; and

means for moving the sensor separately from a projection lens when the projective magnification is changed.

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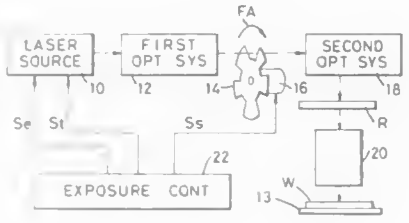
4,884,101
APPARATUS CAPABLE OF ADJUSTING THE LIGHT AMOUNT

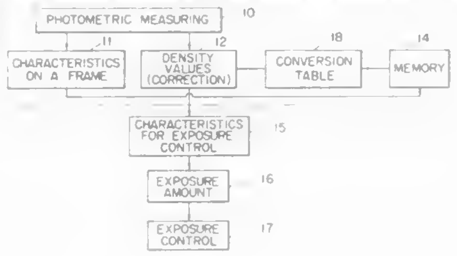
Akikazu Tanimoto, Yokohama, Japan, assignor to Nikon Corporation, Tokyo, Japan
Filed Feb. 1, 1988, Ser. No. 151,188
Claims priority, application Japan, Feb. 3, 1987, 62-21677; Feb. 5, 1987, 62-23640; Feb. 5, 1987, 62-23641
Int. Cl.⁴ G03B *27/72*
U.S. Cl. 355—68 17 Claims



1. An apparatus including:
(a) applying means for applying radiation repetitively to an object;
(b) shutter means disposed in the optical path from said applying means to said object, said shutter means having a first state in which said applying means is inhibited from applying the radiation to the object and a second state in which said applying means is permitted to apply the radiation to the object; and
(c) control means for controlling said applying means and said shutter means so that said applying means applies the radiation repetitively to the object during the period from when said shutter means starts the shift from said first state to said second state until said shutter means completes the shift from said second state to said first state, said control means having first calculating means for calculating the amount of radiation applied once by said applying means, prior to the start of the operation of said shutter means by said control means, so that the object obtains a proper exposure amount by the radiation, and second calculating means for calculating the time when said shutter means shifts from said second state to said first state, prior to the start of the operation of said shutter means by said control means, said control means causing said applying means to apply the radiation for a predetermined period on the basis of the amount of radiation calculated by said first calculating means, and wherein said control means controls said shutter means so that the point of time at which said shutter means has substantially completed the shift from said first state to said second state and the point of time at which said shutter means starts the shift from said second state to said first state are substantially coincident with points of time at which said applying means applies the radiation.

4,884,102
CONTROLLING METHOD FOR A PHOTOGRAPHIC SYSTEM

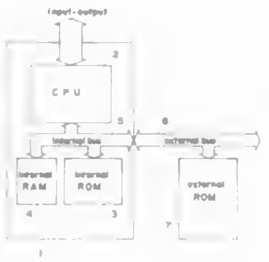
Takaaki Terashita, Kaisei, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Continuation of Ser. No. 865,024, May 20, 1986, abandoned. This application May 18, 1989, Ser. No. 355,105
Claims priority, application Japan, May 22, 1985, 60-109767; May 29, 1985, 60-116256; Dec. 19, 1985, 60-284320
Int. Cl.⁴ G03B *27/32, 27/80*
U.S. Cl. 355—77 8 Claims

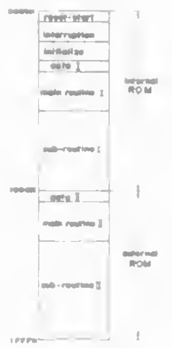


8. A normalization method as claimed in claim 1, wherein said first average values are weighted moving average values obtained by multiplying weight coefficients depending on data numbers from the photometric measuring to current.

4,884,103
PROGRAMMED CONTROL DEVICE FOR COPYING MACHINES AND THE LIKE

Hirokazu Yamada, Toyohashi, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan
Filed Oct. 15, 1987, Ser. No. 109,085
Claims priority, application Japan, Oct. 17, 1986, 61-248233
Int. Cl.⁴ G03G *15/00*
U.S. Cl. 355—200 7 Claims



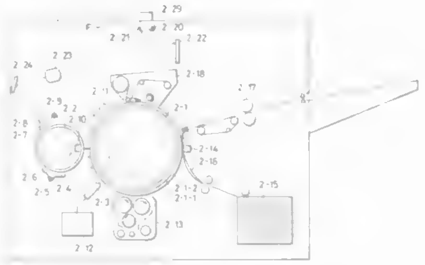


1. A programmed control device for copying machines comprising:

a control unit including a read only memory storing a main program for general control of the machine and a subprogram for special control of a special portion or function of the machine, and a processing means for processing the control of the machine according to programs;
an external memory capable of connecting to the control unit and storing an identification data and a substitute program which is modified in part from the main program of the read only memory, the substitute program being used as a substantial duplicate of the main program when the external memory is connected to the control unit; and
means operatively connected to the control unit for discriminating the connection of the external memory by confirming the identification data and for overriding the execution of the main program to enable the processing means to control the copying machine by use of the substitute program when the external memory is connected.

4,884,104
IMAGE FORMING APPARATUS HAVING MULTIPLE IMAGE INFORMATION INPUTS

Tadashi Yoshida, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 928,697, Nov. 7, 1986, abandoned, which is a continuation of Ser. No. 849,421, Nov. 7, 1983, abandoned. This application Jun. 29, 1988, Ser. No. 213,452
Claims priority, application Japan, Nov. 10, 1982, 57-196911
Int. Cl.⁴ G03G *15/00*
U.S. Cl. 355—202 26 Claims

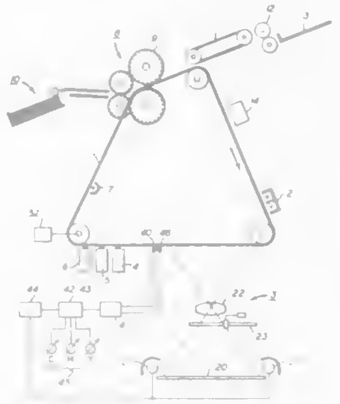


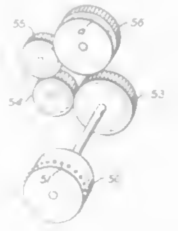
1. An image forming apparatus comprising:
means for converting an original image into an electrostatic charge and for maintaining the electrostatic charge;
first forming means for forming a first electrostatic latent image on a recording medium according to the electrostatic charge maintained by said converting means; and
second forming means for forming a second electrostatic latent image on said recording medium according to an input image signal
wherein, in response to a demand for latent image formation by said second forming means during the latent image formation by said first forming means, the function of said first forming means is interrupted and said second forming means is activated, and, the latent image formation by said first forming means, which is performed according to the electrostatic charge maintained by said converting means before the interruption, is started again after the completion of the function of said second forming means.

4,884,105
REPRODUCTION APPARATUS HAVING A SPROCKET-DRIVEN TRANSFER DRUM

Brian J. Joseph, Rochester; Leo G. Procter, Churchville, and Carl W. Roy, Spencerport, all of N.Y., assignors to Eastman Kodak Co., Rochester, N.Y.
Filed Sep. 2, 1988, Ser. No. 239,882
Int. Cl.⁴ G03G *15/00, 15/01*
U.S. Cl. 355—212 9 Claims

7. A multicolor reproduction apparatus of the type including means for transporting a web carrying electrostatically held toner images of different color through an endless path, which web includes a plurality of closely spaced perforations along an edge thereof, and a transfer device for transferring a plurality of such images in registry to a receiving surface to form a composite image, said transfer device comprising:
a transfer drum including means for holding a receiving sheet on the outer periphery thereof and rotatable to bring a receiving surface of said sheet into transfer relation with said images once for each image to be transferred,
a sprocket having a circumference equal to the pitch of said images on said web and engageable with the perforations in the web and rotatable with the movement of the web, and





gear means between the sprocket and the transfer drum to rotate the transfer drum at a peripheral speed substantially equal to the speed of the web to permit said images to be transferred in registry, said gear means including a sprocket gear coaxial with, driven with and of equal circumference with the sprocket and a drum gear coaxial with, driven with and of equal circumference with the transfer drum and two intermediate gears coupling the sprocket gear and the drum gear, said intermediate gears each being one half the circumference of the sprocket and drum gears.

4,884,106
MULTI-IMAGE REPRODUCTION APPARATUS

Calvin E. Harris, Fairport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Sep. 2, 1988, Ser. No. 239,885
Int. Cl.⁴ G03G *15/01*
U.S. Cl. 355—212 6 Claims

5. A color reproduction apparatus comprising:
means for supporting and moving an electrophotosensitive web through an endless path said web having intended image areas and at least one perforation for each image area, each perforation being located in a predetermined position with respect to its respective image area,
means for uniformly charging said web,
means for exposing said web to a series of color separation light images of an original to create latent electrostatic images thereon representative of said color separation

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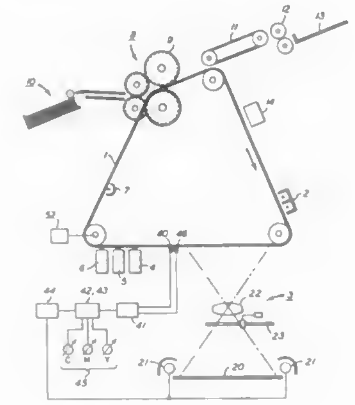
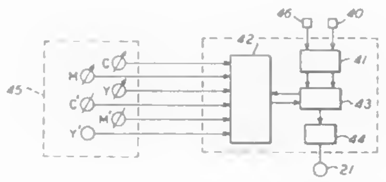
- images, each such electrostatic image being located in a separate image area, said exposing means including
- flash exposure means for illuminating the original,
- means for sensing the arrival of a perforation at a predetermined position along said endless path,
- means for actuating said flash exposure means in response to sensing a perforation associated with the image area to be exposed, said actuating means including delay means for delaying the actuation of said flash exposure means by a predetermined time after sensing said perforation, and





- means for adjusting said predetermined time for actuation independently for each perforation of said web,
- means for developing said images with toners of different color to create visible color images defined by the latent images, and
- means for transferring the visible color images in registry to a recieving surface to form a multicolor image, the accuracy of the registration of the color images being dependant upon the accuracy of the relative locations of the exposures with respect to the image areas.

4,884,107

IMAGE FORMING APPARATUS FOR BLANKING PORTIONS OF A DOCUMENT

Junji Watanabe, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 885,710, Jul. 15, 1986, abandoned. This application Apr. 28, 1989, Ser. No. 344,462

Claims priority, application Japan, Aug. 12, 1985, 60-177201

Int. Cl.⁴ G03G *21/00*

U.S. Cl. 355—218 12 Claims

1. An image forming apparatus having an image carrier, comprising:

- first means for receiving a document with a document image surface turned upward;
- means for selectively designating an image forming range of said document placed with a document image surface turned upward on said first means, said designating means including a spot light source movable in a two-dimensional plane located along said document for emitting light through said document placed with the document image surface turned upward on said first means so as to define said image forming range;
- second means for holding said document with the document image surface turned downward;
- mechanical means for automatically transporting said document from said first means to said second means such that said document image surface is turned downward on said second means, and further transporting said document from said second means such that said document image surface is turned upward on said first means; and
- means for forming an image, corresponding to said image forming range of the image of said document placed with a document image surface turned downward on said second means, onto said image carrier.

4,884,108

MECHANISM FOR RECIPROCATING AN ORIGINAL TABLE OF A COPYING APPARATUS

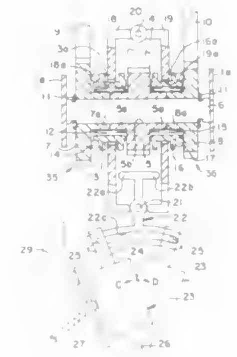
Tamami Nagasawa, Osaka, and Takahiro Fukunaga, Nara, both of Japan, assignors to Sharp Kabushiki Kaisha, Japan

Filed Nov. 14, 1988, Ser. No. 270,902

Claims priority, application Japan, Nov. 13, 1987, 62-287738

Int. Cl.⁴ G03G *15/00*

U.S. Cl. 355—234 7 Claims



1. In a mechanism for reciprocating an original table of a copying apparatus, comprising a driving means for reciprocating the original table, and two clutch means for transmitting a driving force to a moving means, one of which is used when moving said original table forward and the other of which is used when moving said original table backward, the improvement exists in that said mechanism further comprises: one solenoid which is movably mounted; a change-over means for changing the position of said solenoid from a first position to a second position and vice versa in response to the movement of said original table; and a transfer means for actuating selected one of said clutch means in response to the operation of said solenoid, said selected one corresponding to the position of said solenoid.

4,884,109

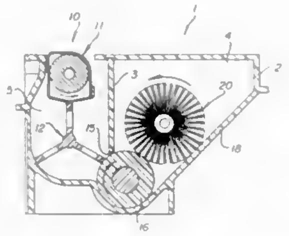
DEVICE FOR DEVELOPING ELECTROSTATIC IMAGES

Lawrence A. Hill, Rochester; Michael F. Jacobs, Henrietta; Arthur S. Kroll, Brighton, and Ralph E. Williams, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 6, 1988, Ser. No. 215,682

Int. Cl.⁴ G03G *21/00, 15/06*

U.S. Cl. 355—260 2 Claims



2. A device for developing electrostatic images including a housing defining a chamber for holding a supply of finely divided, dry particulate toner, a feed member located generally at the bottom of the chamber which feed member is rotatable to meter toner out of said chamber into another portion of the device where the toner is used to develop electrostatic images, said chamber being defined by at least one wall that is slanted to urge toner to said feed member under the force of gravity, characterized by an elongated agitating brush located in said chamber, supported by peripheral engagement with said slanted wall and said feed member and rotatable by such peripheral engagement with said feed member said brush being sufficiently curved, end to end, to periodically impact said slanted wall, as said brush is rotated, to dislodge toner.

4,884,110

SHEET CONVEYANCE APPARATUS

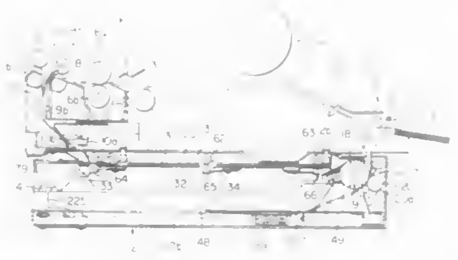
Yasuo Tsurubuchi, and Shogo Kato, both of Hachioji, Japan, assignors to Konishiroku Photo Industry Co., Ltd, Tokyo, Japan

Continuation of Ser. No. 883,146, Jul. 8, 1986, abandoned. This application Aug. 1, 1988, Ser. No. 226,561

Claims priority, application Japan, Jul. 9, 1985, 60-150571; Jul. 9, 1985, 60-150573; Jul. 9, 1985, 60-150575; Jul. 9, 1985, 60-150580

Int. Cl.⁴ G03G *21/00;* B65H *5/22*

U.S. Cl. 355—319 22 Claims



1. A sheet conveyance apparatus for copying an image on both sides of a sheet comprising:

- an image copy means for copying and fixing image information to a sheet;
- a delivery means for delivering the copied sheet;
- a first conveying part for feeding the sheet to said image copying means and then conveying the copied sheet to said delivery means;
- a path-change means arranged in said first conveying part between said image copy means and said delivery means for changing a conveying direction of the copied sheet according to copy pattern orders, said copy pattern orders consisting of an order to copy one side and both sides;
- an intermediate tray for storing the sheet copied on one side, before said sheet is refed through the first conveying part in accordance with a both side copy order;
- a second conveying part, capable of effecting reversible rotation therein, for storing operation, said conveying part alternately conveying the sheet copied on one side from said path-change means to said intermediate tray in one direction of rotation and for a refeeding operation that feeds the sheet copied on one side from said intermediate tray to said image copy means by reverse direction of rotation; so that the sheet copied on one side can receive image information on the reverse side thereof and then be conveyed to said delivery means; and
- a double feed prevention roller in presence contact with a reversible roller of said second conveying part, thereby causing a rotation of said double feed prevention roller with said reversible rotation of said reversible roller.

4,884,111

SUPERCONDUCTING DEVICE

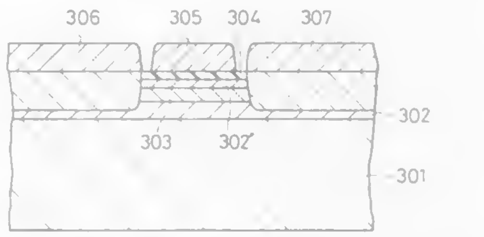
Toshikazu Nishino, 1618, Kizuki, Nakahara-ku, Kawasaki-shi, Kanagawa; Mutsuko Miyake, 1-25-19, Ohhara, Urawa-shi, Saitama; Ushio Kawabe, 1-8-46, Sakaecho, Hamuramachi, Nishitama-gun, Tokyo; Yutaka Harada, B1-2, 1473, Jousuihoncho, Kodaira-shi, Tokyo; Masaaki Aoki, 4-6-12, Minamiaoyama, Minato-ku, Tokyo, and Mikio Hirano, 1-1-59, Suehirocho, Ome-shi, Tokyo, all of Japan

Continuation of Ser. No. 795,270, Nov. 5, 1985, abandoned. This application Jul. 13, 1987, Ser. No. 73,408

Claims priority, application Japan, Nov. 5, 1984, 59-231308; Feb. 20, 1985, 60-30366; Feb. 25, 1985, 60-34355; Mar. 11, 1985, 60-46539; May 24, 1985, 60-110371

Int. Cl.⁴ H01L *39/22, 27/12, 29/78, 23/48*

U.S. Cl. 357—05 4 Claims



1. A superconducting device comprising: a semiconductor layer; at least two superconducting electrodes formed in contact with said semiconductor layer, said superconducting electrodes being spaced from each other less than 10 times the coherence length of a superconducting electron pair; and at least one control electrode means for controlling current flowing between said superconducting electrodes, said at least one control electrode means being formed on said semiconductor layer between said superconducting electrodes and separated from said semiconductor layer by an electrically insulating film having a thickness of 20 to 80 nanometers, the superconducting electrodes and the control electrode means being positioned on a same side of the semiconductor layer; with an impurity contained in said semiconductor layer being so distributed as to form at least one high impurity concentration region having a concentration above a mean value and at least one low impurity concentration region having a concentration below said mean value, the high impurity concentration region being existent in contact with the superconducting electrodes, wherein the control electrode means is on a low impurity concentration region, with a high impurity concentration region positioned under the low impurity concentration region on which the control electrode means is located.

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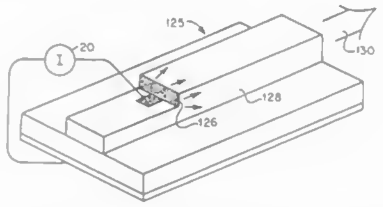
4,884,112
SILICON LIGHT-EMITTING DIODE WITH INTEGRAL OPTICAL WAVEGUIDE

Joseph P. Lorenzo, Stow, and Richard A. Soref, Newton Centre, both of Mass., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Mar. 18, 1988, Ser. No. 170,172
Int. Cl.⁴ H01L *33/00*
U.S. Cl. 357—17 **25 Claims**

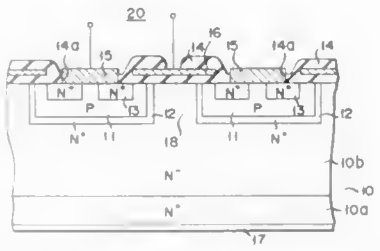


1. An electrooptic silicon device having a longitudinal axis comprising:
- a first doped silicon layer;
- a second doped silicon layer positioned upon said first layer wherein said second silicon layer is formed into an optical waveguide;
- a third doped silicon layer positioned at said optical waveguide wherein said third doped silicon layer forms a p-n junction with said second doped silicon layer;
- a first electric contact electrically coupled to said second silicon layer;
- a second electric contact electrically coupled to said third silicon layer; and
- a power source for forward biasing said p-n junction through said first and second electrical contacts in order to cause said p-n junction to emit light directly into said optical waveguide.

4,884,113
DOUBLE-DIFFUSED, INSULATED-GATE, FIELD EFFECT TRANSISTOR

Ken'ichi Muramoto, Hyogo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Apr. 28, 1988, Ser. No. 188,070
Claims priority, application Japan, Dec. 25, 1984, 59-278432
Int. Cl.⁴ H01L *29/78, 29/90*
U.S. Cl. 357—23.4 **3 Claims**

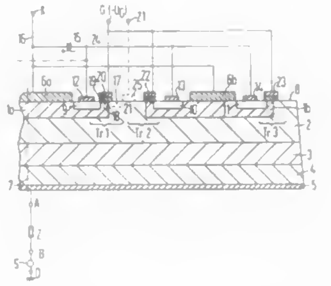


1. A double-diffused insulated-gate field effect transistor comprising:
- a semiconductor substrate of a first conductivity type, the semiconductor substrate forming a drain region;
- two impurity regions of a second conductivity type formed at a predetermined interval, in the semiconductor substrate, said two impurity regions forming a channel base region;
- first high concentration impurity regions of the first conductivity type formed in each of said two impurity regions of the second conductivity type, each said first high concentration impurity region forming a source region;
- a plurality of second high concentration impurity regions of the first conductivity type each formed along an interface between each of said impurity regions of the second conductivity type and the semiconductor substrate to completely surround the channel base region, the concentration of each of the second high concentration impurity regions having a value at which a depletion layer formed at a junction between said second high concentration impurity region of the first conductivity type and said impurity region of the second conductivity type cannot extend beyond the respective second high concentration impurity region into the semiconductor substrate when a source-to-drain voltage is less than 10 volts; and
- an area of the semiconductor substrate formed between said plurality of second high concentration impurity regions.

4,884,114
DISCONNECTABLE THYRISTOR

Eberhard Spenke, Pretzfeld, and Michael Stoisiek, Ottobrunn, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jul. 19, 1983, Ser. No. 515,175
Claims priority, application Fed. Rep. of Germany, Aug. 18, 1982, 3230760
Int. Cl.⁴ H01L *29/74*
U.S. Cl. 357—38 9 Claims



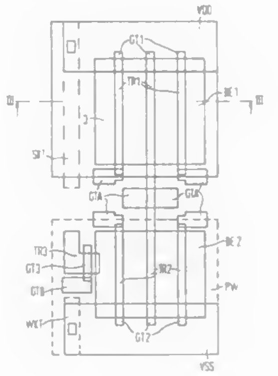
1. In a thyristor having a triggering means and a semiconductor member having alternating layers of opposite conductivity type consisting in sequence of an emitter of a first conductivity type in contact with an electrode of a first polarity, a base of a second conductivity type, a base of said first conductivity type, with a pn-junction existing between said bases, and an emitter of said second conductivity type in contact with an electrode of a second opposite polarity, at least said emitter of said second conductivity type consisting of a plurality of distinct emitter sections each exhibiting a boundary surface, a means for quenching said thyristor comprising:
- a plurality of switching transistors each consisting of a semiconductor zone of said first conductivity type inserted in one of said emitter sections of said second conductivity type, a partial zone of said base of said first conductivity type, an intermediate channel zone adjacent to said semiconductor zone in said emitter section, said channel zone being covered by an insulating layer at said boundary surface and a gate over said insulating layer, said gate connected to a control terminal; and
- a current source having poles respectively exhibiting said first and second polarities and being interconnected between each of said semiconductor zones and a feed line for said electrode of said second polarity, with a pole of said current source exhibiting said first polarity being connected to said feed line,

whereby said thyristor in a conducting state is rapidly quenched upon the application of a control voltage of said second polarity to said control terminal.

4,884,115
BASIC CELL FOR A GATE ARRAY ARRANGEMENT IN CMOS TECHNOLOGY

Petra Michel, Grafing, and Martin Geiger, Furth, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich

Filed Feb. 4, 1988, Ser. No. 152,234
Claims priority, application Fed. Rep. of Germany, Feb. 27, 1987, 3706462
Int. Cl.⁴ H01L *27/02, 27/10, 27/15*
U.S. Cl. 357—42 **12 Claims**



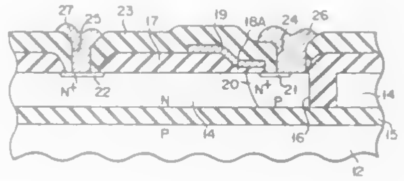
1. A basic cell for a gate array arrangement in CMOS technology, including a first region containing a plurality of first transistors of one conductivity type connected in series, and a second region having an identical plurality of second transistors of the opposite conductivity from said one type connected in series, each of said transistors having a gate electrode, a drain electrode, and a source electrode, a plurality of first connecting lines respectively connected to said gate electrodes of said first transistors in said first region and a plurality of second connecting lines respectively connected to said gate electrodes of said second transistors in said second region, said first and second connecting lines being arranged in parallel with each other,
- (a) said first and second lines being connected respectively to a plurality of gate electrode contacts located between said first and second regions, said electrode contacts being located at different staggered positions along a direction parallel with said lines, one line of each of said first and second lines being connected in common to a single one of said gate electrode contacts,
- (b) a first supply conductor adapted to be connected to a first supply voltage positioned outside said first connecting lines at the outer edge of said first region proceeding in a direction parallel to said first series connected transistors, and
- (c) a second supply conductor adapted to be connected to a second supply voltage positioned outside said second connecting lines at the outer edge of said second region proceeding a direction parallel to said second series connected transistors.

4,884,116
DOUBLE DIFFUSED MOSFET WITH POTENTIAL BIASES

Koji Shirai, Kawasaki, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 14, 1987, Ser. No. 132,032
Claims priority, application Japan, Dec. 20, 1986, 61-304671
Int. Cl.⁴ H01L *27/02*
U.S. Cl. 357—41 9 Claims

1. A semiconductor device comprising:
- a first semiconductor region of a first conductivity type;
- an insulating region formed over the entire surface of said first semiconductor region;
- a second semiconductor region of a second conductivity type formed on the entire surface of said insulating region; and

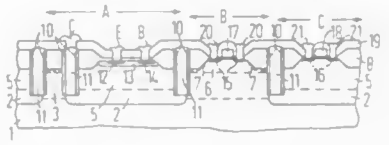


- a third semiconductor region of said first conductivity type formed in said second semiconductor region and contacting said insulating region, said third semiconductor region being held at a potential substantially equal to said first semiconductor region.

4,884,117
CIRCUIT CONTAINING INTEGRATED BIPOLAR AND COMPLEMENTARY MOS TRANSISTORS ON A COMMON SUBSTRATE

Franz Neppl, Munich, and Josef Winnerl, Landshut, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Continuation of Ser. No. 60,914, Jun. 12, 1987, abandoned. This application Mar. 15, 1989, Ser. No. 323,218
Claims priority, application Fed. Rep. of Germany, Aug. 13, 1986, 3627509
Int. Cl.⁴ H01L *27/02*
U.S. Cl. 357—43 3 Claims



1. An integrated transistor circuit, comprising:
- (a) a doped semiconductor substrate;
- (b) wells of a conductivity type opposite to that of said substrate formed in said substrate , at least one of said wells containing an MOS transistor, at least one other of said wells containing a bipolar transistor, each well containing a bipolar transistor being the collector of said transistor; and
- (c) trenches in said substrate surrounding said MOS and bipolar transistors such that each transistor is surrounded in its respective well by said trenches, said trenches having a filler of polycrystalline silicon of the same conductivity type but having a higher doping strength than said wells, said trenches serving to insulate between wells, the filler in the trenches surrounding each bipolar transistor forming a contact terminal for the collector of the bipolar transistor .

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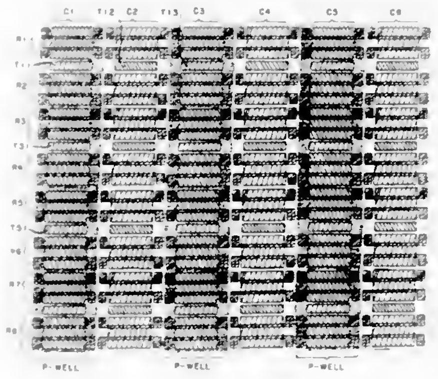
DOUBLE METAL HCMOS COMPACTED ARRAY

Alex C. Hui, Palto Alto; Anthony Y. Wong, Cupertino; Conrad J. Dell'Oca, Palto Alto; Daniel Wong, San Jose, and Roger Szeto, San Jose, all of Calif., assignors to LSI Logic Corporation, Milpitas, Calif.

Continuation of Ser. No. 865,071, May 19, 1986, abandoned. This application Feb. 12, 1988, Ser. No. 158,066

Int. Cl.^{4} H01L *29/52, 29/78, 27/10*

U.S. Cl. 357—45 6 Claims



1. An integrated circuit gate array structure comprising:

a semiconductor substrate in which are located columns of semiconductor material of a first conductivity type alternating with and adjacent to columns of semiconductor material of a second conductivity type thereby to leave no intervening area for metal routing, said columns comprising an array of elements, the elements in successive columns of said array being aligned into rows;

active areas formed within said columns to which can be connected conductive material, thereby forming active devices, each of said active areas comprising:

- a first source/drain region;
- a second source/drain region;
- a third source/drain region;
- a first channel region between said first and second source/drain regions;
- a gate formed above said first channel region to control the conductivity of said first channel region;
- a second channel region between said second and third source/drain regions; and
- a gate formed above said second channel region to control the conductivity of said second channel region;

tap regions formed within said columns such that tap regions of subsequent columns are aligned into rows, said tap regions having the same conductivity type as the columns in which they are formed and to which can be connected conductive material, said tap regions being more heavily doped than their respective columns thereby to allow current and voltage characteristics of said columns to be controlled;

said active areas and said tap regions in each column being symmetrical about a center line running the length of each of said columns, thus allowing one of said active areas to be paired with another of said active areas in an adjacent column on either side of said one of said active areas;

wherein said active areas and said tap regions within one of said columns are placed so as to form a plurality of adjacent cells, each cell consisting of one active area followed by one tap region followed by one active area such that an active area directly abuts an active area in the next adjacent cell.

4,884,119

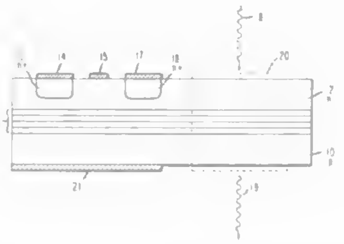
INTEGRATED MULTIPLE QUANTUM WELL PHOTONIC AND ELECTRONIC DEVICES

David A. B. Miller, Fair Haven, N.J., assignor to American Telephone & Telegraph Company, New York, N.Y. and AT&T Bell Laboratories, Murray Hill, N.J.

Filed Apr. 22, 1988, Ser. No. 184,747

Int. Cl.^{4} H01L *29/12*

U.S. Cl. 357—58 8 Claims



1. An optoelectronic integrated circuit comprising an optical device and an electronic device said optical device including a first doped semiconductor layer, a second doped semiconductor layer, a conductivity type for said first doped semiconductor layer being opposite to the conductivity type for said second doped semiconductor layer, and an intrinsic region interposed between said first and second doped semiconductor layers, and said electronic device including at least first and second doped semiconductor regions confined to said first doped semiconductor layer, said electronic device adjacent to said optical device and said first doped semiconductor layer being electrically continuous over a region substantially including both said electronic device and said optical device.

4,884,120

SEMICONDUCTOR DEVICE AND METHOD FOR MAKING THE SAME

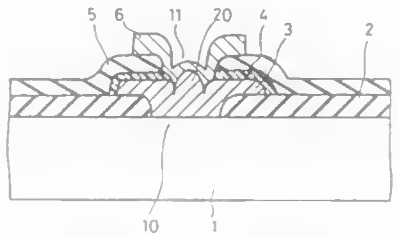
Hiroshi Mochizuki; Reiji Tamaki; Junichi Arima; Masaaki Ikegami; Eisuke Tanaka, and Kenji Saito, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 20, 1987, Ser. No. 16,787

Claims priority, application Japan, Feb. 20, 1986, 61-37785

Int. Cl.^{4} H01L *23/48, 29/44, 29/54, 29/62*

U.S. Cl. 357—68 4 Claims



1. A semiconductor device comprising:

a semiconductor substrate;

a first insulating film formed on a surface of said semiconductor substrate and having, in a predetermined region thereof, a first penetrating hole reaching the surface of said semiconductor substrate;

a first interconnection film formed on a predetermined region of said first insulating film and electrically connected to the surface of said semiconductor substrate via said first penetrating hole;

an encapsulation layer, comprising an oxide of said first interconnection film, formed on said first interconnection layer and on said first insulation film, said encapsulation layer having a void therethrough overlapping said first penetrating hole;

a second insulating film formed on said encapsulation layer and said first insulating film and having in that region which overlaps with said first penetrating hole in planar layout a second penetrating hole reaching the surface of said first interconnection film; and

a second interconnection film formed on a predetermined region of said second insulating film and electrically connected to said first interconnection film via said second penetrating hole, wherein

said first interconnection film has a hillock selectively formed at said first penetrating hole portion and having a predetermined height.

4,884,121

SEMICONDUCTOR DEVICE

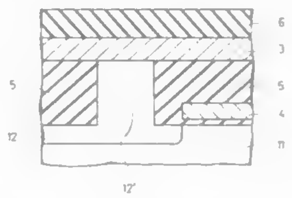
Tatsuya Ishii, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 13, 1987, Ser. No. 49,264

Claims priority, application Japan, May 22, 1986, 61-119518

Int. Cl.^{4} H01L *23/54, 23/48*

U.S. Cl. 357—68 6 Claims



1. A semiconductor device comprising:

a semiconductor substrate having a major surface, an active region within said substrate and a protruding portion of said active region having a substantially uniform cross section extending above said major surface; and

a conductive interconnection layer formed over said semiconductor substrate;

said interconnection layer having a contact region located above and electrically connected to said protruding portion of said active region for providing an electrical connection to said active region; and

an interlayer insulating layer interposed between said major surface of said semiconductor substrate and said interconnection layer so that the height of said protruding portion is substantially equal to a thickness of said interlayer insulating layer at said protruding portion.

4,884,122

METHOD AND CONFIGURATION FOR TESTING ELECTRONIC CIRCUITS AND INTEGRATED CIRCUIT CHIPS USING A REMOVABLE OVERLAY LAYER

Charles W. Eichelberger, Schenectady; Robert J. Wojnarowski, Ballston Lake, and Kenneth B. Welles, II, Schenectady, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Aug. 5, 1988, Ser. No. 230,654

Int. Cl.^{4} H01L *23/12, 23/14*

U.S. Cl. 357—71 12 Claims

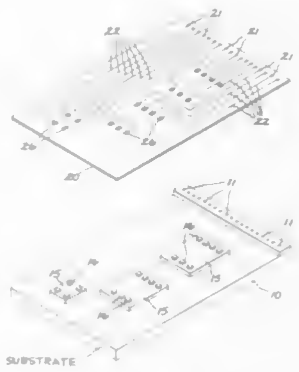
1. An integrated circuit chip package including chips of an electronic system therein, comprising:

a substrate:

a plurality of integrated circuit chips disposed on said substrate, said integrated circuit chips including said chips of said electronic system and when properly interconnected comprising said electronic system and having interconnect pads thereon;

a polymer film overlay layer disposed over said chips and said substrate, said film having apertures therein exposing at least some of said interconnect pads; and

a pattern of metallization disposed on said film and connected to selected interconnect pads through said apertures;



wherein at least one of said chips comprises a test chip operable to test at least one other of said chips for proper operation as connected in said package by the combination of said polymer film overlay and said pattern of metallization.

4,884,123

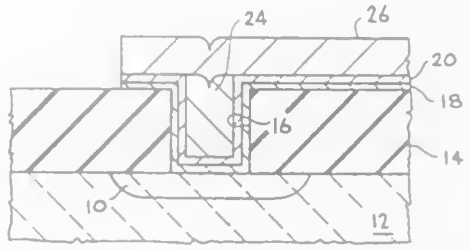
CONTACT PLUG AND INTERCONNECT EMPLOYING A BARRIER LINING AND A BACKFILLED CONDUCTOR MATERIAL

Pankaj Dixit, Snnnyvale; Jack Sliwa, Los Altos Hills; Richard K. Klein; Craig S. Sander, both of Mountain View, and Mohammad Farnaam, Santa Clara, all of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Feb. 19, 1987, Ser. No. 16,429

Int. Cl.^{4} H01L *29/54*

U.S. Cl. 357—71 18 Claims



1. A low resistance contact plug, stable in the presence of aluminum, formed in a contact hole less than about μm^2 in area through at least one insulating layer formed on a semiconductor surface to at least a portion of a doped region in said semiconductor surface, said contact comprising:

(a) an adhesion and contacting layer of titanium about 100–800Å thick formed at least along the walls of said contact hole through said at least one insulating layer and in contact with said portion of said doped region;

(b) a barrier layer formed over said adhesion and contacting layer; and

(c) a conductive material formed over said barrier layer and at least substantially filling said contact hole; and

a patterned interconnect electrically and physically contacting said plug.

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4,884,124

RESIN-ENCAPSULATED SEMICONDUCTOR DEVICE

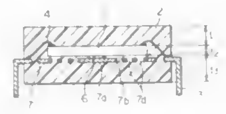
Ryuichiro Mori; Tatsuhiko Akiyama, and Katsuyuki Fukudome, all of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Japan

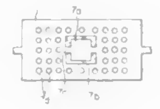
Filed Aug. 17, 1987, Ser. No. 85,769

Claims priority, application Japan, Aug. 19, 1986, 61-194263; Aug. 19, 1986, 61-194264; Aug. 28, 1986, 61-204216

Int. Cl.⁴ H01L *23/28*

U.S. Cl. 357—72 8 Claims





1. A packaged semiconductor device comprising:

a semiconductor element having opposed first and second sides;

a flat base having opposed top and bottom sides including a centrally disposed bonding portion on said top side defined by and substantially surrounded by a plurality of elongated recesses in said top side extending only partly through said base toward said bottom side for confining a bonding material to said bonding portion, said bonding portion having a smaller area than said second side and said top side;

a bonding material, disposed on said second side and on said top side confined to said centrally disposed bonding portion, bonding said semiconductor element to said base only at said centrally disposed portion; and

a resin encapsulating said semiconductor element and said base.

4,884,125

HYBRID INTEGRATED CIRCUIT DEVICE CAPABLE OF BEING INSERTED INTO SOCKET

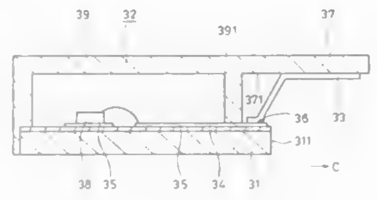
Norio Miura, Gunma, Japan, assignor to Sanyo Electic Co., Ltd., Japan

Filed Oct. 13, 1987, Ser. No. 107,990

Claims priority, application Japan, Oct. 15, 1986, 61-244371; Oct. 17, 1986, 61-247924; Oct. 17, 1986, 61-247925; Oct. 17, 1986, 61-159714; Oct. 17, 1986, 61-159715; Oct. 20, 1986, 61-160393; Nov. 17, 1987, 61-176217

Int. Cl.⁴ H01L *23/12, 29/52*

U.S. Cl. 357—74 13 Claims



1. A hybrid integrated circuit device comprising:

a metal substrate having an end,

an insulating film formed on said metal substrate,

conductive paths formed on said insulating film and extending to said end of said metal substrate,

a plurality of circuit elements connected to said conductive paths,

conductive pads formed in said end of said metal substrate and connected to said conductive paths,

a casing having a sealing portion formed of an insulating material surrounding said circuit elements, and a connector portion projected from said sealing portion and separated from and extending approximately parallel with said metal substrate, and

external leads having one ends connected to said conductive pads and extending to contact said connector portion of said casing.

4,884,126

SEMICONDUCTOR DEVICE HAVING PARALLEL-CONNECTED, SELF TURN-OFF TYPE SEMICONDUCTOR ELEMENTS

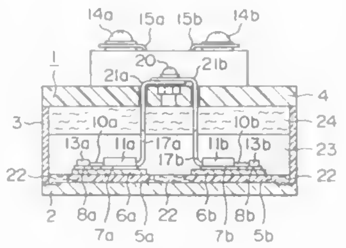
Eiji Harada, Hitachi; Hitoshi Matsuzaki, Mito; Sigeo Tomita, and Katsunori Chida, both of Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 840,203, Mar. 17, 1986, abandoned. This application Jan. 15, 1988, Ser. No. 144,061

Claims priority, application Japan, Mar. 23, 1985, 60-58951

Int. Cl.⁴ H01L *23/34, 23/48, 25/02*

U.S. Cl. 357—81 4 Claims



1. A semiconductor device having parallel-connected, self turn-off semiconductor elements, comprising:

(a) a package for packaging self turn-off type semiconductor elements, said package including a metallic cooling fin, an insulating side case provided on one principal surface of said cooling fin, and an insulating covering case disposed on said side case;

(b) a plurality of self turn-off type semiconductor elements each having a semiconductor chip having predetermined pn junctions therein and three electrodes in ohmic contact with said semiconductor chip, and mounted on said cooling fin of said package through an insulating material; and

(c) a plurality of terminals mounted on said insulating covering case, each having one end disposed internally of said package and electrically connected with a respective electrode of a corresponding one of said plurality of self turn-off type elements, and the other end exposed externally of said package through said insulating covering case; and

at least one of said plurality of terminals electrically connected with respective ones of said plurality of self turn-off semiconductor elements being mounted on a common terminal mount region of said insulating covering case, and said plurality of self turn-off semiconductor elements being disposed symmetrically with respect to said common terminal mount region.

4,884,127

APPARATUS FOR PRE-CONDITIONING AUXILIARY TELEVISION SIGNAL INFORMATION

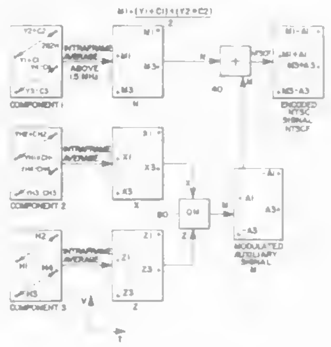
Michael A. Isnardi, Plainsboro, and Robert N. Hurst, Jr., Hopewell, both of N.J., assignors to General Electric Company, Princeton, N.J.

Filed Dec. 29, 1987, Ser. No. 139,338

Claims priority, application United Kingdom, Sep. 14, 1987, 8721565

Int. Cl.⁴ H04N *11/14*

U.S. Cl. 358—12 25 Claims



1. A television signal processing system comprising:

means for providing a first signal with mutually exclusive groups of intraframe image pixels of identical value within each group, with grouped pixels exhibiting temporal separation defined by a multiple of a line scanning interval over which a given phase of a chrominance subcarrier recurs;

means for providing a second signal with mutually exclusive groups of intraframe image pixels of identical value within each group, with grouped pixels exhibiting temporal separation defined by a multiple of a line scanning interval over which a given phase of a chrominance subcarrier recurs; and

means for combining said first and second signals via an invertible algorithm to facilitate separating said first and second signals at a receiver.

4,884,128

SIGNAL PROCESSING APPARATUS WITH INDEPENDENT GAIN CONTROL FOR CHROMINANCE AND COLOR SIGNALS

Teruo Hieda, Yokohama, Japan, assignor to Canon Kabusbiki Kaisha, Tokyo, Japan

Filed Mar. 20, 1989, Ser. No. 325,931

Claims priority, application Japan, Jul. 10, 1985, 60-151791; Jul. 10, 1985, 60-151792; Jul. 10, 1985, 60-151793; Jul. 10, 1985, 60-151794

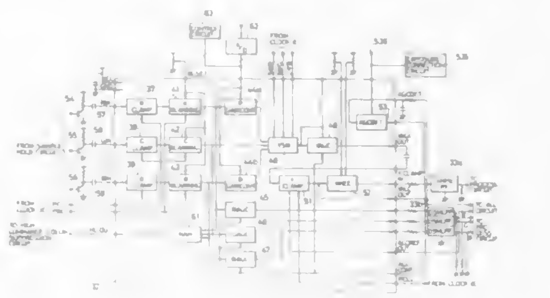
Int. Cl.⁴ H04N *9/73*

U.S. Cl. 358—29 31 Claims

1. A signal processing apparatus comprising:

(a) first automatic gain control means for automatically controlling gains of a plurality of color signals;

(b) chroma signal forming means for forming chroma signals using color signals whose gains are automatically controlled by said first automatic gain control means;



(c) high-band luminance signal forming means for dot sequencing said plurality of color signals whose gains are not controlled by said first automatic gain control means.

4,884,129

SIGNAL PROCESSING APPARATUS FOR USE WITH A SINGLE CHIP SOLID-STATE COLOR CAMERA

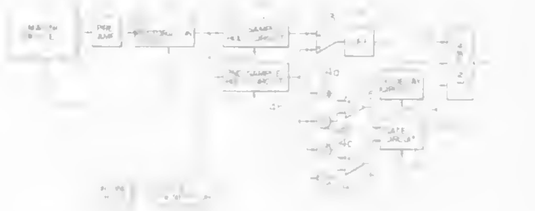
Naoki Ozawa, Akishima; Toshiyuki Akiyama, Tokorozawa; Kenji Takahashi, Kanagawa; Itaru Mimura, Hachioji, and Takahiro Nakano, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 22, 1988, Ser. No. 171,714

Claims priority, application Japan, Mar. 23, 1987, 62-65698

Int. Cl.⁴ H04N *9/077, 9/04, 9/64*

U.S. Cl. 358—44 11 Claims



1. A signal processing apparatus for use with an imaging device having an image signal output means inherently generating noise in operation so that noise may be superposed on the image signal, said image signal from said output means including pixel signal pieces representative of at least two kinds of color components of an image alternately recurrent one after another with a predetermined period with said noise being superposed on the pixel signal piece in each period, the apparatus comprising:

means connected with said image signal output means for disabling the noise superposed on the pixel signal piece at least during a part of said each period;

means connected with said disabling means for sampling and holding an output of said disabling means, using at least two sampling pulses mutually phase-shifted by an amount substantially identical with said period, to extract a noise-disabled part of the output of said disabling means and, at the same time, to separate the extracted signal for generating at least two noise-suppressed pixel signals for demodulation of chroma signals corresponding to said at least two kinds of color components of an image during line periods of the image signal;

means connected with said sampling and holding means for producing a sum of said noise-suppressed pixel signals to generate a luminance signal; and

means connected with said sampling and holding means for

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producing a difference between said noise-suppressed pixel signals to generate chroma signals each for every other line period.

4,884,130

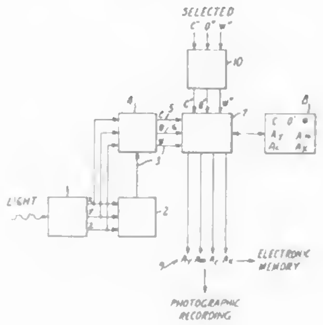
METHOD OF DESCRIBING A COLOR IN A TRIAXIAL PLANAR VECTOR COLOR SPACE

James R. Huntsman, Stillwater, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Apr. 29, 1988, Ser. No. 187,831

Int. Cl.⁴ G03F *3/08;* H04N *1/16*

U.S. Cl. 358—80 18 Claims



1. A method of representing a color according to the vector space geometry in a triaxial, essentially planar vector color space comprising the steps of:

(a) illuminating a surface with light, said light having a spectral composition and intensity generally throughout the visible region of the electromagnetic spectrum, and receiving said light or receiving light intensity from a self-luminous object,

(b) converting the received intensity of said light from said surface or said object into electronic data representing at least three visual responses either optically with filters or electronically with a mathematical transformation related to wavelength, intensity, and perception,

(c) selecting the lowest value of said electronic data as achromatic data and converting said electronic data into chromatic data by letting each value of said electronic data be an ordinate value on a corresponding axis of a triaxial, essentially planar vector space and determining chroma as the magnitude and hue as the direction of the vector resulting from said vector space geometry of the ordinate values of said electronic data,

(d) determining the amounts of primary colors capable of representing said color by comparing said converted achromatic and chromatic data to similarly converted achromatic and chromatic data from known colors having known corresponding density, intensity, or area amounts relative to a pixel element in terms of said primary colors, and

(e) storing, transmitting, or outputting said chromatic and achromatic data, or said amounts of primary colors.

4,884,131

STEREOSCOPIC TELEVISION SYSTEM WITH PREDICTIVE CODING TO MINIMIZE DATA BANDWIDTH

Dan S. Chevion, Haifa; Ehud D. Karnin, and Eugeniusz Walach, both of Kiryat Motzkin, all of Israel, assignors to International Business Machines Corp., Armonk, N.Y.

Filed Aug. 15, 1988, Ser. No. 231,934

Claims priority, application Israel, Sep. 2, 1987, 83752

Int. Cl.⁴ H04N *13/00*

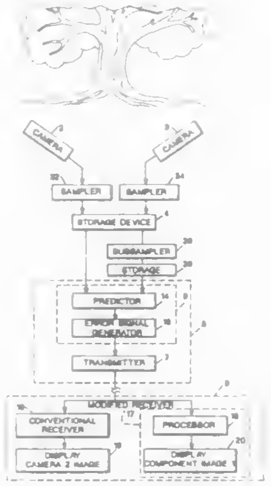
U.S. Cl. 358—88 17 Claims

1. A method for transmitting at a transmitter site and receiving at a receiver site 3-dimensional video images of a scene using conventional video transmission channels, comprising:

producing at least two images by imaging said scene from different viewing angles,

sampling said images so as to generate sets of component picture elements respectively associated with each image,

storing all said sets of component picture elements and subsampling said sets of component picture elements in accordance with a predetermined pattern in order to form first and second sets of signals for each set of component picture elements,



storing all said sets of signals,

transmitting both sets of signals of a first of said images,

predicting a second set of signals of a second of said images at both the transmitter and receiver sites,

generating at the transmitter site a compressed set of signals derived from said sub-sampled second set of signals of said second image and said corresponding predicted set,

transmitting said compressed set of signals, and

receiving and processing at said receiver site all the transmitted signals so as to regenerate said second set of signals.

4,884,132

PERSONAL SECURITY SYSTEM

James A. Morris, P.O. Box 4002, Charlottesville, Va. 22903; Terry F. Morris, 1405 Chandler Rd., Huntsville, Ala. 35801, and Frank O. Birdsall, Rte. 1, Box 16, Afton, Va. 22920

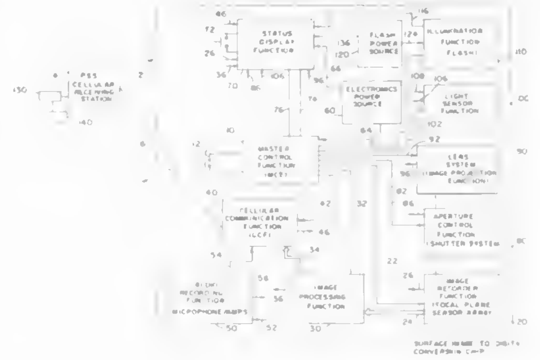
Continuation of Ser. No. 934,836, Nov. 25, 1986, abandoned. This application Dec. 28, 1988, Ser. No. 291,342

Int. Cl.⁴ H04N *7/18*

U.S. Cl. 358—93 15 Claims

1. A personal security system comprising a hand-held unit having a digital image sensor, wherein the image sensor comprises a surface image to digital signal conversion chip, a cellular transmitter for transmitting a digital image, a window,

wherein the window is optically aligned with the sensor for permitting an image to pass through the window to the sensor,


PSS CELLULAR RECEIVING STATION
130
140
STATUS DISPLAY FUNCTION
FLASH POWER SOURCE
ILLUMINATION FUNCTION FLASH
ELECTRONICS POWER SOURCE
LIGHT SENSOR FUNCTION
MASTER CONTROL FUNCTION
LENS SYSTEM IMAGE PROJECTION FUNCTION
CELLULAR COMMUNICATION FUNCTION
APERTURE CONTROL FUNCTION SHUTTER SYSTEM
AUDIO RECORDING FUNCTION MICROPHONE AMPS
IMAGE PROCESSING FUNCTION
IMAGE RECORDER FUNCTION FOCAL PLANE SENSOR ARRAY
SURFACE IMAGE TO DIGITAL CONVERSION CHIP

and digital preprogrammed information identifying the handheld unit to a remote location.

4,884,133

ENDOSCOPE LIGHT SOURCE APPARATUS

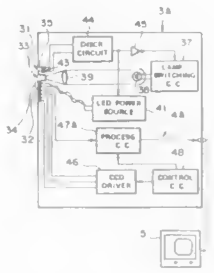
Masahide Kanno; Hisao Yabe; Takeshi Yokoi, all of Hachioji; Jun Yoshinaga, Hino, and Kazuhiko Ohzeki, Hachioji, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jun. 9, 1988, Ser. No. 204,312

Claims priority, application Japan, Jun. 11, 1987, 62-145526

Int. Cl.⁴ A61B *1/04, 1/06*

U.S. Cl. 358—98 7 Claims



1. An endoscope apparatus comprising:

a first endoscope having a light guide means which can transmit an illuminating light and can radiate said illuminating light onto an object and an observing means wherein an image of said object illuminated by said light guide means can be observed;

a second endoscope having a light source which can emit a light of a single wavelength band and can radiate said light onto an object and an observing means wherein an image of said object can be observed;

a light source apparatus having a light guide light source which can feed an illuminating light to said light guide means and a power source which can feed an electric power to said light source provided in said second endoscope and capable of being selectively connected with said first endoscope and said second endoscope.

4,884,134

VIDEO ENDOSCOPE APPARATUS EMPLOYING DEVICE SHUTTER

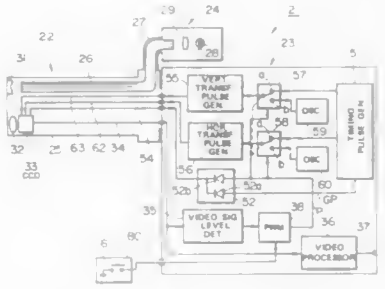
Kiyoshi Tsuji, Tama; Kenji Kimura, Tachikawa, and Yoshihiro Okada, Hachioji, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Aug. 30, 1988, Ser. No. 238,061

Claims priority, application Japan, Oct. 7, 1987, 62-254068; Apr. 19, 1988, 63-97417

Int. Cl.⁴ A61B *5/04, 1/06*

U.S. Cl. 358—98 32 Claims



1. A video endoscope apparatus comprising:

(a) an electronic scope including:

an elongated inserting section;

light emitting means for emitting illuminating light through the leading end of said inserting section;

an objective optical system disposed at said leading end of said inserting section for focusing an optical image; and

imaging means including a solid state imaging device for effecting photoelectric conversion of said optical image focused by said objective optical system; and

(b) charge-storage-time shortening means for shortening the storage time required for signals obtained by said photoelectric conversion of said solid state imaging device to be stored in the form of signal charges.

4,884,135

APPARATUS FOR PROMOTING THE VIGILANCE OF A MOTOR VEHICLE OPERATOR

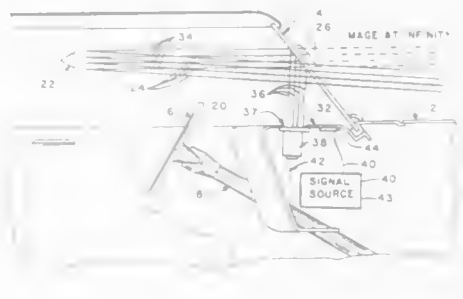
Julius Schiffman, 12960 LaSalle La., Huntington Woods, Mich. 48070

Division of Ser. No. 15,160, Feb. 17, 1987, Pat. No. 4,742,389, which is a continuation of Ser. No. 710,676, Mar. 12, 1985, abandoned. This application Apr. 29, 1988, Ser. No. 187,834

The portion of the term of this patent subsequent to May 3, 2005, has been disclaimed.

Int. Cl.⁴ H04N *7/18*

U.S. Cl. 358—103 11 Claims



1. An apparatus for use in a ground vehicle having a windshield through which a driver may view conditions in the direction of travel of the ground vehicle, the apparatus comprising:

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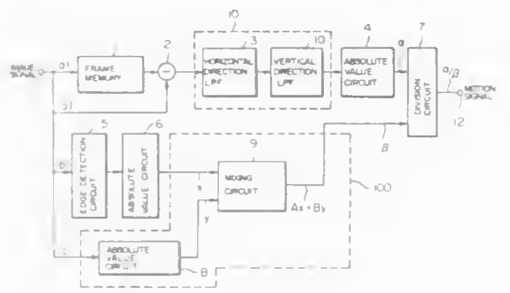
a signal source for generating a video signal comprising a series of moving visual images constituting a visual program of unpredictable, new information unrelated to the operation of the ground vehicle; and
a visual display means connected to said signal source for presenting a visual display of said video signal, the visual display means including
  a video display source connected to said signal source for emitting light corresponding to said video signal, and
  a reflecting device having an area, which is a small fraction of the total windshield area and disposed on the windshield in a position slightly above the line of sight of the driver toward the direction of travel of the ground vehicle for reflecting the light emitted by said video display source to the driver,
whereby the driver can observe said visual display while operating the ground vehicle and such observation will maintain the field of view of the driver in the proper position for operation of the ground vehicle and will maintain the driver in a mental state of vigilance.

4,884,136

MOTION DETECTION CIRCUIT

Yuichi Ninomiya; Yoshimichi Ohtsuka, both of Kawasaki; Yoshinori Izumi, Tokyo; Seiichi Gohshi, Komae, and Yoshiaki Shishikui, Yokohama, all of Japan, assignors to Nippon Hoso Kyokai, Tokyo, Japan
Filed Sep. 28, 1988, Ser. No. 250,160
Claims priority, application Japan, Oct. 2, 1987, 62-247790
Int. Cl.⁴ H04N *5/91*
U.S. Cl. 358—105 7 Claims



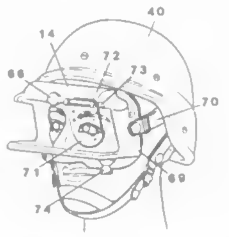
1. A motion detection circuit comprising:
means for producing a interframe difference signal of a sub-sampled image signal;
filter means for removing, from the interframe difference signal outputted from the producing means, its aliased portion;
detection means for detecting an edge of the image signal;
mixing means for mixing an absolute value of a level of the image signal and an absolute value of an output signal from the detection means; and
dividing means for dividing an absolute value of an output signal from the filter means by an output signal from the mixing means to provide a motion signal.

4,884,137

HEAD MOUNTED VIDEO DISPLAY AND REMOTE CAMERA SYSTEM

Charles M. Hanson, Richardson; Vaughn J. Koester, Dallas, and Robert D. Fallstrom, Richardson, all of Tex., assignors to Varo, Inc., Garland, Tex.
Division of Ser. No. 883,994, Jul. 10, 1986, Pat. No. 4,786,966. This application Mar. 14, 1988, Ser. No. 168,137
Int. Cl.⁴ H04N *7/18, 5/33, 7/22;* **H04B** *9/00*
U.S. Cl. 358—108 9 Claims

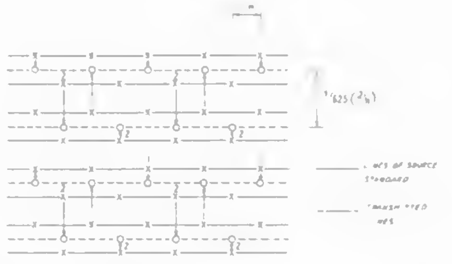
1. A video system, comprising:
an imaging system for generating video signals representative of an object;
a video receiver and display remotely located from said imaging system;
an optical link operating between a short UV and a far IR wavelength for transmitting said video signals between said imaging system and said video receiver;
means for presenting to the person different images superimposed one on another so that plural images can be viewed simultaneously, said presenting means comprising a partially reflecting mirror disposed in the paths of two images; and
means removably attachable to a person's head, including means for mounting thereto said video display in a position such that the person can view the display without the use of the person's hands and wherein the person can move about in an unimpeded manner.



4,884,138

VIDEO TRANSMISSION SYSTEMS

Richard Storey, Newchapel, United Kingdom, assignor to British Broadcasting Corporation, London, England
PCT No. PCT/GB86/00797, § 371 Date Apr. 4, 1988, § 102(e) Date Apr. 4, 1988, PCT Pub. No. WO88/01462, PCT Pub. Date Feb. 25, 1988
PCT Filed Dec. 23, 1986, Ser. No. 174,792
Claims priority, application United Kingdom, Aug. 19, 1986, 8620110
Int. Cl.⁴ H04N *7/01, 7/12*
U.S. Cl. 358—133 13 Claims

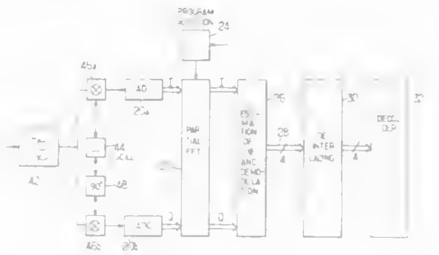


1. A method of transmitting a video signal originating at a relatively higher line standard over a transmission channel for signals at a lower line standard, comprising reducing the bandwidth of the higher line standard signal to one quarter of that of the higher line standard signal, collapsing two lines of the bandwidth reduced signal into a single line of the lower standard and transmitting samples at substantially a quarter of the bandwidth of the higher line standard, the samples being so formed as not to prejudice the ability of the bandwidth reduction decoding process to resolve the full resolution of the original higher line standard signal.

4,884,139

METHOD OF DIGITAL SOUND BROADCASTING IN TELEVISION CHANNELS WITH SPECTRUM INTERLACING

Daniel Pommier, Mordelles, France, assignor to Etat Francais, Represente Par Le Secretariat D'etat Aux Post Es Et Telecommunications (Centre National D'etudes Des Telecommunications), France
Filed Dec. 23, 1987, Ser. No. 137,369
Claims priority, application France, Dec. 24, 1986, 86 18163
Int. Cl.⁴ H04N *7/08*
U.S. Cl. 358—142 8 Claims

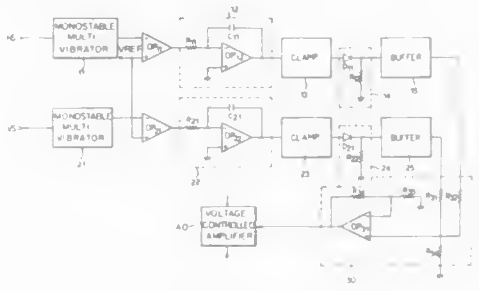


1. Process for broadcasting of digital signals in a television channel subjected to interference with a television program broadcast in an adjacent channel in the form of a signal having a spectrum of a plurality of spectral lines separated by low spectral power density intervals, comprising distributing said digital signals between a plurality of frequencies interlaced with the spectral lines of the signal of the television program for transmission, whereby frequency multiplexing is achieved and extracting said digital signals by comb filtering on reception.

4,884,140

VIGNETTING COMPENSATING CIRCUIT FOR A VIDEO CAMERA

Jong B. Park, Seoul, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea
Filed Nov. 2, 1988, Ser. No. 266,099
Claims priority, application Rep. of Korea, Nov. 18, 1987, 19978/1987
Int. Cl.⁴ H04N *5/208, 5/14, 5/235, 5/335*
U.S. Cl. 358—168 4 Claims


MONOSTABLE MULTI VIBRATOR
CLAMP
BUFFER
MONOSTABLE MULTI VIBRATOR
CLAMP
BUFFER
VOLTAGE CONTROLLED AMPLIFIER

1. A vignetting compensating circuit for a video camera comprising:
monostable multivibrators (11), (21) for outputting pulse signals corresponding to a width of one-half-cycle of a horizontal synchronizing signal (HS) and of a vertical synchronizing signal (VS);
operational amplifiers (OP_{11}), (OP_{21}) for amplifying the output signals of said monostable multivibrators (11), (21);
integrators (12), (22) for integrating the output signals of said operational amplifiers (OP_{11}), (OP_{21});
clamp circuits (13), (23) for clamping the minimum value of the output signals of said integrators (12), (22) to zero volt;
wave form shaping circuits (14), (24) for shaping the output signals of said clamp circuits (13), (23) into parabolic waves;
buffers (15), (25) for buffering and amplifying the output signals of said wave form shaping circuits (14), (24);
an adder (30) for adding the output signals of said buffers (15), (25) one to another; and
a voltage controlled amplifier (40) for amplifying the video signal taken by a video camera in proportion to the output voltage of said adder (30).

4,884,141

AUTOMATIC GAIN CONTROL CIRCUIT

Junichi Hyakutake, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Jan. 24, 1989, Ser. No. 300,977
Claims priority, application Japan, Jul. 27, 1988, 63-188818
Int. Cl.⁴ H04N *5/52, 9/64*
U.S. Cl. 358—174 6 Claims

1. An automatic gain control circuit, comprising:
an input means for inputting a video intermediate frequency signal;
a video intermediate frequency signal processing circuit connected to said input means, for amplifying and detecting said video intermediate frequency signal to output a video detection signal;
a decision circuit connected to said video intermediate frequency signal processing circuit, for deciding whether a peak of an amplitude of said video detection signal reaches a predetermined reference value or not to output a first output when reaches and a second output when does not reach;
a gain control circuit connected to said decision circuit and said video intermediate frequency signal processing circuit, for decreasing a gain of said video intermediate frequency signal processing circuit at a relatively fast first speed in response to said first output and increasing the gain of said video intermediate frequency signal processing circuit at a relatively slow second speed in response to said second output; and
a gain variation speed changing circuit connected to said decision circuit and said gain control circuit, for changing said second speed in said gain control circuit into a third speed faster than said second speed when said first output is not outputted from said decision circuit for a predetermined period longer than one horizontal period.

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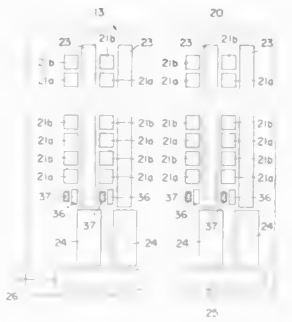
4,884,142
ELECTRONIC CAMERA HAVING SOLID STATE IMAGE SENSOR WITH IMPROVED NOISE SIGNAL DRAINING

Nobuo Suzuki, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Oct. 27, 1987, Ser. No. 113,063
Claims priority, application Japan, Oct. 28, 1986, 61-256361
Int. Cl.⁴ H04N *3/14*
U.S. Cl. 358—213.19 15 Claims

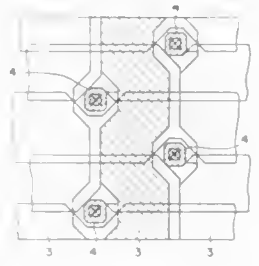


1. A process for forming an optical image in a solid state image sensor comprising the steps of:
- (a) registering an image on photosensitive units containing pixels;
- (b) generating charges corresponding to the received image;
- (c) transferring from the photosensitive units any unnecessary charges generated in the photosensitive pixels therein;
- (d) accumulating any said charges generating in step (b);
- (e) draining any unnecessary transferred charges;
- (f) removing from the image sensor any signals accumulated in the accumulation unit just before exposure began; and
- (g) at the end of the exposure time, draining charges accumulated during the exposure time by the process of steps (a) to (f);

wherein unnecessary charges generated in the photosensitive pixels are drained just before the beginning of the exposure period and just after the end of the exposure period.

4,884,143
LAMINATION TYPE SOLID IMAGE PICK UP APPARATUS FOR AVOIDING A NARROW CHANNEL EFFECT

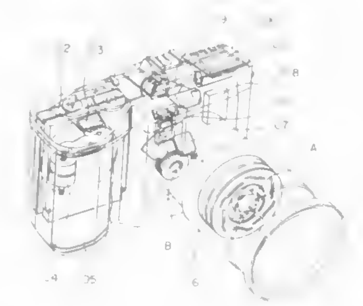
Shinji Uya, Kawasaki, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Sep. 26, 1988, Ser. No. 248,975
Claims priority, application Japan, Sep. 29, 1987, 62-245404
Int. Cl.⁴ H04N *3/14*
U.S. Cl. 358—213.28 3 Claims



1. A solid state image pick up apparatus comprising:
a semiconductor substrate;
a plurality of channels arranged at predetermined intervals in an upper region of said semiconductor substrate, each channel being formed in a zigzag pattern with a nearly constant channel width;
transfer electrodes formed through gate insulation films on said channels, respectively;
source layer sfor individual pixels, disposed adjacent to said channels, respectively, for supplying signal charges of individual pixels to respective channels in said upper region of said semiconductor substrate, said source layers being formed in such a pattern that those source layers which are horizontally adjacent to one another are shited from said channel in a vertical direction by a ½ pixel pitch;
first electrode means arranged on said insulating layer, parts of said first electrode means being in contact with said source layers, respectively;
a photoconductive film disposed on said first electrode means; and
second electrode means laminated on said photoconductive film.

4,884,144
ELECTRONIC CAMERA

Shigeru Jinnai, and Shinji Sakai, both of Kanagawa, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 51,667, May 18, 1987, abandoned. This application Apr. 12, 1989, Ser. No. 338,364
Claims priority, application Japan, May 21, 1986, 61-116375
Int. Cl.⁴ H04N *5/238*
U.S. Cl. 358—228 16 Claims

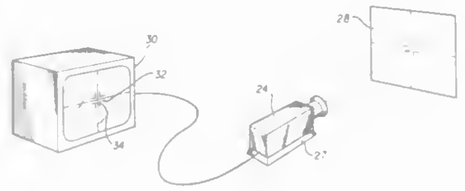


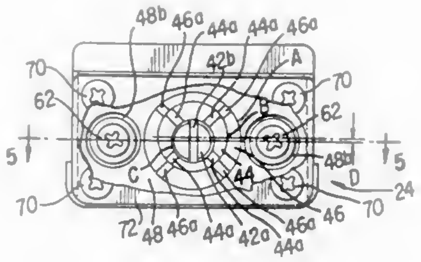
1. An electronic camera comprising:
- (a) detecting means for detecting the brightness of an object to be photographed;
- (b) image pickup means for receiving an optical image from the object to produce an image signal;
- (c) an exposure control member for controlling the amount of the light incident on said image pickup means within a predetermined range;
- (d) sensitivity control means for controlling variation of the amplification of said image signal of said image pickup means; and
- (e) main control means for controlling said exposure control member in accordance with the detection information of said detecting means and further controlling said sensitivity control means in said range of possible exposure control by said exposure control member.

4,884,145
ALIGNMENT OF DOUBLE ECCENTRIC AIMING SYSTEM FOR SOLID STATE CAMERA

Seymour Kaye, Flushing, and William R. Thompson, Malverne, both of N.Y., assignors to Loral Corporation, Syosset, N.Y.
Filed Dec. 31, 1986, Ser. No. 948,258
Int. Cl.⁴ H04N *9/097;* **G02B** *7/02*
U.S. Cl. 358—229 7 Claims

1. An apparatus for aligning an image-forming optical element with respect to an object to be imaged, comprising:
- (a) a housing comprising alignment means for permitting adjustment of the relative positions of an element mounting member and said housing, said alignment means comprising inner and outer eccentric adjustment members, each of said adjustment members comprising an outer cylindrical surface and a bore, the axes of said cylindrical surfaces and bores of said adjustment members being parallel to but not coaxial to one another, said element mounting member having a cylindrical surface fitting within said bore of said inner eccentric adjustment member, and said housing comprising a cylindrical bore for receiving said outer eccentric adjustment member,
- (b) means for fixably mounting said image forming optical element to said element mounting member,



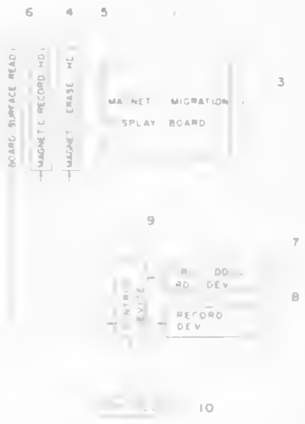


- (c) means for mounting said housing on an alignment mount in predetermined relation to an optical target,
- (d) means for operating said image-forming optical element to display an image of said optical target,
- (e) means for adjusting the position of said optical element with respect to said housing and said alignment mount by varying the relative angular positions of said inner and outer eccentric adjustment member relative to the housing until said image of said optical target indicates that said element is properly aligned,
- (f) means for locking said optical element with respect to said housing; and
- (g) means for mounting said housing on a second mount in predetermined relation to said object to be imaged.

4,884,146
IMAGE DISPLAY SYSTEM

Kenroh Yatsunami, Yamatokoriyama, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Jul. 14, 1988, Ser. No. 218,991
Claims priority, application Japan, Jul. 14, 1987, 62-175201; Jul. 14, 1987, 62-175202; Jul. 14, 1987, 62-175203; Jul. 14, 1987, 62-175204; Jul. 14, 1987, 62-175205
Int. Cl.⁴ H04M *1/00*
U.S. Cl. 358—400 20 Claims

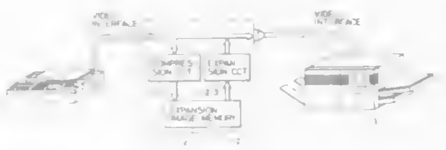
1. An image display system having a display board, comprising:
information reading means for reading information;
information display means for displaying said information read by said information reading means; and
copying means for producing an output representing said information being displayed on said information display means;
said information display means including,
information writing means for writing information onto the display board, and
information erasing means for erasing information from the display board,



said information erasing means preceding said information writing means with respect to a direction for writing said information onto the display board.

4,884,147
IMAGE SIGNAL PROCESSING SYSTEM

Shinobu Arimoto, Tokyo, and Masanori Muramatsu, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 246,947, Sep. 20, 1988, abandoned, which is a continuation of Ser. No. 823,243, Jan. 28, 1986, abandoned. This application Mar. 6, 1989, Ser. No. 319,921
Claims priority, application Japan, Jan. 31, 1985, 60-17002; Jan. 31, 1985, 60-17005; Jan. 31, 1985, 60-17010
Int. Cl.⁴ H04H *1/40*
U.S. Cl. 358—443 30 Claims



1. An image signal processing system comprising:
input means for entering image signals;
compression means for compressing the image signals entered by said input means;
memory means for storing the image signals of plural images, compressed by said compression means; and
control means for controlling the storage of the image signals into said memory means;
wherein, in case said memory means comprises plural areas available for memory, said control means is adapted to select a memory area according to a memory capacity of each area.

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4,884,148

CIRCUIT EMPLOYING A PLURALITY OF COUNTERS AND AN INTERPOLATOR FOR CONVERTING A VIDEO SIGNAL INTO A BINARY SIGNAL

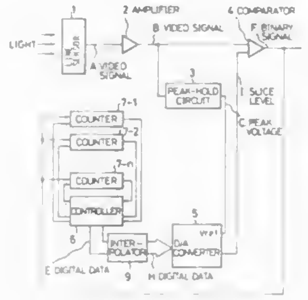
Osamu Ishikawa; Mikihiko Sone, and Yoshimi Suzuki, all of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 116,863, Nov. 4, 1987. This application Oct. 31, 1988, Ser. No. 264,710

Claims priority, application Japan, Nov. 14, 1986, 61-269788; Nov. 14, 1986, 61-269789

Int. Cl.⁴ H04N *1/40, 5/228*

U.S. Cl. 358—464 4 Claims



1. A circuit for converting a video signal comprising a series of pixel signals into a binary video signal comprising a series of corresponding binary signals, said pixel signals being obtained by photelectrically reading an object having an effective area in which information to be read is present and a marginal area outside the effective area, comprising:

a line image sensor comprising a plurality of sensor elements for photoelectrically reading the object line by line to produce pixel signals indicative of brightness levels of pixels forming each line of the object, each pixel signal being produced by a corresponding one of the sensor elements;

means responsive to the pixel signals produced by the line image sensor for setting respective reference levels for sections into which said line image sensor is divided, each section consisting of a plurality of adjacent ones of the sensor elements, said reference level setting means including

means for producing digital reference level data for each of said sections from the pixel signals produced by the line image sensor,

an interpolator for producing interpolated digital reference level data for each of a plurality of subsections into which said sections are divided from the digital reference level data, and

a D/A converter for converting said interpolated digital reference level data into corresponding analog reference level signals; and

a comparator for comparing each pixel signal with the analog reference level signal for the subsection to which the sensor element which produced the pixel signal belongs to produce the corresponding binary signal.

4,884,149

IMAGE RECORDING WITH DATA TRANSMISSION BYPASS AND SHIFT REGISTER

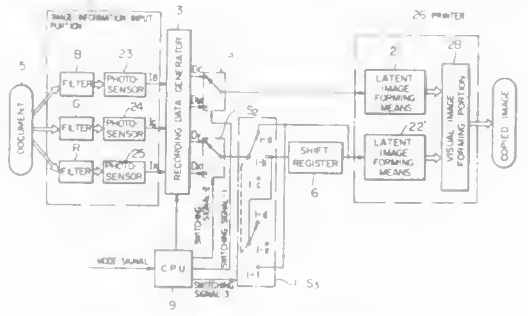
Hisashi Shoji; Satoshi Haneda, and Kunihisa Yoshino, all of Hachioji, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Mar. 22, 1988, Ser. No. 171,836

Claims priority, application Japan, Mar. 26, 1987, 62-72810; Mar. 30, 1987, 62-76978; Mar. 30, 1987, 62-76979; Apr. 9, 1987, 62-88138; Apr. 9, 1987, 62-88139; Jun. 22, 1987, 62-156335

Int. Cl.⁴ G01D *9/42;* H04N *1/23*

U.S. Cl. 358—300 7 Claims



1. An image forming apparatus comprising

a data introducing means for introducing an image data to be recorded,

an image carrying means for producing an image thereon,

a writing means for writing the image onto said image carrying means in accordance with the image data,

a transmission means for transmitting the image data from said introducing means to said writing means,

said transmission means having

a shift register for sequentially shifing the image data therethrough so that image data is transferred to the writing means with a predetermined time delay,

a bypass line for bypassing said shift-register so that said image data is transferred directly to the writing means without said predetermined time delay,

a circulation line for circulating the image data from an outlet to an inlet of said shift register, and

a switch means for establishing a transmission mode of said trransmission means by selectively connecting said shift register, said bypass line and said circulation line.

4,884,150

INFORMATION REPRODUCER

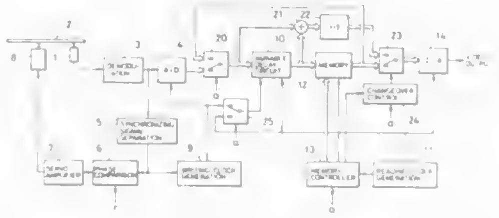
Masao Kanda, Saitama, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Jan. 20, 1988, Ser. No. 145,956

Claims priority, application Japan, Jan. 20, 1987, 62-10941

Int. Cl.⁴ H04N *9/87*

U.S. Cl. 358—327 11 Claims



1. An information reproducer of the type in which video information recorded on a recording medium is read therefrom and reproduced, comprising; first timing signal generation means for generating a first timing signal corresponding to the time-axis error of a video signal obtained from said recording medium; variable delay means for delaying an input signal by a time determined by a control input; second timing signal generation means for generating a second timing signal for causing said variable delay means to act as a fixed delay line; memory means for storing an output from said variable delay means in accordance with a command signal and capable of storing an amount of data corresponding to at least one field; first signal selection means for selectively supplying one of a signal read from said memory and said video signal read from said recording medium to said variable delay means; second signal selection means for selectively supplying one of said first and second timing signals as said control input to said variable delay means in accordance with said command signal and correction means for processing said signal read from said memory, using the output from said variable delay means, in response to said command signal, so as to improve the quality of a picture reproduced from said signal read from said memory.

4,884,151

RECORDING AND/OR REPRODUCING APPARATUS WITH PHOTO-ELECTRIC IMAGE DEVICE

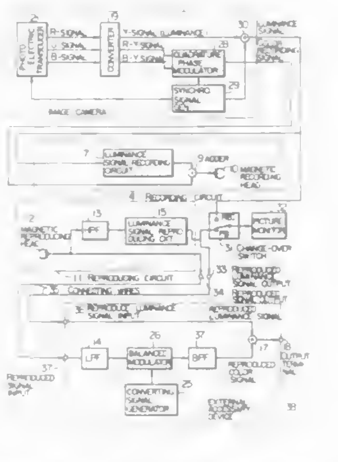
Masamitsu Ohtsu, Kadoma, and Hiroshi Taniguchi, Hirakata, both of Japan, assignors to Matsushita Electric Inductrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 793,441, Oct. 18, 1985, abandoned, which is a continuation of Ser. No. 547,456, Nov. 1, 1983, abandoned, which is a continuation of Ser. No. 180,579, Aug. 25, 1980, abandoned. This application Feb. 1, 1988, Ser. No. 153,564

Claims priority, application Japan, Sep. 3, 1979, 54-112576

Int. Cl.⁴ H04N *9/491*

U.S. Cl. 358—330 3 Claims



1. An integrated system including an image camera and recording circuit for recording on video tape a color video signal including a color recording signal occupying a frequency band of relatively low frequency and a luminance recording signal occupying a frequency band higher than the frequency band occupied by the color recording signal, without forming a conventional composite color television signal as an intermediate step in producing the color video signal, comprising:

converter means for converting signals representative of the primary colors R, G and B into a luminance signal Y, an R-Y color difference signal, and a B-Y color difference signal;

synchronizing signal generator means for generating a synchronizing signal containing at least a horizontal synchronizing signal, a vertical synchronizing signal and a first carrier signal, the frequency of said first carrier signal being selected to be appropriate for directly recording the color recording signal on video tape;

adder means for combining the luminance signal Y with the synchronizing signal to produce a luminance output signal;

modulation means for modulation of the luminance output signal with a second carrier signal having a higher frequency than said first carrier signal to produce a luminance recording signal, the frequency of the second carrier signal being selected to be appropriate for the direct recording of the luminance recording signal on video tape in a relatively high frequency band;

quadrature phase modulator means responsive to the color difference signals and the first carrier signal for modulating the phases of said color difference signals to produce a color recording signal for direct recording on the video tape in a relatively low frequency band; and

adder means for receiving the luminance recording signal in a relatively high frequency band and the relatively low frequency color recording signal for producing the color video signal for recording on video tape without forming a conventional composite color television signal as an intermediate step in producing said color video signal.

4,884,152

METHOD FOR RESTORING TRACK 0

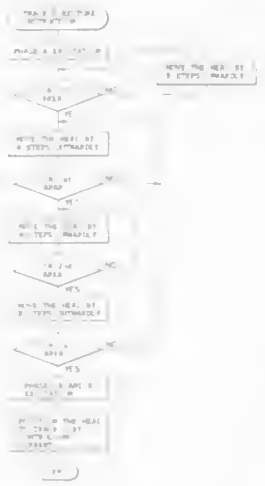
Jun Ide, Furukawa, Japan, assignor to Alps Electric Co., Ltd., Japan

Continuation of Ser. No. 15,449, Feb. 17, 1987, abandoned. This application Dec. 28, 1988, Ser. No. 290,836

Claims priority, application Japan, Jun. 4, 1986, 61-128221

Int. Cl.⁴ G11B *5/55, 5/596*

U.S. Cl. 360—78.14 2 Claims



1. A method for restoring a head to a track 0 in a disk drive unit in which an information recording medium formed in a shape of a disk is driven to be rotated and the head is moved by use of a stepping motor to effect a recording or reproducing of an information, the method being achieve by detecting a position of the track 0 at an outer-most location in a recording area of the information recording medium comprising the following steps of:

disposing a first area and a second area on the recording medium each for beforehand writing therein a servo information, said first and second areas being adjacent to each other in a rotational direction of the information recording medium;

writing the servo information in an area outside the track 0 in a portion of the first area, and writing the servo information in a portion of the second area inside the track 0, and writing the servo information configured alternately

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in a zigzag shape in a preset portion of the first and second areas inside the recording area;

positioning the head to a position outside the track 0 by exciting the stepping motor;

returning the head thereafter toward an inner side to detect a position where the track 0 is found within a cycle of an excitation phase of the stepping motor;

positioning the head at a position separated from the track 0 by a preset number of steps; and

controlling thereafter a current ratio to effect an excitation on a preset excitation phase, thereby positioning the head to the position over the track 0.

4,884,153

SINGLE DRIVING SYSTEM FOR TAPE LOADING AND REEL MODE CONVERSION OF VCR

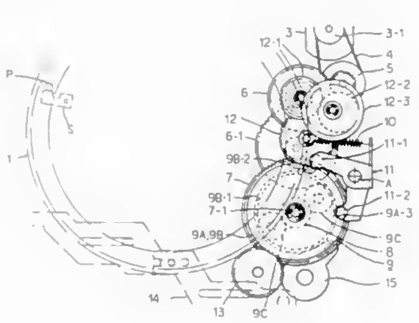
Hee K. Ahn, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd, Rep. of Korea

Filed May 12, 1987, Ser. No. 48,823

Claims priority, application Rep. of Korea, May 14, 1986, 1986-3741

Int. Cl.⁴ G11B *15/61, 5/008*

U.S. Cl. 360—85 6 Claims



1. A single driving system for tape loading and reel mode conversion of a VCR including a head drum, a ring gear for tape loading and reel mode converting means, said single driving system comprising:

- a single drive motor to perform the functions of tape loading and reel mode conversion;
- a drive gear being rotated by the driving force of said drive motor transmitted through a first interlocking means;
- a selective power transmission device which transmits successfully and discriminatingly the driving force of said drive motor, transferred from said drive gear, to said ring gear and said reel mode converting means through a second interlocking means under the control of a single control lever;
- said power transmission device including:
  - a sun gear, having at least one planet gear connectively engaged with said sun gear such that said sun gear and said planet gear rotate in opposite directions,
  - a gear for tape loading, said ring gear being responsive to said gear for tape loading;
  - a gear for reel mode conversion, said reel mode converting means being responsive to said gear for reel mode conversion;
  - said gear for tape loading, said gear for reel mode conversion, and said sun gear being connectively engaged at a common axis; and
  - said gears for tape loading and reel mode conversion having a groove on their respective rims to receive a locking pin of said control lever, whereby when said locking pin is received by said groove of one of said gears, the driving force of said driving motor is transferred to that gear whose groove has not received said locking pin.

4,884,154

FLANGED TRANSDUCER SUPPORTING ARM FOR A MAGNETIC HEAD/ARM ASSEMBLY

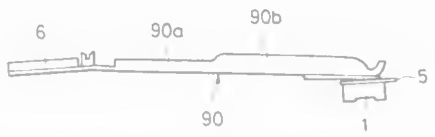
Shuji Onodera; Taichi Sato, both of Ibaraki; Kihachiro Tanaka, Ushiku; Yokuo Saitoh, Kanagawa; Hiroshi Daito, Odawara; Yoko Yamada, Tokyo; Yuzo Yamaguchi, Tsuchiura; Yoshinori Takeuchi, Ibaraki; Shigeo Hara, Kanagawa, and Shouichi Setone, Ebina, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 16, 1987, Ser. No. 97,170

Claims priority, application Japan, Sep. 19, 1986, 61-219511

Int. Cl.⁴ G11B *5/48*

U.S. Cl. 360—104 6 Claims



1. A transducer supporting arm for use in a magnetic head/arm assembly, comprising a front end for supporting a magnetic transducer, a rear end for mounting to a drive unit of the assembly, side edges between the front end and the rear end, and flanges provided along the side edges,

wherein the flanges comprise first flanges of one height extending from the rear end toward the front end to an intermediate position, and second flanges of a second height greater than the one height extending from the front end toward the rear end to the intermediate position, and a step joining each of the first flanges with the respective second flanges at the intermediate position.

4,884,155

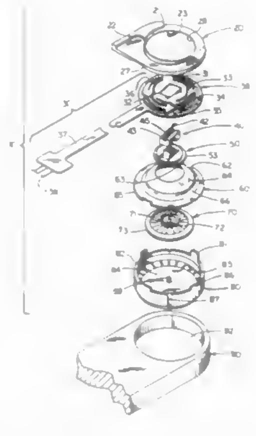
SELF-LOADING HEAD ASSEMBLY FOR DISK DRIVES

John L. Spash, Harvard, Mass., assignor to Digital Equipment Corporation, Maynard, Mass.

Filed Dec. 4, 1987, Ser. No. 128,802

Int. Cl.⁴ G11B *5/54*

U.S. Cl. 360—105 17 Claims



2. A head assembly for supporting a slider in a loaded position juxtaposed a rotating disk comprising:

A. expandable bellows means having a rigid upper housing member adapted to be mounted on an actuator arm and a flexible lower diaphragm member affixed in sealing relationship thereto to form an airtight seal to form an air chamber, said slider being mounted on said diaphragm member sidewall and an opposed sidewall for supporting said slider said bellows means having an expanded condition in which it supports said slider proximate said disk and a collapsed condition in which it supports said slider distal said disk;

B. retraction means connected to said bellows means for urging said bellows to its collapsed condition; and

C. air interception means connected to said bellows means for intercepting air entrained with said disk and directing it into said bellows means to facilitate expansion of said bellows means.

4,884,156

MAGNETIC HEAD HAVING A THIN-FILM AND A COIL

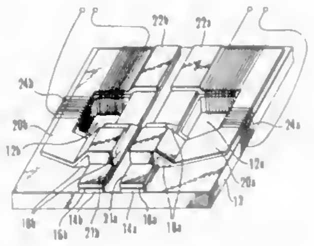
Hideaki Miyakawa, Kanagawa, and Makoto Kameyama, Chiba, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 80,172, Jul. 30, 1987, abandoned, which is a continuation of Ser. No. 693,499, Jan. 22, 1985, abandoned. This application Mar. 27, 1989, Ser. No. 330,925

Claims priority, application Japan, Jan. 26, 1984, 59-12490

Int. Cl.⁴ G11B *5/29*

U.S. Cl. 360—121 4 Claims



1. A multi-track magnetic head comprising:

(a) a non-magnetic block having a first plane surface and a pair of penetration holes respectively formed in a direction crossing with the first plane surface;

(b) a pair of lower magnetic thin film layers, each of which forms at least a part of a magnetic core and is deposited on the first plane surface, said pair of lower magnetic thin film layers having a common plane surface arranged to be parallel with the first plane surface;

(c) a pair of non-magnetic thin films, each of which operates as a transducing gap of the magnetic head and is deposited on the common plane surface, a distance between the pair of non-magnetic thin films being smaller than a distance between that of the pair of penetration holes;

(d) a pair of upper magnetic thin film layers, each of which has a part deposited on each of said pair of non-magnetic thin films, a pair of magnetic cores consisting of said pair of lower magnetic thin film layers and said pair of upper magnetic thin film layers and being arranged to enclose around said pair of penetration holes on the first plane surface; and

(e) a pair of wire-form coils wound around said non-magnetic block and said pair of magnetic cores through said pair of penetration holes.

4,884,157

THIN FILM MAGNETIC HEAD WITH COIL WINDINGS RECEIVING TRENCH

Gary E. Roberts, Santa Barbara, and James Reid, Santa Ynez, both of Calif., assignors to Applied Magnetics Corporation, Goleta, Calif.

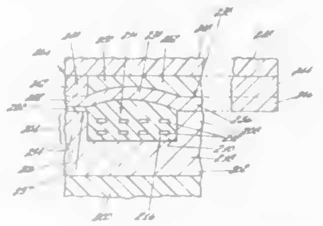
Filed Jul. 28, 1987, Ser. No. 78,909

Int. Cl.⁴ G11B *5/127*

U.S. Cl. 360—125 9 Claims

1. A thin film magnetic head comprising

- a substrate formed of a material which is highly resistive to being abraded by a magnetic media being moved thereacross;
- a bottom pole piece located on said substrate, said bottom pole piece having a front gap section and a rearwardly extending portion with the front gap section thereof positioned at a predetermined location on said substrate and with the rearwardly extending portion thereof located rearward of and spaced from the front gap section;
- a lateral wall formed of a magnetic material having a forward wall section and a rearward wall section defining a coil windings receiving trench therebetween, said lateral wall being formed of predetermined thickness and being positioned on said bottom pole piece with the forward wall section contiguous the front gap section of said bottom pole piece establishing the forward wall section as one side of a transducing gap and with the rearward wall section being positioned a predetermined distance rearward from the front wall section and contiguous the rearwardly extending portion of said bottom pole piece forming one side of a rear magnetic closure section, the coil windings receiving trench being positioned on said bottom pole piece rearward of the front gap section and forward of the rear magnetic closure section with said bottom pole piece located between the forward wall section and the rearward wall section forming a bottom enclosure for the coil windings receiving trench;
- a coil having a plurality of coil windings formed on said bottom pole piece and having a thickness which is less than the thickness of said lateral wall, said coil having a portion of the coil windings located in the coil windings receiving trench and the remaining portion thereof extending from the coil windings receiving trench rearward on the rearwardly extending portion of said bottom pole piece and beyond the rear magnetic closure section;



- an insulating structure having a thin gap defining portion and a thick coil windings enclosing portion wherein the thin gap defining portion of said insulating structure is formed of predetermined thickness and is located on the forward wall section of said lateral wall to establish the thickness of a transducing gap and wherein the thick coil windings enclosing portion encloses and surrounds that portion of the coil windings located in the coil windings receiving trench;
- a top pole piece having a front gap section and a rear magnetic closure portion with the front gap section positioned on the thin gap defining portion of said insulating structure and adjacent the front gap section of said bottom pole establishing the front end section of said top pole piece as the other side of the transducing gap and with the rear magnetic closure portion thereof contiguous the rearward wall section of said lateral wall establishing a rear magnetic closure portion of said top pole piece as the other side of a rear magnetic closure section, the bottom surface of said top pole piece bridging from the forward wall section to the rearward wall section of said lateral wall forming a top enclosure for the coil windings receiving trench; said top pole piece having a contoured outer surface having a step formed therein and having a rearward support section;
- a leveler layer formed of a material having substantially the same abrading characteristics as that of the top pole piece and having a thickness which is slightly greater than the height of the step of said top pole piece and having a forward leveler section located on the front gap section of said top pole piece, and a rearward leveler section located

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on a support section positioned a predetermined distance from and rearward of the forward leveler section of said leveler layer and rearward of the transducing gap, the forward leveler section and rearward leveler section being adapted to receive and support a superstrate attached to said magnetic head by an adhesive means substantially located between the forward leveler section and the rearward leveler section.

4,884,158

MAGNETIC TAPE CASSETTE HAVING A SPRING-BIASED FRONT PANEL AND LOCKING MEMBER

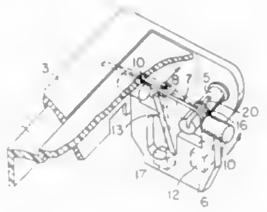
Albert Pertzsch, Munich; Hubert Brunner, Weil, and Ludwig Zeroni, Ottobrunn, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 793,183, Oct. 31, 1985, abandoned. This application May 13, 1987, Ser. No. 49,288

Claims priority, application Fed. Rep. of Germany, Nov. 10, 1984, 3441156

Int. Cl.⁴ G11B *23/087*

U.S. Cl. 360—132 5 Claims



1. In a cassette for magnetic video tape, the combination of
a two part housing with
an upper housing
a lower housing
said upper and lower housings each having side walls and a front wall formed with apertures,
a front panel pivotally mounted on the side walls so as to have an open position and a closed position with respect to the apertures wherein the front panel covers said apertures when in said closed position, and permits access through said apertures when in said open position,
side parts of the front panel partly overlapping the side walls,
at least one peg carried on the inside of said side and extending towards the inside of the cassette, and
having a recess formed in said peg,
a coil spring mounted on said peg, having a long leg and a short leg forming the respective ends of the coil,
said short leg being seated in the peg recess to fix the coil spring on the peg,
a locking plate mounted on the lower housing half, means for swiveling the plate on supports in the lower half having a plane oriented along the height dimension so that the plane is positioned inside of the front part of the side walls and the side parts of the front panel,
said plate swiveling on the axis of rotation of said swiveling means,
means on the plate for engaging the front panel so as to hold the panel in said closed position over the apertures when the plate is engaged with the front panel and to be disengageable upon swiveling of the plate,
a projection of said plate extending obliquely from the plane of the plate along the height dimension and having a surface offset from the axis of rotation of the swivel means,
the projection being constructed to that the long leg engages the projection surface and upper housing half and applies a force producing an angular moment in the plate.

4,884,159

BRAKING ARRANGEMENT IN A MAGNETIC TAPE CASSETTE

Takateru Satoh, Nagano, Japan, assignor to TDK Corporation, Japan

Filed Oct. 30, 1987, Ser. No. 115,534

Claims priority, application Japan, Nov. 5, 1986, 61-169003[U]; Nov. 5, 1986, 61-169004[U]

Int. Cl.⁴ G11B *23/04*

U.S. Cl. 360—132 6 Claims

1. A magnetic tape cassette, comprising:
a casing comprising an upper casing member and a lower casing member connected together;
a pair of reel hubs rotatably arranged in said casing and having a magnetic tape wound thereon;
lock means provided at a portion of each of said reel hubs above said magnetic tape wound thereon;
a hub brake slidably arranged in said casing and releasably engaged with said lock means, said hub brake having one side opposite to said reel hubs and the other side opposite to said one side;
a hub brake spring provided in said casing so as to force said hub brake toward said lock means of each of said reel hubs to selectively engage said hub brake with said lock means;
a front cover pivotally mounted at said casing so as to selectively close and open a front portion of said casing due to its pivotal movement;
said front cover selectively engaging with said hub brake to release engagement of said hub brake with said lock means against said hub brake spring;
a springe engagement provided on said other side of said hub brake so as to be engaged with said hub brake spring;
wherein said hub brake spring includes a coil portion supported on said lower casing member and an extension held on said spring engagement;
wherein said spring engagement comprises an arm-like projection mounted on said hub brake so as to downwardly extend therefrom, said arm-like projection being bent at a tip end thereof for securely holding said extension on said spring engagement;
and additionally comprising
a spring support provided on said lower casing member for support said hub brake spring;
an abutment provided on said lower casing member for provisionally holding said extension of said hub brake spring engaged with said spring engagement of said hub brake; and
a release element provided at said upper casing member for releasing said extension of said hub brake spring held on said abutment to transfer said extension to said spring engagement;
wherein said lower casing member is provided at an upper end thereof with a wall member for supporting said hub brake thereon;
wherein said abutment comprises a prominence provided on said wall member along a cutout formed at said wall member for inserting said extension of said hub brake spring therethrough under said wall member;
wherein said release element of said upper casing member comprising a projection provided on an inner surface of said upper casing member so as to downwardly extending therefrom, said projection being formed at a tip end thereof with an oblique surface portion which pushingly releases said hub brake spring held on said abutment of said lower casing member therefrom;
wherein said spring engagement of said hub brake spring is positioned so as to receive said extension released from said abutment at a position below said wall member;
wherein said wall member is provided with an overhang portion; and
wherein said extension of said hub brake spring is arranged to be overlapped by said overhang portion of said wall member;
whereby when said hub brake is incorporated in said lower casing member, said hub brake spring is temporarily held on said abutment of said lower casing member, and
when said upper and lower casing members are then combined, said lower oblique surface portion of said release element provided on the inner surface of said upper casing member, releases said extension of said spring being provisionally held upon the abutment of the lower casing member and moves the extension through said cutout to a position under said wall member,
so that said spring does not act upon said hub brake until said upper casing member is combined with said lower casing member to cause said reel hubs to be aligned, and effectively preventing inclining or lifting of said reel hubs, and providing smooth assembly of said cassette.

4,884,160

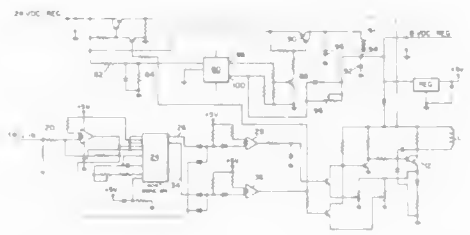
CONSTANT CURRENT ACTUATOR FOR INDUCTIVE LOAD

Stephen T. Pasquarella, Rochester, N.Y., assignor to VA Inc., Rochester, N.Y.

Continuation of Ser. No. 129,162, Dec. 7, 1987, abandoned. This application Mar. 10, 1989, Ser. No. 320,885

Int. Cl.⁴ H01H *47/32*

U.S. Cl. 361—18 2 Claims



1. A circuit for energizing an inductive load comprising: a first source of direct current having a low internal impedance and a first voltage, a second source of direct current having a low internal impedance and a second voltage lower than said first voltage, switching means for selectively connecting a load across said sources, timed control means responsive to an input signal for controlling said switch means so that switch means connects the load continuously across said first source for a predetermined initiating interval immediately following the beginning of the input signal and continuously across said second source immediately following the initiating interval until the end of the input signal, and current control means including a feedback loop for limiting the maximum current through the load to a first predetermined constant value during the initiating interval and to a second, lower, constant value thereafter until the end of the input signal.

4,884,161

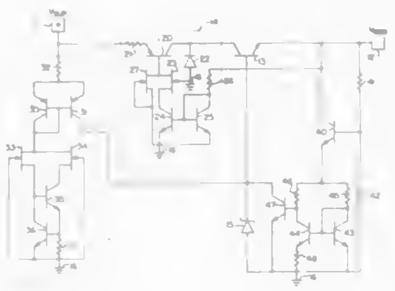
INTEGRATED CIRCUIT VOLTAGE REGULATOR WITH TRANSIENT PROTECTION

James H. Atherton, and Silvo Stanojevic, both of Freeport, Ill., assignors to Honeywell, Inc., Minneapolis, Minn.

Continuation of Ser. No. 498,343, May 26, 1983, abandoned. This application Mar. 10, 1986, Ser. No. 839,453

Int. Cl.⁴ H02H *9/02, 3/20*

U.S. Cl. 361—18 27 Claims



24. An integrated circuit voltage regulator with improved protection against excessive voltage excursions, comprising:
a supply terminal for receiving electrical current, at a voltage which may have substantial superimposed excursions of positive or negative polarity relative to a reference voltage;
a source of the reference voltage;
a bipolar regulator pass transistor of a first conductivity type having a base electrode and first and second additional electrodes, said pass transistor being susceptible to electrical breakdown when positive or negative voltages in excess of first and second predetermined magnitudes respectively are impressed between the base electrode and the first additional electrode, the first and second predetermined magnitudes being less than the magnitudes of the voltage excursions which may be present at said supply terminal;
first base drive means for supplying a substantially constant voltage to the base electrode of said pass transistor;
diode means connected between said source of the reference voltage and the first additional electrode of said pass transistor for limiting voltage excursions of the first polarity to less than the first predetermined magnitude;
a bipolar transistor of a second conductivity type having a base electrode and first and second additional electrodes;
first connecting means connecting the first electrodes of said bipolar transistors of first and second conductivity types;
second connecting means connecting said supply terminal to the second terminal of said transistor of the second conductivity type; and
second base drive means for supplying a substantially constant current to the base of said transistor of the second conductivity type.

4,884,162

METHOD AND APPARATUS FOR PREVENTING THE OVERHEAT OF A LINE FEED MOTOR FOR A PRINTER

Toshikazu Ito; Toshiro Suemune, and Katsuhiko Sato, all of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Jul. 25, 1988, Ser. No. 224,001

Claims priority, application Japan, Jul. 24, 1987, 62-183732

Int. Cl.⁴ H02H *6/00*

U.S. Cl. 361—23 2 Claims

1. An apparatus for preventing the overheating of a line feed motor, said apparatus comprising:
a first timer means for measuring a predetermined first time interval;

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a second timer means for measuring a predetermined second time interval;

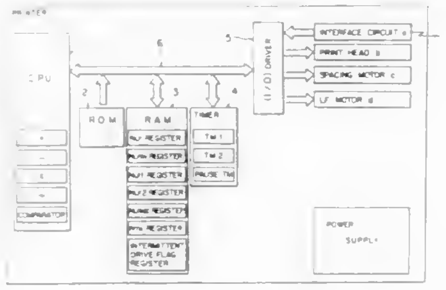
a counting and calculating means for counting a number of line feed pulses of said line feed motor during each of said first time interval and said second time interval, and for adding the thus counted number of line feed pulses to a previously updated sum of line feed pulses to obtain a new sum of line feed pulses at the end of each of said first time interval and said second time interval;

a first subtracting means for subtracting a first allowable line feed pulse number from said new sum of line feed pulses to obtain a newly updated sum of line feed pulses at the end of said first time interval;

a second subtracting means for subtracting a second allowable line feed pulse number from said new sum of line feed pulses to obtain said newly updated sum of line feed pulses at the end of said second time interval;

a control means for controlling activation of said line feed motor, for activating said first timer means, for determining whether said newly updated sum of line feed pulses at the end of said first time interval is a positive number, for reactivating said first time means when said newly updated sum of line feed pulses at the end of said first time interval is a nonpositive number, for activating said second timer means when said newly updated sum of line feed pulses at the end of said first time interval is a positive number, for determining whether said newly updated sum of line feed pulses at the end of said second time interval is a positive number, for activating said first timer means when said newly updated sum of line feed pulses at the end of said second time interval is a nonpositive number, and for reactivating said second timer means when said newly update sum at the end of said second time interval is a positive number;

wherein a cessation period for deactivation of said line feed motor is provided during a portion of said second time interval, whereby said cessation period allows for heat dissipation of said line feed motor.



4,884,163
CONDUCTIVE POLYMER DEVICES

Marguerite E. Deep, Los Altos, and Nelson H. Thein, Fremont, both of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Division of Ser. No. 711,909, Mar. 14, 1985, Pat. No. 4,774,024. This application Apr. 5, 1988, Ser. No. 177,720

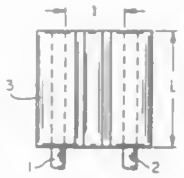
Int. Cl.⁴ H02H *5/04*

U.S. Cl. 361—58 7 Claims

6. A circuit protection device which has a resistance at 23° C. of less than 100 ohms and which comprises a PTC element and two metal electrodes which can be connected to a source of electrical power to cause current to pass through the PTC element, the PTC element being composed of a conductive polymer composition which exhibits PTC behavior, which has been cross-linked by radiation, which has a resistivity at 23° C. of less than 100 ohm.cm and which comprises

(1) a crystalline polymeric component;

(2) carbon black which is dispersed in the polymeric component;



(3) alumina trihydrate; and

(4) a lubricant or a coupling agent for the alumina trihydrate.

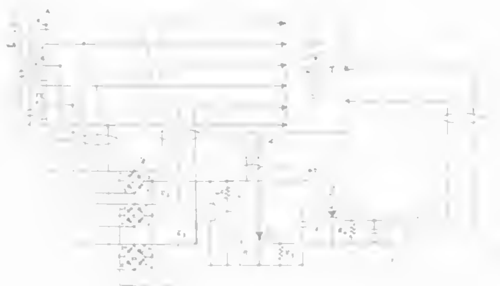
4,884,164
MOLDED CASE ELECTRONIC CIRCUIT INTERRUPTER

Richard A. Dziura; Ronald R. Russell, both of Plainville, and Graham A. Scott, Avon, all of Conn., assignors to General Electric Company, New York, N.Y.

Filed Feb. 1, 1989, Ser. No. 305,341

Int. Cl.⁴ H02M *3/053*

U.S. Cl. 361—97 23 Claims



1. A circuit interrupter comprising:

a case and a cover;

a pair of separable contacts within said case under control of an operating mechanism;

an electronic trip circuit within said cover connected with a first trip coil to articulate said operating mechanism and separate said contacts upon occurrence of first overcurrent conditions through said contacts; and

a second trip coil connected to said first trip coil to articulate said operating mechanism and separate said contacts upon occurrence of second overcurrent conditions through said contacts.

4,884,165
DIFFERENTIAL LINE DRIVER WITH SHORT CIRCUIT PROTECTION

Samuel K. Kong, Union City; William Y. Jiang, Sunnyvale, and Wallace C. W. Chan, Cupertino, all of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Nov. 18, 1988, Ser. No. 274,319

Int. Cl.⁴ H02H *3/00*

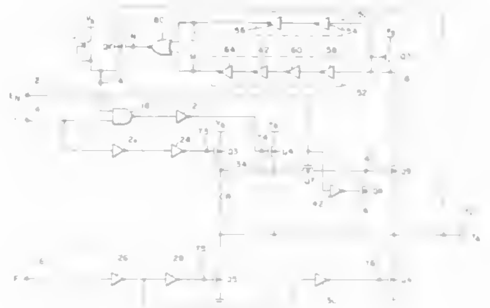
U.S. Cl. 361—98 20 Claims

1. A line driver circuit having short-circuit protection comprising:

primary pull-up transistor means connected between a first voltage reference level and an output terminal for providing a primary current to said output terminal;

a secondary pull-up transistor means coupled between said first voltage reference level and said output terminal for providing a secondary current to said output terminal; and

means for disabling conduction of said primary current through said primary pull-up transistor means in response to said secondary current through said secondary pull-up transistor means exceeding a predetermined level for a period greater than a predetermined time period, wherein the means for disabling conduction of said primary current through said primary pull-up transistor means includes means for providing a fault signal which is active when said secondary current in said secondary pull-up transistor means exceeds said predetermined level; wherein the means for disabling conduction includes logic gate and means for inhibiting input drive signals to said primary pull-up transistor means;



means for determining that said fault signal is active for greater than said predetermined time period, said determining means providing a cutoff signal which is active to disable conduction of said primary current through said primary pull-up transistor means, wherein the means for determining that said fault signal is active includes means for delaying said fault signal for a time greater than said predetermined time period to provide a delayed fault signal and includes means for comparing said fault signal and said delayed fault signal to provide said cutoff signal to disable conduction of said primary current when said fault signal and said delayed fault signal are active at the same time.

4,884,166
ELECTRICITY STATION

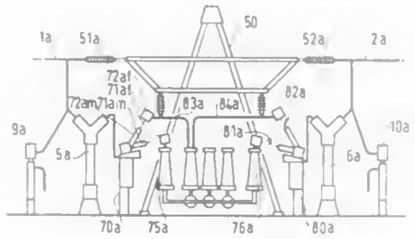
Edmond Thuries, Pusignan, and Jean-Paul Masson, Villeurbanne, both of France, assignors to Societe Anonyme dite : Alsthom, Paris Cedex, France

Filed Aug. 3, 1988, Ser. No. 227,933

Claims priority, application France, Aug. 3, 1987, 87 10987

Int. Cl.⁴ H02B *5/00*

U.S. Cl. 361—333 6 Claims



1. A hybrid outdoor electricity transmission station for coupling at least one air-insulated electric transmission line to output feedthroughs, through a circuit including at least one circuit breaker series connected with at least one section switch by means of at least one set of three phase busbars, the improvement wherein said circuit breakers are of outdoor type, said section switches are of telescopic, open air type, and said at least one set of busbars is of the metal-clad type including a sheath containing dielectric gas under pressure.

4,884,167
COOLING SYSTEM FOR THREE-DIMENSIONAL IC PACKAGE

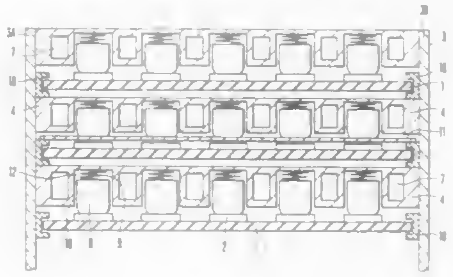
Shinji Mine, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Nov. 8, 1988, Ser. No. 268,467

Claims priority, application Japan, Nov. 9, 1987, 62-283454; Nov. 9, 1987, 62-283455

Int. Cl.⁴ H01L *23/40*

U.S. Cl. 361—382 5 Claims



1. A cooling system for a three-dimensional IC package in which substrates each mounting a plurality of IC devices on at least one surface thereof are laminated with a predetermined interval therebetween in a chassis, comprising:

cold plates, fixed parallel to each other in said chassis with a predetermined interval therebetween for housing said substrate, holes being formed in each of said cold plates at positions corresponding to heat radiating surfaces of said IC devices when said substrate is inserted in said interval, and a cooling fluid path for flowing a fluid being formed around said holes;

at least one heat conductive piston, inserted in each of said holes of said cold plate while a small gap is kept between an inner wall of said hole and said heat conductive piston, vertically biased by spring means to vertically move in said hole, and when said IC devices operate, biased by said spring means and brought into contact with said heat radiating surface of a corresponding one of said IC devices, and conducting heat generated from said IC device to said cold plate through said gap; and

heat conductive piston adjusting means for releasing, when maintenance of said substrate is to be performed, a contact between said heat conductive piston and said IC device against a biasing force of said spring means, thereby enabling insertion/removal of said substrate with respect to said chassis.

4,884,168
COOLING PLATE WITH INTERBOARD CONNECTOR APERTURES FOR CIRCUIT BOARD ASSEMBLIES

Melvin C. August; Eugene F. Neumann; Stephen A. Bowen, and John T. Williams, all of Chippewa Falls, Wis., assignors to Cray Research, Inc., Chippewa Falls, Wis.

Filed Dec. 14, 1988, Ser. No. 284,992

Int. Cl.⁴ H05K *7/20*

U.S. Cl. 361—382 4 Claims

1. An improved cooling system for stacked printed circuit boards, comprising:

(a) a cooling plate, said cooling plate formed by joining two plates of heat conductive material, and said cooling plate adapted to be interposed between the printed circuit boards;

(b) fluid inlet means joined to said cooling plate;

(c) fluid outlet means joined to said cooling plate;

(d) fluid pass means disposed within said cooling plate, said fluid pass means connecting said fluid inlet means and fluid outlet means such that a cooling liquid can flow from said fluid inlet means through said cooling plate to said

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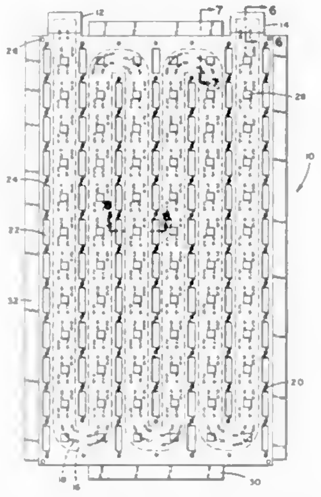
fluid outlet means so as to dissipate heat from said cooling plate;
(e) a plurality of heat-dissipating fins disposed within said fluid pass means, said fins adapted to transfer heat from said cooling plate to the cooling liquid;
(f) a plurality of heat conductive pads disposed on the outer surface of said cooling plate for engaging the printed circuit boards; and
(g) means in said cooling plate defining a plurality of apertures, each adapted to receive a z-axis connector assembly such that electrical interconnections may be made between the printed circuit boards disposed on either side of said cooling plate.



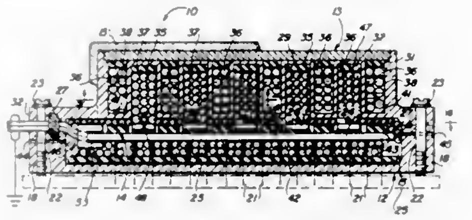
4,884,169
BUBBLE GENERATION IN CONDENSATION WELLS FOR COOLING HIGH DENSITY INTEGRATED CIRCUIT CHIPS

John M. Cutchaw, Scottsdale, Ariz., assignor to Technology Enterprises Company, Scottsdale, Ariz.

Filed Jan. 23, 1989, Ser. No. 299,795

Int. Cl.⁴ H05K *7/20*

U.S. Cl. 361—385 25 Claims



1. An apparatus for containing and cooling a high-density integrated circuit package comprising in combination:
a base,
a high-density integrated circuit mounted on said base,
a heat exchanger mounted on said base to enclose said circuit and carry away the operational heat thereof by means of a coolant which is passed through said heat exchanger,
said heat exchanger comprising a housing having an especially configured thermally conductive wall for providing an elongated tunnel over said circuit,
said tunnel being closed at one end and open at its other end which other end is juxtapositioned to said circuit,
a plurality of thermally conductive spheroids arranged in said tunnel and biased into thermally conductive contact with each other, with said circuit and said wall forming said tunnel to maximize heat transfer from said circuit to said wall, and
a particle centrally positioned in said spheriods in said tunnel at a point juxtapositioned to said circuit for catalytically enhancing bubble nucleation growth around said circuit.

4,884,170
MULTILAYER PRINTED CIRCUIT BOARD AND METHOD OF PRODUCING THE SAME

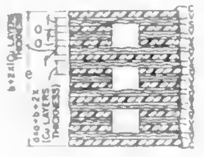
Nobuaki Ohki; Norio Sengoku, both of Hadano, and Fumiyuki Kobayashi, Sagamihara, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

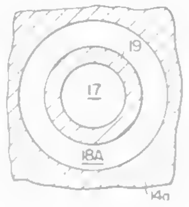
Filed Apr. 14, 1983, Ser. No. 484,891

Claims priority, application Japan, Apr. 16, 1982, 57-62410

Int. Cl.⁴ H05K *1/11*

U.S. Cl. 361—414 7 Claims





1. A method of producing a multilayer printed circuit board the method comprising the steps of:
(a) forming an electric source or ground layer and a signal circuit layer on opposite copper-plated surfaces of each of a plurality of copperplated lamination insulating plates, said electric source or ground layer and said signal circuit layer being respectively disposed on opposite surfaces; and
(b) stacking and bonding said plurality of copperplated plates each subjected to the processing in step (a) so as to dispose said signal circuit layer and said electric source or ground layer alternately.

4,884,171
ELECTROMAGNETIC INTERFERENCE SHIELDING DEVICE FOR A PORTABLE AIRCRAFT ENGINE TESTER

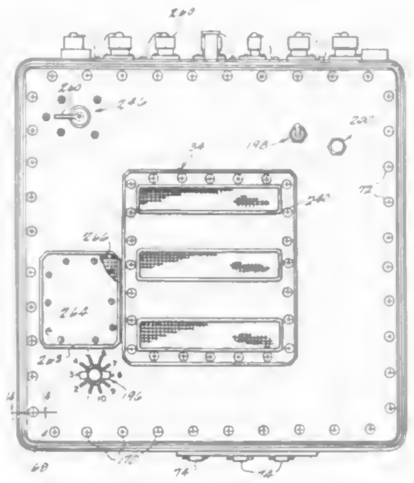
William L. Maserang, Fort Worth, and John W. Wright, Arlington, both of Tex., assignors to Howell Instruments, Fort Worth, Tex.

Filed Dec. 15, 1988, Ser. No. 284,729

Int. Cl.⁴ H05K *5/04*

U.S. Cl. 361—424 17 Claims

1. A portable apparatus for shielding from EMI a portable aircraft engine tester having a plurality of aircraft engine measurement signal inputs that input measurement signals obtained from an aircraft engine, an electrical power input for inputting electrical power, and switches for controlling the aircraft engine tester, the portable shielding apparatus comprising:
a portable, seamless, conductive, outer casing having a bottom, four sides, and an open top, at least one of said sides including at least one side opening;
a conductive filter box disposed within said outer casing so that a back side of said filter box is connected to said outer casing and covers said at least one side opening, said filter box including:
  a plurality of holes located on said back side of said filter box within an area that corresponds to said at least one side opening, and
  a plurality of holes located on another side of said filter box;
a first EMI gasket disposed between said connected filter box and said outer casing;
a connector disposed within each of said plurality of holes on said back side of said filter box, said connectors having input contact points;
a plurality of second EMI gaskets disposed between said plurality of connectors and said filter box;
a plurality of EMI filters disposed within said filter box, each filter mounted at an end to one of said plurality of holes on said another side of said filter box, and including:
  at least one thermocouple EMI filter for filtering a thermocouple measurement signal, said thermocouple filter containing an inductor wrapped with constantan wire,
  at least one DC signal EMI filter for filtering a DC measurement signal,
  at least one AC signal EMI filter for filtering an AC measurement signal, and
  at least one power EMI filter for filtering an electrical power input signal;
a conductive deck having a plurality of holes and at least one top opening, said conductive deck connected to said sides of said outer casing to enclose said top of said outer casing;
a display window covering said at least one top opening, said display window including:
  a conductive bezel that covers said at least one top opening and is connected to an outside of said deck,
  a third EMI gasket disposed between said bezel and said deck,
  a transparent plastic window disposed on an inside of said deck,
  a conductive woven screen that is larger than and covers said plastic window so that a periphery of said woven screen that touches an inside of said deck,
  a fourth EMI gasket disposed over said conductive woven screen, and
  a conductive backup plate disposed over said fourth EMI gasket for causing a compressive fit of said woven screen and fourth EMI gasket on an inside of said instrument; and
  a plurality of EMI switch coverings, one EMI switch covering for each of said switches.



4,884,172
AUTOMOTIVE SAFETY DEVICE FOR SIDE LIGHTING

James W. Walker, 145 Turnsworth Ave., Redwood City, Calif. 94062

Filed Jan. 17, 1989, Ser. No. 297,028

Int. Cl.⁴ B60Q *1/00*

U.S. Cl. 362—61 5 Claims

3. In an automotive safety device for use with a vehicle having a front with peripheral headlights and a side surface with wheel wells, an elongated flexible reflective strip with two ends and having a width substantially the same as the height dimension of said headlight, means for removably attaching said strip to said vehicle, including first means for positioning one end of said sheet opposite a said headlight and offset therefrom and second means for removably attaching the other end of said strip to a side of said vehicle and offset therefrom for providing a curved sheet which reflects light from said headlight rearwardly by diverse light rays reflected by said curved sheet along the side of said vehicle to illuminate at least one of said wheel wells.

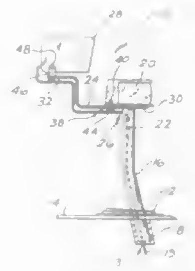
4,884,173
COMBINATION RUNNING LIGHT AND SPOT LIGHT DEVICE FOR A BOAT

Jerald L. Cassidy, 500 Autum Circle, Corbin, Ky. 40701

Filed Jan. 12, 1989, Ser. No. 296,006

Int. Cl.⁴ B60Q *1/00*

U.S. Cl. 362—61 14 Claims



1. A combination running light and spot light device for a boat comprising:
a female receptacle having electrical connectors therein for attachment to a boat hull;
a mast having a male fitting at, its bottom end receivable in the female receptacle and having electrical connectors for completing an electrical connection with the electrical connectors of the female receptacle;
a running light attached to the top end of the mast;
an electrical circuit interconnecting the running light and the electrical connector of the male fitting;
a bracket mounted to the mast proximate the top end thereof for selected pivotal movement about the longitudinal axis of the mast;

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means for securing the bracket at a selected position about the longitudinal axis of the mast;

a spot light mounted to the bracket for movement with the bracket about the longitudinal axis of the mast; and,

an electrical circuit interconnecting the spot light and the electrical connector of the male fitting.

4,884,174

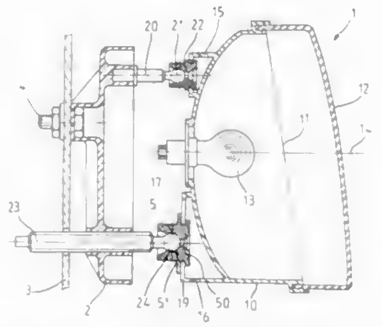
ATTACHMENT AND HINGING COMPONENT, ESPECIALLY FOR A DEVICE TO ADJUST AN OPTICAL ELEMENT, PARTICULARLY FOR A MOTOR VEHICLE HEADLIGHT

Guy Dorleans, Boulogne, France, assignor to Valeo Vision, Cedex, France

Filed May 6, 1988, Ser. No. 190,821

Int. Cl.⁴ B60Q *1/00*

U.S. Cl. 362—61 5 Claims



1. In an assembly for adjusting the position of an optical element body such as a motor vehicle headlight with respect to a fixed support part, the assembly including an adjustment screw mounted in said fixed support and which is adapted to be threadably adjusted with respect to the fixed support part and which has formed at one end thereof a swivel joint connected to one side of the optical element body, pivot means connecting another side of said optical element body with said fixed support part,

said swivel joint including an attachment and hinging component having a base and a concave seat engagable with a ball section of said adjustable screw and adapted for pivotal movement relative thereto upon adjustment of said adjustment screw, said base being slidably receivable in a slot formed in said optical element body and extending substantially perpendicular to the axis of said adjustment screw and having lateral edges, said base having two rectilinear and mutually parallel grooves engagable with said lateral edges of said slot for guiding said attachment and hinging component in translation during adjustment of said adjustment screw with respect to the fixed support part to pivot said optical element body about said pivot means.

4,884,175

TIRE-PRESSURE AND DEPTH GAUGE WITH ILLUMINATION COMPONENT

Hsi-Kuang Weng, 2nd Fl., No. 29, Wu Cheng Street, Ban Chyan, Taipel Hslen, Taiwan

Filed Jun. 14, 1988, Ser. No. 206,424

Int. Cl.⁴ B25K *23/18;* **B60C** *23/02*

U.S. Cl. 362—119 **4 Claims**

1. A combination device with components for determining the tire pressure, the depth of tread of a tire, and for illumination, comprising:

a compact housing body defining first and second hollow chambers of cylindrical configuration, said second hollow chamber defining a threaded portion, and said housing having a formation providing an aperture for a respective key ring;

a nozzle formation provided at said first hollow chamber, said nozzle formation being in conformity with a tire valve and said nozzle formation including a bottom, a protrusion adapted to actuate a valve stem of a tire valve and an adjacent slot connecting said nozzle formation to said first hollow chamber;

a pad located at said bottom about said protrusion;

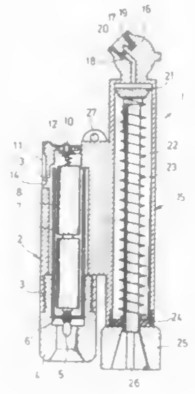
a sleeve member providing an annular edge forwardly of said nozzle formation and in contact with said pad;

a conical piston arranged in said first chamber; a first spring in said first hollow chamber for biasing said piston;

a member including a scale and whose lower end comprises a slender rod for taking readings of tire pressure and tire tread depth, this member being disposed inside said first spring;

a ring block which has a hole in the center, enabling the passage of said member, and which permits operative motion but precludes inadvertent sliding of said member;

a transparent hollow base with an aperture for said member to extend therethrough and a recess formation of conic shape widening towards the free end of said base;



a transparent shade which is hollow and has exterior threads at one end for connection at the threaded portion of said second hollow chamber;

a metal ring secured at said transparent shade;

a light bulb secured at said metal ring;

a metal cylinder disposed in said second hollow chamber with one end adjacent said ring;

at least one battery cell arranged in said metal cylinder between said light bulb and a respective second spring;

a cover including a conductive clip secured by a respective fastener at that end of said metal cylinder which is opposite said end adjacent said metal ring;

a second spring disposed between said battery and said cover; and

a fastener for securing said cover at said second chamber;

said bulb, said metal ring, and said metal cylinder, in said second hollow chamber providing a circuit of the illumination component, and said nozzle formation, said conical piston, said first spring, and said member including said scale respectively providing the tire pressure gauge and tread measuring components.

4,884,176

TRI-VIEW MIRRORED CABINET WITH PERIPHERAL LIGHTING

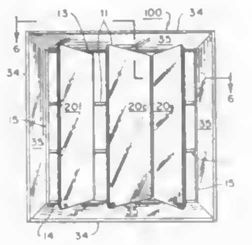
James J. Palka, Kildeer, and Robert B. Rekart, Villa Park, both of Ill., assignors to Pace Industries, Inc., Chicago, Ill.

Filed May 31, 1988, Ser. No. 200,364

Int. Cl.⁴ F21V *33/00*

U.S. Cl. 362—135 2 Claims

1. In a tri-view medicine cabinet comprising an open enclosure-forming cabinet having a front edge about said cabinet with at least one central access door having an outer mirrored surface for forming a closure of the cabinet and on each side of said central access door a pivotal side access door having a mirror supported thereon forming a part of the closure of said cabinet for reflecting at least a partial side view of an object positioned before said central access door, the improvement comprising light emitting means comprising a plurality of fluorescent lamp tubes positioned about the entire periphery of said open enclosure-forming cabinet for directing diffused light upon an object positioned before said central access door with a portion of each one of said fluorescent lamp tubes extending beyond said front edge of said open enclosure-forming cabinet to project shadow-free light on an object positioned before said mirrored central access and side access cabinet doors, said plurality of fluorescent lamp tubes being supported in a chase formed as an integral part of said tri-view medicine cabinet by the outer peripheral walls of the enclosure-forming cabinet and finishing panels positioned outwardly about said outer peripheral walls of the enclosure-forming cabinet and spaced therefrom by support panels connected between said outer peripheral walls of the enclosure-forming cabinet and said finishing panels, said finishing panels extending outwardly beyond said front edge of said open enclosure-forming cabinet for directing the light inwardly toward said central access door, and a translucent light diffusing panel means positioned adjacent each one of said plurality of fluorescent lamp tubes for diffusing and distributing the light emitted therefrom.



4,884,177

FLEXIBLE TORCH

Burke C. Pullman, Appt. 19G, 939, Coast Blvd., La Jolla, Calif. 92037

Filed Feb. 11, 1988, Ser. No. 154,595

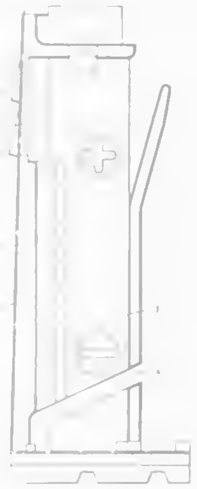
Claims priority, application United Kingdom, Feb. 13, 1987, 8703342

The portion of the term of this patent subsequent to Apr. 19, 2005, has been disclaimed.

Int. Cl.⁴ F21L *7/00*

U.S. Cl. 362—189 11 Claims

1. A torch having a tray adapted to receive battery means and to locate a bulb, a cover which fits over the tray to confine the battery means and over the bulb to define a zone of direct illumination by the bulb, a mirror mounted on one side of the torch, and light diffusion means, at least partially formed by said cover, whereby light from said bulb is shed towards another zone, facing said mirror, exclusive of the first zone.



4,884,178

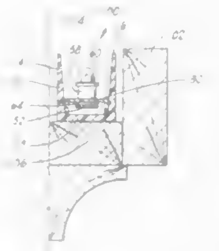
INDIRECT LIGHTING FIXTURE

James R. Roberts, 4501 N. Western, Oklahoma City, Okla. 73118

Filed Mar. 13, 1989, Ser. No. 322,006

Int. Cl.⁴ F21V *1/00*

U.S. Cl. 362—241 6 Claims



1. A lighting fixture for indirect lighting applications comprising:

a mounting member in the form of an elongated generally U-shaped extrusion of reflective material having a base panel and right angularly extending side panels having inner and outer surfaces, each of said side panel inner surfaces being formed with an elongated groove extending therealong proximate and equi-distant from said base panel, and being formed as diverging angular surfaces proceeding outward from adjacent said respective elongated grooves;

an insert strip in the form of an elongated panel having a plurality of spaced holes formed therealong and including ridge means on each side for mating engagement in the respective base member grooves; and

a light strip having plural lamp assemblies mounted thereon in spacing similar to said insert strip spaced holes, said light strip being disposed between the insert strip and mounting member base panel and extending respective lamp assemblies through said spaced holes.

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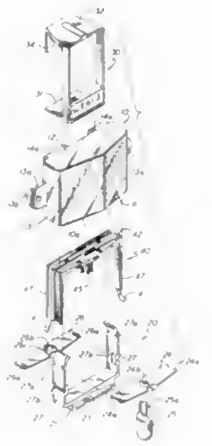
4,884,179

LAMP WITH BUILT-IN ON-OFF SWITCH

Dennis G. Moore, 2602 Superior, Livermore, Calif. 94550
Filed Jun. 14, 1988, Ser. No. 206,283
Int. Cl.⁴ F21V *23/00*
U.S. Cl. 362—295 **17 Claims**



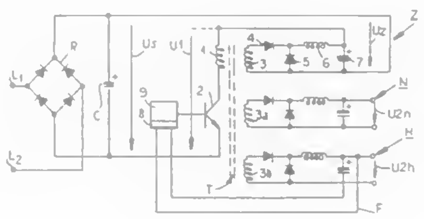
1. An electric lamp for use in a vehicle lighting system comprising
- a housing having a light transmitting portion through which light is passed when a light bulb positioned therein is illuminated,
- said housing having an opening for receiving therethrough a light bulb carrier means for supporting a light bulb in a predetermined position when said light bulb carrier means is positioned therein,
- a light bulb carrier means for retaining a light bulb in a position such that an electrical coupling portion of the light bulb extends outwardly from said light bulb carrier means for engagement with an electrical contact means to couple therethrough a source of illuminating energy for the light bulb,
- electrical contact means supported in said housing in a position to be engaged by the electrical coupling portion of a light bulb retained in said light bulb carrier means such that movement of said light bulb carrier means positions the light bulb retained therein in to and out from engagement with said electrical contact means to thereby illuminate and extinguish the light bulb, and
- actuator slide means carried by said housing and movable relative thereto for effecting the opening and closing of an illuminating circuit for illuminating a light bulb positioned in said light bulb carrier means,
- said actuator slide means positioned by said housing to engage said light bulb carrier means for effecting movement thereof in response to movement of said actuator slide means to thereby move a light bulb retained in said light bulb carrier means in to and out from engagement with said electrical contact means for selectively coupling the light bulb to a source of electric power.

4,884,180

REGULATED DIRECT-CURRENT CONVERTER

Günther Hoffmann, Eningen, Fed. Rep. of Germany, assignor to Wandel & Goltermann GmbH & Co., Eningen, Fed. Rep. of Germany
Filed Nov. 18, 1988, Ser. No. 273,965
Claims priority, application Fed. Rep. of Germany, Dec. 8, 1987, 3741452
Int. Cl.⁴ H02M *3/335*
U.S. Cl. 363—21 **23 Claims**

1. A direct-current converter for producing an output voltage from a feed voltage, comprising:
- a converter transformer having a primary winding and at least one secondary winding;
- a pulse-width control circuit connected in series with said primary winding;
- a main-voltage rectifier circuit connected with said secondary winding for outputting a main output voltage;
- means for controlling said pulse-width control circuit in response to said main output voltage;



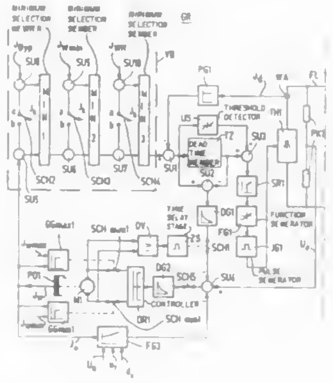
- an additional-voltage rectifier circuit connected to output an additional voltage and generating said additional voltage by a rectification similar to that producing said main output voltage; and
- means for applying a feed voltage and said additional voltage additively to said primary winding.

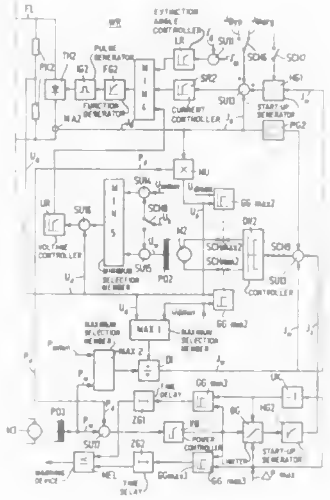
4,884,181

METHOD AND ARRANGEMENT FOR CONTROLLING A HIGH VOLTAGE D-C TRANSMISSION SYSTEM

Wolfgang Kaufhold, Erlangen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany
Filed Aug. 11, 1988, Ser. No. 230,894
Claims priority, application Fed. Rep. of Germany, Aug. 26, 1987, 3728512
Int. Cl.⁴ H02J *3/36*
U.S. Cl. 363—35 **4 Claims**

1. A method of controlling a high-voltage d-c transmission system between three-phase network-fed rectifier and inverter stations, comprising the steps of:
- forming a first reference d-c current from the difference of a reference current-dependent control angle function and a current controller dependent control angle on a rectifier side of the system, wherein the current controller is influenced by a difference of the first reference d-c current and an actual d-c current;
- setting a countervoltage as a function of the power on an inverter side of the system to thereby determine the actual d-c current;
- producing a second reference d-c current from division of a reference power by actual d-c voltage;
- producing on the inverter side a difference of the actual d-c current and the second reference d-c current to influence a level controller; and





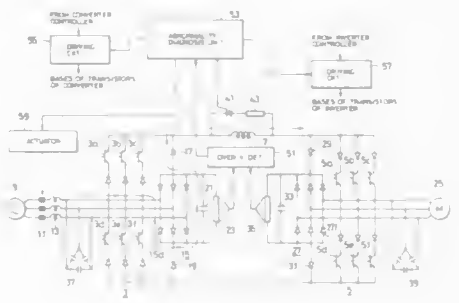
- setting the second reference d-c current for a voltage controller on the inverter side via the level controller.

4,884,182

CURRENT SOURCE POWER CONVERTING APPARATUS WITH OVERVOLTAGE PROTECTION

Takeki Ando, Naka; Kiyoshi Nakamura, Katsuta; Toshisuke Mine, Katsuta; Hiromi Inaba, Katsuta; Toshiaki Kurosawa, Katsuta; Masao Nakazato, Katsuta, and Yoshio Sakai, Naka, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Apr. 20, 1988, Ser. No. 184,048
Claims priority, application Japan, Apr. 22, 1987, 62-97359
Int. Cl.⁴ H02H *7/10*
U.S. Cl. 363—37 **12 Claims**

1. A current source power converting apparatus comprising:
- converter means, fed by an AC power source through a contactor, for converting AC power into DC power;
- DC reactor means coupled in series with one of the DC terminals of said converter means;
- inverter means, fed by said converter means through said DC reactor means, for inverting the DC power into AC power to be supplied for an AC load,
- first energy absorbing means including a first rectifier having AC terminals coupled to AC terminals of said converter means and having DC terminals coupled between said DC reactor means and said converter means and in parallel with DC terminals of said converter means through diodes, and a first capacitor connected in parallel with the DC terminals of the first rectifier; and
- second energy absorbing means including a second rectifier having AC terminals coupled to AC terminals of said inverter means and having DC terminals coupled between said DC reactor means and said inverter means through diodes, and a second capacitor connected in parallel with the DC terminals of the second rectifier;

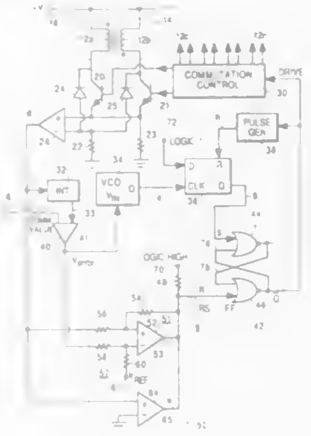


- whereby said first and second energy absorbing means and said DC reactor means form a circulation circuit through which current caused by energy stored in said DC reactor means can be circulated when voltage induced by said DC reactor means is higher than a first predetermined value.

4,884,183

DUAL-MODE CONTROLLED PULSE WIDTH MODULATOR

Daniel M. Sable, Blacksburg, Va., assignor to General Electric Company, East Windsor, N.J.
Filed Mar. 29, 1989, Ser. No. 330,388
Int. Cl.⁴ H02M *3/156*
U.S. Cl. 363—41 **4 Claims**



1. A power switch drive circuit for causing the average current through an inductor to tend to follow a command signal, comprising:
- a controllable power switch including a control input terminal;
- an inductor serially coupled with said controllable power switch to form a series circuit, said series circuit being adapted to be coupled across the terminals of a source of voltage for causing an increasing ramp-like current to flow when said switch is conductive;
- current sensing means coupled to said series circuit for generating a current-representative signal;
- integrating means coupled to said current sensing means for generating a signal representative of the average of said current representative signal;
- first comparator means coupled to said integrating means and adapted to receive said command signal for compar-

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ing said command signal with said signal representative of the average of said current-representative signal for generating an error signal therefrom;

a voltage-controlled oscillator coupled to said first comparator for generating oscillations at a frequency controlled by the magnitude of said error signal;

a D flip-flop including a data input terminal coupled to a source of signal representative of a first logic level and also including a clock input terminal coupled to said voltage-controlled oscillator, and also including an output terminal, for, when said D flip-flop is in a reset state, gating said first logic level to said output terminal of said D flip-flop in response to a transition of said oscillations, said D flip-flop further including a Reset input terminal;

an RS flip-flop including a set input terminal coupled to said output terminal of said D flip-flop, said RS flip-flop further including a Reset input terminal, and also including an output terminal coupled to said control input terminal of said power switch for driving said switch during those intervals in which said RS flip-flop is in a reset state;

a pull-up resistor coupled to said Reset input terminal of said RS flip-flop and to a source of signal representative of said first logic level;

second comparator means coupled to said current sensing means and to a source of reference signal representative of a minimum current condition, and also including an output terminal coupled to said Reset input terminal of said RS flip-flop, for assuming a second logic level at said output terminal of said second comparator means in response to a zero value of said current-representative signal, and for assuming a high impedance condition at said output terminal of said second comparator means in response to a nonzero value of said current-representative signal;

hysteresis means including a first input terminal coupled to said first comparator means, a second input terminal coupled to said current sensing means, and an output terminal capable of assuming said second logic state and an open-circuit state, said output terminal being coupled to said Reset input terminal of said RS flip-flop, for switching said output terminal to said open-circuit state when said current-representative signal reaches a predetermined amount above said signal representative of the average of said current-representative signal, and for switching said output terminal to said second logic level under one of the conditions that (a) said current-representative signal reaches a predetermined value less than said signal representative of the average of said current representative signal, and (b) said output terminal of said second comparator means assumes said second logic level; and

pulse generating means coupled to said output terminal of said RS flip-flop for generating a pulse in response to a transition of a particular polarity at said output terminal of said RS flip-flop, and coupled to said Reset input terminal of said D flip-flop for coupling said pulse as a reset pulse to said D flip-flop in response to each said transition of a particular polarity.

4,884,184
CONTROL APPARATUS FOR CASCADED CONVERTER CIRCUIT

Takayuki Matsui, Hitachi; Toshiaki Okuyama, Ibaraki; Mitsugu Matsutake, Hitachi; Junichi Takahashi, Katsuta, and Masami Ito, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 3, 1988, Ser. No. 151,902

Claims priority, application Japan, Feb. 6, 1987, 62-24561

Int. Cl.⁴ H02M *1/14*

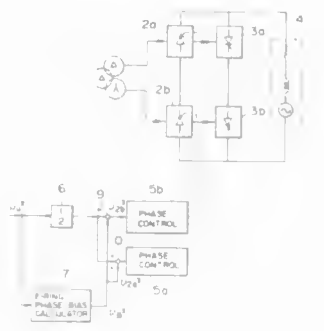
U.S. Cl. 363—46 **14 Claims**

1. A converter circuit control apparatus, comprising:

a cascaded converter circuit composed of at least two unit converters connected in cascade;

a load supplied with electric power from said cascaded converter circuit;

phase control means each provided in association with each of said unit converters for controlling firing phase of the associated unit converter in accordance with a voltage command signal; and



firing phase adjusting means for adjusting the firing phases controlled by said phase control means so that phases of ripple components in the output voltages of said unit converters are maintained at a predetermined angular difference.

4,884,185
PULSE WIDTH MODULATION CONVERTER

Cornilleau Hubert, Saint Germain En Laye, France, assignor to La Telemecanique Electrique, France

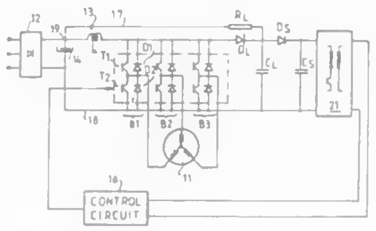
PCT No. PCT/FR88/00156, § 371 Date Nov. 29, 1988, § 102(e) Date Nov. 29, 1988, PCT Pub. No. WO88/07784, PCT Pub. Date Oct. 6, 1988

PCT Filed Mar. 25, 1988, Ser. No. 287,200

Claims priority, application France, Mar. 30, 1987, 87 04371

Int. Cl.⁴ H02M *5/44*

U.S. Cl. 363—56 **4 Claims**



1. A pulse width modulation converter for delivering variable electric energy to an inductive load, said converter including:

(i) a DC voltage source;

(ii) an inverter having a plurality of arms connected in parallel across first and second leads each having input and output terminals, each of said arms including first and second static switches seriallyconnected across said leads and first and second recovery diodes respectively connected across said first and second switches, the second switch of each arm having a common point which is connected to the inductive load;

(iii) a control circuit connected to said inverter for driving said inverter in pulse with modulation;

(iv) an inductance connecting said DC voltage source to the input terminal of said first lead;

(v) a serial circuit comprising a transfer capacitor (C_L) in series with a transfer diode (D_L) connecting the output terminal of said first lead to the output terminal of the second lead;

(vi) a transfer capacitor discharge resistor connecting the DC voltage source to the common point between said diode and said transfer capacitor, and

(vi) means connecting said DC voltage source to the input terminal of said lead.

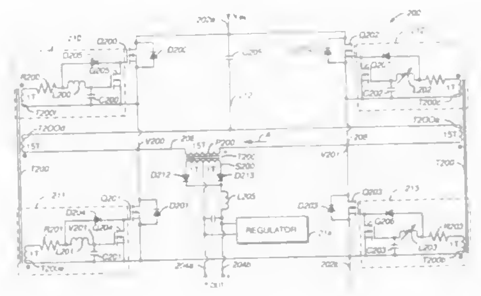
4,884,186
POWER SUPPLY WITH REDUCED SWITCHING LOSSES

Kenneth T. Small, Cupertino, Calif., assignor to Boschert Incorporated, Fremont, Calif.

Filed Dec. 10, 1987, Ser. No. 130,906

Int. Cl.⁴ H02M *7/5387*

U.S. Cl. 363—132 **18 Claims**



1. A full-bridge converter comprising:

a first lead for receiving a first voltage;

a second lead for receiving a second voltage;

first transistor means having a first current carrying lead coupled to said first lead and a second current carrying lead coupled to a first node, said first transistor means having a control lead;

second transistor means having a first current carrying lead coupled to said first node and a second current carrying lead coupled to said second lead, said second transistor means having a control lead;

third transistor means having a first current carrying lead coupled to said first lead and a second current carrying lead coupled to a second node, said third transistor means having a control lead;

fourth transistor means having a first current carrying lead coupled to said second node and a second current carrying lead coupled to said second lead, said fourth transistor means having a control lead; and

a transformer having at least first, second and third legs, said transformer including a primary winding coupled between said first and second nodes and a secondary winding coupled to provide output power in response to the voltage applied across said primary winding, a first control winding coupled to the control lead of said first transistor means for controlling said first transistor means, a second control winding coupled to said control lead of said second transistor means for controlling said second transistor means, a third control winding coupled to said control lead of said third transistor means for controlling said third transistor means, and a fourth control winding coupled to said control lead of said fourth transistor means for controlling said fourth transistor means, and wherein said primary and secondary windings are wound around said first leg, said first and second control windings are wound around said second leg, and said third and fourth windings are wound around said third leg.

5. The converter of claim 1 further comprising an auxiliary output winding wound around said second leg for providing a second output voltage.

4,884,187
VOLTAGE REGULATOR WITH FERROMAGNETIC FILTER

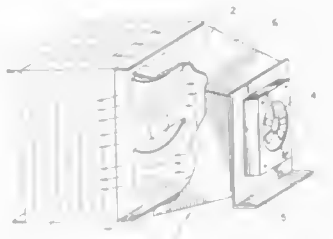
Maurice Budin, Bron, and Pierre Veyrand, Saint Priest, both of France, assignors to Automatismes Energie Electronique Systemes, France

Filed Dec. 5, 1988, Ser. No. 280,002

Claims priority, application France, Dec. 8, 1987, 87 17369

Int. Cl.⁴ G05F *1/13*

U.S. Cl. 363—141 **3 Claims**



1. A ferromagnetic voltage regulator of the type having ferro-resonant saturating magnetic circuits comprising:

a ferromagnetic circuit member;

at least one electromagnetic winding disposed in operative relationship with said circuit member;

forced thermal heat extraction means;

fluid directing means operatively coupling said heat extraction means first to said electromagnetic winding and then to said ferromagnetic circuit member to remove from the regulator the thermal losses of the winding and circuit members and increase the joules losses to iron losses ratio.

4,884,188
MAGNETIC ROLLER MEANS WITH STATIONARY MAGNETIC KNIFE BLADE FOR USE IN PRINTING DEVICES

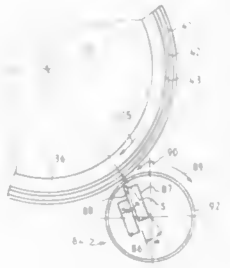
Ronald Berkhout, Venlo; Johannes G. V. Van Stiphout, Maasbree; Jozef Corver, Nuenen; Antoon L. Hoep, Molenhoek, and Berend J. Knapen, Baarlo, all of Netherlands, assignors to Oce-Nederland B.V., Venlo, Netherlands

Filed Aug. 23, 1988, Ser. No. 235,428

Claims priority, application Netherlands, Aug. 25, 1987, 8701985; May 20, 1988, 8801309

Int. Cl.⁴ G01D *15/00*

U.S. Cl. 346—160.1 **7 Claims**



1. A printing device for reproducing information, comprising a movable image-forming element with a dielectric surface; an image-forming station including a magnetic roller having a rotatable electrically conductive non-magnetic sleeve disposed near the surface of said image-forming element; means to generate an electric field between the image-forming element and said magnetic roller in accordance with an information pattern; means for placing an electrically conductive magnetically

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attractable toner powder in the between said magnetic roller and said image-forming element; and means for generating a magnetic field in said zone comprising a stationary ferromagnetic knife blade disposed within said sleeve of said magnetic roller, said blade being held in place at an angle of between 70° and 85° to a tangential plane of said sleeve by two magnets.

4,884,189
LOCUS INTERPOLATION DEVICE

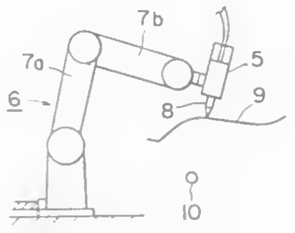
Kaoru Kimura; Masanori Nishi, both of Kitakyushu, and Yoshikatsu Minami, Nakama, all of Japan, assignors to Kabushiki Kaisha Yaskawa Denki Seisakusho, Kitakyushu, Fukuoka, Japan

Filed Sep. 25, 1987, Ser. No. 100,863

Claims priority, application Japan, Oct. 6, 1986, 61-237517; Aug. 28, 1987, 62-214896

Int. Cl.^{4} G05B *19/18;* G06F *15/46*

U.S. Cl. 364—474.31 7 Claims



1. A locus interpolation device provided at the end of a movable member, said device comprising an operational shaft having an end provided with tool-supporting means, said operational shaft being rotatable about a first rotating center which is eccentric with respect to a tool mounted thereon, a rotating shaft for supporting and rotating said operational shaft, said rotating shaft being rotatable about a second rotating center which is spaced apart from the first rotating center by a predetermined distance, said operational shaft being rotated such that a radial distance between the tool and said second rotating center is made equal to a radius of circular movement of said tool to control the operation of said tool independently from the movement of said movable member in a manner interpolating the locus of circular and noncircular configuration.

4,884,190
HIGH PERFORMANCE PARALLEL VECTOR PROCESSOR HAVING A MODIFIED VECTOR REGISTER/ELEMENT PROCESSOR CONFIGURATION

Chuck H. Ngai, Endwell, and Gerald J. Watkins, Endicott, both of N.Y., assignors to International Business Machines Corp., Armonk, N.Y.

Continuation of Ser. No. 711,329, Mar. 13, 1985, abandoned, and a continuation-in-part of Ser. No. 530,842, Sep. 9, 1983. This application Mar. 8, 1989, Ser. No. 320,889

Int. Cl.^{4} G06F *9/18*

U.S. Cl. 364—200 7 Claims

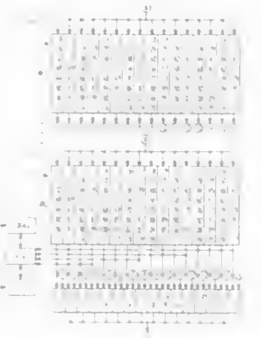
1. A vector processor, comprising:

a plurality of vector registers, wherein each vector register is subdivided into a plurality of smaller registers, each of said smaller registers having a separate output, and

each vector register stores a vector, each of said smaller registers storing a plurality of elements of said vector, each vector including a plurality of groups of said elements, each group including a plurality of elements corresponding in number to the plurality of smaller registers, the plurality of elements of each group of a vector stored in a vector register being stored, respectively, in the plurality of smaller registers of the vector register;

a plurality of element processor means connected, respectively, to the plurality of outputs of the corresponding plurality of smaller registers of each of said plurality of vector registers, each of said element processor means being dedicated and connected to a different set of said smaller registers to process any element within the dedicated set, each of said sets comprising one smaller register per vector register, and wherein all the smaller registers in each set store corresponding vector elements of said vectors, each of said element processor means processing, one element at a time, the elements stored in any smaller register of the dedicated set; and

controlling means for selecting which groups of elements in the associated vector registers to process, whereby the plurality of element processor means process, at least partially in parallel, the plurality of elements of each selected group, and wherein



each of said smaller registers of each vector register stores vector elements whose positions in the vector are defined by the equation $K_1+N_i\times K_2$ where K_1 is a constant which is different for each smaller register within the same vector register, K_2 is a constant which is the same for each smaller register within the same vector register and N_i is a sequence of integers.

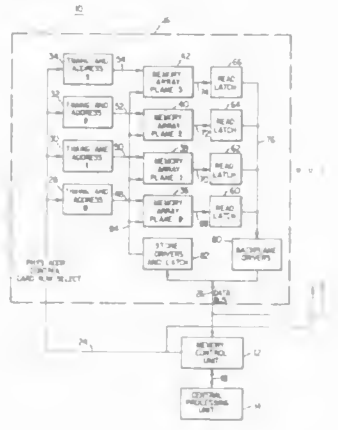
4,884,191
MEMORY ARRAY UNIT FOR COMPUTER

James R. Weatherford, Lake Dallas, and Arthur T. Kimmel, Dallas, both of Tex., assignors to Convex Computer Corporation, Richardson, Tex.

Continuation of Ser. No. 18,752, Feb. 24, 1987, abandoned, which is a continuation of Ser. No. 622,457, Jun. 20, 1984, abandoned. This application Mar. 24, 1989, Ser. No. 328,798

Int. Cl.^{4} G06F *13/00, 12/00;* G11C *13/00*

U.S. Cl. 364—200 4 Claims



1. A memory array unit for use in a computer which has a central processing unit that operates in conjunction with a memory control unit, comprising:

a plurality of memory array planes each including a plurality of integrated circuit memory devices for storing data therein, each said memory array plane having an input for receiving data for storage in said memory devices and an output for supplying data read from said memory devices,

a respective address and control circuit for each of said memory array planes, each address and control circuit connected to receive address information and control commands from said memory control unit and connected to provide address information and control commands to the corresponding one of said memory array planes,

a store latch having an input and an output,

a bidirectional data bus connected between said memory control unit and the input of said store latch, wherein said store latch only receives data from said memory control unit,

a unidirectional input bus connected between the output of said store latch and the inputs of said memory array planes, wherein said unidirectional input bus transfers data only from said store latch to the inputs of said memory array planes,

a respective read latch for each of said memory array planes, each read latch having an input and an output, the input for each read latch connected to the output of the corresponding one of said memory array planes,

a driver circuit having an input and an output, the output of said driver circuit connected to said bidirectional bus for transferring data only from said driver circuit to said memory control unit, and

a unidirectional output bus connected between the outputs of said read latches and the input of said driver circuit for transferring data only from said read latches to said driver circuit.

4,884,192
INFORMATION PROCESSOR CAPABLE OF DATA TRANSFER AMONG PLURAL DIGITAL DATA PROCESSING UNITS BY USING AN ACTIVE TRANSMISSION LINE HAVING LOCALLY CONTROLLED STORAGE OF DATA

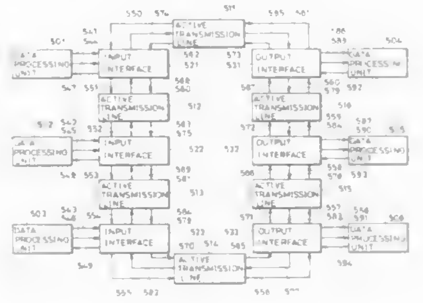
Hiroaki Terada, Suita; Katsuhiko Asada, Amagasaki; Hiroaki Nishikawa, Suita; Souichi Miyata, Shiki; Hajime Asano, Toyonaka; Masahisa Shimizu, Kadoma; Kenji Shima, Nishinomiya, and Shinji Komori, Itami, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka; Matsushita Electric Industrial Co., Ltd., Kadoma; Sanyo Electric Co., Ltd., Moriguchi and Mitsubishi Denki Kabushiki Kaisha, Tokyo, all of, Japan

Continuation of Ser. No. 765,504, Aug. 14, 1985, abandoned. This application Dec. 14, 1987, Ser. No. 134,601

Claims priority, application Japan, Aug. 16, 1984, 59-171121; Aug. 16, 1984, 59-171203

Int. Cl.^{4} G06F *13/40*

U.S. Cl. 364—200 4 Claims



1. An information processor for receiving input data, for outputting output data, and capable of data transfer among a plurality of digital data processing units, comprising:

at least one receiving and controlling means for receiving and controlling the input data;

at least one transmitting and controlling means for controlling and transmitting the output data;

at least one data processing means, for processing the input data received by said at least one receiving and controlling means and for providing the output data for transmission by said at least one transmitting and controlling means;

an active transmission line including:

a plurality of data holding means for storing and outputting data, including the input data and the output data, in inputted order, said plural data holding means coupled together in a ring; and

transmission control means, coupled to said plurality of data holding means, for controlling the output of the data stored in said plural data holding means, so that when a latter one of said data holding means is empty, data stored in a preceding one of said data holding means is read out and applied to the latter one of said data holding means, said transmission control means including a plurality of transmission controlling means, respectively coupled to said plurality of data holding means, each of said plurality of transmission controlling means for controlling the output of data stored in the corresponding one of said plural data holding means so as to control the transfer of the data stored in the corresponding one of said plural data holding means to an adjacent one of said plural data holding means through use of a hand-shake procedure in which a preceding one of said transmission controlling means corresponding to a preceding one of said data holding means which is holding data, provides a first signal to a latter one of said transmission controlling means corresponding to a latter one of said data holding means, the first signal indicating that the data held by the preceding one of said data holding means is to be transmitted to the latter one of said data holding means, the latter one of said transmission controlling means returning a second signal indicating that the latter one of said data holding means is empty, the preceding one of said transmission controlling means being responsive to the second signal for transmitting the data stored in the preceding one of said data holding means to the latter one of said data holding means and providing a third signal indicating that the preceding one of said data holding means is empty;

a plurality of data jointing means, coupled between respective predetermined ones of said data holding means in said active transmission line and respectively coupled to said at least one receiving and controlling means and said at least one data processing means, for jointing said at least one receiving and controlling means and said at least one data processing means, respectively, to said active transmission line, a first of said plurality of data jointing means having an input terminal, coupled to said at least one receiving and controlling means, for jointing the input data from said at least one receiving and controlling means to said active transmission line, a second of said plurality of data jointing means including an input terminal, coupled to said at least one data processing means, for jointing the output data from said at least one data processing means to said active transmission line;

a plurality of data branching means, coupled between respective predetermined ones of said plurality of data holding means in said active transmission line, and respectively coupled to said at least one transmitting and controlling means and said at least one data processing means, for branching the data transmitted on said active transmission line to said at least one transmitting and controlling means and said at least one data processing means, respectively, a first of said plurality of data branching means having an output terminal for branching the output data from said active transmission line to said at least one transmitting and controlling means, a

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second one of said plurality of data branching means having an output terminal for branching the input data from said active transmission line to said at least one data processing means.

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WAVEFRONT ARRAY PROCESSOR

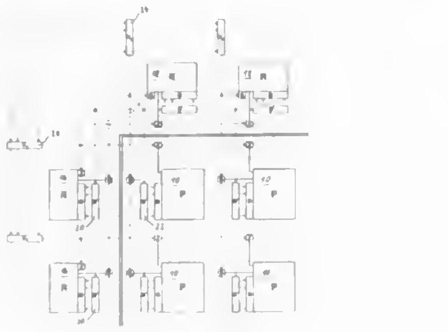
Hans-Werner Lang, Hansa-Strasse 48, 2300 Kiel, Fed. Rep. of Germany

Filed Sep. 18, 1986, Ser. No. 908,580

Claims priority, application Fed. Rep. of Germany, Sep. 21, 1985, 3533800

Int. Cl.⁴ G06F *15/16*

U.S. Cl. 364—200 2 Claims



1. A method for operating a highly integrated wavefront array processor having n×m processor cells arranged in n horizontal rows and m vertical columns with each processor cell connected to each of its horizontally and vertically adjacent processor cells, comprising the steps of shifting an instruction code in horizontal and vertical directions between adjacent processor cells from one processor cell to the respective next horizontally and vertically adjacent processor cell, and shifting a first group of n row selection bits and a second group of m column selection bits through the processor cell array to release certain processor cells for the execution of said instructions.

4,884,194

MULTIPROCESSOR COMPUTER SYSTEM WHICH INCLUDES N PARALLEL-OPERATING MODULES AND AN EXTERNAL APPARATUS, AND COMPUTER MODULE FOR USE IN SUCH A SYSTEM

Thijs Krol, and Willibrordus J. Van Gils, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 136,432, Dec. 17, 1987, abandoned, which is a continuation of Ser. No. 758,932, Jul. 25, 1985, abandoned. This application Jan. 30, 1989, Ser. No. 304,892

Claims priority, application Netherlands, Aug. 10, 1984, 8402472

Int. Cl.⁴ G06F *15/16*

U.S. Cl. 364—200 16 Claims

1. A multiprocessor computer system which includes a plurality of n parallel-operating computer modules, each of which is situated in its own fault isolation area, said computer system having a failure protection means for maintaining operability under failure of at most $1 \leqq t < n$ of said computer modules, wherein each of said n parallel-operating computer modules includes:

a processor for processing data words, each of said data words consisting of a plurality of $k \geqq t+1$ data symbols;

a reducing encoder module connected to said processor module for encoding a received data word into one code symbol;

a storage module connected to said reducing encoder module for storing a code symbol and having a data output; and

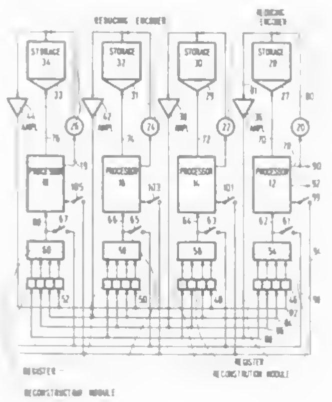
a data word reconstruction module connected to said data outputs and to each of said n parallel-operating computer modules to receive a full code word of $n \geqq k+2t$ code symbols of a code having a correction capability of t symbols per code word and to reconstruct from said full code word an associated data word;

and wherein $1 \leqq A \leqq n$ of said computer modules has a connection for receiving a primary version of an external message, wherein said computer system comprises:

broadcasting means for executing a first sequence of (t+1) broadcasting steps; and

decision means in each computer module responsive to said broadcasting steps for executing, after completion of said first sequence, a second sequence of (t+1) decision steps, wherein said first sequence has the following steps:

a first broadcasting step in which each of said computer modules that receives a primary version of said external message broadcasts a secondary version of said external message to all the other of said computer modules; and



a second broadcasting step in which each of said computer modules that receives a secondary version of said external message broadcasts a tertiary version of said external message to each other of said computer modules that had not directly received the primary version of said external message from which said secondary version was derived, whereby each computer module receiving a secondary version and not a primary version also receives a plurality of tertiary versions; and

wherein said second sequence in each computer module has the following steps:

a penultimate decision step responsive to said second broadcasting step for executing a plurality of majority decisions, each decision being made on said secondary version and said plurality of tertiary versions that originate from the same primary version of the external message to yield a plurality of penultimate decision results; and

an ultimate decision step in each of said computer modules which had received a primary version of said external message, for executing a selection decision among said penultimate decision results and said primary versions of said external message.

4,884,195

MULTIPROCESSOR SYSTEM FOR LOADING MICROPROGRAMS INTO A RAM CONTROL STORE OF A BUS CONTROLLER

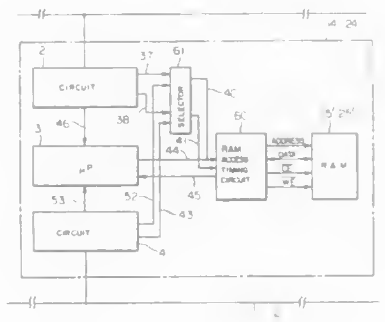
Norikazu Endo, Hadano, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 11, 1986, Ser. No. 895,438

Claims priority, application Japan, Aug. 30, 1985, 60-189565

Int. Cl.⁴ G06F *9/06, 9/24, 13/10, 13/14*

U.S. Cl. 364—200 2 Claims



1. A multiprocessor system including:

at least two modules wherein each module includes,

(a) a first processor for executing arithmetic processing and peripheral control,

(b) a first memory for storing program and data wherein said program and data controls said first processor,

(c) an input-output controller controlled by said first processor wherein said input-output controller controls external input-output devices,

(d) a transmission controller controlled by said first processor wherein said transmission controller controls information transfers from/to another module, and

(e) a first common transmission path connected to said first processor, said first memory, said input-output controller and said transmission controller for permitting information transfers between said first processor, said first memory, said input-output controller and said transmission controller; and

a second common transmission path respectively connected to transmission controllers of said modules for permitting information transfers between said modules via said transmission controllers,

said transmission controller includes

a second processor for executing arithmetic processing,

a second memory for storing microgprogram wherein said microprogram controls said second processor, said second memory being writable,

a first circuit connected to said first common transmission path and said second memory, said first circuit being controlled, in an initial state following a power-on sequence, by said first processor such that microprogram, transferred through said first transmission path, is stored in said second memory,

a second circuit connected to said second common transmission path and said second memory, said second circuit stores microprogram, transferred through said second transmission path subsequent to recognizing an identification code of an associated module, in said second memory during a power-on sequence, and

means connected to said first circuit, said second circuit and said second memory for sending said microprogram obtained from either said first circuit or said second circuit to said second memory.

4,884,196

SYSTEM FOR PROVIDING DATA FOR AN EXTERNAL CIRCUIT AND RELATED METHOD

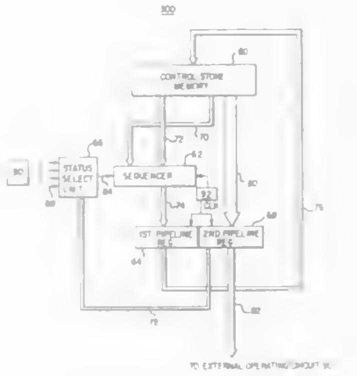
Geoffrey L. Thiel, Richmond; Douglas H. Hodgkiss, Sheppston, both of United Kingdom, and Hisanori Tohara, Otawara, Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa, Japan

Filed Oct. 6, 1986, Ser. No. 915,062

Claims priority, application Japan, Oct. 7, 1985, 60-221758

Int. Cl.⁴ G06F *15/16, 9/24*

U.S. Cl. 364—200 11 Claims



1. A system for sequentially providing external circuit data to an external circuit, comprising:

a memory having a plurality of memory locations identified by addresses, each said memory location containing an instruction comprising external circuit data and memory location data, said memory further comprising an address input terminal for currently accessing one of said memory locations in response to receipt of the address for that memory location at said address input terminal;

sequencer means, coupled to said memory, for receiving said memory location data from said currently accessed one of said memory locations, and for selecting the address of another one of said memory locations in response to said memory location data subsequent to receipt of said memory location data from said currently addressed one of said memory locations;

first register means, coupled between said sequencer means and said address input terminal of said memory, for receiving said selected address of said another one of said memory locations from said sequencer means, and for storing said selected address to make said selected address available at said address input terminal of said memory to access said another one of said memory locations; and

second register means, coupled between said memory and said external circuit, for receiving said external circuit data from said currently accessed one of said memory locations concurrently with receipt of said memory location data from said currently accessed one of said memory locations by said sequencer means and for storing said external circuit data of said currently accessed memory location in said second register means, for use, after said storing, be said external circuit.

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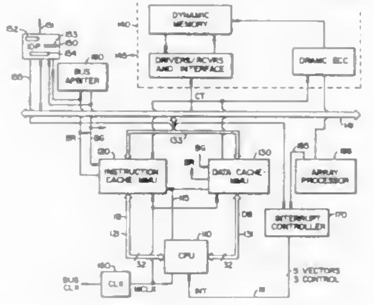
METHOD AND APPARATUS FOR ADDRESSING A CACHE MEMORY

Howard G. Sachs; James Y. Cho, both of Los Gatos, and Walter H. Hollingsworth, Campbell, all of Calif., assignors to Intergraph Corporation, Huntsville, Ala.

Continuation of Ser. No. 704,499, Feb. 22, 1985. This applicatioo Oct. 3, 1986, Ser. No. 915,319

Int. Cl.⁴ G06F *9/00, 9/38*

U.S. Cl. 364—200 **16 Claims**



1. A microprocessor comprising:
a first addressable memory forming a data cache;
a second addressable memory forming an instruction cache, the instruction cache being separate from the data cache;
execution means for processing data received from the data cache in response to an instruction from the instruction cache;
data interface means, coupled to the data cache and to the execution means, for independently controlling access to the data cache and for communicating data from the data cache to the execution means; and
instruction interface means, coupled to the instruction cache and to the execution means, for independently controlling access to the instruction cache and for communicating instructions from the instruction cache to the execution means, the instruction interface means including:
a counter for addressing the instruction cache;
instruction address loading means, coupled to the counter, for storing a first address in the counter; and
cache advance means for repetitively generating a non-address cache advance signal for incrementing the counter after the first address is stored in the counter, the counter being incremented once per cache advance signal, and the cache advance means operating independently of the instruction address loading means.

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SINGLE CYCLE PROCESSOR/CACHE INTERFACE

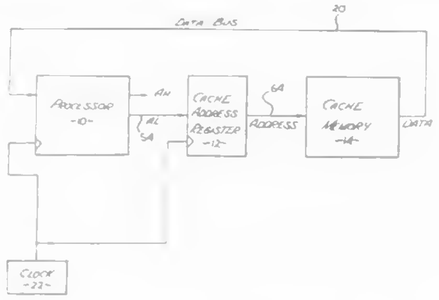
Robert B. Garner, San Jose, and Anant Agrawal, Cupertino, both of Calif., assignors to Sun Microsystems, Inc., Mountain View, Calif.

Filed Dec. 18, 1986, Ser. No. 944,422

Int. Cl.⁴ G06F *13/00, 9/16*

U.S. Cl. 364—200 **12 Claims**

1. A cache access system external to a processor comprising:
cache memory means including a cache memory for storing data at a plurality of addresses;
cache register means coupled to said cache memory means for temporarily storing an address to be applied to said cache memory on receipt of a clock signal by said cache register means;
address generation means coupled to said cache register means for generating said address and providing said address to said cache register means;
clock means for generating cyclical clock signals coupled to said cache register means and said dddress generation means;
cache data receiving means, internal to the processor, coupled to said cache memory means and said clock means for receiving said accessed data on receipt of said clock signal;
wherein said cache register means has a first inherent delay of said clock signal and said cache data receiving means has a second inherent delay of said clock signal which is longer than said first inherent delay a fraction of a clock cycle, such that said clock signal is received by said cache data receiving means after receipt of said clock signal by said cache register means;
whereby said fraction of a clock cycle provides additional time for accessing said cache memory means prior to the receipt of said clock signals by said cache data receiving means.



4,884,199

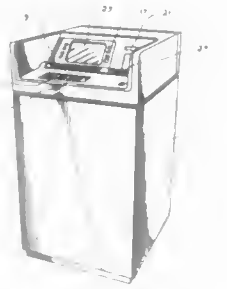
USER TRANSACTION GUIDANCE

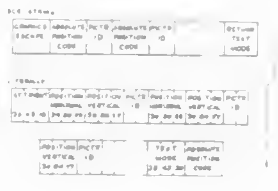
William A. Boothroyd, Davidson, N.C.; James C. Camann, Fort Mill, S.C., and Robert A. Palo, Concord, N.C., assignors to International Business Macines Corporation, Armonk, N.Y.

Filed Mar. 2, 1987, Ser. No. 20,796

Int. Cl.⁴ G06F *15/30*

U.S. Cl. 364—408 **9 Claims**





1. A computer comprising:
a display buffer and a display screen for displaying to a user on said display screen information stored in said display buffer;
a processor for receiving a picture library, and a message specification string;
means in said processor for recognizing a graphic control code in said message specification string as an instruction to interpret the following field as a picture ID code;
means in said processor for recognizing said picture ID code as an instruction to retrieve from said picture library, records containing information representing a picture, said records each having a skip field, a length field, and a data field;
means in said processor for processing a count in said skip field to determine where on said display screen said picture is to be displayed.

4,884,200

SIGNAL DETECTING METHOD IN AUTORADIOGRAPHY

Tsutomu Kimura, and Kazuhiro Hishinuma, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

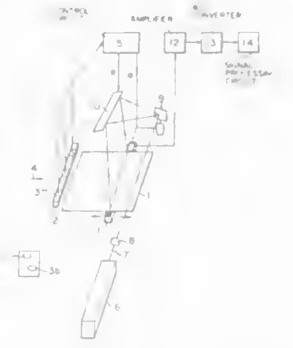
Filed Mar. 30, 1984, Ser. No. 595,504

Claims priority, application Japan, Mar. 31, 1983, 58-57418

The portion of the term of this patent subsequent to May 12, 2004, has been disclaimed.

Int. Cl.⁴ G03B *41/16;* **G01N** *33/50, 27/26;* **G01T** *1/29*

U.S. Cl. 364—413.13 **7 Claims**



1. A signal detecting method in autoradiography, which is applied to an autoradiograph having locational information on radioactively labeled substances distributed one-dimensionally, being recorded on a radiosensitive material as a visible image, which comprises steps of:
(1) scanning the radiosensitive material with a light in at least two different positions in such a manner that each scanning traverses the one-dimensional distribution of the radioactively labeled substances and photoelectrically reading out a portion of the visualized autoradiograph to give an electric signal, to which is applied a signal processing comprising stages of:
detecting distribution points of the radioactively labeled substances for each scanning, and preparing a continuous line selected from the group consisting of a straight line, a polygonal line and a curved line along the corresponding distribution points of the radioactively labeled substances for each scanning, to assign said continuous line to one-dimensional distribution direction of the radioactively labeled substances; and
(2) scanning the radiosensitive material with a light along said one-dimensional distribution direction of the radioactively labeled substances determined in the step (1) and photoelectrically reading out the visualized autoradiograph, to obtain the locational information on the radioactively labeled substances indicated by said autoradiograph as a digital signal.

4,884,201

AUTOMATIC GEAR CHANGE DEVICE

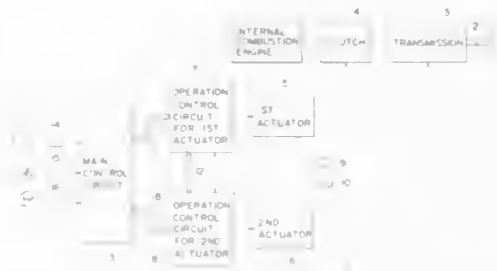
Yuji Sato; Hiromi Kono; Akifumi Tanoue, and Yoshiyuki Kimura, all of Higashi-matsuyama, Japan, assignors to Diesel Kiki Co., Ltd., Tokyo, Japan

Filed Jun. 13, 1988, Ser. No. 206,865

Claims priority, application Japan, Jun. 12, 1987, 62-146725

Int. Cl.⁴ B60K *41/18;* **G05B** *9/02*

U.S. Cl. 364—424.1 **5 Claims**


INTERNAL COMBUSTION ENGINE
TRANSMISSION
OPERATION CONTROL CIRCUIT FOR 1ST ACTUATOR
1ST ACTUATOR
MAIN CONTROL
OPERATION CONTROL CIRCUIT FOR 2ND ACTUATOR
2ND ACTUATOR

1. An automatic gear change device for controlling the operation of a gear transmission and a clutch, said clutch for engaging and disengaging said gear transmission, said device comprising:
a first actuator connected to said clutch, said first actuator operating said clutch in response to a first actuator signal;
a second actuator connected to said gear transmission, said second actuator operating said gear transmission in response to a second actuator signal;
a first actuator operation control means, connected to said first actuator, for outputting said first actuator signal in response to target data;
a second actuator operation control means, connected to said second actuator, for outputting said second actuator signal in response to said target data;
a main control means, connected to said first actuator operation control means by a first signal path and connected to said second operation control means by a second signal path, for outputting said target data;
a communication means for electrically interconnecting said first actuator operation control means and said second actuator operation control means;
a first stroke sensor connected to said first actuator and said first actuator operation control means, said first stroke sensor outputting to said first actuator operation control means a first position signal in accordance with a stroke of said first actuator; and,
a second stroke sensor connected to said second actuator and said second actuator operation control means, said second stroke sensor outputting to said second actuator operation control means a second position signal in accordance with a stroke of said second actuator;
wherein a first electrical signal path is established between said main control means and said first actuator operation control means through said second signal path and said second actuator operation control means and said communication means when said first signal path is inoperative;
wherein a second electrical signal path is established between said main control means and said second actuator operation control means through said first signal path and said first actuator operation control means and said communication means when said second signal path is inoperative; and,
wherein said first and second actuator operation control means respectively output first and second position data to said main control means, said first and second position data respectively corresponding to said first and second position signals.

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4,884,202
PROGRAMMABLE DRIVERLESS VEHICLE

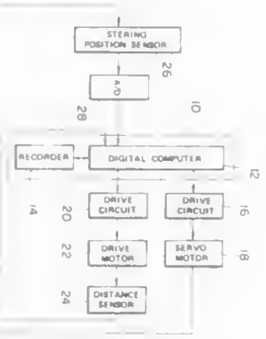
Hiroshi Ogawa, Aichi, and Susumu Yoshida, Kagamihara, both of Japan, assignors to Kabushiki Kaisha Meidensha, Tokyo, Japan

Filed Feb. 2, 1987, Ser. No. 9,958

Claims priority, application Japan, Feb. 4, 1986, 61-22387; Feb. 4, 1986, 61-22388

Int. Cl.⁴ G06F *15/50*

U.S. Cl. 364—424.01 9 Claims



1. A programmable driverless vehicle comprising:

a first signal source for producing a first electrical signal having an actual value for a steering position of the driverless vehicle;

a second signal source for producing a second electrical signal having a value for a distance from its initial position covered by the driverless vehicle;

a data recorder having a record of information programmed therein, the information defining target steering positions as a function of the covered distance;

a control circuit responsive to the second signal for calculating a target value for the steering position from the information programmed in the data recorder, the control circuit including means for calculating an error between the actual and target values for the steering position, the control circuit including means for storing a predetermined number of steering position errors calculated successively to have the most recent successive steering position errors, the control circuit including means for calculating a duty ratio as a function of the new steering position error, the control circuit including means for setting the duty ratio at a predetermined maximum value when the new and last steering position errors have the same sign and when the last steering position error is zero and the new steering position error has an absolute value equal to or greater than a predetermined value, the control circuit including means for producing a control signal having a value corresponding to the calculated duty ratio;

means including a servo motor responsive to the control signal fed thereto from the control circuit for changing the steering position of the driverless vehicle for a time corresponding to the duty ratio.

4,884,203
METHOD FOR INFLUENCING THE DRIVING SPEED OF A MOTOR VEHICLE AND APPARATUS THEREFOR

Karl-Heinz Preis, Bühlertal, and Eberhard Schnaibel, Hemmingen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Feb. 2, 1988, Ser. No. 151,623

Claims priority, application Fed. Rep. of Germany, Feb. 6, 1987, 3703645

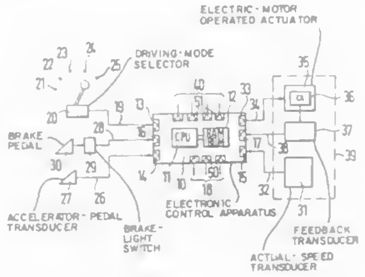
Int. Cl.⁴ G05D *13/60;* **B60K** *31/00*

U.S. Cl. 364—426.04 21 Claims

1. A method of influencing the driving speed of a motor vehicle equipped with an internal combustion engine in dependence upon an actual speed signal and at least one driving-mode signal, which is independent of the accelerator pedal, and to which at least the two driving modes of "accelerate" and "decelerate" are assigned, the motor vehicle being equipped with a driving-mode selector for facilitating the selection of said two driving modes of "accelerate" and "decelerate", the method comprising the steps of:

metering the air/fuel mixture to the engine via an electric-motorized actuator driven by a control signal;

initially changing said control signal via a computer with a first change rate and then with a second change rate less than said first change rate and uniformly with time;



thereafter, changing said control signal via said computer uniformly with time during the time phase that at least one of said driving modes is effective;

changing said control signal via said computer at least in quasi jump-like manner at the end of said time phase; and,

then changing said control signal via said computer until a driving condition having zero acceleration is reached.

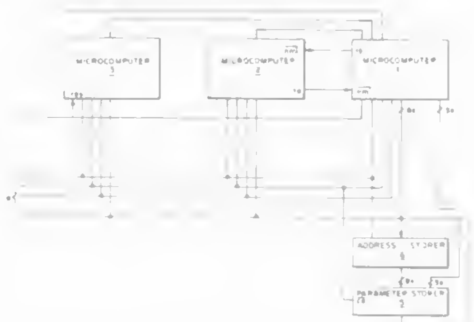
4,884,204
MICROCOMPUTER SYSTEM FOR REGULATING INTERNAL COMBUSTION VEHICULAR ENGINES

Artur Seibt, and Alois Kainz, both of Wien, Austria, assignors to Voest-Alpine Automotive Gesellschaft mbH, Linz, Austria

Filed Aug. 6, 1986, Ser. No. 893,656

Int. Cl.⁴ G06F *15/16, 13/38*

U.S. Cl. 364—431.03 9 Claims



1. A microcomputer system for parallel processing of data and instructions, for regulating an internal combustion vehicular engine and for indicating engine status comprising:

a plurality of microcomputer modules including a first module with a microcomputer therein having internal buses for performing first priority assignments and at least a second microcomputer module with a microcomputer therein having internal buses for performing second priority assignments;

a pluggable parameter storer module having a storer/memory therein which is programmable in accordance with the specific requirements of the vehicle, the engine, the assignments of each of the microcomputers, and the priority of same; and

a combined bidirectional address and data bus for interconnecting said microcomputers for data transfer among said microcomputers while maintaining isolation of said combined bidirectional address and data bus from the internal buses of said microcomputers to provide substantial immunity from noise interference and further for interconnecting each of said microcomputer modules and said parameter storer module in a manner whereby said first microcomputer has first priority of access to said storer/-memory for performing first priority assignments; and

storer module being pluggable into said bidirectional address and data bus whereby the system easily can be modified for another engine or vehicle.

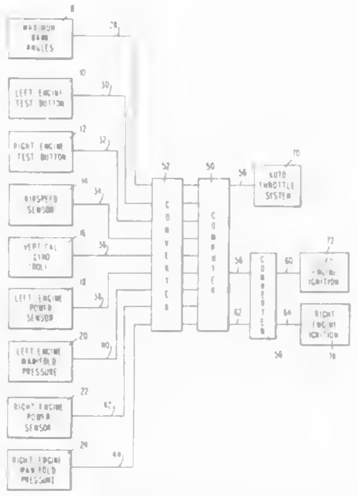
4,884,205
METHOD AND APPARATUS FOR LIMITING ADVERSE YAW-INDUCED ROLL DURING ENGINE FAILURE IN MULTIENGINE AIRCRAFT

Jorge H. Hernandez-Diaz, Minillas Sta. Box 41267, Santurce, P.R. 00940

Filed Aug. 4, 1987, Ser. No. 83,019

Int. Cl.⁴ G05D *1/00*

U.S. Cl. 364—431.01 19 Claims



2. An apparatus for limiting adverse yaw caused by asymmetrically produced total thrust in a multiengine aircraft, comprising:

asymmetrical thrust detector means including engine power measurement means for measuring engine power outputs from each engine and for generating signals indicative of the corresponding thrust developed thereby;

aircraft attitude detector means for detecting aircraft attitude and producing a signal responsive thereto; and

control means responsive to said signals from said asymmetric thrust detector means and said aircraft attitude detector means for controlling said aircraft engine outputs to reduce said asymmetry of total thrust.

4,884,206
PROCESS AND PROCESSING CIRCUIT FOR THE ANALOG OUTPUT SIGNAL OF A SENSOR

Jean-Luc Mate, Toulouse, France, assignor to Bendix Electronics S.A., Toulouse, France

Continuation of Ser. No. 807,062, Dec. 6, 1985, abandoned. This application Jul. 1, 1988, Ser. No. 218,510

Claims priority, application France, Dec. 21, 1984, 84 19620

Int. Cl.⁴ F02D *41/04*

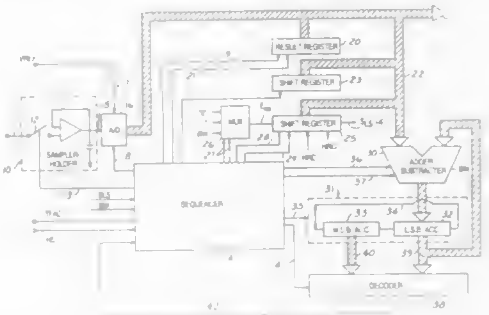
U.S. Cl. 364—431.08 4 Claims

1. A digital system for processing the analog output of a sensor, in particular of an accelerometric sensor for the detection of pinking for an internal combustion engine, wherein the analog output of the sensor is bi-polar and is characterized by an integration constant, said system comprising:

means for periodically generating a measuring period signal representing a measuring period for the analog output of the sensor;

sampling means for periodically sampling the analog output of the sensor during each measuring period to produce bi-polar analog output signals;

analog-to-digital converter means responding to the bi-polar analog output samples for producing corresponding uni-polar digital values;



accumulating means for summing the uni-polar digital values produced during each measuring period to produce a sum of the uni-polar digital values occurring during each measuring period;

means for dividing the sum of the uni-polar digital values occurring during each measuring period by the integration constant characterizing the sensor to produce, for each measuring period, a modifier value; and

means for adjusting ignition timing of the engine as a function of such modifier values.

4,884,207
START CONTROLLER FOR ENGINE

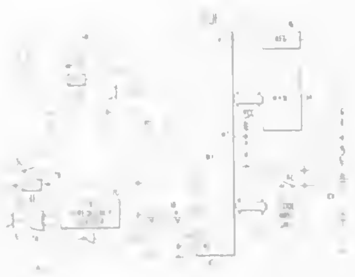
Toru Asada, Takaoka; Kenichi Komuro, Toyota; Ryoichi Fukumoto, Nagoya, and Nozomu Torii, Hekinan, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Japan

Filed Apr. 2, 1986, Ser. No. 847,344

Claims priority, application Japan, Apr. 2, 1985, 60-69821

Int. Cl.⁴ B60R *25/00*

U.S. Cl. 364—431.03 1 Claim



1. A start controller for an engine of a vehicle comprising:

fuel supply means for supplying fuel to the engine;

electric driving means for supplying a current to the fuel supply means for operating the fuel supply means to supply fuel to the engine;

control means for holding a specific code, comparing an input code with the specific code to judge the coincidence and energizing the electric driver means when the specific code and the input code coincide; and

code input means for inputting the input code to the control means wherein said input means comprises a portable key

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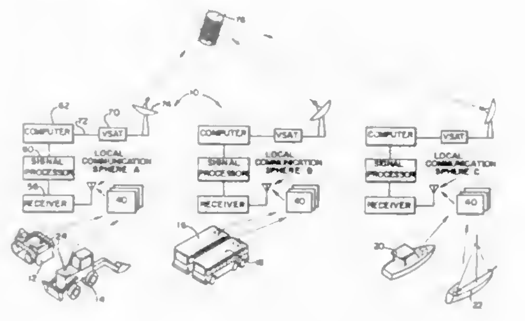
code oscillator having means for generating a signal including code information and transmitting said signal and a vehicle mounted key code receiver having means for receiving the signal generated and transmitted by the key code oscillator means for detecting input code information included in the signal and providing said input code information to said control means.

4,884,208
SYSTEM FOR CONTINUOUSLY ESTABLISHING AND INDICATING THE LOCATION OF A MOVABLE OBJECT

Orlando M. Marinelli, and Mark Rector, both of Ft. Lauderdale, Fla., assignors to Equipment Tracking Network, Inc., Ft. Lauderdale, Fla.

Filed May 16, 1988, Ser. No. 194,597
Int. Cl.⁴ G01S *3/02*
U.S. Cl. 364—460 2 Claims


COMPUTER
VSAT
SIGNAL PROCESSOR
LOCAL COMMUNICATION SPHERE A
LOCAL COMMUNICATION SPHERE B
LOCAL COMMUNICATION SPHERE C
RECEIVER

2. A system for continuously establishing and indicating the location of a movable object comprising:

first transmitter means secured to the object for periodically transmitting, at a first predetermined frequency, first radio frequency signals representative of an identification code uniquely associated with the object;

a plurality of receiver/repeater stations positioned at spaced locations within a predetermined geographic area, each receiver/repeater station including, a plurality of spaced, first receiver means for each receiving and demodulating the first radio frequency signals to provide an object identification code signal, means associated with each first receiver means for determining the strength of the received first radio frequency signals and for generating a first radio frequency strength signal in each first receiver means;

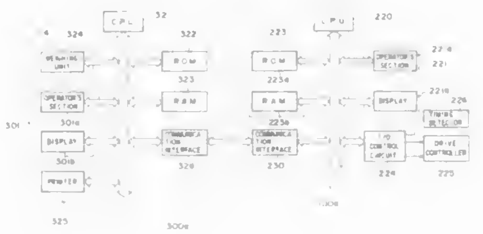
signal processor and computer means centrally located within the predetermined geographic area and communicating with the first receiver means and the strength determining means for receiving the signals representative of the object identification code and strength signals, for calculating the location of the object based upon the strength signals and for storing signals representative of the object identification code and the location of the object; and

a master tracking station communicating with the signal processor and computer means for each of a plurality of predetermined geographic areas, the master tracking station including means for receiving and storing the signals representative of the object identification code and the object location, and display means for providing a visual indication of the object identification code and the object location.

4,884,209
FILM FOLDING CONTROL APPARATUS OF WRAPPING SYSTEM

Toshio Denda, Tokyo, Japan, assignor to Teraoka Seiko Co., Limited, Tokyo, Japan

Division of Ser. No. 868,509, May 30, 1986, Pat. No. 4,757,451. This application Mar. 22, 1988, Ser. No. 172,051
Claims priority, application Japan, May 31, 1985, 60-117907
Int. Cl.⁴ G06F *15/46;* **B65B** *57/10*
U.S. Cl. 364—468 13 Claims



1. A wrapping machine comprising:

a film feeding means for feeding a film cut to a predetermined length to a predetermined position of the wrapping machine, clamping edge portions of the film, so that when the film feeding is completed, the cut film is positioned approximately symmetrically in respect to the central line of the predetermined position which is perpendicular to the film feeding direction regardless of the cut film length;

film clamping means constituted by left, right, and central sections for independently clamping the right, left and central parts of the respective film edge portions which are perpendicular to the film feeding direction;

film folding means constituted by left and right folding plates and a front folding plate, wherein said left and right folding plates are disposed above the predetermined position of the wrapping machine sliding in the mutually opposite direction, for folding the lengthwise opposing edge portions of the film underneath the article to be wrapped, and said front folding plate is disposed above the predetermined position of the machine sliding in the direction perpendicular to the left and right folding plates sliding direction, for folding one edge portion perpendicular to the film lengthwise direction underneath the article to be wrapped;

infeeding means for feeding in an article to be wrapped from the direction perpendicular to the film feeding direction onto the upper side of lifting means;

lifting means for lifting the article to be wrapped fed in by said infeed means into engaging contact with the film clamped by said clamping means so that the upper part of the article to be wrapped may be covered by the film;

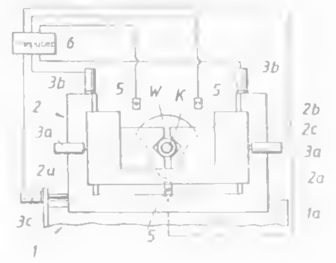
tension control means for adjusting the tension of the film when wrapping is completed;

wherein said tension control means controls the lengthwise film tension by controlling at least one of the left and right folding plates operating timing and releasing timing of the right and left sections of the film clamping means, and controls the film tension in the direction perpendicular to the lengthwise direction by controlling at least one of the front folding plate operating timing and the releasing timing of the central section of the film clamping means on the front folding plate side.

4,884,210
METHOD AND MACHINE FOR A BALANCING CENTERING OF WORKPIECES WHICH ARE TO BE MACHINED ONLY AT CERTAIN PORTIONS, PARTICULARLY CRANKSHAFTS

Gottfried Blaimschein, Steyr, Austria, assignor to GFM Gesellschaft für Fertigungstechnik und Maschinenbau Gesellschaft m.b.H., Steyr, Austria

Filed Nov. 16, 1987, Ser. No. 121,124
Claims priority, application European Pat. Off., Nov. 26, 1986, 86890329.5
Int. Cl.⁴ G01M *1/24, 1/02;* **B23B** *49/04*
U.S. Cl. 364—474.01 5 Claims



1. A method for a balancing centering of a workpiece having first portions to be machined and second portions which are not to be machined along an axis of the workpiece, the workpiece portions imparting unbalances to the workpiece with respect to the axis, the method comprising the steps of

(a) gripping the unbalanced workpiece,

(b) imparting a transverse displacement to the gripped workpiece with respect to the axis to reduce the unbalance of the workpiece,

(c) cutting the gripped workpiece to length in the position resulting from the transverse displacement along two opposite end faces, and

(d) forming a respective centering bore in each end face of the gripped workpiece in the position resulting from the transverse displacement, the centering bores defining an axis of rotation for the balanced workpiece,

(e) wherein the improvement comprises the steps of

(1) measuring only the unbalances of said second workpiece portions while disregarding the unbalances of said first workpiece portions to obtain corresponding measured data and

(2) determining the extent and direction of the transverse displacement only in response to, and on the basis of, said measured data.

4,884,211
NUMERICAL CONTROL UNIT FILE PROTECTION SYSTEM

Hajimu Kishi, Hino; Kunio Tanaka, Akishima; Masashi Yukutomo, Sagamihara, and Teruyuki Matsumura, Hachioji, all of Japan, assignors to Fanuc Ltd., Minamitsuru, Japan

Continuation of Ser. No. 32,962, Mar. 31, 1987, abandoned, which is a continuation of Ser. No. 642,663, Aug. 17, 1984, abandoned. This application May 18, 1988, Ser. No. 196,783
Claims priority, application Japan, Dec. 29, 1982, 57-228510
Int. Cl.⁴ G05B *9/00*
U.S. Cl. 364—474.22 4 Claims

1. A numerical control unit file protection system, comprising:

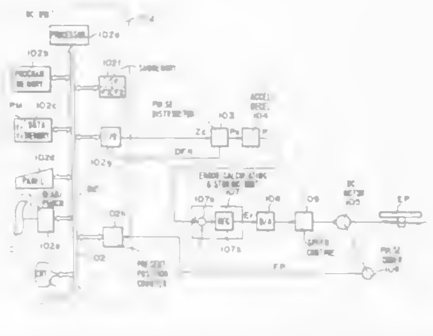
memory means for storing a control program, at least one unprotected file and at least one protected file, each protected an unprotected file having a filename, said memory means comprising:

a parameter area for storing filenames only of protected files; and

a submemory for storing the at least one protected file;

input means for inputting an object filename in a file modification command, and a processing confirmation; and

processor means for processing the file modification command by comparing the object filename with the filename of the at least one protected file and, when there is coincidence therebetween, for performing modification processing of the at least one protected file only in response to the processing confirmation being entered on said input means after filename coincidence is determined.



4,884,212
APPARATUS AND METHOD FOR USING UNIQUE CHARGE CARDS DISPENSED FROM A VENDING MACHINE

Richard Stutsman, San Diego, Calif., assignor to Vertx Corporation, Salt Lake City, Utah

Continuation-in-part of Ser. No. 29,618, Mar. 23, 1987, abandoned. This application May 29, 1987, Ser. No. 55,908
Int. Cl.⁴ G07F *7/10, 11/02*
U.S. Cl. 364—479 16 Claims

1. A dispensing machine that can be accessed repeatedly by a card issued by the machine, the machine comprising:

storage means for holding and dispensing a plurality of products;

memory means for storing information including representations of credit amount information, customer identification code information and product location information;

processing means for accessing information in the memory means and for entering information in the memory means;

credit input means responsive to information from customer for transferring credit for the customer to the processing means for storage in the memory means;

character entry means responsive to actuation by a customer for producing representations of credit amount informa-

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tion desired by the customer and communicating the credit amount information representations to the processing means;

customer card dispensing means responsive to the processing means for dispensing a customer card; and

customer card reading means coupled to the processing means for obtaining representations of information from the customer card and for communicating the representations to the processing means.

4,884,213
METHOD FOR QUANTITATIVE ANALYSIS OF ANALYTE IN LIQUID SAMPLE USING ANALYTICAL ELEMENT

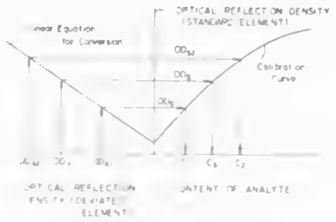
Yuzo Iwata; Hajime Makiuchi, and Masao Kitajima, all of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 900,533, Aug. 26, 1986, abandoned. This application Feb. 15, 1989, Ser. No. 311,444

Claims priority, application Japan, Aug. 26, 1985, 60-188226

Int. Cl.⁴ G01N *35/02, 21/00*

U.S. Cl. 364—497 7 Claims



1. In a method for quantitatively analyzing an analyte in a liquid sample by applying the liquid sample on one of a set of analytical elements and measuring a color developed in the analytical element through reflection photometry in which said set of analytical elements are the same elements as a standard element except for deviation of sensitivity to the analyte, but said deviation of sensitivity is essentially equivalent to each other among the set of analytical elements, a calibration curve of the standard element with respect to said analyte being predetermined, the improvement comprising the steps of:

(I) applying two standard solutions containing the analyte in contents C_1 and C_2 different from each other on two analytical elements, respectively, these analytical elements being selected from said set of analytical elements, and measuring colors developed on the elements through reflection photometry to obtain optical reflection density values OD_{x1} and OD_{x2}, respectively;

(II) preparing a linear equation for defining a relationship between an optical reflection density value OD_x to be measured on an analytical element belonging to said set of the analytical elements and an optical reflection density value OD_s being predetermined on the standard analytical element, in which the optical reflection density values OD_x and OD_s are those to be determined on colors developed on the respective elements upon application of a liquid sample containing the analyte in the same content C_x, the preparation being made utilizing the calibration curve and the optical reflection density values OD_{x1} and OD_{x2} obtained in step (I);

(III) applying a liquid sample containing the analyte in an unknown amount on an analytical element belonging to said set of analytical elements, and measuring a color developed on said element through reflection photometry to obtain an optical reflection density values; and

(IV) determining the content of the analyte in the applied liquid sample according to the above-prepared linear equation and the predetermined calibration curve; wherein said linear equation is

$$OD_x = A \cdot OD_s + B$$

in which A and B are constant values obtained from the equations:

$$OD_{x1} = A \cdot OD_{s1} + B$$

$$OD_{x2} = A \cdot OD_{x2} + B$$

in which OD_{s1} is an optical reflection density value to be determined on the standard analytical element upon application of a liquid sample containing the analyte in the content C_{x1}, and OD_{s2} is an optical reflection density value to be determined on the standard analytical element upon application of a liquid sample containing the analyte in the content C_{x2}.

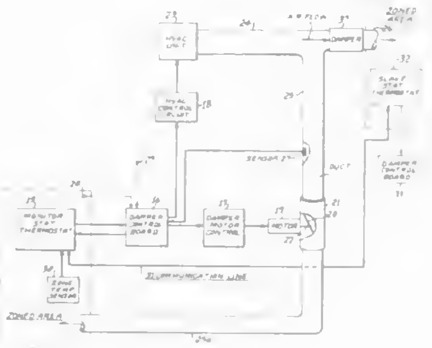
4,884,214
THERMOSTAT

Jeffery L. Parker, and Edward Parker, both of Jacksonville, Fla., assignors to Parker Electronics, Inc., Jacksonville, Fla.

Filed Feb. 12, 1987, Ser. No. 13,868

Int. Cl.⁴ F25B *29/00*

U.S. Cl. 364—505 73 Claims



1. In a system for monitoring and controlling the condition of air in a zone within selectively determined operating limits using a single HVAC unit in which conditioned air passes into the zone via a damper, operated by control means, in a duct communicating with a zone, a thermostat for activating and deactivating the control means, said thermostat comprising:

first circuit means responsive to input signals for establishing the operating limits for the zone and providing a first digital word output signal representative of the operating limits;

second circuit means responsive to input signals indicative of the actual condition of the air in the zone for providing a second digital word output signal representative of the condition of the air therein;

third circuit means responsive to output signals from said first and second circuit means for providing third digital word output signals for operating the control means of the damper; and

programmable logic means for providing digital word input signals to said third circuit means for selectively controlling the operation of the control means of a damper by said third circuit means.

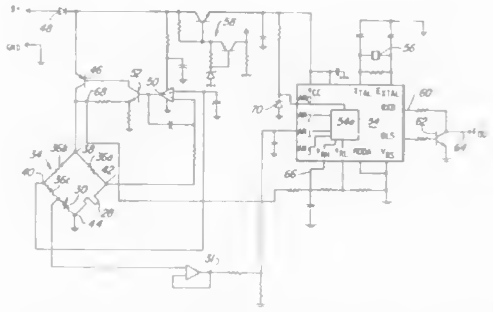
4,884,215
AIRFLOW SENSOR AND CONTROL CIRCUIT

James A. Zboralski, Clawson; Darryl A. Hock, Harper Woods, and David L. Kaleita, Hamtramck, both of Mich., assignors to Jabil Circuit Company, Madison Heights, Mich.

Filed Feb. 27, 1987, Ser. No. 19,968

Int. Cl.⁴ G01F *1/68*

U.S. Cl. 364—510 13 Claims



1. A control circuit for an airflow sensor of the type employing a flow sensing bridge having a thermal element which senses airflow and provides an indication of airflow as a function of electrical energy applied to said bridge, said bridge having a supply node to which said electrical energy is applied and said bridge having first and second control nodes for providing an indication of the balanced and unbalanced state of said bridge, the control circuit comprising:

a differential amplifier circuit means for coupling to a source of electrical energy having first and second inputs coupled to said first and second control nodes and being coupled to said supply node, for sensing the balanced and unbalanced state of said bridge and for controlling the electrical energy applied to said supply node to maintain said bridge in a substantially balanced state;

a fixed voltage reference source;

said supply node being at a voltage which varies in accordance with the electrical energy applied to said bridge;

a microcomputer having an analog to digital converter, having a memory circuit and having a serial communication output channel;

said analog to digital converter having an analog signal input channel and a reference voltage input channel;

said analog to digital converter being of the type capable of receiving an analog signal within a predetermined voltage range at said analog signal input channel and capable of receiving a fixed voltage at said reference voltage input channel;

said analog to digital converter being further of the type that when receptive of an analog signal within a predetermined voltage range at said analog signal input channel when receptive of a fixed voltage at said reference voltage input channel said analog to digital converter divides said voltage range into substantially equal increments, each increment corresponding to a different binary digit;

in said control circuit said reference voltage input channel of said analog to digital converter being coupled to said supply node to sense the electrical energy applied to said supply node as characterized by the voltage at said supply node and said analog signal input channel being coupled to said fixed voltage reference source;

said analog to digital converter when so coupled to said supply node and to said fixed voltage reference source being operable to divide said range of supply node values into substantially nonequal increments, each increment corresponding to a different binary digit;

said microcomputer being receptive of said binary digits and producing a signal on said serial communication output channel which is indicative of said binary digits and thereby indicative of measured mass airflow.

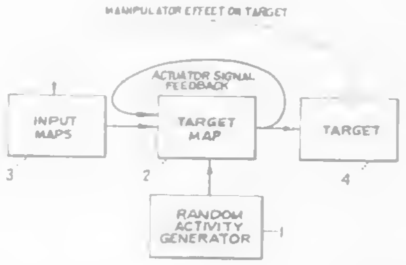
4,884,216
NEURAL NETWORK SYSTEM FOR ADAPTIVE SENSORY-MOTOR COORDINATION OF MULTIJOINT ROBOTS FOR SINGLE POSTURES

Michael Kuperstein, 40 Longwood Ave., Brookline, Mass. 02146

Filed Nov. 9, 1987, Ser. No. 118,828

Int. Cl.⁴ G06F *15/46*

U.S. Cl. 364—513 18 Claims



10. A method for calibrating visual and motor functions in a robot having a body and at least one arm comprising limbs and joints connecting one limb to the body and the limbs to each other with one limb having a free end, the method comprising the steps of:

a. generating a target map of random values, the values corresponding to a single random orientation of the limbs relative to their joints;

b. orienting the limbs in the single random orientation;

c. visually sensing the position of the free end of the one limb and generating an input map of values corresponding to the visually sensed position;

d. correlating the input map to the target map;

e. continuously repeating steps a-d in sequence for different random orientations to generate a correspondence between all input maps and all target maps.

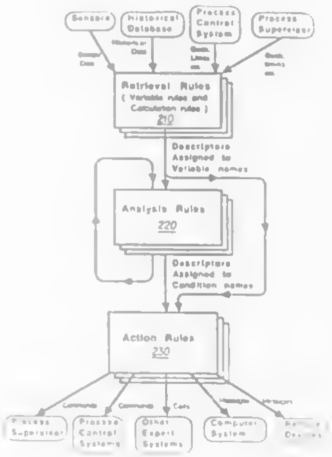
4,884,217
EXPERT SYSTEM WITH THREE CLASSES OF RULES

Richard D. Skeirik, Newark, Del., and Frank O. DeCaria, Old Hickory, Tenn., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Sep. 30, 1987, Ser. No. 102,832

Int. Cl.⁴ G06F *15/18*

U.S. Cl. 364—513 146 Claims



1. An expert system, comprising:

a collection of inference rules, consisting of retrieval rules, respective ones thereof including standards

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for associating an attribute with an object selectively in accordance with input values; and

non-retrieval rules, respective ones thereof each performing a function selected from the group consisting of:

associating an attribute with an object selectively in accordance with object/attribute associations made by ones of said rules, and/or;

selectively executing an external command in accordance with attribute/object associations made by ones of said rules;

a processor connected to receive inputs from an input channel, to execute said collection of inference rules on said inputs, and to provide outputs on an output channel accordingly,

wherein said processor is not programmed to perform any purely arithmetic test while executing said non-retrieval rules.

4,884,218

KNOWLEDGE SYSTEM WITH IMPROVED REQUEST PROCESSING

Palmer W. Agnew, Owego; Neil H. Clayton, Apalachin; Monroe Judkovics, Endwell, all of N.Y.; Jose L. Rivero, Boca Raton, Fla., and Kuo-chang Sun, Endicott, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 1, 1987, Ser. No. 103,810

Int. Cl.⁴ G06F *15/00*

U.S. Cl. 364—513 14 Claims

1. A knowledge system to determine a machine configuration of a given type from a requested machine configuration, each machine configuration having a record including a plurality of parameters, taken from a given family of parameters, and a value for each of said plurality of parameters, the knowledge system comprising:

an expert system to process the record of the requested machine configuration to determine therefrom a machine configuration of the given type;

a complementary database storing a plurality of records of machine configurations of the given type, all of the values for each one of the parameters of the records stored in the complementary database forming a value set associated with said one parameter;

search means to search the complementary database for a record identical to the record of the requested machine configuration, and to indicate to a requestor that the requested machine configuration is of the given type if a record identical to the record of the requested machine configuration is found in the complementary database, and including means to search all of the value sets associated with the parameters of the record of the requested machine configuration, one value set at a time, for all of the values in each value set identical to the value of the associated parameter of the record of the requested machine configuration; and

input means to receive from the requestor the record of the requested machine configuration, and to transmit the record thereof to the search means.

4,884,219

METHOD AND APPARATUS FOR THE PERCEPTION OF COMPUTER-GENERATED IMAGERY

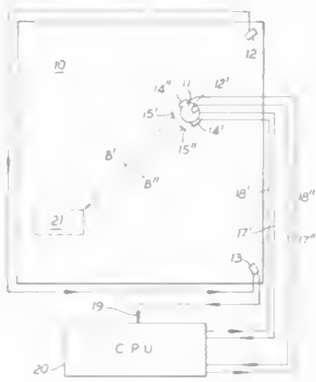
Jonathan D. Waldren, Melton Mowbray, United Kingdom, assignor to W. Industries Limited, Leicester, United Kingdom

Filed Jan. 15, 1988, Ser. No. 144,090

Claims priority, application United Kingdom, Jan. 21, 1987, 8701288

Int. Cl.⁴ G06F *15/62, 15/20;* **G06K** *15/00*

U.S. Cl. 364—514 8 Claims



1. A 3-dimensional display system comprising:

headwear having means mounted thereon to project individual images of a 3-dimensional object into respective eyes of a person wearing said headwear,

means for monitoring variations of spatial coordinates relating to said wearer,

means for monitoring variations of an orientation of said wearer's head,

means for monitoring a line of sight of each said eye of said wearer and for monitoring variations of an angle of convergence of said lines of sight,

computer means for generating two images of the three-dimensional object having spatial coordinates, and

means for modifying said images in response to variations of a relationship between said spatial coordinates, said orientation and said angle of convergence,

such that the image presented to each said eye is of said 3-dimensional object as seen by said eye at a distance from said wearer determined by said angle of convergence whereby said wearer perceives said object stereoscopically.

4,884,220

ADDRESS GENERATOR WITH VARIABLE SCAN PATTERNS

John F. Dawson; Joseph W. Bednarski, both of Albuquerque; Marie A. Stoffer, Rio Rancho, and James A. Cousens, Albuquerque, all of, assignors to Honeywell Inc., Minneapolis, Minn.

Filed Jun. 7, 1988, Ser. No. 203,660

Int. Cl.⁴ G06F *15/62*

U.S. Cl. 364—521 14 Claims

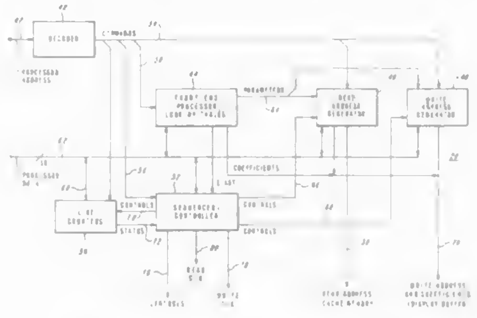
1. An address generator for scanning a first addressable memory logically configures in a rectangular matrix wherein a pattern of data is stored in a predetermined orientation with respect to said matrix, and for writing to a second addressable memory comprising:

input means for receiving parameters from an external source, said parameters being programmable for providing a predetermined scan pattern from a plurality of scan patterns substantially independent of said predetermined orientation,

processor means coupled to receive said parameters for computing angles of an envelope defining the contour of a scan pattern and angles of rotation for successive lines of said scan pattern.

read address generator means responsive to said processor means for selectively generating address signals so as to read out said pattern information in a given direction with respect to said predetermined orientation, wherein said given direction is substantially independent of said predetermined orientation, and for providing incremental horizontal and vertical values of read addresses for generating each line of said scan pattern and reading values of digital signals stored in said first memory at corresponding addresses,

write address generator means coupled to receive said parameters in the form of a first parameter defining a starting point of a first scan line, a second parameter defining the slope of said scan line, and a third parameter defining the slope of starting points of successive scan line, said first, second, and third parameters being dynamically and sequentially variable in accordance with command signals from said external source to form one of said plurality of scan patterns, for generating sequential write addresses for writing into said second addressable memory configured in a rectangular matrix,



counter means for counting the number of incremental addresses in accordance with a predetermined line length and the number of scan lines in accordance with a predetermined line count and for providing a signal indicative of the completion of a scan line and a signal indicative of the generation of a complete frame at the completion of said line count, and

timing means for generating timing and sequencing signals for generating each scan line, reading said first addressable memory along said scan lines, and writing the contents of said addressable memory into said second addressable memory.

4,884,221

COLOR MEASURING APPARATUS

Masami Sugiyama, Toyonaka; Nobuyuki Kita, Osaka, and Yoshihiro Tasaka, Nishinomiya, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Apr. 14, 1987, Ser. No. 38,366

Claims priority, application Japan, Apr. 14, 1986, 61-87535; Apr. 14, 1986, 61-87537

Int. Cl.⁴ G06F *15/20;* **G01J** *3/50*

U.S. Cl. 364—526 20 Claims

9. A color measuring apparatus comprising:

a photoelectric conversion means which separates light from a sample into a plurality of predetermined basic color components so as to output basic color signals corresponding to quantities of light of the basic color components, respectively; and

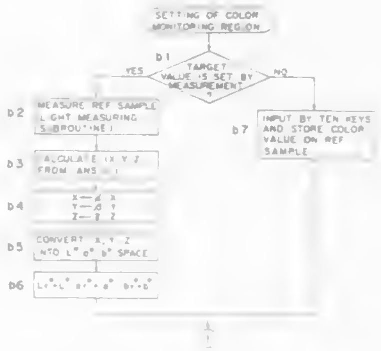
a data processing means including:

a calculating means which converts the basic color signals from said photoelectric conversion means into coordinates defined by a predetermined colorimetric system so as to calculate a color value of the sample,

a region setting means for setting a predetermined region in the colorimetric system,

a decision means for deciding whether or not the color value calculated by said calculating means falls within the predetermined region, and

a control means for controlling a time interval of measurement of the sample, which actuates, when it is decided by said decision means that the color value falls out of the predetermined region, said photoelectric conversion means, said calculating means, said region setting means and said decision means at a first time interval so as to automatically repeat measurement of the sample,


SETTING OF COLOR MONITORING REGION
b1
TARGET VALUE IS SET BY MEASUREMENT
YES
NO
b2
MEASURE REF SAMPLE
b7
INPUT BY TEN KEYS AND STORE COLOR VALUE ON REF SAMPLE
b3
b4
b5
CONVERT X, Y, Z INTO L* a* b* SPACE
b6

said control means actuating, when it is decided by said decision means that the color value falls within the predetermined region, said photoelectric conversion means, said calculating means, said region setting means and said decision means at a second time interval different from the first time interval so as to automatically repeat the measurement of the sample.

4,884,222

FIRE ALARM SYSTEM

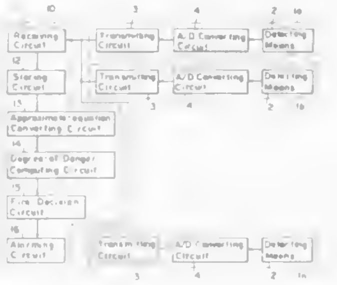
Tetsuya Nagashima, Tokyo; Eiji Matsushita, Yokohama; Sadataka Yuchi, Sagamihara, and Akira Kitajima, Yokohama, all of Japan

Continuation-in-part of Ser. No. 582,316, Feb. 22, 1984, abandoned. This application Jul. 29, 1985, Ser. No. 760,312

Claims priority, application Japan, Jul. 31, 1984, 59-160850

Int. Cl.⁴ G08B *17/00*

U.S. Cl. 364—550 22 Claims



1. A fire alarm system which comprises:

one or more detecting sections for detecting a change in the physical phenomen of the surroundings related to the occurrence of a fire and outputting analog data corresponding to the change;

a data sampling section for sampling the data from each of the detecting sections at periodic intervals;

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- a storing section for storing the data output from the data sampling section for each of; said detecting sections;
- a computing section for sequentially extracting the data from said storing section, computing from such data an approximation equation of said change, and computing a future value of said phenomen predicted from said approximation equation by using a predetermined number of the data stored in said storing section;
- a comparing section for comparing said future value predicted by said computing section with a preliminarily set data value related to fire alarming and generating an output when the relation therebetween is not within a predetermined range; and
- an alarming section for generating an alarm in response to the output from said comparing section.

4,884,223

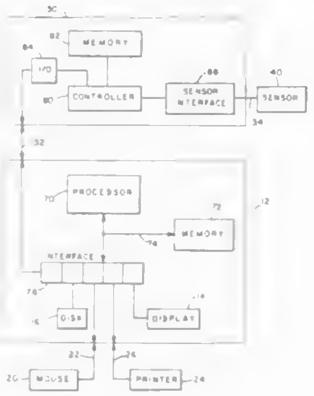
DYNAMIC FORCE MEASUREMENT SYSTEM

Lloyd D. Ingle, Valley Center; Henry V. Allen, and James W. Knutti, both of Fremont, all of Calif., assignors to Hybond, Inc., Escondido, Calif.

Continuation of Ser. No. 752,967, Jul. 5, 1985, abandoned. This application Mar. 22, 1988, Ser. No. 170,036

Int. Cl.⁴ G01M *7/00;* G01F *1/375;* B25J *19/00*

U.S. Cl. 364—550 14 Claims



1. A dynamic bond force measurement system for taking a series of force measurements of force applied by a wire bonding tool, the system comprising:

- a sensor device for positioning beneath a wire bonding tool, comprising a substrate platform, a transducer element mounted on said platform, and a pressure pedestal mounted on said transducer element for receiving the force applied by a wire bonding tool;
- the transducer element comprising means for detecting forces between the pedestal and the substrate platform in the range form 0.00 to 2.00 lbs. and for producing a continuous analog output signal in the range form 0.00 to 100.00 millivolts in relation to said force;
- a sensor interface device for receiving said analog output signal, the interface device comprising analog to digital converter means for converting said analog output signal, data storage means for storing discrete values of said digital output signal at a preselected sample rate, triggering means for initiating said data storage, and output means for transmitting said stored digital output signals; and
- data processing means for receiving said digital output signals from said interface device, means for storing said received signals, and means for generating from said signals a graphical representation of the applied force relative to time.

4,884,224

METHOD FOR GENERATING IMAGE CONTOUR DATA AND APPARATUS THEREFOR

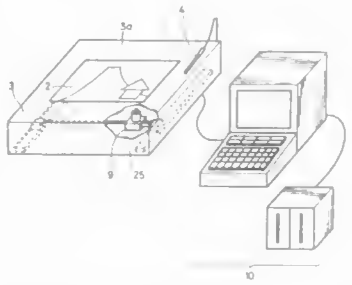
Makoto Hirosawa, Kyoto, Japan, assignor to Dainippon Screen Mfg. Co., Ltd., Japan

Filed Jan. 22, 1988, Ser. No. 147,354

Claims priority, application Japan, Jan. 23, 1987, 62-13837; Jul. 10, 1987, 62-171165

Int. Cl.⁴ G06F *15/20;* G05B *1/00*

U.S. Cl. 364—550 26 Claims



1. Image contour data generating apparatus, comprising:

- a single integrated inputting unit comprising an original film holding means, a scanning position input means and a contour position detecting means;
- said original film holding means being effective for holding an original film having an image thereon, said image having an image contour to be detected;
- said scanning position input means being effective for permitting an operator of said apparatus to identify a scanning position on said film holding means, and therefore a scanning position on said original film, corresponding to a selected portion of said image contour;
- said contour position detecting means including a scanning image sensor and being effective for moving said scanning image sensor to said scanning position, while said original film remains positioned at said original film holding means, said contour position detecting means being further effective for causing said image sensor to scan an area of said original film corresponding to said portion of said image contour and for generating an output signal indicative of said scanned area of said original film scanned by said image sensor; and
- arithmetic means for determining an actual contour of said selected portion of said image contour on the basis of said output signal.

4,884,225

FILTERING IN 3-D VISUAL SYSTEM

Kevin E. Fogarty, Mass.; Fredric S. Fay, both of Worcester; Louise M. Isenstein, Littleton, all of Mass., and James M. Coggins, Chapel Hill, N.C., assignors to University of Massachusetts Medical Center, Worcester, Mass.

Filed Apr. 3, 1987, Ser. No. 34,893

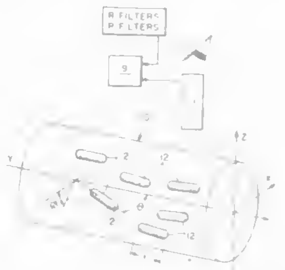
Int. Cl.⁴ G06F *15/42, 15/70*

U.S. Cl. 364—559 22 Claims

1. Apparatus for locating positions and measuring sizes of bodies in a 3-D fluorescense image, comprising:

- spatial filter means comprised of a plurality of spacial filters for locating bodies of different sizes within a predetermined range of sizes, each spatial filter for locating bodies of one predetermined size, different spatial filters for locating bodies of different predetermined sizes; and

- convolution means for convolving each spacial filter with the image to locate bodies of at least the respective predetermined size, convolution responses of successive filters providing a size measurement of a body, the respective predetermined size of a largest filter providing an increasing convolution response to the body determining size measurement of the body and determining size of spacial filter for providing orientation of the body.



4,884,226

METHOD FOR DETECTING POSITION

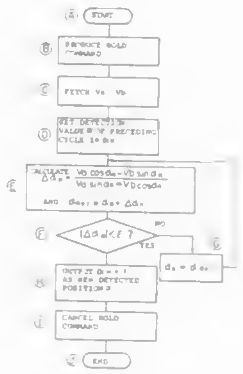
Tetsuro Sakano, Yamanashi, Japan, assignor to Fanuc Ltd., Yamanashi, Japan

Continuation of Ser. No. 887,162, Jul. 3, 1986, abandoned. This application Oct. 24, 1988, Ser. No. 262,081

Claims priority, application Japan, Nov. 5, 1984, 59-231354

Int. Cl.⁴ H03K *13/08;* G06F *15/20*

U.S. Cl. 364—560 5 Claims



1. A method for detecting a position comprising the steps of:

- using a rotary encoding plate having a plurality of channels for generating a two-phase sinusoidal wave signals having a 90° -spatial phase difference therebetween, among which a first channel is formed to obtain 1 cycle of a sinusoidal wave during a single rotation of the rotary encoding plate, a second channel is formed to obtain N cycles of the sinusoidal wave, where N is an integer larger than two, during the single rotation of the rotary encoding plate, and other channels are similarly formed to obtain increased number of cycles of the sinusoidal wave;
- producing a plurality of pairs of two-phase sinusoidal wave signals using said rotary encoding plate, said plurality of pairs of two-phase sinusoidal wave signals having a 90° -spatial phase difference therebetween upon movement of a moving object, and each pair having a different wavelength from another pair;
- detecting a current voltage values V_a and V_b of the two-phase sinusoidal wave signals of the first channel and calculating
- the phase angle α of the sinusoidal wave of the first channel, by solving an equation $V_a \cdot \cos\alpha - V_b \cdot \sin\alpha = 0$ where α is a variable, on condition that polarities of $\sin\alpha$ and $\cos\alpha$ for the calculated α coincide with those of V_a and V_b, respectively;

detecting a current voltage values V_c and V_d of the two-phase sinusoidal wave signals of the second channel and calculating the phase angle β of the sinusoidal wave of the second channel by solving the equation $V_c \cdot \cos\beta - V_d \cdot \sin\beta = 0$ where β is a variable, on condition

- that polarities of $\sin\beta$ and $\cos\beta$ for the calculated β coincide with those of V_c and V_d, respectively; and
- detecting a moving position of a moving object by obtaining phase angle over a plurality of cycles of the two-phase signals of the short wavelength from the values of α, β, . . . determined as per the preceding steps so that the rotary positions over a single rotation of the rotary encoding plate are detected as absolute position date.

4,884,227

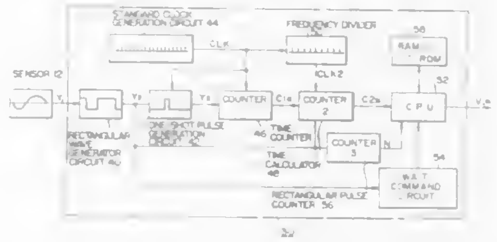
SPEED DETECTING APPARATUS FOR A VEHICLE

Masao Watanabe, Nagoya, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 11, 1987, Ser. No. 132,066

Int. Cl.⁴ G01P *11/00, 15/00*

U.S. Cl. 364—565 6 Claims



1. A speed detecting apparatus for vehicles having a rotor provided with a multiplicity of protrusions on the peripheral surface thereof and a sensor which is attached to a stationary side of a vehicle in such a manner as to face said rotor and wherein said sensor outputs an AC signal when each of said protrusions of said rotor passes in front of said sensor to calculate at least one of the speed and acceleration of vehicles on the basis of said AC signal, said speed detecting apparatus comprising:

- rectangular wave generation circuit means for converting an AC signal into a number of rectangular pulses and outputting the generated rectangular pulse signals;
- rectangular pulse counter means for counting the rectangular pulse signals and outputting the counted value as a pulse number count signal which indicates the number of the rectangular pulses;
- time counter means for cumulatively counting clock pulses and outputting the cumulative count value as a time count signal which indicates the time at the rise point or the fall point of a rectangular pulse every time said rectangular pulse rises or falls;
- time calculator means for calculating the time for outputting the c enter position of a peak side rectangular pulse or a trough side rectangular pulse on the basis of said time count signal and outputting the calculated value as a center position time signal;
- memory circuit means for storing said pulse number count signal and said center position time signal corresponding to said pulse number count signal on the basis of a read signal; and
- speed calculation means for calculating a first difference between preceding written data and present data of the pulse number count signal, calculating a second difference between preceding written data and present data of the center position time signal, and calculating said at least one of the speed and acceleration on the basis of said first and second differences, thereby detecting the speed and the acceleration without being influenced by a low frequency swell component and a high frequency noise component contained in said AC signal.

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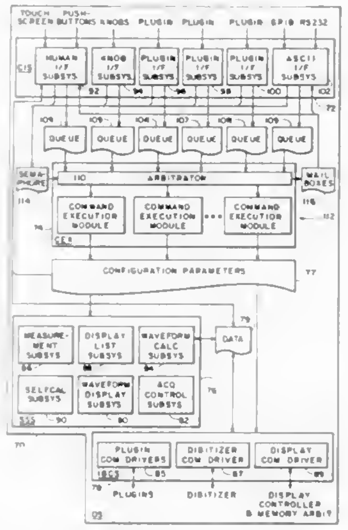
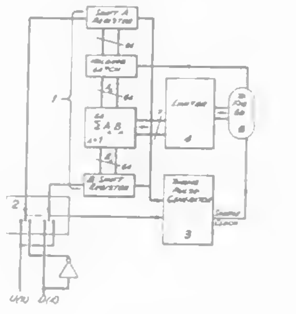
4,884,228
FLEXIBLE INSTRUMENT CONTROL SYSTEM
James C. Stanley, Portland, and Brian D. Diehm, Lake Oswego, both of Oreg., assignors to Tektronix, Inc., Beaverton, Oreg.
Filed Oct. 14, 1986, Ser. No. 918,430
Int. Cl.⁴ G06F *15/20;* G05B *23/02*
U.S. Cl. 364—579 6 Claims

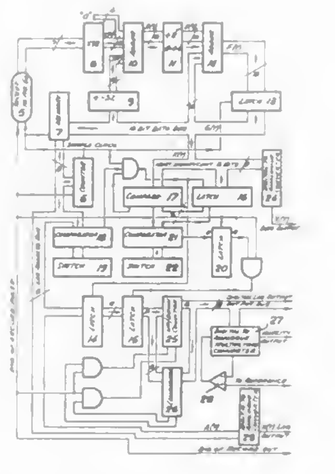


1. An instrument comprising:
a computer for producing at least one output signal;
first means for carrying out an instrumentation operation in any one of a plurality of operating modes determined according to said at least one output signal;
a plurality of control signal sources, each for producing at least one control signal;
interface means for providing input to said computer indicating when each of said control signal is produced; and
memory means accessed by said computer for storing a plurality of command execution modules, at least one command execution module comprising instructions for said computer to produce said at least one output signal for determining the operating mode of said first means, said memory means also storing in addition to the command execution modules instructions for causing said computer to generate commands and to store said commands in said memory means as they are generated, each command being generated in response to production of a corresponding one of said control signals indicated by said interface means and each command identifying a corresponding command execution module, and said memory means storing instructions for causing said computer to execute in a predetermined order of priority instructions included in each command execution module identified by each stored command.

4,884,229
METHOD AND APPARATUS FOR REMOVING NOISE
David L. Dekker, Mount Isa, Australia, assignor to Mount Isa Mines Limited, Australia
Continuation of Ser. No. 748,735, Jun. 25, 1985, abandoned. This application Oct. 26, 1988, Ser. No. 265,282
Claims priority, application Australia, Jul. 4, 1984, PG5841
Int. Cl.⁴ G06F *15/31, 15/336*
U.S. Cl. 364—724.11 20 Claims

1. Apparatus for removing noise common to a first signal and a second signal correlated with the first signal, said apparatus comprising:
correlator means for providing an output signal indicative of the difference between the cross correlation of the first and second signals as a function of positive time lag of the first signal with respect to the second signal, and the cross correlation of the first and second signals as a function of negative time lag of the first signal with respect to the second signal, said correlator means comprising a signal correlator having a first circuit input, a second circuit input, and providing a signal which is indicative of the cross correlation of signals applied to the circuit inputs as a function of time lag of one input signal with respect to the other, and means for switching inputs between a positive time lag mode and a negative time lag mode, said switching means in the positive time lag mode directing the first signal to the first circuit input and the second signal to the second circuit input and said switching means in the negative time lag mode directing the first signal to the second circuit input, and the second signal to the first circuit input, wherein the correlator means includes means for inverting one of the input signals applied in one of the modes.

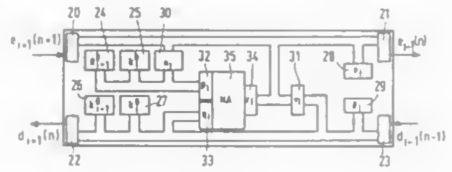




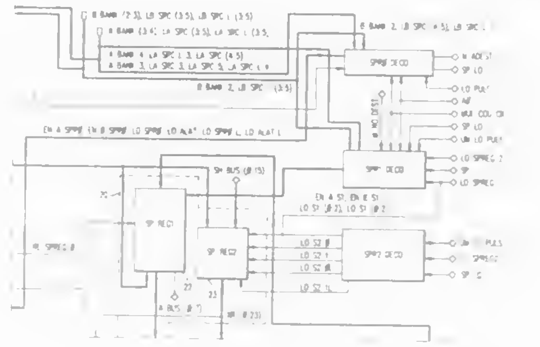
4,884,230
DIGITAL LATTICE FILTER
Gerardus C. M. Gielis; Antonius J. P. Bogers, and Steven J. W. Van Lerberghe, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Filed May 4, 1988, Ser. No. 209,448
Int. Cl.⁴ G06F *15/31*
U.S. Cl. 364—724.15 9 Claims

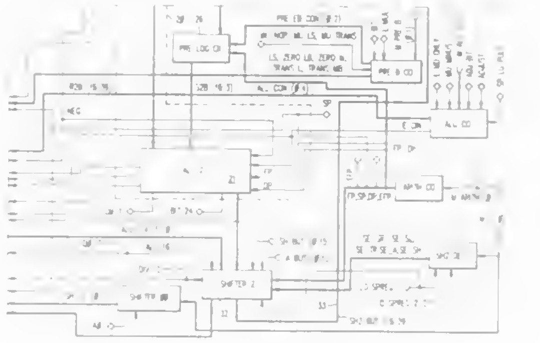
1. A digital lattice filter, comprising a plurality of identical filter stages each having a pair of inputs for receiving input signals and a pair of outputs for supplying output signals, these stages being connected in a cascade arrangement, each stage consisting in no less than two mutually linked branches, no less than one of these branches comprising delay means, a number of successive cascaded filter stages, of the plurality of filter stages, forming a group, at least first and second branches in each group of filter stages comprising delay means such that

the time delay in the first branch is equal to the time delay in the second branch, characterized in that each group comprises an even number of successive cascaded filter stages and in that each group comprises a single processing unit which calculates during a sample interval the two output signals on the basis of the two input signals, whilst the processing units of the successive groups calculate the output signals for different sample instants.



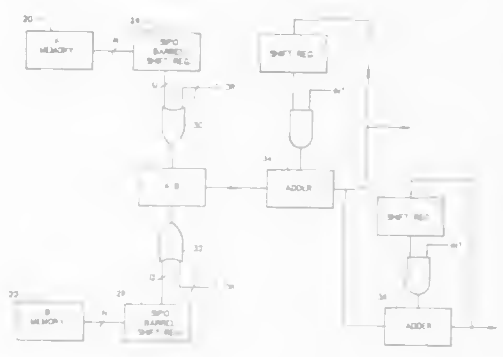
4,884,231
MICROPROCESSOR SYSTEM WITH EXTENDED ARITHMETIC LOGIC UNIT
Yeshayahu Mor, and Leonardo Sandman, both of Cupertino, Calif., assignors to Performance Semiconductor Corporation, Sunnyvale, Calif.
Filed Sep. 26, 1986, Ser. No. 912,756
Int. Cl.⁴ G06F *7/00*
U.S. Cl. 364—736 3 Claims





1. In a microprocessor for processing operands, said microprocessor having a primary arithmetic logic unit (ALU) having a plurality of inputs and an output with a first shifter connected thereto, said primary ALU having a capability of handling operands of a predetermined number of bits, said predetermined number of bits being less than the total number of bits in said operands in some operations, the improvement comprising:
an auxiliary ALU operating in conjunction with said primary ALU and said first shifter,
said auxiliary ALU having a plurality of inputs and an output having a second shifter connected thereto;
a plurality of special registers connected to said inputs of said auxiliary ALU;
means for supplying some of said total number of operand bits to said special registers;
means for loading said some of said total number of operand bits from said special registers into said auxiliary ALU;
means for processing said loaded bits in said auxiliary ALU;
means for selecting bits from said operands for said primary ALU during said processing of said bits in said auxiliary ALU;
first and second latch means for receiving said selected operand bits for said primary ALU;
prelogic means connected to receive the outputs of said first and second latch means,
means for connecting said first and second latch means to said inputs of said primary ALU through said prelogic means;
means for supplying and processing said selected bits in said primary ALU after said processing of said loaded operand bits in said auxiliary ALU; and
means for exchanging selected bits between said first shifter and said second shifter to shift the outputs of said primary ALU and said auxiliary ALU in either direction.

4,884,232
PARALLEL PROCESSING CIRCUITS FOR HIGH SPEED CALCULATION OF THE DOT PRODUCT OF LARGE DIMENSIONAL VECTORS
Richard S. Schlunt, Loma Linda, Calif., assignor to General Dynamics Corp., Pomona Div., Pomona, Calif.
Filed Dec. 14, 1987, Ser. No. 133,096
Int. Cl.⁴ G06F *15/347, 7/52*
U.S. Cl. 364—754 1 Claim



1. A circuit for calculating a(i)·b(j) where a(i) is the vector $(a_1(i), a_2(i) \ldots, a_Q(i))$,b(j) is the vector $(b_1(j), b_2(j), \ldots b_Q(j))$, each $a_k(i)$ is a zero or a one, and each $b_k(j)$ is a zero or a one, comprising:
first memory means for storing digital signals representing a(i);
second memory means for storing digital signals representing b(j);
a first serial-in-parallel-out barrel shift register for creating the bit planes a(o), . . . ,a(N−1) from the digital signals stored in the first memory means;
a second serial-in-parallel-out barrel shift register for creating the bit planes b(o), . . . ,b(N−1) from the digital signals stored in the second memory means;
a first OR gate having a first input connected to the first serial-in-parallel-out barrel shift register;
a second OR gate having a first input connected to the second serial-in-parallel-out barrel shift register;
means for applying a zero or a one to a second input of each of the OR gates;

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a correlator connected to an output of the first OR gate and an output of the second OR gate; and

mean connected to the correlator for summing a plurality of successive outputs of the correlator.

4,884,233
FAST SUMMING CIRCUIT

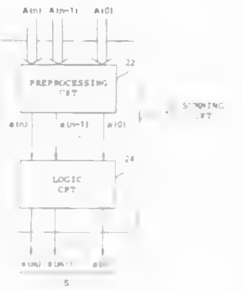
Akira Ishizuka, Tokyo, and Toshihiko Nakamura, Yamanashi, both of Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Jun. 14, 1988, Ser. No. 207,110

Claims priority, application Japan, Jun. 15, 1987, 62-148791; Jun. 15, 1987, 62-148792

Int. Cl.^{4} G06F *7/50*

U.S. Cl. 364—786 7 Claims



1. A summing circuit for summing up zeroth through n-th input data signals to produce a sum signal, where n represents a first predetermined natural number, each of said zeroth through said n-th input data signals consisting of (m+k+1) bit arranged from a most significant bit 2^{m+k} to a least significant bit 2^0, where m represents a second predetermined natural number and k represents a predetermined integer which is not less than zero, said sum signal consisting of (m+1) bits arranged from said most significant bit 2^{m+k} to a k-th bit 2^k as counted from said least significant bit 2^0, said summing circuit comprising:

preprocessing means responsive to said zeroth through said n-th input data signals for preprocessing said zeroth through said n-th input data signals to a preprocessed signal which is (n+1) bits arranged from a most significant bit 2^n to a least significant bit 2^0, said least through said most significant bits 2^0 to 2^n of the preprocessed signal being equal to the most significant bits 2^{m+k} of said zeroth through said n-th input data signals, respectively; and

logical operation means coupled to said preprocessing means for carrying out a logical operation on said preprocessed signal to produce said sum signal.

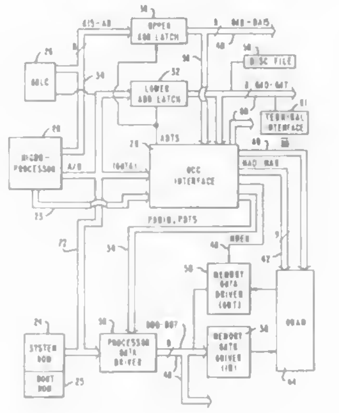
4,884,234
DYNAMIC RAM REFRESH CIRCUIT WITH DMA ACCESS

John B. Keys, and David A. Rieker, both of Cambridge, Ohio, assignors to NCR Corporation, Dayton, Ohio

Filed Jun. 29, 1987, Ser. No. 67,761

Int. Cl.^{4} G06F *15/00, 12/00*

U.S. Cl. 364—900 8 Claims



1. In a data processing system including a data processor, a dynamic memory and a peripheral device coupled to said processor for requesting access to the dynamic memory, a memory controller comprising:

means for refreshing the dynamic memory when enabled;

first circuit means responsive to first status signals and timing signals outputted from said processor for generating a first control signal to enable said refreshing means;

second circuit means responsive to a second status signal from the processor acknowledging the request of the peripheral device for generating a second control signal to transfer control of the memory to the requesting peripheral device;

third circuit means coupled to said first circuit means and said processor for generating a third control signal representing the simultaneous occurrence of said first control signal and said second status signal; and

fourth circuit means coupled to said first and second circuit means for disabling the second circuit means from generating said second control signal in response to the generation of said third control signal and said second status signal thereby disabling the requesting peripheral device from accessing the memory and enabling the memory to be refreshed prior to the time the control of the memory is transferred to the requesting peripheral device by the processor wherein said second circuit means includes a bistable member operated by said timing signals to output said second control signal in response to receiving said second status signal, and further includes a gating circuit coupled to one input of said bistable member for outputting a binary signal disabling said bistable member from outputting said second control signal in response to receiving said third control signal and said second status signal.

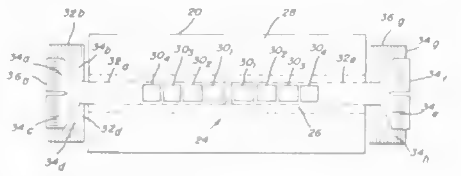
4,884,235
MICROMAGNETIC MEMORY PACKAGE

Alfred A. Thiele, 262 N. Dithridge St., No. 306, Pittsburgh, Pa. 15213

Filed Jul. 19, 1988, Ser. No. 221,349

Int. Cl.^{4} G11C *5/04, 19/08*

U.S. Cl. 365—2 16 Claims



1. A package for a micromagnetic memory, comprising:

a plurality of truncated confocal ellipsoidal means layers and having a common opening therethrough along a central axis for receiving said memory therein, said layers including,

an outer layer of first type ferromagnetic material for providing a shield against external fields,

an inner layer of second type ferromagnetic material for producing a static field transverse to said central axis substantially uniformly throughout the spatial volume defined by said opening,

an inner layer comprising an electromagnetic coil structure for generating a time varying field in said volume for controlling a micromagnetic data storage element of said micromagnetic memory, and

an inner layer of third type ferromagnetic material located between the layer of second type ferromagnetic material and said electrical coil structure for providing a flux return path for the time varying field generated by said coil structure and increasing the permeance of said inner layer of second type ferromagnetic material.

4,884,236
BLOCH LINE MEMORY DEVICE

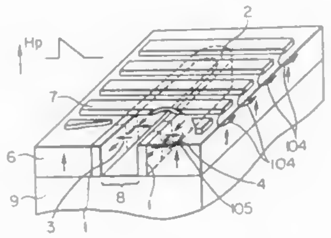
Youzi Maruyama, Hachioji; Tadashi Ikeda, Kanagawa, and Ryo Suzuki, Hachioji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 9, 1987, Ser. No. 106,346

Claims priority, application Japan, Oct. 9, 1986, 61-239010

Int. Cl.^{4} G11C *19/08*

U.S. Cl. 365—29 10 Claims



1. A Bloch line memory device comprising:

a magnetic film for holding magnetic bubble domains, said magnetic film being formed on a substrate so that its film plane has a (111) face;

a plurality of stripe magnetic domains formed in said magnetic film, each of the stripe magnetic domains being arranged to enclose a different one of groovings formed in a part of said magnetic film, the stripe magnetic domains having a Bloch line pair as an information carrier in the magnetic wall of the stripe magnetic domain, the stripe magnetic domain being arranged with its longitudinal direction in parallel to either the crystalographic directions, $[11\bar{2}]$ and, $[\bar{1}\bar{1}2]$, $[1\bar{2}1]$ and, $[\bar{1}2\bar{1}]$, or $[\bar{2}11]$ and $[2\bar{1}\bar{1}]$ of said magnetic film;

write means for writing the Bloch line pair in the stripe magnetic domain in accordance with information; and

read means for reading information on the basis of the presence or absence of the Bloch line pair in the stripe magnetic domain.

4,884,237
STACKED DOUBLE DENSITY MEMORY MODULE USING INDUSTRY STANDARD MEMORY CHIPS

Wolfgang R. Mueller, Wappingers Falls, and Gwynne W. Spencer, II, Poughkeepsie, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

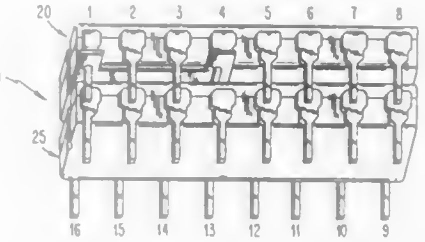
Continuation of Ser. No. 594,184, Mar. 28, 1984, abandoned. This application Mar. 17, 1989, Ser. No. 324,958

Int. Cl.^{4} G11C *5/06;* H01R *9/00;* H05K *1/00*

U.S. Cl. 365—63 33 Claims

17. A double density memory module comprising:

first and second industry standard memory chips, each of which includes a plurality of address, power supply and data pins, a chip select pin and an unused pin, in the same pin positions on said first and second chips, with the pins on said first chip directly connected to the corresponding pins on said second chip, except for said chip select pins; and



a conductive strap connecting said chip select pin and said unused pin on said first chip.

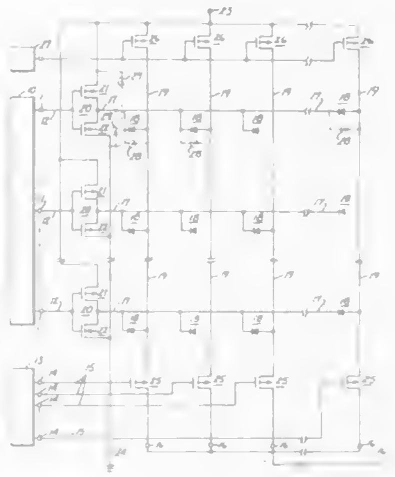
4,884,238
READ-ONLY MEMORY

Kang W. Lee, Wayzata, and Robert L. Rabe, Maple Grove, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Mar. 9, 1988, Ser. No. 165,852

Int. Cl.^{4} G11C *17/06*

U.S. Cl. 365—105 25 Claims



1. A monolithic integrated memory circuit, said memory comprising:

a semiconductor material body of a first conductivity type in at least a first portion thereof, forming a first body portion, except in a plurality of isolating regions in said first body portion which plurality includes multiple pluralities of said isolating regions each of which has those said isolating regions included therein electrically interconnected to one another to form an interconnection plurality thereby forming multiple interconnection pluralities of said isolating regions, said semiconductor material body having a first major surface which is intersected by selected ones of said plurality of isolating regions with each of said isolating regions being of a second conductivity type;

a plurality of memory point regions which comprises multiple first constituent pluralities of said memory point regions with each of said multiple interconnection pluralities of said isolating regions having those said memory point regions of one of said first constituent pluralities located therein, said plurality of memory point regions also comprising multiple second constituent pluralities of said memory point regions with each of said second constituent pluralities having one of those said memory point regions therein located in each one of said multiple interconnection pluralities of said isolating regions, each said memory point regions being of said first conductivity type

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and intersecting said first major surface but otherwise being surrounded by that said selected isolating region in which that said memory point region is located;

a plurality of first interconnection means with there being one of said first interconnection means electrically connected to each of said multiple interconnection pluralities of said isolating regions, and to a first circuit selection means;

a plurality of second interconnection means each being electrically connected to a terminating region of a field-effect transistor in a second circuit selection means, there being one of said plurality of second interconnection means being provided for each of said second constituent pluralities but with only selected ones of those said memory point regions in a said second constituent plurality thereof being electrically connected to that said second interconnection means corresponding thereto; and

a plurality of second interconnection means impedances each having first and second terminating regions between which a selected conductivity is established, said first terminating region of each of said plurality of second interconnection means impedances being electrically connected to a first terminal means adapted for connection to a first source of voltage, said second terminating region of each of said plurality of second interconnection means impedances being electrically connected to a corresponding one of said plurality of second interconnection means.

4,884,239
METHOD FOR ERASING DATA IN A SEMICONDUCTOR MEMORY DEVICE

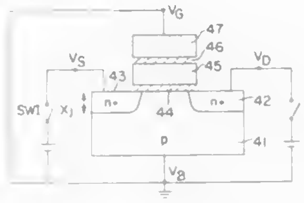
Takashi Ono, and Shooji Kitazawa, both of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Apr. 5, 1988, Ser. No. 177,612

Claims priority, application Japan, Apr. 6, 1987, 62-82988

Int. Cl.^{4} G11C *11/34*

U.S. Cl. 365—185 19 Claims



1. A method for erasing data stored in a semiconductor memory device, wherein the device comprises an MOS transistor having a substrate, a source formed on said substrate, a drain formed on said substrate at a distance from said source, and a control gate and a floating gate as a memory unit, and wherein data writing is effected by the generation of an MOS-channel current of sufficient magnitude so that an electrical charge is injected into said floating gate, this data-erasure method being characterized in that said injected electrical charge is effectively removed by:

applying between said control gate and the substrate a predetermined potential which allows essentially no channel region to be created on said substrate between said source and said drain;

applying between said source and said substrate a first predetermined reverse-bias voltage of sufficient magnitude so as to allow essentially no current to flow between said source and said substrate; and

applying between said drain and substrate a second predetermined reverse-bias voltage which is greater than said first predetermined reverse bias voltage so as to allow an avalanche current to flow between said drain and said substrate and no channel current to flow between said source and said drain.

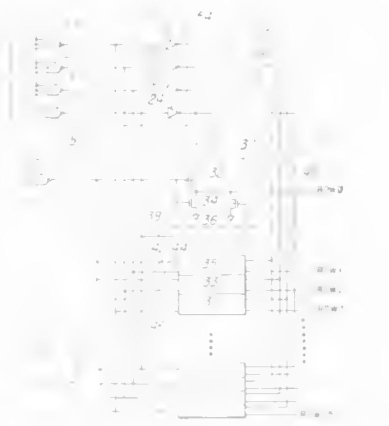
4,884,240
STATIC ROW DRIVER

Stanley M. Dennison, Jonesborough, and Cordell E. Prater, Johnson City, both of Tenn., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jun. 19, 1986, Ser. No. 876,140

Int. Cl.^{4} G11C *7/00*

U.S. Cl. 365—189.09 4 Claims



1. A CMOS static row driver circuit for an array of memory cells having 2N row lines configured in 2N/k groups of k rows to select one row line in a group with decoders, said circuit comprising:

a plurality of P-type transistors each connected to control current flow through one of the 2N row lines each P-type transistor having a first source/drain electrode connected to a row line, a second source/drain electrode and a gate electrode; 2N/k decoders each connected to a group of k row lines to effect selective provision of charge to one row line in a group, each decoder capable of providing an input signal to the gate electrode of any P-type transistor in the group;

k additional decoders each connected to selectively provide current flow through a different row line in every group, each of said additional decoders coupled to the second source/drain electrode of a different P-type transistor in each of the 2N/k groups;

a first plurality of N-type pull down transistors each having a first source/drain electrode coupled to a row line, a second source/drain electrode coupled to a reference potential and a gate electrode, said first plurality of N-type pull down transistors arranged in groups of k transistors with all of the gate eletrodes of the transistors in each group connected to one of the 2N/k decoders; and

a second plurality of N-type pull down transistors each having a first source/drain electrode coupled to a row line, a second source/drain electrode coupled to a reference potential and a gate electrode, said second plurality of N-type pull down transistors arranged in groups of k transistors with each of the gate eletrodes of the transistors in a group connected to a different one of the k decoders.

4,884,241
NONVOLATILE SEMICONDUCTOR MEMORY DEVICE

Sumio Tanaka; Shigeru Atsumi, both of Tokyo, and Shinji Saito, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 29, 1989, Ser. No. 330,040

Claims priority, application Japan, Mar. 31, 1988, 63-78722

Int. Cl.^{4} G11C *7/00*

U.S. Cl. 365—210 6 Claims

1. A nonvolatile semiconductor memory device comprising: bit lines;

a first load circuit connected to said bit lines to charge them to a potential;

nonvolatile memory cells connected to said bit lines;

a first transfer gate transistor which is connected between said bit lines and a first node and whose gate is supplied with a preset bias voltage;

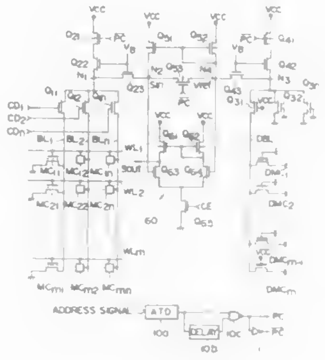
a second load circuit connected to said first node to charge the same;

at least one dummy bit line;

a third load circuit connected to said dummy bit line to charge the same;

dummy cells connected to said dummy bit line;

a second transfer gate transistor which is connected between said dummy bit line and a second node and whose gate is supplied with the preset bias voltage;



a fourth load circuit having a current supplying ability higher than said second load circuit, connected to said second node to charge the same;

an equalizing circuit for equalizing potentials of said first and second nodes in a non-readout period in which stored data is not read out; and

a sense amplifier for comparing the potential of said first node with that of said second node, and amplifying and supplying the difference therebetween in a data readout period, wherein substantially the same capacitance as that associated with said bit line is provided for said dummy bit line.

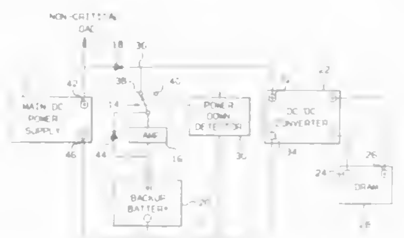
4,884,242
BACKUP POWER SYSTEM FOR DYNAMIC MEMORY

Robert H. Lacy, and William A. Spencer, both of Bartlesville, Okla., assignors to Applied Automation, Inc., Bartlesville, Okla.

Filed May 26, 1988, Ser. No. 199,980

Int. Cl.^{4} G11C *11/40*

U.S. Cl. 365—229 13 Claims



1. Apparatus for continuously supplying DC power to a dynamic memory said apparatus comprising:

a DC/DC converter connected to said dynamic memory, wherein said DC/DC converter supplies regulated DC power to said dynamic memory to maintain a bit pattern stored in said dynamic memory;

a main DC power supply connected to said DC/DC converter, wherein said main DC power supply supplies input power to said DC/DC converter;

a backup DC power supply to backup the power supplied to said DC/DC converter by said main DC power supply;

a power down detector circuit for detecting when input power to said DC/DC converter is below a predetermined level, wherein an input power level for said DC/DC converter that is below said predetermined level prevents said DC/DC converter from supplying sufficient DC power to said dynamic memory to maintain said bit pattern stored in said dynamic memory;

means coupled to said power down detector circuit for immediately supplying backup power from said backup DC power supply when said input power from said main DC power supply is interrupted; and

means for automatically disconnecting said backup DC power supply when the input power for said DC/DC converter falls below said predetermined level.

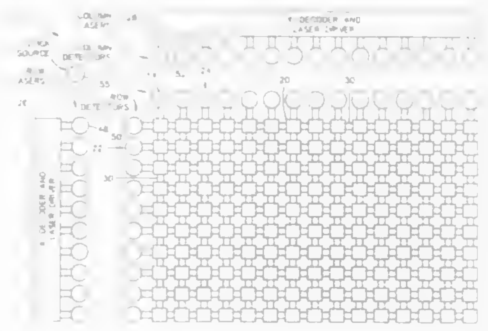
4,884,243
MULTI-PORT, OPTICALLY ADDRESSED RAM

Alan R. Johnston, La Canada; Robert H. Nixon, Sunland; Larry A. Bergman, Van Nuys, and Sadik Esener, La Jolla, all of Calif., assignors to California Institute of Technology, Pasadena, Calif.

Filed Feb. 19, 1988, Ser. No. 157,692

Int. Cl.^{4} G11C *8/00*

U.S. Cl. 365—234 31 Claims



1. In a binary computer memory having a plurality of storage cells for containing bits of binary information and logic at a location removed from close proximity to the storage cells for receiving information from an outside source directing access to ones of the storage cells, the improvement comprising:

(a) first light source means associated with the logic for transmitting a first light beam with the access information modulated thereon;

(b) first light detecting means associated with the storage cells for receiving said first light beam, for generating an electrical signal containing the access information, and for conducting said electrical signal to one of the storage cells to which it is directed; and,

(c) reflecting means disposed between said first light source means and said first light detecting means for reflecting said first light beam from said first light source means to said first light detecting means.

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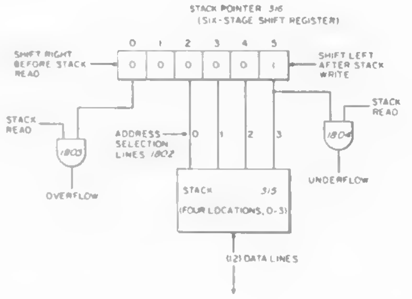
4,884,244

METHOD OF ADDRESSING A COMPUTER MEMORY

Tony M. Brewer, Raleigh, N.C., assignor to Data General Corporation, Westboro, Mass.

Filed Jan. 28, 1985, Ser. No. 695,335
Int. Cl.⁴ G11C *8/00*
U.S. Cl. 365—240 4 Claims



1. A storage system for use in a digital computer comprising:

storage means having n multibit storage locations for storing data in binary form;

shift register means having n stages for identifying locations in said storage means;

connect means coupled between said storage means and said shift register means for identifying each of said n stages of said shift register means with a corresponding location in said storage means;

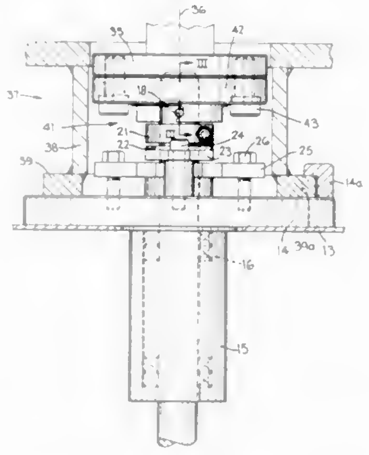
selection means for selecting a next stage in said shift register means and for enabling a corresponding location in said storage means.

4,884,245

QUICK-CONNECTION DRIVE COUPLING FOR MIXING TANK

George C. McIntosh, Portsheldon Township, Ottawa County, and Robert Gowin, Grand Haven, both of Mich., assignors to JWI, Incorporated, Holland, Mich.

Filed Mar. 21, 1989, Ser. No. 326,629
Int. Cl.⁴ B01F *7/16*
U.S. Cl. 366—279 7 Claims



1. In combination, a closed tank containing a liquid therein, the tank having an interior mixing shaft which extends upwardly through a top wall of the tank and has a shaft extension which projects upwardly a predetermined extent above the top wall, the shaft extension having pinlike elements projecting radially outwardly from diametrically opposite sides thereof at a location close to but spaced axially downwardly a small distance from the upper free end of said shaft extension, and a drive unit for releasable attachment to the shaft extension to effect rotation of said mixing shaft, said drive unit comprising:

a motor section including a rotatable drive motor confined within a housing and having a drive member rotatable about an axis;

a sleeve-like shroud fixed to said housing and projecting axially thereof in concentric relationship to said axis, said shroud terminating in an axial free end defined by an annular end plate;

a drive coupling means disposed within said shroud for permitting quick drive connection to and disconnection from said shaft extension when said shroud is positioned in surrounding relationship to said shaft extension so that the annular end plate thereof bears against said top wall;

said drive coupling means including a driving member nonrotatably coupled to said drive member for rotation thereby about said axis, said driving member having a piloting bore formed coaxially thereof for accommodating an upper end part of said shaft extension;

said driving member having a pair of drive-projections which project axially downwardly in cantilevered fashion and are spaced radially outwardly on generally diametrically opposite sides of said axis and define a clearance space diametrically therebetween so as to accommodate said shaft extension, each of said driving projections extending circumferentially around said axis through an arcuate extent which is significantly less than 90 degrees and defining a lead face as viewed in the direction of rotation, said lead face being disposed generally within a plane which extends parallel to said axis, said lead face being adapted to drivingly abut one of the pinlike elements on the shaft extension, and each said driving projection adjacent a lower free end thereof having a ramplike cam part which projects circumferentially outwardly from said lead face in the direction of rotation, said ramplike cam part being adapted to circumferentially extend beneath the respective pinlike element to create an axial coupling of the drive unit to the tank; and

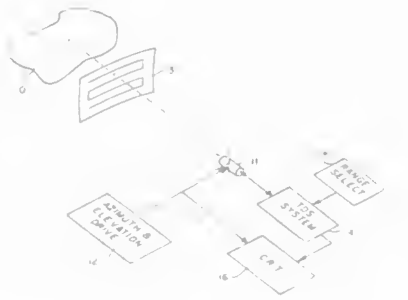
the circumferentially extending regions which extend between said driving projections constituting opened clearance spaces for permitting relative axial movement between the drive coupling means and the tank to permit either quick connection or disconnection therebetween.

4,884,246

METHOD AND APPARATUS FOR REFLECTION MODE IMAGING

Richard C. Heyser, Tujunga, and James A. Rooney, La Crescenta, both of Calif., assignors to California Institute of Technology, Pasadena, Calif.

Continuation of Ser. No. 821,001, Jan. 22, 1986, abandoned. This application Mar. 29, 1988, Ser. No. 145,104
Int. Cl.⁴ G03B *42/06*
U.S. Cl. 367—7 7 Claims



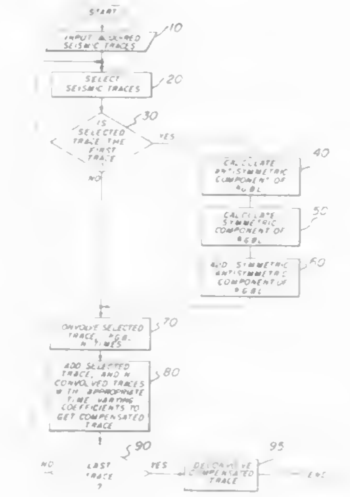
1. A method of reflection mode imaging of a property within a volume including the steps of scanning said volume with a raster scan about a center of rotation using a transmitter/receiver, generating a signal to be transmitted using a time-delay spectrometer for sweeping the signal to be transmitted in frequency as a function of time and receiving a reflected signal modulated in amplitude and phase shift by said volume as said signal is reflected, selecting a total range differential of said frequency sweep for said transmitter as a function of time, gating a range window on said receiver with selected range differentials as a function of time for all ranges of interest at successive raster scan positions, demodulating the phase and amplitude of received signals falling within said selected range differential to obtain signals representative of a characteristic of said property while varying said range window until said volume has been scanned at all ranges and synchronously scanning an imaging display in a manner corresponding with said raster scan to display variations of said characteristics on said display at selected ranges.

4,884,247

METHOD OF PROCESSING GEOPHYSICAL DATA TO COMPENSATE FOR EARTH FILTER ATTENUATION

Mohamed T. Hadidi, Dallas, Tex.; Andrejs Jurkevics, Arlington, Va., and Andrew F. Linville, Jr., Dallas, Tex., assignors to Mobil Oil Company, New York, N.Y.

Continuation-in-part of Ser. No. 23,313, Mar. 9, 1987, Pat. No. 4,780,859. This application Oct. 13, 1987, Ser. No. 107,717
Int. Cl.⁴ G01V *1/36*
U.S. Cl. 367—43 37 Claims



1. A method of compensating for the effects of intrinsic and apparent attenuation of a seismic signal transmitted through a geophysical formation comprising the steps of:

determining an antisymmetric component of the cepstrum of an inverse earth filter;

determining a symmetric component of the cepstrum of said inverse earth filter modified to effect gain limiting;

combining said modified symmetric component and said antisymmetric compenasted to determine said inverse earth filter of said geophysical formation; and

applying said inverse earth filter to said seismic signal to determine a compensated seismic signal.

4,884,248

METHOD OF RESTORING SEISMIC DATA

Stanley J. Laster; Robert A. Meek, both of Dallas, and Thomas E. Shirley, Richardson, all of Tex., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 148,307, Jan. 25, 1988. This application Jan. 30, 1989, Ser. No. 303,199
Int. Cl.⁴ G01V *1/28, 1/36*
U.S. Cl. 367—73 18 Claims

1. A method of restoring seismic data to a null trace included as part of a series of seismic traces comprising steps of:

a single non-iterative procedure for a transform which band limits acquired data, by

producing a data localizing transform representation of said series of seismic traces;

applying a mute capable of passing only the localized data portion of said localized data transform space corresponding to said transformed series of seismic traces;

producing a second series of seismic traces from said muted transform, said second series of seismic traces including a partial restoration of said null trace;

substituting said partially restored trace for said null trace in said first series of seismic traces; and

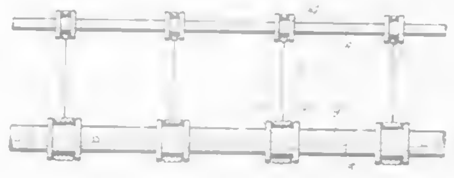
producing a seismic section which includes a full restoration of said null trace from said substituted series of seismic traces.

4,884,249

MARINE STREAMER FOR USE IN SEISMIC SURVEYS

Clive T. Snook, Oegstgeest, Netherlands, assignor to GECO A.S., Sandvika, Norway

Filed Jul. 18, 1988, Ser. No. 220,675
Claims priority, application Norway, Jul. 27, 1987, 873149
Int. Cl.⁴ G01J *1/00*
U.S. Cl. 367—154 10 Claims



1. A marine streamer for use in seismic exploration comprising:

a substantially tubular shaped and substantially flexible buoyancy member, having a buoyancy relative to water;

a streamer cable having a predetermined degree of negative

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buoyancy for suspension below the surface of the water at a depth greater than said flexible buoyancy member;

a plurality of pairs of sleeve shaped swivel members mounted on said flexible buoyancy member and said streamer cable, one of the swivel members of each pair being mounted on said flexible buoyancy member and the other swivel member of each pair being mounted on said streamer, said pairs being in relative longitudinal spaced relationship;

ring members swivelly mounted around said sleeve shaped members; and

a narrow substantially resilient suspension rope connected to said ring members of each pair of swivel members for suspending said streamer cable from said flexible buoyancy member and maintaining said streamer cable at a predetermined distance from the surface of the water.

4,884,250

ACCELEROMETER FOR BLAST MONITORING

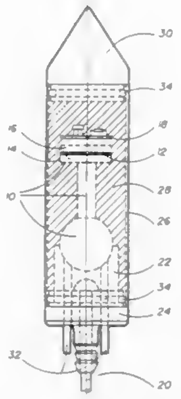
Frank Kitzinger, Montréal; David Sprott, Ile Bizard, and Michel Ménard, Pincourt, all of Canada, assignors to Noranda, Inc., Toronto, Canada

Filed Nov. 18, 1988, Ser. No. 272,945

Claims priority, application Canada, Jan. 29, 1988, 557778

Int. Cl.⁴ H04R *17/00, 11/00*

U.S. Cl. 367—180 6 Claims



1. An accelerometer for blast monitoring comprising:

(a) At least one piezoelectric transducer having a piezoelectric membrane attached along an edge thereof to the sidewall of a container and having no extraneous mass secured thereto, said piezoelectric membrane being mounted for free movement in such container for generating a high impedance electrical output signal upon deformation of the piezoelectric membrane by its own inertia by vibration during a blast;

(b) a high to low impedance converter connected to said piezoelectric membrane for converting a high impedance output of said piezoelectric membrane into a low impedance signal for transmission through cables to electrical signal recording equipment; and

(c) means for encapsulating the piezoelectric transducer and converter into encapsulating material to minimize response to the transducer to surrounding acoustic signals.

4,884,251

HOUSING FOR A SONIC TRANSDUCER

James G. Moxness, St. Paul, Minn., assignor to Minnesota Minning and Manufacturing Company, St. Paul, Minn.

Filed Jan. 26, 1982, Ser. No. 342,756

Int. Cl.⁴ H04R *11/00;* A47B *81/06;* G01K *11/00*

U.S. Cl. 367—188 17 Claims

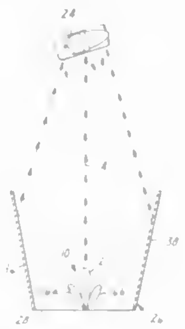
1. A housing adapted for receiving a sonic transducer, said sonic transducer being capable of projecting and receiving a sonic pattern having a primary lobe in a primary direction and a secondary lobe over four quadrants, said secondary lobe being at a lobe angle to said primary lobe, comprising:

an end wall adapted for receiving said sonic transducer;

a restrictive wall coupled to said end wall, said restrictive wall for intercepting said secondary lobe in a first quadrant and reflecting said secondary lobe into a quadrant opposite said first quadrant; and

a pair of side walls coupled to said end wall and to said restrictive wall, said pair of side walls substantially intercepting and reflecting said secondary lobe in quadrants adjacent said first quadrant to provide a more uniform sonic pattern i said quadrants adjacent said first quadrant to fill in said sonic pattern between said primary lobe and said secondary lobe in said quadrants adjacent said first quadrant;

said primary lobe of said sonic pattern being free of interception by said restrictive wall and said pair of side walls.



4,884,252

TIMEPIECE INCLUDING AN ANTENNA

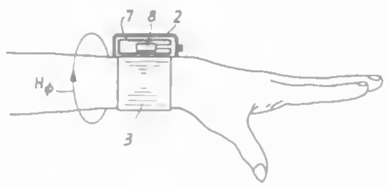
Viron Teodoridis, Hauterive, and Bernard Joss, Chézard, both of Switzerland, assignors to ETA SA Fabriques d'Ebauches, Grenchen, Switzerland

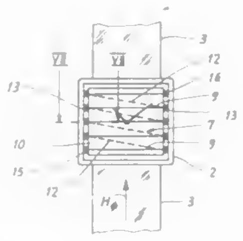
Filed Apr. 14, 1989, Ser. No. 338,192

Claims priority, application Switzerland, Apr. 26, 1988, 1563/88

Int. Cl.⁴ G04B *47/00*

U.S. Cl. 368—10 9 Claims





1. A timepiece adapted to be worn on a portion of the body having a cylindrical form such as the arm or the trunk, said timepiece including an antenna capable of capturing an electromagnetic field which includes a magnetic field H and an electrical field E, said electromagnetic field bearing radio-diffused messages and a case having at least a glass and a back cover, said case comprising, in addition to the elements necessary to display the time of day, a micro receiver which receives the messages captured by the antenna in order to transform such messages into data perceptible to the wearer of the timepiece, the antenna being situated within the space bounded by the case and being constituted by a coil including at least one winding said winding being arranged and oriented to capture the component (H_ϕ) of the magnetic field tangential to said cylinder, the axis of said winding being arranged parallel to the back cover of the case.

4,884,253

BREAD MAKING DEVICE WITH A CLOCK FUNCTION

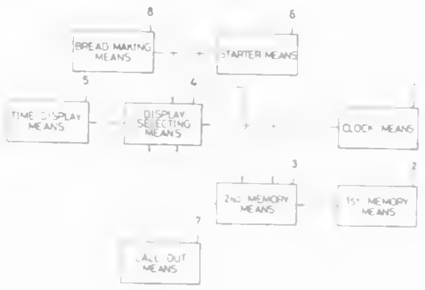
Seiji Koyabu, Nara, and Tatsuhisa Fukuda, Osaka, both of Japan, assignors to Sanyo Electric Co., Ltd. and Yamano Electric Mfg. Co., Ltd., both of Osaka, Japan

Filed May 18, 1988, Ser. No. 195,768

Claims priority, application Japan, Jun. 2, 1987, 62-138462; Jun. 16, 1987, 62-149383

Int. Cl.⁴ G04B *47/00;* H05B *1/02*

U.S. Cl. 368—10 5 Claims



1. A bread making device provided with a clock function comprising:

a starter means for generating by the operation thereof a starting instruction,

a clock means for counting up present time,

a first memory means for memorizing a bread making time previously set for break making,

means for adding said bread making time to the present time counted by said clock means at the moment of input of said starting instruction so as to thereby obtain a bread making finishing time,

second memory means for memorizing said bread making finishing time,

a display selecting means for generating normally said present time supplied from said clock means and for generating said bread making finishing time supplied from said second memory means instead of present time in response to said starting instruction, and

a time display means for displaying a time generated by said display selecting means.

4,884,254

TIME DISPLAY DEVICE

Shoichi Kawai, Sangenya-nishi; Masayuki Konishi, Nara, and Chieji Katoh, Yamatokoriyama, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Dec. 27, 1988, Ser. No. 289,828

Claims priority, application Japan, Dec. 28, 1987, 62-200324

Int. Cl.⁴ G04B *19/22*

U.S. Cl. 368—21 5 Claims

1. A time display device comprising:

input means having a variety of input keys and instruction keys;

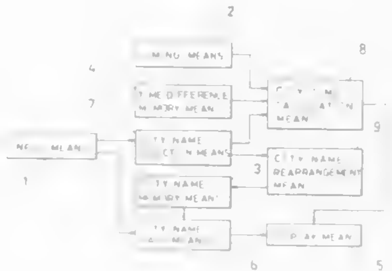
timing means for timing and outputting a standard time;

city name memory means for storing city names of three figures;

time difference memory means for storing the time difference of individual cities from the standard time;

display means for displaying various pieces of information;

city name call means for calling a predetermined number of the most recently called city names which are stored in said city name memory means when an instruction key for calling the city name is operated, and for displaying them in a listed form in said display means;



city name selection means for selecting a desired one from the listed city names when an instruction key for selecting the city name is operated;

city time calculation means for outputting the time of the selected city and outputting the time to said display means by calling the time difference of the selected city name, when selected, from said time difference memory means and by adding the called time difference to the standard time outputted from said timing means; and

city name rearrangement means for storing the selected city name as the first listed city of said city name memory means.

4,884,255

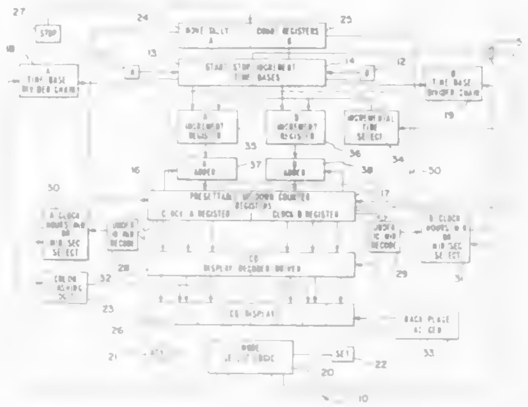
DIGITAL CHESS CLOCK

Robert J. Fischer, Box 50271, Pasadena, Calif. 91105

Filed Aug. 5, 1988, Ser. No. 228,610

Int. Cl.⁴ G04F *3/00*

U.S. Cl. 368—96 20 Claims



1. A timing device for timing two events which comprises:

a pair of clock means for timing two different events; compensation means coupled to said clock means for incrementing or decrementing each of said clock means;

a pair of start switches coupled to said clock means, each of which starts one of said clock means for timing one event and simultaneously stops the other of said clock means to interrupt the timing of the other of the two different events;

at least one of said start switches also being coupled to said

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compensation means for actuation of said compensation means; and

display means coupled to said clock means for displaying the time for each of the two different events.

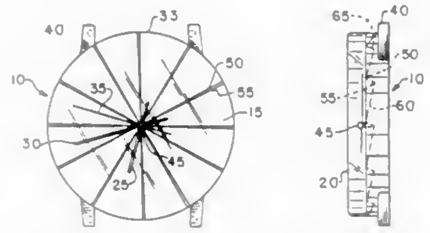
4,884,256
DIAL FACE FOR CLOCK OR WATCH

Bruce N. Blackburn, Pelham, N.Y., assignor to Bernard Weinstein, New York, N.Y.

Filed Oct. 20, 1988, Ser. No. 260,411

Int. Cl.⁴ G04B *19/00*

U.S. Cl. 368—223 34 Claims



1. An apparatus for indicating time comprising:

(a) a face having stationary members positioned in adjacent relation at an angle with respect to a horizontal base plane and arranged in a predetermined pattern oriented around a central point, each said member comprising a first plane and a second plane which intersect to form a common edge therebetween, said first and second planes being of different areas and terminating in a first plane boundary and a second plane boundary, respectively, wherein the boundary of the first plane of one member contacts a portion of the boundary of the second plane of an adjacent member to form a continuous surface around said point; and

(b) means for determining elapsed time by viewing said surfaces.

4,884,257
WRIST WATCH

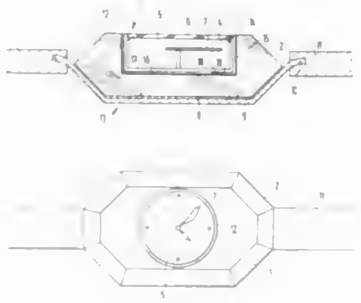
Helmut Swarovski, Wattens, Austria, assignor to D. Swarovski & Co., Wattens, Austria

Filed Mar. 17, 1989, Ser. No. 324,734

Claims priority, application Fed. Rep. of Germany, Mar. 24, 1988, 3810001

Int. Cl.⁴ G04B *37/00*

U.S. Cl. 368—276 3 Claims



1. A wrist watch having a case made of faceted glass that has a recess for taking up a watchwork, characterized in that the recess (4) is provided on the top (12) of the case (2) made of faceted glass, the underside (13) of the case (2) and the walls (15) and floor (16) of the recess (4) bear reflecting layers (8, 19) so as to reflect the rays of light incident upon the top (12), and the case (2) is disposed in a bottom portion (9) connected therewith.

4,884,258
MINIATURE TABLE CLOCK

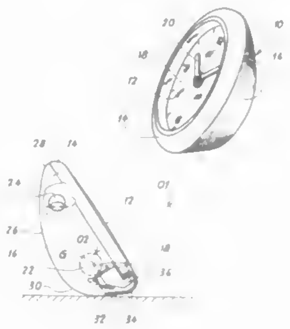
Pierre-André Noirjean, Courfaivre, Switzerland, assignor to ETA SA Fabriques d'Ebauches, Grenchen, Switzerland

Filed May 5, 1989, Ser. No. 347,668

Claims priority, application Switzerland, May 10, 1988, 1772/88

Int. Cl.⁴ G04B *37/12*

U.S. Cl. 368—276 5 Claims



1. A miniature table clock including a case provided with a front glass and a back cover in the form of a cap, an arrangement for displaying the time of day covered by the glass and positioning means defining two positions of stable equilibrium, a first position in which the case rests on its front face and a second position in which the case rests on the back cover, said back cover including a first zone defined by a first convex surface a portion of which serves to bear the clock in its second equilibrium position and a second zone defined by a second convex surface surrounding the first zone, the mean radius of curvature of the first surface being less than the mean radius of curvature of the second surface.

4,884,259
OPTICAL MEMORY DISK AND TRACK ACCESS THEREFOR

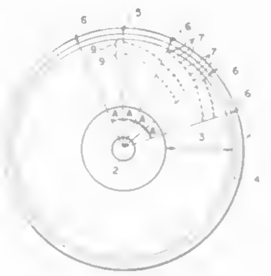
Hiroshi Horikawa; Yoshio Kudo; Daigo Ezuka, and Takashi Shoji, all of Kaisei, Japan, assignors to Fuji Photo Film Co., Ltd., Japan

Filed Aug. 28, 1985, Ser. No. 770,416

Claims priority, application Japan, Aug. 28, 1984, 59-179076; Aug. 31, 1984, 59-180311; Oct. 3, 1984, 59-206292

Int. Cl.⁴ G11B *17/22*

U.S. Cl. 369—32 2 Claims



1. A tracking servo method for accurately tracking with an optical head a desired data track on a rotating optical memory disk having no tracking guide grooves but having concentrically arranged data tracks provided with sector marks characterized by the steps of producing an optical head position signal corresponding to the position of the desired track, producing an eccentricity correction signal derived from an eccentricity detected in the rotating disk, producing a tracking error signal obtained when the sector mark is detected, summing said head position signal, said eccentricity correction signal and said tracking error signal, and adjusting the position of said head as a function of the summed signals.

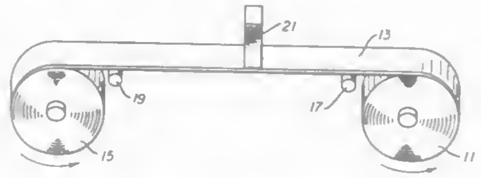
4,884,260
DATA RECORDING SYSTEM FOR OPTICAL MEMORY TAPE

Eric W. Bouldin, Atherton, and Jerome Drexler, Los Altos Hills, both of Calif., assignors to Drexler Technology Corporation, Mountain View, Calif.

Division of Ser. No. 39,507, Apr. 16, 1987, Pat. No. 4,753,864, which is a continuation-in-part of Ser. No. 935,999, Nov. 28, 1986, Pat. No. 4,788,129, which is a continuation-in-part of Ser. No. 896,988, Aug. 15, 1986, abandoned, which is a continuation-in-part of Ser. No. 855,228, Apr. 23, 1986. This application Jun. 22, 1988, Ser. No. 210,527

Int. Cl.⁴ G11B *7/007, 11/03, 25/06*

U.S. Cl. 369—93 7 Claims



1. A system for recording data by means of a laser comprising,

a pack of optical recording tape having a length wound on a spool, said tape having a flexible web backing, a reflective metallic layer deposited over said backing, and an optical storage layer with a planar crust of irregular, nonfilamentary and oblong black silver particles within the top one-half micron of the optical storage layer distal to the backing and substantially clear gelatin below the crust, the optical storage layer being laser recordable in place on said tape producing reflective data spots revealing the underlying reflectivity of the metallic layer against a background field of said crust, the optical reflective contrast ratio of the data spots to the surrounding field being at least 1.2 to one,

laser means having at least one beam disposed in laser writing relation with respect to said strip for writing data in a plurality of parallel tracks,

a light detector means disposed in reading relation with respect to said strip for reading said tracks, and

means providing relative motion between the laser beam and the tape for following said tracks.

4,884,261
STORAGE MEDIA TRANSDUCER LOADING/UNLOADING AND CARRIAGE LOCK MECHANISM

Warren L. Dalziel, Monte Sereno, Calif., assignor to Tandon Corporation, Moorpark, Calif.

Continuation-in-part of Ser. No. 759,900, Jul. 29, 1985, abandoned. This application Feb. 24, 1988, Ser. No. 159,709

Int. Cl.⁴ G11B *21/22*

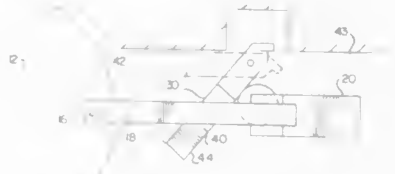
U.S. Cl. 360—105 16 Claims

1. Apparatus for loading and unloading a magnetic transducer from a surface of a storage medium, the magnetic transducer being mounted on a cantilevered member coupled to a carriage, configured for motion across the surface of the storage medium, the carriage being movable along a carriage axis extending from the storage medium, comprising:

a separator, comprising a member of generally planar configuration having a selected width, configured to rotate about an axis of rotation associated therewith between a first and a second position, the axis of rotation being in a fixed location relative to the storage medium, the separator having a first surface at an oblique angle to the surface of the storage medium, contacting and displacing the cantilevered member when moved into the second position, a first separator surface parallel to the axis of rotation of said separator at an oblique angle to the generally planar configuration of the member comprising said separator, second and third separator surfaces parallel to the axis of rotation of said separator and at oblique angles to the generally planar configuration of the member comprising said separator, the second and third separator surfaces being perpendicular to each other;

a trigger, movable, responsive to an external command, between a trigger first position and trigger second position, and comprising a first trigger surface parallel to the axis of rotation of the separator at an oblique angle to the generally planar configuration of the member comprising the separator when said separator is in said first position, and in abutting contact with the first surface of said separator when said separator is in the first position and producing a force about said axis of rotation of said separator to lock the separator in the first position, and second and third trigger surfaces, parallel to the axis of rotation of said separator, said second and third trigger surfaces being parallel to the second and third separator surfaces, and in abutting contact therewith, responsive to said separator being in the second position and said trigger being in the trigger means first position to lock the separator in the second position; and

a spring, coupled between said trigger and a point displaced from the axis of rotation of said separator.



4,884,262
MAGNETIC SYSTEM FOR A STEREO PICK-UP WITH A MOVABLE COIL

Jan Larsen, Herlev; Robert Gudmandsen, Præsto, and Per Winfeld, Lyngby, all of Denmark, assignors to Ortofon Manufacturing A/S, Valby, Denmark

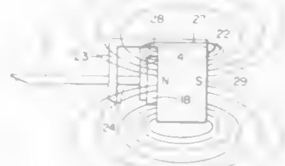
PCT No. PCT/DK86/00127, § 371 Date Jul. 17, 1987, § 102(e) Date Jul. 17, 1987, PCT Pub. No. WO87/03157, PCT Pub. Date May 21, 1987

PCT Filed Nov. 18, 1986, Ser. No. 78,524

Claims priority, application Denmark, Nov. 18, 1985, 5317/85

Int. Cl.⁴ G11B *3/00*

U.S. Cl. 369—136 4 Claims



1. A magnet system for a stereo pick-up with a movable coil

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and containing a permanent magnet with a high energy product, characterized in that the magnet system comprises an L- or a U-shaped yoke member of magnetically conductive or permanent-magnetic material, and that one leg of said yoke member is disposed in opposite and somewhat spaced as well as substantially parallel relationship with a pole face of the magnet, while the other leg or legs are disposed in engagement with or closely adjacent to one magnet side or their respective magnet sides parallel with the field direction.

4,884,263

PACKET-SWITCHED COMMUNICATIONS NETWORK WITH PARALLEL VIRTUAL CIRCUITS FOR RE-ROUTING MESSAGE PACKETS

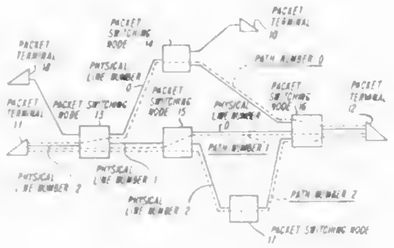
Hiroshi Suzuki, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 1,443, Jan. 8, 1987, abandoned. This application Mar. 17, 1989, Ser. No. 325,010

Claims priority, application Japan, Jan. 9, 1986, 61-2442; Apr. 15, 1986, 61-85184

Int. Cl.⁴ H04J *1/16*

U.S. Cl. 370—16 7 Claims



1. A packet-switched communications network, comprising:

a plurality of terminals each being capable of sequentially transmitting control packets in response to a request for a call and subsequently transmitting message packets in succession; and

a plurality of switching nodes connected to one or more of said terminals, each of said switching nodes having means responsive to said control packets for establishing first and second virtual circuits from a source terminal to a destination terminal, means for detecting whether an abnormal condition exists in said first virtual circuit, and means for writing routing information of said first virtual circuit into said message packets to enable same to be propagated through said first virtual circuit and rewriting said routing information of said message packets with routing information of said second virtual circuit when said abnormal condition is detected in said first logical channel.

4,884,264

HYBRID TIME MULTIPLEX SWITCHING SYSTEM WITH OPTIMIZED BUFFER MEMORY

Michel Servel, Lannion; Patrick Gonet, Trelevern, and Jo'- ,uml/e/ l Francois, Perros Guirec, all of France, assignors to Etat Francais Represente Par Le Ministre Des PTT (Centre National D'Etudes Des Telecommunications, Issy-Les-Moulineaux, France

Filed Jul. 22, 1988, Ser. No. 223,692

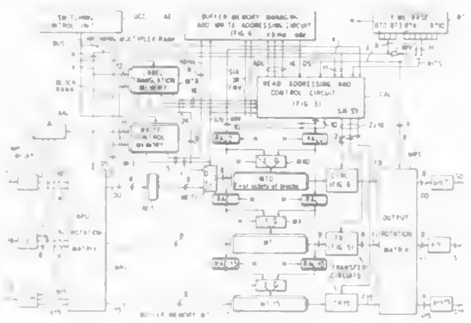
Claims priority, application France, Jul. 24, 1987, 87-10034

Int. Cl.⁴ H04J *3/26*

U.S. Cl. 370—58.1 9 Claims

1. A system for switching data blocks between a plurality of incoming multiplex ways and a plurality of outgoing multiplex ways, each of said blocks in said incoming ways being intended for at least one addressee of said outgoing ways,

said system comprising input means (CE, MRE) for detecting data blocks in said incoming multiplex ways thereby multiplexing detected blocks into multiplexed blocks, buffer means comprising block cells for memorizing said multiplexed blocks, write addressing means (MCE, MTR, CPE) deriving write addresses of block cells for writing said multiplexed blocks in block cells in accordance with the derived write addresses, read addressing means (CAL) for arranging the addresses of the write addressed block cells dependent on addressee outgoing multiplex ways for which the written blocks are intended for cyclically reading the written blocks into read blocks in accordance with the arranged block cell addresses, and means (CTR, MRS, p/s) for demultiplexing said read blocks and transmitting them onto said addressee outgoing multiplex ways,



said write addressing means comprising means (MAD) for selecting any one of the block cells which is free in said buffer means responsive to any data block being detected, thereby providing a free cell address to write said detected block in said buffer means, said free cell address being selected contingent on block cell addresses which are supplied from said read addressing means to said selecting means when memorized blocks are read.

4,884,265

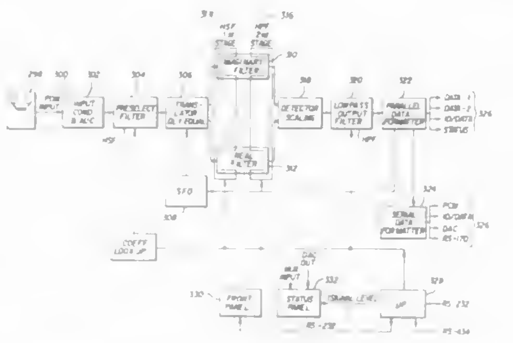
DIGITAL DEMODULATOR FOR FREQUENCY-DIVISION-MULTIPLEXED SIGNALS

Gene F. Schroeder, and Guy T. Ellis, Jr., both of Sarasota, Fla., assignors to Loral Corporation, Syosset, N.Y.

Filed Apr. 30, 1987, Ser. No. 44,424

Int. Cl.⁴ H04J *1/02*

U.S. Cl. 370—70 34 Claims



1. Apparatus for demodulating a frequency-division-multiplexed input signal having modulating information and one or more subcarrier channels, comprising:

input means for receiving said input signal,

analog-to-digital conversion means in communication with said input means for providing a series of digital words corresponding to the instantaneous amplitude of said input signal,

translation means in communication with said analog-to-digital means for removing the subcarrier of each of said subcarrier channels of said input signal and producing translated signals, and for providing real and imaginary components of said translated signals encoding phase information corresponding to the modulating information in the input signal for each of said subcarrier channels,

low-pass filter means in communication with said translation means for selecting out the real and imaginary components of each of said translated signals, and

demodulating means in communication with said low-pass filter means for recovering modulation of said translated signals, wherein said demodulating means comprises means for analyzing said phase information.

4,884,266

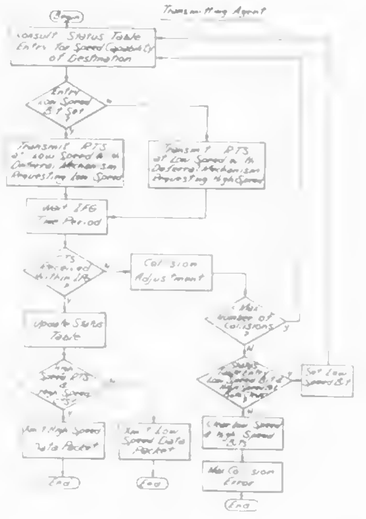
VARIABLE SPEED LOCAL AREA NETWORK

Michael W. Pflaumer, Berkeley, Calif., assignor to Sun Microsystems, Inc., Mountain View, Calif.

Filed Aug. 9, 1988, Ser. No. 230,180

Int. Cl.⁴ H04J *3/22*

U.S. Cl. 370—84 46 Claims



1. A method for transferring data on a communication medium between a plurality of data processing devices ("agents"), including a sending agent and a receiving agent, comprising the steps of:

said sending agent transmitting a first signal(RTS) to said receiving agent coupled to said data communication medium at a first speed;

said receiving agent receiving said first signal and generating a second signal(CTS), said second signal including an CTS control character corresponding to a speed for data transfer over said medium, said receiving agent transmitting said control signal on said medium to said sending agent;

said sending agent receiving said second signal and transmitting a data packet to said receiving agent at the speed which corresponds to said CTS control character;

whereby data is transfer between said sending and receiving agents coupled to said communication medium.

4,884,267

TDM TRANSMISSION SYSTEM

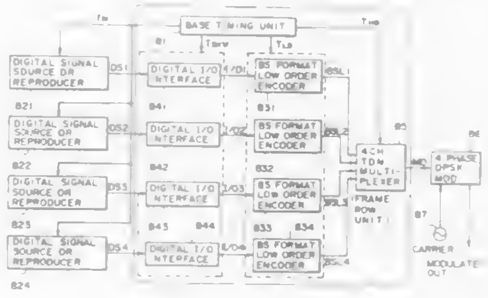
Yukihiko Miyamoto, Tama; Hirokazu Kobayashi, Gyoda, and Syoichi Suzuki, Tokyo, all of Japan, assignors to Kabushiki Kaisha Kenwood, Tokyo, Japan

Filed May 28, 1987, Ser. No. 55,073

Claims priority, application Japan, Dec. 27, 1986, 61-309090; Dec. 27, 1986, 61-309091; Feb. 24, 1987, 62-24939[U]

Int. Cl.⁴ H04J *3/06*

U.S. Cl. 370—100.1 7 Claims



1. A time division multiplex system comprising:

time division multiplex transmitter means which comprises;

a base timing unit for supplying a master clock to a plurality of PCM digital signal sources having a same sampling frequency and a same quantization bit number to effect frequency synchronization;

a digital I/O interface unit for adjusting the phase of each sample data word not D/A converted and sampled from said digital signal source;

a low order encoder unit for obtaining a low order encoder output of a predetermined format at a same timing from said base timing unit, based on said data word signal phase-adjusted by said digital I/O interface unit; and

a time division multiplex unit for obtaining a time-divisionally multiplexed signal by time-divisionally multiplexing said low order encoder output in units of frame row: and

time division demultiplex receiver means which comprises;

a time division demultiplex unit for demultiplexing said time-divisionally multiplexed signal in units of frame row and outputting a low order signal having a predetermined format expanded in accordance with an original transmission rate; and

a low order decoder unit inputted with said low order signal of a predetermined format and decoding the sampled data word signal.

4,884,268

REPEATER ARRANGEMENT CAPABLE OF AVOIDING ACCUMULATION OF STUFF JITTERS

Kunihiro Goto, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Nov. 9, 1988, Ser. No. 269,026

Claims priority, application Japan, Nov. 9, 1987, 62-281075

Int. Cl.⁴ H04J *3/07*

U.S. Cl. 370—102 2 Claims

2. A repeater arrangement for dealing with a sequence of input multiplexed signals to produce a sequence of output multiplexed signals, each of said input and said output multiplexed signals comprising at least one of stuff pulses within every one of multiframes of said each multiplexed signal and a plurality of data signals distributed to a plurality of channels, said repeater arrangement comprising:

a demultiplexer for demultiplexing said input multiplexed signals into a plurality of demultiplexed signals assigned to the respective channels;

first memory means coupled to said demultiplexer for memorizing said demultiplexed signals with the stuff pulses

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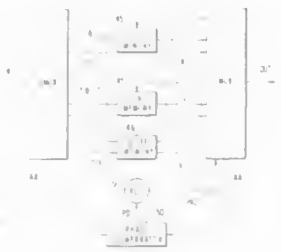
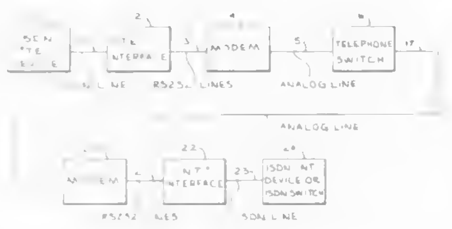
destuffed to produce reproduced demultiplexed signals in accordance with readout clock pulse sequences;
second memory means coupled to said demultiplexer for memorizing stuff information related to the stuff pulses destuffed;
means coupled to said first and said second memory means for delivering a plurality of clock pulse sequences to said first memory means with reference to said stuff information as said readout clock pulse sequences, each of said clock pulse sequences appearing at time positions assigned to said stuff pulses; and
means for multiplexing said reproduced demultiplexed signals into said output multiplexed signal sequence with the stuff pulses added.

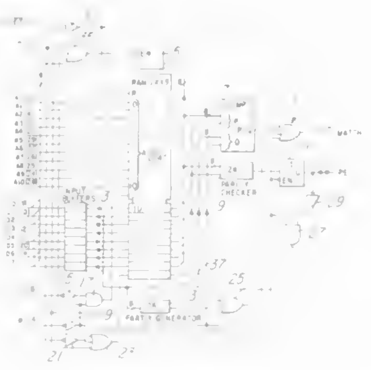


4,884,269
METHOD AND APPARATUS FOR CONNECTING ISDN DEVICES OVER AN ANALOG TELEPHONE LINE
Jay P. Duncanson, San Francisco, and Stephen J. Speckenbach, Oakland, both of Calif., assignors to Hayes Microcomputer Products, Inc., Norcross, Ga.
Filed Jun. 20, 1988, Ser. No. 209,348
Int. Cl.⁴ H04J *3/12, 3/17*
U.S. Cl. 370—110.1 17 Claims



1. An apparatus for allowing a first ISDN device to communicate with a second ISDN over an analog telephone line, comprising:
first interface means connected to said first ISDN device, said first interface means comprising means for receiving ISDN data signals from said first ISDN device, and means for separating selected data for a selected ISDN channel from said ISDN data;
first means for determining whether said selected data for said selected ISDN channel represents a data condition or an idle signal condition;
means for deleting said selected data which represents said idle signal condition;
a first modem for receiving said selected data and placing a modulated signal onto said analog telephone line, said modulated signal corresponding to said selected data;
a second modem for receiving said modulated signal from said analog telephone line, and demodulating said modulated signal to provide demodulated data corresponding to said modulated signal;
second means for determining whether said demodulated data represents a data condition or an idle signal condition;
means for inserting a predetermined number of bytes of a predetermined value into said demodulated data if said demodulated data represents said idle signal condition;
means for assembling said demodulated data into packets having a predetermined size; and
second interface means, said second interface means comprising means for receiving said packets, means for incorporating said packets into a selected ISDN channel of an ISDN data stream, and means for providing said ISDN data stream to said second ISDN device.

4,884,270
EASILY CASCADABLE AND TESTABLE CACHE MEMORY
Edison H. Chiu, Richardson, and Roland H. Pang, Plano, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.
Division of Ser. No. 940,369, Dec. 11, 1986, Pat. No. 4,831,625. This application Oct. 14, 1988, Ser. No. 257,500
Int. Cl.⁴ G06F *11/10*
U.S. Cl. 371—21.2 12 Claims

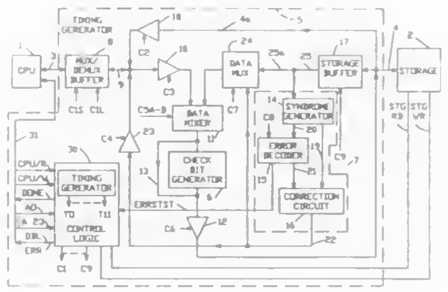


1. A single semiconductor chip cache memory comprising:
(a) a SRAM having plural data inputs, plural address inputs, plural address locations for storing data and plural data outputs;
(b) a comparator for comparing said data inputs stored at said addressed locations to provide a comparator output indicative of a match between input and stored data; and
(c) an output transistor having three electrodes including first and second electrodes and a control electrode for selectively coupling together the first and second electrodes, said control electrode being coupled to the comparator output to control the coupling or uncoupling of the first and second terminals in response to the comparator output at the control terminal.

4,884,271
ERROR CHECKING AND CORRECTING FOR READ-MODIFIED-WRITE OPERATIONS
Fernando Concha, and Charles J. Stancil, both of Boca Raton, Fla., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 28, 1987, Ser. No. 138,429
Int. Cl.⁴ G06F *11/00*
U.S. Cl. 371—40.2 4 Claims

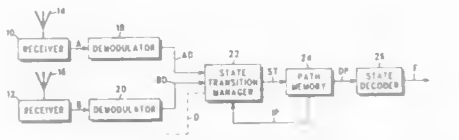
1. In a data processing system including a data storage module having a plurality of addressable locations for storing in each said location a digital information segment and an error checking and correcting code (ECC) for said segment and including a processor operating upon information in units smaller than said segment, said system further including read-modify-write (RMW) means for combining a portion of a selected segment with an information unit from the processor to form a new segment and its ECC for transfer to the storage module,

the method of transferring information units from the processor to the storage module comprising the steps of concurrently
(a) combining a portion of a selected first segment from one of said locations with an information unit from the processor to form a second segment and generating ECC bits for said second segment, and
(b) writing said second segment to said one location;



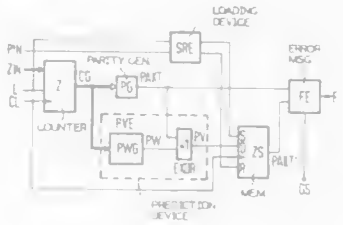
(c) determining whether the selected first segment is error free or contains a single bit error;
correcting the selected first segment, if it contains a single bit error, to form a third segment; combining a portion of the corrected third segment with the information unit from the processor to form a fourth segment and generating ECC bits for said fourth segment; and
rewriting the fourth segment in place of said second segment in said one location.

4,884,272
MAXIMUM LIKELIHOOD DIVERSITY RECEIVER
Peter R. H. McConnell, 5970 Empress Ave., Burnaby, British Columbia, Canada (V5E 2S2)
Filed Feb. 10, 1988, Ser. No. 154,218
Int. Cl.⁴ G06F *11/10*
U.S. Cl. 371—43 2 Claims



2. A maximum likelihood diversity receiver comprising at least two receivers at a common receiving site, each said receiver having its own antenna, said antennas being separated to receive signals having a low correlation coefficient, each said receiver generating a demodulated signal, including in combination:
a state transition manager for applying Hamming weight to said demodulated signals generated by each receiver for all possible state transition paths across each level in a trellis based on a known starting state,
means for determining a minimum Hamming weight of each state transition path across a level in said trellis,
means for retaining only the minimum Hamming weight for each said path regardless of the receiver source,
path memory means for accumulating minimum Hamming weights for each level in said trellis into a metric for each path until a pair of paths intersect,
means for selecting the moth likely path to said intersection based on the one of said intersecting paths having the metric with the minimum Hamming weight and discarding the other path leading to the intersection and
means for repeating the process until only a single path remains and state decoder means for decoding said received signal to determine a message based on a remaining single path in said state decoder means.

4,884,273
METHOD AND APPARATUS FOR MONITORING THE CONSISTENCY OF SUCCESSIVE BINARY CODE SIGNAL GROUPS IN DATA PROCESSING EQUIPMENT
Friedhelm Caprasse, Zorneding, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany
Filed Jan. 25, 1988, Ser. No. 147,723
Claims priority, application Fed. Rep. of Germany, Feb. 3, 1987, 3703184
Int. Cl.⁴ G06F *11/10*
U.S. Cl. 371—49.4 4 Claims



1. A method for monitoring the consistency of successive binary code signal groups, including binary numbers of a prescribed length used as addresses in data processing equipment, comprising the steps of
comparing the current parity bit to the parity bit predictively calculated for the current code signal group in response to the predeccessor code signal group, and intermediately stored,
generating an error signal in the case of inequality,
generating an indicator signal (PW_1) indicating a possible change in parity bit upon transition to the successor code signal group ($CG_{x\pm1}$) for every effective code signal group (CG_x) according to the relationship

$$PW_i = 2^0 v \bigcup_{n=0}^{n=\lfloor(i-3)/2\rfloor}\left[\left(\bigcap_{m=0}^{m=n} 2^{2m+1}\right)\cap 2^{2(n+1)}\right] \text{for } i > 2$$

for code signal groups (CG_x, CG_{x+1}) following one another in ascending order, and according to the relationship

$$PW_i = 2^0 v \bigcup_{n=0}^{n=\lfloor(i-3)/2}\left[\left(\bigcap_{m=0}^{m=n} 2^{2m+1}\right)\cap 2^{2(n+1)}\right] \text{for } i > 2$$

for code signal groups (CG_x, CG_{x-1}) following one another in descending order, said indicator signal being derived from the bit position signals ($2^{n=1}$, 2^2, . . . , 2^12^0) of the respectively effective code signal group (CG_x); and
predictively calculating the parity bit (PV) belonging to the successor code signal group ($CG_{x\pm1}$) from the respectively calculated indicator signal (PW_1) together with the current parity bit (PAKT) respectively calculated from the effective code signal group (CG_x), by an exclusive-OR operation.

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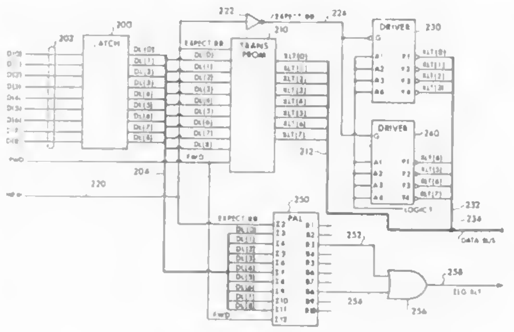
4,884,274
DETECTION OF NON-ZERO ERRORS IN THE PREFIX AND COMPLETION FRAMES OF HIGH DENSITY MAGNETIC TAPES AND APPARATUS THEREFOR

Howard H. Rather, Boulder, Colo., assignor to Aspen Peripherals Corp., Longmont, Colo.

Filed Apr. 19, 1988, Ser. No. 183,149

Int. Cl.⁴ G06F *11/10*

U.S. Cl. 371—57.2 **4 Claims**



1. An apparatus for correcting the presence of non-zero errors in high density magnetic storage tape, said high density magnetic storage tape having prefix and completion frames, each of said prefix and completion frames having a plurality of tracks wherein each said track has byte fields set to all zeroes, each said track and each said byte field having an identity and whereas said prefix frames are frame counts one and two when said tape is read in the forward direction and wherein said completion frames are frame counts one and two when said tape is read in the reverse direction, said apparatus comprising:

- means receptive of each of said byte fields for each of said plurality of tracks in said frame counts one and two of said prefix and completion frames for determining whether each said byte field contains a non-zero error,
- means connected to said determining means for storing the identity of the track containing said non-zero byte field and the identity of the frame, and
- means receptive of each of said byte fields for each of said plurality of tracks in said frame counts one or two of said prefix and completion frames for setting all said byte fields to zero so that any non-zero errors contained therein are corrected.

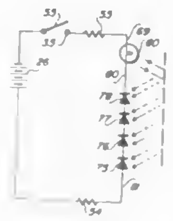
4,884,275
LASER SAFETY SHUTOFF SYSTEM

Robert A. Simms, Phoenix, Ariz., assignor to Murasa International, Long Beach, Calif.

Filed Oct. 24, 1988, Ser. No. 261,103

Int. Cl.⁴ H01S *3/10*

U.S. Cl. 372—9 **17 Claims**



1. A laser illuminator including in combination:

- a housing having a light exit opening therein;
- a laser light source mounted in said housing;
- a power supply located in said housing;
- control switch means for selectively interconnecting and disconnecting said laser light source and said power supply; a transmitting lens mounted in said bousing between said light source and the light exit opening in said housing: a receiving lens concentrically mounted with respect to said transmitting lens in said bousing adjacent said transmitting lens for receiving light of a predetermined wavelength: an opaque shield between said transmitting lens and said receiving lens to prevent light emitted from said light source from directly impinging upon said receiving lens and
- normally closed, light responsive, safety switch means mounted in said housing behind said receiving lens means to receive light reflected from said light source onto said receiving lens means by an object and connected in series circuit with said light source and said power supply for opening said series circuit in response to light of a predetermined intensity impinging thereon.

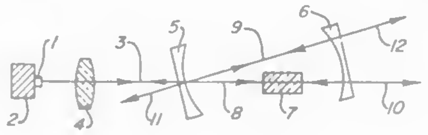
4,884,276
OPTICAL FEEDBACK CONTROL IN THE FREQUENCY CONVERSION OF LASER DIODE RADIATION

George J. Dixon, Lutz, Fla.; Douglas W. Anthon, and John H. Clark, both of Wheaton, Ill., assignors to Amoco Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 125,161, Nov. 25, 1987, which is a continuation-in-part of Ser. No. 78,373, Jul. 27, 1984. This application Oct. 20, 1988, Ser. No. 260,255

Int. Cl.⁴ H01S *3/10*

U.S. Cl. 372—21 **21 Claims**



1. An apparatus for generating coherent optical radiation which comprises:

(a) laser diode means for generating coherent optical radiation of a first frequency;
(b) an optical cavity which is resonant for optical radiation of said first frequency and separate from any optical cavity used as a component of said laser diode means;
(c) means for introducing said radiation of a first frequency from the laser diode means into said optical cavity;
(d) feedback means for returning a minor portion of said radiation of a first frequency from said optical cavity to the laser diode means, wherein said minor portion is effective to narrow the linewidth of the optical output from said laser diode means and to lock the optical output from said laser diode means at said first frequency; and
(e) nonlinear optical means disposed within said optical cavity for interacting with said radiation of a first frequency to generate coherent radiation of a second frequency.

4,884,277
FREQUENCY CONVERSION OF OPTICAL RADIATION

Douglas A. Anthon, Wheaton, and Donald L. Sipes, Jr., Lisle, both of Ill., assignors to Amoco Corporation, Chicago, Ill.

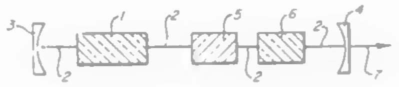
Continuation-in-part of Ser. No. 157,741, Feb. 18, 1988. This application Jun. 16, 1988, Ser. No. 207,666

Int. Cl.⁴ H01S *3/10*

U.S. Cl. 372—22 **36 Claims**

13. An apparatus for generating coherent optical radiation which comprises:

(a) an optical cavity for optical radiation of a first frequency;
(b) lasant material disposed within said cavity for generating optical radiation of said first frequency; and
(c) nonlinear optical means for converting said optical radiation of a first frequency into optical radiation of a second frequency wherein said nonlinear optical means comprises at least two nonlinear optical crystals which are positioned within said optical cavity and oriented so that radiation of said first frequency circulating within the optical cavity can interact with said crystals along a phase-match axis of each crystal for said radiation of a first and second frequency.



4,884,278
SEMICONDUCTOR LASER MODULATION CONTROL SYSTEM

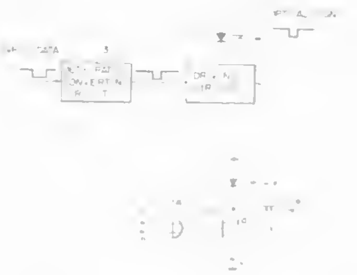
Hiroshi Nishimoto, Sagamihara; Takashi Touge, Tokyo; Tadashi Okiyama, Yokohama; Naoki Kuwata, Yokohama, and Yasunari Arai, Tokyo, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 234,082, Aug. 19, 1988, abandoned. This application Mar. 6, 1989, Ser. No. 320,864

Claims priority, application Japan, Aug. 19, 1987, 62-204205

Int. Cl.⁴ H01S *3/10, 3/00*

U.S. Cl. 372—26 **17 Claims**



1. A semiconductor laser modulation control system comprising:

- a drive circuit (1) for supplying a drive current to a semiconductor laser (2) in accordance with an input data, to modulate said input data into an optical signal of said semiconductor laser (2), said optical signal being at either one of a high intensity state and a low intensity state in accordance with whether said input data is "1" and "0" in respective time slots of said input data; and
- a duty ratio conversion circuit (3) receiving said input data and having an output connected to an input of said drive circuit (1), for converting the duty ratio of said input data in such a way that said low intensity state of said optical signal is returned to said high intensity state within each time slot of said input data.

4,884,279
OPTICAL TRANSMISSION APPARATUS

Yuichi Odagiri, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Apr. 22, 1988, Ser. No. 185,023

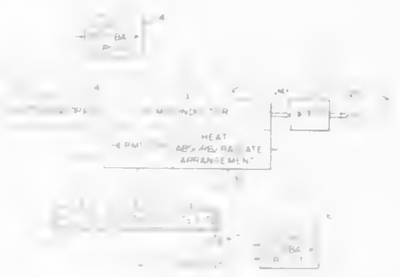
Claims priority, application Japan, Apr. 23, 1987, 62-98563

Int. Cl.⁴ H01S *3/13*

U.S. Cl. 372—29 **19 Claims**

1. An optical transmission apparatus comprising:

- light emitting means for outputting coherent light;
- output light control means including a first feedback circuit and a photosensor for stabilizing the light output by said light emitting means by sensing a part of said light;
- temperature sensor means for sensing an ambient temperature
- temperature control means including a second feedback circuit and a heat transfer means, said temperature control means being responsive to said ambient temperature sensed by said temperature sensor means for controlling the temperature of said light emitting means; and
- decision means for determining whether the temperature sensed by said temperature sensor means lies in a predetermined temperature range and for determining which one of said light control means or temperature control means should have priority; said decision means further identifying any one of three different stages to which the temperature of the light emitting means belongs such that information from said decision means is fed to at least one of the first and second feedback circuits to stabilize the output of the light emitting means.



4,884,280
SEMICONDUCTOR LASER DRIVING DEVICE FOR STABILIZING THE OPTICAL OUTPUT THEREOF

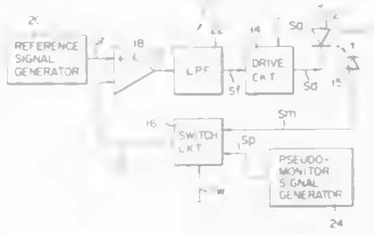
Osamu Kinoshita, Kawasaki, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 23, 1988, Ser. No. 248,112

Claims priority, application Japan, Sep. 25, 1987, 62-241410

Int. Cl.⁴ H01S *3/00*

U.S. Cl. 372—38 **10 Claims**



1. A device for stabilizing an optical output level of a semiconductor laser, said device comprising:

- driver means for supplying a drive current to the laser;
- light sensitive means for producing an electrical monitor signal indicative of the actual optical output level of said laser;
- comparator means, connected to said light sensitive means, for receiving and electrical reference signal indicative of a reference output level of said laser, and for detecting a difference between values of the monitor signal and the reference signal to produce an electrical comparison signal indicative of a change in the actual optical output level of said laser; and
- compensator means connected to said comparator means, for, when said laser is switched from a waiting mode to a normal oscillation mode for sending data, supplying said comparator means with an electrical compensation signal which serves to cause said comparator means to generate a certain comparison output having an amplitude low enough to set a current component supplied as the drive

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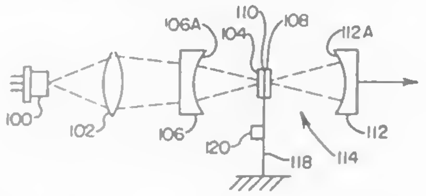
current to said laser to be forcibly decreased so that an abnormal current is eliminated from flowing in said laser.

4,884,281
LOW COST/POWER VISIBLE LIGHT SOLID-STATE LASER

Pliny S. Hawthorn, New Carlisle, and Mark D. Sobottke, Kettering, both of Ohio, assignors to Spectra-Physics, Inc., San Jose, Calif.

Filed Sep. 9, 1988, Ser. No. 242,792
Int. Cl.⁴ H01S *3/091*
U.S. Cl. 372—75 **18 Claims**



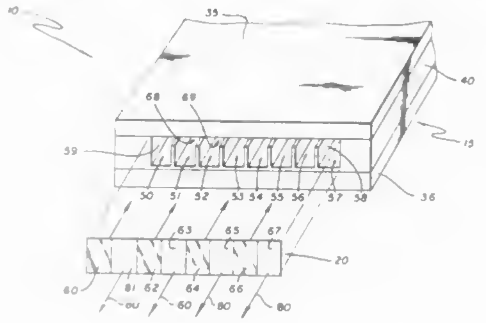
1. A compact, laser diode pumped, high efficiency, solid-state laser comprising:

a laser diode;
output coupler means including a mirrored surface forming a front end of a laser cavity;
input mirror means for forming a back end of said laser cavity;
a laser chip of stoichiometric lasing material;
a frequency doubler chip positioned immediately adjacent said laser chip for doubling the frequency of light generated by said laser chip thereby halving its wavelength;
coupling material for bonding said laser chip to said doubler chip, said coupling material having a refractive index matched to said chips to nearly eliminate reflections at power peaking means for generating spikes in laser light which passes through said output coupler means; and support means for movably mounting the bonded combination of said laser chip and said doubler chip, and wherein said power peaking means includes vibratory means for moving said support means and thereby the bonded combination of said laser chip and said doubler chip.

4,884,282
COUPLED WAVEGUIDE LASER ARRAY

William B. Bridges, Pasadena, Calif., assignor to California Institute of Technology, Pasadena, Calif.

Filed Jan. 27, 1988, Ser. No. 211,886
Int. Cl.⁴ H01S *3/082, 3/03*
U.S. Cl. 372—97 **6 Claims**

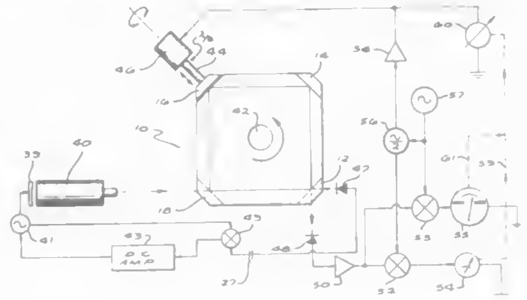


1. A coupled waveguide gas laser array comprising:
first and second electrodes;
first laser means disposed between said first and second electrodes for providing a first cavity along a first longitudinal axis and an output aperture at a first end thereof for providing a first beam in a first direction;
second laser means disposed between said first and second electrodes for providing a second cavity along a second longitudinal axis substantially parallel to said first longitudinal axis, said second means having an output aperture at a first end thereof to provide a second beam in said first direction;
an active medium disposed within said first and second cavities;
means for coupling said first cavity to said second cavity; and
a mirror mounted in a plane transverse to said longitudinal axes having
a first partially transmissive section mounted in optical alignment with said first beam and
a second substantially reflective section mounted in optical alignment with said second beam.

4,884,283
RING LASER GYROSCOPE MIRROR ORIENTATION SYSTEM AND METHOD

John Rahn, Canoga Park, and Thomas J. Hutchings, West Hills, both of Calif., assignors to Litton Systems, Inc., Beverly Hills, Calif.

Filed Dec. 20, 1988, Ser. No. 287,131
Int. Cl.⁴ H01S *3/08*
U.S. Cl. 372—107 9 Claims

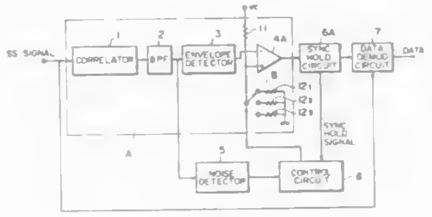


1. In a ring laser gyroscope, having a frame, and a closed optical path formed by a plurality of reflecting mirrors;
a method of orientation for at least one of said mirrors in order to provide a lower scatter and optimum cavity finesse, comprising the steps of:
(a) rotationally oscillating, at least one of each of a plurality of mirrors positioned away from said ring laser gyroscope frame along an axis of rotation which is parallel to a normal of said mirror;
(b) measuring a resonant output light beam emitted from said closed optical path to determine a speckle pattern intensity of said beam at a reflection point on a reflecting surface of said rotationally oscillating mirror;
(c) positioning said rotationally oscillating mirror securely onto a corner of said frame when said speckle pattern from said mirror has reached a minimum optical intensity;
repeating steps (a) through (c) above for each remaining mirror one at a time until each mirror along said optical path is secured to said frame at a reflecting point such that the overall scatter is optimized;
whereby, proper orientation of each of the mirrors along said closed optical pathway will be achieved.

4,884,284
SPREAD SPECTRUM RECEIVER

Shigeyuki Nakayama, Koganei, Japan, assignor to Kabushiki Kaisha Kenwood, Tokyo, Japan

Filed Sep. 22, 1988, Ser. No. 247,607
Claims priority, application Japan, Sep. 26, 1987, 62-239977
Int. Cl.⁴ H04K *1/04;* **H04L** *9/00*
U.S. Cl. 375—1 **2 Claims**

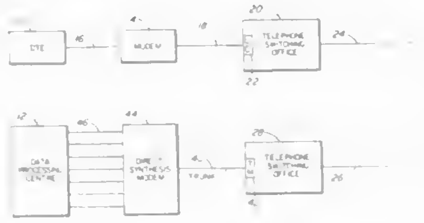


1. A receiver in a spread spectrum communication system comprising:
an initial synchronization circuit including a correlator for detecting a correlation of the spread spectrum input signal, a detector circuit for detecting an output of said correlator, and a comparator for receiving an output of said detector circuit an outputting a correlation detection signal;
a synchronization holding circuit for receiving the correlation detection signal to perform synchronization holding and outputting a synchronization holding signal during the synchronization holding;
noise detecting means for detecting noises of the correlation detection signal;
and a control circuit for detecting if the synchronization holding signal is outputted within a predetermined period, and if not, controlling a reference voltage to be supplied to said comparator in accordance with the noise detection output of said noise detecting means.

4,884,285
(DS) TRANSMITTER

Jan Heynen, 2928 Haughton Street, Ottawa, Ontario, Canada (K2B 6Z7); Larry S. Kayser, 36 Glebe Avenue, Ottawa, Ontario, Canada (K1S 2C1), and Georges E. Mony, 3576 Marlowe Avenue, Montreal, Quebec, Canada H5A 3L7

Filed Feb. 12, 1987, Ser. No. 14,035
Claims priority, application Canada, Oct. 22, 1986, 521080
Int. Cl.⁴ H04B *14/04*
U.S. Cl. 375—25 **18 Claims**

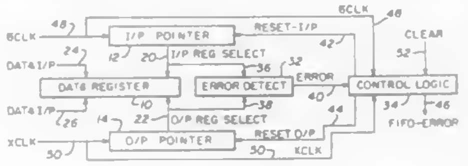


1. A method of transferring data from a telephone switching office to a remote processing center at a customer's premises via a telephone trunk, the data being multiplexed in a digitally encoded modulated format and carried on the telephone trunk to the processing center and vice versa comprising directly synthesizing at the customer's premises, from the digitally encoded modulated data multiplexed on the trunk, a plurality of digital data signals in a non-modulated format readable by the processing center and directly synthesizing at the customer's premises, a plurality of non-modulated digital data signals output from the processing center, data which is multiplexed in a digitally encoded modulated format for transmission on the trunk.

4,884,286
ELASTIC BUFFER FOR LOCAL AREA NETWORKS

Andre Szdzepanek, Bedford, and George Buchanan, Sherington, both of England, assignors to Texas Instruments Inc., Dallas, Tex.

Filed Dec. 12, 1985, Ser. No. 808,149
Int. Cl.⁴ H04L *7/00*
U.S. Cl. 375—118 **11 Claims**



1. An elastic buffer for absorbing frequency jitter or drift of a data stream incoming on an input data line, comprising:
a serial circular stack of data register cells;
means for storing data bits in said cells from an incoming data stream one at a time with each bit in a cell adjacent a cell in which is stored a next earlier bit at a clock frequency BCLK equal to the frequency of arrival of the incoming data;
means for directing stored data from said data registers onto an output data line one at a time at a predetermined fixed clock rate XCLK equal to the average frequency of incoming data;
wherein at any instant the register from which data is taken out is a number of registers away from the register into which data is stored, the number increasing when the frequency of BCLK is greater than that of XCLK and decreasing when the frequency of BCLK is less than that of XCLK;
wherein said directing means includes:
a plurality of output gates each coupled between
the output data line and an output of a corresponding
one of said data registers;
an output pointer circuit selectively coupled to each of said output gates, in turn, at a frequency equal to said average frequency and operable when so coupled to release data from a corresponding one of said data registers onto the data output line; a plurality of input gates each coupled between
the input data line and an input of a corresponding one of said data registers; an input pointer circuit selectively coupled to
each of said input gates, in turn, at a frequency equal to the frequency of arrival of the input data and operable when so coupled to open a corresponding input gate and allow transmission of data from said line onto a corresponding data register; wherein said input and output pointers each
include a plurality of latches, one corresponding to each cell of said data registers, wherein all latches except a selected latch reset to a zero bit while the selected latch resets to a "1" bit and in response to incoming clock signals after each cycle each latch passes its bit level onto a next adjacent latch wherein a "1" level in a given latch causes a control signal to issue to an associated one of the input and output gates of a corresponding data register cell to open the gate and permit a data bit to flow thereby; and
wherein said data register cells each include an ERDET line precharged to a predetermined voltage level, normally non-transmitting gate means connecting said ERDET line to ground, said gate means responsive to a coincident signal from an output pointer

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latch corresponding to said each cell and from an immediately preceding input pointer latch, and from an input pointer latch corresponding to said each cell and a coincident signal from an immediately preceding output pointer latch to open and ground said ERDET line.

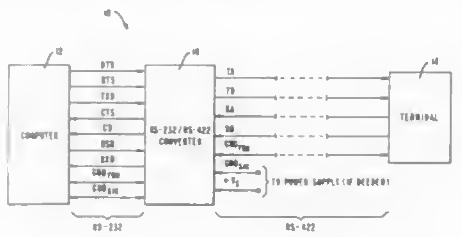
4,884,287
CONVERTER DEVICE FOR INTERCONNECTING SYSTEMS HAVING DIFFERENT COMMUNICATION STANDARDS

Ronald Jones, Casselberry, and Michael E. Amy, Winter Springs, both of Fla., assignors to NCR Corporation, Dayton, Ohio

Filed Apr. 1, 1988, Ser. No. 176,508

Int. Cl.⁴ H04L *23/00*

U.S. Cl. 375—121 **17 Claims**



1. In a converter device for interconnecting a first data processing system having input/output (I/O) signals conforming to a first communication standard, to a second data processing system having I/O signals conforming to a second communication standard, the improvement comprising:

deriving means for deriving an operating voltage for the converter device from at least one of the I/O signals of one of the first and second data processing systems; and

external voltage connection means for connecting the converter device to an external power source for receiving an external power signal from which an operating voltage may be derived, so that an operating voltage for the converter device may be derived from either the one I/O signal or the external power signal.

4,884,288
NEUTRON AND GAMMA-RAY MOISTURE ASSAY

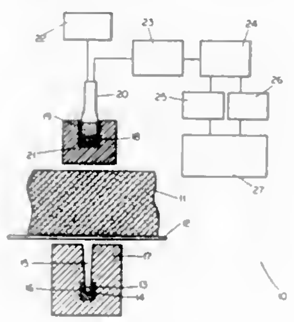
Brian D. Sowerby, Kareela, Australia, assignor to Commonwealth Scientific and Industrial Research Organization, Campbell, Australia

Filed Dec. 29, 1986, Ser. No. 946,966

Claims priority, application Australia, Dec. 31, 1985, PH4049

Int. Cl.⁴ G01N *23/06, 23/09*

U.S. Cl. 378—51 **16 Claims**



1. A system for measuring the moisture content of a substance comprising:

a fast neutron and gamma-ray source disposed in the vicinity of the substance to irradiate the substance with fast neutrons and gamma-rays, a fast neutron moderator positioned in the path of the fast neutrons and gamma-rays transmitted through the substance,

a unitary Li glass or LiI slow neutron detector having a thickness ranging from 5 mm to 50 mm which can also detect gamma-rays positioned behind or surrounded by the fast neutron moderator to detect slow neutrons, corresponding to or proportional to fast neutrons transmitted through the substance and to detect gamma-rays transmitted through the substance,

counting means operatively associated with the detector for determining the intensities of the detected gamma-rays and the detected slow neutrons, and

calculating means operatively associated with the counting means for calculating the moisture content of the substance from the intensities.

4,884,289
X-RAY SCANNER FOR DETECTING PLASTIC ARTICLES

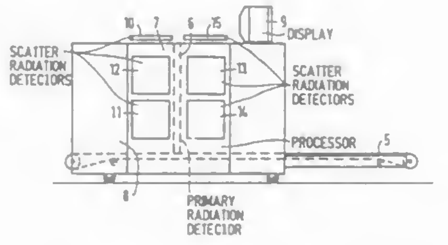
Walter Glockmann, Schlangenbad, and Thomas Herwig, Eltville, both of Fed. Rep. of Germany, assignors to Heimann GmbH, Fed. Rep. of Germany

Filed May 22, 1987, Ser. No. 52,981

Claims priority, application Fed. Rep. of Germany, May 28, 1986, 3617893

Int. Cl.⁴ G01V *23/04*

U.S. Cl. 378—57 **1 Claim**


DISPLAY
SCATTER RADIATION DETECTORS
SCATTER RADIATION DETECTORS
PROCESSOR
PRIMARY RADIATION DETECTOR
10
7
6
15
9
12
13
11
14
5
8

1. An x-ray scanner for detecting plastic in articles to be examined comprising:

an x-ray source which emits a fan-shaped x-ray beam in a propagation direction defined by two marginal rays;

means for moving an article to be examined through said x-ray beam;

a primary radiation detector disposed for receiving radiation attenuated by said article, said primary radiation detector being disposed such that said marginal rays are incident at respective extreme edges thereof;

a plurality of scatter radiation detectors disposed spaced from said primary radiation detector behind said article in said propagation direction such that scatter radiation from said article is incident on said scatter radiation detector, said scatter radiation being indicative of plastic in said article; and

means for separately processing signals from said primary radiation detector and said scatter radiation detectors based on the absorption characteristics of plastic so as to identify the presence of plastic within said article.

4,884,290
METHOD OF ANALYZING COMPOSITION OF OPTICAL FIBER BASE MATERIAL TO BE MEASURED BY RADIOACTIVE RAYS

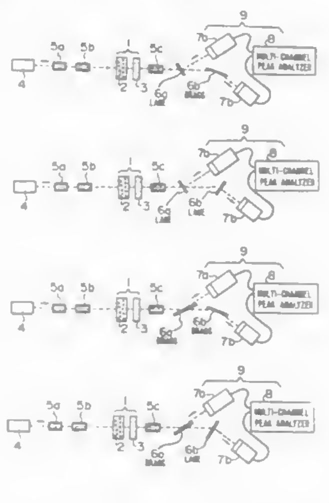
Junichi Tamura; Ryoichi Hara; Fumihiko Abe, and Hisashi Koaizawa, all of Ichihara, Japan, assignors to The Furukawa Electric Company, Ltd., Tokyo, Japan

Filed Oct. 11, 1985, Ser. No. 786,695

Claims priority, application Japan, Oct. 13, 1984, 59-214580

Int. Cl.⁴ G01T *1/36*

U.S. Cl. 378—83 **12 Claims**



1. A method of analyzing a composition of an optical fiber base material to be measured by x-rays, comprising the steps of:

irradiating x-rays from a radiation generator to the base material contining a plurality of elements

emitting x-rays from the base material along a line of passage,

placing a plurality of single crystals so as to intersect said line of passage, and wherein each of said crystals is independently positioned with respect to each other,

producing from each crystal an X-ray beam of specific energy, and

measuring each X-ray beam of specific energy with a separate radiation detector for each single crystal to analyze the compositions of the plurality of elements in the base material.

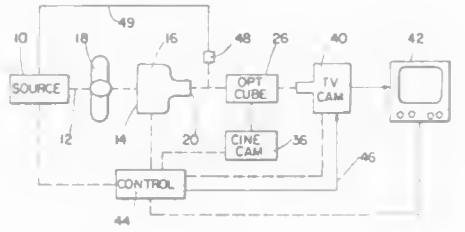
4,884,291
X-RAY TELEVISION IMAGING USING DIGITAL CIRCULAR BLANKING

David Nicolay, Fairview Park, Ohio, assignor to Picker International, Inc., Cleveland, Ohio

Filed Jul. 11, 1988, Ser. No. 217,630

Int. Cl.⁴ H05G *1/64*

U.S. Cl. 378—99 **10 Claims**



10. An x-ray radiographic imaging system comprising:

(a) a source for directing x-ray energy along a path;

(b) an image intensifier tube aligned in the path for producing at an output face a visual light image corresponding to a pattern of x-rays received incident upon an input face of said image intensifier tube;

(c) a television camera positioned to view said visible light image at said output face of said image intensifier tube, said television camera including a television pick-up tube and circuitry for producing electrical video and horizontal and vertical synchronization signals representing the viewed visible light image as a pattern of raster lines in accordance with a selected one of a plurality of scan formats;

(d) a monitor coupled to receive said video and synchronization signals for producing in response thereto a second visible light image corresponding to said x-ray pattern;

(e) a read only memory containing stored digital information defining for each raster line of said image for a given scan format the approximate blanking and active time required to form a circularly blanked video image;

(f) a line counter synchronized to said vertical synchronization signals from said television camera and responsive to horizontal synchronization signals to increment one count per raster line and additionally having means to reset said counter to zero upon the tracing of the first raster line of the scan, and

(g) at least one additional read only memory containing stored digital information for rendering said read only memory as a look-up table for scaling the size of said active viewing area.

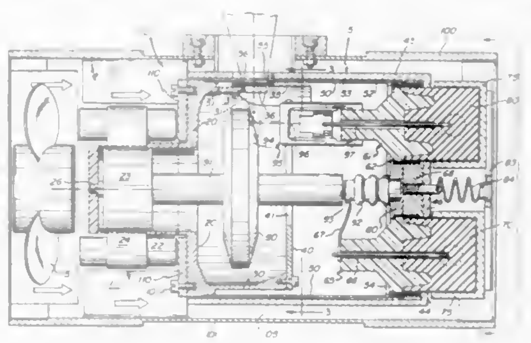
4,884,292
AIR-COOLED X-RAY TUBE

Heinrich F. Klostermann, Menlo Park, Calif., assignor to Medical Electronic Imaging Corporation, Fremont, Calif.

Continuation-in-part of Ser. No. 326,752, Dec. 2, 1981, abandoned, which is a continuation-in-part of Ser. No. 90,501, Nov. 1, 1979, abandoned, which is a continuation-in-part of Ser. No. 71,192, Aug. 30, 1979, abandoned. This application Jun. 27, 1986, Ser. No. 879,598

Int. Cl.⁴ H05G *01/02;* **H01J** *35/10*

U.S. Cl. 378—127 **21 Claims**



1. An X-ray tube comprising:

(A) an evacuated tube envelope fabricated primarily of metal, the tube envelope generally comprising a first end wall, a cylindrical side wall and a second end wall;

(B) an anode rotatably mounted in the tube envelope with its target surface facing the second end wall; and drive means for rotating the anode;

(C) a cathode mounted within the tube envelope and positioned to cooperate with the anode to produce a beam of x-rays, and conductor means connected to the anode and cathode for applying electrical potential to produce x-rays;

(D) a heat transfer sleeve within said evacuated tube envelope extending from the first end wall toward the second end wall and beyond the anode and having a free end, the heat transfer sleeve being spaced-apart from the cylindrical side wall of the tube envelope and being disposed

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exteriorally of the anode to provide an annular vacuum space, the heat transfer sleeve receiving heat emanating from the anode during operation of the tube to produce X-rays and transferring that heat to the first end wall for dispersal, the heat transfer sleeve and cylindrical side wall of the tube envelope including means permitting the passage therethrough of the desired beam of X-rays from within the tube envelope and exteriorally of the tube envelope; and

(E) air-cooled means for cooling said first end wall.

4,884,293
X-RAY PHOTOGRAPHING APPARATUS

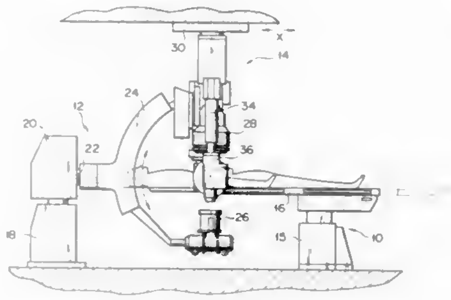
Katsuhiko Koyama, Ootawara, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jan. 18, 1989, Ser. No. 298,137

Claims priority, application Japan, Jan. 19, 1988, 63-7507

Int. Cl.⁴ G03B *41/16*

U.S. Cl. 378—197 **8 Claims**



1. An X-ray photographing apparatus comprising:

a first system for photographing an object from a frontal side thereof, said first system including a first arm having a substantially semicircular shape, a first X-ray tube attached to one end of the first arm, a first image intensifier attached to the other end of the first arm and opposed to the first X-ray tube, and first support means for supporting the first arm to be rotatable along its circumference about a rotational center located on an X-ray beam emitted from the first X-ray tube, and to be rotatable about a rotational axis extending in the radial direction of the arm through the rotational center;

a second system for photographing the object from a lateral side thereof, said second system including a second arm having a substantially semicircular shape, a second X-ray tube attached to one end of the second arm, a second image intensifier attached to the other end of the second arm and opposed to the second X-ray tube, and second support means for supporting the second arm to be rotatable along its circumference about a rotational center located on an X-ray beam emitted from the second X-ray tube, and to be rotatable about a rotational axis extending in the radial direction of the second arm through the rotational center;

said first and second arms being supported by the first and second support means to be movable to positions where X-ray beams emitted from the first and second X-ray tubes cross each other and to a reference position where an iso-center defined by said crossing point of the X-ray beams coincides with said rotation centers of the first and second arms;

drive means for rotating and moving the first and second arms; and

means for preventing the first and second arms from interfering with each other when at least one of them is to be rotated, said interfering preventing means including a storing section for storing data relating to relative positions between the first and second arms when at least one of the arms is rotated with the iso-center being held at the reference position, a detecting section for detecting a distance the iso-center shifts from the reference position, an operation section for calculating, on the basis of the data and the detected distance, a position where the first and second arms interfere with each other when at least one of the arms is to be rotated with the iso-center being shifted from the reference position, and driving the drive means in accordance with the calculated interference position, and means for alarming when the first and second arms come near the calculated interference position.

4,884,294
PORTABLE CORDLESS TELEPHONE SET FOR OUTPUTTING VARIOUS DISCRIMINIATION SOUNDS WITH SIMPLE CIRCUIT CONSTRUCTION

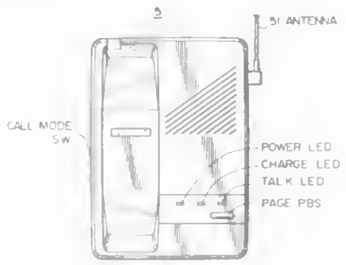
Fujio Inagami, Yokohama, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Feb. 26, 1988, Ser. No. 160,765

Claims priority, application Japan, Feb. 27, 1987, 62-043064

Int. Cl.⁴ H03B *19/00*

U.S. Cl. 379—61 **10 Claims**



1. A portable cordless telephone set for outputting various types of discrimination sounds in radio communication with a base unit, and having a telephone transmission and reception portion comprising:

a sound generation control circuit operatively connected to said telephone transmission and reception portion to receive a discrimination sound request and having at least one microcomputer;

a clock generation circuit generating an operation clock signal of said sound generation control circuit;

a sound generator generating one of a plurality of discrimination sounds having sound pressures different from one another in response to one of a plurality of resonant frequencies different from one another supplied thereto, one of said resonant frequencies being near a frequency of the operation clock signal of the sound generation control circuit and output from the clock generation circuit, and other resonant frequencies being selected to satisfy the relationship of a ratio of an integer with respect to said one resonant frequency;

a frequency divider circuit operatively connected to the clock generation circuit to receive the clock signal and having at least one frequency divider dividing the clock signal and providing a divider frequency signal;

a switch circuit connected to the clock generation circuit and the frequency divider circuit to selectively output one frequency signal therefrom; and

a timing control circuit operatively connected between the switch circuit and the sound generator, receiving the frequency signal from the switch circuit and outputting an ON/OFF timing signal of the received frequency signal to the sound generator in response to a command from the sound generation control circuit;

the sound generation control circuit energizing the switch circuit and sending the command to the timing control circuit in response to the received discrimination sound request.

DESIGN PATENTS

GRANTED NOV. 28, 1989

ERRATA

For CLASS	See PATENT NO.
D10-046	304,844
D14-118	4,874

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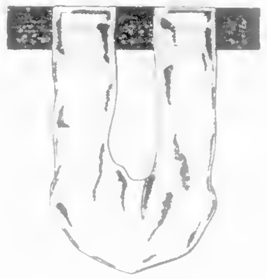
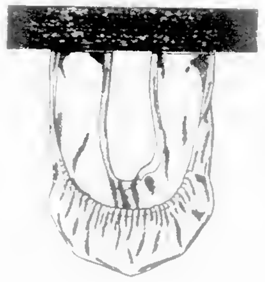
DESIGNS

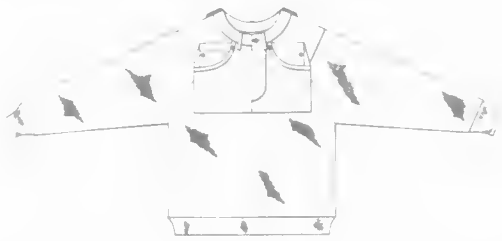
NOVEMBER 28, 1989

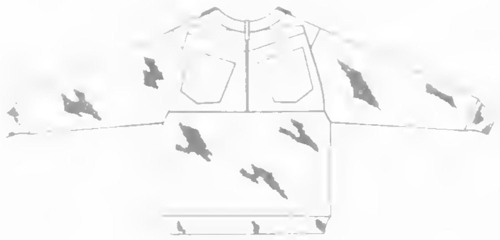
304,775
SCROTAL SUPPORTER
Doris A. Eckenrode, 154 Bertie Ave., Westminster, Md. 21157
Filed Feb. 1, 1988, Ser. No. 150,722
Term of patent 14 years
U.S. Cl. D2—10



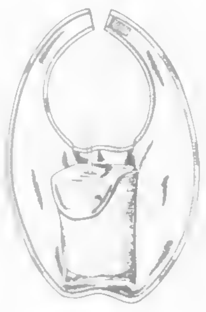


304,776
SHIRT OR SIMILAR ARTICLE
Dawn Singer, 19637 W. 12 Mile Rd. #201, Southfield, Mich. 48076
Filed Oct. 6, 1986, Ser. No. 915,578
Term of patent 14 years
U.S. Cl. D2—215

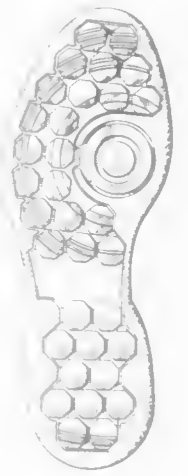




304,777
COMBINED BIB AND CONTAINER POUCH
Joseph G. Glenn, 411 F Odin La., NW., Fort Walton Beach, Fla. 32548
Filed Jul. 16, 1987, Ser. No. 74,461
Term of patent 14 years
U.S. Cl. D2—229



304,778
OUTSOLE FOR A SHOE
Tuan N. Le, Cohassett, and Paul E. Litchfield, Grafton, both of Mass., assignors to Reebok International Ltd., Canton, Mass.
Filed Oct. 2, 1986, Ser. No. 914,762
Term of patent 14 years
U.S. Cl. D2—320



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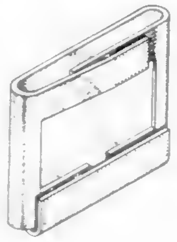
AUTO SEAT BELT BUCKLE BOOT

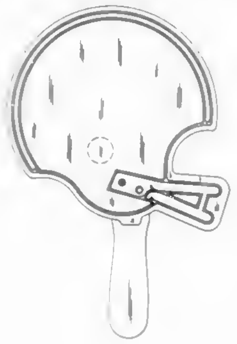
Oriel Raphael, and Evelyn G. Raphael, both of 19601 Weeburn La., Tarzana, Calif. 91356
Filed Sep. 26, 1986, Ser. No. 911,822
Term of patent 14 years
U.S. Cl. 2—639



304,780

NOVELTY FAN

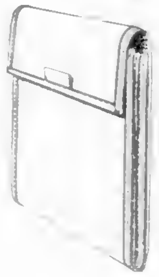
George A. Morris, Jr., 720 Fair Oaks Manor, Atlanta, Ga. 30327
Filed Aug. 4, 1986, Ser. No. 892,206
Term of patent 14 years
U.S. Cl. D3—4



304,781

COMPACT DISC HOLDER

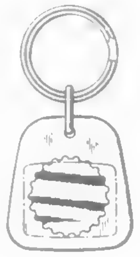
Patrick Hanson, 989 Coronado Dr., Glendale, Calif. 91206
Filed Jan. 13, 1986, Ser. No. 817,985
Term of patent 14 years
U.S. Cl. D3—35



304,782

KEY RING

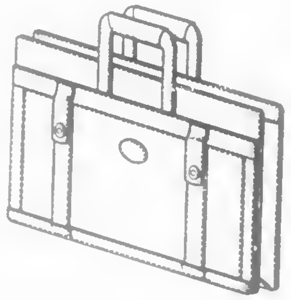
Henry Sawatsky, and Richard K. Sawatsky, both of Brampton, Canada, assignors to Precisioncraft Limited, Ontario, Canada
Filed Jan. 23, 1986, Ser. No. 824,567
Claims priority, application Canada, Aug. 1, 1985, 01-08-85-2
Term of patent 14 years
U.S. Cl. D3—61



304,783

BRIEF BAG

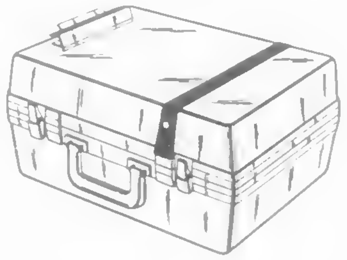
Robert S. Forman, Chicago, Ill., assignor to Roberts Incentives Corporation, Chicago, Ill.
Filed Jun. 11, 1986, Ser. No. 873,313
Term of patent 14 years
U.S. Cl. D3—71



304,784

CARRYING CASE

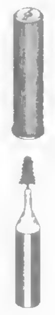
F. Carlos De Witt, Long Beach, Calif., assignor to Romana Acosta, Los Angeles, Calif.
Filed Mar. 5, 1986, Ser. No. 841,739
Term of patent 14 years
U.S. Cl. D3—76



304,785

TOOTHBRUSH

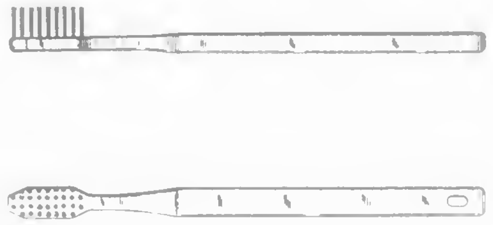
Emanuel B. Tarrson; Dane Maric, both of Chicago, and Thomas P. Kelly, Palatine, all of Ill., assignors to John O. Butler Company, Chicago, Ill.
Filed Mar. 4, 1986, Ser. No. 841,702
The portion of the term of this patent subsequent to Feb. 26, 2002, has been disclaimed.
Term of patent 14 years
U.S. Cl. D4—104



304,786

TOOTH BRUSH

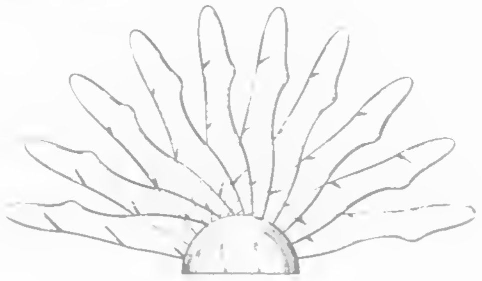
Yoshikazu Kayamura, Osaka, Japan, assignor to Naoji Kayamura, Kyato, Japan
Filed Nov. 13, 1986, Ser. No. 930,431
Claims priority, application Japan, Sep. 19, 1986, 61-037204
Term of patent 14 years
U.S. Cl. D4—104



304,787

HOSIERY DISPLAY STAND

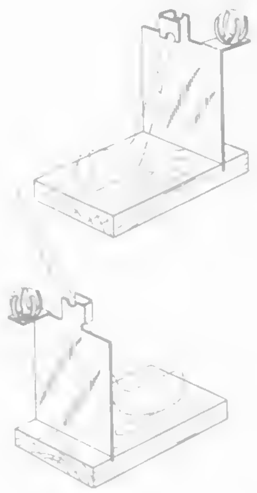
John M. Strongosky, McGraw, and David M. Freund, Syracuse, both of N.Y., assignors to RPM Industries, Inc., Auburn, N.Y.
Filed Sep. 12, 1986, Ser. No. 906,784
Term of patent 14 years
U.S. Cl. D6—450



304,788

COMBINED GOLF CLUB AND BALL DISPLAY STAND

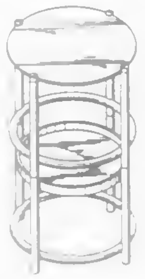
Claude L. McJunkin, 12,184 - 111th La., Largo, Fla. 33544
Filed Sep. 15, 1986, Ser. No. 908,084
Term of patent 14 years
U.S. Cl. D6—467



304,789

ACCENT TABLE

Winfried Scholl, Düsseldorf, Fed. Rep. of Germany, assignor to FA. HEWI Heinrich Wilke GmbH, Fed. Rep. of Germany
Division of Ser. No. 771,059, Aug. 30, 1985. This application Jul. 6, 1988, Ser. No. 215,945
Claims priority, application Fed. Rep. of Germany, Mar. 1, 1985, M 246
The portion of the term of this patent subsequent to Jun. 14, 2002, has been disclaimed.
Term of patent 14 years
U.S. Cl. D6—484



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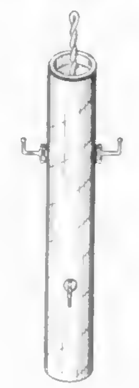
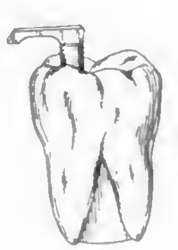
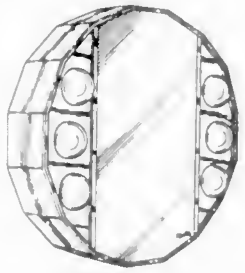
304,790
SUSPENDED CUP HOLDER
Jerry L. Pliett, 1329 Spring Brook Rd., Fort Wayne, Ind. 46825
Filed Mar. 2, 1987, Ser. No. 20,675
Term of patent 14 years
U.S. Cl. D6—514



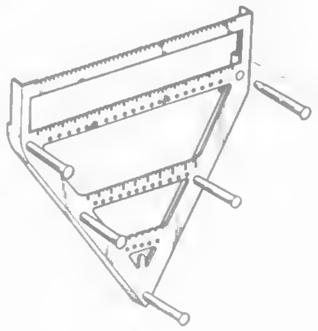
304,791
TOOTHPASTE DISPENSER
James J. DeVigili, Box W411, Old Bridge Rd., Alexandria Bay, N.Y. 13607
Filed Mar. 30, 1987, Ser. No. 32,095
Term of patent 14 years
U.S. Cl. D6—542



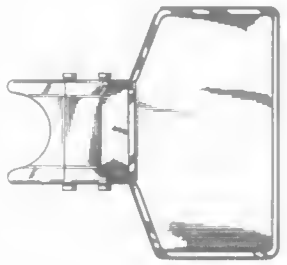
304,792
MIRRORED CABINET
Heinz G. Baus, 35 Wartbodenstrasse, CH-3626 Hünibach-Thun, Switzerland
Filed Aug. 17, 1987, Ser. No. 85,694
Claims priority, application Fed. Rep. of Germany, Feb. 19, 1987, URA198/87
Term of patent 14 years
U.S. Cl. D6—559



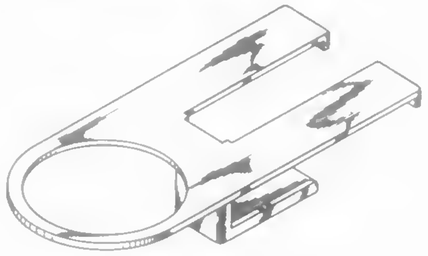
304,793
JEWELRY DISPLAY RACK
Doris Burke, 37620 Lola, Sterling Heights, Mich. 48077
Filed May 18, 1987, Ser. No. 51,027
Term of patent 14 years
U.S. Cl. D6—569



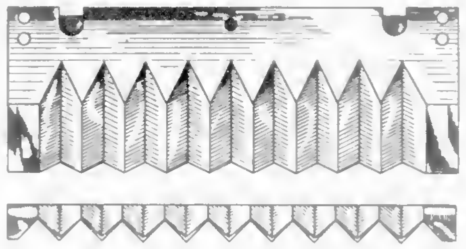
304,794
FOOD-CATCHING TRAY
Timothy Sheard, 243 W. MacDonald Ave., Richmond, Calif. 94801
Filed Feb. 10, 1987, Ser. No. 13,262
Term of patent 14 years
U.S. Cl. D7—37



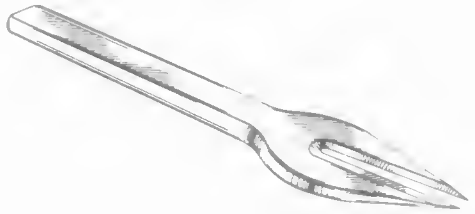
304,795
BEVERAGE CUP HOLDER
Randall B. Klopp, 9768 E. Fair La., Englewood, Colo. 80111
Filed Dec. 29, 1986, Ser. No. 947,537
Term of patent 14 years
U.S. Cl. D7—70



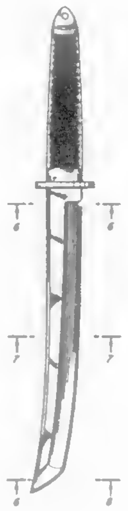
304,796
ZIG ZAG FRENCH FRY SLAB CUTTER KNIFE
George A. Mendenhall, 4252 S. Eagleson Rd., Boise, Id. 83705
Filed Jun. 10, 1987, Ser. No. 60,378
Term of patent 14 years
U.S. Cl. D7—106



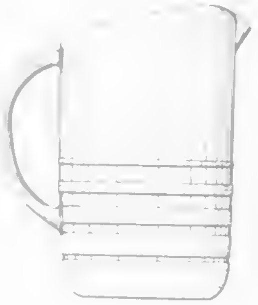
304,797
UTENSIL FOR OPENING HARD-SHELLED SEAFOOD
Dallas Perkins, 4711 N. 48th Dr., Phoenix, Ariz. 85031
Filed Oct. 31, 1986, Ser. No. 925,670
Term of patent 14 years
U.S. Cl. D7—106



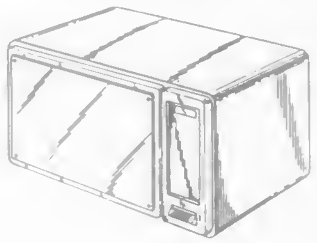
304,798
KNIFE
Lynn C. Thompson, Ventura, Calif., assignor to Cold Steel, Inc., Ventura, Calif.
Filed May 28, 1986, Ser. No. 868,420
Term of patent 14 years
U.S. Cl. D7—151

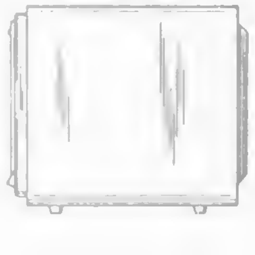


304,799
PITCHER
T. Brent Freese, Winchester, Va., assignor to Rubbermaid Commercial Products Inc., Winchester, Va.
Filed Jan. 8, 1987, Ser. No. 1,671
Term of patent 14 years
U.S. Cl. D7—319



304,800
MICROWAVE OVEN
Seung H. Yoo, Buchon, Rep. of Korea, assignor to Gold Star Co., Ltd., Seoul, Rep. of Korea
Filed Feb. 18, 1987, Ser. No. 16,179
Claims priority, application Rep. of Korea, Aug. 27, 1986, 86-12210
The portion of the term of this patent subsequent to Nov. 7, 2003, has been disclaimed.
Term of patent 14 years
U.S. Cl. D7—351





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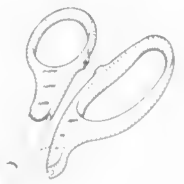
304,801
HANDLE UNIT FOR SHEARS

Robert S. Gingher, Greensboro, N.C., assignor to Scissaires, Inc., Greensboro, N.C.

Filed Apr. 25, 1986, Ser. No. 857,585

Term of patent 14 years

U.S. Cl. D8—57



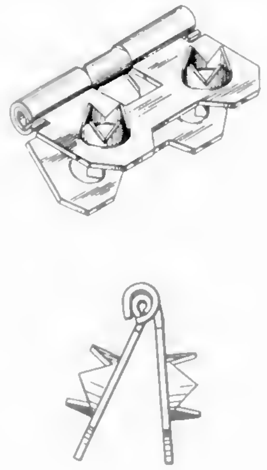
304,802
EASEL HINGE

Han Ung Yi, Seoul, Rep. of Korea, assignor to Starlight Industries, Inc., Brooklyn, N.Y.

Filed Nov. 15, 1988, Ser. No. 271,776

Term of patent 14 years

U.S. Cl. D8—328



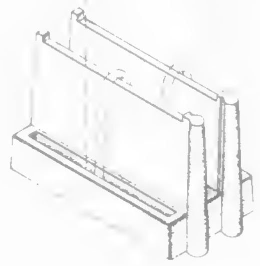
304,803
PACKAGE FOR CANDY CANES

Donald H. Young, Decatur, Ala., assignor to Bob's Candies, Inc., Albany, Ga.

Filed Sep. 23, 1986, Ser. No. 911,083

Term of patent 14 years

U.S. Cl. D9—341



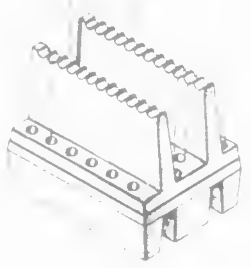
304,804
PACKAGE FOR CANDY CANES

Donald H. Young, Decatur, Ala., assignor to Bob's Candies, Inc., Albany, Ga.

Filed Oct. 6, 1986, Ser. No. 915,922

Term of patent 14 years

U.S. Cl. D9—341



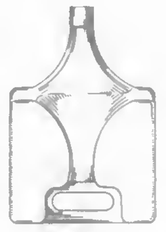
304,805
BOTTLE

Juris M. Mednis, Howell, N.J., assignor to Universal Symetrics Corporation, Howell, N.J.

Filed Apr. 15, 1987, Ser. No. 38,588

Term of patent 14 years

U.S. Cl. D9—376



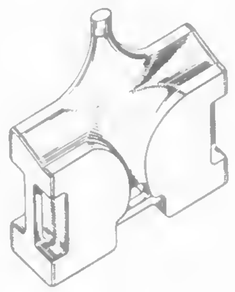
304,806
BOTTLE

Juris M. Mednis, Howell, N.J., assignor to Universal Symetrics Corporation, Howell, N.J.

Filed Apr. 15, 1987, Ser. No. 38,596

Term of patent 14 years

U.S. Cl. D9—376



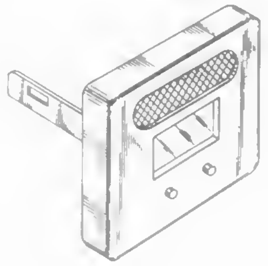
304,807
QUARTZ DIGITAL CLOCK WITH PULL OUT BRACKET AND UNIVERSAL MOUNT

Marc R. Iacovelli, Miami, Fla., assignor to Rally Manufacturing, Inc., Miami, Fla.

Filed Dec. 5, 1986, Ser. No. 938,753

Term of patent 14 years

U.S. Cl. D10—15



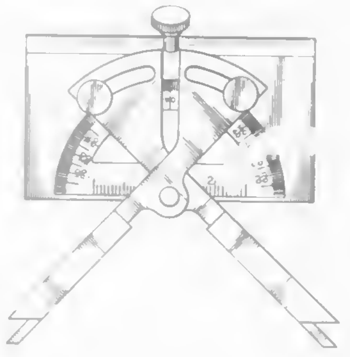
304,808
MAT MARKING AND GUIDE DEVICE

Charles H. Carithers, Jr., 5752A Gallant Dr., Jackson, Miss. 39236

Filed Dec. 1, 1986, Ser. No. 936,258

Term of patent 14 years

U.S. Cl. D10—65



304,809
LINK ELEMENT

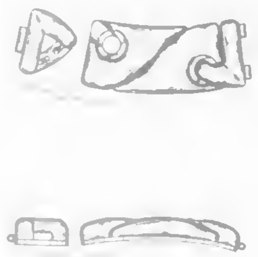
Paolo Bulgari, Rome, Italy, assignor to Partecipazioni Bulgari S.p.A., Rome, Italy

Filed Dec. 14, 1987, Ser. No. 132,133

Claims priority, application Italy, Jun. 22, 1987, 35872-87[U]

Term of patent 14 years

U.S. Cl. D11—93



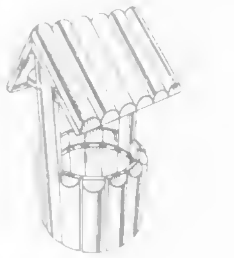
304,810
COMBINED PLANTER AND COVER

Rick K. Thurman, 2623 Crawford, Parsons, Kans. 67357

Filed Apr. 1, 1987, Ser. No. 33,483

Term of patent 14 years

U.S. Cl. D11—149



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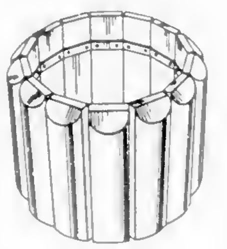
PLANTER

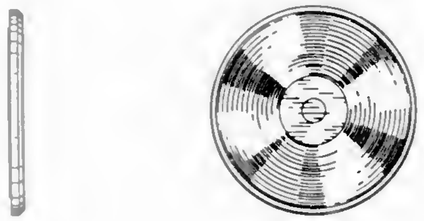
Rick K. Thurman, 2623 Crawford, Parsons, Kans. 67357
Filed Apr. 1, 1987, Ser. No. 33,490
Term of patent 14 years
U.S. Cl. D11—152



304,812

DISPLAY BUTTON

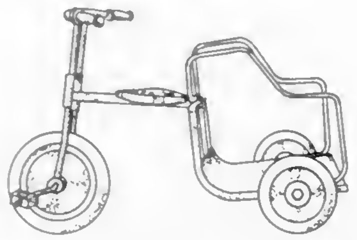
Robert J. De brey, 4502 Browndale Ave., Edina, Minn. 55424
Filed Dec. 3, 1986, Ser. No. 937,669
Term of patent 14 years
U.S. Cl. D11—227



304,813

TRICYCLE

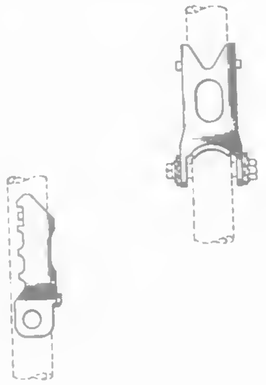
Ray G. Kelly, St. Louis, Mo., assignor to Angeles Nursery Toys, Inc., Pacific, Mo.
Filed Dec. 11, 1987, Ser. No. 131,522
Term of patent 14 years
U.S. Cl. D12—113



304,814

FOLDABLE FOOTPEG FOR BICYCLES

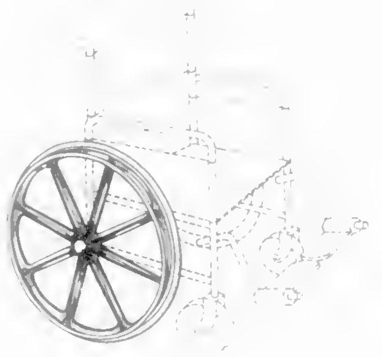
Robert B. Haro, Encinitas, Calif., assignor to The Derby Cycle Corporation, Carson, Calif.
Filed May 20, 1987, Ser. No. 51,608
Term of patent 14 years
U.S. Cl. D12—114



304,815

WHEELCHAIR WHEEL

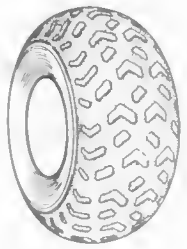
Ralph P. Jones, Camarillo, Calif., assignor to Everest & Jennings, Inc., Camarillo, Calif.
Continuation-in-part of Ser. No. 789,459, Oct. 21, 1985, abandoned. This application Sep. 8, 1986, Ser. No. 904,250
Term of patent 14 years
U.S. Cl. D12—133



304,816

AUTOMOBILE TIRE

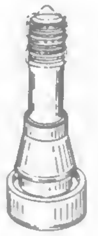
Kouichi Tatsumi, Hyogo, Japan, assignor to Sumitomo Rubber Industries, Ltd., Hyogo, Japan
Filed Mar. 17, 1987, Ser. No. 26,653
Claims priority, application Japan, Dec. 9, 1986, 61-48713
Term of patent 14 years
U.S. Cl. D12—151



304,817

TIRE VALVE

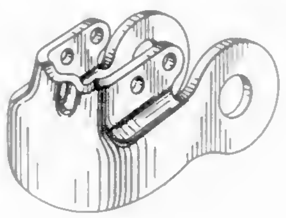
John R. Earley, Lynchburg, and Paul Stewart, Hurt, both of Va., assignors to Bridge Products, Inc., Northbrook, Ill.
Filed Dec. 19, 1985, Ser. No. 811,009
Term of patent 14 years
U.S. Cl. D12—153



304,818

TRAILER COUPLER YOKE

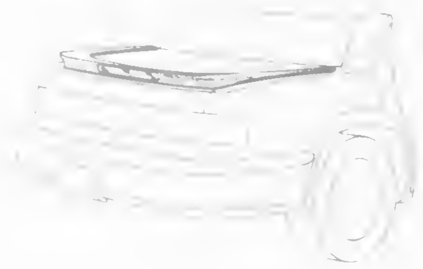
James W. Chambers, Rockford, Ill., assignor to Atwood Industries, Inc., Rockford, Ill.
Filed Jun. 4, 1987, Ser. No. 57,852
Term of patent 14 years
U.S. Cl. D12—162



304,819

COMBINED REAR SPOILER AND LIGHT

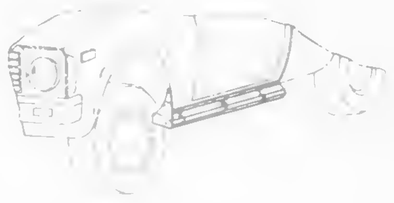
Leif H. Chapman, Sylvan Lake, and Richard F. Ruzzin, Grosse Pointe, both of Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed Sep. 14, 1987, Ser. No. 95,935
Term of patent 14 years
U.S. Cl. D12—181



304,820

LOWER SIDE PROTECTOR FOR VEHICLES

Craig Rasmussen, 578 Bringhurse Dr., Providence, Utah 84332
Filed Feb. 2, 1987, Ser. No. 10,175
Term of patent 14 years
U.S. Cl. D12—190



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304,821

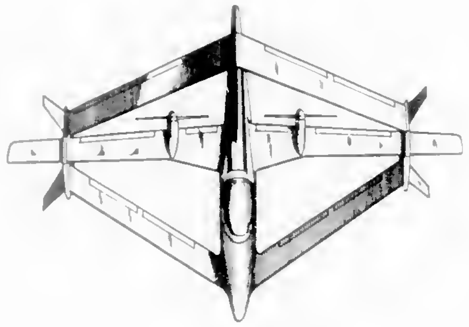
TRI-CHANNEL WING AIRCRAFT

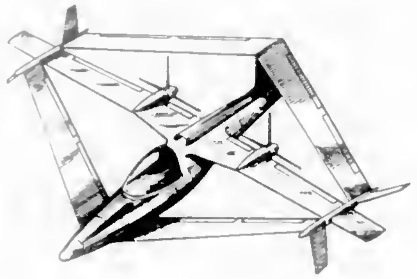
Alexander Ratony, 2076 Shadybrook, Thouand Oaks, Calif. 91362

Filed Jul. 14, 1986, Ser. No. 885,187

Term of patent 14 years

U.S. Cl. D12—331





304,822

BATTERY PACK

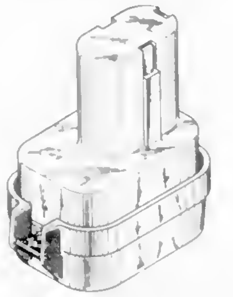
Fusao Fushiya; Michio Okumura, and Yoshiyuki Kubota, all of Anjo, Japan, assignors to Makita Electric Works, Ltd., Anjo, Japan

Filed Dec. 16, 1988, Ser. No. 285,229

Claims priority, application Japan, Jul. 9, 1988, 63-27440

Term of patent 14 years

U.S. Cl. D13—8



304,823

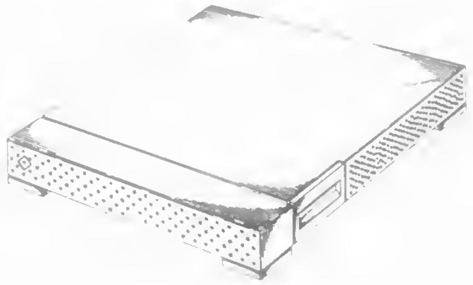
COMPUTER HOUSING

Herbert Pfeifer, San Jose, and Howell Hsiao, Mountain View, both of Calif., assignors to Sun Microsystems, Inc., Mountain View, Calif.

Filed Feb. 9, 1988, Ser. No. 154,128

Term of patent 14 years

U.S. Cl. D14—100



304,824

COMBINATION PRINTER AND IMAGE SCANNER

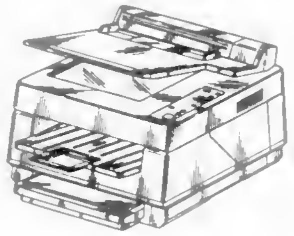
Kunio Hara, Chiba, and Shin-ichi Hiroki, Tokyo, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jan. 28, 1988, Ser. No. 150,316

Claims priority, application Japan, Aug. 3, 1987, 62-31264

Term of patent 14 years

U.S. Cl. D14—107



304,825

IMAGE SCANNER

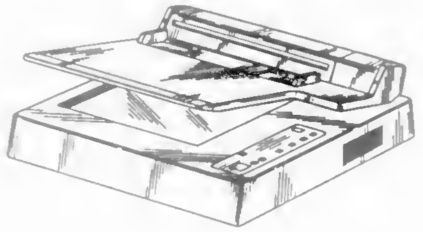
Kunio Hara, Chiba, and Shin-ichi Hiroki, Tokyo, both of Japan, assignors to Kabushiki Kaisha Toshiba, Tokyo, Japan

Filed Feb. 2, 1988, Ser. No. 151,077

Claims priority, application Japan, Ang. 3, 1987, 62-31263

Term of patent 14 years

U.S. Cl. D14—107



304,826

INTEGRATED CIRCUIT CARD WITH MAGNETIC READER STRIP AND KEYBOARD AND DISPLAY

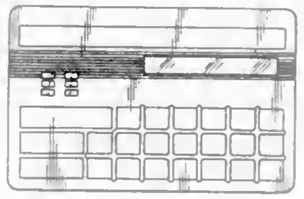
Shigeru Sutoh, Urawa, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Oct. 31, 1988, Ser. No. 264,520

Claims priority, application Japan, May 18, 1988, 63-19213

Term of patent 14 years

U.S. Cl. D14—117



304,827

IMAGE SCANNER

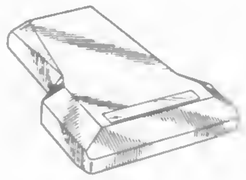
Mineo Kubota, Kofu, Japan, assignor to Nippon Seimitsu Kogyo Kabushiki Kaisha, Kofu, Japan

Filed Oct. 5, 1987, Ser. No. 104,495

Claims priority, application Japan, Apr. 4, 1987, 62-13206

Term of patent 14 years

U.S. Cl. D14—116



304,828

FACSIMILE TRANSCEIVER/RECEIVER

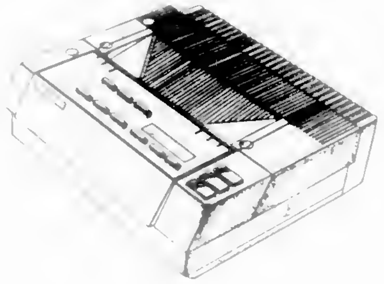
Hiroaki Watanabe, Tokyo, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Apr. 7, 1987, Ser. No. 35,291

Claims priority, application Japan, Oct. 7, 1986, 61-39692

Term of patent 14 years

U.S. Cl. D14—118



304,829

COMBINED COMPACT DISC PLAYER AND TAPE RECORDER

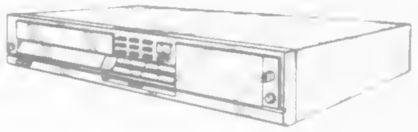
Masafumi Ito; Sigeru Hasegawa; Haruki Takita, and Minoru Snbe, all of Tokyo, Japan, assignors to Teac Corporation, Tokyo, Japan

Filed Jun. 18, 1986, Ser. No. 875,790

Claims priority, application Japan, Dec. 19, 1985, 60-52869

Term of patent 14 years

U.S. Cl. D14—135



304,830

MOBILE TELEPHONE SET

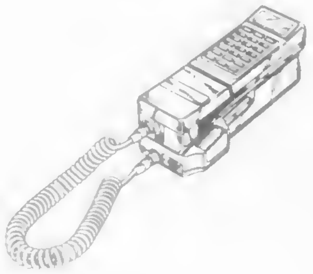
Shigeru Sutoh, Saitama, Japan, assignor to Kabushiki Kaisha Toshiba, Kanagawa, Japan

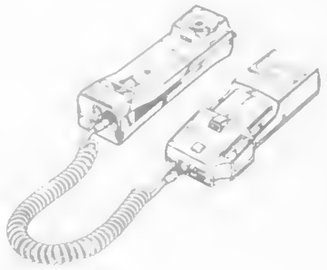
Filed Sep. 21, 1988, Ser. No. 247,323

Claims priority, application Japan, May 9, 1988, 63-17910

Term of patent 14 years

U.S. Cl. D14—138





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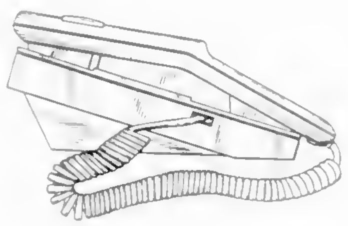
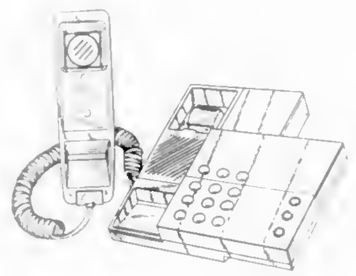
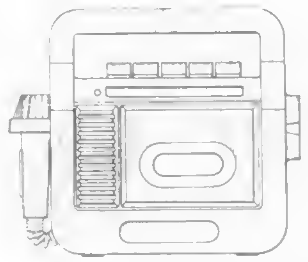
304,831
TELEPHONE SET
Ping Kwan Ng, Flat 1506, 15th Floor, Block N, Kornhill, No. 14, Hong On Street, Quarry Bay, Hong Kong
Filed Jan. 19, 1988, Ser. No. 145,778
Claims priority, application United Kingdom, Oct. 14, 1987, 1045613
Term of patent 14 years
U.S. Cl. D14—140

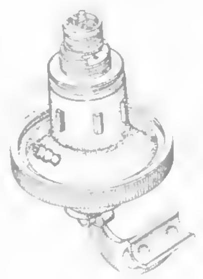




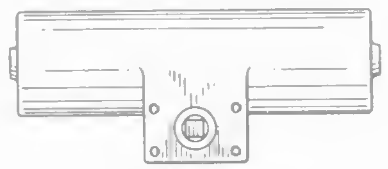
304,832
TAPE RECORDER
Patrick J. Murphy, East Aurora, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Sep. 29, 1987, Ser. No. 102,086
Term of patent 14 years
U.S. Cl. D14—165



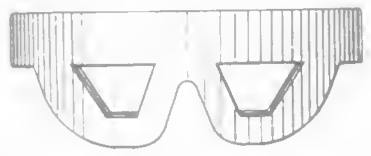
304,833
PISTON DIAPHRAGM PUMP FOR ATTACHMENT TO PRESSURIZED SPRAYER CONTAINERS
Pedro W. Luchsinger, Panamericana 445 Lagos de Moreno, C.P. 47400, Jalisco, Mexico
Filed Jun. 1, 1987, Ser. No. 56,529
Term of patent 14 years
U.S. Cl. D15—7



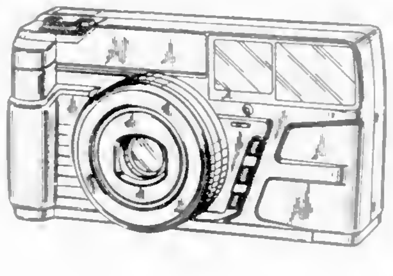
304,834
ROTARY ACTUATOR
Helmut Habicht, 15 Royal Park Ter., Hillsdale, N.J. 07642
Filed Jun. 16, 1986, Ser. No. 875,368
Term of patent 14 years
U.S. Cl. D15—148



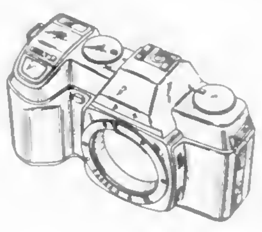
304,835
EYEGLASS FRAME
Robert A. Hodges, 320-178 Swanson, Saginaw, Mich. 48603
Filed Apr. 20, 1987, Ser. No. 40,863
Term of patent 14 years
U.S. Cl. D16—107



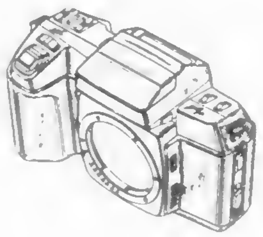
304,836
35 MM CAMERA
Susumu Koshino, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Jan. 8, 1987, Ser. No. 1,492
Claims priority, application Japan, Sep. 1, 1986, 61-34504
Term of patent 14 years
U.S. Cl. D16—209



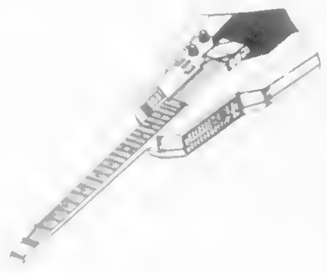
304,837
SINGLE-LENS REFLEX CAMERA BODY
Koki Onuma, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Jan. 8, 1987, Ser. No. 1,489
Claims priority, application Japan, Aug. 20, 1986, 61-32590
Term of patent 14 years
U.S. Cl. D16—217



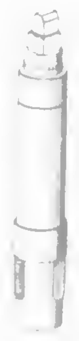
304,838
SINGLE-LENS REFLEX CAMERA BODY
Masato Yamamoto, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Jan. 8, 1987, Ser. No. 1,491
Claims priority, application Japan, Aug. 20, 1986, 61-32591
Term of patent 14 years
U.S. Cl. D16—217



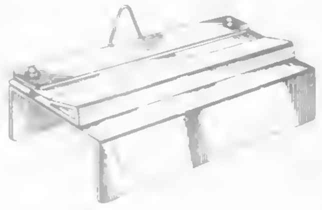
304,839
ELECTRONIC GUITAR
Yoshitaka Naito, Tachikawa, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan
Filed Jun. 4, 1987, Ser. No. 58,022
Term of patent 14 years
U.S. Cl. D17—14



304,840
MARKING PEN
Keiichi Mizutani, and Akira Ohashi, both of Nagoya, Japan, assignors to Shachihata Industrial Co., Ltd., Nagoya, Japan
Filed Jun. 24, 1986, Ser. No. 877,994
Claims priority, application Japan, Dec. 26, 1985, 60-54603
The portion of the term of this patent subsequent to May 23, 2003, has been disclaimed.
Term of patent 14 years
U.S. Cl. D19—43



304,841
LABEL PEELER
John S. Horger, 26285 Augusta Dr., Lake Arrowhead, Calif. 92352
Filed May 19, 1986, Ser. No. 864,945
Term of patent 14 years
U.S. Cl. D19—69



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304,842

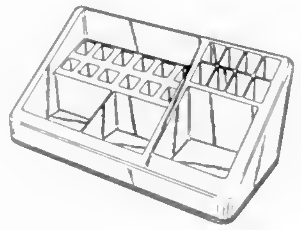
ORGANIZER TRAY

Reina A. Barone, Mill Valley, and Bruce W. Burtch, Sausalito, both of Calif., assignors to Burtch Barone, Inc., Sausalito, Calif.

Filed Nov. 20, 1986, Ser. No. 933,582

Term of patent 14 years

U.S. Cl. D19—75



304,843

SIMULATED GOLF GAME APPARATUS

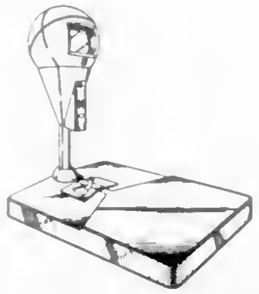
Peter S. Tonner, Saskatoon, Canada, assignor to Joytec Ltd., Burnaby, Canada

Filed May 13, 1986, Ser. No. 862,890

Claims priority, application Canada, Jan. 31, 1986, 31-01-86-1

Term of patent 14 years

U.S. Cl. D21—11



304,844

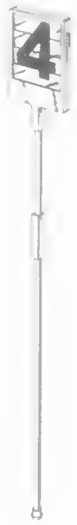
FOOTBALL DIGITAL DISPLAY MARKER OR SIMILAR ARTICLE

Robert L. Smith, 8409 Flora, Kansas City, Mo. 64131

Filed Nov. 20, 1986, Ser. No. 933,067

Term of patent 14 years

U.S. Cl. D10—46.1



304,845

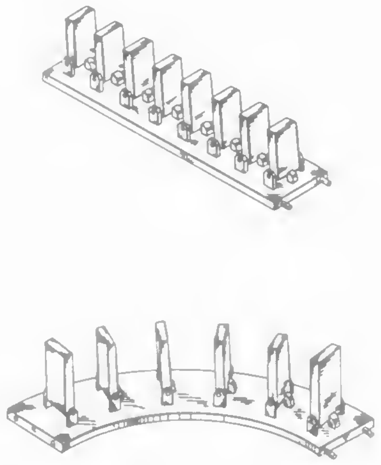
CONNECTABLE TOPPLING TOY

Philip R. Inglee, 13375 Braun Rd., Golden, Colo. 80401

Filed Jul. 7, 1986, Ser. No. 882,835

Term of patent 14 years

U.S. Cl. D21—59



304,846

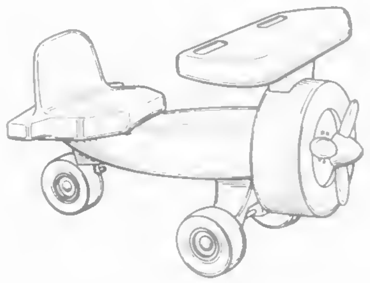
TOY RIDING AIRPLANE

Daniel G. Hahn, 1040 E. North Ave., Olney, Ill. 62450

Filed Dec. 15, 1986, Ser. No. 941,935

Term of patent 14 years

U.S. Cl. D21—77



304,847

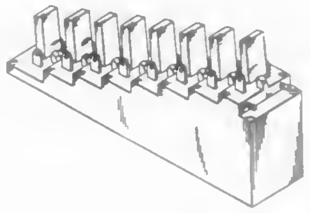
CONNECTABLE TOPPLING TOY

Philip R. Inglee, 13375 Braun Rd., Golden, Colo. 80401

Division of Ser. No. 882,835, Jul. 7, 1986. This application Apr. 17, 1989, Ser. No. 338,767

Term of patent 14 years

U.S. Cl. D21—59



304,848

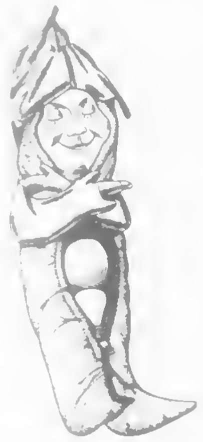
DOLL

Scott M. Dreicer, 8201 Shady Grove Rd., Jacksonville, Fla. 32216, and Morris Shriftman, 33 S. Hogan, Jacksonville, Fla. 32202

Filed Jul. 8, 1986, Ser. No. 883,269

Term of patent 14 years

U.S. Cl. D21—155



304,849

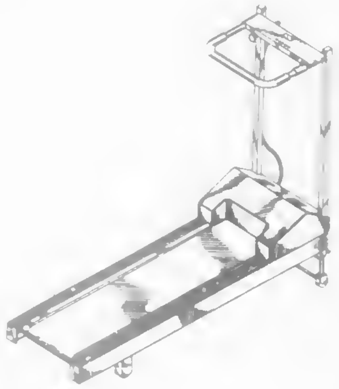
TREADMILL EXERCISER

Scott R. Watterson, River Heights, Utah, assignor to Weslo, Inc., Logan, Utah

Filed Dec. 29, 1986, Ser. No. 947,494

Term of patent 14 years

U.S. Cl. D21—192



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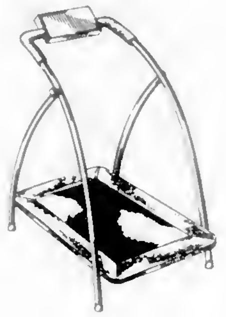
304,850
TRAMPOLINE EXERCISER

Arthur E. Chambers, 21421 North Seventh Ave., Phoenix, Ariz. 85027-2998

Filed Oct. 26, 1987, Ser. No. 112,435

Term of patent 14 years

U.S. Cl. D21—235



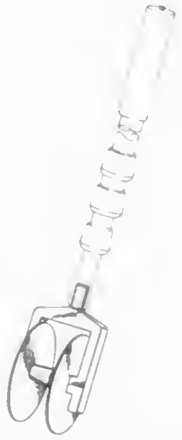
304,851
BALL RETRIEVER HEAD ASSEMBLY

Donald J. Allison, Manchester, and Rodney J. Spielman, Vernon, both of Conn., assignors to Golftech Inc., Ellington, Conn.

Filed Aug. 15, 1986, Ser. No. 896,876

Term of patent 14 years

U.S. Cl. D21—234



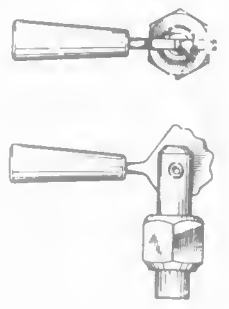
304,852
ACTUATOR HANDLE FOR PRESSURE SELECTING VALVE

McLane Tilton, Buellton, Calif., assignor to Tilton Engineering, Inc., Buellton, Calif.

Filed Jan. 31, 1986, Ser. No. 824,617

Term of patent 14 years

U.S. Cl. D23—252



304,853
FAUCET SPOUT

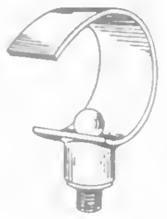
Edmond Pery, Blégny, Belgium, and Edmond Pery, Blégny, Belgium, assignors to Sunset Collection S.P.R.L., Blégny, Belgium

Filed Aug. 26, 1985, Ser. No. 769,096

Claims priority, application World Int. Prop. O., May 22, 1985, DM/005285

Term of patent 14 years

U.S. Cl. D23—257



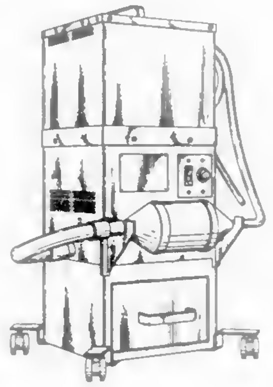
304,854
PORTABLE AIR FILTER

Wyman H. Stackhouse, Manhattan Beach, and Ian M. Williamson, Redondo Beach, both of Calif., assignors to Stackhouse Associates, El Segundo, Calif.

Filed Apr. 27, 1988, Ser. No. 187,075

Term of patent 14 years

U.S. Cl. D23—365



304,855
HEAT EXCHANGER

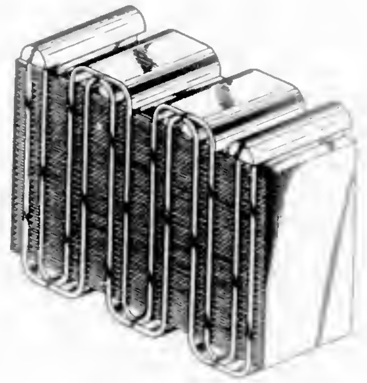
Hisao Aoki, Tamamura, Japan, assignor to Sanden Corporation, Gunma, Japan

Filed Aug. 19, 1985, Ser. No. 767,049

The portion of the term of this patent subsequent to Nov. 28, 2003, has been disclaimed.

Term of patent 14 years

U.S. Cl. D23—386



304,856
HEAT EXCHANGER

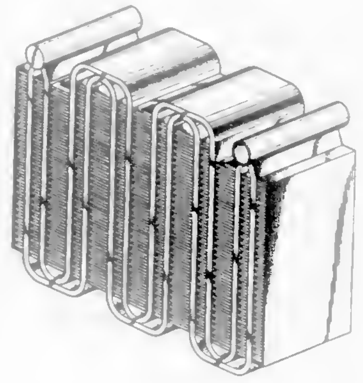
Hisao Aoki, Tamamura, Japan, assignor to Sanden Corporation, Gunma, Japan

Filed Aug. 19, 1985, Ser. No. 767,022

The portion of the term of this patent subsequent to Nov. 28, 2003, has been disclaimed.

Term of patent 14 years

U.S. Cl. D23—386



304,857
DISPENSING TOOL FOR DENTAL RETENTION PINS

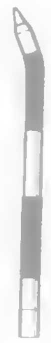
Harald E. Nordin, Villa Amphion, 1822 Chernex, Switzerland

Filed Nov. 9, 1987, Ser. No. 118,353

Claims priority, application Hague, May 15, 1987, DMA/000 626

Term of patent 14 years

U.S. Cl. D24—10



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304,858

COMBINED ROOT CANAL FILE AND GRIP HANDLE

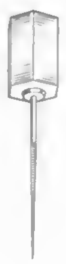
Klas Tofft, Lidingo, Sweden, assignor to AB John Sjoding, Sweden

Filed May 8, 1987, Ser. No. 47,067

Claims priority, application Sweden, Nov. 10, 1986, 86-2588

Term of patent 14 years

U.S. Cl. D24—10



304,859

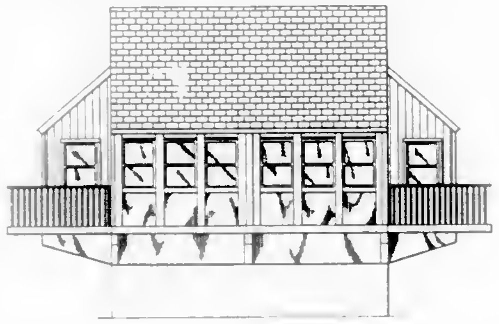
ONE STORY PEDESTAL DUPLEX

Bertram Zusman, 4112 Monticello Blvd., Youngstown, Ohio 44505

Filed Jul. 1, 1987, Ser. No. 68,402

Term of patent 14 years

U.S. Cl. D25—17



304,860

STREET-LAMP

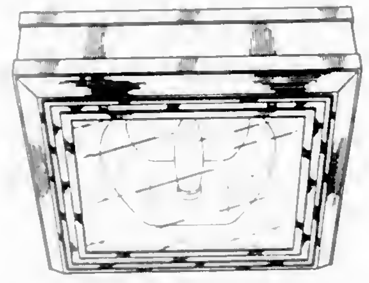
Nicolas O'Dohanue, Montreal, and Francois Lecuyer, Laval, both of Canada, assignors to Lumec, Inc., Boisbriand, Canada

Filed Jan. 8, 1987, Ser. No. 1,560

Claims priority, application Canada, Aug. 19, 1986, 19-08-86-13

Term of patent 14 years

U.S. Cl. D26—67



304,861

AUXILIARY HEADLAMP FOR MOTOR VEHICLES

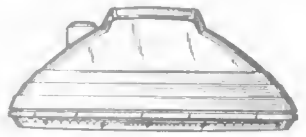
Gerd Schmidt, Veibert, Fed. Rep. of Germany, assignor to Hella KG Hueck & Co., Lippstadt, Fed. Rep. of Germany

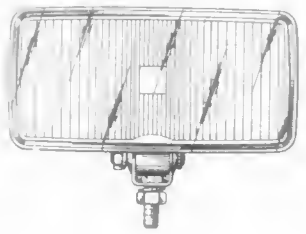
Filed Jan. 28, 1988, Ser. No. 149,195

Claims priority, application Fed. Rep. of Germany, Aug. 21, 1987, MR 586

Term of patent 14 years

U.S. Cl. D26—29





304,862

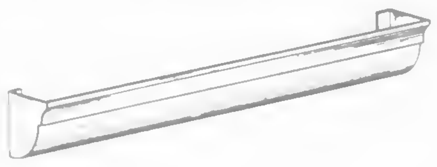
CORNICE LIGHTING REFLECTOR OR THE LIKE

Vince DiCola, Louisville, Ky., assignor to Thomas Industries Inc., Louisville, Ky.

Filed Jul. 6, 1987, Ser. No. 69,949

Term of patent 14 years

U.S. Cl. D26—76



304,863

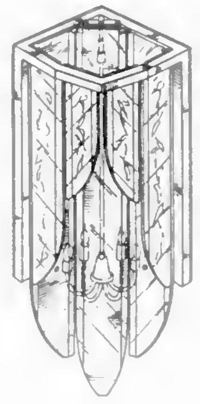
CORNER LIGHTING FIXTURE

Reynolds K. Ohai, 8135 Pinositas Rd., Whittier, Calif. 90605

Filed Apr. 6, 1987, Ser. No. 35,148

Term of patent 14 years

U.S. Cl. D26—85



304,864

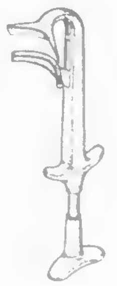
EYELASH CURLER

Robert F. Stein, 2476 Glencoe Ave., Venice, Calif. 90291

Filed Dec. 9, 1987, Ser. No. 132,052

Term of patent 14 years

U.S. Cl. D28—36



304,865

COMBINED ELECTRIC SHAVER AND BLADE COVER THEREFOR

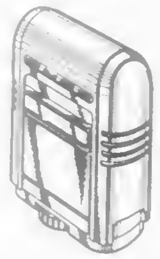
Shinji Yamamoto, and Masashi Nomura, both of Kadoma, Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

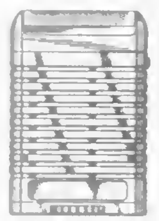
Filed Dec. 31, 1987, Ser. No. 140,316

Claims priority, application Japan, Jul. 15, 1987, 62-28782

Term of patent 14 years

U.S. Cl. D28—49





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304,866
ELECTRIC SHAVER

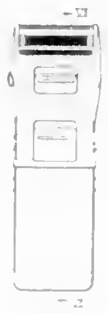
Kazuyoshi Yonezawa, **Kadoma, Japan,** and Florian Seiffert, Wiesbaden, Fed. **Rep. of Germany, assignors** to Matsushita Electric Works, **Ltd., Osaka, Japan**

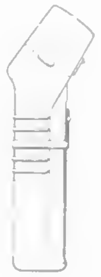
Filed **Aug. 4, 1987,** Ser. No. 81,172

Claims priority, **application Japan, Feb.** 16, 1987, 5694/1987

Term of patent 14 years

U.S. Cl. D28—49





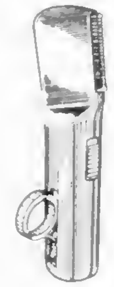
304,867
HAIR CLIPPER

Kiyoshi Okamoto, 2415 Van Ness Ave., #605, San Francisco, Calif. 94109

Filed Jun. 19, 1987, Ser. No. 63,858

Term of patent 14 years

U.S. Cl. D28—53



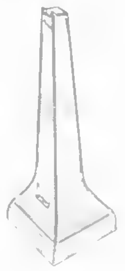
304,868
SAFETY RAZOR AND STAND

Paul Spencer, P.O. Box 2378, Gardena, Calif. 90247

Filed Sep. 23, 1985, Ser. No. 778,856

Term of patent 14 years

U.S. Cl. D28—73



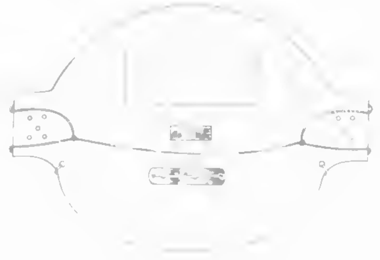
304,869
PROTECTIVE FACIAL MASK

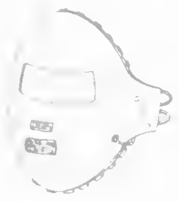
Connie Mattox, Rte. 3, Box 270, Buffalo, Mo. 65622

Filed Dec. 1, 1987, Ser. No. 129,071

Term of patent 14 years

U.S. Cl. D29—8





304,870
TRAY FOR HOLDING AQUATIC ORGANISMS OR THE LIKE

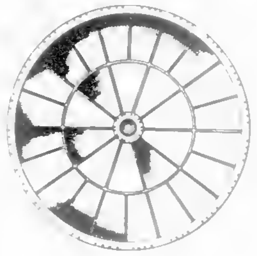
Edgar G. Mason, **Crapaud, Canada, assignor** to Marine Lobster Farms Ltd., **Canada**

Filed **Jun. 25, 1986,** Ser. No. 878,494

Claims priority, **application Canada, Jan.** 9, 1986, 09-01-86-8

Term of patent 14 years

U.S. Cl. D30—115



304,871
COMBINED RECHARGEABLE VACUUM CLEANER AND CHARGER

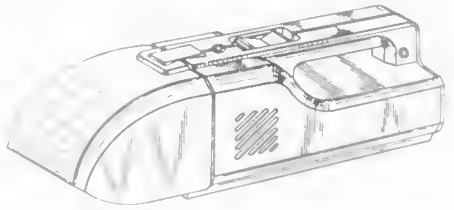
John S. Yuen, Kowloon, **Hong Kong, assignor** to John Manufacturing Limited, Kowloon, Hong Kong

Filed **Oct. 31, 1986,** Ser. No. 925,661

Claims priority, **application** United Kingdom, May 2, 1986, 1033849

Term of patent 14 years

U.S. Cl. D32—18



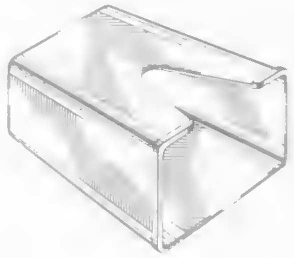
304,872
TRASH FUNNEL

Richard P. Jebb, P.O. Box 518, **Hawthorne, Fla.** 32640

Filed Sep. 8, 1987, Ser. No. 94,103

Term of patent 14 years

U.S. Cl. D34—1



304,873
RECYCLING CONTAINER

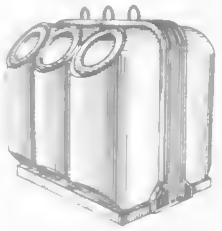
Lothar **Ruehland, Grasgarten** 34, 3304 Wendeburg/Bortfeld, Fed. Rep. of Germany

Filed Nov. 18, 1987, Ser. No. 122,883

Claims priority, **application Fed. Rep. of Germany,** May 18, 1987, 36 MR 1394; Oct. 6, 1987, 36 MR 1412; Oct. 6, 1987, 36 MR 1411

Term of patent 14 years

U.S. Cl. D34—5



304,874
FACSIMILE TRANSCEIVER

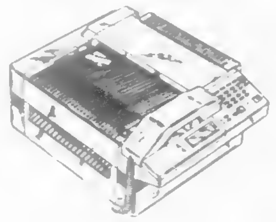
Masahito **Saegusa,** Mitaka; **Kazunori Hashimoto,** Tachikawa; Yoshihiro **Kawakatsu, Sayama; Katsubumi** Ohuchi, **Chigasaki;** Hiroshi Endo, and **Masaki** Sato, both of Yokohama, **all of Japan, assignors to Hitachi, Ltd.,** Tokyo, Japan

Filed Jan. 23, 1987, Ser. No. 6,598

Claims priority, **application Japan, Jul.** 25, 1986, 61-28944

Term of patent 14 years

U.S. Cl. D14—118



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LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 28TH DAY OF NOVEMBER, 1989

NOTE —Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

- A-Dec, Inc.: *See—*
  - Austin, George K., Jr.; and Parlier, Mathew H., 4,883,316, Cl. 297-191.000.
- A&M Cousin: *See—*
  - Pipon, Yves; and Chales, Bernard, 4,882,943, Cl. 74-409.000.
- Abatement Technologies, Inc.: *See—*
  - Flannery, Gene; Crouse, T. Blair; and Patterson, Wesley L., 4,883,329, Cl. 312-1.000.
- ABB Cerama AB: *See—*
  - Adlerborn, Jan; Larker, Hans; and Nilsson, Jan, 4,883,639, Cl. 419-49.000.
- Abbing, Andreas; Bertling, Hannes; Kehl, George; Mergenthaler, Robert; Rischen, Dietmar; Schafer, Ernst-Dieter; Schmitt, Edgar; and Siegel, Heinz, to Robert Bosch GmbH. Brake booster. 4,882,976, Cl. 91-376.00R.
- Abbott Laboratories: *See—*
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- Abboud, George E.; Such, Christopher H.; Horley, Susan M.; and Waters, Julian A., to Imperial Chemical Industries PLC. Methacryloxy-containing compounds. 4,883,873, Cl. 544-316.000.
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- Abe, Masahiko: *See—*
  - Agui, Wataru; Tamura, Shuji; Kuyama, Hiroshi; Kurachi, Yoshiya; Abe, Masahiko; Kaneko, Yukihiro; and Ogino, Keizo, 4,883,596, Cl. 210-638.000.
- Abe, Masayuki: *See—*
  - Ueda, Masanori; Abe, Masayuki; Shitani, Kensai; Yoshimoto, Tetsuo; Yamamoto, Hiroki; and Kurosawa, Fumio, 4,883,544, Cl. 148-2.000.
- Abe, Norimoto: *See—*
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- Abe, Shinya: *See—*
  - Nakamoto, Kouji; Suzuki, Takeshi; Abe, Shinya; Hayashi, Kenji; Kajiwara, Akiharu; Yamatsu, Isao; Otsuka, Issei; and Shiojiri, Hiroyuki, 4,883,916, Cl. 564-186.000.
- Abe, Tomiya; Shimazaki, Yukio; Ishibashi, Takanobu; Abe, Norimoto; Asai, Takayasu; and Taketani, Noriaki, to Hitachi Cable, Ltd. & Hitachi, Ltd. Synthetic resin optical fiber. 4,883,338, Cl. 350-96.340.
- Abe, Yoshihito; Yaginuma, Katsuhiro; Nagasawa, Takeshi; and Kuroiwa, Katsumasa, to Nitto Boseki Co., Ltd. Tripeptide derivatives and antiplasmin agents containing the same. 4,883,863, Cl. 530-331.000.
- Abele, Berthold W., to KSA Dichtsysteme GmbH & Co. KG. Apparatus for sealing conjoined conductors of cables. 4,883,919, Cl. 174-93.000.
- Abou-Gharbia, Magid A., to American Home Products Corporation. Antipsychotic imides. 4,883,875, Cl. 546-16.000.
- Acquaro, William D. Cargo trailer safety lock. 4,883,393, Cl. 410-52.000.
- Acumeter Laboratories, Inc.: *See—*
  - McIntyre, Frederic S., 4,883,691, Cl. 427-434.200.
- Adachi, Mitsuhiro, to Tachikawa Spring Co., Ltd. Vehicle seat. 4,883,318, Cl. 297-234.000.
- Adamson, Arthur P.; and Gliebe, Philip R., to General Electric Company. Aircraft propeller noise reduction. 4,883,240, Cl. 244-69.000.
- Adi Diagnostics Inc.: *See—*
  - Heelies, Donald R., 4,883,760, Cl. 435-296.000.
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  - Harp, James J.; and Molten, Robert, 4,883,140, Cl. 180-116.000.
- Advanced Extraction Technologies, Inc.: *See—*
  - Mehra, Yuv R., 4,883,514, Cl. 62-17.000.
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- Advanced Medical Technologies Inc.: *See—*
  - Lindmayer, Istvan, 4,883,483, Cl. 604-411.000.
- Advanced Micro Devices, Inc.: *See—*
  - Dixit, Pankaj; Sliwa, Jack; Klein, Richard K.; Sander, Craig S., and Farnaam, Mohammad, 4,884,123, Cl. 357-71.000.
  - Kong, Samuel K.; Jiang, William Y.; and Chan, Wallace C. W., 4,884,165, Cl. 361-98.000.
- Advanced Technology Laboratories, Inc.: *See—*
  - Stedman, David; and Harui, Norio, 4,883,059, Cl. 128-660.010.
- Aerojet-General Corporation: *See—*
  - Schoenman, Leonard, 4,882,904, Cl. 60-258.000.
- Aerotech, Inc.: *See—*
  - Aiello, Michael E., 4,884,016, Cl 318-685.000.
- AFA Products, Inc.: *See—*
  - Maas, Joseph W. J., 4,883,227, Cl. 239-120.000.
- Agfa-Gevaert Aktiengesellschaft: *See—*
  - Pertzsch, Albert; Brunner, Hubert; and Zeroni, Ludwig, 4,884,158. Cl. 360-132.000.
  - Thiele, Hartmut; and Mauser, Heinz, 4,883,175, Cl. 206-387.000.
- AGFA-Gevaert Aktiengessellschaft: *See—*
  - Kampfer, Helmut; and Himmelmann, Wolfgang, 4,883,880, Cl 546-347.000.
  - Thiele, Hartmut; and Toral, Jose , 4,883,178, Cl. 206-391.000.
- Agnew, Palmer W.; Clayton, Neil H.; Judkovics, Monroe; Rivero, Jose L.; and Sun, Kuo-chang, to International Business Machines Corporation. Knowledge system with improved request processing. 4,884,218, Cl. 364-513.000.
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- Agrawal, Anant: *See—*
  - Garnei, Robert B.; and Agrawal, Anant, 4,884,198, Cl. 364-200.000.
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  - Makishima, Tatsuo; Hirai, Tadaaki; Tsuji, Kazutaka; Ishioka, Sachio; Yamashita, Takashi; Shidara, Keiichi; Yamazaki, Junichi; and Aiba, Masaaki, 4,884,011, Cl. 315-368.000.
- Aiello, Michael E., to Aerotech, Inc. Closed loop torque angle control of synchronous motor. 4,884,016, Cl. 318-685.000.
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- Aiga, Hiroshi: *See—*
  - Takuma, Keisuke; Kuroda, Sizuo; Oyama, Tsukasa; and Aiga, Hiroshi, 4,883,611, Cl. 552-235.000.
- Aiga, Tadao; and Kimura, Masoyoshi, to Kureha Chemical Industry Co., Limited. Method of arranging a form of processed meat 4,883,677, Cl. 426-420.000.
- Aiki, Kunio: *See—*
  - Ishii, Satoru; Nemoto, Tugio; and Aiki, Kunio, 4,883,342, Cl. 350-320.000.
- Air Products and Chemicals, Inc.: *See—*
  - Agrawa, Rakesh; Auvil, Steven R.; and Wilson, Keith B., 4,883,519, Cl. 62-39.000.
- Airtech Company, Inc.: *See—*
  - Schmoeger, Duane A., 4,882,992, Cl. 101-424.100.
- Aisan Kogyo Kabushiki: *See—*
  - Eitoku, Kenji; Tateishi, Mamoru; and Hayashi, Kenji, 4,884,052, Cl 338-202.000.
- Aisin Seiki Kabushiki Kaisha: *See—*
  - Asada, Toru; Komuro, Kenichi; Fukumoto, Ryoichi; and Torii, Nozomu, 4,884,207, Cl. 364-431.030.
  - Kobayashi, Toshimitsu; Inagaki, Akio; Kobayashi, Yasuhiro; Mori, Masanori; and Sakakibara, Takashi, 4,883,448, Cl. 474-260.000.
  - Mochizuki, Masahiro, 4,883,041, Cl. 123-564.000.
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- Akahori, Takashi: *See—*
  - Takahashi, Junichi; Kosaka, Daisuke; Eguchi, Hirotoshi; Matsumoto, Shoji; Akahori, Takashi; Yamazaki, Hiroshi; and Izumi, Kouji, 4,884,051, Cl. 338-4.000.
- Akebono Brake Industry Co., Ltd.: *See—*
  - Shimanuki, Haruki; Maki, Takao; and Takahashi, Yoshio, 4,883,325, Cl. 303-96.000.
- Akerlund & Rausing Licens AB: *See—*
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- Akers, Charles K.: *See—*
  - Schneeberger, Richard F.; and Akers, Charles K., 4,884,076, Cl. 342-5.000.
- Akeson, Richard C.: *See—*
  - Nagy, Gabor S.; Akeson, Richard C.; Sweenie, Richard E.; Novak, Mark E.; Malsch, Harry K.; Widule, Thomas J.; Ding, Gustav L. P.; and Jackson, Jared K., 4,882,930, Cl. 73-56.000.
- Akiyama, Tatsuhiko: *See—*
  - Mori, Ryuichiro; Akiyama, Tatsuhiko; and Fukudome, Katsuyuki, 4,884,124, Cl. 357-72.000.
- Akiyama, Toshiyuki: *See—*
  - Ozawa, Naoki; Akiyama, Toshiyuki; Takahashi, Kenji; Mimura, Itaru; and Nakano, Takahiro, 4,884,129, Cl. 358-44.000.
- Akiyama, Yoshikazu: *See—*
  - Ishida, Mamoru; Inaki, Shunichi; Akiyama, Yoshikazu; and Kohata, Mitsuhiro, 4,883,766, Cl. 437-40.000.
- Akiyoshi, Mitsuo: *See—*
  - Takano, Teruhisa; Yamasaki, Takahiko; and Akiyoshi, Mitsuo, 4,883,944, Cl. 219-492.000.
- Akzo America Inc.: *See—*
  - Hardy, Thomas A.; and Walsh, Edward N., 4,883,891, Cl. 558-161.000.
  - Hardy, Thomas A.; and Walsh, Edward N., 4,883,892, Cl. 558-164.000.
- ALbert Einstein College of Medicine - of Yeshiva University: *See—*
  - Bhargava, Kuldeep K.; Chervu, Lakshman R.; and Blaufox, M. Donald, 4,883,650, Cl. 424-1.100.
  - Chervu, Lakshman R.; Bhargava, Kuldeep K.; and Blaufox, M. Donald, 4,883,862, Cl. 530-331.000.
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  - Fitzgerald, Patrick H.; Rao, Nandakumar S.; Vinod, Yashavant; V.; and Alender, Jeffrey R., 4,883,839, Cl. 525-136.000.
- Alesch, Edward A.: *See—*
  - Valentino, Frank; Betts, David E.; and Alesch, Edward A., 4,883,361, Cl 366-97.000.
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- Alfred Teves GmbH: *See—*
  - Burgdorf, Jochen; and Weize, Lutz, 4,883,328, Cl. 303-116.000.
- Allen, Gene E.: *See—*
  - Challoner, A. Dorian; von der Embse, U. A.; Mitchell, Mark P.; Chang, Donald C. D.; Fowell, Richard A.; Huang, Ken Y.; Hayden, Joseph H.; and Allen, Gene E., 4,883,244, Cl. 244-171.000.
- Allen, Henry V.: *See—*
  - Ingle, Lloyd D.; Allen, Henry V.; and Knutti, James W., 4,884,223, Cl. 364-550.000.
- Allen, Robert H.: *See—*
  - Gautreaux, Marcelian F.; and Allen, Robert H., 4,883,687, Cl. 427-213.000.
- Alley, Ralph D.: *See—*
  - Sheridan, David S.; and Alley, Ralph D., 4,883,474, Cl. 604-280.000.
- Allied-Signal Inc.: *See—*
  - Harpell, G. A.; Li, H. L.; Kwon, Y. D.; and Prevorsek, D. C., 4,883,700, Cl. 428-113.000.
  - Kwon, Young D.; Kavesh, Sheldon; and Prevorsek, Dusan C., 4,883,628, Cl. 264-178.00F.
  - Tsang, Peter; Rhee, Seong; Jacko, Michael; and Kubik, James, 4,883,023, Cl. 123-25.00A.
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- Alps Electric Co., Ltd.: *See—*
  - Ide, Jun, 4,884,152, Cl. 360-78.140.
  - Teshirogi, Toshiyuki, 4,883,343, Cl. 350-338.000.
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- Yamada, Masayuki. Trill mechanism for wind instrumentml4,882,968, Cl. 84-384.000.
- Yamada, Noriyuki: *See—*
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- Yamaoka, Kojiro; Azuma, Toshiro; Fujisaki, Koichiro; and Okada, Hideaki, to Kanzaki Kokyukoki Mfg. Co. Ltd. Power transmission mechanism for tractorml4,882,940, Cl. 74-15.661.
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- Yang, Nien-chu C., to University of Chicago. Chemiluminescent compoundsml4,883,898, Cl. 558-427.000.
- Yano, Kenichi; Midorikawa, Hiroshi; Kamei, Toshiaki; and Shizume, Takeharu, to Kajima Corporation; and Kayaba Industry Co., Ltd Vibration-proof and earthquake-immue mount systemml4,883,250, Cl. 248-638.000.
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Nagae, Yoshiharu; Isogai, Masato; Kawakami, Hideaki; and Nakano, Fumio, to Hitachi, Ltd. Method for driving liquid crystal element employing ferroelectric liquid crystalmlRe. 33,120, Cl. 350-350.00S.
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Smith, William T., to Motor Wheel Corporation. Rim assemblymlB1 4,574,859, 11-28-89, Cl. 152-410.000.
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607	4,882,795
CLASS 5	
8	4,882,796
66	4,882,797
89	4,882,798
100	4,882,799
451	4,882,800
CLASS 8	
115.6	4,883,495
476	4,883,496
CLASS 15	
23	4,882,801
144 R	4,882,802
167.1	4,882,803
244.1	4,882,804
CLASS 16	
93 R	4,882,805
198	4,882,806
225	4,882,807
240	4,882,808
384	4,882,809
CLASS 17	
11	4,882,810
58	4,882,811
CLASS 19	
112	4,882,812
CLASS 24	
16 PB	4,882,813
20 R	4,882,814
303	4,882,815
555	4,882,816
707.6	4,882,817
CLASS 26	
15 R	4,882,818
18.6	4,882,819
93	4,882,820
CLASS 27	
17	4,882,821
CLASS 29	
1.22	4,882,822
6.1	4,882,823
33.2	4,882,824
156.4 R	4,882,825
251	4,882,829
421.1	4,882,830
527.1	4,882,826
527.2	4,882,827
527.5	4,882,831
596	4,882,832
	4,882,833
605	4,882,834
622	4,882,835
623.1	4,882,828
623.5	4,883,497
719	4,882,836
	4,882,837
829	4,882,838
853	4,882,839
857	4,882,842
CLASS 30	
43.6	4,882,840
125	4,882,841
276	4,882,843
381	4,882,844
CLASS 33	
328	4,882,845
464	4,882,846
503	4,882,847
559	4,882,848
567	4,882,849
760	4,882,850
CLASS 34	
41	4,882,852
60	4,882,851
68	4,882,853
115	4,882,854
116	4,882,855
CLASS 36	
43	4,882,856
120	4,882,857
131	4,882,858
CLASS 37	
187	4,882,859
191 A	4,882,860
CLASS 40	
299	4,882,861
324	4,882,862
352	4,882,863
359	4,882,864
442	4,882,865
611	4,882,866
625	4,882,867
657	4,882,868
CLASS 42	
94	4,882,869
CLASS 43	
9.1	4,882,870
53.5	4,882,871
55	4,882,872
132.1	4,882,873
CLASS 44	
532	4,883,498
CLASS 47	
1.5	4,882,874
79	4,882,875
CLASS 48	
203	4,883,499
CLASS 49	
141	4,882,876
506	4,882,877
CLASS 51	
206 R	4,882,878
298	4,883,500
309	4,883,501
	4,883,502
337	4,882,879
358	4,882,880
426	4,882,881
CLASS 52	
21	4,882,882
79.1	4,882,883
82	4,882,884
126.6	4,882,887
220	4,883,503
221	4,882,885
232	4,882,886
309.9	4,882,888
336	4,882,889
396	4,882,890
742	4,882,891
CLASS 53	
176	4,882,892
449	4,882,893
461	4,882,894
531	4,882,895
CLASS 55	
67	4,883,504
84	4,883,505
96	4,883,506
97	4,883,507
322	4,883,508
326	4,883,509
	4,883,510
355	4,883,511
356	4,883,512
385.2	4,883,513
CLASS 56	
10.5	4,882,896
11.3	4,882,897
208	4,882,898
220	4,882,899
377	4,882,900
CLASS 59	
84	4,882,901
CLASS 60	
39.182	4,882,903
39.75	4,882,902
258	4,882,904
299	Re.33,118
608	4,882,905
624	4,882,906
649	4,882,907
CLASS 62	
17	4,883,514
	4,883,515
22	4,883,516
	4,883,517
38	4,883,518
39	4,883,519
155	4,882,908
209	4,882,909
256	4,882,910
288	4,882,911
297	4,882,912
409	4,882,913
457.4	4,882,914
542	4,883,520
CLASS 63	
19	4,882,915
CLASS 65	
17	4,883,521
18.4	4,883,522
30.14	4,883,523
37	4,883,524
	4,883,525
104	4,883,526
273	4,883,527
275	4,883,528
281	4,883,529
CLASS 66	
163	4,882,916
CLASS 68	
17 A	4,882,917
CLASS 70	
54	4,882,918
208	4,882,919
209	4,882,920
232	4,882,921
CLASS 71	
36	4,883,530
CLASS 72	
243	4,882,922
249	4,882,923
254	4,882,924
356	4,882,925
469	4,882,926
CLASS 73	
1 R	4,882,927
9	4,883,531
19	4,882,928
49.2	4,882,929
56	4,882,930
189	4,882,931
457	4,882,932
517 R	4,882,933
861.04	4,882,934
861.38	4,882,935
862.36	4,882,936
862.67	4,882,937
863.91	4,882,938
864.03	4,882,939
CLASS 74	
15.166	4,882,940
104	4,882,942
409	4,882,943
574	4,882,944
594.3	4,882,945
594.6	4,882,946
687	4,882,947
690	4,882,948
714	4,882,949
	4,882,950
745	4,882,951
867	4,882,952
CLASS 75	
101 R	4,883,532
CLASS 76	
83	4,882,953
CLASS 81	
15.9	4,882,954
20	4,882,955
	4,882,956
121.1	4,882,957
124.4	4,882,958
416	4,882,959
488	4,882,960
CLASS 83	
177	4,882,961
812	4,882,962
CLASS 84	
1.01	4,882,963
1.16	4,882,965
94.2	4,882,966
313	4,882,967
384	4,882,968
487	4,882,969
611	4,882,964
CLASS 89	
1.41	4,882,973
1.55	4,882,970
33.02	4,882,971
34	4,882,972
41.16	4,882,974
CLASS 91	
376 R	4,882,975
	4,882,976
CLASS 92	
5 R	4,882,977
33	4,882,979
34	4,882,978
48	4,882,980
CLASS 99	
295	4,882,982
	4,882,983
404	4,882,984
426	4,882,985
479	4,882,981
494	4,882,986
CLASS 101	
13.04	4,882,987
232	4,882,988
235	4,882,989
348	4,882,990
350	4,882,991
424.1	4,882,992
CLASS 102	
218	4,882,993
290	4,882,994
371	4,882,995
496	4,882,996
503	4,882,997
CLASS 104	
112	4,882,998
281	4,882,999
CLASS 105	
4.4	4,883,000
CLASS 106	
18.14	4,883,533
35	4,883,534
93	4,883,535
194	4,883,536
	4,883,537
287.13	4,883,538
417	4,883,539
CLASS 108	
90	4,883,001
CLASS 110	
173 R	4,883,002
212	4,883,003
343	4,883,004
CLASS 112	
63	4,883,005
121.12	4,883,006
226	4,883,007
262.1	4,883,008
266.1	4,883,009
288	4,883,010
CLASS 114	
39.1	4,883,011
61	4,883,012
219	4,883,013
263	4,883,014
272	4,883,015
363	4,883.016
CLASS 118	
653	4,883,017
660	4,883,018
691	4,883,019
719	4,883,020
CLASS 119	
1	4,883,021
73	4,883,022
CLASS 122	
383	4,883,036
CLASS 123	
25 A	4,883,023
41.7	4,883,024
90.11	4,883,025
90.16	4,883,026
	4,883,027
179 B	4,883,028
193 CH	4,883,030
193 P	4,883,029
195 C	4,883,031
276	4,883,032
335	4,883,033
339	4,883,034
361	4,883,035
399	4,883,037
436	4,883,038
463	4,883,039
557	4,883,040
564	4,883,041
CLASS 124	
67	4,883,042
CLASS 126	
512	4,883,043
515	4,883,044
CLASS 128	
24 A	4,883,045
25 R	4,883,046
38	4,883,047
92 VD	4,883,048
202.22	4,883,049
202.27	4,883,050
204.21	4,883,051
205.27	4,883,052
303 B	4,883,053
303.1	4,883,054
631	4,883,057
633	4,883,055
645	4,883,056
654	4,883,058
660.01	4,883,059
	4,883,060
665	4,883,061
667	4,883,062
670	4,883,063
696	4,883,064
711	4,883,065
732	4,883,067
760	4,883,068
774	4,883,066
782	4,883,069
785	4,883,070
837	4,883,071
857	4,883,072
878	4,883,073
CLASS 131	
84.1	4,883,074
84.4	4,883,075
	4,883,076
108	4,883,077
280	4,883,078
CLASS 132	
318	4,883,079
322	4,883,080
CLASS 134	
1	4,883,540
3	4,883,541
21	4,883,542
CLASS 137	
39	4,883,081
62	4,883,082
110	4,883,083
118	4,883,084
315	4,883,085
399	4,883,086
458	4,883,087
510	4,883,088
596.18	4,883,089
625.41	4,883,090
625.64	4,883,091
625.65	4,883,092
CLASS 138	
45	4,883,093
89	4,883,094
CLASS 139	
91	4,883,095
383 A	4,883,096
	4,883,097
439	4,883,098
CLASS 141	
1	4,883,099
	4,883,100
27	4,883,101
98	4,883,102
368	4,883,103
CLASS 148	
2	4,883,544
12 B	4,883,545
CLASS 152	
210	4,883,104
410	B1 4,574,859
416	4,883,105
417	4,883,106
431	4,883,107
531	4,883,108
CLASS 156	
62.2	4,883,546
73.4	4,883,547
99	4,883,548
161	4,883,549
171	4,883,550
178	4,883,551
180	4,883,552
193	4,883,553
219	4,883,554
227	4,883,555
273.3	4,883,556
287	4,883,557
292	4,883,558
603	4,883,559
626	4,883,560
633	4,883,561
643	4,883,562
645	4,883,563
CLASS 160	
32	4,883,109
CLASS 162	
112	4,883,564
CLASS 164	
249	4,883,110
428	4,883,113
436	4,883,111
459	4,883,112
478	4,883,114
CLASS 165	
1	4,883,115
104.26	4,883,116
164	4,883,117
CLASS 166	
55.3	4,883,118
72	4,883,119
98	4,883,120

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217	4,883,121
263	4,883,122
264	4,883,123
291	4,883,125
307	4,883,124

CLASS 172

26	4,883,126
126	4,883,127
430	4,883,128
777	4,883,129

CLASS 173

12	4,883,130

CLASS 174

1	4,883,918
48	4,883,924
68.5	4,883,920
84 R	4,883,925
87	4,883,921
93	4,883,919
125.1	4,883,922
158 F	4,883,923

CLASS 175

44	4,883,131
65	4,883,132
93	4,883,133
96	4,883,134
323	4,883,135
339	4,883,136

CLASS 178

18	4,883,926

CLASS 180

6.34	4,883,137
68.6	4,883,139
116	4,883,140
243	4,883,141
245	4,883,142
249	4,883,138

CLASS 181

198	4,883,144
286	4,883,143

CLASS 182

2	4,883,145
5	4,883,146
179	4,883,147

CLASS 184

6.4	4,883,148

CLASS 188

264 E	4,883,149
289	4,883,150

CLASS 192

4 A	4,883,151
42	4,883,152
45.1	4,882,941
70.27	4,883,153
98	4,883,154
	4,883,155
106.2	4,883,156

CLASS 193

34	4,883,157

CLASS 194

217	4,883,158

CLASS 198

328	4,883,160
347	4,883,161
374	4,883,162
460	4,883,163
468.4	4,883,164
626	4,883,159
682	4,883,165
688.1	4,883,166
712	4,883,167

CLASS 2.3

20	4,883,488

CLASS 200

5 R	4,883,929
50 C	4,883,927
81.9 M	4,883,928
148 F	4,883,930
148 R	4,883,931
339	4,883,932

CLASS 204

1 T	4,883,566
39	4,883,567
129.43	4,883,568
157.74	4,883,569
164	4,883,570
180.2	4,883,565
180.6	4,883,571
181 F	4,883,572
182.4	4,883,573
192.15	4,883,574
198	4,883,575
224 M	4,883,576
299 R	4,883,577
300 EC	4,883,578
403	4,883,579

CLASS 206

152	4,883,168
170	4,883,169
315.1	4,883,170
315.11	4,883,171
328	4,883,172
366	4,883,173
378	4,883,174
387	4,883,175
	4,883,176
391	4,883,177
	4,883,178
523	4,883,179
534	4,883,180
	4,883,182

CLASS 208

48 AA	4,883,580
48 R	4,883,581
106	4,883,582
113	4,883,583

CLASS 209

38	4,883,584
166	4,883,585
167	4,883,586
534	4,883,181
	4,883,183

CLASS 210

94	4,883,587
117	4,883,588
140	4,883,589
164	4,883,590
223	4,883,591
227	4,883,592
500.32	4,883,593
603	4,883,594
634	4,883,595
638	4,883,596
640	4,883,597
656	4,883,598
670	4,883,599
696	4,883,600
710	4,883,601
776	4,883,602
802	4,883,603

CLASS 212

146	4,883,184
147	4,883,185
184	4,883,186

CLASS 215

1 R	4,883,187
12.1	4,883,188

CLASS 219

10.55 E	4,883,935
10.55 F	4,883,936
69.12	4,883,933
	4,883,934
121.64	4,883,937
124.34	4,883,938
125.1	4,883,939
203	4,883,940
216	4,883,941
227	4,883,942
306	4,883,943
492	4,883,944
523	4,883,946
541	4,883,945
553	4,883,947

CLASS 220

1 T	4,883,189
66	4,883,190
83	4,883,191
85 SP	4,883,192
266	4,883,193
307	4,883,194
339	4,883,195
415	4,883,196

CLASS 221

26	4,883,197

CLASS 222

1	4,883,198
14	4,883,199
77	4,883,200
105	4,883,201
109	4,883,202
143	4,883,203
192	4,883,204

CLASS 224

32 R	4,883,205
153	4,883,206
	4,883,207
316	4,883,208

CLASS 226

92	4,883,209
100	4,883,210

CLASS 227

9	4,883,211
	4,883,212
10	4,883,213

CLASS 228

9	4,883,214
116	4,883,215
119	4,883,216
122	4,883,217
	4,883,218
190	4,883,219

CLASS 229

69	4,883,220
143	4,883,221
160.2	4,883,222

CLASS 232

35	4,883,223
43.1	4,883,224

CLASS 235

382	4,883,948
440	4,883,950
449	4,883,949

CLASS 236

34.5	4,883,225

CLASS 237

12.3 C	4,883,226

CLASS 239

120	4,883,227
279	4,883,228
587	4,883,229

CLASS 242

25 R	4,883,230
35.5 A	4,883,231
55.2	4,883,232
66	4,883,233
67.3 R	4,883,234
71.1	4,883,235
	4,883,236
83	4,883,237
317	4,883,238

CLASS 244

3.15	4,883,239
69	4,883,240
114 R	4,883,241
118.5	4,883,242
122 R	4,883,243
171	4,883,244

CLASS 246

2 R	4,883,245

CLASS 248

165	4,883,246
542	4,883,247
550	4,883,248
566	4,883,249
638	4,883,250

CLASS 249

53 R	4,883,251

CLASS 250

201	4,883,951
225	4,883,952
226	4,883,953
227	4,883,954
231 SE	4,883,955
269	4,883,956
283	4,883,957
288	4,883,958
306	4,883,959
327.2	4,883,960
	4,883,961
334	4,883,962
339	4,883,963
341	4,883,964
	4,883,965
363.02	4,883,966
370.01	4,883,967
423 R	4,883,968
427	4,883,969
483.1	4,883,970
495.1	4,883,971
575	4,883,972

CLASS 251

129.18	4,883,252
315	4,883,253
335.2	4,883,254

CLASS 252

8.551	4,883,605
8.9	4,883,604
32.5	4,883,606
174.18	4,883,607
189	4,883,608
299.61	4,883,609
559	4,883,610

CLASS 254

266	4,883,255

CLASS 256

22	4,883,256
54	4,883,257

CLASS 260

402	4,883,612
408	4,883,613
413	4,883,614

CLASS 261

64.4	4,883,616

CLASS 264

29.7	4,883,617
49	4,883,618
60	4,883,619
72	4,883,620
86	4,883,621
108	4,883,622
	4,883,623
112	4,883,624
136	4,883,625
156	4,883,626
157	4,883,627
178 F	4,883,628
289.6	4,883,629
513	4,883,630
528	4,883,631
544	4,883,632
550	4,883,633
555	4,883,634

CLASS 266

148	4,883,258
217	4,883,259

CLASS 267

140.1	4,883,260
158	4,883,261
175	4,883,262
293	4,883,263

CLASS 271

110	4,883,264
220	4,883,265
291	4,883,266

CLASS 272

3	4,883,267
73	4,883,268
76	4,883,635
117	4,883,269
134	4,883,270

CLASS 273

1 GC	4,883,271
26 A	4,883,272
110	4,883,273
164	4,883,274
172	4,883,275
183 B	4,883,276
236	4,883,277
241	4,883,278
269	4,883,636

CLASS 277

1	4,883,279

CLASS 280

3	4,883,280
33.992	4,883,281
43.24	4,883,282
204	4,883,283
293	4,883,284
491.5	4,883,285
629	4,883,286
665	4,883,287
672	4,883,288
684	4,883,289
814	4,883,290

CLASS 283

117	4,883,291

CLASS 285

55	4,883,292
364	4,883,293

CLASS 290

31	4,883,973

CLASS 292

148	4,883,294
307 R	4,883,295
336.3	4,883,296
339	4,883,297
341.12	4,883,298

CLASS 293

110	4,883,299

CLASS 294

2	4,883,300
77	4,883,301

CLASS 296

37.1	4,883,302
91	4,883,303
97.8	4,883,304
105	4,883,305
162	4,883,306
180.2	4,883,307
185	4,883,308
194	4,883,309
210	4,883,310
213	4,883,311
214	4,883,312
216	4,883,313

CLASS 297

159	4,883,314
184	4,883,315
191	4,883,316
193	4,883,317
234	4,883,318
354	4,883,319
452	4,883,320

CLASS 298

17.7	4,883,321

CLASS 299

34	4,883,322
42	4,883,323

CLASS 301

9 TV	4,883,324

CLASS 303

96	4,883,325
110	4,883,326
116	4,883,327
	4,883,328

CLASS 307

10.1	4,883,974
112	4,883,983
256	4,883,984
279	4,883,985
290	4,883,975
291.2	4,883,976
298	4,883,986
355	4,883,987
401	4,883,977
443	4,883,978
	4,883,988
446	4,883,979
448	4,883,989
465.1	4,883,980
473	4,883,990
491	4,883,991
	4,883,992
542.1	4,883,993

CLASS 310

12	4,883,994
40 R	4,883,981
55	4,883,995
62	4,883,982
154	4,883,996
179	4,883,997
239	4,883,998
254	4,883,999
268	4,884,000
313 A	4,884,001
323	4,884,002
328	4,884,003

CLASS 312

1	4,883,329
195	4,883,330
	4,883,331
330.1	4,883,332

CLASS 313

402	4,884,004
404	4,884,005
474	4,884,006
573	4,884,007

CLASS 315

152	4,884,008
246	4,884,009
366	4,884,010
368	4,884,011
397	4,884,012

CLASS 318

481	4,884,013
600	4,884,014
640	4,884,015
685	4,884,016

CLASS 320

2	4,884,017

CLASS 322

8	4,884,018

CLASS 324

77 R	4,884,019
83 D	4,884,020
142	4,884,021
157	4,884,022
158 F	4,884,024
	4,884,026
	4,884,027
158 MG	4,884,023
158 SC	4,884,025
213	4,884,028
309	4,884,029
344	4,884,030
459	4,884,031
503	4,884,033
504	4,884,032
529	4,884,034

CLASS 328

133	4,884,035
167	4,884,036

CLASS 329

336	4,884,037

CLASS 330

4.3	4,884,044
165	4,884,038
253	4,884,039

CLASS 331

1 A	4,884,040
57	4,884,041
113 R	4,884,042
186	4,884,043

CLASS 333

158	4,884,045
260	4,884,046

CLASS 335

10	4,884,047
18	4,884,048

CLASS 337

36	4,884,049
264	4,884,050

CLASS 338

4	4,884,051
202	4,884,052
275	4,884,053

CLASS 340

309.15	4,884,054
426	4,884,055
453	4,884,056
456	4,884,057
461	4,884,058
514	4,884,059
	4,884,060
550	4,884,061
571	4,884,062
572	4,884,063
573	4,884,064
632	4,884,065
633	4,884,066
686	4,884,067
707	4,884,068
799	4,884,069
825.78	4,884,070
854	4,884,071
937	4,884,072

CLASS 341

31	4,884,073
70	4,884,074
159	4,884,075

CLASS 342

5	4,884,076
202	4,884,077
360	4,884,078

CLASS 346

1.1	4,884,079
46	4,884,080
74.6	4,884,081
105	4,884,082
108	4,884,083
136	4,884,084
	4,884,085
155	4,884,086
160.1	4,884,188

CLASS 350

96.10	4,883,333
96.13	4,883,334
96.15	4,883,335
96.20	4,883,336
96.29	4,883,337
96.34	4,883,338
	4,883,339
260	4,883,340
276 R	4,883,341
320	4,883,342
338	4,883,343
339 R	4,883,344
350 S	Re.33,120
418	4,883,345

423	4,883,346
500	4,883,347
503	4,883,348
631	4,883,349

CLASS 351

160 R	4,883,350
221	4,883,351

CLASS 353

122	4,883,352

CLASS 354

75	4,884,087
86	4,884,088
222	4,884,089
234.1	4,884,090
271.1	4,884,091
289.1	4,884,092
299	4,884,093
412	4,884,094

CLASS 355

1	4,884,095
23	4,884,097
27	4,884,098
55	4,884,099
68	4,884,100
	4,884,101
77	4,884,102
200	4,884,103
202	4,884,104
212	4,884,105
	4,884,106
218	4,884,107
233	4,884,096
234	4,884,108
260	4,884,109
319	4,884,110

CLASS 356

41	4,883,353
128	4,883,354
241	4,883,355
326	4,883,356
349	4,883,357
350	4,883,358
401	4,883,359
402	4,883,360

CLASS 357

05	4,884,111
17	4,884,112
23.4	4,884,113
38	4,884,114
41	4,884,116
42	4,884,115
43	4,884,117
45	4,884,118
58	4,884,119
68	4,884,120
	4,884,121
71	4,884,122
	4,884,123
72	4,884,124
74	4,884,125
81	4,884,126

CLASS 358

12	4,884,127
29	4,884,128
44	4,884,129
80	4,884,130
88	4,884,131
93	4,884,132
98	4,884,133
	4,884,134
103	4,884,135
105	4,884,136
108	4,884,137
133	4,884,138
142	4,884,139
168	4,884,140
174	4,884,141
213.19	4,884,142
213.28	4,884,143
228	4,884,144
229	4,884,145
300	4,884,149
327	4,884,150
330	4,884,151
400	4,884,146
443	4,884,147
464	4,884,148

CLASS 360

78.14	4,884,152
85	4,884,153
104	4,884,154
105	4,884,155
	4,884,261
121	4,884,156
125	4,884,157
132	4,884,158
	4,884,159

CLASS 361

18	4,884,160
	4,884,161
23	4,884,162
58	4,884,163
97	4,884,164
98	4,884,165
333	4,884,166
382	4,884,167
	4,884,168
385	4,884,169
414	4,884,170
424	4,884,171

CLASS 362

61	4,884,172
	4,884,173
	4,884,174
119	4,884,175
135	4,884,176
189	4,884,177
241	4,884,178
295	4,884,179

CLASS 363

21	4,884,180
35	4,884,181
37	4,884,182
41	4,884,183
46	4,884,184
56	4,884,185
132	4,884,186
141	4,884,187

CLASS 364

200	4,884,190
	4,884,191
	4,884,192
	4,884,193
	4,884,194
	4,884,195
	4,884,196
	4,884,197
	4,884,198
408	4,884,199
413.13	4,884,200
424.01	4,884,202
424.1	4,884,201
426.04	4,884,203
431.01	4,884,205
431.03	4,884,204
	4,884,207
431.08	4,884,206
460	4,884,208
468	4,884,209
474.01	4,884,210
474.22	4,884,211
474.31	4,884,189
479	4,884,212
497	4,884,213
505	4,884,214
510	4,884,215
513	4,884,216
	4,884,217
	4,884,218
514	4,884,219
521	4,884,220
526	4,884,221
550	4,884,222
	4,884,223
	4,884,224
559	4,884,225
560	4,884,226
565	4,884,227
579	4,884,228
724.11	4,884,229
724.15	4,884,230
736	4,884,231
754	4,884,232
786	4,884,233
900	4,884,234

CLASS 365

2	4,884,235
29	4,884,236
63	4,884,237
105	4,884,238
185	4,884,239
189.09	4,884,240
210	4,884,241
229	4,884,242
234	4,884,243
240	4,884,244

CLASS 366

97	4,883,361
101	4,883,362
157	4,883,363
279	4,884,245

CLASS 367

7	4,884,246
43	4,884,247
73	4,884,248
154	4,884,249
180	4,884,250
188	4,884,251

CLASS 368

10	4,884,252
	4,884,253
21	4,884,254
96	4,884,255
223	4,884,256
276	4,884,257
	4,884,258

CLASS 369

32	4,884,259
93	4,884,260
136	4,884,262

CLASS 370

16	4,884,263
58.1	4,884,264
70	4,884,265
84	4,884,266
100.1	4,884,267
102	4,884,268
110.1	4,884,269

CLASS 371

21.2	4,884,270
40.2	4,884,271
43	4,884,272
49.4	4,884,273
57.2	4,884,274

CLASS 372

9	4,884,275
21	4,884,276
22	4,884,277
26	4,884,278
29	4,884,279
38	4,884,280
75	4,884,281
97	4,884,282
107	4,884,283

CLASS 374

102	Re.33,119
129	4,883,364
136	4,883,365
184	4,883,366

CLASS 375

1	4,884,284
25	4,884,285
118	4,884,286
121	4,884,287

CLASS 376

272	4,883,637

CLASS 378

51	4,884,288
57	4,884,289
83	4,884,290
99	4,884,291
127	4,884,292
197	4,884,293

CLASS 379

61	4,884,294

CLASS 384

114	4,883,367
458	4,883,368
476	4,883,369
490	4,883,370
559	4,883,371
585	4,883,372
	4,883,373
618	4,883,374

CLASS 400

55	4,883,375
83	4,883,376
121	4,883,377
624	4,883,378
697.1	4,883,379

CLASS 401

208	4,883,380

CLASS 402

74	4,883,381

CLASS 403

405.1	4,883,382
407.1	4,883,383

CLASS 404

14	4,883,384
47	4,883,385

CLASS 405

136	4,883,386
195	4,883,387
	4,883,388
204	4,883,389

CLASS 406

24	4,883,390

CLASS 407

40	4,883,391

CLASS 409

165	4,883,392

CLASS 410

52	4,883,393

CLASS 411

51	4,883,394
55	4,883,395
	4,883,396
174	4,883,397
344	4,883,398
431	4,883,399

CLASS 414

2	4,883,400
273	4,883,401
499	4,883,402

CLASS 415

98	4,883,403
115	4,883,404
137	4,883,405
183	4,883,406
190	4,883,407

CLASS 416

93 R	4,883,408

CLASS 417

43	4,883,409
69	4,883,410
331	4,883,411
387	4,883,412

CLASS 418

55	4,883,413
57	4,883,414

CLASS 419

9	4,883,638
49	4,883,639

CLASS 420

417	4,883,640
502	4,883,745

CLASS 422

50	4,883,641
66	4,883,642
94	4,883,643
104	4,883,644
133	4,883,645
311	4,883,646

CLASS 423

239	4,883,647
290	4,883,648

CLASS 424

1.1	4,883,649
	4,883,650
47	4,883,651
59	4,883,652
60	4,883,653
69	4,883,654
70	4,883,655
	4,883,656
72	4,883,657
78	4,883,659
	4,883,660
80	4,883,658
85.2	4,883,661
101	4,883,662
120	4,883,726
195.1	4,883,663
	4,883,673
196.1	4,883,664
417	4,883,665
422	4,883,666
438	4,883,667
448	4,883,668
	4,883,669
450	4,883,670

CLASS 425

47	4,883,415
64	4,883,416
122	4,883,671
135	4,883,421
140	4,883,417
217	4,883,418
326.1	4,883,419
464	4,883,420

CLASS 426

2	4,883,672
118	4,883,674
120	4,883,675
314	4,883,676
420	4,883,677
496	4,883,678
532	4,883,679
534	4,883,680
573	4,883,681
580	4,883,682
582	4,883,683
607	4,883,684
658	4,883,685

CLASS 427

38	4,883,686
193	B1 4,555,415
213	4,883,687
285	4,883,688
297	4,883,689
430.1	4,883,690
434.2	4,883,691
440	Re.33,121

CLASS 428

16	4,883,692
34.9	4,883,693
35.2	4,883,694
	4,883,695
35.4	4,883,696
35.7	4,883,697
35.9	4,883,698
36.9	4,883,699
113	4,883,700
136	4,883,701
141	4,883,702
142	4,883,703
209	4,883,704
	4,883,705
215	4,883,706
219	4,883,707
263	4,883,708
288	4,883,709
336	4,883,710
	4,883,711
367	4,883,712
397	4,883,713
412	4,883,714
421	4,883,715
	4,883,716
423.1	4,883,615
458	4,883,717
	4,883,718
541	4,883,719
552	4,883,720
623	4,883,721
625	4,883,722
653	4,883,723

CLASS 429

23	4,883,724
99	4,883,725
145	4,883,727
160	4,883,728
179	4,883,729

CLASS 430

18	4,883,730
41	4,883,731
49	4,883,732
54	4,883,733
109	4,883,734
	4,883,735
110	4,883,736
138	4,883,737
	4,883,738
192	4,883,739
270	4,883,740
	4,883,741
275	4,883,742
321	4,883,743
325	4,883,744
504	4,883,746
542	4,883,747
567	4,883,748

CLASS 431

182	4,883,422
328	4,883,423

CLASS 432

77	4,883,424

CLASS 433

32	4,883,425
91	4,883,426

CLASS 434

247	4,883,749

CLASS 435

6	4,883,750
7	4,883,751
68	4,883,752
167	4,883,753
177	4,883,754
240.2	4,883,755
252.1	4,883,757
252.3	4,883,756
253.5	4,883,758
289	4,883,759
296	4,883,760
320	4,883,761

CLASS 436

18	4,883,762
45	4,883,763
63	4,883,764
71	4,883,765

CLASS 437

37	4,883,543
40	4,883,766
41	4,883,767
61	4,883,768
110	4,883,769
	4,883,770
129	4,883,771
200	4,883,772
207	4,883,773
211	4,883,774
225	4,883,775

CLASS 439

64	4,883,427
69	4,883,428
74	4,883,429
510	4,883,430
521	4,883,431
553	4,883,432
607	4,883,433
619	4,883,434
876	4,883,435

CLASS 441

65	4,883,436

CLASS 445

5	4,883,437
	4,883,438
66	4,883,439

CLASS 446

91	4,883,440
99	4,883,441
320	4,883,442
478	4,883,443

CLASS 464

160	4,883,444

CLASS 474

113	4,883,445
133	4,883,446
242	4,883,447
260	4,883,448

CLASS 493

43	4,883,449
196	4,883,450
396	4,883,451

CLASS 501

10	4,883,776
15	4,883,777
19	4,883,778
88	4,883,779
96	4,883,780
102	4,883,781

CLASS 502

220	4,883,782
304	4,883,783

CLASS 514

8	4,883,784
31	4,883,785
47	4,883,786
57	4,883,788
63	4,883,789
167	4,883,791
169	4,883,792
228.2	4,883,793
248	4,883,794
253	4,883,795
	4,883,796
255	4,883,797
256	4,883,798
258	4,883,799
259	4,883,800
263	4,883,801
278	4,883,802
304	4,883,803
357	4,883,804
411	4,883,805
417	4,883,806
427	4,883,807
468	4,883,808
469	4,883,809
	4,883,810
	4,883,811
	4,883,812
470	4,883,813
524	4,883,814
541	4,883,815
546	4,883,816
557	4,883,817
570	4,883,818
573	4,883,819
616	4,883,820
617	4,883,821
680	4,883,822

CLASS 518

702	4,883,823

VOL
1108
ISS
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NO
28
1989
UMI

CLASSIFICATION OF PATENTS

CLASS 521	
88	4,883,824
112	4,883,825
164	4,883,826
184	4,883,827
CLASS 523	
122	4,883,828
334	4,883,829
414	4,883,830
CLASS 524	
98	4,883,860
100	4,883,831
265	4,883,832
394	4,883,833
504	4,883,834
	4,883,835
CLASS 525	
66	4,883,836
	4,883,837
119	4,883,838
136	4,883,839
146	4,883,840
148	4,883,841
240	4,883,842
327.6	4,883,843
472	4,883,844
534	4,883,845
CLASS 526	
73	4,883,846
84	4,883,847
124	4,883,848
141	4,883,849
200	4,883,850
268	4,883,851
279	4,883,852
329	4,883,853
CLASS 528	
28	4,883,854
171	4,883,855
202	4,883,856
272	4,883,857
322	4,883,858
484	4,883,859
CLASS 530	
326	4,883,861
331	4,883,862
	4,883,863
356	4,883,864
415	4,883,865
CLASS 534	
606	4,883,866
CLASS 536	
28	4,883,867
CLASS 540	
145	4,883,790
222	4,883,868
355	4,883,869
598	4,883,870
CLASS 544	
47	4,883,874
210	4,883,871
263	4,883,872
316	4,883,873
CLASS 546	
16	4,883,875
51	4,883,876
112	4,883,877
172	4,883,878
280	4,883,879
347	4,883,880
353	4,883,881
CLASS 548	
262	4,883,882
549	4,883,883
CLASS 549	
74	4,883,884
214	4,883,885
255	4,883,886
341	4,883,887
463	4,883,888
532	4,883,889
CLASS 552	
235	4,883,611
CLASS 558	
61	4,883,890
161	4,883,891
164	4,883,892
308	4,883,893
311	4,883,894
319	4,883,895
	4,883,896
327	4,883,897
427	4,883,898
CLASS 560	
14	4,883,899
24	4,883,907
41	4,883,900
45	4,883,901
75	4,883,902
137	4,883,903
174	4,883,904
180	4,883,905
238	4,883,906
344	4,883,908
351	4,883,909
CLASS 562	
528	4,883,910
581	4,883,911
608	4,883,912
CLASS 564	
2	4,883,913
91	4,883,914
155	4,883,915
186	4,883,916
292	4,883,917
414	4,883,787
CLASS 600	
36	4,883,452
	4,883,453
CLASS 603	
39	4,883,494
CLASS 604	
1	4,883,454
4	4,883,455
9	4,883,456
20	4,883,457
22	4,883,458
	4,883,460
28	4,883,459
53	4,883,461
	4,883,462
74	4,883,464
96	4,883,465
110	4,883,466
152	4,883,467
164	4,883,468
192	4,883,469
	4,883,470
195	4,883,471
208	4,883,472
217	4,883,473
280	4,883,474
290	4,883,475
323	4,883,476
339	4,883,477
360	4,883,478
365	4,883,479
385.1	4,883,480
	4,883,481
385.2	4,883,482
411	4,883,483
891.1	4,883,484
CLASS 623	
6	4,883,485
13	4,883,486
15	4,883,487
22	4,883,489
	4,883,490
	4,883,491
23	4,883,492
38	4,883,493

CLASSIFICATION OF DESIGNS

2—	639	304,779
D2—	10	304,775
	215	304,776
	229	304,777
	320	304,778
D3—	4	304,780
	35	304,781
	61	304,782
	71	304,783
	76	304,784
D4—	104	304,785
		304,786
D6—	450	304,787
	467	304,788
	484	304,789
	514	304,790
	542	304,791
	559	304,792
	569	304,793
D7—	37	304,794
	70	304,795
	106	304,796
		304,797
	151	304,798
	319	304,799
	351	304,800
D8—	57	304,801
	328	304,802
D9—	341	304,803
		304,804
	376	304,805
		304,806
D10—	15	304,807
	46.1	304,844
	65	304,808
D11—	93	304,809
	149	304,810
	152	304,811
	227	304,812
D12—	113	304,813
	114	304,814
	133	304,815
	151	304,816
	153	304,817
	162	304,818
	181	304,819
	190	304,820
	331	304,821
D13—	8	304,822
D14—	100	304,823
	107	304,824
		304,825
	116	304,827
	117	304,826
	118	304,828
		304,874
	135	304,829
	138	304,830
	140	304,831
	165	304,832
D15—	7	304,833
	148	304,834
D16—	107	304,835
	209	304,836
	217	304,837
		304,838
D17—	14	304,839
D19—	43	304,840
	69	304,841
	75	304,842
D21—	11	304,843
	59	304,845
		304,847
	77	304,846
	155	304,848
	192	304,849
	234	304,851
	235	304,850
D23—	252	304,852
	257	304,853
	365	304,854
	386	304,855
		304,856
D24—	10	304,857
		304,858
D25—	17	304,859
D26—	29	304,861
	67	304,860
	76	304,862
	85	304,863
D28—	36	304,864
	49	304,865
		304,866
	53	304,867
	73	304,868
D29—	8	304,869
D30—	115	304,870
D32—	18	304,871
D34—	1	304,872
	5	304,873

GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

Alabama	1
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Puerto Rico	43
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(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

01	4,882,860
	4,884,027
04	4,882,830
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	4,883,105	33	4,883,716		4,883,474		4,883,627		4,884,016		4,883,051
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	4,883,202		4,883,335		4,883,589		4,883,697		4,882,919		4,883,948
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DESIGN PATENTS

01	304,803		304,821		304,845		304,785		304,793		304,834
	304,804		304,823		304,847		304,818		304,819	36	304,787
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CLASSIFICATION OF PLANTS

P —	68	7,059	7,060			

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